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Vol. 1215 Number 3

OFFICIAL GAZETTE

of the
UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

October 20, 1998



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OFFICIAL GAZETTE of the
UNITED STATES PATENT AND TRADEMARK OFFICE

October 20, 1998 Volume 1215 Number 3

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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1214 O.G. 47, on September 15, 1998.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1998, and were announced in the *Official Gazette* at 1213 O.G. 153, on August 18, 1998.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1998, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a and filing fee under 37 CFR 1.16(a) paid)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	*	*
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	*	*
USPTO was ISA but not IPEA	*	*
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	*	*
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	*	*
Other National fees		
— For each independent claim in excess of 3	*	*
— For each claim in excess of 20	*	*
— For each application containing a multiple dependent claim	*	*
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(l)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(l)	130.00	130.00

* No fees are indicated because as of the date this notice was prepared these fee amounts were uncertain. Current fee amounts may be obtained from the Patent and Trademark Office's Web site (www.uspto.gov) or by contacting the PTO General Information Services Division at (703) 308-4357 or (800) 786-9199.

Sep. 16, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the

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maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 17, 1995 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,457,819 through 5,459,873
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 15, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,056,155 through 5,058,206
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 13, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,698,844 through 4,700,402
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) ..... *
By other than a small entity ..... *

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) ..... *
By other than a small entity ..... *

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) ..... *
By other than a small entity ..... *

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional $1,640.00

* No fees are indicated because as of the date this notice was prepared these fee amounts were uncertain. Current fee amounts may be obtained from the Patent and Trademark Office's Web site (www.uspto.gov) or by contacting the PTO General Information Services Division at (703) 308-4357 or (800) 786-9199.

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON August 12, 1998
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,604,761	06/798,790	08/12/86
4,604,774	06/704,175	08/12/86
4,604,775	06/564,030	08/12/86
4,604,779	06/705,789	08/12/86
4,604,782	06/503,051	08/12/86
4,604,783	06/679,033	08/12/86
4,604,793	06/643,585	08/12/86
4,604,796	06/739,708	08/12/86
4,604,802	06/663,395	08/12/86
4,604,804	06/707,905	08/12/86
4,604,807	06/770,966	08/12/86
4,604,818	06/758,329	08/12/86
4,604,830	06/694,817	08/12/86
4,604,838	06/548,504	08/12/86
4,604,839	06/606,877	08/12/86
4,604,840	06/593,387	08/12/86
4,604,853	06/677,283	08/12/86
4,604,855	06/607,367	08/12/86
4,604,865	06/485,202	08/12/86
4,604,868	06/556,616	08/12/86
4,604,878	06/695,569	08/12/86
4,604,879	06/590,326	08/12/86
4,604,881	06/710,723	08/12/86
4,604,887	06/676,639	08/12/86
4,604,891	06/661,806	08/12/86
4,604,897	06/636,003	08/12/86
4,604,899	06/597,753	08/12/86
4,604,900	06/668,460	08/12/86
4,604,904	06/533,989	08/12/86
4,604,908	06/662,104	08/12/86
4,604,919	06/679,130	08/12/86
4,604,923	06/570,462	08/12/86
4,604,929	06/696,756	08/12/86
4,604,940	06/707,111	08/12/86
4,604,957	06/703,257	08/12/86
4,604,966	06/786,225	08/12/86
4,604,968	06/748,165	08/12/86
4,604,970	06/599,759	08/12/86
4,604,971	06/594,531	08/12/86
4,604,978	06/713,719	08/12/86
4,604,984	06/731,786	08/12/86
4,604,988	06/591,041	08/12/86
4,605,005	06/661,375	08/12/86
4,605,012	06/569,400	08/12/86
4,605,021	06/640,463	08/12/86
4,605,024	06/534,098	08/12/86

Patent Number	Application Number	Issue Date
4,605,032	06/622,599	08/12/86
4,605,033	06/655,172	08/12/86
4,605,034	06/664,050	08/12/86
4,605,037	06/684,480	08/12/86
4,605,048	06/661,606	08/12/86
4,605,052	06/765,101	08/12/86
4,605,054	06/654,589	08/12/86
4,605,058	06/718,743	08/12/86
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4,605,129	06/675,697	08/12/86
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4,605,142	06/631,637	08/12/86
4,605,150	06/686,541	08/12/86
4,605,152	06/583,218	08/12/86
4,605,154	06/695,391	08/12/86
4,605,156	06/705,248	08/12/86
4,605,164	06/777,019	08/12/86
4,605,179	06/653,876	08/12/86
4,605,182	06/778,303	08/12/86
4,605,183	06/592,348	08/12/86
4,605,200	06/595,656	08/12/86
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4,605,216	06/633,930	08/12/86
4,605,220	06/722,648	08/12/86
4,605,221	06/648,767	08/12/86
4,605,223	06/697,024	08/12/86
4,605,224	06/609,698	08/12/86
4,605,243	06/658,665	08/12/86
4,605,250	06/762,792	08/12/86
4,605,251	06/633,341	08/12/86
4,605,252	06/716,551	08/12/86
4,605,260	06/692,182	08/12/86
4,605,263	06/750,135	08/12/86
4,605,269	06/622,615	08/12/86
4,605,273	06/682,161	08/12/86
4,605,280	06/736,517	08/12/86
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4,605,283	06/780,706	08/12/86
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4,605,526	06/694,739	08/12/86
4,605,551	06/676,634	08/12/86
4,605,557	06/415,567	08/12/86
4,605,559	06/646,090	08/12/86
4,605,560	06/677,841	08/12/86
4,605,568	06/729,804	08/12/86
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4,605,590	06/764,706	08/12/86
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4,605,608	06/779,281	08/12/86
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4,605,617	06/691,370	08/12/86
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4,605,633	06/454,673	08/12/86
4,605,634	06/749,559	08/12/86
4,605,635	06/691,982	08/12/86
4,605,636	06/780,780	08/12/86
4,605,645	06/448,087	08/12/86
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4,605,662	06/529,548	08/12/86
4,605,670	06/576,087	08/12/86
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4,605,723	06/735,132	08/12/86
4,605,724	06/656,555	08/12/86
4,605,727	06/706,948	08/12/86
4,605,729	06/784,071	08/12/86
4,605,736	06/743,246	08/12/86
4,605,737	06/602,779	08/12/86
4,605,740	06/534,535	08/12/86
4,605,756	06/682,623	08/12/86
4,605,758	06/602,834	08/12/86
4,605,759	06/636,289	08/12/86
4,605,763	06/646,196	08/12/86
4,605,766	06/650,807	08/12/86
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4,605,777	06/744,143	08/12/86
4,605,778	06/617,990	08/12/86
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4,605,835	06/612,728	08/12/86
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4,605,878	06/613,384	08/12/86
4,605,879	06/650,393	08/12/86
4,605,888	06/657,361	08/12/86
4,605,892	06/705,763	08/12/86
4,605,897	06/579,846	08/12/86
4,605,899	06/541,004	08/12/86
4,605,901	06/486,827	08/12/86
4,605,903	06/795,941	08/12/86
4,605,904	06/731,815	08/12/86
4,605,915	06/629,121	08/12/86
4,605,916	06/592,101	08/12/86
4,605,924	06/575,491	08/12/86
4,605,928	06/544,652	08/12/86
4,605,934	06/637,121	08/12/86
4,605,957	06/417,437	08/12/86
4,605,958	06/486,003	08/12/86
4,605,959	06/643,503	08/12/86
4,605,963	06/523,823	08/12/86
4,605,989	06/764,379	08/12/86
4,605,992	06/743,784	08/12/86
4,605,995	06/712,187	08/12/86
4,605,998	06/599,580	08/12/86
4,606,021	06/641,625	08/12/86
4,606,022	06/592,547	08/12/86
4,606,023	06/615,555	08/12/86
4,606,025	06/536,597	08/12/86
4,606,028	06/589,901	08/12/86
4,606,038	06/557,354	08/12/86
4,606,039	06/629,510	08/12/86
4,606,045	06/590,093	08/12/86
4,606,061	06/566,158	08/12/86
4,606,063	06/662,402	08/12/86
4,606,070	06/643,919	08/12/86

PATENTS WHICH EXPIRED ON August 7, 1998
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,945,575	07/244,873	08/07/90
4,945,576	07/393,273	08/07/90
4,945,578	07/164,853	08/07/90
4,945,583	07/168,654	08/07/90
4,945,589	07/454,370	08/07/90
4,945,591	07/454,020	08/07/90
4,945,594	07/328,529	08/07/90
4,945,598	07/377,073	08/07/90
4,945,600	07/069,524	08/07/90
4,945,606	06/721,196	08/07/90
4,945,610	07/313,867	08/07/90
4,945,614	07/372,529	08/07/90
4,945,620	07/379,297	08/07/90
4,945,623	07/218,774	08/07/90
4,945,624	07/261,513	08/07/90
4,945,625	07/228,324	08/07/90
4,945,627	07/346,555	08/07/90
4,945,636	07/295,915	08/07/90
4,945,638	07/225,026	08/07/90
4,945,639	07/410,875	08/07/90
4,945,642	07/286,179	08/07/90
4,945,648	07/302,204	08/07/90
4,945,652	07/340,077	08/07/90
4,945,656	07/387,236	08/07/90
4,945,663	07/427,985	08/07/90
4,945,664	07/446,340	08/07/90
4,945,667	07/209,174	08/07/90
4,945,670	07/445,402	08/07/90
4,945,672	07/265,894	08/07/90
4,945,676	07/249,797	08/07/90
4,945,680	07/310,289	08/07/90
4,945,681	07/354,295	08/07/90
4,945,688	06/790,053	08/07/90
4,945,698	07/390,929	08/07/90
4,945,704	07/347,100	08/07/90
4,945,706	07/309,417	08/07/90
4,945,714	07/436,911	08/07/90
4,945,721	07/181,625	08/07/90
4,945,722	07/196,558	08/07/90
4,945,725	07/237,774	08/07/90
4,945,726	07/397,182	08/07/90
4,945,728	07/371,187	08/07/90
4,945,734	07/411,710	08/07/90
4,945,735	07/364,335	08/07/90
4,945,738	07/436,343	08/07/90
4,945,739	07/360,052	08/07/90
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4,945,754	07/382,146	08/07/90
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4,945,795	07/248,812	08/07/90
4,945,798	07/327,869	08/07/90
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4,945,801	07/242,425	08/07/90
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4,945,814	06/752,922	08/07/90
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4,945,832	07/313,353	08/07/90
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4,945,844	07/353,750	08/07/90
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4,945,898	07/379,573	08/07/90
4,945,918	07/189,977	08/07/90
4,945,919	07/308,769	08/07/90
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4,945,923	07/378,449	08/07/90
4,945,929	07/062,815	08/07/90
4,945,934	07/114,561	08/07/90
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4,945,952	07/154,807	08/07/90
4,945,955	07/171,949	08/07/90
4,945,959	07/318,207	08/07/90
4,945,961	07/374,442	08/07/90
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4,945,973	07/270,605	08/07/90
4,945,982	07/382,460	08/07/90
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4,946,002	07/330,830	08/07/90
4,946,004	07/423,175	08/07/90
4,946,006	07/337,552	08/07/90
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4,946,012	07/382,399	08/07/90
4,946,014	07/416,083	08/07/90

Patent Number	Application Number	Issue Date
4,946,015	07/350,272	08/07/90
4,946,016	07/262,553	08/07/90
4,946,020	07/386,314	08/07/90
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4,946,038	07/453,934	08/07/90
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4,946,077	07/332,056	08/07/90
4,946,084	07/398,720	08/07/90
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4,946,091	07/409,767	08/07/90
4,946,094	07/246,678	08/07/90
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4,946,109	07/391,466	08/07/90
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4,946,120	07/230,331	08/07/90
4,946,123	07/385,082	08/07/90
4,946,124	07/275,895	08/07/90
4,946,129	07/272,718	08/07/90
4,946,130	07/276,897	08/07/90
4,946,131	07/424,268	08/07/90
4,946,139	07/381,962	08/07/90
4,946,147	07/322,126	08/07/90
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4,946,159	07/288,970	08/07/90
4,946,160	07/339,648	08/07/90
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4,946,163	07/336,202	08/07/90
4,946,168	07/453,907	08/07/90
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4,946,567	07/281,623	08/07/90
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4,946,585	07/408,582	08/07/90
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4,946,595	07/243,319	08/07/90
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4,946,627	07/381,894	08/07/90
4,946,628	07/219,685	08/07/90
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4,946,632	07/229,998	08/07/90
4,946,636	07/344,309	08/07/90
4,946,640	07/338,684	08/07/90
4,946,645	07/329,822	08/07/90
4,946,649	06/824,191	08/07/90
4,946,651	07/194,935	08/07/90
4,946,653	06/462,738	08/07/90
4,946,655	07/250,797	08/07/90
4,946,657	07/110,925	08/07/90
4,946,664	07/301,864	08/07/90

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4,946,671	07/346,046	08/07/90
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4,946,708	07/273,523	08/07/90
4,946,714	07/465,503	08/07/90
4,946,715	07/217,562	08/07/90
4,946,721	07/291,232	08/07/90
4,946,727	07/320,447	08/07/90
4,946,748	07/425,519	08/07/90
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4,946,798	07/305,735	08/07/90
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4,946,835	07/219,942	08/07/90
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4,946,843	07/211,652	08/07/90
4,946,846	07/329,374	08/07/90
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4,946,851	07/266,233	08/07/90
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4,946,995	07/325,403	08/07/90
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4,947,115	07/293,891	08/07/90
4,947,116	07/240,782	08/07/90
4,947,120	07/152,760	08/07/90
4,947,123	07/274,569	08/07/90
4,947,133	07/145,099	08/07/90
4,947,138	07/361,526	08/07/90
4,947,145	07/416,351	08/07/90
4,947,147	07/448,788	08/07/90
4,947,153	07/400,581	08/07/90
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4,947,301	07/347,474	08/07/90
4,947,314	07/196,061	08/07/90
4,947,319	07/244,976	08/07/90
4,947,321	07/443,865	08/07/90
4,947,328	07/195,085	08/07/90
4,947,330	07/182,487	08/07/90
4,947,336	07/181,820	08/07/90
4,947,344	07/364,550	08/07/90
4,947,349	07/198,575	08/07/90
4,947,353	07/243,295	08/07/90
4,947,354	07/255,812	08/07/90
4,947,359	07/346,147	08/07/90
4,947,360	06/895,020	08/07/90
4,947,369	07/416,881	08/07/90
4,947,374	07/191,115	08/07/90
4,947,380	07/208,186	08/07/90
4,947,381	07/308,039	08/07/90
4,947,387	07/269,519	08/07/90
4,947,390	07/327,202	08/07/90
4,947,398	07/372,834	08/07/90
4,947,403	07/374,298	08/07/90
4,947,405	07/356,147	08/07/90
4,947,420	07/345,056	08/07/90
4,947,438	07/217,535	08/07/90
4,947,446	07/435,282	08/07/90
4,947,458	06/760,560	08/07/90
4,947,460	07/321,434	08/07/90
4,947,462	07/249,549	08/07/90
4,947,464	07/150,281	08/07/90
4,947,465	07/385,032	08/07/90
4,947,468	07/325,932	08/07/90
4,947,474	07/261,619	08/07/90
4,947,476	07/396,367	08/07/90
4,947,478	07/170,103	08/07/90

PATENTS WHICH EXPIRED ON August 9, 1998
DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
5,335,371	08/130,707	08/09/94
5,335,373	07/800,487	08/09/94
5,335,376	07/613,867	08/09/94
5,335,377	08/126,067	08/09/94
5,335,378	08/033,241	08/09/94
5,335,379	08/101,022	08/09/94
5,335,392	08/114,828	08/09/94
5,335,393	07/784,236	08/09/94
5,335,394	08/139,170	08/09/94
5,335,397	08/076,782	08/09/94
5,335,399	07/867,375	08/09/94

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5,335,401	08/107,917	08/09/94
5,335,407	08/024,403	08/09/94
5,335,414	08/038,381	08/09/94
5,335,418	08/003,783	08/09/94
5,335,419	07/948,140	08/09/94
5,335,422	07/873,753	08/09/94
5,335,423	07/941,656	08/09/94
5,335,424	08/034,511	08/09/94
5,335,427	07/962,573	08/09/94
5,335,430	08/014,272	08/09/94
5,335,433	08/000,709	08/09/94
5,335,434	07/756,522	08/09/94
5,335,435	07/964,027	08/09/94
5,335,437	08/035,277	08/09/94
5,335,438	07/972,687	08/09/94
5,335,444	08/035,657	08/09/94
5,335,446	07/977,667	08/09/94
5,335,447	07/798,523	08/09/94
5,335,451	07/968,440	08/09/94
5,335,459	07/919,842	08/09/94
5,335,460	08/057,634	08/09/94
5,335,464	07/792,283	08/09/94
5,335,492	07/851,617	08/09/94
5,335,499	07/950,252	08/09/94
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5,336,011	08/143,278	08/09/94
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5,336,040	07/895,833	08/09/94
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5,337,043	08/059,950	08/09/94
5,337,044	07/772,915	08/09/94
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5,337,106	08/074,227	08/09/94
5,337,139	07/866,751	08/09/94
5,337,140	07/922,059	08/09/94
5,337,143	07/959,972	08/09/94
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5,337,158	07/813,822	08/09/94
5,337,165	07/828,183	08/09/94
5,337,178	07/996,262	08/09/94
5,337,179	07/920,206	08/09/94
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5,337,249	07/752,438	08/09/94
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5,337,291	08/151,014	08/09/94
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5,337,402	07/654,182	08/09/94
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Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 8/14/98

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
Re. 34,676	08/116,315	09/03/93	07/26/94	08/18/98
4,483,032	06/436,048	10/22/82	11/20/84	08/18/98
4,739,692	06/866,743	05/27/86	04/26/88	08/17/98
4,817,679	07/040,160	04/17/87	04/04/89	08/19/98
4,840,233	07/155,516	02/12/88	06/20/89	08/19/98
4,879,181	07/040,534	04/20/87	11/07/89	08/19/98
4,893,696	07/222,117	07/20/88	01/16/90	08/14/98
5,049,591	07/413,770	09/28/89	09/17/91	08/20/98
5,113,864	07/188,043	04/29/88	05/19/92	08/14/98
5,219,162	07/894,558	06/15/92	06/15/93	08/18/98
5,239,835	07/871,548	04/21/92	08/31/93	08/19/98
5,261,866	07/746,905	08/19/91	11/16/93	08/20/98

Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

4,936,913, Re. S.N. 09/140,471, Aug. 25, 1998, Cl. 106/404, ALUMINUM FLAKE PIGMENT, Takao Hieda, Owner of Record: *Toyo Aluminium Kabushiki Kaisha, Osaka-shi, Japan,* Attorney or Agent: David G. Conlin, Ex. Gp.: 1741

5,151,239, Re. S.N. 08/893,956, Jul. 16, 1997, Cl. 174/87, WIRE JUNCTION ENCAPSULATING WIRE CONNECTOR AND METHOD OF MAKING SAME, Lloyd Herbert King Jr., Owner of Record: *King Technology of Missouri Inc., Louis, Mo.,* Attorney or Agent: Carl L. Johnson, Ex. Gp.: 1732

5,482,278, Re. S.N. 09/004,626, Jan. 8, 1998, Cl. 273/176.00A, HANDICAPPED-ACCESSIBLE GOLF COURSE, David H. Hill, et. al., Owner of Record: *Michael S. Oring, North Potomac, Md.,* Attorney or Agent: James R. Burdett, Ex. Gp.: 3711

5,497,842, Re. S.N. 09/041,519, Mar. 12, 1998, Cl. 175/334, REAMER WING FOR ENLARGING A BOREHOLE BELOW A SMALLER-DIAMETER PORTION THEREOF, Paul E. Pastusek, et. al., Owner of Record: *Baker Hughes Inc., Houston, Tex.,* Attorney or Agent: Joseph A. Walkowski, Ex. Gp.: 3625

5,517,469, Re. S.N. 09/075,957, May 12, 1998, Cl. 2856, TIMEPIECE DRIVEN BY A SOURCE OF MECHANICAL ENERGY AND REGULATED BY AN ELECTRIC CIRCUIT, Fridolin Wiget, Owner of Record: *Asulab S.A., Bienne, Switzerland,* Attorney or Agent: Townsend M. Belser Jr., Ex. Gp.:

5,545,674, Re. S.N. 09/133,422, Aug. 13, 1998, Cl. 518/715, SURFACE SUPPORTED COBALT CATALYST, PROCESS UTILIZING THESE CATALYSTS FOR THE PREPARATION OF HYDROCARBONS FROM SYNTHESIS GAS AND PROCESS FOR THE PREPARATION OF SAID CATALYSTS, William C. Behrmann, et. al., Owner of Record: *Exxon Research & Engineering Co., Florham Park, N.J.,* Attorney or Agent: Arnold H. Krumholz, Ex. Gp.: 1613

5,549,330, Re. S.N. 09/140,831, Aug. 26, 1998, Cl. 280/822, QUICK RELEASE SKI POLE AND STRAP SYSTEM, Galen Wells, Owner of Record: *Inventor,* Attorney or Agent: Stephen S. Ford, Ex. Gp.: 3611

5,551,445, Re. S.N. 09/145,168, Sep. 1, 1998, Cl. 128/782, APPARATUS AND METHOD FOR MOVEMENT COORDINATION ANALYSIS, Lewis M. Nashner, Owner of Record: *Neurocom International Inc., Clackamas, Oreg.,* Attorney or Agent: Timothy M. Murphy, Ex. Gp.: 3733

5,553,806, Re. S.N. 09/145,915, Sep. 2, 1998, Cl. 242/542, SUPPORT OR PRESSURE ROLL FOR A PAPER ROLL WINDER, Robert G. Lucas, Owner of Record: *Beloit Techno-*

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logies Inc., Wilmington, Del., Attorney or Agent: Gerald A. Mathews, Ex. Gp.: 3631

5,554,814, Re. S.N. 09/150,542, Sep. 9, 1998, Cl. 084/659, ELECTRONIC MUSICAL INSTRUMENT CREATING TIMBRE BY OPTIMUM SYNTHESIS MODE, Takuya Nakata, Owner of Record: *Yamaha Corp., Shizuoka-ken, Japan*, Attorney or Agent: David L. Fettrman, Ex. Gp.: 2837

5,603,442, Re. S.N. 08/819,660, Mar. 17, 1997, Cl. 227/119, ROTARY HOPPER FOR AN ATTACHING APPARATUS, Volker Schmidt, et. al., Owner of Record: *Eastlex Machine Corp., Lexington, Ky.*, Attorney or Agent: Frank C. Leach Jr., Ex. Gp.: 3721

5,636,988, Re. S.N. 09/139,545, Aug. 25, 1998, Cl. 132/322, SONIC DENTAL DEVICE, Ronald K. Murayama, Owner of Record: *Inventor*, Attorney or Agent: Charles C. Fowler, Ex. Gp.: 2854

5,663,512, Re. S.N. 09/137,254, Aug. 19, 1998, Cl. 075/236, HARDFACING COMPOSITION FOR EARTH-BORING BITS, Kevin W. Schader, et. al., Owner of Record: *Baker Hughes Inc., Houston, Tex.*, Attorney or Agent: James E. Bradley, Ex. Gp.: 3641

5,687,003, Re. S.N. 09/136,597, Aug. 19, 1998, Cl. 358/445, READER WITH HIGH-RESOLUTION MODE AND HIGH-SPEED MODE, Fumikazu Nagano, Owner of Record: *Sharp Kabushiki Kaisha, Osaka, Japan*, Attorney or Agent: Brian L. Michaelis, Ex. Gp.: 2724

5,705,427, Re. S.N. 09/141,377, Aug. 27, 1998, Cl. 437/192, METHOD OF FORMING A LANDING PAD STRUCTURE IN AN INTEGRATED CIRCUIT, Tsiu C. Chan, Owner of Record: *ST Microelectronics, Inc., Carrollton, Tex.*, Attorney or Agent: Dan Venglarik, Ex. Gp.: 2812

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

D. 372,985, Reexam. No. 90/005,074, Aug. 17, 1998, Cl. D25/002, STAIRS FOR SWIMMING POOL, Jean Bourgault, Owner of Record: *Les Produits de Resine Access, Inc., St. Lambert, Quebec, Canada*, Attorney or Agent: F. Michael Sajovec, Myers Bigel Sibley and Sajovec, Cary, N.C., Ex. Gp.: 2914, Requester: James M. Durlacher, Woodard Emhardt Naughton Moriarty and McNett, Indianapolis, Ind.

4,751,669, Reexam. No. 90/005,081, Aug. 17, 1998, Cl. 345/115, VIDEOTEX FRAME PROCESSING, Samuel P. Sturgis, et. al., Owner of Record: *Wang Laboratories, Inc., Lowell, Mass.*, Attorney or Agent: Ronald J. Paglierani, Wang Laboratories, Inc., Billerica, Mass., Ex. Gp.: 2774, Requester: Michael E. Dergosits, Dergosits and Noah, San Francisco, Calif.

5,002,478, Reexam. No. 90/005,078, Aug. 20, 1998, Cl. 425/325, IMPROVEMENTS IN SUCTION APPLYING MOLD BLOCKS IN PIPE FORMING APPARATUS, Manfred A. A. Lupke, Owner of Record: *Corma, Inc., Concord Ontario, Canada*, Attorney or Agent: Jane Parsons and Associates, Toronto, Ontario, Canada, Ex. Gp.: 1722, Requester: Wood Phillips Van Santen Clark and Mortimer, Chicago, Ill.

5,083,039, Reexam. No. 90/005,079, Aug. 21, 1998, Cl. 290/044, VARIABLE SPEED WIND TURBINE, Robert D. Richardson, et. al., Owner of Record: *Zond Energy Systems, Inc., Tehachapi, Calif.*, Attorney or Agent: Edwin H. Taylor, Blakely Sokoloff Taylor and Zafman, Sunnyvale, Calif., Ex. Gp.: 2834, Requester: Enercon GmbH, Aurich, Germany, c/o Mary Helen Sears Law Firm Chartered, Washington, D.C.

5,121,712, Reexam. No. 90/005,076, Aug. 18, 1998, Cl. 119/167, ANIMAL LITTER BOX LINER, Benjamin M. Schulein, Jr., et. al., Owner of Record: *Alfa-Pet, Inc., St. Louis, Mo.*, Attorney or Agent: Rebecca J. Brandau, The Kalish and Gilster Intellectual Property Practice Grp., Blackwell Sanders Peper and Martin, St. Louis, Mo., Ex. Gp.: 3616, Requester: John S. Beulick, Armstrong Teasdale Schlafly and Davis, St. Louis, Mo.

5,201,537, Reexam. No. 90/005,080, Aug. 21, 1998, Cl. 280/281.1, BICYCLE FRAME, Christopher P. D'Aluisio, Owner of Record: *Cannondale Corp., Bethel, Conn.*, Attorney or Agent: Pennie and Edmonds, Washington, D.C., Ex. Gp.: 3611, Requester: Owner

5,438,408, Reexam. No. 90/005,077, Aug. 19, 1998, Cl. 356/336, MEASURING DEVICE AND METHOD FOR THE DETERMINATION OF PARTICLE SIZE DISTRIBUTIONS BY SCATTERED LIGHT MEASUREMENTS, Reiner Weichert, et. al., Owner of Record: *Sympatec GmbH, Clausthal-Zellerfeld, Germany*, Attorney or Agent: William H. Logsdon, Webb Ziesenheim Bruening Logsdon Orkin and Hanson, Pittsburgh, Pa., Ex. Gp.: 2877, Requester: Micromeritics Instrument Corp., Norcross, Ga. c/o Albert S. Anderson, Norcross, Ga.

5,460,820, Reexam. No. 90/005,073, Aug. 13, 1998, Cl. 242/449, METHOD FOR PROVIDING TESTOSTERONE AND OPTIONALLY ESTROGEN REPLACEMENT THERAPY TO WOMEN, Charles D. Ebert, et. al., Owner of Record: *Theratech Inc., Salt Lake City, Utah*, Attorney or Agent: Thomas E. Ciotti, Morrison and Foerster, Palo Alto, Calif., Ex. Gp.: 1615, Requester: Owner

5,642,554, Reexam. No. 90/005,075, Aug. 17, 1998, Cl. 024/016PD, CABLE TIE HAVING ENHANCED LOCKING ENGAGEMENT BETWEEN PAWL AND RATCHET TEETH ON TONGUE, Soren Christian Sorenson, Owner of Record: *GB Electrical, Milwaukee, Wis.*, Attorney or Agent: Edward W. Callan, San Diego, Calif., Ex. Gp.: 3626, Requester: Owner

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Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
September 1, 1998
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
119,485	71/104,789	11/27/1917
119,490	71/104,663	11/27/1917
119,500	71/099,532	11/27/1917
119,538	71/102,562	11/27/1917
119,586	71/104,536	11/27/1917
352,138	71/369,937	11/23/1937
352,145	71/381,825	11/23/1937
352,148	71/385,034	11/23/1937
352,174	71/391,001	11/23/1937
352,232	71/394,288	11/23/1937
352,237	71/394,420	11/23/1937
352,245	71/394,576	11/23/1937

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352,269	71/395,030	11/23/1937
352,298	71/395,473	11/23/1937
654,946	72/006,454	11/26/1957
654,947	72/006,508	11/26/1957
654,959	72/019,808	11/26/1957
654,961	72/023,290	11/26/1957
654,984	72/697,830	11/26/1957
654,992	72/017,498	11/26/1957
654,995	72/024,995	11/26/1957
655,001	72/022,840	11/26/1957
655,003	72/014,130	11/26/1957
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655,020	72/028,733	11/26/1957
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655,053	71/679,941	11/26/1957
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655,056	72/007,766	11/26/1957
655,065	71/692,480	11/26/1957
655,068	72/011,769	11/26/1957
655,069	72/013,928	11/26/1957
655,075	72/023,427	11/26/1957
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655,082	71/695,435	11/26/1957
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1,077,703	73/112,339	11/22/1977
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1,077,992	73/084,680	11/22/1977
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1,078,005	73/082,991	11/22/1977
1,078,006	73/082,992	11/22/1977
1,078,014	73/113,123	11/22/1977
1,078,015	73/114,838	11/22/1977
1,078,016	73/117,778	11/22/1977
1,078,021	73/121,622	11/22/1977
1,078,024	73/121,997	11/22/1977
1,078,026	73/097,244	11/22/1977
1,078,029	73/123,565	11/22/1977
1,078,030	73/123,586	11/22/1977
1,078,031	73/123,859	11/22/1977
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1,078,149	73/117,189	11/22/1977
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1,078,217	73/086,695	11/29/1977
1,078,224	73/118,074	11/29/1977
1,078,225	73/118,794	11/29/1977
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1,078,306	73/117,388	11/29/1977
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1,078,340	73/110,503	11/29/1977
1,078,344	73/113,294	11/29/1977
1,078,345	73/113,836	11/29/1977
1,078,346	73/114,036	11/29/1977
1,078,347	73/114,402	11/29/1977
1,078,354	73/074,308	11/29/1977
1,078,358	73/111,241	11/29/1977
1,078,365	73/053,574	11/29/1977
1,078,369	73/065,011	11/29/1977
1,078,370	73/067,947	11/29/1977
1,078,379	73/088,315	11/29/1977
1,078,380	73/091,520	11/29/1977
1,078,387	73/104,977	11/29/1977
1,078,388	73/105,015	11/29/1977
1,078,392	73/106,402	11/29/1977
1,078,393	73/106,429	11/29/1977
1,078,397	73/108,167	11/29/1977
1,078,400	73/110,183	11/29/1977
1,078,401	73/110,186	11/29/1977
1,078,402	73/110,188	11/29/1977
1,078,403	73/110,189	11/29/1977
1,078,404	73/110,190	11/29/1977
1,078,405	73/111,098	11/29/1977
1,078,410	73/117,998	11/29/1977
1,078,411	73/118,071	11/29/1977
1,078,416	73/120,332	11/29/1977
1,078,417	73/120,376	11/29/1977
1,078,418	73/120,388	11/29/1977
1,078,419	73/120,417	11/29/1977
1,078,420	73/073,553	11/29/1977
1,078,421	73/077,190	11/29/1977
1,078,422	73/085,094	11/29/1977
1,078,429	73/069,456	11/29/1977
1,078,431	73/101,043	11/29/1977
1,078,433	73/105,602	11/29/1977
1,078,438	73/119,904	11/29/1977
1,078,439	73/120,349	11/29/1977
1,078,440	73/120,704	11/29/1977
1,078,455	73/116,852	11/29/1977
1,078,458	73/096,398	11/29/1977
1,078,459	73/114,349	11/29/1977
1,078,461	73/125,015	11/29/1977
1,078,462	73/107,488	11/29/1977
1,078,464	73/118,677	11/29/1977
1,078,472	73/064,765	11/29/1977
1,078,473	73/065,931	11/29/1977
1,078,478	73/118,251	11/29/1977
1,078,481	73/118,742	11/29/1977
1,078,484	73/113,716	11/29/1977
1,078,485	73/115,795	11/29/1977
1,078,486	73/122,648	11/29/1977
1,078,489	73/092,672	11/29/1977
1,078,490	73/097,974	11/29/1977
1,078,492	73/104,297	11/29/1977
1,078,497	73/109,156	11/29/1977
1,078,498	73/110,613	11/29/1977
1,078,500	73/116,535	11/29/1977

Reg. Number	Serial Number	Reg. Date
1,078,503	73/096,296	11/29/1977
1,078,505	73/102,669	11/29/1977
1,078,508	73/106,936	11/29/1977
1,078,510	73/109,741	11/29/1977
1,078,525	73/088,612	11/29/1977
1,078,543	73/111,645	11/29/1977
1,078,544	73/120,429	11/29/1977
1,078,548	73/122,635	11/29/1977
1,078,549	73/123,567	11/29/1977
1,078,555	73/103,444	11/29/1977
1,078,556	73/110,519	11/29/1977
1,078,557	73/114,114	11/29/1977
1,078,563	73/091,831	11/29/1977
1,078,566	73/100,509	11/29/1977
1,078,568	73/103,053	11/29/1977
1,078,570	73/113,623	11/29/1977
1,078,573	73/119,157	11/29/1977
1,078,575	73/119,683	11/29/1977
1,078,580	73/103,658	11/29/1977
1,078,581	73/104,272	11/29/1977
1,078,582	73/108,842	11/29/1977
1,078,585	73/116,767	11/29/1977
1,078,586	73/116,983	11/29/1977
1,078,589	73/119,407	11/29/1977
1,078,592	73/024,347	11/29/1977
1,078,598	73/094,945	11/29/1977
1,078,604	73/103,404	11/29/1977
1,078,612	73/089,835	11/29/1977
1,078,614	73/097,526	11/29/1977
1,078,617	73/101,839	11/29/1977
1,078,620	73/106,008	11/29/1977
1,078,626	73/117,615	11/29/1977
1,078,627	73/120,124	11/29/1977
1,078,629	73/007,802	11/29/1977
1,078,630	73/007,803	11/29/1977
1,078,634	73/052,032	11/29/1977
1,078,635	73/077,818	11/29/1977
1,078,647	73/108,977	11/29/1977
1,078,649	73/112,404	11/29/1977
1,078,653	73/115,928	11/29/1977
1,078,660	73/119,921	11/29/1977
1,078,668	72/418,274	11/29/1977
1,078,673	73/081,133	11/29/1977
1,078,674	73/098,652	11/29/1977
1,078,678	73/085,554	11/29/1977
1,086,098	73/107,550	02/21/1978
1,088,797	73/141,526	04/04/1978

Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998

NICHOLAS P. GODICI
Deputy Assistant Commissioner for Patents (Acting)

Service by Publication

A petition to cancel the registrations identified below having been filed, and the notice of such proceeding sent by certified mail to registrants at their last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Indian Wells Water Company, Inc., Corte Madera, Calif., Reg. No. 1,779,384, for the mark "Indian Wells Pure Drinking Water Bottled Fresh Daily Sodium Free, non-carbonated, 5 Gals and design", Canc. No. 26,959.

National Tea Co., Rosemont, Ill., Reg. No. 743,532, for the mark "SO FRESH", Canc. No. 27,627.

Washington Apparel Group, Inc., Nashville, Tenn., Reg. No. 740,960, for the mark "BEAU BRUMMEL", Canc. No. 27,785.

KATRINA PETERSON
Supervisory Legal Assistant
Trademark Trial and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner for Trademarks

Reclassification Alert Report

This report is a summary of classificaiton changes which became effective by issuance of Classification Orders from July through September 1998. Information includes:

- subclasses established or abolished (major changes)
- subclass title, indent, or position change
- changes to existing classes and subclass definitions (minor changes)

This Reclassification Alert Report may appear from time to time in the Official Gazette and is intended to provide an interim notice of classification changes pending publication of the Manual of Classification and revisions thereto.

The general public may purchase copies of Classification Orders or Classification Definitions by contacting the Editorial Division at 703-305-6101 or 703-305-5099. Payment can be made through a Deposit Account, or by check made payable to "Commissioner of Patents and Trademarks" and sent to:

Chief, Editorial Division
Office of Classification Support
U.S. Patent and Trademark Office
Crystal Park 3, Room 902
Washington, D.C. 20231

September 18, 1998

FREDERICK R. SCHMIDT
Administrator for Search and Information Resources

RECLASSIFICATION ALERT REPORT

JULY — SEPTEMBER 1998

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
8			DEFN. CHANGE	1703
15			DEFN. CHANGE	1695
19			DEFN. CHANGE	1700
28			DEFN. CHANGE	1700
33			DEFN. CHANGE	1700
33	366		ABOLISH	1702
33	366.11	366.19	ESTABLISH	1702
33	366.21	366.27	ESTABLISH	1702
33	401		TITLE CHANGE	1702
34			DEFN. CHANGE	1703
47	58		ABOLISH	1703
47	58.1		ESTABLISH	1703
65			DEFN. CHANGE	1700
68			DEFN. CHANGE	1695
71			DEFN. CHANGE	1703
73			DEFN. CHANGE	1700
73			DEFN. CHANGE	1702
74			DEFN. CHANGE	1699
99			DEFN. CHANGE	1703
106			DEFN. CHANGE	1703
127			DEFN. CHANGE	1703
128			DEFN. CHANGE	1703
131			DEFN. CHANGE	1703
134			DEFN. CHANGE	1703
137	565		ABOLISH	1695
137	565.1		ABOLISH	1695
137	565.2		ABOLISH	1695
137	566	570	ABOLISH	1695
137	565.01		ESTABLISH	1695
137	565.11	565.19	ESTABLISH	1695
137	565.22	565.29	ESTABLISH	1695
137	565.3		ESTABLISH	1695
137	565.31	565.37	ESTABLISH	1695
137	561A		POSITION CHANGE	1695
141			DEFN. CHANGE	1703
162			DEFN. CHANGE	1703
172			DEFN. CHANGE	1703
178			DEFN. CHANGE	1702
180			DEFN. CHANGE	1699
188			DEFN. CHANGE	1699
192	4	11	ABOLISH	1699
192	215	217	ESTABLISH	1699
192	217.1	217.7	ESTABLISH	1699
192	218		ESTABLISH	1699
192	219		ESTABLISH	1699
192	219.1	219.7	ESTABLISH	1699
192	220		ESTABLISH	1699
192	220.1	220.7	ESTABLISH	1699
192	221		ESTABLISH	1699
192	221.1		ESTABLISH	1699
192	222		ESTABLISH	1699
192	223		ESTABLISH	1699
192	223.1	223.4	ESTABLISH	1699
192	224		ESTABLISH	1699
192	224.1	224.3	ESTABLISH	1699
192	225		ESTABLISH	1699
192	226		ESTABLISH	1699
198			DEFN. CHANGE	1699
203			DEFN. CHANGE	1703
206			DEFN. CHANGE	1703
208	111		ABOLISH	1705
208	120		ABOLISH	1705
208	111.01		ESTABLISH	1705
208	111.05		ESTABLISH	1705
208	111.1		ESTABLISH	1705
208	111.15		ESTABLISH	1705
208	111.2		ESTABLISH	1705
208	111.25		ESTABLISH	1705
208	111.3		ESTABLISH	1705
208	111.35		ESTABLISH	1705
208	120.01		ESTABLISH	1705
208	120.05		ESTABLISH	1705

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
208	120.1		ESTABLISH	1705
208	120.15		ESTABLISH	1705
208	120.2		ESTABLISH	1705
208	120.25		ESTABLISH	1705
208	120.3		ESTABLISH	1705
208	120.35		ESTABLISH	1705
209			DEFN. CHANGE	1700
210			DEFN. CHANGE	1699
210			DEFN. CHANGE	1703
222			DEFN. CHANGE	1695
235	462	467	ABOLISH	1704
235	472		ABOLISH	1704
235	462.01	462.09	ESTABLISH	1704
235	462.1		ESTABLISH	1704
235	462.11	462.19	ESTABLISH	1704
235	462.2		ESTABLISH	1704
235	462.21	462.29	ESTABLISH	1704
235	462.3		ESTABLISH	1704
235	462.31	462.39	ESTABLISH	1704
235	462.4		ESTABLISH	1704
235	462.41	462.49	ESTABLISH	1704
235	472.01	472.03	ESTABLISH	1704
235	900		ESTABLISH	1704
235	901		ESTABLISH	1704
241			DEFN. CHANGE	1703
242			DEFN. CHANGE	1700
250			DEFN. CHANGE	1700
250			DEFN. CHANGE	1703
250			DEFN. CHANGE	1704
252			DEFN. CHANGE	1703
313			DEFN. CHANGE	1701
322			DEFN. CHANGE	1699
324			DEFN. CHANGE	1700
324			DEFN. CHANGE	1704
338			DEFN. CHANGE	1702
340			DEFN. CHANGE	1700
340			DEFN. CHANGE	1702
348			DEFN. CHANGE	1700
353			DEFN. CHANGE	1700
356	237	243	ABOLISH	1700
356	237.1	237.6	ESTABLISH	1700
356	238.1	238.3	ESTABLISH	1700
356	239.1	239.8	ESTABLISH	1700
356	240.1		ESTABLISH	1700
356	241.1	241.6	ESTABLISH	1700
356	242.1		ESTABLISH	1700
356	243.1	243.8	ESTABLISH	1700
356			DEFN. CHANGE	1702
358			DEFN. CHANGE	1700
359			DEFN. CHANGE	1701
361			DEFN. CHANGE	1706
362			DEFN. CHANGE	1700
362	32		ABOLISH	1701
362	551	583	ESTABLISH	1701
377			DEFN. CHANGE	1700
382			DEFN. CHANGE	1700
382			DEFN. CHANGE	1704
385			DEFN. CHANGE	1700
385			DEFN. CHANGE	1701
417			DEFN. CHANGE	1695
418			DEFN. CHANGE	1695
424			DEFN. CHANGE	1703
426			DEFN. CHANGE	1703
429	190	198	ABOLISH	1706
429	218		ABOLISH	1706
429	218.1		ESTABLISH	1706
429	218.2		ESTABLISH	1706
429	231.1	231.9	ESTABLISH	1706
429	231.95		ESTABLISH	1706
429	300	347	ESTABLISH	1706
429	188		TITLE CHANGE	1706
433			DEFN. CHANGE	1701
435	172.1	172.3	ABOLISH	1703
435	440	490	ESTABLISH	1703
436			DEFN. CHANGE	1703
475			DEFN. CHANGE	1699

CLASS	FIRST SUBCLASS	LAST SUBCLASS	ACTION	ORDER NUMBER
504			DEFN. CHANGE	1703
530			DEFN. CHANGE	1703
536			DEFN. CHANGE	1703
588			DEFN. CHANGE	1703
600			DEFN. CHANGE	1700
600			DEFN. CHANGE	1701
600			DEFN. CHANGE	1703
604			DEFN. CHANGE	1703
701			DEFN. CHANGE	1699
800	2		ABOLISH	1703
800	DIG. 1	DIG. 6	ABOLISH	1703
800	200		ABOLISH	1703
800	205		ABOLISH	1703
800	220		ABOLISH	1703
800	230		ABOLISH	1703
800	235		ABOLISH	1703
800	240		ABOLISH	1703
800	250		ABOLISH	1703
800	255		ABOLISH	1703
800	DIG. 7	DIG. 71	ABOLISH	1703
800	3	25	ESTABLISH	1703
800	260	300	ESTABLISH	1703
800	300.1		ESTABLISH	1703
800	301	317	ESTABLISH	1703
800	317.1	317.4	ESTABLISH	1703
800	318	320	ESTABLISH	1703
800	320.1	320.3	ESTABLISH	1703
800	321	323	ESTABLISH	1703
800	323.1	323.3	ESTABLISH	1703
800			TITLE CHANGE	1703
935	1	111	ABOLISH	1703
PLT			DEFN. CHANGE	1703

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Parts 2 and 3

RIN 0651-AA87

Miscellaneous Changes to Trademark Trial and Appeal Board Rules; Correction

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Correcting amendment.

SUMMARY: This document contains corrections to the rules relating to discovery, motions, and the fee for recording documents, and to the title of Part 3 of Volume 37 of the Code of Federal Regulations.

EFFECTIVE DATE: September 30, 1998.

FOR FURTHER INFORMATION CONTACT: Ellen J. Seeherman, Administrative Trademark Judge, Trademark Trial and Appeal Board, by telephone at (703) 308-9300, extension 206; or by mail marked to her attention and addressed to Assistant Commissioner for Trademarks, Box TTAB-No Fee, 2900 Crystal Drive, Arlington, Virginia 22202-3513; or by facsimile transmission marked to her attention and sent to (703) 308-9333.

SUPPLEMENTARY INFORMATION: On September 9, 1998, the Patent and Trademark Office published a final rule entitled "Miscellaneous Changes to Trademark Trial and Appeal Board Rules" in the *Federal Register* (63 FR 48081).

There is an error on page 48093, column 2, in the discussion of the amendment of Section 2.127(a), which states that "if a motion for an extension of time to file a brief in response to a motion is denied, the time for responding to the motion for summary judgment may remain as specified under this section." The words "for summary judgment" should be deleted.

Section 2.120(a) was amended to clarify certain Board practices and to change certain provisions relating to discovery. When the final rule was printed, this section was incorrectly published as two paragraphs instead of one. Section 2.120(a) should appear as a single paragraph.

Section 2.127(a) was amended to, inter alia, provide that the Board may, in its discretion, consider a reply brief. As published, however, a comma was erroneously placed after the word "Board" rather than after the word "may."

Section 3.41 was amended in order to correct a cross-reference to the section relating to the fee for recording a trademark document. However, an earlier version of § 3.41 was inadvertently inserted. The version of § 3.41 as published in the Federal Register on October 10, 1997, 62 FR 53132, 1203 TMOG 63 (October 21, 1997), which became effective December 1, 1997, should be reinserted with the corrected cross-reference.

Finally, the title of Part 3 of Volume 37 of the Code of Federal Regulations was erroneously listed as "Rules of Practice in Trademark Cases." It should remain as "Assignment, Recording and Rights of Assignee."

List of Subjects

37 CFR Part 2

Administrative practice and procedure, Patents, Trademarks.

37 CFR Part 3

Administrative practice and procedure, Patents, Trademarks.

Accordingly, 37 CFR Parts 2 and 3 are corrected as follows:

PART 2—RULES OF PRACTICE IN TRADEMARK CASES

1. The authority citation for part 2 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6.

2. Section 2.120(a) is correctly revised to read as follows:

§ 2.120 Discovery.

(a) *In general.* Wherever appropriate, the provisions of the Federal Rules of Civil Procedure relating to discovery shall apply in opposition, cancellation, interference and concurrent use registration proceedings except as otherwise provided in this section. The provisions of the Federal Rules of Civil Procedure relating to automatic disclosure, scheduling conferences, conferences to discuss settlement and to develop a discovery plan, and transmission to the court of a written report outlining the discovery plan, are not applicable to Board proceedings. The Trademark Trial and Appeal Board will specify the opening and closing dates for the taking of discovery. The trial order setting these dates will be mailed with the notice of institution of the proceeding. The discovery period will be set for a period of 180 days. The parties may stipulate to a shortening of the discovery period. The discovery period may be extended upon stipulation of the parties approved by the Board, or upon motion granted by the Board, or by order of the Board. If a motion for an extension is denied, the discovery period may remain as originally set or as reset. Discovery depositions must be taken, and interrogatories, requests for production of documents and things, and requests for admission must be served, on or before the closing date of the discovery period as originally set or as reset. Responses to interrogatories, requests for production of documents and things, and requests for admission must be served within 30 days from the date of service of such discovery requests. The time to respond may be extended upon stipulation of the parties, or upon motion granted by the Board, or by order of the Board. The resetting of a party's time to respond to an outstanding request for discovery will not result in the automatic rescheduling of the discovery and/or testimony periods; such dates will be rescheduled only upon stipulation of the parties approved by the Board, or upon motion granted by the Board, or by order of the Board.

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3. Section 2.127(a) is correctly revised to read as follows:

§ 2.127 Motions.

(a) Every motion shall be made in writing, shall contain full statement of the grounds, and shall embody or be accompanied by a brief. Except as provided in paragraph (e)(1) of this section, a brief in response to a motion shall be filed within fifteen days from the date of service of the motion unless another time is specified by the Trademark Trial and Appeal Board or the time is extended by stipulation of the parties approved by the Board, or upon motion granted by the Board, or upon order of the Board. If a motion for an extension is denied, the time for responding to the motion may remain as specified under this section. The Board may, in its discretion, consider a reply brief. Except as provided in paragraph (e)(1) of this section, a reply brief, if filed, shall be filed within 15 days from the date of service of the brief in response to the motion. The time for filing a reply brief will not be extended. No further papers in support of or in opposition to a motion will be considered by the Board. Briefs shall be submitted in typewritten or printed form, double spaced, in at least pica or eleven-point type, on letter-size paper. The brief in support of the motion and the brief in response to the motion shall not exceed 25 pages in length; and a reply brief shall not exceed 10 pages in length. Exhibits submitted in support of or in opposition to the motion shall not be deemed to be part of the brief for purposes of determining the length of the brief. When a party fails to file a brief in response to a motion, the Board may treat the motion as conceded. An oral hearing will not be held on a motion except on order by the Board.

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PART 3—ASSIGNMENT, RECORDING AND RIGHTS OF ASSIGNEE

4. The authority citation for Part 3 continues to read as follows:

Authority: 15 U.S.C. 1123; 35 U.S.C. 6.

5. The title of Part 3 is correctly revised to read as follows:

Part 3—ASSIGNMENT, RECORDING AND RIGHTS OF ASSIGNEE

6. Section 3.41 is correctly revised to read as follows:

§ 3.41 Recording fees.

(a) All requests to record documents must be accompanied by the appropriate fee. Except as provided in paragraph (b) of this section, a fee is required for each application, patent and registration against which the document is recorded as identified in the cover sheet. The recording fee is set in § 1.21(h) of this chapter for patents and in § 2.6(b)(6) of this chapter for trademarks.

(b) No fee is required for each patent application and patent against which a document required by Executive Order 9424 is to be filed if:

(1) The document does not affect title and is so identified in the cover sheet (see § 3.31(c)(2)); and

(2) The document and cover sheet are mailed to the Office in compliance with § 3.27(b).

September 24, 1998 ALBIN F. DROST
Deputy Solicitor

Registration to Practice

The following list contains the names of persons who successfully passed the registration examination that was held August 27, 1997 and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 4, 1998.

Richardson, Scott C., 2310 Windsor Rd., Alexandria, Va. 22307

Turner, Kevin F., 1017 N. Danville St., Arlington, Va. 22201

September 22, 1998 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons who successfully passed the registration examination that was held August 28, 1996 and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 4, 1998.

Machtinger, Marc D., 100 Forest Pl., #306, Oak Park, Ill. 60301

September 22, 1998 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

Registration to Practice

The following list contains the names of persons who successfully passed the registration examination that was held April 13, 1994 and have been given provisional recognition pursuant to 37 CFR 10.9(a) to prepare and prosecute patent applications before the Office until their registration certificates are mailed to them. Final approval for registration is subject to establishing to the satisfaction of the Director of the Office of Enrollment and Discipline that the person seeking registration is of good moral character and repute. [37 CFR 10.7(a)]. Accordingly, any information tending to affect the eligibility of any of the following applicants on moral, ethical, or other grounds should be furnished to the Director, Office of Enrollment and Discipline on or before December 4, 1998.

Choi, Kathleen L., 590 Daffodil Dr., Benecia, Calif. 94510

September 22, 1998 KAREN L. BOVARD, *Director*
Office of Enrollment and Discipline

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 980713170-8247-02]

RIN 0651-AA96

Revision of Patent Fees for Fiscal Year 1999

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule; Delay of effective date.

SUMMARY: The Patent and Trademark Office (PTO) published a final rule in the *Federal Register* of July 24, 1998, that revised certain patent fee amounts for fiscal year 1999. Since then, a continuing resolution appropriations bill has been passed by the Congress and signed by the President. The continuing resolution maintains patent fees at their September 1998 (fiscal year 1998) rates through October 9, 1998. This document delays the effective date of the PTO's final rule until October 10, 1998, unless it is superseded by law.

DATES: The effective date of the final rule published at 63 FR 46891, July 24, 1998, and corrected at 63 FR 46891, September 3, 1998, is delayed until October 10, 1998, unless it is superseded by law. If this date is superseded by law, PTO will publish further notice in the Federal Register.

FOR FURTHER INFORMATION CONTACT: Matthew Lee by telephone at (703) 305-8051, fax at (703) 305-8007, or by mail marked to his attention and addressed to the Commissioner of Patents and Trademarks, Office of Finance, Crystal Park 1, Suite 802, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: The Patent and Trademark Office (PTO) published a final rule in the *Federal Register* of July 24, 1998, that revised certain patent fee amounts for fiscal year 1999 (63 FR 39731). See also 63 FR 46891 (September 3, 1998) (correcting one of the fee amounts specified in the July 24, 1998 final rule). Since then, a continuing resolution appropriations bill was passed by the Congress and signed by the President on September 25, 1998. *See* H.R. Res. 128, P.L. 105-240 (1998). It maintains patent fees at their September 1998 (fiscal year 1998) rates through the period of the continuing resolution enacted on September 25, 1998, which expires October 9, 1998. The continuing resolution supersedes the July 24, 1998, final rule on revision of patent fees for fiscal year 1999. Accordingly, this notice delays the effective date of the final rule until October 10, 1998. Additional continuing resolutions could further extend the fiscal year 1998 fee rates into fiscal year 1999.

Legislation is still pending in the Congess to set new patent fees for fiscal year 1999. If an appropriations or authorization bill authorizing new patent fees is enacted prior to the expiration of a continuing resolution, it will supersede the continuing resolution. Patent customers should refer to the official PTO website (www.uspto.gov), or call the PTO General Information Services Division at (703) 308-4357 or (800) PTO-9199, for the most current fee amounts and information.

Sep. 28, 1998 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Disclaimers

4,487,588—David W. Burleigh, Bognor Regis, England; Waldemar Czernakowski, Blaustein; Hermann Wetter, Ulm, both of Germany. CHILD SAFETY SEAT. Patent dated Jan. 30, 1996. Disclaimer filed August 7, 1998, by the assignee, Britax-Excelsior Limited, England; Britax Romer Kindersicherheit GmbH, Germany.

Hereby enters this disclaimer to claims 1-18 of said patent.

4,999,646—Jeffrey L. Trask, Boise, Id. METHOD FOR ENHANCING THE UNIFORMITY AND CONSISTENCY OF DOT FORMATION PRODUCED BY COLOR INK JET PRINTING. Patent dated March 12, 1991. Disclaimer filed July 23, 1998, by the assignee, Hewlett-Packard Company.

Hereby enters this disclaimer to claims 1 and 2 of said patent.

5,466,044—Geoffrey W. Barley, Pitton; Norman Morton, Driffield, both of England. CHILD SAFETY SEAT. Patent dated Nov. 14, 1995. Disclaimer filed Aug. 7, 1998, by the assignee, Britax-Excelsior Limited.

Hereby enters this disclaimer to claims 1-4 of said patent.

5,472,113—Thomas J. Shaw, Little Elm, Tex. AUTOMATIC PILL DISPENSING APPARATUS. Patent dated Dec. 5, 1995. Disclaimer filed April 6, 1998, by the inventor.

The term of this patent shall not extend beyond the expiration date of Pat. No. 5,176,285.

5,472,618—Daniel G. Bolser, Bellevue, Wash. METHOD FOR RECOVERING METALS FROM SOLUTIONS. Patent dated Dec. 5, 1995. Disclaimer filed August 7, 1998, by the assignee, Great Western Chemical Company.

Hereby enters this disclaimer to claims 1-16 and 18 of said patent.

5,496,862—Dennis L. Burns, Kent, Wash. MOLDED STYRENE BLOCK COPOLYMER CLOSURE FOR A WINE CONTAINER. Patent dated March 5, 1996. Disclaimer filed Dec. 1, 1997, by the assignee, Supreme Corq.

Hereby enters this disclaimer to claims 16-25, of said patent.

5,502,941—Louis F. Zember, Fallbrook; Kenneth W. Masters, Carlsbad; James A. Ogilvie; Edward Shea, both of Vista, all of Calif. METHOD AND APPARATUS FOR PRODUCING AN ORNAMENTAL CONCRETE SURFACE. Patent dated April 2, 1996. Disclaimer filed June 26, 1998, by the assignee Ultra-Tex Surfaces, Inc.

Hereby enters this disclaimer to claims 1, 2 , 3, 4, 5, 7 and 8 of said patent.

5,679,259—Daniel G. Bolser, Bellevue, Wash. METHOD FOR RECOVERING METALS FROM SOLUTIONS. Patent dated Oct. 21, 1997. Disclaimer filed August 7, 1998, by the assignee, Great Western Chemical Company.

Hereby enters this disclaimer to claims 4-11 of said patent.

5,524,965—Geoffrey W. Barley, Pitton, England. CHILD SAFETY SEAT. Patent dated June 11, 1996. Disclaimer filed August 7, 1998, by the assignee, Britax-Excelsior Limited.

Hereby enters this disclaimer to claims 1-9 of said patent.

5,708,557—Haim Feigenbaum, Irvine; Bao Le, Santa Ana; Randy Lee Thomas, Orange; Dong Vo, Garden Gove, all of Calif. PUNCTURE-RESISTANT ELECTROSTATIC CHUCK WITH FLAT SURFACE AND METHOD OF MAKING THE SAME. Patent dated Jan. 13, 1998. Disclaimer filed July 14, 1998, by the assignee, Packard Hughes Interconnect Company.

Hereby enters this disclaimer to claims 1-2 of said patent.

5,712,565—Allan E. Schultz, St. Paul; Peter K. George, Bloomington; Arthur Calderon, Minnetonka; Jumna P. Ramdular, Brooklyn Park; Juan J. Fernandez-De Castro, Lakeville; Leroy L. Longworth, Waconia, all of Minn.; Peter I. Bonyhard, Scotts Valley, Calif. MR SENSOR HAVING THICK ACTIVE REGION BETWEEN TWO THINNER INACTIVE MR REGIONS TOPPED WITH RESPECTIVE PERMANENT MAGNETS. Patent dated Jan. 27, 1998. Disclaimer filed April 2, 1998, by the assignee, Seagate Technology, Inc.

Hereby enters this disclaimer to claims 2 and 9, of said patent.

Dedications

4,931,811—Bruce Cowger, Niels J. Nielsen; John H. Dion, all of Corvallis, Oregon. THERMAL INK JET PEN HAVING A FEEDTUBE WITH IMPROVED SIZING AND OPERATIONAL WITH A MININUM OF DEPRIMING. Patent dated June 5, 1990. Dedication filed July 23, 1998, by the assignee, Hewlett-Packard Company.

Hereby dedicates to the public the entire term of said patent.

5,580,251—Alan M. Gilkes; Marvin W. Cowens, both of Plano; Larry A. Taylor, North Richland Hills, all of Texas. ELECTRICONIC REFRESHABLE TACTILE DISPLAY FOR BRAILLE TEXT AND GRAPHICS. Patent dated Dec. 3, 1996. Dedication filed July 20, 1998, by the assignee, Texas Instruments Incorporated.

Hereby dedicates to the public all claims and the entire term of said patent.

Certificates of Correction for October 20, 1998

B1-4,013,109	5,603,318	5,679,474	5,704,109
D. 367,442	5,604,423	5,681,533	5,706,105
D. 392,213	5,613,184	5,683,261	5,706,647
D. 395,512	5,614,061	5,684,785	5,707,648
D. 396,479	5,621,540	5,684,881	5,708,463
4,965,178	5,621,810	5,685,655	5,709,241
5,094,127	5,623,444	5,685,903	5,709,738
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5,543,683	5,651,675	5,694,091	5,717,611
5,544,004	5,654,696	5,694,951	5,717,848
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5,567,360	5,661,761	5,700,980	5,722,942
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5,580,647	5,670,575	5,702,344	5,725,984
5,597,973	5,674,308	5,702,810	5,726,576
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5,727,631	5,745,134	5,763,641	5,778,702
5,728,692	5,745,225	5,763,823	5,779,146
5,729,687	5,745,397	5,765,601	5,779,195
5,731,099	5,745,721	5,766,471	5,779,900
5,731,825	5,748,328	5,767,448	5,780,402
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5,736,278	5,754,531	5,770,863	5,783,398
5,736,815	5,755,467	5,773,214	5,784,419
5,737,840	5,756,200	5,773,518	5,785,186
5,738,593	5,756,318	5,773,849	5,786,484
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5,739,085	5,756,981	5,775,359	5,787,082
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5,740,425	5,757,582	5,775,767	5,788,548
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5,742,126	5,759,471	5,776,577	5,789,727
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5,742,264	5,759,942	5,776,667	5,790,527
5,742,296	5,760,132	5,777,137	5,790,685
5,743,304	5,760,578	5,777,379	5,791,073
5,743,521	5,760,635	5,777,478	5,791,516
5,743,715	5,760,642	5,777,937	5,793,015
5,744,349	5,761,856	5,777,959	5,793,202
5,744,475	5,762,905	5,778,393	5,793,779
5,744,537	5,762,913	5,778,603	

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Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

August 31 - September 4, 1998

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
9-2	EX	74/672,089	Open Software Associates, Inc.	2(e)(1)	Refusal Affirmed		"OPENUI" [computer programs for use in developing applications programs]		No
9-3	OPP	99,974	Dayco Products, Inc. v. Aquapore Moisture Systems, Inc.	genericness	Opposition Sustained		"QUICK CONNECT" [non-metal couplings for watering hose ends]		No
9-3	EX	74/733,860	Information Technology, Inc.	2(d); 2(e)(1)	Refusal Affirmed on both grounds [Note: affirmed under 2(d) only as to the cited mark "PC/BANKER" (and design)]		"PCBANC" [computer software program for use in baking via personal computer]	"P.C. BANKS" (in script form) [computer programs and program manuals all sold as a unit for the purpose of providing financial institutions with information]; "PC/BANKER" (and design) [computer programs and instructional manuals sold as a unit for use in the finance industry]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
NICHOLAS P. GODICI, (Acting) Deputy Assistant Commissioner for Patents
STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	01/11/96
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	06/25/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	07/29/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	05/27/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	11/23/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/13/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/26/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	04/26/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	12/21/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	11/12/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director	305-3900	09/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-3293	06/28/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	12/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	03/11/97
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	02/07/96
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/13/96
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	02/04/97

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

Bruce A. Lehman, Commissioner
Philip G. Hampton, II, Assistant Commissioner
Robert M. Anderson, Deputy Assistant Commissioner
David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of September 1, 1998

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308–9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/12/98	06/03/98
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308–9102—South Tower, 5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/98	04/20/98
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/97	05/27/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—South Tower, 6th Floor, Unwrought Metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/97	06/08/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—South Tower, 6th Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/13/98	04/20/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—South Tower, 7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/20/98	05/07/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/17/98	08/18/98
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—South Tower, 8th Floor Precious Metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/18/98	06/18/98
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308–9109—South Tower, 8th Floor, Precious Metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/01/97	06/06/98
**Collective Marks—Class 200 **Certification Marks—Classes A & B		
Office of Trademark Services—Terron Sims, Director, (703) 308-9100 Trademark Assistance Center—(703) 308-9000 Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188 Intent-To-Use—(ITU)—(703) 308-9500 Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	06/10/98	—0—
Renewals (All Classes)	07/13/98	—0—
Section 12(c) Publications (All Classes)	07/01/98	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 through (703) 305–9752 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

OCTOBER 20, 1998

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 5,124,349 (3647tb)

STORAGE STABLE AZADIRACHTIN FORMULATION

Charles G. Carter, Silver Spring; Clifford J. Hull, Jr., Laurel; Narender P. Luthra, Columbia, and James F. Walter, Ashton, all of Md., assignors to W. R. Grace & Co.-Conn., New York, N.Y.

Reexamination Request No. 90/004,050, Dec. 8, 1995.

Reexamination Certificate for Patent 5,124,349, issued Jun. 23, 1992, Ser. No. 606,366, Oct. 31, 1990.

Continuation-in-part of Ser. No. 371,243, Jun. 26, 1989, Pat. No. 5,001,146.

Int. Cl.[6] A01N *43/16*

U.S. Cl. 514—453

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–19** are confirmed.

1. A storage-stable pesticide composition comprising a neem seed extract solution containing azadirachtin wherein the solution has at least 50% by volume aprotic solvent, at least about 1.0% but less than 10% surfactant, and less than 15% by volume water, said solution being non-degrading to azadirachtin.

B1 5,355,872 (3648th)

LOW FLOW RATE NEBULIZER APPARATUS AND METHOD OF NEBULIZATION

John H. Riggs, 201-F Foliage Cir., Cary, N.C. 27511, and Barry O. Mangum, P.O. Box 20554, Raleigh, N.C. 27619

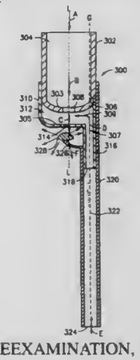
Reexamination Request No. 90/003,943, Aug. 23, 1995.

Reexamination Certificate for Patent 5,355,872, issued Oct. 18, 1994, Ser. No. 927,834, Aug. 10, 1992.

Continuation-in-part of Ser. No. 846,784, Mar. 4, 1992, Pat. No. 5,186,166.

Int. Cl.[6] A61M *11/00;16/10;* **B05B** *7/14;1/26*

U.S. Cl. 128—200.21



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–6**, **8–10** and **14** are determined to be patentable as amended.

Claims **7** and **11–13**, dependent on an amended claim, are determined to be patentable.

New claims **15–33** are added and determined to be patentable.

9. A method of delivering a nebulized medicament to a patient, and increasing delivery of pulmonarily effective aerosol particles at low flow rates comprising the steps of:

(I) providing a nebulizer apparatus including a breathing circuit coupled to the patient and including a small volume nebulizer device, wherein the small volume nebulizer device comprises:

(a) a housing defining a nebulizer receptacle having an interior volume therewithin, including a reservoir portion for holding medicament therein for entrainment into a carrier gas to form a delivery gas mixture comprising nebulized medicament and carrier gas, said nebulizer receptacle having a size defining said nebulizer device as a small volume nebulizer device;

(b) a discharge port connected to the housing in flow communication with the interior volume **[**therewith in**]** *therewithin*, for discharging the delivery gas mixture from the housing;

(c) means for increasing delivery of pulmonarily effective aerosol particles at low flow rates through said nebulizer receptacle, comprising:

a jet passage member having (i) an inlet means for introduction of carrier gas thereinto and (ii) a nozzle means positioned in the interior volume of the housing for discharging carrier gas in jet form into the interior volume of said nebulizer receptacle, for entrainment of medicament from the reservoir portion of the housing in the carrier gas jet, said nozzle *means comprising a nozzle* portion *having a cross-section transversed to the direction of gas flow through the jet passage member, and* comprising a nozzle orifice **[**comprising a nozzle orifice**]** *at an extremity of the nozzle portion,* accommodating carrier gas flow therethrough, wherein the nozzle orifice has an equivalent orifice diameter in the range of from about 0.005 inch to about 0.015 inch;

(d) an expansion chamber joined to the nozzle portion of the jet passage member, said expansion chamber being coextensive in cross-sectional transverse extent with the nozzle portion of the jet passage member, and including an expansion chamber wall which is spaced in the direction of gas flow from the nozzle portion to define an enclosed expansion volume therebetween, said expansion chamber wall having an orifice therein which is in alignment with the orifice of the nozzle portion;

(e) a vertically extending aspiration tube in the interior volume of the housing, having a lower open end and an upper end joined in flow communication with the expansion chamber so that in operation fluid upwardly drawn through the aspiration tube is flowed transversely across the enclosed expansion volume for entrainment in gas flowed in the jet passage member through the orifice of the nozzle portion and the orifice in the expansion chamber wall, to form said delivery gas mixture;

and

(f) an impingement baffle presenting an impingement surface in alignment with the orifice of the jet passage member, *to receive the delivery gas mixture and disperse same in the interior volume of the housing for discharge from the housing through the discharge port;*

(II) disposing a medicament in the reservoir portion of the housing;

(III) flowing the carrier gas through the jet passage member of the jet nebulizer device and nebulizer receptacle at a flow rate in the range of from about 0.5 to 2.8 liters per minute *while aspirating medicament from the reservoir to cause medicament to flow through the aspiration tube from the lower open end thereof to the enclosed expansion volume of the expansion chamber for transverse flow across the expansion volume for contact with and entrainment in the carrier gas flowed through the nozzle orifice and expansion chamber wall orifice,* to disperse the medicament into the carrier gas and form a pulmonarily effective nebulized **[**medicament**]** *medicant* in the carrier gas, as a medicant/carrier gas mixture; and

(IV) passing the medicament/carrier gas mixture through the breathing circuit to a pulmonary situs of the patient.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,925

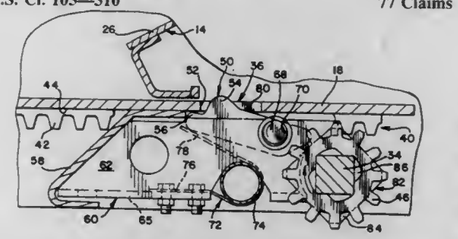
APPARATUS FOR CONTROLLING OPERATION OF A RAILCAR DISCHARGE GATE ASSEMBLY HAVING A LOST MOTION MECHANISM FOR UNLOCKING THE GATE PRIOR TO MOVEMENT

Jeremy J. Dohr, Kenosha; Robert S. Toms, Racine, both of Wis., and Robert T. Fischer, Homewood, Ill., assignors to Miner Enterprises, Inc., Geneva, Ill.

Original No. 5,353,713, dated Oct. 11, 1994, Ser. No. 130,250, Oct. 1, 1993. Application for reissue Oct. 8, 1996, Ser. No. 727,190

Int. Cl.[6] B16D *7/24*

U.S. Cl. 105—310 **77 Claims**



21. A gate control apparatus and railway hopper car discharge gate assembly including a frame defining a generally rectangular discharge opening with a generally rectangular discharge gate mounted on said frame for movement between open and closed positions along a predetermined path of travel, said apparatus comprising:

an operating shaft rotatably supported on said frame adjacent an end of said opening, said operating shaft being connected to said gate whereby said gate slidably moves between the open and closed positions in response to rotation of said operating shaft;

a lock assembly including a displacable stop member which, when said gate is in its closed position, prevents movement of the gate relative to said frame; and

wherein a drive is provided between said lock assembly stop member and said operating shaft for positively displacing said stop member prior to movement of the gate.

Re. 35,926

VENETIAN- OR PLEATED BLINDS, PARTICULARLY FOR MULTIPLE PANE INSULATING GLASS WINDOW

Helge Hagen, Fredrikshavn, Denmark, assignor to Nordicon Develop ApS, Mariager, Denmark

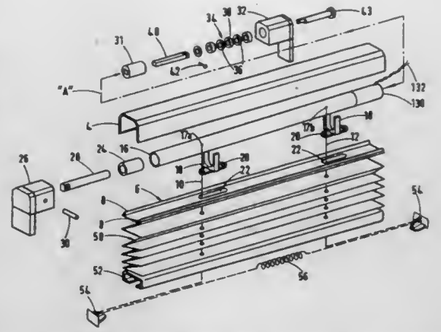
Original No. 5,178,200, dated Jan. 12, 1993, Ser. No. 892,731, May 29, 1992. Continuation of Ser. No. 703,110, May 22, 1991, abandoned. Application for reissue Jan. 4, 1995, Ser. No. 368,424

Claims priority, application Macau, Dec. 14, 1990, 905416

Int. Cl.[6] E06B *3/32*

U.S. Cl. 160—107 **14 Claims**

1. A blind adapted for installation between the glass panes in an insulating glass window, the glass panes spaced apart with spacer elements positioned around the circumference of the window and including an upper transversely extending spacer element and space-apart side spacer elements, the blind comprising at least one winding shaft including, as a unit, supporting and drive means therefor; at least two sets of blind supporting and winding cords connected in laterally spaced relationship to the *winding* shaft; and a housing in which the winding shaft is mounted and confined, said housing comprising the upper transversely extending spacer element, said housing specifically including a two-part assembly of, firstly, a lower, substantially plate-shaped member cooperating to



support the winding shaft [unit] and, secondly, a substantially U-shaped upper cover member sealingly connected to said first member and sealingly confining the winding shaft [unit] between the said two members, said housing also including two corner spacer elements attached to opposite ends of said first and second members, each of which corner spacer elements being attached to the respective adjacent side spacer element on each side of the window, wherein each of said corner spacer elements is a right angled, profiled element having two arms, one of which is sealingly connected to the end of the two-part spacer element, the other end of said corner piece being attached to the top of the respective side spacer element, and wherein at least one of said corner spacer elements is provided with a supporting bearing for rotatably receiving one outer end of the winding shaft.

Re. 35,927

Patent Not Issued For This Number

Re. 35,928

Patent Not Issued For This Number

Re. 35,929

MULTILAYERED TYPE NETWORK INTERFACE UNIT

Bassel Hage Daoud, 100 Vail Rd., Apt. C-8, Parsippany, N.J. 07054

Original No. 5,363,440, dated Nov. 8, 1994, Ser. No. 40,772, Mar. 31, 1993. Application for reissue Jul. 19, 1996, Ser. No. 683,935

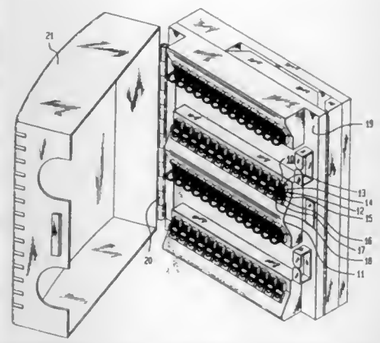
Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—399 **15 Claims**

8. A network interface unit for servicing a multiplicity of subscribers, said unit comprising:

a bottom portion having first and second sides, said bottom portion including a splice chamber and an array of protector devices mounted thereon, said splice chamber including wiring means for connecting a cable to said protectors, said splice chamber having a splice chamber cover, said splice chamber cover being mounted by first hinge means along and nearest the first side of said bottom portion;

a top portion having first and second sides, said top portion including an array of customer bridges each adapted for coupling to a different subscriber line, the bridge array being



coupled to said protector array through at least one electrical connector, said top portion being mounted to said bottom portion by second hinge means, said second hinge means joining the second side of said bottom unit to the second side of said top portion; and

a cover for covering said array of customer bridges, said cover being mounted to the first side of said top portion by third hinge means.

Re. 35,930

METHOD FOR FINE-LINE INTERFEROMETRIC LITHOGRAPHY

Steven R. J. Brueck; Saleem Zaidi, and An-Shyang Chu, all of Albuquerque, N. Mex., assignors to the University of New Mexico, Albuquerque, N. Mex.

Original No. 5,415,835, dated May 16, 1995, Ser. No. 945,776, Sep. 16, 1992. Application for reissue Apr. 22, 1996, Ser. No. 635,565

Int. Cl.[6] G03F *7/20*

U.S. Cl. 430—311 **18 Claims**

1. In microelectronic processing, the method of producing a two-dimensional complex pattern on a photosensitive layer said pattern containing structures with dimensions in the extreme submicron range, comprising the steps of:

a) exposing the photosensitive layer for a first time to two beams of coherent radiation which form an image of a first interference pattern on the surface of said layer;

b) exposing the photosensitive layer for at least one subsequent time to two beams of coherent radiation which form an image of at least one subsequent interference pattern, such that said subsequent interference pattern or patterns referenced to the photosensitive layer are each different from the first pattern;

c) isolating desired regions of said complex pattern with a further exposure of the photosensitive layer using any conventional lithography.

12. An apparatus for producing a two-dimensional complex pattern on a photosensitive layer, said pattern containing structures with dimensions in the extreme submicron range, comprising:

a movable table;

a wafer positioned on said movable table, said wafer having a surface; and,

a source of coherent radiation which forms subsequent images of interference patterns on said surface of said wafer, said source providing at least two beam paths, said radiation having an amplitude, phase, angle, intensity and periodicity.

Re. 35,931

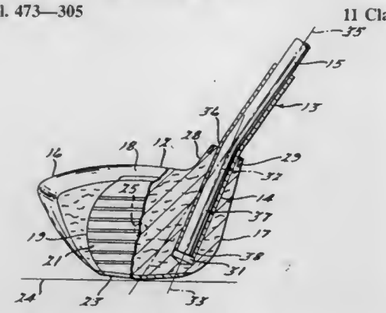
GOLF CLUB

Edward W. Schroder, Livonia, Mich., and Jeffrey Schroder, 15979 Park La., Northville, Mich. 48167

Original No. 5,255,914, dated Oct. 26, 1993, Ser. No. 937,376, Aug. 31, 1992. Application for reissue Oct. 25, 1995, Ser. No. 547,982

Int. Cl.[6] A63B *53/02*

U.S. Cl. 473—305 **11 Claims**



9. A golf club comprising a golf club head and a shaft assembly, the golf club head having a toe portion, a heel portion, a center of percussion substantially in the center of the club head, an upper surface contiguous with the toe portion and the heel portion, and a hole extending inwardly from the upper surface into the heel portion in an angular direction away from the center of percussion, the shaft assembly further comprising a main elongated shaft portion and a lower shaft portion, the center axis of the lower shaft portion being angularly offset from the center axis of the main elongated shaft portion, and at least a part of the lower shaft portion being received in the hole, the main elongated shaft portion remaining exterior of the club head, the center axis of the main elongated shaft portion, when extended downwardly into the club head, passing in close proximity of the center of percussion.

Re. 35,932

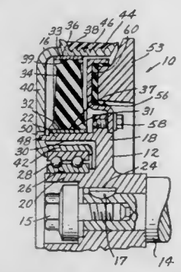
TORSIONAL VIBRATION DAMPER

Zdenek Cerny, Brampton, and Michael Clark, New Market, both of Canada, assignors to Tesma International, Inc., Ontario, Canada

Original No. 5,405,296, dated Apr. 11, 1995, Ser. No. 174,455, Dec. 28, 1993. Application for reissue Jul. 29, 1996, Ser. No. 687,983

Int. Cl.[6] F16H *7/08*

U.S. Cl. 474—135 **31 Claims**



5. The combination [as claimed in claim 3,] *comprising:*

an internal combustion engine including an engine frame and an output shaft rotatable by operation of said internal combustion engine, said output shaft being subject to torsional and bending vibrations resulting from rotation thereof in conjunction with the operation of said internal combustion engine;

a plurality of driven shafts mounted for rotational movement about parallel axes fixed with respect to said engine frame;

a plurality of driven pulleys, each of said driven pulleys operatively connected with a corresponding one of said driven shafts;

a driving pulley for said output shaft;

an endless flexible poly-V belt trained about said driven and said driving pulleys, said poly-V belt being subject to transitional vibrations from changing rotational speeds of said output shaft;

a belt tensioner carried by the engine frame in tensioning engagement with said poly-V belt for maintaining said poly-V belt in driven engagement with said driving pulley and in driving engagement with said driven pulleys; and

a vibration damper assembly operatively connecting said driving pulley with said output shaft for damping said torsional vibrations, said bending vibrations, and said transitional vibrations transmitted from said output shaft through said poly-V belt and said engine frame to said belt tensioner, said vibration damper assembly comprising

a mounting element, fixed to said output shaft, in torsional transmitting relation therewith;

bearing means operatively disposed between said driving pulley and said mounting element to restrict relative movement therebetween to torsional relative movement;

a resilient member operatively connected between said driving pulley and said mounting element in resilient torsional transmitting relation therebetween;

a mass element annularly disposed about said output shaft for damping said bending and torsional vibrations of said output shaft; and

wherein said mass element is fixed to said mounting element through an elastic damping element.

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PLANT PATENTS

GRANTED OCTOBER 20, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,648

ROSE PLANT NAMED 'POULCOV'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser APS, Fredensborg, Denmark

Filed Jan. 7, 1997, Ser. No. 779,607
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—1 **1 Claim**

1. A new and distinct cultivar of rose plant named 'POULcov', as illustrated and described.

10,649

MINIATURE ROSE PLANT NAMED 'POULNOU'

L. Pernille Olesen, and Mogens N. Olesen, both of Fredensborg, Denmark, assignors to Poulsen Roser ApS, Fredensborg, Denmark

Filed Feb. 5, 1997, Ser. No. 794,881
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—8.1 **1 Claim**

1. A new and distinct variety of rose plant of the miniature class, substantially as herein illustrated and described, due to its compact growth, abundant clean white flowers, disease-resistant foliage, its suitability for year round production from cuttings in greenhouses, and its suitability to use as a flowering pot plant.

10,650

HYBRID TEA ROSE PLANT NAMED 'TANKALCIG'

Hans-Jürgen Evers, Uetersen, Germany, assignor to Bear Creek Gardens, Inc., Medford, Oreg.

Filed Dec. 8, 1997, Ser. No. 986,903
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—21 **1 Claim**

1. A new and distinct variety of rose plant of the hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by long, straight stems, bright red, well formed flowers, glossy, dark green foliage; good cut flower production; good petal count; and moderate thorns.

10,651

APRICOT TREE NAMED 'LOUISA'

John J. Kovacevich, 4001 Pinehurst, Bakersfield, Calif. 93306

Filed Oct. 16, 1996, Ser. No. 729,340
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—39 **1 Claim**

1. A new and distinct variety of apricot tree substantially as illustrated and described which is somewhat remotely similar to the 'Castlebrite' apricot tree (unpatented) from which it was derived, but from which it is distinguished by producing fruit which are mature for commercial harvesting and shipment approximately May 15 to May 25, or about three days to five days after the 'Castlebrite' apricot tree, in the San Joaquin Valley of central California and which produces larger freestone fruit with a substantially sweeter flavor and milder texture.

10,652

PEACH TREE DESIGNATED 'GW115'

W. Glenn Welsh, Martinsburg, W. Va., assignor to Adams County Nursery, Inc., Aspers, Pa.

Filed Feb. 18, 1997, Ser. No. 800,555
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—43.1 **1 Claim**

1. A new distinct variety of peach tree, as illustrated and described, characterized by fruit of early maturity, attractive color, firm flesh, long shelf-life and low incidence of split or shattered pits.

10,653

MANDEVILLA PLANT NAMED 'TROPICAL DREAMS'

John F. Gray, Hawthorne, Fla., assignor to Lake Area Nursery, Inc., Hawthorne, Fla.

Filed Jul. 25, 1997, Ser. No. 910,471
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—54.1 **1 Claim**

1. A new and distinct cultivar of Mandevilla plant named 'Tropical Dreams', as illustrated and described.

10,654

ASIATIC HYBRID LILY PLANT NAMED 'HELIOS'

Donald L. Egger, Wilsonville, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Jan. 23, 1997, Ser. No. 788,112
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of Asiatic hybrid lily plant substantially as herein shown and described.

10,655

ASIATIC HYBRID LILY PLANT NAMED 'RED SPIDER'

Donald L. Egger, Wilsonville, Oreg., assignor to Cebeco Lilies, Inc., Aurora, Oreg.

Filed Jan. 23, 1997, Ser. No. 788,951
Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.4 **1 Claim**

1. A new and distinct cultivar of Asiatic hybrid lily plant substantially as herein shown and described.

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10,656

ANTIRRHINUM PLANT NAMED 'LAPLEBLO'

Taco Van Der Made, Quedlinburg, Germany, assignor to Saatzucht Quedlinburg GmbH, Quedlinburg, Germany

Filed Jul. 25, 1997, Ser. No. 910,474

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—879 **1 Claim**

1. A new and distinct cultivar snapdragon plant named 'Laplelblo', as illustrated and described.

10,657

VARIETY OF GERANIUM PLANT NAMED 'MORNING MIST'

David Lemon, Lompoc, Calif., assignor to John Bodger & Sons Company, So. El Monte, Calif.

Filed Mar. 20, 1997, Ser. No. 821,260

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—87.12 **1 Claim**

1. A new and distinct variety of geranium plant, substantially as shown and described.

10,658

AGLAONEMA PLANT NAMED 'JEWEL OF INDIA'

Parthasarathy Mukundan, and Gopalaswamy Parthasarathy, both of "Srinivasa" 237/46 Fifth Main Road, Chamarajpet, Bangalore, India

Filed Aug. 29, 1997, Ser. No. 920,468

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named 'Jewel of India', as illustrated and described.

10,659

AGLAONEMA PLANT NAMED 'EMERALD STAR'

Parthasarathy Mukundan, and Gopalaswamy Parthasarathy, both of "Srinivasa" 237/46 Fifth Main Road, Chamarajpet, Bangalore, India

Filed Aug. 29, 1997, Ser. No. 920,469

Int. Cl.[6] A01H *5/00*

U.S. Cl. Plt.—88.1 **1 Claim**

1. A new and distinct cultivar of Aglaonema plant named 'Emerald Star', as illustrated and described.

PATENTS

GRANTED October 20, 1998

ERRATA

Patents

For CLASS	See PATENT NO.
024—573	5,822,844
054—008	5,822,950
414—510	5,823,728
416—132	5,823,749
493—213	5,823,933
493—342	5,823,934
493—354	5,823,935
493—364	5,823,936
494—067	5,823,937
602—024	5,823,931
607—004	5,824,014
208—107	5,824,214
435—145	5,824,449
177—136	5,824,963
177—136	5,824,965
345—097	5,825,390
356—004	5,825,464
356—028	5,825,465

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PATENTS

GRANTED OCTOBER 20, 1998

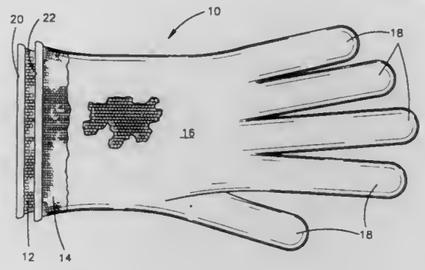
GENERAL AND MECHANICAL

5,822,791

PROTECTIVE MATERIAL AND METHOD

Robert P. Baris, Cleveland, Ohio, assignor to Whizard Protective Wear Corp, Birmingham, Ohio

Filed Jun. 24, 1996, Ser. No. 668,695
Int. Cl.[6] F41H *1/02*
U.S. Cl. 2—2.5 32 Claims



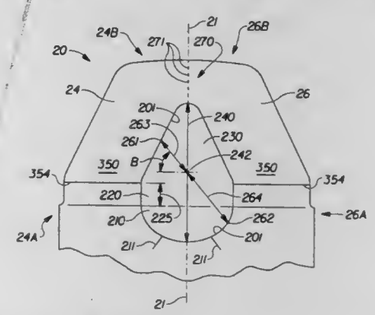
1. A protective material comprising:
a base layer comprisjng cut resistant yarn;
an intermediate layer comprising natural fiber;
an outer layer comprising a flexible, elastomeric material impervious to liquid;
said intermediate layer bonded to said elastomeric material;
said cut resistant yarn substantially free of encapsulation by said elastomeric material;
said intermediate layer joined to said base layer at one or more locations;
said intermediate layer unattached to a major part of said base layer.

5,822,792

BIB HAVING AN IMPROVED NECK OPENING

Richard Nicholas Reinhart, Jr., Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 513,643, Aug. 10, 1995. This application Jul. 30, 1997, Ser. No. 902,864
Int. Cl.[6] A41C *13/10;* A41D *27/00*
U.S. Cl. 2—49.1 15 Claims



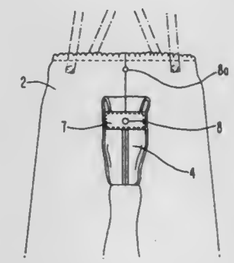
1. A disposable bib comprising:
a bib body having a longitudinal length and a lateral width; and
a pair of shoulder extensions extending from the bib body and providing a generally planar neck opening having a longitudinal length with a midpoint therein; wherein the generally planar neck opening has a front neck portion defining a concavity which is oriented toward the midpoint, a rear neck portion defining a concavity which is oriented toward the midpoint, and a maximum width portion having longitudinally parallel side edges disposed intermediate the front neck portion and the rear neck portion, wherein the rear neck portion has a longitudinal length which is at least about 1.5 times the longitudinal length of the front neck portion, and wherein the maximum width portion has a longitudinal length which is less than or equal to the longitudinal length of the front neck portion, the generally planar neck opening is generally symmetric about a longitudinal axis and generally asymmetric about a lateral axis passing through the midpoint of the longitudinal length of the neck opening, wherein the neck opening has a lateral asymmetry ratio of at least about 1.15 within an angular portion of the neck opening defined by an angle B wherein 15 degrees<B<80 degrees.

5,822,793

CLOTHING CAPABLE OF EXPOSING INSIDE THEREOF

Shigeko Tokura, Kurashiki, and Kumiko Tanaka, Mino, both of Japan, assignors to Jumbo Tokura Co. Ltd., Okayama, Japan

Filed Jan. 22, 1997, Ser. No. 787,567
Int. Cl.[6] A41B *9/00*
U.S. Cl. 2—69 9 Claims



1. A piece of clothing comprising:
an upper envelope portion;
two leg portions extending downward from the envelope portion and separated from each other at a crotch; and
a flap portion formed by two elongate cuts each extending from the envelope portion into a respective one of the leg portions, the flap portion being movable to a first position for closing the crotch, the flap portion being also movable to a second position for opening the crotch;
a first fastening device for holding the flap portion in said first position;
a second fastening device for holding the flap portion in said second position.

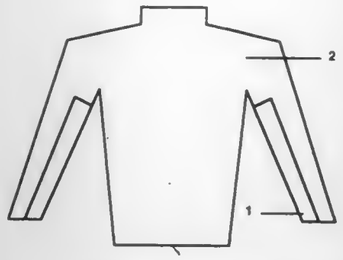
5,822,794

GRIPPING FOOTBALL SHIRT

Brian M. Allred, 2411 Larkspur La. #38, Sacramento, Calif. 95825

Filed Jan. 27, 1997, Ser. No. 789,522
Int. Cl.[6] A41D *1/00*
U.S. Cl. 2—115 5 Claims

1. A football player's long sleeve shirt to be worn beneath a numbered jersey which shirt is adapted to improve the gripability



and retention of a football, when a football is held by the wearer against at least one clothed arm by the wearer, which shirt comprises:

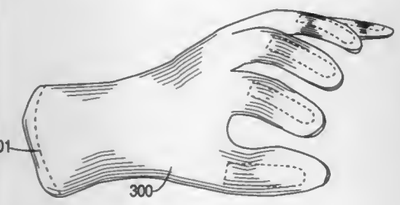
a conventional long sleeve football shirt having two anatomical arm sections for a close fit on both, of both upper and lower arms of the wearer, said shirt having two spaced sections of neoprene mounted externally on the two arm sections of the shirt to substantially cover the triceps and biceps muscle areas of each arm of the wearer.

5,822,795

MULTI-LAYER GLOVE CONSTRUCTIONS AND METHODS OF CONSTRUCTING MULTI-LAYER GLOVES

Danny Gold, 27 Barker Rd., Apt. E-2, Hong Kong, Hong Kong

Filed Nov. 15, 1996, Ser. No. 751,168
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—159 **8 Claims**



1. A multi-layer glove, comprising:

an inner liner layer having an inner surface and an outer surface, the inner surface being adapted to contact a wearer's hand;

a waterproof and breathable membrane layer sized so as to fit over the inner liner layer, having an inner and outer surface;

an outer shell member sized so as to fit over the waterproof and breathable membrane layer; the inner liner, waterproof and breathable membrane layer and outer shell forming a multi-layer glove; and

at least two adhesive strips secured to the outer surface of the inner liner layer, proximate backs of the fingers and thumb, with the adhesive bonded to the inner surface of the membrane layer, the outer shell member secured to the inner liner and membrane layer proximate the open end of the glove; and

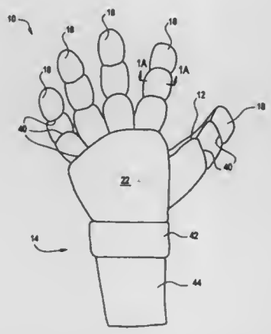
whereby a multi-layer glove incorporating a waterproof and breathable membrane is provided which prevents the waterproof and breathable membrane from reversing as the wearer removes the glove from his or her fingers.

5,822,796

FIREFIGHTER GLOVE

Cordell Frank Harges, Jr., 12629 Loma Verde Dr., Victorville, Calif. 92392, and Bert Rivera, 1707 S. Marengo Ave., Alhambra, Calif. 91803

Filed Feb. 27, 1997, Ser. No. 807,399
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.6 **14 Claims**



1. A protective glove for use in wildland fires, said glove comprising:

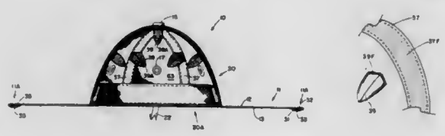
a bottom portion shaped to extend along a palm and bottom finger surfaces of a hand, said bottom portion comprising a protective layer permitting flexibility in hand movement, and an upper portion shaped to extend along the palm and upper finger surface of the hand, said upper layer comprising an outer shell of fire resistant material, an insulating batting layer formed of fibrous, fire resistant material, said batting layer being joined to a woven layer adjacent the hand.

5,822,797

HAT FOR MAINTAINING A WEARER'S HAIRSTYLE

Tomima L. Edmark, P.O. Box 671269, Dallas, Tex. 75367

Division of Ser. No. 511,637, Aug. 7, 1995, Pat. No. 5,657,490.
This applicatioo Mar. 3, 1997, Ser. No. 810,677
Int. Cl.[6] A42C *5/00*
U.S. Cl. 2—182.2 **13 Claims**



1. A hat comprising:

(a) a crown member having an internal periphery for receiving at least a portion of the head of a wearer;

(b) a first half of an interengagable fastener affixed to the inner periphery;

(c) a multiplicity of elongated support members for supporting the hat on the head of a wearer, each support member having a first end comprising a second half of the interengagable fastener and having a second end extending from the inner periphery; and

(d) a brim affixed to the crown;

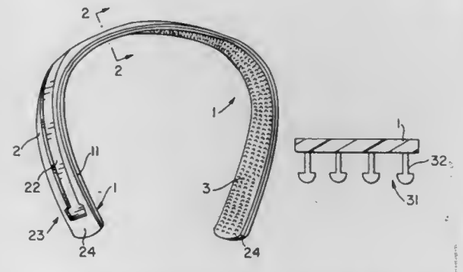
wherein the second half of the interengagable fastener of the first end of each support member is fastened to the first half of the interengagable fastener affixed to the inner periphery.

5,822,798

HAIR BAND

Frances J. Baxley, 9009 Western Lake Dr., Jacksonville, Fla. 32256

Filed Mar. 25, 1996, Ser. No. 621,844
Int. Cl.[6] A42C *5/00*
U.S. Cl. 2—182.6 **14 Claims**



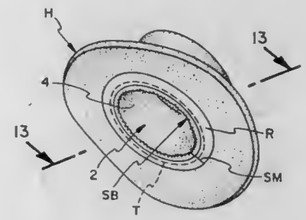
1. In a hair band having projections to maintain the hair band in place, the improvement where said projections comprise flexible fibre retentive members which mechanically engage hair fibres to maintain the hair band in place, wherein said fibre retentive members are mushroom shaped.

5,822,799

SWEATING FOR HEAD COVERING AND METHOD FOR MANUFACTURING

Jeffrey L. Kepple, Denver, Pa., assignor to Bollman Hat Company, Adamstown, Pa.

Filed Oct. 17, 1996, Ser. No. 734,457
Int. Cl.[6] A42B *1/22*
U.S. Cl. 2—183 **34 Claims**



1. A comfort-fit sweatband for a head covering having an interior wall, comprising:

a) a non-elastic ribbon having an attachment section, a connection section for connecting to the interior wall of the head covering, and a ribbon-length, the attachment and connection sections span the ribbon-length;

b) a tape with elastic properties having a stretched-condition, and a relaxed-condition; and,

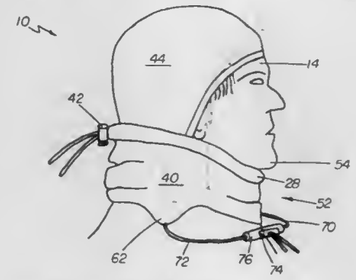
c) an attachment member attaching said tape in the stretched-condition to the attachment section and along the ribbon-length, whereby said ribbon tends to gather in a concave curved linear fashion with said tape on the inside of the curve when the tape is in the relaxed-condition after being attached to said ribbon.

5,822,800

MULTI-FUNCTIONAL HAT

Seth 1. Anderson, Grand Junction, Colo., assignor to Loki, LLC, Grand Junction, Colo.

Filed Sep. 26, 1997, Ser. No. 938,403
Int. Cl.[6] A42B *1/04*
U.S. Cl. 2—202 **18 Claims**



1. A multi-functional hat comprising:

a substantially tubular hat body with an upper edge and a bottom edge;

a tubular drawstring channel formed along said upper edge and encircling said tubular hat body for enclosing a drawstring;

a drawstring positioned in said drawstring channel, said drawstring having opposed ends passing outwardly to exterior said hat body;

a domal head covering attached to the tubular hat body near said upper edge; and

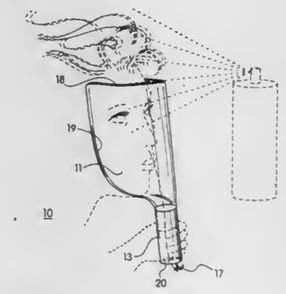
an opening in a front portion of said head covering, said opening comprising a face opening.

5,822,801

FACE SHIELD

Marna L. Varney, 12 Bay Rd., Brookhaven Hamlet, N.Y. 11719

Filed Jun. 27, 1997, Ser. No. 883,783
Int. Cl.[6] A42B *1/18*
U.S. Cl. 2—206 **7 Claims**



1. A face shield comprising:

a face portion made of a rigid transparent material, said face portion having a concave shape so as to conform to the shape of a face, and having two side edges, a bottom and a top edge;

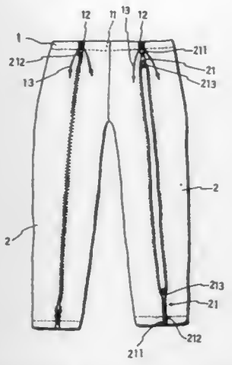
a handle portion integrally formed with said face portion and extending downward from the bottom of said face portion, said handle portion being hollow and having an open bottom end;

a handle grip surrounding said handle portion and having an open bottom end; and

a bottom plug having a bottom surface and adapted to fit securely in said open bottom end of said handle grip, said bottom plug being divided into two halves along a center diameter, one half being solid and one half having an opening

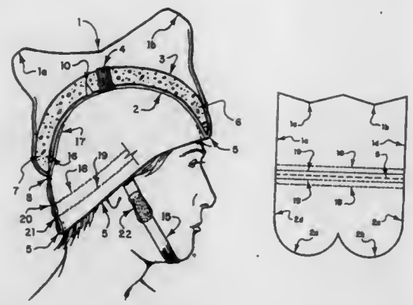
to allow air to pass through the bottom plug and the handle portion and into the area of the face portion.

5,822,802
HOSPITAL TROUSERS FOR PATIENTS
Chao-Mu Chou, Taipei, Taiwan, assignor to Chia-Tein Chou, Taipei, and Shiu-Yin Cheng, Tao Yuan, both of Taiwan
Filed Nov. 13, 1995, Ser. No. 556,531
Int. Cl.[6] A41D *1/06*
U.S. Cl. 2—227 **1 Claim**



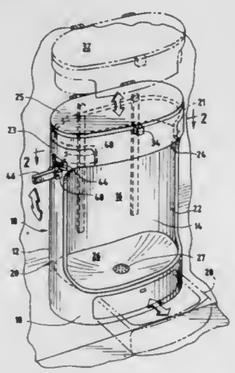
1. Hospital trousers for patients comprising a waist portion and a pair of legs, said waist portion being provided with tying means, wherein each of said legs has a slit formed in a front side thereof and running lengthwise from said waist portion to a bottom end of each said leg, and a fastening device provided at each slit consisting of an upper stop and an upper pawl disposed at an upper end of said fastening device, a lower stop and a lower pawl disposed at a lower end of said fastening device, and two slides disposed oppositely at both ends of said fastening device, whereby said fastening device is closed by the downward movement of the upper slide and the upward movement of the lower slide, said tying means consisting of a string hole formed by folding said waist portion inwardly having an opening formed on both sides of each slit defining a first string hole portion disposed between said slits on one side and a second string hole portion disposed between said slits on a second side, a first string arranged in said first string hole portion and a second string arranged in said second string hole portion, said first and second strings extending through said openings for tying purposes, and a fly front concealing each fastening device.

5,822,803
PROTECTIVE HEAD COVERING
Roy J. Lorenzi, and Starr L. Lorenzi, both of 27133 Kindlewood La., Bonita Springs, Fla. 34134
Continuation of Ser. No. 528,116, Sep. 14, 1995, Pat. No. 5,581,818. This application Sep. 17, 1996, Ser. No. 714,343
Int. Cl.[6] A42B *3/00*
U.S. Cl. 2—411 **13 Claims**



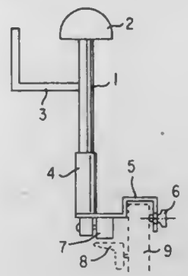
1. A protective head covering made out of an initially flat unitary piece of material, said flat piece of material having first and second edges and third and fourth edges and side edges, said first edge and said second edge forming substantial semi-circles and forming a hollow head contacting portion when sewn together, said third edge and said fourth edge having contours different from said first and second edges and forming a hollow crown portion when sewn together, said side edges are sewn together and said head covering portion being inverted into said crown portion and forming a fold line, said fold line being the lower margin of said head covering, said crown portion being distended from said head covering portion and said head covering portion having a crescent-shaped impact absorbing pad placed thereon and means for preventing said pad from moving in a forward or a rearward direction and lateral directions.

5,822,804
PORTABLE MALE TODDLER URINAL
Marcia Hauflaire, 26 N. Woodland Trail, Palos Park, Ill. 60464
Filed Jan. 17, 1997, Ser. No. 785,060
Int. Cl.[6] E03D *13/00*
U.S. Cl. 4—144.1 **5 Claims**



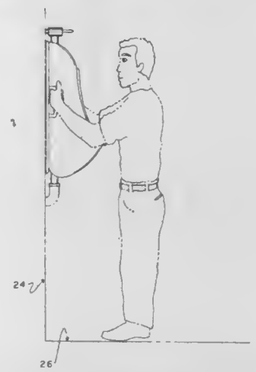
1. A portable urinal containing a frame structure which is generally elliptical in shape, and including walls defining a front opening and a ledge at its upper end, a drain plate supported by the frame structure adjacent the bottom thereof, a receptacle into which urine is collected, the drain plate defining a drain opening which leads into the receptacle, a flush tank assembly disposed on the top of the frame structure and supported by the ledge of the frame structure, the flush tank assembly including a bottom wall defining a plurality of holes adjacent the frame structure, the flush tank assembly including a flow control means comprising a gasket assembly, and means for operating the flow control means comprising a handle member secured to the frame structure and to the gasket assembly, which handle member controls the position of the gasket assembly, which in turns controls the flow of water from the flush tank assembly through the holes into the urinal to flush the urine deposited on the walls and drain plate of the urinal.

5,822,805
TOILET FLUSH ACTUATOR
Leigh J. Lachman, 17 Stratford Dr., and Klaus P. Stoffel, 41 Cornell Dr., both of Livingston, N.J. 07039
Filed Jul. 12, 1996, Ser. No. 679,735
Int. Cl.[6] E03D *5/00*
U.S. Cl. 4—249 **12 Claims**



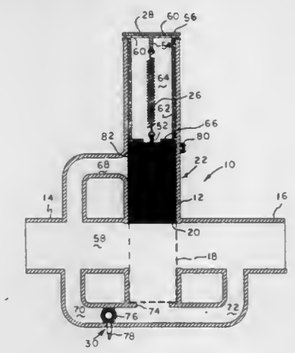
1. A toilet flush actuator for actuating a flush lever of a toilet, comprising:
- an elongate stem having an upper end and a lower end;
- means for slideably holding the stem in a substantially vertical orientation, the holding means including a sleeve member a portion of the stem being slideable in the sleeve member;
- means for mounting the stem and the holding means at the toilet lever so that the lower end of the stem is engageable with the toilet lever; and spring means connected between the stem and the sleeve member for opposing downward movement of the stem and maintaining the stem in a first, upper position, the stem being moveable against spring force into a second, lower position in which the toilet lever is actuated.

5,822,806
WALL MOUNTED WASTE RECEPTACLE
Samuil Kizhnerman, 19 Blythe Pl., Staten Island, N.Y. 10306
Filed Apr. 4, 1997, Ser. No. 826,568
Int. Cl.[6] E03D *13/00*
U.S. Cl. 4—310 **6 Claims**



1. A wall mounted waste receptacle for providing a convenient place for a person to vomit comprising, in combination:
- a housing having a generally oval configuration including a rounded outer surface having an enlarged opening extending into a hollow interior of the housing, the enlarged opening having a rubber gasket removably coupled with a peripheral edge thereof, the housing having a planar generally rectangular shaped rear panel, the rear panel having apertures through four corners thereof for mounting to a wall area at least four feet above a ground area, a pair of handles secured to the rear panel on opposing sides of the housing, the hollow interior having an upper opening and a lower opening, the lower opening having a threaded pipe extending downwardly therefrom, a free end of the threaded pipe adapted to extend within an existing pipe;
- a water dispenser coupled with the upper opening of the housing, the water dispenser having a branched open lower end disposed within the housing, an upper portion of the water dispenser having an inner end coupled with a water supply, an outer end of the upper portion having an activation handle;
- a motion sensor secured to the rear panel of the housing, the motion sensor having an outer end extending within the hollow interior of the housing, an inner end of the motion sensor having a wire for connection to a power supply;
- a light source secured to the rear panel of the housing, the light source having an illuminating end extending within the hollow interior of the housing, the light source having wiring extending therefrom for coupling to the motion sensor and the power supply;
- a fan disposed within a small housing, the small housing secured to the rear panel of the housing, the small housing having an open outer end extending into the hollow interior of the housing, the open outer end having a vented cover thereover, the fan having wiring extending therefrom for coupling to the motion sensor and the power supply; and
- a pair of mesh screens secured to the rounded outer surface of the housing disposed above and below the enlarged opening therein.

5,822,807
SUCTION RELIEF APPARATUS
Patrick J. Gallagher, 1808 Viking Blvd. N.W., Cedar, Minn. 55011, and Larry R. Mills, 27737 104th St., Zimmerman, Minn. 55398
Filed Mar. 24, 1997, Ser. No. 824,062
Int. Cl.[6] E04H *4/12*
U.S. Cl. 4—507 **9 Claims**



1. A suction relief apparatus for relieving suction at a suction connection to a pool comprising:
- a) a main valve housing having
  - i) an inlet port,
  - ii) an outlet port in fluid communication with the inlet port, and
  - iii) an actuator chamber in fluid communication with and located between the inlet port and the outlet port;
- b) a main valve actuator member movable between a first position permitting fluid communication between the inlet port and the outlet port, and a second position wherein the actuator member blocks fluid communication between the inlet port and the outlet port; and
- c) biasing means for urging the main valve actuator member to the first position in the absence of a pressure differential between the outlet port and the inlet port

wherein the actuator member moves to the second position in response to a pressure differential between the outlet port and the inlet port caused by a blockage upstream of the inlet port and relieves the suction at the suction connection.

5,822,808

HYDROMASSAGE DEVICE FOR USE IN A BATHTUB

Hans-Peter Esser, Frechen, Germany, assignor to Hoesch Metall + Kunststoffwerk GmbH, Kreuzau, Germany

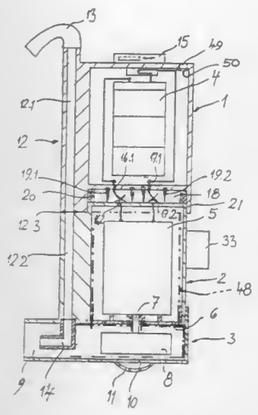
PCT No. PCT/EP95/03083, § 371 Date Jul. 22, 1996, § 102(e) Date Jul. 22, 1996, PCT Pub. No. WO96/03960, PCT Pub. Date Feb. 15, 1996

PCT Filed Aug. 2, 1995, Ser. No. 624,502

Claims priority, application Germany, Aug. 5, 1994, 94 12 640 U; Mar. 23, 1995, 195 10 645.8

Int. Cl.[6] A47K *3/00*

U.S. Cl. 4—541.1 **19 Claims**



1. A hydromassage device for use in a bathtub, said device having a pump casing which is connected to at least one intake aperture and to at least one nozzle-shaped discharge aperture, a pump impeller seated in said casing, a motor casing in which an electric drive motor is arranged, said drive motor being connected to said pump impeller, and further having a battery casing in which electrical batteries are arranged which are connected to the drive motor, said pump casing, said motor casing and said battery casing being connected with one another and at least one of said casings being provided with holding means for securing said device to a wall of the bathtub, characterized in that said battery casing and said motor casing are each formed by separate, waterproof casings having an outside wall, said outside walls are detachably connected with one another, said outside wall of said battery casing and said outside wall of said motor casing are respectively provided with a pair of electrical contact members which are in contact with one another when, in the operating state, both casings are connected with one another and which respectively form a contact pair with which the batteries and the drive motor are connected, sealing means being arranged around said contact pairs so as to prevent water from reaching said pairs.

5,822,809

TRANSFER SEAT APPARATUS

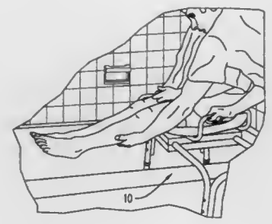
Thomas S. Gallo, 2417 Tanglewood Dr., Sarasota, Fla. 34239

Filed Aug. 29, 1997, Ser. No. 920,528

Int. Cl.[6] A47K *3/022*

U.S. Cl. 4—578.1 **7 Claims**

1. A transfer seat apparatus comprising:



a support frame including substantially parallel spaced apart elongated track members formed along an upper portion thereof;

a seat section adapted to supportively receive a person in a seated position thereon;

a swivel member, an upper portion of which is connected to a lower portion of said seat section whereby said seat section is rotatable on said swivel member about a central axis of rotation;

a seat base section connected at an upper portion thereof to a lower portion of said swivel member and having spaced apart slide members each connected to a respective said track member whereby said seat base is translatable along said track members; and

an elongated turning member pivotally connected at one end to one said track member and pivotally connected at another end to said seat section at a point on said seat section spaced laterally from said axis of rotation whereby said seat section is controllably rotated on said swivel member by said turning member as said seat section is slidably translated on said track members.

5,822,810

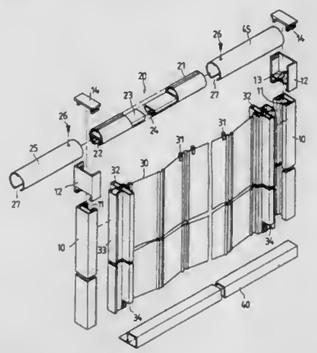
SHOWER SCREEN

Chang Than Chen, 12F., No. 426, Ming Chuan 2nd Road, Chien Chen Chu, Kaohsiung, Taiwan

Filed Feb. 27, 1997, Ser. No. 810,508

Int. Cl.[6] A47K *3/22*

U.S. Cl. 4—610 **5 Claims**



1. A shower screen comprising:

a pair of vertical posts each including a longitudinal channel,

a bracket secured on top of each of said posts,

a rod including two ends secured in said brackets and including a groove formed in a bottom portion thereof,

a rail secured in said rod and including a duct aligned with said groove of said rod,

a plurality of panels pivotally coupled together at a plurality of live hinges and including a plurality of slides slidably engaged in said groove of said rod and said duct of said rail for allowing said panels to be folded and unfolded, said panels including two side portions, and

a beams secured to each of said side portions of said panels and each including a rib for engaging with said channel of said post for preventing spilling.

5,822,811

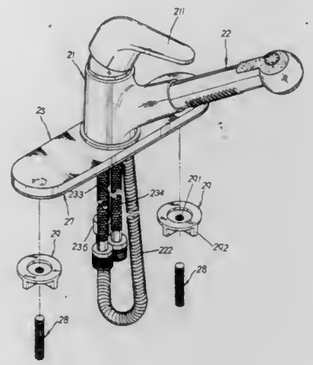
EXTENSIBLE FAUCET STRUCTURE OF KITCHEN CABINET

Hsi-Chia Ko, Lu Kang, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Taiwan

Filed Aug. 11, 1997, Ser. No. 908,049

Int. Cl.[6] E03C *1/04*

U.S. Cl. 4—678 **2 Claims**



1. An extensible faucet structure for a kitchen cabinet, said faucet structure comprising:

a faucet body;

a control handle disposed at an upper end of said faucet body;

a circular insertion mouth laterally extending from one side of said faucet body, said insertion mouth defining an opening with a locating notch formed on an edge thereof;

a spout with an insertion section disposed on one end thereof, said insertion section having a locating projection on an end thereof;

an extensible guide tube connected at one end to said one end of said spout;

a connector having outer threads connected to an opposite end of said guide tube;

a combination seat formed with an internal combination chamber;

an inner gasket seat with an opened section formed on a lateral side thereof;

a projection block disposed at an upper end of an inner edge of said gasket seat, said projection block being formed with a stepped hole on an outer edge thereof;

an outer thread section of less diameter extending downward from a bottom of said gasket seat;

a panel with a hexagonal fitting hole formed in a center thereof and two thread seats each formed on a respective side of a bottom face thereof;

a pad member with a through hole formed in a center thereof and a circular hole formed in each side thereof;

a locating block disposed on a bottom of said combination seat, said locating block including a thread socket disposed on a plane cut face thereof, said locating block being formed with three thread holes on a bottom face thereof for communication with said combination chamber, said three thread holes being respectively connected to a cold water incoming hose, a hot water incoming hose and an outgoing hose with different lengths, said outgoing hose including a movable nut disposed on one end thereof;

two locking trays each having a central thread hole and an X-shaped projecting plate disposed on a bottom thereof;

a locking nut; and

two bolts;

wherein said outer thread section of said gasket seat is passed through said hexagonal fitting hole and tightened therein by said locking nut such that said gasket seat is fixed on said panel, said bolts are passed through two through holes of a cabinet and through said circular holes of said pad member and are tightened in said thread seats of said panel, and said locking trays are rotated at said X-shaped projecting plates about said bolts in said thread holes such that said locking trays abut a bottom of said cabinet.

5,822,812

REMOTE OPERATED PLUG

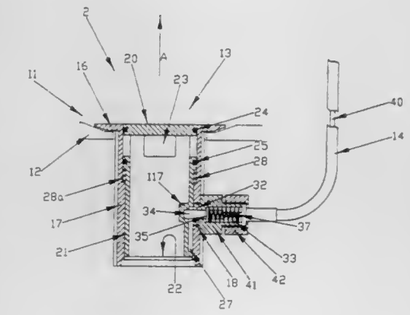
Albert Edward Worthington; Cavan John O'Connell, both of Christchurch, and Wayne Andrew Mason, Dunedin, all of New Zealand, assignors to Wes Wastes Limited, ChristChurch, New Zealand

Filed Oct. 4, 1996, Ser. No. 726,460

Claims priority, application New Zealand, Jun. 19, 1996, 286846

Int. Cl.[6] E03C *1/23*

U.S. Cl. 4—689 **10 Claims**



1. An improved remotely operated plug assembly for a sink or basin with a drain, said plug assembly including:

a sink waste unit secured within said drain, which sink waste unit includes a drain pipe;

a plug movably and releasably secured within said drain, said plug including a spring means, and an inter-engaging means, said plug having a closed top and sides with holes formed therein, wherein said plug is movably secured within the drain by said inter-engaging means which permits vertical movement of said plug within said drain, between an opened and a closed position and vice-versa, but which does not permit the removal of said plug from said drain under ordinary operating conditions, and said spring means serving to bias said plug to the open position, said open position being a position in which said holes are open to said sink or basin, and said closed position being a position in which said closed top is substantially flush with the top of said sink waste unit;

an opening mechanism to move the plug from the closed position to the open position, said mechanism being situated remotely from said drain and plug and connected by cabling to a retaining mechanism, said opening mechanism including an opening means to move and retain one end of said cabling;

said retaining mechanism, to keep said plug in the closed position, includes spring-biased means to release said retaining mechanism to allow said plug to move to the open position;

means to allow the plug to be physically removed from said drain and replaced therein; wherein

the plug is capable of movement between an open and a closed position by manual depression of said plug, and between a closed and an open position by operation of said remotely placed opening mechanism to release the retaining mechanism via the cabling; and

said inter-engaging means and said retaining mechanism have common elements which are circumferentially situated within and about said drain pipe, and wherein one element of said retaining mechanism is the said one end of said cabling of said opening mechanism.

5,822,813

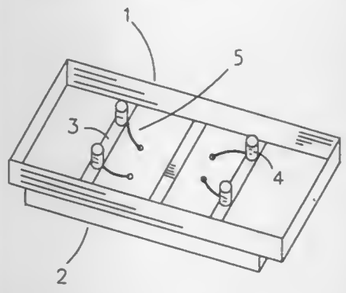
MOTION COMPENSATED APPARATUS

Tyrone E. Powell, 2000 Otter, Anchorage, Ak.

Filed Nov. 2, 1995, Ser. No. 556,810

Int. Cl.[6] A47C *17/64*

U.S. Cl. 5—118 **7 Claims**



1. A shipboard motion compensated bed comprising, in combination:

a base firmly attached to a ship deck;

a plurality of extendable positioners attached to said base;

a reference plane perpendicular to gravitational acceleration;

a carrier attached to said extendable positioners, whereby said carrier can take an angle from a predetermined range of angles with respect to said base and a vertical acceleration from a predetermined range of accelerations, said range of angles being determined according to typical angles encountered on ships; said range of accelerations being determined by accelerations encountered on ships;

a sleeping platform firmly attached to said carrier;

at least one sensor referred to said reference plane to sense an instantaneous angle of the carrier with respect to said reference plane;

at least one sensor to sense an instantaneous linear acceleration of the carrier;

a control system with input and output, said input coupled to said sensors; said output coupled to said extendable postitioners such that said control system causes the extendable postitioners to keep the carrier substantially parallel to said reference plane while canceling linear acceleration, whereby said sleeping platform remains level with respect to said reference plane and experiences substantially no pitch acceleration.

5,822,814

MEDICAL DIAGNOSTIC AND/OR THERAPY APPARATUS WITH A SWINGABLE PATIENT TABLE TOP

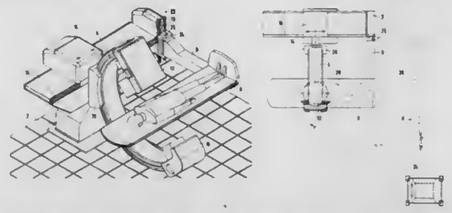
Adrianus Van der Ende, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 6, 1997, Ser. No. 870,220

Claims priority, application Belgium, Jun. 14, 1996, 09600550

Int. Cl.[6] H05G *1/02*

U.S. Cl. 5—601 **20 Claims**



1. A medical diagnostic and/or therapy apparatus, comprising a component support for diagnostic and/or therapy components, a patient table top, and a stand for supporting the patient table top and the component support, the patient table top being attached to the stand by way of a supporting arm which is provided with a pivot for pivoting about a substantially vertical axis, which pivot is provided in the supporting arm at a distance from the stand which amounts to less than half the length of the supporting arm, and wherein the component support is displaceably mounted on the stand for longitudinal motion along the length of and parallel to the patient table top when the patient table top has been swung around the pivot toward the stand.

5,822,815

Patent Not Issued For This Number

5,822,816

Patent Not Issued For This Number

5,822,817

INFANT MATTRESS SYSTEM WITH SLEEPING RECESS

James M. Carew, and JoAnn Carew, both of Brattleboro, Vt., assignors to Racing Strollers, Inc., Yakima, Wash.

Continuation-in-part of Ser. No. 336,007, Nov. 8, 1994. This application May 30, 1996, Ser. No. 655,636

Int. Cl.[6] A47C *27/05*

U.S. Cl. 5—732 **7 Claims**

1. A dual sleeping surface mattress, constructed to provide one sleeping surface which restricts the movement of an individual sleeping thereon, comprising:

a) a mattress body reversible between upward and downward facing orientations, with a pair of opposing, laterally spaced apart, outward side walls, and a pair of opposing, laterally spaced apart, outward end walls, said outward side walls and end walls defining a periphery of said mattress, said mattress body having:

a) first horizontal body surface facing upward when said mattress body is in said upward facing orientation and extending about said periphery of said mattress body along said outward side walls and end walls of said mattress body;

a second horizontal body surface opposite said first horizontal body surface and facing downward when said mattress body is in said upward facing orientation and upward when said mattress body is in said downward facing orientation, said second horizontal body surface extending substantially fully between said outward side walls and end walls of said mattress body;

a pair of opposing, laterally spaced apart, inward side walls extending downward into said mattress body from said first horizontal body surface when said mattress body is in said upward facing orientation, said inward side walls positioned inward from and substantially parallel to said outward side walls to form a pair of spaced apart peripheral barriers extending substantially the full length of said mattress body, said inward side walls being a pliant and soft air permeable plastic foam material to cushion the sleeping individual;

a pair of opposing, laterally spaced apart, inward end walls, extending downward into said mattress body from said first horizontal body surface when said mattress body is in said upward facing orientation, and transverse to said inward side walls, said inward end walls positioned inward from and substantially parallel to said outward end walls to form a pair of spaced apart peripheral barriers extending substantially the full width of said mattress body, said inward end walls being a pliant and soft air permeable plastic foam material to cushion the sleeping individual; and

an exposed flat first sleeping surface for receiving the sleeping individual thereon, recessed from said first horizontal body surface when said mattress body is in said upward facing orientation and defined by said inward side walls and said inward end walls, with said inward side walls, said inward end walls, and said recessed first sleeping surface defining an upwardly open recess in said mattress body when said mattress body is in said upward facing orientation, said recessed first sleeping surface being of sufficient surface area to accommodate the full body of the sleeping individual thereon and said inward side walls and said inward end walls being of sufficient height to restrict movement of the sleeping individual on said recessed first sleeping surface beyond said periphery of said mattress body, said pairs of peripheral barriers and said recessed first sleeping surface having a unitary construction without sufficiently sized opening therebetween to prevent the sleeping individual on said recessed first sleeping surface from extending an arm, leg or head between said barriers and said recessed first sleeping surface, and said recessed first sleeping surface further comprising:

attachment means secured to said recessed first sleeping surface for receiving mating attachment means;

a cover contoured to enclose said entire mattress body and removably secured thereto;

a water impervious panel constructed in said cover in alignment with said recessed first sleeping surface, having mating attachment means on a lower surface thereof for detachable engagement with said recessed first sleeping surface attachment means, said mating attachment means securing said water impervious panel and cover to said recessed first sleeping surface during use and allowing removal thereof for cleaning;

second attachment means secured to an upper surface of said water impervious panel for receiving second mating attachment means; and

a second panel constructed of sheeting material having mating second attachment means on a lower surface thereof for detachable engagement with said second attachment means, said mating second attachment means securing said second panel to said water impervious panel during use and allowing removal thereof for cleaning;

b) a mattress inset removably positionable within said recess and sized to substantially fill said recess when positioned within said recess, said inset having:

a first horizontal inset surface sized to extend substantially fully between said inward side walls and end walls when said inset is positioned within said recess; and

a second horizontal inset surface sized to be positionable adjacent to said recessed first sleeping surface when in position within said recess, said first and second horizontal inset surfaces being spaced apart by a distance such that when said inset is positioned within said recess said first horizontal inset surface is substantially coplanar and contiguous with said first horizontal body surface to define together a flat surface extending substantially to said periphery of said mattress body, with said combined flat surface when said mattress body is in said upward facing orientation and said second horizontal body surface when said mattress body is in said downward facing orientation defining an exposed flat second sleeping surface larger than said recessed first sleeping surface for receiving the sleeping individual thereon when said inset is positioned within said recess.

5,822,818

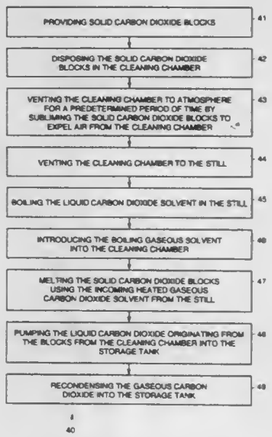
SOLVENT RESUPPLY METHOD FOR USE WITH A CARBON DIOXIDE CLEANING SYSTEM

Sidney C. Chao, Manhattan Beach, and Edna M. Purer, Los Angeles, both of Calif., assignors to Hughes Electronics, El Segundo, Calif.

Filed Apr. 15, 1997, Ser. No. 837,961

Int. Cl.[6] D06F *43/08*

U.S. Cl. 8—158 **12 Claims**



1. A method of replenishing solvent used in a liquid carbon dioxide cleaning system having a cleaning chamber, a storage tank containing liquid carbon dioxide solvent, a pump for pumping the liquid solvent from the storage tank to the cleaning chamber, a gas

recovery compressor for compressing gaseous solvent into its liquid state, a condenser for recondensing gaseous carbon dioxide, and a still containing a heater for heating the liquid solvent, said method comprising the steps of:

providing solid carbon dioxide blocks;

disposing the solid carbon dioxide blocks in the cleaning chamber;

venting the cleaning chamber to atmosphere for a predetermined period of time to expel air from the cleaning chamber;

venting the cleaning chamber to the still;

boiling the liquid solvent in the still to produce boiling gaseous solvent;

introducing the boiling gaseous solvent into the cleaning chamber;

melting the solid carbon dioxide blocks in the cleaning chamber using the boiling gaseous solvent from the still; and

pumping the melted carbon dioxide blocks from the cleaning chamber into the storage tank to replenish the liquid solvent.

5,822,819

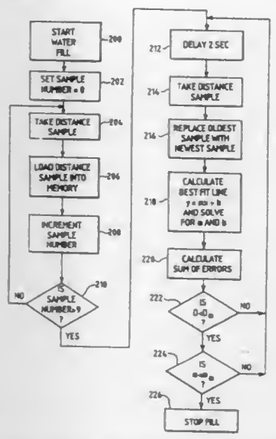
ULTRASONIC WATER LEVEL DETECTION SYSTEM FOR USE IN A WASHING MACHINE

Nelson J. Ferragut, Williamsburg; Michael A. Estenson, Ely, and J. Scott Petty, Cedar Rapids, all of Iowa, assignors to Raytheon Appliances Inc., Ripon, Wis.

Filed May 28, 1997, Ser. No. 864,534

Int. Cl.[6] D06F *33/02*

U.S. Cl. 8—158 **23 Claims**



1. A water level detector for automatically determining in real time when the water height in a washing machine reaches an optimum operating level, said washing machine having a control for beginning and stopping water flow into said washing machine, said detector comprising:

a transceiver for sending a plurality of ultrasonic pulses, detecting a corresponding plurality of echoes and generating a signal in response to each echo detected;

a circuit connected to said transceiver for amplifying and filtering said signal generated in response to each echo detected;

a edge detector connected to said circuit for detecting a sudden increase in said amplified and filtered signal and generating a ranging signal representing the time period between the transmittal of each of said plurality of ultrasonic pulses and the detection of each of said corresponding plurality of echoes; and

a microprocessor for storing said ranging signals to form a signature, detecting at least one characteristic in said signature indicative of the optimum water height and in response to detecting said characteristic generating a signal to said control for stopping the water flow into said washing machine.

11. A method for automatically determining in real time when the water height in a washing machine reaches an optimum operating level and stopping the flow of the water into said washing machine when said optimum water level is reached, said washing machine having a tub for holding clothes to be cleaned and water, a control for beginning the flow of water into said tub and stopping the flow of water into said tub and a water level detector, said method comprising:

(a) beginning the flow of water into said tub;

(b) sending a plurality of ultrasonic pulses toward the water in said tub;

(c) detecting a plurality of echoes corresponding to said plurality of ultrasonic pulses;

(d) generating a plurality of signals, each corresponding to one of said plurality of detected echoes;

(e) storing each of said signals in a microprocessor;

(f) forming a set of data points corresponding to a set of said stored signals;

(g) calculating the best fit line for said set of data points;

(h) calculating the slope of said best fit line;

(i) calculating the sum of the squares of the distance each of said data points is from said best fit line;

(j) determining if said sum of the squares is below a predetermined value; and

(k) stopping the flow of water to said tub if said sum of the squares is below a predetermined value.

5,822,820

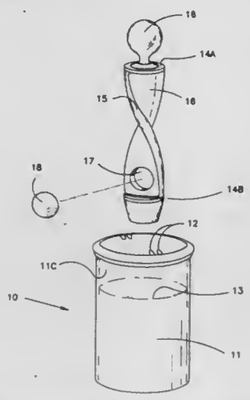
APPARATUS FOR CLEANING A COMPUTER MOUSEBALL

Glenna Heisler, 1926 Fruit St., Santa Ana, Calif. 92701

Filed Aug. 20, 1997, Ser. No. 915,392

Int. Cl.[6] A46B *11/00*

U.S. Cl. 15—21.2 **3 Claims**



1. An apparatus for cleaning a computer mouseball, comprising:

a container, cylindrical in shape with an open top and a closed bottom for holding a solvent;

a plunger adapted to fit within the container, the plunger having an aperture to accept a computer mouseball;

a bristle assembly within the container for cleaning the mouseball when the plunger is within the container;

means for manipulating the plunger from a primary position outside the container to a secondary position within the container for contact between the mouseball, the bristle assembly and the solvent; and

means for rotating the plunger when it is moved between the primary and secondary position, comprising two pairs of appenditures extending inwardly from the open top of the container and curved edges on the plunger which fit between the appenditures to provide rotation of the plunger when it is moved within the container.

5,822,821

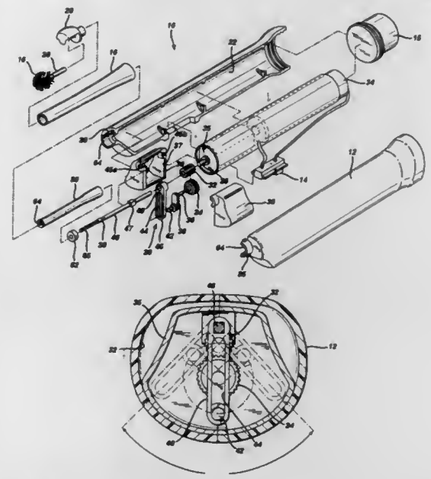
ELECTRIC TOOTHBRUSH

John C. K. Sham, Hong Kong, Hong Kong, assignor to Pentalpha Enterprises Ltd., Hong Kong

Filed Jan. 12, 1996, Ser. No. 585,849

Int. Cl.[6] A46B *13/02*

U.S. Cl. 15—22.1 **1 Claim**



1. An electric toothbrush comprising:

a) an elongate body defining a handle and having an interior cavity formed therein;

b) an elongate housing extending from a front end of the elongate body and supporting a brush head at a distal end thereof;

c) an elongate drive shaft mounted for axial rotation within the elongate housing and connected to the brush head;

d) an electric motor disposed within the interior cavity of the body and including a rotating output shaft; and

e) a transmission assembly disposed within the interior cavity of the elongate body and including a crank arm, a follower attached to said crank arm, and a rocker arm having an elongate slot, said crank arm being operatively connected to said output shaft, said follower disposed in said elongate slot of said rocker arm, and said rocker arm being connected to said drive shaft, said transmission assembly converting rotational movement from said output shaft via said crank arm, follower, and rocker arm into reciprocating movement for said drive shaft and brush head about an axis of rotation shared commonly between them, and wherein said rocker arm has a reciprocating pendulum motion within an angular sector of rotation of approximately 80°.

5,822,822

COMPACT DISC CLEANING DEVICE

Jin-Sheng Weng, Taipei, Taiwan, assignor to Bor Ying Corporation, Taipei Hsien, Taiwan

Filed May 1, 1997, Ser. No. 848,938

Claims priority, application China, May 7, 1996, 85206660

Int. Cl.[6] A47L *25/00*; **B08B** *11/02*; **G11B** *3/58*

U.S. Cl. 15—97.1 **4 Claims**

1. A compact disc cleaning device, comprising:

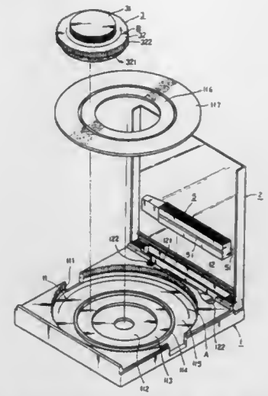
a seat having a circular recess portion which is provided at an inner peripheral wall with a plurality of inner teeth;

a cover being pivotally connected to an edge of said seat; and

a rotational wheel including a hand cap and a wheel body pivotally connected to a lower axis portion of said hand cap, said wheel body being provided at a bottom side with a cleaning element and at an outer peripheral wall with a plurality of outer teeth to mesh with said inner teeth of said circular recess portion of said seat, such that said rotational wheel is allowed to move in rotation along said inner peripheral wall of said circular recess portion;

said circular recess portion of said seat being sequentially formed from a center to an outer portion with a central recess, an inner annular recess, an intermediate partition ring, and an outer annular recess; said intermediate partition ring separating said inner annular recess from said outer annular recess, so that said inner and said outer annular recesses are adapted to separately support a differently sized compact disc thereon for cleaning purpose; and

said seat being provided near one edge with a compartment to receive a cleaning liquid container therein, so that said cleaning liquid container can be integrally stored inside said compact disc cleaning device.



5,822,823

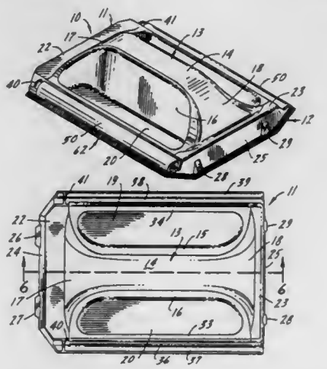
APPARATUS AND METHOD FOR APPLYING COATINGS TO PLANAR AND NON-PLANAR SURFACES

Bruce C. Polzin, Greendale; Kenneth L. Shehow, Milwaukee; Mark T. Sterwald, Manitowoc, and William W. Barton, Greendale, all of Wis., assignors to Newell Operating Company, Ill.

Filed Aug. 11, 1995, Ser. No. 514,489

Int. Cl.[6] B05C *17/00*

U.S. Cl. 15—210.1 **18 Claims**



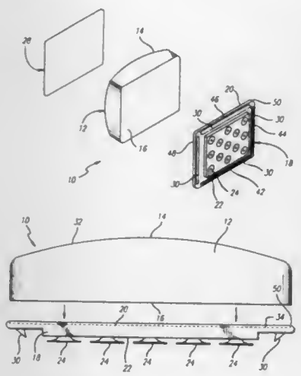
1. A coating applicator comprising:

rigid handle means having a first centrally located bottom portion lying in a first plane and first flanking wing portions extending outwardly and upwardly from sides of the first

centrally located bottom portion, the first central bottom portion and the first wing portions being smooth, continuous and integrally formed;

coating applicator means having a front and a rear, the coating applicator means being removably coupled to the handle means and having a second centrally located bottom portion lying in a second plane and second flanking wing portions extending outwardly and upwardly from sides of the second centrally located bottom portion such that the handle means and the coating applicator means are generally complimentarily contoured so as to closely conform and abut each other, wherein the coating applicator means comprises a continuous directional velour fabric oriented towards the front of the coating applicator means.

5,822,824
MOUNTABLE WASHING DEVICE
William D. Dion, 1492 W. Straford Ave., Gilbert, Ariz. 85233-4605
Filed Dec. 3, 1996, Ser. No. 759,781
Int. Cl.[6] A47K *7/02*
U.S. Cl. 15—210.1 **21 Claims**



20. A mountable washing device comprising:

(a) a mounting section including an attachment surface and a mounting surface, said mounting surface having a plurality of sides and comprising:

(i) a surface mounting structure; and

(ii) flexible gripper means for securing a standard wash cloth in a substantially taut configuration without puncturing the washcloth; and

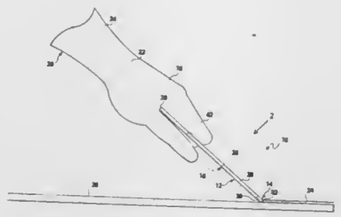
(b) a cloth support section attached to said attachment surface of said mounting section.

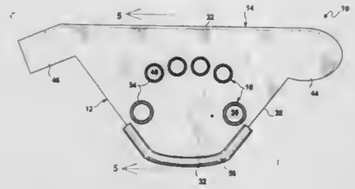
5,822,825
WINDOW ICE SCRAPER
Eric A. West, 2040 Hatfield Rd., Huntington, Md. 20639
Filed Dec. 26, 1997, Ser. No. 998,459
Int. Cl.[6] A47L *1/06*
U.S. Cl. 15—236.02 **7 Claims**

1. A window ice scraper comprising:

a) a one-piece flat plate having a scraping edge; and

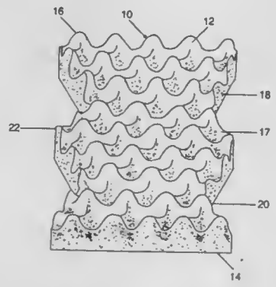
b) means in said one-piece flat plate, for securely grasping by a hand of a person, so that it will reduce strain on the wrist of the person, while said scraping edge on said one-piece flat plate can effectively remove ice from a flat surface, wherein said one-piece flat plate is a substantially triangular shaped body, with said scraping edge being a base of said triangular shaped body, and further wherein said one-piece flat plate includes a bulbous end extending outwardly from a first side





of said scraping edge and a square end extending outwardly from a second side of said scraping edge which can be used for removing ice from various tight areas, as well as irregular shaped areas.

5,822,826
DECORATING PAINT APPLYING DEVICE
Merilyn Stevens Mitchell Parker, Rte. 4, Box 499, Hickory, N.C. 28602
Filed May 15, 1996, Ser. No. 647,791
Int. Cl.[6] A47L *13/16*
U.S. Cl. 15—244.4 **5 Claims**



1. A greenery and floral, wall decorating, paint device for obtaining a decorative pattern comprising:

a means for applying paint,

said means is a resilient self restoring, paint retaining material having sides,

said means also having a face and an undersurface in addition to said sides, said undersurface is flat,

wherein at least a part of said sides is straight, forming a straight portion,

said means having a main body,

in addition to said straight portion, said sides also have at least three protrusions, said protrusions each have only two sides, both of these sides are straight, said protrusions protrude from said main body,

wherein the two sides of a first of said protrusions are formed from legs of two adjacent v shaped notches;

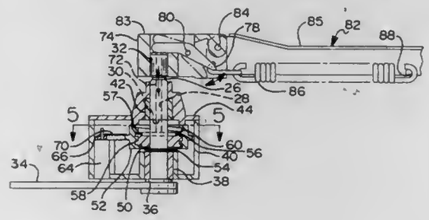
wherein a first part of said straight portion is an integral part of said main body, a second part of said straight portion forms one of the two sides of a second of said protrusions, a third part of said straight portion is one of the two sides of a third of said protrusions, the other of said sides of said second and third protrusions are each one leg of a different v notch;

wherein said face has a number of projections separated by valleys that are rounded, said valleys are formed within said material, said projections have a cross section parallel to said undersurface, said cross section being round, wherein each of said protrusions has at least part of one of said projections;

said projections are unclustered and uniformly distributed, all of said projections pointing in only one direction, when said means for applying paint is in an uncompressed state;

a means for retaining said means for applying paint in a compressed state, when in the compressed state, said means for applying paint is cinched tight enough to deform said means for applying paint such that some of the projections are clustered and point in varying directions.

5,822,827
VARIABLE PRESSURE WINDSHIELD WIPER SYSTEM
Michael Anthony Dimatteo, Kettering, Ohio; Daniel Lee Harmon, Lake Orion, Mich., and Deno John Rogakos, deceased, late of Centerville, Ohio, by Niki Rogakos, administrator, assignors to ITT Automotive Electrical Inc., Auburn Hills, Mich.
Filed Feb. 20, 1997, Ser. No. 804,243
Int. Cl.[6] B60S *1/32;1/34*
U.S. Cl. 15—250.203 **6 Claims**



1. A variable force windshield wiper system for clearing a windshield of an automotive vehicle comprising:

a drive shaft having an axial bore defined therein;

a rod slidably disposed within the bore;

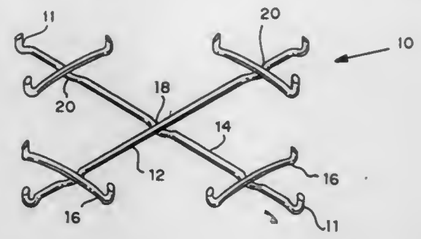
a wiper arm having a first end, a second end, and an intermediate portion joining said first and second end the first end of the wiper arm rotatably fixed to the drive shaft and the second end of the wiper being pivotable relative to the first end;

a wiper blade pivotably attached to the second end of the wiper arm;

a spring having a first end and a second end, the first end of the spring connected to the intermediate portion of said wiper arm biasing the wiper blade against the windshield;

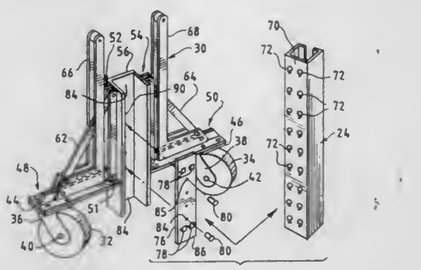
a lever arm pivotably connected to the wiper arm at a pivot point proximate to the drive shaft of the lever arm having a first end spaced from the pivot point engaged by the rod and the lever arm operably pivoting responsive to axial movement of the rod and the lever arm having a second end connected to the second end of the spring.

5,822,828
FASTENER FOR LAYERED FLOOR COVERINGS AND METHOD OF FASTENING LAYERS
Raymond A. Bérard; Claude Edward Terry, both of Kennesaw; Harold F. Adams, Chatsworth, all of Ga.; William A. McDonough, Charlottesville, Va., and Michael Braungart, Suderberg, Germany, assignors to Interface, Inc., Atlanta, Ga., and McDonough Braungart Design Chemistry, L.L.C., Charlottesville, Va.
Filed Sep. 13, 1996, Ser. No. 713,949
Int. Cl.[6] A47G *27/04*
U.S. Cl. 16—6 **12 Claims**



1. A fastener used to secure together backing and facing layers of a floor covering, comprising a plurality of interconnected wires arranged in a plane, wherein the ends of the wires are bent to form rigid barbed prongs which extend substantially vertically from the plane and are of a length such that when the fastener is positioned on a top surface of the backing layer, all of the barbed prongs extend into, but not through, the facing layer.

5,822,829
CASTER ASSEMBLY FOR MOVING STORAGE RACK COMPONENTS
Andrew L. Webb, and John M. Burke, both of Jacksonville, Fla., assignors to Webb Equipment Company, Inc., Jacksonville, Fla.
Filed Apr. 1, 1997, Ser. No. 829,942
Int. Cl.[6] B60B *33/00*
U.S. Cl. 16—30 **15 Claims**



1. A caster assembly for engaging, lifting and roll transporting columns on a floor surface, and engageable to a first type of column, the first type of column having two-lines of spaced apart first engagement holes on a bottom region thereof, the assembly comprising:

a housing adapted to receive a column of the first type of columns, and having a wall with first bolt holes therethrough;

at least a first caster wheel mechanically connected to said housing for supporting at least a portion of the housing from the floor surface;

a bracket having a plate member and a plurality of first lugs extending from the plate member aligned for engagement with the first engagement holes of the column, said plate

member having second bolt holes aligned with first bolt holes through said wall of said housing; and

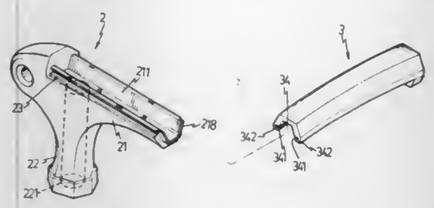
fasteners fitted through said first and second bolt holes for fastening said bracket to said housing.

5,822,830

HANDLE FOR L SHAPED TOOL

Chiang Her Lin, No.22-8, Jiann Dong Rd., Dah Li City, Taichung, Taiwan

Filed Jul. 21, 1997, Ser. No. 897,586
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—111 R 4 Claims



1. A handle for engaging with an L-shaped tool having a first stem and a second stem, said handle comprising:

a beam including a bore for engaging with the first stem, and a bar perpendicular to said beam, said bar including a groove communicating with said bore of said beam for engaging with the second stem, and

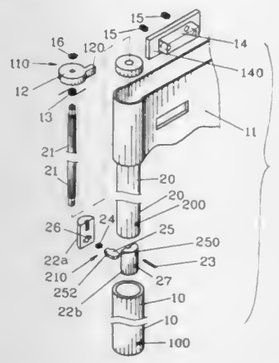
a cover secured to said bar for securing the second stem in place and for allowing the tool to be solidly secured in said handle.

5,822,831

POSITIONING DEVICE FOR COLLAPSIBLE LUGGAGE TROLLEYS

Shih-Min Cheng, No. 1-2 Lane 132, Lin-Jiang Road, Da-Jia Town, Taichung Hsien, Taiwan

Filed Sep. 16, 1997, Ser. No. 931,353
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—115 6 Claims



1. A positioning device for a luggage trolley of the type having a pair of outer tubes, a pair of inner tubes respectively, telescopically received in the outer tubes, and a handle means connected to upper ends of the inner tubes, each said outer tube including a plurality of vertically spaced engaging holes, the positioning device comprising:

a connecting rod pivotably mounted in each said inner tube and having an upper end and a lower end;

a manually operable actuating means mounted to the handle means and connected to said upper end of each said connecting rod to urge pivotal movement of said connecting rod;

an engaging means mounted in each said inner tube and securely connected to said lower end of an associated said connecting rod to pivot therewith, each said engaging means including an engaging member releasably, selectively engaged in one of the engaging holes of an associated said outer tube; and

means for biasing each said engaging member to engage with one of the engaging holes of the associated outer tube;

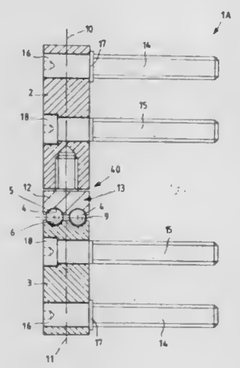
wherein each said engaging member is pivoted to be disengaged from an associated engaging hole of the associated outer tube when the actuating means is actuated to allow vertical movement of the inner tubes in the outer tubes, and each said engaging member is biased to selectively engage with one of the engaging holes when the actuating means is released so as to position the inner tubes in the outer tubes.

5,822,832

HINGE FOR DOORS

Rinaldo Maggi, Calolziocorte, Italy, assignor to Maggi S.p.A., Calolziocorte, Italy

Filed Mar. 19, 1997, Ser. No. 820,081
Claims priority, application Italy, Mar. 19, 1996, MI960199 U
Int. Cl.[6] E05D *11/04*
U.S. Cl. 16—276 19 Claims



1. A hinge, comprising:

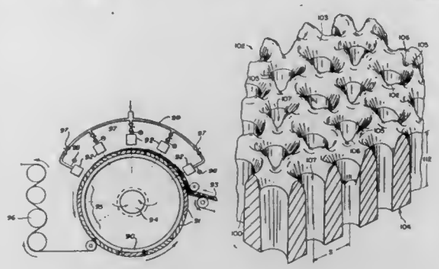
at least one first element which is fastenable to an upright member and a second element which is fastenable to a door, a plurality of rolling bodies interposed between said at least one first element and second element, said rolling bodies rolling along a first annular track and a second annular track respectively provided on said at least one first element and said second element, each of said tracks having a bottom portion and two side portions, wherein said side portions are extended for retaining the rolling bodies inside the tracks during rolling of the rolling bodies along the annular tracks and form between the at least one first element and the second element, in proximity with the rolling bodies, an annular gap which is wide enough to prevent contact between the at least one first element and the second element, said annular gap also extending into an area located coinciding with axes of symmetry of said first and second elements and wherein adjacent ends of said first and second elements are spaced apart by the annular gap so as to not contact one another.

5,822,833

APPARATUS FOR MAKING NONWOVEN FABRICS HAVING RAISED PORTIONS

William A. James, Long Branch, and William G. F. Kelly, Middlesex, both of N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 308,017, Sep. 16, 1994, Pat. No. 5,674,587.
This application Feb. 10, 1997, Ser. No. 799,638
Int. Cl.[6] D04H *1/46*
U.S. Cl. 28—105 2 Claims



1. A method for producing a nonwoven fabric comprising the steps of:

a) providing a cylindrical topographical support member comprising a body having an outer surface including a first micro-sized topographical pattern, at least one macro-sized region recessed below said outer surface, and a pattern of apertures extending through said body including through said micro-sized and macro-sized regions;

b) positioning a fibrous layer on said outer surface of said cylindrical topographical support member;

c) projecting adjacent fluid streams simultaneously against said fibrous layer and said outer surface and then through said apertures;

d) rotating said cylindrical topographical support member while the fluid is being projected against said fibrous layer;

e) removing the fluid projected through said apertures; and

f) removing a nonwoven fabric from said outer surface of said cylindrical topographical support member.

5,822,834

NEEDLING MACHINE WITH SLIDING ROD

Bernard Jourde, Elbeuf; Francois Louis, La Saussaye, and Robert Jean, Amfreville la Campagne, all of France, assignors to Asselin, Elbeuf, France

PCT No. PCT/FR95/01618, § 371 Date Jul. 16, 1997, § 102(e) Date Jul. 16, 1997, PCT Pub. No. WO96/17987, PCT Pub. Date Jun. 13, 1996
PCT Filed Dec. 7, 1995, Ser. No. 849,478
Claims priority, application France, Dec. 8, 1994, 94 14760
Int. Cl.[6] D04H *18/00*
U.S. Cl. 28—113 14 Claims

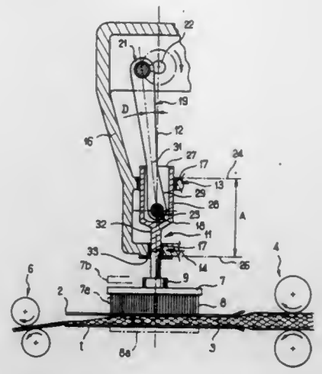
1. A needling machine for mechanically consolidating a sheet of fibers comprising,

means for causing the sheet of fibers to progress,

a mobile system comprising a needle board support and at least one rod mounted for sliding movement in a transverse direction with respect to the sheet in two axially spaced slide bearings,

for each said sliding rod, a connecting rod having a first end articulated with a drive crank and a second end connected to said sliding rod by an articulation, in order to transmit a reciprocating motion to the support,

wherein each said sliding rod comprises a first region having a first outer diameter, sliding through a first one of the slide bearings, said first bearing located nearer the crank and having a corresponding first inner diameter, the sliding rod having a second outer diameter in a second region sliding in the other bearing, said other bearing having a corresponding second inner diameter, and located nearer the needle board support, and wherein said second outer diameter is smaller than said first outer diameter, and said second inner diameter is smaller than said first inner diameter.

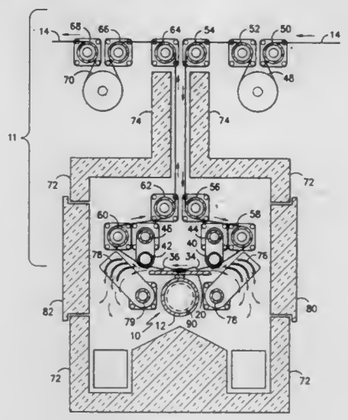


5,822,835

METHOD AND APPARATUS FOR WEB TREATMENT

Louis Dischler, Spartanurg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 17, 1997, Ser. No. 999,638
Int. Cl.[6] D06C *19/00*
U.S. Cl. 28—167 4 Claims



1. A method for conditioning a crease sensitive web, comprising the steps of:

supplying a web to a first conditioning zone, wherein the web is treated by projecting at least one high velocity stream of gaseous fluid against only one side of the web substantially tangential to the path of travel of the web and in the opposite direction of travel of the web such that a series of saw-tooth waves are formed in and move along the web in the opposite direction of travel of the web;

supplying the web to a second conditioning zone, wherein the web is treated by projecting at least one high velocity stream of gaseous fluid against the same side of the web as in the first conditioning zone substantially tangential to the path of travel of the web and in the same direction of travel of the web such that a series of saw-tooth waves are formed in and move along the web in the same direction of travel of the web;

supplying the web to an area of high tension which separates said first conditioning zone from said second conditioning zone; and

removing the web from said second conditioning zone.

5,822,836

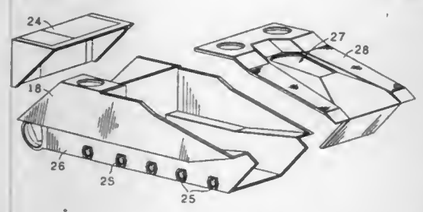
REAR DRIVE M113 CONVERSION METHOD

Matthew Guy Riddle, San Jose, Calif., assignor to United Defense LP, Arlington, Va.

Continuation of Ser. No. 349,338, Dec. 5, 1994, Pat. No. 5,577,311. This application Aug. 12, 1996, Ser. No. 695,456

Int. Cl.[6] B21K *21/16*

U.S. Cl. 29—401.1 9 Claims



1. A rear-drive conversion method for an armored vehicle comprising the steps of:

providing an armored vehicle, said vehicle including a front end, a rear end, a rear portion, an upper hull and a lower hull with a rear sponson area;

selectively disassembling said vehicle to a base hull including said front end, said rear end, said rear portion, said upper hull, and said lower hull;

removing said rear portion from said base hull;

modifying the configuration of said lower hull;

adding a new front plate to said lower hull at said rear end; and

fastening together said upper hull, said modified lower hull, and said new front plate.

5,822,837

PROCESS FOR PRODUCING A FRICTIONAL ENGAGEMENT

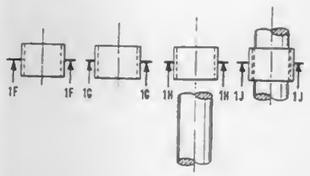
Kurt Schwellenbach, Neufahrn, and Robert Lang, München, both of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed May 13, 1997, Ser. No. 855,338

Claims priority, application Germany, Jun. 17, 1996, 196 24 048.4

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—450 3 Claims



1. A process for producing a frictionally locking connection between first and second structural component parts by either inserting the second structural component part into the first structural component part or inserting the first structural component part into the second structural component part, the process comprising the steps of:

a) plastically deforming a first round structural component part one of an oval shape and a polygon shape by applying a force;

b) substantially elastically rounding the one of oval and polygonal first structural component part by applying an additional force;

c) assembling the first and second structural component parts while maintaining the additional force; and

d) cancelling the additional force so that the rounded first structural component part springs back into the one of an oval and polygonal shape so that the structural component parts are frictionally connected with one another by a press fit.

5,822,838

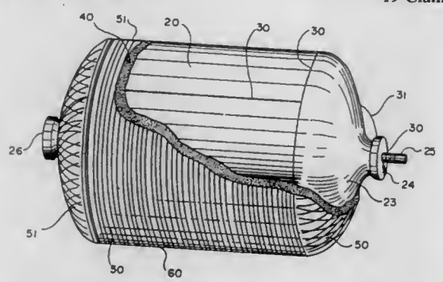
HIGH PERFORMANCE, THIN METAL LINED, COMPOSITE OVERWRAPPED PRESSURE VESSEL

Ellis C. Seal, Bay S. Louis, Miss., and Norman C. Elfer, Pearl River, La., assignors to Lockheed Martin Corporation, Bethesda, Md.

Continuation-in-part of Ser. No. 595,371, Feb. 1, 1996, abandoned. This application Jul. 22, 1996, Ser. No. 681,147

Int. Cl.[6] B65H *81/00;* F17C *1/02;* B23K *15/00*

U.S. Cl. 29—469.5 19 Claims



1. A method of manufacturing a composite overwrapped pressure vessel, comprising the following steps:

(a) using spin forming, making a liner having first and second dome portions and a cylindrical portion made of a metal having a tensile yield strengthened p.s.i./tensile modulus of elasticity in p.s.i.(F^{TY}/E) of at least 0.6% and a ductility of at least 5%;

(b) forming first and second bosses made of the metal, the first boss being connected to the first dome portion and the second boss being connected to the second dome portion; and

(c) applying a composite overwrap over the liner, applying filaments of the overwrap onto the liner.

5,822,839

METHOD FOR MAKING A MICROMOTOR IN A CERAMIC SUBSTRATE

Syamal K. Ghosh, Rochester; Edward P. Furlani, Lancaster, and Dilip K. Chatterjee, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 3, 1997, Ser. No. 868,210

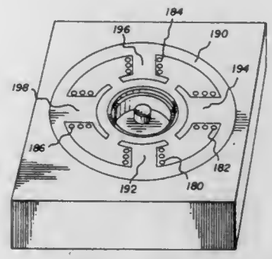
Int. Cl.[6] H02K *15/04*

U.S. Cl. 29—596 5 Claims

1. A method of making a micromotor in a ceramic substrate, comprising:

(a) forming a sacrificial stator member comprising a sacrificial stator core with a plurality of teeth each having a central portion and a free-end and providing a tape cast ceramic material wrapped around the central portion of each tooth, and a sacrificial fiber wound in a helical fashion on the tape cast material;

(b) forming a micromolded ceramic bottom portion in the green state having a cavity for receiving the sacrificial stator member and an insert recess, and inserting the sacrificial stator member into said cavity;



(c) forming a micromolded ceramic top portion in the green state having a recess through hole, a first pair of through holes and a plurality of second pairs of through holes, and assembling the micromolded ceramic top portion in a relationship to the micromolded ceramic bottom portion so that the ends of the sacrificial fibers extend through the plurality of second pairs of through holes, the first pair of through holes being aligned over the sacrificial stator core and the recess through hole and the insert recess being aligned to form a rotor mechanism receiving recess;

(d) sintering the assembled micromolded ceramic top and bottom portions to form a unitary ceramic body;

(e) etching through the first pair of through holes to provide a ferromagnetic stator receiving cavity and etching through the plurality of second pairs of through holes to provide embedded coil receiving cavities;

(f) filling the embedded coil receiving cavities with a conductive material thereby forming embedded conductive coil structures, and filling the ferromagnetic stator receiving cavity with soft magnetic material thereby forming the ferromagnetic stator; and

(g) mounting a rotor drive mechanism in the rotor mechanism receiving recess and in operative relationship to the ferromagnetic stator and having a rotor member arranged so that when drive voltages are applied to the embedded conductive coil structures a field is created through the ferromagnetic stator which provides a driving force to the rotor member causing it to rotate.

5,822,840

METHOD OF MANUFACTURING SPRING HINGES

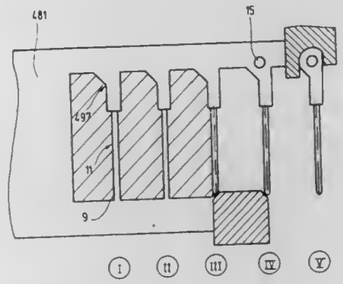
Heinz Mössner, Ispringen, and Otto Lehnert, Sinsheim, both of Germany, assignors to O B E-Werk Ohnmacht & Baumgärtner GmbH & Co. KG, Ispringen, Germany

Filed Mar. 14, 1996, Ser. No. 615,765

Claims priority, application Germany, Apr. 27, 1995, 195 15 495.9

Int. Cl.[6] B21D *53/40*

U.S. Cl. 29—11 5 Claims



1. A method of manufacturing a hinge including at least a housing and a hinge member, the method comprising the steps of:

providing a strip material for forming the hinge member;

cutting free a region from the strip material substantially corresponding to a shape of the hinge member;

pressing the cut-free region of the strip material to form a substantially round extension of the hinge member;

punching the cut-free region of the strip material to form a gudgeon of the hinge member;

separating the hinge member from the strip material;

providing a hinge housing; and

mounting the hinge member in the hinge housing.

5,822,841

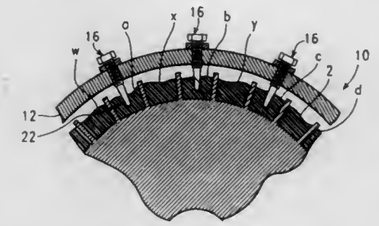
IBR FIXTURE

Daniel A. Bales, Palm City, and Leroy F. Turner, Sr., West Palm Beach, both of Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 17, 1996, Ser. No. 768,370

Int. Cl.[6] B25B *27/14*

U.S. Cl. 29—281.1 5 Claims



1. A fixture for use in machining, in combination with integral bladed rotor, said integral bladed rotor having a plurality of circumferential spaced blades with each of said blades including an airfoil section, said fixture comprising a rigid ring dimensioned to surround the periphery of the integral bladed rotor, tapered pins extending radially through holes formed in said rigid ring, a removable material cast into the spaces between the airfoils of said blades, said tapered pins extending in said removable material formed between adjacent blades of said integral bladed rotor and being alternately removable between adjacent blades of said integral bladed rotor to permit machining said airfoil of individual blades of the integral bladed rotor for providing rigidity to the integral bladed rotor during the machining thereof.

5,822,842

METHOD FOR MASKING A DISK SHAPED SUBSTRATE

Jaroslav Zejda, Rodenbach, Germany, assignor to Leyold Aktiengesellschaft, Hanau am Main, Germany

Division of Ser. No. 164,009, Dec. 8, 1993, Pat. No. 5,480,530. This application Oct. 10, 1995, Ser. No. 541,594

Claims priority, application Germany, Mar. 9, 1993, 43 07 382.4

Int. Cl.[6] B23P *11/02*

U.S. Cl. 29—450 4 Claims

1. Method for masking a disk-shaped substrate having a thickness and an annular marginal portion defining an outside diameter of said substrate, said method comprising

providing a flat annular plate of elastic material having an outwardly facing cylindrical wall defining an outside diameter, an inwardly facing cylindrical wall defining an inside diameter substantially the same as the outside diameter of said substrate, an annular flange extending radially inwardly from said inwardly facing cylindrical wall, and a plurality of projections spaced from each other, said projections being spaced from said flange by a distance substantially the same as the thickness of said substrate,

providing an abutment having a circular opening defining an inside diameter which is smaller than the outside diameter of the annular plate,

providing a pusher having an outside diameter which is larger than the inside diameter of the annular plate, the outside diameter of the pusher being smaller than the inside diameter of the abutment,

aligning the pusher, the plate and the abutment concentrically with the annular flange against the pusher,

pushing the pusher toward the abutment so that said annular plate bows axially to spread apart said projections,

placing the annular marginal portion of said substrate against said flange, and

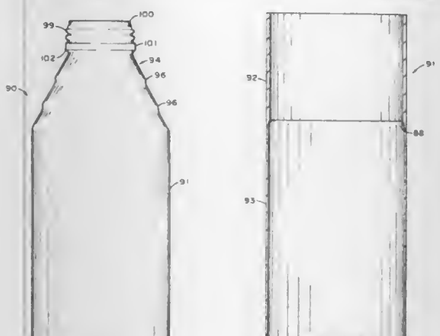
withdrawing said pusher so that said annular plate is not bowed and said projections retain said substrate against said flange.

5,822,843

METHOD OF MAKING BOTTLE-SHAPED METAL CANS

Hans H. Diekhoff, Avonmore, and Andrew F. Clarke, Lower Burrell, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 343,743, Nov. 22, 1994, Pat. No. 5,718,352. This application Dec. 20, 1996, Ser. No. 769,476
Int. Cl.[6] B21D *39/00*
U.S. Cl. 29—512 **14 Claims**



1. A method for forming a light weight, resealable bottle-shaped metal can comprising:

providing a drawn and ironed can body made of thin gauge, hard temper metal having a bottom end wall, a lower sidewall portion, an upper sidewall portion having a metal thickness greater than said lower sidewall portion, and an open top end;

die necking said upper sidewall portion at least 20 times to form a converging wall portion and a substantially cylindrical portion adjacent said open top end to form the can body into a bottle shaped metal can; and

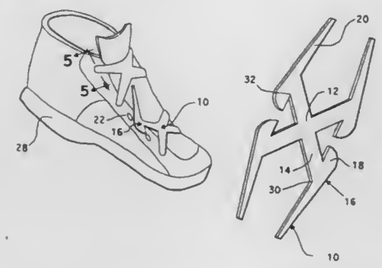
providing a thread on said cylindrical portion for securing a threaded closure on said metal can.

5,822,844

ELASTIC CLOSURE COMPONENT

Daniel F. Mento, 120 Beechwood Ter., Pottstown, Pa. 19465-8610

Filed Apr. 1, 1997, Ser. No. 834,722
Int. Cl.[6] A43C *11/22*
U.S. Cl. 24—573.1 **5 Claims**



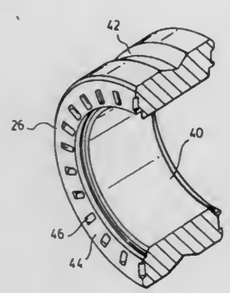
1. An elastic closure component formed of a natural or synthetic elastic substance comprising an intersection of resilient material having a plurality of appendages protruding outward from said intersection with a gusset positioned at an obtuse angle to each said appendage adjoined to a half semicircle attached at an acute angle, from each said appendage.

5,822,845

METHOD OF RETAINING A WINDING ELEMENT IN A STATOR SLOT

Gary Michael Gould, and Piero Vittorio Ronca, both of Peterborough, Canada, assignors to General Electric Canada Inc., Mississauga, Canada

Division of Ser. No. 627,103, Apr. 3, 1996, Pat. No. 5,708,315. This application Apr. 2, 1997, Ser. No. 825,900
Int. Cl.[6] H02K *15/06*
U.S. Cl. 29—596 **8 Claims**



1. A method of retaining a winding element in the slot of the stator of a large dynamoelectric machine comprising:

placing an elastomeric material over said winding element such that the elastomeric material extends along the slot portion of said winding element and envelops three surfaces of the winding element along the length thereof, and

applying a stretching force to said elastomeric material to stretch the elastomeric material sufficiently to reduce the thickness of said elastomeric material surrounding the three sides of said winding element, and

inserting the winding element and the stretched elastomeric material into the stator slot of said machine, and

removing the stretching force from said elastomeric material and allowing the elastomeric material to relax in the slot space and expand in width to retain the winding element in said slot.

5,822,846

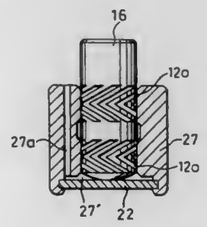
METHOD OF MANUFACTURING A DISK DRIVE SPINDLE MOTOR

Norishige Moritan, Saihaku-gun; Akihide Matsuo, and Hideshi Fukutani, both of Yanago, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 744,899, Nov. 8, 1996, Pat. No. 5,715,116, which is a continuation of Ser. No. 405,571, Mar. 16, 1995, abandoned, which is a continuation of Ser. No. 125,449, Sep. 22, 1993, abandoned. This application Sep. 4, 1997, Ser. No. 923,475

Claims priority, application Japan, Mar. 15, 1993, HEI 5-053396

Int. Cl.[6] H02K *15/04*
U.S. Cl. 29—598 **2 Claims**



1. A method of assembling a spindle motor for driving a memory disk, the spindle motor comprising a rotor for carrying and driving at least one memory disk; at least one radial type dynamic pressure fluid bearing including a shaft having a first end and a second end, a sleeve having an upper end and a lower end, the sleeve rotatably fitting on the shaft and a first predetermined amount of lubricant between the shaft and the sleeve, either of an outer face of the shaft or an inner face of the sleeve having at least one herringbone-pattern groove for producing dynamic pressure; and a thrust bearing including a thrust plate disposed at the lower end of the sleeve for abutting the first end of the shaft and a second predetermined amount of lubricant confined in a closed space which is formed by the sleeve, the first end of the shaft and the thrust plate, and a gap for storing lubricant at the upper end of the sleeve, the method comprising the steps of:

placing the thrust plate at the lower end of the sleeve,

putting lubricant into a space on the upper end of the sleeve,

inserting the shaft in the sleeve, and then

vacuuming the closed space, thereby sucking the lubricant into the closed space and related space in the bearing, replaced air within the bearing space after the shaft is inserted into the sleeve and the bearing space being placed under a condition of negative pressure.

5,822,847

IC MOUNTING/DEMOUNTING SYSTEM AND A MOUNTING/DEMOUNTING HEAD THEREFOR

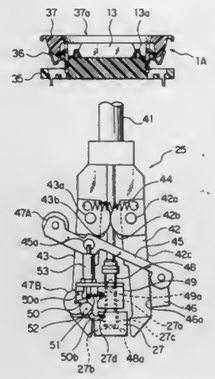
Isao Arakawa; Yosinori Hirata, and Ryoichi Miyamoto, all of Kumamoto, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 15, 1997, Ser. No. 782,672
Claims priority, application Japan, May 2, 1996, 8-135495
Int. Cl.[6] H05K *3/30;13/04*
U.S. Cl. 29—741 **14 Claims**

1. An integrated circuit mounting/demounting system comprising:

a tray supply section for supplying a tray on which an integrated circuit is mounted;

a board supply section for supplying a socket board having an IC integrated circuit socket on which the integrated circuit can be mounted for testing by pressing and displacing a moving section of the socket which moves contacts of the socket;



a robot body for transferring the integrated circuit between the tray supplied to the tray supply section and the socket board supplied to the board supply section;

a mounting/demounting head supported by the robot body and having a pair of socket pushers movable by the robot body into and out of contact with the moving section of the socket to depress the moving section, an interval between the socket pushers being adjustable in accordance with the size of the integrated circuit, a spring for pressing the socket pushers in a direction to increase the interval between the socket pushers, a lever rotatable mounted on of the socket pushers, and an interval control member disposed at a first end of the lever to control the interval between the socket rushers in accordance with an angle of the lever; and

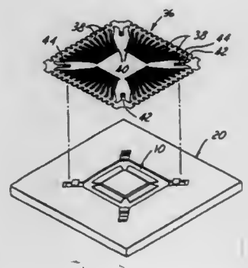
a control section for controlling the robot body.

5,822,848

LEAD FRAME HAVING A DETACHABLE AND INTERCHANGEABLE DIE-ATTACH PADDLE

Cheng-Lien Chiang, Taipei, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Jun. 4, 1996, Ser. No. 658,029
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 **23 Claims**



1. A method of detachably mounting a die paddle to a lead frame comprising the steps of:

providing a lead frame having lead fingers and a multiplicity of tie bars extending inwardly from said lead frame each having a fixed end integral with said lead frame and a free end equipped with an attachment means,

providing a die paddle having a multiplicity of receptacle means adapted to receive said attachment means on said free ends of the tie bars, and

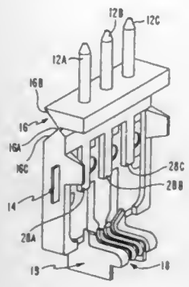
detachably engaging said attachment means on said tie bars to said receptacle means on said die paddle.

5,822,849

HINGED CIRCUIT ASSEMBLY WITH MULTI-CONDUCTOR FRAMEWORK

David Charles Casali, Glastonbury; John E. Opie, Stony Creek, and Solomon Fridman, Farmington, all of Conn., assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 165,218, Dec. 10, 1993, Pat. No. 5,619,012. This application Oct. 31, 1996, Ser. No. 742,078
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 11 Claims



1. A method of making an overmolded circuit assembly, comprising the steps of:

a. forming a unitary framework of electrically conductive material comprising electrical conductors connected to each other by at least one structural member;

b. connecting electrical leads of at least one electrical component to respective ones of said electrical conductors;

c. overmolding at least part of the framework with an electrically insulating material to secure the electrical conductors in predetermined positions relative to each other independently of the at least one structural member; and

d. subsequent to the overmolding step, severing any portion of said at least one structural member which connects ones of the electrical conductors that are not to be electrically connected to each other;

an end of at least one of the electrical conductors comprising a terminal extending out of a hinge formed in said overmolded electrically insulating material, said hinge comprising a narrowed section of said material disposed between first and second relatively thick sections of said material, said narrowed section extending in a first direction and said at least one electrical conductor passing through said narrowed section in a second direction transverse to said first direction.

5,822,850

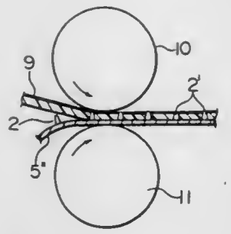
CIRCUIT DEVICES AND FABRICATION METHOD OF THE SAME

Hiroshi Odaira, Chigasaki; Eiji Imamura, Yokosuka; Yusuke Wada, Tokyo; Yasushi Arai, Fujisawa; Kenji Sasaoka, Zama; Takahiro Mori, Yokohama; Fumitoshi Ikegaya, Zama, and Sadao Kowatari, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 204,994, Mar. 2, 1994, Pat. No. 5,600,103. This application Dec. 22, 1995, Ser. No. 577,324
Claims priority, application Japan, Apr. 16, 1993, 5-090177; Jun. 2, 1993, 5-131726; Jun. 23, 1993, 5-152006; Sep. 8, 1993, 5-223329
Int. Cl.[6] H05K *3/02*
U.S. Cl. 29—846 23 Claims

1. A fabrication method of a printed wiring board, comprising the steps of:

forming conductive bumps having a substantially conical shape on at least one main surface of a resin sheet;and



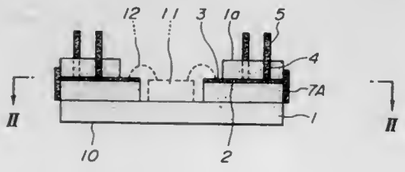
pressurizing said conductive bumps vertically into said synthetic resin sheet so as to form conductive lead portions that pierce said synthetic resin sheet.

5,822,851

METHOD OF PRODUCING A CERAMIC PACKAGE MAIN BODY

Kozo Yamasaki, and Naomiki Kato, both of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Division of Ser. No. 347,070, Nov. 23, 1994, Pat. No. 5,621,190. This application Dec. 31, 1996, Ser. No. 775,305
Claims priority, application Japan, Dec. 24, 1993, 5-347664
Int. Cl.[6] H05K *3/02*
U.S. Cl. 29—846 11 Claims



1. A method of producing a ceramic package main body, comprising the steps of:

preparing a ceramic substrate having a circuit wiring, said circuit wiring including first and second circuit wires which are to be electrically insulated from each other;

forming on said ceramic substrate first and second conductive layers which are electrically insulated from each other;

forming on said ceramic substrate a first connection wire connecting between said first circuit wire and said first conductive layer;

forming on said ceramic substrate a second connection wire connecting between said second circuit wire and said second conductive layer; and

examining an electrical connection between said first and second conductive layers and determining, from a result of said examining, whether a short circuit is developed between said first and second circuit wires.

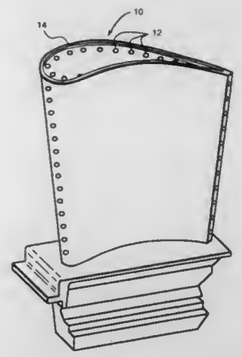
5,822,852

METHOD FOR REPLACING BLADE TIPS OF DIRECTIONALLY SOLIDIFIED AND SINGLE CRYSTAL TURBINE BLADES

Bernard Patrick Bewlay, Schenectady, and Melvin Robert Jackson, Niskayuna, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jul. 14, 1997, Ser. No. 892,034
Int. Cl.[6] B23P *15/00*; B22D *19/10*
U.S. Cl. 29—889.1 20 Claims

1. A method for replacing a tip on a directionally solidified or single crystal turbine blade, the method comprising the steps of:



providing a directionally solidified or single crystal turbine blade of a superalloy, the turbine blade having a blade tip;

removing a portion of the blade tip to generate an attachment surface;

placing a replacement tip on the attachment surface, the replacement tip being a directionally solidified or single crystal superalloy material; and

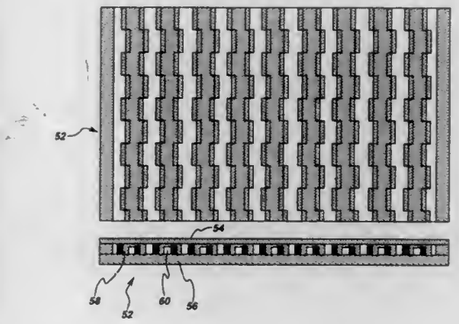
applying heat to join the replacement tip to the turbine blade.

5,822,853

METHOD FOR MAKING CYLINDRICAL STRUCTURES WITH COOLING CHANNELS

Ann Melinda Ritter, Albany; John Raymond Hughes, Scotia; Melvin Robert Jackson, Niskayuna; Francis Lawrence Kirkpatrick, Galway; Francisco Jose Tenreiro Cunha, Clifton Park; Nesim Abuaf, Schenectady, and Ronald Scott Bunker, Niskayuna, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 24, 1996, Ser. No. 669,069
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—890.01 37 Claims



1. A method for making double-wall structures having integral internal channels, comprising:

assembling a double-wall assembly comprising an inner wall, channel forming means, sacrificial channel filling means and an outer wall, wherein the inner wall and the outer wall are complementary to one another and separated by the channel forming means that is placed between and in touching contact with them to define at least one channel, and wherein the sacrificial channel filling means is complementary to the channel forming means and placed into the channel forming means to fill the at least one channel, such that the double-wall assembly comprises a substantially solid structure;

wherein the assembling the at least one channel further comprises forming at least one stepwise offset for promoting turbulent fluid flow through the at least one channel;

hot pressing the double-wall assembly at a temperature and for a time sufficient to cause the inner wall, outer wall and channel forming means to become metallurgically bonded to one another; and

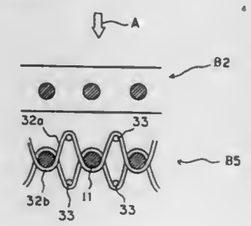
removing the sacrificial channel filling means.

5,822,854

METHOD OF FABRICATING A HEAT EXCHANGER FOR AN AIR CONDITIONER

Kaoru Ikejima; Takashi Gotoh; Tsuneo Yumikura, all of Hyogo; Michimasa Takeshita, Shizuoka, and Takayuki Yoshida, Kanagawa, all of Japan, assignors to Mitsubishi Denk Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 417,159, Apr. 4, 1995, Pat. No. 5,769,157. This application Jun. 6, 1996, Ser. No. 659,763
Claims priority, application Japan, Jul. 22, 1994, 6-171307; Oct. 24, 1995, 3-258351
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—890.017 1 Claim



1. A method of fabricating a heat exchanger for an air conditioner, comprising a plurality of heat-transfer tubes through which a cooling medium flows, and linear heat-transfer fins which are arranged in a structure having spaces between the linear heat-transfer fins and the heat transfer tubes and which are in contact with the outer circumferences of the heat-transfer tubes, said method comprising the steps of:

electroless plating an Ni film over at least either the outer circumferences of the plurality of heat-transfer tubes or the outer circumferences of the linear heat-transfer fins with a plating material to form a metal film and selecting a plating time such that the spaces between the heat-transfer fins and the heat transfer tubes are not clogged with plating material;

interlacing the plurality of heat-transfer tubes and the linear heat-transfer fins in a heat exchanging structure; and

heating the heat exchanging structure to the melting point of the metal film to melt part of the metal film so that the plurality of heat-transfer tubes and the linear heat-transfer fins are bonded together.

5,822,855

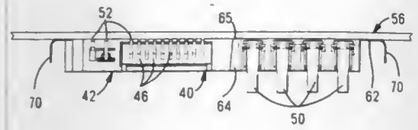
METHOD OF MAKING ELECTRICAL CONNECTOR HAVING A TWO PART ARTICULATED HOUSING

David Stanley Szczesny; William V. Pauza, both of Palmyra, and James Ray Fetterolf, Sr., Mechanicsburg, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 429,372, Apr. 26, 1995. This application Mar. 22, 1996, Ser. No. 620,375
Int. Cl.[6] H01R *43/16*
U.S. Cl. 29—883 3 Claims

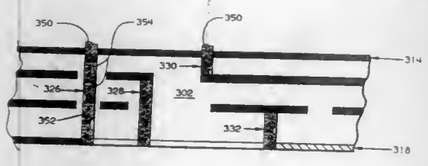
1. In a method of making an electrical connector having a two part articulated housing and electrical contacts therein, the steps:

(1) providing a carrier strip having a flexible metal member attached thereto;



(2) molding insitu a first housing part and a second housing part onto said flexible member, said first and second housing parts being mutually spaced apart;
(3) transporting said carrier strip to a contact insertion machine; and
(4) inserting said electrical contacts into said first and second housings.

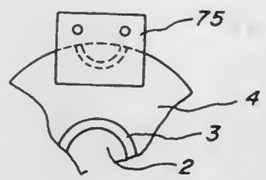
5,822,856
MANUFACTURING CIRCUIT BOARD ASSEMBLIES HAVING FILLED VIAS
Anilkumar Chinuprasad Bhatt, Johnson City, N.Y.; Donald Herman Glatzel, New Milford, Pa.; Allen F. Moring, Vestal, N.Y.; Voya Rista Markovich, Endwell, N.Y.; Kostas Papathomas, Endicott, N.Y., and David John Russell, Apalachin, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 28, 1996, Ser. No. 672,292
Int. Cl.[6] H05K *3/30*
U.S. Cl. 29—832 **10 Claims**



1. A method for producing a circuit assembly, comprising:
providing a circuitized substrate;
forming holes in said circuitized substrate;
providing a filler material;
injecting said filler material into said holes;
forming a first wiring layer of patterned metal on a surface of said circuitized substrate including plating an external surface of said filler material with electroconductive metal;
depositing a layer of photoresist over said first wiring layer;
forming conductive vias through said layer of photoresist;
forming a second wiring layer over said layer of photoresist including forming connectors to electrically connect electronic components to said second wiring layer;
providing electronic components with terminals;
providing joining material on said connectors or said terminals of said electronic components, or both;
placing said components onto said circuitized substrate with said terminals positioned for connection to said connectors; and
heating said joining material sufficient to form interconnection joints.

5,822,857
METHOD OF REPAIRING SHED PORTION OF COMPOSITE INSULATOR
Takao Tani, Ama-Gun, and Hiroshi Kashiwagi, Nagaya, both of Japan, assignors to NGK Insulators, Ltd., Japan
Filed Mar. 14, 1997, Ser. No. 818,718
Claims priority, application Japan, Mar. 18, 1996, 8-061032; Oct. 25, 1996, 8-283497
Int. Cl.[6] H01B *19/00*
U.S. Cl. 29—887 **5 Claims**

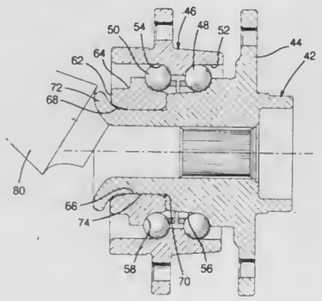
1. A method of repairing a shed portion of a composite insulator having a core portion, a sheath portion arranged on an outer surface of said core portion, and a plurality of shed portions projected from said sheath portion, comprising the steps of, cutting out a section of said shed portion having defects which section is less than the entire shed portion itself, and connecting a repairing member to said cut out portion.



5,822,858

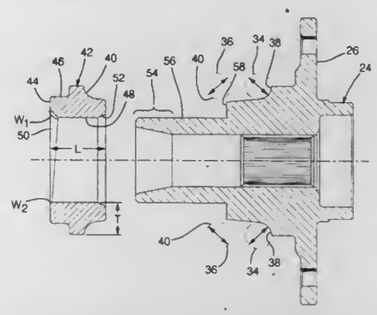
Patent Not Issued For This Number

5,822,859
BEARING WITH INTEGRALLY RETAINED SEPARABLE RACE
Jeffrey Steven Kessen, Huron, and Debbie Sue Wadsworth-Dubbert, Port Clinton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Oct. 7, 1996, Ser. No. 723,452
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—898.061 **3 Claims**



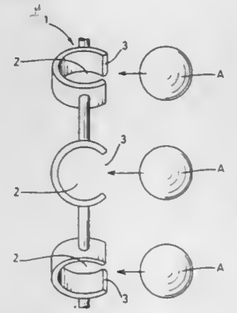
1. A method for assembling a bearing of the type having an inner spindle, a surrounding outer hub, a pair of axially spaced rows of rolling bodies supporting said spindle and hub for coaxial rotation, with one of said rows running on a pathway of a generally ring shaped separable race having a cylindrical mounting surface that press fits tightly over a cylindrical support surface on said spindle in an installed position, said race having an axial outermost edge that is axially proximate to said pathway and limited in radial thickness to substantially the radial thickness of said pathway, said method comprising the steps of;
providing a radially outwardly and axially inwardly deformable annular lip on said spindle axial end having an outer diameter initially equal to said spindle support surface,
providing said race outer edge and mounting surface with a generally conical relieved portion, said relieved portion having an axial length and a continuous, shallow angle sufficient to accommodate radially outward swelling experienced by said spindle support surface as said annular lip is deformed,
installing said separable race over said spindle with said race mounting surface and spindle support surface tightly and closely engaged and with said annular lip extending axially beyond said race outer edge, and,
deforming said spindle annular lip axially inwardly and radially outwardly sufficiently to form a bead closely abutting said race outermost edge to retain said race to said spindle, said race relieved portion accommodating the resultant radially outward swelling in said spindle support surface, thereby preventing uneven binding against said race mounting surface and maintaining a solid engagement between said support surface and mounting surface.

5,822,860
INTEGRALLY RETAINED BEARING RACE WITH IMPROVED TWISTING RESISTANCE
Debbie Sue Wadsworth-Dubbert, Port Clinton; Douglas Arnold Michel, Sandusky; Jeffrey Steven Kessen, Huron, and Charles Alan Price, Sandusky, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Dec. 23, 1996, Ser. No. 777,921
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—898.061 **3 Claims**



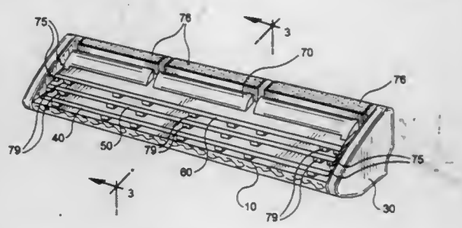
1. A method for assembling a bearing having an inner spindle with a central axis, a surrounding outer hub, a pair of axially spaced rows of rolling bodies supporting said spindle and hub for coaxial rotation, with one of said rows running on a generally ring shaped separable race having a cylindrical mounting surface that press fits coaxially to said spindle over a cylindrical support surface on said spindle and which is subject to turning on said support surface, said race having an axial outermost annular face that intersects said mounting surface at a circular edge, said method comprising the steps of;
providing a radially outwardly and axially inwardly deformable annular lip on said spindle axial end having an outer diameter substantially equal to said spindle support surface,
providing the circular edge intersection of said separable race outer face and cylindrical mounting surface with a generally conical chamfer that is eccentric to said central axis of both said separable race and spindle,
installing said separable race over said spindle with said race mounting surface and spindle support surface closely engaged and with said annular lip extending axially beyond said race outer face,
deforming said spindle annular lip axially inwardly and radially outwardly sufficiently to form a bead that closely abuts said race outermost face and conforms to and fills said eccentric chamfer, whereby, said separable race is both axially retained to said spindle and also prevented from turning relative to said spindle about said central axis by virtue of said deformed annular lip filling said eccentrie chamfer and providing a wedging effect to resist relative turning.

5,822,861
METHOD OF MANUFACTURING A ROLLER BEARING
Vendran Andelo Tadic, Elst; Johan Christian Marinus Bras, Tricht, both of Netherlands, and Leslie Berryman, Bridgnorth, England, assignors to SKF Industrial Trading & Development Company B.V., Mt. Nieuwegein, Netherlands
Filed Aug. 29, 1994, Ser. No. 297,672
Claims priority, application Netherlands, Sep. 16, 1993, 9301602
Int. Cl.[6] F16C *33/32*
U.S. Cl. 29—898.064 **3 Claims**



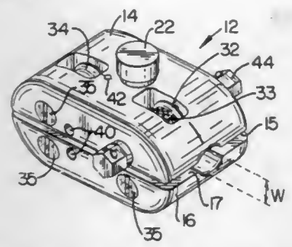
1. A method of manufacturing a roller bearing comprising the steps of:
forming a cage from cross-linkable, thermoplastic polymer-containing material, said cage having an annular circumference and means for receiving and holding rotating bodies over the entire annular circumference thereof;
inserting into the cage rotating bodies to form a cage containing rotating bodies;
subjecting the cage containing the rotating bodies to radiation to effect cross-linking of the cage material without bonding the rotating bodies thereto; and
assembling the cross-linked cage and rotating bodies into a roller bearing.

5,822,862
SUSPENDED BLADE SHAVING SYSTEM
Frank Anthony Ferraro, Trumbull, Conn., assignor to Warner-Lambert Co., Morris Plains, N.J.
Filed Jan. 17, 1997, Ser. No. 785,261
Int. Cl.[6] B26B *21/02*
U.S. Cl. 30—50 **37 Claims**



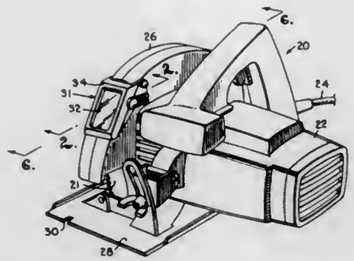
1. A razor head comprising:
a first support;
at least one resilient second support connected to said first support; and
a plurality of skin-engaging elements rigidly connected to and movably supported by said second support, wherein at least one of said first and second supports comprises a material which is different from another support.

5,822,863
UNIVERSAL TOOL FOR ACCESSING OPTICAL FIBERS IN A FIBER OPTIC CABLE
Michael J. Ott, Taylorsville, N.C., assignor to Siecor Corporation, Hickory, N.C.
Filed Nov. 12, 1996, Ser. No. 748,138
Int. Cl.[6] B21F *13/00*
U.S. Cl. 30—90.4 **27 Claims**



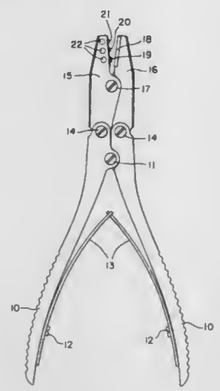
1. A tool for cutting buffer tubes having a range of radii up to a predetermined maximum radius, the tool comprising:
a first housing having at least one inner surface, wherein said inner surface contains a first semicircular groove defining a first longitudinal axis;
a second housing having at least one inner surface containing a second semicircular groove defining a second longitudinal axis, wherein said first housing is adjustably attached to said second housing such that said first and second semicircular grooves are maintained in aligned relationship to thereby form a channel having a width for receiving a buffer tube, and wherein each of said first and second semicircular grooves have a respective radius at least as great as the predetermined maximum radius of the buffer tubes such that said first and second semicircular grooves receive and center buffer tubes having a range of radii up to the predetermined maximum radius;
a first blade defining a first plane and at least partially disposed in said first housing such that said first blade extends into said first groove a predetermined distance;
a second blade defining a second plane and at least partially disposed in said second housing such that said second blade extends into said second groove by said predetermined distance such that said first and second blades define a gap between said blades and;
means for adjusting the relative positions of said first and second housings with respect to each other wherein the width of said channel may be varied.

5,822,864
VIEWING WINDOW FOR CIRCULAR SAW GUARD
David C. Campbell, Bel Air; Gale A. Heslop, Carney; Lynn E. Lentino, Westminster, and Michael R. Sell, Bel Air, all of Md., assignors to Black & Decker, Inc., Newark, Del.
Filed May 31, 1996, Ser. No. 655,803
Int. Cl.[6] B27B *9/00*
U.S. Cl. 30—123 **23 Claims**



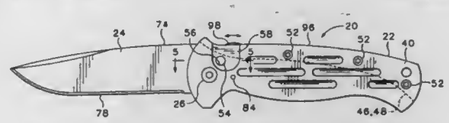
1. A hand-held circular saw having a saw blade with a peripheral edge, said saw comprising:
a base for supporting the saw as the blade passes through a workpiece:
an operating handle for guiding the hand-held saw during operation;
a guard covering at least a portion of the peripheral edge of the blade and having a pair of side surfaces extending generally parallel to the saw blade and an upper surface extending between said side surfaces, said guard having an opening formed therein and through said upper surface;
a window supported by said guard and allowing a saw operator to view the saw blade from a position above the saw, said window movable between a closed position, wherein said window substantially covers said opening, and an open position, wherein said window at least partially uncovers said opening to allow cleaning of said window; and
means for biasing said window to said closed position.

5,822,865
CUTTING PLIERS FOR CUTTING IMPLANT PLATES
Martin Bosch, Emmingen-Liptingen; Joachim Pfefferle, Munstertal; Michael Roth, Ebringen; Peter Scheuble, Wasenweiler, and Hermann Zeuner, Freiburg, all of Germany, assignors to MedArtis AG, Basel, Switzerland
Filed Sep. 20, 1996, Ser. No. 717,479
Int. Cl.[6] B26B *13/08*
U.S. Cl. 30—134 **15 Claims**



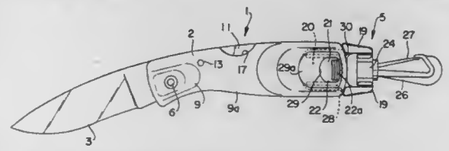
1. A cutting pliers for cutting implant plates which include eyelets, said cutting pliers comprising:
a holding jaw having an outer edge;
a punching jaw pivotally connected to said holding jaw;
a pair of handles, one of said handles respectively connected to said holding jaw and punching jaw;
said holding jaw including a holding surface for holding a said implant during a cutting operation, said holding surface facing said punching jaw, said holding surface including a holding cutting edge spaced from said outer edge;
said punching jaw including a punching surface, said punching surface including a punching cutting edge which complements said holding cutting edge and which cooperates therewith for effecting a cutting operation;
a recessed pinching portion in said holding jaw located between said holding cutting edge and said outer edge;
said punching jaw including a second pinching portion;
whereby, after a cutting operation, a cut off portion of a said cutting implant is captured between said recessed and second pinching portions.

5,822,866
SAFETY LOCK FOR AUTOMATIC KNIFE
Melvin M. Pardue, Repton, Ala., assignor to Mentor Group, L.L.C., West Linn, Oreg.
Filed Jan. 17, 1997, Ser. No. 785,527
Int. Cl.[6] B26B *1/04*
U.S. Cl. 30—161 **31 Claims**



1. In an automatic knife having a handle including a back and a side, a blade movable with respect to said handle between a closed position and an extended position, and a latch control device located on a side of said handle and interconnected with a latch mechanism normally retaining said blade either in said closed position or said extended position, a safety device comprising:
(a) a safety stop movable between a disengaged position and an engaged position in which a blocking element of said safety stop is located adjacent a part of said latch control device, thereby preventing it from moving far enough to release said blade from either its closed position or its extended position; and
(b) an operating control portion of said safety stop operatively connected with said safety stop so as to move said safety stop between said disengaged position and said engaged position, wherein said latch mechanism of said automatic knife includes a cross-bolt release and said latch control device is a button having a bottom, and wherein said blocking element of said safety stop is adjacent said bottom of said button when said safety stop is in said engaged position, and wherein said safety stop includes a disk mounted in said handle and rotatable about an axis extending transversely with respect to said handle, said disk defining a cutout providing clearance for movement of said button sufficient to cause said latch mechanism to release said blade when said safety stop is in said disengaged position, and a portion of said disk including said blocking element being located adjacent said bottom of said button when said safety stop is in said engaged position.

5,822,867
KNIFE
Kimiyuki Sakai, Seki, Japan, assignor to Gerber Sakai Co., Ltd, Gifu-Ken, Japan
Filed Feb. 4, 1997, Ser. No. 800,646
Int. Cl.[6] B26B *1/10*
U.S. Cl. 30—298.4 **21 Claims**

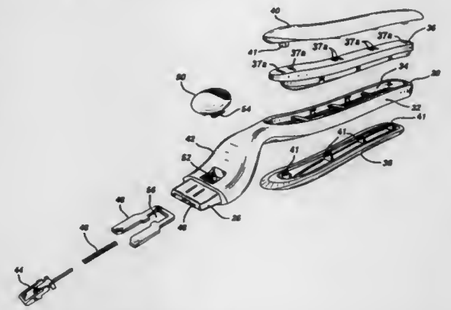


1. A knife and holder combination comprising:
a knife;
a handle on the knife having a proximal end and a distal end;
a blade pivotally connected to the distal end of the handle;
a holder releasably coupled to the knife, the holder having a proximal end and a distal end;
a snap hook on the proximal end of the holder, wherein the snap hook is directly joined to a swivel member, the swivel member having at least one pivot axis;
a coupler including a pair of mating parts for releasably coupling the knife to the holder, a first of the mating parts being formed on the proximal end of the knife handle and a second mating part being joined to the swivel member;
a pivot joint formed on the second mating part for receiving the swivel member such that the second mating part is pivotally connected to the swivel member, wherein the pivot joint is directly adjacent to the second mating part;
a locking mechanism for locking one of the mating parts to the other, the locking mechanism having a quick release member for quickly releasing the locking mechanism.

5,822,868
LUMINOUS FLAME OF ACETAL POLYMERS
Alex Forschirm, Parsippany, and James Howard, Somerset, both of N.J., assignors to HNA Holdings, Inc., Warren, N.J.
Filed Sep. 6, 1996, Ser. No. 709,081
Int. Cl.[6] B25G *1/10*; **C08K** *5/09*
U.S. Cl. 30—340 **8 Claims**

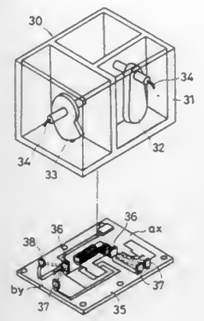
1. A polyacetal composition comprising a major amount of polyacetal and from about 0.5 to about 1.0 wt %, based on the total weight of the composition, of sodium acetate to cause the composition to exhibit a luminous flame under combustible conditions.

5,822,869
RAZOR HANDLE
Stephen Cabot Metcalf, West Newton, and Charles Bridgham Worrick, III, Hanson, both of Mass., assignors to The Gillette Company, Boston, Mass.
Division of Ser. No. 630,437, Apr. 10, 1996, Pat. No. 5,787,586.
This application Aug. 22, 1997, Ser. No. 918,602
Int. Cl.[6] B26B *21/52*
U.S. Cl. 30—526 **17 Claims**



1. A shaving handle comprising
an elongated hand gripping structure including a frame member having an upper region and generally opposite thereof a lower region, and
a cartridge support structure extending from an end of said hand gripping structure,
said elongated hand gripping structure further comprising at least two gripping portions, each gripping portion comprising an elastomeric plastic outer gripping layer and a nonelastomeric plastic support layer thereunder having extensions that are press-fitted into said elongated hand gripping structure, said elastomeric outer gripping layer being molded to said nonelastomeric support layer and overlying a major portion of said nonelastomeric support layer, and
one of said at least two gripping portions being in overlying relation to said upper region of said frame of said elongated hand gripping structure, and another of said at least two gripping portions being in overlying relation to said lower region of said frame of said elongated hand gripping structure, said gripping portions attachable along inwardly oriented axes to attach to said hand gripping structure, whereby said hand gripping structure is sandwiched between the at least two gripping portions.

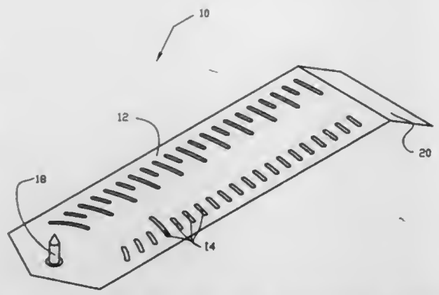
5,822,870
LEVEL CONTROLLER
Ro King-Yang, No. 289, Yong-Keng Road, Feng-Yuan City, Taichung County, Taiwan
Filed Aug. 20, 1996, Ser. No. 700,040
Int. Cl.[6] G01C 9/06
U.S. Cl. 33—1 M 2 Claims



1. A level controller, comprising:
a base plate having an upright support;
a platform supported on and turned about said upright support and having a bottom side facing said base plate;
a status detector mounted on the bottom side of said platform to detect a position of said platform and to provide an output signal corresponding to a result of the detection, said status detector including an X-axis detector unit adapted for detecting an X-axis position of said platform, and a Y-axis detector unit adapted for detecting a Y-axis position of said platform, said X-axis detector unit including (a) a first light source, (b) first light sensor means, and (c) a first light chopper pivotally coupled to an X-axis axle and disposed between said first light source and said first light sensor means of said X-axis detector unit, said first light sensor means of said X-axis detector unit including an analog light sensor and a digital light sensor, said Y-axis detector unit including (a) a second light source, (b) second light sensor means, and (c) a second light chopper pivotally coupled to a Y-axis axle and disposed between said second light source and said second light sensor means of said Y-axis detector unit, said first light chopper of said X-axis detector unit being tilted when said platform is tilted in an X-axis direction, thereby causing said first light sensor means of said X-axis detector unit to provide an output signal corresponding to respective movement of said platform, said second light chopper of said Y-axis detector unit being tilted when said platform is tilted in a Y-axis direction, thereby causing said second light sensor means of said Y-axis detector unit to provide an output signal corresponding to respective movement of said platform;
a driving mechanism mounted on said base plate and controlled to displace said platform for maintaining said platform in an even horizontal plane; and,
a microprocessor mounted on said base plate for controlling said driving mechanism responsive to said output signal of said status detector.

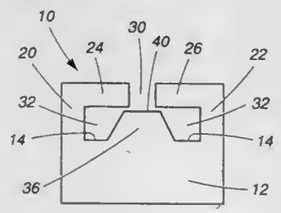
5,822,871
TOOL TO AID IN CUTTING CIRCLES IN DRYWALL
Douglas D. Walker, 6222 Glider Dr., San Jose, Calif. 95123
Filed Nov. 7, 1996, Ser. No. 745,961
Int. Cl.[6] B43L 9/04
U.S. Cl. 33—27.03 4 Claims

1. A tool to aid in cutting circles in drywall comprising:
a substantially flat main body formed from a rigid material,
a plurality of grooves adapted to guide a cutting tool, said grooves each include an inner wall and an outer wall, said



inner walls and said outer walls of said grooves lie on arcs concentric to a pivot point at a first end of said main body, and
a fixing pin situated at said pivot point of said first end of said main body on an underside thereof, said fixing pin is a sharp projection.

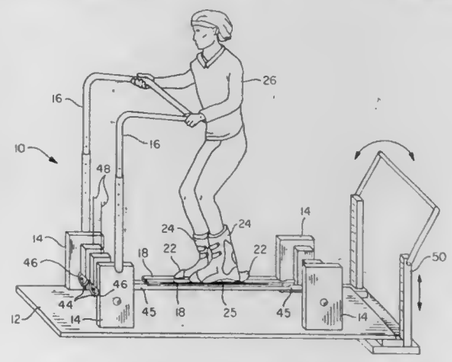
5,822,872
OPEN BLADE REAR SIGHT FOR PISTOL, RIFLE OR SHOTGUN
Matthew Waki, 353 Scott Ave., Salt Lake City, Utah 84115
Filed Jan. 21, 1997, Ser. No. 785,784
Int. Cl.[6] F41G 3/00
U.S. Cl. 33—235 12 Claims



1. A rear gunsight comprising
a substantially rectangular-shaped base member having an essentially planar upper surface;
a left sidewall extending upwardly from a left hand side of said base member;
a right sidewall extending upwardly from a right hand side of said base member;
a left hand top element extending from an upper end of said left sidewall toward said right sidewall;
a right hand top element extending from an upper end of said right sidewall toward said left sidewall;
a hollow space enclosed by said base, said left and right sidewalls and said left and right hand top elements, said hollow space being open at a front end and a rear end of said gunsight so that one can see through said hollow space;
terminal ends of said right hand and left hand top elements being spaced apart to form a notch that extends from the front end to the rear end of said gunsight, with said notch opening into said hollow space as well as being open at its opposite ends so that one can see through said notch simultaneously with seeing through said hollow space;
a boss that extends upwardly into said hollow space from the planar upper surface of said base member;
said boss being spaced from each of said left and right sidewalls by an equal dimension so that two spaced apart sight chambers through which one can see simultaneously are formed on opposite sides of said boss;
said boss has a substantially flat upper surface that is spaced from said left hand and right hand top elements so that an open passage is formed between said notch and each of said sight chambers; and

said boss has a width sufficient that the flat upper surface of said boss extends beneath said notch for at least the entire width of said notch, with said flat upper surface of said boss being spaced from said left hand and right hand top elements to form said open passage between said notch and each of said sight chambers.

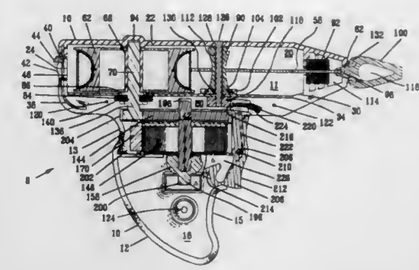
5,822,873
DEVICE FOR DETERMINING CANTS FOR SKIERS AND METHOD OF USE
Henry Meilman, 35 Caveswood La., Owings Mills, Md. 21117
Filed Nov. 1, 1996, Ser. No. 742,476
Int. Cl.[6] G01C 9/00
U.S. Cl. 33—365 20 Claims



1. A device to measure and correct the cant of a pair of ski boots worn by a skier, the device comprising:
a pair of articulated platforms, independently laterally movable with respect to one another, each articulated platform having a center line along a longitudinal plane, a respective binder attached to each articulated platform to hold the ski boots of the skier,
each articulated platform being independently rotatable about the longitudinal center line,
a vertical indicator means extending upwardly perpendicularly from the longitudinal center lines of each articulated platform,
means to indicate a relationship between a center of mass of the respective knee of the skier and the vertical indicator means,
a pair of second indicators, one attached to each articulated platform, the second indicators measuring the degree of rotation of each articulated platform, indicating the cant, and
means to insert a wedge into the device to correct the cant of each respective ski boot to obtain 0° of rotation of the respective second indicator means.

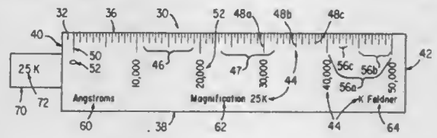
5,822,874
AUTOMATICALLY RETRACTING CHALK LINE MARKING TOOL
Anne Nemes, 2216 Richter Dr., Palm Harbor, Fla. 34683
Filed Nov. 5, 1996, Ser. No. 743,238
Int. Cl.[6] B44D 3/38
U.S. Cl. 33—414 15 Claims

1. An automatically retracting chalk-line dispenser comprising a housing; a chalk-line spool coupled to a first shaft for rotation therewith, the spool disposed in a chalk-receiving chamber; a line-retracting spring coupled to a second shaft; and a gear arrangement coupling the first shaft to the second shaft; the dispenser further comprising:
a shaft seal adjacent a wall of the chalk-receiving chamber, the first shaft adapted to rotate within the seal, the seal intermediate the spool and the spring; and



a trigger attached to the housing for pivotal motion between a latched and a released position, a projection portion of the trigger coacting with the second shaft so as to prevent the second shaft from rotating when the trigger is in the latched position, the projection not coacting with the second shaft when the trigger is in the released position, the projection frictionally coacting with the second shaft so as to brake the rotation thereof when the trigger is intermediate the latched and the released positions.

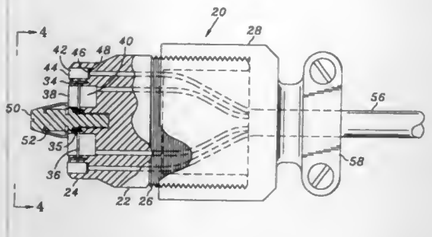
5,822,875
SCANNING ELECTRON MICROSCOPIC RULER AND METHOD
Klaus Feldner, Fishkill, N.Y., assignor to Siemens Aktiengesellschaft, Munich, Germany
Continuation of Ser. No. 512,869, Aug. 9, 1995, abandoned.
This application Jun. 2, 1997, Ser. No. 867,772
Int. Cl.[6] G01B 3/04
U.S. Cl. 33—494 15 Claims



1. A set of transparent ruled devices for measuring an actual dimension of a specimen displayed as a magnified image by a magnification system having a plurality of magnification factors, comprising:
a plurality of transparent planar ruled devices, each of said ruled devices having indicia of a linear scale associated with a predetermined selected magnification, whereby each ruled device has a separate associated magnification factor, wherein said indicia enables the measurement of an actual dimension of said magnified image, so that anyone of said plurality of ruled devices can be selected according to a selected magnification factor;
wherein said set is stored within a receptacle and said set includes pull tab means for removing said devices from said receptacle.

5,822,876
SURFACE DISPLACEMENT MEASUREMENT GAUGE
Edwin G. Haas, Sayville; James R. Kennedy, Southampton; Alvin Levy, Stony Brook, and John M. Papazian, Great Neck, all of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Apr. 25, 1996, Ser. No. 637,874
Int. Cl.[6] G01B 3/56
U.S. Cl. 33—533 13 Claims

1. A gauge for measuring an out-of-plane surface displacement profile of an out-of-plane surface of a structural material circum-



ferentially surrounding a cold-worked hole disposed through the structural material, the gauge comprising:

a) a deformable strain sensor positionable to be deformed in accord with the out-of-plane surface of the structural material circumferentially surrounding the cold-worked hole during measurement of the out-of-plane surface displacement profile thereof, said strain sensor comprising at least three ribbons of strain sensitive film arranged to extend radially from a center member of the gauge and spaced substantially equidistantly from each other over a 360 degree circular distance; and

b) a measurement reporting member in communication with the strain sensor.

5,822,877

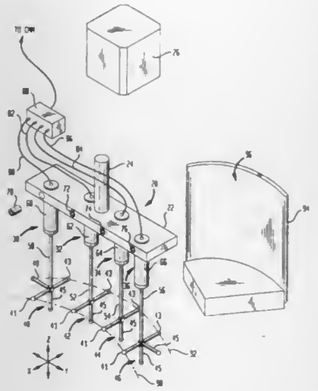
MULTI-PROBE SYSTEM FOR DIMENSIONAL METROLOGY

Yuzhong Dai, Coventry, R.I., assignor to Brown & Sharpe Manufacturing Company, Kingstown, R.I.

Filed Jun. 20, 1996, Ser. No. 670,176

Int. Cl.[6] G01B *7/03*

U.S. Cl. 33—560 **26 Claims**



1. A probe assembly for a coordinate measuring machine comprising:

a probe base member mounted on a moving element of a coordinate measuring machine;

a plurality of individual sensing probes each generating a discrete sensing signal based upon a position relative to an object to be measured, each of the plurality of probes being mounted on the probe base in spaced-apart relationship so that a plurality of points on a workpiece can be measured during one machine motion cycle; and

a sensor associated with each of said probes capable of generating a sensing signal based upon a position relative to the object to be measured when the object to be measured is approached from multiple directions.

5,822,878

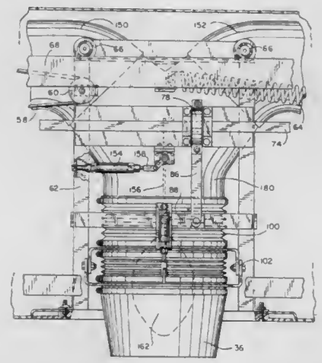
MOTOR VEHICLE DRYER WITH OVOID SHAPED NOZZLE MEMBER

Allen Jones, Oneida, Wis., assignor to PDQ Manufacturing, Inc., Green Bay, Wis.

Continuation of Ser. No. 324,351, Oct. 17, 1994, Pat. No. 5,596,818. This application Dec. 4, 1996, Ser. No. 760,047

Int. Cl.[6] F26B *17/00*

U.S. Cl. 34—585 **10 Claims**



1. A dryer used to dry a motor vehicle, comprising:

at least one blower for providing a gas;

a nozzle for directing the flow of gas from the blower into contact with the vehicle, the nozzle having a discharge opening and a cavity formed by a sidewall; and

an ovoid-shaped member positioned within the cavity inwardly from the discharge opening and the sidewall, the ovoid-shaped member having an outer surface shaped to allow passage of gas therealong by the Coanda effect.

5,822,879

METHOD AND OVEN FOR HOMOGENEOUSLY MELTING BY MICROWAVES WITH OSCILLATION OF STATIONARY WAVES FOR VITRIFYING MATERIALS AND GAS OUTLET FLOW

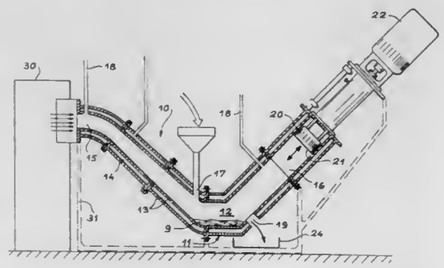
Jean-Jacques Vincent, Bagnols sur Ceze; Jean-Marc Silve, Marseilles; René Cartier, Le Pontet, and Hubert Frejaville, St. Martial, all of France, assignors to COMMISSARIAT a l'Energie Atomique, Paris, and Compagnie General des Matieres Nucleaires, Velizy Villacoublay, both of France

Filed Apr. 15, 1997, Ser. No. 834,253

Claims priority, application France, Apr. 23, 1996, 96 05084

Int. Cl.[6] F26B *3/34*

U.S. Cl. 34—262 **8 Claims**



1. Melting method by means of microwaves for vitrifying materials in a body including:

a lower portion constituting a melting tank;

an inlet for the materials;

an outlet for the molten materials and placed at the desired height of the melting bath;

at least one gas outlet, and

an inlet for the microwaves so as to continuously melt the materials by an incident wave created by a microwave generator and a reflected stationary wave above the melting bath by a reflecting surface placed in the body opposite the microwave generator, wherein with the wave being monomodal, the position of the reflecting surface is made to continuously vary so as to constantly vary melting the position of the antinodes of the reflected stationary wave and thus homogenize the temperature for the entire melting bath.

5,822,880

METHOD AND ARRANGEMENT FOR UTILIZING CONDENSATION WATER OF DRYING APPARATUS FOR FIBRE WEB

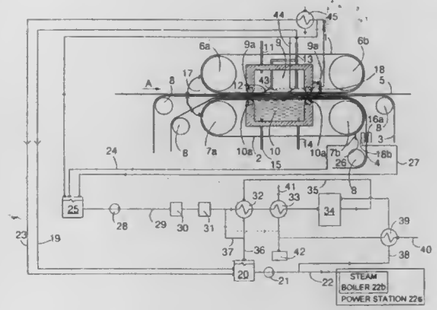
Jarmo Puumalainen, Tampere, Finland, assignor to Valmet Corporation, Helsinki, Finland

Filed Apr. 11, 1997, Ser. No. 832,728

Claims priority, application Finland, Apr. 12, 1996, 961638

Int. Cl.[6] F26B *13/26*

U.S. Cl. 34—95 **10 Claims**



1. A method for utilizing condensation water of an apparatus for drying a fibre web, the apparatus comprising two endless bands impermeable to air and having a good thermal conductivity, first turning rolls, the first band being arranged to turn around the first turning rolls, second turning rolls, the second band being arranged to turn around the second turning rolls, and a pressure chamber containing a pressure medium that is steam, the pressure chamber being arranged to heat the first band, whereby the second band is cooled and the fibre web and at least one felt or wire run between the bands in such a way that the fibre web is in contact with the heated first band and the felt or wire is correspondingly situated between the fibre web and the cooled second band, and that the water that has evaporated from the fibre web and then condensed is recovered, wherein the water that has evaporated from the fibre web and then condensed is supplied for use after the removal of solid matter

5,822,881

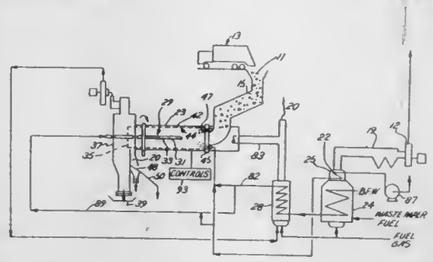
METHOD FOR CONDITIONING REFUSE

Frank T. Romweber, 3316 Santa Fe Trail, Olympia Fields, Ill. 60461, and Dennis F. Sowa, 321 Montclare La., Wood Dale, Ill. 60191

Continuation-in-part of Ser. No. 436,164, May 8, 1995, Pat. No. 5,613,306, which is a continuation of Ser. No. 888,562, May 22, 1992, Pat. No. 5,412,881, which is a division of Ser. No. 698,355, May 6, 1991, Pat. No. 5,116,363, which is a continuation-in-part of Ser. No. 475,995, Feb. 6, 1990, abandoned, which is a continuation-in-part of Ser. No. 410,093, Sep. 20, 1989, abandoned. This application Mar. 24, 1997, Ser. No. 822,482

Int. Cl.[6] D06F *58/00*

U.S. Cl. 34—136 **20 Claims**



1. A method of preprocessing raw trash for subsequent sorting, the trash having plastic, paper, aluminum, glass and other types of refuse, using a movable chamber, comprising:

inputting trash into the movable chamber upward;

heating the environment within the chamber to a temperature of at least 250° F., said heating including non-combustibly shrinking the plastic of the trash;

moving the trash within the chamber for a time period during said step of heating;

filtering out portions of a predetermined size or less of the trash during movement of the trash within the chamber; and

recovering the remaining larger portions of the trash for subsequent processing and recovery.

5,822,882

FREEZE DRYER METHOD AND APPARATUS WITH ENCLOSED HEATER AND CONTROLLER

Alan R. Anger, Champlin, Minn., assignor to Freezedry Specialties, Inc., Osseo, Minn.

Continuation-in-part of Ser. No. 375,814, Jan. 20, 1995, abandoned. This application Jul. 23, 1996, Ser. No. 685,342

Int. Cl.[6] F26B *5/06*

U.S. Cl. 34—296 **14 Claims**

1. A freeze dryer, comprising:

a freezer unit having a plurality of walls defining a freezer interior, a first of the plurality of walls having an aperture therein;

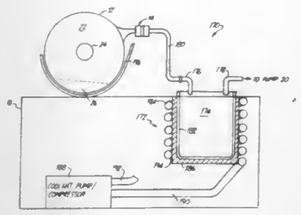
a housing defining a chamber suitable for receiving a specimen to be freeze dried, the housing being mounted to the first wall to extend through the aperture within the freezer interior, the housing having an opening therein;

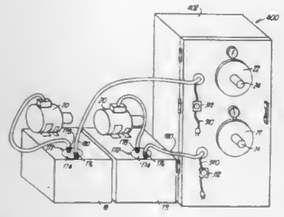
a lid engageable with the housing to seal the opening of the housing;

a condenser remote from the chamber and having an interior coupled for communication with the chamber;

a pump coupled to the chamber to lower pressure in the chamber;

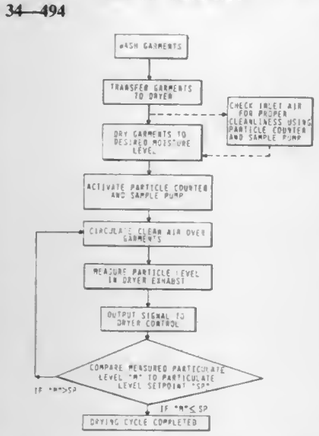
a heater disposed proximate the housing within the freezer unit; and





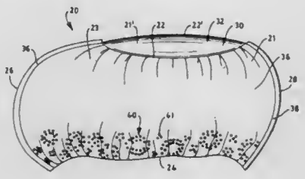
a thermally insulative covering layer disposed over the heater and the housing.

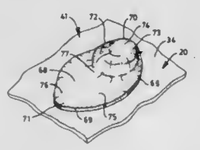
5,822,883
EXHAUST AIR PARTICULATE CONTAMINATION SENSING FOR TUMBLER DRYERS
Steven A. Horwitz, Bryan, Ohio, assignor to White Consolidated Industries, Inc., Cleveland, Ohio
Division of Ser. No. 760,050, Dec. 4, 1996, Pat. No. 5,709,040. This application Oct. 10, 1997, Ser. No. 949,159
Int. Cl.[6] F26B *3/00*
U.S. Cl. 34—494 **2 Claims**



1. A method for controlling the operation of a tumbler dryer to achieve a desired concentration of particulates associated with garments disposed in said dryer, said dryer comprising a rotatable drum for receiving said garments, a particle counter in communication with said drum, provisions for passing air through said drum, and a control unit having data storage provisions enabling one or more control parameters to be input and stored by said control unit, said method comprising:
placing said garments in said drum;
designating a first signal in said control unit representative of a desired concentration of particulates associated with said garments;
passing air through said drum and over said garments;
measuring concentration of particulates in said air by use of said particle counter;
generating a second signal representative of the measured particulate concentration;
comparing said second signal representing measured concentration of particulates in said air with said first signal representing desired particulate concentration; and
determining if said second signal is greater than said first signal and if so, then repeating at least said passing air step, and if not, then initiating a shut down sequence.

5,822,884
SLIP-RESISTANT SHOE COVER
Robert J. Roeder, Roswell, Ga., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Filed Jul. 11, 1996, Ser. No. 678,262
Int. Cl.[6] A43B *3/16;23/28*
U.S. Cl. 36—7.1 R **15 Claims**





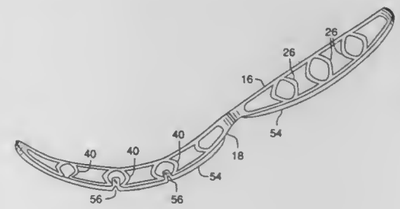
11. A shoe cover having portions thereof defining an opening and adapted to receive a sole of a shoe, the shoe cover comprising:
a pair of panels secured near an area defined by respective top and side edges with a pressure sensitive hot melt adhesive, and wherein portions of the respective side edges between the pressure sensitive hot melt adhesive and a bottom edge are ultrasonically bonded together, the shoe cover further including cleats secured to an outside surface of the shoe cover, some of the cleats being adapted to overlie the sole, wherein at least one cleat includes a first raised portion and a second raised portion, the second raised portion being thicker in cross-section than the first raised portion, wherein each of said first and second raised portions are positioned to both contact an adjacent surface when said shoe cover is being worn.

5,822,885
SHOE OUTSOLE ASSEMBLY
Marc R. Loverin, Arlington, Mass., assignor to SRL, Inc., Wilmington, Del.
Filed Feb. 10, 1997, Ser. No. 797,109
Int. Cl.[6] A43B *13/00;23/00*
U.S. Cl. 36—25 R **16 Claims**

1. A shoe comprising
a shoe upper defining a volume for enclosing a wearer's foot, and
an outsole assembly attached generally below said upper, said outsole assembly comprising
an outsole comprising of an outsole body of transparent material defining a water-impervious outsole bottom surface disposed for engagement with a walking surface when worn, an outsole upper surface disposed generally in opposition to said volume, and an outsole side surface extending peripherally about said outsole generally between said outsole bottom surface and said outsole top surface,
a grid member defining at least one aperture at said outsole upper surface, and
at least one article disposed within said at least one aperture, said at least one article disposed in said at least one aperture at said outsole upper surface being observable through said water-impervious outsole bottom surface of said outsole body of transparent material.

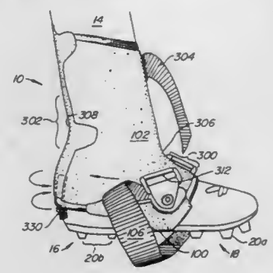


5,822,886
MIDSOLE FOR SHOE
Simon Luthi; Xavier Kälin, both of Lake Oswego, Oreg.; Wolfgang Scholz, Lonnerstadt, Germany, and Edgar Stüssi, Schlieren, Switzerland, assignors to Adidas International, BV, Netherlands
Continuation of Ser. No. 280,208, Jul. 25, 1994, Pat. No. 5,461,800. This application Oct. 25, 1995, Ser. No. 548,744
Int. Cl.[6] A43B *13/18*
U.S. Cl. 36—28 **39 Claims**



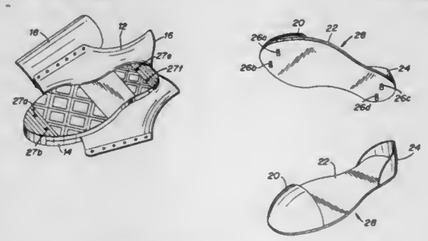
1. A midsole for an athletic shoe comprising:
(a) a heel section including a at least one transversely arranged heel tube;
(b) a forefoot section including at least one transversely arranged forefoot tube having a slit-shaped aperture extending a length of the tube at its bottom;
(c) a top layer extending over the heel and forefoot sections and a midfoot section of the midsole; and
(d) a bottom layer extending under the heel tubes, forefoot tubes and the midfoot section and being discontinuous at, at least one slit-shaped aperture.

5,822,887
OVER-THE-SHOE ATHLETIC SPAT
Gregory D. Turner, 5502 Tyler St., Sacramento, Calif. 95842
Continuation-in-part of Ser. No. 647,210, May 9, 1996, abandoned, which is a continuation of Ser. No. 243,067, May 16, 1994, abandoned, which is a continuation of Ser. No. 81,418, Jun. 22, 1993, abandoned. This application Jun. 6, 1997, Ser. No. 870,437
Int. Cl.[6] A43B *7/20;7/14;* **A61F** *5/00*
U.S. Cl. 36—89 **6 Claims**



1. The combination of a shoe and shoe support over a foot of an athlete comprising:
an athletic shoe having a sole for contact with ground and attached heel, toe, and ankle supporting shoe top overlying and attached to the sole for supported confinement of the foot of an athlete;
a spat for fitting under the sole and over the ankle supporting shoe top including;
a sole portion that fits over the sole between the sole and the ground;
a spat top portion attached to the sole portion that partially covers and fits over the ankle supporting top and sides of the athletic shoe, the spat top portion extending to the ankle supporting shoe adjacent the ankle of the wearer;
straps attached to the spat top portion and extending to a fastening disposition over the ankle of the athlete independent of ankle supporting shoe top for pulling on the sole portion in a stirrup like fashion, for pulling upward on the sole portion and through the sole portion on the athletic shoe at the sole to pull the athletic shoe to the athlete's foot to reinforce the foot supporting confinement of the wearer's foot within the athletic shoe.

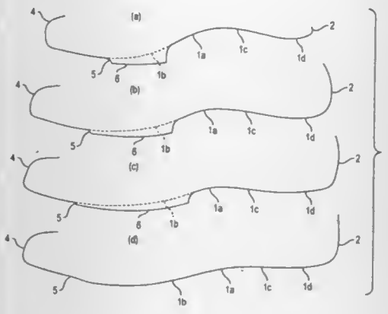
5,822,888
REVERSABLE SHOE WITH REMOVABLE MIDSOLE
Michael R. Terry, 1312 Graceland Av., Racine, Wis. 53403
Continuation of Ser. No. 584,979, Jan. 11, 1996, abandoned. This application Jun. 5, 1997, Ser. No. 869,315
Int. Cl.[6] A43B *3/24*
U.S. Cl. 36—100 **25 Claims**



1. A reversible shoe comprising:
a removable midsole insert having a toe end with a toe piece for covering the toes of a wearer;

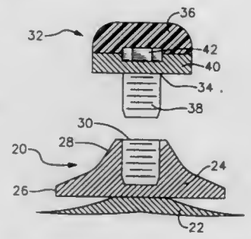
a base having a top side with a means for positioning the midsole thereon, a bottom side with a means for positioning the midsole thereon, a toe end, and a heel end;
first and second uppers secured to said base, said first upper having a first flap and a second flap; and
a closure associated with both of said uppers;
a tongue attached to said first upper between the first and second flaps;
wherein the midsole insert is positioned between said uppers.

5,822,889
BICYCLES SHOES
Yutaka Ueda, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan
Continuation of Ser. No. 595,985, Feb. 6, 1996, abandoned. This application Aug. 26, 1997, Ser. No. 921,755
Claims priority, application Japan, Feb. 10, 1995, 7-045110
Int. Cl.[6] A43B *5/14*
U.S. Cl. 36—131 **2 Claims**



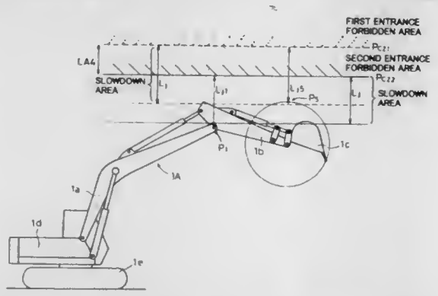
1. A bicycle shoe comprising:
a sole portion (**1**) including:
an inflection point (**1***a*) substantially in a longitudinal central portion of the sole;
an inflection point from portion (**1***b*) in front of the inflection point (**1***a*), the inflection point front portion (**1***b*) having a convex shape; and
an inflection point back portion (**1***c*) behind the inflection point (**1***a*), the inflection point back portion (**1***c*) having a concave shape;
a heel portion (**2**) which is continuously and smoothly connected to a back end portion of the sole portion (**1**), the heel portion (**2**) having convex shape for fitting to a heel;
left and right side portions (**3**) which are smoothly and continuously connected to corresponding left and right side portions of the sole portion (**1**) and to the heel portion (**2**); and
a toe portion (**4**) which is smoothly and continuously connected to front end portions of the left and right side portion (**3**) and to a front end portion of the sole portion (**1**), the toe portion (**4**) extending upwardly and rearwardly from the front end portion of the sole portion (**1**) and terminating at a rear end that is spaced apart from the sole portion (**1**) so that the toe portion (**4**) forms a cup shape having a contour line that is closed within a lateral cross section thereof and which has a convex shape;
wherein the sole portion (**1**), the heel portion (**2**), the left and right side portions (**3**), and the toe portion (**4**) are formed as one piece;
wherein the inflection front portion (**1***b*) includes a coupling portion (**8**) for attachment of a coupler so that the bicycle shoe may be coupled to a bicycle pedal; and
wherein the coupling portion (**8**) includes first and second elongated openings (**9**).

5,822,890
SHOE WITH REPLACEABLE TRACTION NUBS
Michael Raymond Beitel, and Leslie Joan Beitel, both of 86 Pereverzoff Place, Prince Albert, Saskatchewan, Canada, S6X-1B6
Filed Sep. 15, 1997, Ser. No. 929,411
Int. Cl.[6] A43B *15/16*
U.S. Cl. 36—134 **4 Claims**



2. A shoe with replaceable traction nubs for allowing proper traction to be maintained throughout a life of the shoe comprising, in combination:
a shoe comprised of an upper portion and a sole portion, the sole portion being disposed on a lower surface of the upper portion, the sole portion having a plurality of openings formed therein in a spaced relationship;
a plurality of anchors secured within the plurality of openings in the sole portion;
a plurality of traction nubs removably secured to the plurality of anchors; and
a tool for installing and removing the plurality of traction nubs with respect to the plurality of anchors;
wherein each of the traction nubs has a lower portion and an upper portion, the lower portion including a threaded lower end and a circular upper end, the threaded lower end coupling with the plurality of anchors, the circular upper end having a hexagonal shaped recess formed therein, the upper portion of the nubs comprising a soft rubber material disposed over the circular upper end of the lower portion.

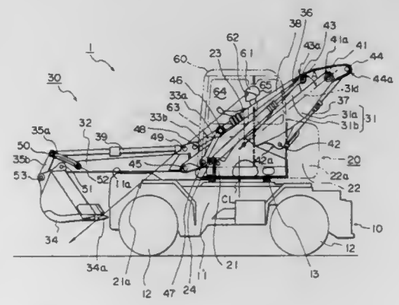
5,822,891
WORK AREA LIMITATION CONTROL SYSTEM FOR CONSTRUCTION MACHINE
Kazuo Fujishima, Ibaraki-ken; Hiroshi Watanabe, Ushiku, and Masakazu Haga, Ibaraki-ken, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan
Filed Dec. 18, 1996, Ser. No. 768,471
Claims priority, application Japan, Dec. 27, 1995, 7-341448
Int. Cl.[6] E02F *5/02*
U.S. Cl. 37—348 **12 Claims**



1. A work area limitation control system for a construction machine, said control system being equipped on the construction machine comprising a machine body, a multi-articulated front device made up of a plurality of front members including first and

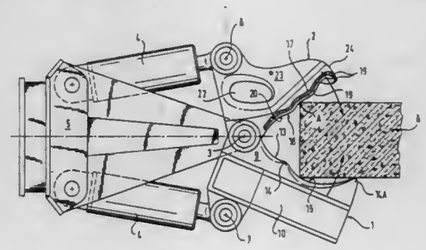
second front members connected to said machine body, a plurality of hydraulic actuators for driving said plurality of front members, a plurality of operating means for instructing operations of said plurality of front members, a plurality of flow control valves driven in accordance with operation signals input from said plurality of operating means for controlling flow rates of a hydraulic fluid supplied to said plurality of hydraulic actuators, said control system operating to cease supply of the hydraulic fluid to said hydraulic actuators to stop said front device when said front device reaches a preset first entrance forbidden area, wherein said control system comprises:
entrance forbidden area setting means for setting a second entrance forbidden area positioned closer to said front device than said first entrance forbidden area, and
first operation signal modifying means for modifying the operation signals input from said operating means for said first and second front members such that immediately before a first monitoring point set on said second front member enters said second entrance forbidden area, said first front member is stopped, but said second front member is allowed to move into said second entrance forbidden area toward said first entrance forbidden area.

5,822,892
WORKING VEHICLE
Youjirou Ohbatake, Uji, and Hidetoshi Sasaki, Kawasaki, both of Japan, assignors to Komatsu Ltd., Tokyo, Japan
PCT No. PCT/JP95/02252, § 371 Date May 5, 1997, § 102(e) Date May 5, 1997, PCT Pub. No. WO96/14476, PCT Pub. Date May 17, 1996
PCT Filed Nov. 6, 1995, Ser. No. 836,527
Claims priority, application Japan, Nov. 8, 1994, 6-300376
Int. Cl.[6] E02F *3/38*
U.S. Cl. 37—397 **19 Claims**



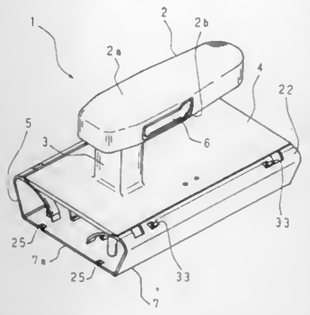
1. A working vehicle comprising:
a base carrier, said base carrier including a base frame having an upper surface;
an upper rotary body rotatably mounted on said base carrier;
a working unit attached to said upper rotary body;
an operator's cab mounted on said upper rotary body;
wherein said working unit includes a first boom, a second boom, an arm, and a bucket;
wherein a first end portion of said first boom is pivotally attached to said upper rotary body;
wherein a first end portion of said second boom is pivotally attached to a second end portion of said first boom;
wherein a first end portion of said arm is pivotally attached to a second end portion of said second boom;
wherein said bucket is attached to a second end portion of said arm;
wherein said first boom includes a boom storage section for storing said second boom inside said first boom; and
wherein said working vehicle has a storage position for said first and second booms and said arm such that at a time of storage said first and second booms are positioned such that said second boom is stored in said boom storage section;
an arm hydraulic cylinder having first and second end portions, said first end portion of said arm hydraulic cylinder being pivotally attached to an intermediate portion of said second boom;
a first arm link having first and second end portions, said first end portion of said first arm link being pivotally attached to said second end portion of said second boom; and
a second arm link having first and second end portions, said first end portion of said second arm link being pivotally attached to said first end portion of said arm; and
wherein said second end portion of said first arm link is pivotally attached to said second end portion of said second arm link and to said second end portion of said arm hydraulic cylinder.

5,822,893
CONCRETE CRUSHING TONGS
Thomas Ostermeyer, Biberach, Germany, assignor to Schilling-Ostermeyer Maschinenbau GmbH, Oggelsbeuren, Germany
PCT No. PCT/EP95/01191, § 371 Date Jan. 3, 1997, § 102(e) Date Jan. 3, 1997, PCT Pub. No. WO96/02708, PCT Pub. Date Feb. 1, 1996
PCT Filed Mar. 30, 1995, Ser. No. 765,519
Claims priority, application Germany, Jul. 13, 1994, 44 24 740.0
Int. Cl.[6] E02F *3/96*
U.S. Cl. 37—406 **11 Claims**



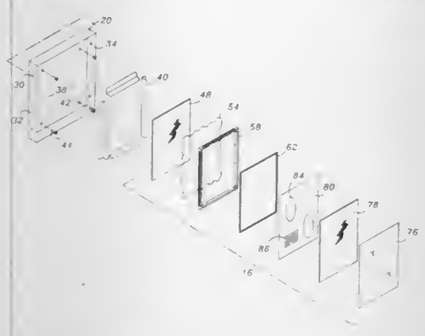
1. Concrete crushing tongs for cutting concrete parts having a reinforcement, said concrete crushing tongs comprising:
first and second jaws;
a pivot joint for hingedly connecting said first and second jaws; and
means for providing a pivoting movement of said jaws to open and close relative to each other,
said first jaw having a frame-shaped first base body, including two side portions, a joint-side portion, and a front portion opposite to said joint-side portion, said side portions, joint-side portion and front portion defining an interior space which is formed to flare out in a direction of a closing movement of said jaws toward each other,
at least one of said two side portions, joint-side portion and front portion, having a closed cross-section enclosing a hollow space,
said first jaw further having a first cutting means comprising a first cutting edge and a first concrete crushing portion projecting beyond said first cutting edge towards said second jaw,
said second jaw having a second cutting means comprising a second cutting edge and a second concrete crushing portion projecting beyond said second cutting edge towards said first jaw,
whereby when said pivoting means forces said jaws to close together said first and second crushing portions crush said concrete part before said first and second cutting edges cooperate to cut said reinforcement, and said second jaw enters said interior space to push the crushed concrete material therethrough.

5,822,894
INVERTIBLE IRONING BOARD
Yasuhiro Ohsugi, Hiroshima, Japan, assignor to NKG Co., Ltd., Hiroshima, Japan
Filed Oct. 17, 1996, Ser. No. 730,848
Claims priority, application Japan, Oct. 28, 1995, 7-012799 U; Oct. 28, 1995, 7-012800 U; Oct. 28, 1995, 7-315722; Jan. 8, 1996, 8-000948; Jan. 17, 1996, 8-006014
Int. Cl.[6] D06F *81/02;85/00*
U.S. Cl. 38—136 23 Claims



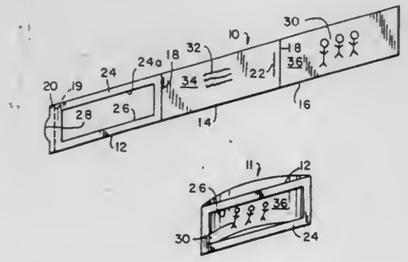
1. An ironing board, comprising;
a first pressing portion and a second pressing portion having pressing surfaces to be brought in contact with an ironed substance;
a pole supporting the first and the second pressing portions at either end thereof;
the first pressing portion and the second pressing portion having their respective pressing surfaces on the side opposite to the pole;
the first pressing portion having a pressing surface of smaller area than that of the second pressing portion, and the first pressing portion including supporting legs extending laterally outward of said first pressing portion for supporting the ironing board when the second pressing portion is in use.

5,822,895
ARCHIVAL VISUAL MEMORIAL
Bruce D. Risdal, 420 Cedar St. No. 31, Story City, Iowa 50248
Filed Nov. 15, 1995, Ser. No. 558,177
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—124.5 17 Claims



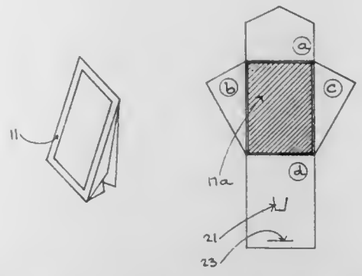
1. A visual memorial system for long term display of an archival print comprising:
(a) a frame having an interior and an exterior;
(b) a visually transparent window secured to said frame;
(c) a pigment-based print depicting a representation substantially similar to a photo sensitive visual representation, said print being provided in said interior of said frame;
(d) a substantially non-oxidizing environment provided in said interior of said frame;
(e) a tube having an interior and an exterior, said tube being provided with a plurality of perforations communicating said interior of said tube to said exterior of said tube;
(f) wherein said print is provided with a perimeter;
(g) wherein said tube is substantially provided around said perimeter of said print;
(h) a desiccant provided within said tube wherein said desiccant is larger than said perforations; and
(i) means for preventing transfer of oxygen from said exterior of said frame to said interior of said frame.

5,822,896
DIORAMIC GREETING CARD
Jeffrey Milstein, 2600 Rte. 212, Woodstock, N.Y. 12498
Filed Aug. 21, 1996, Ser. No. 701,310
Int. Cl.[6] G09F *1/00*
U.S. Cl. 40—124.07 5 Claims



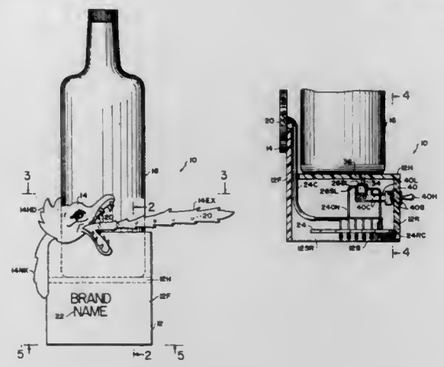
1. A flat blank for constructing a dioramic display card comprising:
first, second and third panels, said panels having the same width, said first panel foldably connected to said second panel along a first common fold line, said second panel having a slit, said second panel foldably connected to said third panel along a second common fold line, said first panel foldably connected to a tab along a third common fold line, said first, second and third panels and said tab being connected lengthwise along said first, second and third fold lines;
wherein said second and third panels are substantially rectangular and have substantially the same dimensions;
wherein said first panel has a length dimension somewhat smaller than that of said second and third panels and is formed with a cutout window;
wherein each said panels have a front and a back side with said front sides and said back sides being respectively contiguous when said blank is flat, with said third panel having a decorative indicia on its front side;
said blank being foldable along said fold lines and by insertion of said tab into said slit, to form a dioramic display card with said decorative indicia being viewable through said window.

5,822,897
COMBINATION GREETING CARD PHOTOGRAPH FRAME AND ENVELOPE
Michelle Ertzan, 1595 Viewsite Dr., Los Angeles, Calif. 90069
Filed Sep. 6, 1996, Ser. No. 708,554
Int. Cl.[6] G09F *1/00*
U.S. Cl. 40—124.09 11 Claims
1. A self contained card, envelope and stand comprising:



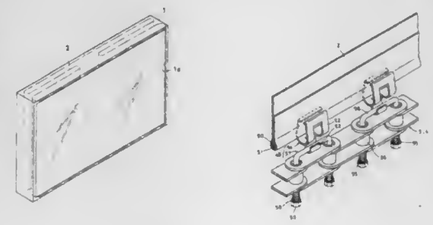
cover stock paper cut using a predetermined pattern forming five sections, a first one of said sections having a rectangular shape, a second one of said sections adjacent to one edge of said first section, said second section having a rectangular shape, a third one of said sections adjacent to one edge of said second section, said third section having a triangular shape, a fourth one of said sections adjacent to a second edge of said second section, said fourth section having a triangular shape a fifth one of said sections adjacent to a third edge of said second section, said fifth section having five sides, two of which are parallel to each other, one of which is the third edge of the second section, and two of which join said two parallel sides and meet at an obtuse angle to form a point, said cover stock paper having scored lines extending the length of each of said edges, wherein said first section includes a slot parallel to said one edge of said first section and a tongue shaped cutout portion, said point being insertable into said slot for forming a stand and being insertable into said cutout portion for forming an envelope;
wherein when said cover stock paper is assembled into said stand, the point of the fifth section is inserted into the slot of the first section, the third section and fourth section are folded so as to be located between said second section and first section.

5,822,898
POINT OF SALE DISPLAY UNIT
Kenneth L. Weissleder, 4909 Featherbed La., Siesta Key, Fla. 34242
Filed Oct. 4, 1994, Ser. No. 317,926
Int. Cl.[6] G09F *13/00*
U.S. Cl. 40—442 30 Claims



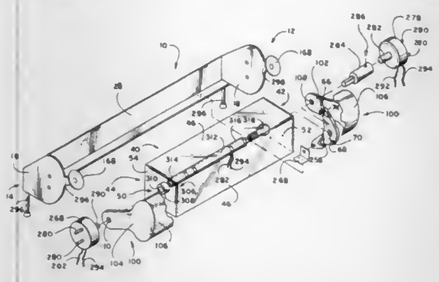
1. A point of sale unit comprising:
(A) a product;
(B) a platform adapted to support said product, said platform having a horizontal support panel, a front panel having a portion extending vertically a substantial distance above said horizontal support panel, and at least one side panel extending below the horizontal support panel;
(C) a pictorial sculpture mounted on said vertically extending portion of said front panel having a theme related to said product, said pictorial sculpture extending above an upper edge of said vertically extending portion such that said product is visible behind the pictorial sculpture when viewed from the front of the point of sale unit;
(D) a plurality of lights mounted along a front surface of said pictorial sculpture and above said upper edge of said vertically extending portion of said front panel; and
(E) light flashing means for repeatedly flashing each of said plurality of lights in a predetermined sequence.

5,822,899
ADVERTISEMENT DISPLAY DEVICE
Itsuro Yonenaga, 33-10, Tonouchi-cho 3-chome, Amagasaki-shi, Hyogo, Japan
Continuation-in-part of Ser. No. 672,655, Jun. 28, 1996, abandoned. This application Aug. 4, 1997, Ser. No. 905,394
Claims priority, application Japan, Jul. 3, 1995, 7-006666; Apr. 2, 1996, 8-079909
Int. Cl.[6] G09F *11/12*
U.S. Cl. 40—472 3 Claims



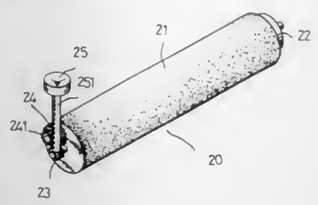
1. An advertisement display device comprising:
a pair of endless chains each comprising links coupled together by tubular pins,
a plurality of pairs of sprockets supporting said endless chains so that said endless chains extend substantially along two opposite side edges of a display area and are folded at least twice behind said display area,
a sprocket driving means for driving at least one pair of said sprockets, said pair of said sprockets engaging said pair of endless chains, respectively,
an endless sheet provided between said endless chains so as to extend along said endless chains, and
a plurality of engaging means provided on said respective endless chains and engaging both side edges of said endless sheet,
each of said engaging means comprising an engaging piece coupled to each of the side edges of said endless sheet and having a hook, an engaging rod comprising a pair of leg portions extending through said tubular pins coupling said links of said endless chains and having free ends protruding from a surface of said respective chain remote from said engaging piece, and a bar portion coupling said leg portions together and detachably coupled to said hook of said engaging piece, nuts mounted on said free ends of said leg portions, and coil springs each mounted around the respective one of said leg portions and having one end thereof engaging said surface of said respective chain and the other end engaging said nut mounted on the free end of each of said leg portions for elastically supporting said sheet.

5,822,900
VEHICLE SIGNALLING DEVICE WITH TRIGGER GRIP OPERATION
William C. Armstrong, P. O. Box 3191, St. Augustine, Fla. 32085
Filed Jul. 19, 1996, Ser. No. 684,593
Int. Cl.[6] G09F *11/02*
U.S. Cl. 40—473 **33 Claims**



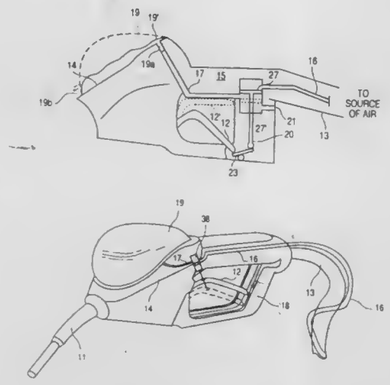
1. A rotatable, vehicle-signalling device, comprising:
a frame having an elongated brace, a frame first end wall, a frame second end wall and a longitudinal axis disposed between the frame first and second end walls;
an elongated, polygonal drum for displaying a predetermined message on each side thereof, the drum having a drum first end wall and a drum second end wall, the drum first and second end walls operatively and rotatably mounted to the frame first and second end walls, respectively, along the longitudinal axis and each side of the drum having indicia for conveying the predetermined message for viewing from outside of a vehicle;
a ratchet wheel mounted to the drum first end wall;
first means being operatively connected to the ratchet wheel for rotating the drum to display at least one side of the drum to a viewer; and
a mounting means engaging the frame for mounting the frame to the vehicle.

5,822,901
PICTURE DISPLAY ASSEMBLY
Yu-Jung Fang, 58, Ma Yuan West St., Taichung, Taiwan
Filed Jul. 26, 1997, Ser. No. 910,586
Int. Cl.[6] G09F *11/00;11/30*
U.S. Cl. 40—476 **4 Claims**



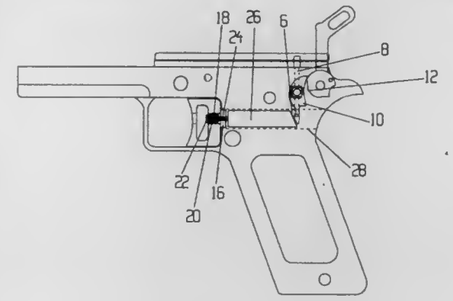
1. A picture display assembly comprises:
a hollow base seat,
a main frame coupling with the hollow base seat,
a transparent plate covering a front face of the main frame,
a rear plate covering a rear face of the main frame,
a separation plate disposed in a front interior of the main frame,
a display chamber defined between the transparent plate and the separation plate,
an elastic plate disposed in a rear interior of the main frame,
a storage chamber defined between the separation plate and the elastic plate,
an upper plate disposed in an upper interior of the main frame,
a slit defined between the separation plate and the upper plate,
a switch plate disposed on an upper end of the upper plate,
a swivel button disposed on an end of the switch plate,
a rolling device disposed in a top interior of the main frame,
a roller set disposed in a middle interior of the main frame,
the rolling device having a rolling cylinder, a volute spring disposed on a first end of the rolling cylinder, an axle gear disposed on a second end of the rolling cylinder, and a transmission gear disposed on the second end of the rolling cylinder and engaging with the axle gear,
the roller set having a first roller passing through the main frame, a second roller passing through the main frame and parallel to the first roller, and a belt surrounding a first end of the first roller and a first end of the second roller,
a shaft gear disposed on a second end of the first roller,
the hollow base seat having a base plate, a U-shaped frame disposed on the base plate, and a post disposed on the U-shaped frame, and
the post having an upper serrated portion engaging with the shaft gear.

5,822,902
DEVICE FOR DISPLAYING INFORMATION ON A FUEL PUMP FILLER GUN
Stein Alvern, Oslo, Norway, assignor to Alvern Norway A/S, Norway
Filed Jul. 19, 1996, Ser. No. 684,197
Int. Cl.[6] B67D *5/00*
U.S. Cl. 40—584 **13 Claims**



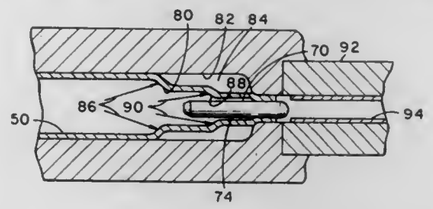
7. A filler gun for a fluid pump of a kind used in vehicle service stations, the filler gun having a trigger to control the flow of fluid, the combination comprising:
a removable inflatable balloon-shaped display apparatus bearing thereon an information display, said display apparatus secured to said filler gun at a location such that said information display is visible upon inflation of said balloon-shaped display,
and means for inflating said display apparatus concurrently with the flow of fluid from the filler gun.

5,822,903
EXTERNALLY ADJUSTABLE SLIDE TRIGGER ASSEMBLIES FOR HANDGUNS
James Jefrey Davis, Sr., Trion, Ga., assignor to Craig T. Luttes, Sparks, Nev.
Filed Aug. 8, 1997, Ser. No. 908,883
Int. Cl.[6] F41A *19/00*
U.S. Cl. 42—69.01 **11 Claims**



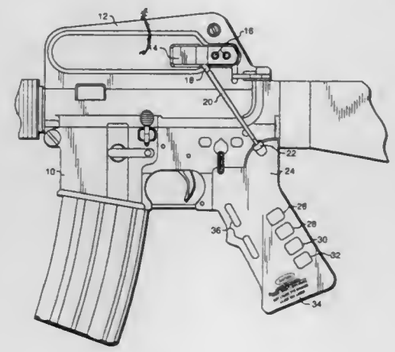
1. A firearm trigger mechanism comprising a trigger housing, a trigger slidingly mounted within said trigger housing, said trigger having a means to limit forward travel, said trigger having a hole exiting said trigger, said hole containing a drive means, said drive means engaging a firing mechanism linkage, said firing mechanism linkage having at one end an engagement means for engaging said drive means, said drive means being accessible externally of said trigger housing for effecting movement of said firing mechanism linkage relative to said trigger.

5,822,904
SUBSUOIC AMMUNITION
Harold F. Beal, Rockford, Teno., assignor to Cove Corporation, Knoxville, Tenn.
Filed Mar. 14, 1997, Ser. No. 815,003
Int. Cl.[6] F41A *21/12*
U.S. Cl. 42—76.01 **2 Claims**



1. The combination of a gun and a gun ammunition cartridge for the leveling of the buildup of gas pressure within said gun ammunition cartridge upon the firing of the cartridge while contained in the firing chamber of the gun comprising,
a gun having a firing chamber and a barrel which includes a breech end portion and a firing chamber disposed adjacent said breech end portion of said barrel and including a generally cylindrical body portion having an inner wall and a tapered shoulder transition portion between and connecting said body portion of said firing chamber and said breech end portion of said barrel,
a gun ammunition cartridge in said firing chamber including an elongated case having a closed end, a generally cylindrical main body portion, an open leading end and at least first and second tandem stepped down stages adjacent said leading end, each of said stepped down stages including a generally cylindrical body portion having an outer wall and a tapered shoulder transition portion having an outer wall,
said tapered shoulder transition portion of said first stepped down stage being disposed between and connecting said body portion of said first stepped down stage and said body portion of said second stepped down stage and
said tapered shoulder transition portion of said second stepped down stage being disposed between and connecting said body portion of said second stepped down stage and said main body portion of said cartridge,
said body portion of said second stepped down stage having a diameter greater than a diameter of said body portion of said first stepped down stage and lesser than a diameter of said body portion of said firing chamber,
whereby there is defined an open continuous annular space between said inner wall of said firing chamber adjacent said breech end of said barrel and said outer walls of said body portion and tapered shoulder transition portion of said second stepped down stage,
an elongated projectile within said leading end of said case,
said projectile extending into said case to a terminus inwardly of said case a distance not less than about coterminal with said second tapered shoulder transition portion of said case, whereby there is defined a continuous annular space between the projectile and the generally cylindrical body portion and tapered shoulder transition portion of the second tandem stepped down stage,
an inner surface of said body portion of said first stepped down stage encircling at least a portion of the length dimension of said elongated projectile to thereby retain said projectile disposed in said leading end of said case prior to the firing of said cartridge,
whereby said tapered shoulder transition portion of said second stepped down stage is expandable into said open continuous annular space upon the firing of said cartridge to absorb at least a portion of the energy accompanying any pressure spikes associated with the firing of said cartridge.

5,822,905
FIREARM HAND GRIPS FOR CONTROLLING AN ELECTRONIC MODULE
James W. Teetzel, 14 Stratham Green, Stratham, N.H. 03885
Continuation of Ser. No. 303,860, Sep. 9, 1994, Pat. No. 5,584,137, which is a continuation-in-part of Ser. No. 200,204, Feb. 23, 1994, Pat. No. 5,481,819. This application Dec. 14, 1996, Ser. No. 764,235
Int. Cl.[6] F41G *1/35;1/36*
U.S. Cl. 42—103 **20 Claims**



1. A hand grip control apparatus for a firearm having left and right hand grips attachment members, said hand grip control apparatus comprising:

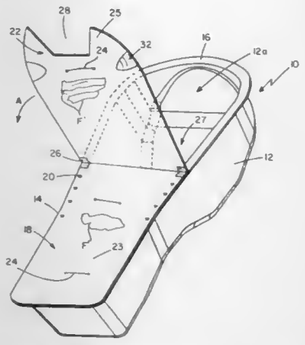
an electronic module having a plurality of modes of operation that is dimensioned to be attached to said firearm;

left and right hand grips having interior and exterior surfaces, dimensioned and sized to be attached respectively to said left and right hand grips attachment members of said firearm;

at least of one said left and right hand grips having a plurality of switches mounted on the exterior surface of said grip, wherein said plurality of modes of operation of said electronic module are controlled by said plurality of switches; and

a connection for electronically connecting said plurality of switches to said electronic module, said connection comprising a flexible circuit in at least one of said hand grips, said flexible circuit being adjacent to, and corresponding in size to, the interior surfaces of said hand grip.

5,822,906
PIT BLIND FOR INTERACTING WITH WILDLIFE AND METHOD OF INSTALLATION AND USE THEREOF
Patrick J. Ward, Lock Haven, Pa., assignor to North Central Outfitters, Lock Haven, Pa.
Filed Sep. 12, 1996, Ser. No. 712,693
Int. Cl.[6] A01M *27/00; E04H 15/00;15/32*
U.S. Cl. 43—1 **25 Claims**



1. A pit blind for placement within an open hole dug in the ground to facilitate a user's interaction with nature, comprising:

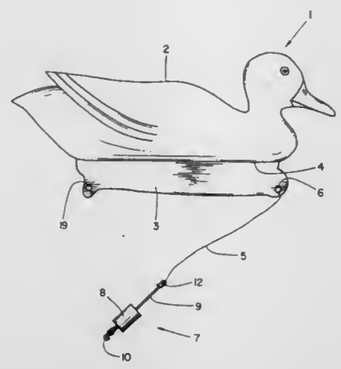
an elongate shell for lining an inner surface of the hole and being formed with an upwardly directed opening of a sufficient size to enable the user's upper torso to extend therethrough,

a shell cover adapted to cover said upwardly directed opening to conceal the user; and

a shell lining made of thermally insulating material and adapted to cover the bottom of the shell.

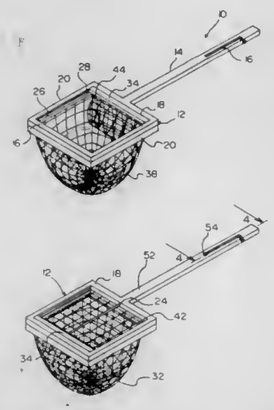
5,822,907
DECOY WEIGHT
Cordell Lukey, 2283 Hurricane Rd. R.R. #2, Welland, Ontario, Canada, L3B 5N5
Filed Feb. 20, 1996, Ser. No. 603,713
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—3 **2 Claims**

1. A decoy and a decoy weight assembly for attachment to a decoy having a stabilizing fin having a front and rear end, said decoy weight assembly comprising a short elasticized cord having hook means attached to one end of said cord and the other end of said cord attached to a long string attached to the front end of the stabilizing fin of the decoy and a cylindrical weight having a hole centrally disposed through its longitudinal axis through which said elasticized cord is passed to slideably retain the weight on said cord, wherein said hook means is adapted, when the string is wrapped around the stabilizing fin of the decoy for transport or



storage, to be inserted in a hole at the back of the stabilizing fin so that the decoy weight assembly is held in place under tension so the weight doesn't come loose, rattle or chip paint from as decoy wherein the end of the hole through the weight adjacent the hook means is enlarged so that the weight will slide over at least part of said hook means.

5,822,908
FISH NETTING DEVICE
Anthony P. Blanchard, 412 Orchard St. W., St. Clair, Mich. 48079
Filed Feb. 7, 1997, Ser. No. 796,936
Int. Cl.[6] A01K *77/00*
U.S. Cl. 43—11 **1 Claim**



1. A new and improved fish netting device for catching fish in an aquarium comprising in combination:

a generally rectangular frame member **12** with a handle **14**, the frame member having a front portion **16**, a rear portion **18** and a pair of side portions **20** therebetween, the rear portion of the frame having an opening **24** therein and centrally aligned with the handle, the frame member having an interior periphery **26**, the interior periphery of the pair of side portions **20** each having an elongated track **28** therein with the elongated track **28** being extended from the front portion to the rear portion;

a first net member **32** being composed of water permeable material intertwined and defining a pocket configuration when interconnected to the frame member;

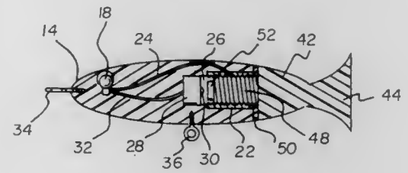
a linear rider bracket **34** having a pair of end portions **36**, the rider bracket being positioned within the frame **12** with each end portion **36** positioned within the track **28** of one of the

pair of side portions **20**, the rider bracket **34** being parallel to the front and rear portion of the frame, the rider bracket capable of sliding within said tracks between positions adjacent the rear portion and the front portion of the frame, the linear rider bracket being formed from a self-lubricating plastic;

a second net member **38** being composed of water permeable material intertwined, the second net member having a first portion **42** interconnected with the rear portion **18** of the frame, the second net member **38** having a second portion **44** interconnected with the rider bracket **34**, the second net member capable of forming a pocket cover when the rider bracket being positioned adjacent the front portion; and

the handle **14** having a guide slot **46** and a channel **48**, the guide slot being within a top side **52** of the handle and opening into the channel, the channel being extended from the guide slot to the opening of the frame, a lever for moving the rider bracket back forth being positioned within the channel, said lever **54** positioned within the guide slot, said lever connected to an elastic member **56** and a push **58** rod, which are mounted in said channel and connected to said rider bracket for controlling the movement of said rider bracket.

5,822,909
FISHING LURE WITH ILLUMINATING EYES
Curt A. Kalagian, 175 Alverson Rd., Mobile, Ala. 36608
Filed Nov. 7, 1996, Ser. No. 746,170
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—17.6 **1 Claim**

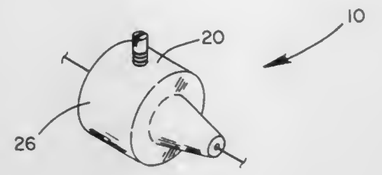


1. A fishing lure with illuminating eyes for improving visibility of the lure for attracting various varieties of fish comprising, in combination:

a head portion formed of casted acrylic material having a generally cylindrical configuration, the head portion having an arcuate first end and a planar second end, the head portion having a pair of LED's secured thereto inwardly of the arcuate first end and extending therefrom for defining eyes, the planar second end having a recess extending inwardly thereof, the recess having a threaded metallic insert disposed therein, the metallic insert having wiring **24** extending therefrom to couple with the pair of LED's, the head portion having a chamber formed therein inwardly of the recess, the chamber having a battery disposed therein, the battery having an electrical contact on an outer surface thereof, the battery having wiring coupled with the pair of LED's, the head portion having a first eyelet **34** secured to the arcuate first end and extending essentially in a collinear relationship therewith, the head portion having a second eyelet **36** extending downwardly from an intermediate portion thereof; and

a tail portion formed of casted acrylic material and comprised of a body and a thin planar tail with arcuate side edges, the body having a planar interior end **46**, a threaded rod **48** extending from the planar interior end, the threaded rod having a rubber gasket **50** removably coupled thereto, the threaded rod engaging the threaded metallic insert for coupling of the tail portion to the head portion, the threaded rod having an electrical contact **52** disposed on a free end thereof, the electrical contact selectively engaging the electrical contact of the battery for illumination of the pair of LED's.

5,822,910
FISHING LINE TENSIONING DEVICE
I. W. Shewmake, 3641 E. Milton Rd., Tucson, Ariz. 85706
Filed Oct. 2, 1997, Ser. No. 942,949
Int. Cl.[6] A01K *97/00*
U.S. Cl. 43—25 **5 Claims**



1. A fishing line tensioning device comprising in combination:

a cylindrical housing having a first end, a second end, and an outer periphery, a central bore formed through the cylindrical housing from the first end to the second end, a radial bore interconnecting the central bore and the outer periphery of the cylindrical housing, the radial bore being threaded and having a lower end proximate to the central bore and an upper end proximate to the outer periphery of the cylindrical housing, a conical aperture formed within the second end of the cylindrical housing;

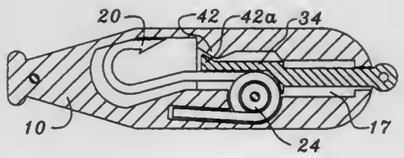
a threaded plunger threadably interconnected to the radial bore of the cylindrical housing, the threaded interconnection allowing the plunger to be adjustably positioned within the radial bore, a nylon ball positioned at the lower end of the radial bore, the threaded plunger functioning to adjust the position of the ball within the radial bore;

a conical line guide having a first base end and a second apex end, a central bore interconnecting the first and second ends of the conical line guide, the first base end interconnected to the conical aperture of the cylindrical housing;

a fishing pole having a length, a number of eyelets formed along the length of the fishing pole, the conical line guide positioned within one of the eyelets of the fishing pole;

a length of fishing line adapted to be threaded through the first end of the cylindrical housing and through the conical line guide, the threaded plunger functions to place the nylon ball in contact with the fishing line to provide a sufficient amount of tension within the line.

5,822,911
DUAL-USE FISHING LURE
Clifford W. Cox, P.O. Box 7000, Texarkana, Tex. 75505
Continuation-in-part of Ser. No. 521,136, Aug. 29, 1995, abandoned. This application Apr. 8, 1997, Ser. No. 835,507
Int. Cl.[6] A01K *83/02;85/02*
U.S. Cl. 43—37 **5 Claims**



1. A dual-use fishing lure molded in two sections joined to form a whole, comprising:

a lure body, said lure body having in a forward portion thereof a trigger rod tube and a trigger rod slidably disposed in said trigger rod tube;

said lure body having a latching blade cavity with a latching blade disposed therein, said latching blade integral with said trigger rod and said latching blade being flexible in a midsection thereof;

friction ridge on a rearward portion of said latching blade, said friction ridge being triangular in cross section and having a latching surface angled to an axis of said trigger rod, said latching surface engaging a substantially parallel interior surface of said lure body to hold said at least one hook in said retracted position;

said lure body having a friction ridge release cavity to allow flexing of said latching blade;

at least one hook having a barbed end, an anchor arm end, and a spring coil in a central portion thereof, said at least one hook having a retracted position and an extended position;

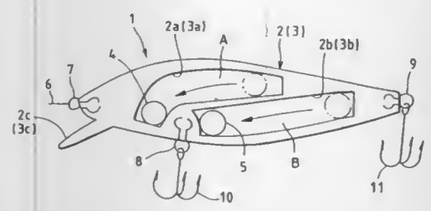
at least one hook support post encircled by said spring coil;

said lure body having a hook cavity for receiving said at least one hook in said retracted position;

said lure body having at least one slotted opening through which said at least one hook extends when in said extended position; and

said lure body having at least one anchor arm cavity therein to receive said anchor arm end of said at least one hook, said anchor arm and said barbed end being disposed on opposite sides of said hook support post.

5,822,912
LURE WITH STABILIZED MOVEMENT
Seiji Kato, Ishikawa, and Hisayuki Tanaka, Toyko, both of Japan, assignors to Daiwa Seiko, Inc., Tokyo, Japan
Continuation of Ser. No. 325,088, Oct. 17, 1994, Pat. No. 5,561,938. This application Feb. 15, 1996, Ser. No. 601,872
Claims priority, application Japan, Oct. 20, 1993, 5-061463; Dec. 6, 1993, 5-339677
The portion of the term of this patent subsequent to Oct. 17, 2014, has been disclaimed.
Int. Cl.[6] A01K *85/01*
U.S. Cl. 43—42.22 **14 Claims**



1. A lure comprising:

a lure body defining a front side and a rear side opposite from said front side with respect to a fishhook attaching section;

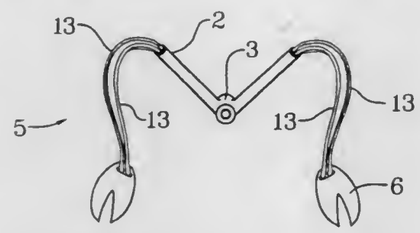
a plurality of weights accommodated in said lure body and movable in a longitudinal direction of said lure body;

a first movement guide section for guiding a first group of said weights from said rear side toward said front side to position said first group of said weights in the vicinity of said fishhook attaching section;

a second movement guide section for guiding a second group of said weights from said rear side toward said front side to position said second group of said weights in the vicinity of said fishhook attaching sections;

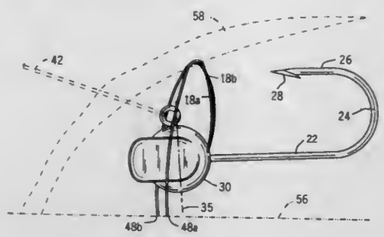
wherein said first group of said weights and said second group of said weights are guided by said first and second movement guide sections to respective different positions with respect to said longitudinal direction.

5,822,913
FISHING LURE ASSEMBLY
Richard Lau, 2723 Connecticut Ave., Pittsburgh, Pa. 15216
Filed Jan. 26, 1998, Ser. No. 13,255
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42 **20 Claims**



1. A fishing lure comprising a pair of arms configured to simulate the belligerent position of the raised upper arms and suspended lower arms of a crustacean and means for attaching said upper arms to a jig or other device proximate to a hook.

5,822,914
WEEDLESS FISHING JIG WITH SIDE-TO-SIDE ACTION
John E. Tadych, Franklin, Wis., assignor to American Building Restoration Products, Inc., Franklin, Wis.
Filed Sep. 12, 1996, Ser. No. 712,858
Int. Cl.[6] A01K *91/00;85/00*
U.S. Cl. 43—42.39 **28 Claims**



1. A fishing lure comprising:

a hook member having a shank and terminating in a hook portion extending laterally from the shank;

a head from which the shank extends, wherein the hook portion extends in a first direction relative to the head;

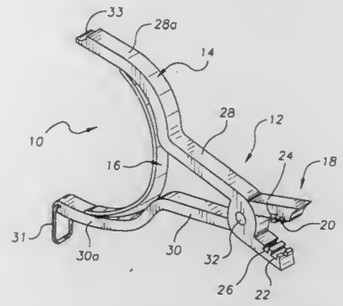
an attachment eye interconnected with the head to provide a point of connection to a fishing line; and

a pair of resilient spring arms extending outwardly from the head in opposite directions, each spring arm having a first end attached to the head and a second end extending in a second direction opposite the first direction and disposed below the head, wherein the spring arm second ends are located on either side of the head and the hook member.

5,822,915
FISH HOOK BARB REMOVING TOOL
Jeffrey L. Walker, 1906 Beachway La., Odessa, Fla. 33556
Filed May 13, 1997, Ser. No. 855,342
Int. Cl.[6] A01K *97/00*
U.S. Cl. 43—53.5 **6 Claims**

1. A fish hook barb removing tool comprising:

a clipping mechanism having a handle assembly including two opposed handle ends, a return spring assembly, a jaw assembly including a lower jaw portion and an upper jaw portion,



upper and lower replaceable triangular cross-section shaped cutting blades, and a mechanism for trapping a cut off barb tip of a fish hook;

said handle assembly and jaw assembly being constructed from two clipper members that are pivotally connected in a clipper configuration to form said two opposed handle ends, said lower jaw portion and said upper jaw portion;

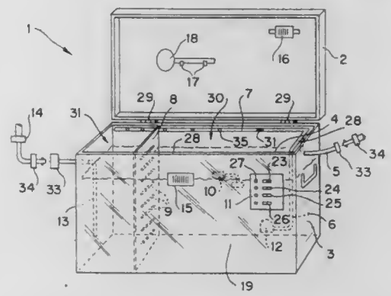
said return spring assembly being positioned between and biasing said two handle ends apart;

said upper replaceable triangular shaped cutting blade being carried on said upper jaw portion;

said lower replaceable triangular shaped cutting blade being carried on said lower jaw portion;

said mechanism for trapping a cut off barb tip of a fish hook being carried on said jaw assembly.

5,822,916
ELECTRONICALLY AUTOMATED PORTABLE LIVE AND BAIT WELL
Mark Gerard Power, 16041 Excel Way, Rosemount, Minn. 55068
Filed Apr. 16, 1996, Ser. No. 633,107
Int. Cl.[6] A01K *97/05*
U.S. Cl. 43—57 **20 Claims**



1. A container for holding live bait and fish that have been caught, said container comprising:

an insulated portable box comprising a bottom, front, back, sides, an inside portion, and an open top, with the insulated portable box further comprising an inlet and an outlet,

a lid for closing said open top,

a divider within said box for dividing said box into at least two compartments, with one of the compartments for holding the live bait and with the other of the compartments for holding the fish that have been caught,

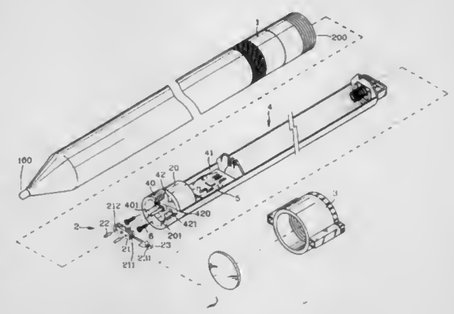
said divider having apertures communicating between said compartments, with a size of the apertures being less than a size of the live relatively small bait to prevent such small bait from swimming to the other compartment, with the size of the apertures being sufficiently large to permit water exchange between the two compartment,

a first pump for supplying water to said box, with the first pump engaged to an inlet conduit which is engaged with the inlet of the box,

a second pump for recirculating water in said box and for pumping water out of said box, with the second pump engaged with an outlet conduit which is engaged with the outlet of the box, and

a cutoff apparatus which automatically controls the level of water in said box, with at least a portion of said cutoff apparatus mounted on the inside portion of said box such that, when the level of water reaches a preselected level in said box, the cutoff apparatus automatically communicates with the first pump to cut off the supply of water provided by the first pump, and wherein said cutoff apparatus for controlling the level of water in said box comprises a cutoff float apparatus.

5,822,917
MOLE CHASER
Te-Chin Jan, 24F-1, No. 161, Sung-Teh Rd., Taipei, Taiwan
Filed Dec. 13, 1996, Ser. No. 766,691
Int. Cl.[6] A01M *1/20*
U.S. Cl. 43—124 **1 Claim**



1. An improvement for a mole chaser comprising:

(1) a main stem being a substantially hollow tube with one conical end and one open end;

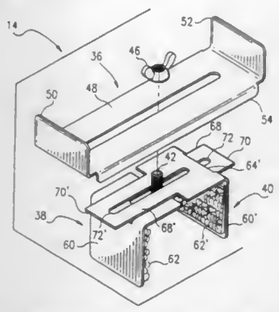
(2) a cap engageable with the open end of the main stem;

(3) a battery chamber housed in the main stem including an impact member at a front end thereof and an open slot behind the impact member; the impact member having a separating wall at the bottom with a spindle opening at the center and a pair of spaced apertures, and a substantially hollow tube wall with a plurality of convex bulges formed on the inside circumference thereof;

(4) a rotation vibrating means including a motor located in the open slot and screwed on one side of the separating wall through the spaced apertures, a motor spindle runs through the spindle opening of the separating wall, a rotation block fixedly attached to the motor spindle beyond a front surface of the separating wall having a pair of spaced second slots located at opposite sides of the motor spindle, each said second slot having pair of apertures in an axial direction of the main stem, and a pair of doughnut-shaped rings, each said doughnut-shaped ring being held in said second slot by a pin engaged with the two axial apertures, each said doughnut-shaped ring further having an opening with a larger diameter than the outside diameter of the pin, and said doughnut-shaped rings being contactable with the convex bulges when the motor spindle rotates;

(5) a control circuit located between the motor and the battery chamber for controlling the operation of the motor.

5,822,918
PLANTER
Barbara Helfman, 3109 Shadow Hill, Middletown, Ohio 45042, and James M. Weisberg, West Chester, Ohio, assignors to Barbara Helfman, Middletown, Ohio
Filed Nov. 25, 1996, Ser. No. 755,585
Int. Cl.[6] A47G *7/02*
U.S. Cl. 47—39 **11 Claims**



6. A planter for mounting atop a member having a horizontal surface extending between a pair of parallel, vertical surfaces, comprising:

a container having a base and a sidewall extending from said base which defines an open interior;

at least one mounting assembly for releasably securing said container to the member, said mounting assembly including:

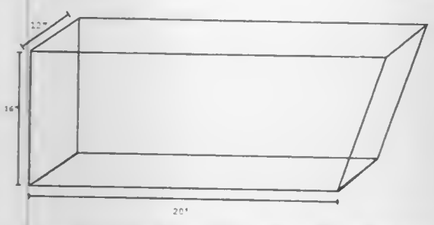
(i) a base support engageable with said base of said container;

(ii) a first bracket and a second bracket each having a horizontal leg connected to a vertical leg, said horizontal legs being slidable relative to one another to position said vertical leg of each of said first and second brackets alongside one of the vertical surfaces of the member, said first and second brackets being substantially identical to one another;

(iii) said horizontal leg of each of said first and second brackets being formed with a head section slidable along said base support and a stem section which is narrower than said head section, said vertical leg of each of said first and second brackets being formed with a transverse slot capable of receiving said stem section of said horizontal leg of the other bracket;

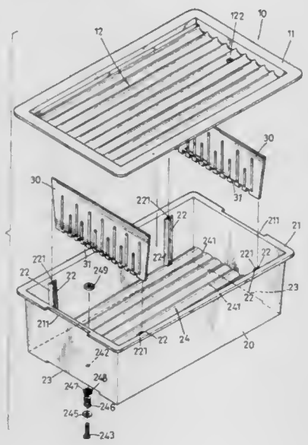
(iv) an attachment device for connecting said first and second brackets to said base support and for securing said first and second brackets to the vertical surfaces of the member.

5,822,919
NATURAL VEGETATION RESERVOIR FEEDING SYSTEM FOR WILDLIFE
Jeffrey D. Griffeth, P.O. Box 320, S. Wirick St., Star City, Ind. 46985
Filed Jan. 14, 1997, Ser. No. 783,125
Int. Cl.[6] A01G *29/00;25/00*
U.S. Cl. 47—48.5 **7 Claims**



1. A system for growing vegetation comprising: A trench having a bottom formed within the ground: a layer of limestone applied over said trench bottom; a tubular percolated member extending along said trench and supported by said trench bottom over said limestone; a water absorbent upon said percolated member; paper sheeting applied over said absorbent and percolated member; soil filled about and over said percolated member upon said paper sheeting; additional limestone applied upon said soil; tree bark applied upon said additional limestone; a water soluble fertilizer, additional water absorbent, and a bacterial inoculant applied over said bark; additional soil applied upon said fertilizer, additional water absorbent, and inoculant; more limestone applied over said additional soil; additional tree bark applied over said additional soil and said more limestone thereon; additional water soluble fertilizer, more water absorbent, and additional bacterial inoculant applied over said additional tree bark; more soil applied over said additional tree bark and said additional water soluble fertilizer, and more water absorbent, and additional inoculant thereon; and further lime applied over said last mentioned soil; a conduit extending from said last mentioned soil downwardly to said tubular percolated member for admitting water into said system at said percolated member; said last mentioned soil for accommodating said vegetation.

5,822,920
NURSERY DEVICE
Chaur-Ji Tsay, No. 160, Shu Hsin Rd., Shu Lin Chen, Taipei Hsien, Taiwan
Filed Jul. 3, 1997, Ser. No. 887,716
Int. Cl.[6] A01G *31/00*
U.S. Cl. 47—61 **3 Claims**



1. A nursery device comprising:

a cover having:

an undulated face provided with a through hole defined therein; and

a first flange peripherally engaged with said undulated face; and

an incubator having:

a second peripheral flange corresponding to said first flange of said cover;

a beveled bottom face provided with a wave-like shape and formed therein a plurality of consecutive troughs;

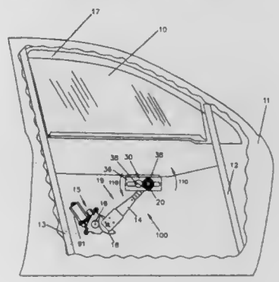
four pairs of bars each formed in a side wall thereof and a slit defined between every two of said bars;

two openings defined in opposed bottom edges thereof;

two clapboards each provided with a plurality of indentations defined in a bottom edge thereof and corresponding to said troughs of said beveled bottom face; and

a drainage hole communicating with said openings and defined in a predetermined position to drain the water within said incubator.

5,822,921
DOOR WITH BIASING WINDOW REGULATOR
Bruce A. Griepenstroh, Middlebury, Ind.; Darren M. Grumm, Cassopolis, Mich.; Michael D. Kobrehel, Elkhart; James A. Molitor, Bristol, both of Ind., and Clayton E. Flanagan, Niles, Mich., assignors to Excel Indusries, Inc., Elkhart, Ind.
Continuation of Ser. No. 667,983, Jun. 19, 1996, abandoned. This application Sep. 12, 1997, Ser. No. 928,223
Int. Cl.[6] E05F *11/44*
U.S. Cl. 49—350 **24 Claims**



1. A rotationally biasing regulator comprising, in combination:

drive means for producing a force for moving a windowpane;

single arm drive transmission means for transmitting the force for moving a windowpane comprising a single drive arm having a first location fixedly attached to the drive means;

attachment means fixedly attachable to a windowpane for connecting the single drive arm to a windowpane; and

a spring exerting a rotational biasing force on the attachment means, wherein a first end of the spring is mounted on the single drive arm at a second location, and a second end of the spring is mounted on the attachment means, operatively connecting the drive transmission means and the attachment means.

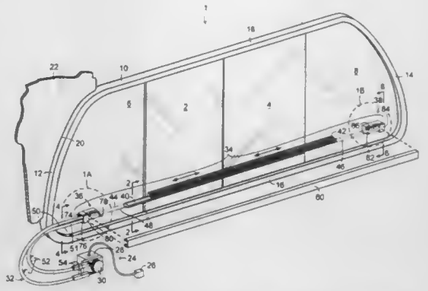
5,822,922
POWER DRIVE SYSTEM FOR MODULAR DUAL PANE REAR-MOUNTED WINDOW ASSEMBLY
Darren M. Grumm, Cassopolis; Roger E. Schamanek, Rochester Hills, both of Mich.; Todd E. Cripe, Goshen, and Raymond S. Butler, Elkhart, both of Ind., assignors to Excel Industries, Inc., Elkhart, Ind.
Continuation-in-part of Ser. No. 624,130, Mar. 29, 1996, Pat. No. 5,724,769. This application Nov. 27, 1996, Ser. No. 757,355
Int. Cl.[6] E05F *11/00*
U.S. Cl. 49—360 **30 Claims**

1. A modular window assembly mounted in a motor vehicle body comprising, in combination:

a circumferential frame member mounted in a window recess in the vehicle body;

a sliding subassembly comprising first and second sliding panes mounted in the frame member between first and second fixed panes, the sliding panes being slideable laterally back and forth between respective open and closed positions;

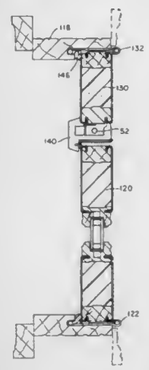
a drive subassembly to move the sliding panes laterally back and forth between their open and closed positions, the drive subassembly comprising a drive motor having an output member and a drive drum operatively engaging the output member for rotation upon actuation of the drive motor; and



a drive member operatively connecting the drive subassembly to the sliding panes, the drive member comprising a drive cable wrapped around the drive drum for pulling the sliding panes toward their open positions upon rotation of the drive drum in a first rotational direction, and for pulling the sliding panes toward their closed positions upon rotation of the drive drum in an opposite rotational direction;

wherein the sliding subassembly further comprises a first cable guide operably connected to the first fixed pane, a second cable guide operably connected to the second fixed pane, a first cable fastener secured to the first sliding pane, and a second cable fastener secured to the second sliding pane, the sliding subassembly and drive cable forming a closed loop, with the drive cable extending from the drive drum to the second cable fastener through the first cable guide, from the second cable fastener to the first cable fastener through the second cable guide, and from the first cable fastener to the drive drum through the first cable guide.

5,822,923
DOOR WITH SWINGING SIDE LIGHT PANEL
Bernard Governale, Duluth, Ga., assignor to Caradon Doors & Windows Group, Norcross, Ga.
Filed Dec. 31, 1996, Ser. No. 775,582
Int. Cl.[6] E06B *5/00*
U.S. Cl. 49—365 **4 Claims**



1. A door and side light assembly comprising

a frame forming a door opening comprising a pair of vertical side members, a top jamb extending between the side members, a sill and a hinge jamb extending between the sill and the top jamb,

a door having a hinged edge pivotally connected to the hinge jamb, and a free edge,

a side light adjacent the door, said side light having a molding member forming an astragal against a free edge which the free edge of the door closes when the side light is closed.

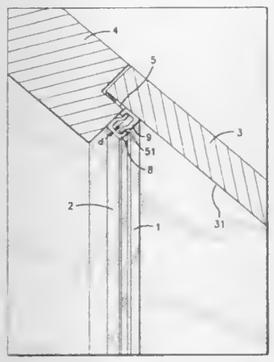
means for latching the door to the molding member,
said side light being hinged to one of the vertical side members to swing about an edge opposite the free edge, of the side light whereby the side light may be opened to maximize the door opening when needed, and
means for locking the side light closed against the frame,
wherein the side light has a maximum width of fourteen inches and the side light is less than half as wide as the door.

5,822,924

BURGLARY-PREVENTATIVE PROFILE SET AND A PROFILED STRIP FOR APPLICATION THEREIN

Maarten Hendrik Wijninga, Prins Bernhardlaan 11, NL-1111 EP Diemen; Nicole Therese Hartwijk, Zeemanlaan 27, NL-1171 BC Badhoevedorp, and Christian Jacques Van Bruggen, Keizersgracht 722, NL-1017 EW Amsterdam, all of Netherlands

PCT No. PCT/NL95/00377, § 371 Date May 29, 1997, § 102(e) Date May 29, 1997, PCT Pub. No. WO96/14490, PCT Pub. Date May 17, 1996
PCT Filed Nov. 2, 1995, Ser. No. 836,281
Claims priority, application Netherlands, Nov. 2, 1994, 9401825
Int. Cl.[6] E05D *11/00*
U.S. Cl. 49—383 **5 Claims**



1. A burglary-preventative profile set for a panel which is movably mounted with respect to a frame, the set comprising two elongated profiled strips for respective attachment to the panel and the frame, both said profiled strips comprising a U-profile with a short leg and a long leg, each said long leg comprising an inward buckle such that said long leg comprises two parts which are substantially parallel and which are displaced with respect to one another and pass into one another via the said buckle.

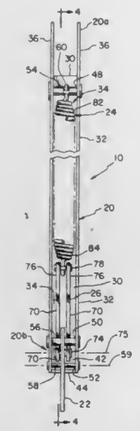
5,822,925

HOOK-MOUNTED HINGE MECHANISM FOR OVEN DOORS

Michael McKinney, Hamilton County, and Scott Williams, Hancock County, both of Ind., assignors to Maytag Corporation, Newton, Iowa

Filed Nov. 7, 1995, Ser. No. 554,827
Int. Cl.[6] E05F *1/10*; **F23M** *7/00*
U.S. Cl. 49—386 **16 Claims**

1. A door hinge mechanism used with an oven door having an outer panel and a door liner cooperating to define an interior region having a height and a width, the door liner including a plurality of sidewalls, a top wall, and a bottom wall, the mechanism comprising:
means for coupling the hinge mechanism to an oven;



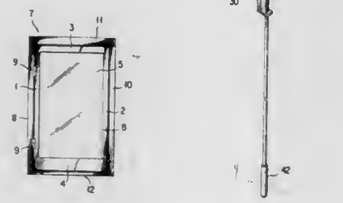
a resilient member disposed inside the interior region;
means coupled to the resilient member for stretching the resilient member in response to movement of the door from a closed position to an open position; and
means extending along the height of the door liner and cooperating with the door liner for enclosing the resilient member within the interior region, said enclosing means including a channel member having a first end formed to include hook means for attaching the enclosing means to the door liner, said hook means including a hook opening away from the door liner, and said door liner including an aperture for receiving the hook.

5,822,926

STRUCTURE FOR MOUNTING CREMORNE LOCK AND REINFORCING MEMBER IN VERTICAL FRAME ELEMENT CONSTITUTING DOOR OR WINDOW LEAF

Sou Koike, and Masao Hirano, both of Toyama-ken, Japan, assignors to YKK Architectural Products Inc., Tokyo, Japan

Filed Jan. 29, 1997, Ser. No. 787,007
Claims priority, application Japan, Feb. 1, 1996, 8-016468
Int. Cl.[6] E05B *65/06*
U.S. Cl. 49—394 **9 Claims**



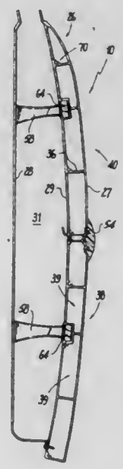
1. A structure comprising:
an extrusion molded aluminum elongated vertical frame element housing first and second vertical plates, each having a surface substantially parallel to a face direction of said structure and third and fourth vertical plates, each having a side and a surface substantially parallel to a thickness direction of said structure, thereby providing a hollow structure with a substantially rectangular cross section, said fourth vertical plate further having a cutout opening at a longitudinally intermediate portion of said fourth vertical plate;
a reinforcing member made of steel and adapted to be inserted in said hollow structure of said vertical frame element;
a spacer made of steel and adapted to be inserted in the hollow structure of said vertical frame element; and
a cremorne lock comprising a lock body adapted to be engaged in the cutout opening of said vertical frame element,
wherein said reinforcing member is placed and fixed to the side of said third vertical plate within said hollow structure of said vertical frame element, said spacer is made to abut against said reinforcing member, said lock body is, on one hand, made to abut against said spacer and on the other hand engaged in said cutout opening, and said lock body is fixed to said reinforcing member by means of bolts with said spacer interposed therebetween; and
wherein said first and second vertical plates are each provided with a projection in the manner that the projection of said first vertical plate is opposite to the projection of said second vertical plate within said hollow structure, and said reinforcing member and said spacer are inserted between said third vertical plate and said projections.

5,822,927

MOTOR VEHICLE DOOR

Michael Hellenkamp, Wesseling; Jörg Ebert, Köhn; Winfried Griep, Bonn; Volker Flndeisen, Bochum, and Volker Gomon, Stuttgart, all of Germany, assignors to VAW Aluminium AG, Bonn, Germany

Continuation-in-part of Ser. No. 265,099, Jun. 24, 1994, abandoned. This application Jun. 6, 1996, Ser. No. 659,771
Claims priority, application Germany, Jun. 26, 1993, 43 21 282.4
Int. Cl.[6] B60J *5/04*
U.S. Cl. 49—502 **21 Claims**



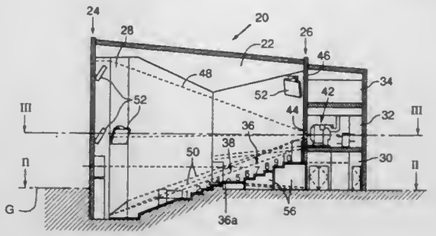
1. A vehicle door, comprising
a hollow outer panel assembly, an inner panel connected to said hollow outer panel assembly, said hollow outer panel assembly being made from an interior wall section and an exterior wall section, said two wall sections defining an interposed cavity, said hollow outer panel assembly having at least one partition located generally perpendicular and attached to said wall sections, said at least one partition defining at least two compartments located within said cavity; and
a fastening support assembly attached to said interior wall section of said hollow outer panel assembly and said inner panel so that said inner panel is secured to said hollow outer panel assembly;
said interior wall section of said hollow outer panel assembly being provided with at least one integrally formed elongated locking channel which is sized and shaped to receive a portion of said fastening support assembly so that said fastening support assembly may be selectively secured to said interior wall section within said elongated locking channel.

5,822,928

MOTION PICTURE THEATRE STRUCTURE

Ian Maxwell, Oakville; Ilidio Paulo Colto, Mississauga, and G. Eric Jacques, Burlington, all of Canada, assignors to Imax Corporation, Mississauga, Canada

Filed Feb. 28, 1997, Ser. No. 807,922
Int. Cl.[6] E04H *3/12*
U.S. Cl. 52—8 **4 Claims**



1. A motion picture theatre structure comprising:
an auditorium having first and second opposite ends;
a projection screen at said first end of the auditorium and a lobby at said second end of the auditorium, the lobby having a floor at a defined level;
a seating deck which includes an array of seats arranged in rows generally transversely with respect to said screen, said seating deck sloping downwardly in a direction from said second end of the auditorium towards said screen;
entry/exit points for audience members, one at each side of said seating deck, each said entry/exit point being located generally at said defined level and generally intermediate upper and lower ends of the deck so that multiple rows of seats exist both above and below the entry/exit points, the seating deck providing access to said seats for audience members from both of said entry/exit points at respective ends of each row of seats;
respective access aisles at opposite sides of the auditorium connecting the lobby with the respective entry/exit points; and,
a projection room at said second end of the auditorium above the lobby, for projecting images onto said screen.

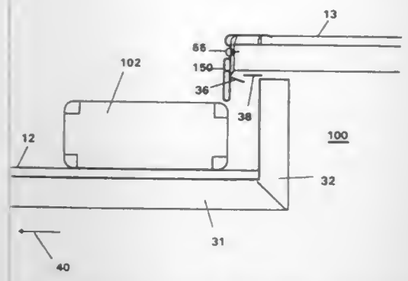
5,822,929

AISLE RISER BACKSTOPS FOR TELESCOPIC SEATING SYSTEMS

Melvin J. Guiles, Plainwell, and Kenneth A. Ahrens, Schoolcraft, both of Mich., assignors to Interkal, Inc., Kalamazoo, Mich.

Filed Mar. 27, 1997, Ser. No. 828,153
Int. Cl.[6] E04H *3/12*
U.S. Cl. 52—9 **19 Claims**

1. A telescopic seating structure having deployed and undeployed states, the telescopic seating structure comprising:
a plurality of seating level members arranged in sequentially elevated relation to one another by a first predetermined height, wherein each such seating level member is disposed



substantially directly beneath an immediately superior seating level member in substantially stacked relation when the telescopic seating structure is in the undeployed state, and wherein each such seating level member is disposed beneath and forward of an immediately superior seating level member in stepped relation when the telescopic seating structure is in the deployed state;

a plurality of engagement elements, each arranged in a forward region of, and coupled to, a respectively associated one of said seating level members;

a plurality of intermediate steps arranged in an aisle region of the telescopic seating structure, each of said intermediate steps being disposed on an associated one of said plurality of seating level members and having a second predetermined height that is shorter than said first predetermined height; and

a plurality of backstop means each having an engagement portion that is arranged in communication with a respectively associated one of said engagement elements, and a riser portion integrally formed with the engagement portion and arranged to extend downward from the forward region of a respectively associated one of said plurality of seating level members for a distance that corresponds substantially to a difference between said first and second predetermined heights.

whereby, when said plurality of seating level members are in the deployed state, a region between the forward region of the respectively associated one of said seating level members and an uppermost extent of a one of said intermediate steps associated with an immediately lower one of said seating level members is substantially closed.

5,822,930

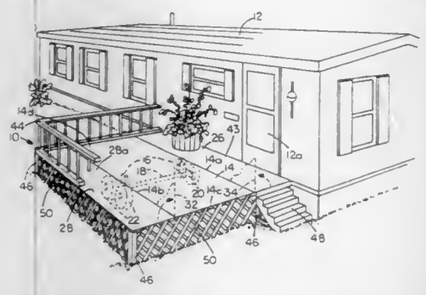
COLLAPSIBLE TRANSPORTABLE DECK FOR A HOUSE TRAILER OR MOBILE HOME

Darrel J. Klein, Rte. 1, Box 17, Breckenridge, Minn. 56520

Continuation of Ser. No. 590,881, Jan. 24, 1996. This application Jun. 18, 1997, Ser. No. 878,035

Int. Cl.[6] E04H *1/12*

U.S. Cl. 52—143 **24 Claims**



1. A portable and collapsible deck suited for use with a house trailer or mobile home comprising,

a floor having opposed longitudinally extending side edges and opposed laterally extending front and rear edges,

at least one movable wall having a first edge at the level of the floor,

the floor and each such wall cooperate when the wall is in a deployed position attached to the floor and extending laterally from the floor to provide a flat, horizontal, substantially continuous deck surface that includes said floor and each such wall,

fastening means for connecting one of the edges of the floor and said first edge of the wall,

each such wall being a) connected to the floor so as to be capable of being removed from the deployed position at the time the deck is to be transported from one location to another and b) during transport each wall being withdrawn from said horizontal deployed position to thereby collapse the deck,

rotatable ground engaging supporting wheels below the deck,

wheel support means separate from the wall and aligned below the floor for maintaining the wheels below the floor and in contact with the ground to support the floor,

each wall being movable independently of the wheels between the deployed horizontal position and the withdrawn position,

a plurality of spaced apart supports for being placed beneath the deck so as to extend upwardly from the ground to hold the deck in a fixed position with the wall spaced above the ground when in the horizontal deployed position,

coupling means at one end of the deck to facilitate connecting the deck to a towing vehicle when the deck is to be transported from one location to another,

such that the deck can be used separately from said house trailer or placed adjacent to the entrance of said house trailer to enable a person to walk from the house trailer or mobile home onto the deck when the deck is deployed, and

the deck can be collapsed for being transported by means of the towing vehicle from one location to another while supported on the wheels.

5,822,931

METHOD AND APPARATUS FOR EXTENDING A FRAME

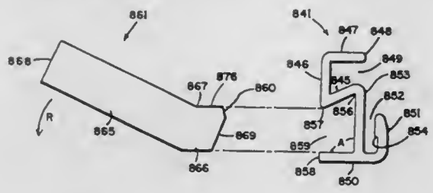
Dennis A. Galowitz, Stillwater, and Todd W. Bruchu, Lake Elmo, both of Minn., assignors to Andersen Corporation, Bayport, Minn.

PCT No. PCT/US95/13255, § 371 Date Apr. 17, 1997, § 102(e) Date Apr. 17, 1997, PCT Pub. No. WO96/12861, PCT Pub. Date May 2, 1996

PCT Filed Oct. 19, 1995, Ser. No. 817,425

Int. Cl.[6] E06B *3/00*

U.S. Cl. 52—204.5 **19 Claims**



1. A rectangular window assembly, comprising:

a first channel extending along a first horizontal frame member;

a second channel extending along a second horizontal frame member;

a third channel extending along a first vertical frame member and between distal ends and associated structure of said first channel and said second channel;

a fourth channel extending along a second vertical frame member and between opposite distal ends and associated structure of said first channel and said second channel;

a first extension member;

a second extension member;

a third extension member;

a fourth extension member, wherein each said extension member has a profile that includes a first segment configured to rotate into engagement with a respective channel, and a second segment configured to extend substantially perpendicularly away from a plane defined by said frame members, and

on said first extension member and said second extension member, said second segment is approximately equal in length to said first frame member and said second frame member, respectively, and

on said third extension member and said fourth extension member, said second segment is less than equal in length to said third frame member and said fourth frame member, and is approximately equal in length to a distance defined between said first extension member and said second extension member, and distal ends of said second segment abut said first extension member and said second extension member proximate corresponding ends thereof; and

a securing means for securing said third extension member and said fourth extension member between said first extension member and said second extension member in such a manner that each said extension member is secured against rotation of out engagement with a respective channel.

5,822,932

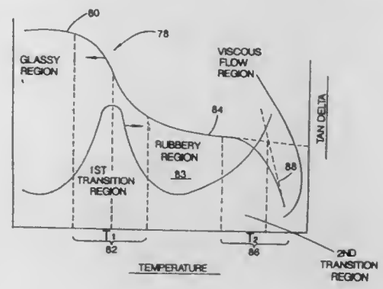
METHOD FOR MAKING A VEHICLE WINDOW PANEL USING A MELT-PROCESSIBLE GASKET MATERIAL

Raj K. Agrawal, Holland, Mich., assignor to Donnelly Corporation, Holland, Mich.

Division of Ser. No. 289,378, Aug. 12, 1994, Pat. No. 5,635,281. This application Feb. 14, 1997, Ser. No. 801,700

Int. Cl.[6] E04C *1/42;* **E06B** *1/26;3/56*

U.S. Cl. 52—597 **28 Claims**



1. A method for manufacturing a vehicle window panel assembly, comprising the steps of:

providing a window panel having a peripheral edge;

selecting a melt-processible, polymeric material which has a multi-phase morphology, is resistant to tensile creep, and has a glassy phase, a rubbery plateau, a viscous flow phase, a first transition temperature between said glassy phase and said rubbery plateau, and a second transition temperature between said rubbery plateau and said viscous flow phase; and

forming and adhering a gasket on at least one surface of said window panel from said melt-processible material;

providing an attachment member for securing said vehicle window panel assembly to a vehicle body;

embedding a first portion of said attachment member in said gasket during formation of said gasket such that a second portion of said attachment member extends from said gasket for securement to the vehicle body, whereby said gasket is securely bonded to said one surface of said window panel and said melt-processible polymeric material resists creep when said window panel is attached to a vehicle with said attachment member.

5,822,933

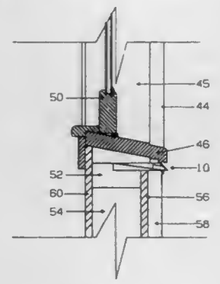
METHOD AND APPARATUS FOR WALL DRAINAGE

Mark E. Burroughs, Supply, and Chris E. Cooper, Wilmington, both of N.C., assignors to Advanced Construction Technologies, Inc., Wrightsville Beach, N.C.

Filed Jan. 23, 1997, Ser. No. 787,606

Int. Cl.[6] E06B *7/14;* **E04B** *1/70*

U.S. Cl. 52—209 **19 Claims**



5. An improved building comprising:

a) a wall having an opening, a wall frame section beneath said opening, and an exterior surface;

b) a wall component mounted in said opening; and

c) a diverter positioned in said wall beneath said wall component, said diverter including a rear edge; a front edge; an upper water diverting surface sloping downwardly from said rear edge to said front edge, said upper water diverting surface extending at least to the exterior surface of said wall when said diverter is positioned beneath said wall component; a plurality of spaced ribs having upper surfaces engaging said wall component when said diverter is mounted in said wall beneath said wall component, said ribs in combination with said water diverting surface forming a plurality of open-topped channels extending from said rear edge to said front edge; and a lower surface parallel to said rib upper surfaces, said lower surface resting on said wall frame section.

5,822,934

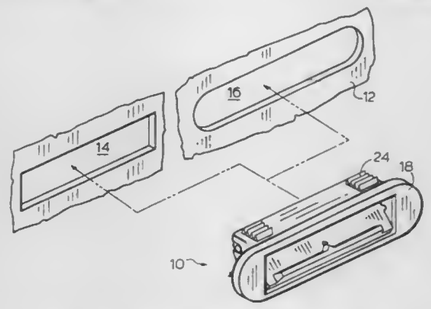
DRAIN

Richard O'Donnell, R.R. #1, Palgrave, Ontario, Canada, L0N 1P0

Filed Apr. 15, 1997, Ser. No. 839,734

Int. Cl.[6] E06B *7/14*

U.S. Cl. 52—209 **6 Claims**



1. A water drain for insertion into a mating wall opening in an extruded, hollow door or window sash or frame, comprising:

a rectangular frame having a peripheral front flange defining a front drain opening for abutment against a wall of the sash or frame, said frame having a top wall and a bottom wall perpendicular to the front flange, said top wall being relatively deep compared to the bottom wall, an open diagonal rear wall

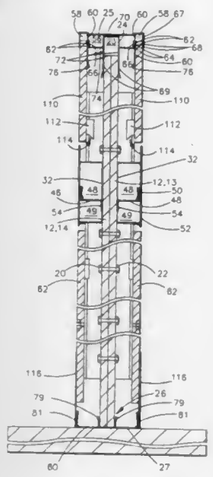
defined by a plurality of spaced-apart ribs joining the distal ends of the top and bottom walls, and a pair of opposed side walls joining the top and bottom walls, means for securing the frame within the wall opening, and a flap having a planar rear surface and a front surface for opening and closing the drain opening, said flap having upper and lower edges and side edges, the flap upper edge being rounded with cylindrical lug extensions of the said upper edge extending laterally of the flap side edges for insertion into round mating holes in said side walls of the frame in proximity to the distal end of the frame top wall for pivotal mounting of the flap in the frame drain opening, whereby the flap can pivot from a closed position on the diagonal rear wall adjacent the spaced-apart ribs upwardly to an open position adjacent the frame top wall in the front drain opening, and a protrusion in the front surface of the flap adjacent the lower edge thereof for abutment against the frame top wall, whereby the flap is substantially unimpeded by surface tension when pivoted to an open position.

5,822,935

SOLID-CORE WALL SYSTEM

Terry Mitchell; James D. Houda, both of Grand Rapids, and Gary S. Juhlin, Alto, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.

Filed Dec. 19, 1996, Ser. No. 770,132
Int. Cl.[6] E04B 2/74;2/82
U.S. Cl. 52—239 26 Claims



24. A reconfigurable wall system comprising:

a load-bearing solid-core wall including a plurality of solid-core panels, the panels being arranged in two adjacently abutting vertical layers, each layer comprising a plurality of said solid-core panels arranged in edge-to-edge abutment, the abutting edges forming vertical seams, the vertical seams in each layer being laterally offset from the vertical seams in the adjacent layer;

a plurality of vertically adjustable, reinforcing vertical studs disposed on opposite faces of the solid-core wall, each of the vertical studs being aligned with a vertical stud on the opposite side of the solid-core wall;

a plurality of horizontally spaced apart fasteners which extend through the solid-core wall and connect the aligned vertical studs on opposite sides of the solid-core wall, the vertical studs and the fasteners being constructed to permit vertical adjustment of the vertical studs;

a plurality of wall covering panels removably mounted with frictional connectors on the vertical studs;

a core cap extrusion secured to an end of the solid-core wall; and

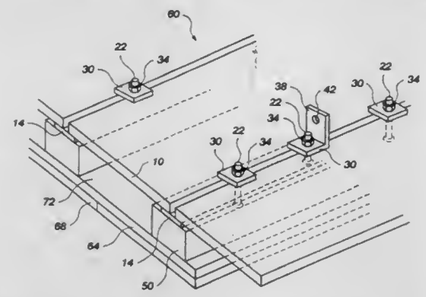
a glass wall portion connected in-line with the solid-core wall, the glass wall portion comprising a glass wall base and a glass wall panel supported on the glass wall base, and a glass jam connected to a side edge of the glass wall panel, the glass wall being connected in-line to the solid-core wall by an in-line connector extrusion attached to the core cap extrusion and to the glass jam, the core cap extrusion and the in-line connector extrusion having abutting tabs which are secured together by a resilient clip.

5,822,936

INTERCONNECT SYSTEM FOR MODULARLY FABRICATED BULLET STOPS

Kyle E. Bateman, P.O. Box 636, Provo, Utah 84603

Continuation-in-part of Ser. No. 8,792, Jan. 25, 1993, abandoned. This application Jan. 20, 1995, Ser. No. 375,618
Int. Cl.[6] E04B 1/38; F41H 5/24; F41J 1/20
U.S. Cl. 52—281 13 Claims



8. An interconnect system for modularly fabricated bullet stops, the system comprising:

a plurality of bullet proof plates, each plate having at least one lateral edge juxtaposed with a lateral edge of another said plate so as to form a plurality of seams;

a plurality of facing strips formed from bullet proof material disposed along the seam between two adjacent said plates, each facing strip comprising an elongate metal strip with a plurality of holes;

backing means connected to the plurality of facing strips; and

clamp means connected to the backing means and the facing strips for drawing the backing means and the facing strips toward one another so as to clamp the lateral edges of the plates between the facing means and the backing means and thereby form removable, bullet resistant joints at the seams; and

a frame attached to the facing strip and spaced away from the plates so as to form a bullet containment means adjacent the plates.

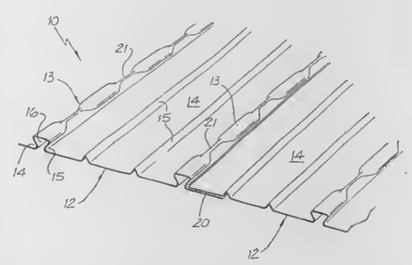
5,822,937

BRICK SUPPORT

Peter John Mahony, and Campbell Seccombe, both of New South Wales, Australia, assignors to Boral Bricks (NSW) Pty. Ltd., New South Wales, Australia

Filed Apr. 11, 1997, Ser. No. 843,155
Claims priority, application Australia, Apr. 12, 1996, PN 9253
Int. Cl.[6] E04F 13/08
U.S. Cl. 52—386 9 Claims

1. A sheet to support a plurality of bricks or tiles to form a wall, the sheet having a plurality of generally parallel and transversely spaced ribs, the ribs being of a non-constant cross-section and separated by pan portions, with each rib having a stem projecting outwardly from the adjacent pan portion, and a plurality of brick or tile engaging portions to engage the bricks or tiles to aid in securing the bricks or tiles to the sheet, the engaging portions of each rib being located at spaced intervals along the rib and being configured to project laterally beyond the stem toward the next adjacent ribs so as to engage bricks or tiles located between adjacent ribs.

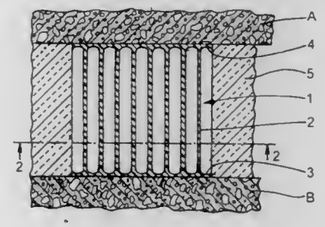


5,822,938

STRUCTURAL ELEMENT FOR THERMAL INSULATION

Michael Bähr, Jockgrim; Armin Schumacher, Ötigheim; Thomas Edelmann, Ettenheim; Oliver Wagner, Rheinmünster; Claudia Schneider-Liebich, Baden-Baden; Eckart Luz, Rheinmünster; Heike Roth, Sinzheim; Gerhard Trunz, Bühlertal, and Andrë Weber, Bühl, all of Germany, assignors to Schock Bauteile GmbH, Baden-Baden, Germany

Filed May 15, 1997, Ser. No. 855,652
Claims priority, application Germany, May 30, 1996, 196 21 643.5
Int. Cl.[6] E04B 1/74
U.S. Cl. 52—404.1 18 Claims



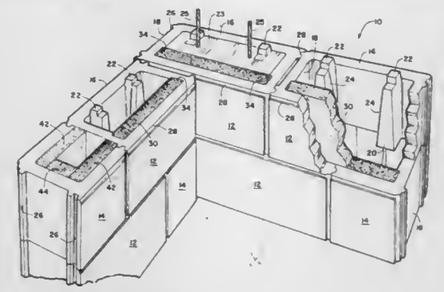
1. A structural element for thermal insulation between two concrete structural parts especially between a building (A) and an projecting external part (B), comprising an insulating body (5) to be inserted in between the two structural parts and includes integrated compression elements which run transversely to and through a longitudinal extension of the insulating body, the compression elements being adapted to be respectively joined to both structural parts, wherein the compression elements (1, 11, 21, 31) comprise a profile body having a plurality of vertically running compression bars (2, 12, 22, 32) and wherein the compression elements have a length in a direction of the longitudinal extension of the insulating body which is a multiple of a vertical height of the compression elements.

5,822,939

INSULATED BUILDING BLOCK SYSTEM

Juan Haener, 8215 Harton Pl., San Diego, Calif. 92123

Filed Feb. 24, 1997, Ser. No. 805,361
Int. Cl.[6] E04B 1/74
U.S. Cl. 52—405.2 8 Claims



1. An insulated, interlocking, block system for use in a wall construction which comprises:

at least one full block having a length substantially twice its width, said at least one full block comprising:

a pair of generally rectangular spaced parallel first and second sidewalls having substantially flat upper and lower surfaces and end edges generally perpendicular to said upper and lower surfaces;

a pair of generally rectangular spaced, parallel endwalls, each transverse to said sidewalls, joined to said sidewalls and having an internal and an external surface;

two inwardly extending ridges along said first sidewall each lying generally parallel to said end edges;

said ridges including ridge protrusions extending beyond said first sidewall upper surface;

said ridge protrusions located so that when one of said full blocks is placed over a second said block with said first sidewalls substantially coplanar and an endwall of the upper block substantially at the center of said lower block, a ridge protrusion on said lower block will interlock against a ridge of said upper block;

each endwall having an endwall groove on said internal surface, contiguous with said second sidewall, for receiving an edge of a sidewall insulation panel;

a panel of thermal sidewall insulation material fitted into said endwall grooves contiguous with said second sidewall; and

a groove in said sidewall insulation panel for receiving a corresponding projection on an end of an endwall insulation panel for positioning said endwall insulation panel along an endwall interior surface.

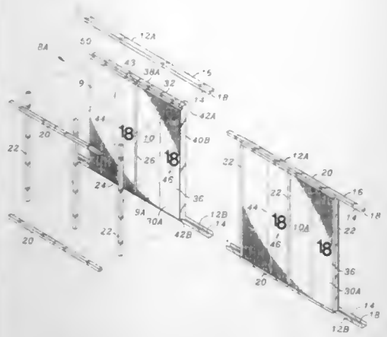
5,822,940

COMPOSITE WALL PANEL

Steven Carlin, and Robert M. Dresslar, both of 4073 39th St., Newport Beach, Calif. 92663

Continuation of Ser. No. 683,670, Jul. 17, 1996. This application Sep. 30, 1996, Ser. No. 724,611
Int. Cl.[6] E04B 9/00; E06B 3/54
U.S. Cl. 52—479 4 Claims

1. A structural, insulating, insect resistant, dimensionally stable composite wall panel for building construction comprising a regular tetragonal body of polymer foam having two opposing primary wall surfaces bounded on its sides by two parallel side walls and on its ends by two parallel end walls; and at least two light metal gauge studs in the body, each stud having a hollow center cavity, a squared cross section with a wide back wall extending the width of the stud, two parallel side walls, two narrow front walls separated by a open slot extending into the central cavity, each light metal gauge stud at least extending from one end wall to the other end wall and parallel to the side walls of said body, the polymer foam



extending into the central cavity of the studs to secure the studs to the body, the width of the panel between the primary wall surfaces being greater than the width of the studs, at least one side wall of each stud forming a portion of the same primary wall surface of said body, the back wall of one stud being a part of one of the side walls of said body, said body having a tongue portion at each of its ends, the tongue portion having a width equal to the width of the studs, the tongue portion adapted to be received by and secured in the open channel of light metal gauge building construction track to form a structural wall.

5,822,941

CONSTRUCTION OF SUSPENDED CEILINGS, WALLS, AND PARTITION WALLS

Thomas Kinsella, Bray, Ireland, assignor to T & T Fixings Limited, Bray, Ireland

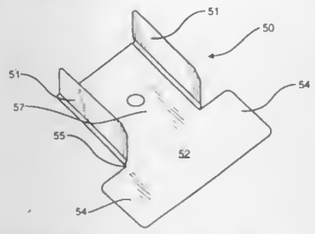
PCT No. PCT/IE93/00053, § 371 Date Apr. 18, 1995, § 102(e) Date Apr. 18, 1995, PCT Pub. No. WO94/09222, PCT Pub. Date Apr. 28, 1994

PCT Filed Oct. 19, 1993, Ser. No. 424,296

Claims priority, application Ireland, Oct. 19, 1992, 922746; Dec. 23, 1992, 922944

Int. Cl.[6] E04B *2/00*

U.S. Cl. 52—506.05 **16 Claims**



1. A connector (**50**) for securing a panel (**4**) to a support element (**1**) for use in the construction of suspended ceilings, walls, partition walls and the like, the connector comprising a panel-connecting element (**52,54**) and a first wing member (**51**) of plastically deformable material, the wing member (**51**) being movable between an open position and an engaged position permitting the first wing member to be folded over onto the support element (**1**) thereby holding the panel (**4**) in position on the support element (**1**) characterized in that the connector (**50**) further includes a body portion (**57**) and wherein the panel-connecting element (**52,54**) is formed of a plastically deformable material enabling the panel-connecting element (**52,54**) to be bent relative to the connector body (**57**) enabling the connector to be used for connecting two support elements together, the connector (**50**) being substantially T-shaped with the panelconnecting element (**52,54**) corresponding to a horizontal element of the "T" and the connector body portion (**57**) corresponding to a vertical element of the "T", the body having opposed sides and the first wing member disposed at one side and a second wing member disposed at the other side, the first and second wing members extending outwardly from the connector body portion (**57**), and at least one of the wing members having a kink thereby enabling the connector to be held on the support element when the wings are in the open position.

5,822,942

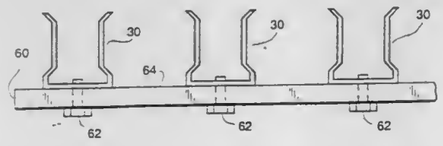
AUXILIARY SURFACE-FORMING MEMBER FOR CONSTRUCTION ELEMENTS

Nicholas J. Lucia, Jr., 65 Beverly Rd., West Caldwell, N.J. 07006

Continuation-in-part of Ser. No. 290,582, Aug. 15, 1994, abandoned. This application Feb. 14, 1997, Ser. No. 799,942

Int. Cl.[6] E04G *23/04*; **E02D** *37/00*

U.S. Cl. 52—514 **13 Claims**



1. A device for forming a planar mounting surface in a chosen plane corresponding to the desired position for a gypsum board panel or a similar construction element in a construction having at least one structural member to which the construction element is adapted to be affixed, said device comprising a member of extended length and an alignment tool upon which the member is mounted, said member having a pair of leg means supported by a base portion, said leg means defining a pair of faces spaced a distance corresponding to the width of the structural member upon which the device member is mounted and being adapted and arranged for aligning and supporting said device upon the structural member whereby said base lies along the chosen plane, said base comprising means for forming a portion of said planar mounting surface, for supporting the construction element thereupon and for allowing the rigid attachment of the construction element to said base.

5,822,943

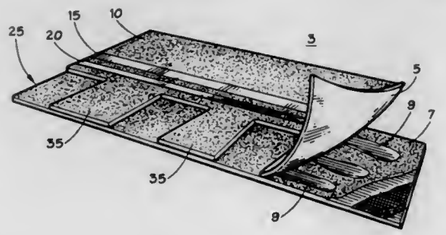
HURRICANE RESISTANT SHINGLE

Stanley P. Frankoski, and Randal J. Jolitz, both of Joplin, Mo., assignors to Tamko Roofing Products, Inc., Joplin, Mo.

Filed Jul. 10, 1996, Ser. No. 677,823

Int. Cl.[6] E04D *1/00*

U.S. Cl. 52—518 **21 Claims**



1. A roofing shingle, comprising:

an asphalt-coated substrate embedded with granules, said substrate including a composite comprising at least first and second layers bonded together, said first layer comprising a scrim and said second layer comprising a mat.

5,822,944

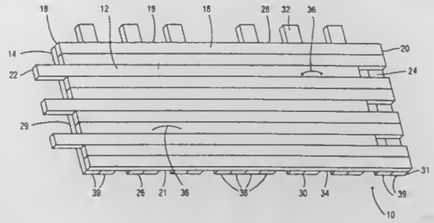
DOUBLE LOCKING FLOORING SYSTEM FOR A CONSTRUCTION SITE

Joe E. Penland, Sr., P.O. Box 320, Nederland, Tex. 77627

Filed Sep. 4, 1996, Ser. No. 707,448

Int. Cl.[6] F04B *5/02*; **E01C** *5/16*

U.S. Cl. 52—591.1 **12 Claims**



1. A flooring mat unit to be interlocked with a plurality of other such units to form a flooring system for use as a construction site or roadway, each unit formed from only two-layers of interconnected wooden boards and vertically positionable to form a completed two-layer flooring system without the addition of individual boards for tie-in purposes, each mat unit comprising:

a first layer having a first end and an opposed second end and a first and second side and formed of a plurality of substantially parallel boards of substantially uniform length, the first layer having a plurality of end locking tabs projecting from the first end, the opposed second end of the first layer having a plurality of end locking slots aligned with said end locking tabs, said end tabs and slots formed by longitudinally offsetting selected boards of the first layer; and

a second layer having a first side and an opposed second side and a first and second end and formed of a plurality of substantially parallel wooden boards of substantially uniform length attached substantially perpendicular and underlying the boards of the first layer with the ends and sides of the second layer aligned with the corresponding sides and ends of the first layer, the second layer having a plurality of side locking tabs extending from one side of the second layer and the opposed side of the second layer having a plurality of aligned side locking slots, said side tabs and side slots formed by longitudinally offsetting selected boards of the second layer;

whereby the end locking tabs and side locking tabs of a first mat unit are vertically placed into end locking slots and side locking slots of adjacent mat units to form an interlocked portion of the completed two-layer flooring system without the addition of individual boards for tie-in purposes.

5,822,945

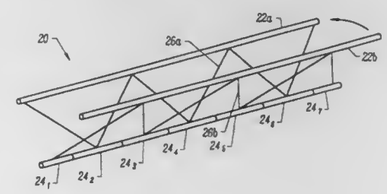
FOLDING TRUSS

Roy Muller, 338 Kings Rd., Brisbane, Calif. 94005

Filed Feb. 3, 1997, Ser. No. 794,008

Int. Cl.[6] E04H *12/18*

U.S. Cl. 52—646 **20 Claims**



1. A truss, comprising:

a plurality of truss cords;

a hinge provided on at least one truss cord of said plurality of truss cords, said at least one truss cord having a plurality of hinge segments and a hollow center throughout;

a pin inserted through said hollow center, said pin being attached to a first group of hinge segments from said plurality of segments, such that said first group of hinge segments is capable of rotating with respect to a second group of hinge segments of said plurality of hinge segments, said first group of hinge segments being different than said second group of hinge segments;

a first connector connecting said at least one truss cord with a second truss cord of said plurality of truss cords, said first connector connecting to said first group of hinge segments; and

a second connector connecting said at least one truss cord with a third truss cord of said plurality of truss cords, said second connector connecting to said second group of hinge segments.

5,822,946

SPACING MEMBER

Henning Baltzer Rasmussen, Danasallé 11, DK-8700 Horsens, Denmark

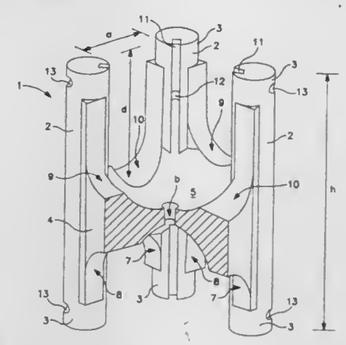
PCT No. PCT/DK95/00282, § 371 Date Dec. 20, 1996, § 102(e) Date Dec. 20, 1996, PCT Pub. No. WO96/00825, PCT Pub. Date Jan. 11, 1996

PCT Filed Jun. 30, 1995, Ser. No. 765,097

Claims priority, application Denmark, Jun. 30, 1994, 0779/94

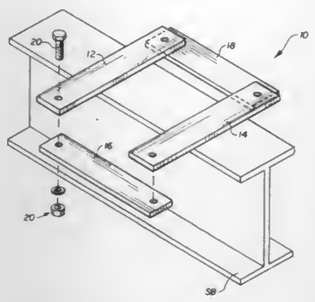
Int. Cl.[6] E04C *5/16*

U.S. Cl. 52—68.1 **13 Claims**



1. A spacing member for chocking reinforcement wires, said spacing member comprising: base means for positioning on a supporting surface; side wall means providing a plurality of pairs of opposed, generally U-shaped slots, said pairs of slots having differing heights relative to the supporting surface on which said spacing member is positioned for supporting reinforcement wires extending therethrough, said side wall means also providing a pair of opposed, inwardly open vertical grooves; and a locking clip downwardly positionable in said opposed pair of vertical grooves, said locking clip including a generally U-shaped section having a curved bottom portion and opposed legs, first flange portions which extend towards one another from ends of said opposed legs, and generally parallel second flange portions which extend from said first portions downwardly toward said curved bottom portion of said U-shaped section for securing a reinforcement wire therebetween, said opposed legs including at least one undulation for cooperation with said grooves of said side wall means to fix said locking clip in position.

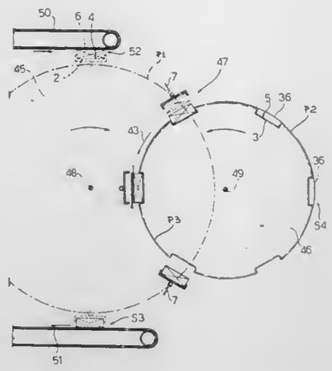
5,822,947
PLANK SUPPORT
Padraig Tarrant, 85 Brush Hill Rd., Kinnelon, N.J. 07405
Filed Dec. 29, 1995, Ser. No. 580,590
Int. Cl.[6] E04B *2/00*
U.S. Cl. 52—781.3 6 Claims



1. A plank support system comprising, in combination:
a load bearing beam; and
an apparatus that provides additional support to said load bearing beam, said apparatus including:
a first flange plate and a second flange plate, each said flange plate having a first and a second end and a lower surface;
a first plank plate and a second plank plate, each said plank plate having a first end and a second end and an upper surface;
wherein each said flange plate and each said plank plate are formed from angle iron;
means for securing each said plank plate to each said flange plate, wherein said lower surface of said first flange plate at said first end is secured to said upper surface of said first plank plate at said first end, said lower surface of said first flange plate at said second end is secured to the upper surface of said second plank plate at said first end, said lower surface of said second flange plate at said first end is secured to said upper surface of said first plank plate at said second end, and said lower surface of said second flange plate at said second end is secured to upper surface of said second plank plate at said second end; whereby
said apparatus is placed on said load bearing beam such that each said flange plate mounts perpendicularly to said load bearing beam thereby aligning each said plank plate adjacent and parallel to said load bearing beam that provides additional support to planks placed thereon.

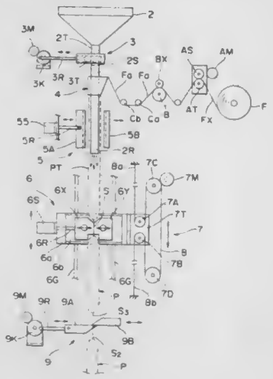
5,822,948
PRODUCT MANIPULATING METHOD
Alberto Manservigi, Bologna, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' per Azioni, Bologna, Italy
Filed May 5, 1997, Ser. No. 851,444
Claims priority, application Italy, May 6, 1996, BO96A0239
Int. Cl.[6] B65B *19/00*
U.S. Cl. 53—466 9 Claims

1. A method of manipulating products (2), the method comprising the steps of supporting a product (6) by means of a first seat (4) facing and parallel to a second seat (5), the two seats (4, 5) being set to a parted position; moving the two seats (4, 5), in a first given direction (7), in relation to and towards each other into a mating position to transfer the product (6) from the first (4) to the second (5) seat and, at the same time, perform a first operation on the product (6); retaining the product (6) in the second seat (5); and moving the two seats (4, 5) in relation to each other so as to move the first seat (4) away from the second seat (5) and restore the two seats (4, 5) to the parted position; characterized by comprising the further step of moving the two seats (4, 5) in relation to each other



and back into the mating position, so that the product (6) is engaged by the first seat (4), to perform a second operation on the product (6).

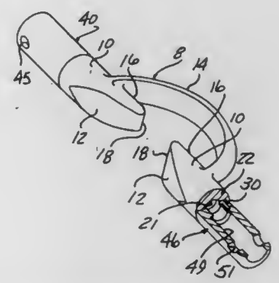
5,822,949
PERFORMANCE CONTROLLER FOR MULTIPLE AUTOMATIC PACKING MACHINE
Mituo Naoi, Sagamihara, Japan, assignor to Sanko Machinery Co., Ltd., Kanagawa-ken, Japan
Filed Nov. 22, 1996, Ser. No. 755,165
Claims priority, application Japan, Apr. 3, 1996, 8-106305
Int. Cl.[6] B65B *9/10;57/00;59/00*
U.S. Cl. 53—55 4 Claims



1. A multiple automatic packing machine for packing a material into bags, each of the having a length, the multiple automatic packing machine comprising:
slitting means, receiving a sheet-like packing material from a take-up roll, for slitting the sheet-like packing material into a predetermined number of packing films;
seal-molding means, receiving the packing films, for seal-molding each of said packing films into a bag-like configuration, said seal-molding means comprising a lateral sealer device for forming a lateral seal in each of the packing films, the lateral sealer device comprising a pair of lateral sealers and lateral sealer driving means for causing relative movement between the pair of lateral sealers to open and close the lateral sealer device;
filling means, receiving the packing films from the seal-molding means, for filling a portion of the material into each of said packing films;

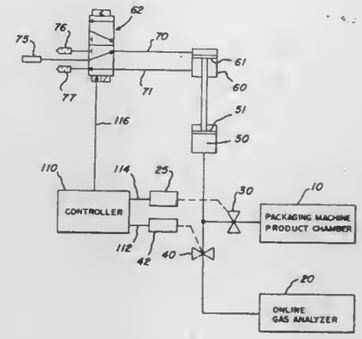
withdrawing means for withdrawing each of said packing films by lowering said lateral sealer device from an initial position by a distance equal to the length of the bag to pull said each of said packing films, opening said lateral sealer device and raising said lowered lateral sealer device back to said initial position, the withdrawing means comprising:
a guide shaft disposed in the multiple automatic packing machine;
a lateral sealer frame having the pair of lateral sealers and the lateral sealer driving means mounted on the lateral sealer frame the lateral sealer frame being disposed on the guide shaft for movement up and down on the guide shaft;
a motor for supplying a motive power for moving the lateral sealer frame up and down;
a link member for conveying the motive power from the motor to the lateral sealer frame; and
a plurality of pulleys on the lateral sealer frame, the link member being trained over the plurality of pulleys;
cutting means for cutting a center line portion of the lateral seal of each of said packing films; and
a performance controller for said multiple automatic packing machine, said performance controller comprising:
key input means for receiving an input representing a desired value for the length of the bag;
program input means for setting a number of rotations of the motor and timings of operation of said filling means and said cutting means in accordance with the desired value for the length of the bag in accordance with the input received by the key input means and a program stored in the program input means; and
control means for controlling the motor and the filling means and said cutting means in accordance with the number of rotations and the timings of operation set by the program input means.

5,822,950
MAESTRO MOUTHPIECE
Jorge de Moya, 195 Walden Way, Wakefield, R.I. 02879, and Albert E. Basso, 51 Poppe Rd., Springfield, Vt. 05156
Filed Apr. 9, 1996, Ser. No. 628,091
Int. Cl.[6] B68B *1/06*
U.S. Cl. 54—8 17 Claims



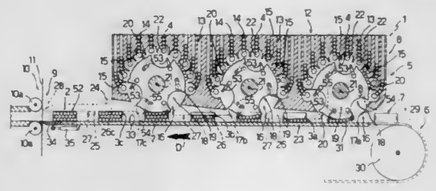
1. A mouthpiece insertable into a horse's mouth in engagement with a horse's mouth bars and receiving the horse's tongue, the mouthpiece comprising:
a bit having an opposed pair of cannons; a heel projecting inwardly along each cannon from an outer edge of each cannon to an inner end spaced from an inner end of the heel on the opposed cannon, each heel having a flattened portion engageable with a horse's mouth bars.

5,822,951
APPARATUS AND METHOD FOR SAMPLING GAS IN PRODUCT PACKAGES
Richard Rosik, Minneapolis, Minn., assignor to Modern Controls, Inc., Minneapolis, Minn.
Filed Nov. 6, 1997, Ser. No. 965,380
Int. Cl.[6] B65B *31/02;57/00*
U.S. Cl. 53—432 12 Claims



11. A method for analyzing gas content in a package prepared and sealed in a packaging machine product chamber, comprising the steps of:
a) closing the product chamber and evacuating most of the gas from the chamber;
b) purging the product chamber with a neutral gas;
c) retrieving a volume sample of the gas remaining in the product chamber into a sample chamber;
d) sealing the package in the product chamber;
e) transferring a portion of the volume gas sample from the sample chamber to a gas analyzer, whereby the gas volume sample comprises a volume greater than twice the volume transferred to the gas analyzer; and
f) obtaining an electrical signal from the gas analyzer which is representative of the gas content in the gas sample.

5,822,952
METHOD AND UNIT FOR FORMING AND WRAPPING GROUPS OF CIGARETTES
Fulvio Boldrini, Ferrara, Italy, assignor to G.D Societa' per Azioni, Bologna, Italy
Filed Jun. 11, 1997, Ser. No. 873,003
Claims priority, application Italy, Jun. 12, 1996, BO96 A 0316
Int. Cl.[6] B65B *11/06;49/00;19/22*
U.S. Cl. 53—444 26 Claims



1. A method of forming and wrapping a multilayer group of cigarettes, the group having opposite longitudinal end surfaces and a lateral surface, the method comprising advancing a conveying pocket in an advancing direction and through a group forming station; forming said group of cigarettes inside said conveying pocket by feeding said cigarettes into said conveying pocket at said group forming station, said conveying pocket having two opposite retaining heads to engage said opposite longitudinal end surfaces

of the cigarettes in said group: advancing said conveying pocket through a group wrapping station so as to engage a wrapping sheet and to fold said sheet at least in a "U" shape about said group and said retaining heads; and withdrawing said retaining heads in a second direction crosswise to said advancing direction so as to release said group.

5,822,953

METHOD OF AND SYSTEM FOR PACKAGING ROLLS OF PHOTOGRAPHIC FILM IN BOX

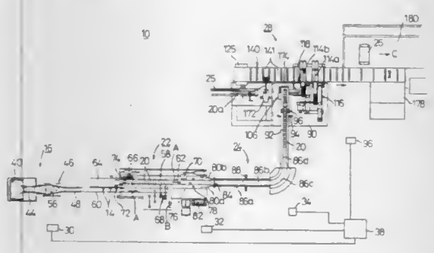
Sakae Kagawa, and Kazunori Nagano, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 6, 1996, Ser. No. 759,718

Claims priority, application Japan, Dec. 7, 1995, 7-319173; Dec. 7, 1995, 7-319178

Int. Cl.[6] B65B *35/30*

U.S. Cl. 53—544 **16 Claims**



1. A system for packaging rolls of photographic film, comprising:

a tubular casing arraying and conveying device for arraying and conveying tubular casings each housing a roll of unexposed photographic film;

a packing device for inserting the tubular casings into respective first packaging cartons each having a packaging carton housing and a tongue-like hanger integral with the packaging carton housing;

a packaging carton conveying device for successively conveying the first packaging cartons with the tubular casings inserted therein, comprising attitude changing means for changing the attitude of said first packaging cartons, wherein said attitude changing means comprises:

a pair of belts for gripping therebetween opposite sides of said first packaging cartons; and

a rod disposed downstream of said belts for engaging the hanger of each of said first packaging cartons to invert the first packaging carton through approximately 180° in a direction in which said first packaging cartons are conveyed; and

a charging device for picking up a predetermined number of first packaging cartons conveyed by said packaging carton conveying device, arraying the said predetermined number of first packaging cartons and a predetermined number of second packaging cartons, each having a packaging carton housing and a tongue-like hanger integral with the packaging carton housing, such that the hangers and the packaging carton housings are superimposed of each other, and placing the array of first and second packaging cartons into a box.

5,822,954

METHOD AND UNIT FOR FOLDING PACKING BLANKS ALONG PREFORMED BEND LINES

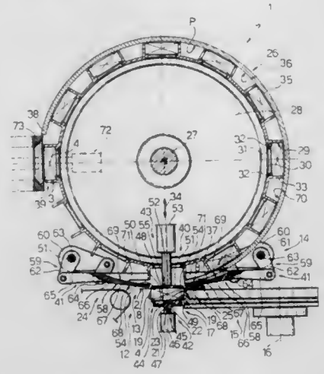
Roberto Osti, Zola Predosa, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D Societa' Per Azioni, Bologna, Italy

Filed Feb. 28, 1997, Ser. No. 807,710

Claims priority, application Italy, Mar. 1, 1996, BO96A0097

Int. Cl.[6] B65B *11/00*

U.S. Cl. 53—466 **14 Claims**



1. A method of folding a rigid packing blank (**2**) along preformed primary and secondary bend lines (**9**, **11**) and about a respective product, (**4**) substantially shaped as a parallelepipedon having a pair of small parallel lateral surfaces (**56**) and a pair of large parallel surfaces (**55**), said primary and secondary preformed bend lines (**9**, **11**) defining, on said blank (**2**), an intermediate portion (**5**) comprising a central panel (**6**), two lateral portions (**7**) arranged on either side of the intermediate portion (**5**) and connected to said intermediate portion (**5**) said primary bend lines (**9**), and, for each lateral portion (**7**), a lateral panel (**8**) and at least one foldable tab (**10**) connected to the lateral panel (**8**) along said secondary bend lines (**11**); the method comprising feeding said blank (**2**) and said product (**4**) in phase with each other to a prefolding station (**13**), wherein the product (**4**) is housed within a supply pocket (**17**); clamping together the blank (**2**) and the product (**4**) in a given folding position within the supply pocket, in which said central panel (**6**) is positioned contacting a respective said large lateral surface (**55**), by means of clamping means (**40**) engaging the product (**4**) and the central panel (**6**); prefolding said lateral portions (**7**) about the respective primary bend lines (**9**) and an to bevelled edges (**20**) of the supply pocket (**17**) by means of movable manipulating means (**58**) while said product and said blank are clamped by said clamping means; transferring the blank (**2**) and the product (**4**) clamped together from the supply pocket (**17**) to a respective folding pocket (**29**) by moving the clamping means (**40**) in a transfer direction (**34**) perpendicular to the central panel (**6**); and completing the folding of the lateral portions (**7**) about the respective primary bend lines (**9**) and on to respective said small lateral surfaces (**56**) during said transferring of the blank (**2**) and product (**4**) clamped together.

5,822,955

GRIP FOR A GRASPING DEVICE

John Woosley; Alfred A. Schroeder; Perry McGuar, and Thomas J. Chadwell, all of San Antonio, Tex., assignors to Packaged Ice, Inc., Houston, Tex.

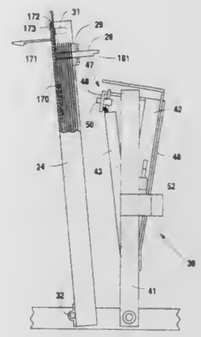
Continuation-in-part of Ser. No. 541,407, Oct. 10, 1995, which is a division of Ser. No. 145,434, Oct. 29, 1993, Pat. No. 5,458,851. This application Nov. 18, 1996, Ser. No. 751,403

Int. Cl.[6] B65B *43/28*

U.S. Cl. 53—570 **10 Claims**

5. An ice bagger, comprising:

an ice bagging unit comprising a gripper; and



said gripper comprising:

a mounting plate having a plurality of tapered slots, and

at least one hook having a grip wherein said grip comprises a member constructed from a material having a durometer hardness range of from 30 to 50.

5,822,956

VACUUM PACKAGING MACHINE

Vreny Liechti, Goldach, and Bruno Landolt, Herisau, both of Switzerland, assignors to Inauen Maschinen AG, Herisau, Switzerland .

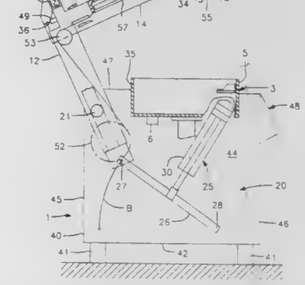
PCT No. PCT/CH95/00094, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/29846, PCT Pub. Date Nov. 9, 1995

PCT Filed May 2, 1995, Ser. No. 571,988

Claims priority, application Switzerland, May 3, 1994, 1374/94

Int. Cl.[6] B65B *31/00*

U.S. Cl. 53—510 **18 Claims**



1. A vacuum-packaging machine comprising a substructure (**1**), a cover (**2**) that is movable in relation to said substructure, and a driving mechanism for moving said cover (**2**) in relation to the substructure (**1**), wherein the driving mechanism (**20**) is designed such that movement of the cover relative to the substructure has a rectilinear component and a swivelling component, wherein the driving mechanism (**20**) is designed such that said rectilinear and swivelling components of the cover's movement are sequential and partly overlap each other, with the result that the cover's movement in a first end-region of travel is rectilinear and movement in an opposing end-region of travel is swiveling.

5,822,957

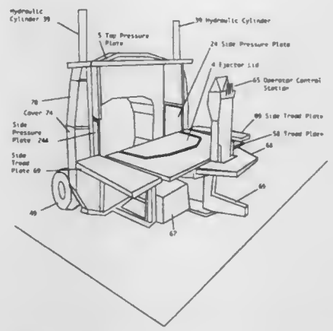
EQUIPMENT FOR SHEATHING HAY BALES IN PLASTIC

Ivan B. Esch, Lancaster, Pa., assignor to Hay Bale, Inc, Leola, Pa.

Filed Aug. 7, 1997, Ser. No. 908,267

Int. Cl.[6] B65B *1/24;63/02*

U.S. Cl. 53—529 **29 Claims**



1. A machine to arrange a plurality of rectangular bales of hay in a compressed stack for purposes of being covered with protective plastic, comprising:

means for receiving a plurality of rectangular bales of hay and positioning the bales in a vertically oriented stack;

a top pressure plate extending over a top of the stack and mounted for vertical reciprocating motion relative to the stack;

means for reciprocating said top pressure plate and moving the pressure plate down into engagement with top of the stack and continuing the downward motion to compress the stack;

a first side pressure plate extending adjacent a first side of the stack and mounted for horizontal reciprocating motion relative to the stack;

first means operable when said top pressure plate is engaged with and has compressed said stack;

said first means being for use in moving said first side pressure plate into engagement with said first side and continuing the motion to compress the stack;

a second side pressure plate extending adjacent a second side of the stack and mounted for horizontal reciprocating motion relative to the stack;

second means operable when said top pressure plate is engaged with and has compressed said stack; and

said second means being for use in reciprocating the second side pressure plate into engagement with said second side and continue the motion to compress the stack.

5,822,958

SANITARY FILL TUBE AND PISTON VALVE ASSEMBLY FOR A POUCH PACKAGING MACHINE

Steven D. Davis, Yuciapa, Calif., assignor to Winpak Lane, Inc., San Bernardino, Calif.

Filed Jun. 2, 1997, Ser. No. 867,506

Int. Cl.[6] B65B *9/06*

U.S. Cl. 53—551 **12 Claims**

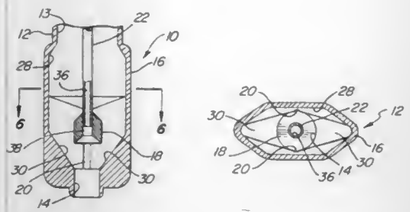
1. A fill tube assembly for a form, fill and seal pouch packaging machine; comprising, in combination:

a substantially oval fill tube having a hollow interior passage, an upper end and a lower end;

an inlet tube secured to the upper end;

a spreader having a hollow inner chamber and a discharge outlet secured to the lower end;

arcuate guides formed in opposed flat side walls of the hollow inner chamber;



a cylindrical piston valve reciprocally guided in the arcuate guides formed in the hollow inner chamber in the spreader; and

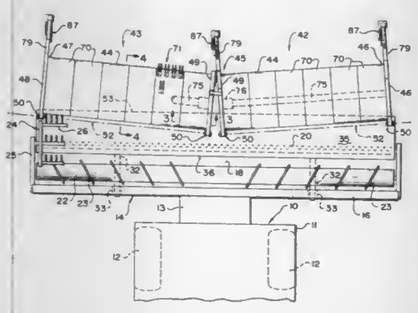
a plunger rod, guided by an opening in the inlet tube is secured to the cylindrical piston valve for moving the cylindrical piston valve in the arcuate guides, between open and closed positions in the spreader.

5,822,959

PICK-UP FOR HARVESTING A LYING CROP

R. Scott Norton, Box 23, Rocanville, Saskatchewan, Canada, S0A 3L0

Filed May 6, 1996, Ser. No. 643,758
Int. Cl.[6] A01D *57/04;89/00*
U.S. Cl. 56—1 **22 Claims**



1. A pick-up for harvesting a crop lying on the ground comprising:

a pick-up frame;

mounting means for mounting the frame for movement across the ground to be harvested with a width of the frame transverse to the direction of movement;

at least two pick-up elements mounted on the frame in side to side arrangement with each of the elements extending across only a part of the width of the frame;

each pick-up element having a front edge for engaging and lifting the lying crop onto the element and a rear edge for depositing the crop onto a collection surface on the frame for collection of the crop;

and means mounting each of the pick-up elements on the frame for individual pivotal movement about an axis across the width of the frame such that a height of each element from the ground can be varied relative to the other of the elements;

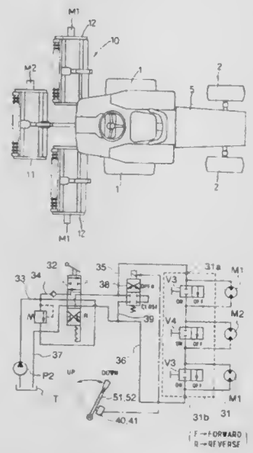
said mounting means mounting the pick-up elements such that each has the front edge arranged at an angle relative to a line at right angles to the direction of movement so that the front edges converge at inner ends thereof to an apex between the pick-up elements which is rearward of outer ends of the front edges.

5,822,960

REEL MOWER

Junichi Kitamura; Matsuo Tachibana; Koji Fujiwara; Osami Fujiwara; Kazuo Samejima; Junji Miyata; Yoshikazu Togoshi; Hironori Tsuchihashi, and Yoshiyuki Esaki, all of Osaka, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Jun. 5, 1997, Ser. No. 869,598
Claims priority, application Japan, Jul. 9, 1996, 8-178981; Sep. 10, 1996, 8-239535
Int. Cl.[6] A01D *75/30;69/03*
U.S. Cl. 56—7 **8 Claims**



1. A reel mower comprising:

a vehicle body having drive wheels;

a first reel mower unit vertically movably connected to said vehicle body and including a reel drive;

a second reel mower unit vertically movably connected to said vehicle body and including a reel drive;

first raising and lowering means for raising and lowering said first reel mower unit between a lower position for a grass cutting operation and an upper position for a non-operational run;

second raising and lowering means for raising and lowering said second reel mower unit between a lower position for a grass cutting operation and an upper position for a non-operational run;

reel control means for controlling the reel drives of said first reel mower unit and said second reel mower unit; and

forcible stopping means for forcibly stopping said reel drives of the reel mower units wherein said forcible stopping means has priority over said reel control means for controlling said reel drives only when said first reel mower unit and said second reel mower unit are both in the upper position.

5,822,961

QUICK ADJUSTMENT FOR STRAIGHT AHEAD TRAVEL FOR A WHEEL-STEERED LAWN MOWER

Garry W. Busboom, Beatrice, Nebr., assignor to ExMark Mfg. Co., Inc., Beatrice, Nebr.

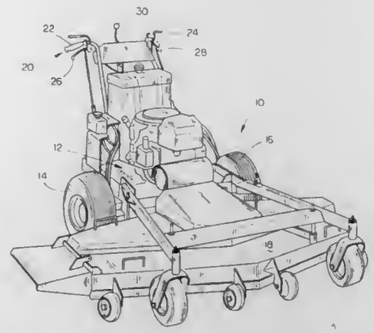
Filed Mar. 20, 1997, Ser. No. 821,115
Int. Cl.[6] A01D *69/00*
U.S. Cl. 56—11.4 **7 Claims**

1. A walk-behind, self-propelled lawn mower, comprising:

a frame means having a rearward end, a forward end, a right side, and a left side;

grass cutting means on said frame means;

a power source on said frame means;



a right drive wheel at said right side of said frame means;

a left drive wheel at said left side of said frame means;

a right hydraulic motor connected to said right drive wheel for driving said right drive wheel;

a left hydraulic motor connected to said left drive wheel for driving said left drive wheel;

a right hydraulic pump fluidly connected to said right hydraulic motor for driving the same;

a left hydraulic pump fluidly connected to said left hydraulic motor for driving the same;

a right hydraulic pump control means connected to said right hydraulic pump for changing the pumping rate of said right hydraulic pump;

a left hydraulic pump control means connected to said left hydraulic pump for changing the pumping rate of said left hydraulic pump;

said power source being connected to said grass cutting means and said right and left hydraulic pumps for driving the same;

connection means interconnecting said right and left hydraulic pump control means;

said connection means being movable in a first direction whereby the pumping rate of both of said right and left hydraulic pumps will be increased the same amount;

said connection means also being movable in a second direction whereby the pumping rates of both of said right and left hydraulic pumps will be decreased the same amount;

a speed control lever connected to said connection means for moving said connection means in said first and second directions;

at least one of said right and left hydraulic pump control means having adjustment means thereon for infinitely adjusting the tracking of the mower by adjusting the output of the hydraulic pump associated with said one hydraulic pump control means, with respect to the output of the hydraulic pump associated with the other hydraulic pump control means, without bringing the mower to a halt;

said right and left hydraulic pump control means having adjustment means thereon for adjusting the tracking of the mower;

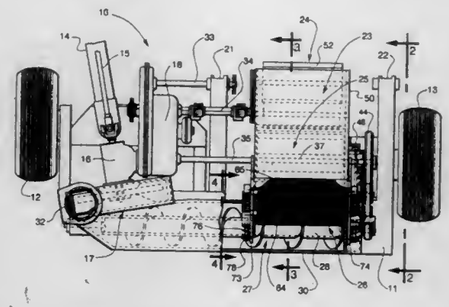
each of said left and right hydraulic pumps having a rotatable control shaft extending therefrom, said connection means comprising a rotatable crank arm having right and left ends, a right arm extending transversely from said right end of said crank arm, a left arm extending transversely from said left end of said crank arm; said left hydraulic pump control means comprising an elongated left control rod having rearward and forward ends, said left control rod having a threaded portion, said forward end of said left control rod operatively secured to the said control shaft on said left hydraulic pump; the rearward end of said left control rod having a left swivel connector mounted thereon which is connected to said left arm on said crank arm; a first jam nut threadably mounted on said left control rod forwardly of said left swivel connector, and a second jam nut threadably mounted on said left control rod rearwardly of said left swivel connector, said first and second jam nuts selectively maintaining said left swivel connector in a predetermined position on said left control rod.

5,822,962

CROP PROCESSOR APPARATUS FOR PULL-TYPE FORAGE HARVESTER

Robert A. Wagstaff, Lancaster, and Larry D. Hall, New Holland, both of Pa., assignors to New Holland North America, Inc., New Holland, Pa.

Filed Apr. 3, 1997, Ser. No. 835,063
Int. Cl.[6] B02C *18/24;* **A01D** *45/02*
U.S. Cl. 56—16.4 R **10 Claims**



1. In a pull type forage harvester comprising

a main frame supported on ground engaging wheels,

a header mounted on and extending forwardly from said main frame,

a cutting assembly comprising a cylindrical cutterhead including an axis and a plurality of knives having cutting edges rotating in a cylindrical path about said axis, and a shearbar operatively associated with said knives for chopping crop material,

feed means for receiving crop material from said header and conveying it to said cutting assembly,

a blower remotely located on said main frame relative to said cutting assembly, said blower including inlet means and means for discharging chopped crop material via a spout to a collecting receptacle, and

a transverse conveyor mounted on said main frame, said conveyor comprising an auger having an axis and spiral flighting, said auger mounted in a trough for receiving chopped crop material from said cutterhead assembly and conveying it to said blower inlet means, the improvement comprising

a crop processor assembly for crushing chopped crop material received from said cutting assembly and expelling it to said transverse conveyor, said processor assembly comprising a pair of crushing rolls mounted adjacent said cutting assembly and above said transverse conveyor.

5,822,963

PROCESS FOR HARVESTING FRESHLY CUT HAY

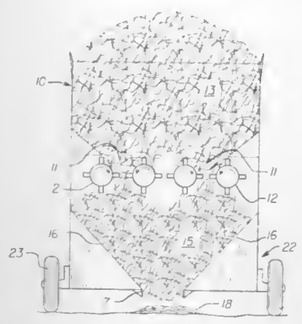
Harvey A. Pletcher, 2414 Harvard, Perryton, Tex. 79070

Filed Apr. 4, 1997, Ser. No. 835,182
Int. Cl.[6] A01D *39/00*
U.S. Cl. 56—16.4 R **1 Claim**

1. A process for converting freshly cut, undried crop material directly into storage-stable forage comprising:

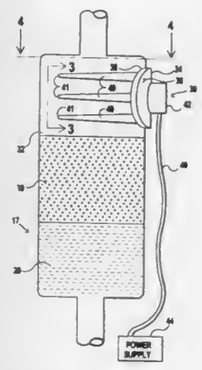
a) gathering said freshly cut crop material having a moisture content greater than 20% into windrows upon the ground in the field where said crop material was grown,

b) adding to said material in said windrows a dry comestible additive substance in comminuted form having an average particle size between ⅛ and 2 inches, thereby producing a preliminary mixture, the amount of said additive substance being sufficient to cause said preliminary mixture to have a moisture content below 20%.



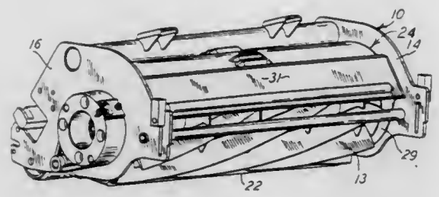
c) lifting said preliminary mixture off the ground and subjecting it to a mixing operation to produce a forage composition, and
d) baling said forage composition.

5,822,964
HOT-GAS ENGINE ELECTRIC HEATER
Rudy Kerpays, Jr., 19163 Jovan St., Reseda, Calif. 91335
Filed Dec. 3, 1996, Ser. No. 758,362
Int. Cl.[6] F01B *29/10*
U.S. Cl. 60—523 16 Claims



1. A hot-gas engine electric heater partially disposable in a heat exchange tube of a hot-gas engine and supplying heat to a working fluid in the hot-gas engine, wherein the heat exchange tube has a contour, comprising:
a) a thin and circular-shaped base conforming to the contour of the heat exchange tube and having an outer surface and an inner surface being conformingly and sealingly abuttable against the heat exchange tube and disposable externally thereto;
b) at least one conically-shaped and outwardly tapering heating element being horizontally oriented and extending perpendicularly outwardly from said inner surface of said thin and circular-shaped base and receiving a voltage for heating the working fluid and being enterable into the heat exchange tube so as to be non-protruding from the heat exchange tube and eliminating wasted heat; and
c) a voltage regulator disposed on said outer surface of said thin and circular-shaped base and regulating the voltage received by said at least one conically-shaped and outwardly tapering heating element and being disposable externally to the heat exchange tube and receiving a voltage.

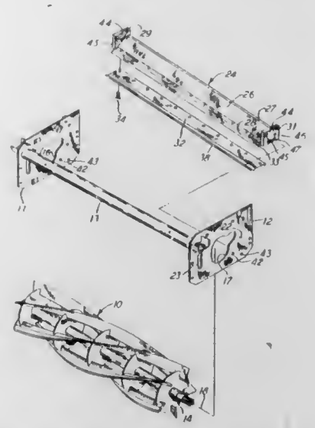
5,822,965
APPARATUS AND METHOD FOR DEFLECTING GRASS CLIPPINGS
Gregory J. Chesack, Kenosha, and Lynn G. Westbrook, Racine, both of Wis., assignors to Textron Inc., Providence, R.I.
Filed Mar. 17, 1997, Ser. No. 818,434
Int. Cl.[6] A01D *34/53*
U.S. Cl. 56—249 20 Claims



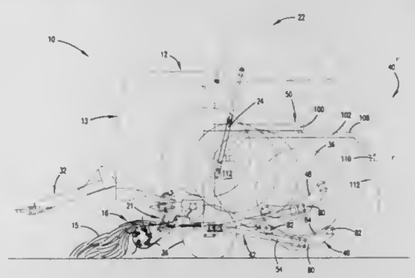
1. In a lawn mower of the type having a rotatable reel mounted for rotation about a longitudinal axis on rotation supports located at both axial ends of said reel, a ground support supporting said reel for moving said reel over the ground in both a forward mowing direction and a rearward direction, and a bed-knife mounted adjacent said reel for cutting grass into clippings in cooperation with said reel, and with said bed-knife directing the grass clippings upwardly from said bed-knife upon rotation of said reel in one direction past said bed-knife, the improvement comprising:
a grass clippings deflector mounted on said rotation supports and including a panel disposed in the path of the upwardly moving cut grass clippings for deflecting the cut grass clippings into the circular path of rotation of said reel and into the ground-movement direction forwardly of said reel, and
said deflector being mounted in a manner to be pivotal about said rotation supports and relative to said axis of said reel to a forward position relative to the ground-movement direction and thereby be free of deflecting said cut grass clippings, whereby said cut grass clippings are free to move past said deflector and rearwardly of said reel relative to the ground-movement direction.

5,822,966
LAWN MOWER ADJUSTABLE BED-KNIFE
Wayne A. Snell, deceased, late of Waterford, Wis., by Kathy L. Snell, administrator, assignor to Textron Inc., Providence, R.I.
Filed Aug. 5, 1997, Ser. No. 906,508
Int. Cl.[6] A01D *34/47*
U.S. Cl. 56—249 7 Claims

1. In a lawn mower with an adjustable bed-knife, a mower frame including spaced-apart side plates, a cutting reel having an extended length and being rotatably mounted about its elongated axis and on said side plates, ground supports mounted on said frame for presenting said reel in an elevation above the ground and for mobilizing said mower in a forward and a rearward ground-movement direction, and said bed-knife mounted on said plates and having a cutting edge disposed in a circumferential space adjacent to and facing said reel and with said cutting edge extending along a line for the length of said reel for the cutting of grass during the rotation of said reel,
the improvement comprising an adjustable connection operative between said side plates and said bed-knife for adjustably supporting said bed-knife and being arranged to present said cutting edge in two different operating positions in said circumferential space and at the same radial distance from said elongated axis for both said positions, and
said adjustable connection being arranged to effect pivoting of said bed-knife in an arc centered on said elongated axis to position said cutting edge in a selected one of said two positions along said circumferential space and at said radius.



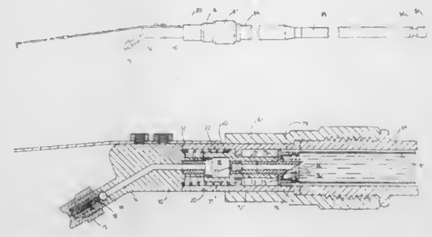
5,822,967
BALER WITH SWING ARM BALE WRAPPER
William A. Hood; Alfred L. Van Maaren, both of Pella, and Ryan G. Walker, Centerville, all of Iowa, assignors to Vermeer Manufacturing Co., Pella, Iowa
Filed Jun. 11, 1996, Ser. No. 661,946
Int. Cl.[6] A01D *91/00*; B30B *9/00*
U.S. Cl. 56—341 42 Claims



1. An apparatus comprising:
a baler for taking in a crop material, forming the crop material into a bale, and ejecting the bale;
arm structure connected to the baler;
a cradle supported by the arm structure for holding the ejected bale and including rotating structure for rotating the bale about at least one axis of the bale;
moving structure associated with the baler for providing relative movement between the baler and the cradle;
wrapping structure supported by the baler; and
a hydraulic cylinder operatively associated with the cradle for tilting the cradle and dumping the bale from the cradle.

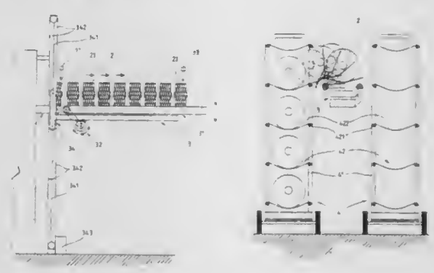
5,822,968
GARDEN TOOL AND SPRAYER
Rodney M. Savala, 4324 E. Fairmont, Fresno, Calif. 93726
Filed Apr. 23, 1996, Ser. No. 636,873
Int. Cl.[6] A01D *07/00*
U.S. Cl. 56—400.04 9 Claims

1. An improved garden implement comprising an elongated hollow handle, a working head at the proximal end of said handle,



a spray nozzle attached to said handle adjacent said working head, a removable reservoir cartridge containing fluid under pressure adapted to fit inside said handle, said cartridge having a closable, deformable pointed end and a flat opposite end, means for opening said handle to accept said cartridge, fluid communication means between the pointed end of said cartridge and said nozzle, biasing means in said handle between said cartridge and said nozzle, and force transmission means at the distal end of said handle in communication with the flat end of said cartridge, whereby as force is transmitted to the cartridge, said deformable end is pushed open allowing the pressurized fluid therein to escape to the outside through said nozzle.

5,822,969
DEVICE FOR DELIVERING WOUND BOBBINS FROM A TEXTILE MACHINE
Zdeněk Špindler, B. Něcové, and Vojtěch Novotný, Dukelská, both of Czech Rep., assignors to Rieter Elitex a.s., Usti nad Orlici, Czech Rep.
Filed Oct. 15, 1996, Ser. No. 730,085
Claims priority, application Czech Rep., Oct. 16, 1995, 2693-95
Int. Cl.[6] D01H *9/10*
U.S. Cl. 57—281 13 Claims



1. A device for delivering wound bobbins from a textile machine, comprising:
a main conveyor of wound bobbins, the main conveyor having a fixed height and an end toward which the main conveyor conveys the bobbins;
an ancillary conveyor of wound bobbins having a receiving end arranged for receiving wound bobbins from the main conveyor, and the ancillary conveyor including a movable conveyor for conveying wound bobbins along the ancillary conveyor away from the end of the main conveyor, the ancillary conveyor remaining horizontal along its length; the ancillary conveyor having lateral sides;
the ancillary conveyor being supported for adjustment of the height of the ancillary conveyor, the ancillary conveyor remaining horizontal;
a story like multi-row container arranged at least along one lateral side of the ancillary conveyor and including respective horizontal rows of bobbin row containers at various fixed heights on the story like container;

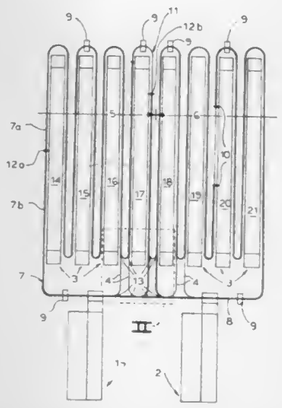
an adjustment device for displacing rows of bobbins from the ancillary conveyor in the direction laterally from the direction of motion of the ancillary conveyor to transfer wound bobbins to the bobbin row container of the story like container at the lateral side of the ancillary conveyor.

5,822,970

TRANSPORT APPARATUS FOR BOBBINS AND BOBBIN SLEEVES IN A TEXTILE PLANT

Herman Güttler, Uhingen, Germany, assignor to Zinser Textilmaschinen GmbH, Ebersbach/Fils, Germany

Filed Mar. 21, 1997, Ser. No. 823,059
Claims priority, application Germany, Mar. 22, 1996, 196 11 398.9
Int. Cl.[6] D01H 9/10
U.S. Cl. 57—281 5 Claims



1. A transport apparatus for bobbins and bobbin sleeves in a textile plant for processing roving and wherein each of at least two initial processing machines is coupled with a respective group of multiplicity of elongated subsequent processing machines and the transport apparatus displaces bobbins from the initial processing machines to the subsequent processing machines and bobbin sleeves from the subsequent processing machines to the initial processing machines, said transport apparatus comprising:

at least two suspension tracks each extending in a respective loop along opposite sides of the respective group of said subsequent processing machines;

branch tracks between the suspension tracks of said groups selectively operable to transfer a loop of one of said subsequent machines from the suspension track of one of said groups to the suspension track of another of said groups;

a respective elongated transporter on each of said suspension tracks, slightly shorter than the length of the respective suspension track, and provided with means for suspending respective bobbins and bobbin sleeves from the transporter; and

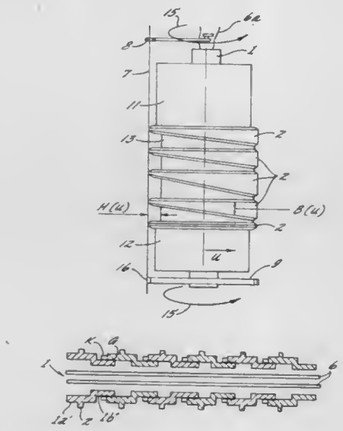
means for decoupling a transfer segment of one of said transporters from an end of said one of said transporters and coupling the decoupled transfer segment onto an end of another of said transporters, said transfer segment having a length corresponding substantially to the length of the respective loop.

5,822,971

ADJUSTABLE HEATING APPARATUS FOR AN ADVANCING YARN

Karl Bauer, Remscheid, Germany, assignor to Barmag AG, Remscheid, Germany

PCT No. PCT/EP93/02273, § 371 Date Apr. 24, 1995, § 102(e) Date Apr. 24, 1995, PCT Pub. No. WO94/04733, PCT Pub. Date Mar. 3, 1994
PCT Filed Aug. 24, 1993, Ser. No. 392,822
Claims priority, application Germany, Aug. 25, 1992, 42 28 129.6; Dec. 15, 1992, 42 42 160.8
Int. Cl.[6] D01H 7/46
U.S. Cl. 57—290 21 Claims



1. An apparatus for heating an advancing yarn comprising

an elongate heater body which includes a heating surface extending longitudinally along the length thereof,

a plurality of yarn carriers mounted to the heating surface in a longitudinally spaced apart arrangement along the length of the heating surface, with each of the yarn carriers defining a longitudinal width which extends in the longitudinal direction of the heating surface,

yarn guide means for guiding an advancing yarn along a yarn path which extends longitudinally across the yarn carriers in spaced relation to the heating surface,

at least some of said yarn carriers each being variable in their longitudinal width in a direction transverse to the yarn path, and

wherein the heat transfer between the heating surface and the advancing yarn may be adjusted by adjusting the relative position between the yarn carriers and the yarn path transversely to the yarn path.

5,822,972

AIR CURTAIN NEP SEPARATION AND DETECTION

David B. Patelke, Knoxville; Gordon F. Williams, Norris; Michael E. Galyon, and Hossein M. Ghorashi, both of Knoxville, all of Tenn., assignors to Zellweger Uster, Inc., Knoxville, Tenn.

Filed Jun. 30, 1997, Ser. No. 885,588
Int. Cl.[6] D01H 4/00
U.S. Cl. 57—408 19 Claims

1. A nep separator and detector, comprising:

means for presenting a fiber sample having fibers, neps, and trash,

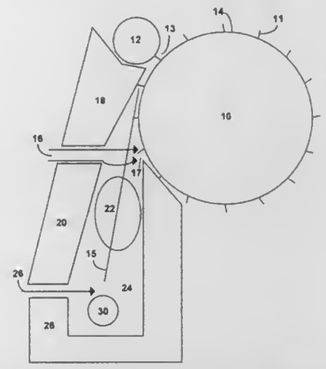
a toothed rotating cylinder for receiving the fiber sample at a fiber sample receiving point, and for impacting and propelling at least a portion of the trash and neps along an ejection path, an air curtain directed toward and passing across a portion of the toothed surface of the rotating cylinder at a location rotationally after the fiber sample is received by the toothed rotating cylinder, the air curtain crossing and being oriented transverse to the ejection path, for drawing at least a quantity of the portion of the neps out of the ejection path and onto the surface of the toothed cylinder as it rotates, the trash propelled by impact with the toothed rotating cylinder having sufficient momentum to pass through the air curtain along the ejection path,

a dead air space disposed adjacent the air curtain and across the air curtain from the fiber sample receiving point, and positioned in the ejection path, through which the trash propelled by the toothed rotating cylinder passes,

a nep air stream for drawing the neps on the surface of the toothed cylinder off the surface of the toothed cylinder at a nep release point and entraining the neps,

a sensor for detecting the neps entrained in the nep air stream, and producing a nep detection signal upon the occurrence of each detection of a nep, and

output means for receiving the nep detection signals produced by the sensor and producing output signals corresponding to the nep detection signals.

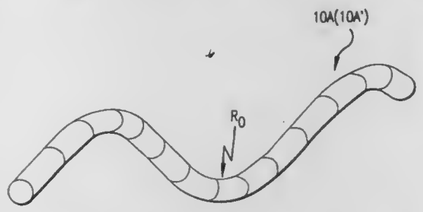


5,822,973

CORROSION RESISTANT STEEL FILAMENT

Yoshikazu Kaneko, and Naohiko Obana, both of Tochigi-ken, Japan, assignors to Bridgestone Metalpha Corporation, Tokyo, Japan

Division of Ser. No. 652,082, May 23, 1996. This application Oct. 6, 1997, Ser. No. 944,223
Claims priority, application Japan, May 26, 1995, 7-152638; Oct. 3, 1995, 7-282538; Oct. 17, 1995, 7-304934; Nov. 17, 1995, 7-324006; Nov. 17, 1995, 7-324007
Int. Cl.[6] D01H 13/26
U.S. Cl. 57—902 1 Claim



1. A spiral steel filament comprising:

a pre-formed spiral structure produced by drawing a steel wire having a carbon content of at least 0.70% by weight, said preformed structure having a diameter in the range of about 0.10 to about 0.40 mm;

a strength of said spiral steel filament being at least about 3,000 N/mm^2; and

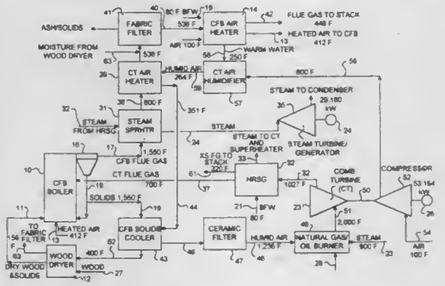
said spiral steel filament having a residual tension stress in a surface layer inside said pre-formed spiral structure which is no greater than zero, wherein a negative residual tension stress represents a compressive stress.

5,822,974

HYBRID BIOMASS AND NATURAL GAS/OIL POWER GENERATION SYSTEM

Charles R. McGowin, Carmel; Jane H. Turnbull, Los Altos, and Shelton Ehrlich, Palo Alto, all of Calif., assignors to Electric Power Research Inst., Palo Alto, Calif.

Filed Feb. 11, 1997, Ser. No. 797,187
Int. Cl.[6] F02C 6/00
U.S. Cl. 60—39.182 5 Claims



1. In a hybrid biomass natural gas/oil power generation system having a combustion turbine (CT) with the natural gas/oil as its major fuel and where the biomass is combusted to produce a heat output including solids with a flue gas and where a steam turbine is driven by the heat output of both the combusted biomass and CT, the system including,

a boiler for said biomass producing said heated flue gas with solids;

separator means connected with said boiler for separating said flue gas from said solids;

humidifying means for heating and humidifying air;

heater means for receiving said solids and passing said heated and humidified air therethrough for heating said air;

filter means connected to said heater means for filtering corrosive particles from said heated and humidified air and supplying said air to such CT in combination with said natural gas/oil.

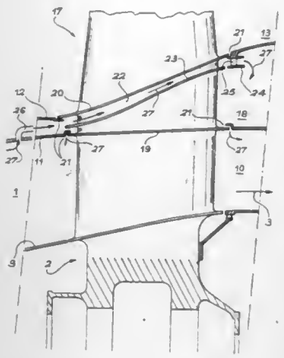
5,822,975

BYPASS ENGINE WITH MEANS FOR LIMITING GAS LEAKAGE

Xavier Jean-Michel André Guyonnet, 536, rue de la Saussaie, 77310-Saint Fargeau Ponthierry, and Pascal Claude Wurniesky, 21, Clos de l'Ormeteau, 77176-Savigny Le Temple, both of France

Filed Apr. 10, 1997, Ser. No. 834,877
Claims priority, application France, Apr. 24, 1996, 9605137
Int. Cl.[6] F02C 7/28; F02K 3/04
U.S. Cl. 60—226.1 4 Claims

1. A bypass engine comprising a primary gas flow path and a secondary gas flow path, a fan having blades disposed both in said primary gas flow path and in said secondary gas flow path, said fan also having first and second annular platforms partly bounding said primary and secondary gas flow paths respectively, first and second annular members respectively aligned with said first and second annular platforms and defining therewith a space between said primary and secondary gas flow paths, means defining an annular intermediate gas flow path in said space at least in front of the gaps



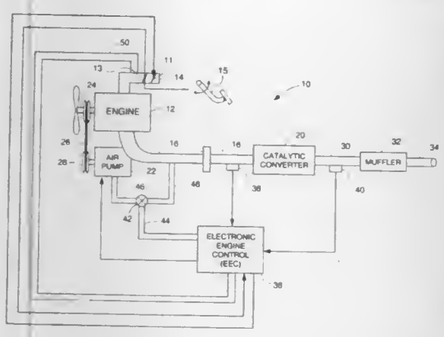
existing between said annular platforms and said annular members, and means for blowing a flow of gas through said intermediate gas flow path.

5,822,976

METHOD AND SYSTEM FOR CONTROLLING THE AMOUNT OF SECONDARY AIR INTRODUCED INTO AN INTERNAL COMBUSTION ENGINE

Charles Allen Cockerill, Brighton, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Apr. 5, 1995, Ser. No. 417,351
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—274 10 Claims



1. For use with vehicle having an internal combustion engine which emits exhaust gasses, an intake manifold for providing primary air flow, an air pump driven directly from the engine to provide a secondary air flow, and a catalytic converter for treating the exhaust gases, a method for controlling the quanity of secondary air provided by the air pump so as to maintain a desired catalyst air/fuel ratio independently of the driving condition of the vehicle, the method comprising:

sensing an oxygen content of the untreated exhaust gas and generating a corresponding oxygen content signal;

determining a quantity of primary air/flow necessary to obtain a desired air/fuel ratio for the engine based on the oxygen content signal;

controlling the primary air flow provided by the intake manifold based on the desired air/fuel ratio for the engine;

determining a quantity of secondary air flow necessary to maintain the desired catalyst air/fuel ratio based on the determined quantity of primary air/flow; and

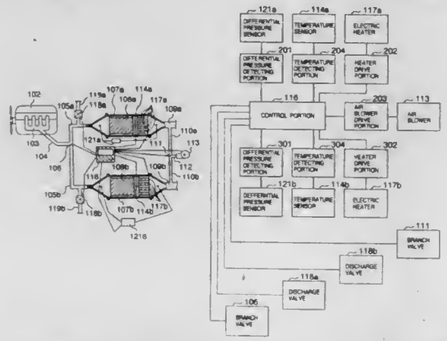
activating a control valve disposed between the air pump and the catalytic converter to control the quantity of secondary air provided by the air pump based on the determined quantity of secondary air.

5,822,977

METHOD OF AND APPARATUS FOR PURIFYING EXHAUST GAS UTILIZING A HEATED FILTER WHICH IS HEATED AT A RATE OF NO MORE THAN 10° C./MINUTE

Kensei Fukuda, Saga-ken; Shoji Kuroda, Miyazaki-ken; Yoshinobu Kuwamoto, Onojo, and Kei Sakanoue, Fukuoka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 16, 1996, Ser. No. 601,343
Claims priority, application Japan, Feb. 28, 1995, 7-040857
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—274 52 Claims



1. A method of purifying exhaust gas, the method comprising:

(a) passing the exhaust gas through a filter to remove at least particulate matter from the exhaust gas;

(b) heating said filter to burn the particulate matter deposited on said filter such that an amount of generation of heat per unit time due to a combustion reaction of the particulate matter is less than an amount of heat radiation from the filter per unit time; and

(c) setting a rate of rise of an average temperature in said filter not more than 10° C./minute when the average temperature is in a range of temperatures which are not less than 400° C.

5,822,978

METHOD OF CONTROLLING THE ELECTRIC HEATING OF A CATALYTIC CONVERTER

Walter Streit, Ingolstadt; Rainer Mertl, Garching; Erhard Otto, Grobenzell; Achim Donnerstag, Braunschweig; Kurt Maute, Sindelfingen; Alfred Wirth, Oberdischingen, and Wolfgang Zag, Flacht, all of Germany, assignors to Audi AG, Ingolstadt, Germany

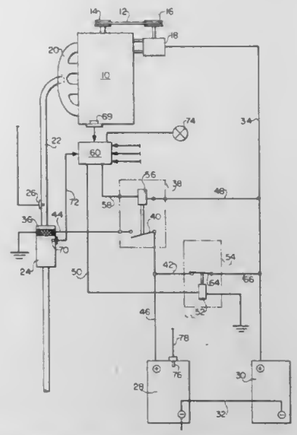
PCT No. PCT/EP95/02412, § 371 Date Dec. 18, 1996, § 102(e) Date Dec. 18, 1996, PCT Pub. No. WO96/00343, PCT Pub. Date Jan. 4, 1996
PCT Filed Jun. 21, 1995, Ser. No. 750,881
Claims priority, application Germany, Jun. 24, 1994, 44 22 198.3
Int. Cl.[6] F01N *3/20;9/00;* B60R *16/04*
U.S. Cl. 60—274 9 Claims

1. A process of controlling an electric heater of a catalytic converter for detoxification of exhaust gases of an internal combustion engine in a motor vehicle, comprising the steps of:

connecting a first battery and a second battery with an electrical system of the motor vehicle, the first battery being connectable to a power switch and the electric heater through an electric control unit based on a function of one of temperature and charging level, the first battery being electrically isolatable from the second battery and the electrical system of the motor vehicle through an isolating switch;

detecting a filament battery voltage of the first battery when a heater on criterion is satisfied, a vehicle electrical system voltage is detected, and the isolating switch is set in an open state; and

generating an error signal when the electric heater is switched to an off state when the filament battery voltage falls below an assigned minimum value.

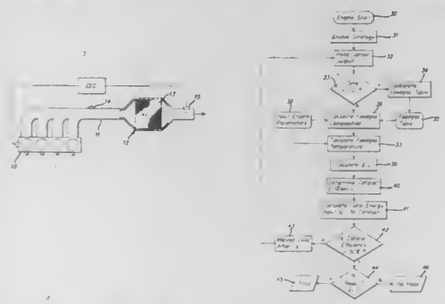


5,822,979

CATALYST MONITORING USING A HYDROCARBON SENSOR

Douglas Ray Hamburg, Bloomfield Hills; Eleftherios Miltiadis Logothetis, Birmingham; Jacobus Hendrik Visser, Farmington Hills, and Margherita Zanini-Fisher, Bloomfield, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Feb. 24, 1997, Ser. No. 804,861
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—274 3 Claims



1. A method for monitoring the performance of a catalyst, including:

providing a first signal related to the hydrocarbon concentration of the exhaust gas before said catalyst reaches operating temperature using a sensor positioned downstream of said catalyst;

providing a second electronic signal related to the hydrocarbon concentration of the exhaust gas after said catalyst reaches operating temperature using said sensor;

comparing said first and second electronic signals using an electronic engine control means and determining the functionality of said catalyst;

determining the efficiency of said catalyst by comparing the hydrocarbon concentration of the feedgas to the hydrocarbon concentration of said catalyst after reaching operating temperature using an electronic engine control means;

wherein the step of determining the efficiency of the catalyst includes:

reading said sensor output;

sensing whether time since engine start is less than a predetermined time value;

if yes, calibrating a feedgas table;

if no, calculating the composition of the exhaust before said catalyst reaches operating temperature;

calculating the temperature of the exhaust before said catalyst reaches operating temperature;

calculating the energy input into said catalyst before it reaches operating temperature;

determining catalyst efficiency;

determining the total energy input into the catalyst;

determining whether the catalyst is operating above a predetermined efficiency level; and

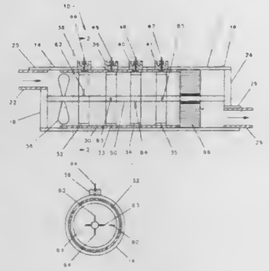
determining whether the total energy input into the catalyst is less than a value defined which corresponds to the performance of a catalyst that has deteriorated sufficiently to induce emission levels higher than a standard.

5,822,980

DEVICE FOR REDUCING MOLECULAR POLLUTANTS IN THE GASES FROM A COMBUSTION ENGINE

Jack Chen, 14 Kimberly Cir., Oak Brook, Ill. 60521

Filed Jul. 1, 1997, Ser. No. 886,857
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—274 20 Claims



8. A device for reducing molecular pollutants from a stream of exhaust gas comprising,

an elongate chamber having a cavity with an inlet and an outlet,

a tubular electrode having a principal longitudinal axis, said tubular electrode positioned within said cavity,

an elongate probe extending axially through said tubular electrode, said elongate probe being rotatable within said tubular electrode about a principal longitudinal axis,

a spark pin extending from a surface of said probe, said spark pin having a distal end spaced from an inner surface of said tubular electrode,

means for electrically insulating said spark pin from said tubular electrode,

means for generating a spark between said distal end of said spark pin and said tubular electrode,

means for rotating said probe within said tubular electrode, and

means for connecting said input end of said chamber to an exhaust of an internal combustion engine.

18. The method of removing molecular pollutants from a stream of exhaust gas comprising the steps of,

directing said exhaust gas through a chamber having an input and an output, and a wall,

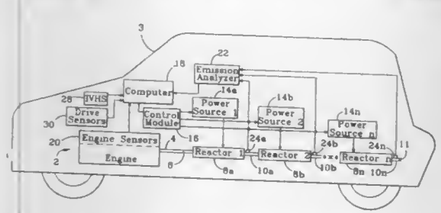
positioning a plurality of electrical contacts within said wall,
providing means for forming a matrix of sparks across said electrical contacts,
generating a train of successive electric pulses, each of said electric pulses having a voltage sufficient to cause a spark across said electrical contacts in said chamber, and
directing said train of electric pulses to said means for forming a matrix of sparks.

5,822,981

AUTOMATIC CONTROL SYSTEM AND METHOD FOR CORONA DISCHARGE POLLUTANT DESTRUCTION APPARATUS

Weldon S. Williamson, Malibu; Franklin A. Dolezal, Reseda; Nelson W. Sorbo, Redondo Beach, and John H. S. Wang, Rancho Palos Verdes, all of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Aug. 19, 1996, Ser. No. 689,999
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—275 **12 Claims**



1. A corona discharge pollutant destruction system, comprising:
at least one corona discharge reactor capable of generating corona discharges to destroy pollutants in an exhaust gas;
at least one power source connected to supply electrical power to said reactor for generating corona discharges in said reactor;
at least one exhaust gas sensor connected to sense the pollutant content of said exhaust gas from said reactor, said sensor capable of generating sensor signals; and
a control module connected to dynamically control the power source's power generation parameters to said reactor in response to changing sensor signals from said sensor, wherein said power generation parameters include at least one of the voltage, resonator frequency, pulse width and pulse repetition rate applied to said reactor.

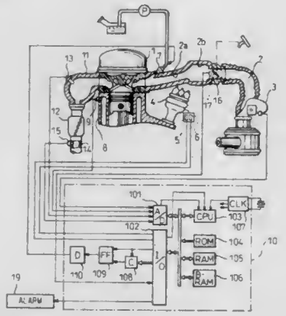
7. A corona discharge pollutant destruction system, comprising:
at least one corona discharge reactor capable of generating corona discharges to destroy pollutants in an exhaust gas;
at least one power source connected to supply electrical power to said reactor for generating corona discharges in said reactor;
at least one exhaust gas sensor connected to sense the pollutant content of said exhaust gas from said reactor, said sensor capable of generating sensor signals;
a control module connected to dynamically control the power source's power generation parameters to said reactor in response to changing sensor signals from said sensor;
a computer connected to received inputs from said sensor and in response to provide an output to said control module for controlling said power source's power generation parameters; and
at least one drive control sensor connected to sense drive control characteristics and to convey said drive control characteristics to said computer, said computer responding to selected changes in said drive control characteristics by adjusting its output to said control module.

5,822,982

DEVICE FOR DETERMINING DETERIORATION OF A CATALYTIC CONVERTER FOR AN ENGINE

Noritake Mitsutani, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 22, 1996, Ser. No. 685,100
Claims priority, application Japan, Jul. 26, 1995, 7-190573
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 **10 Claims**



1. A device for determining deterioration of a catalytic converter having an O_2 storage capability and disposed in an exhaust gas passage of an engine comprising:
an upstream air-fuel ratio sensor disposed in an exhaust gas passage of an engine upstream of a catalytic converter for detecting an air-fuel ratio of an exhaust gas upstream of the catalytic converter;
a downstream air-fuel ratio sensor disposed in the exhaust gas passage of the engine downstream of the catalytic converter for detecting the air-fuel ratio of the exhaust gas downstream of the catalytic converter;
air-fuel ratio feedback control means for controlling the air-fuel ratio of the exhaust gas flowing into the catalytic converter in such a manner that the air-fuel ratio of the exhaust gas flowing into the catalytic converter changes between a rich air-fuel ratio and a lean air-fuel ratio compared to a stoichiometric air-fuel ratio alternately;
rich gas inflow amount calculating means for calculating the amount of HC and CO in the exhaust gas flowing into the catalytic converter based on the output of the upstream air-fuel ratio sensor when the air-fuel ratio of the exhaust gas is controlled by said air-fuel ratio feedback control means;
rich gas outflow amount calculating means for calculating the amount of HC and CO in the exhaust gas flowing out from the catalytic converter based on the output of the downstream air-fuel ratio sensor when the air-fuel ratio of the exhaust gas is controlled by said air-fuel ratio feedback control means; and
determining means for determining a degree of deterioration of the catalytic converter based on the inflow amount of HC and CO calculated by said rich gas inflow amount calculating means and the outflow amount of HC and CO calculated by the outflow rich gas calculating means.

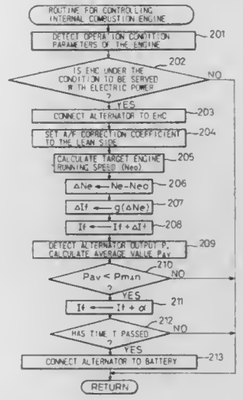
5,822,983

APPARATUS FOR CONTROLLING INTERNAL COMBUSTION ENGINE MOUNTING ELECTRICALLY HEATED CATALYST

Shinji Ikeda, Mishima, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Sep. 16, 1996, Ser. No. 714,719
Claims priority, application Japan, Sep. 21, 1995, 7-243135
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—284 **12 Claims**

1. An apparatus for controlling an internal combustion engine mounting an electrically heated catalyst having a catalyst carrier which is attached to the exhaust gas passage and is electrically heated, comprising:



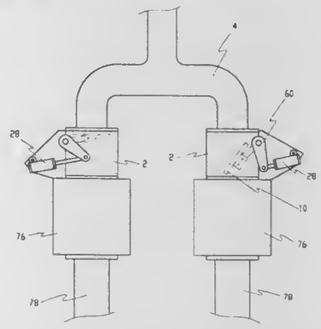
an operation condition detection means for detecting the operation conditions of the internal combustion engine;
a current-supplying condition detection means for detecting whether the electrically heated catalyst is in a condition to be supplied with an electric current;
an alternator connection switching means which, when the electrically heated catalyst is in a condition to be supplied with an electric current, disconnects the alternator driven by the internal combustion engine from a battery and connects it to the electrically heated catalyst;
an air-to-fuel ratio-setting means for setting the air-to-fuel ratio of the internal combustion engine to a lean region while the electric current is being supplied to the electrically heated catalyst;
a target running speed calculation means for calculating a present target running speed of the engine from the calculation conditions of the engine that are detected;
a running speed deviation operation means for calculating a deviation between the target running speed that is calculated and the present running speed of the engine; and
field current control means for controlling the field current of the alternator toward a direction in which the deviation decreases.

5,822,984

ALTERNATE VALVE ASSEMBLY FOR SMOKE RE-COMBUSTION DEVICE

Sang Kyu Park, Clover Apt. 120-1003, Dunsan-dong, Seo-ke, Taejon, Rep. of Korea

Filed Feb. 4, 1997, Ser. No. 794,811
Claims priority, application Rep. of Korea, Feb. 6, 1996, 96-2771
Int. Cl.[6] F01N *3/00;* **F16K** *1/16*
U.S. Cl. 60—288 **4 Claims**



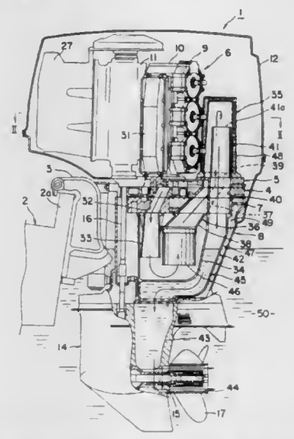
1. An alternate valve assembly for a smoke re-combustion device of a engine including a pair of alternate valves which are symmetrically installed at each inlet of filters connected with branches of an exhaust manifold which is branched off two ways, each of said valves comprising:
a valve body being supported to be rotatable by a shaft in bearings of a valve housing having an inlet and an outlet, with bushes interposed, said shaft including a rectangular part about the middle of said shaft and a protruded end formed extendedly from the rectangular part, said bushes being supported in said bearings of the valve housing thereby supporting said shaft and said protruded end;
an arm connecting said valve body with said shaft;
an actuator being placed in the outside of said valve housing and being connected with said protruded end through a link thereby opening and closing said valve body through said arm alternately;
a collar being inserted in the periphery of said shaft for sealing up said shaft so that the periphery of said shaft may not be exposed to the inside of said valve housing;
rings for maintaining airtightness respectively being inserted in peripheries of said shaft and said protruded end and being pressed elastically by springs to be contacted with the inner ends of said bushes;
a pair of retainer rings being inserted in the inside of said bearing which supports said protruded end;
a packing being positioned between said retainer rings to seal up the gap between said protruded end and said bush;
a ring-shaped valve seat being inserted in and being supported by an annular groove having a jaw, said annular groove being formed in the inner periphery of said inlet of the valve housing; and
a cushion being fixed to the outside of said ring-shaped valve seat to prevent exhaust gases from leaking.

5,822,985

EXHAUST PASSAGE STRUCTURE OF OUTBOARD MOTOR UNIT

Masaaki Yoshimura, Shizuoka-ken, Japan, assignor to Suzuki Kabushiki Kaisha, Japan

Filed Jul. 25, 1996, Ser. No. 687,020
Claims priority, application Japan, Jul. 31, 1995, 7-195581
Int. Cl.[6] F01N *3/28*
U.S. Cl. 60—302 **5 Claims**



1. In an exhaust passage structure of an outboard motor unit having an engine holder mounted to a hull through a bracket, an engine disposed to an upper portion of the engine holder, a drive shaft housing disposed to a lower portion of the engine holder and an exhaust passage structure extending from the engine into water

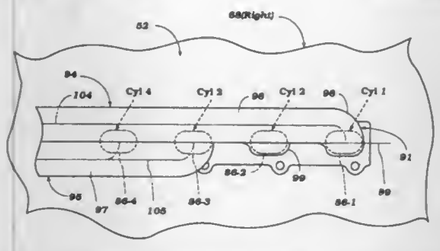
through the drive shaft housing, the improvement in which first and second exhaust expansion chambers are formed on the way of an exhaust passage of the exhaust passage structure, said second exhaust expansion chamber is disposed to an upper portion of the engine holder, an exhaust tube is formed on an upstream side of another exhaust passage which communicates said second exhaust expansion chamber with the water so that an upstream side opening of the exhaust tube is directed upward in a mounted state, said opening being opened at a position between the location of the bracket and an upper end of an engine cylinder so that the water does not enter the second exhaust expansion chamber even if a draft line of the water rises.

5,822,986

EXHAUST SYSTEM FOR ENGINE

Shinji Higashide, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Continuation of Ser. No. 451,139, May 26, 1995. This application Dec. 20, 1996, Ser. No. 770,545
Claims priority, application Japan, May 30, 1994, 6-139324
Int. Cl.[6] F01N *7/10*
U.S. Cl. 60—313 **6 Claims**



1. A V-type internal combustion engine having a pair of angularly inclined cylinder banks each containing four cylinders and forming four exhaust ports on oppositely facing external surfaces thereof, a pair of exhaust manifolds, each affixed to a respective one of said cylinder bank external surface, each exhaust manifold being comprised of an integral metallurgically attached unit comprised of at least two tubular collector sections, each collector section having a collector pipe section connected to at least two integral metallurgically attached branch sections, each of said branch sections being connected to a respective one of said exhaust ports, said collector sections extending at least in substantial part in parallel relationship to each other and a common collector metallurgically attached to the discharge ends of said collector sections and forming a single exhaust gas outlet; said branch sections serving said collector sections being associated with cylinders that do not fire more frequently than 270 degrees of crankshaft rotation from each other, said branch sections being disposed at an acute angle to the collector pipe sections.

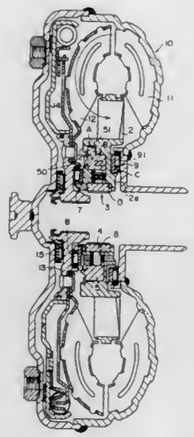
5,822,987

STATOR AND ONE WAY CLUTCH ASSEMBLY FOR A TORQUE CONVERTER

Kazumasa Tsukamoto; Masahiro Hayabuchi; Koji Maeda; Yutaka Teraoka, all of Anjo, and Makoto Yamaguchi, Takefu, all of Japan, assignors to Aisin AW Co., Ltd., Japan

Filed Mar. 18, 1997, Ser. No. 816,773
Claims priority, application Japan, Mar. 28, 1996, 8-099066
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—441 **17 Claims**

1. A torque converter comprising:
a stator;
a one-way clutch arranged radially inward of said stator and having inner and outer races, said outer race having first and second outer cylindrical surfaces engaging respectively first



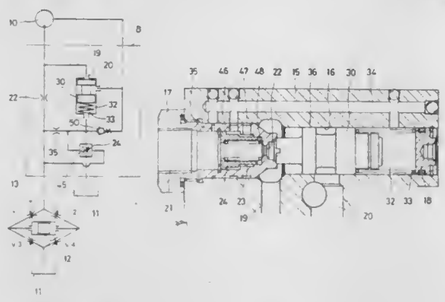
and second inner cylindrical surfaces on said stator, said first outer cylindrical surface having outer splines and said first inner cylindrical surface having inner splines meshed with said outer splines, said second surfaces engaging to center said stator on said one-way clutch, said first surfaces being axially offset from said second surfaces.

5,822,988

FLOW CONTROL DEVICE OF A POWER STEERING APPARATUS

Hideya Kato, Okazaki, Japan, assignor to Toyoda Koki Kabushiki Kaisha, Kariya, Japan

PCT No. PCT/JP96/03438, § 371 Date Jul. 24, 1997, § 102(e) Date Jul. 24, 1997, PCT Pub. No. WO97/18983, PCT Pub. Date May 29, 1997
PCT Filed Nov. 22, 1996, Ser. No. 875,110
Claims priority, application Japan, Nov. 24, 1995, 7-305284
Int. Cl.[6] F16D *31/02*
U.S. Cl. 60—468 **2 Claims**



1. A flow control device of a power steering apparatus comprising:
a control valve having variable throttles arranged on paths connected to a pump, both fluid chambers of a power cylinder and a reservoir;
a metering orifice arranged in a supply passage leading operating fluid discharged from said pump to said control valve;
a flow control valve having said metering orifice, a spring chamber connected to said supply passage downstream of said metering orifice, and a bypass spool urged by a spring in said spring chamber so as to regulate an opening of a bypass passage in accordance with the pressure difference across said metering orifice;

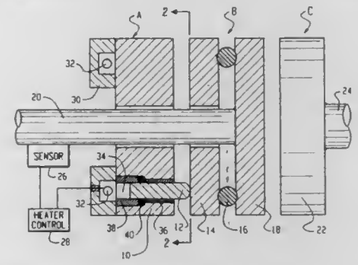
a valve receiving bore (**16**) which slidably receives said bypass spool in a housing of said pump;
a union (**17**), arranged in said valve receiving bore (**16**), having said metering orifice at a first end of it and an outlet port leading operating fluid passed through said metering orifice at a second end;
a load pressure responsive valve (**24**) received in said union (**17**) and having a variable orifice (**45**), said load pressure responsive valve (**24**) brings said spring chamber into communication with said reservoir when road pressure, caused by operation of a steering wheel, is relatively low and said load pressure responsive valve (**24**) shuts the communication between said spring chamber and said reservoir in response to rising of the road pressure.

5,822,989

THERMOCHEMICAL/MECHANICAL BRAKE AND CLUTCH UNIT

Michael L. Sturdevant, Painesville; Griffin M. Allen, Jr., Shaker Heights, and Edward T. Schneider, Eastlake, all of Ohio, assignors to TCAM Technologies, Inc., Mentor, Ohio

Filed Jun. 3, 1996, Ser. No. 656,761
Int. Cl.[6] F03G *7/06*
U.S. Cl. 60—528 **21 Claims**



1. An electromechanical actuator comprising:
an elongated passage containing a solid polymeric material which melts, expands, and flows when heated;
an elongated, electrical heater element disposed within and extending along the elongated passage such that when the heater is actuated, melted polymeric material flows along the elongated heater element and the passage equalizing pressure along the elongated passage;
a plurality of polymer-filled chambers in fluid communication with the elongated passage such that expanding and melted polymeric material flows from the passage into the chambers;
an extensible member mounted at each chamber and acted upon by the expanding and melted polymeric material such that the expanding and melting polymeric material exerts a common pressure on each of the extensible members urging each extensible member to extend simultaneously with a common force.

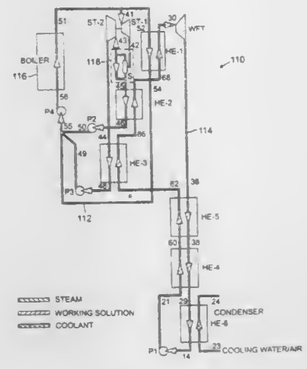
5,822,990

CONVERTING HEAT INTO USEFUL ENERGY USING SEPARATE CLOSED LOOPS

Alexander I. Kalina, Hillsborough, and Lawrence B. Rhodes, Livermore, both of Calif., assignors to Exergy, Inc., Hayward, Calif.

Filed Feb. 9, 1996, Ser. No. 598,950
Int. Cl.[6] F01K *25/06*
U.S. Cl. 60—649 **42 Claims**

1. A method of converting heat to useful energy comprising
expanding a primary fluid in a vapor state in a first stage expander to obtain useful energy and to produce a partially expanded primary fluid stream having vapor and liquid components,



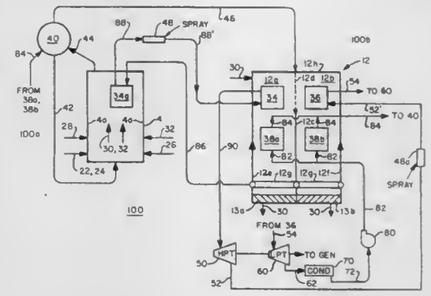
separating said partially expanded primary fluid stream into liquid and vapor components and splitting said stream into a vapor stream and a further primary stream including liquid,
expanding said vapor stream in a second stage expander to obtain useful energy,
using heat in said partially expanded primary fluid stream to heat a multicomponent working fluid in a separate closed loop at a primary heat exchanger, and
expanding said multicomponent working fluid in a further expander in said separate closed loop to obtain useful energy and produce a spent multicomponent working fluid.

5,822,991

CIRCULATING FLUIDIZED BED STEAM GENERATOR (CFB) WITH A SUPERHEATER AND A REHEATER

Stephen A. Pierzchala, East Longmeadow, Mass., and Bruce W. Wilhelm, Enfield, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Feb. 14, 1997, Ser. No. 801,714
Int. Cl.[6] F01K *7/34*
U.S. Cl. 60—653 **21 Claims**



1. In a steam generation plant including a high pressure turbine, a low pressure turbine and a circulating fluidized bed steam generator having a furnace volume defined by a plurality of waterwall tubes and embodying therewithin at least superheat surface, a multichambered backpass volume connected in fluid flow relation with the furnace volume and embodying in one chamber thereof at least superheat surface and embodying in another chamber thereof at least reheat surface, a first circulatory fluid flow path operative as an evaporative steam loop, and a second circulatory fluid flow path operative as a superheat steam-reheat steam loop and having a saturated steam segment, a superheat steam segment, a reheat steam segment and an economizer segment, the improvement of a

method for exercising control over the final predefined superheat outlet steam temperature from the circulating fluidized bed steam generator and for exercising control over the final predefined reheat outlet steam temperature from the circulating fluidized bed steam generator, said method for exercising control over the final predefined superheat outlet steam temperature from the circulating fluidized bed steam generator and for exercising control over the final predefined reheat outlet steam temperature from the circulating fluidized bed steam generator comprising the steps of:

a. effecting the flow of saturated water within the waterwall tubes defining the furnace volume;

b. effecting the combustion of fuel and air within the furnace volume so as to thereby produce therefrom hot gases and solids;

c. effecting a heat transfer from the hot gases produced from the combustion of fuel and air within the furnace volume to the saturated water flowing within the waterwall tubes defining the furnace volume so as to thereby produce from such heat transfer a mixture of saturated water and saturated steam within the waterwall tubes defining the furnace volume;

d. effecting the separation of the saturated water from the mixture of saturated water and saturated steam after the mixture of saturated water and saturated steam has flowed through the waterwall tubes defining the furnace volume and thereafter effecting the return of the separated saturated water to the waterwall tubes defining the furnace volume;

e. effecting the separation of the saturated steam from the mixture of saturated water and saturated steam after the mixture of saturated water and saturated steam has flowed through the waterwall tubes defining the furnace volume and thereafter effecting the flow of the separated saturated steam to and through the multichambered backpass volume;

f. effecting the flow of the separated saturated steam from the multichambered backpass volume to and through a low temperature superheat surface and during the passage therethrough of the separated saturated steam effecting the heating of the separated saturated steam to a temperature sufficient to transform the separated saturated steam to superheat steam;

g. effecting the flow of the superheat steam from the low temperature superheat surface to and through a finishing superheat surface and during the passage therethrough of the superheat steam effecting the heating of the superheat steam to a final predefined superheat outlet steam temperature;

h. effecting the flow of the superheat steam having a final predefined superheat outlet steam temperature from the finishing superheat surface to and through the high pressure turbine and during the passage therethrough of the superheat steam effecting the expansion thereof;

i. effecting the flow of the superheat steam from the high pressure turbine to and through a reheat surface and during the passage therethrough of the superheat steam effecting the heating of the superheat steam to a final predefined reheat outlet steam temperature;

j. effecting the flow of the superheat steam having a final predefined reheat outlet steam temperature from the reheat surface to and through a low pressure turbine and during the passage therethrough of the superheat steam effecting the expansion thereof such that the superheat steam is transformed to saturated steam; and

k. effecting the exercise of control over the predefined superheat outlet steam temperature and the exercise of control over the predefined reheat outlet steam temperature by manipulating the suspension density within the furnace volume of the solids produced from the combustion of fuel and air within the furnace volume.

5,822,992

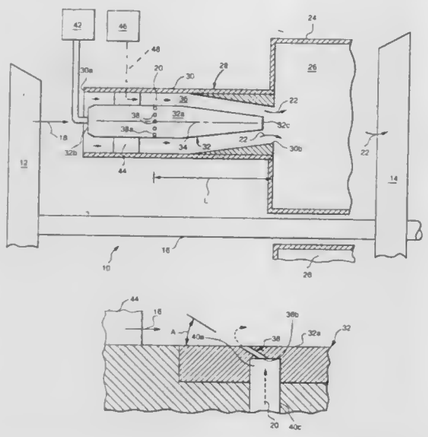
LOW EMISSIONS COMBUSTOR PREMIXER

Anthony John Dean, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 19, 1995, Ser. No. 545,438

Int. Cl.[6] F02C *1/00*

U.S. Cl. 60—737 **6 Claims**



1. A pre-mixer for pre-mixing liquid fuel and compressed air for flow to a gas turbine engine low NOx combustion chamber comprising:

a tubular shroud having an inlet at one end thereof for receiving said compressed air, and an outlet at an opposite end thereof;

a centerbody having an outer surface and disposed coaxially in said shroud and spaced radially inward therefrom to define a flow channel from said shroud inlet to said shroud outlet;

a plurality of fuel injection orifices spaced circumferentially apart around said center body and each having an outlet being substantially flush with said center body outer surface;

a fuel supply circuit extending in said centerbody in flow communication with said fuel injection orifices for supplying said liquid fuel to said orifices for discharge therefrom into said flow channel for pre-mixing said air prior to discharge from said shroud outlet;

wherein said fuel injection orifices are positioned axially between said shroud inlet and said shroud outlet for defining a pre-mixing region in said flow channel extending to said shroud outlet, with said pre-mixing region being unobstructed;

wherein said fuel injection orifices are inclined at an acute angle with respect to said centerbody outer surface for injecting said fuel toward said shroud inlet to increase the differential mixing velocity with said compressed air;

said pre-mixer in combination with a gas turbine engine compressor disposed in flow communication with said shroud outlet for channeling compressed discharge air into said shroud inlet, said combustion chamber is disposed in flow communication with said shroud outlet and said fuel outlets are spaced axially upstream from said shroud outlet; and

wherein said fuel supply circuit comprises an annular manifold disposed in said centerbody in flow communication with said fuel injection orifices, a center bore extending in said centerbody for channeling said fuel, and a plurality of fuel spokes extending radially outwardly from said center bore to said manifold for distributing said fuel to said manifold.

5,822,993

COOLING APPARATUS

Graeme Scott Attey, South Fremantle, Australia, assignor to Hydrocool Pty Limited, Fremantle, Australia

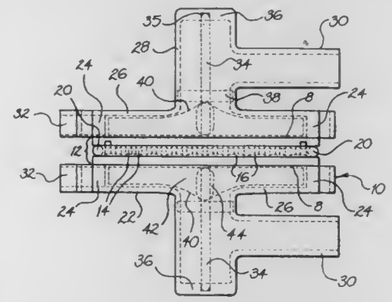
PCT No. PCT/AU95/00271, § 371 Date Nov. 13, 1996, § 102(e) Date Nov. 13, 1996, PCT Pub. No. WO95/31688, PCT Pub. Date Nov. 23, 1995

PCT Filed May 12, 1995, Ser. No. 737,125

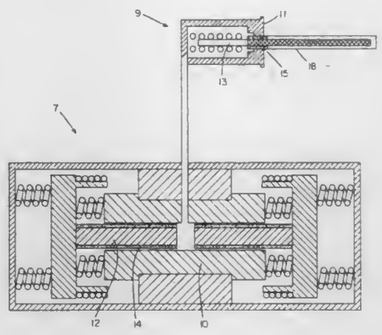
Claims priority, application Australia, May 13, 1994, PM 5596; Aug. 8, 1994, PM 7288

Int. Cl.[6] F25B *21/02*

U.S. Cl. 62—3.7 **10 Claims**



1. A thermoelectric system characterised by a thermoelectric module heat pump having first and second opposed outer faces, the first outer face being relatively cool and the second outer face being relatively hot in use, a manifold defining a volume being attached to at least one outer face of the thermoelectric module, the manifold having a liquid inlet and a liquid outlet and an open face adjacent the at least one outer face of the thermoelectric module so that, in use, liquid flows through the manifold and the at least one outer face of the thermoelectric module is directly contacted by the liquid passing through the manifold, wherein the manifold contains a non-static means arranged for movement relative to the at least one outer face of the thermoelectric module for increasing turbulence in the liquid flowing through the manifold so as to increase efficiency of heat transfer between the thermoelectric module and the liquid.



a self lubricating liner concentrically bonded to the piston, the piston having a longitudinal length and said liner extending substantially the longitudinal length of the piston.

5,822,995

Patent Not Issued For This Number

5,822,996

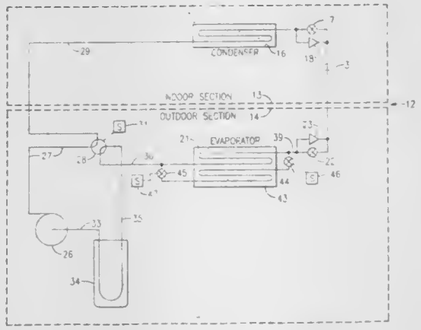
VAPOR SEPARATION OF VARIABLE CAPACITY HEAT PUMP REFRIGERANT

Tobias H. Sienel, Manchester, and Dennis R. Pandy, South Windsor, both of Conn., assignors to Carrier Corporation, Farmington, Conn.

Filed Aug. 22, 1997, Ser. No. 918,618

Int. Cl.[6] F25B *41/00*

U.S. Cl. 62—114 **7 Claims**



5,822,994

LOW FRICTION LINEAR CLEARANCE SEAL

Daniel James Belk, Long Grove; Thomas S. Donahoe; Arthur R. Nelson, both of Davenport, all of Iowa, and Gary W. Van Court, Rock Island, Ill., assignors to Litton Systems, Inc., Davenport, Iowa

Filed Feb. 5, 1997, Ser. No. 795,972

Int. Cl.[6] F25B *9/00*

U.S. Cl. 62—6 **19 Claims**

1. A clearance seal for use in cryogenic coolers, the cryogenic cooler comprising a compressor having at least one piston at least partially mounted within a cylinder, said clearance seal comprising:

5. A method of operating a heat pump system having an indoor primary coil, an outdoor primary coil, a compressor, a suction accumulator feeding the input of said compressor, and means for expanding the refrigerant flowing between said primary coils, comprising:

providing said outdoor coil with two sections, a first one of said sections being in fluid communication within said system at all times, the second one of said sections being disposed lower than said first section and having shut off valves that selectively connect either end to a corresponding end of said first section and said system;

charging said system, with said shut off valves open, with a zeotropic multi-component refrigerant blend having a low pressure component;

operating said system in a cooling mode with both of said shutoff valves open, whereby to utilize all of said blend;

causing said system to be inoperative with both of said shutoff valves open, whereby said refrigerant migrates in liquid form into said second section;

adjusting said system to operate in a heating mode with the one of said shut off valves in closest communication with the inlet of said suction accumulator open and the other shut off valve closed, whereby the portion of said blend other than said low pressure component will vaporize and separate from said low pressure component, thereby increasing the capacity of said system.

5,822,997

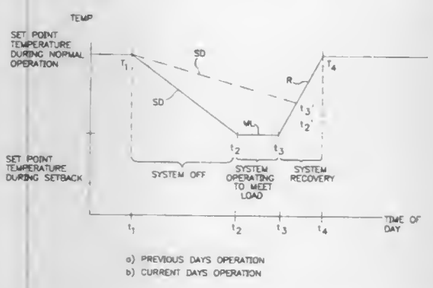
THERMOSTAT SETBACK RECOVERY METHOD AND APPARATUS

William G. Atterbury, Columbus, Ohio, assignor to Gas Research Institute, Chicago, Ill.

Filed Dec. 4, 1996, Ser. No. 760,044

Int. Cl.[6] F23N *5/20*; F25D *17/00*

U.S. Cl. 62—180 **15 Claims**



12. A thermal conditioning system for the thermal conditioning of a space, the thermal conditioning apparatus being configured to operate in a normal operations mode and a setback operations mode, the thermal conditioning system comprising:

means for providing thermally conditioned air to a space;

means for sensing the temperature of the air in the space;

user programmable means for regulating the operation of the means for providing thermally conditioned air so as to maintain a substantially constant air temperature in the space,

the user programmable means being further configured to vary the rate at which thermally conditioned air is supplied to the space according to a time-referenced schedule such that the rate of thermal conditioning is setback for a period of time at substantially regular intervals of time, the thermal conditioning system thereafter undergoing recovery from the setback operation to normal operations,

the user programmable means being operably connected to the means for providing thermally conditioned air to the space, the sensing means, the recording means and the correlating means,

the user programmable means further including means for accommodating changes in loading on the means for providing thermally conditioned air such that recovery from setback operation occurs at substantially the same time during each of said substantially regular intervals of time.

5,822,998

REFRIGERATOR

Jae Hoon Lim; Yong Myoung Kim; Ki Woong Song, and Seak Haeng Park, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

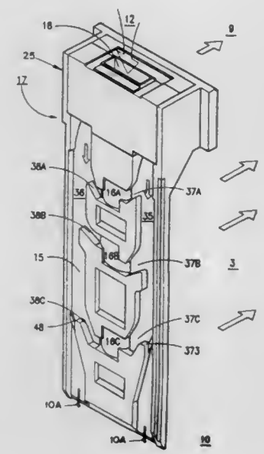
PCT No. PCT/KR95/00030, § 371 Date Oct. 23, 1995, § 102(e) Date Oct. 23, 1995, PCT Pub. No. WO95/27178, PCT Pub. Date Oct. 12, 1995

PCT Filed Apr. 3, 1995, Ser. No. 537,789

Claims priority, application Rep. of Korea, Apr. 4, 1994, 1994 7080; Jul. 20, 1994, 1994 17512; Dec. 10, 1994, 1994 33558

Int. Cl.[6] F25D *17/08*

U.S. Cl. 62—186 **26 Claims**



1. A refrigerator comprising:

a body partitioned into a freezing compartment and a refrigerating compartment;

an evaporator disposed in said body for generating cool air; and

an air distribution apparatus disposed on one wall of said refrigerating compartment and including:

a row of vertically spaced openings for conducting cool air toward said refrigerating compartment;

first and second horizontally spaced vertical ducts straddling said row of openings, upper ends of said vertical ducts receiving a downward flow of cool air from said evaporator;

each of said openings being connected to said first and second vertical ducts by first and second branch ducts, respectively.

5,822,999

REFRIGERATION SYSTEM

Miguel Jornet Salo, Barcelona, Spain, assignor to Electrolux Espana, S.A., Madrid, Spain

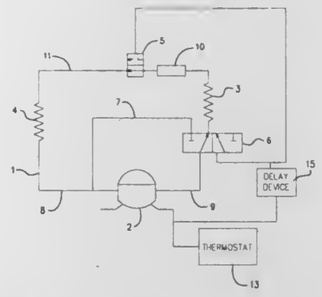
Filed May 1, 1997, Ser. No. 848,890

Claims priority, application Spain, May 3, 1996, 9600994

Int. Cl.[6] F25B *41/00*

U.S. Cl. 62—196.3 **3 Claims**

1. Improved refrigeration system, comprising a compressor (**2**), a condenser (**3**), an evaporator (**4**), a suction pipe (**8**) extending between the condenser and the evaporator, and a valve (**5**) adapted to control refrigerant flow between the condenser (**3**) and the evaporator (**4**), wherein a three-way valve (**6**) is provided between the condenser (**3**) and the compressor (**2**), said three-way valve (**6**) establishing a bypass (**7**) between the compressor (**2**) and the



suction pipe (**8**) during stoppage of the compressor (**2**) to prevent reflux of refrigerant from the condenser (**3**) to the compressor.

5,823,000

REFRIGERANT CIRCUIT WITH FLUID FLOW CONTROL MECHANISM

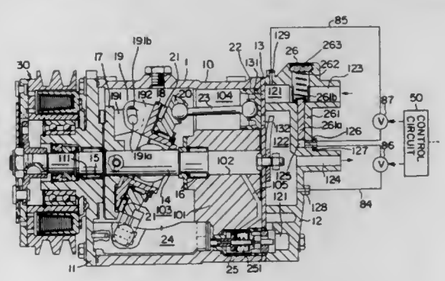
Kazubiko Takai, Sawa-gun, Japan, assignor to Sanden Corporation, Gunma, Japan

Filed Mar. 27, 1997, Ser. No. 827,360

Claims priority, application Japan, Mar. 29, 1996, 8-075709

Int. Cl.[6] B60H *1/32*; F04B *1/26*

U.S. Cl. 62—133 **22 Claims**



1. A fluid flow control means for use in a refrigerant circuit of a vehicle, having a compressor, a condenser, and an evaporator connected to each other in series, said fluid control means comprising:

a passageway control device disposed between an outlet of said evaporator and an inlet of said compressor, said passageway control device having an actuating chamber therein and adjusting a size of an opening of said inlet of said compressor in response to a pressure difference between said inlet of said compressor and said actuating chamber, wherein said passageway control device operates to increase the size of said opening of said inlet of said compressor in response to increases in said pressure difference and to decrease the size of said opening in response to decreases in said pressure difference; and

pressure control means for connecting said actuating chamber of said passageway control device with said outlet of said compressor and said inlet of said compressor for minimizing said pressure difference between said inlet of said compressor and said actuating chamber, when said vehicle accelerates.

5,823,001

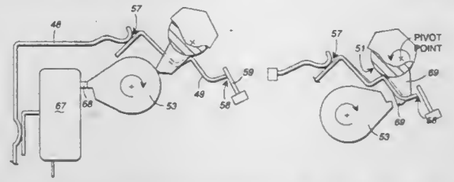
METHOD AND APPARATUS FOR PROVIDING ICE

Kenneth H. Patrick, Rainbow City; Thomas A. Mooty, and Larry E. Unger, both of Southside, all of Ala., assignors to Mid-South Industries, Inc., Gadsden, Ala.

Filed Oct. 24, 1995, Ser. No. 547,522

Int. Cl.[6] F25C *1/12*

U.S. Cl. 62—135 **4 Claims**



1. A control system for an apparatus for making ice, said control system operating in discrete cycles and comprising:

a motor having an output shaft configured for rotation upon the operation of said motor;

a timing cam operably associated with said output shaft of said motor, said timing cam having a lobe to be moved in sequence from a first, "HOLD SWITCH OFF" position to and through a second, "HOLD SWITCH ON" position to and through a third, "BAIL OUT" position, to and through a fourth, "WATER FILL ON" position to and through a fifth, "WATER FILL OFF" position;

a shutoff switch capable of interrupting said cycle upon being placed in an open position;

a hold switch configured to be maintained in an open position when said timer cam is at the beginning of its cycle;

a water fill valve configured to be opened by said lobe of said timer cam when said timer cam is in said fourth position, and closed when said timer cam is in said fifth position; and

a thermostat switch in series with said shutoff switch, said thermostat switch configured to energize said motor if said shutoff switch is closed, such that said cycle begins and said motor causes said lobe of said timer cam to sequentially perform the duties of releasing and thus closing said hold switch, opening and then shutting said shutoff switch, opening and then closing said water fill valve, and opening said hold switch.

5,823,002

AIR CONDITIONER AND METHOD THEREFOR

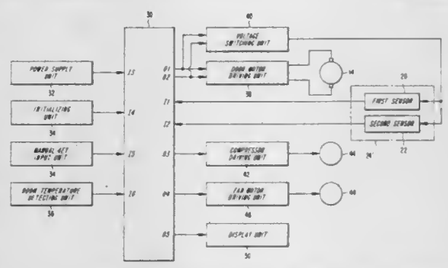
Eui-Jin Jeong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 12, 1996, Ser. No. 764,268

Claims priority, application Rep. of Korea, Dec. 13, 1995, 95-49388

Int. Cl.[6] F25B *49/00*

U.S. Cl. 62—131 **8 Claims**



1. An air conditioner having an intake inlet for taking in indoor air, a heat-exchanger for heat-exchanging the indoor air, a discharge outlet formed to discharge heat-exchanged air, and a discharge outlet door that is closable for preventing dusts or foreign

substances from passing through the discharge outlet when the air conditioner is in a stand-by mode, and which outlet door is openable for discharging the heat-exchanged air when the air conditioner is in operation, the air conditioner comprising:

control means for generally controlling air conditioning;

door motor driving means for controlling a door motor drive such that, in response to a control signal from the control means, the outlet door is moved upward or downward to open or close a discharge outlet;

door position detecting means for detecting a current position of the outlet door and for providing a detection signal to the control means;

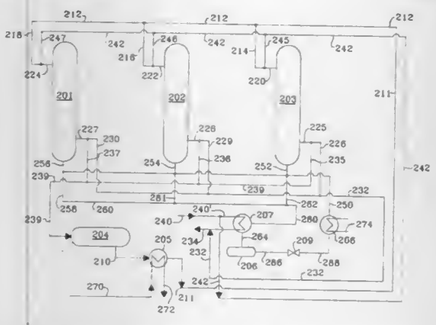
voltage switching means for controlling a driving voltage to be supplied to the door position detecting means in response to detection of one of a fully up and fully down states of the outlet door.

5,823,003

PROCESS FOR HEAT RECOVERY IN A SORPTION REFRIGERATION SYSTEM

Frank S. Rosser, Jr., La Grange Park, and Stephen R. Dunne, Algonquin, both of Ill., assignors to UOP LLC, Des Plaines, Ill.

Filed May 2, 1997, Ser. No. 850,539
Int. Cl.[6] F25B *17/00*
U.S. Cl. 62—144 **15 Claims**



1. A process for controlling a sorption cooling system comprising:

a) a first sorption zone of a plurality of sorption zones undergoing heating in a desorption mode and a second sorption zone of the plurality of sorption zones undergoing cooling in an adsorption mode of a plurality of sorption zones, each sorption zone of the plurality of sorption zones having a heat exchange zone through which a heat transfer medium is passed to provide heating or cooling and an adsorption zone containing a solid adsorbent, said heat exchange zone being in intimate thermal contact with said adsorption zone, each adsorption zone being in fluid communication with a condenser and an evaporator in a sorption refrigeration circuit such that a desorbed refrigerant vapor stream can flow from the adsorption zone being heated into the condenser, a cooled condensate stream can flow from the condensor to the evaporator and a vaporized refrigerant stream from the evaporator can flow into the adsorption zone being cooled;

b) passing a hot working fluid stream at a hot source temperature through the heat transfer zone of the first sorption zone and withdrawing a hot exit stream at an exit temperature;

c) comparing the exit temperature to a reference temperature and passing the hot exit stream to a hot heat transfer medium reservoir when the exit temperature is greater than or equal to the reference temperature and heating a reservoir working fluid stream withdrawn from said reservoir to provide the hot working fluid stream; and

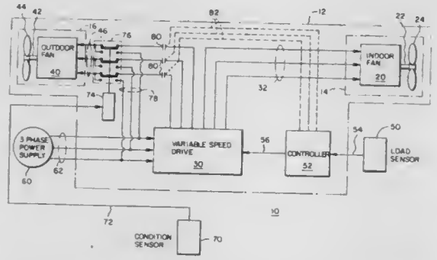
d) passing a cold stream through the heat transfer zone of said second sorption zone and withdrawing a warm exit stream, and admixing the hot exit stream with the warm exit stream when the exit temperature is below the reference temperature.

5,823,004

OUTDOOR FAN CONTROL FOR PART LOAD EFFICIENCY

Phillip L. Polley, Clarksville, and William G. Hansen, Adams, both of Tenn., assignors to American Standard Inc., Piscataway, N.J.

Filed Nov. 12, 1996, Ser. No. 747,178
Int. Cl.[6] F25B *39/00*
U.S. Cl. 62—179 **8 Claims**



1. A method of controlling fans in a rooftop air conditioning unit comprising the steps of:

determining a measure of compressor operating capacity;

calculating an indoor fan speed as a function of that capacity;

maintaining a fixed relationship between the indoor fan speed and an outdoor fan speed;

controlling the indoor fan in accordance with the calculated indoor fan speed;

monitoring ambient conditions;

determining if those monitored conditions are extreme; and

overriding the outdoor fan control to couple the outdoor fan directly to the power supply if the monitored conditions are extreme.

5,823,005

FOCUSED AIR COOLING EMPLOYING A DEDICATED CHILLER

Arthur Ray Alexander, Valley Center, and Warren W. Porter, deceased, late of Escondido, both of Calif., by Carla D. Porter, legal representative, assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 3, 1997, Ser. No. 778,706
Int. Cl.[6] F25D *23/12;* **H05K** *7/20*
U.S. Cl. 62—259.2 **14 Claims**

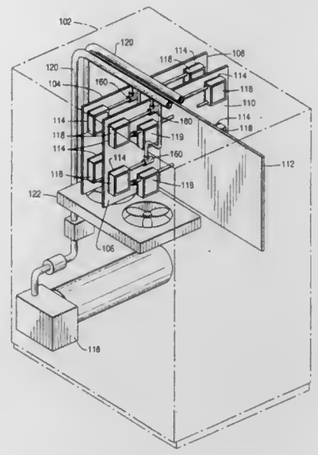
1. An electrical component cooling system, comprising:

means for generating a flow of air;

an expansion device for cooling the flow of air to provide a cooled airflow;

a heat exchanger in thermal contact with the component and in communication with and attached proximate to said expansion device, the heat exchanger comprising a hollow body formed of a thermally conductive material for attachment to said component, and a cooling structure, thermally attached to said hollow body and formed of a thermally conductive material, the cooling structure for providing a surface area exposed to the cooled airflow; and

a conduit having a first end connected to said air flow generating means and a second end connected to said heat exchanger for providing a cooled airflow pathway from said expansion device to said airflow generating means.

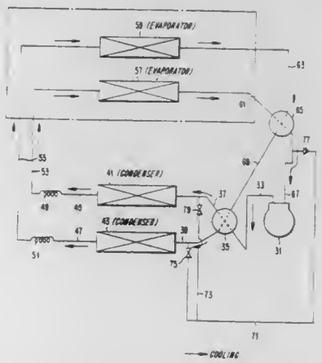


5,823,006

AIR CONDITIONER AND CONTROL APPARATUS THEREOF

Nack-Hun Jung, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 26, 1996, Ser. No. 621,640
Claims priority, application Rep. of Korea, Mar. 30, 1995, 1995-6081
Int. Cl.[6] F25B *9/00;13/00*
U.S. Cl. 62—291 **13 Claims**



1. An air conditioning system for heating and cooling, comprising:

an outdoor heat exchange mechanism;

an indoor heat exchange unit including a housing and two separate indoor heat exchangers connected by refrigerant piping to the outdoor heat exchange mechanism;

a compressor connected by refrigerant conduits to the outdoor heat exchange mechanism and the indoor heat exchangers;

a manually manipulable member for setting a desired operating condition; and

an electric valve arrangement operably connected to the manual manipulable member and to the refrigerant conduits for operating: one or both of the indoor heat exchangers as evaporators during a cooling operation, one or both of the indoor heat exchangers as condensers during a heating operation, and one of the indoor heat exchangers as an evaporator and simultaneously the other of the indoor heat exchangers as a condenser during a heating/dehumidifying operation;

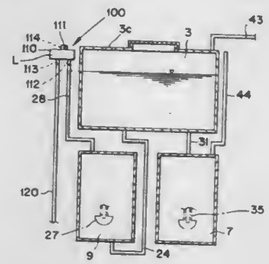
wherein the outdoor heat exchange mechanism comprises a pair of outdoor heat exchangers connected to respective ones of the indoor heat exchangers.

5,823,007

COLD/HOT WATER DISPENSER HAVING AN EXPANSION TANK FOR WATER OVERFLOW

Beung-Kwon Chang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 5, 1997, Ser. No. 851,029
Claims priority, application Rep. of Korea, May 25, 1996, 96-17908
Int. Cl.[6] B67D *5/62*
U.S. Cl. 62—397 **9 Claims**



1. A water dispenser comprising:

a purified water storage tank;

a hot water tank disposed below the storage tank and communicating therewith for receiving water from the storage tank and heating that water;

a cold water tank disposed below the storage tank and communicating therewith for receiving water from the storage tank and cooling that received water;

a dispensing structure communicating with the hot and cold water tanks for dispensing water therefrom;

a water level detector for maintaining a water level at a predetermined first elevation in the storage tank; and

an expansion tank for discharging excess water, said expansion tank having an inlet communicating with the hot water tank for receiving excess water therefrom, and a discharge outlet communicating with the inlet for discharging the excess water from the expansion tank, the inlet and outlet both situated at a same second elevation disposed above the first elevation, whereby excess water disposed in the storage tank above the second elevation forces water to flow from hot water tank and through the expansion tank.

5,823,008

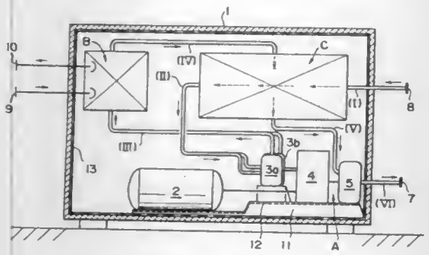
COLD AIR SUPPLY UNIT

Isao Nikai; Motohisa Uda, both of Yokohama; Naoki Shindo, Hino, and Takeshi Fuse, Ayase, all of Japan, assignors to Kajima Corporation, Tokyo, and NHK Spring Co., Ltd., Kanagawa, both of Japan

PCT No. PCT/JP95/02031, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO96/11367, PCT Pub. Date Apr. 18, 1996
PCT Filed Oct. 4, 1995, Ser. No. 647,941
Claims priority, application Japan, May 10, 1994, 6-264417; Oct. 5, 1994, 6-241045; Oct. 5, 1994, 6-264407
Int. Cl.[6] F25D *9/00*
U.S. Cl. 62—401 **12 Claims**

1. A cold air supply unit housed in a casing, comprising:

an air compressor-expander unit comprised of a combination of a motor, an air compressor and an air expander;



an air-to-water heat exchanger which is connected with a cooling water intake connection and a cooling water outlet connection;

an air-to-air heat exchanger;

the air compressor, the air expander, the air-to-water heat exchanger, and the air-to-air heat exchanger, being disposed in the casing;

air tubing for interconnecting the air compressor, the air expander, the air-to-water heat exchanger, and the air-to-air heat exchanger, so that air at an air pressure not higher than 5 kg/cm^2, is transmitted therebetween, said air tubing further communicating with a cold air discharge connection, and a return air intake connection.

5,823,009

BLOWOFF ORIFICE

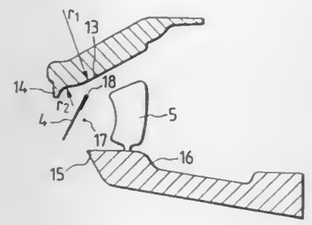
Tomoko Suzuki; Takayuki Yoshida; Satoru Kotoh; Hiroaki Ishikawa; Kazunobu Jojima; Itsutarou Akiyama; Akihiro Matsushita, and Masataka Kabuki, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 1, 1996, Ser. No. 740,708

Claims priority, application Japan, Nov. 20, 1995, 7-310456

Int. Cl.[6] F24F *13/08*

U.S. Cl. 62—410 **20 Claims**



16. A blowoff orifice comprising:

an upper wall;

a lower wall; and

a vertical wind deflecting plate provided between said upper wall and said lower wall, said vertical wind deflecting plate being changeable of an airflow from a horizontal direction to a downward direction;

wherein an end portion of said upper wall is located more downstream than an end portion of said lower wall, and when the airflow is blown off downward by the vertical wind deflecting plate, the end portion of said vertical wind deflecting plate nearest to the upper wall is located more upstream than the end portion of said upper wall and the end portion of said vertical wind deflecting plate nearest to the lower wall is located more downstream than the end portion of said lower wall and the end portion of said upper wall.

5,823,010

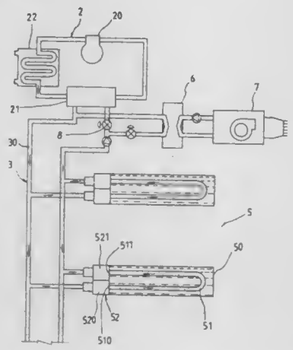
AIR CONDITION INSTALLATION ADJUSTABLE IN STORING AND DISPENSING COOLNESS

Ching-I Chao, No. 20, To-Chiang street, Chien-Chen District, Kaohsiung City, Taiwan

Filed May 30, 1997, Ser. No. 865,941

Int. Cl.[6] F25D *11/00*

U.S. Cl. 62—434 **6 Claims**



1. An air conditioning installation adjustable in storing and dispensing coolness, comprising a coolant circulating course including a cooler and a compressor for circulating a cooling fluid therethrough, an unfreezable liquid circulating course, in communication with said cooler and including a plurality of ice storing tanks connected to the unfreezable liquid circulating course in parallel flow relationship, said unfreezable liquid circulating course further communicating with a blower for distributing air of a desired temperature for air conditioning; and

a valve in said unfreezable liquid circulating course is as to selectively control flow of an unfreezable liquid through the cooler and the blower;

a hollow container body filled with a cool-storing liquid for exchanging heat with the unfreezable liquid circulating in said unfreezable liquid circulating course;

a tubular body located in said container body, the tubular body having an inlet end and an outlet end separately communicating with said unfreezable liquid circulating course so that said unfreezable liquid circulates through said tubular body in said cylindrical body so as to exchange heat with said cool-storing liquid; and,

two separate chambers located in a front portion of said container body, each chamber separately communicating with said unfreezable liquid circulating course, a first chamber communicating with said inlet end of said tubular body and a second chamber communicating with said outlet end of said tubular body so that said unfreezable liquid flows through one of said separate chambers into said inlet end of said tubular body and out of said outlet end of said tubular body into the other of said separated chambers and then flows through said unfreezable liquid circulating course.

5,823,011

APPARATUS FOR PRESS MOLDING GLASS BODIES

Klaus Pöting, Erkrath, Germany, assignor to Poting GmbH & Co. KG, Germany

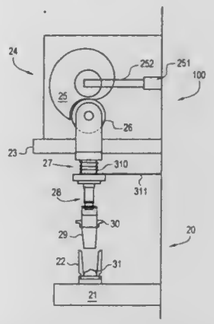
PCT No. PCT/DE95/00381, § 371 Date Dec. 6, 1996, § 102(e) Date Dec. 6, 1996, PCT Pub. No. WO96/00193, PCT Pub. Date Jan. 4, 1996

PCT Filed Mar. 21, 1995, Ser. No. 750,698

Claims priority, application Germany, Jun. 27, 1994, 44 22 053.7

Int. Cl.[6] C03B *11/00;11/16*

U.S. Cl. 65—305 **5 Claims**



1. Glass-molding apparatus for producing molded glass bodies using a press-molding method, said apparatus comprising at least one pressing station which includes a press mold and a molding plug, said press mold determines a specified external shape of the molded glass bodies and into which a proportioned amount of molten glass is poured and pressed by said molding plug that determines a specified internal shape of the molded glass bodies, the apparatus further including a power generator which presses the molding plug into the mold, the apparatus further including a device for withdrawing the molding plug after a completed molding process, the power generator including an electric motor having torque and speed control and further including a cam disk, said electric motor driving said cam disk, an axially extending pressing rod being provided which supports the molding plug at a first end and is guided to be displaceable in an axial direction, said cam disk acting against a second end of said pressing rod.

5,823,012

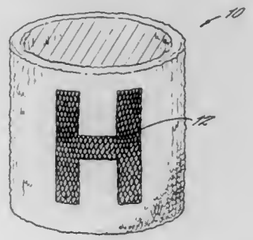
JACQUARD KNIT PATTERNED WRISTBAND AND HEADBAND AND METHODS OF MAKING SAME

Charles A. Hacskaylo, Asheboro, N.C., assignor to Pine Hosiery Mills, Inc., Star, N.C.

Filed Nov. 20, 1996, Ser. No. 754,228

Int. Cl.[6] D04B *1/12;* **A41D** *19/00*

U.S. Cl. 66—171 **10 Claims**



1. A method of making an athletic band comprising the steps of:

knitting a first series of courses from a first yarn on a circular knitting machine to form a first tubular section,

knitting to said first tubular section a second series of courses forming a second tubular section, wherein adjacent wales in at least one course of said second series of courses are knit from visually distinct yarns so as to form at least one individual course which varies in appearance along its length,

knitting to said second tubular section a third series of courses from a third yarn to form a third tubular section, wherein the yarns forming the first and third tubular sections comprise a specialty yarn selected from the group of thermal regulating and wicking yarns,

axially aligning the tubular sections such that at least a portion of said first tubular section overlies at least a portion of said third tubular section, and

securing a free end of said first tubular section proximate a free end of said third tubular section, to thereby form a multi-layered patterned athletic band.

5,823,013

KNITTED TUBULAR COMPONENTS WITH FORM-FITTING POUCH AND METHODS FOR MANUFACTURING SAME

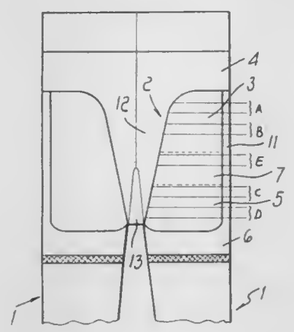
Francesco Lonati; Tiberio Lonati; Ettore Lonati, and Fausto Lonati, all of Brescia, Italy, assignors to Lonati S.p.A, Monza, Italy

Filed Apr. 8, 1997, Ser. No. 835,560

Claims priority, application Italy, Apr. 22, 1996, MI96A0790

Int. Cl.[6] D04B *1/24*

U.S. Cl. 66—177 **25 Claims**



1. Method for producing tubular components, for manufacturing hosiery or other items of clothing with a shaping effect by using circular knitting or hosiery-making machines, the method comprising the steps of:

knitting tubular component so as to form an extension of the tubular component having rows of knitting arranged in succession along the extension of the tubular component;

knitting selected portions of selected rows of knitting with a greater loop length than the loop length of the rows of knitting which precede said selected rows along the extension of the tubular component and than the loop length of the rows of knitting which follow said selected rows along the extension of the tubular component and than the loop length of the remaining portions other than said selected rows, in order to form at least one lateral pouch along the extension of the tubular component; and

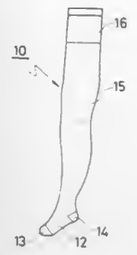
gradually increasing the length of the loops of knitting, in the selected row portions that form said pouch, row by row at the beginning of the knitting of said pouch in order to blend said pouch with the previously formed part of the tubular component.

5,823,014

HOSIERY AND PROCESS FOR PRODUCING THE SAME

Hirofumi Kobayashi, Aichi-ken; Tadahito Nagayasu, Nagoya, and Nagafumi Himeno, Aichi-ken, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Oct. 7, 1994, Ser. No. 319,519
Claims priority, application Japan, Oct. 15, 1993, 5-258776
Int. Cl.[6] A41B *9/08;11/00*
U.S. Cl. 66—178 R 16 Claims



1. An article of hosiery produced by knitting, said article comprising:

a leg portion consisting exclusively of a covered elastic yarn composed of an elastic core yarn covered by polyamide filaments;

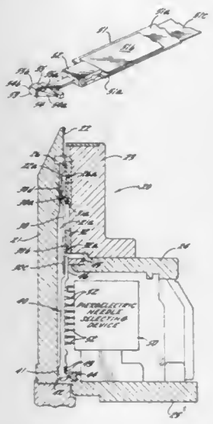
said covering polyamide filaments being composed of zero or less than 0.22 wt. % titanium oxide and formed in a non-recessed flat cross-sectional shape having a flatness ratio b/a in the range of 2.0 to 6.0, wherein b is the length and a is the width of said cross sectional shape.

5,823,015

PIEZOELECTRIC NEEDLE SELECTION DEVICE FOR KNITTING MACHINES

Takao Shibata, Osaka, Japan, assignor to Precision Fukuhara Works, Ltd., Japan

Filed Feb. 24, 1997, Ser. No. 806,224
Claims priority, application Japan, Mar. 19, 1996, 8-090435
Int. Cl.[6] D04B *15/78*
U.S. Cl. 66—218 21 Claims



1. In a knitting machine including knitting needles movable between knit, tuck and welt positions to form stitch loops in a predetermined pattern, the combination of pattern controlled needle selection means for selecting particular needles to be moved to and between the knit, tuck and welt position in accordance with said pattern, said needle selection means including

a piezoelectric electric body movable between three operative positions corresponding to the knit, tuck and welt positions of said needles,

first driving means for causing said piezoelectric body to move to one of its operative positions,

second driving means for causing said piezoelectric body to move to another one of its operative positions, and

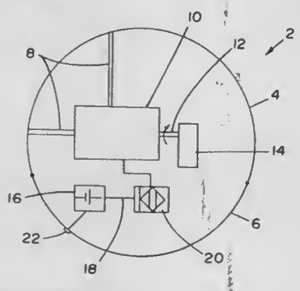
third driving means for causing said piezoelectric body to move to the remaining one of its operative positions, whereby said piezoelectric body selects and causes the needles to move between their three operative positions in accordance with said predetermined pattern.

5,823,016

WASHING AND CLEANING DEVICE

Karl-Heinz Glotz, Hechtweg 7, D-31275, Lehrte, Germany

PCT No. PCT/EP95/00119, § 371 Date Sep. 23, 1996, § 102(e) Date Sep. 23, 1996, PCT Pub. No. WO95/19732, PCT Pub. Date Jul. 27, 1995
PCT Filed Jan. 13, 1995, Ser. No. 676,330
Claims priority, application Germany, Jan. 22, 1994, 44 01 798.7
Int. Cl.[6] B08B *3/10*
U.S. Cl. 68—3 SS 16 Claims



1. A washing and cleaning device, comprising:

a) a sealed housing;

b) an electrically driven device arranged in said housing for generating vibrations transferable from said housing to its environment;

c) an electric motor disposed in a cavity of said housing and rigidly secured to an inner wall thereof;

d) said electrically driven device including an imbalanced mass for generating the vibrations being arranged outside the axis of rotation of and on an output shaft of said electric motor; and

e) an accumulator disposed inside said housing and being provided as a power source for said electric motor, said accumulator being rechargeable via a connection being arranged adjacent said housing wall.

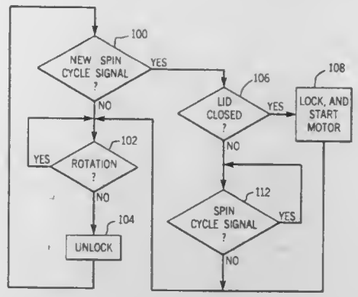
5,823,017

RAPID RELEASE WASHING MACHINE LID LOCK

Kenyon A. Hapke, Libertyville, Ill.; Timothy Laseke, New Berlin, and Spencer C. Schantz, Dousman, both of Wis., assignors to U.S. Controls Corporation, New Berlin, Wis.

Filed Dec. 10, 1996, Ser. No. 763,025
Int. Cl.[6] D06F *33/02;37/42*
U.S. Cl. 68—12.26 12 Claims

1. In a washing machine having a lid that may be opened to provide access to a spin basket and closed to prevent access to the spin basket, the spin basket being driven by an electric motor when a spin cycle signal from a spin cycle timer is present, a lid locking assembly comprising:



(a) an electromagnetic lid locking mechanism, in a locked state, holding the lid closed until an unlock signal is received;

(b) a spin sensor producing a rotation signal when the washing machine spin basket is rotating; and

(c) a logic circuit communicating with the spin sensor and providing the unlock signal to the electromagnetic lid locking mechanism when the rotation signal is not present;

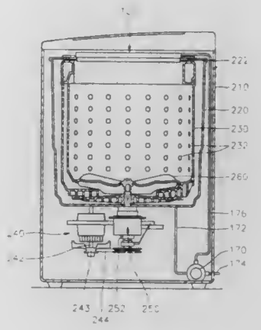
wherein the electromagnetic lid locking mechanism in an unlocked state allows the lid to be freely opened until a lock signal is received, and where the unlock and lock signals apply power to the electromagnetic lid locking mechanism and wherein, absent power applied to the electromagnetic lid locking mechanism, the electromagnetic lid locking mechanism remains in its last state of locked and unlocked.

5,823,018

WASHING MACHINE HAVING A SPRAYING NOZZLE ASSEMBLY

Jae-Yoll Lee, Kyungki-Do, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 12, 1996, Ser. No. 766,210
Claims priority, application Rep. of Korea, Dec. 18, 1995, 1995 42260
Int. Cl.[6] D06F *17/00;39/08*
U.S. Cl. 68—23.5 14 Claims



1. A washing machine comprising:

a housing;

an outer tub disposed in the housing so as to receive a washing liquid;

a spin tub accommodated in the outer tub, the spin tub having a plurality of discharging holes at a side wall thereof and being driven by a motor;

an outer tub cover mounted on the outer tub;

a gear assembly connected to the motor, the gear assembly receiving a rotational force from the motor and transmitting the rotational force to the spin tub or to a pulsator mounted on a bottom wall of the spin tub;

a spraying nozzle assembly for spraying the washing liquid onto an article to be washed which is loaded in the spin tub; and

a circulation pump disposed at a lower portion of the housing and communicated with the outer tub, the circulation pump circulating the washing liquid into the spraying nozzle assembly through a circulation tube or draining the washing liquid out of the washing machine through a draining tube,

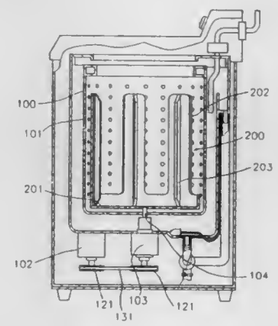
wherein the spraying nozzle assembly includes an upper frame mounted on an upper surface of the outer tub cover, and a lower frame rotatably coupled to a lower portion of the upper frame, the lower frame being formed at a bottom wall thereof with a plurality of spraying nozzles which are regularly arranged in a spiral pattern.

5,823,019

WASHING MACHINE

Kwan-Cheol Park, Kwang-Ju, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 24, 1996, Ser. No. 667,596
Claims priority, application Rep. of Korea, Jun. 23, 1995, 1995 14510
Int. Cl.[6] D06F *17/10*
U.S. Cl. 68—133 2 Claims



1. A washing machine for washing washing articles by a rotation of a pulsator according to rotating a shaft of a shaft housing, comprising:

a washing tub for providing space to wash washing articles and having a plurality of holes; and

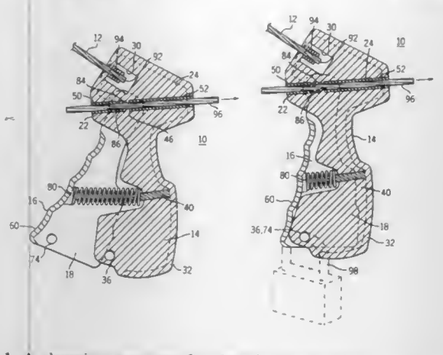
the pulsator having:

a disc-shaped base plate having a plurality of holes to let washing water in and out of the washing tub and fixed to the shaft so as to be rotated according to the rotation of the shaft;

a plurality of supporting members perpendicularly formed along and integrally formed with the outer periphery of the disc-shaped base plate for being rotated by the rotation of the disc-shaped base plate, and spaced apart at a certain distance therebetween, and extended nearly up to the upper end of the washing tub; and

a plurality of protrusions formed in a concentric periphery with the washing tub and longitudinally formed on an inner surface of the plurality of supporting members respectively, and for forming a perpendicular-shaped waterflow in washing water when the plurality of supporting members are rotated and for enhancing a washing effectiveness by striking the washing articles against the plurality of protrusions and the plurality of supporting members, wherein the plurality of protrusions are rotated according to the rotation of the shaft.

5,823,020
CABLE LOCKING SYSTEM
Steven J. Benda, Cokato, Minn., assignor to Brady USA, Inc., Milwaukee, Wis.
Filed May 9, 1996, Ser. No. 644,026
Int. Cl.[6] E05B *73/00*
U.S. Cl. 70—18 **28 Claims**





1. A clamping apparatus for clamping onto at least one cable section, the apparatus comprising:

a handle member including integrally connected head and neck portions, the head portion forming a first channel and forming a pivot aperture essentially perpendicular to the first channel;

a trigger member including proximal and distal ends;

a pivot Pin securely linked to the proximal ends, extending through the pivot aperture, and forming a second channel adjacent the first channel, proximate edges of the first and second channels being cable securing edges, the pin pivotally linking the proximal end to the head portion for movement between an open position wherein the first and second channels are substantially aligned and adjacent, and a closed position wherein the first and second channels are misaligned; and

a means for securing the members in the closed position;

wherein, with the members in the open position, a cable segment is positionable within the channels so that a securing section of the cable is proximate the cable securing edges and, with the cable segment so positioned, the members can be rotated into the closed position misaligning the channels, the cable securing section axially compressed between the misaligned cable securing edges such that cable movement along the channels is prohibited.

5,823,021
STRUCTURE OF PADLOCK
Charlie Chang, 7F-2, No. 95-8 Chang Ping Road, Sec. 1, Taichung, Taiwan
Filed Dec. 18, 1995, Ser. No. 575,674
Int. Cl.[6] E05B *67/22*
U.S. Cl. 70—38 A **1 Claim**

1. A locking apparatus comprising:

a hollow cylinder body having two end portions and a pair of locking holes one at each end portion, a pair of cap means fixedly closing two end portions thereof and a protrudent hole at a central portion perpendicular to said locking holes;

a U-shaped shackle member having a pair of parallel locking arms extended to identical length and each comprising a tapered end and a plurality of beveled notches formed spaced apart along an inward surface thereof;

a core secured to said protrudent hole of said hollow cylinder body, said core comprising a cylinder body having a circumferential knot on one end, a slot on an other end, a pair of recesses on lateral peripheries thereof and an axis rotatably disposed through a center, said axis having a rectangular projection on one end, a slot on an other end aligned with the slot of said cylinder body which further has a circular slot on other end with a plurality of ogives therein;

a locking mechanism disposed into said protrudent hole and secured by means of a rivet, said locking mechanism comprising:

a disk member having a central rectangular slot fitted to the rectangular projection of said core, a pair of rivets adjacent two ends of the rectangular slot respectively, and an indentation on a circumference closer to one of said rivets for receiving the knot means of said core therein;

a pair of sliding members having a cylinder body diametrically identical to an inner diameter of said hollow cylinder body, a vertical slot adjacent a cavity on an inward end, a latch means which has a beveled surface on a top and a right angular surface on a bottom thereof at other end and a transverse eye on a lateral periphery in communication with said vertical slot thereof;

a pair of compression springs disposed on one ends to the cavity of said sliding members and other ends engaged with the lateral recesses of said core;

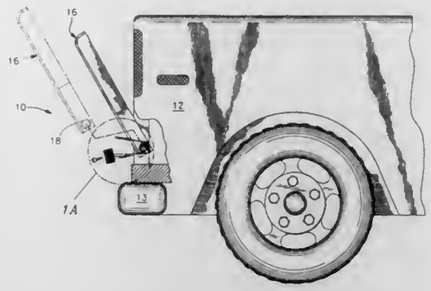
a pair of lever members each having an eye at proximity of an outward end which inserts into the vertical slot of said sliding member and is pivotally secured by means of a rivet and an elongate slot on inward end which is movably retained by a rivet of said disk member, said lever means being reversibly arranged on said disk member and said sliding members;

whereby, said sliding members normally positioned at the locking holes of said hollow cylinder body facilitate an automatic locking up of said padlock and is centralized when rotates said disk member by means of a key.

5,823,022
TAILGATE LOCK
Bob Barker, 17890 Slater Rd., N. Ft. Myers, Fla. 33917
Filed Oct. 20, 1997, Ser. No. 954,189
Int. Cl.[6] B62D *33/033;* **E05B** *67/24*
U.S. Cl. 70—38 A **6 Claims**

1. An anti-theft device for locking a tailgate onto a pickup truck, wherein the pickup truck includes a side wall having a transversely disposed, inwardly protruding protrusion extending therefrom at a predetermined angle relative to a vertical plane, and wherein the tailgate has a transversely disposed, outwardly protruding "C"-shaped hollow axle at a lowermost corner thereof for receiving the protrusion, comprising:

a locking device having a lock body, a keeper, and a locking means within said lock body, said locking means having a locked configuration and an unlocked configuration;



said keeper having cylindrical opposite ends, of solid construction, interconnected by a thin, flexible, resilient, flat bight member;

a plurality of longitudinally spaced notches formed in each of said cylindrical opposite ends of said keeper;

said lock body having a pair of spaced apart bores for releasably receiving said cylindrical opposite ends of said keeper, said locking means maintaining said opposite ends of said keeper within said lock body by engaging preselected notches of said plurality of notches when said locking means is in its locked configuration and said locking means releasing both ends of said keeper by releasing said preselected notches when said locking means is in its unlocked configuration;

said cylindrical opposite ends of said keeper being disposed in diverging relation to one another when in repose and in parallel relation to one another when said cylindrical opposite ends are received within said bores;

said lock body and said keeper being positioned in a space between said pickup truck side wall and said tailgate when said keeper and lock body are disposed in enclosing relation to said protrusion and said hollow axle so that said lock body and said keeper do not interfere with opening and closing of said tailgate;

said flat bight member being positioned in capturing relation to said "C"-shaped hollow axle so that said protrusion may not exit through an opening defined by opposite ends of said "C"-shaped hollow axle when said tailgate is positioned at a predetermined angle relative to a vertical plane where said protrusion is in alignment with said opening;

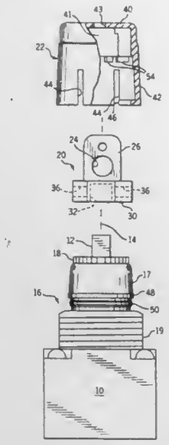
whereby a space enclosed by said keeper and said lock body is made progressively smaller when said opposite ends of said keeper are inserted progressively further into said lock body so that said enclosed space may be sized to receive protrusions and hollow axles of differing diameters.

5,823,023
LOCKING DEVICE FOR A VALVE
Steven J. Benda, Cokato, Minn., assignor to Brady USA, Inc., Milwaukee, Wis.
Filed Oct. 29, 1997, Ser. No. 959,885
Int. Cl.[6] F16K *35/00*
U.S. Cl. 70—180 **7 Claims**

1. In a valve having a rotatable shaft extending from a valve body and surrounded by a bushing, the improvement therein comprising:

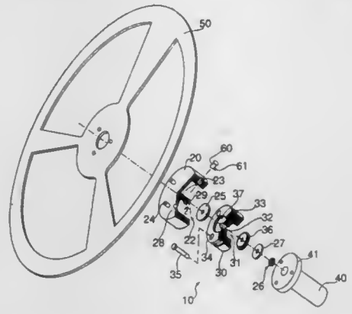
a lock tab formed on the end of the shaft and having a lock opening formed therethrough;

a knob coupled to the bushing and rotationally coupled to the shaft, the knob having a top wall with a tab opening through which the lock tab extends, the knob being translatable along the axis of rotation of the shaft between an unlocked position in which it can be rotated about said axis and a locked position in which rib means formed beneath the top wall of the knob engage teeth formed on the bushing to prevent rotation of the knob about said axis; and



wherein the lock opening in the lock tab extends above the top wall of the knob when the knob is in said locked position and a lock may be passed through said lock opening to prevent the knob from being translated to its unlocked position.

5,823,024
APPARATUS FOR DISABLING THE STEERING OF A VEHICLE
Doris L. Goodson, Camden, and Alexander Alon, Mays Landing, both of N.J., assignors to Doris Goodson, Camden, and Elizabeth Stewart, Mt. Laurel, both of N.J.
Filed Oct. 18, 1996, Ser. No. 733,503
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—218 **20 Claims**



1. An apparatus for disabling the steering of a vehicle comprising;

a steering column;

a cylindrical core fixedly mounted to the steering column wherein a bearing cavity is disposed in the core adjacent to the steering column and a bore extends axially through the core;

a circumferential track extending completely around the core;

a cylindrical housing having a cylindrical chamber, wherein the core is disposed, at least in part, within the chamber;

a central shaft fixedly mounted to the housing and extending axially through the bore;

a stopper attached to an end of the central shaft distal to the housing;

a core bearing mounted to the central shaft between the stopper and the core;

a housing bearing mounted to the central shaft between the housing and the core; and

a locking assembly fixedly mounted to the housing, contained completely within the housing and selectively engaged to the core wherein the locking assembly comprises a free end permanently disposed in the track.

5,823,025

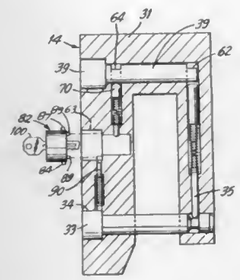
LOCK SYSTEM WITH A LOCK-OUT SAFETY DEVICE FOR WHEELED VEHICLES

Sherwood Phifer, 2120 E. Tremont Ave., Bronx, N.Y. 10462

Continuation of Ser. No. 160,073, Nov. 3, 1993, abandoned, which is a continuation-in-part of Ser. No. 746,118, Aug. 15, 1991, Pat. No. 5,265,451. This application Apr. 30, 1996, Ser. No. 640,117

Int. Cl.[6] B60R *25/00*

U.S. Cl. 70—226 **23 Claims**



1. A motorcycle lock to be fastened to an apertured rotatable element of a motorcycle in order to prevent the rotatable element from completing a full rotation as a result of contact of the lock with a stationary portion of said motorcycle, comprising:

a first leg member and a second leg member, a base member connected between one end of each said leg member to form a substantially U-shaped lock housing having a gap between said leg members, a portion of said rotatable element of said motorcycle being positionable in said gap;

a locking bolt channel extending at least partially through said first leg member and at least partially through said second leg member, a locking cylinder channel extending into said base member, and a locking bolt pin channel extending between said locking bolt channel and said locking cylinder channel;

a locking bolt member dimensioned for sliding in said locking bolt channel to extend from said first leg member across said gap through an aperture in said rotatable element and into said second leg member, said locking bolt member having a first recess;

a locking bolt pin slidably located in said locking bolt pin channel, said locking bolt pin being engagable in said first recess of said locking bolt member when said locking bolt member slides in said locking bolt channel into said second leg; and

a cam member located in said locking cylinder channel, a first surface of said cam member engaging said locking bolt pin to urge said locking bolt pin into the first recess in said locking bolt member to hold said locking bolt member in position in said second leg member when said cam member is in a first position, and in a second position of said cam member allowing said locking bolt to withdraw from said first recess, whereby said lock is secured on the rotatable element and moves therewith until it engages a stationary portion of said motorcycle;

a lock-out channel formed in said first leg;

pin means disposed between said lock-out channel and said locking bolt channel for blocking full entry of said locking bolt member into said locking bolt channel in said second leg member; and

a lock-out device removably insertable into said lock-out channel, said lock-out device in a first position engaging with said pin means and blocking full entry of said locking bolt member into said locking bolt channel in said second leg member so as to prevent engagement of said locking bolt member with said locking bolt pin, positioning of said lock-out device in said lock-out channel to a second position causing said pin means to unblock said locking bolt channel, said lock-out device being removable from said lock-out channel in said second position and being constrained in said lock-out channel in said first position of said lock-out device.

5,823,026

LOCKING DEVICE FOR A DOOR

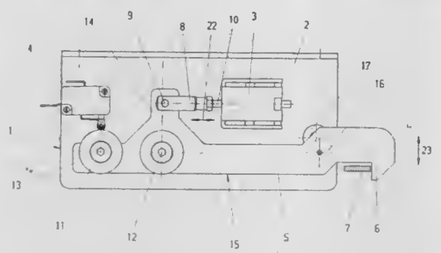
Andreas Finke, Gevelsberg, Germany, assignor to DORMA GmbH + Co. KG, Ennepetal, Germany

Filed Oct. 4, 1996, Ser. No. 725,744

Claims priority, application Germany, Jan. 19, 1995, 195 01 420.0

Int. Cl.[6] E05B *47/00*

U.S. Cl. 70—276 **18 Claims**



1. A locking mechanism for a door, said door being at least one of a hydraulic, an electromechanical and a manually operated door, said locking mechanism being for the securing of two door members in at least one of a locked and an unlocked position, said locking mechanism comprising:

a locking lever member;

said locking lever member being movable between at least two lever positions;

said locking lever member substantially restraining relative movement between said two door members in a first of said at least two lever positions; and

said locking lever member substantially permitting relative movement between said two door members in a second of said at least two lever positions;

an electromagnetic device to move said locking lever member between said first lever position and said second lever position;

a first permanent magnet disposed on said locking lever member;

said first permanent magnet moving with said locking lever member between said first lever position and said second lever position;

a second permanent magnet;

said second permanent magnet being stationarily mounted;

said first permanent magnet and said second permanent magnet exerting magnetic forces on one another to substantially maintain said locking lever member in at least one of said first and second lever positions;

said electromagnetic device comprising an electromagnet;

said electromagnet comprising first and second windings;

energization of said first winding of said electromagnet urging said locking lever member toward said first lever position; and

energization of said second winding of said electromagnet urging said locking lever member toward said second lever position.

5,823,027

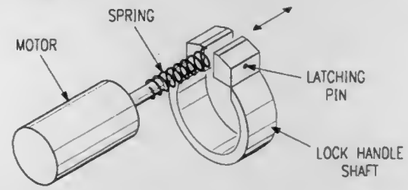
ELECTRICAL/MECHANICAL ACCESS CONTROL SYSTEMS AND METHODS

Mark M. Glick, Dallas; Nicholas M. G. Fekete, Richardson; Michael L. Bolan, Dallas, and Jeffrey D. Owens, Whitesboro, all of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Division of Ser. No. 346,556, Nov. 29, 1994, which is a continuation-in-part of Ser. No. 220,425, Nov. 30, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 483,780

Int. Cl.[6] E05B *49/00*

U.S. Cl. 70—278 **2 Claims**



1. An access control system, comprising:

a retro-fit electromechanical door handle assembly adapted to be similar in appearance and to replace an existing mechanical door handle assembly on a door, said retro-fit electromechanical door handle assembly comprising:

a locking mechanism including a motor mechanically coupled to a latch mechanism for locking and unlocking the latch mechanism, thereby locking and unlocking the door, and

a door handle having an electrical key insert means and a mechanical key insert means, wherein

the electrical key insert means has a data probe on an exterior location of the door handle for communicating with an electrical key and the electrical key insert means is for activating the motor to unlock the locking mechanism upon contact of an authorized electrical key with the data probe independently of a mechanical key and independently of the mechanical key insert means, and

the electrical key insert means is provided with a gripping means on an exterior portion of the data probe for engagement with an electrical key, allowing the key to be used to turn the handle to withdraw the latch of the locking mechanism after it has been unlocked.

5,823,028

CYLINDER LOCK AND KEY DEVICE

Takashi Mizuno; Sadao Kokubu; Hisashi Aoki, and Yoshiyuki Mizuno, all of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Continuation of Ser. No. 579,887, Dec. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 253,490, Jun. 3, 1994, abandoned. This application Mar. 11, 1997, Ser. No. 814,682

Claims priority, application Japan, Jun. 8, 1993, 5-030710

Int. Cl.[6] E05B *49/00*

U.S. Cl. 70—278 **5 Claims**

1. A cylinder lock and key device in combination with an ignition switch and a wireless lock device, the cylinder lock and key device comprising:

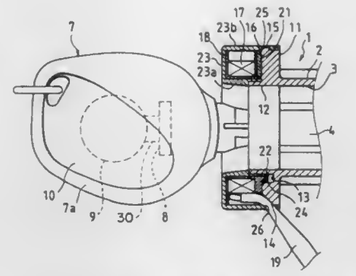
a rotor rotatable from a locked off position to an unlocked on position;

a cylinder lock body surrounding said rotor and including a coil mounting portion forming a front end portion of said cylinder lock body;

a primary coil wound on a coil bobbin mounted in said coil mounting portion, said primary coil being connected to a control device for energizing said primary coil when said rotor is in the unlocked on position;

shielding means mounted in said cylinder lock body for preventing magnetic flux of the primary coil from flowing into the cylinder lock body, the shielding means being arranged between the coil mounting portion and the primary coil; and

a key having a secondary coil connected to a power cell in a charging circuit, said key being insertable into the cylinder lock body through a central opening in the coil bobbin, said key operable to rotate said rotor to the unlocked on position thereby allowing said control device to energize said primary coil to achieve magnetic coupling of the primary and secondary coils to charge the power cell, the power cell being for powering a signal transmitting circuit for transmitting a signal to the wireless lock device separate from the cylinder lock and key device.



5,823,029

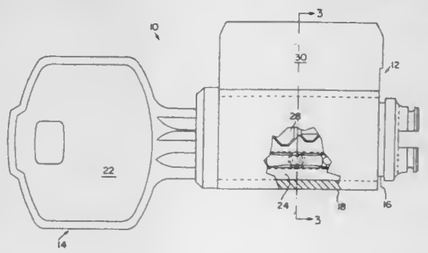
CYLINDER LOCK SYSTEM

Charles W. Eden, Jr., Plantsville, and Kenneth T. Theriault, Meriden, both of Conn., assignors to International Security Products, Inc., Southington, Conn.

Continuation-in-part of Ser. No. 789,395, Jan. 29, 1997. This application Jun. 24, 1997, Ser. No. 881,053

Int. Cl.[6] E05B *27/06*

U.S. Cl. 70—358 **30 Claims**



1. A cylinder lock comprising:

a shell, said shell having a plurality of pin tumbler receiving chambers, said shell further having an interior surface which defines a core receiving chamber having a longitudinal axis, said shell pin tumbler receiving chambers each extending to said shell interior surface and having an axis, said shell interior surface being provided with at least a first recess, said first recess having a depth and being in part defined by a side wall and a camming surface which extends from said side wall and merges with said shell interior surface, said shell being mounted with a fixed orientation in the use environment of said lock;

a core cooperating with said shell to form the relatively rotatable component of said lock, said core having an exterior surface and being disposed within said core receiving chamber of said shell for rotation about said longitudinal axis, said core including a longitudinally extending keyway, said keyway having oppositely disposed first and second sides and defining a plane in which said longitudinal axis lies, said core also having a plurality of pin tumbler receiving chambers, each of

said core pin tumbler receiving chambers having an axis, each of said core pin tumbler receiving chambers being located so as to be axially alignable with an associated one of said shell pin tumbler receiving chambers when said lock is in the locked state, said core pin tumbler receiving chambers extending between said keyway and said exterior surface of said core, a shear line for said lock being defined by the interface between said interior surface of said shell and said exterior surface of said core, said core further having at least a first auxiliary locking pin receiving chamber which has an axis, said auxiliary locking pin receiving chamber axis extending linearly between said first side of said keyway and said core exterior surface, said first auxiliary locking pin receiving chamber axis being in registration with said shell first recess when said pin tumbler receiving chambers of said shell and core are in axial alignment;

a plurality of pin tumblers, said pin tumblers each having at least a bottom pin and a driver pin, said pins each having an axis and said pins of each of said pin tumblers being in axial alignment when said core and shell pin tumbler receiving chambers are in axial alignment whereby said pin tumblers are reciprocally movable as units when said lock is in the locked state, said pin tumblers each further including a first spring for urging said driver pins in the direction of said keyway whereby at least one of said pins of at least some of said pin tumblers normally extends across said shear line so as to be partly disposed in an aligned shell pin tumbler receiving chamber and core pin tumbler receiving chamber;

an auxiliary locking pin having first and second oppositely disposed end portions, said auxiliary locking pin being in part disposed in said core auxiliary locking pin receiving chamber for reciprocal motion, said auxiliary locking pin defining an axis, said first end portion of said auxiliary locking pin including a shaped head, said shaped head at all times extending into said keyway through said first side of said keyway, said second end portion of said auxiliary locking pin extending across said shear line and being received in said first recess in said shell interior surface when said lock is in the locked state, said shaped head of said auxiliary locking pin including a reaction surface against which a force directed axially with respect to said auxiliary locking pin may be exerted, said reaction surface facing generally toward said second end portion of said auxiliary locking pin, said auxiliary locking pin first end portion also including an extension of said shaped head, said extension projecting beyond said reaction surface toward said second side of said keyway, said auxiliary locking pin second end portion including a cam surface shaped to cooperate with said shell recess defining camming surface to impart axial motion to said auxiliary locking pin; and

an auxiliary locking pin spring for applying an axial resilient bias force to said auxiliary locking pin to urge said auxiliary locking pin toward said shell interior surface whereby said auxiliary locking pin will normally extend across said shear line and said second end portion thereof will be received in said shell first recess, said auxiliary locking pin cooperating with said shell first recess defining sidewall to prevent rotation of said core relative to said shell in the absence of the application of forces to said auxiliary locking pin which are in a direction opposite to and in excess of said resilient bias force.

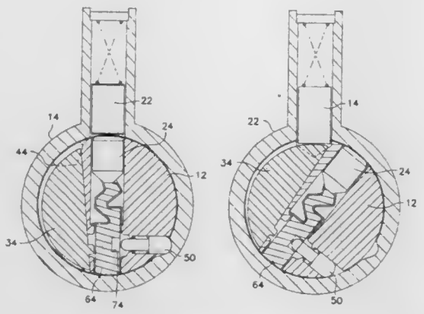
5,823,030

CYLINDER LOCK SYSTEM

Kenneth T. Theriault, Meriden, and Charles W. Eden, Jr., Plantsville, both of Conn., assignors to International Security Products, Inc., Southington, Conn.

Filed Jan. 29, 1997, Ser. No. 791,756
Int. Cl.[6] F05B *15/00*
U.S. Cl. 70—419 **14 Claims**

1. A cylinder lock comprising:



a shell, said shell having a plurality of pin tumbler receiving chambers, said shell further having an interior surface which defines a core receiving chamber having an axis, said pin tumbler receiving chambers extending to said interior surface, said shell being mounted with a fixed orientation in the use environment of said lock;

a rotatable core cooperating with said shell to form the relatively movable component of said lock, said core having an exterior surface and being disposed within said core receiving chamber of said shell for rotation about said chamber axis, said core defining a longitudinally extending keyway having oppositely disposed sides, said core having a plurality of pin tumbler receiving chambers, said core pin tumbler receiving chambers being alignable with said shell pin tumbler receiving chambers, said core pin tumbler receiving chambers extending between said keyway and said exterior surface of said core whereby communication may be established between said shell and core pin tumbler receiving chambers, a shear line for said lock being defined by the interface between said interior surface of said shell and said exterior surface of said core;

pin tumblers reciprocally disposed in said pin tumbler receiving chambers, said pin tumblers each having at least a bottom pin and a driver pin, said pins being in axial alignment and abutting contact, at least one of said pins of each of said pin tumblers extending across said shear line so as to be partly disposed in an aligned shell pin tumbler receiving chamber and core pin tumbler receiving chamber in the absence of a properly bitted key in said keyway, said pin tumblers each further including a first spring for resiliently biasing said aligned pins in the direction of said core;

at least first auxiliary locking means for establishing a rotation preventing mechanical coupling between said shell and said core in the absence in said keyway of a key having a first profile feature which cooperates with said first auxiliary locking means, said first auxiliary locking means being in part carried by and movable relative to said core, said first auxiliary locking means communicating with a first side of said keyway; and

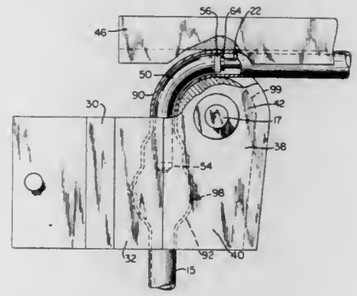
trapping means for mechanically capturing in said keyway keys which lack a second profile feature, said trapping means being carried by and being movable relative to said core, said trapping means extending between said shear line and a second side of said keyway, said keyway second side being oppositely disposed with respect to said keyway first side, said trapping means having an actuating portion which is at least in part in alignment with said auxiliary locking means, said actuating portion cooperating with a said second profile feature of a key, rotation of said core relative to said shell being permitted by key first profile feature induced movement of said first auxiliary locking means to decouple said core from said shell, rotation of said core to an unlocked orientation being permitted by key second profile feature induced movement of said trapping means to a non-trapping position.

5,823,031

METHOD AND APPARATUS FOR BULGE FORMING AND BENDING TUBES

Larry D. Campbell, Littleton; Gary Demartelaere, Conifer, and Ronald R. Stange, Littleton, all of Colo., assignors to Tools for Bending, Inc., Denver, Colo.

Filed Nov. 20, 1996, Ser. No. 754,109
Int. Cl.[6] B21D *9/05;39/20*
U.S. Cl. 72—58 **32 Claims**



1. A method for expanding a portion of a tube, said tube having a longitudinal axis, the method comprising:

disposing a resilient, radially expandable mandrel within the portion of said tube, the mandrel having a free end and a stationary base end;

pulling the free end of said mandrel axially toward the base and thereby axially compressing said mandrel to cause radial expansion of said mandrel under sufficient force to radially expand said tube surrounding said mandrel; and

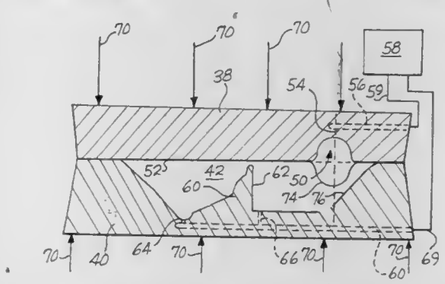
bending another portion of said tube about the axis of said tube.

5,823,032

PRETHINNING FOR SUPERPLASTIC FORMING

John Robert Fischer, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Apr. 7, 1994, Ser. No. 224,212
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—60 **21 Claims**



1. A process for superplastic forming a part from a superplastic material comprising the steps of:

(a) inserting a sheet of superplastic material having uniform thickness into a die having a die lid and a die base, the lid having a prethinning recess where localized prethinning of the sheet would minimize excessive thinning of the formed part elsewhere on its topography, the base having a cavity with a cavity floor having a shape corresponding to the formed part;

(b) clamping the sheet between the lid and the base by exerting a squeezing force on the lid and the base;

(c) heating the material to the superplastic temperature of the material;

(d) while maintaining the superplastic temperature, pressurizing the die base cavity with compressed, inert gas to form superplastically localized portions of the sheet that die opposite the lid recess into the lid recess to form a prethinned bulge;

(e) while maintaining the superplastic temperature, pressurizing the die lid above the bulge with compressed inert gas to a gas forming pressure to reverse the prethinned bulge down into the cavity and, thereafter, to form superplastically the sheet into the cavity to define the formed part,

(f) forming peripheral regions of the sheet around the cavity into a peripheral recess around the cavity in the die base to control wrinkles that could otherwise form in the sheet in the cavity;

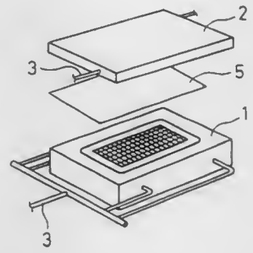
whereby the localized prethinning bulge effectively expands the material by initially superplastically forming the material in areas that would tend to form slowest or least in the base die cavity because of contact between the sheet and the die surface and whereby the localized prethinning bulge makes material available for other areas of the part that would normally become excessively thinned by virtue of the shape of the adjacent areas or depth of the die cavity, the localized prethinning bulge thereby permitting unthinned material to advance farther into the cavity than the unthinned material would have advanced without prethinning.

5,823,033

METHOD FOR PRODUCING A DAMPER PLATE HAVING SUBSTANTIALLY POLYGON PATTERNS

Hirokazu Takayama, Tokyo; Toshiyuki Ogawa, and Atsushi Kaneko, both of Yokohama, all of Japan, assignors to Ebara Corporation, Tokyo, Japan

Filed Jul. 15, 1996, Ser. No. 680,351
Claims priority, application Japan, Jul. 17, 1995, 7-202829
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—60 **8 Claims**



1. A method for producing a damper plate for sealing between a rotating portion and a stationary portion of a rotary machine and cushioning said rotating portion, comprising the steps of:

preparing a superplastic plate;

defining a plurality of convex portions and concave portions in said superplastic plate by a superplastic processing method; and

bending said superplastic plate to form a bent portion for attaching said superplastic plate to a rotating portion or a stationary portion of said rotary machine.

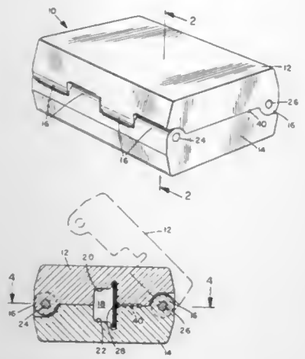
5,823,034

SUPERPLASTIC METALFORMING WITH SELF-CONTAINED DIE

Donald O. Nelepovitz, San Diego, Calif., assignor to Hyperform Technologies, Inc., San Diego, Calif.

Filed Oct. 10, 1997, Ser. No. 948,678
Int. Cl.[6] B21D *26/02*
U.S. Cl. 72—60 **22 Claims**

1. A die apparatus for forming a part, comprising:



a plurality of die segments, each die segment unitarily formed from a material selected from the group consisting of graphite and ceramic, each die segment having a unitarily formed connecting portion for interlocking said die segment to another of said die segments; and

said connecting portion of each die segment interlockable with a connecting portion of another one of said die segments to define a die having an interior chamber with a surface reflecting a shape of said part.

5,823,035

METHOD OF MAKING A COIL SPRING

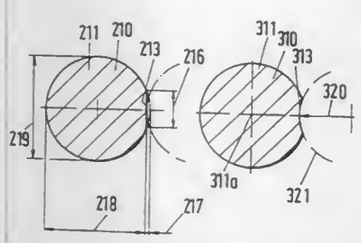
Albert Albers, Bühl, and Robert Felger, Bühl-Neusatz, both of Germany, assignors to Luk Lamellen Und Kupplungsbau GmbH, Bühl, Germany

Division of Ser. No. 533,110, Sep. 25, 1995, Pat. No. 5,642,875, which is a continuation of Ser. No. 206,455, Mar. 4, 1994, abandoned. This application May 29, 1997, Ser. No. 865,265

Claims priority, application Germany, Mar. 5, 1993, 43 06 908.8

Int. Cl.[6] B21D *11/08;* **B21F** *3/02*

U.S. Cl. 72—136 **31 Claims**



1. A method of making a coil spring, comprising the steps of:

imparting to an external surface of an elongated hardened round spring steel wire a configuration including an elongated, at least substantially cylindrical, major portion and at least one elongated flat, said imparting step including cold forming the wire;

converting the wire into a coil spring with a plurality of neighboring convolutions each having an external surface including a major section forming part of said cylindrical major portion and a smaller section forming part of said flat; and imparting to said spring an arcuate shape so that each of said convolutions includes a radially inner portion and a radially outer portion, said radially inner portions of said neighboring convolutions being nearer to each other than said radially outer portions, said smaller section of the external surface of each convolution abutting a neighboring convolution and opposing radial movements of abutting neighboring convolutions relative to each other when the coil spring is under load in a direction corresponding to said arcuate shape.

5,823,036

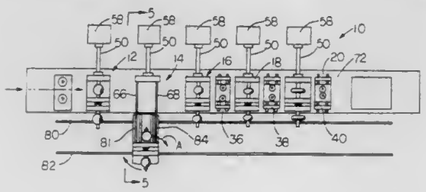
ROLL FORMING MACHINE AND METHOD FOR CHANGING ROLLS

Douglas S. Matsunaga, Mettawa, Ill., assignor to Braner USA, Inc., Schiller Park, Ill.

Filed Aug. 19, 1997, Ser. No. 914,193

Int. Cl.[6] B21B *31/10*

U.S. Cl. 72—181 **12 Claims**



1. A roll forming machine comprising multiple mill stands defining a material pass line through the mill stands, said mill stands each including a drive bearing housing, a rotatable bearing housing, and an active pair of spaced rotatable arbors supported on said bearing housings, said active pair of arbors carrying a first pair of tube shaping rolls cooperating to define said material pass line therebetween, an inactive pair of rotatable arbors connected to said rotatable bearing housing for carrying a second pair of tube shaping rollers, drive means for rotating said active pair of arbors as a strip of metal passes through said rolls along said material pass line, said rotatable bearing housing being supported by a bearing housing support, a cart mounted for movement parallel to said material pass line, said cart and said rotatable bearing housing carrying cooperating sliding supports for slidably supporting said rotatable bearing housing for movement from said bearing housing support to said cart and from the cart to the bearing housing support in a direction transverse to the material pass line, and rotatable means for supporting said rotatable bearing housing for rotation about a substantially vertical axis after the latter has been moved from said bearing housing support to said cart whereby the inactive pair of arbors become the active pair of arbors after the rotatable bearing housing is moved from said cart back onto the bearing housing support after operation of the rotatable means, and means for shifting parallel to said material pass line said cart between said mill stands.

5,823,037

ELECTRICALLY HEATED METAL STRIP ROLLING MILL

Stanislav K. Kim; Eduard I. Anisimov; Sergey A. Kutsenko; Yury N. Petrochenko, all of Zhukovsky; Andrey Y. Sterlin, Fryazevskaya; Valery V. Voznesensky, Zhukovsky, all of Russian Federation; Won-Guk Jee, Kyonggi-do, and Hyung-Min Rho, Seoul, both of Rep. of Korea, assignors to Kyong In Special Metal Co., Ltd., Incheon, Rep. of Korea

Filed Nov. 12, 1996, Ser. No. 745,547

Claims priority, application Rep. of Korea, May 18, 1996, 16804/1996

Int. Cl.[6] B21B *27/08*

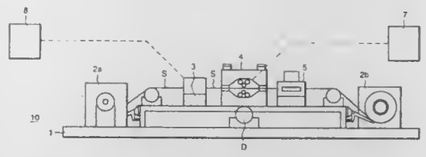
U.S. Cl. 72—201 **15 Claims**

1. An electrically heated metal strip rolling mill comprising:

a front reel for supporting a metal strip;

electric power suppliers;

a roll stand disposed after said front reel for rolling the metal strip from said front reel, said roll stand having a base, a roll support frame having upper and lower casing being fastened



with studs, at least two pairs of supporting rolls rotatably fixed in said support frame, at least one pair of working rolls rotatably fixed in said roll support frame and disposed between the support rolls, and a roll drive mechanism for driving the support rolls;

means for applying electricity directly to a surface of one roll of the pair of working rolls from the electric power suppliers and conducting the electricity to the outside directly from another roll of the pair of working rolls;

means for cooling said working rolls having coolant channels formed therein for allowing coolant, supplied from an external coolant source, to flow therethrough;

a strip cooler disposed after said roll stand for cooling the metal strip from said roll stand; and

a back reel disposed after said strip cooler for winding the metal strip from said strip cooler.

5,823,038

APPARATUS FOR LOADING A BILLET AND, IF NECESSARY, A PRESSING DISC INTO A HORIZONTAL METAL EXTRUSION PRESS

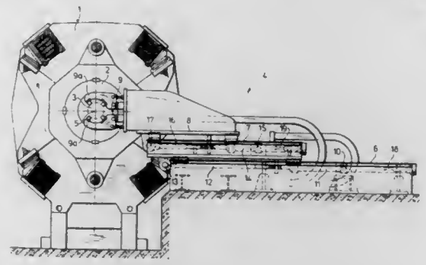
Nikolaus Jakoby, Ratingen, Germany, assignor to SMS Eumuco GmbH, Germany

Filed Feb. 14, 1997, Ser. No. 800,850

Claims priority, application Germany, Feb. 26, 1996, 196 06 955.6

Int. Cl.[6] B21C *33/00*

U.S. Cl. 72—270 **15 Claims**



10. Apparatus for loading a billet and, if necessary, a pressing disc into a horizontal metal extrusion press having a press axis, the apparatus comprising:

a base;

a first mobile part mounted on said base so as to be movable relative thereto in a plane transverse to said press axis, the extent of the movement being predetermined;

a second mobile part mounted on said first mobile part so as to be movable relative thereto in said plane, the extent of the movement being predetermined; and

a carrying part provided on said second mobile part;

whereby the carrying part is movable in said plane from a charging position remote from said press axis, via an intermediate position wherein the carrying part is closer to said press axis than in the charging position but still remote from said press axis, to a loading position wherein the carrying part is in line with said press axis; and

wherein the extent of movement of one of said mobile parts corresponds to the distance between the charging position and the intermediate position, and the extent of movement of the other of said mobile parts corresponds to the distance between the intermediate position and the loading position.

5,823,039

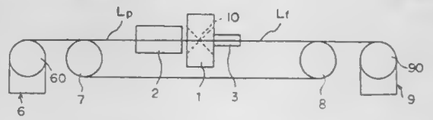
APPARATUS FOR DRAWING WIRE USING A HEATED DRAWING DIE AND COOLING DEVICE

Katsumi Umeda; Kanji Umekawa; Yasushi Umeda, and Shiro Kono, all of Yokohama, Japan, assignors to Noge Electric Industries Co., Ltd., Yokohama, Japan

Continuation of Ser. No. 384,982, Feb. 7, 1995, abandoned. This application Jun. 9, 1997, Ser. No. 871,417

Int. Cl.[6] B21C *9/00*

U.S. Cl. 72—286 **4 Claims**



1. A working apparatus for wire drawing wherein wire material is fined, comprising:

a delivery device for delivering such wire material as a starting material;

a die having an aperture for plastic working to reduce a diameter of such wire material;

a pulling device for pulling such wire material delivered from said delivery device through said aperture at a predetermined speed;

a takeup device for taking up such wire material pulled through said aperture by said pulling device;

heating means for heating said die;

heating control means for controlling said heating means to control the temperature of said die so that a part of the wire material lying in said aperture is heated by said heating means to be at a temperature within a predetermined range; and

cooling means for cooling a part of such wire material having just been pulled out of said die ("part-to-be-cooled") so that the temperature of the part-to-be-cooled is lowered below a predetermined value.

5,823,040

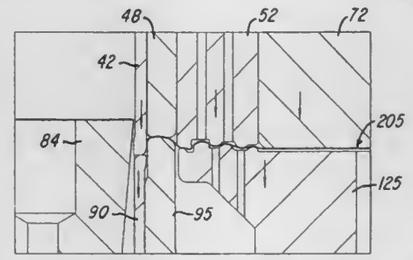
METHOD AND APPARATUS FOR FORMING A CAN SHELL

Ralph P. Stodd, 6450 Poe Ave. Suite 213, Dayton, Ohio 45414

Filed May 2, 1997, Ser. No. 850,826

Int. Cl.[6] B21D *51/44*

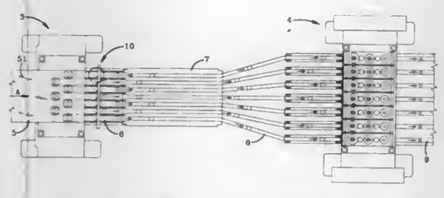
U.S. Cl. 72—329 **10 Claims**



1. A method of producing a container end wall or shell from a flat metal sheet, the shell including a center panel having concentric annular beads and connected by an annular panel wall portion to an annular countersink portion which is connected to an annular crown portion by an annular chuck wall portion, the method comprising the steps of blanking a disk from the metal sheet, gripping a peripheral portion of the disk, forming the center panel

including the concentric beads within the disk, and thereafter forming the chuck wall portion within the disk.

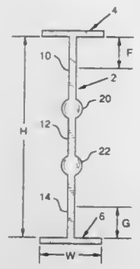
5,823,041
METHOD AND APPARATUS FOR MAKING A NON-CYLINDRICAL CAN BODY
James A. McClung, North Canton, Ohio, assignor to Can Industry Products, Inc., Canton, Ohio
Filed Jun. 6, 1997, Ser. No. 870,543
Int. Cl.[6] B21D *22/26*
U.S. Cl. 72—349 **16 Claims**



1. Method for making a non-cylindrical can body having a bottom wall and a side wall including the steps of:
A. providing an elongated strip of sheet metal having a uniform thickness and having a known grain direction;
B. forming a flat blank from the metal strip with the grain direction of said blank being known;
C. forming the flat blank into an elongated can blank having generally major and minor axes and having a known grain direction at a first tooling station, said can blank having an annular side wall terminating in a flangeless top edge and an integral oval-shaped bottom wall, said side and bottom walls each with a thickness substantially equal to the thickness of the strip of sheet material;
D. moving said elongated can blank from the first tooling station toward a second tooling station;
E. orienting said elongated can blank in a known direction with respect to the grain and maintaining control of and knowing the grain direction of said oriented can blank when moving the can blank between said first and second tooling stations;
F. redrawing said elongated can blank into the can body at the second tooling station while maintaining and knowing the grain direction in the bottom wall of the can blank as it moves through said second tooling station; and
G. reducing the major and minor axes of the can blank and increasing the axial height of the can blank without substantially thinning the thickness of the side and bottom walls when performing Step F.

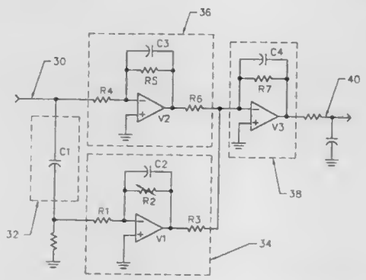
5,823,042
METHOD OF MAKING AN IMPROVED HOT ROLLED I-BEAM AND ASSOCIATED PRODUCT
Carl A. Snyder, McMurray; Michael A. Karczewski, Beaver Falls; Karl W. Shurskis, Hookstown, all of Pa., and Sunil Saigal, Fairfax, Va., assignors to J&L Structural, Inc., Aliquippa, Pa.
Filed Mar. 14, 1997, Ser. No. 818,476
Int. Cl.[6] B21B *23/00*
U.S. Cl. 72—366.2 **25 Claims**

1. A method of forming and using a unitary metal I-beam comprising,
providing an elongated metal workpiece,
progressively hot rolling said metal workpiece to create an elongated beam having a web and flanges at the edges of said web,
forming within said web elongated reinforcing means of solid cross-section having a generally straight longitudinal axis oriented generally parallel to said flanges,



establishing said reinforcing means with two or five elongated laterally projecting solid heat sink ribs projecting in both lateral directions,
cooling said I-beam while resisting forming substantial waves in said web due to the temperature differential between said web and said flanges, and
securing said I-beam in a structural product.

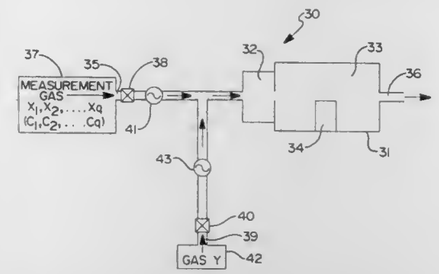
5,823,043
TRANSDUCER RESPONSE COMPENSATOR
Richard B. Loucks, Severna Park, and Larry G. Ferguson, Balto, both of Md., assignors to The United States of America as represented by the Secretary of The Army, Washington, D.C.
Filed Jan. 26, 1996, Ser. No. 605,301
Int. Cl.[6] G01K *1/00*
U.S. Cl. 73—1.01 **2 Claims**



1. A response-compensated electronic transducer apparatus comprising:
a first order electronic transducer producing an output signal having a response characterized by a known response constant; and
a circuit for adjusting the transducer output signal to approach the response of an ideal transducer having a response constant of zero.

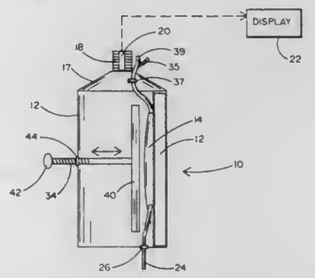
5,823,044
METHOD FOR SELECTIVE GAS SENSORS BASED ON NONLINEAR GAS REACTIONS
Eleftherios M. Logothetis, Birmingham; Michael D. Hurley, Ann Arbor, and Richard E. Soltis, Saline, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Apr. 30, 1997, Ser. No. 848,333
Int. Cl.[6] G01N *7/00;27/00*
U.S. Cl. 73—23.2 **3 Claims**

1. A method for determining an amount of gas of interest contained in a measurement gas, said method comprising the steps of:



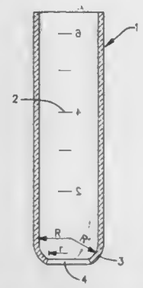
periodically modulating a specified flux of a measurement gas at a first predetermined frequency;
periodically modulating a specified flux of a specified gas that can react non-linearly with a gas of interest at a second predetermined frequency;
adding the modulated flux of the specified gas to the modulated flux of the measurement gas;
passing the mixture of the two modulated gas fluxes through a reactor where the gas of interest reacts with the specified gas to produce a third gas;
exposing a gas sensor that can respond to the third gas present in the gas mixture after the reactor;
measuring the sensor output at zero frequency (DC) and at specified frequencies (AC); and
determining the original concentration of the gas of interest in the measurement gas from the measured sensor output at zero frequency and at the specified frequencies.

5,823,045
MEASURING BLOOD VOLUME IN SOFT-SHELL VENOUS RESEVOIRS BY DISPLACEMENT
Michael R. Van Driel, Fountain Valley, Calif.; Darren S. Gray, Grand Junction, Colo.; Victor C.H. Lam; Jill E. Uyeno, both of Honolulu, Hi., and Yu-Tung Wong, Huntington Beach, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Apr. 29, 1997, Ser. No. 840,688
Int. Cl.[6] G01F *23/00*
U.S. Cl. 73—299 **12 Claims**



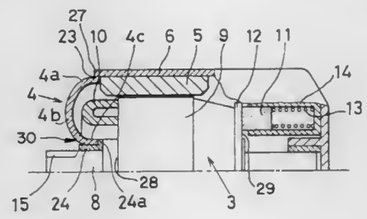
1. A method of measuring the blood volume in an expandable soft-shell venous reservoir, comprising the steps of:
a) mounting said reservoir in a body of fluid;
b) detecting a volume change in said fluid as said reservoir expands and contracts; and
c) providing a blood volume indication corresponding to said detected volume changes.

5,823,046
MEASURING VESSEL
Tonie Schagerström, P.O. Box 442, Uppsala, Sweden, S-754 31; Pär Eriksson, Molngatan 6, Uppsala, Sweden, S-754 31, and Anders Olsson, Jakobsbergsgatan 18B, Sala, Sweden, S-733 34
Continuation of Ser. No. 605,091, Mar. 6, 1996, abandoned.
This application Jul. 18, 1997, Ser. No. 896,419
Claims priority, application Sweden, Sep. 14, 1993, 9302988
Int. Cl.[6] G01F *19/00*
U.S. Cl. 73—427 **21 Claims**



1. A measuring vessel for measuring finely ground coffee, cocoa powder, flour for baking, gruel and other packable, dry materials with similar properties of being compressible under an externally applied pressure, having the form of a hollow, graduated measuring tube made from transparent material which extends in the direction of a longitudinal axis from a first end to an opposite second end,
said measuring tube being open at said first end for introducing a desired volume of said finely ground, packable and dry material by vertically inserting the tube in the material,
and open at said second end for dispensing captured material when the measuring tube is inverted from a vertical orientation, said measuring tube having a portion along said longitudinal axis with a uniform cross section,
and means at said first end and extending from said portion for retaining a packed column of said finely ground, packable and dry material in said measuring tube in a region of said first end, including when said measuring tube is removed from said material and maintained in a generally vertical direction, until dispensing the captured material through said open second end by inverting the measuring tube.

5,823,047
STARTER WITH SEPARATING WALL HAVING SLANTING PORTION
Akifumi Hosoya, Kariya, Japan, assignor to Denso Corporation, Kariya, Japan
Filed Feb. 6, 1997, Ser. No. 796,862
Claims priority, application Japan, Feb. 8, 1996, 8-022524
Int. Cl.[6] F02N *15/06*
U.S. Cl. 74—7 E **14 Claims**



1. A starter comprising:

a starting motor including a shaft, a yoke, and an armature provided in an inner circumference of said yoke, said armature including an armature core fixed to said shaft;

a planetary gear speed reduction mechanism, for reducing rotational speed of said armature, disposed axially adjacent to said starting motor and including a sun gear provided on said shaft, planetary gears meshing with said sun gear, and an internal gear meshing with said planetary gears; and

a separating wall provided between said starting motor and said planetary gear speed reduction mechanism to extend from said yoke radially inwardly toward said shaft, said separating wall being formed in a continuous curved shape of different curvatures over an entire radial length thereof.

5,823,048

STARTER FOR AN ENGINE

Thomas Saupe, Herzogenaurach, Germany, assignor to FEV Motorentechnik GmbH & Co. KG, Aachen, Germany

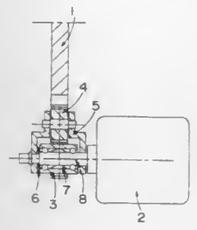
PCT No. PCT/EP95/04709, § 371 Date Aug. 5, 1996, § 102(e) Date Aug. 5, 1996, PCT Pub. No. WO96/18034, PCT Pub. Date Jun. 13, 1996

PCT Filed Nov. 30, 1995, Ser. No. 687,477

Claims priority, application Germany, Dec. 8, 1994, 44 43 674.2

Int. Cl.[6] F02N *15/04*

U.S. Cl. 74—8 **6 Claims**



1. An engine starter comprising

(a) an electric driving motor having a drive shaft;

(b) a transmission pinion coupled to said drive shaft;

(c) a starter pinion meshing with said transmission pinion;

(d) a swiveling device mounted on said drive shaft for pivotal motion thereabout; said starter pinion being rotatably supported in said swiveling device;

(e) a friction clutch torque-transmittingly coupling said drive shaft to said swiveling device for causing said swiveling device to pivot about said shaft for placing said starter pinion in a working position when said shaft is rotated in a driving direction; and

(f) an overrunning device for transmitting a driving torque between said drive shaft and said transmission pinion solely when said drive shaft rotates at least at the same speed as said transmission pinion.

5,823,049

MECHANICAL SCANNER

Stuart E. Schechter, Newton, Mass., assignor to Synkinetics, Inc., Lowell, Mass.

Continuation-in-part of Ser. No. 372,594, Jan. 13, 1995, abandoned. This application Oct. 23, 1995, Ser. No. 546,593

Int. Cl.[6] F16H *21/16*

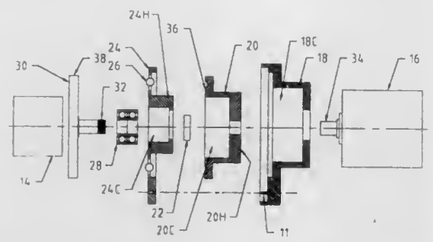
U.S. Cl. 74—25 **12 Claims**

1. Apparatus for converting a rotary input to a scanning output, the apparatus comprising

a housing,

a conjugate pair of devices rotatable about a common axis,

at least one rolling element,



a retainer part having an elongated slot, said element fitting in said slot,

a first of said pair having a continuous track and a second of said pair having a discontinuous track, said tracks interacting via said element in said slot,

a coupling part, said retainer part connected to said housing via said coupling part,

means for spindling one of said devices as an input part and the other of said devices as an output part, one of said devices mounted between said retainer part and said housing and the other of said devices mounted in conjunction with said retainer part,

said retainer part and one of said devices each having a cup portion and a hub portion, one of said cup Portions nested in one of said hub portions, the other of said devices having a hub portion that nests with the other of said cup portions, wherein

said output part oscillates when said input part is rotated.

5,823,050

MOTION TRANSFORMING APPARATUS

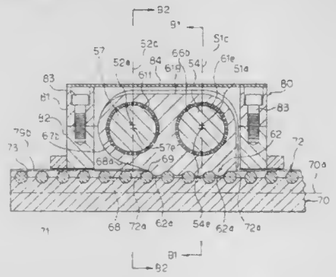
Hiroyuki Takenaka, Gifu-ken, Japan, assignor to Teijin Seiki Co., Ltd., Osaka, Japan

Filed Oct. 15, 1996, Ser. No. 730,455

Claims priority, application Japan, Oct. 24, 1995, 7-275169

Int. Cl.[6] F16H *23/00;27/00*

U.S. Cl. 74—116 **10 Claims**



1. A motion transforming apparatus for transforming an input rotation motion into a relative linear motion, comprising:

first and second rotation shafts each having a rotational center axis and respectively rotatable around the rotational center axes, each of said first and second rotation shafts being formed with at least three crank shaft portions having respective eccentric axes in parallel relationship with one another and to said rotational center axis, said eccentric axes of said crank shaft portions being displaced from and arranged equiangularly around said rotational center axis of each of said first and second rotation shafts;

a plate assembly constituted by at least three rotation plates each having a toothed portion formed with a plurality of teeth spaced from one another with a predetermined pitch, said rotation plates being laterally juxtaposed with one another with said toothed portions of said rotation plates laterally adjacent to one another, each of said rotation plates being formed with first and second cranked through bores having center axes in parallel relationship with each other, and said crank shaft portions of said first and second rotation shafts being rotatably received in said first and second cranked through bores of said rotation plates respectively with said rotational center axes of said first and second rotation shafts paced from and in parallel relationship with each other;

a toothed rail having a longitudinal axis extending longitudinally thereof and a mid-longitudinal plane perpendicularly intersected by the center axis of each of said first and second rotation shafts and extending on said longitudinal axis, said toothed rail including a support portion, and a toothed rail including a support portion and a toothed portion having a plurality of teeth each protruding from said support portion, and the teeth of said toothed rail being spaced from one another with the same pitch as that of the teeth of said rotation plates and held in mesh with said teeth of said toothed portions of said rotation plates; and

a plate assembly housing movable along the longitudinal axis of said toothed rail relatively with respect to said toothed rail and having said plate assembly and said first and second rotation shafts partly accommodated therein with the distance between the longitudinal axis of said toothed rail and each of the rotational center axes of said first and second rotation shafts being maintained constant.

wherein said first rotation shaft is driven by said first and second rotation shafts in cooperation with said second rotation shaft, each of said rotation plates further having an untoothed portion connected to said toothed portion of each rotation plate and closer to said second rotation shaft than said first rotation shaft with said toothed portion being closer to said first rotation shaft than said second rotation shaft, said untoothed portion of each rotation plate facing and being spaced from said toothed portion of said toothed rail, and said toothed portion of said toothed rail being pressed by said toothed portions of said rotation plates while said rotation plates are being rotated by said crank shaft portions of said first rotation shaft around said rotational center axes of said first and second rotation shafts.

5,823,051

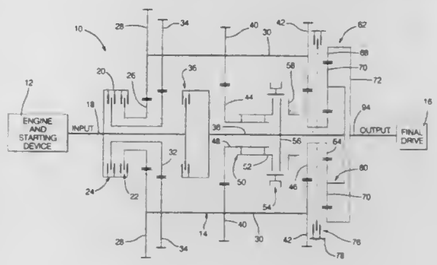
MULTI-SPEED POWER TRANSMISSION

Arthur Hall, III, Cicero, Ind., assignor to General Motors Corporation, Detroit, Mich.

Filed May 5, 1997, Ser. No. 841,855

Int. Cl.[6] F16H *3/08*

U.S. Cl. 74—325 **4 Claims**



1. A power transmission comprising:

an input shaft;

a first ratio gear;

a second ratio gear meshing with said first ratio gear;

a third ratio gear;

a fourth ratio gear meshing with said third ratio gear;

countershaft means for supporting rotation of said second ratio gear and said fourth ratio gear;

a first selectively engageable clutch selectively connecting said input shaft with said first ratio gear;

a second selectively engageable clutch selectively connecting said input shaft with said third ratio gear;

a simple planetary gear set having a sun gear, a ring gear and a carrier assembly;

an output shaft connected with said ring gear;

first transfer gear means connecting said countershaft means with said sun gear;

second transfer gear means connecting said countershaft means with a one-way drive assembly;

an intermediate shaft drivingly connected with said carrier assembly and with a forward/reverse drive establishing means for providing a selective drive connection with said one-way drive assembly and with a stationary component; and

a third selectively engageable clutch selectively connecting said input shaft with said intermediate shaft to establish a power path between said input shaft and said output shaft exclusive of said first, second, third, and fourth ratio gears and cooperating with said first and second clutches to establish two additional power paths between said input shaft and said output shaft wherein each power path includes one of said first and third ratio gears.

5,823,052

AUTOMATIC TRANSMISSION CONTROL SYSTEM

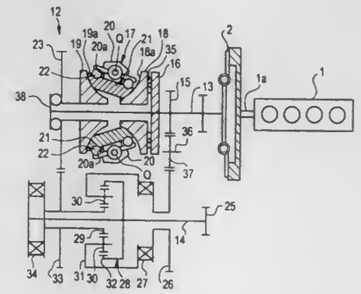
Hidetoshi Nobumoto, Hiroshima, Japan, assignor to Mazda Motor Corporat ion, Hiroshima, Japan

Filed Mar. 31, 1997, Ser. No. 834,820

Claims priority, application Japan, Mar. 29, 1996, 8-077468; Jan. 21, 1997, 9-008592

Int. Cl.[6] F16H *61/00*

U.S. Cl. 74—335 **9 Claims**



1. A control system for controlling a gear ratio of an automotive automatic transmission changeable between an automatic shift mode and a manual shift mode, said automatic transmission control system comprising:

gear ratio control means for controlling a change of the gear ratio to shift the automatic transmission to a desired gear;

manually operated shift up means for causing said gear ratio control means to make the gear ratio lower to shift the automatic transmission up in said manual shift mode when said shift up means is continuously operated;

manually operated shift down means for causing said gear ratio control means to change the gear ratio higher to shift the automatic transmission down in said manual shift mode when said shift down means is continuously operated; and

a control means for controlling said gear ratio control means to make a change rate of the gear ratio lower when said shift

down means is continuously operated than when said shift up means is continuously operated.

5,823,053

GEAR-SHIFT DEVICE FOR A CHANGE-SPEED GEARBOX

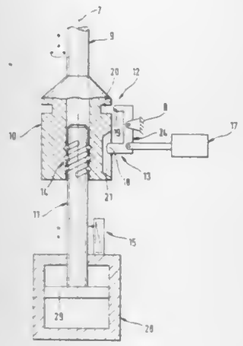
Martin Stengel, Urbach, and Günter Wörner, Kernen, both of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Germany

Filed Sep. 4, 1997, Ser. No. 923,554

Claims priority, application Germany, Sep. 4, 1996, 196 35 866.3

Int. Cl.[6] F16H *59/04*

U.S. Cl. 74—335 **25 Claims**



1. Gear-shift device for a change-speed gearbox, comprising:
a housing,
a shift actuator which is arranged rotatably and axially displaceably with respect to a central axis of the housing,
a selection actuator which is coaxial with respect to the central axis and is arranged rotatably relative to the housing, the selection actuator being fixable with regard to the housing in the longitudinal directions of the central axis,
an axial actuator which is coaxial with respect to the central axis and is displaceable exclusively axially relative to the housing,
an engageable and disengageable brake for fixing the selection actuator with regard to the housing in the circumferential directions of the central axis, and
an auxiliary transmission for converting a reciprocating motion into a rotary motion,
wherein two of the shift, selection, and axial actuators are both arranged such that they are fixed in terms of movement with respect to one another, at least in the longitudinal directions of the central axis, and are connected to a remaining one of the shift, selection, and axial actuators by the auxiliary transmission,
wherein an engageable and disengageable locking device is connected in terms of action both to the selection actuator and to the brake in such a manner that the selection actuator can be fixed with regard to the housing alternately either exclusively in the circumferential directions or exclusively in the longitudinal directions of the central axis, and
wherein the selection actuator is connected by the auxiliary transmission to the axial actuator which is displaceable exclusively axially with regard to the housing.

5,823,054

MOVEMENT ACTUATOR

Stefan Frits Brouwer, Den Haag, Netherlands, assignor to IKU Holding Montfoort B.V., Montfoort, Netherlands

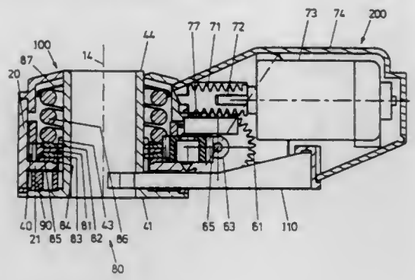
PCT No. PCT/NL95/00049, § 371 Date Nov. 12, 1996, § 102(e) Date Nov. 12, 1996, PCT Pub. No. WO95/21339, PCT Pub. Date Aug. 10, 1995

PCT Filed Feb. 2, 1995, Ser. No. 687,375

Claims priority, application Netherlands, Feb. 2, 1994, 9400163

Int. Cl.[6] B60R *1/02;* **G02B** *7/182*

U.S. Cl. 74—425 **18 Claims**



1. A movement actuator comprising:

a first module including:
first and second actuator parts mounted for rotation relative to one another;
a gear wheel rotatably arranged in said second actuator part; and
a transmission system including a coupler coupled to said gear wheel, and a worm wheel;
a second module including:
a motor housing; and
an electromotor mounted in said housing, said electromotor including a drive shaft having mounted thereon a worm; and
said first module and said second module being constructed to fit together in different manners of fixed orientation of said motor housing and said electromotor relative to said second actuator part in each of which said worm engages said worm wheel, thereby coupling said electromotor through said transmission system and said gear wheel to said actuator parts, such that said electromotor is operable to rotate said actuator parts relative to each other.

5,823,055

WORM GEAR DRIVE LOCKING APPARATUS

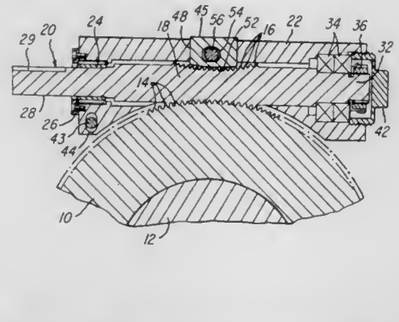
G. Daniel Siler, Dayton, Ohio, assignor to Dayton Machine Tool Company, Dayton, Ohio

Filed Nov. 18, 1996, Ser. No. 751,860

Int. Cl.[6] F16H *1/16;35/06*

U.S. Cl. 74—425 **17 Claims**

11. Apparatus for locking a worm gear drive including a worm having teeth engaging mating teeth on a worm gear, said apparatus comprising a housing supporting said worm for rotation, a clamping shoe positioned adjacent said teeth on said worm and supported by said housing for movement between a released position providing for rotation of said worm and a clamping position engaging and pressing said teeth on said worm into said teeth on said worm gear, and a power actuated rotatable cam member connected to move said clamping shoe from said released position to said clamping position for slightly deflecting said worm toward said worm gear.



5,823,056

Patent Not Issued For This Number

5,823,057

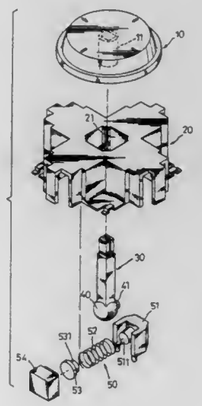
JOY STICK STRUCTURE

Ming-kun Hsien, No. 53, Chungcheng Rd., Hsitzu Chen, Taipei Hsien, Talwan

Filed Aug. 16, 1996, Ser. No. 704,437

Int. Cl.[6] G05G *9/047*

U.S. Cl. 74—471 X **2 Claims**



1. A joy stick structure comprising:
a pressing plate having a central socket integrally provided thereunder;
a body having a central through hole and a plurality of first spaces defined therein;
a stick having a sphere at a first end thereof and a second end securely inserted into said central socket of said pressing plate through said central through hole of said body;
a plurality of transmission mechanisms each firmly received within a respective one of said plurality of first spaces of said body and spaced apart from said stick a predetermined distance and, having:
a receiver having a central boss;
a resilient member having a first end securely seated on said central boss of said receiver and a second end;
a presser having a central protrusion formed on a first face and configured to mate with said second end of said resilient member and a second face; and
an activation switch in contact with to said second face of said presser.

5,823,058

TWIST-GRIP SHIFTER FOR BICYCLES AND A BICYCLE HAVING A TWIST-GRIP SHIFTER

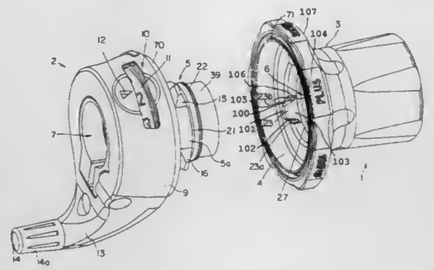
Markus Arbeiter, WUrzburg, Germany, assignor to Mannesmann Sachs AG, Schweinfurt, Germany

Continuation-in-part of Ser. No. 566,284, Dec. 1, 1995, Pat. No. 5,666,859, which is a continuation-in-part of Ser. No. 563,996, Nov. 29, 1995, Pat. No. 5,588,925. This application Mar. 4, 1996, Ser. No. 610,651

Claims priority, application Germany, Dec. 2, 1994, 44 42 953.3; Dec. 2, 1994, 44 42 952.5

Int. Cl.[6] B62K *23/04;* **B62M** *25/04*

U.S. Cl. 74—489 **18 Claims**



1. A bicycle, said bicycle comprising:
a frame;
at least two wheels, said at least two wheels comprising at least a front wheel and a rear wheel;
said at least two wheels being disposed on said frame;
an arrangement to propel at least one of said front wheel and said rear wheel;
said arrangement to propel comprising:
a chain;
at least two sprockets to engage said chain; and
at least two pedals, said at least two pedals being connected to one of said at least two sprockets;
a seat, said seat being disposed on said frame;
a handlebar for steering said bicycle; and
a bicycle gearing system, said bicycle gearing system comprising:
an arrangement to shift gearing associated with at least one of: said front wheel and said rear wheel of said bicycle;
a shift actuator mounted on said handlebar, generally coaxially with said handlebar;
at least one control cable having a first end and a second end;
said first end of said at least one control cable being operatively associated with said shift actuator;
said second end of said at least one control cable being operatively associated with said arrangement to shift gearing; and
said shift actuator comprising:
a first part being rotatable in a first direction and a second direction;
said first part being operatively connected to said arrangement to shift gearing;
said first part comprising a rotatable grip part;
a second part, said second part comprising an arrangement to actuate said first end of said at least one control cable;
a housing, at least a portion of said second part being disposed within said housing;
a connecting arrangement to connect said first part and said second part to one another, and for rotating said first part and said second part along with one another; and
said connecting arrangement comprising:
at least two projections disposed on one of said first part and said second part;
at least two recesses disposed in the other one of said first part and said second part; and
said at least two projections being engaged with said at least two recesses, one of said at least two projections

being configured to solely engage with only one of said at least two recesses.

5,823,059

Patent Not Issued For This Number

5,823,060

LEAD WIRE PROCESSING DEVICE FOR INDUSTRIAL ROBOT

Atsushi Ichibangase, and Masahiro Ogawa, both of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki, Fukuoka, Japan

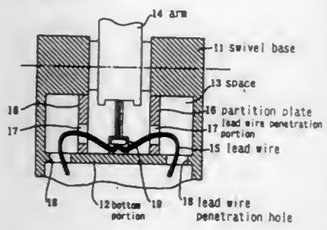
PCT No. PCT/JP95/02494, § 371 Date Jul. 31, 1996, § 102(e) Date Jul. 31, 1996, PCT Pub. No. WO96/17714, PCT Pub. Date Jun. 13, 1996

PCT Filed Dec. 6, 1995, Ser. No. 687,592

Claims priority, application Japan, Dec. 7, 1994, 6/331299

Int. Cl.[6] B25J *11/00*

U.S. Cl. 74—490.02 **2 Claims**



1. A structure for lead wire distribution in an industrial robot having a fixed base, a swivel base movably mounted on said fixed base, said swivel base having a bottom and a space therein, said bottom of said swivel base having an upper bottom surface, an arm attached to said swivel base with the lower section of said arm being rotatably held in said swivel base, a partition plate provided in said space and disposed on said upper bottom surface of said swivel base at a position offset from an outer periphery of said upper bottom surface and offset from said arm within said space, a lead wire penetration portion in said partition plate at a level above said upper bottom surface, and a lead wire penetration hole provided in said bottom of said swivel base at a position outward from said partition plate for permitting lead wires drawn out of the lower section of said arm in said space to extend downwardly toward a position identical to or lower than said lead wire penetration section of said partition plate, while allowing said lead wires to be separated from each other to extend upwardly or horizontally so that a resulting lead wire portion passes through said lead wire penetration portion, enters into the outer periphery of said partition plate and passes through said lead wire penetration hole to enter the inside of said fixed base.

5,823,061

INDUSTRIAL ROBOT

Kazuhiro Tomiyasu, Fukuoka, Japan, assignor to Kabushiki Kaisha Yaskawa Denki, Kitakyushu, Japan

PCT No. PCT/JP96/03423, § 371 Date Jul. 25, 1997, § 102(e) Date Jul. 25, 1997, PCT Pub. No. WO97/19789, PCT Pub. Date May 6, 1997

PCT Filed Nov. 21, 1996, Ser. No. 875,374

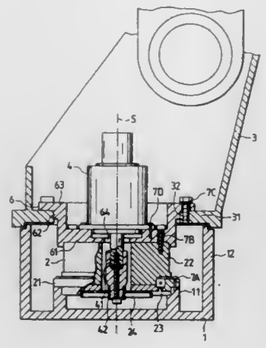
Claims priority, application Japan, Nov. 29, 1995, 7-335963

Int. Cl.[6] B25J *9/06;17/00*

U.S. Cl. 74—490.03 **1 Claim**

1. An industrial robot comprising:

a base provided with a mounting seat at its central upper portion;



a reduction gear having a stationary portion fixed to said mounting seat so as to be concentric with a vertically extending rotation axis, and a speed reduction mechanism portion supported on said stationary portion through a bearing;

a driving motor for driving said reduction gear; and

a revolving portion rotatably supported through said speed reduction mechanism portion of said reduction gear, and mounted with arms;

characterized in that an intermediate member having a disc portion, a flange portion provided on an outer circumference of said disc portion, and a through hole provided in a center of said disc portion is provided between said speed reduction mechanism portion and said revolving portion,

in that a through hole is provided in a bottom portion of said revolving portion so as to be concentric with said rotation axis and so as to have an inner diameter larger than an outer diameter of said stationary portion of said reduction gear,

in that said disc portion of said intermediate member is fixed to an upper surface of said speed reduction mechanism portion, and said flange portion is fixed to said bottom portion of said revolving portion,

in that a lower surface of said revolving portion is made opposite to an upper surface of said base through a gap, and

in that said driving motor is fixed to said disc portion of said intermediate member concentrically with said rotation axis, and an output shaft of said driving motor is coupled with said speed reduction mechanism portion.

5,823,062

TILT STEERING COLUMN LOCK

William M. Snell, Grand Blanc; Ronald Klanke, Royal Oak, and Peter Escobedo, Jr., Waterford, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Dec. 12, 1996, Ser. No. 764,806

Int. Cl.[6] B62D *1/18*

U.S. Cl. 74—493 **7 Claims**

1. Apparatus for releasably locking the tilt steering column of an automotive vehicle in an adjusted position, comprising

support structure adapted to be affixed to the vehicle frame,

a steering column assembly,

means for pivotally mounting said steering column assembly on said support structure for vertical pivotal movement,

a rack carried by said steering column assembly and having rack teeth,

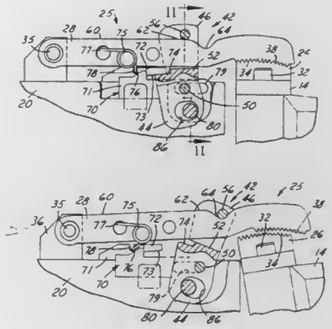
a pawl having first and second ends,

pawl teeth at said first end of said pawl,

means for pivoting said second end of said pawl to said support structure for pivotal movement of said pawl to positions engaging and disengaging said rack and pawl teeth,

a cam bracket,

means for pivotally mounting said cam bracket to said support structure for movement between first and second positions,



said pawl having a cam surface provided with locking and release surface portions,

said cam bracket having a lock pin slidable over said cam surface and engageable with said locking surface portion thereof in its first position and with said release surface portion thereof in its second position,

said pawl, when said cam bracket is in its first position, being moved by said lock pin to its position engaging said rack and pawl teeth to lock said steering column assembly in adjusted position and when said cam bracket is in its second position, being released by said lock pin to enable movement of said pawl to its position disengaging said rack and pawl teeth and releasing said steering column assembly,

a wedge mounted on said support structure for sliding movement from a retracted position to an advanced position positively retaining said bracket in said first position thereof,

manually operable means for moving said wedge to its retracted position to release said bracket and thereafter in sequence for moving said bracket from the said first to the said second position thereof,

said manually operable means also operable to move said bracket from said second position to said first position thereof and thereafter in sequence to move said wedge to its advanced position, and

actuating means operative when said bracket is moved to its second position for moving said pawl to its position disengaging said rack and pawl teeth.

5,823,063

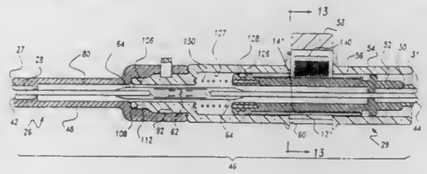
SHIFT COLUMN CABLE ASSEMBLY

J. Martin Nagle, Royal Oak, and David Van Zanten, Troy, both of Mich., assignors to Nagle Industries, Inc., Clawson, Mich.

Division of Ser. No. 510,542, Aug. 2, 1995, Pat. No. 5,655,415. This application Mar. 6, 1997, Ser. No. 812,797

Int. Cl.[6] F16C *1/10*

U.S. Cl. 74—502.6 **2 Claims**



1. A single piece connector for connecting a cable strand to a ball stud, said single piece connector comprising:

a body;

a socket formed in said body, a pair of integral bosses located on an end of said body a pair of internal lever arms adjacent said socket, said lever arms attached to said body by an integral flexible hinge, said lever arms further including lock projections such that when said ball stud is inserted, said lever arms are deflected outward whereby the lock projections clear a ball portion and engage a shaft portion of the ball stud, thus retaining the ball stud within the socket.

5,823,064

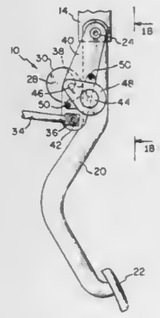
ADJUSTABLE AUTOMOBILE PEDAL SYSTEM

Edmond B. Cicotte, 11086 Hedgeway, Utica, Mich. 48317

Continuation of Ser. No. 472,917, Jun. 7, 1995, which is a division of Ser. No. 266,937, Aug. 16, 1994, abandoned, which is a division of Ser. No. 772,326, Oct. 7, 1991, Pat. No. 5,351,573. This application Nov. 19, 1996, Ser. No. 752,046

Int. Cl.[6] G05G *1/14*

U.S. Cl. 74—512 **15 Claims**



1. A method for adjusting a pedal arm adapted to rotate about an axis of pedal arm rotation with respect to a datum point on a reaction member, said method comprising the steps of:

positioning a first pivot axis in one end of a rotatable link means and a second pivot axis in an opposite end of said rotatable link means, said first pivot axis of said rotatable link means being positioned such that said first pivot axis is said axis of pedal arm rotation;

immobilizing said rotatable link means with respect to said reaction member by attaching said rotatable link means to said reaction member at said datum point;

positioning an axis of rotation a predetermined distance from said axis of pedal arm rotation in one of said pedal arm and said rotatable link means, said predetermined distance being no greater than the distance between said first and second pivot axes;

placing a rotatable member about said axis of rotation in one of said pedal arm and said rotatable link means, said rotatable member engaging the other of said pedal arm and said rotatable link means;

fixing said rotatable member to said one of said rotatable link means and said pedal arm such that said rotatable member rotates about said axis of rotation; and

rotating said rotatable member about said axis of rotation to move the other of said rotatable link means and said pedal arm and rotatively displace said other of said pedal arm and said rotatable link means about said axis of pedal arm rotation to provide adjustment of said pedal arm.

5,823,065

DRIVING CRANK FOR A WINDSHIELD WIPER SYSTEM

Bruno Egner-Walter, Heilbronn, Germany, assignor to ITT Automotive Europe GmbH, Germany

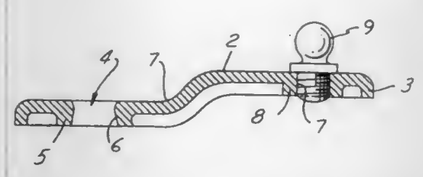
PCT No. PCT/EP94/02116, § 371 Date Jul. 25, 1996, § 102(e) Date Jul. 25, 1996, PCT Pub. No. WO95/01894, PCT Pub. Date Jan. 19, 1995

PCT Filed Jun. 29, 1994, Ser. No. 571,881

Claims priority, applicatica Germany, Jul. 5, 1993, 43 22 297.8

Int. Cl.[6] F16H *51/00;* G05G *1/04*

U.S. Cl. 74—519 7 Claims



1. Driving crank for a windshield wiper system, comprising:

a crank lever made of deep-drawn sheet metal, including a rear part, a beaded circumferential edge, and a first opening at a first end of the crank lever wherein an edge of said first opening is beaded and extends away from the rear portion, wherein said beading around said first opening edge extends towards the same side as the circumferential edge so as to form an inner cone, and wherein said crank lever further includes a second opening at a second end of the crank lever wherein a ball pin is attached to said second opening, wherein the inner cone expands starting from the rear portion of the crank lever, and wherein the edge of the second opening is beaded towards the same side of the rear portion as the circumferential edge and the edge of the first opening.

5,823,066

ARTICULATION TRANSMISSION MECHANISM FOR SURGICAL INSTRUMENTS

Thomas Huitema, Cincinnati; Richard P. Nuchols, Loveland, and Bryan D. Knodel, Cincinnati, all of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed May 13, 1996, Ser. No. 645,434

Int. Cl.[6] G05G *5/06*

U.S. Cl. 74—527 9 Claims

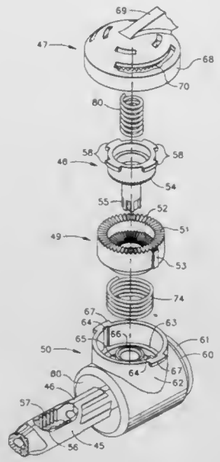
1. An articulating surgical instrument (**30**) having an end effector (**37**), said instrument comprising an articulation transmission assembly (**41**) for remotely articulating said end effector of said instrument, said assembly including:

a) a body (**50**) mounted on said instrument, said body having a housing (**62**) extending therefrom;

b) an oscillating member (**49**) seated rotationally stationary within said housing for oscillating movement therein, said oscillating member having a first set of unloading teeth (**51**) thereon and a first set of locking teeth (**52**) thereon;

c) a rotating member (**48**) fitted into said oscillating member for rotational movement therein, said rotating member having a drive gear (**55**) thereon extending into said body of said articulation transmission assembly for translating rotational movement of said rotating member into axial movement of at least one elongated transmission band (**45,46**) attached to said drive gear, said rotating member having a second set of locking teeth (**54**) thereon; and

d) an actuator (**47**) rotatably mounted on said housing of said body and secured to said rotating member for applying a rotational force on said rotating member, said actuator having a second set of unloading teeth (**70**) thereon.



5,823,067

CRANK HANDLE APPARATUS AND METHOD

Bernard James Clarys, and Charles Milton Schmeichel, both of Jamestown, N. Dak., assignors to Agri-Cover, Inc., Jamestown, N. Dak.

Continuation of Ser. No. 204,523, Mar. 1, 1994, abandoned. This application Feb. 5, 1996, Ser. No. 596,703

Int. Cl.[6] B60P *7/04;* B25G *1/04*

U.S. Cl. 74—546 14 Claims



1. A crank handle, comprising:

a longitudinal tube having a longitudinal portion, first and second ends, and an enlarged end portion at the first end;

a rotatable tube having a longitudinal portion and a handle portion offset from a longitudinal axis of the longitudinal portion of the rotatable tube, the longitudinal tube being telescopically disposed around the rotatable tube, so that the crank handle is extended to a desired length up to a maximum length whereby an end portion of the rotatable tube is extended from the first end of the longitudinal tube to approximately the second end of the longitudinal tube;

wherein the rotatable tube is freely rotatable relative to the longitudinal tube when the end portion of the rotatable tube is disposed outside the longitudinal portion at the enlarged end portion of the longitudinal tube, whereby the rotatable tube is adjusted to a desired transversal position; and

wherein the rotatable tube is locked relative to the longitudinal tube when the end portion of the rotatable tube is disposed inside the longitudinal portion of the longitudinal tube, whereby the longitudinal tube is rotated with the rotatable tube.

13. A method of operating a crank handle of a roll-up flexible cover assembly for covering/uncovering an open container, comprising the steps of:

taking out the crank handle from a retainer;

adjusting a length of the crank handle by extending/retracting the crank handle to a certain length,;

rotating the crank handle to cover/uncover the open container;

adjusting a quarter turn of the crank handle so that the crank handle is placed towards a suitable angle fot storage; and

putting the crank handle in the retainer.

5,823,068

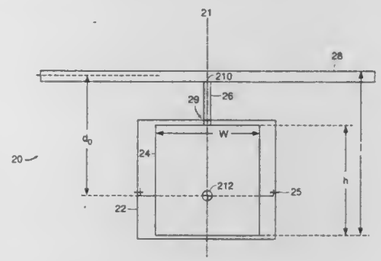
ROTATING SYSTEM WITH REDUCED TRANSFERENCE OF VIBRATION AND ACOUSTICS AND METHOD FOR REDUCING SAME

Phillip Burgers, San Diego, Calif., assignor to Comair Rotron, Inc., San Ysidro, Calif.

Filed Aug. 27, 1996, Ser. No. 703,652

Int. Cl.[6] F16F *15/10;* G05G *1/00*

U.S. Cl. 74—574 12 Claims



1. A rotating system comprising:

(a) a chassis having a longitudinal axis;

(b) a rotary unit having:

a motor situated within the chassis;

a shaft having first and second ends and being attached to the motor at the first end; and

a rotary body placed at the second end of the shaft;

wherein the rotary unit includes a pivot point, the pivot point remaining at a constant distance from where the rotary body and the second end of the shaft intersect, independent of rotational speed exhibited by the rotary unit, the distance from which the pivot point remains from where the body and the shaft intersect is defined by the formula:

$$d_o = \frac{g \cdot T^2}{4 \cdot \pi^2}$$

wherein g is acceleration due to gravity, and T is an oscillation period of the rotary unit when the unit is allowed to swing about a point of intersection between the rotary body and the shaft; and

(c) mounting means disposed between the motor and the chassis the mounting means being mounted the distance d_o from the rotary body.

5,823,069

RESILIENT HAND GRIP

Michael A. Roark, West Allis; James A. Searles, Port Washington; Dale R. Swenson, Wales, all of Wis.; Phillip Downey, LaVerna, Calif., and Scott W. Stonecipher, Kewaskum, Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.

Filed Jan. 4, 1996, Ser. No. 583,224

Int. Cl.[6] B62K *21/26*

U.S. Cl. 74—551.9 9 Claims



1. A hand grip comprising:

a substantially rigid tubular member having a sidewall having inner and outer surfaces, and at least one opening formed in said sidewall; and

a resilient member that is softer than said tubular member, said resilient member having a tubular portion positioned at least partially within said tubular member, said resilient member including a raised portion that protrudes through the opening in the tubular member and extends over the periphery of the opening and onto the outer surface of the tubular member adjacent said opening.

5,823,070

AUTOMATIC TRANSMISSION

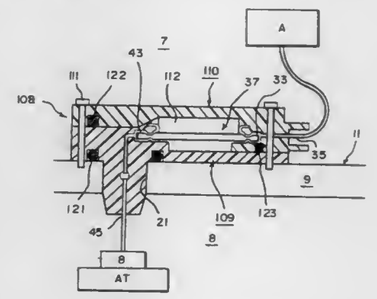
Takao Taniguchi, Okazaki; Nobuaki Miki, Kariya; Takenori Kano, Toyota; Toshiya Morishita, Hekinan; Naoto Ogasawara, Chiryu; Naotaka Murakami, and Ken Kiyama, both of Nishio, all of Japan, assignors to Aisin Aw Co., Ltd., Japan

Filed Oct. 4, 1996, Ser. No. 721,710

Claims priority, application Japan, Oct. 6, 1995, 7-260167

Int. Cl.[6] F16H *57/02*

U.S. Cl. 74—606 R 9 Claims



1. An automatic transmission comprising:

a transmission casing defining a casing interior housing a transmission mechanism and having a wall with a through-hole;

a first plurality of electronic components mounted exterior to said casing;

a second plurality of electric components mounted within the interior of said transmission casing;

a sealed wire terminal mounted in and closing said through-hole, said sealed wire terminal having a sealed interior space;

an electronic control unit mounted within said sealed interior space of said wire terminal;

electrical cables connecting said electronic control unit with said first and second pluralities of electronic components, said sealing wire terminal supporting ends of said cables; and

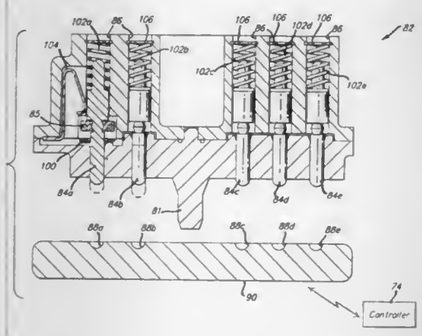
sealing means for forming a seal between said transmission casing, surrounding said through-hole, and said sealed wire terminal, and for isolating said sealed interior space from said casing interior.

5,823,071

INTEGRATED TRANSMISSION CONTROL SYSTEM

Gregg W. Petrosky, Warren, Mich., and Brian C. Fagan, Oregon, Ill., assignors to Borg-Warner Automotive, Inc., Sterling Heights, Mich.

Filed Oct. 31, 1996, Ser. No. 740,602
Int. Cl.[6] F16H *57/02*
U.S. Cl. 74—606 R **9 Claims**



1. An integrated solenoid circuit assembly for a motor vehicle transmission having a controller for controlling transmission operation, comprising:

an assembly housing including a solenoid subhousing and a transmission range sensor subhousing;

a solenoid sensor operatively located in said solenoid subhousing for sensing selective activation of a plurality of transmission solenoids;

a plurality of transmission sensors operatively positioned in said transmission range sensor subhousing for communicating transmission modes sensed by said solenoid sensor to said controller;

a manifold operatively mounted in said solenoid subhousing for selectively energizing said plurality of transmission sensors in response to the sensed transmission modes; and

a transmission sensor circuit connecting said plurality of transmission sensors to said manifold for selective activation of said plurality of transmission sensors in response to the sensed transmission modes;

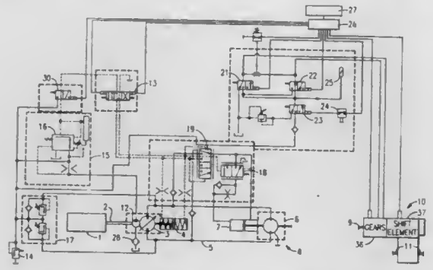
said solenoid circuit assembly integrating said transmission sensors and said transmission sensor circuit into a single piece construction.

5,823,072

VEHICLE DRIVE SYSTEM

Jürgen Legner, Friedrichshafen, Germany, assignor to ZF Friedrichshafen AG, Frieddrichshafen, Germany

PCT No. PCT/EP95/03440, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO96/07840, PCT Pub. Date Mar. 14, 1996
PCT Filed Sep. 1, 1995, Ser. No. 793,387
Claims priority, application Germany, Sep. 7, 1994, 4431864.2
Int. Cl.[6] F16H *47/02*
U.S. Cl. 74—733.1 **9 Claims**



1. A drive system having a drive motor (**1**) driving a feed pump (**12**) and a hydrostatic variable displacement pump (**3**), said drive system having a hydrostatic motor (**6**) which, with said variable displacement pump (**3**), forms a closed hydrostatic circuit (**5**) and drives a powershiftable selector transmission (**10**), and a plurality of devices for selecting a direction of travel and constantly maintaining a charge pressure for regulation of a control pressure being dependant upon a speed of said drive motor (**1**), and the maximum control pressure corresponding to the charge pressure,

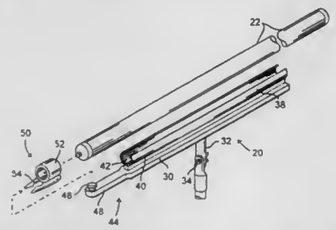
wherein a synchronizing valve (**30**) is provided so that when shifting to a lower gear, during a synchronization period, a switch from the speed-dependent control pressure to the constant charge pressure occurs.

5,823,073

TUBULAR FLUORESCENT LAMP TOOL

Jerold A. Tickner, Phoenix, Ariz., assignor to Transition Lighting, Inc., Phoenix, Ariz.

Filed Dec. 16, 1996, Ser. No. 767,536
Int. Cl.[6] H01K *3/32*
U.S. Cl. 81—53.11 **9 Claims**



1. A tool for removal and installation of a tubular fluorescent lamp, said tubular fluorescent lamp having a longitudinal axis and a predetermined diameter, and said tool comprising:

a backplane;

a lamp gripper joined to said backplane;

a lamp extractor joined to said backplane;

a coupler joined to said backplane for attachment of an external extension pole; and

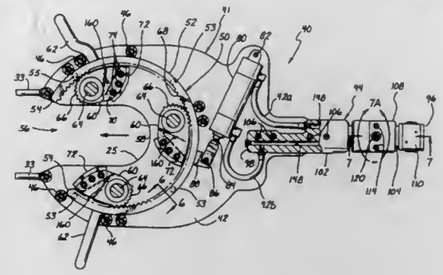
an extraction endpiece configured to engage said lamp extractor and to be placed on said tubular fluorescent lamp.

5,823,074

OPEN HEAD FOSTER-STYLE BACK-UP TONG

Arthur Gustaf Ahlstone, Ventura, Calif., assignor to Oil Country Manufacturing, Inc., Ventura, Calif.

Filed Dec. 14, 1995, Ser. No. 573,101
Int. Cl.[6] B25B *13/50*
U.S. Cl. 81—57.34 **23 Claims**



1. A backup tong for use in making or breaking threaded joints in strings of tubing of oil and gas wells, comprising:

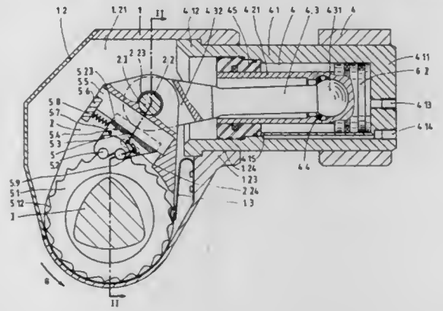
a stem having an outer end for attachment to a support and an inner end, a housing supported at said inner end, a ring gear rotatable in said housing, a plurality of jaws pivoted to said housing and in mesh with said gear such that rotation of said gear in said housing is operative for pivoting said jaws between a retracted position and a gripping position, each of said jaws having a toothed end in mesh with said ring gear and an opposite end having a jaw face, said jaw face being fixed in relation to said toothed end, said ring is toothed along an interior circumference thereof and is rotatably supported at an outer circumference thereof between a plurality of outer bearings mounted to said housing, said housing having a pair of plates rigidly interconnected by said outer bearings and said plates held against said outer bearings by bolts passing through both said plates and each of said outer bearings, said ring gear being contained between said plates, characterized in that the annular continuity of said ring gear is interrupted by a gap for admitting tubing into the center of said ring gear for engagement by said jaws.

5,823,075

TIGHTENING SPANNER

Daniel Octaaf Ghislain Torrekens, Rue de la Station 22, 7850 Enghien, Belgium

PCT No. PCT/BE94/00072, § 371 Date Jun. 28, 1996, § 102(e) Date Jun. 28, 1996, PCT Pub. No. WO95/11776, PCT Pub. Date May 4, 1995
PCT Filed Oct. 25, 1994, Ser. No. 633,822
Claims priority, application Belgium, Oct. 25, 1993, 9301139
Int. Cl.[6] B25B *13/46*
U.S. Cl. 81—57.39 **2 Claims**



1. A hydraulically powered tightening and loosening spanner comprising

a casing,

a hydraulic operating cylinder which is housed in the casing and in which a piston equipped with a piston rod may be moved with a reciprocating motion,

a drive lever connected to the piston rod in an articulated manner,

a ratchet wheel assembly which is mounted in the casing so that it can rotate about an axis, is capable of being fitted over an element to be tightened or to be loosened, and is provided at its periphery with notches, having flanks which, in profile, have an at least a partially rounded shape,

a drive member for rotating the ratchet wheel assembly supported by the drive lever and including at least one drive element interacting with the said rounded flanks of the said notches of the ratchet wheel assembly to make it turn in a first direction of rotation during an outward stroke of the reciprocating motion of the piston, and

a retaining mechanism which interacts with the ratchet wheel assembly and prevents it from turning in a second direction which is opposite to the first direction during a return stroke of the reciprocating motion of the piston,

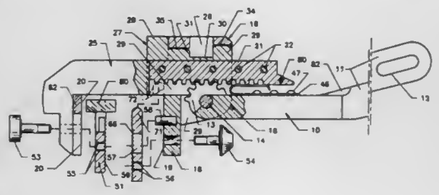
the drive lever fixedly supporting a guide and a rotational drive member further comprising a slide which supports the at least one drive element and is able to slide along the guide during the reciprocating motion of the piston, wherein the slide supports a cradle which is mounted in the slide to swing about an axis parallel to the axis of the ratchet wheel assembly and in which the at least one drive element is housed.

5,823,076

ADJUSTABLE, RATCHETING GEAR WRENCH FOR PIPES AND BOLTS

Kazimierz M. Binkowski, 17 Riggs St., Ansonia, Conn. 06401

Filed May 16, 1996, Ser. No. 648,782
Int. Cl.[6] D25B *13/14*
U.S. Cl. 81—127 **15 Claims**



8. A gear wrench comprising:

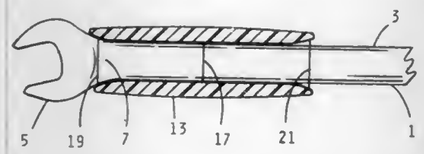
a hollow fixed jaw body having a fixed jaw portion and a rear portion, said portions joined by side walls, thereby forming a cavity;

a sliding jaw slidable in said cavity between said rear portion and said fixed jaw portion and having a rack disposed thereon;

a lever having a handle at one end and a sector pinion gear on the other end, said other end being pivotally disposed to said side walls within said cavity coaxially with said pinion gear, the teeth of said pinion gear facing the teeth of said rack; and

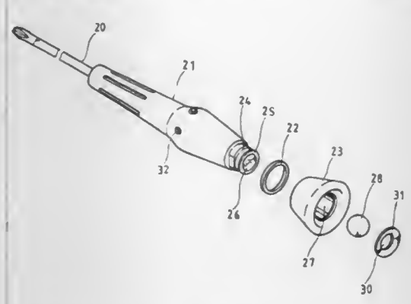
a rigid spacer mounted between said rear portion and said sliding jaw, said space being movable between a stable working position in which said sliding jaw is positioned with its teeth intermeshing the teeth of said pinion, whereby pivotal movement of said lever will cause sliding movement of said sliding jaw toward or away from said fixed jaw, and a stable non-working position in which said sliding jaw can be disposed with its teeth disengaged from said pinion thereby to adjust the relative position of said sliding jaw with respect to said fixed jaw, whereby to adjust the working size of said wrench.

5,823,077
DOUBLE-ENDED WRENCH
Richard J. Macor, Warren County, N.J., assignor to Proprietary Technologies, Inc., Stewartsville, N.J.
Continuation-in-part of Ser. No. 500,178, Jul. 10, 1995. This application May 8, 1996, Ser. No. 646,954
Int. Cl.[6] B25B *23/16*
U.S. Cl. 81—177.1 20 Claims



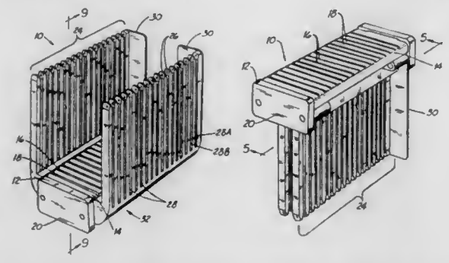
1. A double-ended wrench comprising:
two wrench heads positioned, one at each end of an elongated handle; and,
a gripping means formed shorter than and for movement along said elongated handle whereby said gripping means is positionable at each end of said elongated handle without obstructing the other end thereof, said gripping means having a cavity therein with a central part and two ends, at least one of said two ends having a width dimension greater than a width dimension of said central part, and said central part having a dimension less than an outer dimension of each of said wrench heads whereby, the movement of said gripping means along said elongated handle is confined by said two wrench heads.

5,823,078
PRECISION SCREWDRIVER EQUIPPED WITH A ROTATABLE CAP
Tsai-Fa Liu, No. 88, Lane 412, Chen Hsing Rd., Talchung, Taiwan
Filed Jan. 15, 1997, Ser. No. 782,673
Int. Cl.[6] B25B *15/00*
U.S. Cl. 81—436 5 Claims



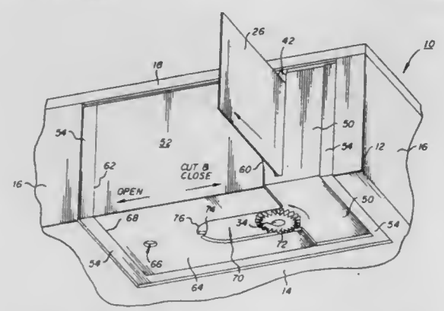
1. A precision screwdriver comprising:
a shaft adapted for driving and removing screws;
a handle, said handle having a cap holding end and a shaft holding end which holds said shaft, wherein said cap holding end has an external annular raised ridge;
a rotatable cap, said rotatable cap having an internal annular groove; and
a single ball, wherein
said external annular raised ridge of said cap holding end is rotatably mated with said internal annular groove of said rotatable cap so that said single ball is rotatably retained between said rotatable cap and said cap holding end of said handle.

5,823,079
METHOD FOR STORING A BREAD SLICING GUIDE
Simon Yiu-Chung Liu, West Bend, Wis., and Cheng Yue-Chun, Kwai Chung, Hong Kong, assignors to The West Bend Company, West Bend, Wis.
Division of Ser. No. 533,523, Sep. 25, 1995, Pat. No. 5,653,154. This application Apr. 21, 1997, Ser. No. 840,578
Int. Cl.[6] B26D *7/01*
U.S. Cl. 83—13 4 Claims



1. A method for storing a bread slicing guide including the steps of:
providing a bread slicing guide having a base member having a top bread slicing surface for supporting a loaf of bread and having an opposed bottom surface, said bread slicing guide further having a guide member mounted for pivoting movement with respect to the base member, said guide member further having at least one elongate guide element for guiding a cutting knife, said bread slicing guide further having a position retention mechanism for retaining said at least one elongate guide element in an orientation generally perpendicular to and above the bread slicing surface of the base member;
releasing the position-retention mechanism coacting between the base member and the guide member; and
pivoting the guide member about 180 degrees to a storage position where the at least one elongate guide element is in an orientation generally perpendicular and below the opposed bottom surface of the base member.

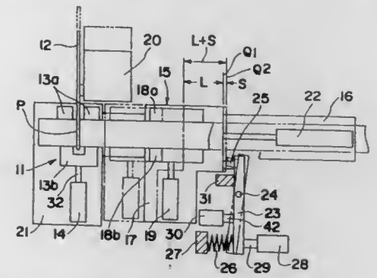
5,823,080
EXTERNALLY DRIVEABLE CASSETTE WITH KNIFE FOR CUTTING PHOTOSENSITIVE MATERIAL AND CLOSING EXIT SLIT FROM CASSETTE
Jeffrey Charles Robertson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 27, 1996, Ser. No. 607,746
Int. Cl.[6] B26D *7/00*
U.S. Cl. 83—649 13 Claims



1. A cassette for light-sensitive web material, comprising:
a hollow cassette housing having a peripheral wall with an outside surface;

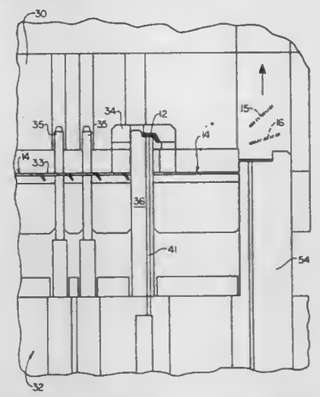
a first exit slit extending through said peripheral wall to said outside surface;
means, located within said housing, for rotatably supporting a roll of photosensitive web material;
means, located within the housing, for engaging a leading end of a web material to drive the web material through said first exit slit; and
a knife blade adjacent said first exit slit, said knife blade having a cutting edge extended at an acute angle to said first exit slit; and
means for slidably mounting said knife blade for movement between a first position in which said first exit slit is open, and a second position in which both the web material has been cut by said cutting edge and said first exit slit has been closed by said knife blade to prevent entry of light into said housing through said first exit slit.

5,823,081
CIRCULAR SAW
Ryoichi Tsune, Toyama, Japan, assignor to Tsune Seiki Co., Ltd., Japan
Filed Jun. 5, 1996, Ser. No. 658,478
Claims priority, application Japan, Jun. 30, 1995, 7-164968; Sep. 22, 1995, 7-244855; Sep. 22, 1995, 7-244859
Int. Cl.[6] B26D *7/06*
U.S. Cl. 83—151 6 Claims



1. A circular saw device, comprising:
(a) a circular saw blade for crosscutting workstock along a crosscutting path to form, after a crosscut, front and rear cut faces opposed to each other;
(b) a main vise for selectively holding said workstock in front of and behind the crosscutting path, and having a main vise operating cylinder, said main vise operating cylinder having a piston for dividing the cylinder into a main vise loosening side and a main vise tightening side;
(c) a carrier vise for selectively holding said workstock, and for advancing workstock forward by one cutoff length over said crosscutting path, when the workstock is held in said carrier vise, and the carrier vise having a front position for transferring to the main vise one cutoff length of the workstock over the crosscutting path, and a normal rear position for preparation of a next feeding of the workstock;
(d) a spreading mechanism for forming a gap between said cutoff face of the workstock and an adjacent side of said saw blade by effecting rearward withdrawal of said carrier vise holding the workstock from the normal rear position somewhat further rearward to a rearmost position, said spreading mechanism having:
(i) an elongated swing lever pivotally connected to a fixed position on the circular saw device;
(ii) a stopper means located on said swing lever for defining the normal rear position of the carrier vise;
(iii) a spring for biasing said swing lever into a normal rest position;
(iv) a spreading cylinder adapted to effect the movement of said carrier vise from the normal rear position to the rearmost position by a rearward moving of said stopper, said spreading cylinder having a piston intermediate a first side facing said swing lever and a rear pressurizing side;
(e) a source of hydraulic operating pressure;
(f) a first conduit connected between said main vise loosening side of said main vise operating cylinder and said source of hydraulic pressure;
(g) said rear pressurizing side of said spreading cylinder being in fluid connection with said main vise loosening side of said main vise;
(h) a second conduit having one end connected to said main vise tightening side of said main vise operating cylinder and a second end connected to said source of hydraulic pressure;
(i) means for alternately applying said hydraulic operating pressure to said first and second conduits;
(j) whereby, due to said fluid communication therebetween, said pressurizing side of said spreading cylinder and said main vise loosening side of said main vise are pressurized simultaneously, however, due to resistance supplied by said spring, said spreading cylinder moves said swing arm a short period of time after loosening activation of said main vise, thereby ensuring that said main vise is detached from the workstock before withdrawal of said carrier vise to said rearmost position.

5,823,082
APPARATUS FOR MANUFACTURING SUPPORT MEMBERS FOR RAZOR BLADES
Robert Wilson, Attleboro, Mass.; Laurence Robert Beesley, Essex, England, and Robert H. Flanagan, Watertown, Mass., assignors to The Gillette Comany, Boston, Mass.
Division of Ser. No. 559,796, Nov. 15, 1995, Pat. No. 5,701,788. This application Mar. 25, 1997, Ser. No. 823,590
Int. Cl.[6] B26D *7/06*
U.S. Cl. 83—152 7 Claims



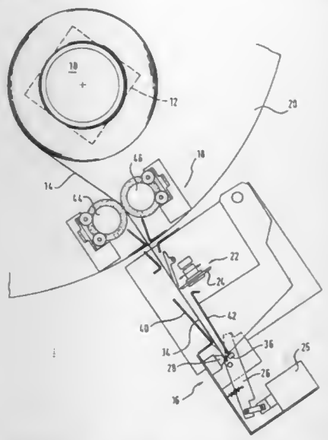
1. Apparatus for the manufacture of support members for razor blades, each razor blade having a cutting edge portion and an elongated support member, said apparatus comprising:
means for feeding an elongated strip of sheet material in roll form along a path into a work station;
said work station comprising die means for contacting said strip of sheet material solely at opposite edges of the strip of sheet material;
a punch member disposed in a first position adjacent one surface of said strip of sheet material for movement through the strip of sheet material to a second position to sever a support member from between the opposite edges of the strip of sheet material;
track means disposed adjacent said work station; and
means for forcing said severed support member in a direction transverse to the path of feed of said elongated strip and depositing said support member onto said track.

5,823,083

GRIPPING APPARATUS FOR REEL MATERIAL

Franz Obertegger; Mario Gandini, both of Brixen, and Anton Profanter, Villnöss, all of Italy, assignors to Durst Phototechnik AG, Brixen, Italy

Continuation of Ser. No. 528,726, Sep. 15, 1995, abandoned. This application Jul. 15, 1997, Ser. No. 892,837
Claims priority, application Italy, Sep. 19, 1994, BZ94A0056
Int. Cl.[6] B26D *7/02; 7/14*
U.S. Cl. 83—175 **12 Claims**



1. An apparatus for gripping an elongated material web, advanced out from a reel core and which travels in a downstream direction along a path defined by an axis X, the apparatus comprising:

a reel support for supporting the reel core of material web for rolling off the reel and for rewinding the web onto the reel core;

a first web clamp assembly on the path defined by the X axis, the first web clamp assembly for clamping the web;

a cutting device for cutting the web traveling in the path defined by the X axis, the cutting device being located upstream the first clamp assembly and downstream the reel support;

a second web clamp assembly for clamping the web, the second web clamp assembly being located between the cutting device and the reel support;

a cross slide mounting the first web clamp assembly for movement along the X axis and a Y axis;

biasing means for biasing the cross slide along the X axis and positioning the first web clamp assembly to a first position when initially clamping the web; and

a second clamp assembly sensor associated with the second clamp assembly for activating the second web clamp assembly to grip the web and hold the web for cutting, whereby the web being rewound on the reel core prior to cutting and after it has been clamped by the first web clamp assembly and the rewinding for placing the web under a predetermined tension along the X-axis.

5,823,084

TOOL FOR STRAIGHT LINE AND SQUARE EDGE CUTTING OF A BOARD

Lester L. Ramey, P.O. Box 520, Clayton, Ga. 30525

Continuation of Ser. No. 626,821, Apr. 3, 1996, abandoned, which is a continuation of Ser. No. 91,759, Jul. 14, 1993, abandoned. This application Mar. 3, 1997, Ser. No. 811,133
Int. Cl.[6] B27B *27/02*
U.S. Cl. 83—415 **1 Claim**

1. A tool to be used in conjunction with a conventional table saw so as to cut a straight or a square edge on a wooden board, said

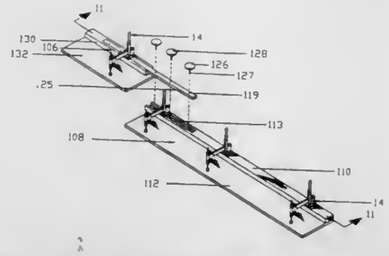


table saw including a flat table, a cutting element extending vertically upwardly driven by an electric motor, front and rear clamp bars, and a laterally movable fence, said wooden board secured to said tool such that said wooden board and said tool are guided longitudinally along said laterally movable fence past the cutting element, said tool comprising:

an elongated clamp base having a predetermined thickness and a straight longitudinal edge which, in use, is positioned parallel to said fence of said table saw, said clamp base having a spacer guide attached thereto, said spacer guide having a slot therein;

at least one toggle clamp assembly affixed to said elongated clamp base, said toggle clamp assembly comprising an arm that extends over said clamp base and a bolt assembly operatively connected to said toggle clamp arm for securing said wooden board in position; and

an extension base having a bar attached thereto, said bar being received by said slot in said spacer guide for attaching said extension base to said clamp base, and

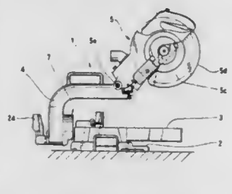
at least one toggle clamp assembly affixed to said extension base, said extension base toggle clamp assembly comprising an arm that extends over said extension base and a bolt assembly operatively connected to said arm of said extension base toggle clamp assembly for securing said wooden board in position.

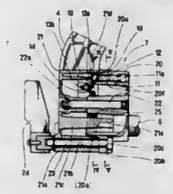
5,823,085

MITER SAW

Masayoshi Kondo, and Kouji Matsubara, both of Anjo, Japan, assignors to Makita Corporation, Aichi-ken, Japan

Filed Oct. 3, 1996, Ser. No. 720,838
Claims priority, application Japan, Oct. 5, 1995, 7-258784
Int. Cl.[6] B23D *45/14*
U.S. Cl. 83—471.3 **17 Claims**





1. In a miter saw comprising a miter saw base for placing a work thereon, a miter saw unit having a saw blade mounted thereon, and a support mechanism for supporting the miter saw unit for both rightward and leftward pivotal movement in pivotal directions from and to a vertical position relative to the base, the support mechanism including a first side member on one of the base and the miter saw unit and a second side member on the other of the base and the miter saw unit, the first side member and the second side member being pivotable relative to each other about a pivotal axis, said first side member being fixed to said one of the base and the miter saw unit for precluding movement therebetween about said pivotal axis, said second side member being fixed to said other of the base and the miter saw unit for precluding movement therebetween about said pivotal axis, the improvement comprising:

a stopper mechanism disposed between the first side member and the second side member for holding the miter saw unit in a vertical position;

said stopper mechanism including:

a first pressing member mounted on and extendible relative to the first side member toward said second side member;

first biasing means for resiliently biasing said first pressing member toward said second side member; and

an abutting surface provided on said second side member with said first pressing member resiliently biased thereagainst, said abutting surface having a first recess formed therein;

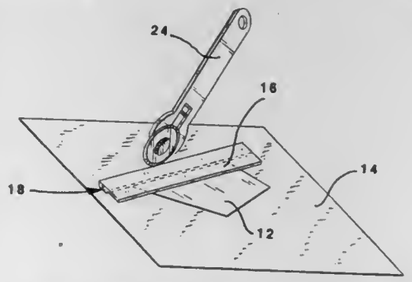
said first pressing member automatically engaging in and being retained in said first recess by a biasing force of said first biasing means upon positioning of said miter saw unit in the vertical position relative to said base, wherein the engagement of said first pressing member in said first recess indicates the vertical positioning of said miter saw unit.

5,823,086

TEMPLATE AND CUTTER GUIDE SYSTEM FOR CUTTING QUILTING PIECES

Carolyn D. McCormick, 507 Staudaher, Bozeman, Mont. 59715

Continuation of Ser. No. 307,172, Sep. 16, 1994, Pat. No. 5,579,670. This application Jul. 24, 1996, Ser. No. 686,197
Int. Cl.[6] B26D *5/08*
U.S. Cl. 83—565 **1 Claim**



1. A system for cutting fabric quilting pieces having an exposed area, the system comprising:

a template conforming to a shape of an exposed area of the quiliting piece, the template having exposed edges;

a cutter guide having a depending rail positioned along one edge of the cutter guide, the rail having an inner guide edge and an outer cutting edge with the inner guide edge and the outer cutting edge being spaced apart in parallel relation by a width selected to correspond to a desired sewing expanse;

a cutter means for cutting the fabric;

wherein the inner guide edge of the cutter guide is positioned on and in stationary relation on the template; and

wherein the cutter means is moved along and is guided by the outer cutting edge of the rail to cut the fabric into a quilting piece.

5,823,087

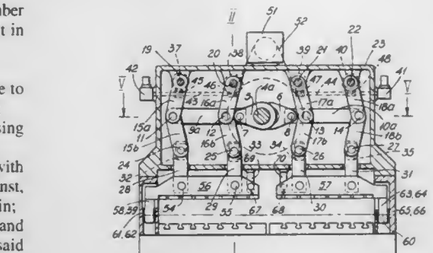
PUNCH PRESS HAVING A TOGGLE JOINT MECHANISM DRIVE

Oskar Eigenmann, Arbon, Switzerland, assignor to Bruderer AG, Frasnacht, Switzerland

Filed Sep. 26, 1996, Ser. No. 717,215
Claims priority, application European Pat. Off., Sep. 27, 1995, 95115190
Int. Cl.[6] B26D *5/18;* **B30B** *15/14*
U.S. Cl. 83—630 **4 Claims**

1. A punch press comprising:

a frame;



two rams for processing a web;

a working space for receiving said web, said web being fed through said working space;

a driving mechanism supported from said frame;

pressing columns; and

toggle joint mechanism units coupled to opposite sides of said driving mechanism in relation to said direction, at least two of said toggle joint mechanism units being located at each of said opposite sides of said driving mechanism;

wherein each of said toggle joint mechanism units includes first levers and second levers, each of said second levers being pivotally mounted at one end to one end of a respective one of said first levers which is coupled to said driving mechanism for stroking said rams, an opposite end of said first levers being pivotally supported from said frame and an opposite end of each of said second levers being secondly pivotally mounted to one end of a respective one of said pressing columns, each of which is pivotally mounted at its opposite and to a corresponding one of said rams, and said second pivotal mounting of each of said second levers being by a pivot pin, said pivot pin being guided by guide means supported from said frame to be movable in a direction of said stroking of said rams and to be unmovable in a direction lateral relative to said direction of said stroking of said rams;

wherein each of said rams includes at an area two guiding columns located at a distance from each other, said guiding columns being mounted to said frame and guided at said web feeding plane; and

further comprising at said end area of each of said rams one further guiding column located at a distance from said two guiding columns, said further guiding columns being rigidly mounted to said frame to project into guiding units in said rams above said web feeding plane so that each of said rams is guided at three locations.

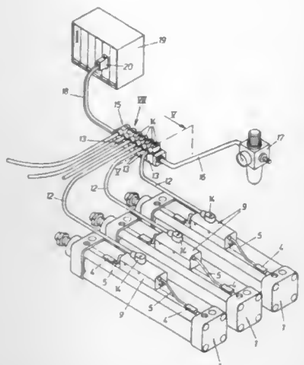
5,823,088

PNEUMATIC ACTUATING ARRANGEMENT

Herbert Frisch, Vienna, Austria, assignor to Hygrama AG, Rotkreuz, Switzerland

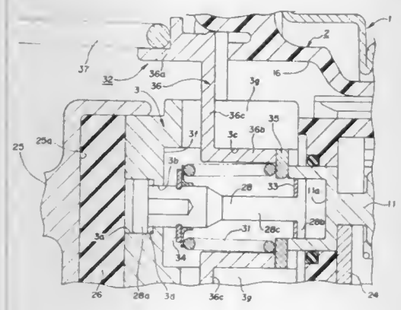
Filed Apr. 28, 1997, Ser. No. 848,015
Int. Cl.[6] F01B *25/26;* **F15B** *13/16*
U.S. Cl. 91—1 **8 Claims**

1. Pneumatic actuating arrangement comprising a plurality of pneumatic consumer devices (1) which define working areas (7,8), a plurality of electrically-actuated switching devices (6) which are respectively located at said consumer devices to form separate consumer units (9), a plurality of feed air/signal distributors (13) connected to a pressure source and to a control unit (19), and a combination line (12) comprising electrical signal lines and a



supply pressure line extending between each consumer unit (**9**) and one of said plurality of feed air/signal distributors (**13**).

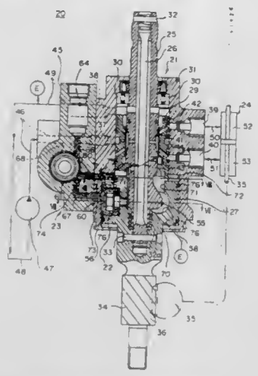
5,823,089
BOOSTER
Hidefumi Inoue, and Masahiro Ikeda, both of Saitama-Ken, Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan
Filed Jul. 16, 1997, Ser. No. 893,326
Claims priority, application Japan, Aug. 2, 1996, 8-220648
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—369.2 **3 Claims**



1. A booster including a valve body slidably disposed within a shell, a valve plunger slidably fitted into the valve body and coupled with an input shaft, an output shaft having one end which is slidably mounted on the valve body, a reaction disc disposed between said one end of the output shaft and the valve plunger, a reaction transmitting member having a front end which is disposed in opposing relationship with the reaction disc and a rear end which is slidably fitted to the valve plunger, and a spring charged to a preset load and disposed between the reaction transmitting member and the valve plunger for normally urging the reaction transmitting member toward the front side, an arrangement being such that a reaction from an output which acts on the output shaft is transmitted to the input shaft through the reaction disc, the reaction transmitting member, the spring and the valve plunger;

characterized by the provision of pseudo-reaction imparting means which imparts a pseudo-reaction to the input shaft, which pseudo-reaction depends on a travel of the input shaft, a stop being mounted on the valve body, the reaction transmitting member abutting against the stop to prevent a reaction of the output acting on the output shaft from being transmitted to the input shaft as the spring is compressed when an input applied to the input shaft exceeds a given value.

5,823,090
POWER STEERING APPARATUS HAVING AN EASILY ADJUSTABLE COUNTER FORCE MECHANISM
Junji Kawamuro, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jun. 6, 1997, Ser. No. 867,428
Claims priority, application Japan, Jul. 9, 1996, 8-179527
Int. Cl.[6] F15B *9/10*
U.S. Cl. 91—375 A **7 Claims**



1. A power steering apparatus comprising:

a rotary control valve, provided in a valve housing, including an input member and an output member connected to each other by a torsion bar, said rotary control valve controlling an amount of working oil to be supplied to a power assist cylinder in response to relative rotation between said input member and said output member;

a counter force mechanism, provided in said rotary control valve, including a counter force plunger, a hydraulic pressure counter force chamber located on an outer side of said counter force plunger and an inside chamber located on an inner side of said counter force plunger, said counter force mechanism providing a counter force to said input member by a pressure difference between a pressure of the working oil in said hydraulic pressure counter force chamber and a pressure of the working oil in said inside chamber;

a hydraulic pressure control valve attached to said rotary control valve, said hydraulic control valve including a counter force mechanism port through which the working oil is supplied to said counter force mechanism; and

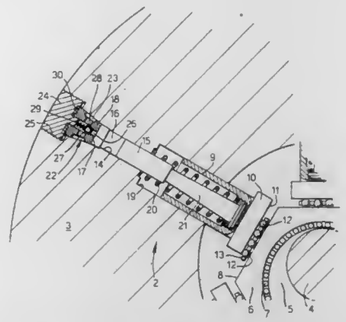
a connection passage connecting between said inside chamber and said counter force mechanism port.

5,823,091
RADIAL PISTON PUMP HAVING MEANS FOR SELECTIVELY DISABLING AT LEAST ONE OF THE PUMPING CHAMBERS
Peter Collingborn, Gillingham, England, assignor to Lucas Industries, Plc, Solihull, England
Filed May 23, 1997, Ser. No. 863,072
Claims priority, application United Kingdom, May 23, 1996, 9610785
Int. Cl.[6] F01B *29/04*
U.S. Cl. 92—59 **14 Claims**

1. A radial piston pump comprising:

a plurality of radially extending pumping plungers;

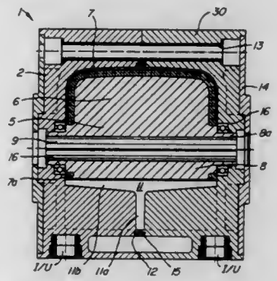
a plurality of radially extending cylinders, each of which is provided with an associated one of the plurality of plungers to define a pumping chamber which is increasable in volume by a movement of its associated plunger in a first direction to receive a liquid to be pumped, and is reducible in volume by movement of its associated plunger in a direction opposite said first direction to deliver liquid at high pressure to an output line; and



means for selectively disabling at least one of the pumping chambers so that the at least one disabled pumping chamber delivers no pumped fluid to an output line.

11. A pump comprising a pump chamber closed by a taper plug which is located in a matching taper of tapered region of a passage leading to the pumping chamber so that an end of the taper plug defines a wall or wall portion of the pump chamber, the plug being, in use, secured in position by a screw plug which is screw-threadedly engaged with screw threads provided in a portion of the passage located outwardly of the tapered region.

5,823,092
ROTARY ACTUATOR WITH MATING HOUSING HALVES
Rune Granberg, Älvsjö, Sweden, assignor to AB Rexroth Mecman, Stockholm, Sweden
Filed Mar. 28, 1996, Ser. No. 626,261
Claims priority, application Sweden, Mar. 31, 1995, 9501185
Int. Cl.[6] F01C *9/00*
U.S. Cl. 92—121 **9 Claims**



1. Rotary actuator (**1**) comprising:

a housing (**2**), which defines a working chamber (**3**) with at least a partially circular section for actuation with a pressure fluid, the working chamber defined in part by an inner wall, said working chamber having a first end position and a second end position, the housing having a symmetry axis;

a pivoting piston (**5**) which is sealingly arranged against the inner wall of said working chamber and is pivotable between said first and second end positions in said working chamber;

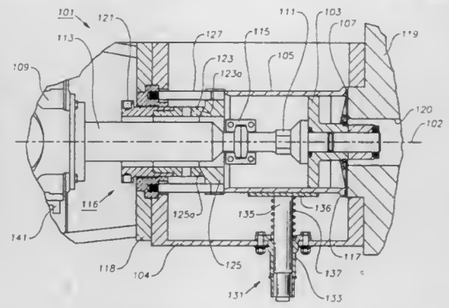
said housing being divided through the working chamber perpendicular to its symmetry axis by at least one dividing plane (A—A) to create two housing portions with opposed, abutting dividing plane surfaces at the dividing plane;

a recess (**12**) in the dividing plane surface of each said housing portion surrounding the inner wall of the working chamber and situated opposite each other so as to together form a guide-receiving space;

a guide element (**15**) housed within the guide-receiving space to guide and align the housing portions (**21**);

said dividing plane surfaces are between entirely plane and slightly convex to create a sealing contact region at the abutting dividing plane surfaces in an area of the inner wall (**4**).

5,823,093
LINER ASSEMBLY WITH A FLUID END CYLINDER
Vladimir S. Kugelev, Fort Worth, and Mark D. Matzner, Burleson, both of Tex., assignors to SPM, Inc., Fort Worth, Tex.
Filed Nov. 5, 1997, Ser. No. 964,714
Int. Cl.[6] F01B *29/00*
U.S. Cl. 92—128 **20 Claims**



1. In a reciprocating pump having a fluid manifold which has a flow passage and an inward-facing wall, a crankshaft, a connecting rod for reciprocating a crosshead linearly along an axis, and a housing surrounding the crankshaft and the connecting rod and having an outer end secured to the fluid manifold, the improvement comprising:

a shaft secured to and extending outward from the crosshead along the axis;

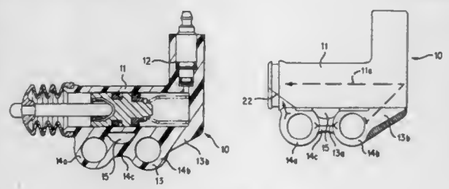
a piston secured to the shaft;

a cylindrical liner coaxial with the shaft and closely receiving the piston;

a liner seal on an outer end of the liner which seals against the wall of the fluid manifold around the flow passage, the liner seal preventing fluid leakage between the liner and the flow passage; and

an adjustment mechanism mounted to the housing and in engagement with the liner for pressing the liner and the liner seal against the wall of the fluid manifold with an outward directed force which is reacted against the housing.

5,823,094
RESINOUS CYLINDER
Motoyuki Shimizu, Okazaki; Minoru Hayashi, Nagoya, and Kiyotaka Nakai, Chita, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Jul. 1, 1996, Ser. No. 672,967
Claims priority, application Japan, Jun. 3, 1995, 7-165425
Int. Cl.[6] F01B *11/02*
U.S. Cl. 92—170.1 **4 Claims**



1. A resinous cylinder comprising:

a cylindrical portion having an open end and a closed end, the cylindrical portion being formed by flowing raw material of resin from a center of the closed end of the cylindrical portion;

a flange portion integrally formed with the cylindrical portion and having a first attaching portion, a second attaching portion and a connecting portion;

the first attaching portion located at a side of the open end and having a first hole for securing to a vehicle;

the second attaching portion located at a side of the closed end and having a second hole for securing to the vehicle; and

the connecting portion connecting the first attaching portion and the second attaching portion and having a clearance with the cylindrical portion;

wherein the resin flowing in the cylindrical portion flows through a first flowing route and the resin flowing in the flange portion flows through a second flowing route, and wherein the volume ratio of the flange portion to the cylinder portion is determined so that a weld line which is formed at a joining portion between the first and second flowing routes is formed on the cylinder portion at the side of the open end while maintaining a predetermined angle of the weld line with respect to an axial direction of the cylindrical portion.

5,823,095

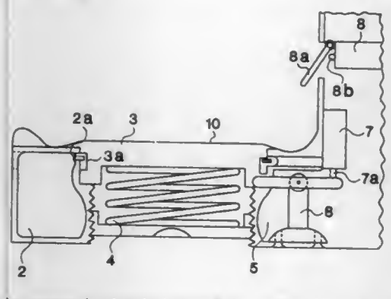
AUTOMATIC SHUT-OFF DEVICE FOR COFFEE MAKER

Shannon Walker, 1704 Morgan, Independence, Mo. 64050

Filed Feb. 25, 1997, Ser. No. 806,049

Int. Cl.[6] A47J *31/00;* **H05B** *1/02*

U.S. Cl. 99—281 **6 Claims**



1. An automatic electrical shutoff for coffee brewing machine comprising:

a housing,

a movable platform attached to said housing,

said platform having resilient biasing means attached thereto for holding said platform in a first position,

said platform adapted to have a heating element therein for keeping liquid in a container, placed on said platform, warm,

first switch means adapted to be connected between a source of electricity and a heating element for turning said heating element on and off,

said first switch means being in the off position when said platform is in said first position,

first switch operating means for engaging said platform at one end and for engaging said switch means at a second end for operating said first switch means,

whereby when a container is placed on said platform, said platform will move to a second position allowing said first switch operating means to move in a first direction to engage and turn on said first switch means, and when said container is removed from said platform, said platform will move to said first position allowing said first operating means to move in a second direction to disengage from and turn off said first switch means,

second switch means adapted to be connected between a source of electricity and a heating mechanism for heating water to brew coffee,

second switch operating means engageable with a portion of said platform at one end and engageable with said second switch means at a second end for turning said heating mechanism, for heating water to brew coffee, on and off,

whereby when a container is placed on said platform, said platform will move to a second position and thereby move said one end of said second switch operating means in a first direction, and will move said second end of said second switch operating means in a second direction, and when said second switch operating means moves in said second direction it will engage said second switch and move said second switch to an operating position.

5,823,096

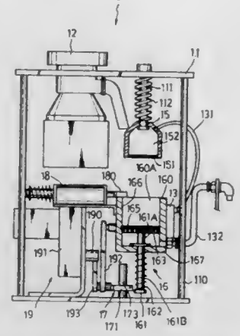
AUTOMATIC INFUSING APPARATUS

Chun-Hong Shih, No. 8, Lane 76, Jui-Jen Rd., Nan-Tzu Dist., Kaohsiung City, Taiwan

Filed Oct. 14, 1997, Ser. No. 943,294

Int. Cl.[6] A47J *31/34*

U.S. Cl. 99—302 P **14 Claims**



1. An automatic infusing apparatus comprising:

an infusing container for receiving an infused beverage, said infusing container having a lower end wall, a peripheral lateral wall extending uprightly from said lower end wall to form an opened upper end at an upper edge thereof, and an outlet valve disposed near said lower end wall for dispensing said infused beverage;

means for lifting and lowering said infusing container to a higher position and a lower position;

a plunger including a sifter member disposed within said infusing container and having a peripheral portion to be slidably moved along an inner surface of said peripheral lateral wall, and a stem member which has an upper section connected to said sifter member and a lower section extending downwardly and outwardly of said lower end wall, said lower section of said stem member being slidable seafingly relative to said lower end wall so as to move said sifter member upwardly to a scraped position which is above brim of said opened upper end, and downwardly to an infused position in which grounded beans or grains can be supported on said sifter member for being infused;

a first biasing member to bias said sifter member to move from said scraped position to said infused position;

means for feeding grounded beans or grains to said infusing container when said infusing container is lifted to said higher position, wherein when said infusing container descends from said higher position to said lower position, said sifter member will be moved upwards from said infused position to said scraped position against biasing action of said first biasing member; and

a scraping device including a retractable scraping rod to move transversely relative to an axial direction of said stem member, said scraping device being disposed at a position such that once said sifter member is moved upwards to said scraped position, said scraping rod is pushed in said transverse direction and over said brim of said opened upper end so as to clear said infused beans or grains away from said sifter member.

5,823,097

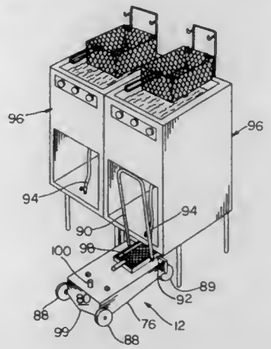
DEVICE FOR STORING AND TRANSFERRING WASTE COOKING OIL

Ronald L. Dirck, 152 S. Zimmer Rd., Warsaw, Ind. 46580

Filed Jun. 10, 1997, Ser. No. 872,420

Int. Cl.[6] A47J *37/12*

U.S. Cl. 99—408 **24 Claims**



1. An apparatus for collecting, storing, and transferring waste cooking oil, comprising:

a holding tank having a bottom wall, a top wall, and a plurality of interconnecting sidewalls, said top wall, said bottom wall, and said sidewalls defining an oil holding chamber;

an input conduit having a pair of ends, one of said input conduit ends being adapted for connection to a waste oil source for communication the waste oil from the waste oil source into said holding chamber;

an input pump in flow communication with said conduit for pumping the waste oil into said holding chamber, the other of said input conduit ends extending into said holding chamber;

an output conduit having a pair of ends, said output conduit for communicating the waste oil out of said holding chamber to a disposal facility;

a heating element for maintaining the waste oil in a liquid state while in said holding tank; and

sensing means for sensing the level of oil in said chamber.

5,823,098

PIE CRUST PROTECTION DEVICE RING

Rachel R. Perry, 506 Marill Terrace, North Lauderdale, Fla. 33068

Filed Nov. 6, 1997, Ser. No. 963,583

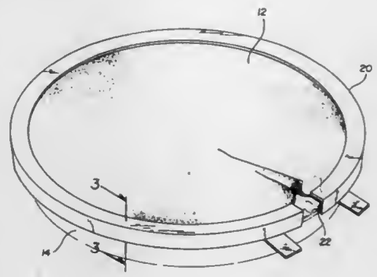
Int. Cl.[6] A47J *36/00;37/01;43/00;* **A21B** *3/13*

U.S. Cl. 99—433 **5 Claims**

1. A new pie crust protection device ring for preventing peripheral edges of a pie crust from burning comprising, in combination:

a circular cover of an aluminum material dimensioned for covering an open top of a pie pan, the circular cover having a radially extending opening, the circular cover having a pair of pliable tabs extending outwardly therefrom on opposing sides of the radially extending opening;

a peripheral retaining edge dimensioned for engaging a peripheral edge of the pie pan over the circular cover, the peripheral retaining edge having an opening therein to facilitate placement on the peripheral edge of the pie pan, the peripheral retaining edge including an essentially horizontal portion and an essentially vertical portion, a lower edge of the essentially vertical portion having a pair of retaining tabs extending outwardly on opposing sides of the opening.



5,823,099

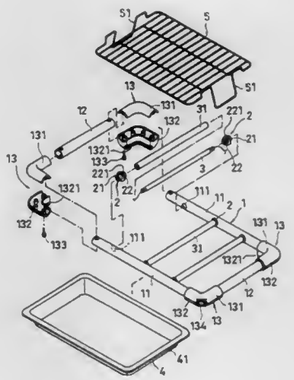
GRILL

Li-Sheng Ko, 3/F., No. 245, Jao-Ho St., Taipei City, Taiwan

Filed Mar. 18, 1998, Ser. No. 40,344

Int. Cl.[6] A47J *27/00;37/00;37/07;* **H05B** *1/02*

U.S. Cl. 99—446 **2 Claims**



1. A grill comprising:

a rectangular rack, said rack comprising two long tubes longitudinally arranged in parallel, two short tubes transversely connected between said long tubes at two opposite sides, and four angle fittings respectively connected between said long tubes and said short tubes in four corners, said angle fittings being respectively comprised of an upper shell and a bottom shell fastened together by screws, said long tubes each having a longitudinal series of round holes at an inner side, said angle fittings each having a mounting groove at an inner side;

a plurality of ceramic mounting elements respectively fastened to the round holes on said long tubes, said ceramic mounting elements each comprising a first plug portion at one side fitted into one round hole on one long tube of said rack, and a second plug portion at an opposite side, said second plug portion defining a plug hole;

a plurality of halogen lamp tubes respectively fastened to the plug holes on said ceramic mounting elements between said long tubes;

a power switch mounted on one of said ceramic mounting elements for controlling the operation of said halogen lamp tubes;

a plurality of far-infrared ceramic tubes respectively sleeved onto said halogen lamp tubes and fastened to the second plug portions of said ceramic mounting elements between said long tubes;

a drip plate mounted on said rack, said drip plate having a mounting flange raised around the border thereof and inserted into engagement with the mounting grooves on said ceramic mounting elements; and

a cooking grid supported on said drip plate, said cooking grid having a plurality of lugs downwardly extended from two opposite short sides thereof and respectively supported on said drip plate.

5,823,100

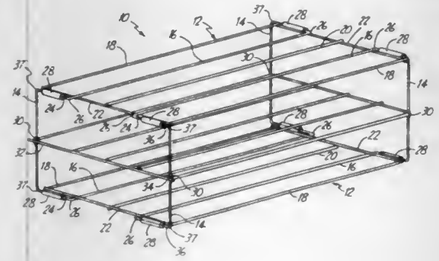
BAKING/COOLING RACK

James L. Wienhold, St. Louis Park, and Irene C. Kramer, St. Paul, both of Minn., assignors to L & L Products, West St. Paul, Minn.

Filed Apr. 2, 1998, Ser. No. 53,934

Int. Cl.[6] A47J *37/04;37/12;43/00;43/18*

U.S. Cl. 99—449 **15 Claims**



1. A rack comprising:

a first shelf;

a plurality of first shelf hinges connected to the first shelf, each of the first shelf hinges generally extending parallel to one another in a first hinge plane;

a plurality of support legs spaced from each other, each of the support legs connected with one of the first shelf hinges to the first shelf; and

a plurality of second shelf hinges, each of the second shelf hinges connected to one of the support legs, each of the second shelf hinges generally extending parallel to one another in a second hinge plane and parallel to the first shelf hinges;

a second shelf, the second shelf connected to each of the support legs with the second shelf hinges;

wherein the first shelf hinges and the second shelf hinges provide a friction force preventing free movement of the connected support legs with respect to the first shelf surface and the second shelf surface but allowing forced movement of the connected support legs with respect to the first shelf surface and the second shelf surface, thereby allowing the rack to move between an upright position and a knock down position.

5,823,101

Patent Not Issued For This Number

5,823,102

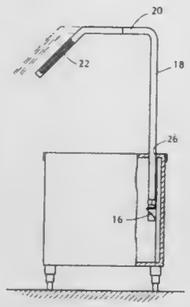
FRESH FOOD DISPLAY PROTECTOR

Robert E. Will, Fort Washington, Pa., assignor to Fletcher Super Rack Industries, Inc., Fort Washington, Pa.

Filed Jan. 29, 1997, Ser. No. 790,108

Int. Cl.[6] A47B *96/18*

U.S. Cl. 99—645 **12 Claims**



1. A food display guard comprising support means for securing the display guard to a display case, a vertical support, means for adjustably mounting the vertical support in said support means, a generally horizontal support member extending from said vertical support and including means for adjusting the length of the horizontal support member, a food protector plate, and means for mounting the food protector plate on said horizontal support member.

5,823,103

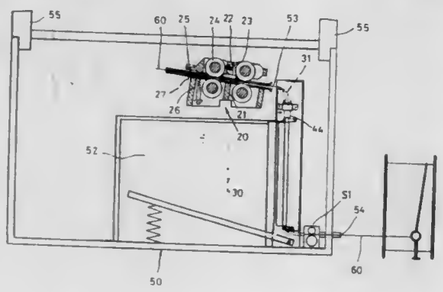
STRAP-FEEDING MECHANISM FOR AN AUTOMATIC STRAPPING MACHINE

Li Pi Kuei, Taipei Hsien, Taiwan, assignor to Gin Dah Enterprise Corp., Taipei, Taiwan

Filed May 30, 1997, Ser. No. 865,908

Int. Cl.[6] B65B *13/06*

U.S. Cl. 100—4 **3 Claims**



1. A strap-feeding mechanism for an automatic strapping machine, comprising a quick strap-feeding mechanism for quickly feeding a beginning of a strap into a strap rail on said automatic strapping machine and an automatic strap-refeeding mechanism for clamping a strap which slides off said strap rail during a pull-back operation, so that said strap is prevented from sliding backward any further and is automatically refed into said strap rail again.

5,823,104

PRESS FOR COLD WORKING OF METAL WORKPIECES

Winfried Beisel, Wilnsdorf-Obersdorf; Eckehart Schulze, Weissach; Heinz Groos, Netphen; Dieter Budenbender, Siegen, and Hans-Werner Kutscher, Braunschweig, all of Germany, assignors to Grabener Pressensysteme GmbH & Co., KG, Netphen, Germany

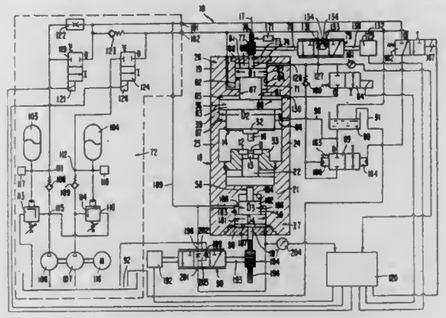
PCT No. PCT/EP95/01138, § 371 Date Oct. 30, 1996, § 102(e) Date Oct. 30, 1996, PCT Pub. No. WO95/27615, PCT Pub. Date Oct. 19, 1995

PCT Filed Mar. 25, 1995, Ser. No. 718,517

Claims priority, application Germany, Apr. 9, 1994, 44 12 224.1

Int. Cl.[6] B30B *15/16;15/04;1/32*

U.S. Cl. 100—48 **28 Claims**



1. A press for cold working of metal workpieces comprising:

a) a double-acting linear hydraulic power drive cylinder, said cylinder having a maximum operating pressure and developing forces, usable for shaping the workpieces, between 10^6N and 10^8N;

b) a continuous press frame for accepting reactive forces that develop during the operation of the press, said frame having a drive-side yoke with a side supporting the drive cylinder, and a counterbearing-side yoke with a side axially supporting the workpiece for machining inside the frame, said frame having non-stretchable cheeks connecting the yokes, said cheeks being located diametrically opposite each another with respect to a central longitudinal axis of the press; and

c) a control valve system operable by output signals, and being one of program-controlled or manually triggerable, from an electronic control unit, for controlling motion of a piston of the drive cylinder; wherein

d) a housing of the drive cylinder forms a drive-side yoke of the press frame and with partial areas of a housing jacket portions of said cheeks of the press frame, with a lateral distance D of the cheeks from one another being greater than a diameter of a piston rod of the drive cylinder;

e) a piston of the drive cylinder having a piston surface with an area A_2, said surface movably defining a driving pressure chamber, said area, during operation of press, being permanently exposed to output pressure of a pressure supply system, with a force $F_R = p \cdot A_2$ urging the piston away from the workpieces, as well as a piston surface A_1 that is larger in value than A_2, by exposure to depressurization, and load-shifting movements and return movements of the piston directed toward workpiece are controlled, and another, larger-area driving surface A_3 having additional exposure to pressure load-advancing movements of the piston of drive cylinder are controlled;

f) a travel-regulating valve for controlling feed and return stroke movements, said valve operating electrically, by pulse control of a stepping motor having controllable incremental position set values of the drive cylinder piston and a mechanical feedback of an actual position value of the drive cylinder piston with an application and relief of pressure on the piston surfaces A_2 and A_3 usable for feed operation controlled by the travel-regulating valve;

g) one of an electromechanical or an electronic pressure sensor delivering an output signal characteristic of pressure prevailing at a control output of the travel-regulating value, said output signal being supplied as an actual pressure signal to the electronic control unit controlling a setting of position set value.

5,823,105

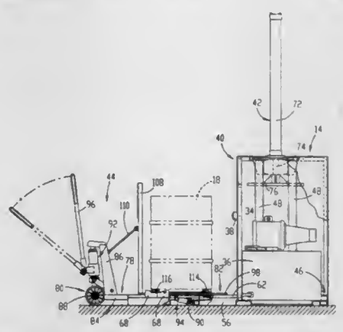
HAZARDOUS WASTE COMPACTION SYSTEM

Richard Feldman, Waverly, Nebr., assignor to Eidos Corporation, Lincoln, Nebr.

Filed Oct. 22, 1996, Ser. No. 731,881

Int. Cl.[6] B30B *9/30*

U.S. Cl. 100—215 **10 Claims**



1. A waste compacting apparatus for compacting waste in a disposal barrel, comprising:

a frame supported on the ground and including a base and an upstanding portion, the frame presenting an opening;

a ram assembly supported on the upstanding portion of the frame and including a ram that is shiftable between retracted and extended positions; and a movable pallet for supporting the disposal barrel for movement through the opening between a compacting position in which the disposal barrel is aligned with the ram and a handling position outside the frame in which the disposal barrel is accessible for handling, the pallet including a base plate on which the disposal barrel sits, the base plate presenting an edge that overlies the base in the compacting position so that the base plate and disposal barrel are supported on the base during compaction of the waste by the ram,

said pallet including a chassis on which the base plate is supported, and a carriage suspended from the chassis for supporting the pallet for rolling movement relative to the frame between the compacting and handling positions,

said carriage including a plurality of rollers and a suspension for shifting the rollers between a raised position in which the chassis is lowered relative to the frame and a lowered position in which the chassis is raised relative to the frame.

5,823,106

PRINTING APPARATUS FOR CIRCULAR SECTIONAL CONTAINER

Shinichiro No, and Shinichiro Watanabe, both of Tokyo, Japan, assignors to Kabushiki Kaisha Yakult Honsha, Tokyo, Japan

PCT No. PCT/JP96/01214, § 371 Date Oct. 27, 1997, § 102(e) Date Oct. 27, 1997, PCT Pub. No. WO96/35580, PCT Pub. Date Nov. 14, 1996

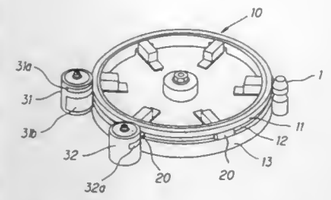
PCT Filed May 8, 1996, Ser. No. 945,394

Claims priority, application Japan, May 9, 1995, 7-110803

Int. Cl.[6] B41F *17/00*

U.S. Cl. 101—35 **1 Claim**

1. A printing apparatus for a cylindrical container having at least a first portion and a second portion, said second portion being



constricted with respect to said first portion such that said first portion has a larger radial length than said second portion, said printing apparatus comprising:

a transfer drum having a fixed transfer surface member and a movable transfer surface member;

at least first and second imprint rolls associated with said first and second portions of said container, respectively, said second imprint roll being arranged at an upstream point along a rotational direction of said transfer drum and said first imprint roll being arranged upstream from said second imprint roll such that said first and second imprint rolls are arranged according to descending radial length of said first and second portions;

resilient biasing means for biasing said movable transfer surface outwardly.

5,823,107

OFFSET PRINTING PRESS

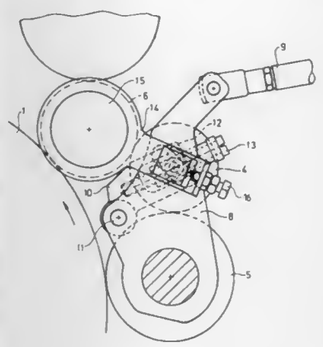
Hermann Beisel, Walldorf, and Rudi Junghans, Wilhelmsfeld, both of Germany, assignors to Heidelberger Druckmaschinen Aktiengesellschaft, Heidelberg, Germany

Filed Nov. 7, 1996, Ser. No. 744,868

Claims priority, application Germany, Nov. 7, 1995, 195 41 418.7

Int. Cl.[6] B41F *23/04;23/16*

U.S. Cl. 101—148 **20 Claims**



1. A device for selectively engaging a wetting unit with an inking unit of a plate cylinder in an offset printing press, said device comprising:

a wetting unit;

said wetting unit comprising a wetting roller;

an inking unit;

said inking unit comprising an inking roller;

an intermediate roller;

said intermediate roller comprising a first end and a second end;

said intermediate roller being disposed to make direct contact with both said wetting roller and said inking roller;

said second end of said intermediate roller being axially opposite said first end of said intermediate roller;

a pivoting arrangement for pivoting said intermediate roller about said inking roller and maintaining said intermediate roller in contact with said inking roller;

said pivoting arrangement comprising:

a first lever;

said first end of said intermediate roller being rotationally mounted on said first lever;

a second lever;

said second end of said intermediate roller being rotationally mounted on said second lever; and

each of said first lever and said second lever being disposed to pivot about its corresponding pivot point; and

actuation apparatus for pivoting each of said first lever and said second lever about its corresponding pivot point to engage and disengage said intermediate roller with said wetting roller.

5,823,108

DEVICE FOR STABILIZING THE TEMPERATURE OF A DUCT ROLLER IN AN INKING UNIT OF A PRINTING PRESS

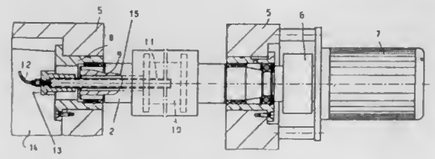
Carsten Kelm, Mannheim, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 29, 1996, Ser. No. 591,962

Claims priority, application Germany, Jan. 27, 1995, 195 02 475.3

Int. Cl.[6] B41F *31/26*

U.S. Cl. 101—348 **4 Claims**



1. An inking unit of a printing press, comprising:

a frame;

at least one ink duct roller rotatably supported in said frame, said ink duct roller having an interior space formed therein, said ink duct roller having an axial bore extending into said interior space and defining bore surfaces;

a fixedly mounted pipe stub having an end extending through said axial bore and projecting into said interior space of said ink duct roller without contacting said bore surfaces defining an annular gap between said bore surfaces and said pipe stub;

lubricating oil reservoir; and

said pipe stub being connected to said lubricating oil reservoir for emptying lubricating oil flowing through said pipe stub into said interior space of said ink duct roller and discharging the oil through said annular gap into said lubricating oil reservoir.

5,823,109

OFFSET PRINTING DEVICE FOR A ROTARY MCHINE PRINTING MACHINES

Peter Hummel, Offenbach, and Robert Ortner, Alzenau, both of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Jun. 20, 1997, Ser. No. 880,121

Claims priority, application Germany, Jun. 22, 1996, 196 25 029.3

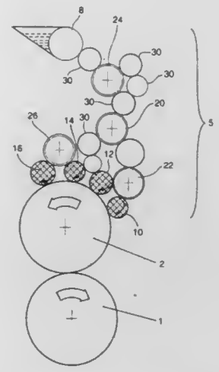
Int. Cl.[6] B41F *31/06;31/10;31/14*

U.S. Cl. 101—350.4 **9 Claims**

1. An offset printing device for a rotary printing machine comprising:

a plate cylinder carrying a printing plate; and

an inking unit for applying printing ink to a printing plate, including:



at least one ink application roller rotatably mounted in adjacent contact with the plate cylinder;

at least one direct-contact inking roller in direct contact with the ink application roller, the direct-contact inking roller being driven at a peripheral speed different than a peripheral speed of the plate cylinder;

at least one indirect-contact inking roller in indirect ink communication with the application roller, the indirect-contact inking roller being driven at a peripheral speed different than the peripheral speed of the plate cylinder;

wherein the indirect-contact inking roller is driven at greater difference in peripheral speed than the direct-contact inking roller relative to the plate cylinder.

5,823,110

INKING ARRANGEMENT FOR PRINTING PRESSES

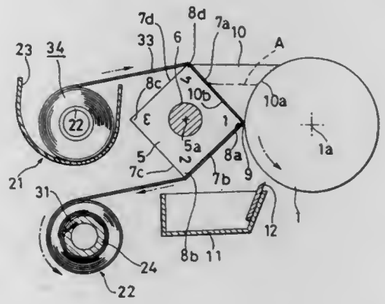
Masayuki Izume, Kyoto, Japan, assignor to I Mar Planning Inc., Kyoto, Japan

Continuation-in-part of Ser. No. 277,066, Jul. 19, 1994, abandoned. This application Nov. 13, 1995, Ser. No. 559,176

Claims priority, application Japan, Jul. 20, 1993, 5-178864; Sep. 10, 1993, 5-226074

Int. Cl.[6] B41F *31/06;31/04*

U.S. Cl. 101—352.091 **21 Claims**



1. An inking arrangement for a printing press, comprising:

an ink fountain member having at least one fountain-forming face for forming an ink fountain;

an ink fountain roller defining an ink channel together with the fountain member and having an outer peripheral surface to be inked through the channel;

a plurality of rollers for supplying the ink applied to the peripheral surface of the fountain roller to a printing portion;

a cleaning tank having a shiftable cleaning blade attached thereto, the cleaning tank being disposed below the fountain member;

means, operably coupled to the cleaning tank, for shifting the shiftable cleaning blade between a cleaning position and a stand-by position, the cleaning position being a position in which the cleaning blade is pressed against the peripheral surface of the fountain roller at a downstream side in a travelling direction of the ink on the peripheral surface of the fountain roller from the ink channel and in which the ink which is applied to the peripheral surface of the fountain roller through the ink channel is scraped off by the cleaning blade in the cleaning position and collected in the cleaning tank, the stand-by position being a position in which the cleaning blade is away from the fountain roller;

roll support means for rotatably supporting a strip of sheet as rolled up before use; and

take-up means for winding up the sheet after use, the sheet being paid off from a roll on the take-up means and guided to the take-up means, a lengthwise intermediate portion of the sheet being placed over the fountain member so as to cover an entire fountain-forming face which formed the ink fountain and which faces the ink inside the ink fountain in intimate contact with the fountain-forming face.

5,823,111

INK SUPPLY MEANS FOR A PRINTING MACHINE

David Edward McManamon, Walker Lane, Fulwood, Preston, England

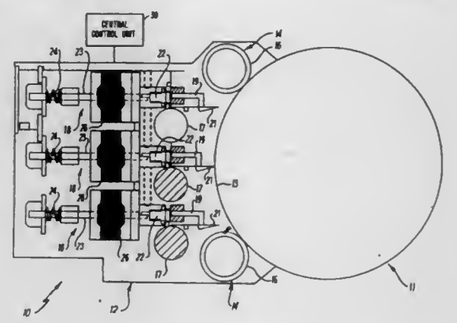
PCT No. PCT/GB95/00533, § 371 Date Nov. 5, 1996, § 102(e) Date Nov. 5, 1996, PCT Pub. No. WO95/24315, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 8, 1995, Ser. No. 702,714

Claims priority, application United Kingdom, Mar. 8, 1994, 9404455

Int. Cl.[6] B41F *31/02;31/03*

U.S. Cl. 101—365 **6 Claims**



1. Ink supply means for a printing machine having a receiver roller, a roller train and a print roller, said receiving roller being linked to said print roller via said roller train, said ink supply means comprising an ink rail mounted so as to extend generally longitudinally of a receiving roller of the machine, wiper rollers mounted adjacent a surface of the receiving roller to wipe a surface thereof, said ink rail comprising at least two discrete ink storage means connected to respective ink outlets in a face of said rail adjacent a surface of the receiving roller and valve means associated with each said outlet to regulate flow of ink through each said outlet, said inks being mixed by the action of said wiper rollers and passage of the ink between rollers of said roller train.

5,823,112

POWDER-DUSTING APPARATUS

Hans Georg Platsch, Stuttgart, Germany, assignor to Grafix Zerstaubungstechnik GmbH, Germany

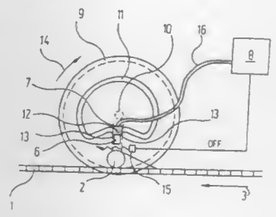
PCT No. PCT/EP96/04635, § 371 Date Jul. 12, 1997, § 102(e) Date Jul. 12, 1997, PCT Pub. No. WO97/21545, PCT Pub. Date Jun. 19, 1997

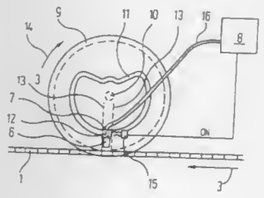
PCT Filed Oct. 25, 1996, Ser. No. 860,765

Claims priority, application Germany, Dec. 14, 1995, 195 46 720.5

Int. Cl.[6] B41F *23/06*

U.S. Cl. 101—424.2 14 Claims





1. Powder-dusting apparatus for a printing machine, having a transport system including gripping devices,

a) a plurality of nozzles through which a mixture of powder and carrying air is directed towards printed products moved past by the gripping devices of the transport system of the printing machine;

b)a mixing device, in which the powder is mixed with air to produce the mixture of powder and carrying air;

c) at least one connecting line, which connects the mixing device with the nozzles,

characterized by

d) a lifting device (**9** to **13**) which is able to move the nozzles (**6**) back and forth between two positions, namely,

da) a first position comparatively far removed from a plane of transport of the printed products

and

db) a second position lying comparatively close to the plane of transport of the printed products

and

e)a control means (**11**, **12**) detecting the position of the gripping device (**2**), which control means co-operates with the lifting device (**9** to **13**) such that the latter brings the nozzles (**6**) into the first position as long as the gripping device (**2**) is in the Vicinity of the nozzles (**6**), and brings the nozzles (**6**) into the second position when the gripping device (**2**) is located an adequate distance from the nozzles (**6**).

5,823,113

METHOD FOR MOISTENING A WASHING ROLLER IN A PRINTING MACHINE

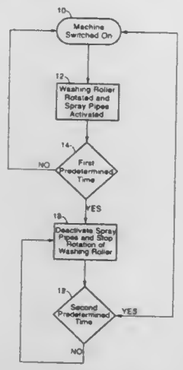
Claus Simeth, Geisenheim-Johannisberg, Germany, assignor to MAN Roland Druckmaschinen AG, Germany

Filed Feb. 21, 1997, Ser. No. 804,006

Claims priority, application Germany, Feb. 23, 1996, 196 06 768.5

Int. Cl.[6] B41F *35/06*

U.S. Cl. 101—483 5 Claims



1. A method for moistening a washing roller used to wash a printing cylinder of an offset rotary printing machine, comprising the steps of:

rotating a washing roller having a covering in a position in which it is not in rotational contact with the printing cylinder prior to a first printing cylinder washing operation;

moistening the washing roller by spraying a liquid on the washing roller while it is not in rotational contact with the printing cylinder;

maintaining a metering blade in contact with the washing roller to wipe excess liquid from the surface of the washing roller;

delaying drawing the washing roller into rotational contact with the printing cylinder until the covering of the washing roller is wet to minimize wear on the covering and avoid damage to the printing cylinder;

drawing the washing roller into rotational contact with the printing cylinder;

disengaging the washing roller from rotational contact with the printing cylinder; and

periodically moistening the washing roller after the first washing operation regardless of whether the washing roller is drawn into rotational contact with the printing cylinder again.

5,823,114

UTILITY DISTRIBUTION SYSTEM INCORPORATING MAGNETIC LEVITATION VEHICLE GUIDEWAYS

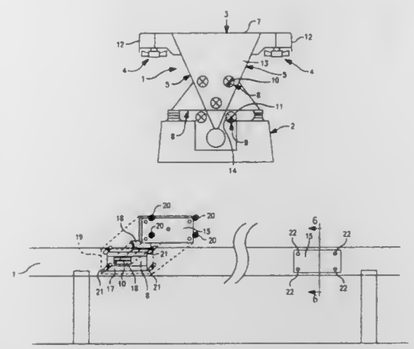
Joseph Cloletti, Pittsburgh; Joseph Koepfinger, Coraopolis, and Frank Young, Murrysville, all of Pa., assignors to Maglev, Inc., Pittsburgh, Pa.

Filed Mar. 25, 1996, Ser. No. 618,057

Int. Cl.[6] E01B *25/00*

U.S. Cl. 104—124 4 Claims

1. In combination with a single track magnetic levitation guideway comprising a cover plate to which side guide rails and profiles are connected, transverse flange plates forming an inclined web connected to the lower surface of said coverplate and connected to the upper surface of a lower flange plate supported above the ground such that said cover plate, said transverse flange plates and said lower flange plate define an enclosed channel, a system for the distribution and transmission of electrical transmissions, fiber optic signals, cable television signals, and communication signals comprising:



at least one tubular conduit defining an enclosed space disposed within the enclosed channel defined by the cover plate, transverse flange plates and lower flange plate such that the at least one tubular conduit is oriented with its long axis parallel to the long axis of the cover plate of the guideway; and

at least one cable for transmitting electricity is disposed within the enclosed space defined by the at least one tubular conduit.

5,823,115

GUIDING OF A PIPE TRAVELLING DEVICE

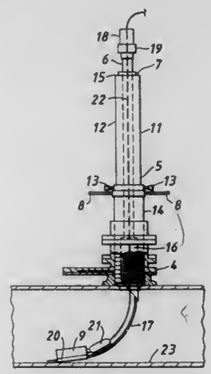
Michael Cotton, Castleford, and Kevin Michael Horan, Rodley, both of Great Britain, assignors to British Gas plc, Reading, England

Filed Sep. 5, 1995, Ser. No. 523,250

Claims priority, application United Kingdom, Sep. 9, 1994, 9418196; May 3, 1995, 9508958

Int. Cl.[6] B61B *13/10*

U.S. Cl. 104—138.2 5 Claims



1. A method for guiding a device in a required direction along the interior of a pipe, the method comprising removably mounting the device on a curved guide, lowering the device and the guide through a hole bored in the wall of the pipe to gain access to the interior of the pipe with the guide arranged to curve in the required direction in which the device is to move along the pipe, and moving the device off the guide in the required direction along the interior or the pipe, the steps of removably mounting, lowering, and moving comprise removably attaching a bag spring to the device and curving the bag spring in the required direction so as to guide the device in the required direction when lowered into the pipe, and moving the device off the bag spring in the required direction.

5,823,116

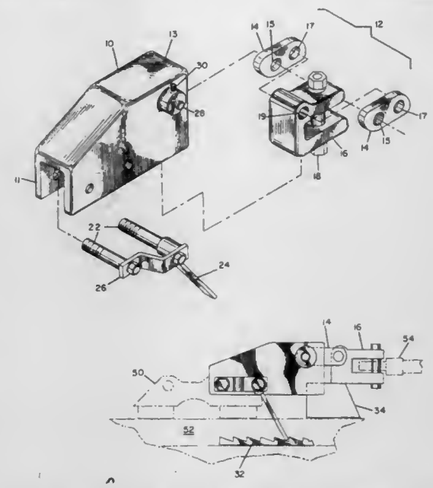
SHOCK-ABSORBING TOW BAR COUPLER

David F. Williams, 1275 N. Parker Dr., Janesville, Wis. 53545

Filed Sep. 20, 1996, Ser. No. 717,498

Int. Cl.[6] B61B *10/00*; B61K *7/00*

U.S. Cl. 104—172.5 21 Claims



17. In an inverted power and free conveyor including a trolley riding upon a track, the trolley dimensioned and configured to engage a tow bar which bears a workpiece, the improvement comprising a shock-absorbing tow bar coupler disposed between the trolley and the tow bar, said coupler comprising:

a housing having a forward end and a rearward end, the forward end of said housing including means for releasibly fastening a trolley of a power and free conveyor;

a clevis assembly disposed within the rearward end of said housing and rotatably attached thereto by a first means for rotatable attachment; and

means for releasibly fastening a tow bar, said means rotatably attached to said clevis assembly by a second means for rotatable attachment.

5,823,117

PASSENGER PASSAGEWAY FOR RAIL VEHICLES

Arnold Ommerli, Flurlingen, Switzerland, assignor to Fiat-Sig Schienenfahrzeuge AG, Neuhausen, Switzerland

PCT No. PCT/CH96/00186, § 371 Date May 5, 1997, § 102(e) Date May 5, 1997, PCT Pub. No. WO96/36519, PCT Pub. Date Nov. 21, 1996

PCT Filed May 15, 1996, Ser. No. 765,968

Claims priority, application Switzerland, May 16, 1995, 1427/95

Int. Cl.[6] B61D *17/00*

U.S. Cl. 105—8.1 17 Claims

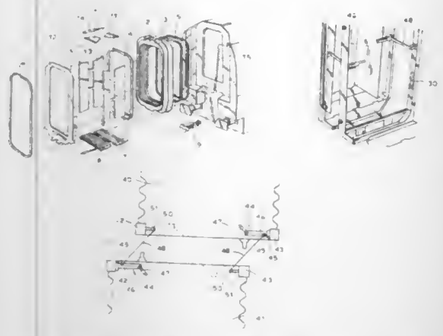
1. A passenger passageway for placement between two rail vehicles, the passageway comprising:

two extendible and retractable half-passageways, each of the half-passageways arrangeable on the end of one of the rail vehicles and the half-passageways being coupleable to each other;

each half-passageway having a respective main frame, the half-passageways being positioned so that their main frames face each other;

each half-passageway having a respective vertical support at the opposite lateral sides of the half-passageway;

a locking device at the main frame of one of the half-passageways, the locking device comprising at least a locking element on the vertical support of the one half-passageway



and at least a receiver on an adjacent vertical support on the other half-passageway shaped and placed so that the locking element can be locked onto the receiver, the one half-passageway having an inside;

an actuating device located on the inside of the one half-passageway and connected with the locking element for moving the locking element onto and off the receiver, the actuating device including a shaft which extends through the respective vertical support;

the shaft having an outside end on which the locking element is fastened for being turned by turning of the shaft so that the locking element is swung between an open position wherein the locking element is off the receiver to a locking position with the locking element on the receiver;

the shaft having an inside end toward the inside of the half-passageway a crank on the inside end of the shaft, and an actuating lever connected with the crank such that swinging of the actuating lever turns the shaft and the locking element on the shaft; and

a drive connection between the actuating device and the locking element for moving the locking element selectively onto and off the receiver.

5,823,118

BOTTOM DISCHARGE ARRANGEMENT

Hilding Månström, Luleå, Sweden, assignor to Luossavaara-Kiirunavaara AB, Lulea, Sweden

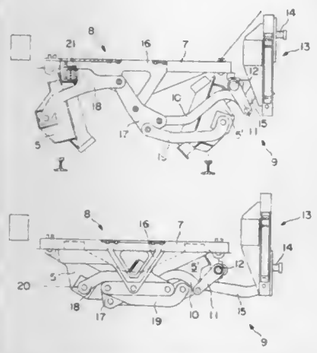
PCT No. PCT/SE95/01283, § 371 Date Jun. 26, 1997, § 102(e) Date Jun. 26, 1997, PCT Pub. No. WO96/15016, PCT Pub. Date May 23, 1996

PCT Filed Oct. 31, 1995, Ser. No. 836,448

Claims priority, application Sweden, Nov. 11, 1994, 9403887

Int. Cl.[6] B61D *7/00*

U.S. Cl. 105—284 **6 Claims**



1. A bottom discharge arrangement mounted to a structure having a goods containing space said arrangement comprises at least one pair of flaps which are pivotally mounted on the goods container at their mutually remote edges so as to be able to swing between an open and a closed position in a plane perpendicular to said edges, the mutually opposing edges of the flaps lying sealingly against one another when the flaps are closed, said flaps when open generally form extensions of the opposing wall parts of the goods container located above the flaps said arrangement including a link system which is common to said flaps and which functions to maneuver the flaps simultaneously, said link system including a two-arm lever which is pivotally mounted at its center to an axle which is fixed in relation to said space and which is located centrally between the pivot axes of said flaps, and wherein one end of the two-arm lever is pivotally connected to a first link pivotally mounted on one of the flaps, and the other end of said lever is pivotally connected to a second link pivotally mounted on the other one of the flaps , when said flaps are closed, all pivoting points of said two-arm lever, first link and second link lie in an essentially forceless state of equilibrium in a common plane, wherein said state of equilibrium is locked by means of an operating device coacting with the link system; and in that the operating device is a means connected to the two-arm lever for turning said two-arm lever about said axle to bring the link system out of its state of equilibrium and therewith allow the flaps to open.

5,823,119

PULL-OUT TABLE HAVING TWO LEAF SECTIONS

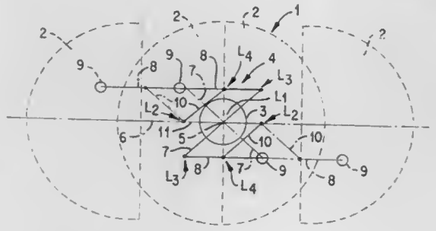
Matthias Fischer, Beethovenstrasse 33a, 60325 Frankfurt, Germany

Filed Jan. 10, 1997, Ser. No. 781,834

Claims priority, application Germany, Jan. 12, 1996, 196 00 956.1

Int. Cl.[6] A47B *1/00*

U.S. Cl. 108—87 **24 Claims**



1. A furniture article, comprising:

two leaf sections, each said leaf section having a respective separating edge;

a supporting structure operatively connected with said leaf sections such that said leaf sections can be moved between an inoperative position, in which the separating edges of the two leaf sections rest against one another, and a pull-out position in which the separating edges are spaced away from one another in a direction defining a stationary pull-out axis, said supporting structure being arranged and configured such that each leaf section can be displaced in parallel along a curved control path respectively relative to the stationary pull-out axis which both leaf sections have in common such that the separating edge of each leaf section is aligned along the whole curved control path at a right angle to the common stationary pull-out axis, said supporting structure including two supporting arms fixedly coupled to the two leaf sections, respectively, each of the supporting arms being rotatably coupled to at least two guiding elements which maintain said supporting arms parallel to said pull-out axis throughout movement between said inoperative position and said pull-out position.

5,823,120

VERTICALLY ADJUSTABLE DESKTOP, PREFERABLY A SCHOOL DESK

Roland Holmquist, Vingåker, Sweden, assignor to JELTEC Ergonomiteknik AB, Katrineholm, Sweden

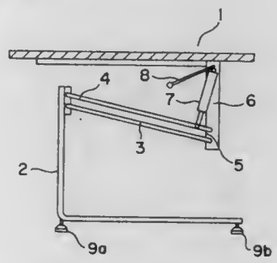
PCT No. PCT/SE91/00770, § 371 Date May 10, 1993, § 102(e) Date May 10, 1993, PCT Pub. No. WO92/08392, PCT Pub. Date May 29, 1992

PCT Filed Nov. 13, 1991, Ser. No. 50,318

Claims priority, application Sweden, Nov. 13, 1990, 90036070

Int. Cl.[6] A47B *9/00*

U.S. Cl. 108—147 **3 Claims**



1. A vertically adjustable desk which comprises:

a support stand,

a desktop which includes an underbody,

first and second linkage means connected between said support stand and said underbody for vertically adjustably positions said desktop in a generally horizontal orientation above said lower stand, each of said first and second linkage means comprising two parallel links, and

first and second gas spring means connected between said first linkage means and said underbody and between said second linkage means and said underbody, respectively, said first and second gas spring means operating to assist in vertical movement of said desktop above said support stand and to lock said desktop in vertical position above said support stand, each of said first and second gas spring means including a handle for manual operation thereof.

5,823,121

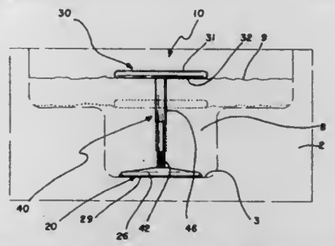
SPA TABLE

Dave Reiter, 3327 S. Monaco Pkwy. #E, Denver, Colo. 80222

Filed Apr. 10, 1997, Ser. No. 833,907

Int. Cl.[6] A47B *9/00*

U.S. Cl. 108—147.19 **13 Claims**



1. A self-adjusting portable table for use in a spa having a floor and being filled with water to create a water surface, said self-adjusting portable table comprising:

a base member, said base member being adapted for positioning on the floor of the spa;

a planar table top member having a substantially planar top surface, said table top member being adapted to float on the water surface of the spa; and

a self-adjusting vertical support member interconnecting said base member and said planar table top member, said self-adjusting vertical support member being adapted for supporting said planar table top member in a generally horizontal position on the water surface of the spa; wherein said self-adjusting vertical support member comprises:

an engaging member, said engaging member being removably coupled to said base member, and a sleeve member, said sleeve member being secured to said planar table top member, wherein said engaging member and said sleeve member are slidably telescopically coupled together such that said sleeve member slides freely over said engaging member, whereby said planar table top member is vertically self-adjustable towards and away from said base member corresponding to changes in a distance between the floor of the spa and the water surface of the spa.

5,823,122

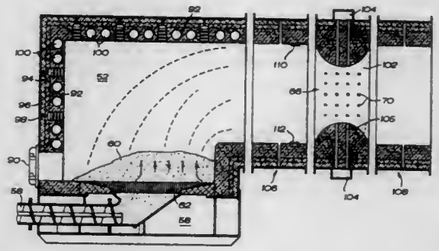
SYSTEM AND PROCESS FOR PRODUCTION OF FUEL GAS FROM SOLID BIOMASS FUEL AND FOR COMBUSTION OF SUCH FUEL GAS

William L. Woerner, Ebony, and Robert A. Chronowski, Great Falls, both of Va., assignors to Alternative Energy Development, Inc., Silver Spring, Md.

Filed Sep. 30, 1994, Ser. No. 315,450

Int. Cl.[6] F23G *15/00*

U.S. Cl. 110—346 **30 Claims**



15. A process for the production of fuel gas from solid biomass fuels and for the combustion of said fuel gas, said process comprising:

(a) gasifying the solid biomass fuel in a gasification zone to produce a fuel gas, said solid biomass fuel being continuously exposed to a supply of gasification air in said gasification zone;

(b) conveying the fuel gas from the gasification zone to a predetermined ignition point;

(c) mixing the fuel gas with combustion air at the ignition point;

(d) igniting the mixture of fuel gas and combustion air to produce a flame; and

(e) shaping and directing the flame produced by injecting the combustion air from a plurality of tuyeres which are disposed to cause the combustion air to exit in a swirling pattern such that the swirling air pattern which exits from each tuyere overlaps the swirling air pattern from any adjacent tuyere.

5,823,123

TRANSPORTING A PARTICULATE MATERIAL TO A DISCHARGE OPENING

Clarence Waldner, Decker, Canada, assignor to Decker Mfg., Decker, Canada

Filed Jul. 25, 1996, Ser. No. 690,469

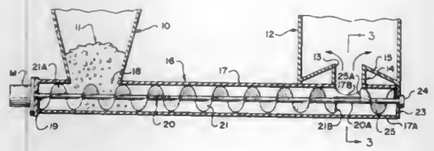
Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—257 **2 Claims**

1. A combustion apparatus comprising:

a combustion chamber;

a substantially horizontal transportation tube having a first feed end and a second end;



a hopper for discharging a particulate fuel material into the transportation tube at said first feed end for transportation therealong;

a substantially vertical discharge tube having a bottom end attached to the transportation tube and a top end communicating with the combustion chamber for feeding the particulate fuel material from the transportation tube upwardly into the combustion chamber;

the discharge tube being connected to the transportation tube at a position thereon adjacent to but spaced from the second end of the transportation tube leaving a free portion of the transportation tube between the discharge tube and the second end;

the transportation tube being closed along its length from the feed end to the discharge duct;

an auger mounted in the transportation tube for transporting the particulate material therealong including a shaft extending along the transportation tube, a first flight portion mounted on the shaft for rotation therewith and extending from the hopper to the discharge tube and arranged such that rotation of the shaft in a drive direction tends to move the particulate material toward the discharge tube and a second flight portion mounted on the shaft for rotation therewith and extending from the discharge tube into the free portion, the second flight portion being arranged such that rotation in the drive direction tends to move particulate material from the second end of the transportation tube toward the discharge tube whereby the particulate material is driven toward the discharge tube and forced into the discharge tube to the combustion chamber;

the first flight portion and the second flight portion each having an end thereof located at a respective point on the shaft which point is substantially axially aligned with a respective edge of the discharge tube, which edges lie in an imaginary vertical center plane of the transportation tube, such that the shaft has a portion thereof directly underneath and aligned with the discharge tube that is wholly free from the first and second flight portions;

said portion of the shaft carrying a plurality of radially outwardly projecting members thereon at angularly spaced positions around the shaft for rotation therewith, the projecting members being fixed relative to the shaft and located wholly within the transportation tube below the discharge tube and outside the combustion chamber, for engaging and agitating the particulate fuel material in the transportation tube and for assisting feeding of the particulate fuel material from the transportation tube into the combustion chamber.

5,823,124

METHOD AND SYSTEM TO REDUCED NO_x AND FUEL EMISSIONS FROM A FURNACE

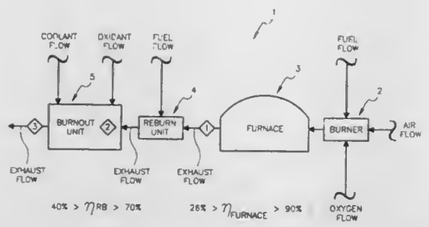
Richard R. Koppang, Monarch Beach, Calif., assignor to Gas Research Institute, Chicago, Ill.

Filed Nov. 3, 1995, Ser. No. 552,993
Int. Cl.[6] F23J *11/00*
U.S. Cl. 110—345 **10 Claims**

1. A method applied to a furnace receiving first and second fuel flows, and air and oxygen flows, the method comprising the steps of:

a) in a chamber of the furnace, adding the first fuel flow, an air flow, and an oxygen flow in approximately stoichiometric proportions;

b) combusting the first fuel flow, the air flow, and the oxygen flow in the chamber to generate heat and an exhaust flow;



c) receiving the exhaust flow in a reburn unit in fluid communication with the chamber, the exhaust flow cooling as the exhaust flow travels through the reburn unit;

d) adding the second fuel flow to the exhaust flow in the reburn unit at a position along the reburn unit at which the temperature of the exhaust gas flow has not cooled below 2200 degrees Fahrenheit, the adding of the second fuel flow to the exhaust flow producing a fuel-rich mixture; and

(e) downstream relative to the direction of the exhaust adding an oxidant flow to the exhaust flow in a burnout unit in fluid communication with the return unit to produce an oxidizer-rich mixture with a stoichiometric ratio above 1.0 to combust fuel in the exhaust flow, wherein the oxidant comprises a mixture of air and oxygen gas.

5,823,125

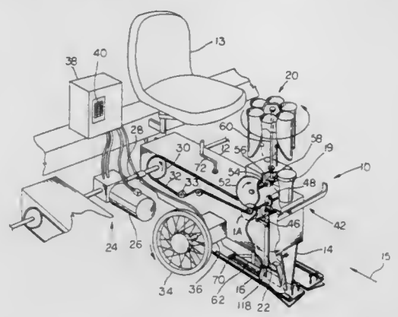
Patent Not Issued For This Number

5,823,126

MECHANICAL SEEDLING TRANSPLANTER

Howard Kolk; Robert Kolk; Ken Kooiker, all of Holland, and Brent Dykgraaf, Zeeland, all of Mich., assignors to Mechanical Transplanter Company, Holland, Mich.

Filed Dec. 13, 1996, Ser. No. 766,676
Int. Cl.[6] A01C *11/00*
U.S. Cl. 111—109 **21 Claims**



1. A transplanter for transplanting seedlings comprising a frame, means for supporting said frame for movement relative to ground, furrow opening means mounted on said frame for opening a furrow in the ground, seedling delivery means for depositing seedlings in the furrow, a stabilizer member movable between a retracted position and a stabilizing position for stabilizing the seedling in the furrow until the soil is compacted around the seedling and a synchronizing drive for driving both the stabilizer member and said seedling delivery means, a variable speed drive for driving said synchronizing drive, the speed of said drive being responsive to a control signal varying as a function of a speed signal which

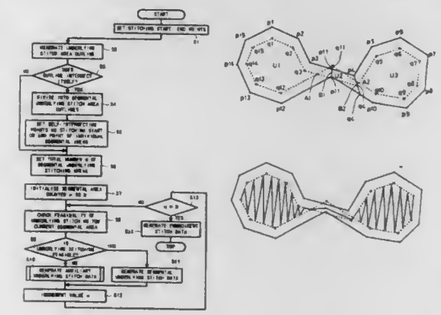
varies with the speed of the transplanter along the ground and a preset interval signal representing the desired distance between seedlings.

5,823,127

EMBROIDERY DATA PROCESSING APPARATUS

Masahiro Mizuno, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 15, 1997, Ser. No. 990,814
Claims priority, application Japan, Dec. 20, 1996, 8-341554
Int. Cl.[6] D05B *21/00*; D05C *5/04*
U.S. Cl. 112—102.5 **16 Claims**



1. An embroidery data processing apparatus for processing embroidery data for forming underlying stitches within a closed area enclosed by an outline that defines a shape of an embroidery area, comprising:

an underlying stitch area outline generating device that generates an underlying stitch area outline that defines a shape of an area to be stitched for underlying, the underlying stitch area outline being generated inside the closed area;

a dividing device that, if the underlying stitch area outline has a point at which the outline intersects itself, called a self-intersecting portion, divides the underlying stitch area outline into a plurality of segmental underlying stitch area outlines using the self-intersecting portion as a boundary;

a segmental underlying stitch data generating device that generates underlying stitch data for each of segmental underlying stitch areas defined by the plurality of segmental underlying stitch area outlines; and

an auxiliary underlying stitch data generating device that generates auxiliary underlying stitch data for a connection between the plurality of segmental underlying stitch areas.

5,823,128

METHOD FOR PRODUCING A FLAP POCKET AND AN ITEM HAVING THE FLAP POCKET

Olivier Lapidus, Neuilly Sur Seine, France, assignor to Ted Lapidus, France

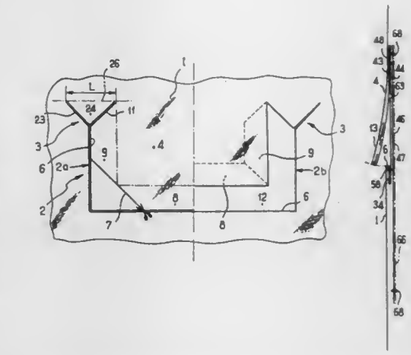
PCT No. PCT/FR94/01385, § 371 Date May 29, 1996, § 102(e) Date May 29, 1996, PCT Pub. No. WO95/14399, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 29, 1994, Ser. No. 647,985
Int. Cl.[6] D05B *13/00*; A41D *27/20*
U.S. Cl. 112—475.06 **32 Claims**

1. A method for producing a flap pocket, comprising the steps of:

providing an item having a panel;

forming in the item panel a slit having a preselected contour to define a flap;

forming an aperture in the item panel at a location outside of the slit;



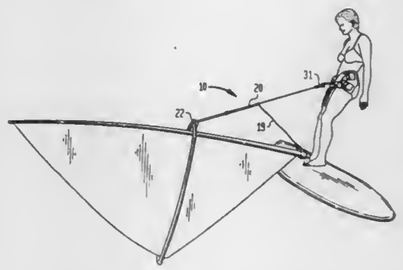
and attaching around the aperture a pocket having a lateral opening so that the lateral opening is positioned under the flap.

5,823,129

METHOD OF UPHAULING A WINDSURFER

R. MacDonald Barnes, Jr., 930 Hillside Ave., Plainfield, N.J. 07060

Continuation-in-part of Ser. No. 681,530, Jul. 22, 1996, abandoned. This application Feb. 27, 1997, Ser. No. 807,173
Int. Cl.[6] B63B *15/00*
U.S. Cl. 114—39.2 **5 Claims**



1. A method of uphauling a sail of a windsurfer rig comprising the steps of:

providing an uphaul line;

attaching a first end of the line to the windsurfer rig;

attaching a second end of the line to an article worn by a sailor;

providing an intermediate attachment means on the line for attaching the line to the article at an intermediate position along the line;

applying the sailor's body weight to the line by the sailor leaning in an opposite direction from the windsurfer rig to partially uphaul the windsurfer rig;

then grasping the line manually and the sailor moving his or her body towards the rig;

attaching the intermediate attachment means to the article worn by the sailor; and

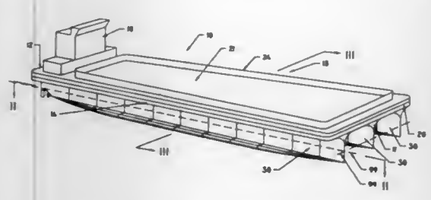
re-applying the sailor's body weight to the line and therefore to the windsurfer rig, by the sailor again leaning in an opposite direction of the rig to further uphaul the windsurfer rig.

5,823,130

MULTI-HULL TANKER AND CONTAINER SHIP

Alex Z. Kreyn, 3147 Merlin Dr. North, Jasksonville, Fla. 32257, and Zachary A. Kreyn, 3913 Mission Dr. #8, Jacksonville, Fla. 32217

Filed Jun. 16, 1997, Ser. No. 876,802
Int. Cl.[6] B63B *1/12*
U.S. Cl. 114—61 8 Claims



1. A combination tanker and container transport vessel having plural separate hulls connected above the water line by a bridging deck member having an upper surface structured to receive stacked cargo containers, each of said hulls comprised of double walls having an upper portion above the water line, a middle portion passing through the water line, a lower portion below the water line extended laterally such that said hull lower portion is wider than said hull middle portion, a port-side outer surface, a portion of which is above the water line, a starboard-side outer surface, a portion of which is above the water line, a longitudinal length, a longitudinal center plane, a height, a volume and a lateral width, each of said hulls comprised mainly of a vertical storage tank divided into multiple compartments for liquid cargo occupying the majority of the hull volume and extending generally the full longitudinal length of each of said hulls, each said vertical storage tank having a lateral distance and a vertical distance, where the vertical distance of each said vertical storage tank exceeds the lateral distance of each said vertical storage tank at substantially every point along the hull longitudinal center plane, and where each said vertical storage tank extends above and below the water line, said hull lower portion further comprising ballast tanks to control the draft of the vessel under all load conditions and to lower the center of gravity of said vessel when said upper surface of said bridging deck is loaded with cargo containers and said vertical storage tanks are empty, whereby said vessel is able to operate independently as either a tanker or a container ship.

5,823,131

METHOD AND APPARATUS FOR DISCONNECTING AND RETRIEVING MULTIPLE RISERS ATTACHED TO A FLOATING VESSEL

L. Terry Boatman; Ron L. Kelm, both of Houston; Brent A. Salyer, Cypress; Jerry L. McCollum, Hempstead, and Charles O. Etheridge, Spring, all of Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 14, 1997, Ser. No. 970,949
Int. Cl.[6] B63B *22/02*
U.S. Cl. 114—230 14 Claims

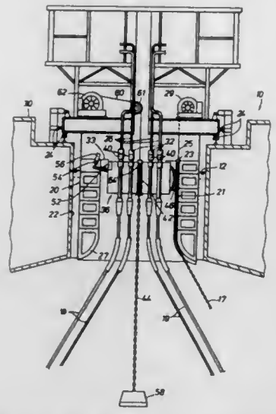
1. A method for connecting and disconnecting multiple flexible risers extending to the sea bed to a floating vessel having a turret mounted within a vertical opening of the vessel comprising the steps of:

supporting upper ends of said multiple flexible risers with a riser buoy;

removably connecting said riser buoy to the turret at a predetermined position within the turret above sea level;

positioning said vessel in the sea with respect to positions of said multiple flexible risers independently of said riser buoy;

removably connecting said multiple flexible risers on said riser buoy to product conduits on said vessel for the transport of product to a desired storage area;



disconnecting said riser buoy and said multiple flexible risers supported thereon from said vessel for movement of said riser buoy and risers to a predetermined submerged depth within the sea,

connecting a weight to said riser buoy with a predetermined length of buoy anchor line;

lowering said weight to the sea bottom such that a predetermined submerged depth of said riser buoy is determined by the length of said buoy anchor line, and

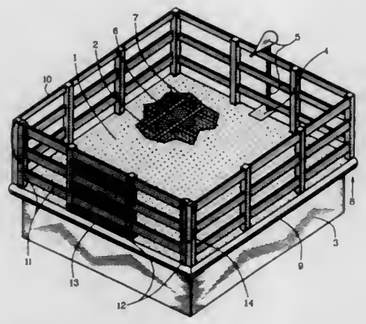
raising said buoy anchor line and weight into a mating position of said weight to said riser buoy when said riser buoy is connected to and docked within said turret.

5,823,132

FLOATING DECK

Brooks L. Donavon, 2107 Van Orman Dr., Deltona, Fla. 32725

Filed Sep. 30, 1996, Ser. No. 723,987
Int. Cl.[6] B63B *35/44*
U.S. Cl. 114—266 24 Claims



1. A floating deck comprising:

a deck structure positioned on a watertight float;

sidewalls extended designedly downward intermediate the deck structure and water in which the floating deck is positioned;

the sidewalls having designedly broad and vertical surfaces in contact with the water to deter movement in the water and to deter entry of water onto the deck structure;

select deck fixtures on the deck structure including a railing having at least one entry, a select section of the railing being a convertible ladder that is pivotal downward from the deck structure, a select portion of the convertible ladder having a ramp platform; and

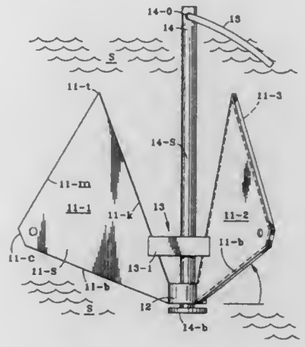
a propulsion bracket on the deck structure.

5,823,133

ANCHORING OF OBJECTS

Peter C. Mele, P.O. Box 533, Crown Pt, N.Y. 12928

Filed Mar. 3, 1997, Ser. No. 808,010
Int. Cl.[6] B63B *21/32*
U.S. Cl. 114—301 17 Claims



1. Apparatus for the anchoring of floating object comprising

an elongated shank;

a constraint movably mounted on said shank;

a fluke attached to said constraint and extending along the vicinity of said shank;

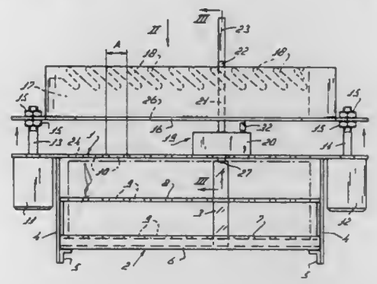
wherein said fluke is triangular with an edge extending from said constraint to a tip.

5,823,134

MILK SAMPLING DEVICE AND METHOD

Karel van den Berg, Bleskensgraaf, Netherlands, assignor to Maasland N.V., Netherlands

Filed Jun. 18, 1996, Ser. No. 665,726
Claims priority, application Netherlands, Jun. 21, 1995, 1000620; Oct. 19, 1995, 1001448
Int. Cl.[6] A01J *5/017*
U.S. Cl. 119—14.02 19 Claims



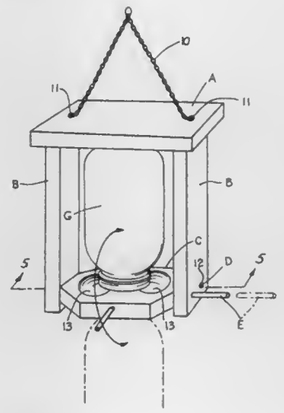
17. A method of sampling milk from animals comprising the steps of: (a) transmitting a predetermined quantity of milk to a milk sample reservoir of a milk sampling device, said quantity of milk being sufficient to overfill said milk sample reservoir; (b) withdrawing by vacuum part of said quantity of milk from said sample reservoir; (c) discharging the remaining milk in said milk sample reservoir into a milk sampling collection means; (d) raising, laterally displacing and lowering said milk sample reservoir so that it is positioned over a further milked sampling collection means; and (e) repeating steps (a) through (c) for a further animal whereby a sample of the further animal's milk is received in a further milk sampling collection means.

5,823,135

SUSPENDED BIRD FEEDER AND METHOD OF FILLING

Randy G. Gilchrist, and Cheryl Louise Gilchrist, both of 490 Chestnut Ridge Dr., Seneca, S.C. 29672

Filed Apr. 2, 1997, Ser. No. 831,325
Int. Cl.[6] A01K *61/02*
U.S. Cl. 119—52.2 5 Claims



1. A bird feeder comprising:

a top;

means fixedly attached to the top at each end for suspending the bird feeder;

rigid frame members fixedly carried in opposed depending spaced relation by said top;

a base extending substantially horizontally between lower ends of said frame members;

a substantially horizontal pivot tiltably supporting said horizontal base on said lower ends of said frame members;

a stop member removably connecting at least one of said rigid frame members and said base maintaining said base in said horizontal position against any force tending to tilt said base;

a connector carried upon an upper surface of said horizontal base; and

a container for bird feed having an open top receivable by said connector when said base is tilted for dispensing bird feed upon said horizontal base;

whereby when said stop member is disengaged, the horizontal base may be tilted to facilitate access to said container for removal and refilling thereof preparatory to reception of said open top by said connector and return of base to horizontal position.

5,823,136

CARRIABLE PET FEEDING SERVICE

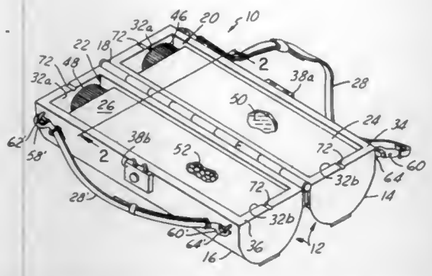
John A. Zarski, 11456 Meadowbrook, Warren, Mich. 48093

Filed Apr. 15, 1996, Ser. No. 631,913
Int. Cl.[6] A01K *5/01;7/00*
U.S. Cl. 119—61 7 Claims

1. A carriable pet feeding service, comprising:

a casing having a rigid first half-section, a rigid second half-section, and a hinge pivotally conjoining said first half-section to said second half-section, wherein said first and second half-sections are pivotable between an open state of said casing and a closed state of said casing, said first half-section having a rigid first receptacle formed therein, said second half-section having a second receptacle formed therein, wherein said first and rigid second receptacles collectively form an interior space of said casing when said casing is in said closed state;

means for selectively retaining said casing in said closed state;



a first container receivable with respect to said first receptacle; and

a second container receivable with respect to said second receptacle;

wherein said closed and open states of said casing are effectable with said first and second containers seated in said first and second receptacles;

wherein said first and second half-sections are structurally non-porous so that first and second receptacles are functionable as feeding dishes;

wherein said first container is selectively resealable and reciprocably shaped with respect to said first receptacle to be seatably receivable therein; and said second container is selectively resealable and reciprocably shaped with respect to said second receptacle to be seatably receivable therein;

wherein said first and second receptacles each have a contoured receptacle wall which includes a concave shaped portion;

wherein a bisection of said casing defines a bisectional terminous of each of said first and second half-sections, said bisectional terminous of each of said first and second half-sections mutually adjoining when said casing is in said closed state, said bisectional terminous of each of said first and second half-sections being in substantially a common plane when said casing is in said open state; and

wherein said first container has a first contoured wall reciprocably shaped with respect to said contoured receptacle wall of said first receptacle so that said first container is seatably receivable with respect to said first receptacle; and said second container has a contoured wall reciprocably shaped with respect to said contoured receptacle wall of said second receptacle so that said second container is seatably receivable with respect to said second receptacle.

5,823,137

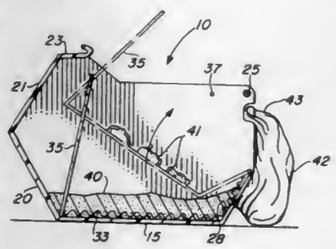
LITTER BOX AND PIVOTAL SIFTING DEVICE

John D. Rood, Fountain Hills, Ariz., and John W. Rood, 15120 E. Greene Valley Rd., Fountain Hills, Ariz. 85268, assignors to John W. Rood, Fountain Hills, Ariz.

Filed Jun. 26, 1996, Ser. No. 673,621

Int. Cl.[6] A01K *1/01;29/00*

U.S. Cl. 119—166 **19 Claims**



7. A litter box assembly comprising: a substantially rectangular base portion having a seating surface; litter holding means attached to said base portion at one end thereof; and a pivotally movable sifting device pivotally mounted to said base portion; said sifting device having a handle, a foraminous, substantially rectangular main screen portion connected to said handle, an angled foraminous screen portion connected to said main screen portion, and pivoting means connected to said angled screen portion, said pivoting means being operably mounted in said base portion to make said sifting device pivotal relative thereto; said litter holding means having a plurality of end walls attached to and disposed at preselected angles relative to each other to provide at least one alternative seating surface for said litter box assembly; said litter box assembly further having a first side wall and a second side wall attached to said base portion and attached to each of said plurality of end walls such that said first side wall and said second side wall are in spaced generally parallel relationship to each other and coact with said plurality of end walls to define said litter holding means for temporarily receiving and holding litter therewithin; said litter being movable into said litter holding means from said open base portion when said litter box assembly is consecutively seated respectively on each of said plurality of end walls until said litter is transferred completely into said litter holding means and said bottom seating surface is completely free of litter for the repositioning of said sifting device into surface-to-surface engagement with said bottom seating surface.

5,823,138

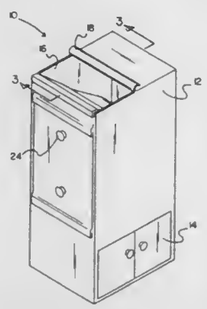
CAT LITTER SEPARATOR

William M. Marts, 8314 Steamside, Houston, Tex. 77088-2713

Filed Dec. 17, 1997, Ser. No. 992,142

Int. Cl.[6] A01K *29/00*

U.S. Cl. 119—166 **8 Claims**



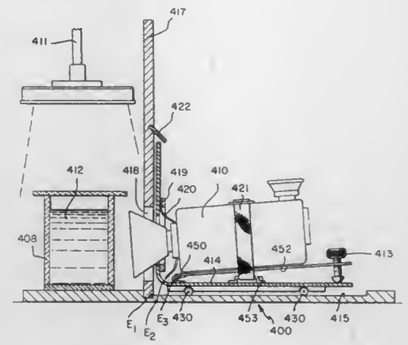
1. A cat litter separator comprising, in combination:

a rectangular housing having a front face, a rear face, a top face, a bottom face, and a pair of side faces for defining an interior space, one of the side faces having a pair of doors hingably coupled within a rectangular cut out formed in the housing adjacent to the bottom face for allowing access to the interior space, the top face having a top opening formed therein adjacent to the front face thereof and an arcuate flange coupled along an edge of the top opening which defines a portion of a cylinder, the housing further having a divider having an inverted V-shaped vertical cross-section with the divider mounted between the side walls just above the doors;

a pair of square containers each with an open top and a bottom face having a surface area half that of the bottom face of the housing, the square containers adapted to be removably rested on the bottom face of the housing and situated within the interior space thereof between the divider;

a chute having a generally Z-shaped configuration including a top angled portion situated within the housing and extending downwardly from the top opening thereof and toward the rear face of the housing, a top face of the top angled portion having a first screen mounted in coplanar relationship therewith and a bottom face of the top angled portion having a second screen mounted in coplanar relationship therewith, the chute further including an intermediate angled portion situated within the housing and extending downwardly from the top angled portion toward the front face of the housing with the intermediate portion having a top face and a bottom face being closed, the chute further having a bottom angled portion situated within the housing and extending downwardly from the intermediate angled portion and toward the rear face of the housing and terminating at a rear extent of the divider, a bottom face of the bottom angled portion having a third screen mounted in coplanar relationship therewith and a top face that is closed;

whereby cat litter having clumps of fecal matter is deposited within the top opening such that the cat litter sifts downwardly into one of the containers adjacent the front face of the housing and the fecal matter is deposited in one of the containers adjacent the rear face of the housing.



5,823,139

ANIMAL EXCRETA DISPOSING MATERIAL CONTAINING WASTE PLASTIC AND PROCESS FOR THE PRODUCTION OF THE MATERIAL

Hiroshi Ito, Tokyo-to, Japan, assignor to Kabushikikaishi Daiki, Tokyo, Japan

PCT No. PCT/JP96/02094, § 371 Date May 19, 1997, § 102(e) Date May 19, 1997, PCT Pub. No. WO97/04643, PCT Pub. Date Feb. 13, 1997

PCT Filed Jul. 25, 1996, Ser. No. 809,613

Claims priority, application Japan, Jul. 25, 1995, 7-219403

Int. Cl.[6] A01K *29/00*

U.S. Cl. 119—171 **32 Claims**

1. A mammalian excrement treating article comprising a plastic waste powder having a particle size of 3 mm or less, a smaller weight amount of a water-absorbable resin and an organic compounding material.

5,823,140

VARIABLE FOCUS MULTIDIRECTIONAL VIDEO OR CAMCORDER PLATFORM APPARATUS

Alan Owen Pittet, Keyport, N.J.; Phillip G. Lee, Galveston, Tex., and Jennifer C. Ellis, Tacoma, Wash., assignors to International Flavors & Fragrances Inc., New York, N.Y., and Board of Regents, The University of Texas System, Austin, Tex.

Division of Ser. No. 622,581, Mar. 26, 1996, which is a division of Ser. No. 413,440, Mar. 30, 1995, Pat. No. 5,579,723, which is a continuation-in-part of Ser. No. 279,181, Jul. 22, 1994, Pat. No. 5,474,030. This application Sep. 18, 1997, Ser. No. 932,703

Int. Cl.[6] A01K *29/00*

U.S. Cl. 119—174 **2 Claims**

1. A variable focus multidirectional video camera or camcorder/video camera or camcorder platform apparatus for facilitating visible wavelength radiation communication between a moving object and an image display of the moving object comprising:

(i) a horizontal static substantially rectangular planar base located in an "X-Y" plane, having an upper surface and having two substantially parallel ends parallel to the "X" axis and two substantially parallel ends parallel to the "Y" axis; with one end parallel to the "Y" axis being along a line designated "E_1";

(ii) a vertically disposed substantially rectangular planar frame located in a "Y-Z" plane, substantially perpendicular to said horizontal static planar base and having two parallel ends parallel to the "Y" axis and two parallel ends parallel to the "Z" axis, one of said ends parallel to the "Y" axis being contiguous with said static planar base along a first end, said line "E_1" of said static planar base, parallel to the "Y" axis, said frame having a first orifice therethrough permitting visible wavelength radiation to be transmitted therethrough;

(iii) a continuous right angle-shaped horizontal/vertical planar base/frame movable platform, movable in both the "X" and "Y" (or lateral) directions consisting of (a) a substantially rectangular horizontal lamina located in the "X-Y" plane facing and within the planar framework of said horizontal static planar base (i) plane and having an upper surface and a lower surface continuously and sealably juxtaposed in a direction parallel to line "E_1" along a line designated "E_2", said line "E_2" being proximate said line "E_1" with (b) a substantially rectangular vertical lamina located in the "Y-Z" plane facing and within the planar framework of said vertically disposed frame (ii) and containing a vertically disposed visible wavelength radiation shield ("blind") having a second orifice therethrough located opposite to and being planarly parallel to and within the planar framework of said first orifice in said vertically disposed frame, said right angle-shaped movable platform being located on rollers juxtaposed with and immediately adjacent said lower surface of said right angle-shaped movable platform and said upper surface of said horizontal static base;

(iv) a substantially rectangular rotating planar base having an upper surface and a lower surface and having two parallel ends parallel to the "Y" axis and two parallel ends parallel to the "X-Z" plane being rotatable about a vertex line "E_3" in a hinge manner having a direction parallel to each of lines "E_1" and "E_2" and being substantially proximate lines "E_1" and "E_2" along a first parallel hinge end in the "Y" direction parallel to the "Y" axis, having variable manually controllable rotation movement means located at an end of said rotating planar base opposite said first parallel hinge end, and opposite the location of said line "E_3", the direction of rotation of said rotating base being from the location of the "X-Y" plane of said right angle-shaped movable platform towards the location of the "Y-Z" plane of said right angle-shaped movable platform about the said vertex line "E_3"; and

(v) a video camera or camcorder fixedly mounted on the upper surface of said rotating planar base, comprising a housing and a lens located in said housing, the focal plane of said lens being substantially parallel to and at a controllably variable distance from the plane of said first orifice of said vertically disposed frame and said second orifice of said visible wavelength radiation shield with said lens, said first orifice and said second orifice all having a common line of vision;

whereby simultaneous manipulation of said rotating planar base and said right angle-shaped movable platform, when the video camera or camcorder is in operation, facilitate visible wavelength radiation communication between (a) an image display resulting from operation of said video camera or camcorder and (b) the image of the moving object being transmitted to said video camera or camcorder.

5,823,141

PROCESS AND FOR EXCITING, ATTRACTING, STIMULATING, AND/OR INCITING MEMBERS OF THE CLASS CRUSTACEA

Alan Owen Pittet, Keyport, N.J.; Phillip G. Lee, Galveston, Tex.; Jennifer C. Ellis, Tacoma, Wash., and Elizabeth A. McCliment, Galveston, Tex., assignors to International Flavors & Fragrances Inc., New York, N.Y., and Board of Regents, The University of Texas System, Austin, Tex.

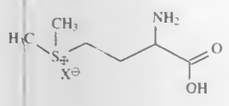
Continuation-in-part of Ser. No. 413,440, Mar. 30, 1995, Pat. No. 5,579,723, which is a continuation-in-part of Ser. No. 279,181, Jul. 22, 1994, Pat. No. 5,474,030. This application Mar. 28, 1996, Ser. No. 623,939

Int. Cl.[6] A01K *61/00;63/00*

U.S. Cl. 119—207 **14 Claims**

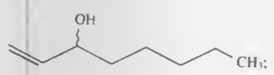
1. A process for attracting a member of the Class Crustacea from a volume of water inhabited by said member of the Class Crustacea to a desired surface or volume within a body of water comprising the step of applying an aqueous solution containing a Crustacea-attracting concentration of a material selected from the group consisting of:

(i) S-methyl methionine sulfonium halides defined according to the structure:

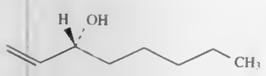


wherein X is a chloride or a bromide anion;

(ii) 1-octen-3-ol having the structure:

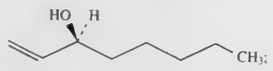


(a mixture of isomers having the structures:

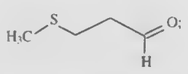


and

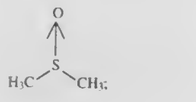
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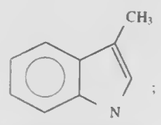
(iii) methional having the structure:



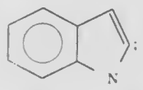
(iv) dimethyl sulfoxide having the structure:



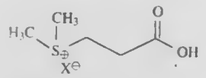
(v) a 50:50 mole:mole mixture of skatole/indole, skatole having the structure:



indole having the structure:



(vi) propionthetin halides having the structure:



wherein X is a chloride or a bromide anion;

(vii) ammonium chloride;

(viii) ammonium acetate;

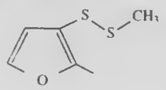
(ix) acetic acid;

(x) glucose;

(xi) "raw sugar", a mixture of sucrose and impurities;

(xii) Thaumatin;

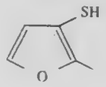
(xiii) 2-methyl-3-(methyldithio) furan having the structure:



(xiv) aqueous ammonia;

(xv) yeast extract; and

(xvi) 2-methyl-3-furanthiol having the structure:



to the vicinity of said desired surface or volume.

5,823,142

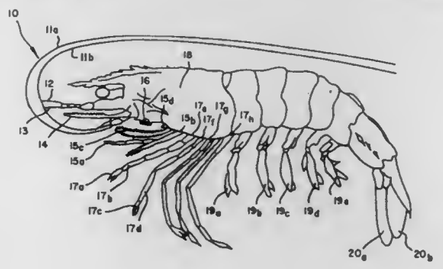
PROCESS FOR DETERMINING EXCITANTS, ATTRACTANTS, STIMULANTS AND INCITANTS FOR MEMBERS OF THE CLASS CRUSTACEA; METHOD FOR EXCITING AND/OR ATTRACTING AND/OR STIMULATING AND/OR INCITING MEMBERS OF THE CLASS CRUSTACEA AND FEEDING COMPOSITIONS INCLUDING EXCITAN

Giampietro Cardinale, Hilversum, Netherlands; Alan Owen Pittet, Keyport, N.J.; Phillip G. Lee, Galveston, Tex.; Jennifer C. Ellis, Tacoma, Wash., and Elizabeth A. McCliment, Galveston, Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex., and International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 623,939, Mar. 28, 1996, which is a continuation-in-part of Ser. No. 413,440, Mar. 30, 1995, Pat. No. 5,579,440, which is a continuation-in-part of Ser. No. 279,181, Jul. 22, 1994, Pat. No. 5,474,030. This application Oct. 30, 1997, Ser. No. 961,565

Int. Cl.[6] A01K *61/00*

U.S. Cl. 119—212 **17 Claims**



1. An enhanced, liquid feed composition for a member of the Class Crustacea comprising in intimate admixture:

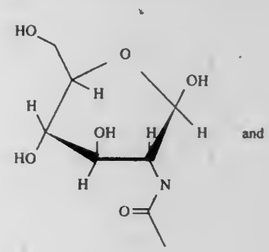
(a) water;

(b) sodium chloride;

(c) a basic fish meal-containing feed composition for a member of the Class Crustacea, and intimately admixed therewith;

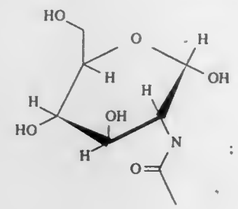
(d) an attracting and/or stimulating and/or inciting and/or exciting concentration and quantity of at least one feed enhancing substance in a concentration of from about 10^{-4} gram moles per liter down to about 10^{-21} gram moles per liter selected from the group consisting of:

(i) N-acetyl-D-Glucosamine, an epimeric mixture of compounds having the structures:

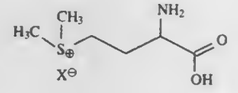


and

-continued

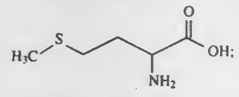


(ii) S-methyl methionine sulfonium halides defined according to the structure:

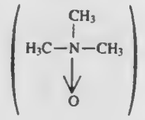


wherein X is a chloride or bromide anion;

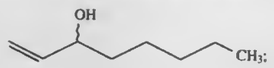
(iii) methionine having the structure:



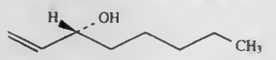
(iv) trimethyl amine oxide hydrate having the structure:



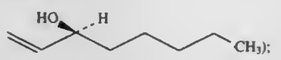
(v) 1-octen-3-ol having the structure:



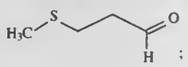
(a mixture of isomers having the structures:



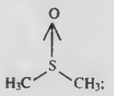
and



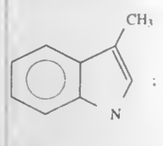
(vi) methional having the structure:



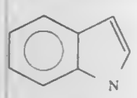
(vii) dimethyl sulfoxide having the structure:



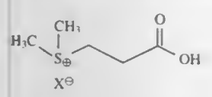
(viii) a 50:50 mole:mole mixture of skatole/indole, skatole having the structure:



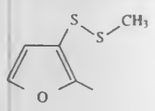
and
indole having the structure:



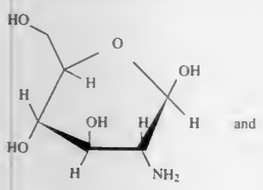
(ix) propionthetin halides having the structure:



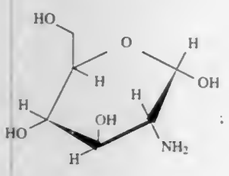
wherein X is a chloride or bromide anion;
(x) ammonium chloride;
(xi) ammonium acetate;
(xii) acetic acid;
(xiii) glucose;
(xiv) "raw sugar", a mixture of sucrose and impurities;
(xv) Thaumatin;
(xvi) 2-methyl-3-(methyldithio)furan having the structure:



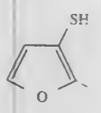
(xvii) aqueous ammonia;
(xviii) yeast extract;
(xix) D-Glucosamine, an epimeric mixture of compounds having the structures:



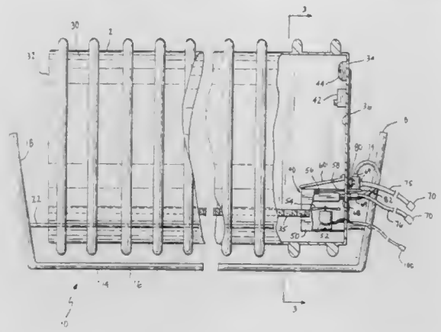
and



and
(xx) 2-methyi-3-furanthiol having the structure:



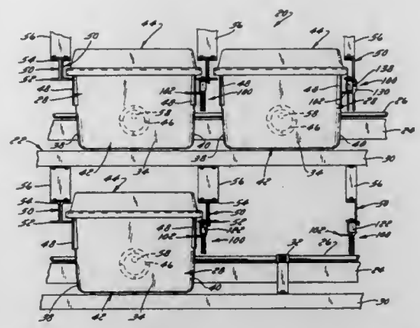
5,823,143
NEWBORN ANIMAL INCUBATOR FOR USE IN CONJUNCTION WITH AN AUTOMOBILE
Jerry A. Wilson, P.O. Box 261, Malta, Mont. 59538
Filed Jun. 20, 1997, Ser. No. 879,505
Int. Cl.[6] A01K *29/00*
U.S. Cl. 119—312 **18 Claims**



1. An apparatus for warming and drying a newborn animal, comprising:
a container having one wall defining an opening for allowing placement of the newborn animal into said container and removal of the newborn animal from said container;
means for covering said opening on said container, said means for covering being operable upon manipulation to expose said opening and to cover said opening;
a source of a liquid medium, wherein said source is the engine coolant system of an automobile;
a heat exchanger having a hydraulic inlet for receiving said liquid medium and a hydraulic outlet for discharging said liquid medium, and an air inlet for receiving air from the interior of said container and an air outlet for discharging air into the interior of said container; and
hydraulic connection means communicating between said hydraulic inlet and hydraulic outlet of said heat exchanger, and said source for said liquid medium.

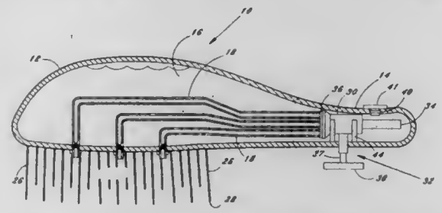
5,823,144
CAGE AND RACK SYSTEM INCORPORATING AUTOMATIC WATER DOCKING SYSTEM, LATCH MECHANISM, AND QUICK-CONNECT COUPLING
William E. Edstrom, Sr., Waterford; Glen W. Trickle, Elm Grove, and Peter S. Planton, Muskego, all of Wis., assignors to Edstrom Industries, Inc., Waterford, Wis.
Filed Feb. 14, 1996, Ser. No. 601,528
Int. Cl.[6] A01K *1/00*
U.S. Cl. 119—475 **8 Claims**

1. A cage and rack system comprising:
(A) a rack having at least one shelf;
(B) a water manifold mounted on said rack;
(C) a cage supported on said shelf, said cage having a front wall and a rear wall spaced longitudinally from one another and a



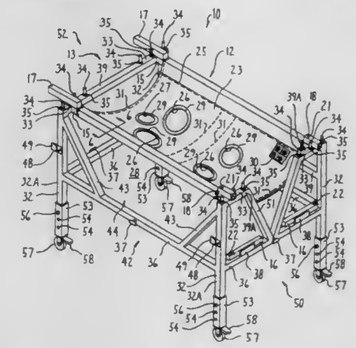
pair of opposed sidewalls spaced laterally from one another and connected to said front and rear walls; and
(D) a water docking system including
(1) a coupling, said coupling including a female fitting which is connected to said water manifold and a male fitting which is supported on said rear wall of said cage, an animal watering valve being connected to said male fitting of said coupling and extending into said cage, and
(2) a latch mechanism which is mounted on said rack, said latch mechanism including a latch catch which is movable 1) from a latched position in which said latch mechanism positively engages said front wall of said cage and holds said cage in a position in which said male fitting is sealingly inserted into said female fitting so as to permit water to therethrough, 2) to an unlatched position in which said latch mechanism is disengaged from said cage and permits removal of said cage from said shelf, wherein at least a portion of said latch mechanism is movable in a direction which has at least one component extending longitudinally of said cage as said latch mechanism moves between said latched position and said unlatched position.

5,823,145
PET FLEA BRUSH
Mark J. Hingiss, 3602 Forrest Hill Blvd. #115, West Palm Beach, Fla. 33406
Continuation-in-part of Ser. No. 621,794, Mar. 22, 1996. This application Jun. 14, 1996, Ser. No. 663,652
Int. Cl.[6] A01K *13/00*
U.S. Cl. 119—603 **13 Claims**



1. A pet flea brush for simultaneously grooming a pet animal and treating it for fleas with a flea-killing solution, said flea brush comprising:
a body structure;
a fluid reservoir defined by said body structure for holding the solution;
a plurality of bristles projecting outward from a selected area of said body structure;
fluid dispensing means, in fluid communication with said reservoir, for dispensing the solution when brushing the pet, said fluid dispensing means comprising at least one aperture in said body structure and a porous membrane, in fluid communication with said aperture and attached to said body structure, for absorbing and retaining the solution and dispensing the solution when brushing the pet;
a clip adaptable for attachment to said body structure for securing said membrane to said body structure, said clip simultaneously holding said membrane against said body structure and gripping said body structure; and
said body structure defining a pump means for forcing the solution from said reservoir to said fluid dispensing means when squeezing said base structure.

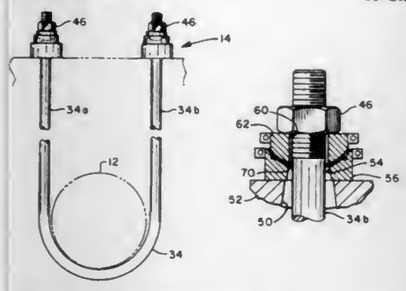
5,823,146
ANIMAL RESTRAINING DEVICE
Glenn R. Alaniz, Delton; William H. Claflin, Augusta; Deborah R. Reeves, Vicksburg, and Dale Vandermolen, Portage, all of Mich., assignors to Pharmacia & Upjohn, Kalamazoo, Mich.
Filed Jul. 28, 1997, Ser. No. 900,939
Int. Cl.[6] A61D *3/00*
U.S. Cl. 119—725 **16 Claims**



1. An animal restraining device, comprising:
a frame for supporting a litter in a position oriented above a floor surface, said frame having an animal head end, said frame including:
a plurality of elongate upright support posts resting on the floor and oriented spaced apart from and parallel to one another so as to define corners of a polygon configuration;
a plurality of horizontally oriented first frame members interconnecting respective pairs of said support posts at a location spaced downwardly from an upper end thereof;
a plurality of horizontally oriented second frame members extending coextensively with said perimeter and interconnecting respective pairs of said support posts adjacent said upper ends thereof on all but one side of said polygon configuration, said second frame member at said animal head end being configured to provide an upwardly opening access opening through which access to an animal head is facilitated; and
means defining a litter supporting first bearing surface adjacent said upper end of each said support post coplanar with others of said first bearing surfaces; and
said litter having at least two elongate support members, and a flexible material for holding an animal thereon connected to and extending between said support members, each said support member having means thereon defining second bearing surfaces oriented at locations thereon that coincide with said first bearing surfaces so that said second bearing surfaces will each rest on a respective one of said first bearing surfaces to support said litter thereon, said flexible material having plural animal leg receiving apertures therein so that legs of an animal supported on an upper side of said flexible material will extend through said apertures and dangle beneath said flexible material;
whereby as said litter is moved onto and off said frame in a general direction horizontally perpendicular to said one side,

the legs of the animal will dangle freely through a region of said frame that is free of a said second frame member thereby making it unnecessary to elevate said litter to a sufficient height to enable the legs of the animal to clear a second frame member.

5,823,147
STEAM GENERATOR STEAM DRUM MOUNTING
J. C. Hitchcock, Jr., Signal Mountain, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Jul. 30, 1997, Ser. No. 902,801
Int. Cl.[6] F22B *37/24*
U.S. Cl. 122—510 **18 Claims**



1. Apparatus for supporting an associated steam drum in an associated steam generator which comprises:

first and second U-shaped members dimensioned and configured for cradling the associated steam drum of the associated steam generator; each of said first and second U-shaped members having first and second elongated leg portions;

each of said leg portions being supported by a separate first body and said first body being supported by a separate second body; one of said bodies having a concave spherical section face and the other having a convex spherical section face, said concave spherical section face and said convex spherical section face being disposed in abutting load bearing relationship, whereby a discrete set of first and second bodies is associated with each of said leg portions,

each of said first bodies and said second bodies has a tapered bore disposed therein dimensioned for passage and free movement of one of said leg portions, each of said leg portions extending through a separate set of bodies that includes one first and one second body.

5,823,148
APPARATUS FOR INTRODUCING COMBUSTION SUPPORTING PARTICLES TO AN INTERNAL COMBUSTION ENGINE
Raymond W. Housand, Sr., 22875 22 Mile Rd., Paris, Mich. 49338
Filed May 29, 1996, Ser. No. 654,524
Int. Cl.[6] F02B *75/12*
U.S. Cl. 123—1 A **7 Claims**

1. An apparatus for introducing combustion supporting particles to an internal combustion engine, comprising:

a chamber for containing a volume of liquid fuel and a volume of vaporized fuel;

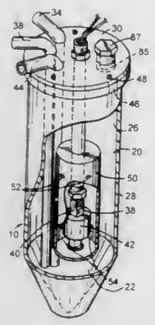
a supply of combustion supporting particles disposed within the chamber;

a conduit for supplying liquid fuel to the chamber;

a conduit for supplying atmospheric air to the chamber;

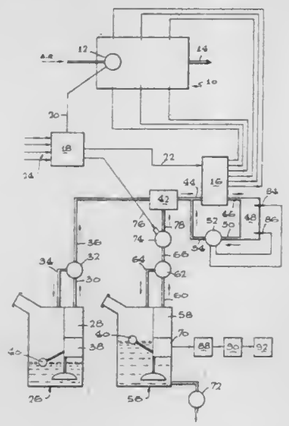
a liquid level controller for maintaining the volume of liquid fuel in the chamber within predetermined limits;

an outlet from the chamber for conveying a mixture of vaporized fuel, air and combustion supporting particles to a vacuum inlet of an internal combustion engine; and



a shroud surrounding the liquid level controller to prevent erroneous liquid level readings which may be caused by rapid fluctuations in the pressure of a vacuum inlet of an internal combustion engine.

5,823,149
WATER/FUEL MIXING SYSTEM FOR A GASOLINE ENGINE
Anatoly D. Mezheritsky, Vancouver, Canada, and Edward M. Halimi, Montecito, Calif., assignors to Turbodyne Systems, Inc., Carpinteria, Calif.
Filed Jul. 24, 1996, Ser. No. 690,313
Int. Cl.[6] F02B *47/02*
U.S. Cl. 123—25 A **36 Claims**



1. A water/gasoline mixing system for a gasoline engine, comprising:

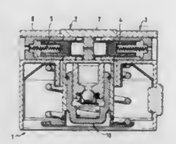
a gasoline delivery system for delivering gasoline to a gasoline engine;

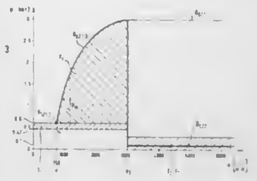
a gasoline tank for storing gasoline, a pump for withdrawing gasoline from said tank and delivering gasoline through a gasoline line to said engine gasoline delivery system;

a mixer connected to receive gasoline from said gasoline line, said mixer being connected to deliver liquid fuel to said gasoline delivery system;

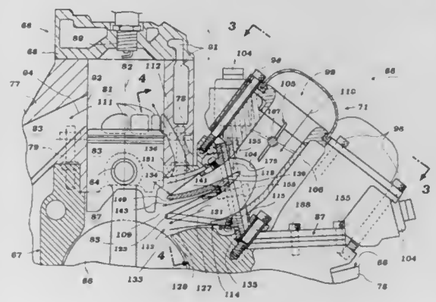
a water tank for storing water, a water line for delivering water from said water tank through the water line to said mixer, a valve in said water line to said mixer to stop flow of water to said mixer; and

an engine controller, said engine controller being connected to said gasoline delivery system for delivering gasoline to the engine in accordance with engine demand, said engine controller also being connected to said water valve to terminate water flow to said mixer prior to engine shutdown so that said gasoline delivery system downstream of said mixer is purged of water by said pump for withdrawing gasoline before engine shutdown.





5,823,150
INDUCTION SYSTEM FOR TWO CYCLE ENGINE
Tsugunori Konakawa, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan
Continuation of Ser. No. 994,931, Dec. 22, 1992, abandoned. This application Feb. 22, 1994, Ser. No. 200,932
Claims priority, application Japan, Dec. 27, 1991, 3-359229; Dec. 27, 1991, 3-359230; Dec. 27, 1991, 3-359231; Dec. 27, 1991, 3-359232; Jan. 14, 1992, 4-024723
Int. Cl.[6] F02B *33/04*
U.S. Cl. 123—73 V **100 Claims**

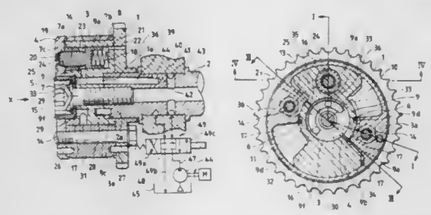


1. A reed type valve arrangement for a reciprocating machine having a passage serving a variable volume chamber of said machine, a mounting plate adapted to be affixed within said passage and having a flow passage extending therethrough, a first caging member formed integrally with said mounting plate and dividing said flow passage into a first portion terminating in a first valved opening and a second portion, a second caging member detachably affixed to said first caging member and in registry with said second portion of said flow passage, said second caging member forming a second valved opening in communication with said second portion of said flow passage, at least one of said caging members defining a third valved opening communicating with the respective portion of said flow passage, and means for affixing first, second and third reed valve elements across said first, second and third valved openings, respectively, for controlling the flow therethrough, the means for affixing one of said reed valve elements to its valved opening also constituting the means for affixing said second caging member to said first caging member.

5,823,151
VALVE GEAR CAM FOLLOWER IN AN INTERNAL COMBUSTION ENGINE
Harald Elendt, Wilhelmsdorf; Michael Haas, Weisendorf, and Gerhard Maas, Herzogenaurach, all of Germany, assignors to Ina Walzlager Schaeffler KG, Germany
PCT No. PCT/EP96/01227, § 371 Date Oct. 20, 1997, § 102(e) Date Oct. 20, 1997, PCT Pub. No. WO96/34185, PCT Pub. Date Oct. 31, 1996
PCT Filed Mar. 21, 1996, Ser. No. 930,529
Claims priority, application Germany, Apr. 26, 1995, 195 15 284.0
Int. Cl.[6] F01L *13/00;1/14;1/24*
U.S. Cl. 123—90.16 **5 Claims**

1. A cam follower (1) of a valve drive of an internal combustion engine, having means for switching to at least two different lifts of at least one gas exchange valve, comprising an inner element (2) and an outer element (3) which are concentric relative to each other and can be coupled to each other at least indirectly by coupling means (4) which are displaceable radially so that, in a coupled state of said inner and outer element (2,3), a larger valve lift, and in an uncoupled state thereof, a smaller valve lift is realized, the coupling means (4) effecting coupling of said inner and outer element (2,3) under the force of a spring means (5) and uncoupling under hydraulic pressure, said cam follower (1) further comprising two separate channels (9, Z_2; 8, Z_1) starting from the outer element (3) and extending in the inner element (2) to supply hydraulic medium pressure to the coupling means (4) and to a hydraulic clearance compensation device (10), a control valve (11) being arranged in front of the channel (9, Z_2) to the coupling means (4), said control valve (11), during warm running of the internal combustion engine and during operation thereof in the partial and full load range, reduces the hydraulic pressure in the channel (9, Z_2) to a level which is lower than and distinct from the hydraulic pressure which serves to displace the coupling means (4) for uncoupling the elements (2, 3) so that a coupled state of the two elements (2, 3) prevails, characterized in that the force of the spring means (5) is designed so that an uncoupling is effected against the spring force by a hydraulic pressure which, at an operating temperature of the internal combustion engine is less than a minimum hydraulic pressure required for the clearance compensation device (10).

5,823,152
CONTROL APPARATUS FOR VARYING A ROTATIONAL OR ANGULAR PHASE BETWEEN TWO ROTATIONAL SHAFTS, PREFERABLY APPLICABLE TO A VALVE TIMING CONTROL APPARATUS FOR AN INTERNAL COMBUSTION ENGINE
Masayasu Ushida, Okazaki, Japan, assignor to Nippondenso Co., Ltd., Japan
Filed Jun. 13, 1996, Ser. No. 663,525
Claims priority, application Japan, Jun. 14, 1995, 7-147123; Oct. 17, 1995, 7-268832; Nov. 28, 1995, 7-308995
Int. Cl.[6] F01L *1/344*
U.S. Cl. 123—90.17 **10 Claims**



1. A rotational or angular phase control apparatus interposed between first and second rotational shafts for varying a rotational or angular phase between said first and second rotational shafts, said apparatus comprising:

a housing (1, 3, 4) connected to said first rotational shaft and rotatable together with said first rotational shaft;

a rotor (9) connected to said second rotational shaft and accommodated in said housing so as to cause a rotation within a predetermined angle with respect to said housing;

said rotor and said housing cooperatively defining a chamber whose volume is variable in accordance with a rotational position of said rotor with respect to said housing;

a locking member (**7**) provided in one of said housing and said rotor and shiftable in a direction parallel to a rotational axis common to said housing and said rotor; and

an engaging bore (**20**) provided in the other of said housing and said rotor for receiving said locking member.

5,823,153

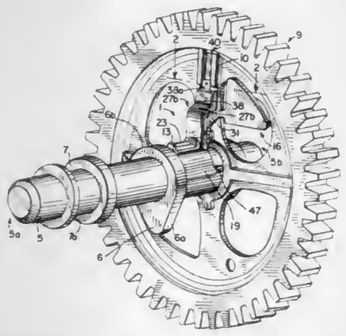
COMPRESSING RELEASE WITH SNAP-IN COMPONENTS

John D. Santi, West Allis, and David A. Kratz, Brookfield, both of Wis., assignors to Briggs & Stratton Corporation, Wauwatosa, Wis.

Filed May 8, 1997, Ser. No. 853,339

Int. Cl.[6] F01L *13/08*

U.S. Cl. 123—182.1 **16 Claims**



1. A compression release apparatus for relieving compression in at least one combustion chamber of an engine, said engine having a rotatable cam shaft, a cam gear and a valve operating device associated with said chamber, comprising:

a base member having a shape that substantially corresponds to an outer surface of said cam shaft;

an arm interconnected with said base member, said arm abutting a surface on said cam gear;

a lift member engageable with said valve operating device; and

a centrifugally-responsive means for changing the position of said lift member in response to engine speeds.

5,823,154

INTERNAL COMBUSTION ENGINE WITH A CAM DRIVE

Uwe Kuhn, Riederich; Juergen Kirschner, Wimsheim, and Sandro Soccol, Bietigheim-Bissingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE96/01584, § 371 Date Aug. 29, 1997, § 102(e) Date Aug. 29, 1997, PCT Pub. No. WO97/24514, PCT Pub. Date Jul. 10, 1997

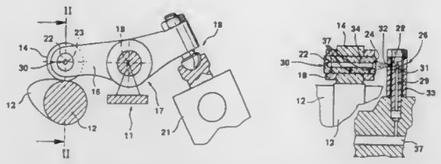
PCT Filed Aug. 27, 1996, Ser. No. 894,832

Claims priority, application Germany, Dec. 30, 1995, 195 49 221.8

Int. Cl.[6] F01M *9/10*; **F01L** *1/18*

U.S. Cl. 123—90.33 **20 Claims**

1. An internal combustion engine comprising a cylinder head, a cam drive (**11**), a rocker arm (**16**) pivotably supported in the cylinder head, a roller (**14**) supported in the rocker arm (**16**), said roller rolls on a cam path of a cam (**13**) of a camshaft (**12**) and is intended for driving a reciprocating component (**21**), the roller (**14**) is supported in the rocker arm (**16**) on a roller bolt (**22**), said roller bolt includes on at least one face end (**24**) a bore (**30**) leading to a



bearing point of the roller (**14**), to which bore lubricant is delivered on the face end upon execution of a reciprocating motion by a lubricant delivery device (**26**) associated in a region of the reciprocation path executed by the roller bolt.

5,823,155

CONTROL CIRCUIT FOR AN INCANDESCENT ELEMENT

Erwin Burner, Adelberg, Germany, assignor to J. Eberspächer GmbH & Co., Esslingen, Germany

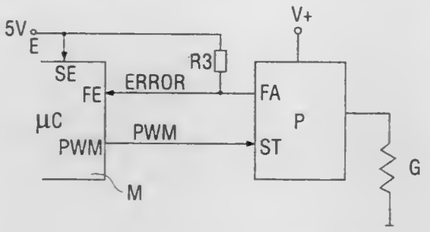
PCT No. PCT/EP95/05048, § 371 Date Jun. 16, 1997, § 102(e) Date Jun. 16, 1997, PCT Pub. No. WO96/19664, PCT Pub. Date Jun. 27, 1996

PCT Filed Dec. 20, 1995, Ser. No. 875,324

Claims priority, application Germany, Dec. 22, 1994, 44 46 113.5

Int. Cl.[6] F02B *9/08*

U.S. Cl. 123—145 A **20 Claims**



1. An ignition device for igniting fuel in a heating apparatus, the ignition device comprising:

a glow pin without a regulating filament;

direct voltage source means for providing heating energy, said direct voltage source means having a supply voltage terminal with a high potential and a ground terminal with a low potential;

switching means connected in series with said glow pin between said supply voltage terminal and said ground terminal of said direct voltage source means, said switching means alternatingly turning on and off said heating energy to said glow pin in a modulated and clocked manner, said switching means includes a semiconductor power switch connected between said supply voltage terminal and said glow pin, said semiconductor power switch including a control terminal;

pulse modulation means for measuring an actual voltage of said voltage source and for feeding said control terminal of said semiconductor power switch with switching control pulses having a high pulse frequency and modulated in accordance with fluctuations in said actual voltage of said direct voltage source in a manner to cause a glow temperature of said glow pin to remain substantially constant irrespective of said fluctuations of said actual voltage of said direct voltage source and despite switching-off periods of said clocked manner, said pulse modulation means includes a microcontroller using one of an algorithm stored in said microcontroller, and a table stored in said microcontroller, to associate said actual voltage of the direct voltage source with a degree of modulation of said switching control pulses to provide a substantially constant amount of heating energy to said low pin.

5,823,156

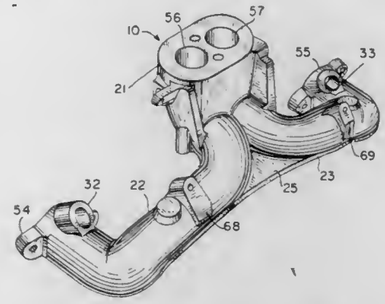
DUAL BORE INTAKE MANIFOLD

Timothy S. Thiel, Plymouth, and Victor Van Dyke, Sheboygan, both of Wis., assignors to Kohler Co., Kohler, Wis.

Filed Apr. 9, 1997, Ser. No. 833,757

Int. Cl.[6] F02M *35/10*

U.S. Cl. 123—184.31 **5 Claims**



1. A one-piece dual bore intake manifold comprising:

first and second conduit members having first and second ends, the first and second conduit members constructed and arranged to provide independent flow paths from the first ends to the second ends;

a throttle control housing having two separate passages connected to each of the first ends for separate communication with the first and second conduit members, the first and second conduit members and the throttle control housing constructed as a one-piece unit, and the second ends of said conduit members adapted to be connected to engine cylinders.

5,823,157

CONSTRUCTION OF AN INTAKE PASSAGE HAVING A VARIABLE CROSS-SECTIONAL AREA AND LENGTH FOR AN INTERNAL COMBUSTION ENGINE

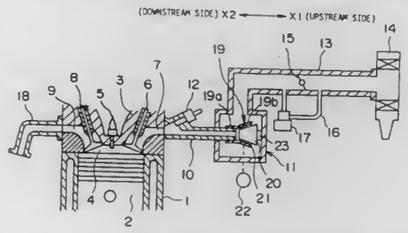
Hiroaki Muramatsu, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi-ken, Japan

Filed Mar. 11, 1997, Ser. No. 814,223

Claims priority, application Japan, Mar. 29, 1996, 8-077357

Int. Cl.[6] F02B *75/18*

U.S. Cl. 123—184.56 **12 Claims**



1. A construction of an intake passage for an internal combustion engine, said intake passage provided for supplying intake air to an intake port of said internal combustion engine, said construction of an intake passage comprising:

a first intake pipe having a first end and a second end, said first end connected to said intake port of said internal combustion engine;

a second intake pipe movably connected to said first intake pipe, said second intake pipe having an open end protruding from said second end of said first intake pipe so as to introduce air therethrough to said first intake pipe, a cross-sectional area of said second intake pipe gradually increasing toward said open end; and

a projection protruding into an interior of said second intake pipe through said open end.

5,823,158

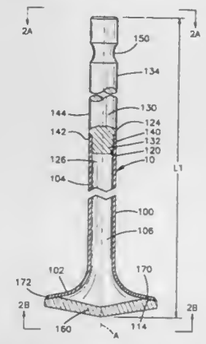
ENGINE VALVE AND METHOD FOR MAKING THE SAME

Rudy J. Heimann, Jr., Brunswick; Victor D. Levin, Highland Heights; William Neumann, Lakewood; Joseph L. Palko, Strongsville, and Robert E. Southam, Hudson, all of Ohio, assignors to TRW Inc., Lyndhurst, Ohio

Continuation-in-part of Ser. No. 811,334, Mar. 4, 1997, Pat. No. 5,771,852. This application Oct. 16, 1997, Ser. No. 950,103

Int. Cl.[6] F02M *3/00*

U.S. Cl. 123—188.3 **16 Claims**



1. An internal combustion engine valve to be reciprocated in a valve guide in an engine, said valve comprising:

a valve stem centered on an axis and comprising first and second parts,

said first part comprising a hollow metal member having an outwardly flared first end portion and a second end portion, said hollow metal member having a chamber extending axially throughout said member, said chamber comprising a flared chamber portion defined by said first end portion and a cylindrical chamber portion defined by said second end portion, said chamber being open at said first end portion, said hollow metal member being one piece of homogenous material,

said second part comprising a metal piece coaxial with said hollow metal member, said metal piece having first and second ends, said first end having a first weld connection to said second end portion of said hollow metal member, said second end being spaced from said hollow metal member, said metal piece having a solid cross-section portion between said first and second ends, said metal piece having a circumferential groove in said solid cross-section portion, said metal piece being one piece of homogenous material; and

a metal cap centered on said axis and coaxial with said hollow metal member, said cap having a periphery and a second weld connection at said periphery to said outwardly flared first end portion of said hollow metal member, said cap closing said flared chamber portion of said hollow metal member at said flared first end portion and having an inner surface facing into said chamber, said inner surface of said cap being conical in shape and tapering axially away from said hollow metal member as said inner surface extends from said periphery toward said axis, said cap having an outer surface which is conical in shape and tapering axially away from said hollow metal member as said outer surface extends from said periphery toward said axis, said metal cap being one piece of homogenous material.

13. A method of making an internal combustion engine valve to be reciprocated in a valve guide in an engine, said method comprising the steps of:

making a first valve stem part of one piece of homogenous material and comprising a hollow metal member having an outwardly flared first end portion and a second end portion, said hollow metal member having a chamber extending axially throughout said member, said chamber comprising a flared chamber portion defined by said first end portion and a cylindrical chamber portion defined by said second end portion, said chamber being open at said first end portion;

making a second valve stem part which is one piece of homogenous material and comprising a metal piece having first and second ends and having a solid cross-section portion between said first and second ends;

making a continuous circumferential groove in said solid cross-section portion;

welding said first end of said metal piece to said second end portion of said hollow metal member so that said metal piece and said hollow metal member are coaxial, said second end being spaced from said hollow metal member;

making a metal cap of one piece of homogeneous material and having a periphery, an inner surface, and an outer surface, said inner surface being conical in shape and tapering axially away from said hollow metal member as said inner surface extends inward from said periphery, said cap having an outer surface which is conical in shape and tapering axially away from said hollow metal member as said outer surface extends inward from said periphery; and

welding said periphery of said metal cap to said outwardly flared first end portion of said hollow metal member to close said flared chamber portion with said inner surface facing into said chamber.

5,823,159

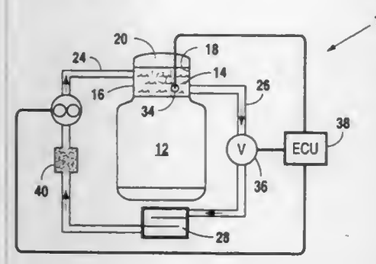
INDEPENDENT VALVE TRAIN LUBRICATION SYSTEM

Susumu Ariga, San Antonio, Tex., assignor to Southwest Research Institute, San Antonio, Tex.

Filed Sep. 26, 1997, Ser. No. 938,625

Int. Cl.[6] F01M *9/10*

U.S. Cl. 123—196 AB **8 Claims**



1. A valve train lubrication system for an internal combustion engine having a cylinder head, a plurality of engine valves actuated by a camshaft mounted above the cylinder head wherein said camshaft is rotatable disposed within an enclosed cavity having a lower portion defined by a portion of said cylinder head and an upper portion defined by a valve cover, said valve train lubrication system being mutually exclusive of an engine lubrication system providing lubrication to the interior of the cylinders, pistons, crankshaft and connecting rods of the engine, and comprising:

an oil reservoir disposed in a lower portion of said enclosed cavity;

an oil pump in fluid communication with said oil reservoir;

a drain conduit in fluid communication with said oil reservoir;

a heat exchanger in fluid communication with said drain conduit and with said oil pump;

a temperature sensor arranged to sense the temperature of oil in said oil reservoir;

a flow control valve in fluid communication with said heat exchanger; and

an electronic control unit in electrical communication with said temperature sensor and said flow control valve.

5,823,160

CONTROL APPARATUS FOR AN IN-CYLINDER INJECTION INTERNAL COMBUSTION ENGINE

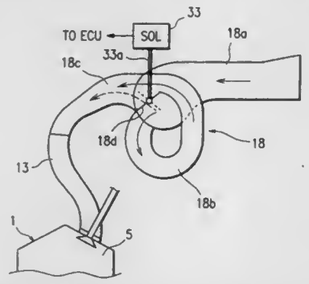
Hideyuki Oda, Nagoya; Kenji Goto, and Masayuki Miyamoto, both of Kyoto, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 11, 1997, Ser. No. 990,324

Claims priority, application Japan, Dec. 13, 1996, 8-334155

Int. Cl.[6] F02M *35/10;* **F02B** *17/00*

U.S. Cl. 123—295 **4 Claims**



1. A control apparatus of an in-cylinder injection type internal combustion engine which is selectively operated in at least either a compression-stroke injection mode where fuel is injected in a compression stroke or an intake-stroke injection mode where the fuel is injected in an intake stroke of the engine, comprising:

an induction control system for changing an effective length of an intake passage through which air is introduced into a combustion chamber of the engine; and

intake-passage length control means for operating said induction control system to change the effective length of the intake passage in accordance with the selected injection mode, said induction control system being operable, under control of the intake-passage length control means in the compression-stroke injection mode, to make the effective length of the intake passage shorter than that for the intake-stroke injection mode.

5,823,161

FUEL INJECTION DEVICE FOR INTERNAL COMBUSTION ENGINES

Detlev Potz, Stuttgart; Guenter Lewentz, Hemmingen; Ralf Maier, Schwaebisch Gmuend; Stefan Kampmann, Gerlingen; Uwe Gordon, Markgroeningen; Andreas Kreh, and Nestor Rodriguez-Amaya, both of Stuttgart, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/EP96/00230, § 371 Date Feb. 25, 1997, § 102(e) Date Feb. 25, 1997, PCT Pub. No. WO96/25596, PCT Pub. Date Aug. 22, 1996

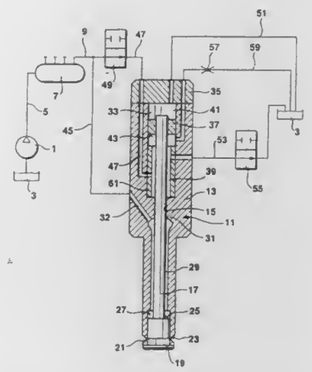
PCT Filed Jan. 19, 1996, Ser. No. 722,200

Claims priority, application Germany, Feb. 15, 1995, 195 04 849.0

Int. Cl.[6] F02B *5/00;* **F02M** *61/18*

U.S. Cl. 123—305 **23 Claims**

1. A fuel injection device for internal combustion engines, having a high-pressure fuel pump (1), which pumps fuel from a low-pressure chamber (3) via a feed line (5) into a high-pressure collection chamber (7), said high-pressure collection chamber communicates via high-pressure lines (9) with individual injection valves (11), each of said individual injection valves protrude into a combustion chamber of the engine to be supplied, the opening and closing motions of said valves are each controlled by one control



valve inserted into the high-pressure line (9) at the injection valve (11), the injection valve (11) has an outward-opening valve member (17), and a variable fuel injection cross section at the injection valve (11) can be adjusted via a controllable opening stroke motion in a direction of the combustion chamber.

5,823,162

WAY OF OPERATION OF DISTRIBUTION MECHANISM OF A FOUR-STROKE INTERNAL COMBUSTION ENGINE

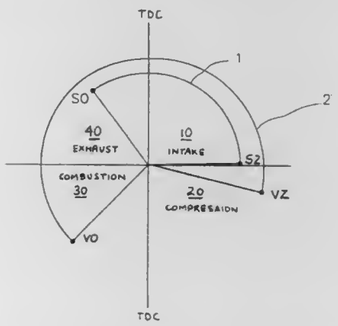
Jan Pavlicek, Bohumila Martinu 38, 602 00 Brno, Czech Rep.; Lubos Jakubec, Salmova 1, 678 01 Blansko, Czech Rep., and Mojmir Robes, Sychotin 75, 679 72 Kunstat na Morave, Czech Rep.

Filed Jun. 3, 1997, Ser. No. 868,130

Claims priority, application Czech Rep., Jun. 6, 1996, 1639-96

Int. Cl.[6] F02B *15/00*

U.S. Cl. 123—311 **3 Claims**



1. A method of operating a distribution system of a four-stroke internal combustion engine having an intake stroke, a compression stroke, a combustion stroke and an exhaust stroke, including a suction mechanism for drawing a gaseous mixture of air and fuel into a cylinder, and an exhaust mechanism for exhausting combustion products from the cylinder, the method comprising:

opening the exhaust mechanism to exhaust combustion products of the internal combustion engine from the cylinder during the combustion stroke, the exhaust mechanism being open for a period of at least 410° of a 720° four-stroke cycle;

opening the suction mechanism to draw the gaseous mixture into the cylinder during the exhaust stroke after the exhaust mechanism is opened;

closing the suction mechanism to close the cylinder and prevent take-up of the gaseous mixture into the cylinder before a bottom turning point of the intake stroke; and

closing the exhaust mechanism to stop exhaust of the combustion products from the cylinder during the compression stroke.

5,823,163

INTAKE AIR-FLOW CONTROL DEVICE FOR AN INTERNAL COMBUSTION ENGINE

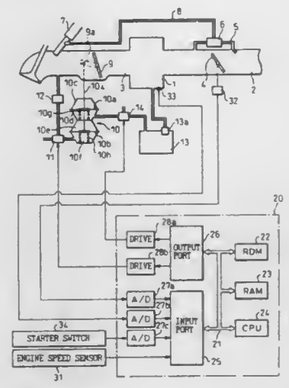
Koichi Hoshi, Susono, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Aichi, Japan

Filed Mar. 19, 1997, Ser. No. 820,138

Claims priority, application Japan, Mar. 27, 1996, 8-072601

Int. Cl.[6] F02D *09/02*

U.S. Cl. 123—336 **11 Claims**



1. An intake air-flow control device for an internal combustion engine including at least one cylinder, the intake air-flow control device comprising:

a first intake air-flow control valve for controlling an amount of intake air supplied to the at least one cylinder;

a first negative pressure actuator for opening the first intake air-flow control valve from a partly opened condition to a fully opened condition when a negative pressure is supplied to the first negative pressure actuator; and

first pressure control means for supplying negative pressure to the first negative pressure actuator when a current engine load exceeds a predetermined value

wherein, when an operating condition of the vehicle becomes a rapid acceleration condition, the predetermined value is reduced.

5,823,164

THROTTLE CONTROL DEVICE

Masato Seki, Obu, and Takamasa Kitamura, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

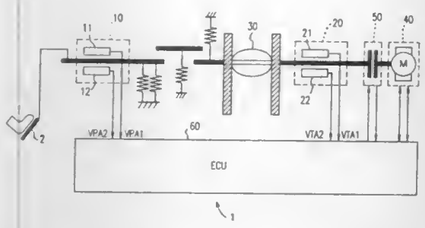
Filed Dec. 12, 1997, Ser. No. 990,021

Claims priority, application Japan, Dec. 19, 1996, 8-340174

Int. Cl.[6] F02D *41/22*

U.S. Cl. 123—396 **3 Claims**

1. A throttle control device for controlling a throttle based on outputs of a position sensor including a first sensor and a second sensor which detect a position of a same object,



wherein, when an abnormality is detected in one of the first sensor and the second sensor, throttle control is continued based on the output of the other sensor in which no abnormality is detected, and the throttle control is discontinued when the detection of the abnormality in one of the first sensor and the second sensor continues for a first predetermined time, and

when an abnormality is detected in both the first sensor and the second sensor, throttle control is continued based on the output of one of the first sensor and the second sensor, and the throttle control is discontinued when the detection of the abnormality in both the first sensor and the second sensor continues for a second predetermined time which is shorter than the first predetermined time.

5,823,165

VALVE ACTUATOR ARRANGEMENT FOR INTERNAL COMBUSTION ENGINE

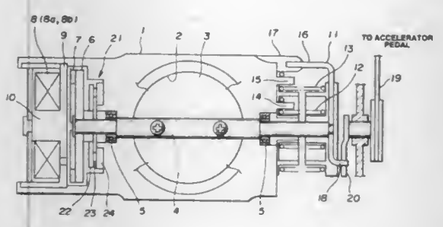
Hisaaki Sato, Gunma; Masato Kumagai, Saitama; Munehiro Kudo, and Keiichi Kai, both of Gunma, all of Japan, assignors to Unisia Jecs Corporation, Atsugi, Japan

Filed Feb. 21, 1997, Ser. No. 803,881

Claims priority, application Japan, Feb. 23, 1996, 8-036911; Jun. 11, 1996, 8-171868; Jun. 11, 1996, 8-171869

Int. Cl.[6] F02D *41/00*; **F16K** *31/02*

U.S. Cl. 123—399 **23 Claims**



1. A valve actuator arrangement for an internal combustion engine, comprising:

a valve structure having a valve body and a rotary valve axle;

an electric motor structure having a generally disc shaped body fixed on one end of said valve axle so as to be integrally pivoted with said valve axle;

a permanent magnet fixed on said disc-shaped body;

a fixing member fixed on the one end of said valve axle; and

a pair of windings to form a pair of coils whose winding directions are mutually opposite to each other and wound around said fixing member so that a direction of a magnetic flux developed between each of said pair of windings and said permanent magnet is parallel to said valve axle.

5,823,166

APPARATUS FOR MONITORING THE CYLINDERS OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Robert Entenmann, Benningen, and Klaus Ries-Müller, Rappenau, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

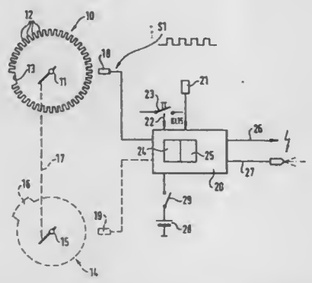
PCT No. PCT/DE96/00988, § 371 Date Feb. 3, 1997, § 102(e) Date Feb. 3, 1997, PCT Pub. No. WO96/41938, PCT Pub. Date Dec. 27, 1996

PCT Filed Jun. 5, 1996, Ser. No. 776,707

Claims priority, application Germany, Jun. 10, 1995, 195 21 277.0

Int. Cl.[6] F02D *41/34*

U.S. Cl. 123—414 **9 Claims**



1. An apparatus for cylinder recognition in an internal combustion engine, comprising a control unit for controlling cyclically repeating operating events selected from the group consisting of ignition events and injection events; a crankshaft sensor outputting signals that allow detection of an ambiguous angular position of a crankshaft referred to an operating stroke of the engine; means for ascertaining an rpm of the crankshaft based on the signals of said crankshaft sensor; and a memory, said ascertaining means ascertaining a first parameter selected from the group consisting of a course of the rpm and a variable dependent on the course of the rpm after the engine is turned over at least one operating cycle of the engine, which parameter is stored in said memory, said ascertaining means ascertaining a next time the engine is turned on the rpm course again; and means for comparing the again ascertained rpm course with the memorized rpm course for detecting cylinder-characteristic rpm fluctuations and hence for cylinder identification.

5,823,167

CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hironao Fukuchi; Takanori Shiina; Kenji Nakano; Katsuhiro Kumagai, and Yoshihisa Hara, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 6, 1997, Ser. No. 812,881

Claims priority, application Japan, Mar. 7, 1996, 8-078089

Int. Cl.[6] F02P *5/14*

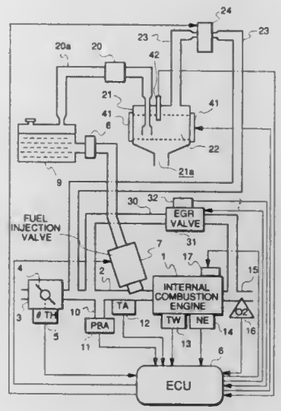
U.S. Cl. 723—421 **11 Claims**

1. A control system for an internal combustion engine having an intake system, a fuel tank, a canister for adsorbing evaporative fuel generated in said fuel tank, a purging passage extending between said canister and said intake system, for purging evaporative fuel into said intake system, and a purge control valve arranged across said purging passage, for controlling a flow rate of evaporative fuel supplied to said intake system through said purging passage;

the control system comprising:

engine control means for controlling said engine, based on at least one predetermined engine control parameter;

canister temperature-detecting means for detecting temperature of said canister; and



parameter-changing means for changing said at least one predetermined engine control parameter according to the temperature of said canister detected by said canister temperature-detecting means.

5,823,168

FUEL INJECTION PUMP

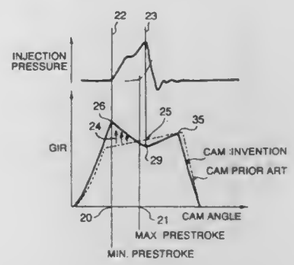
Takashi Otob, and Mitsuhiro Murata, both of Kawasaki, Japan, assignors to Isuzu Motors Limited, Tokyo, Japan

Filed Dec. 3, 1996, Ser. No. 753,992

Claims priority, applIcation Japan, Dec. 6, 1995, 7-318094

Int. Cl.[6] F02M *59/26*

U.S. Cl. 123—496 **3 Claims**



1. A fuel injection pump comprising:

a sleeve;

a plunger movable received in the sleeve; and

a cam for moving the plunger up and down in the sleeve for fuel injection, the cam having a shape defined by a plurality of portions, wherein the plunger reciprocates in the longitudinal direction of the sleeve to delay or advance a timing of fuel injection and to use different portions of the cam from start of fuel injection to end of fuel injection, the shape of the cam causing a geometric fuel injection rate to drop from the start of fuel injection to the end of fuel injection when the fuel injection timing is most advanced by shifting the sleeve downward.

5,823,169

AGGREGATE FOR FEEDING FUEL FROM SUPPLY TANK TO INTERNAL COMBUSTION ENGINE

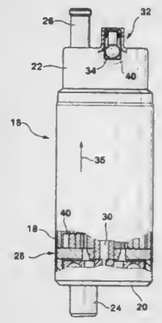
Willi Strobl, Beilstein; Georg Haeussler, Ditzingen; Jochen Rose, Hemmingen; Oliver Wahl, Schwieberdingen, and Erich Eiler, Sachsenheim 1, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 29, 1997, Ser. No. 841,152

Claims priority, application Germany, May 8, 1996, 196 18 452.5

Int. Cl.[6] F02M *37/04*

U.S. Cl. 123—516 **21 Claims**



1. An aggregate for feeding fuel from a fuel supply tank to an internal combustion engine, the aggregate comprising a housing through which fuel flows; a feeding pump and a motor which drives said pump, said feeding pump and a motor which drives said pump, said feeding pump and said motor being arranged in said housing so that behind said feeding pump as considered in a flow direction a pressure chamber limited by said feeding pump is provided; a valve communicating said pressure chamber with an outer chamber, said valve having a closing element which during a normal operation of said feeding aggregate is held in a closing position so that said pressure chamber is filled with fuel and separated from said outer chamber, said valve having a first passage with a first fluid flow which directly communicates said pressure chamber with said outer chamber when said valve is in open position, a second passage with a second fluid flow flowing around said closing element and leading to a joint opening toward said outer chamber, so that with increasing first fluid flow a pressure difference on opposite sides of said closing element.

5,823,170

METHOD AND APPARATUS FOR REDUCING ENGINE NOX EMISSIONS

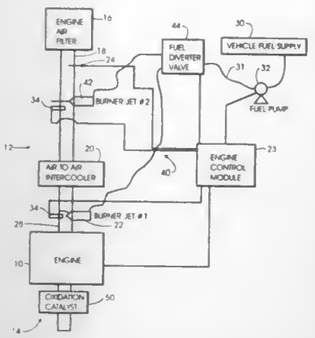
Edward J. Sienicki, Hickory Hills, Ill., assignor to Navistar International Transportation Corp., Chicago, Ill.

Filed Aug. 22, 1997, Ser. No. 916,861

Int. Cl.[6] G05D *23/00*

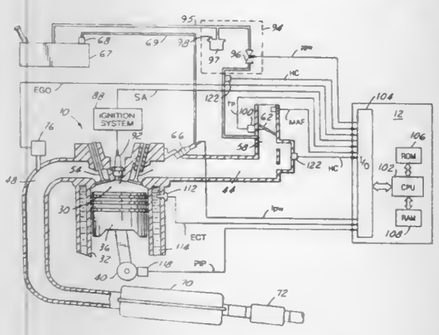
U.S. Cl. 123—551 **11 Claims**

1. In combination with a diesel engine an emissions control apparatus for use in decreasing NOx emissions in diesel engine exhaust gas by fumigating CO_2 into engine intake air, the diesel engine having at least an electronic controller, a temperature sensor functionally engaged thereto, an air intake system including an intercooler therein, an exhaust system, a fuel system including a fuel pump, and the emissions control apparatus comprising a burner engaged within the air intake system upstream of the intercooler, the burner being functionally supplied with fuel from said fuel system and being operated by the electronic controller to



ignite during periods of sensed warm running of the engine to fumigate CO_2 into the engine intake air.

5,823,171
ENGINE CONTROL SYSTEM FOR AN ENGINE COUPLED TO A FUEL VAPOR RECOVERY
David George Farmer, Plymouth; Gopichandra Surnilla, and Daniel V. Orzel, both of Westland, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Apr. 3, 1997, Ser. No. 826,607
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—704 **10 Claims**



1. A method for controlling air/fuel ratio of an engine having a fuel vapor recovery system coupled to an air/fuel intake, comprising the steps of:

measuring ambient air inducted into the air/fuel intake;

delivering fuel to the engine in proportion to said inducted ambient air measurement;

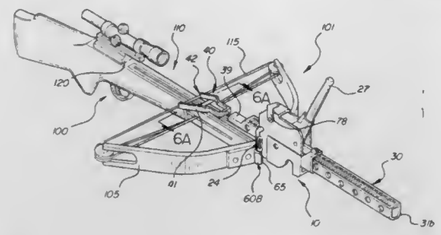
purging air through the fuel vapor recovery system to induct a mixture of said purged air and fuel vapor from the fuel vapor recovery system into the air/fuel intake;

measuring an air/fuel vapor ratio of said inducted mixture of purged air and ambient air and fuel vapor from a hydrocarbon sensor positioned in the air/fuel intake;

calculating mass per unit of time of said fuel vapor inducted into the air/fuel intake from said air/fuel vapor measurement and said inducted ambient air measurement; and

adjusting said delivered fuel with said calculated fuel vapor mass to maintain a desired air/fuel ratio.

5,823,172
CROSSBOW BOW STRING DRAWING DEVICE
Jack A. Suggitt, 626 Osband, Ypsilanti, Mich. 48198
Continuation-in-part of Ser. No. 533,267, Sep. 25, 1995, abandoned. This application Jan. 27, 1997, Ser. No. 791,481
Int. Cl.[6] F41B *5/12*
U.S. Cl. 124—25 **28 Claims**

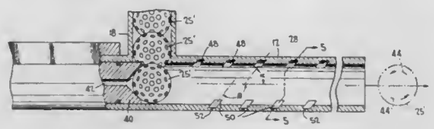


1. In a device to draw the bow string of a crossbow, said device of the type including a housing having an elongate arm extendable from said housing and rectilinearly moveable with respect thereto in at least one direction coaxial with the longitudinal axis of said arm, the improvement comprising:

said arm including means for engaging the crossbow bow string; and

a manually operable drive mechanism comprising ratchet means provided in mechanical communication with said arm, such that operation of said drive mechanism effects rectilinear movement of said arm in said at least one direction with respect to said housing.

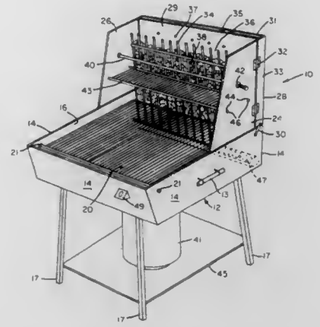
5,823,173
PAINTBALL GUN
Robert M. Slonaker, 874 Estancia Way, San Rafel, Calif. 94903, and Michael de Angeli, 10802 Coopersmith Ct., North Potomac, Md. 20878
Continuation-in-part of Ser. No. 433,823, May 4, 1995, Pat. No. 5,640,945. This application Feb. 28, 1997, Ser. No. 807,531
The portion of the term of this patent subsequent to May 4, 2015, has been disclaimed.
Int. Cl.[6] F41B *11/00*
U.S. Cl. 124—56 **27 Claims**



1. An improved paintball gun for firing paintballs each comprising a substantially spherical shell of a material designed to rupture upon impact, said shell housing a quantity of a marking paint,

said gun comprising a breech, an improved barrel, a source of compressed gas, and trigger-operated valve means for admitting a predetermined charge of said gas to said breech for expelling a paintball from said barrel, said improved barrel comprising means disposed at least in part along said barrel for controlling the flow of said charge of gas as said ball is expelled from said barrel, such that differential forces are imparted to upper and lower hemispheres of said ball as said ball is expelled from said barrel, whereby backspin is imparted to said ball, said differential forces being essentially aerodynamic in nature and provided by differential flow of said charge of gas with respect to said upper and lower hemispheres of said ball.

5,823,174
PORTABLE COOKING DEVICE WITH VERTICALLY ARRANGED HEARTH
Alfonso G. Andress, Malecon Balta 720, Lima 18, Peru
Filed Aug. 21, 1997, Ser. No. 915,710
Int. Cl.[6] F24B *3/00*
U.S. Cl. 126—25 R **20 Claims**



1. A cooking device comprising:

a body having walls defining a heating chamber and having an open top,

a main food supporting grill mounted on said body in a generally horizontal manner so as to span at least a portion of said open top,

walls extending generally upwardly from portions of said body, said walls including opposing side walls and a rear wall structure extending between said side walls,

a grate located between said side walls and in spaced relation to said rear wall structure so as to define a generally vertically arranged fire chamber for holding a source of heat generating fuel,

a secondary food supporting grill located between said side walls, forwardly of said grate, and above and generally parallel to said main grill,

whereby, when fuel is generating heat in said fire chamber, heat is reflected from said rear wall structure and (1) convects from said fire chamber to said heating chamber and generally upwardly through said main grill and secondary grill and (2) radiates generally outwardly from said fire chamber to said main grill and secondary grill.

5,823,175
THERMAL PROTECTIVE BARRIER
Bruce K. Sweitzer, 2145 North Glade Rd., and Barbara E. Sweitzer, 2145 North Glade Rd., both of Swanton, Md. 21561
Filed Dec. 26, 1995, Ser. No. 579,626
Int. Cl.[6] F24C *15/34;15/36*
U.S. Cl. 126—34 **5 Claims**

1. A thermal protective barrier including a panel for installation about an interior space heating unit in combination with a sleeve for installation about a flue component of the interior space heating unit,

said sleeve comprising:

a thin, leak proof sleeve formed of a fireproof material and having a cylindrical configuration and a toroidal cross section, said sleeve including an intermediate section and an uppermost section, each said section having an outer face, an opposite inner face, and a lower end and an opposite upper end defining a continuous interior volume therebetween, and containing a non-combustible liquid substantially filling the interior volume of each said section;

said intermediate section including a liquid inlet port communicating with the interior volume of the intermediate section adjacent its lower end, a first outlet passage extending from its lower end to its upper end, said first outlet passage being closed to the interior volume of said intermediate section, and a second outlet passage opposite said first outlet passage, said second outlet passage communicating with the interior volume of said intermediate section adjacent its upper end;

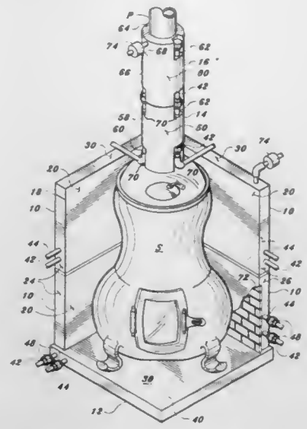
said uppermost section including a liquid inlet port at its lower end connected to said second outlet passage of the intermediate section, and a first outlet passage connected to the first outlet passage of said intermediate section, said first outlet passage of the uppermost section extending from its lower end to adjacent its upper end and providing for separate downward flow of said non-combustible liquid from said uppermost section through said intermediate section;

said panel comprising:

at least one thin, leak proof panel formed of a fireproof material and having a rectangular parallelepiped configuration including a first face and an opposite second face, two oppositely disposed edge walls consisting of a lowermost edge wall and an uppermost edge wall, and two oppositely disposed end walls defining a continuous interior volume therebetween, and containing a non-combustible liquid substantially filling said interior volume;

said at least one panel including a liquid inlet port and a liquid outlet port installed therein, said inlet port communicating with the interior volume immediately adjacent said lowermost edge wall and said outlet port communicating with the interior volume immediately adjacent said uppermost edge wall, with each said port respectively providing for the filling and draining of said non-combustible liquid from said panel, and;

reinforcement means installed within said at least one panel for strengthening said first face and said second face.



5,823,176
SOLAR WATER HEATING PANEL ATTACHMENT DEVICE
Don Harris, 25122 Barclay La., Laguna Niguel, Calif. 92677
Filed Nov. 10, 1997, Ser. No. 966,860
Int. Cl.[6] F24J *2/36*
U.S. Cl. 126—624 **11 Claims**

1. A flexible tie-down device for attaching to a roof a solar water panel of a type used for heating water for swimming pools, the solar panel having two or more elongate solar panel arrays each being formed of a number of side-by-side, small diameter, flexible plastic heat transfer tubes attached at one end to a rigid, larger diameter elongate tubular water inlet manifold and at the other end to a rigid, larger diameter elongate tubular water outlet manifold, said tie-down device comprising:



a. a plurality of flexible elastometric tubes connected in a side-by-side relationship to form a device array of said tubes having a length enabling the device array to bend and fit around the outside of either of said tubular inlet and outlet manifolds with the end regions of the device extending outwardly in a parallel, overlapping relationship relative to one another; and

b. means for enabling said overlapped end regions of said device array to a preexisting structure.

5,823,177

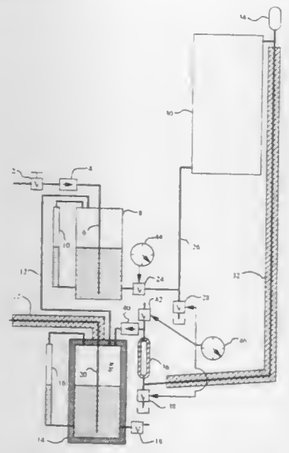
PUMPLESS SOLAR WATER HEATER WITH ISOLATED PRESSURIZED STORAGE

John C. Whitehead, 3322 Biscayne Bay Pl., Davis, Calif. 95616

Filed Jan. 16, 1996, Ser. No. 585,095

Int. Cl.[6] F24J *2/04*

U.S. Cl. 126—640 **20 Claims**



1. An apparatus for solar water heating, comprising:

a. a first tank having a cold water inlet, a water outlet, and a first gas port, said first tank having means to hold fluid therein at a pressure elevated above atmospheric pressure;

b. a second tank having a hot water inlet, a hot water outlet, and a second gas port, said second tank having means to hold fluid therein at a pressure elevated above atmospheric pressure, said second tank being separate from said first tank, and said second tank being located at a lower elevation than said first tank;

c. a gas pipe connected between said first gas port and said second gas port, such that gases can flow between said first tank and said second tank;

d. a substantially fixed quantity of compressed gas contained within said first tank and said second tank, said substantially fixed quantity of compressed gas occupying a total volume exceeding half the volume of said first tank;

e. a water passageway connected between said water outlet of said first tank and said hot water inlet of said second tank;

f. means to heat by solar radiation water located between said cold water inlet of said first tank and said hot water inlet of said second tank;

g. a control valve on said water passageway, said control valve having means for closing said control valve at night.

5,823,178

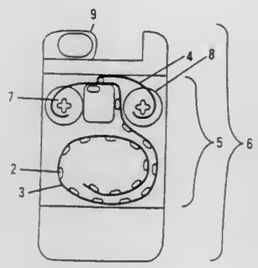
DISPOSABLE PACKAGE FOR USE IN AEROSOLIZED DELIVERY OF DRUGS

Lester John Lloyd, Orinda; Peter M. Lloyd, Oakland; Reid M. Rubsamen, and Jeffrey Arthur Schuster, both of Berkeley, all of Calif., assignors to Aradigm Corporation, Hayward, Calif.

Division of Ser. No. 630,391, Apr. 10, 1996, Pat. No. 5,660,166, which is a division of Ser. No. 454,421, May 30, 1995, Pat. No. 5,718,222, which is a continuation of Ser. No. 247,012, May 20, 1994, Pat. No. 5,544,646, which is a continuation-in-part of Ser. No. 166,972, Dec. 14, 1993, Pat. No. 5,497,763, which is a continuation-in-part of Ser. No. 65,660, May 21, 1993. This application Aug. 2, 1996, Ser. No. 693,593

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.14 **24 Claims**



1. A drug delivery system, comprising:

a cassette comprised of an outer protective cover having positioned therein a disposable package comprised of a plurality of interconnected individual containers with each container being in connection, by a channel, with a porous membrane having a pore density of from about 1×10^4 to 1×10^8 pores/cm^2 with pores having a pore diameter in the range of 0.25 micron to 6.0 microns and containing a liquid formulation comprising a pharmaceutically active drug;

a transport mechanism for successively moving each individual container of the cassette into a drug release position for release of the drug therefrom;

a mechanical mechanism for applying force to an individual container upon actuation; and

a housing interconnecting the transport mechanism and mechanical mechanism, while allowing the disposable package to be moved so that successive containers are moved into the drug release position.

5,823,179

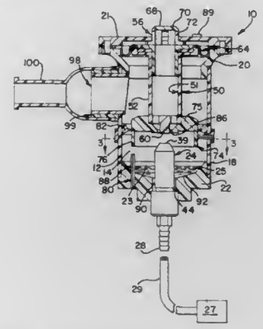
NEBULIZER APPARATUS AND METHOD

Jerry R. Grychowski, Lake Ulrich, Ill.; George Baran, and Martin P. Foley, both of London, Canada, assignors to 1263152 Ontario Inc., Ontario, Canada

Filed Feb. 13, 1996, Ser. No. 600,419

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.18 **65 Claims**



54. A nebulizer for providing an aerosol flow of a medicine to a patient comprising:

a housing having a chamber;

a nozzle located in said chamber, said nozzle having a gas outlet and a liquid outlet;

a diverter opposite said nozzle;

wherein the diverter is movable into a nebulizing position in proximity with said nozzle and into a non-nebulizing position out of proximity with said nozzle as a function of a pressure difference resulting from a patient's breathing.

5,823,180

METHODS FOR TREATING PULMONARY VASOCONSTRICTION AND ASTHMA

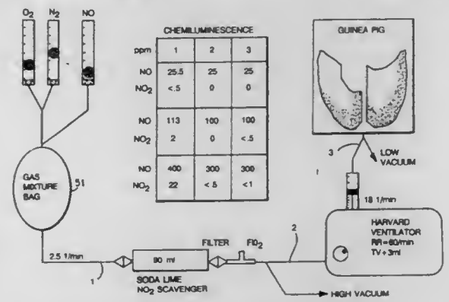
Warren M. Zapol, Concord, Mass., assignor to The General Hospital Corporation, Boston, Mass.

PCT No. PCT/US95/04123, § 371 Date Jan. 7, 1997, § 102(e) Date Jan. 7, 1997, PCT Pub. No. WO95/26768, PCT Pub. Date Oct. 12, 1995

PCT Filed Apr. 3, 1995, Ser. No. 718,349

Int. Cl.[6] A61M *15/00*

U.S. Cl. 128—200.24 **25 Claims**



1. A method for treating or preventing reversible pulmonary vasoconstriction in a mammal, which method comprises

identifying a mammal in need of such treatment or prevention,

providing a therapeutically-effective amount of gaseous nitric oxide for inhalation by the mammal, and

before, during, or immediately after said gaseous nitric oxide is inhaled by the mammal, introducing into the mammal a therapeutically-effective amount of a phosphodiesterase inhibitor selected from the group consisting of 1-cyclopentyl-3-methyl-6-(4-pyridyl)pyrazolo[3,4-d]pyrimidin- 4-(5H)-one; (+)-6a,7,8,9,9a,10,11,11a-octahydro- 2,5-dimethyl-3H pentalen(6a,1,4,5)imidazo[2,1-b]purin-4(5H)one; 2-phenyl-8-ethoxycycloheptimidazole; and sodium 1-[6-chloro- 4-(3,4-methylenedioxybenzyl)-aminoquinazolin-2-y]piperidine-4-carboxylate sesquihydrate.

5,823,181

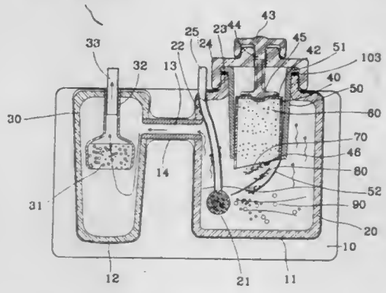
HANDY OXYGEN GENERATOR

Chih-Sheng Shih, 3Fl., No. 5, Chien Kang Rd., Chungho, Taipei Hsien, Taiwan

Filed May 13, 1997, Ser. No. 855,166

Int. Cl.[6] A61M *15/00;16/00;* A62B *7/08;21/00*

U.S. Cl. 128—202.26 **6 Claims**



1. A handy oxygen generator comprising:

a casing defining a reaction chamber, an air accumulator, and an air passage between said reaction chamber and said air accumulator, said reaction chamber having a top-open mouth covered with a screw cap;

an air intake pipe mounted in said reaction chamber, said air intake pipe having a bottom end coupled with an air filter element suspending inside said reaction chamber, and a top end coupled with a connector disposed outside said reaction chamber;

an air pump connected to the connector of said air intake pipe and operated to pump air into said reaction chamber through said air intake pipe;

a chemical module mounted in said reaction chamber and retained in place by said screw cap, said chemical module comprising a first chemical, a second chemical, and partition means adapted to separate said first chemical from said second chemical;

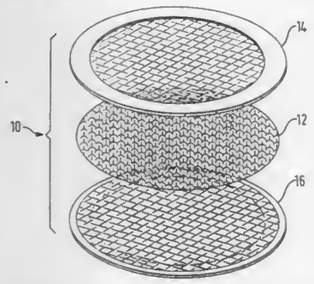
plunger means mounted in a hole in said screw cap and having a handle disposed outside said screw cap for operation by hand;

an air outlet pipe mounted in said air accumulator, said air outlet pipe having a bottom end coupled with air filter means suspending in said air accumulator, and a top end coupled with a connector disposed outside said air accumulator; and

a mouthpiece connected to the connector of said air outlet pipe for breathing in air from said air outlet pipe;

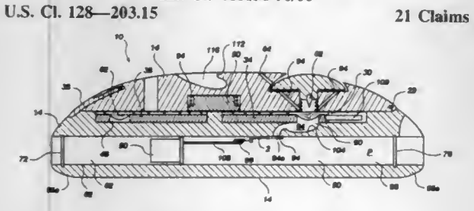
wherein when said plunger means is pressed down, said partition means of said chemical module is broken, causing said first chemical to mix with said second chemical and to induce a chemical reaction and to release oxygen during the chemical reaction, permitting released oxygen to pass from said reaction chamber into said air accumulator through said air passage and then to be breathed in by the user through said mouthpiece via said air outlet pipe.

5,823,182
MEDICAMENT CARRIER FOR DRY POWDER INHALATOR
Michiel M. Van Oort, Durham, N.C., assignor to Glaxo Wellcome Inc., RTP, N.C.
Division of Ser. No. 328,578, Oct. 21, 1994, Pat. No. 5,647,347.
This application Sep. 20, 1996, Ser. No. 717,034
Int. Cl.[6] A61M *15/00*
U.S. Cl. 128—203.12 35 Claims



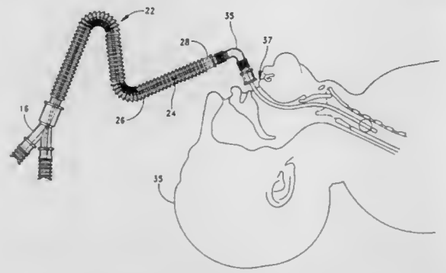
1. A medicament carrier for use in a dry powder inhalator device comprising at least one carrier surface defining a plurality of interstices therein and loaded with a powdered medicament, the powdered medicament being loaded onto the carrier surface, said interstices remaining partially open.

5,823,183
DRY POWDER MEDICAMENT INHALATOR HAVING AN INHALATION-ACTIVATED FLOW DIVERTING MEANS FOR TRIGGERING DELIVERY OF MEDICAMENT
Robert A. Casper; Frank A. Leith, and David L. Gardner, all of Hillsborough, N.C., assignors to Innovative Devices, Raleigh, N.C.
Continuation of Ser. No. 690,984, Aug. 1, 1996, Pat. No. 5,692,496. This application Mar. 25, 1997, Ser. No. 823,139
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—203.15 21 Claims



1. A dry powder medicament inhalator comprising:
a housing including a body having:
- a medicament cartridge receiving cavity formed within the housing;
- a primary inhalation passage extending through the body for allowing airflow through the body;
- a rotatable flow restricting means disposed in the primary inhalation passage such that air passing through the primary inhalation passage moves the rotatable flow restricting means between a first, open position, wherein the rotatable flow restricting means does not substantially inhibit airflow through the primary inhalation passage, and a second, restricting position wherein the rotatable flow restricting means restricts airflow through the primary inhalation passage;
- a secondary inhalation passage extending at least partially through the body, the secondary inhalation passage being disposed in communication with the medicament cartridge receiving cavity; and
- blocking means for selectively preventing airflow through the secondary inhalation passage, the blocking means being biased in a first, closed position to block airflow through the secondary inhalation passage and disposed in communication with the rotatable flow restricting means such that movement of the rotatable flow restricting means from the first, open position to the second, restricting position moves the blocking means from the first, closed position to a second, open position, and thereby permits airflow through the secondary inhalation passage.

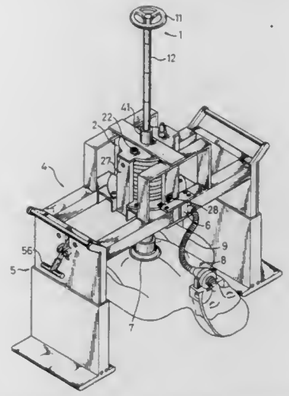
5,823,184
BREATHING CIRCUIT
James R. Gross, Wareham, Mass., assignor to Tyco International (US) Inc., Exeter, N.H.
Continuation of Ser. No. 228,786, Apr. 18, 1994, abandoned.
This application Mar. 25, 1997, Ser. No. 823,984
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—294.18 18 Claims



1. A component which is part of a circle circuit breathing circuit for directing flow of air to and from a patient, the breathing circuit including an inspiratory tube defining an inspiratory lumen for flow of air to the patient and an expiratory tube defining an expiratory lumen for flow of air from the patient, said tubes being joined via a wye piece to the component, the component comprising:
each of inner and outer coaxial tubes, said inner tube defining an inner lumen in communication with said inspiratory lumen at the wye piece, said outer tube defining an outer lumen in communication with said expiratory lumen at the wye piece, wherein said outer tube is made from a corrugated tubing which is sufficiently flexible to assume a bent configuration and sufficiently stable to retain said bent configuration about a patient's head and neck area during a surgical procedure, said inner and outer coaxial tubes having a leading end adapted for breathing by a patient, whereby the component is optimally positionable about the patient's head and neck area during the surgical procedure.

5,823,185
MANUAL PRESSING AND AUTOMATIC AIR BREATHING CARDIOPULMONARY RESUSCITATION FIRST-AID DEVICE
Tien-Tsai Chang, 5F, 28 Kuo-Hsiao Road, Hsin-Tien City, Taipei Hsien, Taiwan
Filed Apr. 4, 1997, Ser. No. 832,793
Int. Cl.[6] A61M *1/362;16/00;* A61H *7/00;* A61B *17/00*
U.S. Cl. 128—204.18 12 Claims

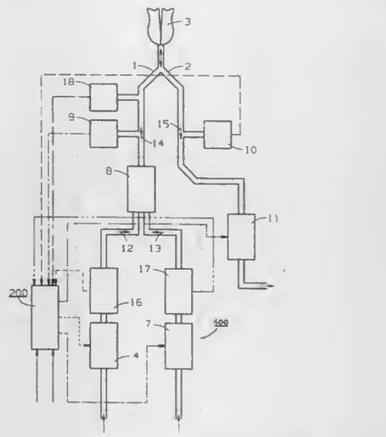
1. A manual pressing and automatic air breathing cardiopulmonary resuscitation first-aid device, comprising:
- a manual pressing shaft having a handle and a straight shaft body that moves up and down;
- a pump to be activated by said manual pressing shaft and having a variable internal enclosure for compressing air;
- an air storage tank in communication with the pump for temporarily storing air compressed therein by said pump;



- a sucking disk disposed beneath said air storage tank and moving up and down in response to said manual pressing shaft so as to be pressed against the patient's chest receptively;
- a pair of stands connected to opposite sides of said air storage tank to be straddled over the patient;
- an air control valve in communication with said air storage tank comprising an air valve, which is open once for a fixed number of times that the manual pressing shaft moves up and down;
- a mouth-nose breather for covering the patient's mouth and nose, and being in communication with said air storage tank through said air control valve mechanism by means of an air duct, wherein said mouth-nose breather simultaneously opens the patient's mouth passageway and shuts the patient's nose passageway when said air control valve is open, and air inside said air storage tank is uni-directionally guided into the patient's mouth, and wherein the patient's nose passageway is open causing the air previously guided into the patient's mouth and entering the lungs to be guided out from the mouth and nose when said air valve is shut off.

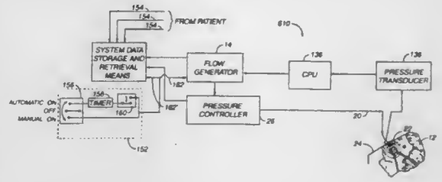
5,823,186
RESPIRATOR
Thomas Rossen, and Dieter Sahmkow, both of Lübeck, Germany, assignors to Drägerwerk AG, Lübeck, Germany
Filed Feb. 6, 1997, Ser. No. 796,516
Claims priority, application Germany, Jun. 20, 1996, 196 24 561.3
Int. Cl.[6] A61M *16/00*
U.S. Cl. 128—204.21 14 Claims

1. A respirator with an inspiration line and an expiration line, which lead to a patient via a connection piece, the respirator comprising:
- a gas mixer;
- a mixing and/metering unit with two gas supply lines, which lead to said gas mixer in the inspiration line;
- a compressor for drawing in and compressing ambient air, said compressor being provided connected to one of said gas supply lines;
- a metering unit for metering at least one auxiliary gas fed in, which is under a pressure that is substantially higher than the ambient pressure, the metering unit being connected to another of said gas supply lines;
- a first gas volume flow meter located in said one of said gas supply lines arranged upstream of said gas mixer;
- a second gas volume flow meter located in said another of said gas supply lines arranged upstream of said gas mixer;
- a first pressure sensor connected to said inspiration line arranged downstream of said gas mixer;
- a discharge valve in the expiration line;
- a second pressure sensor connected to said expiration line, arranged upstream of said discharge valve; and



- a central control unit connected to said compressor, said metering unit, said discharge valve, as well as to said pressure sensors and to said gas volume flow meters, said central control unit including control means for controlling the breathing pressure and the mixed gas composition after comparison of the signals measured, by means of said pressure sensors as well as said gas volume flow meters, with predetermined set points.

5,823,187
SLEEP APNEA TREATMENT APPARATUS WITH A THERAPY DELAY CIRCUIT ARRANGEMENT
Mark C. Estes, 6 Regola Dr., Irwin, Pa. 15642, and Janice M. Cattano, 1801 N. Villa Dr., Gibsonia, Pa. 15044
Division of Ser. No. 110,372, Aug. 23, 1993, Pat. No. 5,551,418, which is a continuation-in-part of Ser. No. 786,269, Nov. 1, 1991, Pat. No. 5,239,995. This application May 13, 1996, Ser. No. 645,245
Int. Cl.[6] A61M *16/00;* A62B *7/04;* F16K *31/02;31/26*
U.S. Cl. 128—204.23 14 Claims



1. Apparatus for delivering pressurized gas to the airway of a patient, said apparatus comprising:
- gas flow generator means for providing a flow of gas;
- conduit means for delivery of gas flow to an airway of a patient;
- pressure controller means cooperable with said gas flow generator means to provide for flow of gas within said conduit means at selectively variable pressures; and
- a therapy delay circuit arrangement for permitting delayed operation of said apparatus;
- said therapy delay circuit arrangement comprising means for instantaneously switching said apparatus between a first mode, wherein diagnostic information relating to a patient is obtained, and a second mode, wherein said apparatus administers respiratory therapy to a patient on the basis of diagnostic information obtained via the first mode.

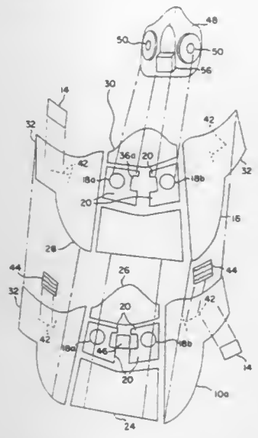
5,823,188
HEAT AND FIRE RESISTANT RESPIRATORY FILTRATION MASK

Cordell Frank Harges, Jr., 12629 Loma Verde Dr., Victorville, Calif. 92392, and Bert Rivera, 1135 Wilcox Ave., Monterey Park, Calif. 91755

Continuation of Ser. No. 297,937, Aug. 31, 1994, Pat. No. 5,628,308, which is a continuation-in-part of Ser. No. 183,417, Jan. 19, 1994, abandoned. This application May 12, 1997, Ser. No. 854,327

Int. Cl.[6] A62B *7/10;18/08;18/02;23/02*

U.S. Cl. 128—206.19 **8 Claims**



1. A heat and fire resistant protective mask, comprising:
a main portion adapted to cover at least the nose, mouth, chin, and cheekbone areas of a wearer, and first and second flap portions extending from either side of said main portion and adapted to be secured about the neck of the wearer;
said main portion and said flap portions comprising a shell made from beat and fire resistant material;
means for supporting in a removable manner a respiratory air filter or thermal barrier in said main portion, said means for supporting comprising inner liner portions fixed to said shell between said shell and the wearer, said inner liner portions being made of a heat resistant and fire resistant material; and
a respiratory air filter or thermal barrier.

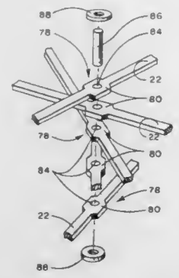
5,823,189
MULTIPLE ELECTRODE SUPPORT STRUCTURES WITH SPLINE ELEMENTS AND OVER-MOLDED HUB

Thomas F. Kordis, Sunnyvale, Calif., assignor to EP Technologies, Inc., San Jose, Calif.

Continuation of Ser. No. 206,417, Mar. 4, 1994, abandoned, which is a continuation-in-part of Ser. No. 33,640, Mar. 16, 1993, abandoned. This application Nov. 8, 1995, Ser. No. 555,261

Int. Cl.[6] A61B *17/36*

U.S. Cl. 128—642 **8 Claims**



1. An electrode support structure comprising at least two spline leaves, each spline leaf being formed of a single aenerally flat sheet of material and comprising an opposed pair of spline elements connected by a center web, each spline element having a terminal end spaced from the web, each web including a hole through the thickness of the web generally equidistant from the terminal ends of the respective spline leaf,
a pin assembly extending through the holes of each of said webs to thereby join the webs of the spline leaves in a mutually stacked relationship with the spline elements radiating from the pin assembly in a circumferentially spaced relationship, said spline elements each having one or more electrodes mounted thereon, and
a hub member over-molded about the pin assembly. said hub member having a central axis, each of said sDline elements extending generally perpendicularly from the axis of said hub.

5,823,190
AUTOMATIZATION OF ELECTRO-OCULOGRAPHIC EXAMINATION

Ville Sakari Voipio, Riihitie 15 A 4, FIN-00330 Helsinki, Finland

PCT No. PCT/FI94/00191, § 371 Date Jul. 8, 1996, § 102(e) Date Jul. 8, 1996, PCT Pub. No. WO94/26165, PCT Pub. Date Nov. 24, 1994

PCT Filed May 13, 1994, Ser. No. 586,642

Claims priority, application Finland, May 14, 1993, 932222

Int. Cl.[6] A61B *5/04*

U.S. Cl. 128—745 **11 Claims**

1. A method for performing an electro-oculographic (EOG) examination, wherein alternating optical signals are produced (**34**, **36**) for the stimulation of eye movements and, for the establishment of sample signals, those changes in the bioelectric potential signals are detected (**12**), which changes are caused by the eye movements corresponding to said optical signals, characterized in filtering (**22**) noise signals off by forming a moving average from successive sample signal portions, defining from said average signals potential leaps or transitions in the biopotential signals, which transitions are caused by said eye movements, and calculating (**24**) values corresponding to said transitions, removing possible distorted values from among said values and finally defining the EOG ratio on the basis of values selected from the remaining set of values.

5,823,191
CONDOM

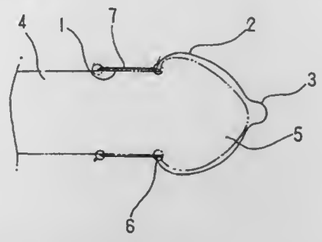
Gill-ho Cho, #207, Mokdong-Shinsigaji Apt. 707-dong, 925, Mok-dong, Yangchon-gu, Seoul, Rep. of Korea

Filed Feb. 28, 1997, Ser. No. 808,068

Claims priority, application Rep. of Korea, Nov. 5, 1996, 96-52156

Int. Cl.[6] A61F *6/04*

U.S. Cl. 128—844 **13 Claims**



1. An improved condom comprising:
a small sack for collecting semen therein;
a condom sack surrounding the glans in wearing; and
a supporting portion extending from the rear of said condom sack;
wherein said supporting portion is shorter than a half of the erect penis in length and thicker than said condom sack in thickness, compressing the penis enough to prevent the condom from slipping out and including one or more auxiliary taking-off means for assisting the condom off operation;
said taking-off means having an elongated shape;
both ends of said taking-off means being fixed to the supporting portion, leaving the middle portion thereof to be free from said supporting portion.

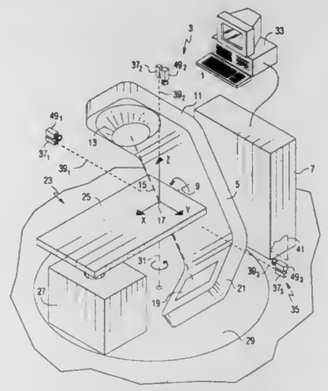
5,823,192
APPARATUS FOR AUTOMATICALLY POSITIONING A PATIENT FOR TREATMENT/DIAGNOSES

Andre M. Kalend, Monroeville; Joel Greenberger, Sewickley; Karun B. Shimoga, Pittsburgh; Charalambos N. Athanassiou, Pittsburgh, and Takeo Kanade, Pittsburgh, all of Pa., assignors to University of Pittsburgh of the Commonwealth System of Higher Education, Pittsburgh, Pa.

Filed Jul. 31, 1996, Ser. No. 690,521

Int. Cl.[6] A61G *15/00*

U.S. Cl. 128—845 **12 Claims**



1. Apparatus for automatically, accurately positioning a patient reclining on a moveable patient positioning assembly to a fixed base position relative to a fixed reference of a treatment/diagnostic device, said apparatus comprising:
a plurality of spaced apart fiducials arranged on said patient;
laser beam generator means for generating a plurality of laser beams projected in different directions relative to said fixed reference to impinge on the patient at impingement points which coincide with said fiducials when said patient is at said fixed base position;
camera means for generating images of said fiducials and said impingement points; and
means generating control signals from said images for driving said moveable patient positioning assembly to bring said fiducials into coincidence with said impingement points, thereby positioning said patient at said fixed base position.

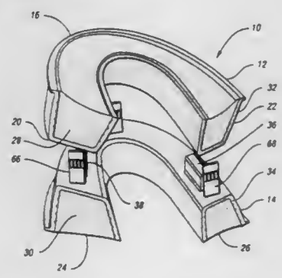
5,823,193
DENTAL APPLIANCE FOR ALLEVIATING SNORING AND PROTECTING TEETH FROM BRUXISM

Gary H. Singer, 1717 W. Chester Pike, Havertown, Pa. 19083; Carl Erwin Misch, 410 Claremount, Dearborn, Mich. 48124, and Neil R. Gottehrer, 202 Clwyd Rd., Bala Cynwyd, Pa. 19004

Filed Jan. 27, 1997, Ser. No. 789,641

Int. Cl.[6] A61F *5/56*

U.S. Cl. 128—848 **15 Claims**



1. A dental appliance for alleviating snoring and protecting teeth from bruxism, comprising:
an upper section mountable upon the upper jaw; and
a lower section mountable on the lower jaw opposing the upper section,
each section having
an anterior region and two posterior regions;
an inner liner which conforms with the teeth and cushions the jaw against impact forces; and
a hard outer shell to resist grinding, which secures the inner liner and distributes forces associated with grinding, at least one of the lower and upper sections being provided with at least one posterior bite stop disposed in the hard outer shell.

5,823,194
FLEXIBLE RETENTIVE BITE BLOCK AND FABRICATION PROCESS

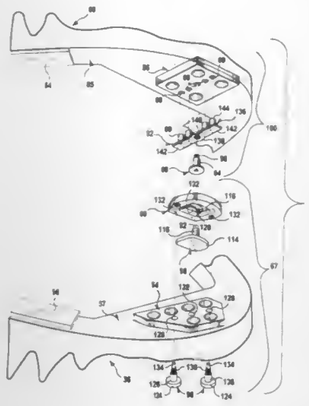
Barry Lampert, 34 Watchway, Lloyd Harbor, N.Y. 11743

Filed May 1, 1997, Ser. No. 847,060

Int. Cl.[6] A61F *5/56*

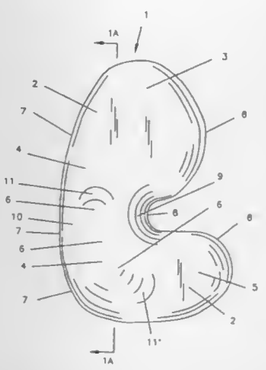
U.S. Cl. 128—848 **25 Claims**

20. An improved flexible retentive bite block of the type having an upper bite block shaped to conform to the maxillary detention, a lower bite block shaped to conform to the mandibular detention and having three non-threaded apertures, and a hinge adjustably connecting the upper bite block to the lower bite block, the hinge comprising a retention plate affixed to the upper bite plate and having a plurality of threaded apertures, a base plate affixed to the lower bite plate and having three non-threaded apertures in align-



ment with the three non-threaded apertures in the lower bite plate, and a guide box affixed to the upper bite block and the lower bite block and having a kidney-shaped aperture formed on its upper surface and a milled-out cavity formed beneath the aperture in the upper surface of the guide block and a pair of threaded apertures straddling the milled-out cavity in the guide box and being in alignment with the outermost non-threaded apertures of the three non-threaded apertures in the base plate, wherein the improvement comprising the upper bite block and lower bite block being made of polyamide whose inherent flexibility eliminates the need for dental wires and the problems associated therewith.

5,823,195
ANKLE PAD
C. David Shook, 718 Glendale Blvd., Mansfield, Ohio 44907, and David J. Hoy, 1270 Rosedale Dr., Mansfield, Ohio 44906
Filed May 9, 1995, Ser. No. 437,940
Int. Cl.[6] A61F *13/06*
U.S. Cl. 128—893 36 Claims

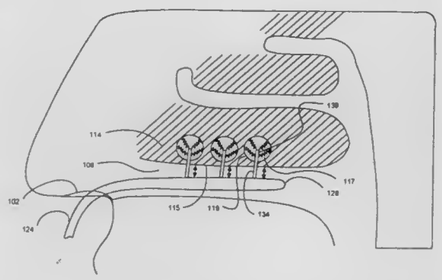


1. A medial ankle pad comprising a medial side and a lateral side, said medial side includes a medial surface and said lateral side includes a lateral surface, said medial surface of said medial ankle pad includes a first superior portion, a first inferior portion and a first middle portion, said lateral surface of said medial ankle pad includes a second superior portion, a second inferior portion and a second middle portion, said medial surface includes a first crown thereon, and said lateral surface includes a second crown thereon,

5,823,196
METHOD FOR DETECTING ALCOHOL CONSUMPTION RATES
James W. Harasymiw, 127 Balmoral Ct., Brookfield, Wis. 53005
Continuation of Ser. No. 275,101, Jul. 14, 1994, abandoned. This application Jun. 26, 1996, Ser. No. 669,836
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 21 Claims

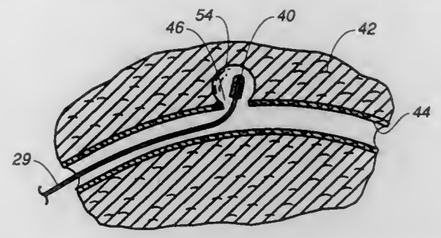
1. A method of identifying individuals having a high alcohol consumption rate, said method comprising:
using a blood specimen from a subject to develop a subject blood constituent panel;
statistically analyzing said individual panel against a first reference panel;
identifying the category of consumption rate for said subject indicated by said analysis; and
further analyzing said subject with a second reference blood constituent panel as a reflex test off said first reference panel, said second reference panel including an additional constituent, said additional constituent being a blood alcohol marker, whereby use of said second reference panel reduces the percentage of false positive results as compared to use of said first reference panel.

5,823,197
METHOD FOR INTERNAL ABLATION OF TURBINATES
Stuart D. Edwards, Portola Valley, Calif., assignor to Somnus Medical Technologies, Inc., Sunnyvale, Calif.
Continuation-in-part of Ser. No. 754,588, Oct. 19, 1996, Pat. No. 5,746,224, and Ser. No. 753,063, Oct. 19, 1996, and Ser. No. 752,076, Oct. 19, 1996, each which is a continuation-in-part of Ser. No. 651,796, May 22, 1996, and Ser. No. 651,798, May 22, 1996, abandoned, each which is a continuation-in-part of Ser. No. 265,459, Jun. 24, 1994, Pat. No. 5,505,730. This application Jan. 29, 1997, Ser. No. 790,172
Int. Cl.[6] A61B *17/36*
U.S. Cl. 128—898 20 Claims



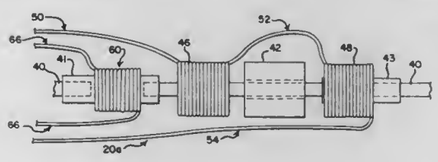
1. A method for ablating at least a portion of a nasal concha comprising:
taking a catheter having a distal portion with a length operable for positioning through a nostril of a patient into a nasal meatus adjacent a nasal concha and an energy delivery device coupled to the catheter distal portion including one or more energy delivering probes;
positioning the catheter distal portion through a nostril of a patient into a nasal meatus adjacent a surface of a nasal concha;
introducing the one or more energy delivering probes into an interior of the nasal concha; and
delivering sufficient ablative energy into the interior of the nasal concha to ablate at least a portion of the nasal concha.

5,823,198
METHOD AND APPARATUS FOR INTRAVASCULER EMBOLIZATION
Michael L. Jones, Capistrano Beach, Calif., and Richard J. Greff, St. Petersburg, Fla., assignors to Micro Therapeutics, Inc., San Clemente, Calif.
Filed Jul. 31, 1996, Ser. No. 690,075
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—899 17 Claims



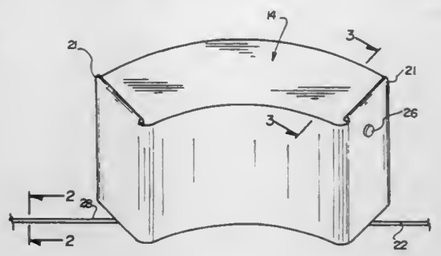
1. An expandable plug for treating a vascular aneurysm, comprising:
a biocompatible material, expandable from a first constrained volume to a second, larger volume; and
a blood soluble restraining agent in contact with the expandable material; wherein the expandable material is in the first, constrained volume and restrained therein by the blood soluble agent.

5,823,199
IN VIVO MECHANICAL ENERGY SOURCE
Roger Hastings; Kenneth Larson, both of Maple Grove; Michael Berman, Golden Valley, and Daniel M. Lafontaine, Plymouth, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Division of Ser. No. 343,045, Nov. 21, 1994, Pat. No. 5,628,719, which is a continuation-in-part of Ser. No. 981,612, Nov. 25, 1992, abandoned. This application Feb. 5, 1997, Ser. No. 795,602
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—899 5 Claims



1. A miniaturized intravascular mechanical energy source system comprising:
an intravascular catheter;
a reciprocating actuator that performs work on a load, said actuator coupled to a distal portion of said intravascular catheter; and
electrical lead means coupled to said actuator and extending to a proximal end of said catheter to supply electrical energy to said actuator;
wherein said actuator and said catheter are for placement inside a vascular body vessel.

5,823,200
TOBACCO SMOKE ABATEMENT SYSTEM
Kharanan Persaud, 142 Atkins Cir., Brampton Ontario, Canada, L6X 4A8
Filed Dec. 26, 1996, Ser. No. 772,583
Int. Cl.[6] A24B *15/00*
U.S. Cl. 131—331 9 Claims



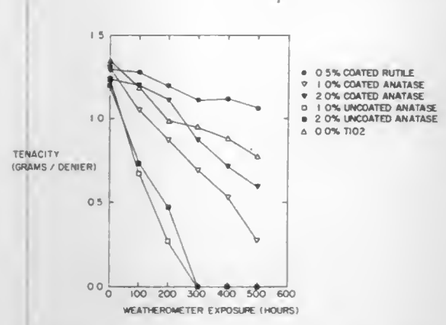
1. A Tobacco Smoke Abatement System comprising:
a first item of furniture located within an enclosed structure, the first item of furniture having outward facing surfaces;
an air distribution system operatively associated with the first furniture item;
said air distribution system including at least one air distribution manifold having air distribution holes located on at least one of the outward facing surfaces of the first furniture item, a first air supply line in fluid communication with said manifold, and an air compressor in fluid communication with the first supply line to provide compressed air to the manifold; and
said manifold being operatively positioned on the first furniture item such that air exiting the distribution holes facilitates movement of tobacco smoke upwardly and away from the first furniture item.

5,823,201
TOBACCO FILTERS AND A METHOD OF PRODUCING THE SAME
Hiroyuki Matsumura, Himeji, Japan, assignor to Daicel Chemical Industries, Ltd., Osaka, Japan
Filed Mar. 20, 1996, Ser. No. 618,559
Claims priority, application Japan, May 31, 1995, 7-158294
Int. Cl.[6] B29C *44/22*
U.S. Cl. 131—343 18 Claims

1. A rod-shaped tobacco filter obtainable by wrapping up a creped or embossed sheet-like material having a web structure and comprising a cellulose ester component, which has a pressure drop of 200 to 500 mm water gauge, a firmness of not less than 88% and a cross-sectional porosity of not more than 2% as determined with a proviso that said filter has a circumferential length of 24.5±0.2 mm and a length of 10±0.2 cm.

5,823,202
ENVIRONMENTALLY NON-PERSISTANT CELLULOSE ESTER FIBERS
Charles M. Buchanan, Bluff City; Robert M. Gardner, Gray; James E. Harris, Kingsport; Gether Irick, Jr., Gray, and David V. Strickler, Jr., Kingsport, all of Tenn., assignors to Eastman Chemical Company, Kingsport, Tenn.
Continuation of Ser. No. 889,213, May 27, 1992, abandoned. This application Aug. 5, 1996, Ser. No. 692,638
Int. Cl.[6] A24D *3/10*; C08L *1/12*
U.S. Cl. 131—345 36 Claims

1. A cellulose ester fiber which comprises
(a) a C_1–C_{10} ester of cellulose having a degree of substitution per anhydroglycose unit (DS/AGU) of about 2.0 to about 2.2 and an inherent viscosity of about 0.2 to about 3.0 dL/g, as



measured in a solution of 60/40 (wt./wt.) phenol/tetrachloroethane, and

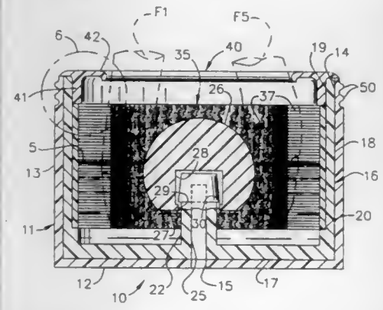
(b) about 0.1–5 weight percent, based on the total weight of (a) and (b), of anatase titanium dioxide.

5,823,203

APPARATUS AND METHOD FOR REMOVING ARTIFICIAL FINGERNAILS AND FINGERNAIL POLISH

George H. Carroll, 2392 Foster Ave., Ventura, Calif. 93001, and Arthur A. Krause, 20642 Skouras Dr., Canoga Park, Calif. 91306

Filed May 9, 1996, Ser. No. 647,008
Int. Cl.[6] A45D *29/00*
U.S. Cl. 132—200 **34 Claims**



22. A method of removing fingernail polish and/or artificial fingernails, comprising the steps of:

simultaneously inserting all the fingers of one hand through an opening means and into a receptacle containing a solvent for softening and dissolving fingernail polish and/or artificial fingernails, and immersing the tips of the fingers in the solvent;

placing the fingernails of said one hand into contact with a scuffing means in the receptacle which removes bits of fingernail polish and/or artificial fingernails as they are softened and dissolved, while maintaining the fingernails wetted with the solvent;

placing the fingers against a finger support in the receptacle adjacent to but spaced from the scuffing means and having a shape to automatically position the fingernails closer to or farther away from the scuffing means and in different angular orientations relative to the scuffing means as the fingers are placed in different axial locations on the finger support, to concentrate pressure between the scuffing means and different parts of the fingernails; and

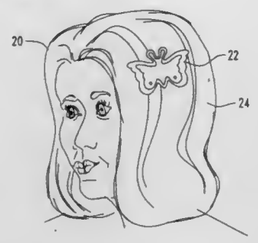
causing the scuffing means and fingertips to move relative to one another to hasten the dissolving action of the solvent and to scuff away bits and pieces of fingernail polish and/or artificial fingernails.

5,823,204

PROCESS FOR CRIMPING AND TATTOOING HAIR

Mark D. Todd, 1815 Lake Rd., Webster, N.Y. 14580, assignor to Mark D. Todd, Webster, N.Y.

Continuation-in-part of Ser. No. 901,815, Jul. 28, 1997. This application Sep. 9, 1997, Ser. No. 926,347
Int. Cl.[6] A61K *7/13*
U.S. Cl. 132—208 **12 Claims**



1. A process for removably applying coloring material to hair, comprising the steps of:

(a) contacting a composite fabric material with hair, wherein:

(1.) said composite fabric is a laminated structure comprised of a fiberglass substrate, and a top layer of polytetrafluoroethylene bonded to said fiberglass substrate, and

(2.) said top layer of polytetrafluoroethylene is comprised of a top surface which is comprised of water-soluble coloring matter, and

(3.) said water-soluble coloring matter contacts said hair, and

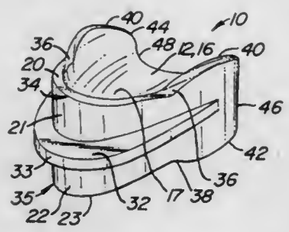
(b) compressing said hair and said composite fabric material while heating said hair and said water-soluble coloring material to a temperature of at least about 140 degrees Fahrenheit.

5,823,205

NAIL FILING GUIDE

Bill Stankovic, 526 Bryant St., Palo Alto, Calif. 94301

Filed Jul. 25, 1997, Ser. No. 900,770
Int. Cl.[6] A45D *29/00*
U.S. Cl. 132—285 **20 Claims**



1. A nail filing guide, particularly for fingernails, comprising:

a digit rest having a proximal end and a distal end; and

a shape wall superimposed along the distal end of the digit rest, said shape wall having an outer contour shaped to define a desired nail distal end shape.

5,823,206

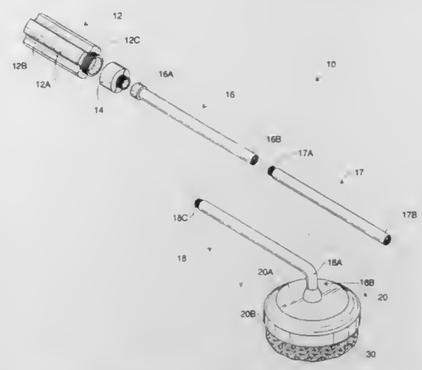
LOTION APPLICATOR

Mark H. Mapleback, 177 Poppy St., Golden, Colo. 80401

Filed Nov. 4, 1996, Ser. No. 743,278
Int. Cl.[6] A45D *40/26*
U.S. Cl. 132—320 **2 Claims**

1. A lotion applicator comprising:

a. a lotion bottle;



b. a hollow handle, the lotion bottle being attachable to the handle;

c. a head configured to be connected to the handle;

d. an applicator pad which is attachable to the head;

e. the handle including at least three elongated segments;

f. the handle being capable of being shortened by completely separating at least one of the segments from remaining ones of the segments;

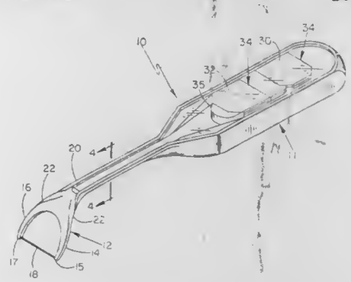
g. wherein lotion is flowable from the lotion bottle, through the handle, then through the head to the pad.

5,823,207

DENTAL FLOSS APPARATUS WITH IMPROVED MECHANISM FOR COLLECTING SPENT FLOSS AND WITH IMPROVED TIP STRUCTURE, AND METHOD OF USE

Rich Bushman, 10975 Stone Bridge Trail North, Stillwater, Minn. 55082

Continuation-in-part of Ser. No. 385,461, Feb. 8, 1995, Pat. No. 5,613,508. This application Feb. 8, 1996, Ser. No. 598,744
Int. Cl.[6] A61C *15/00*
U.S. Cl. 132—323 **24 Claims**



1. An apparatus for holding, dispensing and collecting dental floss, the apparatus comprising:

a handle;

a dental floss support coupled with the handle, the dental floss support comprising a first projection and a second projection with both projections presenting a tip and a dental floss guide channel;

a dental floss advancement mechanism for advancing dental floss along the guide channels and between the tips of the projections;

a hole extending through each respective tip to guide dental floss from the tip of the first projection to the tip of the second projection, the dental floss being disposed within the hole when the apparatus is in use to prevent inadvertent removal of floss from the tip; and

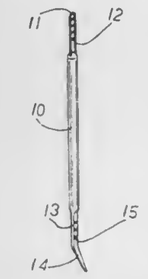
a notch extending through each respective projection at the hole, the notch being constructed to receive dental floss and guide dental floss to and through the hole, wherein a side of the hole farthest from the handle is substantially continuous and is free of an inside end of the notch, to substantially prevent inadvertent removal of dental floss from the hole through the notch.

5,823,208

TOOTHPICK STRUCTURE

Ching Hsi Lin, Changhua Hsien, Taiwan, assignor to Chien I Industry Co., Ltd., Changhua Hsien, Taiwan

Filed May 30, 1997, Ser. No. 865,877
Int. Cl.[6] A61C *15/02*
U.S. Cl. 132—329 **4 Claims**



1. An toothpick structure integrally produced by plastics injection molding having a flexible toothpick body being characterized by that:

said toothpick body having a fixed reverse U-shaped first end provided with a number of parallel rung elements thereon:

a second end of said toothpick body being provided with a flat extension on which V-shaped marks for massaging dental gum are defined; and a slanted pointed projection connected to said flat extension wherein said fixed reverse U-shaped end can be inserted into fissures between teeth and be twisted for effectively cleaning up food residues stuck between teeth, and said slanted pointed projection can be easily inserted into fissures between molar teeth.

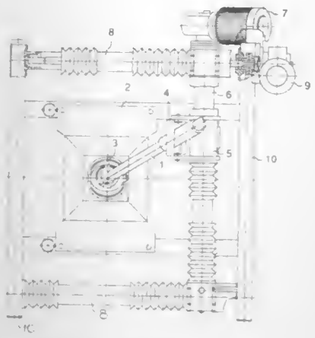
5,823,209

APPARATUS FOR THE GUIDING OF AN ELONGATED ELEMENT

Karsten Kleye, Wesel, and Wilfried Boden, Stradow, both of Germany, assignors to Bergemann GmbH, Wesel, Germany

Continuation-in-part of Ser. No. 721,748, Sep. 30, 1996, abandoned, which is a division of Ser. No. 424,900, Apr. 19, 1995, abandoned. This application Oct. 31, 1996, Ser. No. 741,572
Claims priority, application Germany, Apr. 29, 1994, 44 15 010.5
Int. Cl.[6] B08B *3/00;7/04;* **A46B** *13/00*
U.S. Cl. 134—57 R **6 Claims**

1. Apparatus for controlling an elongated member, comprising: an elongated member emitting a specifically-configured jet to blow soot off specific areas of a wall; a first universal joint and a second universal joint separated from said first joint for securing said elongated member; said first universal joint being stationary; a first spindle, said second universal joint traveling back and forth along said first spindle; a second spindle and a third spindle parallel to said second spindle, said second universal joint having ends traveling back and forth along said second spindle and said third spindle; a first pair of inductive proximity sensors cooperating with said first spindle; a second pair of inductive proximity sensors cooperating with one of said second and third spindles, rotation of said first spindle being detected through pulses emitted by a first



one of said first pair of inductive proximity sensors, rotation of said one of said second and third spindles being detected through pulses emitted by a first one of said second pair of inductive proximity sensors, distance traveled by said second universal joint along said second and third spindles being measured by number of rotations; a memory-programmable controller for receiving a configuration of said specifically-configured jet for setting a distance of said second universal joint from said wall in form of vertical and horizontal motions of said second universal joint; means for comparing the pulses from said first sensor to said configuration received by said controller; means for adjusting the second ones of each said pair of sensors vertically and horizontally to a fixed reference point on said wall; and means for actuating the spindles in accordance with said configuration entered into said controller and in accordance with said reference point.

5,823,210

CLEANING METHOD AND CLEANING APPARATUS

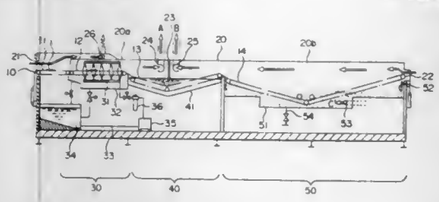
Minoru Inada, Yokohama; Yasutaka Imajo, Hachioji, and Masahide Uchino, Tokyo, all of Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Division of Ser. No. 355,312, Dec. 12, 1994, Pat. No. 5,593,507. This application May 31, 1995, Ser. No. 454,729

Claims priority, application Japan, Aug. 22, 1990, 2-229221; Sep. 12, 1990, 2-241974; Sep. 12, 1990, 2-241975; Jan. 21, 1991, 3-020471; Aug. 22, 1991, 2-220304

Int. Cl.[6] B08B *3/10*

U.S. Cl. 134—105 **19 Claims**



1. A cleaning apparatus comprising:

an apparatus proper having a conveying mechanism for a part subjected to cleaning installed therein and incorporating therein a gateway for said conveying mechanism,

a cleaning tank,

a drying tank adapted to utilize a vapor of a vapor cleaning agent having perfluorocarbon as a main component thereof to dry the part,

inactive vapor generating means for thermally vaporizing perfluorocarbon and supplying the resultant vapor to said cleaning or drying tank, and

a defiled liquid container bath for accommodating a used and consequently defiled cleaning agent having an inflammable solvent as a main component thereof, an inactive bath for accommodating perfluorocarbon, a heating source for severally vaporizing said defiled cleaning agent and perfluorocarbon, a condensing mechanism for condensing vapors of said defiled cleaning agent and perfluorocarbon, and a separator for separating a condensate produced by said condensing mechanism into said inflammable solvent and perfluorocarbon;

wherein said cleaning tank and said drying tank exist apart.

5,823,211

DISHWASHER

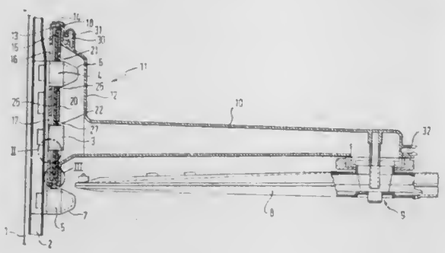
Johann Wilhelmstätter, Giengen/Hürben; Helmut Jerg, Giengen; Bernd Schessl, Dillingen; Gerhard Fetzer, Gundelfingen; Michael Hartmann, Höchstädt; Markus Höpfl, Lauingen/Donau; Karl-Heinz Rehm, Dischingen, and Rudolf Schmidt, Giengen, all of Germany, assignors to BSH Bosch und Siemens Hausgeraete GmbH, Munich, Germany

Filed Mar. 20, 1997, Ser. No. 821,082

Claims priority, application Germany, Mar. 20, 1996, 196 11 054.8

Int. Cl.[6] B08B *3/02*

U.S. Cl. 134—176 **13 Claims**



1. A dishwasher, comprising:

a tub having a side wall;

at least one adjustable-height basket;

a spray arm associated with said basket, said spray arm having a horizontal inlet tube, and said spray arm and said inlet tube being secured to said basket;

a supply line secured to said side wall of said tub;

an open connection fitting protruding toward said inlet tube;

two closed blind fittings protruding toward said inlet tube; and

a coupling having a housing, said coupling having an end oriented toward said supply line, said coupling connecting said inlet tube to said supply line, said coupling having two openings formed therein, said connection fitting protruding into one of said openings, and one of said blind fittings protruding into the other of said openings, said coupling having a centering plate at said end and a sealing plate downstream of said centering plate in flow direction, and said sealing plate having flexible sealing lips and being freely movable between said housing and said centering plate.

5,823,212

STADIUM UMBRELLA

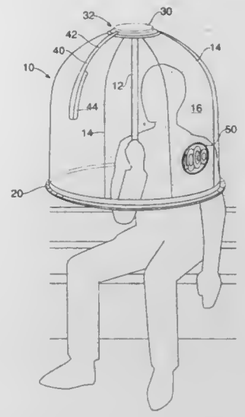
Richard B. Allen, 2400 Hudson Ter., Apt. 2H, Fort Lee, N.J. 07024

Continuation of Ser. No. 066,788, May 24, 1993, abandoned. This application Oct. 24, 1994, Ser. No. 328,159

Int. Cl.[6] A45B *3/00*

U.S. Cl. 135—16 **17 Claims**

1. An umbrella having a center pole and a handle at one end thereof, a plurality of ribs radiating from the other end thereof and a cover comprised of a plurality of panels defined by the number of



ribs, said cover being secured to said center pole and to said ribs, wherein, when in an open mode, the cover assumes a cylindrical shape with a hemispherically shaped top, the lowermost portion of the ribs and cover thereof comprising said cylindrical portion, the edge of which is parallel to the axis of the said center pole, the diameter of said cylindrical portion approximating the vertical height of said cover, said cover of said umbrella being made of transparent material, to enable the user or any other person whose vision would otherwise be obstructed to see through said cover.

5,823,213

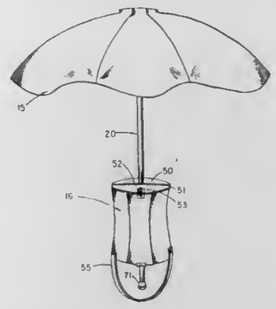
COMBINATION PURSE AND UMBRELLA

Samuel F. Patarra, 111 Elysium Dr., Royal Palm Beach, Fla. 33441

Filed May 27, 1997, Ser. No. 862,998

Int. Cl.[6] A45B *3/10*

U.S. Cl. 135—16 **10 Claims**



1. A combination umbrella and purse, including a support mast, a purse arranged at one end of said support mast, a foldable umbrella arranged at the opposite end of said mast, said umbrella having a plurality of fabric supporting ribs forming a frame, a fabric covering extended over and fixed to said frame which folds to an open position and to a closed position, and means for maintaining said frame in spaced apart stand-off relation with respect to said mast and such that said frame surrounding the purse when the umbrella frame is in said closed position, and said purse having carrying means on one end in said opposite end of the support mast for carrying the umbrella in a lowered and reversed position.

5,823,214

SELF OPENING AND SELF CLOSING COLLAPSIBLE UMBRELLA

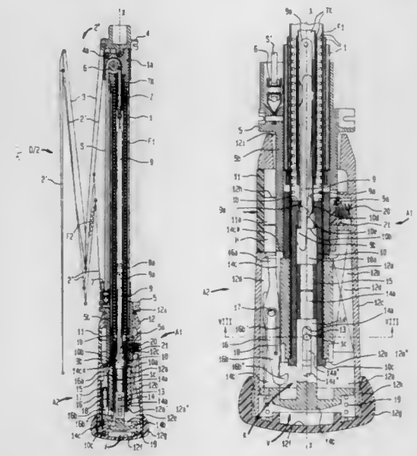
Joachim Seidel, Solingen, Germany, assignor to Kortenbach Verwaltungs- und Beteiligungsges. mbH & Co., Solingen, Germany

Filed Jul. 7, 1997, Ser. No. 888,729

Claims priority, application Germany, Sep. 10, 1996, 196 36 690.9

Int. Cl.[6] A45B *25/14*

U.S. Cl. 135—22 **17 Claims**



1. An automatic, collapsible umbrella; comprising:

a handle;

a canopy assembly;

an elongated telescopic stick defining a longitudinal axis and extending between the handle and the canopy assembly;

a runner traveling along the stick;

an opening spring mechanism accommodated in the stick for extending the stick and opening the canopy assembly by energy stored in the opening spring mechanism;

a first release mechanism accommodated in the handle for releasing the stored energy in the opening spring;

a closing spring mechanism integrated in the canopy assembly and tensioned during release of the stored energy of the opening spring mechanism to thereby store energy releasable for closing the canopy assembly;

a second release mechanism for releasing the stored energy in the closing spring mechanism, said second release mechanism including a locking member accommodated inside of and secured to the stick, a first catch extending axially in the stick and adapted for engagement with the locking member, a release member extending axially in the stick and slidable in axial direction for interaction with the first catch, and a second catch disposed outside of the stick and operatively connected to the release member for movement in a direction parallel thereto;

a tackle extending between the runner and the first catch; and

a control button provided in the handle for so operating the first and second release mechanisms that the release member and the second catch are movable into a release position with respect to the first catch and the control button in direction toward the first catch when the stick is extended, and into a neutral position in direction away from the first catch when the stick is retracted.

5,823,215

AUTOMATIC CLOSING AND OPENING UMBRELLA WITH FIXED TYPE OF PLURAL SECTIONS OF MIDDLE ROD IN VARIABLE DYNAMIC PROCESS AND RATIO

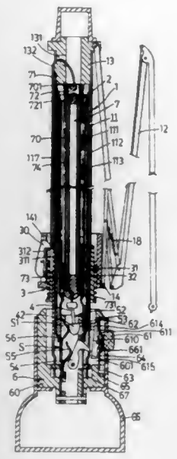
Lung-Chiao Chou, No. 1, Alley 9, Lane250 Sec 2, Cheng Gung Rd., Nei Hu Area, Taipei, Taiwan, and Chin-I Lin, No. 23, Jui Yuan Area, Ta Hsi City, Taoyuan Hsien, Taiwan

Filed May 21, 1996, Ser. No. 651,956

Claims priority, application China, Feb. 8, 1996, 96 2 29266.4

Int. Cl.[6] A45B *25/14*

U.S. Cl. 135—24 **5 Claims**



1. An automatically opening and closing umbrella including a skeleton system, springs, a control mechanism, a mechanism to make changes, a locating device, and a handle, and comprising:

a) multiple sections of the skeleton mechanism, comprising a middle rod, a first spring for closing the umbrella and a branch skeleton which includes upper, middle and lower sections telescopically inter connected, an upper nest located on an upper section of the middle rod, the upper nest having a hole and a rope portion below the holes a first pulling rope extending outside of the middle rod and connected with the locating device and the upper section's skeleton rod having a fastening hole;

b) a second spring for opening the umbrella is placed within the middle rod having a first end connected to a locating edge on a mechanism to make changes at a long hollow seat's upper end, and a second end connected to a lower end face of a protruding point formed on the middle rod;

c) the locating device including a first fastening sheet assembled within a container chamber of a lower nest, and action tube having a protruding shoulder wall at a lower end and a third spring between an inner side of the lower nest and the action tube;

d) the mechanism to make changes includes a long hollow seat cooperating with the second spring for opening the umbrella within the middle rod a first end directly bearing against a bottom face of the upper nest, within the long hollow seat are located a movable rope seat and a fixed rope seat, the movable rope seat and the first pulling rope extend to one end of an inner side of the middle rod, a second pulling rope having a first end connected to the fixed rope seat at a lower end of the long hollow seat while and a second end passes through a casing hole in the fixed rope seat and is connected with a shuttle arrow placed within the lower skeleton rod and extending toward one end of the handle, the shuttle arrow having a fastening block;

e) the control mechanism including a hollow cylinder seat within the lower section rod, the cylinder seat having an opening hole and fastening hole located to engage the fastening block of the shuttle arrow, a second fastening sheet within the cylinder seat which presses against the middle rod together with a first recoiling sheet for recoiling and fixation in response to a pressing button of the handle, the first and a second recoiling sheets, have different lengths and are placed one over the other in a rear side of the fastening block; and

f) the handle is provided at an end of the lower section rod and includes an inner set seat on which there is a button hole and two positions opposite to each other at an edge of a lower side are located upper and lower sustaining seats, for mounting a bridge type of recoiling sheet which threads through and is installed between an inner side of a pressing button, and a pivotal flexible pressing board, the flexible pressing board has one end installed with a projecting pressed block and another end is equipped with a pressing portion corresponding to the second fastening sheet of the control mechanism, a wall of cylinder seat of the control mechanism at its outside under lower side of the second fastening sheet and a fourth spring under the cut body shape.

5,823,216

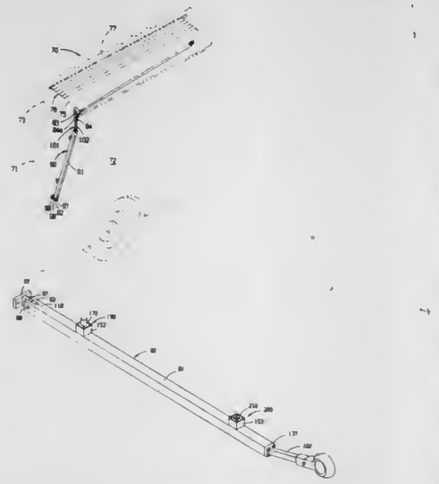
AUTOMATIC AWNING FOR RECREATIONAL VEHICLE

Louis Simonetti, Elk Grove, Ill., assignor to Zip Dee, Inc., Elk Grove Village, Ill.

Division of Ser. No. 465,975, Jun. 6, 1995, Pat. No. 5,597,006. This application Jan. 3, 1997, Ser. No. 775,973

Int. Cl.[6] E04F *10/00*

U.S. Cl. 135—88.1 **6 Claims**



1. A support arm for an awning mounted to a vehicle, said arm comprising an elongated tubular outer member capable of being connected at one end to a vehicle, a plurality of axially extending channels in said tubular outer member, a tubular inner member slidably received in said outer member and having one closed end thereof forming a piston near the end of said outer member capable of being connected to the vehicle, means for introducing pressurized fluid into said outer member to force said piston therealong and for introducing pressurized fluid to said axially extending channels, a push-off cylinder and locking mechanism mounted on said outer member in fluid communication with said axially extending channels to accommodate introduction of pressurized fluid to said push-off cylinder and to said locking mechanism.

5,823,217

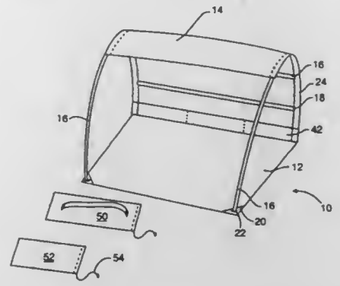
SUNSHADE

Paul Rice, Palo Alto, Calif., assignor to GreenBest, Inc., Palo Alto, Calif.

Filed Apr. 10, 1996, Ser. No. 630,737

Int. Cl.[6] E04H *15/34*

U.S. Cl. 135—124 **12 Claims**



1. A collapsible shelter comprising:

a ground covering sheet having a first end, a second end, and a length between the first and second ends;

a canopy having a first end, a second end, a length between the first and second ends, a first side, and a second side, the first end of the canopy being attached to the first end of the ground covering sheet and the canopy extends over at least half and less than the entire around cover;

first and second elongated flexible rods each having two ends and a length between the two ends greater than the length of the ground covering sheet; means for attaching the first and second elongated flexible rods, respectively, at a plurality of locations along the first and second sides of the canopy, so as to hold the canopy in tension;

means for attaching the ends of the first and second rods to the first and second ends of the ground covering sheet, so as to hold the ground covering sheet in tension; and

means for maintaining the first and second rods in a spaced apart configuration;

wherein the means for attaching the first and second rods to the first and second ends of the ground covering sheet includes pins provided on the rods and openings provided in the ground cover sheet.

5,823,218

LARGE MANIPULATOR, ESPECIALLY FOR SELF-PROPELLED CONCRETE PUMPS, AND METHOD FOR OPERATING IT

Karl Schlecht, and Hartmut Benckert, both of Filderstadt, Germany, assignors to Putzmeister Aktiengesellschaft, Aichtal, Germany

PCT No. PCT/EP94/02460, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO95/06178, PCT Pub. Date Mar. 2, 1995

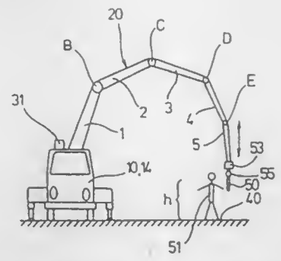
PCT Filed Jul. 26, 1994, Ser. No. 605,081

Claims priority, application Germany, Aug. 26, 1993, 43 28 707.7; Apr. 13, 1994, 44 12 643.3

Int. Cl.[6] B67D *5/64*

U.S. Cl. 137—1 **30 Claims**

1. A method for handling a large manipulator for self-propelled vehicular concrete pumps comprising a concrete-distributing articulated mast arranged on a vehicular frame, the concrete-distributing articulated mast having a freely movable mast top configured to carry a concrete distributing end hose, and a remote-control for manipulating the articulated mast, said method comprising moving the concrete-distributing articulated mast and the mast top with the remote control to a building site, and the operator manually directing the end hose to the desired concrete-feeding point, the mast top automatically following the three-dimensional movements of at least one of the end hose and the operator.



5,823,219

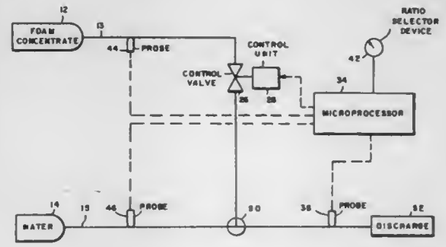
SYSTEM AND METHOD FOR PRODUCING AND MAINTAINING PREDETERMINED PROPORTIONATE MIXTURES OF FLUIDS

Fay A. Purvis, Malvern; William R. MacBride, Glenmoore, and Edward C. Norman, Chester Springs, all of Pa., assignors to National Foam, Inc., Lionville, Pa.

Continuation-in-part of Ser. No. 309,759, Sep. 21, 1994, abandoned, which is a continuation of Ser. No. 137,707, Oct. 14, 1993, abandoned, which is a division of Ser. No. 931,933, Aug. 18, 1992, Pat. No. 5,284,174. This application Aug. 28, 1995, Ser. No. 520,050

Int. Cl.[6] F16K *31/00*

U.S. Cl. 137—5 **7 Claims**



1. A system for maintaining a predetermined proportionate mixture of first and second fluids, said system comprising:

mixing means for mixing said first and second fluids to continuously produce a proportionate discharge mixture;

means for establishing a set point representative of a desired conductivity characteristic of said first and second fluids which corresponds to said predetermined proportionate mixture, said establishing means comprising first measuring means for measuring the conductivity characteristics of each of the fluids flowing along separate paths, and second measuring means for measuring the conductivity characteristics of the predetermined proportionate mixture flowing along a common path;

means for comparing the conductivity of the discharge mixture with the set point, and for generating a control signal representative of any difference therebetween; and

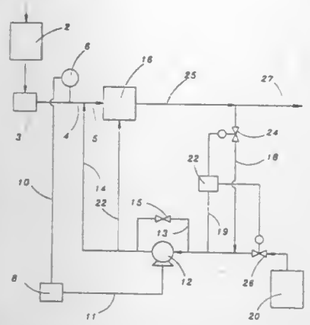
means responsive to said control signal for adjusting said mixing means in order to minimize the difference between the measured conductivity of said discharge mixture and said set point.

5,823,220

PRESSURE REDUCTION SYSTEM AND METHOD

Roy N. McBrayer, Jr., Austin; Jimmy G. Swan, Alvin, and John S. Barber, Round Rock, all of Tex., assignors to RPC Waste Management Services, Inc., Austin, Tex.

Division of Ser. No. 283,699, Aug. 1, 1994, Pat. No. 5,551,472.
This application Jun. 6, 1996, Ser. No. 659,265
Int. Cl.[6] G05D *11/00*
U.S. Cl. 137—13 31 Claims



1. A method of reducing pressure of a fluid by at least 500 p.s.i.g. by passing the fluid through a static restriction device, comprising:

flowing a first fluid stream at a pressure of at least about 500 p.s.i.g.;

sensing the pressure of the first fluid stream with a pressure sensor;

pumping a second fluid stream into the first fluid stream at a location upstream of an inlet of the static restriction device and downstream of the pressure sensor;

reducing the pressure of the mixed fluid stream by at least about 500 p.s.i. by flowing the mixed fluid stream through the static restriction device; and

varying an amount of the second fluid being pumped into the first fluid stream as a function of the sensed pressure.

5,823,221

DEVICE AND METHOD FOR THE AUTOMATIC COUPLING OF A TEEMING LADLE TO ONE OR MORE GAS PIPES

Hubert Stomp, Luxembourg-Howald, and Albert Feitler, Strassen, both of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Germany

Filed Feb. 27, 1996, Ser. No. 607,610
Claims priority, application Luxembourg, Mar. 3, 1995, 88594
Int. Cl.[6] F16L *55/18*
U.S. Cl. 137—15 25 Claims

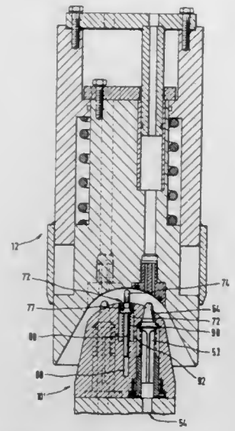
25. A method for the automatic coupling of a device to several gas pipes, wherein a first coupling part connected to a gas supply and a second coupling part attached to the device are coupled together, and wherein a plurality of closeable gas outlets are arranged in the first coupling part and a plurality of gas inlets are arranged in the second coupling part, including the steps of:

a) moving at least one of said first and second coupling parts toward the other;

b) opening a first gas outlet in said first coupling part before the first and second coupling parts are brought together;

c) opening of the remaining gas outlets in said first coupling part after the coupling surfaces have been cleaned by the gas flowing from the open first gas outlet, wherein impurities which have been deposited on the coupling surfaces are flushed radially outwards by the gas flow;

d) effecting a coupling of said first and second coupling parts;



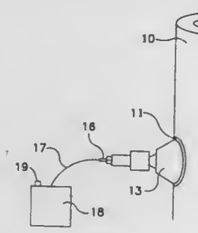
e) effecting sealing of the individual transitions between the respective gas outlets and the corresponding gas inlets.

5,823,222

SANITARY SAMPLING DEVICE AND METHOD FOR USING SAME

James Edward Minshull, Coquitlam, and Robert G. Lawrence, Delta, both of Canada, assignors to Labatt Brewing Company Limited, London, Canada

Filed Nov. 29, 1996, Ser. No. 758,563
Int. Cl.[6] G01N *1/10*; B08B *3/04*; F16L *37/32*; F16K *43/00*
U.S. Cl. 137—15 3 Claims



1. In a method for sampling the contents of a vessel used for preparing, treating, or holding liquid substances so that the contents can be analyzed for bacterial contamination, the improvement that comprises

tapping a closed, unidirectional flow channel by engaging a nipple with a coupling means, wherein said nipple provides a channel for fluid flow, and wherein said engaging step simultaneously:

(a) seals said nipple with said coupling means and

(b) opens a stopping means of said nipple at an end of said channel engaging said coupling means

(c) thereby permitting a unidirectional flow of said fluid;

transferring said fluid through said channel of said nipple into said coupling means and, thereafter, into a sterile sample receiving means;

disengaging said nipple and said coupling means after said sampling has been completed; wherein said disengaging step simultaneously:

(a) releases said nipple from said coupling means and

(b) closes said stopping means of said nipple to terminate said unidirectional flow of said fluid; and then

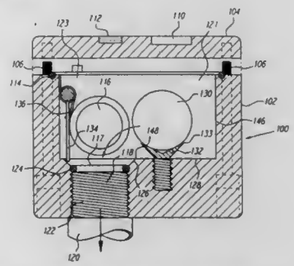
cleaning said disengaged coupling means and any other means attached thereto to remove residual sample prior to further sampling; whereby a false positive in a subsequent sample produced by contamination from the residual sample is avoided.

5,823,223

RETROFITTABLE SAFETY SHUT-OFF VALVE FOR GAS OR LIQUID METER

Richard G. Franklin, Manhattan Beach; Robert Salazar, Rowland Heights, and William Q. Osburn, La Canada, all of Calif., assignors to Pacific Enterprises, Los Angeles, Calif.

Continuation-in-part of Ser. No. 566,548, Dec. 4, 1995, Pat. No. 5,603,345. This application May 1, 1996, Ser. No. 688,995
Int. Cl.[6] F16K *17/36*
U.S. Cl. 137—38 2 Claims



1. A shut-off valve for retrofitting in place of a 90° elbow comprising:

a housing having a flow portion in the configuration of said 90° elbow, said flow portion having a threaded fluid inlet formed along an inlet axis and a threaded fluid outlet formed in said housing, said outlet having an axis perpendicular to the inlet axis;

a ball for blocking fluid flow into said outlet when the valve is closed; and

a retainer pedestal adjacent said flow portion for seating said ball when the valve is open, said retainer pedestal comprising a screw having a head and a threaded portion which threadably engages said housing and said screw head having a concave surface for receiving said ball;

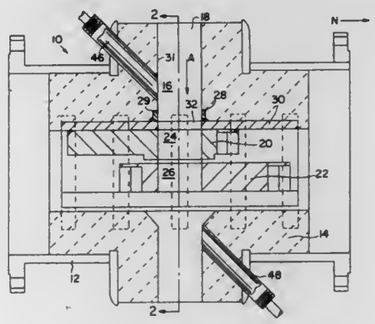
wherein the fluid flow presses said ball directly against said outlet when the valve is closed.

5,823,224

SLIDE VALVE

Luis Gomez, Bolivar, Venezuela, assignor to Brifer International Ltd., Bridgetown, Barbados

Filed Jun. 26, 1997, Ser. No. 883,090
Int. Cl.[6] F16K *3/30*; B22D *37/00*
U.S. Cl. 137—240 34 Claims



1. A slide valve for use in a high pressure, high temperature, erosive flow system environment, said slide valve comprising:

a valve housing;

means for defining a flow passage for a medium within said valve housing;

a stationary valve member fixed relative to said flow passage;

a valve member movable relative to said flow passage for restricting flow through said flow passage, said movable valve member having an orifice therein and being movable between a first position wherein said orifice is aligned with said flow passage and a second position wherein said orifice is non-aligned with said flow passage; and

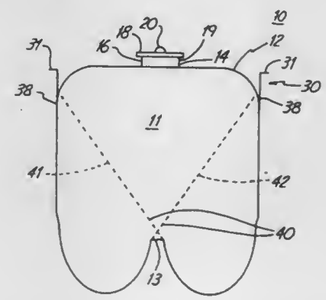
a plate secured to said stationary valve member for substantially preventing channelling around said stationary valve member.

5,823,225

COLLAPSIBLE CONTAINER FOR HAULING BULK MATERIALS

Stewart E. Erickson, and Daniel J. Halvorson, both of Hudson, Wis., assignors to SEEC, Inc., Mendota Heights, Minn.

Continuation of Ser. No. 233,111, Apr. 25, 1994, which is a continuation-in-part of Ser. No. 190,989, Feb. 3, 1994. This application May 17, 1995, Ser. No. 443,107
Int. Cl.[6] B61D *5/00*
U.S. Cl. 137—347 17 Claims



1. A collapsible container for hauling materials, comprising:

a generally flexible barrier defining a collapsible cavity, the barrier having an upper portion, a lower portion and a sidewall;

a port having a periphery, the port extending through the upper portion of the barrier for passing the material into and out of the cavity;

a cover attached to the barrier for closing the port;

a lifting member attached to the upper portion for engagement with a crane, the lifting member having a fitting for engaging a lifting bar carried by the crane and an arm for engaging a freight vehicle;

a strap attached to the lifting member and the barrier; and

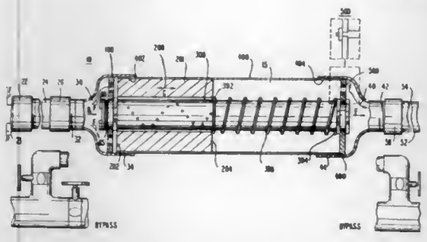
a ring attached to the lower portion of the barrier for holding the container as the container is inverted so that the materials may be evacuated through the port when the cover is removed therefrom.

5,823,226

AUTOMATIC VARIABLE-DEMAND FLOW REGULATOR

Eric Leon, and Stephen Leon, both of Fort Lauderdale, Fla., assignors to Water Management Equipment Ltd., Boca Raton, Fla.

Continuation-in-part of Ser. No. 603,078, Feb. 20, 1996, Pat. No. 5,704,390. This application Sep. 10, 1997, Ser. No. 927,218
Int. Cl.[6] G05D *7/01*
U.S. Cl. 137—357 **10 Claims**



1. A variable-demand flow regulator system for regulating water flow to a water system of a building, the variable-demand flow regulator system comprising:

a water supply; and

a regulator having an inlet connected to the water supply and an outlet connected to the water system of the building, the regulator including a bleeder valve for establishing desired water flow characteristics thereof,

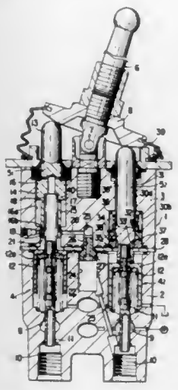
wherein the regulator automatically responds to variations in water demand by increasing water flow to the building when water demand increases and decreasing water flow to the building when water demand decreases.

5,823,227

HYDRAULIC PILOT VALVE

Shuji Hori; Kei Kawabata, and June Maruyama, all of Tochigi-ken, Japan, assignors to Komatsu, Ltd., Tokyo, Japan

PCT No. PCT/JP95/02327, § 371 Date May 9, 1997, § 102(e) Date May 9, 1997, PCT Pub. No. WO96/15374, PCT Pub. Date May 23, 1996
PCT Filed Nov. 14, 1995, Ser. No. 836,259
Claims priority, application Japan, Nov. 14, 1994, 6-278989
Int. Cl.[6] F15B *13/02*
U.S. Cl. 137—636.1 **7 Claims**



1. A hydraulic pilot valve comprising:

a plurality of pressure reduction valve portions, each of said pressure reduction valve portions having an inlet port, an outlet port and a pressure regulating valve for establishing and blocking communication between said inlet and outlet ports by movement of said pressure regulating valve;

a plurality of pistons for moving said pressure regulating valves of said pressure reduction valve portions in a direction establishing communication between said inlet and outlet ports, respectively;

an operation lever having a pushing member for pushing said plurality of pistons, by rocking said operation lever from a neutral position in a direction so as to place said operation lever at an actuating position at which one of said pistons is pushed to place one of said pressure reduction valve portions in a pressurized fluid supply condition to establish communication between said inlet portion and said outlet portion;

a plurality of springs for biasing said pistons upwardly beyond a predetermined neutral position to retain said pistons in an abutting relation with said pushing member;

a switching valve portion provided in the other of said pistons, said switching valve portion moving to an open position when said other piston is pushed in an upward direction;

a pressure receiving chamber for pushing up at least one of said pistons, other than said one piston, so as to maintain said operation lever at the actuating position, said pressure receiving chamber communicating with said outlet port of said one pressure reduction valve portion via said switching valve portion; and

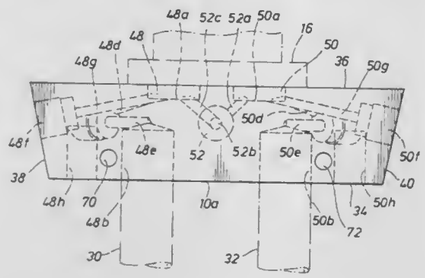
a resistance device, disposed adjacent said one piston, for increasing resistance to a downwardly directed pushing force applied to said one piston when said one piston is pushed down beyond a predetermined distance by said pushing member.

5,823,228

VALVE MANIFOLD

Alan F. Chou, Sugar Land, Tex., assignor to Keystone International Holdings Corp., Houston, Tex.

Filed Feb. 5, 1997, Ser. No. 794,975
Int. Cl.[6] E03B *11/00*
U.S. Cl. 137—597 **9 Claims**



1. A valve mazifold adapted to be positioned between a main flow line and a pressure sensor to control fluid flow from said main flow line to said pressure sensor, comprising:

a manifold body having a first face, an opposed, substantially planar second face, and a peripheral wall, a high pressure inlet, a low pressure inlet, a high pressure drain port, and a low pressure drain port being formed in said first face, a high pressure outlet and a low pressure outlet being formed in said second face;

an equalizer valve cavity formed in said peripheral wall, said equalizer valve cavity being in open flow communication with said high pressure outlet and said low pressure outlet;

an equalizer valve disposed in said equalizer valve cavity for controlling fluid communication between said high pressure outlet and said low pressure outlet;

a high pressure block valve cavity formed in said peripheral wall said high pressure block valve cavity, said high pressure inlet, and said high pressure outlet being interconnected, said high pressure block valve cavity and said high pressure outlet being connected by a first, straight passageway;

high pressure block valve cavity disposed in said high pressure valve cavity for controlling fluid communication between said high pressure inlet and said high pressure outlet;

a high pressure vent valve cavity formed in a first, substantially planar side surface of said peripheral wall, said first side surface being coincident with an imaginary plane forming an acute angle with said second face;

a straight, high pressure vent passageway connecting said high pressure vent valve cavity and said high pressure outlet, said high pressure vent passageway sloping in a direction away from said second face and being normal to said first side surface, said high pressure vent valve cavity and said high pressure drain port being connected;

a high pressure vent valve disposed in said high pressure vent valve cavity for controlling fluid communication between said high pressure outlet and said high pressure drain port;

a low pressure block valve cavity formed in said peripheral wall, said low pressure block valve cavity, said low pressure inlet, and said low pressure outlet being interconnected, said low pressure block valve cavity and said low pressure outlet being connected by a second straight passageway;

a low pressure block valve disposed in low pressure block valve cavity for controlling fluid communication between said low pressure inlet and said low pressure outlet;

a low pressure vent valve cavity formed in a second, substantially planar side surface of said peripheral wall, said second side surface being coincident with an imaginary plane forming an acute angle with said second face and being opposed to said first side surface;

a straight, low pressure vent passageway connecting said low pressure vent valve cavity and said low pressure outlet, said low pressure vent passageway sloping in a direction away from said second face and being normal to said second side surface, said low pressure vent valve cavity and said low pressure drain port being connected, and

a low pressure vent valve disposed in said low pressure vent valve cavity for controlling fluid communication between said low pressure outlet and said low pressure drain port said peripheral wall including a third side surface a fourth side surface, and a fifth side surface said fourth side surface being disposed between said first side surface and said third side surface, said fifth side surface being disposed between said second side surface and said third side surface, said fourth side surface and said fifth side surface forming obtuse angles with said third side surface, said equalizer valve cavity being disposed in said third side surface, said high pressure block valve cavity being disposed in said fourth side surface and said low pressure block valve cavity being disposed in said fifth side surface.

5,823,229

FAUCET HAVING MULTIPLE WATER DISCHARGES

John E. Bertrand, Fairview Park; Lee A. Mercer, Valley City, both of Ohio; Thomas H. Burchard, Winchester; Gregory Hunter, Westwood, both of Mass.; John Lofgren, Glendale; Henry N. Wagner, Cedar Grove, both of Wis.; Kevin M. Johnson, Natick, and Jeffery Karg, Hopkinton, both of Mass., assignors to Moen Incorporated, North Olmsted, Ohio

Filed Dec. 6, 1996, Ser. No. 761,404
Int. Cl.[6] F16K *15/18*
U.S. Cl. 137—614.2 **35 Claims**

1. A faucet having multiple water discharges including a housing, an input water connection for said housing, stream discharge means on said housing, spray discharge means on said housing, filtered water discharge means on said housing, a water filter cartridge within said housing, valve control means in said housing connected to each of said water discharges,

said water filter cartridge including a cover, a filter element within said cover, said cover having a single unfiltered water input connection connected to said housing input water connection and a plurality of output connections, one for filtered water and one for unfiltered water, said filtered water output connection being connected to said valve control means and said unfiltered water output connection being connected to said valve control means, a conduit within said cover connecting said unfiltered water input connection and said unfiltered water output connection, a flow path within said cover from said unfiltered water input connection through said filter element and connecting to said filtered water output connection, a peripheral chamber between the exterior of said filter element and the interior of said cover, with said chamber being within said flow path and being connected to said unfiltered water input connection,

manual means accessible from the exterior of said housing for operating said valve control means to direct water from said cartridge unfiltered water output connection to either said stream discharge means or said spray discharge means,

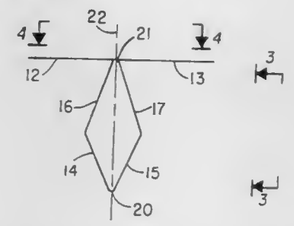
filtered water manual control means accessible from the exterior of said housing for operating said valve control means to direct filtered water from said cartridge filtered water output connection to said filtered water discharge.

5,823,230

HEAT EXCHANGER ASSEMBLY METHOD AND TUBE PLUG FOR HEAT EXCHANGER

Kevin Lloyd Freestone, Warren, Pa.; Edward Olen Smouse, Lawtons, N.Y.; Mabel Winifred Smith, Sherman, N.Y.; Herbert Allen Weaver, Conewango Valley, N.Y.; Stephen Alan Parks; Alvan Harold Johnson, both of Jamestown, N.Y.; Brian Raymond Nelson, Frewsburg, N.Y.; Ronald Lee Brake, Sr., Jamestown, N.Y., and Jeremy Grant Suber, Kennedy, N.Y., assignors to Valeo Engine Cooling Inc., Jamestown, N.Y.

Filed Jul. 11, 1995, Ser. No. 500,601
Int. Cl.[6] F16L *55/00*
U.S. Cl. 138—89 **1 Claim**



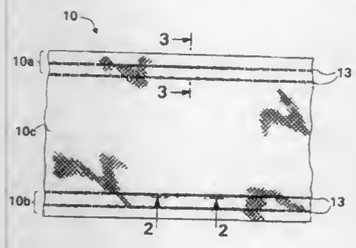
1. A tube plug for a heat exchanger, the tube plug having a longitudinal axis and comprising a cap portion adapted to at least substantially close a heat exchanger tube, the cap portion extending transversely of the axis and a tube engaging portion depending from the cap portion and extending along the longitudinal axis, the tube engaging portion being hollow, wherein the tube plug is formed from a sheet metal member, and wherein the sheet metal member defines an axial cross section which tapers outwardly in the axial direction along the tube engaging portion to a location of maximal extent, then tapers inwardly along a connecting portion to a throat region, the connecting portion enabling the tube engaging portion to flex, wherein the sheet metal member extends substantially transversely to define the cap portion.

5,823,231
MULTI-LAYERED HOSE
Minoru Kawasaki, Komaki, Japan, assignor to Tokai Rubber Industries, Ltd., Komaki, Japan
Continuation of Ser. No. 546,950, Oct. 23, 1995, Pat. No. 5,664,608, which is a continuation of Ser. No. 129,402, Sep. 30, 1993, abandoned. This application Apr. 1, 1997, Ser. No. 831,083
Claims priority, application Japan, Sep. 30, 1992, 4-286689
Int. Cl.[6] F16L *11/12*
U.S. Cl. 138—109 18 Claims



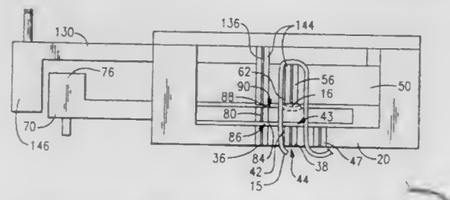
1. A multi-layered hose comprising
a flexible rubber outer layer and a resin or metal inner layer integrally formed at an inner periphery surface of said outer layer,
an edge portion for receiving a mating member, said inner layer being located at said inner periphery surface of a main portion of said flexible rubber outer layer and at said inner periphery surface of said edge portion of said outer layers,
at least a part of said inner layer at said inner periphery surface of said edge portion of said outer layer tapering gradually from a thickness at said main portion until reaching a lesser thickness for progressively increasing sealing engagement with a leading edge of the mating member as the mating member is inserted into said edge portion.

5,823,232
EMBROIDERY FABRIC STRIP WITH DEFORMABLE, SHAPE-RETAINING PROPERTIES
Andreas Georgii, Sindelfingen, Germany, assignor to Zweigart & Sawitzki, Sindelfingen, Germany
Filed Jun. 25, 1997, Ser. No. 882,586
Int. Cl.[6] D03D *15/02*
U.S. Cl. 139—383 R 6 Claims



1. An embroidery fabric, comprising;
a) a main body having an elongated, strip-shaped configuration having a width in a range from 5 cm to 15 cm and including two filamentary arrays each including a multitude of substantially parallel fibers that are interwoven with those of the respective other array and extend substantially normal thereto to form between themselves respective rows and columns of openings for the passage of embroidery threads therethrough, said openings along said rows and said columns all being of equal size, said body having two elongated marginal portions extending longitudinally of said main body and spaced from one another by an intervening portion of a width many times exceeding that of said marginal portions, at least one of said marginal portions being substantially straight and extending in substantial parallelism to said fibers of one of said filamentary arrays; and
b) reinforcing means for reinforcing at least said one of said marginal portions of said body to the exclusion of at least said intervening portion, including at least one elongated reinforcing element of a plastically deformable material secured only to said one marginal portion and extending fully within the confines thereof at least substantially over the entire length of said one marginal portion.

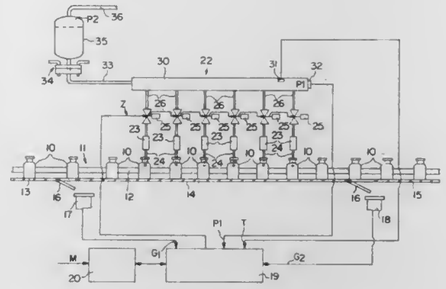
5,823,233
APPARATUS FOR CUTTING AND CRIMPING COIL
David C. McHenry, Jr., Stone Mountain, Ga., assignor to Unicoil, Inc., Norcross, Ga.
Filed Jul. 8, 1997, Ser. No. 889,407
Int. Cl.[6] B21F *35/02*
U.S. Cl. 140—92.7 13 Claims



1. An apparatus for cutting and crimping a coil, comprising:
a) a first fixed plate having at least one first tooth extending therefrom, the first tooth having a cutting edge;
b) a second fixed plate having a second tooth extending therefrom, the second fixed plate disposed substantially parallel to and in spaced apart relation with the first fixed plate;
c) a cut plate disposed between the first fixed plate and the second fixed plate and capable of moving relative to the first fixed plate and the second fixed plate, the cut plate having a third tooth extending therefrom, the third tooth having a cutting edge;
d) a push plate disposed adjacent to the second fixed plate and capable of movement relative to the second fixed plate, the push plate having a fourth tooth extending therefrom, the fourth tooth extending across a portion of the second fixed plate so that the fourth tooth and the second tooth are capable of forming a pair of opposed clamping members, the push plate being capable of engaging with the cut plate;
e) means for biasing the push plate such that the opposed clamping members are juxtaposed; and,
f) means for driving the cut plate in reciprocating, substantially linear motion.

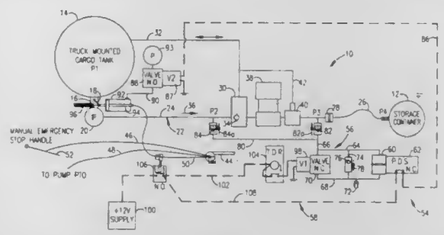
5,823,234
PROCESS FOR FILLING CONTAINERS WITH A PRESSURIZED LIQUID
Detlef Boertz, Schwablisch Hall, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE96/01037, § 371 Date Feb. 13, 1997, § 102(e) Date Feb. 13, 1997, PCT Pub. No. WO97/00224, PCT Pub. Date Jan. 13, 1997
PCT Filed Jun. 3, 1996, Ser. No. 776,948
Claims priority, application Japan, Jun. 16, 1995, 7-150670
Int. Cl.[6] B67C *3/20*
U.S. Cl. 141—67 20 Claims

1. A process for filling containers (**10**) with a liquid under pressure (P1) which comprises supplying a liquid contained within a pressurized reservoir (**35**) to a distributor (**30**) connected with said pressurized reservoir so as to completely fill the distributor with liquid simultaneously supplying the liquid from said distributor to respective filling valves, measuring the pressure of the liquid contained within said distributor, transmitting the measured pressure (P1) to a control device (**19**) to which a signal representative



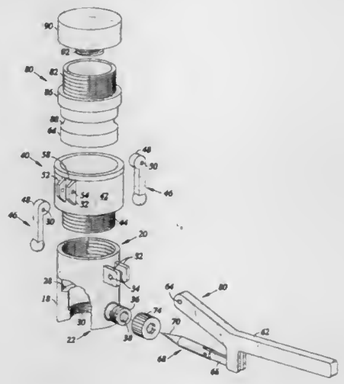
of a desired fill quantity has been directed to produce a trigger output (Z) of said control device, directing the trigger output (Z) to each of said filling valves to simultaneously actuate each of said filling valves to fill said liquid in respective containers, continuously measuring the pressure (P1) at particular intervals (Δt) during the filling said containers, calculating actual filled fill quantities (M) from a sum of partial volumes (ΔM), which sum is produced taking into account the respectively measured pressure (P1) of the liquid, the time intervals (Δt) between the individual pressure measurements, and a pressure flow characteristic curve (k) of the filling valves (**25**), and stopping the trigger signal from the control device (**19**) to the metering valves (**25**) when a fill limit quantity (M (max)) has been obtained.

5,823,235
EMERGENCY SHUT-OFF MECHANISM FOR PROPANE DELIVERY SYSTEMS AND THE LIKE
Lewis F. Alley, Kansas City, and Billy F. Brim, Liberty, both of Mo., assignors to A-B Products, Inc., Liberty, Mo.
Filed Apr. 3, 1997, Ser. No. 819,758
Int. Cl.[6] B65B *3/00*
U.S. Cl. 141—197 7 Claims



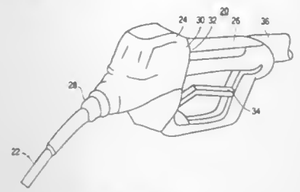
1. In a fluid delivery apparatus for transferring fluid under pressure through a conduit from an outlet of a source of supply to a delivery site, safety shut-off mechanism for closing the outlet in the event of a break in the conduit comprising:
a shut-off valve operably associated with the outlet; and
a control system operably coupled with the conduit and the shut-off valve for closing the valve in response to a drop in pressure in the conduit,
said control system being responsive to the differential between an established reference pressure and a current delivery pressure in the conduit to close the shut-off valve,
said system including a timer operable to delay determination of the reference pressure for a certain predetermined period of time following initiation of the delivery process through the conduit,
said system further including a pressure detecting fluid circuit plumbed in parallel with the conduit,
said circuit including an actuator, means for communicating working pressure in the conduit with one side of the actuator during the delivery process, and structure for trapping fluid at the reference pressure on an opposite side of the actuator at the termination of the delay period,
said actuator being operable, when the difference between the reference pressure on one side of the actuator and the working pressure on its opposite side reaches a predetermined magnitude, to actuate,
said shut-off valve including an electrically-powered device,
said actuator being operably associated with a switch forming part of an electrical control circuit for said device,
said actuator being operable, when actuated, to operate said switch and cause actuation of said device.

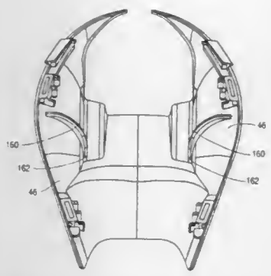
5,823,236
AEROSOL CAN PUNCTURING MACHINE
James E. Kirby, Norwalk; Glen Silva Abad, La Habra, and Ralph E. Jaffke, Lakewood, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.
Filed Aug. 25, 1997, Ser. No. 917,999
Int. Cl.[6] B67B *7/00*
U.S. Cl. 141—330 13 Claims



1. An aerosol can puncturing machine comprising:
a lower housing section adapted to receive at least a portion of an aerosol can;
an upper housing section removably attachable to said lower housing section, said upper and lower housing sections fully encasing the aerosol can when attached to each other;
a locking mechanism connected to the lower housing section and movable between an unlocked position wherein the upper housing section is detachable from the lower housing section and a locked position wherein the upper housing section is maintained in locked engagement to the lower housing section;
wherein said locking mechanism comprises:
at least one cam lever pivotally connected to the lower housing section;
the movement of the cam lever to the locked position facilitating the engagement thereof to the upper housing section in a manner preventing the detachment of the upper housing section from the lower housing section; and
a puncturing mechanism connected to the lower housing section and operable to selectively puncture the aerosol can encased within the upper and lower housing sections.

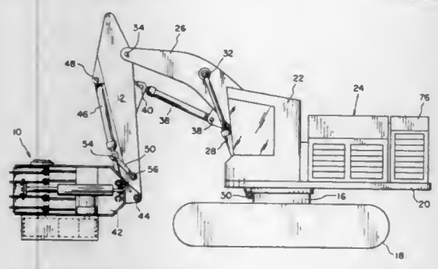
5,823,237
PROTECTIVE COVER FOR A FUEL PUMP FILLER GUN AND METHOD FOR PROTECTING SAME
Stein Alvern, Houston, Tex., and Öyvind Alvern, Hjellestad, Norway, assignors to Alvern-Norway A/S, Oslo, Norway
Continuation-in-part of Ser. No. 678,848, Jul. 12, 1996, which is a continuation-in-part of Ser. No. 669,228, Jun. 24, 1996. This application Dec. 2, 1996, Ser. No. 757,096
Int. Cl.[6] B67D *5/37*
U.S. Cl. 141—392 **15 Claims**





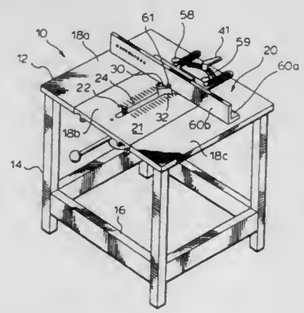
1. An apparatus for protecting a fuel pump filler gun, the filler gun including in sequence a barrel, a head portion, and a handle, the apparatus comprising:
- a rigid outer shell configured to substantially surround only the head portion of the filler gun and to distribute impact forces away from the filler gun, the outer shell having a front end and a rear end, the rear end having an opening proximate a junction between the head portion and the handle, the handle extending through the opening such that the handle is not covered; and
- a resilient arcuate rib disposed between an inner surface of the outer shell and a surface of the head portion of the filler gun to assist in the distribution of the impact forces away from the filler gun.

5,823,238
BACKHOE GRINDER
Dean Bohnke, 16309 Hoagland Rd., Monroeville, Ind. 46773
Filed Jan. 8, 1997, Ser. No. 780,504
Int. Cl.[6] A01G *23/06*
U.S. Cl. 144—24.12 **11 Claims**



6. A tree grinder comprising:
frame movable from tree to tree;
a drum,
a drum support rotatably mounting said drum to said frame;
a motor attached to said drum support;
a first drive pulley attached to said motor;
a second drive pulley connected to said drum;
a plurality of drive belts connecting said first drive pulley to said second drive pulley; and
a shredding plate attached to said drum support, said shredding plate operable to be moved toward and away from said drum thereby decreasing or increasing the size of shredded particles during grinder operation.

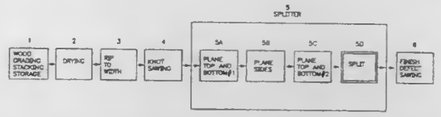
5,823,239
WORK BENCH
Darrin E. Smith, Ontario, Canada, assignor to Jessem Products Limited, Ontario, Canada
PCT No. PCT/CA96/00053, § 371 Date Jul. 30, 1997, § 102(e) Date Jul. 30, 1997, PCT Pub. No. WO96/23634, PCT Pub. Date Aug. 8, 1996
PCT Filed Jan. 26, 1996, Ser. No. 875,397
Claims priority, application Canada, Jan. 31, 1995, 2141468
Int. Cl.[6] B27C *5/02;* **B27B** *1/00;* **B25H** *1/00*
U.S. Cl. 144—135.2 **13 Claims**



1. A router table including:
- a table having a stationary planar upper surface and an elongated slot formed therein;
- a fence which is adjustably mounted on said upper surface and to which a work piece may be clamped such that the work piece may be adjustably positioned on said upper surface and maintained immovable in a desired position during the routing operation;
- a carriage slideably mounted beneath said upper surface;
- and a router mounted to said carriage and having a bit which extends through said slot and projects upwardly of said upper surface to engage the work piece, said bit cutting out an elongated groove in the immovable work piece as said carriage slides beneath said upper surface,

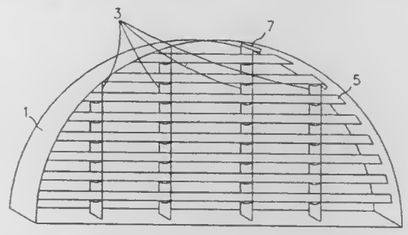
said slot extending across said table and beneath said fence and defining an elongated path along which said bit travels as said carriage slides beneath said upper surface such that as said carriage slides, said bit cuts out an elongated groove in the immovable work piece, said fence having an opening above said slot through which said bit may pass.

5,823,240
LOW PROFILE HARDWOOD FLOORING STRIP AND METHOD OF MANUFACTURE
Darl J. Bolyard, Whitmer, W. Va.; James E. Price; Dicky Ray Welch, both of Jackson, Tenn.; Gerhard Henn, Königheim, and Jürgen Petzold, Bad Rappenau, both of Germany, assignors to Triangle Pacific Corporation, Dallas, Tex.
Continuation of Ser. No. 373,042, Jan. 17, 1995, Pat. No. 5,597,024. This application Jan. 23, 1997, Ser. No. 789,310
Int. Cl.[6] B27L *5/02;* **B27C** *9/00*
U.S. Cl. 144—369 **13 Claims**



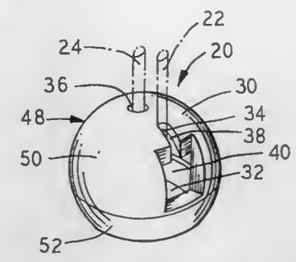
1. A hardwood flooring product made according to the method comprising the steps of:
- (a) processing a strip of raw wood into a blank having a predetermined thickness and width defined by top and bottom surfaces and opposing side edge surfaces which reside in parallel planes relative to each other;
- (b) planing the top and bottom surfaces of the blank;
- (c) planing the side edge surfaces of the blank;
- (d) splitting the blank along the width of the blank from one side to the other to form two low profile flooring strips having the same width as the blank and a thickness less than one-half the thickness of the blank<;
- (e) the steps of (b), (c) and (d) comprising sequential automatic steps without intermediate handling to thereby provide enhanced dimensional tolerances to the flooring strip; and
- (f) finishing the flooring strip to a predetermined level.

5,823,241
USER FITTABLE VENETIAN BLINDS FOR DIFFERING ARCHED WINDOWS
Steven O. Sitzes, 1742 Sandpiper, Abilene, Tex. 79602, and Keith B. Turner, 5002 S. 11th St., Abilene, Tex. 79605
Filed Sep. 16, 1997, Ser. No. 931,348
Int. Cl.[6] A47H *1/00*
U.S. Cl. 160—107 **3 Claims**



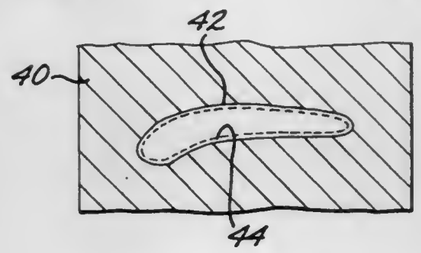
1. A user fittable Venetian blind comprising:
- a) an arched window frame and an arched window therein,
- b) a minimum of two rigid hanger strips and multiple slats, said hanger strips having multiple angled slots sized to snugly hold said multiple slats therein with said hanger strips being a minimum of about one foot apart and all of said slats being as long as the widest part of said window;
- c) adjustable hinges with each of said hinges having a short side with an opening to allow fastening to a top end of each of said hanger strips and a curved slotted long side to allow loosely fastening in a center of said slot to said arched window frame and to allow a user to slide said hinges until said slats are exactly horizontal before trimming said slats to fit inside said frame and tightening said fasteners to hold said strips rigidly in place.

5,823,242
SAFETY TASSEL FOR PULL CORDS
Chung-Chen Huang, Taipei, Taiwan, assignor to Teh Yor Industrial Co., Ltd., Taipei, Taiwan
Filed Jun. 13, 1997, Ser. No. 874,165
Int. Cl.[6] E06B *9/30*
U.S. Cl. 160—178.1 R **13 Claims**



1. A pull cord tassel for releasably holding a first string and for holding a second string, the first string having a first enlargement near its end, the pull cord tassel comprising:
- a hollow, generally spherical body having a top hemisphere and a bottom hemisphere and defining a cavity, a first aperture for receiving the first string, an elongated aperture, and an assembly aperture; the first aperture being integral with the elongated aperture which is in turn integral with the assembly aperture; and the first, elongated, and assembly apertures being in communication with the cavity, surrounded on all sides by the body, and located substantially on the top hemisphere;
- the first aperture and the elongated aperture being at least as large as the size of the first string and smaller than the first enlargement, the assembly aperture being larger than the first enlargement, the pull cord tassel being adapted to hold the first string with the first enlargement in the cavity when the first string is positioned through the first aperture and to release the first string when the first string is moved through the elongated aperture and into the assembly aperture through which the first enlargement can pass.

5,823,243
LOW-POROSITY GAMMA TITANIUM ALUMINIDE CAST ARTICLES AND THEIR PREPARATION
Thomas J. Kelly, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio
Filed Dec. 31, 1996, Ser. No. 775,700
Int. Cl.[6] B22D *27/20*
U.S. Cl. 164—57.1 **17 Claims**



1. A method of preparing a gamma titanium aluminide article, comprising the steps of:
- furnishing a mold having an inner surface defining the shape of an article, at least a portion of the inner surface having thereon a facecoating of an inoculant operable to nucleate grains during solidification and to cause an as-cast gamma

titanium aluminide material to form a nearly equiaxed structure rather than a columnar structure at the surface of a casting;

casting into the mold a charge of a molten metal which, upon solidification, forms a gamma titanium aluminide material; and

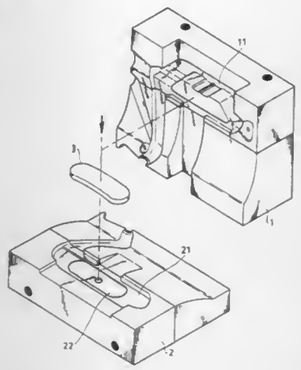
cooling the cast charge.

5,823,244

METHOD FOR INTEGRALLY FORMING GOLF CLUB HEADS

Wen Liang Hsieh, No. 12, Min-Chuan Street, Mi-Ching Village, Mi-To Hsiang, Kaohsiung Hsien, Taiwan

Filed Jul. 2, 1997, Ser. No. 887,120
Int. Cl.[6] B22D *19/00*
U.S. Cl. 164—112 **7 Claims**



1. A method for manufacturing a golf club head, comprising the steps of:

(a) providing a male mold having a first cavity and a female mold with a second cavity, the first cavity and the second cavity having a contour complimentary to that of a golf club head, a bottom wall defining one of the first cavity and the second cavity having a recess defined therein,

(b) inserting an insert piece into the recess, and

(c) pouring molten metal into the first cavity and the second cavity to form the golf club head in which the insert piece is integrally formed with the golf club head.

5,823,245

STRAND CASTING PROCESS

Manfred Wolf, Zurich, Switzerland, assignor to Clecim, Cergy-Pontoise, France

Continuation of Ser. No. 318,512, Sep. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 36,240, Mar. 24, 1993, abandoned. This application Oct. 1, 1996, Ser. No. 725,660
Claims priority, application France, Mar. 31, 1992, 92 03906
Int. Cl.[6] B22D *11/04;11/07;11/16*
U.S. Cl. 164—452 **15 Claims**

1. Strand casting process for a molten metal in an installation for continuous production of a cast product by pouring molten metal into a bottomless mold having an axis and cooled walls,

said installation comprising means for oscillating said mold along said axis over a distance and at a frequency, and means for withdrawing said product from said mold at a casting speed,

oscillations of said mold being adjusted so that, during each oscillation cycle of duration tc, a speed of descent of said mold is greater than said casting speed during a negative stripping time having a first value which is valid over a first adjustment range of said casting speed,

the molten metal being surmounted by a lubricant forming a liquid slag for lubricating said cooled walls of said mold, said lubricant being poured into an upper part of said mold with a consumption rate having a first value which is valid over said first adjustment range of said casting speed,

said process comprising the steps of:

(a) determining the nature of said lubricant and said consumption rate having a first value, relative to the composition of molten metal and a first casting condition corresponding to said first adjustment range of said first casting speed;

(b) adjusting said casting speed over a second adjustment range to a lower casting speed adapted to a lower casting condition without modifying said lubricant; and

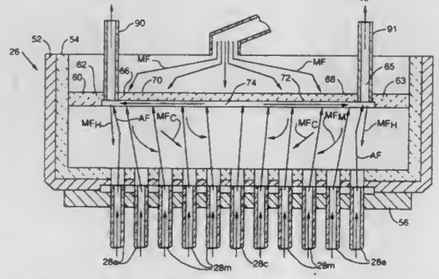
(c) acting on both said distance h and frequency f of the oscillations according to said lower casting speed, the consumption rate of said lubricant and the negative stripping time remaining substantially at their respective first values corresponding to said first adjustment range of said casting speed.

5,823,246

TUNDISH INCLUDING A BAFFLE FOR DIRECTING MOLTEN METAL THERETHROUGH AND AN ASSOCIATED CASTER AND METHOD OF CASTING MOLTEN METAL

Wilhelm F. Lauener, Gerlafingen, Switzerland, assignor to Larex A.G., Solothurn, Switzerland

Filed Mar. 3, 1997, Ser. No. 808,465
Int. Cl.[6] B22D *11/10;41/00*
U.S. Cl. 164—488 **5 Claims**



1. A tundish through which molten metal is cast downwardly to form a cast rectangular product, said tundish including a generally rectangular baffle in it with said baffle having a longitudinal axis and comprising a central portion, a pair of end sections on opposite ends of the baffle along said longitudinal axis, and intermediate sections between said central portion and said end sections for creating two spaced passageways in said tundish so molten metal introduced into said tundish will diverge around said central portion along the longitudinal axis of said baffle and will flow downwardly through said passageways to be cast into a cast product with reduced cracking of metal in the cast product, said baffle further having at least one vertical opening therethrough and a chimney on the baffle over the opening for gasses to flow from said molten metal in said mold, below the baffle, upwardly through said opening and said chimney.

4. A method of casting molten metal into a metal product in a mold of a caster, said mold having an elongated rectangular cross-section with a center portion and an outside edge portion, said mold including a tundish that includes a baffle having a generally rectangular configuration with a longitudinal axis, at least one vertical opening through said baffle and a chimney on the baffle over said opening, said method comprising:

introducing hot air downwardly into said chimney and through said baffle to preheat said caster before casting molten metal in it;

thereafter directing molten metal into said tundish and diverting substantially all of the molten metal in opposite directions along said longitudinal axis of said baffle and then downwardly into said mold; and

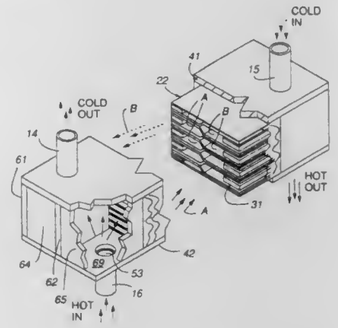
solidifying said molten metal in said mold such that cracking of said metal product is inhibited.

5,823,247

HEAT EXCHANGER AND METHOD

Walter W. Weibler, 7652 Webster Way, Arvada, Colo. 80003

Filed Aug. 16, 1996, Ser. No. 689,708
Int. Cl.[6] F28D *9/02*
U.S. Cl. 165—76 **12 Claims**



1. A heat exchanger device comprising:

a separately constructed, leak tested heat exchanger core having flat opposed first and second outer core plates, a stack of parallel spaced inner core plates between said first and second outer core plates, said outer core plates being constructed of a thickness or material having a greater ability to resist pressure than said inner core plates with spaces between said inner core plates defining alternate flow passages for hot and cold fluids, said outer core plates extending parallel to said inner core plates,

an attachable first core retaining plate affixed to one face of said core and extending parallel to said first outer core plate having opposed first and second end portions extending beyond the ends of said core and having a first pair of flow apertures at preselected precise positions in relation to flow line connectors to which the device is connected,

an attachable second core retaining plate affixed to an opposite face of said core and extending parallel to said second outer core plate having opposed first and second end portions extending beyond the ends of said core with a second pair of apertures at preselected precise positions in relation to flow line connectors to which the device is connected for fluid flow,

attachable first end wall portions connected to said first and second core retaining plates at one end of said core forming first flow compartments to pass fluid toward and away from said core and through one each of said first and second pairs of apertures, and

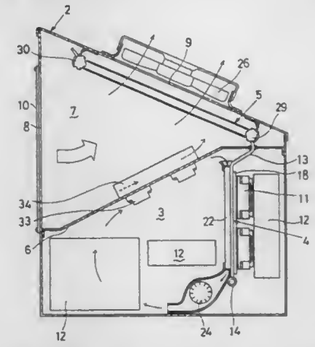
attachable second end wall portions connected to said top and bottom core retaining plates at an opposite end of said core forming second flow compartments to pass fluid toward and away from said core and through one each of said other of said first and second pairs of apertures.

5,823,248

COOLING APPARATUS USING BOILING AND CONDENSING REFRIGERANT

Shigeru Kadota, Hekinan; Takashi Furukawa, Nagoya; Kiyoshi Kawaguchi, Toyota; Masahiko Suzuki, Hoi-gun, and Kenji Yamada, Chiryu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 30, 1996, Ser. No. 724,594
Claims priority, application Japan, Oct. 6, 1995, 7-259702
Int. Cl.[6] F28D *15/00*
U.S. Cl. 165—104.33 **8 Claims**



2. A cooling apparatus. for cooling heating elements using boiling and condensing refrigerant said cooling apparatus comprising:

a casing for forming a substantially sealed space and accommodating therein heating elements including a first heating element and a second heating element:

a refrigerant tank disposed in said sealed space and filled with refrigerant, said refrigerant tank being provided with said first heating element so that the refrigerant sealed in said refrigerant tank is boiled and vaporized by heat generated by said first heating element;

a radiator connected to said refrigerant tank and disposed outside said sealed space for liquefying the refrigerant in gaseous phase in said refrigerant tank,

a heat-receiving fin installed in said refrigerant tank, for absorbing heat from air in said sealed space wherein said second heating element is disposed independently from said refrigerant tank so as to be cooled by convection in said sealed space;

a third heating element attached to said casing in said sealed space, said third heating element having an intermediate heating density between said first heating element and said second heating element; and

an air cooling fin attached to said casing and disposed outside said sealed space at a position on an opposite surface from where said third heating element is attached.

5,823,249

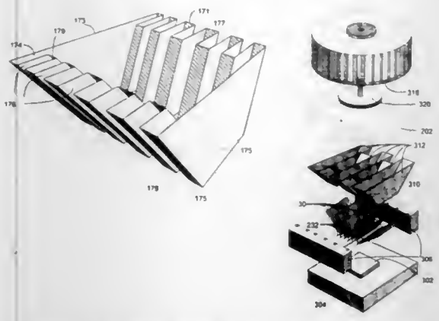
MANIFOLD FOR CONTROLLING INTERDIGITATED COUNTERSTREAMING FLUID FLOWS

John Samual Batchelder, 2 Campbell Dr., Somers, N.Y. 10589

Filed Sep. 3, 1997, Ser. No. 922,290
Int. Cl.[6] F28F *7/00*
U.S. Cl. 165—121 **5 Claims**

1. A manifold for directing and channeling the flow of fluid to and from a plurality of interdigitated counterpropagating flowing streams, comprising;

a continuous folded sheet having a first surface, a second surface, the folded sheet functionally impervious to the flow of fluid, the first surface for contacting and channeling a first flowing stream which communicates with the manifold through a first aperture in the manifold, the first flowing stream channeled by the manifold to communicate through a

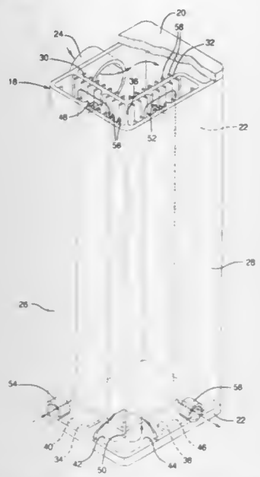


plurality of apertures in the manifold with a first plurality of flowing streams, the first plurality of flowing streams being flowing streams of the plurality of interdigitated counter-propagating flowing streams which flow substantially in a first direction, at least a portion of the second surface for contacting and channeling a second fluid stream which communicates with a second plurality of flowing streams, the second plurality of flowing streams being flowing streams of the plurality of interdigitated counterpropagating flowing streams which flow substantially in a second direction, the second direction substantially counter to the first direction, wherein the area of the first aperture is substantially greater than the sum of the areas of the plurality of apertures.

5,823,250
INTEGRALLY EXTRUDED RADIATOR TANK AND OIL COOLER

Brian Leslie Barten, Lockport, and John Kenneth Spoth, Clarence Ctr, both of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 5, 1997, Ser. No. 927,123
Int. Cl.[6] F28D *7/10*
U.S. Cl. 165—140 **2 Claims**



1. An integrated radiator coolant manifold tank and oil cooler for automotive use, comprising:

an axially extruded, elongated tank body of generally rectangular cross section having first and second open ends, a pair of outer walls forming an exterior corner, a pair of inner walls axially coextensive with and parallel to said outer walls and forming an interior corner, and an integral web connecting said exterior and interior corners to define a pair of parallel interior subchambers, said web extending flush from said tank body first open end toward said other tank body second open end, but terminating short of said second open end;

a first cap sealed to said tank body first open end and sealed to said integral web;

a second cap sealed to said tank body second open end, but with an axial clearance space relative to said integral web;

an oil inlet opening into one of said subchambers remote from said clearance space; and,

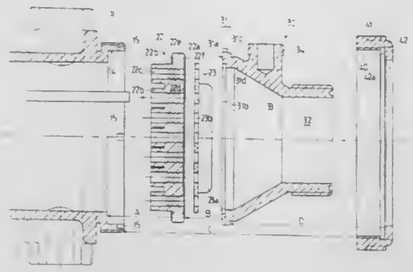
an oil outlet opening into the other of said subchambers remote from said clearance space;

whereby coolant may be fed into said tank body, sealed from said subchambers by said inner walls and caps, while oil may be fed into said oil inlet, sealed from the rest of said tank body by said inner walls and caps, to flow along the length of one subchamber and through said axial space into and along the length of the other subchamber and ultimately out of said oil outlet, thereby following a serpentine flow path through said tank body while thermally exposed to coolant across said inner walls.

5,823,251
HEAT EXCHANGER

Francis Romero, Angers Cedex, France, assignor to Piscine Service Anjou SA, France

Filed Jan. 14, 1997, Ser. No. 782,421
Claims priority, application France, Jan. 26, 1996, 96 01196; Jul. 9, 1996, 96 08790
Int. Cl.[6] F28F *9/12*
U.S. Cl. 165—158 **13 Claims**



1. A heat exchanger of the tube bundle (**21**) type having a plurality of tubes being rectilinear and parallel to one another and a body unit (**10**) of generally cylindrical shape, which is provided with an intake (**12**) and an outlet (**13**) for primary fluid, and end sections (**11**) fitted with flanges (**22**) closing off said body unit (**10**), and across which said tubes (**21**) pass, mouth elements (**30**) for the inlet and outlet of secondary fluid being provided at respective ends of said body unit (**10**), wherein

each flange (**22**) is made of a rubber type material, and comprises a circular plate (**22***a*) having faces with a set of circular lips on a periphery thereof, parallel to one another (**22***e* and **22***f*), said flange (**22**) to rest, by means of one of the sets of lips (**22***e*) on a radial surface of a corresponding end section (**11**) of said body unit (**10**),

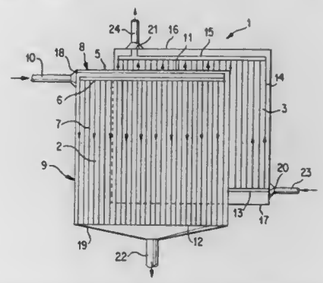
each mouth element (**30**) comprising an end section (**31**) provided with a radial front surface (**31***a*) to rest on the other set of lips (**22***f*) of said flange (**22**),

a screw (**40**) for fastening to an outer wall of each end section (**11**) of said body unit (**10**), said screw (**40**) being provided with means (**42**) to lock said mouth element (**30**) against said flange (**22**) in such a way that said flange (**22**) will be locked between said mouth element (**30**) and said body (**10**).

5,823,252
TWO-STAGE EVAPORATOR UNIT

Peter Waitkat, Neuhausen; Uwe Benz, and Johann Einhart, both of Uhldingen, all of Germany, assignors to Daimler-Benz Aktiengesellschaft, Germany

Filed Jul. 28, 1995, Ser. No. 508,660
Claims priority, application Germany, Jul. 28, 1994, 44 26 692.8
Int. Cl.[6] F28F *3/02;13/08*
U.S. Cl. 165—166 **10 Claims**



1. An evaporator unit for converting a liquid reactant mass flow adjustable as a function of a load presetting into a gaseous reactant mass flow, comprising an alternating stack of first foils having heat-exchange channels and second foils having reaction channels with increasing cross-sectional surface in a direction of the liquid mass flow, the first and second foils defining a stacking plane therebetween, an inflow channel oriented in the and operatively associated with the alternating stack for supplying the liquid mass flow such that the liquid mass flow is evaporated in the evaporator unit and an outlet conduit operatively associated with the alternating stack for discharging the gaseous mass flow, wherein only a first channel with a small cross-sectional surface in the second foils directly adjoins the inflow channel and extends essentially along an entire width of the second foils transversely to the direction of the liquid mass flow, and a plurality of reaction channels branch off a distributor channel adjoining the first channel in a parallel relationship such that a total cross-sectional surface of the reaction channels is larger than the cross-sectional surface of the first channel.

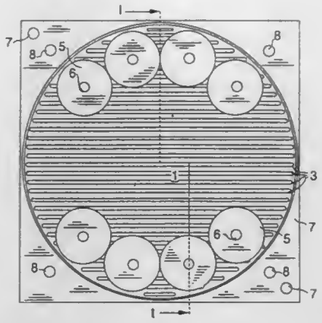
5,823,253
PLATE HEAT EXCHANGER AND METHOD FOR ITS MANUFACTURE

Mauri Kontu, Vahterus, FIN-23660, Kalanti, Finland

PCT No. PCT/FI94/00567, § 371 Date Aug. 12, 1996, § 102(e) Date Aug. 12, 1996, PCT Pub. No. WO95/17272, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 16, 1994, Ser. No. 666,364
Claims priority, application Finland, Dec. 20, 1993, 935745
Int. Cl.[6] F28F *3/08*
U.S. Cl. 165—167 **12 Claims**

1. In a method for making a plate heat exchanger wherein plate blanks of round shape are formed with corrugations and flow openings and are then connected together so that corrugations of adjacent of the plate blanks define a ridge angle that determines a flow characteristic of fluid passing between adjacent corrugated blanks, the improvement comprising forming the plate blanks with a pressing tool comprising

(a) press means, including a press body and a counterpart body, for pressing the plate blanks, said press body comprising at least first and second pairs of spaces with one space of the first pair positioned opposite a second space of the first pair at an equal distance from a center of the press body and with one piece of the second pair positioned opposite a second space of the second pair at an equal distance from the center of the press body, said press body comprising protuberances or grooves, said counterpart body comprising grooves if the press body comprises protuberances, or protuberances if the press body comprises grooves, such that plate blanks, when pressed between the press body and the counterpart body, are formed with the corrugations;



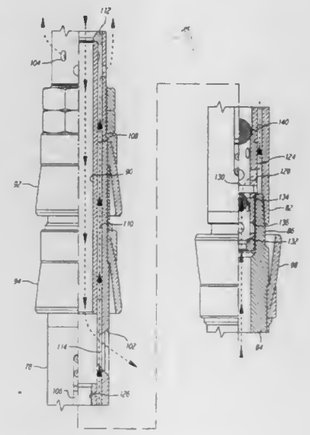
(b) filling means comprising a plurality of first filing pieces for selectively filling spaces in the first or second pairs and for defining flow openings in the plate blanks, said first filling pieces being selectively inserted into either the first or second pairs of spaces; and

(c) a plurality of second filling pieces inserted into the first or second pairs of spaces that are not filled with the first filling pieces, said second filling pieces comprising protuberances if the press body comprises protuberances, or grooves if the press body comprises grooves, said first and second filling pieces being selectively insertable into spaces of either the first or second pairs of spaces such that said filling means can be used to define flow openings in any one of a plurality of alternative arrangements in the plate blanks whereby the ridge angle defined by corrugations of adjacent plate blanks can be varied by changing an arrangement of the first and second filling pieces when forming the plate blanks.

5,823,254
WELL COMPLETION TOOL

Richard M. Dobson; Jefferey D. Herndon, and Leo D. Hudson, all of Bakersfield, Calif., assignors to Bestline Liner Systems, Inc., Bakersfield, Calif.

Division of Ser. No. 641,836, May 2, 1996. This application Sep. 18, 1997, Ser. No. 936,480
Int. Cl.[6] E21B *43/04;43/10*
U.S. Cl. 166—51 **3 Claims**



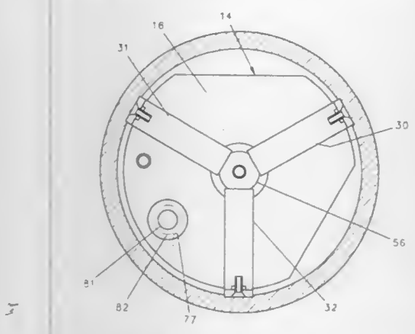
1. A well tool for a well casing, comprising

a landing adapter including a landing fixture attachable to the well casing, the landing fixture having a landing ring extending inwardly to define a hole axially therethrough, the landing ring having an upward shoulder and a downward shoulder, an adapter body fitting within the landing ring and having a first outwardly facing cavity and a second outwardly facing cavity, an actuator positioned in the first outwardly facing cavity, the actuator including a body fitting within the hole, an engagement shoulder extending outwardly from the body to engage the upward shoulder of the landing ring and an extention fitting within the hole and extending from the body, the body being smaller axially of the hole than the first outwardly facing cavity, a shear element positioned in the second outwardly facing cavity and having a first position extending outwardly of the adapter body to outwardly of the downward shoulder with the adapter body in the landing ring and a second position not extending outwardly of the adapter body, the extention being selectively engagable with the shear element with the shear element in the second position;

a liner assembly extending from the cylindrical attachment section and including a perforated section, a gravel pack port collar adjacent the perforated section, a rotatable sleeve within the gravel pack port collar, and a wash-in shoe at the distal end of the liner assembly;

a by-pass tool positionable in the liner and including a barrel having a gravel port extending radially and a central passage extending the length of the barrel, a side passage within the barrel extending through a first length of the barrel, an annular seat within the barrel having a by-pass passage extending lengthwise and communicating with the side passage, the gravel port extending radially through the annular seat, the by-pass passage and the gravel port not being in mutual communication, a valve sleeve within the annular seat and in the central passage, the valve sleeve having a return port extending radially therethrough, a closed position with the valve sleeve extending over and closing the gravel port and the annular seat extending over and closing the return port, an open position with the valve sleeve displaced from the gravel port and the return port displaced from the annular seat, and a valve seat in the central passage between the return port and the gravel port when the valve sleeve is in the open position, a valve element positionable in the valve sleeve at the valve seat to block the central passage.

5,823,255
TUBULAR CASING CUTTER
Jeffrey Swiatowy, Cary, and Scott Ferrar, Wheeling, both of Ill., assignors to The E. H. Wachs Company, Wheeling, Ill.
Filed Dec. 17, 1996, Ser. No. 768,321
Int. Cl.[6] E21B *29/00*
U.S. Cl. 166—55.1 **9 Claims**



1. A machine for making a transverse cut in a length of pipe having a given inner diameter, an outer wall, and an inner surface, said machine comprising:

a body having a longitudinal axis and having cross sectional dimensions all of which are less than said given diameter,

a plurality of legs, on said body, said legs having distal ends which are radially movable against said inner surface of said length of pipe,

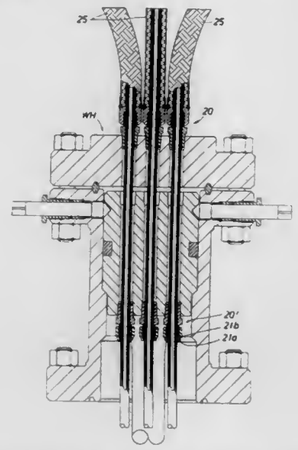
means for moving said distal ends of said legs radially against said inner wall of said pipe,

a rotating member on said body, said rotating member rotatable about said longitudinal axis,

cutting means on said rotating member for cutting said outer wall of said length of pipe, and

motor means on said body and connected to said rotating member for rotating said rotating member, said motor means insertable within said length of pipe with said body when making a transverse cut.

5,823,256
FERRULE—TYPE FITTING FOR SEALING AN ELECTRICAL CONDUIT IN A WELL HEAD BARRIER
Boyd B. Moore, 427 Mignon, Houston, Tex. 77024
Division of Ser. No. 448,575, Aug. 7, 1995, Pat. No. 5,667,008, which is a continuation-in-part of Ser. No. 651,633, Feb. 6, 1991, Pat. No. 5,289,882. This application Feb. 16, 1996, Ser. No. 602,332
Int. Cl.[6] E21B *33/03;* **H01R** *17/04*
U.S. Cl. 16—65.1 **5 Claims**



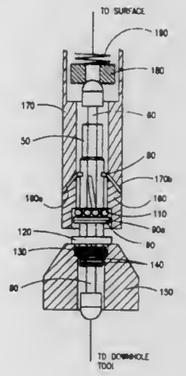
1. A ferrule-type fitting for forming a fluid-tight seal between an insulated electrical conductor extending from outside a well to a wellhead barrier and a rigid tube that projects outside the wellhead barrier, the rigid tube surrounding the electrical conductor and, extending through the wellhead barrier for routing of the electrical conductor, said ferrule-type fitting comprising:

a tubular body fitting with an elongated opening sized and shaped to fit around the rigid tube, said opening including a conical counter bored section adjacent to one end for forming a gap between said body fitting and the rigid tube, said body fitting including an outer threaded surface on said one end;

a ring shaped ferrule bushing formed of a material softer than the material of the rigid tube, which has the tendency of returning to its original shape after being deformed, said ferrule bushing being sized and shaped to fit around and directly contact the rigid tube and interface said conical counter bored section with said gap;

a nut fitting including threaded inner surface for engaging the outer threaded surface of said body fitting and a shoulder for engaging said ferrule bushing, wherein said shoulder engaging said ferrule bushing so that said ferrule bushing is deformed to engage and crimp the rigid tube for providing a fluid-tight seal between the inner surface of the rigid tube and the insulated electrical conductor after said nut fitting is tightened onto said body fitting, and wherein said ferrule bushing is not hard enough to permanently engage the rigid tube, but returns to its original shape so that it can be removed from the crimped rigid tube when said nut fitting is loosened and removed from said body fitting.

5,823,257
ROTATABLE WET CONNECT FOR DOWNHOLE LOGGING DEVICES
Mark Alan Peyton, No. 3 Oilpatch La., Gonzales, Tex. 78692
Filed Oct. 4, 1996, Ser. No. 720,953
Int. Cl.[6] E21B *23/00*
U.S. Cl. 166—65.1 **13 Claims**



1. An apparatus for electrically connecting an electric wireline to a downhole logging tool used in an earth borehole, said apparatus permitting relative rotation between said downhole logging tool and said electric wireline, comprising:

a male shaft;

a contact rod extending through said male shaft, said contact rod adapted to electrically couple to a downhole logging tool;

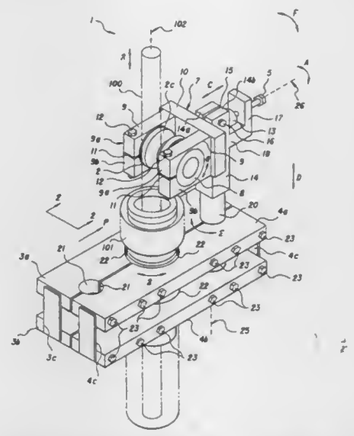
a female sleeve adapted to couple to an electric wireline, said electric wireline extending towards the surface of an earth borehole, said female sleeve having a longitudinal bore for receiving said male shaft therein;

electrical contact means disposed within said female sleeve and adapted to electrically couple to said electric wireline, for contacting said contact rod and providing an electric flowpath from said contact rod to said electric wireline when said male shaft is engaged within said bore of said female sleeve; and

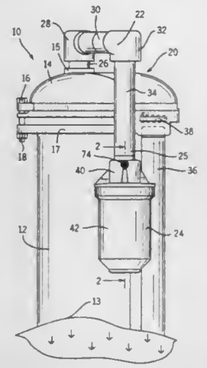
bearing means comprising a plurality of ball bearings disposed on said male shaft, said bearing means axially supporting said female sleeve when said male shaft is received within said bore of said female sleeve, said bearing means and said female sleeve thereby rotatable about a longitudinal axis of said male shaft.

5,823,258
CENTRALIZER APPARATUS
Herman Goldner, Lot 9, Mildura Road, Mount Helena, Western Australia, Australia
Filed Sep. 23, 1996, Ser. No. 717,947
Int. Cl.[6] E21B *33/038;33/04*
U.S. Cl. 166—77.1 **20 Claims**

1. A centralizer apparatus for centralizing a rod comprising at least one guide roller means to contact said rod, mounting means to mount said centralizer apparatus such that it is fixable relative to said rod, and pressure adjustment means to enable the contact pressure of said guide roller means against said rod to be adjusted.



5,823,259
WELL CAP SNORKEL VENT
Stephen D. Royle, Stoughton, Wis., assignor to Baker Manufacturing Company, Evansville, Wis.
Filed Dec. 9, 1996, Ser. No. 762,633
Int. Cl.[6] F16K *24/04*
U.S. Cl. 166—97.1 **4 Claims**

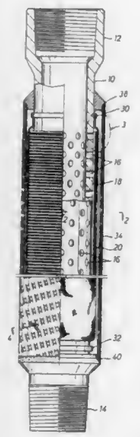


1. An apparatus for allowing air to pass through an inlet to a well vent conduit between the conduit and an ambient area outside the conduit when flood levels are below a threshold level and for blocking flow through the inlet when flood levels exceed the threshold level, the conduit including a watertight well cap at an upper distal end, the apparatus comprising:

a snorkel including a housing forming a substantially vertical internal passage from an air inlet at a bottom end to an outlet at a top end, the outlet forming a float seat, the top end of the snorkel linked to the cap inlet to allow fluid communication between the snorkel and the vent conduit, the snorkel also including a lower float positioned adjacent the air inlet and an upper spherical ball float positioned between the lower float and the float seat, the lower float being larger than the upper float and oblong along the length of the passage, the float seat formed so as to receive the upper float to form a watertight seal, the passage being longer than the combined dimensions of the upper and lower floats along the length of the passage from the top end to the bottom ends;

a laterally extending pipe connected at a proximal end to the cap inlet and at a distal end to the top end of the snorkel, the distal end forming an opening that opens downwardly.

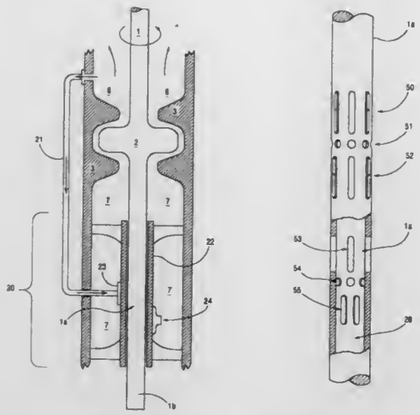
5,823,260
WELL SCREEN
Howard T. McConnell, and Robert D. Whitworth, both of Spring, Tex., assignors to Houston Well Screen Company, Houston, Tex.
Filed Sep. 24, 1996, Ser. No. 718,813
Int. Cl.[6] E21B *43/08*
U.S. Cl. 166—230 **4 Claims**



1. A rod-based well screen for positioning in a well bore to screen solid particles from the fluid produced by the well comprising a base pipe, a portion of the wall of which is perforated, and having threaded connections for connecting the base pipe into a pipe string, a wire screen surrounding the perforated portion of the base pipe, a thin porous membrane, formed by a layer of cloth made of woven ceramic fibers, that is wrapped around the wire screen to filter particles out of well fluid passing through the woven ceramic cloth before the fluid enters the base pipe, means for holding the ends of the ceramic cloth membrane in sealing engagement with the base pipe, and a perforated tubular metal shroud surrounding the ceramic cloth membrane to protect the membrane from damage as the screen is lowered into a well bore.

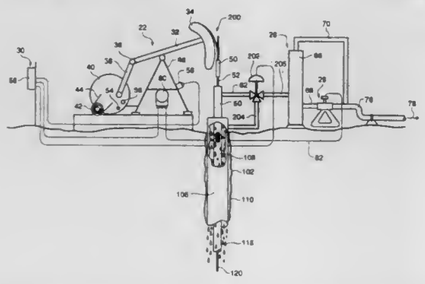
5,823,261
WELL-PUMP ALIGNMENT SYSTEM
Douglas S. Drumheller, Cedar Crest, N. Mex., assignor to Sandia Corporation, Albuquerque, N. Mex.
Filed Sep. 25, 1996, Ser. No. 717,588
Int. Cl.[6] E21B *47/00;43/00;* **H04H** *9/00;* **G01V** *3/00*
U.S. Cl. 166—250.01 **18 Claims**

11. A method of aligning a rotor within a stator of a well-pump, comprising:
providing a frequency generator adjacent said well-pump;
rotating said rotor, so as to produce a vibrational output from said frequency generator of a first frequency;
monitoring variations in the output produced by the frequency generator, due to variations in axial alignment between said rotor and stator; and



adjusting the relative position of said rotor within said stator so as to obtain said first frequency.

5,823,262
CORIOLIS PUMP-OFF CONTROLLER
Robert E. Dutton, Louisville, Colo., assignor to Micro Motion, Inc., Boulder, Colo.
Filed Apr. 10, 1996, Ser. No. 629,805
Int. Cl.[6] E21B *43/12;47/00;47/10*
U.S. Cl. 166—250.15 **22 Claims**

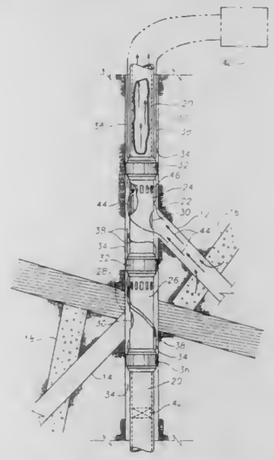


1. A pump control system for use in terminating actuation of a pumping unit while fluid levels in a well bore are disadvantageously low, said system comprising:
means for measuring a production fluid volume corresponding to the reciprocation of a reciprocating pump unit;
means for producing signals representative of said production fluid volume corresponding to each of said stroke cycles;
means responsive to receipt of said signals for comparing said production fluid volumes to identify a reduction in pump stroke lifting efficiency;
means for generating a signal representative of said reduction in pump stroke efficiency; and
means responsive to said generation of said signal representative of said reduction in pump stroke efficiency for stopping surface production from said pumping unit,
wherein said measuring means includes a Coriolis flow meter.

12. A method of controlling a pumping unit to avoid actuation of the pumping unit while fluid levels in a well bore are disadvantageously low, said method comprising the steps of:
measuring a production fluid volume produced by a pumping unit through the use of a Coriolis flow meter;
producing signals representative of said production fluid volume corresponding to each upstroke of said pumping unit;
comparing said signals between one another to identify a reduction in volumetric pump stroke efficiency induced by an upper

limit of production fluids in said well bore having fallen below a plunger assembly attached to said pumping unit:
transmitting a signal representative of said condition; and
stopping surface production from said pumping unit to permit buildup of bottom hole pressure in said well bore.

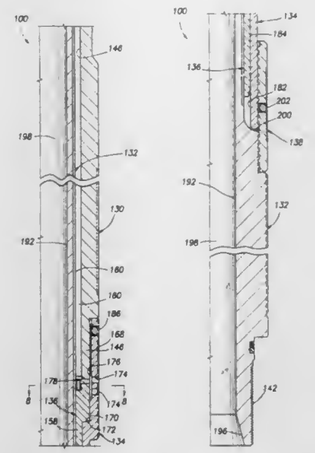
5,823,263
METHOD AND APPARATUS FOR REMOTE CONTROL OF MULTILATERAL WELLS
Arthur J. Morris, Magnolia, and Ronald E. Pringle, Houston, both of Tex., assignors to Camco International Inc., Houston, Tex.
Division of Ser. No. 638,027, Apr. 26, 1996. This application Sep. 29, 1997, Ser. No. 939,223
Int. Cl.[6] E21B *34/06;34/10;34/14;43/12*
U.S. Cl. 166—313 **35 Claims**



2. A method of remotely controlling fluid production from at least one lateral wellbore extending from a central wellbore, comprising the steps of:
connecting at least one fluid control apparatus to a tubing string, the at least one fluid control apparatus having a selectively operable flow control valve and a selectively operable lateral access door;
locating and orienting the tubing string in the central wellbore with the at least one fluid control apparatus adjacent the at least one lateral wellbore;
providing packing means to isolate fluid flow from the at least one lateral wellbore and prevent commingling flow of produced fluids through an annulus formed between the central wellbore and the tubing string; and,
using a control panel to control the at least one fluid control apparatus to regulate fluid production from the at least one lateral wellbore and to regulate service tool access from the interior of the at least one fluid control apparatus into the at least one lateral wellbore.

5,823,264
TRAVEL JOINT FOR USE IN A SUBTERRANEAN WELL
Paul D. Ringgenberg, Carrollton, Tex., assignor to Halliburton Energy Services, inc., Dallas, Tex.
Filed May 3, 1996, Ser. No. 642,733
Int. Cl.[6] E21B *17/07*
U.S. Cl. 166—355 **33 Claims**

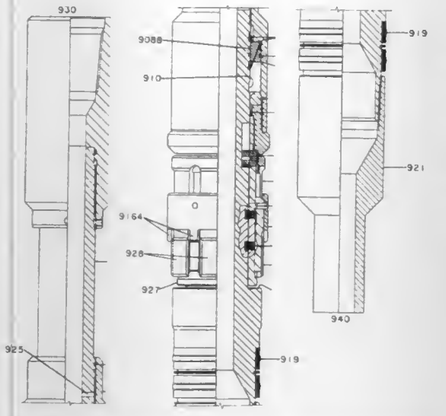
1. An axially telescoping and generally tubular tool for use in a subterranean well wherein a torque is to be applied to the tool, the tool comprising:



an elongated tubular housing having opposite ends, a first one of the housing opposite ends having a circumferentially spaced apart series of axially extending first projections formed thereon;
an elongated tubular first member axially and telescopingly received in the housing; and
an elongated tubular second member having opposite ends, one of the second member opposite ends having a circumferentially spaced apart series of axially extending second projections formed thereon, the second projections being complementarily shaped relative to the first projections, and the second projections cooperatively circumferentially engaging the first projections, whereby the torque may be transmitted from the housing to the second member by the cooperative engagement of the first and second projections.

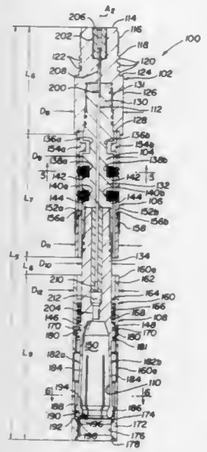
5,823,265
WELL COMPLETION SYSTEM WITH WELL CONTROL VALVE
Robert W. Crow, Irving; John C. Gano, Carrollton; Nam Van Le, Lewisville; James R. Longbottom, Whitesboro, and Karluf Hagen, Stavanger, all of Tex., assignors to Halliburton Energy Services, Inc., Dallas, Tex.
Division of Ser. No. 381,571, Jan. 30, 1995, Pat. No. 5,564,502, which is a continuation-in-part of Ser. No. 274,175, Jul. 12, 1994, Pat. No. 5,479,989. This application Jul. 19, 1996, Ser. No. 683,947
Int. Cl.[6] E21B *34/06*
U.S. Cl. 166—373 **5 Claims**

1. A method of completing a well bore for production of oil or gas, the well bore intersecting at least one oil-bearing zone of interest which is to be stimulated, comprising the steps of:
constructing a completion segment, the segment comprising a production tubing string and a stimulation/shifter string placed inside of the production tubing string;
initially placing said segment within a well bore adjacent the production zone of interest;
stimulating said zone:
lifting said stimulation/shifter string up out of said zone of interest, said stimulation/shifter string closing a flow control



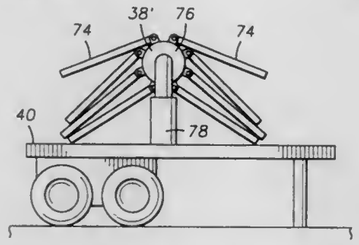
device adjacent said zone of interest, said production string staying in the zone of interest.

5,823,266
LATCH AND RELEASE TOOL CONNECTOR AND METHOD
John D. Burleson, Denton, and Joseph A. Henke, Lewisville, both of Tex., assignors to Halliburton Energy Services, Inc., Dallas, Tex.
Filed Aug. 16, 1996, Ser. No. 698,608
Int. Cl.[6] E21B *17/02*
U.S. Cl. 166—380 **25 Claims**



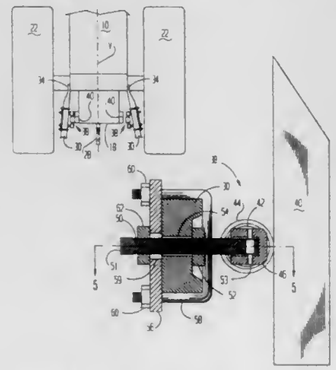
1. A tool connector comprising: a stinger; a stinger receptacle, the stinger being adapted to be stabbed into the stinger receptacle; a loaded engaging member movably connected to said stinger receptacle, said loaded engaging member movable between a running position before the stinger is stabbed into the stinger receptacle and a latched position when the stinger is stabbed into the stinger receptacle; and a release member engaging said stinger receptacle and said loaded engaging member, said release member retaining the loaded engaging member in the running position, whereby when the stinger is stabbed into the stinger receptacle and a set force is applied to the stinger and the stinger receptacle, the release member releases the loaded engaging member to move to the latched position and latch the stinger and the stinger receptacle together.

5,823,267
UNIVERSAL PIPE AND TUBING INJECTION APPARATUS AND METHOD
Philip Burge, Chiswick; Peter Fontana, Drayton Gardens; Glenn Leroux, Roehampton, all of European Pat. Off., and Friedhelm Makohl, Hermannsburg, Germany, assignors to Baker Hughes Incorporated, Houston, Tex.
Division of Ser. No. 600,842, Feb. 13, 1996, Pat. No. 5,738,173, which is a continuation-in-part of Ser. No. 402,117, Mar. 10, 1995, abandoned, and a continuation-in-part of Ser. No. 524,984, Sep. 8, 1995, abandoned, and a continuation-in-part of Ser. No. 543,683, Oct. 16, 1995, abandoned. This application Aug. 22, 1997, Ser. No. 915,346
Int. Cl.[6] E21B *19/22*
U.S. Cl. 166—385 **10 Claims**



1. An apparatus for providing a large radius coil of tubing at a well site, to minimize repetitive bending stress on said tubing during injection and pulling of said tubing into and out of a well bore, said apparatus comprising:
a shipment vehicle for supporting and holding coiled tubing during shipment to a well site;
a shipping reel mounted on said shipment vehicle, said shipping reel having a first diameter;
a handling vehicle for supporting and handling coiled tubing during injection and pulling of the tubing;
an expandable working reel mounted on said handling vehicle, said expandable working reel being expandable to a second diameter larger than said diameter of said shipping reel; and
apparatus for uncoiling the tubing from said shipping reel and coiling the tubing on said working reel at the well site.

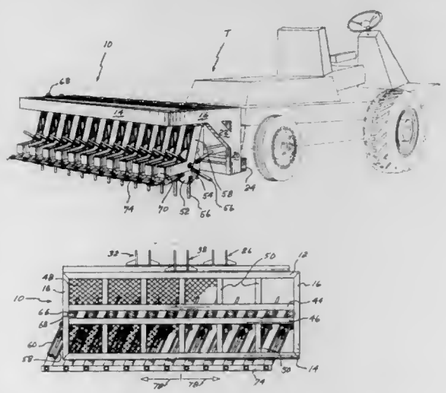
5,823,268
TRAILER HITCH ANTI-SWAY DEVICE
Ronny L. Barnes, R.R. 1, Box 73-A, O'Donnell, Tex. 79351
Filed Feb. 25, 1997, Ser. No. 806,086
Int. Cl.[6] A01B *59/043*
U.S. Cl. 172—450 **15 Claims**



1. An anti-sway structure adapted to be mounted on an agricultural tractor, said tractor having:

a) at least two drive wheels to propel the tractor in a direction of draft,
b) a rear structure with a center line,
c) a pair of pivots on the rear structure equidistant from the centerline and at the same elevation,
d) a standard three link hitch attached to said rear structure, including:
i) a top adjustment link, having a proximal and a distal end, said proximal end attached to the rear structure at the center line above the pivots,
ii) two elongated lower draft links, each having a longitudinal axis extending between and defining a proximal end and a distal end, each link also having a medial flank adjacent to the center line, and a lateral flank distant from the center line, and each link having a height,
iii) the proximal ends of said lower draft links journalled one to each of the pivots,
e) an implement structure attached to the distal ends of the top link and the draft links thereby fixing the distance between similar points on the draft links,
f) a means for raising and lowering the draft links, by rotating them about the pivot at the proximal end, thereby causing the draft links to have an arc of movement,
g) sway plates on a support structure which is the rear structure adjacent to an area near the draft links,
h) said sway plates extending in a direction parallel to the arc of movement of the draft links, and
j) having a length such that a portion of the sway plates is always adjacent to the draft links throughout their arc of movement;
wherein said improved anti-sway structure comprises:
jj) a unit which includes:
k) at least one elongated wear axle on an axle support structure, said axle having two ends,
l) a rigid roller journalled about the axle,
m) said unit adapted to be mounted on the medial flank of one of the draft links between the medial flank of the draft link and one of said sway plates with the wear axle extending in the direction of the longitudinal axis of the draft link; and
n) a means for forcing the wear axle away from the draft link.

5,823,269
TURF AERATOR ATTACHMENT FOR TRACTOR
Francois Leclerc, 8800 Othello, Brossard, Quebec, Canada, J4Y 3A7
Filed Mar. 27, 1997, Ser. No. 828,805
Int. Cl.[6] A01B *45/02*
U.S. Cl. 172—21 **6 Claims**

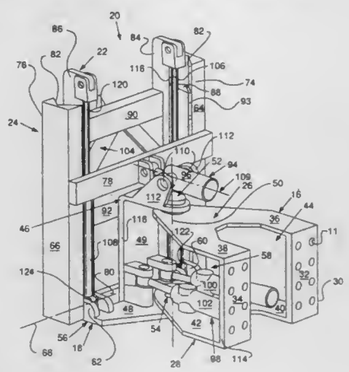


1. An aerator apparatus suitable for use with a tractor, said apparatus comprising:

a frame,
a plurality of aerator disc assemblies, each aerator disc assembly comprising an aerator disc and aerator disc mounting means, each aerator disc having an aerator axle, at least one aerator tine extending radially outward from each of said aerator discs, each aerator disc mounting means extending between said frame and each of said aerator axles, each aerator disc mounting means being rotatably journalled on said frame to thereby permit each of said aerator discs to be turned in response to a direction change of the tractor,
and interconnecting means connecting each of said aerator disc mounting means to maintain parallel alignment of said aerator discs.

5,823,270
STEERABLE IMPLEMENT HITCH
David E. Cooper, Washington, Ill., assignor to Catepillar Inc., Peoria, Ill.
Filed Nov. 25, 1996, Ser. No. 756,303
Int. Cl.[6] A01B *69/06*
U.S. Cl. 172—439 **8 Claims**

1. An implement hitch for a machine, comprising:



a frame;
a sub-frame being pivotally mounted to said frame, said sub-frame being pivotally moveable about a first axis relative to said frame;
a mast having a carrier and a hitch element, said carrier being pivotally mounted to said sub-frame, said carrier being pivotally moveable about a second axis relative to said sub-frame, said second axis being perpendicular to said first axis, said hitch element being positioned in moveable engagement with said carrier, said hitch element being moveable relative to said carrier;
at least a first pivot hydraulic cylinder connected between said frame and sub-frame, said sub-frame pivotally moving about said first axis in response to operation of said first pivot hydraulic cylinder;
a pitch hydraulic cylinder connected between said sub-frame and carrier, said carrier pivotally moving about said second axis in response to operation of said pitch hydraulic cylinder; and
at least a first lift hydraulic cylinder being connected between said carrier and hitch element, said hitch element moving in response to operation of said first lift hydraulic cylinder.

5,823,271

LIFTING ROD FOR THE THREE-POINT ATTACHING DEVICE OF A TRACTOR

Norbert Müller, Ruppichteroth; Herbert Coenen, Königswinter, and Jürgen Vollmer, Lohmar, all of Germany, assignors to GKN Walterscheid GmbH, Lohmar, Germany

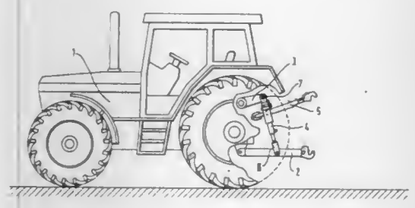
Filed Feb. 13, 1997, Ser. No. 799,137

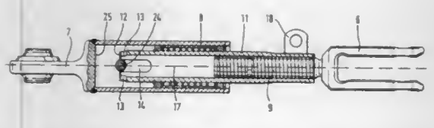
Claims priority, application Germany, Feb. 15, 1996, 196 05 560.1

Int. Cl.[6] A01B *59/043*

U.S. Cl. 172—450 10 Claims

1. A lifting rod for connecting a lower steering arm of a three-





point attaching device of a tractor to a lifting arm of the tractor, comprising:

a first connecting element to be connected to the lifting arm of the tractor and a second connecting element to be connected to the lower steering arm of the tractor;

a housing and a rod element received in a bore in the housing, said rod element being adjustable along a longitudinal axis, said housing and said rod element each being associated with one of the connecting elements;

means for setting the rod element relative to the housing to a fixed length, said setting means including a plug-in pin and a plug-in bore in the housing which are effective in one direction;

stops at the housing and at the rod element being effective in the other direction;

means for setting the fixed lifting rod length, said setting means including a threaded connection;

at least at one end projecting from the housing, said rod element including a threaded bore portion which is adjustably engaged by a threaded rod by external thread of the rod, said threaded rod being connected to one of the connecting elements, the bore portion and the threaded rod being the means for setting the fixed lifting rod length;

the rod element having an end entering the housing is provided with a recess or bore in said end through which extends the plug-in pin inserted into the plug-in bore of the housing, the pin fixing the rod element relative to the housing, and the rod element, at said end, including a slot, which is offset relative to the recess or bore around the longitudinal axis, and which extends along the longitudinal axis and into which it is possible to insert the plug-in pin after the rod element has been turned accordingly relative to the housing.

5,823,272

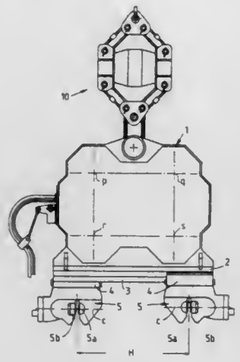
VIBRATING HAMMER, MORE PARTICULARLY FOR DRIVING SHEET PILES INTO THE GROUND

Tijmen van Halteren, Dorpsstraat 142, 3751 Et Bunschoten, Netherlands

Filed Nov. 13, 1995, Ser. No. 556,505

Int. Cl.[6] E02D *7/18*

U.S. Cl. 173—49 1 Claim



1. A vibrating hammer, for driving sheet piles and the like into the ground, comprising:

a housing having an upper wall, sidewalls and a bottom wall the bottom wall having a lower side;

vibrating means mounted within said housing for rotation about substantially horizontal axes;

suspension means provided on said upper wall;

a pair of guide tracks provided on the lower side of said bottom wall to extend substantially horizontally and parallel to one another, each of said guide tracks having a vertical plane of symmetry;

a pair of slide blocks, placed in sliding engagement with one of said guide tracks and mounted for adjustment along said guide track, each of said slide blocks carrying a pair of clamping jaws with cooperating clamping faces that are mounted for movement relative to one another longitudinally of said guide tracks so as to clamp a sheet pile therebetween,

the cooperating clamping faces of each pair of clamping jaws having a common center line extending parallel to said guide tracks and said clamping faces lying in substantially vertical planes at right angles to said guide tracks,

wherein the center line of the cooperating clamping faces of each pair of clamping jaws is positioned laterally offset relative to said vertical plane of symmetry of the respective guide track, in such a way that an act of slidingly removing a slide block from the respective guide track, turning said slide block back to front and replacing the slide block onto said guide track will place said slide block in a position which is radially offset relative to said plane of symmetry in an opposite direction.

5,823,273

WELL STABILIZATION TOOLS AND METHODS

Krishna M. Ravi, Duncan; Robert M. Beirute, Tulsa; Alan B. Duell; Henry E. Rogers, both of Duncan; Dick A. Murray, Okmulgee, and Earl D. Webb, Healdton, all of Okla., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 692,868, Aug. 2, 1996. This application Aug. 6, 1996, Ser. No. 692,665

Int. Cl.[6] E21B *7/18*

U.S. Cl. 175—72 30 Claims

1. A method of stabilizing an enlarged portion of an unstable subterranean zone or formation passed through by a well bore during the drilling of the well bore with a drill bit connected to a drill string comprising the steps of:

(a) placing a well stabilization tool in the drill string near the drill bit, said tool having a longitudinal fluid flow passage therethrough, having one or more lateral fluid ports therein and having an internal valve which can be selectively moved between a first position whereby fluid pumped into the drill string is flowed through said fluid flow passage of said tool and through the drill bit and a second position whereby said fluid is flowed through said lateral fluid ports of said tool;

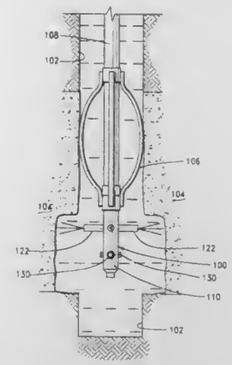
(b) drilling the well bore with said valve of said tool in said first position until the well bore has been drilled through the unstable subterranean zone or formation;

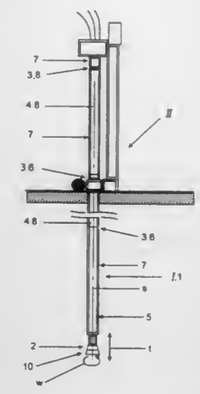
(c) moving said valve of said tool from said first position to said second position;

(d) pumping a hardenable cementitious material through the drill string and through said ports of said tool at a rate while moving said tool through the enlarged portion of the well bore in the unstable zone or formation whereby the enlarged portion of the well bore is filled with said hardenable cementitious material;

(e) moving said valve of said tool back to said first position while said cementitious material is allowed to harden; and

(f) drilling the well bore through said hardened cementitious material.





5,823,274

DRILL ROD

Risto Wisakanto, Tampere, and Harri Sjöholm, Kangasala, both of Finland, assignors to Oy Winrock Technology, Ltd., Tampere, Finland

PCT No. PCT/FI95/00487, § 371 Date May 1, 1997, § 102(e) Date May 1, 1997, PCT Pub. No. WO96/08682, PCT Pub. Date Mar. 21, 1996

PCT Filed Sep. 8, 1995, Ser. No. 793,885

Claims priority, application Finland, Jun. 16, 1994, 944291

Int. Cl.[6] E21B *17/042*

U.S. Cl. 175—215 7 Claims

1. A drill rod for use with a hydraulic drilling apparatus, the hydraulic drilling apparatus including a hydraulic system, a driving end including a flushing system and a drilling end having a drilling device, the drilling device including drilling means, hammering means, and flushing means, the drilling device for drilling a hole by means of the drilling means assisted by flushing medium led to the flushing means from the flushing system of the hydraulic drilling apparatus, the drilling being performed by a feeding motion along a longitudinal axis of the hydraulic drilling apparatus, by a rotational motion around the longitudinal axis, and by a hammering motion carried out when hydraulic fluid is led to the hammering means from the hydraulic system of the hydraulic drilling apparatus, the drilling device further including jointing means for removably fastening a drill rod thereto to increase the drilling depth of the hydraulic drilling apparatus, the drill rod comprising:

a casing including casing jointing means;

a flow arrangement positioned at least partially inside the casing for leading hydraulic fluid and flushing medium through said casing; and

a coupling arrangement for connecting the flow arrangement of the drill rod with a corresponding flow arrangement in the drilling device, and/or in another drill rod, and/or, or at the driving end of the hydraulic drilling apparatus, the coupling arrangement being arranged at least partly dismountable from the drilling device, the another drill rod, or the hydraulic drilling apparatus to enable maintenance of the drill rod;

whereby the casing further comprises a first end part, a second end part, and a middle part, each of the first end part and the second end part including a thread joint, the middle part including first and second ends each including a thread joint, the first and second end parts attached to the first and second ends, respectively, of the middle part by the thread joints;

the coupling arrangement further comprising closing means arranged in the first and second end parts of the casing for independently closing and opening at least the flow arrangement for transmitting hydraulic fluid to enable quick fastening of the drill rod, the casing jointing means comprising a double-start, rounded thread for releasably locking the casing to the drilling device.

5,823,275

HIGH-SPEED DRILL FOR ROCK STAKE ENGINEERING

Chun-Yi Ku, and Chao-Hsiang Ku, both of P.O. Box 28–24, Kaohsiung, Taiwan

Filed Jan. 16, 1997, Ser. No. 783,333

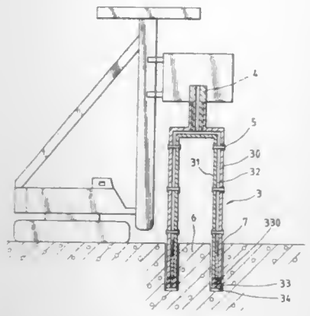
Int. Cl.[6] B23B *27/10;* E21B *10/02;10/60*

U.S. Cl. 175—403 4 Claims

1. A high-speed drill for rock stake engineering comprising:

an outer tube having a cylindrical configuration with a hollow interior, an open bottom, and a small-diameter upper portion connected with a high speed rotatable power shaft so as to rotate therewith, the upper portion having a passage for directing pressurized air and water into the interior said outer tube during rotation;

an inner tube also having a cylindrical configuration with a hollow interior and an open bottom, located within said outer a hollow space is defined by an inner surface of said outer tube and an outer surface of said inner tube, said hollow space receiving pressurized air and water from said passage and enabling pressurized air and water to flow downwardly therein:



a plurality of connectors connected to said outer tube and said inner tube to fixedly attach the outer and inner tubes together, the plurality of connectors extending through the hollow space,

an annular cushion block attached to and bridging the open bottom of said outer tube and said inner tube, the annular cushion block having a plurality of through holes, one end of each said through hole communicating with said hollow space and another end thereof communicating with an exterior of said outer tube; and,

a plurality of cutters fixed to bottom of said annular cushion block in spaced-apart positions so as to rotate together with said outer tube and said inner tube to cut into rock.

5,823,276

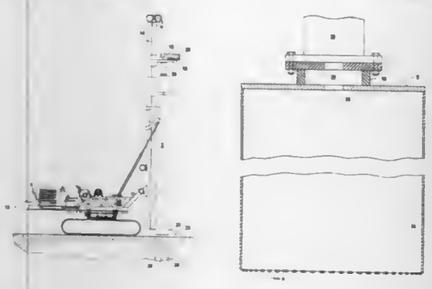
DIAMOND-TIPPED CORE BARREL AND METHOD OF USING SAME

August H. Beck, III, 10 Hearthwood, San Antonio, Tex. 78248

Filed Dec. 24, 1596, Ser. No. 780,097

Int. Cl.[6] F21B *10/48;* **F02D** *5/34*

U.S. Cl. 175—405.1 **25 Claims**



1. A core barrel having a working end for excavating super hard ground in which foundation piles or secant wall piles are to be constructed, said core barrel having a diameter of at least about 18 inches and a length of at least about 15 feet and comprising a plurality of cutters secured to the working end of the core barrel, each of said cutters having a substantially flat cutting face formed from material composed at least in part of diamond for cutting a kerf principally by abrasion, and means formed in each of said cutters for securing the cutters to the working end of the core barrel.

24. A method of constructing a pile in very hard earth, such as rock, for use in foundation systems or underground barriers, comprising the steps of:

drilling an annular kerf in hard ground with a hollow-interior core barrel having a plurality of diamond cutters secured to a working end of the core barrel, a diameter of at least about 18 inches and a length of at least about 15 feet and comprising; and

circulating a drilling fluid downward through the interior of said core barrel and across said plurality of diamond cutters to cool and wash the cutters;

thereby to excavate a relatively large diameter shaft around a hard earthen core.

5,823,277

CUTTING EDGE FOR MONOBLOC DRILLING TOOLS

Robert Delwiche, Brussels, Belgium, and Alain Besson, Cheyreuses, France, assignors to Total, Puteaux, France, and DB Stratabit S.A., Brussels, Belgium

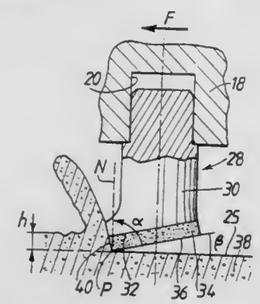
PCT No. PCT/FR96/00861, § 371 Date May 1, 1997, § 102(e) Date May 1, 1997, PCT Pub. No. WO97/00372, PCT Pub. Date Jan. 3, 1997

PCT Filed Jun. 7, 1996, Ser. No. 793,726

Claims priority, application France, Jun. 16, 1995, 95 074240

Int. Cl.[6] E21B *10/56*

U.S. Cl. 175—428 **5 Claims**



1. A cutting edge of a monobloc tool for drilling a rock formation comprising: a base (**30**) made of case-hardened metal carbide and fastened to the tool, and a plate (**34**) attached to the base, covering an entire lower surface thereof, and shaped as a cylindrical disk made from polycrystal diamond particles, the plate having a lateral wall (**40**), and a substantially flat free face (**36**), wherein the plate is disposed such that a plane of its flat free face forms, with a line N perpendicular to the surface (**25**) of the rock formation, an acute angle (α) lying in the same direction as the direction of movement (F) of the cutting edge, with the result that the plate cuts into the rock formation by its lateral wall.

5,823,278

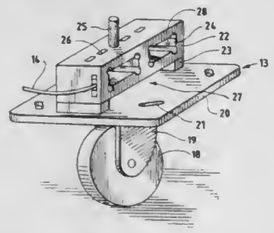
CASTER MOUNTED WEIGHING SYSTEM

E. Randy Geringer, Westport; Joseph Goldberg, Easton, and Allen A. Crowe, Prospect, all of Conn., assignors to Future Systems, Inc., Westport, Conn.

Continuation-in-part of Ser. No. 322,787, Oct. 13, 1994. This application Jun. 6, 1995, Ser. No. 468,268

Int. Cl.[6] G01G *19/52;19/00*

U.S. Cl. 177—144 **35 Claims**



1. A weighing device comprising:

a weight bearing surface; a frame supporting said surface

least one weigh module supporting said frame, each weigh module including a support removably coupled to the frame independently of other weigh modules, measuring means mounted integrally with the support for measuring the weight applied to the weigh module, and a data storage means;

accumulating means for accumulating and processing the weight information collected from the measuring means, and

transmitting means for transmitting signals between the measuring means on each weigh module and the accumulating means.

5,823,279

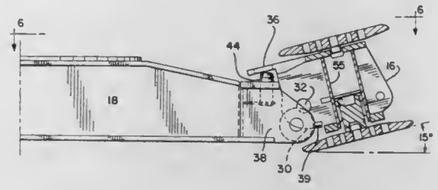
CARBODY TO CRAWLER CONNECTION

Terry Lee Petzold, Kiel, Wis., assignor to Hanitowoc Crane Group, Inc., Reno, Nev.

Continuation of Ser. No. 93,986, Jul. 19, 1993, abandoned, which is a continuation of Ser. No. 762,764, Sep. 20, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 469,194

Int. Cl.[6] B62D *55/084*

U.S. Cl. 180—9.1 **8 Claims**



1. A method of attaching a carbody and a crawler to each other wherein said carbody comprises a vertical pin and said crawler comprises a plate having a hole extending through said plate along a longitudinal axis perpendicular to said plate to engage said pin, said method comprises the steps of:

positioning the crawler and the plate such that the longitudinal axis of said hole is at an angle of between 5° and 45° with respect to said axis of said vertical pin;

lowering said crawler and said plate so that said hole engages an end section of said vertical pin;

continuing to lower said engaged crawler and said plate, allowing rotary engagement of said crawler and said plate into an operational alignment position with respect to said carbody, wherein said end section extends through said hole at said operational alignment position.

5,823,280

HYBRID PARALLEL ELECTRIC VEHICLE

Michel J. Lateur, Redwood City, and Daniel P. Pliskin, Palo Alto, both of Calif., assignors to Nevcor, Inc., Stanford, Calif.

Filed Jan. 12, 1995, Ser. No. 372,173

Int. Cl.[6] B60K *1/00*

U.S. Cl. 180—65.2 **19 Claims**

18. A driving arrangement, comprising:

a heat engine having a drive shaft;

a first electric motor/generator having a first rotor connected to said drive shaft;

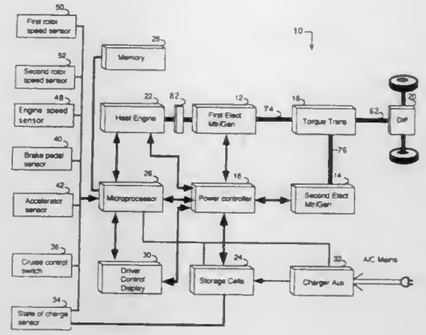
a second electric motor/generator having a second rotor;

an output shaft connected to and between said first and second rotors;

means for determining the rotational speed of said output shaft;

means for determining a desired rotational speed of said output shaft; and

means for modifying the rotational speed of said second rotor in response to changes in the rotational speed of said first rotor whereby the rotational speed of said output shaft is maintained at said desired rotational speed.



5,823,281

HYBRID VEHICLE

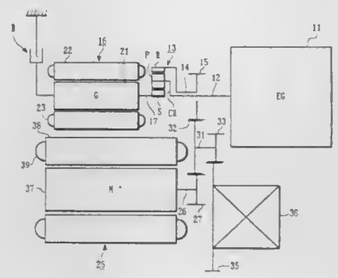
Kozo Yamaguchi, and Hiroyuki Kojima, both of Aichi-ken, Japan, assignors to Kabushikikaisha Equos Reseach, and Aisin AW Co., Ltd., both of Japan

Filed May 24, 1996, Ser. No. 653,614

Claims priority, application Japan, May 25, 1995, 7-150882; Dec. 5, 1995, 7-344542

Int. Cl.[6] B60K *1/02*

U.S. Cl. 180—65.2 **18 Claims**



1. A hybrid vehicle, comprising:

an internal-combustion engine;

an electric motor;

a generator from which rotational speed is controlled;

an output shaft connected for driving drive wheels;

a differential gear unit composed of at least three elements in which a first element is connected to said engine, a second element is connected to said generator, and a third element is connected to said output shaft and said electric motor;

electric storage means for supplying electric power to said electric motor and for storing electric power generated in said electric motor and said generator, said electric storage means being electrically connected to both said electric motor and said generator;

required minimal load judgment means for judging a required minimal load for driving the vehicle; and

generator control means for controlling a rotational speed of said generator and a change rate of the rotational speed, said generator control means controlling in response to the required minimal load judged by said required minimal load judgment means.

5,823,282

HYBRID VEHICLE WITH OIL PUMP SELECTIVELY DRIVEN BY THE ENGINE, A GENERATOR OR A MOTOR

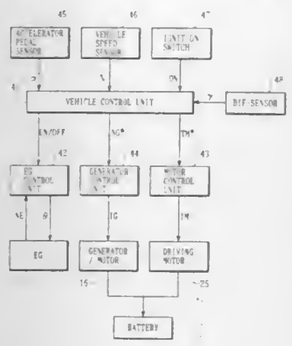
Kozo Yamaguchi, Aichi-ken, Japan, assignor to Kabushikikaisha Equos Research, Japan

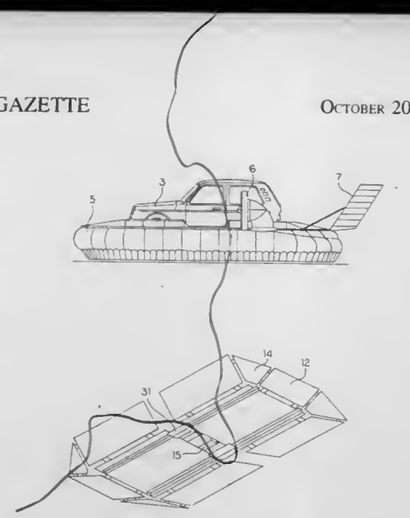
Filed Jun. 5, 1996, Ser. No. 660,681

Claims priority, application Japan, Jun. 6, 1995, 7-162959; Oct. 31, 1995, 7-306652

Int. Cl.[6] B60K *1/00;6/00*

U.S. Cl. 180—65.2 **21 Claims**





1. A hybrid vehicle comprising:
an internal-combustion engine for driving an engine output shaft;
a generator operable at a variable rotational speed based on an instruction signal;
an electric motor driven by an electric current supplied thereto;
an unit output shaft connected to drive wheels of the vehicle;
a differential gear unit comprising at least a first gear element connected to said generator, a second gear element connected to said engine output shaft, and a third gear element connected to said unit output shaft and, through said unit output shaft, to said electric motor;
an oil pump for lubrication rotatably driven by at least one of said engine output shaft, a transmission shaft connected to said generator, and said unit output shaft; and
control means for receiving said instruction signal and for controlling amount of discharge from said oil pump by controlling the rotational speed of said generator in accordance with said instruction signal.

5,823,283

CONTAINER CONVERTIBLE INTO AIR CUSHION SUPPORT

Alexandr Sergeevich Mamonov, ulitsa Upita, Russian Federation, assignor to Aktsionernoe Obscnestvo othkrytogo Tipa Proizvodstenno-Torgovaya Avtor, Kirov, Russian Federation

Filed Sep. 6, 1995, Ser. No. 524,380

Claims priority, application Russian Federation, Sep. 13, 1994, 94033135

Int. Cl.[6] B60V *3/00;* **B63B** *7/00*

U.S. Cl. 180—116 **16 Claims**

1. An apparatus convertible between an air cushion configuration for transporting a vehicle and a compact container configuration for towing by the vehicle, said apparatus comprising:
detachable trailer wheels for hauling in said compact container configuration;
a plurality of latticed sections foldable between a folded position forming a body in said compact container configuration and an unfolded position forming a base in said air cushion configuration, said plurality of latticed sections having at least two main sections and a plurality of perimeter sections;
a plurality of hinge joints interconnecting adjacent ones of said main and perimeter sections;
each of said main and perimeter sections having a planar surface whereby the main sections and the perimeter sections can be folded about respective hinge joints with the planar surface of each perimeter section lying flat against a respective planar surface of said main section in said compact container configuration;
each of said main sections having a plurality of transverse girders and at least two longitudinal girders, said transverse and longitudinal girders interconnected by resilient coupling elements, said resilient coupling elements permitting limited displacements of said girders relative to one another for conforming to a variety of terrain contours in said unfolded position;
a flexible inflatable skirt;
propulsion and blowing means including a blower for creating a cushion of air and an airscrew for providing controllable thrust, said propulsion and blowing means being detachably mounted to the base in said air cushion configuration;
a steering gear for directional control of said apparatus being detachably mounted to the base in said air cushion configuration; and
attachment means for securing said vehicle to said base in said air cushion configuration.

5,823,284

UTILITY VEHICLE

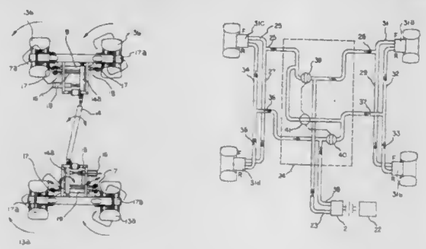
David L. Hoar, Fredericton; Ronald G. Mersereau, and Larry A. Welton, both of Sunbury County, all of Canada, assignors to Central Mechanical Ltd., Hoyt, Canada

Filed Sep. 22, 1995, Ser. No. 532,156

Claims priority, application Canada, Sep. 22, 1994, 2132684

Int. Cl.[6] B60K *17/356*

U.S. Cl. 180—240 **11 Claims**



1. A vehicle comprising, in combination.
a vehicle frame and front and rear vehicle chassis, each of said front and rear chassis having wheels, hydrostatic wheel drive means, said hydrostatic wheel drive means including hydrostatic transmission means having a multi-range speed drive,
a counter-configured steering assembly having a rotatable timing shaft, front and rear steering shafts each separately
connected to said rotatable timing shaft, said front and rear steering shafts being operatively associated with said wheels of the respective front and rear chassis,
force imparting means for rotating each of said steering shafts independently with said timing shaft equalizing the rotational speed of said front and rear steering shafts, and
a suspension system suspending said vehicle frame on said front and rear chassis.

5,823,285

FOUR WHEEL DRIVE WORKING VEHICLE

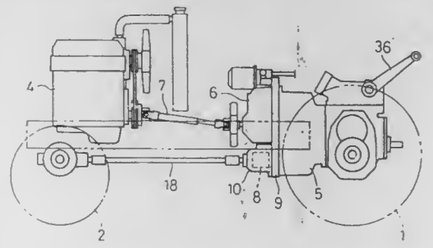
Hironori Tsuchihashi; Yoshikazu Togoshi; Osami Fujiwara; Teruo Shimamura; Akio Matsui; Hideya Umemoto; Kenichi Chujo, and Niro Bando, all of Sakai, Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Mar. 29, 1996, Ser. No. 625,060

Claims priority, application Japan, Apr. 6, 1995, 7-081066; Aug. 31, 1995, 7-223869; Aug. 31, 1995, 7-223870

Int. Cl.[6] B60K *17/356*

U.S. Cl. 180—242 **11 Claims**



1. A four wheel drive working vehicle having forward drive wheels and rear drive wheels, said vehicle comprising:
an engine;
a transmission case;
a hydraulic block including a side for covering said transmission case;
an HST attached to an opposite side of said hydraulic block, said HST including:
an input shaft for transmitting drive from said engine; and
an output shaft positioned above said input shaft and extending through said hydraulic block;
a shaft member disposed within said transmission case for transmitting drive from said output shaft to said forward drive wheels and said rear drive wheels, said shaft member being positioned below said output shaft;
a drive transmission mechanism disposed between said shaft member and one of said forward drive wheels and said rear drive wheels, said drive transmission mechanism including means for engaging and disengaging the drive therebetween; and
an intermediate shaft disposed between said shaft member and said one of said forward drive wheels and said rear drive wheels, said intermediate shaft being positioned below said shaft member and said input shaft of said HST, said intermediate shaft extending through said hydraulic block.

5,823,286

SUPPORTING STRUCTURE FOR EXHAUST PIPE SYSTEM OF A VEHICLE

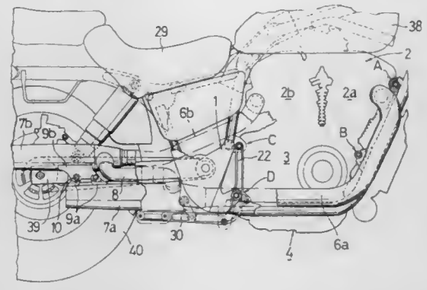
Satoshi Ishihara, and Yukishige Kuwabara, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 463,233

Claims priority, application Japan, Jun. 14, 1994, 6-131822

Int. Cl.[6] B60K *13/04*

U.S. Cl. 180—309 **19 Claims**



1. A vehicle including an exhaust pipe system and supporting structure for supporting said exhaust pipe system, said vehicle including a power unit having an engine and a transmission supported on a body frame by a resilient support member, said exhaust pipe system extending from said engine, said supporting structure comprising:
a bracket fixed to said power unit and extending therefrom, said bracket comprising a substantially L-shaped member having a substantially vertical leg portion and a substantially horizontal leg portion;
means for supporting said exhaust pipe system relative to said bracket; and
hanger bolts for connecting said power unit to said body frame, wherein said substantially vertical leg portion is attached to said hanger bolts, and said exhaust pipe system is attached to said substantially horizontal leg portion.

5,823,287

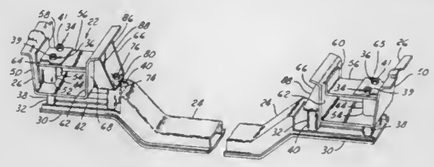
MOUNTING ASSEMBLY FOR A TRANSMISSION CROSS MEMBER OF A MOTOR VEHICLE

Parameswar Chidamparam, Madison Heights; Dattatrey N. Gawaskar, Farmington Hills; Robert D. Blankenship, Novi, and Leland B. Clark, Utica, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Mar. 3, 1997, Ser. No. 811,461

Int. Cl.[6] B60K *17/00;* **B62D** *21/02*

U.S. Cl. 180—377 **16 Claims**



2. A mounting assembly for mounting an end of a transmission cross member to a body rail of a motor vehicle, said mounting assembly comprising:
a cross member sleeve fixedly secured to the end of the transmission cross member and the body rail;
a rail sleeve fixedly secured to the body rail; and
a cover plate fixedly secured to said rail sleeve and the body rail;

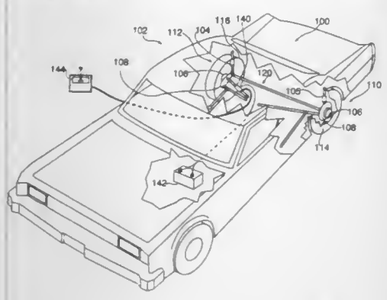
wherein said cross member sleeve includes a first sleeve portion and a second sleeve portion, each receiving a respective fastener therethrough.

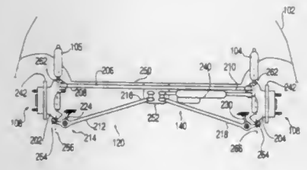
5,823,288

CONTROLLABLE SLIDE CAR

William J. Buff, IV, 131 Shore Dr., Long Branch, N.J. 07740

Filed Nov. 27, 1996, Ser. No. 757,392
Int. Cl.[6] B62D *63/00*
U.S. Cl. 180—445 **11 Claims**





1. A controllable slide car for controllably simulating understeer and oversteer conditions in an automobile having a rear wheel mounting assembly and conventional wheels, comprising:

a rear steering linkage assembly connected to the rear wheel mounting assembly, where said rear steering linkage assembly operates independently of a conventional wheel steering system that is used to steer the automobile;

a hydraulic or electro-mechanical actuator that is structurally independent of the conventional steering system and that is coupled to said rear steering linkage for controllably manipulating the rear steering linkage;

a controller, coupled to the hydraulic or electro-mechanical actuator for controllably steering the rear steering linkage assembly and the wheel mounting assembly to simulate understeer and oversteer;

whereby movement of the hydraulic or electro-mechanical actuator causes movement of the rear wheel mounting assembly and whereby this movement caused by the hydraulic or electro-mechanical actuator is movement in addition to movement caused by the conventional wheel steering system of the rear wheel mounting assembly;

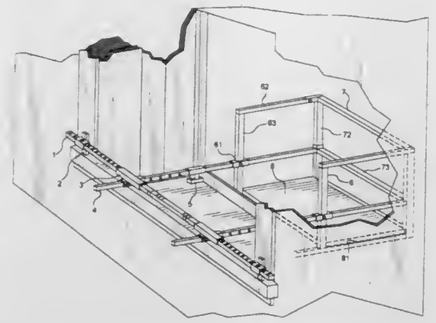
and whereby the oversteer and understeer are accomplished through movement of the conventional wheels and are accomplished without the use of additional wheels and without replacing any of the conventional wheels.

5,823,289

WINDOW PLATFORM AND SCAFFOLDING DEVICE

Steven Csomos, 880 Birkbeck St., Freeland, Pa. 18224

Filed Dec. 19, 1996, Ser. No. 770,211
Int. Cl.[6] A47L *3/02*
U.S. Cl. 182—61 **7 Claims**



1. An adjustable window mounted working platform which comprises:

a. an inner brace member which engages the inside of a building in which a window is positioned;

b. a pair of side members which extend outside of the window and cause the inner brace to engage the inside of a wall in cantilever action;

c. a platform supported by the pair of side members and mounted thereon at an elevation below the elevation of a lower window sill;

d. a pair of L-shaped side handles each comprising a horizontal member and a vertical member, the vertical member mounted onto each side member;

e. a rear brace member perpendicularly attached to each L-shaped side handle horizontal member and spanning the width of the platform;

f. means for slidingly connecting the side members to the inner brace to provide adjustment to the window width from inside the window;

g. means for releasably connecting the rear brace to the side members;

h. means for fixing the the side member connecting means in a given position;

i. means for fixing the rear member connecting means in a given position whereby a complete platform is assembled at an elevation below the elevation of the window sill.

5,823,290

Patent Not Issued For This Number

5,823,291

SELF-CONTAINED DEVICE FOR CLEANING AND COATING HOLD SURFACES IN A BULK CARRIER

Richard A. Goldbach, Norfolk, Va., assignor to Metro Machine Corporation, Norfolk, Va.

Filed Feb. 19, 1997, Ser. No. 802,676
Int. Cl.[6] B66C *23/04*
U.S. Cl. 182—141 **7 Claims**

1. A self-contained device for supporting one or more operators for applying work to internal wall surfaces of a bulk cargo vessel hold, comprising:

framework providing a vertical tower having a base;

a shiftable support structure supporting the tower base and arranged for shifting the tower about in each of two mutually orthogonal horizontal direction on a substantially horizontal deck of the hold, for stationing the tower in proximity with each of four corners where respective pairs of sidewalls of the hold meet one another;

a vertical trolley mounted to the vertical tower and vertically movable thereon to assume and maintain each of a plurality of selected vertical elevations;

a horizontal trolley mounted to the vertical trolley and bidirectionally horizontally movable thereon to assume and maintain each of a plurality of selected horizontal positions relative to the vertical tower, including a first extreme of extension in one direction to one side of the vertical tower and a second extreme of extension to an opposite side of the vertical tower;

a complement of supply systems for use in performing work on said surface, said systems being provided on said vertical tower;

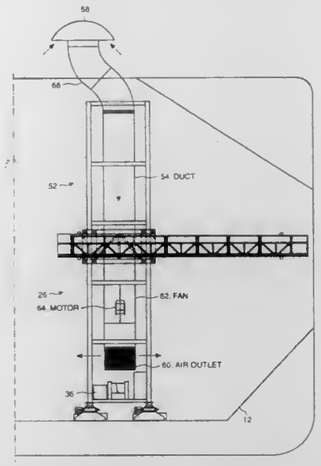
an operator walkway provided on said horizontal trolley;

a ventilation duct supported by said vertical tower; said ventilation duct having an air inlet provided at an upper end thereof, and an air outlet provided at a lower end thereof;

a filter associated with said ventilation duct for filtering air drawn into the ventilation duct; and

a fan interposed in said duct for causing air to be drawn into said duct through said inlet and expelled into the hold through said outlet;

said duct including a laterally offset upper end portion which extends above said vertical tower and being swivelable about a vertical axis, for locating said inlet at any of a plurality of laterally offset locations within a circular envelope of movement and disposition.



5,823,292

CLAMP CONNECTOR FOR THE ASSEMBLY OF PREFABRICATED SHAPED-SECTION BARS TO FORM SCAFFOLDING

Günther Krause, Alsfeld, Germany, assignor to Krause-Werk GmbH & Co., KG, Alsfeld-Altenburg, Germany

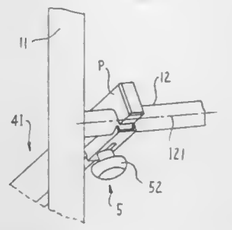
PCT No. PCT/EP95/01805, § 371 Date Mar. 20, 1997, § 102(e) Date Mar. 20, 1997, PCT Pub. No. WO95/34727, PCT Pub. Date Dec. 21, 1995
PCT Filed May 12, 1995, Ser. No. 776,213
Claims priority, application Germany, Jun. 10, 1994, G 94 09 418.7
Int. Cl.[6] E04G *7/00*
U.S. Cl. 182—186.8 **16 Claims**

1. A clamp connector with structural elements for the assembly of a scaffolding, the structural elements including elongate shaped-section bars and crossbars, comprising:

one of the shaped-section bars having a rectangular hollow shape partially defined by first and second side walls and an underside wall extending between the first and second side walls, means for defining an aperture being in an end area of the one shaped-section bar for receiving one of the crossbars therein the aperture being symmetrical about an axis of symmetry, the axis of symmetry being transverse with respect to the longitudinal axis of the one shaped-section bar, means defining a slot being in the one shaped-section bar, the slot opening from the aperture through the underside wall of the one shaped-section bar so that the aperture can receive the one crossbar therethrough,

the aperture being dimensioned such that the one shaped-section bar rests nonmoveably longitudinally on the one crossbar, and

a clamp being provided on the end area of the one shaped-section bar, means for moving the clamp at least partially parallel to the longitudinal axis of the one shaped-section bar joining the clamp and the one shaped-section bar, means for locking the clamp in position being provided on the one shaped-section bar, the clamp being moveable between open and closed positions, in the closed position the clamp covers the slot opening into the aperture to pressingly clamp the crossbar in the aperture to resist pivotal movement of the crossbar relative to the shaped-section bar, the clamp having a U-shape including first and second legs, the first and second legs respectively extend over the exterior of the first and second side walls.

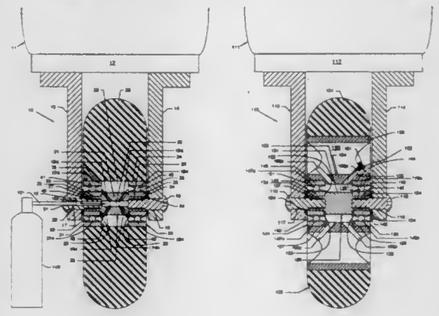


5,823,293

PROCESS AND APPARATUS FOR LUBRICATING INLINE SKATE BEARINGS AND SKATEBOARD BEARINGS

Stephen M. Gilbertson, and Jonathan G. Gilbertson, both of 8232 Oakmere Rd., Bloomington, Minn. 55458

Filed Dec. 10, 1996, Ser. No. 763,969
Int. Cl.[6] F16C *1/24*
U.S. Cl. 184—5.1 **34 Claims**



1. A wheel assembly with provision for at least one of the group consisting of lubricating and cleaning for use with an inline skate or a skateboard, comprising:

a. a pair of spaced apart wheel supports;

b. a wheel positioned between said spaced apart wheel supports, said wheel having a concentric central opening;

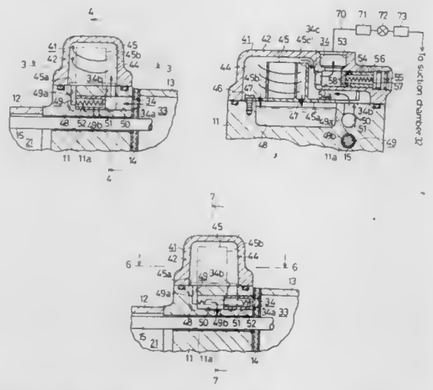
c. an axle/spacer positioned within said central opening of said wheel, said axle/spacer extending from one side of said wheel to the other side of said wheel and held in a concentric position with respect to said wheel by two bearings, said two bearings being separated from one another with one bearing positioned at one side of said wheel and the other bearing positioned at the other side of said wheel, thereby providing a

space between said two bearings for receiving said at least one of said group consisting of lubricating and cleaning;

d. said axle/spacer being attached to said pair of spaced apart wheel supports by two screws, at least one of said two screws having an exterior entrance and an interior passageway extending from said entrance throughout its entire length for delivery of said at least one of said group consisting of lubricating and cleaning when provided to said entrance;

e. said axle/spacer having a central body portion with a chamber therein which adjoins said interior passageway, and said axle/spacer further having at least one port extending through said central body portion from said chamber to said space between said two bearings for delivery of at least one of said groups consisting of lubricating and cleaning to said two bearings; whereby,

f. at least one of said group consisting of lubricating and cleaning, when provided to said entrance, can pass through said interior passageway into said chamber, then through said at least one port in said central body portion to said space between said two bearings, and then outwardly through said two bearings to the sides of said wheel.



18. A process for a wheel assembly with provision for at least one of the group consisting of lubricating and cleaning for use with an inline skate or a skateboard, comprising:

a. spacing apart a pair of wheel supports;

b. positioning a wheel between said spaced apart wheel supports, said wheel having a concentric central opening;

c. positioning an axle/spacer within said central opening of said wheel, said axle/spacer extending from one side of said wheel to the other side of said wheel and held in a concentric position with respect to said wheel by two bearings, said two bearings being separated from one another with one bearing positioned at one side of said wheel and the other bearing positioned at the other side of said wheel, thereby providing a space between said two bearings for receiving at least one of said group consisting of lubricating and cleaning;

d. attaching said axle/spacer to said pair of spaced apart wheel supports by two screws, at least one of said screws having an exterior entrance and an interior passageway extending from said entrance throughout its entire length for delivery of at least one of said group consisting of lubricating and cleaning when provided to said entrance;

e. providing said axle/spacer with a central body portion with a chamber therein which adjoins said interior passageway, and said axle/spacer further having at least one port extending through said central body portion from said chamber to said space between said two bearings for delivery of at least one of said group consisting of lubricating and cleaning to said two bearings; whereby at least one of said group consisting of lubricating and cleaning, when provided to said entrance, can pass through said interior passageway into said chamber, then through said at least one port in said central body portion to said space between said two bearings, and then outwardly through said two bearings to the sides of said wheel.

5,823,294

LUBRICATION MECHANISM IN COMPRESSOR

Hideki Mizutani; Hiroaki Kayukawa; Suguru Hirota, and Fuminobu Enokijima, all of Kariya, Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Jun. 5, 1997, Ser. No. 869,656
Claims priority, application Japan, Jun. 6, 1996, 8-144432
Int. Cl.[6] F01M *9/00*
U.S. Cl. 184—6.3 **20 Claims**

1. A compressor for compressing gas containing misted oil, the compressor having a drive plate located in a crank chamber and mounted on a drive shaft and a piston operably coupled to the drive plate and located in a cylinder bore, wherein said drive plate converts rotation of the drive shaft to reciprocating movement of the piston in the cylinder bore to vary the capacity of the cylinder bore, said piston compressing gas supplied to the cylinder bore and discharging the compressed gas from the compressor by way of a discharge chamber and a discharge passage, said compressor comprising:

an oil separating mechanism disposed midway in the discharge passage to separate the oil from the gas flowing in the discharge passage;

a storing chamber defined in the lower portion of the separating mechanism to store the oil separated from the gas;

a supplying passage for connecting the storing chamber with the crank chamber to supply the oil to the crank chamber from the storing chamber; and

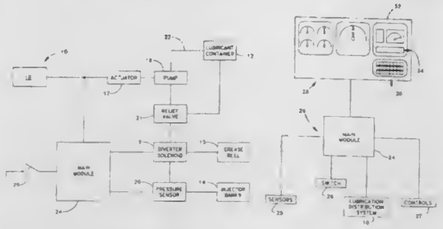
a supplying valve disposed midway in the supplying passage, wherein said supplying valve opens the supplying passage to supply the oil to the crank chamber from the storing chamber when the compressor is stopped.

5,823,295

LUBRICATION CONTROL SYSTEM FOR A WORK MACHINE

Bobby D. Griffith, Aurora; Mark R. Hawkins, Chillicothe; Dean J. Schlickbernd, Joliet, and Steven J. Zmuda, Dunlap, all of Ill., assignors to Caterpillar Inc., Peeria, Ill.

Filed Mar. 29, 1996, Ser. No. 624,151
Int. Cl.[6] F01M *1/18;1/10*
U.S. Cl. 184—6.4 **16 Claims**



16. An apparatus for lubricating a work machine, comprising:

a timer;

a lubricant distribution system, said lubricant distribution system comprising an automatic lubrication system and a manual lubrication system, said automatic lubrication system including lubricant injector banks and said manual lubrication system including a grease reel;

a lubricant diverter fluidly connected to said automatic lubrication system and to said manual lubrication system;

means for determining a lubrication mode and responsively producing a lubrication mode signal, said means for determining including a manually activated switch, said switch being connected with said lubricant diverter such that when said switch is activated, said lubricant diverter diverts the flow of lubricant between the automatic and manual lubrication systems;

a charging system adapted to drive said lubricant distribution system;

means for sensing a charging system parameter indicative of the operating state of said charging system;

means for causing said timer to calculate a time interval, said time interval being dependent on a previous lubricating event;

means for producing a first lubrication signal in response to said time interval being greater than or equal to a predetermined interval constant and said charging system parameter being greater than or equal to a predetermined level;

means for producing a second lubrication signal in response to said charging system parameter being greater than or equal to a predetermined level and said lubrication mode signal being greater than a predetermined value; and

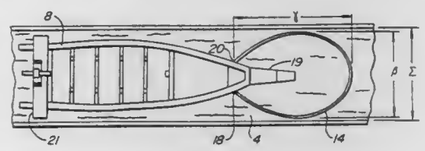
means for activating said lubricant distribution system in response to said first lubrication signal and said second lubrication signal.

5,823,296

HYDRAULIC SYSTEM FOR SERVING FOOD

Yukio Iwamoto, and Masako Iwamoto, both of 1 James Ave., Atherton, Calif. 94027

Continuation of Ser. No. 466,666, Jun. 6, 1995, Pat. No. 5,566,782, which is a continuation of Ser. No. 149,687, Nov. 9, 1993, Pat. No. 5,474,153. This application Jan. 11, 1996, Ser. No. 584,632
Int. Cl.[6] B65G *53/02*
U.S. Cl. 186—49 **8 Claims**



1. An apparatus for serving and displaying food comprising:

a continuous watercourse having a watercourse width and an outer periphery, the continuous watercourse containing water having a free surface;

means for inducing a current in the continuous watercourse;

a plurality of food carriers floating in the continuous watercourse under the influence of said current, said food carriers being structurally independent from one another so that each food carrier is independently removable from said watercourse, said food carriers each having a length of the water line when floating in the watercourse; and

a plurality of bumpers positioned between said food carriers and sized to maintain a predetermined spacing between said food carriers in said watercourse, the bumpers extending outward from the food carriers by a distance in the direction of current equal to at least one-quarter the length of the waterline;

wherein the bumpers have a width sufficient to help the food carriers align with the watercourse.

5,823,297

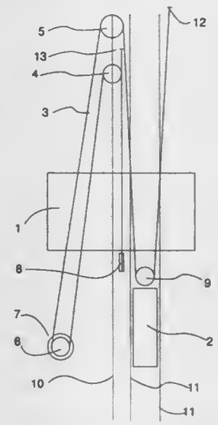
Patent Not Issued For This Number

5,823,298

TRACTION SHEAVE ELEVATOR

Esko Aulanko, Kerava; Harri Hakala, Hyvinkää, and Jorma Mustalahti, Hyvinkää, all of Finland, assignors to Kone Oy, Helsinki, Finland

Filed Jun. 19, 1996, Ser. No. 666,836
Claims priority, application Finland, Jun. 22, 1995, 953154
Int. Cl.[6] B66B *11/08*
U.S. Cl. 187—266 **13 Claims**



1. A traction sheave elevator in an elevator shaft, the elevator shaft having guide rails and the traction sheave elevator comprising:

drive machinery with a traction sheave, the drive machinery and the traction sheave being in the elevator shaft;

an elevator car and a counterweight mounted on the guide rails;

hoisting ropes extending from the traction sheave;

at least two diverting pulleys mounted on one of the guide rails,

a first one of the diverting pulleys carrying a hoisting rope portion going from the traction sheave to the elevator car and a second one of the diverting pulleys carrying a hoisting rope portion going from the traction sheave to the counterweight.

5,823,299

SHUTTLE ELEVATORS FEEDING LOCAL ELEVATORS

Gilbert W. Wierschke, West Simsbury; Frederick H. Barker, Bristol; Paul Bennett, Waterbury; Anthony Cooney, Unionville; Richard C. McCarthy, Simsbury; Joseph Bittar, Avon; Bruce A. Powell, Canton, and Samuel C. Wan, Simsbury, all of Conn., assignors to Otis Elevator Company, Farmington, Conn.

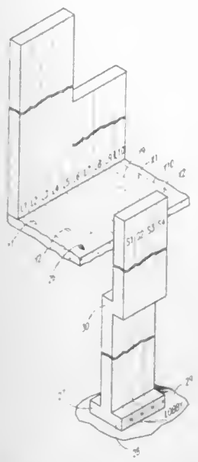
Filed Jun. 19, 1996, Ser. No. 666,188
Int. Cl.[6] B66B *1/00;11/02;9/00*
U.S. Cl. 187—277 **17 Claims**

13. An elevator system for providing elevator service between a lobby level at one part of a building and a plurality of contiguous floors at another part of a building, comprising:

a plurality of multiple deck express shuttle elevators extending between a plurality of floors at a lobby level of a building and a transfer level of the building vertically remote from said lobby level, each having a multiple deck carframe for carrying multiple elevator cabs which may be off-loaded therefrom;

a plurality of local elevator groups, each group comprising a plurality of local elevators extending away from said transfer level of the building for providing service to a plurality of contiguous floors of said building, each local elevator having a carframe for carrying an elevator cab which may be off-loaded therefrom;

a plurality of contiguous transfer floors at said transfer level of said building, each floor being in horizontal alignment with



one of said multiple decks of any of said shuttle elevators when at rest at said transfer level;

a carrier for each of said transfer floors, each for moving elevator cabs between any of said shuttle elevators and any of said local elevators on the related one of said transfer floors, said carriers and said carframes including means for off-loading said cabs from said carframes onto corresponding ones of said carriers and loading said cabs from said carriers onto corresponding ones of said car frames.

5,823,300

BRAKE DEVICE OF LINEAR MOVING BODY

Yasuo Higuchi, Aichi, Japan, assignor to Pubot Giken Co., Ltd., Aichi, Japan

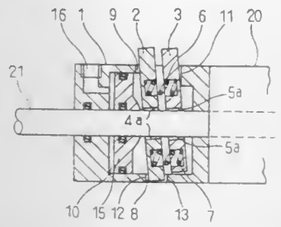
PCT No. PCT/JP96/00121, § 371 Date Sep. 12, 1996, § 102(e) Date Sep. 12, 1996, PCT Pub. No. WO96/23979, PCT Pub. Date Aug. 8, 1996

PCT Filed Jan. 24, 1996, Ser. No. 702,698

Claims priority, application Japan, Jan. 31, 1995, 7-50302; Mar. 23, 1995, 7-104524; Dec. 15, 1995, 7-351722

Int. Cl.[6] B65H *59/10;* **F15B** *15/26;* **F16D** *63/00*

U.S. Cl. 188—67 **5 Claims**



1. A brake device for a linear moving body, comprising:

a rod having a cylindrical outer circumferential surface and a center axis; and

a brake member having two opposite end surfaces orthogonal to said center axis of said rod and a hole with a cylindrical inner circumferential surface, said rod extending at least into said hole and having a clearance fit therein, said cylindrical inner circumferential surface of said hole of said brake member to be fitted to said cylindrical outer circumferential surface of said rod, said brake member being arranged movable slantwise using a position remote from said axis of said rod as a fulcrum,

wherein notched surfaces are formed in the cylindrical inner circumferential surface of said brake member, said notched surfaces being defined by opposite surfaces in parallel to a slanting direction of said brake member,

and frictional surfaces are provided in at least four positions where one end surface, one notched surface and the cylindrical inner circumferential surface after notching, intersect with each other.

5,823,301

BRAKE PADS AND PROCESS FOR THEIR PRODUCTION

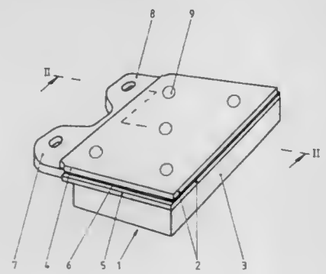
Karlheinz Bildner, Linsengericht-Grossenhausen, and Christoph Freist, Bielefeld, both of Germany, assignors to CWW-Gerko Akustik GmbH & Co. KG, Frankfurt, Germany

Continuation-in-part of Ser. No. 669,695, Jun. 24, 1996, abandoned. This application Dec. 10, 1996, Ser. No. 763,300

Claims priority, application Germany, Jun. 23, 1995, 195 22 889.8

Int. Cl.[6] F16D *65/38*

U.S. Cl. 188—73.37 **10 Claims**



1. A brake pads comprising:

(A) a support which comprises two metal sheets bonded together by a damping layer, and

(B) a friction facing provided on one of said metal sheets,

wherein said damping layer is a peroxide-crosslinked polyacrylate adhesive of a thickness of about 75 μm or a peroxide-crosslinked silicone adhesive of a thickness of about 100 μm.

5,823,302

TOGGLE BRAKE ASSEMBLY FOR A WHEEL OF A SHOPPING CART OR THE LIKE

Quentin David Schweninger, c/o Dellmont Leisure International, Inc. 3214 Honolulu Ave., La Crescenta, Calif. 91214

Filed May 23, 1996, Ser. No. 652,835

Int. Cl.[6] B60T *7/18;* **B62B** *5/04*

U.S. Cl. 188—111 **16 Claims**

1. A wheel-and-brake assembly for a vehicle, comprising:

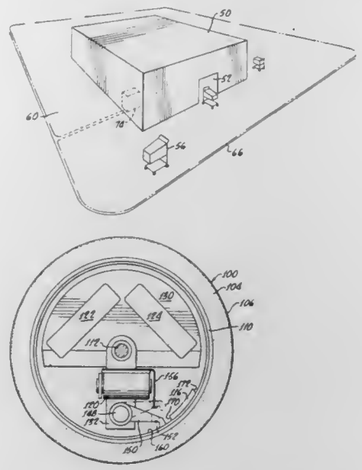
a wheel including a hub and a tire mounted on said hub;

a cleat stopper mounted on said hub;

a toggle mounted in said wheel and non-rotatable relative to a rotation axis of said wheel;

a solenoid coil positioned in said wheel; and

a clip which holds said toggle in a non-braking condition relative to said stopper and which releases said toggle from the non-braking condition when said coil is activated, said toggle when released moving to a braking condition engageable with an end of said stopper to brake rotation of said wheel in one



direction and engageable with an opposite end of said stopper to brake rotation of said wheel in an opposite direction.

5,823,303

BRAKE DISC

Guenther Schwarz, Tuttlingen; Ulrich Schmitt, Abtsgmuend, and Armin Hipp, Kolbingen, all of Germany, assignors to Schwaebische Huettenwerke GmbH, Aalen-Wasseralfinger, Germany

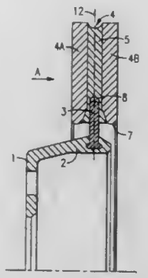
PCT No. PCT/EP94/00154, § 371 Date Nov. 6, 1995, § 102(e) Date Nov. 6, 1995, PCT Pub. No. WO94/17316, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 21, 1994, Ser. No. 500,974

Claims priority, application Germany, Jan. 28, 1993, 43 02 328.2; Sep. 28, 1993, 43 32 951.9

Int. Cl.[6] F16D *65/12*

U.S. Cl. 188—218 XL **2 Claims**



1. A brake disc having a friction ring, defining an axial plane of symmetry, and a bearing part connected to the friction ring by a plurality of pins disposed about and projecting radially outwardly from an outer circumference of the bearing part into bores extending radially outwardly from an inner circumferential opening of the friction ring located in the axial plane of symmetry, wherein the pins are displaceable relative to the bores and the bearing part is a wheel hub and the pins are connected to the wheel hub by clamping claws.

5,823,304

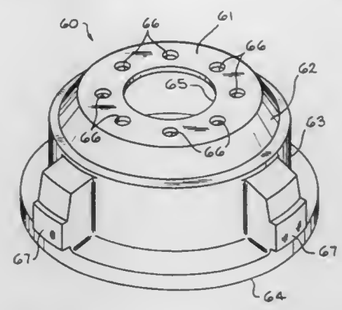
METHOD FOR PRODUCING A BRAKE DRUM

Theodore J. Wagg, New Hudson, Mich., assignor to Kelsey-Hayes Company, Livonia, Mich.

Filed Oct. 2, 1996, Ser. No. 725,135

Int. Cl.[6] F16D *65/10*

U.S. Cl. 188—218 R **26 Claims**



1. A brake drum adapted for use in a drum brake assembly comprising:

a hollow cylindrical brake drum defining a brake drum axis and including a generally closed outer end, a generally radially extending transition section, a generally axially extending cylindrical main body, and an opened inner end;

a plurality of discrete raised segments provided on an outer surface of said cylindrical main body, each of said raised segments having a generally stepped configuration including a generally radially extending first surface, a generally axially extending second surface, a generally radially extending third surface, a generally axially extending fourth surface, and a generally radially extending fifth surface, said raised segments extending substantially the entire axial length of said outer surface of said cylindrical main body; and

at least a portion of one of said first surface, said second surface, said third surface, said fourth surface, and said fifth surface on at least one of said raised segments being selectively machined to thereby produce the brake drum.

5,823,305

FLOW SENSITIVE, ACCELERATION SENSITIVE SHOCK ABSORBER

Donald G. Richardson, Sutter Creek, and David A. Shirley, Pine Grove, both of Calif., assignors to Ricor Racing & Development, L.P., Sutter Creek, Calif.

Continuation-in-part of Ser. No. 958,560, Oct. 8, 1992, abandoned. This application Mar. 1, 1995, Ser. No. 396,558

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—275 **51 Claims**

1. An acceleration sensitive shock absorber connected at one end to the chassis of a vehicle and at the other end to a wheel of the vehicle comprising:

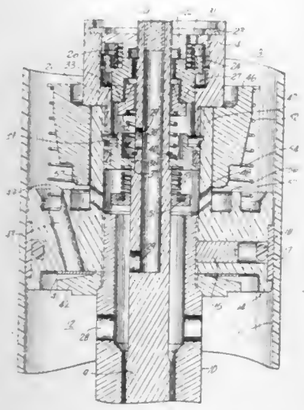
a tubular housing for connection to one portion of a vehicle;

a piston assembly in the housing comprising a piston dividing the housing into an upper chamber and a lower chamber, and a piston rod for connection to another portion of the vehicle, one of said portions being the chassis of the vehicle and the other portion being a wheel of the vehicle;

means for passing shock absorber fluid between the upper chamber and the lower chamber with a restricted flow rate during compression of the shock absorber;

means for passing shock absorber fluid between the upper chamber and the lower chamber with a restricted flow rate during extension of the shock absorber;

a first port for providing fluid flow from the lower chamber to the upper chamber;



a second port for providing fluid flow from the upper chamber to the lower chamber;

a movable inertial mass in the shock absorber for opening the first port when acceleration of the wheel of the vehicle is greater than a predetermined magnitude for increasing flow of fluid between the upper chamber and the lower chamber; and

means for applying sufficient fluid pressure to the inertial mass for maintaining the inertial mass in a port-open position in response to fluid flow between the chambers.

5,823,306

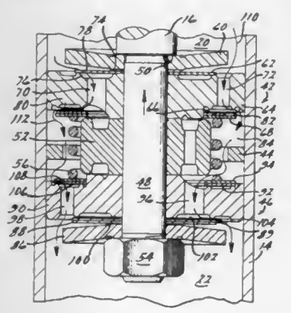
STROKE DEPENDENT DAMPING

Simon Anne de Molina, Merchtem, Belgium, assignor to Tenneco Automotive Inc., Lake Forest, Ill.

Filed Nov. 12, 1996, Ser. No. 746,388

Int. Cl.[6] F16F *9/34*

U.S. Cl. 188—322.15 **21 Claims**



1. A two-state shock absorber comprising:

a pressure tube;

a piston rod slidably disposed within said pressure tube;

a valve assembly attached to said piston rod and slidably disposed within said pressure tube, said valve assembly providing a first and a second fluid flow path during movement of said valve assembly within said pressure tube, said first and second flow paths of said valve assembly providing a low resistance to the movement of said valve assembly; and

an independent ring disposed within said pressure tube, said valve assembly being movable between a first position spaced from said independent ring and a second position engaging said independent ring to close one of said first and second flow paths when movement of said valve assembly exceeds a specified distance, said closing of one of said first and second flow path providing a high resistance to the movement of said valve assembly, said valve assembly normally being located in said first position.

5,823,307

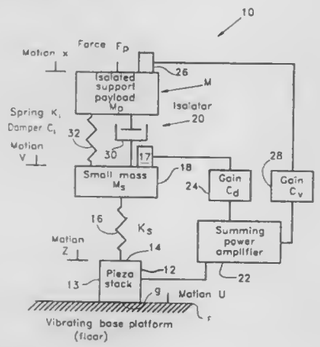
STIFF ACTUATOR ACTIVE VIBRATION ISOLATION SYSTEM

Dale W. Schubert, Sudbury; Andrew Michael Beard, Winchester; Steven Frank Shedd, Plympton; Marion Richard Earles, Jr., Marlboro, all of Mass., and Andreas H. Von Flotow, Hood River, Oreg., assignors to Technical Manufacturing Corporation, Peabody, Mass.

Continuation of Ser. No. 223,256, Apr. 4, 1994, Pat. No. 5,660,255. This application May 2, 1997, Ser. No. 850,045

Int. Cl.[6] F16F *7/10*

U.S. Cl. 188—378 **19 Claims**



1. An active vibration isolation system for isolating a payload mass from a source of vibration, said active vibration isolation system comprising:

a small mass;

at least one stiff actuator having first and second opposed ends and variable in length between the first and second opposed ends, the first end coupled to said small mass and the second end coupled to the source of vibration;

a passive isolator interposed between said small mass and said payload mass, wherein said stiff actuator, said small mass and said passive isolator are interposed between said payload mass and the source of vibration;

a sensor coupled to said small mass to generate a sensor signal which is a function of the movement of said small mass; and

circuitry coupling said sensor to said stiff actuator and receiving said sensor signal, said circuitry including compensation circuitry to alter said sensor signal such that said active vibration isolation system will be stable over a predetermined range of vibration frequencies and payload masses, said circuitry further including control circuitry coupled to said stiff actuator for varying the length of said stiff actuator as a function of said altered sensor signal.

5,823,308

CLUTCH CONTROL WITH MULTIPLE ACTUATING CYLINDERS FOR A PULL-TYPE CLUTCH

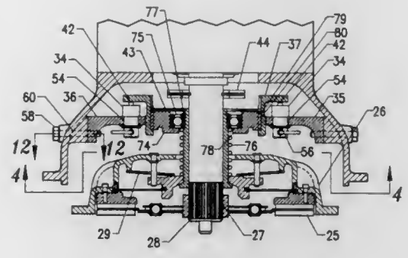
Eli M. Ladin, Ann Arbor, Mich., and Lily W. Ladin, legal representative, 1608 Morton Ave., Ann Arbor, Mich. 48104

Filed Feb. 16, 1996, Ser. No. 601,309

Int. Cl.[6] F16D *67/02*

U.S. Cl. 192—13 R **18 Claims**

1. A control for selectively engaging and disengaging a "pull-type" vehicle clutch from an engine, comprising: release sleeve for movement on a transmission input shaft; a release bearing assembly mounted on said release sleeve for movement with said release sleeve; a clutch brake disc fixedly mounted on said transmission shaft; an inverted "U" shaped thrust yoke mounted on said release bearing for said movement with said release sleeve and said release bearing assembly to activate said clutch brake disc and disengage said clutch from said engine, said thrust yoke having at least one outer side portion for restraining said clutch brake disc from rotating when said clutch is disengaged; at least two co-acting actuators operatively connected to a common pressure source for moving said thrust yoke, each of said actuators being independently mounted at a fixed position on a bell housing which encloses said vehicle clutch, said actuators further having extendable push rods for engaging said thrust yoke; a bracket for mounting each of said actuators to a side of said bell housing, at least one of said brackets having an inner side portion in juxtaposed and cooperative relationship to said thrust yoke clutch brake disc restraining portion, and a common pressure source operatively connected to said actuators for extending said push rods away from said clutch.



5,823,309

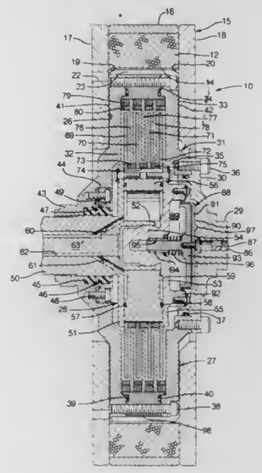
MAGNETORHEOLOGICAL TRANSMISSION CLUTCH

Swaminathan Gopalswamy, Rochester Hills, and Gary Lee Jones, Farmington Hills, both of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed May 23, 1997, Ser. No. 862,914

Int. Cl.[6] F16D *35/00*

U.S. Cl. 192—21.5 **20 Claims**



1. A magnetorheological clutch for controllable torque transmission comprising:

a housing defining a cavity;

a rotary input element with at least one input clutch plate extending in the cavity;

a rotary output element with at least one output clutch plate extending in the cavity adjacent the input clutch plate with a gap defined between the input clutch plate and the output clutch plate;

a core formed of magnetically permeable material;

a coil effective to establish an electromagnetic field and carried against the core;

a magnetorheological fluid carried in the cavity and within the gap wherein the fluid is responsive to the electromagnetic field that is established by the coil through the core so that torque is transferred from the input clutch plate to the output clutch plate through the magnetorheological fluid; and

a thermal expansion chamber in the cavity with a compressible gas chamber in the thermal expansion chamber separated from a magnetorheological fluid chamber in the thermal expansion chamber by a diaphragm so that expansion of the magnetorheological fluid is accommodated by movement of the diaphragm to compress the gas.

9. A magnetorheological clutch for controllable torque transmission comprising:

a housing defining a cavity;

a rotary input element with at least one input clutch plate extending radially in the cavity;

a rotary output element with at least one output clutch plate extending radially in the cavity adjacent the input clutch plate with a gap defined between the input clutch plate and the output clutch plate;

a core formed of magnetically permeable material and having a pair of side plates extending radially across the housing;

a coil effective to establish an electromagnetic field and carried against the core;

a magnetorheological fluid carried in the cavity and within the gap wherein the fluid is responsive to the electromagnetic field that is established by the coil through the core so that torque is transferred from the input clutch plate to the output clutch plate through the magnetorheological fluid; and

a series of radially extending cooling fins positioned in the cavity and radially inside the input clutch plate and the output clutch plate wherein generated heat is dissipated through the cooling fins by exposure to a circulating coolant fluid that enters and exits the cavity through a coolant flow path and flows about the cooling fins.

5,823,310

APPARATUS FOR COUPLING A LOOSE WHEEL TO A SHAFT IN A CHANGE SPEED TRANSMISSION AND METHOD OF MAKING SAME

Hans Leucht, Esslingen, Germany, assignor to Mercedes-Benz AG, Stuttgart, Germany

Filed Dec. 9, 1996, Ser. No. 762,075

Claims priority, application Germany, Dec. 11, 1995, 195 46 087.1

Int. Cl.[6] F16D *23/06;* **F16H** *63/30*

U.S. Cl. 192—53.34 **15 Claims**

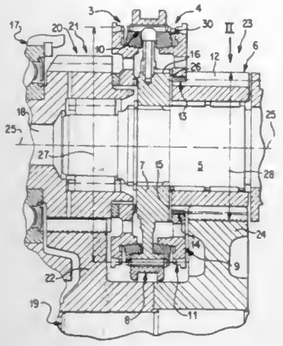
1. An apparatus in a change speed transmission, comprising:

a loose wheel rotatably disposed on a shaft and having a running toothing on an outer circumference, said running toothing including a reduced-diameter section, a base portion of said running toothing being continuous along an entire width of the loose wheel;

a shift sleeve support fixed to said shaft adjacent said reduced-diameter section of said loose wheel;

a shift slide sleeve arranged concentrically, non-rotatably, and axially displaceably with respect to said shift sleeve support, said shift slide sleeve having an inner clutch toothing; and

a clutch ring arranged concentrically with respect to said loose wheel, said clutch ring having an outer clutch toothing selectively engageable by said inner clutch toothing of said shift slide sleeve, and said clutch ring having an inner driving



toothing engaged with said reduced-diameter section of said running toothing of said loose wheel.

5,823,311

FLYWHEEL, IN PARTICULAR FOR MOTOR VEHICLES

Ayman Mokdad, and Giovanni Grieco, both of Saint-Ouen, France, assignors to Valeo, Paris, France

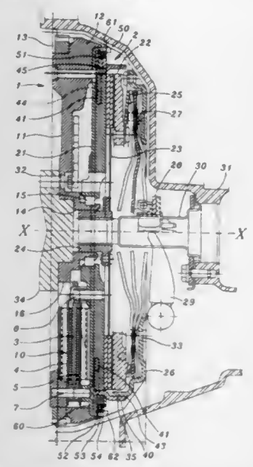
PCT No. PCT/FR95/00482, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO95/28580, PCT Pub. Date Oct. 26, 1995

PCT Filed Apr. 13, 1995, Ser. No. 564,067

Claims priority, application France, Apr. 14, 1994, 94-04439

Int. Cl.[6] F16F *15/12*

U.S. Cl. 192—70.17 **5 Claims**



1. A damped flywheel of the kind which comprises two coaxial masses, (**1**,**2**) mounted for movement of one with respect to the others a resilient member (**8**) and friction devices (**50**, **150**) are interposed operatively between said two coaxial masses (**1**, **2**), in which one (**1**) of the masses, referred to as the first mass, is adapted to be secured to a driving shaft, while the other mass (**2**), referred to as the second mass, comprises a reaction plate (**21**) for a friction clutch and is mounted rotatably on the first mass (**1**) through an interposed bearing (**15**), wherein the first mass (**1**) carries a stiffening member (**60**) fixed to its outer periphery and lying close to the second mass (**2**), the friction devices (**50**, **150**) are interposed operatively between one of the outer and inner peripheries of the stiffening member and the second mass (**2**), the stiffening member (**60**) includes at one of its inner and outer peripheries an axially oriented flange having lugs, bent back radially, at its free end, said flange is formed with slots (**61**, **161**) defining mortices and at least one friction ring (**51**, **151**) and an axially acting resilient ring (**53**, **153**) are fitted between the lugs (**62**) and a transverse portion of the stiffening member, the friction ring (**51**, **151**) is arranged to be mounted in rotation, optionally with a clearance, on the second mass (**2**), while the axially acting resilient ring (**51**, **151**) bears directly or indirectly on the lugs (**62**) of the stiffening member so as to act on an application ring (**52**, **152**) which has tenon engaging with the mortices (**61**, **161**) in the axial flange of the stiffening member (**60**), so that the friction ring (**51**, **151**) is gripped between the application ring and the transverse portion of the stiffening member (**60**).

5,823,312

AUTOMATICALLY ADJUSTABLE FRICTION CLUTCH

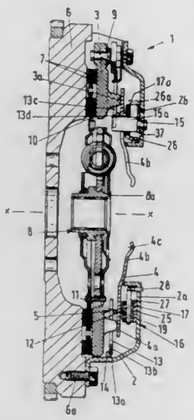
Wolfgang Reik, Bühl; Karl-Ludwig Kimmig, Bühl-Waldmatt, both of Germany; Edmund Maucher, Wooster, Ohio, and Christoph Wittmann, Bühl-Eisental, Germany, assignors to LuK Lamellen und Kupplungsbau GmbH, Bühl, Germany

Continuation of Ser. No. 982,184, Nov. 25, 1992, Pat. No. 5,409,091. This application Apr. 10, 1995, Ser. No. 419,352

Claims priority, application Germany, Nov. 26, 1991, 41 38 806.2; Mar. 5, 1992, 42 06 904.1; Mar. 10, 1992, 42 07 58.9; Apr. 18, 1992, 42 12 940.0

Int. Cl.[6] F16D *13/75*

U.S. Cl. 192—70.25 **110 Claims**



83. An engageable and disengageable friction clutch for motor vehicles, comprising a housing rotatable about a predetermined axis; a pressure plate; means for non-rotatably connecting said pressure plate to said housing with limited freedom of movement in the direction of said axis; a counterpressure plate adjacent said pressure plate; a torque transmitting clutch disc disposed between said plates and having friction linings which are subject to wear in response to repeated engagement and disengagement of the friction clutch; an axially stressed diaphragm spring effective between said housing and said pressure plate to bias said pressure plate against said clutch disc so that said friction linings are clamped between said plates in engaged condition of the friction clutch, said diaphragm spring being tiltable relative to a seat which is carried by said housing; means for automatically compensating for wear at least upon said friction linings, said compensating means being effective in the direction of said axis and as a function or the extent of said wear; means for operating said compensating means; and means for supporting said diaphragm spring on said housing, said diaphragm spring having a force-to-displacement characteristic with a transition from a positive to a negative force upon disengagement of the friction clutch.

5,823,313

PRESSURE-CONTROL DEVICE

Ulrich Bohner, Unteruhldingen, and Hugo Burkhart, Ravensburg, both of Germany, assignors to ZF Friedrichshafen AG, Friedrichshafen, Germany

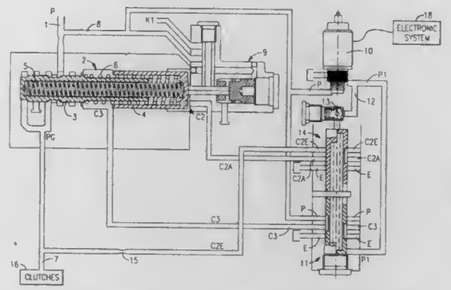
PCT No. PCT/EP95/01421, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/29350, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 15, 1995, Ser. No. 727,446

Claims priority, application Germany, Apr. 22, 1994, 44 14 165.3

Int. Cl.[6] F16H *61/06*; **F16D** *48/06*

U.S. Cl. 192—85 R **9 Claims**



1. A pressure-control device for affecting engagement behavior of powershift clutches in a powershift gear, the pressure-control device including a pressure-control valve by which a pressure cycle for engaging a desired powershift clutch can be controlled;

wherein the pressure control valve includes both a pressure control piston and a displacement piston, a first chamber is located between the displacement piston and the pressure-piston; and a magnetic valve, coupled to a source of hydraulic fluid, is connected to both a first switching valve and a second switching valve for supplying hydraulic fluid thereto; the first switching valve controls a flow of hydraulic fluid to and from the first chamber; and the second switching valve controls a flow of hydraulic fluid from the second chamber, spaced from the first chamber by the displacement piston, whereby the pressure-contol piston is maintained in an initial position for supplying a substantially unitrupted flow of hydraulic pressure to a clutch line connected to the desired powershift clutch to be engaged.

5,823,314

WET FRICTIONAL ENGAGEMENT PLATE

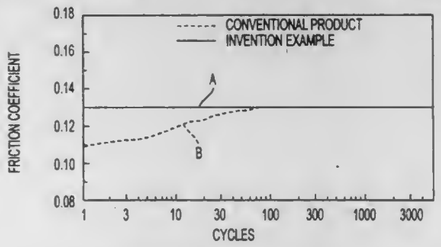
Makoto Suzuki, and Masaki Sakai, both of Shizuoka, Japan, assignors to NSK-Warner Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 356,520, Dec. 15, 1994, abandoned. This application Dec. 4, 1996, Ser. No. 760,631

Claims priority, application Japan, Dec. 15, 1993, 5-342227; Feb. 21, 1994, 6-044704

Int. Cl.[6] F16D *69/00*

U.S. Cl. 192—107 M **8 Claims**



6. A wet frictional engagement plate comprising a core metal having a surface and a wet frictional material containing a fiber component, a filler, a friction adjustment agent and a thermosetting resin, said wet frictional material being fixed onto the surface of the core metal, said wet frictional material being produced by subjecting a surface of said wet frictional material to a surface treatment process compromising pressing a smooth-faced hot plate at a temperature in a range of 350° to 550° C. against the surface of said wet frictional material for a time ranging from 1 to 5 seconds so as to smooth the surface of said wet frictional material without carbonizing the thermosetting resin.

7. A wet frictional engagement plate comprising:

a smoothed, surface-heat-treated wet frictional material containing a fiber component, a filler, a friction adjustment agent and a non-carbonized thermosetting resin.

5,823,315

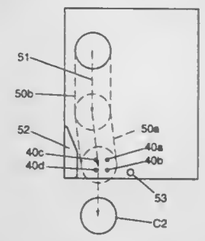
COIN DETECTOR AND IDENTIFIER APPARATUS AND METHOD

Kirk D. Hoffman, Yorkville; Joe Ferrantelli, Orland Park, and Robert Huizenger, Woodridge, all of Ill., assignors to Coin Mechanisms, Inc., Glendale Heights, Ill.

Division of Ser. No. 537,971, Oct. 2, 1995, Pat. No. 5,568,855. This application Apr. 29, 1996, Ser. No. 639,765

Int. Cl.[6] G07F *3/02*

U.S. Cl. 194—203 **2 Claims**



1. A coin sensing apparatus for use with a coin operated device comprising:

plurality of sensing means for detecting the presence of a test coin, the plurality of sensing means including first and second sensing means; and

guide means for directing a test coin past the plurality of sensing means, the test coin traversing along a substantially linear path, the path being defined by a centerline coincident with the center of the test coin and first and second outer boundaries disposed on either side of the centerline and coincident with the diametrical edges of the test coin, the first sensing means being disposed between the centerline and the first outer boundary and the second sensing means being disposed between the centerline and the second outer boundary, the first and second sensing means being offset in the direction of the centerline; and

processing means responsive to the first and second sensing means to analyze the travel path of the test coin.

5,823,316

METHOD FOR AUTOMATIC CONVEYOR WIDTH ADJUSTMENT

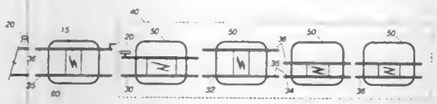
Michael F. Shaw, Sunrise; Anthony J. Suppelsa, Coral Springs, and Richard W. Jones, Lauderhill, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1995, Ser. No. 538,931

Int. Cl.[6] B65G *43/00*

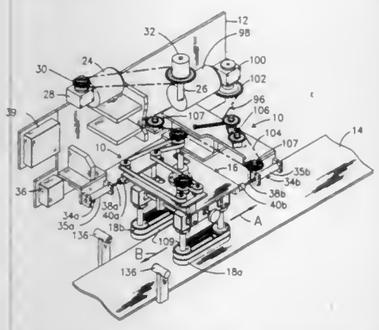
U.S. Cl. 198—341 **8 Claims**

1. A method of simultaneously processing workpieces of varying size through a computer controlled conveyor line having multiple cells, comprising the steps of:



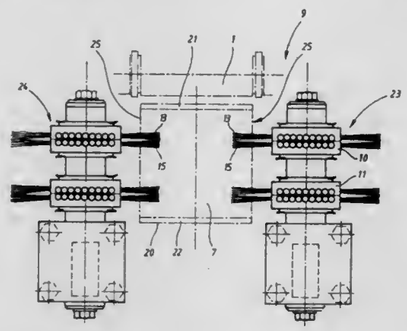
scanning a first workpiece to acquire information describing an attribute of the first workpiece;
transmitting the acquired information to a controller;
transmitting the acquired information from the controller to a machine;
adjusting the width of a machine conveyor responsive to the transmitted information;
transporting the first workpiece into the machine on the adjusted machine conveyor;
adjusting the width of a master conveyor in a master work cell by aligning a sensor on the master conveyor with an indicia on the adjusted machine conveyor to match the adjusted width of the machine conveyor;
transporting the first workpiece off of the machine conveyor; and
transporting the first workpiece into the master work cell on the adjusted master conveyor.

5,823,317
APPARATUS FOR UNIFORMLY ORIENTATING ARTICLES
Geza E. Bankuty, Bradenton; Nicholas J. Perazzo, Sarasota, and Steven Louis Pearson, Bradenton, all of Fla., assignors to New England Machinery, Inc.
Filed Dec. 4, 1996, Ser. No. 759,521
Int. Cl.[6] B65G *47/244;47/252*
U.S. Cl. 198—395 **7 Claims**



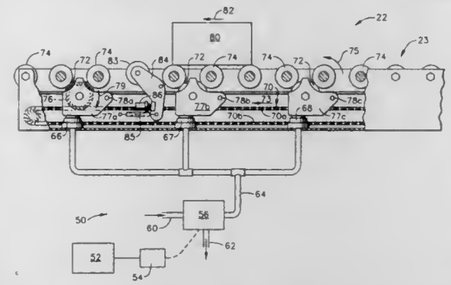
1. An apparatus for orientating articles being advanced along a predetermined path comprising:
a support frame;
at least one conveyor positioned adjacent said support frame for advancing an article along a predetermined path, defining an upstream direction and a downstream direction along said path;
a selectively rotatable support member connected to said frame and disposed adjacent said predetermined path;
means for rotating said support member being connected thereto for rotation of said support member between two positions;
a sensor for detecting orientation of an article when said article is being conveyed along said predetermined path, said sensor being connected to said frame adjacent said predetermined path proximal said support member and said sensor being operatively connected to said means for rotating said support member for selective rotation thereof;
two pair of rotary drive members comprising a first pair and a second pair of rotary drive members connected to said support member,
a pair of continuous loop drive belts comprising a first and a second continuous loop drive belt, said first drive belt being mounted on said first pair of rotary drive members and said second drive belt being mounted on said second pair of rotary drive members, said drive belts extending longitudinally between and around said rotary drive members, said drive belts extending generally parallel to said conveyor and being spaced apart from one another for engagement of an article therebetween; and
means for driving at least one of said rotary drive members being attached to said frame and connected to said first pair of rotary drive members for movement of said first drive belt mounted thereon, and upon rotation of said support member, said drive means is disengaged from said first pair of rotary drive members and is operatively engaged with said second pair of rotary drive members for movement of said second belt mounted thereon, such that as said support member rotates said first and second pair of rotary drive members alternately engage said drive means for rotation.

5,823,318
SLICE STACKER PARTICULARLY FOR CHEESE SLICES
Wilhelm Baur, Gestratz; Andreas Kierok, Lindenberg; Timo Steinbauer, Lindenberg; Franz Hartmann, Weiler/Simmerberg; Herbert Adler, Lindenberg; Oskar Milz, Heimenkirch; Roland Zeuschner, Argenbühl, and Günter Honsberg, Wangen, all of Germany, assignors to Natec, Reich, Summer GmbH & Co. KG, Germany
Filed Oct. 31, 1996, Ser. No. 741,653
Claims priority, application Germany, Feb. 10, 1996, 196 04 926.1
Int. Cl.[6] B65G *15/20*
U.S. Cl. 198—699.1 **18 Claims**



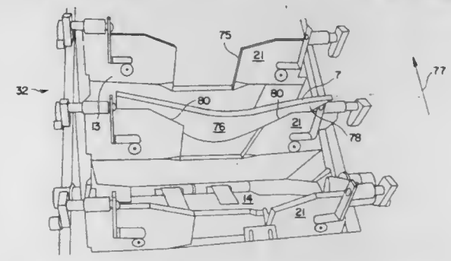
1. A slice stacking apparatus for stacking cheese slices and other slice-shaped objects, the apparatus comprising:
at least one pair of opposing, horizontally oriented brush belts, each opposing belt comprising an upper and a lower brush belt, the belts running parallel to one another and being spaced apart to form a horizontal transport area having an inlet end and an outlet end;
each brush belt having a plurality of spaced packets of bristles projecting laterally into said transport area and opposing the bristle packets of the other brush belt to support spaced, vertically oriented slice-shaped objects along the horizontal transport area between adjacent pairs of opposing bristle packets; and
a vertically oriented shot belt assembly positioned at the inlet end of the brush belts for transporting slice-shaped objects in a vertical orientation into the horizontal transport area between said bristle packets.

5,823,319
CONTROL SYSTEM FOR THE DROP-OUT ZONE OF A CONSTANT SPEED ACCUMULATING CONVEYOR
Brian J. Resnick, Mount Orab, and Raymond R. Neiser, Batavia Township, both of Ohio, assignors to The Buschman Company, Cincinnati, Ohio
Filed May 10, 1996, Ser. No. 644,857
Int. Cl.[6] B65G *13/06*
U.S. Cl. 198—781.06 **16 Claims**



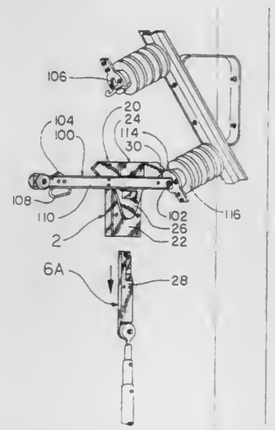
1. A control system for a conveyor system having a first conveyor with a drop-out zone, a drive mechanism for said drop-out zone, a second downstream variable-speed conveyor, and an actuator that operates said drive mechanism for said drop-out zone, wherein:
(a) said first conveyor's drop-out zone comprising a plurality of rollers over which packages move, said rollers being selectively driven by said drive mechanism operated by said actuator so as to induce rotational movement in said rollers
(b) said control system having a processing circuit that is configured to determine the velocity of said second, downstream conveyor, said processing circuit being additionally configured to determine the effective velocity of said first conveyor's drop-out zone by use of a periodic varying duty cycle signal that controls said actuator via an output device that is in communication with said processing circuit; and
(c) said processing circuit being further configured to vary the ON-time and OFF-time of said varying duty cycle signal to automatically control energizing said output device so as to substantially match the velocity of said first conveyor's drop-out zone to the velocity of said second, downstream conveyor.

5,823,320
INSERTER FOR FLAT PRODUCTS
Randy R. Seidel, Allentown; Lawrence Bush, Nazareth; Neal Cohen, Flourtown; Gary L. Davenport, Sellersville, all of Pa.; Robert M. Silva, Milford, N.J., and Roger Honegger, Yardley, Pa., assignors to Graphic Management Associates, Inc., Del.
Filed Mar. 9, 1995, Ser. No. 401,425
Int. Cl.[6] B65G *17/46*
U.S. Cl. 198—803.5 **62 Claims**



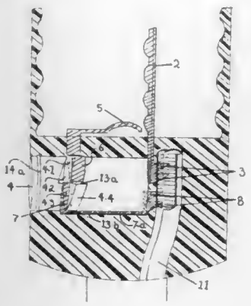
1. An openable pocket, capable of movement in a downstream direction in a closed path, comprising a downstream wall, having an upper edge and a lower edge parallel thereto, and an upstream wall, having a near edge adjacent said lower edge, said upstream wall hinged at said near edge to said downstream wall adjacent said lower edge for movement between an open position, wherein said upstream wall and said downstream wall are spaced apart, and a closed position, wherein said upstream wall and said downstream wall are adjacent each other, an actuator bar, substantially parallel to said near edge, slidably mounted on at least one of said upstream wall and said downstream wall for movement substantially perpendicular to said near edge, whereby pressure on said bar urges at least one said wall toward at least one of said open position and said closed position.

5,823,321
LOCKING DEVICE FOR UNIPOLAR BREAKER
Michel Leclerc, 4919 route Marie-Victorin, St-Antoine-de-Tilly, Qc, Canada, G0S 2C0
Filed Jan. 14, 1997, Ser. No. 783,544
Claims priority, application Canada, Jan. 15, 1996, 2166960
Int. Cl.[6] H01H *9/28*
U.S. Cl. 200—43.19 **8 Claims**



1. A locking device for a unipolar line breaker (**100**), such as used in overhead high voltage lines, said unipolar breaker moving from an original position, letting a current go through, to a safety position, breaking said current, said unipolar breaker (**100**) defining a rectangular channel (**122**) having long sides and shorter sides, said long sides being defined by a right blade (**110**) and a left blade (**112**), said shorter sides being defined by a right rigid post (**118**) and a left rigid ppost (**120**), said locking devide comprising:
reversed U-shaped part (**20**) comprising a carrying wing (**22**), a web (**24**) and a penetrating wing (**26**), said penetrating wing (**26**) adapted for being engaged between said right blade (**110**) and said left blade (**112**) until said web (**24**) is resting on one of said left blade (**112**) or right blade (**110**),
said carrying wing (**22**) having an opening (**46**) (FIG. **1**) for receiving remote manipulation means (**28**),
said penetrating wing (**26**) comprising means for lateral blocking to prevent lateral displacement within said rectangular channel (**122**) and said carrying wing means for longitudinal blockingto prevent longitudinal displacement within said channel and (**22**) for preventing withdrawal of said penetrating wing (**26**),
said web (**24**) comprising an extension (**34**) ending with a wedge point (**30**) forming an L-shape with said penetrating wing (**26**), said wedge point (**30**) blocking movement of said unipolar breaker when said uniporar breaker (**100**) is lowered towards said original position, thus keeping said safety position, thereby breaking said current.

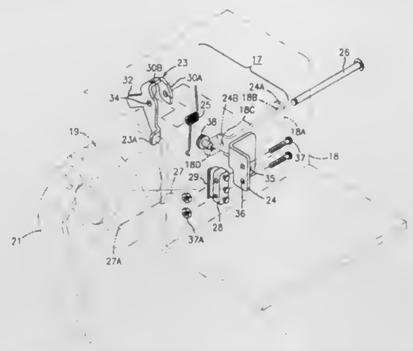
5,823,322
SNAPIN INSTANTLY WIRED ONE PIECE THERMO PLASTIC LAMP SOCKET
Bates Johnson, 8 Russet La., Essex, Conn. 06426
Filed Mar. 14, 1997, Ser. No. 818,305
Int. Cl.[6] H01R *33/955;4/24*
U.S. Cl. 200—51.17 **7 Claims**



1. An electric lamp socket comprising:
a polymeric plastic body defining a lamp opening, a conductive first contact with a portion defining at least a part of the opening, said body further including a transverse bore oriented transversely of said lamp opening, said body further including a lamp cord channel, said lamp cord channel having an inner end located in close proximity, and open to, an inner end of said transverse bore,
said conductive first contact having a second portion defining a puncture pin provided at the inner end of said bore,
a second conductive contact having a portion provided centrally of the lamp opening, said second contact having a second portion provided in a first cavity in said transverse bore,
a third conductive contact having a portion defining a puncture pin provided in the inner end of said switch bore,
said third contact having a second portion provided in a third cavity in said transverse bore opposite said first cavity, and
an actuator plug in said bore for engaging said first and third conductive contacts to cause said puncture pin portions to penetrate a lamp cord provided in said channel.

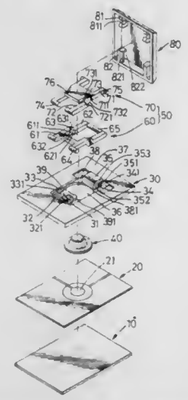
5,823,323
CIRCUIT BREAKER CONTACT POSITION INDICATING UNIT
Raymond K. Seymour, Plainville; Michael C. Guerrette, Bristol, and James L. Rosen, West Hartford, all of Conn., assignors to General Electric Company, New York, N.Y.
Filed Feb. 3, 1997, Ser. No. 794,108
Int. Cl.[6] H01H *9/00;67/02*
U.S. Cl. 200—308 **13 Claims**

1. An industrial-rated circuit breaker for high level overcurrent protection comprising:
an insulative base;
an insulative circuit breaker cover arranged on said insulative base;
a pair of movable contacts on said insulative base;
an electronic trip unit within said cover and arranged for determining overcurrent conditions within a protected circuit;
an operating mechanism drive shaft within said base arranged for moving said pair of circuit breaker contacts between ON and OFF positions upon occurrence of said overcurrent conditions on receipt of a control signal from said trip unit; and



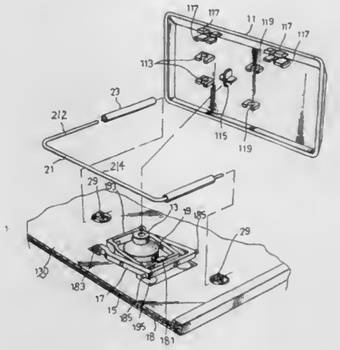
a contact position switch assembly within said base arranged for providing indication to said electronic trip unit of said ON and OFF positions of said circuit breaker contacts.

5,823,324
KEY SWITCH ASSEMBLY FOR A COMPUTER KEYBOARD
Huo-Lu Tsai, No. 126-1, Shui-Nan Rd., Pei-Tun Dist., Taichung City, Taiwan
Filed Aug. 25, 1997, Ser. No. 918,048
Int. Cl.[6] H01H *3/12*
U.S. Cl. 200—344 **10 Claims**



1. A key switch assembly for a computer keyboard, said key switch assembly comprising:
a base board;
a membrane circuit provided on said base board, said membrane circuit having an electrical contact;
an upright biasing member supported on said membrane circuit;
a base plate disposed on said membrane circuit and formed with an opening to permit extension of said biasing member therethrough, said opening having opposite first and second sides, said base plate being further formed with a first slot retainer unit adjacent to said first side of said opening, and a first pivot retainer unit adjacent to said second side of said opening;
a scissors-type key cap support including first and second support levers with upper and lower portions, and intermediate portions that are coupled rotatably about a pivot axis, said lower portion of said first support lever being retained slidably in said first slot retainer unit of said base plate, said lower portion of said second support lever being retained pivotally in said first pivot retainer unit of said base plate; and
a key cap having a bottom side formed with a second pivot retainer unit for retaining pivotally said upper portion of said first support lever, and a second slot retainer unit for retaining slidably said upper portion of said second support lever;
said first support lever having a generally rectangular frame section with a parallel pair of upper rods that serve as said upper portion of said first support lever and that have front and back sides and lower ends, a parallel pair of lower rods that serve as said lower portion of said first support lever and that have front and back sides and upper ends, and a pair of circular connecting portions that interconnect said lower ends of said upper rods and said upper ends of said lower rods and that serve as said intermediate portion of said first support lever, said front sides of said upper rods protruding forwardly relative to said front sides of said lower rods, said back sides of said lower rods protruding rearwardly relative to said back sides of said upper rods, each of said circular connecting portions having inner and outer sides, a first circumferential edge section which forms a first shoulder that interconnects said front sides of one of said upper rods and a corresponding one of said lower rods, a second circumferential edge section which is diametrically opposite to said first circumferential edge section and which forms a second shoulder that interconnects said back sides of one of said upper rods and a corresponding one of said lower rods, and a third circumferential edge section between said first and second circumferential edge sections and disposed adjacent to said upper end of a respective one of said lower rods, said upper end of each of said lower rods having a concave first end face which extends transversely along said third circumferential edge section at said inner side of a corresponding one of said circular connecting portions, each of said circular connecting portions further having a fourth circumferential edge section which is diametrically opposite to said third circumferential edge section and which is disposed adjacent to said lower end of a respective one of said upper rods, said lower end of each of said upper rods having a concave second end face which extends transversely along said fourth circumferential edge section at said inner side of a corresponding one of said circular connecting portions;
said second support lever having a parallel pair of lower arms that serve as said lower portion of said second support lever and that have front and back sides and upper ends, a parallel pair of upper arms that serve as said upper portion of said second support lever and that have front and back sides and lower ends, and a pair of circular plates that interconnect said upper ends of said lower arms and said lower ends of said upper arms and that serve as said intermediate portion of said second support lever, said front sides of said upper arms protruding forwardly relative to said front sides of said lower arms, said back sides of said lower arms protruding rearwardly relative to said back sides of said upper arms, each of said circular plates having inner and outer sides, a first peripheral edge section which forms a third shoulder that interconnects said back sides of one of said upper arms and a corresponding one of said lower arms, a second peripheral edge section which is diametrically opposite to said first peripheral edge section and which forms a fourth shoulder that interconnects said front sides of one of said upper arms and a corresponding one of said lower arms, and a third peripheral edge section between said first and second peripheral edge sections and disposed adjacent to said lower end of a respective one of said upper arms, said lower end of each of said upper arms having a concave third end face which extends transversely along said third peripheral edge section at said outer side of a corresponding one of said circular plates, each of said circular plates further having a fourth peripheral edge section which is diametrically opposite to said third peripheral edge section and which is disposed adjacent to said upper end of a respective one of said lower arms, said upper end of each of said lower arms having a concave fourth end face which extends transversely along said fourth peripheral edge section at said outer side of a corresponding one of said circular plates;
said first and second shoulders of said first support lever abutting slidably against said third and fourth end faces of said second support lever, and said first and second end faces of said first support lever abutting slidably against said third and fourth shoulders of said second support lever, thereby coupling rotatably said first and second support levers.

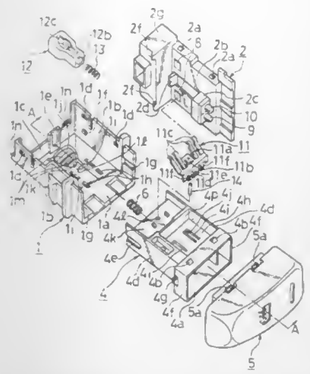
5,823,325
KEYSWITCH ASSEMBLY FOR A MULTIPLE-WIDTH KEY
San-Feng Lin, c/o Acer Peripherals Inc., No. 157, Shan-Ying Road, Kweishan, Taoyuan, Taiwan
Filed Nov. 6, 1997, Ser. No. 965,215
Claims priority, application Taiwan, Aug. 1, 1997, 86213030
Int. Cl.[6] H01H *13/70*
U.S. Cl. 200—344 **8 Claims**



1. An improved keyswitch assembly, comprising:
a keycap defining a top surface and a bottom surface, said bottom surface being provided with a connecting portion and a pair of retaining tabs which define a retaining groove therebetween;
a substrate having a connecting portion and a pair of mounting lugs thereof;
a reciprocating means having an upper end pivotally engaged to said connecting portion of said keycap and having a lower end pivotally engaged with said connecting portion of said substrate such that said keycap is capable of moving downward with respect to said substrate when said keycap is depressed by an external force, and moving upward and away from said substrate when the external force is released;
a switch which, responsive to the movement of the keycap, is selectively turned ON;
a balance lever having a longitudinal portion and a pair of traverse portions which are respectively perpendicular to said longitudinal portion such that a substantial U-shape configuration is formed, wherein said traverse portions are respectively inserted into said mounting lugs of said substrate, and said longitudinal portion is received within said retaining groove;
wherein said traverse portions of said balance lever are respectively sleeved with a tubular bushing, and one end of said tubular bushing being biased against said mounting lug such that the horizontal displacement of said keycap with respect to said substrate can be reduced or eliminated.

5,823,326
PUSH LOCK SWITCH
Takehiko Saito, and Kazue Obtaki, both of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Japan
Filed May 28, 1997, Ser. No. 864,383
Claims priority, application Japan, May 29, 1996, 8-156391
Int. Cl.[6] H01H *3/42*
U.S. Cl. 200—524 **3 Claims**

1. A push lock switch having a lock mechanism for locking a movable member, the movable member moving relative to a stationary member so as to cyclically open and close a switch each time the movable member is pushed, the push lock switch comprising:
a heart cam pivotally mounted to the stationary member; and



a lock pin mounted to the movable member and urged toward said heart cam to engage said heart cam;

wherein said movable member is adapted to extend from and retract into the stationary member; and

wherein the movable member includes a movable contacting strip having a movable contact and a retainer for retaining said lock pin, said movable contact being in a one piece construction with said retainer.

5,823,327

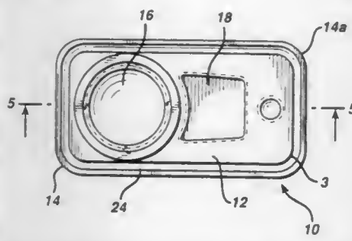
PACKAGING ARRANGEMENT FOR CONTACT LENSES

Jongliang Wu; Daniel Tsu-Fang Wang, both of Jacksonville; Stephen Robert Beaton, Neptune Beach; Kornelis Renkema, Jacksonville; Wybren Van Der Meulen, Neunen; Victor Lust, and Richard Wayne Abrams, both of Jacksonville, all of Fla., assignors to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of Ser. No. 414,514, Mar. 31, 1995, abandoned, which is a continuation-in-part of Ser. No. 257,796, Jun. 10, 1994, Pat. No. 5,697,495, which is a continuation-in-part of Ser. No. 146,754, Nov. 2, 1993, abandoned. This application Oct. 1, 1996, Ser. No. 724,316

Int. Cl.[6] **A45C** *11/04*

U.S. Cl. 206—5.1 **21 Claims**



1. A packaging arrangement for the sealed containment of at least one hydrophilic contact lens in a sterile aqueous solution; comprising:

(a) at least one plastic base member having a cavity for containing a contact lens immersed in a sterile aqueous solution, said base member including a generally planar flange extending outwardly about the periphery of said cavity, said cavity consisting of an indentation extending from the plane of said flange of said base member and a continuous peripheral groove formed in the plane of said flange and extending closely inwardly of the peripheral edge of said flange, wherein a second indentation is formed in the surface of said flange intermediate said cavity and said peripheral groove; and

(b) a flexible cover sheet superimposed over said base member and dimensioned to be detachably sealed to a surface area of said flange extending about said cavity and including said cover sheet having the portions thereof located in alignment with said peripheral groove depressed into said groove so as to form a clamping engagement with said flange coextensive with said peripheral groove.

5,823,328

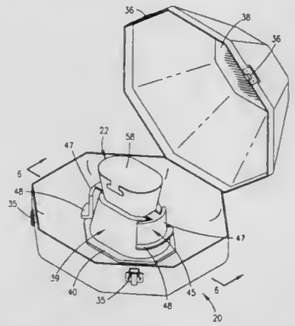
HATBOX WITH A CONCEALABLE STORAGE BOX

Kenneth A. Fomby, Rte. 7, Box 435, Gainesville, Tex. 76240

Filed Aug. 20, 1997, Ser. No. 915,428

Int. Cl.[6] **A45C** *11/02;5/12*

U.S. Cl. 206—8 **10 Claims**



1. A hatbox in with a concealable storage box comprising:

a receptacle having a bottom, side walls, and a lid adapted to open and close defining a hat compartment;

a hat stand secured in the hat compartment on the bottom thereof including an enclosure wall and top for supporting a hat spaced from the bottom of the compartment, the interior of the hat stand defining a storage vault opening through the bottom of the compartment; and

a storage box having side walls, a bottom, and a lid; and

latch structure for securing the storage box at a first concealed mode in the storage vault and in a second mode on the hat stand in the hat compartment with the bottom of the storage box secured with the hat stand for holding the box in place and permitting access into the box.

5,823,329

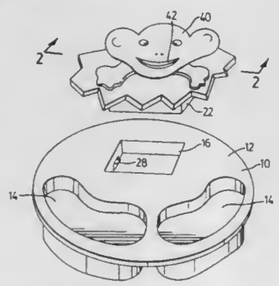
INFANT FOOD DISH WITH MOTIVATION MEANS

Brian G. Roberts, 12 Robinwood Ave., Toronto, Ontario, Canada, M5P 1X7

Filed Aug. 25, 1997, Ser. No. 917,129

Int. Cl.[6] **B65D** *77/00;* **A63H** *5/00*

U.S. Cl. 206—216 **8 Claims**



1. In combination; an infant's food dish;

an electronic sound unit;

latch means securing said sound unit to said food dish for support therefrom to permit the removal therefrom without the use of any tool;

a feeding utensil for use with said food dish; and

a proximate switch means operable to enable said sound unit for at least such time as said feeding utensil is disposed in proximity to said proximate switch means.

5,823,330

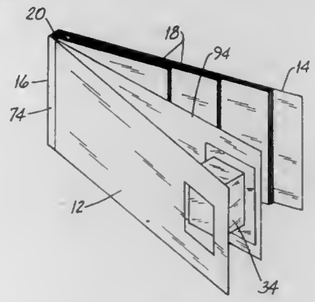
PACKET FOR STORING PHOTO-RELATED PRODUCTS

Richard S. Werner, 326 Cedar Sauk Rd., West Bend, Wis. 53095, and Carey P. Woods, Plum City, Wis., assignors to Richard S. Werner, West Bend, Wis.

Continuation-in-part of Ser. No. 713,111, Sep. 16, 1996, which is a continuation-in-part of Ser. No. 605,970, Feb. 23, 1996, Pat. No. 5,704,472. This application Feb. 19, 1997, Ser. No. 803,039

Int. Cl.[6] **B65D** *85/67*

U.S. Cl. 206—232 **10 Claims**



1. An improved packet for storing photos and photo cartridges comprising:

first and second sheet-like cover members disposed in spaced, substantially parallel planes and each having a spine-adjacent edge;

a sheet-like spine interconnecting the cover members along said spine-adjacent edges;

a plurality of sheet-like photos interposed between the cover members, such photos being removably and replaceably secured to the spine by adhesive;

a sheet-like insert interposed between the cover members and having first and second sides, such insert being removably and replaceably secured to the spine by adhesive; and wherein:

the insert includes a structural element securing a photo cartridge to its second side and an index print attached to the first side.

5,823,331

RIGID HINGED-LID PACKET

Alberto Manservigi, Bologna, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D. Societa'per Azioni, Bologna, Italy

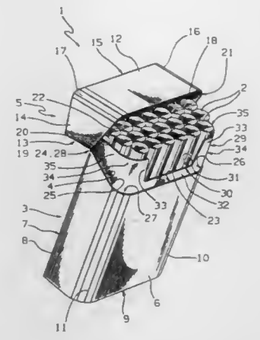
Filed Sep. 24, 1996, Ser. No. 710,971

Claims priority, application Italy, Sep. 25, 1995, B095A0446

Int. Cl.[6] **B65D** *85/10*

U.S. Cl. 203—268 **11 Claims**

1. A rigid packet (**1**) with a hinged-lid (**5**), the packet (**1**) comprising a cup-shaped bottom container (**3**), and a cup-shaped lid (**5**) hinged to an open top end (**4**) of the container (**3**) so as to rotate between an open position and a closed position; the packet (**1**) being substantially in the form of a rectangular parallelepipedon, and comprising a front wall (**6, 12**), a rear wall (**7, 13**), and two lateral walls (**8, 14**); the packet (**1**) being characterized in that the front wall (**6, 12**) presents a smaller surface than the rear wall (**7, 13**); and in that the packet (**1**) comprises two connecting walls (**10, 16; 11, 17**) for connecting the front wall (**6, 12**) to the lateral walls (**8, 14**); said connecting walls (**10, 16; 11, 17**) presenting a curved cross section with a radius of curvature equal to one and a half times the radius of a normal cigarette (**2**).



5,823,332

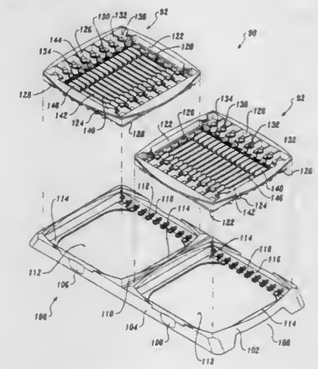
MULTIMEDIA STORAGE DEVICE

Eivind Clausen, Bellingham, Wash., assignor to Allsop, Inc., Bellingham, Wash.

Filed Nov. 8, 1996, Ser. No. 745,794

Int. Cl.[6] **B65D** *85/57*

U.S. Cl. 206—307.1 **48 Claims**



1. A device for storing substantially planar media, the device comprising:

a base comprising:

a longitudinal axis;

an outer periphery defining walls therearound, the walls including a bottom, a first sidewall, and a second sidewall opposite the first sidewall; and

a containing area located between the walls;

a tile comprising:

a longitudinal axis;

a plurality of holders for storing the substantially planar media; and

an outer shape designed so as to be received within the containing area of the base, the containing area and the outer shape being configured such that the tile may be arranged within the containing area in first and second orientations, the first orientation being defined such that the longitudinal axis of the tile is substantially aligned with the longitudinal axis of the base and the second orientation

being defined such that the longitudinal axis of the tile is no more than orthogonal with the longitudinal axis of the base.

28. A device for storing substantially planar media, the device comprising:

a base having a containing area, a first sidewall, and a second sidewall;

a first set of pegs at a first height including a first group of pegs extending from the first sidewall and a second group of pegs extending from the second sidewall and being substantially aligned with the first group of pegs of the first set, the pegs of the first set of pegs being spaced relative to one another a distance which is slightly greater than the thickness of the substantially planar media such that an end of the substantially planar media may be extended between adjacent pegs of the first group and of the second group of the first set of pegs;

a second set of pegs at a second height lower than the first height including a first group of pegs extending from the first sidewall and a second group of pegs extending from the second sidewall and being substantially aligned with the first group of pegs of the second set, the second set of pegs being staggered with respect to the first set of pegs such that aligned pairs of pegs of the first group and second group of the second set of pegs support an end of the substantially planar media; and

a tile designed to be received within the containing area of the base and having:

a first set of partitions adjacent said first sidewall; and

a second set of partitions adjacent said second sidewall and aligned with said first set of partitions, each partition of the first set and of the second set being spaced from adjacent partitions a distance which is slightly greater than the thickness of the substantially planar media such that an end of the substantially planar media is supported by aligned pairs of partitions of the first set and second set.

35. The device for storing substantially planar media, at least one of which has rounded edges comprising:

a tile having a floor, a first sidewall opposite a second sidewall, a first set of partitions adjacent said first sidewall;

a second set of partitions adjacent said second sidewall and aligned with said first set of partitions, each partition of the first set and of the second set being spaced from adjacent partitions a distance which is slightly greater than the thickness of the substantially planar media such that an end of the substantially planar media is supported by aligned pairs of partitions of the first set and second set; and

a plurality of grooves in the floor of the tile, the grooves having a substantially arcuate cross-section that substantially matches the rounded edges of the substantially planar media and being of a width slightly larger than the thickness of the substantially planar media such that the rounded edge of the substantially planar media is supported in one of the grooves.

41. A compact disk divider for attaching to a tray, the tray having a first side and a second side, and a first set of retaining members adjacent the first side, the compact disk divider comprising:

a base defining a longitudinal plane therethrough;

a first tab projecting from the bottom of the base for inserting between a pair of retaining members in a first set of retaining members on a first side of a tray;

a holding mechanism for holding a compact disk, the holding mechanism being designed such that a surface of a compact disk held by the holding mechanism is substantially parallel to and on a first side of the longitudinal plane of the base; the compact disk divider being designed such that when the first tab is inserted between a pair of a first set of retaining members on a first side of a tray, the compact disk divider is supported substantially erect for display, and

a set of tabs on the base for receiving a substantially planar media having a substantially rectangular shape, the tabs being located on the side of the longitudinal plane of the base opposite of the first side.

5,823,333

CASE FOR DISK-TYPE RECORDING MEDIUM

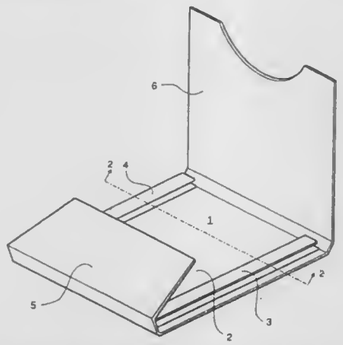
Takanori Mori, 22-12, Igusa 3-chome, Suginami-ku, Tokyo-to, Japan

Division of Ser. No. 155,080, Nov. 19, 1993, Pat. No. 5,522,500. This application Sep. 29, 1995, Ser. No. 536,139

The portion of the term of this patent subsequent to Nov. 19, 2013, has been disclaimed.

Int. Cl.[6] B65D *85/57*

U.S. Cl. 206—308.1 **5 Claims**



1. A case for receiving a disk-type recording medium, comprising:

a single folded sheet of material defining a receiving chamber for holding disk-type recording medium, said sheet comprising a planar four-sided disk receiving surface having wings extending from each side thereof, wherein,

first and second wings located on opposite sides of said disk receiving surface are folded along a plurality of creases to form a bellows having a plurality of peaks and valleys, the valleys are dimensioned to receive disk-type recording medium and the peaks are dimensioned such that the bellows supports the disk-type recording medium;

a third wing is turned up thereby forming a bottom surface to said disk receiving chamber and a bottom lid facing the disk receiving surface; and

a fourth wing is turned up to form a top surface to said disk receiving chamber and a top lid facing the disk receiving surface and extending across substantially the entire receiving chamber; and

a disk-type recording medium disposed in the receiving chamber.

5,823,334

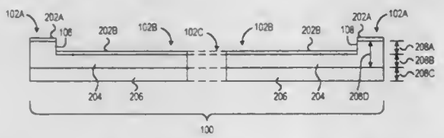
COMPACT DISC HIGH FRICTION BOTTOM COASTER

Chandra D. Giovanni, P.O. Box 3225, Saratoga, Calif. 95070

Filed Aug. 16, 1996, Ser. No. 689,697

Int. Cl.[6] B65D *85/57;25/24*

U.S. Cl. 206—308.1 **1 Claim**



1. A data storage medium coaster for storing a data storage medium having a data access surface, the data storage medium coaster comprising:

an upper surface of a substantially non-scratching material so as to avoid substantial damage to the data access surface when in contact with the non-scratching material and which is adapted to receive the data storage medium; and

a relatively high-friction bottom surface which is laminated with the upper surface;

wherein the relatively high-friction bottom surface is a bottom surface of an integral structure member to which the substantially non-scratching material is directly adhered.

5,823,335

GOLF CLUB DIVIDER ASSEMBLY

William K. Joh, 6852 Vachon Dr., Bloomfield Hills, Mich. 48301

Continuation-in-part of Ser. No. 585,400, Jan. 11, 1996, Pat. No. 5,613,603, which is a continuation-in-part of Ser. No. 410,913, Mar. 27, 1995, Pat. No. 5,505,300. This application Aug. 9, 1996, Ser. No. 694,989

Int. Cl.[6] A63B *55/00*

U.S. Cl. 206—315.6 **11 Claims**



1. An improved golf club divider assembly for retaining a plurality of golf clubs in an orderly, secure and segregated fashion, said divider assembly comprising:

an outer frame having a central axis and a predetermined height along said axis and being generally polygonally shaped in transverse cross section, said frame further defining a hollow lengthwise extending interior and a pedestal base support;

a primary club divider member constructed of an elongated and central upwardly extending portion and a plurality of individual vane portions which extend both axially along an extending distance of said upwardly extending portion and radially outwardly from said upwardly extending portion, said primary divider member being inserted lengthwise within said frame to subdivide said hollow interior into a first plurality of axially extending compartments;

a plurality of secondary club divider members which are each in turn constructed of a central upwardly extending portion and a plurality of individual vane portions which extend both axially along an extending distance of said upwardly extending portion and radially outwardly from said upwardly extending portion, said secondary club divider members being each lengthwise within selected one's of said first plurality of axially extending compartments to subdivide said first selected compartments into a second plurality of axially extending compartments; and

said second plurality of axially extending compartments defining, in combination with said primary club divider member, a plurality of individual club receiving cavities arranged in an interlocking pattern.

5,823,336

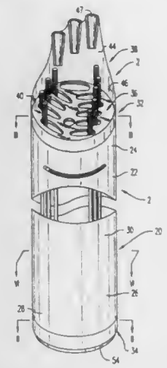
GOLF BAG WITH CLUB SEPARATOR

Benny E. Smith, 327 Buttonwood Dr., Sebring, Fla. 33872

Continuation-in-part of Ser. No. 763,288, Dec. 11, 1996, abandoned. This application Sep. 8, 1997, Ser. No. 925,236

Int. Cl.[6] A63B *55/00*

U.S. Cl. 206—315.6 **7 Claims**



1. A golf bag for carrying a set of golf clubs including woods, irons and putter, each having a shaft and a head with a toe and a heel, with the heads of said woods and putter positioned upward and the heads of said irons positioned downward, comprising:

said golf bag including a tubular body elongated along a longitudinal axis and defined by an upper portion having a upper end, a lower portion having a lower end and an integral central portion;

a top section capping said upper end and a bottom section closing said lower end, said top section comprising a throat member and a wall member;

said throat member including a throat plate defined by a first periphery and positioned normal to said longitudinal axis with said first periphery connected to said upper end of said upper portion;

said throat plate containing X number of first openings axially therethrough each having particularly sized and shaped somewhat oval periphery which substantially matches a vertical projection of, and thereby to admit only one particular head of said irons, and Y number of second openings axially therethrough sized to admit the shafts of said woods and putter;

a bottom plate defined by a second periphery and positioned generally normal to said longitudinal axis, said lower end of said lower portion of said tubular body being connected to said second periphery;

X number of guide member means each positioned in substantial vertical alignment with one said first opening for defining a guide periphery that mimics at least in part said sized periphery of one of said first openings of said throat plate.

5,823,337

TACKLE BOX

Robert J. Yunger, and James Schumaker, both of Plano, Ill., assignors to Plano Molding Company, Plano, Ill.

Filed Feb. 26, 1996, Ser. No. 607,231

Int. Cl.[6] A01K *97/06*

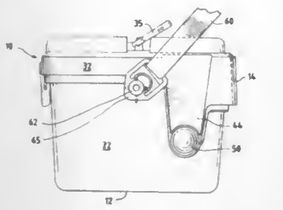
U.S. Cl. 206—315.11 **26 Claims**

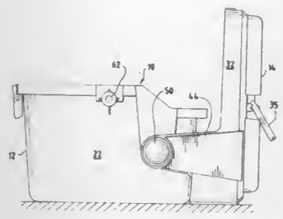
1. A rigid carrying case, comprising:

a base section having a bottom wall disposed substantially in a plane, and from which extends a front wall, rear wall, and spaced end walls;

a lid having a top wall from which depends a front wall, rear wall, and spaced end walls;

a pair of pivot mounts for pivotally connecting said end walls of said lid to said end walls of said base section;





wherein said pivot mounts, lid, and base section are cooperable to limit rotation of said lid from a closed position to an open position in which said rear wall of said lid is disposed substantially within said plane.

5,823,338

PACKAGING FOR ROD-SHAPED PARTS

Helmut Osterle, Feldkrich, Austria; Daniel Gasser, Diepoldsau, Switzerland; Guido Hasler, Marbach, Switzerland; Richard Sahli, Widnau, Switzerland; Walter Seifert, Buchs, Switzerland; Norbert Koppel, Diepoldsau, Switzerland, and Markus Steffen, Grabs, Switzerland, assignors to SFS Industrie Holding AG, Heerbrugg, Switzerland

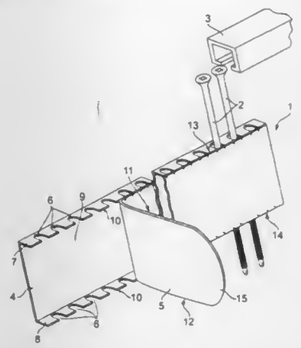
PCT No. PCT/EP94/04256, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 24, 1996, PCT Pub. No. WO95/18050, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 21, 1994, Ser. No. 666,450

Claims priority, application Germany, Dec. 27, 1993, 43 44 679.5; Jul. 13, 1994, 44 24 750.8

Int. Cl.[6] B65D *85/24;73/00*

U.S. Cl. 206—338 **19 Claims**



1. Packaging for rod-shaped parts, such as screws, bolts, nails or pins, in the form of a strip-shaped carrier element, in which the parts, such as screws, bolts, nails or pins, can be held parallel to one another and aligned in a row, where the carrier element (**1**) consists of a holder strip (**4**) with a plurality of holder openings (**6**), indentations, slits, nubs or similar holders, to hold the rod-shaped parts (**2**) aligned parallel to one another, and of a cover strip (**5**) which covers the region of the rod-shaped parts (**2**) which lies opposite the holder strip (**4**), over part of the length, characterized in that the holder strip (**4**) is structured to be essentially U-shaped, where the holder openings (**6**) or indentations are formed in ridges (**7**,**8**) which run parallel to and at a distance from one another, projecting from a back part (**9**) and that the cover strip (**5**) is connected with the holder strip (**4**) in such a way that it is possible to tear, separate or remove the cover strip (**5**) from the holder strip in one piece, the cover strip (**5**) being made in one piece with the holder strip (**4**), with suitable weakening lines or perforation lines (**13**, **14**) being formed at the ridges (**7**, **8**) and/or at the transition regions between the ridges (**7**, **8**) and the cover strip (**5**), so that the cover strip (**5**) can be torn off.

5,823,339

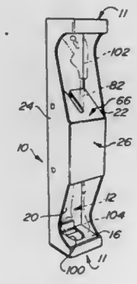
PACKAGING CONTAINER FOR A STRING TRIMMER

David A. Dunham, Baltimore, Md.; Robert G. Haskett, Lowell, N.C.; Paul Dennis Owings; Henry Louis Tew, both of Fayetteville, N.C.; Jeffrey B. Davis, Potomac, Md.; Christopher E. Jacob, Baltimore, Md., and Maureen Wolthuis, Towson, Md., assignors to Black & Decker Inc., Newark, Del.

Filed Jul. 25, 1996, Ser. No. 686,901

Int. Cl.[6] B65D *5/50;71/08*

U.S. Cl. 206—349 **23 Claims**



1. A container comprising:

a back wall, a pair of opposing side walls extending from said back wall and a front wall extending between said side wall defining a rectangular sleeve, said front wall including a pair of apertures enabling access within said sleeve, said apertures separated from one another by said front wall and forming a top and bottom band at ends of the container;

at least one positioning member extending from said front wall, said positioning member extending toward said back wall and for maintaining an article within said container.

5,823,340

STERILIZATION CONTAINER

Willi Maihofer, Novaggio, Switzerland, assignor to Nordpunkt AG, Novaggio, Switzerland

PCT No. PCT/EP95/00723, § 371 Date Sep. 4, 1996, § 102(e) Date Sep. 4, 1996, PCT Pub. No. WO95/23617, PCT Pub. Date Sep. 8, 1995

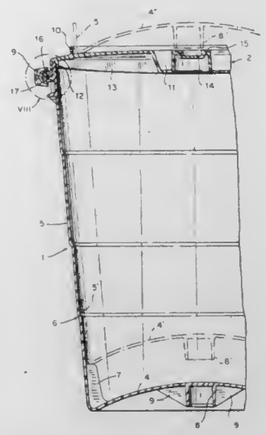
PCT Filed Feb. 28, 1995, Ser. No. 704,628

Claims priority, application Germany, Mar. 4, 1994, 44 07 220.1

Int. Cl.[6] B65D *83/10;51/16;45/32;* **G05D** *16/00*

U.S. Cl. 206—370 **39 Claims**

1. A reusable sterilization container, preferably for hospital refuse, having a receptacle (**1**) with a filling opening that is defined by the upper edge of its side wall and is disposed opposite from its bottom, a lid (**2**) that is for covering the filling opening and is preferably comprised of the same microwave-permeable material as the receptacle (**1**), and a sealing device with a sealing ring (**20**) between the receptacle (**1**) and the lid (**2**), wherein to guarantee a secure and reliable pressure-tight seal between the receptacle (**1**)



and the lid (**2**), in addition to the sealing ring (**20**), which is accommodated in grooves (**18**, **19**) in the receptacle (**1**) and in the lid (**2**) that are correspondingly embodied in their cross sectional shape, the sealing device has additional sealing regions (**21**, **16***b*; **5***b*, **22***a*; **5***a*, **2***a*) on the receptacle (**1**) and the lid (**2**), and a detachable closure device (**3**, **29**) is provided for securing the lid (**2**) on the receptacle (**1**) counter to the force of an internal pressure in the receptacle (**1**) and can be secured in the closed position if need be, and the receptacle (**1**)—and if need be, also the lid (**2**)—is comprised of a tough plastic that resists stretching, even beyond the boiling temperature of water.

5,823,341

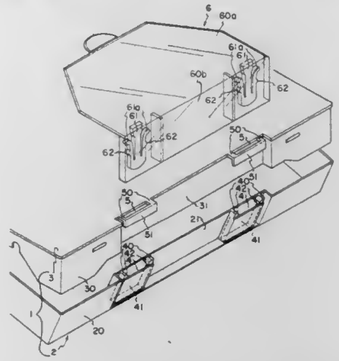
VIDEO TAPE STORAGE CASE WITH LOCK

Tamotsu Nakasuji, 1-19-28 Imagome, Higashiosaka, Osaka, Japan

Filed Oct. 31, 1996, Ser. No. 742,203

Int. Cl.[6] B65D *85/575*

U.S. Cl. 206—387.11 **18 Claims**



1. A video tape case with lock comprising:

a case body structure including a lid part flexibly attached to a receiving body, penetration holes in said receiving body and lid part which are located and configured to overlap when said receiving body and said lid part are closed together;

a pair of holding claws being located at an end of the penetration hole of said receiving body;

a lock including an abutment wall and a transformable molding part, said holding part having a stud adapted to be received in said penetration holes;

said holding claw and said holding part being adapted to fasten together upon insertion of the stud into said penetration holes when the case body is closed, said abutment wall being adapted to touch an outer side of the lid part when said holding claw and holding part are fastened, so that while the case body and the lock are fastened, the case body is unable to be opened; and

said holding part being adapted to change shape by a detaching key being inserted into the penetration hole of the receiving body, so that the holding part is released from the holding claw to permit the case body to be opened.

4. A security case comprising:

a case body structure including a first part interconnected with a second part, the first and second parts being movable between an open position in which an object can be inserted in or removed from the case body structure, and a closed position in which an object can be enclosed within the case body structure, the first and second parts respectively defining first and second penetration holes that are arranged and configured to align when the first and second parts are in the closed position;

a lock member for locking the first and second parts in the closed position, the lock member including a first portion adapted to be inserted within the first and second penetration openings when the first and second parts are in the closed position, the lock member also including a second portion including an abutment surface arranged and configured to overlap an outer side portion of the first part when the first portion of the locking member is disposed within the first and second penetration holes; and

a locking arrangement for fastening the first portion of the locking member within the first and second penetration holes, the locking arrangement including a flexible first holding part and a second holding part, the first and second holding parts being arranged and configured to fasten together when the first portion of the locking member is inserted through the first and second penetration holes.

12. A security case system comprising:

a case body structure including a first part interconnected with a second part, the first and second parts being movable between an open position in which an object can be inserted in or removed from the case body structure, and a closed position in which an object can be enclosed within the case body structure, the first and second parts respectively defining first and second penetration holes that are arranged and configured to align when the first and second parts are in the closed position;

a lock member for locking the first and second parts in the closed position, the lock member including a first portion adapted to be inserted within the first and second penetration openings when the first and second parts are in the closed position, the lock member also including a second portion including an abutment surface arranged and configured to overlap an outer side portion of the first part when the first portion of the locking member is disposed within the first and second penetration holes;

a locking arrangement for fastening the first portion of the locking member within the first and second penetration holes, the locking arrangement including a flexible first holding part and a second holding part, the first and second holding parts being arranged and configured to fasten together when the first portion of the locking member is inserted through the first and second penetration holes; and

a detaching key for unfastening the flexible first holding part and the second holding part, the flexible first holding part being arranged and configured to flex away and unfasten from the second holding part when the key is inserted into the second penetration hole such that the case body is permitted to be opened.

5,823,342

PACKAGING FOR MITRAL OR AORTIC HEART VALVE DEVICE

Roberto Caudillo, and Tammi Klostermeyer, both of Austin, Tex., assignors to Sulzer Carbomedics Inc., Austin, Tex.

Filed Nov. 14, 1997, Ser. No. 970,227
Int. Cl.[6] A61B *17/06;* **B65D** *85/30;* **A61F** *2/24*
U.S. Cl. 206—438 **14 Claims**



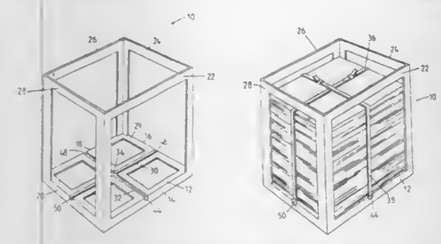
1. Packaging for a heart valve device, comprising:
a container having an inner compartment, the container having an aortic orientation and a mitral orientation and constructed to be opened in either orientation;
an aortic support member, located in the inner compartment, to support the heart valve device when the container is opened in the aortic orientation such that the heart valve device is prepared for receiving a holding instrument for implantation as an aortic valve; and
a mitral support member, located in the inner compartment, to support the heart valve device when the container is opened in the mitral orientation such that the heart valve device is prepared for receiving a holding instrument for implantation as a mitral valve.

5,823,343

PACKAGING APPARATUS

Darryl James Heffernan, 18 Sierra Close, Leeming, Australia, 6155

Continuation of Ser. No. 513,128, Aug. 9, 1995, abandoned. This application Apr. 11, 1997, Ser. No. 839,398
Int. Cl.[6] B65D *85/48*
U.S. Cl. 206—451 **2 Claims**



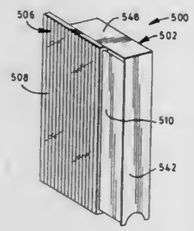
1. A packaging frame for packaging generally flat material, said packaging frame including a substantially rectangular base defined by four sides, each pair of adjacent sides intersecting at a respective corner, a respective side frame extending upwardly from each side, each side frame including a pair of spaced upright flat webs each having opposed major surfaces and extending upwardly from the respective side with the major surfaces parallel to the respective side, each web having inner and outer sides and an upper end, each web being disposed adjacent a corner of the base so that the outer side thereof is orthogonally contiguous with the outer side of a web of a side frame of an adjacent side, a respective laterally extending flat cross member interconnecting the upper ends of the webs of each side frame, each flat cross member having opposed major surfaces which are disposed parallel to the major surfaces of the upright flat webs, the arrangement being such that the packaging frame has an open top and open sides, the base having an upwardly facing surface and the base being fixed relative to the side frames, a pair of intersecting recessed channels extending transversely across the base between respective pairs of opposed sides and being recessed into the upwardly facing surface of the base, the channels each having opposite end openings in the base which are externally accessible even when the packaging frame contains material, and the channels being from 10 to 25 mm in width and intersecting one another substantially at right angles.

5,823,344

DISPLAY SYSTEMS WITH MULTIPLE VIEW OPTICS

Stephen D. Fantone, Lynnfield, Mass.; Anthony L. Gelardi, Cape Porpoise, and John A. Gelardi, Kennebunkport, both of Me., assignors to Insight, Inc., Lynnfield, Mass.

Continuation-in-part of Ser. No. 508,380, Jul. 31, 1995, and Ser. No. 772,968, Dec. 23, 1996. This application Jan. 6, 1997, Ser. No. 778,975
Int. Cl.[6] B65D *85/00*
U.S. Cl. 206—459.5 **25 Claims**



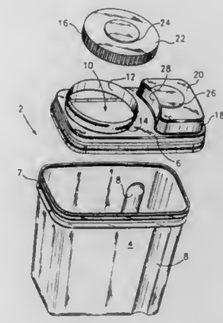
1. A box system for displaying visual information, said box system comprising:
a multi-sided box having panels, said multi-sided box having at least one image bearing panel with printed interlaced images formed thereon on at least one surface thereof; and
a transparent member having at least one wall having at least one lenticulated surface comprising a plurality of adjacent lenticular optical elements having axes and a focal plane and, said image bearing panel and said transparent member having complementary configured means for releasably attaching said lenticulated surface to said image bearing panel in overlying relationship to said printed interlaced images and in optical registration therewith so that an observer of said transparent lenticulated surface is provided with distinct visual effects when viewing said interlaced images through said transparent lenticulated section, said complementary configured releasably attaching means comprising a guide and rail arrangement and said transparent member has spaced apart grooved end sections and said image bearing panel has correspondingly spaced apart rail sections that fit into said grooved end sections to permit said transparent member to be slid onto said image bearing panel and registered therewith, at least one corresponding pair of grooves and rails serving as a reference edge for aligning said lenticular optical elements with said interlaced images along at least one direction.

5,823,345

STACKABLE RECEPTACLE ASSEMBLY FOR POURABLE PRODUCTS

Aleene F. Nask, West Harrison, N.Y.; Timmy L. Willett, Waverly, Ky., and Richard Rhodes, Northport, N.Y., assignors to Berry Plastics Corporation, Evansville, Ind., and Olin Corporation, Cheshire, Conn.

Filed Jul. 24, 1997, Ser. No. 899,971
Int. Cl.[6] B65D *21/032;21/036;21/02*
U.S. Cl. 206—509 **15 Claims**



1. A modular stackable receptacle assembly for holding a pourable product, said receptacle assembly comprising:
a lower rectilinear container having a continuous sidewall and a bottom wall which is integral with said sidewall, said bottom wall including first and second alignment and stacking recesses;
an upper rectilinear cover fitted onto said container, said cover including a raised crown part disposed to one side of said cover, said crown part having an upper surface;
a raised first alignment and stacking projection on said upper surface of said crown part;
said cover further including a product pouring spout disposed on a side of said cover opposite to said crown part;
a closure cap closing said pouring spout, said closure cap including an upper surface which is essentially coplanar with said crown part upper surface;
a raised second alignment and stacking projection on said upper surface of said closure cap; and
said first and second alignment and stacking recesses in said lower rectilinear container capable of receiving the raised first and second alignment and stacking projections and thereby providing for aligned and stable stacking of a plurality of receptacle assemblies.

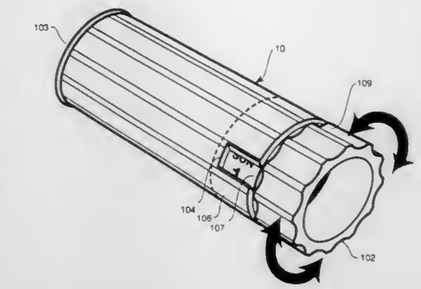
5,823,346

MEDICINE BOTTLE REMINDER ATTACHMENT

Steven L. Weiner, 3180 Crow Canyon Pl., Suite 127, San Ramon, Calif. 94583

Continuation-in-part of Ser. No. 905,477, Aug. 4, 1997. This application Aug. 6, 1997, Ser. No. 910,491
Int. Cl.[6] B65D *83/04*
U.S. Cl. 206—534 **8 Claims**

1. A medicine bottle dosage reminder comprising:
a cylindrical container with an open top, a recessed bottom and a circumferential wall with a container portion between the bottom and open top and a skirt portion extending from the bottom, the skirt portion having an aperture;
an indicator member having a ring portion with an indicator label with a plurality of label markings around the circumference of the ring portion and grasping portion, wherein the skirt portion of the container wall has an inside circumference, the ring portion of the indicator member having an outside circumference substantially equal to the inside circumference of the skirt portion of the container wall;



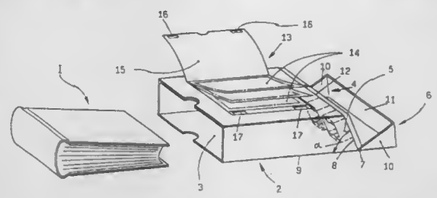
and, retainer means for rotatably retaining the ring portion of the indicator member in the skirt portion of the container wall when the ring portion of the indicator member is inserted into the skirt portion of the circumferential wall with the grasping portion extending from the skirt portion, wherein label markings selectively appear in the aperture on rotation of the grasping portion of the indicator member.

5,823,347

DEVICE FOR STORING PHOTOGRAPHIC FILM NEGATIVE CASSETTES

Peter Mattes, Nettetal, Germany, assignor to Karl Walther Alben und Rahmen GmbH & Co. KG, Germany

Filed Nov. 14, 1996, Ser. No. 749,321
Claims priority, application Germany, Jul. 5, 1996, 296 11 711.0; Sep. 2, 1996, 296 15 075.4
Int. Cl.[6] B65D *85/671*
U.S. Cl. 206—555 **10 Claims**



1. A device for storing negative cassettes of photographic films, comprising a receiving container means for receiving at least one negative cassette, a case having first and second sides and including a first opening at the first side for insertion of a photographic album to be accommodated in the case and a second opening at the second side for receiving the receiving container means whereby the receiving container means is accessible through the second opening for selective reception and removal of negative cassettes, and means for closing the second opening.

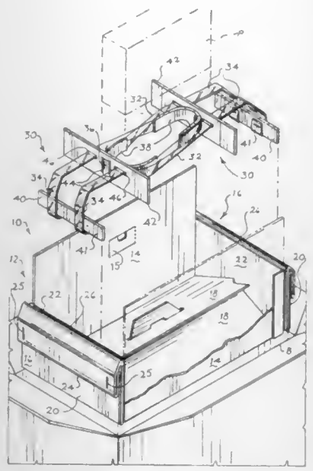
5,823,348

SUSPENSION PACKAGE

Noel M. Phillips; Tammy L. Stiles; Jennifer R. Harding, and Lewis C. Lofgren, all of Chicago, Ill., assignors to ADE, Inc., Chicago, Ill.

Filed May 20, 1997, Ser. No. 859,535
Int. Cl.[6] B65D *81/10*
U.S. Cl. 206—583 **32 Claims**

1. A suspension package comprising:
a frame comprising first and second opposed ends, said frame forming a product suspension region intermediate the ends:
first and second opposed product restraints mounted to the first and second ends, respectively, said restraints comprising respective first and second product-engaging portions opera-



tive to engage a product and to limit movement of the product away from the respective end, with the product interposed (1) between the first product-engaging portion and the first end, and (2) between the second product-engaging portion and the second end; and

first means for shortening an effective length of at least one of the restraints such that opposing tension in the first and second restraints suspends the product in the product suspension region.

30. A suspension package comprising:

a frame comprising first and second opposed ends, said frame forming a product suspension region intermediate the ends;

said first end comprising a hinge and a flap mounted for pivoting movement about the hinge, said flap comprising a receiving element;

a product suspension element secured to the flap to extend into the product suspension region;

a mounting element;

said product suspension element wrapped around the mounting element, said mounting element adjustably mounted in the receiving element for user adjustment of the effective length of the product suspension element.

5,823,349

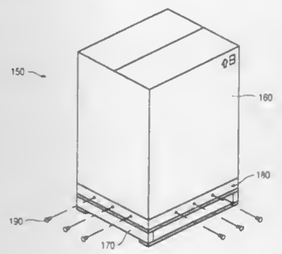
SECURING A CORRUGATED CONTAINER TO A PALLET

John W. Bridges, Pflugerville, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Filed May 2, 1997, Ser. No. 850,835

Int. Cl.[6] B65D *19/00*

U.S. Cl. 206—597 **12 Claims**



1. A container for packaging and shipping articles, said container comprising:

a substantially rectangular wooden base;

a corrugated box, wherein said box telescopes over the base and wherein a portion of the base is inside the box;

a reinforcing material applied to a section of the outside walls of the box adjacent to the base; and

a plurality of fasteners fastening the box to the base through the reinforcing material, wherein the reinforcing material provides reinforcement to the bond between the fasteners, the box and the base.

5,823,350

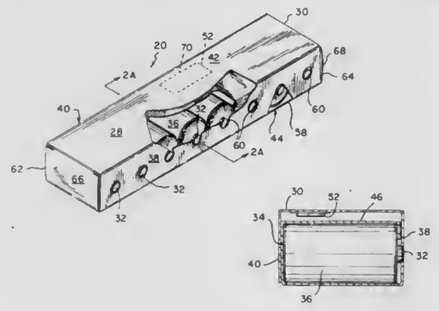
PAPERBOARD SECURITY BATTERY PACKAGE

Thomas F. Ward, Madison, Wis., assignor to Rayovac Corporation, Madison, Wis.

Division of Ser. No. 773,216, Dec. 23, 1996, which is a continuation-in-part of Ser. No. 577,504, Dec. 22, 1995, Pat. No. 5,586,657. This application Apr. 3, 1998, Ser. No. 55,203

Int. Cl.[6] B65D *85/88*

U.S. Cl. 206—705 **5 Claims**



1. A consumer display package containing a plurality of batteries, the package comprising:

a paperboard blank having a first side panel, a top panel which extends from the first side panel, and a bottom panel which extends from the side panel beneath the top panel, and a second side panel which extends between the bottom panel and the top panel, the blank being folded and connected together to define a box in which the first side panel is spaced in parallel relation from the second side panel a first distance;

a plurality of like batteries, the batteries having tops and bottoms joined by sides, wherein the batteries are positioned within the box, and the battery tops are adjacent to the top panel, and the battery bottoms are adjacent to the bottom panel, the batteries having a first thickness in the direction between the first side panel and the second side panel, the first thickness being less than the first distance;

an electronic article surveillance sensor mounted on the first side panel such that the sensor is not visible when the package is fully loaded with batteries, the sensor being positioned between the first panel and the second panel;

a sheet of paperboard material interposed between the first side panel and the batteries within the box, the sheet serving to enforce non-engagement between the sensor and the batteries, to thereby allow the surveillance sensor to properly function.

5,823,351

SEMICONDUCTOR CRYSTAL PACKAGING DEVICE

Shinichi Matsuo, Niigata; Nobuyoshi Fujimaki, Guma; Shiroyasu Watanabe, Niigata, and Kintaro Kato, Tokyo, all of Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

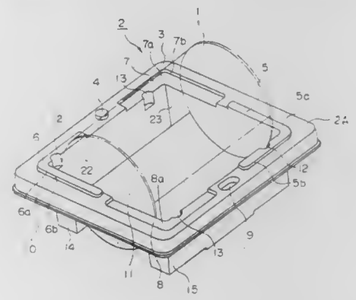
PCT No. PCT/JP95/01357, § 371 Date Mar. 7, 1996, § 102(e) Date Mar. 7, 1996, PCT Pub. No. WO96/02069, PCT Pub. Date Jan. 25, 1996

PCT Filed Jul. 7, 1995, Ser. No. 617,804

Claims priority, application Japan, Jul. 8, 1994, 6-180963

Int. Cl.[6] B65D *85/86*

U.S. Cl. 206—710 **10 Claims**



1. A semiconductor crystal packaging device comprising a pair of device halves, wherein each device half has:

a horizontal edge wall;

raised guides and a protuberance formed on the horizontal edge wall;

recessed guides and a recess formed in the horizontal edge wall in point symmetry with each other so as to be engageable with the raised guides and protuberance of the other device half when the two device halves are engaged together;

a strip-like vertical edge wall depending from the outer edge of the horizontal edge wall;

an outwardly convex accommodation wall defining a substantially semi-circular sectional profile recess for accommodating semiconductor crystal therein;

legs provided on bottom portions of the accommodation wall; and

reinforcement raised portions projecting from outer walls of the legs;

the protuberance and recesses of the two device halves being engageable with one another compressively to accommodate semiconductor crystal in the device halves thus engaged together.

2. A semiconductor crystal packaging device comprising a pair of device halves made of an elastic material, wherein each device half has:

a horizontal edge wall;

raised guides and a protuberance formed on the horizontal edge wall;

recessed guides and a recess formed in the horizontal edge wall in point symmetry with the raised guides and the protuberances so as to be engageable compressively with the raised guides and protuberance of the other device half when the two device halves are engaged together;

a strip-like vertical edge wall depending from the outer edge of the horizontal edge wall;

an outwardly convex accommodation wall defining a substantially semi-circular sectional profile recess for accommodating semiconductor crystal therein;

legs provided on bottom portions of the accommodation wall; and

reinforcement raised portions projecting from outer walls of the legs;

the protuberances and recesses of the two device halves being engageable with one another compressively to accommodate semiconductor crystal in the device halves thus engaged together.

3. A semiconductor crystal packaging device for packaging a number of wafers after slicing and before polishing directly in close contact with one another in a substantially cylindrical semiconductor wafer stack, comprising:

an upper and a lower device half made of thin resin sheet, said upper and lower device halves each having an identical shape, each of said device halves including:

a substantially semi-circular sectional profile central recess extending concave from an open end toward a bottom, the substantially semi-circular sectional profile central recess being defined by an outwardly convex semi-circular sectional profile accommodation wall having a diameter equal to or less than the diameter of the substantially cylindrical semiconductor wafer stack;

a pair of legs depending from the opposite side portions of the semi-circular sectional profile accommodation wall toward the bottom thereof and having a greater height than the semi-circular sectional profile accommodation wall; and

a protuberance and a recess formed on and in the outer surface of a horizontal edge wall surrounding the opening of the central recess;

wherein the cylindrical semiconductor wafer stack is accommodated between the semi-circular sectional profile accommodation walls of the upper and lower device halves, respectively, with the recess and the protuberance of the upper device half being engaged with the protuberance and the recess of the lower device half, respectively.

5,823,352

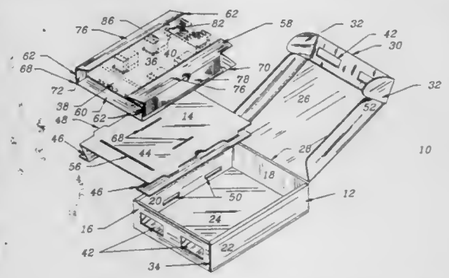
CONTAINER WITH SHOCK-ABSORBING INSERT

J. Joe Mena; Charles F. Johnson; Carol L. Johnson, and Gustav M. Maenpaa, all of Colorado Springs, Colo., assignors to Summit Container Corporation, Monument, Colo.

Filed Jun. 3, 1997, Ser. No. 868,159

Int. Cl.[6] B65D *5/50*

U.S. Cl. 206—721 **19 Claims**



1. A container for holding a substantially rectangular product, comprising:

a. An outer shell having an interior front panel, a back panel, left and right side panels, a bottom panel, and a top panel, said top panel being movable between a closed position and an open position,

b. A first insert comprising a first insert platform suitable for supporting the product, and at least one resilient and compressible support member, wherein said first insert can be placed inside said outer shell with said first insert platform substantially parallel to said bottom panel when said support member rests on said bottom panel,

c. A plurality of tabs extending from said first insert platform and parallel with said first insert platform, and

d. A slit formed in a side or back panel to receive each tab, said slit being wide enough to snugly receive said tab, and tall

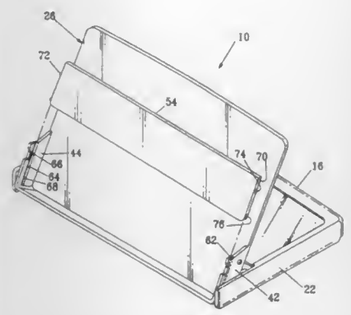
enough to allow said tab and the first insert platform from which said tab extends to move up and down as the support member compresses and expands.

5,823,353

COMBINATION BUSINESS CARD CASE AND DISPLAY CASE

Patrick C. Perrin, Rancho Palos Verdes, and Jimmie L. Whittington, deceased, late of Diamond Bar, both of Calif., by Eleanor Whittington, legal representative, assignors to Perrin Manufacturing Company, City of Industry, Calif.

Continuation-in-part of Ser. No. 592,759, Jan. 26, 1996, abandoned. This application Jul. 3, 1996, Ser. No. 675,727
Int. Cl.[6] B65D *85/672*
U.S. Cl. 206—752 6 Claims



1. A receptacle for holding and displaying a card member suitable for being carried on one's person, said card member bearing informational data thereon, said receptacle comprising:

a base member having a back wall structure enclosed on three sides with top, left and right side wall structures for partially framing said back wall structure, forming a partial enclosure in which is stored a supply of said card members and operable between a closed position and an open position;

a front wall member having a front wall with free edges rotatably linked between the left and right side wall structures, said front wall having an inside face and an outside face and adapted to be received within the partially framed wall structure of the base member, said front wall equipped with a trough assembly extending laterally across the inside face of the front wall member and normal to said left and right side wall structures reaching between said side walls, said trough assembly being enclosed at its lateral ends with end wall portions, said trough assembly being adapted to removably contain at least one card member therein;

said back wall including flap means for insertion into a person's pocket, said flap means being flexibly secured to the back wall;

hinge means affixed to the inside of each one of the left and right side wall structures adjacent the trough assembly for rotatably linking said base member and said front wall member;

stop means associated with the base member adjacent the hinge means for engaging a free edge of the front wall to support the front wall when the base member is rotated to its display position to expose the trough assembly which is on the inside face of the front wall;

said receptacle being made of transparent plastic material;

whereby said front wall member when positioned within said framed structure forms an enclosure for the card member contained in the trough assembly and itself forms a display enclosure for the card member deposited in said trough assembly when said base member is rotated to its open display position.

5,823,354

METHOD AND APPARATUS FOR THE SEPARATION AND SORTING OF NON-FERROUS MATERIALS

Alexander Elkind, Mt. Laurel; James MacFarlane, Collingswood, both of N.J.; Mark Krymsky, Langhorn, Pa.; Victor Nikolaevich Tisenko, St. Petersburg, Russian Federation; German Abramovich Shneerson, St. Petersburg, Russian Federation; Vyacheslav Semenovich Korolev, St. Petersburg, Russian Federation; Sergey Ivanovich Krivosheev, St. Petersburg, Russian Federation; Alexey Pavlovich Nenashev, St. Petersburg, Russian Federation, and Vladimir Markovich Vasilevskiy, St. Petersburg, Russian Federation, assignors to Rustec, Inc., Camden, N.J.

Filed Jan. 16, 1996, Ser. No. 585,097
Int. Cl.[6] B03C *1/00*
U.S. Cl. 209—212 7 Claims

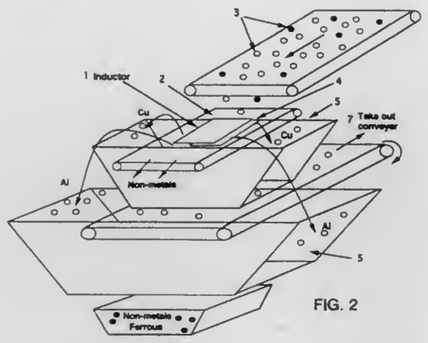


FIG. 2

1. An apparatus for separating and sorting non-ferrous metal pieces from other materials according to density comprising:

(a) a capacitor and inductor for producing an electromagnetic field which provides a non-steady state, non-uniform magnetic field, and produces a sharp skin effect in the non-ferrous metal pieces so that the non-ferrous metal pieces are propelled at distances which are inversely proportional to the densities of these materials and independent of their conductivities;

(b) a ferromagnetic core;

(c) an infeed conveyor for positioning materials to be separated and sorted between said capacitor and inductor for producing an electromagnetic field and said ferromagnetic core; and

(d) a collecting means located at a selected distance from said infeed conveyor for collecting separated and sorted non-ferrous metal pieces propelled by the electromagnetic field.

5,823,355

FIBRESAVER SCREEN BASKET SUPPORT

Antoine G. Abdulmassih, San Francisco, Calif.; Donald B. Johnson, Bedford, N.H.; Douglas L. G. Young, Nashua, N.H., and Brian J. Gallagher, Litchfield, N.H., assignors to Beloit Technologies, Inc., Beloit, Wis.

Filed Mar. 29, 1995, Ser. No. 412,796
Int. Cl.[6] B07B *1/49*; B01D *29/00*
U.S. Cl. 209—406 4 Claims

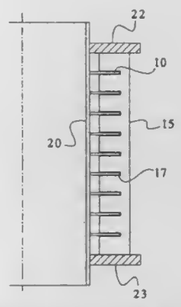
1. A combination screen basket and support structure for the screen basket comprising:

a thin cylindrical screen basket comprising a cylindrically formed structure of screen material perforated with closely spaced holes;

a pair of axially spaced mounting flanges including an upper flange and a lower flange, said mounting flanges being connected to an exterior of the screen;

a plurality of axially spaced rings that extend peripherally around and that are in contact with and connected to said exterior of said screen, said plurality of axially spaced rings having a minimum screen contact area to permit maximum flow through said screen, said plurality of axially spaced rings being spaced between said mounting flanges; and

said plurality of axially spaced rings being disposed between said screen and a plurality of slotted vertical support rods, the slotted vertical support rods each including a plurality of slots, each slot for accommodating one of said rings, each rod extending between an underside of said upper flange and an upper side of said lower flange to maintain the spacing between the upper and lower flanges and to provide vertical compression resistance.

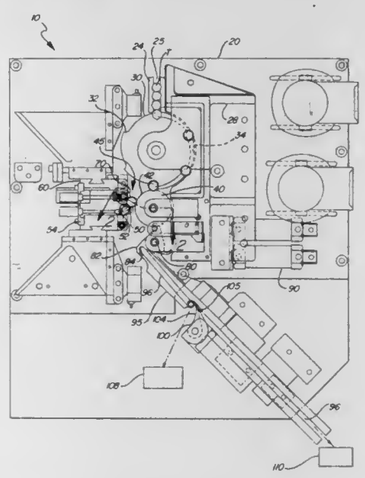


5,823,356

APPARATUS AND METHOD FOR INSEPCTING THREADED MEMBERS

Lloyd Goodrich, Roseville; James F. Carpenter, Macomb, and Gregory J. Wronkowicz, Sterling Heights, all of Mich., assignors to Ajax Metal Processing, Inc., Detroit, Mich.

Filed Apr. 25, 1996, Ser. No. 637,424
Int. Cl.[6] B07C *5/12*
U.S. Cl. 209—601 9 Claims



1. An apparatus for functionally testing and sorting a plurality of threaded members, each threaded member having a threaded shank portion and a head portion, said apparatus comprising:

a base member;

a frame support means mounted to said base member, said frame support means having first rotatable transfer means attached thereto;

means for conveying said plurality of threaded members to said first rotatable transfer means, said conveying means being attached to said frame support means and having one end juxtaposed said first rotatable transfer means such that said first rotatable transfer means receives each threaded member of said plurality of threaded members one at a time from said one end of said conveying means at a predetermined pick-up area and rotatably transfers each said threaded member to a predetermined drop-off area;

second rotatable transfer means attached to said frame support means and spaced a predetermined distance from said first rotatable transfer means, said second rotatable transfer means having means for receiving each said threaded member from said first rotatable transfer means at said predetermined drop-off area, said second rotatable transfer means transferring each said threaded member from said predetermined drop-off area to a testing station;

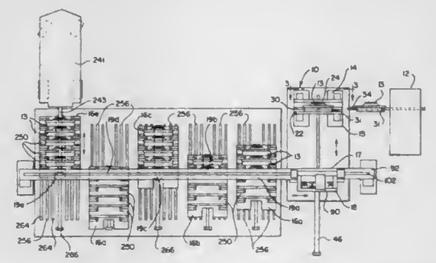
means for functionally testing said threaded portion of said threaded member, said functional testing means being positioned to partially surround said threaded member located at said testing station, such that said functional testing means and said second rotatable transfer means communicate to position said threaded member at said testing station and functionally test said threaded portion of said threaded member; and means for selectively sorting each said threaded member tested by said functional testing means, said sorting means being attached to said frame support means and located in spaced relationship to said second rotatable transfer means such that rejects identified by said functional testing means are selectively separated from said plurality of threaded members that pass through said testing station.

5,823,357

AUTOMATED WHEEL SORTING SYSTEM AND METHOD

Christopher Z. Sieradzki, Monee, and Jaime F. Pozo, Clarendon Hills, both of Ill., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jul. 11, 1997, Ser. No. 893,695
Int. Cl.[6] B07C *7/04*
U.S. Cl. 209—703 23 Claims



6. A system for sorting articles into groups of like articles comprising:

an inspection station for determining the category to which an article belongs;

a pick up station spaced from the inspection station;

a plurality of drop off stations laterally spaced from the pick up station;

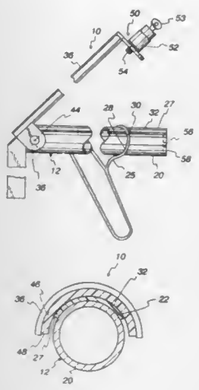
a movable transfer car for moving an article to the pick up station;

a carriage system including a hoist laterally movable between the pick up station and drop off stations, the hoist having a vertically movable portion for raising an article out of the transfer car at the pick up station;

a plurality of shuttle cars spaced from the inspection station and pick up station, each shuttle car being associated with one drop off station, each shuttle car having a plurality of receiving stations for receiving sorted articles, one receiving station in each shuttle car being aligned with each drop off station so

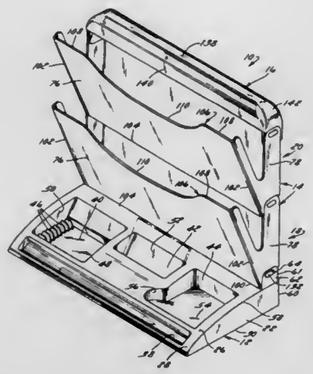
that the vertically movable portion of the hoist may be lowered to deposit an article in the receiving station;
means for moving the transfer car from the inspection station to the pick up station;
means for moving the shuttle cars so that each receiving station may be aligned with the corresponding carriage system drop off station;
means for moving the hoist laterally between the pick-up station and the drop off stations; and
means for raising and lowering the vertically movable portion of the hoist.

5,823,358
SECURITY SYSTEM FOR GARMENT DISPLAY
Roger J. Leyden, Willow Springs; Terrance Surma, Bloomingdale, both of Ill., and Christopher Kelsch, Midlothian, Va., assignors to Se-Kure Controls, Inc., Franklin Park, Ill.
Filed Feb. 26, 1996, Ser. No. 606,923
Int. Cl.[6] E05B *73/00*
U.S. Cl. 211—8 **12 Claims**



1. A security system comprising:
a frame having an elongate arm having a length and defining an upwardly facing support surface;
a hanger for an article of clothing having a hook defined by a formed elongate body, the body having a diameter taken in cross section transversely to the length of the body and defining a downwardly facing edge that can be placed against the upwardly facing support surface to thereby maintain the hanger in a display position;
a cover mounted to the frame for movement relative to the frame selectively between a) a first position wherein the hanger can be placed into and removed from the display position and b) a second position wherein the cover closely captively maintains the hanger in the display position,
there further being a compressible material on at least one of the cover and the frame,
the hook being squeezed between the frame and cover so as to be pressed into the compressible material with the hanger in the display position and the cover in the second position to produce frictional holding forces between the hook and the compressible material,
the compressible material having a thickness between the frame and cover that is not substantially greater than the diameter of the formed elongate body,
whereby the frictional forces generated between the hanger and the compressible material layer inhibit pivoting of the hanger around the length of the elongate arm with the hanger in the display position and the cover in the second position to thereby avoid release of the hanger from the display position.

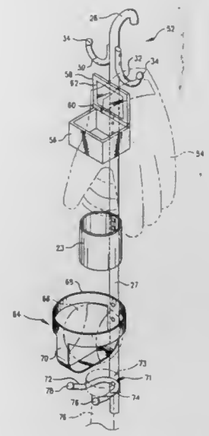
5,823,359
DESKTOP VERTICAL FILE ASSEMBLY
David C. Harris, Baraboo, Wis.; Aimee J. Markelz, Chicago, and Charles E. Baiu, West Dundee, both of Ill., assignors to Sterling Plastics Co., Madison, Wis.
Filed May 30, 1996, Ser. No. 656,161
Int. Cl.[6] A47F *5/00*
U.S. Cl. 211—11 **25 Claims**



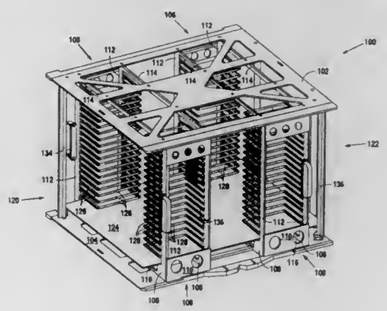
1. A modular desktop vertical file assembly comprising:
a base including a support surface and a base attachment region, the base attachment region including at least one resilient attachment member having an aperture;
a vertical file including a bottom panel, a rear panel perpendicular to the bottom panel, a pair of side panels and a front panel extending from the bottom panel at a non-perpendicular angle, each side panel and rear panel including a top attachment region having at least one resilient attachment member including an aperture, and each side panel and rear panel including a bottom attachment region including at least one tab; and
wherein the vertical file is attached to and supported by the base by releasable engagement of the at least one tab in the at least one aperture of the base.

5,823,360
DEVICE FOR HOLDING SPORTS EQUIPMENT AND OTHER ITEMS
Daniel R. Gorosave, 1140 7th Ave. South, Edmonds, Wash. 98020
Filed May 30, 1996, Ser. No. 655,741
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—13.1 **19 Claims**

1. A device for holding items, including a ball of a predefined radius, and a beverage container of a predefined outside diameter, the device comprising:
(a) a support member having a connector for connecting to another structure and attaching the device thereto;
(b) beverage retaining means having a receptacle for receiving and retaining a beverage container, the receptacle having an inside diameter approximately corresponding to said predefined outside diameter, the beverage retaining means being connected to the support member; and
(c) ball retaining means connected to the support member for receiving and holding a ball, the ball retaining means defining a recess having a depth, wherein, when the ball retaining means receives and holds the ball, the ball is received into the recess to a depth at least equal to said predefined radius.



5,823,361
SUBSTRATE SUPPORT APPARATUS FOR A SUBSTRATE HOUSING
Daniel A. Babbs, Travis County, Tex., assignor to Progressive System Technologies, Inc., Austin, Tex.
Filed Feb. 6, 1996, Ser. No. 599,537
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—41 **28 Claims**

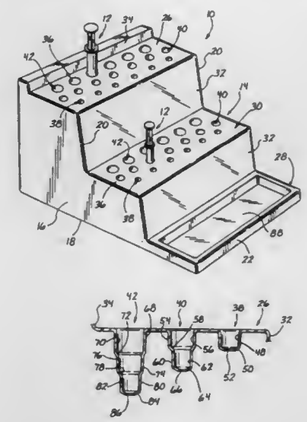


1. A substrate support apparatus for supporting at least one substrate in a substrate carrier, comprising:
a first support rod positioned to support one side of a substrate along a first support contact line on a surface and offset from a peripheral edge of a substrate;
a second support rod positioned to support the other side of the substrate along a second support contact line on said surface and offset from said peripheral edge of the substrate; and
at least one rod support member mounted to each of said first and second support rods and for mounting to the substrate carrier;
wherein said first and second support lines are determined by finite element analysis of the substrate to support the substrate with a minimum amount of sag.

5,823,362

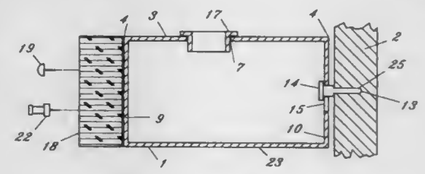
Patent Not Issued For This Number

5,823,363
MEDICAL SYRINGE HOLDING/TRANSPORT APPARATUS
Douglas Cassel, 1766 Port Manleigh Cir., Newport Beach, Calif. 92660-6622
Filed Oct. 18, 1996, Ser. No. 733,439
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—60.1 **10 Claims**



1. An article of manufacture which is constructed to receive and hold a plurality of syringes of differing size, said article comprising:
a substantially rigid frame having a plurality of tiers formed thereon, each of said teirs having a top surface;
a plurality of syringe-receiving cavities formed in at least one of the tiers, each of said syringe-receiving cavities being sized and configured to receive and hold a syringe in a generally vertical orientation;
at least some of said syringe-receiving cavities being variable diameter syringe-receiving cavities, which are adapted to receive different sizes of syringes, each of said variable diameter syringe-receiving cavities having an inner surface which defines:
i) a first region having an inner wall of a first diameter to receive and hold a syringe which has an outer diameter substantially equal to said first diameter; and
ii) a second region having an inner wall of a second diameter to receive and hold a syringe which has an outer diameter substantially equal to said second diameter.

5,823,364
WALL MOUNTED TOOL RACK
Dominic Mucciacciaro, 1791 Blount Rd., Suite 901, Pompano Beach, Fla. 33069
Filed Mar. 7, 1997, Ser. No. 813,046
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—70.6 **18 Claims**



1. A rack assembly for holding small tools on the vertical wall of a stationary machine tool, the rack assembly comprising:

a hollow rack having an elongate horizontal top surface, the top surface being substantially rectangular and having opposed short edges and opposed long edges that are at least three times as long as the short edges, and having a plurality of tool receiving apertures therethrough, the apertures provided with edges that are softer than aluminum maximum harness of 95 on the Brinell scale;

a front vertical panel and an opposed back vertical panel depending from the long edges;

a plurality of rack supporting means for supporting the rack against the vertical wall of a stationary machine tool, each rack supporting means provided with a first means for fixed attachment to said vertical wall and a second means for removably engaging said back vertical panel; and

said back vertical panel provided with means for cooperating with said rack supporting means to removably mount the rack on said vertical wall with said back vertical panel against said vertical wall without tools so that the rack may be readily removed from the wall by lifting and pulling the rack away from the wall or simply pulling the rack away away from the wall.

5,823,365

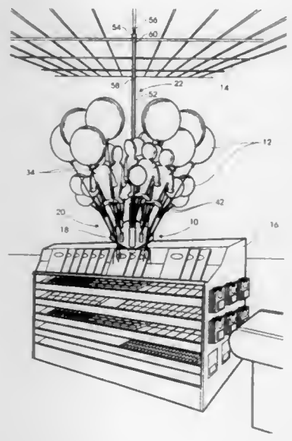
BALLOON HOLDER AND METHOD FOR DISPLAYING AND HOLDING BALLOONS

Gary W. Page, 4809 Pineridge Rd., Charlotte, N.C. 28226

Filed Sep. 26, 1996, Ser. No. 721,691

Int. Cl.[6] A47F *5/08*

U.S. Cl. 211—113 **19 Claims**



1. A ceiling-mounted balloon holder to removably retain balloons attached to tethers at a predetermined distance below said ceiling and at a location above fixtures extending upwardly from a floor, comprising:

(a) a base suspendable from said ceiling and disposed above said fixtures such that said balloon holder is accessible to a person standing on said floor without disrupting said fixtures;

(b) means for removably retaining balloons on said base, said means including a receiver formed thereon to permit said balloon tethers to be inserted into said receiver and to be releasably retained thereat; and

(c) means for suspending said base from said ceiling to said predetermined distance therebelow such that said base is positionable between said ceiling and the top of said fixture located on said floor.

5,823,366

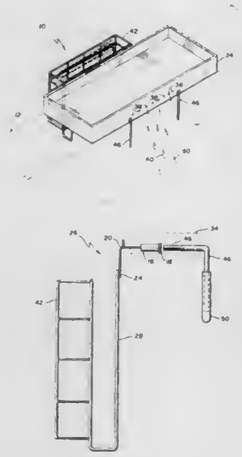
BATHTUB CADDY

David M. Bellamy, 6200 Fair Oaks Rd. S.E. Lot # 77, Olympia, Wash. 98513

Filed Jul. 29, 1997, Ser. No. 902,067

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—119.011 **8 Claims**



1. A caddy for supporting a plurality of items comprising:

a base member;

a cross-member having an L-shaped configuration and including a first and second end, said cross-member being oriented such that said first end is attached to said base member at a location proximate the midpoint of said base member, and said second end projecting perpendicularly from the plane of said base member;

a frame assembly including:

at least two U-shaped members spaced a predetermined distance from each other, each of said U-shaped member having a first end and a second end,

a first arm, horizontally oriented and attached to the second end of said cross-member, said first arm being further attached to the first ends of said at least two U-shaped members, and

a second arm horizontally oriented and attached to the second ends of said at least two U-shaped members;

a tray for receiving a plurality of items;

means for removably securing said tray to said base member;

a rack secured to said second arm and said at least two U-shaped members; and

means for adjustably securing said caddy to a bathtub.

5,823,367

ADAPTER FOR HOLDING A PAN IN A FOOD SERVING STATION

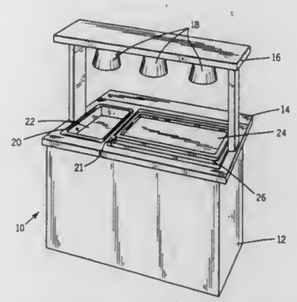
Robert E. Moran, Jr., Sheboygan Falls, Wis., assignor to The Vollrath Company, L.L.C., Sheboygan, Wis.

Continuation of Ser. No. 379,345, Jan. 27, 1995, abandoned. This application Apr. 17, 1997, Ser. No. 837,356

Int. Cl.[6] A47G *29/00*

U.S. Cl. 211—126.1 **11 Claims**

1. In a food serving station having a food service table, at least two adjacent wells formed in the table for receiving and supporting trays of food and a heating system for heating the trays of food, an adapter for supporting a sheet pan of the type having substantially upstanding sides surrounding a central sheet and terminating in an upper peripheral bead, the adapter comprising:



a frame configured to fit flush on the table and to extend over at least two adjacent wells in the table, the frame including a central depression for receiving the sheet pan and an upper support surface for engaging the peripheral bead; and

at least one projection coupled to the frame and extending downwardly therefrom to engage the food serving station and thereby to locate and retain the adapter over the wells.

5,823,368

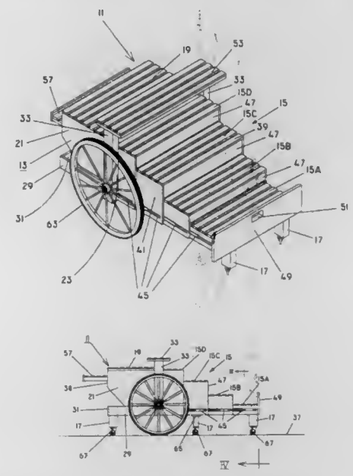
DISPLAY RACK

Wade P. Burke, Watauga, and Ray M. Lewis II, Fort Worth, both of Tex., assignors to Marco Display Specialists, Inc., Fort Worth, Tex.

Filed May 2, 1997, Ser. No. 850,606

Int. Cl.[6] A47F *5/00*

U.S. Cl. 211—175 **12 Claims**



1. A rack for displaying products, comprising:

a) a frame comprising a top wall and side walls coupled thereto, the side walls being spaced apart from each other so as to form a frame cavity therebetween;

b) first and second nested shelves, each of which has a top wall and side walls coupled thereto, the side walls of each nested shelf being spaced apart from each other so as to form a shelf cavity, the first nested shelf being slidingly coupled to the frame such that the first nested shelf can move between a first stowed position inside of the frame cavity and a first extended position where a portion of the first nested shelf extends out from the frame cavity, the second nested shelf being slidingly coupled to the first nested shelf such that the second nested shelf moves between a second stowed position inside of the shelf cavity of the first nested shelf and a second extended position where a portion of the second nested shelf extends out of the shelf cavity of the first nested shelf;

c) first legs coupled to the frame;

d) second legs coupled to one of the first or second nested shelves.

5,823,369

CONTROL DEVICE FOR AUTOMATICALLY STOPPING SWIVELING OF CRANES

Kazunori Kuromoto, Yokohama, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Japan

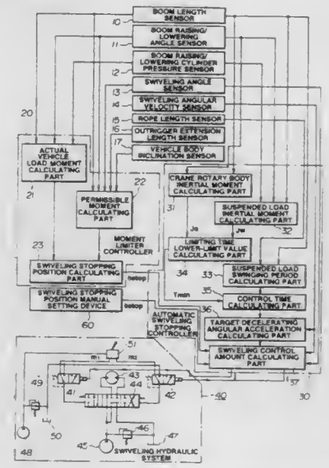
PCT No. PCT/JP94/01496, § 371 Date Mar. 11, 1996, § 102(e) Date Mar. 11, 1996, PCT Pub. No. WO95/07231, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 9, 1994, Ser. No. 612,871

Claims priority, application Japan, Sep. 9, 1993, 5-224658

Int. Cl.[6] B66C *13/04*

U.S. Cl. 212—273 **5 Claims**



1. A control device for automatically stopping the swiveling of a crane in which a boom is attached to a rotary body and a load is suspended from a tip end of the boom, comprising:

first measurement means for measuring an inertial moment of the rotary body;

second measurement means for measuring an inertial moment of the load;

memory means in which a plurality of swiveling control lower-limit times Tmin, which are set so that vibration of the boom falls within an allowable range when the boom swivels, are stored beforehand in association with a plurality of different values of the inertial moment of the rotary body and the inertial moment of the load, and which outputs one swiveling control lower-limit time Tmin, from among the plurality of different swiveling control lower-limit times Tmin stored therein, which corresponds to the inertial moment of the rotary body and the inertial moment of the load that are output from the first and second measurement means;

third measurement means for measuring a swinging period T of the load;

deceleration time calculating means for calculating a smallest natural number n for which $nT \geqq Tmin$ by using the swiveling control lower-limit time Tmin output from said memory means and the swinging period T output from said third measurement means, and for calculating a deceleration time nT obtain by multiplying swinging period T by the natural number n;

target deceleration angular velocity calculating means for calculating a target deceleration angular velocity α(wherein $\alpha=-\Omega O/nT$ and ΩO is a swiveling angular velocity of the rotary body immediately prior to the initiation of automatic swiveling stopping control), based on the deceleration time nT output from said deceleration time calculating means; and

braking and stopping control means for braking and stopping the rotary body with the target deceleration angular velocity α calculated by the target deceleration angular velocity calculating means.

5,823,370

MOVABLE RANGE INDICATING APPARATUS FOR MOBILE CRANE VEHICLE

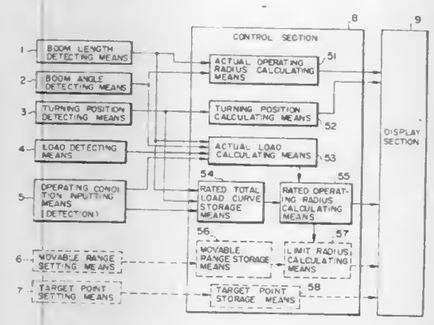
Masamichi Ueda, Hiratsuka, Japan, assignor to Komatsu Ltd., and Komatsu Mec Kabushiki Kaisha, both of Tokyo, Japan

PCT No. PCT/JP95/00342, § 371 Date Sep. 2, 1997, § 102(e) Date Sep. 2, 1997, PCT Pub. No. WO96/27548, PCT Pub. Date Sep. 12, 1996

PCT Filed Mar. 3, 1995, Ser. No. 894,981

Int. Cl.[6] B66C *23/04*; G06G *7/00*

U.S. Cl. 212—276 **20 Claims**



1. A movable range indicating apparatus which is suitable for use on a mobile crane vehicle having a base carrier, a revolvable superstructure which is revolvably mounted on the base carrier, and a vertically swingable telescopic boom which is mounted to the revolving superstructure, said apparatus comprising:

a boom length detecting means, for detecting a length of the telescopic boom;

a boom angle detecting means, for detecting a derricking angle of the telescopic boom;

a load detecting means, for detecting an actual load acting on the telescopic boom;

a turning position detecting means, for detecting a turning position of the telescopic boom;

an operating condition inputting means, for inputting operating conditions of the revolvable superstructure and the base carrier;

a display section, capable of indicating images in rectangular coordinates in which said turning position is taken as an X-coordinate and an operating radius is taken as a Y-coordinate; and

a control section, for performing calculations based on signals from each of said means, and for outputting calculation results to said display section;

wherein said control section calculates a current actual load, a rated operating radius for each turning position in a state of suspending said actual load, and an end position of the telescopic boom; and

wherein said display section indicates an image of said rated operating radius and an image of the end position of said telescopic boom at corresponding positions on said rectangular coordinates by superimposition.

5,823,371

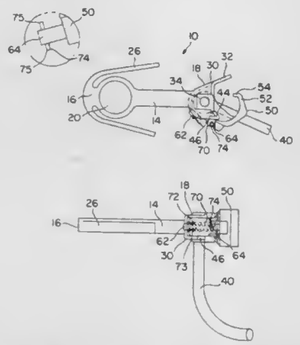
MAGNETICALLY ACTUATED COUPLER ASSEMBLY

H. Lee Riley, Middletown, Del., and Robert H. Staat, Goshen, Ky., assignors to Bachmann Industries, Inc., Philadelphia, Pa.

Filed Oct. 1, 1997, Ser. No. 941,925

Int. Cl.[6] B61G *3/00*

U.S. Cl. 213—75 TC **15 Claims**



1. A magnetically actuated coupler assembly for model railroad rolling stock comprising:

a drawbar having first and second ends, the first end including an aperture defined therethrough adapted for mounting in a coupler pocket on the model railroad rolling stock, and the second end including a coupler head;

a coupler knuckle pivotably mounted to the coupler head by a magnetically actuated pivot post;

a first coil spring alignment pin located on the second end of the drawbar;

a second coil spring alignment pin located on the coupler knuckle;

a coil spring mounted between the coupler head and the coupler knuckle on the first and second coil spring alignment pins for resiliently urging the coupler knuckle to a coupled position; and

at least one of the first and second coil spring alignment pins including a coil spring retainer mounted thereon which engages at least a portion of the coil spring to prevent the coil spring from becoming dislodged from the at least one of the first and second coil spring alignment pins.

5,823,372

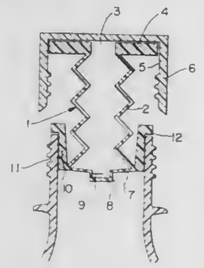
PUMP INSERT FOR BOTTLE CAPS

Alan Levine, 7511 Prescott La., Lake Worth, Fla. 33467

Filed Jan. 28, 1998, Ser. No. 14,849

Int. Cl.[6] B65D *51/24*

U.S. Cl. 215—228 **20 Claims**



1. A pump adapted for insertion between a cap and a carbonated-beverage bottle for re-pressurizing the interior of the bottle with air, the pump comprising:

a hollow, resilient, expandable and compressible body, said body having an upper end and a lower end;

a flanged lip seal formed around an outer circumference of said upper end of said hollow body and adapted for engaging an inside recess of a standard bottle cap;

said upper end of said hollow body having a hole therethrough;

a membrane closing said lower end of said hollow body, said membrane containing a normally sealed opening adapted to open in response to an increase in pressure caused by compression of said hollow body; and,

a collar extending from said lower end of said hollow body and adapted to sealingly engage a bottle neck upon engagement of said collar with said bottle neck.

5,823,373

PLASTIC CAP AND A PROCESS FOR THE PRODUCTION OF THE SAME

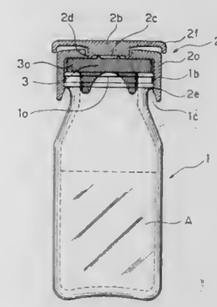
Morihiro Sudo, Sumida-ku, and Hiroshi Togashi, Abiko, both of Japan, assignors to Daikyo Seiko, Ltd., Tokyo, Japan

Filed Oct. 17, 1996, Ser. No. 733,318

Claims priority, application Japan, Oct. 18, 1995, 7-270201; Mar. 5, 1996, 8-047505

Int. Cl.[6] B65D *47/36*

U.S. Cl. 215—249 **20 Claims**



1. A cap arrangement for use in covering a mouth part of a container for a medicament, said cap arrangement comprising:

a sealing material for sealing against the mouth part of the container;

a hard plastic cap for covering the mouth part of the container and air-tightly fixing the sealing material to the container;

wherein said hard plastic cap comprises a cap base part, a protection cover covering said cap base part, and a binding part connecting said protection cover to said cap base part;

wherein said cap base part comprises a generally cylindrical drum part having an inwardly protruding part for engagement with an outwardly protruding flange of the mouth part of the container, and a top wall provided at a top end of said cylindrical drum part;

wherein said top wall has a window part formed therethrough;

wherein said protection cover comprises a top plate mounted over the top wall of said cap base part and has an area larger than an area of said window part so as to cover said window part and at least a portion of said top wall outside of said window part;

wherein said binding part comprises plural bridging parts securing said top plate to said top wall in such a manner that said top plate can be readily detached from said top wall of said cap base part by imposing a force in a predetermined direction to break said bridging parts; and

wherein said bridging parts connect between an outer edge of the window part and a lower end of said top plate.

5,823,374

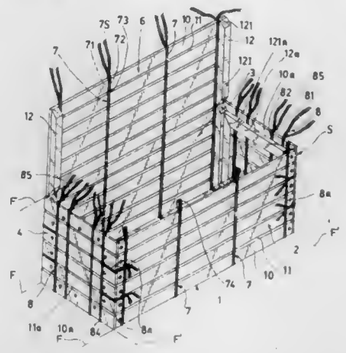
COLLAPSIBLE BOX FORMED WITH BAMBOO STRIPS

Jack Chieh-Yuan Wu, P. O. Box 55-846, Taipei, Taiwan

Filed Apr. 29, 1997, Ser. No. 848,645

Int. Cl.[6] B65D *6/20*

U.S. Cl. 217—51 **5 Claims**



1. A collapsible box comprising:

a bottom panel (**1**), a front panel (**2**), and a rear panel (**3**) respectively hingedly connected to a front side and a rear side of the bottom panel (**1**), a left-side panel (**4**) hingedly connected to a left side of the bottom panel (**1**), a right-side panel (**5**) hingedly connected to a right side of the bottom panel (**1**), and a top panel (**6**) hingedly connected to the rear panel (**3**), whereby upon folding and assembly of said panels (**1**, **2**, **3**, **4**, **5** and **6**), a box of parallelepiped shape is formed;

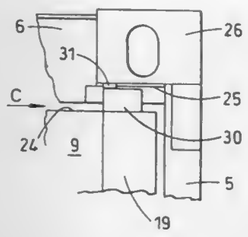
each said panel of the bottom panel (**1**), the front panel (**2**), the rear panel (**3**) and the top panel (**6**) including: a plurality of bamboo strips (**10**) juxtapositionally connected by a plurality of fastening members (**7**), a plurality of ventilation apertures (**11**) formed in each said panel each said aperture (**11**) formed between every two neighboring bamboo strips (**10**) for ventilation, and at least two reinforcing ribs (**12**) respectively transversely secured on two opposite end portions of each said panel (**1**, **2**, **3**, **6**) by a plurality of joining elements (**9**), each said reinforcing rib (**12**) perpendicular to each said bamboo strip (**10**); and each said reinforcing rib (**12**) having a pair of acute-angle portions (**121**) disposed on two opposite end portions of each said rib (**12**), each said acute angle portion (**121**) defining 45 degrees from a bottom surface of each said panel (**1**, **2**, **3**, **6**), whereby upon assembly of two said panels neighboring each other, the two acute-angle portions (**121**) of two neighboring reinforcing ribs (**12**) will form a right angle to form a right-angle eblow portion of the two neighboring reinforcing ribs by assembling the two said panels to be perpendicular to each other; whereby upon folding of said bottom, front, rear, and top panels, a pair of rectangular frames each consisting of four said reinforcibg ribs (**12**) are formed in a left and right side of said box for forming a strong and stable box when further assembled with said right-side and left-side panels;

each said fastening member (**7**) including: a lower belt (**71**), and an upper belt (**72**) for sandwiching each said bamboo strip (**10**) between the lower and upper belts (**71**, **72**) having a joining portion (**73**) of each said belt (**71**, **72**) between two neighboring bamboo strips (**10**) joined together and each said joining portion (**73**) positioned in each said aperture (**11**) between the two neighboring bamboo strips (**10**), a loop portion (**74**) formed on a first end of the fastening member (**7**), and a tail portion (**75**) formed on a second end of the fastening member (**7**) for tying a knot with the loop portion (**74**) for fastening said panels (**1**, **2**, **3**, **6**) together in order to assemble a box; and

each said side panel of the left-side panel (**4**) and the right-side panel (**5**) including: a plurality of bamboo strips (**10***a*) juxtapositionally connected by a plurality of fastening members

(8); a plurality of apertures (11*a*) formed in each said side panel, each said aperture (11*a*) defined between every two neighboring bamboo strips (10*a*) for ventilation; and four side reinforcing ribs (12*a*) forming an inner rectangular frame and fixed on each said side panel (4, 5) by screws (9) with each said side reinforcing rib (12*a*) separated from an outermost edge of each said side panel (4, 5) at a distance (D) which is equal to a height (H) of each said reinforcing rib (12) secured on each said panel of said bottom, front, rear and top panels (1, 2, 3, 6), whereby upon assembly of a box, the inner rectangular frame formed by the four side reinforcing ribs (12*a*) in each said side panel (4, 5) will be engaged within an outer rectangular frame formed by the four reinforcing ribs (12) of the bottom, front, rear and top panels (1, 2, 3, 6) for a tight and stable assembly of the box.

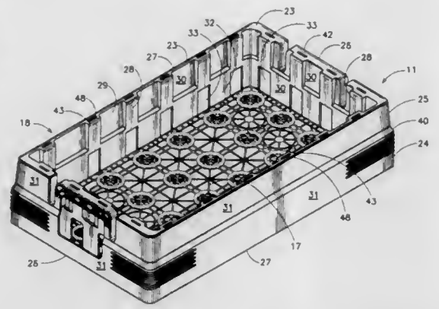
5,823,375
CARGO CONTAINER
Stanley Nessfield, Bainton, Great Britain, assignor to Sea Containers Ltd., London, United Kingdom
Filed Jul. 28, 1997, Ser. No. 901,197
Claims priority, application United Kingdom, Aug. 1, 1996, 9616146
Int. Cl.[6] B65D *90/62*
U.S. Cl. 220—1.5 **15 Claims**



1. A cargo container having a bottom, side walls and a top within a frame, the frame incorporating castings known per se for stacking one container upon another, a door mounted at least partially within the frame to define a peripheral gap between the frame and at least part of the door and support means located on at least one of the door and the frame partially to extend across the peripheral gap only in the vicinity of the castings when the container is not under an external load, wherein when the door is closed and a load is applied externally to the container to distort the frame, the support means engages an opposite side of the peripheral gap, so that the support means and door together share loading forces of the external load with the frame.

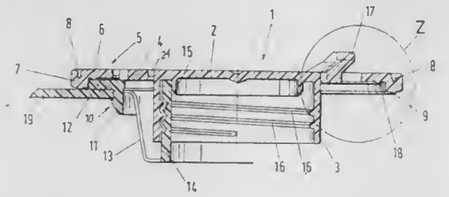
5,823,376
NESTABLE CRATE FOR BEVERAGE BOTTLES
Patrick James McGrath, Orlando, Fla., assignor to Alpha Holdings, Inc., Dallas, Tex.
Filed Nov. 6, 1996, Ser. No. 746,075
Int. Cl.[6] B65D *21/00*
U.S. Cl. 220—516 **38 Claims**

1. A nestable crate for bottles, said crate comprising:
a. a horizontally disposed floor having a top surface and a bottom surface;
b. a retainer wall integrally attached to the floor and extending along a periphery of said floor, said retainer wall having an upper portion, a lower portion, an interior surface and an exterior surface;
c. means, formed in the interior surface of the upper portion of the retainer wall, for contacting each bottle adjacent the retainer wall at a tangency point and a line of contact between



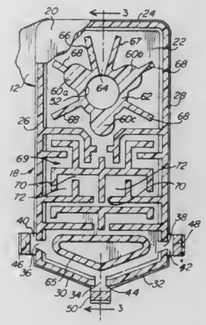
the bottles and the retainer wall that is substantially parallel to the interior surface of the retainer wall, wherein said bottle contact means includes a plurality of spaced-apart tangency pads integrally formed on the interior surface of said retainer wall; and
d. a nesting window formed in the interior surface of the lower portion of said retainer wall below each tangency point.

5,823,377
SCREW CAP HAVING A TAMPER RESISTANT CONNECTION TO A PLASTIC CONTAINER
Günter Jakob Krautkrämer, Budenheim, Germany, assignor to Jacob Berg GmbH & Co. KG, Budenheim, Germany
Filed Mar. 24, 1995, Ser. No. 410,320
Claims priority, application Germany, Mar. 28, 1994, P 44 10 790.0
Int. Cl.[6] B65D *17/32;17/40;41/34*
U.S. Cl. 220—268 **10 Claims**



1. A two part plastic closure for use on an opening in a container surface, said closure comprising:
a) a lower closure part including:
i) a pouring spout having a thread; and
ii) a sealing foot for engagement with said opening, said sealing foot having a flange for contact with the container surface surrounding said opening said sealing foot being integrally connected with said pouring spout; and
b) a screw cap in engagement with the thread of said pouring spout, wherein the screw cap is provided with an extension which is at least partially covering and radially extending over the flange of said sealing foot, said extension being provided for and adapted to be welded to the material of the surface of said plastic container wherein said extension is integrally connected to said screw cap by means of easy tearable tabs and completely separable therefrom by breaking said tabs.

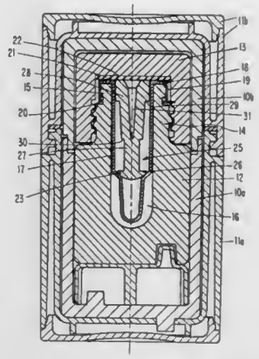
5,823,378
BREATHER VENT FOR ELECTRICAL ENCLOSURE
David A. Evarts, Fairfield; Charles R. Ruskouski, Danbury, and John Cutone, Old Lyme, all of Conn., assignors to GSEG LLC, Farmington, Conn.
Filed Mar. 27, 1997, Ser. No. 826,254
Int. Cl.[6] B65D *51/16*
U.S. Cl. 220—374 **13 Claims**



1. A breather vent box for use with an electrical housing forming an enclosure, the electrical housing having at least one substantially vertical wall defining a vent opening therein for admitting and discharging gases and ambient air, comprising:
an upper breather opening in said box sealable to said vent opening in fluid flow relationship therewith;
a lower breather opening in said box communicating with said ambient air;
a plurality of walls within said box forming a labyrinth ascending from said lower breather opening to said upper breather opening; and
a shield including a wall external of said box positioned adjacent to, and spaced from, said lower breather opening in blocking relationship to liquid flow into said lower breather opening but permitting liquid flow out of said lower breather opening.

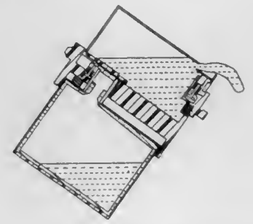
5,823,379
SEALED CONTAINER FOR HAZARDOUS MATERIAL
Uri Friedlander, London, and Richard Ashley Stubbs, Tring, both of United Kingdom, assignors to Amersham International plc, Buckinghamshire, United Kingdom
Continuation of Ser. No. 416,896, Apr. 18, 1995, abandoned. This application May 22, 1997, Ser. No. 861,850
Claims priority, application United Kingdom, Oct. 20, 1993, 9321612
Int. Cl.[6] B65D *43/04*
U.S. Cl. 220—408 **11 Claims**

1. A container defining a cavity with an opening to a neck, and having a cap releasably secured on the neck covering the opening, a liner disposed within the cavity and including an end flange by which the liner is supported from the upper end of the neck, an inner end, a liquid containing cavity at the inner end, an annular shoulder located internally and spaced from the inner end, the annular shoulder facing towards the end flange, and a sealing element comprising a head adapted to abut the annular shoulder and to form a liquid-tight seal therewith and a stem extending towards the end flange, an outer end of the stem being arranged for engagement with an underside of the cap such that when the cap is secured on the neck the head of the sealing element is held in sealing engagement with the annular shoulder, wherein said stem of said sealing element is smaller in outer diameter than said head



of said sealing element, and said stem extends away from said head for engagement with an underside of the cap.

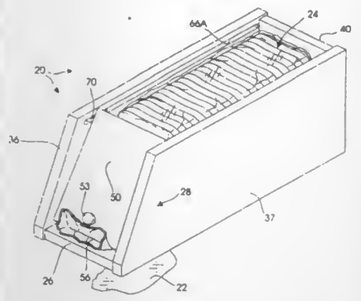
5,823,380
THERMAL COMBINATION CUP AND FLUID CONTAINER RECEPTACLE
Kingsley James Arthur Cox, 9 New York Ave., Stony Brook, N.Y. 11790
Continuation of Ser. No. 499,276, Jul. 7, 1995, abandoned. This application Jun. 24, 1997, Ser. No. 881,637
Claims priority, application United Kingdom, Jul. 12, 1994, 9414002
Int. Cl.[6] B67D *5/62*
U.S. Cl. 220—502 **20 Claims**



1. A fluid receptacle comprising a fluid holding compartment and a cup compartment, connectable with one another by an inter compartment aperture, first closure means movable between a closed position closing the aperture to seal the compartments from one another and an open position allowing fluid to flow from the holding compartment to the cup compartment under gravity when the holding compartment is above the cup compartment, first opening means operable from the exterior of the receptacle for moving the first closure means to the open position, the cup compartment being substantially closed and defining a dispensing opening around which the lips of one's mouth may be placed and through which liquid in the cup compartment can be drunk, and second closure means integrally mounted to the cup compartment for closing and opening the dispensing aperture.

5,823,381
LOAF SEALING BREAD BOX
Todd H. Ashley, and Charles R. Wood, both of North Little Rock, Ark., assignors to Bread Shed Inc., North Little Rock, Ark.
Filed Jan. 11, 1997, Ser. No. 782,907
Int. Cl.[6] B65D *25/10*
U.S. Cl. 220—559 **7 Claims**

1. A bread box for storing a loaf of bread, said box comprising:



a base adapted to be disposed upon a supporting surface, said base comprising a pair of edges and a front and rear;

a pair of upstanding, parallel sides disposed on opposite edges of said base each side comprising a top configured with a follower;

a handle slidably disposed at the top of the box, the handle comprising opposite ends having channel means for receiving and captivating the followers on said sides;

a front door pivotally coupled to said handle between said sides, said door pivotal between a closed position contacting said base and an open position;

whereby when a wrapped loaf of bread is stored in said bread box at least a portion of the loaf wrapper is pressed between the base and the door when the door is in said closed position, and, when the door assumes said open position, the bread loaf is partially exposed for withdrawing at least one slice of bread.

5,823,382

BASEPLATE FOR A PALLET CONTAINER

Maurice Gerardus Maria Van Giezen, Santpoort-Zuid, and Harald Feijth, Utrecht, both of Netherlands, assignors to Koninklijke Emballage Industrie Van Leer B.V., Amstelveen, Netherlands

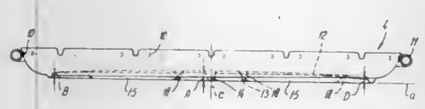
PCT No. PCT/NL95/00427, § 371 Date Jul. 10, 1997, § 102(e) Date Jul. 10, 1997, PCT Pub. No. WO96/19397, PCT Pub. Date Jun. 27, 1996

PCT Filed Dec. 19, 1995, Ser. No. 860,166

Claims priority, application Netherlands, Dec. 19, 1994, 9402155

Int. Cl.[6] B65D *21/02*

U.S. Cl. 220—571 **8 Claims**



1. A pallet container having a substantially rectangular periphery and including a foot section, a baseplate on the foot section and a container section supported on the baseplate, wherein said baseplate comprises:

a recess in a first side of the baseplate arranged to accommodate therein a valve for the container section;

a gutter at a periphery of the baseplate sloping in a downward direction toward said first side from a second side of the baseplate opposite thereto; and

a bearing surface, on which the container section is supported, that slopes downwardly from a longitudinal center line to the periphery in a direction substantially perpendicular to said center line and ending in said gutter, wherein said center line extends between said first and second sides of the baseplate.

5,823,383

PLASTIC WELD POURER COMPONENT

Johannes Hins, Sundern, Germany, assignor to Georg Menshen GmbH & Co. KG, Finnentrop, Germany

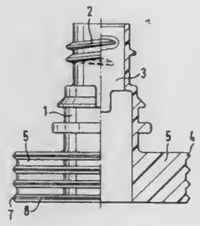
PCT No. PCT/EP96/01931, § 371 Date Apr. 10, 1997, § 102(e) Date Apr. 10, 1997, PCT Pub. No. WO96/38349, PCT Pub. Date Dec. 5, 1996

PCT Filed May 8, 1996, Ser. No. 776,187

Claims priority, application Germany, Jun. 2, 1995, 295 09 118.5

Int. Cl.[6] B65D *6/40*

U.S. Cl. 220—601 **9 Claims**



1. A plastic weld pourer component for connecting to a plastics container part made of film-like plastics material by welding, comprising:

a tubular neck portion defining an elongated axial through-passage to serve as a discharge passage;

at least one welding rib formed as one piece with the neck portion and circumferentially extending thereabout, said welding rib including a thick-walled rib base portion radially protruding outwardly from an outer surface of the neck portion and having a peripheral outer edge, and a thin-walled welding flash formed as one piece with said rib base portion on the peripheral outer edge thereof and having a smaller radial dimension than that of the rib base portion;

wherein a ratio of an axial dimension of the welding flash relative to an axial dimension of the rib base portion immediately adjacent the peripheral outer edge thereof is between approximately 1:3 and 1:10.

5,823,384

DRINKING INSERT FOR CANS CONTAINING BEVERAGES

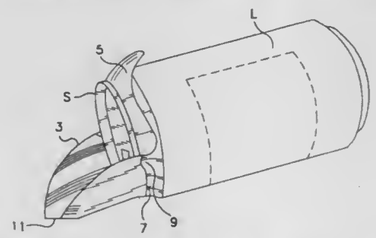
Carmen Maria Sartori de Zamparolo, Malaver 1946 piso 2° Florida, (1642) Buenos Aires, Argentina

Filed Nov. 11, 1997, Ser. No. 967,507

Claims priority, application Argentina, Jan. 23, 1997, M97 01 00286

Int. Cl.[6] B65D *25/48*

U.S. Cl. 220—717 **3 Claims**



1. Drinking insert for cans containing beverages, of the kind intended for drinking the contents of the can directly and for being disposed after use, characterized by comprising a flexible laminar body with oval contour defined by circle arcs of different diameter, asymmetrical as per its excentric larger axis, such that at one side thereof the semi-circular permietral contour has, mating with the smaller axis of the laminar body, a substantially triangular projecting tab, at a short distance from the perimeter there being an opening defined by a concentrical semicircular line with respect to the adjacent perimetral portion, extending until it joins another opposite line of straight contour mating with the larger axis, wherein the cut is made with a small diameter semicircular shape at the extreme joining points; the portion opposite to said longer axis of the larger surface of the oval laminar body having a radius smaller than the former one and is flattened through a chord parallel to the larger axis.

5,823,385

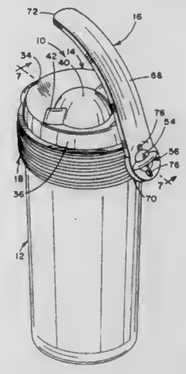
CONTAINER WITH TWO POSITION HANDLE

Victor J. J. Cautereels, Ranst, Belgium, assignor to Dart Industries Inc., Orlando, Fla.

Filed Apr. 3, 1997, Ser. No. 832,541

Int. Cl.[6] B65D *25/00*

U.S. Cl. 220—762 **19 Claims**



1. A container for fluent materials, said container comprising a container body having an upper end portion defining an upwardly opening mouth, an elongate handle having opposed first and second ends, and a post mounted on said container body below said mouth and extending along an axis extending laterally of said container body, said post securing said first end of said handle to said container body selectively in a plurality of adjusted positions relative to said container body, said positions being defined by rotation of said handle about said axis of said post, and said positions extending between a first pouring position in which said handle depends from said post generally adjacent said container body with said second end of said handle being free and below said first end thereof, and a second bail position in which said handle extends upward from said post with said second end of said handle being free and over said upwardly opening mouth in spaced relation above said container body.

5,823,386

REWARD CANDY DISPENSER FOR PERSONAL COMPUTERS

Anthony Peter Vandenberg, C-201 Nagamura Mansion 3423-1 7-ku, Kitacho, Japan

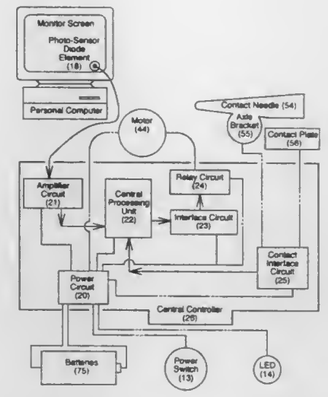
Filed Feb. 10, 1997, Ser. No. 798,045

Int. Cl.[6] B65D *83/04*

U.S. Cl. 221—2 **1 Claim**

1. A personal computer peripheral, battery powered reward candy dispenser for use with educational application software compromising:

a) a transparent plastic upper supply compartment with a transparent threaded plastic cap for storing a plurality of the same size candies,



b) a transparent plastic lower compartment base stand for housing the dispenser components,

c) a suction-cup, monitor screen attachable photo-sensor device for detecting a designated personal computer generated light intensity actuation signal,

d) a central controller for receiving, confirming, and converting said actuation signal into a dispense motor activation command,

e) a motor and transparent plastic gear means for rotating a transparent plastic, gravity-fed, multiple-chambered dispense drum under a transparent plastic chute ceiling and above a transparent plastic drop chute for controlled dispense,

f) integral agitator rods on said dispense drum for agitating stored said candies and preventing the formation of bridging cavities in said supply compartment above said chambered dispense drum,

g) a pivoting, drop contact displacement device for detecting the dispense of one said candy and signaling said central controller to stop power to said motor limiting said controlled dispense to one said candy per said actuation signal,

h) a transparent plastic dispense port for reception of a plurality of dispensed said candies,

i) a main power switch and a light emitting diode to display that said power switch is on,

whereby said candy reward dispenser will entertain and intrigue students with visible dispense processes, and

whereby said candy reward dispenser will present students with a single said candy for each problem answered correctly thereby rewarding the students and motivating continued utilization and increased effectiveness of said educational application software.

5,823,387

METHOD AND APPARATUS FOR SIMULTANEOUSLY DISPENSING VISCOUS MATERIALS

Benjamin Yap Manadanas, Freehold; James Michael Skaggs, Bayonne; Sean Patrick O'Sullivan, Edison, and Christopher John Hedin, Bridgewater, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 18, 1993, Ser. No. 63,202

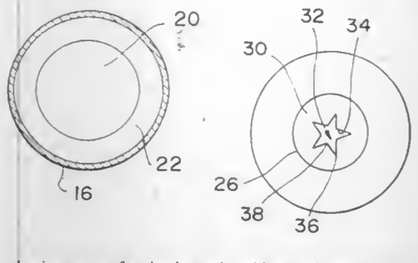
Int. Cl.[6] B65D *35/00*

U.S. Cl. 222—1 **7 Claims**

1. A method of dispensing viscous materials comprising

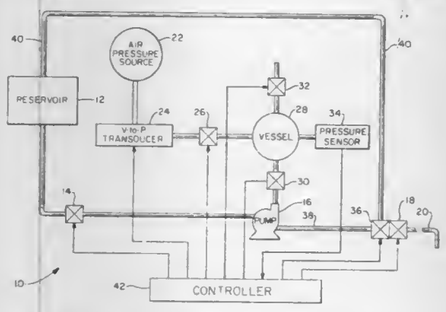
providing a container having a core of a first viscous material and a second viscous material surrounding said core; and

dispensing said first and second materials simultaneously through a dispensing means, said dispensing means including



shaping means for shaping only said second material to form a plurality of stripes on said first material.

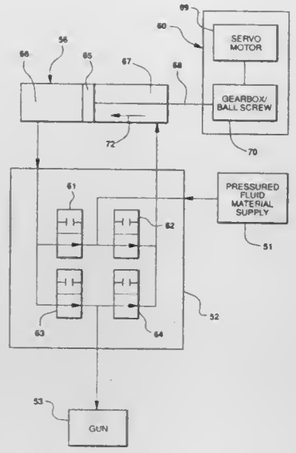
5,823,388
LIQUID DISPENSER HAVING FLOW RATE COMPENSATION
Thomas S. Green, Atwater, Ohio, assignor to ABC TechCorp, Akron, Ohio
Filed Nov. 18, 1996, Ser. No. 746,816
Int. Cl.[6] B67D *5/08*
U.S. Cl. 222—1 **16 Claims**



1. A method of dispensing a predetermined quantity of a liquid from a pump, comprising:
recirculating the liquid from the pump to a reservoir through a first flow path for a set period of time;
determining the volume of liquid recirculated by the pump in said set period of time;
determining a flow rate of the liquid through said first flow path; and
dispensing the liquid from the pump through a second flow path, substantially identical to said first flow path, for a period of time sufficient to dispense the predetermined quantity of fluid at said flow rate.

5,823,389
APPARATUS AND METHOD FOR DISPENSING FLUID MATERIAL
Raymond J. Guzowski, Fenton, Mich., assignor to Fanuc Robotics North America, Inc., Auburn Hills, Mich.
Filed Dec. 26, 1996, Ser. No. 773,141
Int. Cl.[6] G01F *11/00*
U.S. Cl. 222—1 **14 Claims**

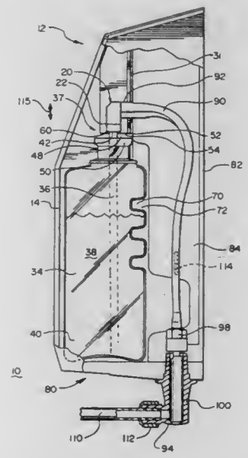
1 An apparatus for dispensing fluid material from a dispensing gun onto a workpiece comprising:
a metering means (**56**,**60**) having a metering chamber formed therein and a pair of inlet/outlet ports, said metering chamber having a pair of variable volume chamber portions (**66**,**67**) each being in fluid communication with an associated one of said inlet/outlet ports;



a valve means (**52**,**59**) having an inlet port connectable to a supply of fluid material (**51**), an outlet port connectable to a dispensing gun (**53**), and a pair of inlet/outlet ports each connected to an associated one of said metering means inlet/outlet ports and being in fluid communication with an associated one of said chamber portions (**66**,**67**); and
a control means (**58**) connected to said metering means (**56**,**60**) and to said valve means (**52**,**59**) whereby when said valve means inlet port is connected in fluid communication with the supply of fluid material (**51**) and said valve means outlet port is connected to the dispensing gun (**53**), said control means controls said metering means and said valve means in a first mode of operation to draw fluid material from the supply of fluid material through said valve means into a first one (**66**) of said chamber portions and to force fluid material from a second one (**67**) of said chamber portions through said valve means and out said valve means outlet port to the dispensing gun, in a second mode of operation to draw the fluid material from the supply of fluid material through said valve means into said second one of said chamber portions and to force the fluid material from said first one of said chamber portions through said valve means and out said valve means outlet port to the dispensing gun, and in a third mode of operation to force the fluid material in said metering means from one of said chamber portions into the other one of said chamber portions through said valve means without forcing the fluid material from said valve means outlet port to the dispensing gun.

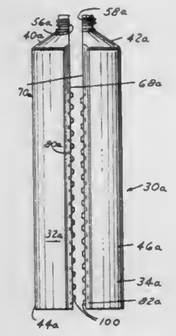
12. An method for dispensing fluid material from a dispensing gun onto a workpiece comprising the steps of:
a. providing a metering means (**56**,**60**) having a metering chamber formed therein and a pair of inlet/outlet ports, said metering chamber having a pair of variable volume chamber portions (**66**,**67**) each being in fluid communication with an associated one of said inlet/outlet ports;
b. providing a valve means (**52**,**59**) having an inlet port, an outlet port and a pair of inlet/outlet ports each connected to an associated one of the metering means inlet/outlet ports and being in fluid communication with an associated one of the chamber portions (**66**,**67**), connecting the inlet port to a supply of fluid material (**51**) and connecting the outlet port to a dispensing gun (**53**);
c. providing a control means (**58**) and connecting the control means to the metering means (**56**,**60**) and to the valve means (**52**,**59**);
d. operating the control means (**58**) to control the metering means (**56**,**60**) and the valve means (**52**,**59**) in a first mode of operation to draw fluid material from the supply of fluid material (**51**) through the valve means into a first one (**66**) of the chamber portions and to force fluid material from a second one (**67**) of the chamber portions through the valve means and out the valve means outlet port to the dispensing gun (**53**);
e. operating the control means (**58**) to control the metering means (**56**,**60**) and the valve means (**52**,**59**) in a second mode of operation to draw the fluid material from the supply of fluid material (**51**) through the valve means into the second one (**67**) of the chamber portions and to force the fluid material from the first one (**66**) of the chamber portions through the valve means and out the valve means outlet port to the dispensing gun (**53**); and
f. operating the control means (**58**) to control the metering means (**56**,**60**) and the valve means (**52**,**59**) in a third mode of operation to force the fluid material in the metering means from one of the chamber portions (**66**,**67**) into the other one of the chamber portions through the valve means without forcing the fluid material from the valve means outlet port to the dispensing gun (**53**).

5,823,390
CHEMICAL DISPENSING APPARATUS HAVING A PIVOTAL ACTUATOR
Kenneth J. Muderlak, Shorewood, Wis., and Rocky Sheih, Hsin Chu, Taiwan, assignors to Technical Concepts, L.P., Mundelein, Ill.
Filed Oct. 6, 1995, Ser. No. 540,235
Int. Cl.[6] B67D *5/22*
U.S. Cl. 222—38 **37 Claims**



1. An actuator system for a fluid dispensing apparatus, the fluid dispensing apparatus including a fluid-containing vessel and a housing, the system comprising:
an actuator nozzle having a receiving aperture and a dispensing aperture, the receiving aperture operatively coupled to the vessel to receive the fluid contained in the vessel;
the dispensing aperture in operative communication with the receiving aperture;
the dispensing aperture connected to a conveying tube to direct the fluid from the vessel, through the conveying tube and into a fluid receiving receptacle;
ejecting means operatively coupled to the actuator nozzle to eject the fluid from the vessel into the actuator nozzle and into the conveying tube;
the actuator nozzle being slidingly and pivotally mounted in the housing and configured to slide vertically relative to the housing and to pivot outwardly relative to the housing to permit reciprocal engagement and disengagement of the vessel from the actuating nozzle while maintaining communication between the actuating nozzle and the conveying tube; and the actuator nozzle remaining in an upward and outwardly pivoted position when the actuator nozzle is pivoted outwardly and the vessel is disengaged from the actuator nozzle to facilitate reengagement of a replacement vessel with the actuator nozzle.

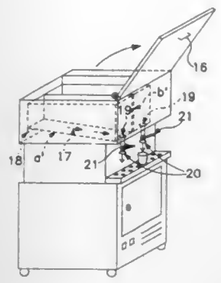
5,823,391
DUAL CHAMBER FLEXIBLE TUBE DISPENSING PACKAGE AND METHOD OF MAKING
Christian W. Klauke, and Igor F. Beaufils, both of Toledo, Ohio, assignors to Owens-Brockway Plastic Products Inc., Toledo, Ohio
Filed Sep. 4, 1996, Ser. No. 707,564
Int. Cl.[6] B65O *35/22;21/02*
U.S. Cl. 222—94 **15 Claims**



1. A dual chamber dispensing package comprising:
pair of plastic tubes,
each said tube comprising a rigid finish, a shoulder adjacent to the finish and a thin flexible body extending from said shoulder,
said finish, said shoulder and said body of each said flexible tube having a generally flat wall and an integral interconnecting wall extending from said flat wall,
said flat wall of each said tube body having a plurality of axially spaced transversely extending integrally formed ribs,
said flat walls being in abutting relation with the ribs on one tube nesting between adjacent ribs on the other tube.

5,823,392
YOGURT/ CEREAL GRAIN MIXTURE DISPENSING MACHINE
Carlos Cano Madico, Lima, Peru, assignor to Paquetes Especiales S.R.L., Lima, Peru
Filed Mar. 21, 1996, Ser. No. 622,336
Int. Cl.[6] B67D *5/56*
U.S. Cl. 222—129 **7 Claims**

1. A stand-alone dispenser apparatus for the storage and controlled dispensing of both flowable and granular edible products which comprises an upright housing that defines a front side, a rear side and opposite left and right sides and which includes an upwardly open upper section, a middle section and a lower section,
said middle section defining a shelf at said front side of said housing on which a food container can be positioned, and
said upwardly open upper section defining first, second and third parallel compartments which extend from said rear side to said front side of said housing, and including a first flowable product receptacle which is positioned in said first compartment, said first flowable product receptacle including a dispensing means located above said shelf for dispensing a first flowable product into a food container located therebelow; a second flowable product receptacle which is positioned in said



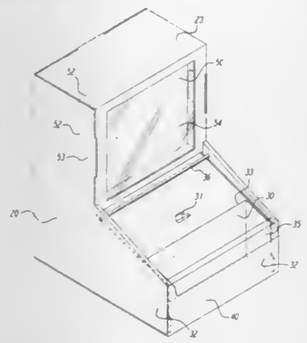
second compartment, said second flowable product receptacle including a dispensing means located above said shelf; and a granular product delivery means located in said third compartment, said granular product delivery means including a vertically-oriented funnel hopper, a horizontally-slidable plate with a bore located beneath the funnel hopper and an operating means for sliding said plate so that said bore can be reciprocally displaced from beneath said funnel hopper to above said shelf to deliver a controlled volume of granular product from said funnel to a food container located on or above said shelf.

5,823,393

DISPOSABLE PACKAGE AND DISPENSER

Torvid Hafstrom, Stockholm, Sweden, assignor to The Scandinavian Candy Co., Inc., Sun Valley, Calif.

Filed Aug. 29, 1997, Ser. No. 920,925
Int. Cl.[6] B67D *5/60*
U.S. Cl. 222—130 **18 Claims**



18. A disposable candy dispenser made of inexpensive materials and comprising:

an internal space defined by a plurality of fixed walls and an open dispensing area covered by a clear plastic pivoting dispensing lid, said open dispensing area located towards the front of the dispenser;

said plurality of fixed walls including a front wall having slots;

a removable divider positioned within said internal space so as to define and separate from each other a closed primary candy storage region and a receiving region, said primary storage region being filled with candy and closed off from said open dispensing area by said divider, and said receiving region being devoid of candy;

said removable divider including extensions that extend forwardly and have forward edges abutting against a front wall of the dispenser;

said extensions each including a tab inserted into said slots of said front wall; and

a visible candy window including:

a closed internal window space having a volume equal to that of said receiving region, said internal window space being filled with candy;

a translucent window pane located in a visible position of said dispenser and defining a side of said internal window space;

perforations running the length of one side of said internal window space; and

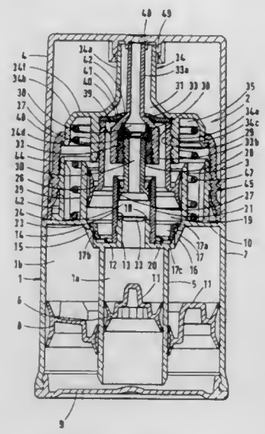
a finger tab adjacent to said perforation.

5,823,394

DISPENSING DEVICE FOR TWO FLUID MATERIALS

Adrian Francis Davis, Weybridge, England; Willy Lorscheidt, Cologne, Germany, and David Reed Wilkins, Brentford, England, assignors to SmithKline Beecham p.l.c., Brentford, England

Division of Ser. No. 438,222, May 9, 1995, which is a continuation of Ser. No. 39,001, May 19, 1994, abandoned. This application Nov. 26, 1996, Ser. No. 757,031
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—137 **2 Claims**



1. A dispenser for dispensing together a first fluid material and a second fluid material, comprising a first material supply chamber and a second material supply chamber for respectively containing said first and second fluid materials,

a head piece which comprises a first pump chamber having a first pump piston slidably arranged therein, and being connected to a first discharge channel which comprises an outlet portion for the first fluid material, and to the first material supply chamber, and a second pump chamber having a second pump piston slidably arranged therein, and being connected to a second discharge channel which comprises an outlet portion for the second fluid material and to the second material supply chamber, the pump pistons being operable by hand action,

an end portion of said first discharge channel being formed by a discharge tube, and the second discharge channel is defined by a tubular body which surrounds said first discharge channel, the discharge tube being in a coaxial relationship within the surrounding tubular body, the second discharge channel being defined by an annular space between the discharge tube and the surrounding tubular body such that the second discharge channel is separated from the first discharge channel by the discharge tube so there is no premixing of the first and second fluid materials within the dispenser,

wherein the first pump chamber communicates with the first material supply chamber via a first non-return valve biased to allow passage of the first material only from the first material supply chamber to the first pump chamber,

the second pump chamber communicates with the second material supply chamber via a second non-return valve biased to allow passage of the second material only from the second material supply chamber into the second pump chamber,

the first pump chamber communicates with the first discharge channel via a third non-return valve biased to allow passage of the first material only from the first pump chamber into the first discharge channel,

and the second pump chamber communicates with the second discharge channel via a fourth non-return valve biased to allow passage of the second material only from the second pump chamber into the second discharge channel,

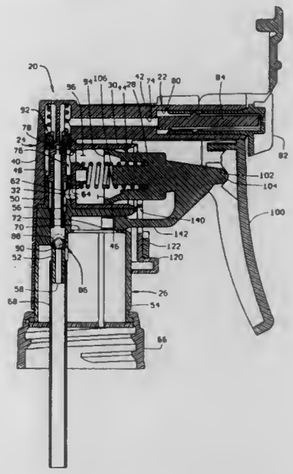
and said dispenser further containing the first and second fluid materials which are jelly-like materials, the viscosity of each component of which can vary independently.

5,823,395

CHILD-RESISTANT PUMP DISPENSER

Donald D. Foster, St. Charles, Mo.; Bert D. Heinzelman, Tenafly, N.J.; Donald R. Lamond, Lynbrook, N.Y., and William Fiebel, Passaic, N.J., assignors to Continental Sprayers International, Inc., St. Peters, Mo.

Filed Apr. 24, 1997, Ser. No. 847,450
Int. Cl.[6] B67D *5/40*
U.S. Cl. 222—153.02 **20 Claims**



1. A child-resistant liquid dispenser comprising:

a dispenser body having an intake port and a discharge port;

a pump mechanism adjacent the dispenser body, the pump mechanism including a moveable member, the moveable member being moveable relative to the dispenser body between first and second positions, the pump mechanism being configured to draw liquid into the intake port and discharge it through the discharge port upon movement of the moveable member between its first and second positions;

a first locking mechanism adjacent the pump mechanism and dispenser body, the first locking mechanism being moveable between locked and unlocked positions, the first locking mechanism being engageable with both the moveable member of the pump mechanism and the dispenser body when the first locking mechanism is in its locked position in a manner to prevent movement of the moveable member from its first position to its second position, the first locking mechanism being configured to permit movement of the moveable member between its first and second positions when the first locking mechanism is in its unlocked position; and

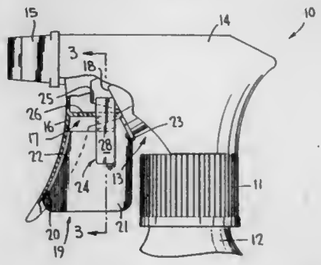
a second locking mechanism adjacent first locking mechanism, the second locking mechanism being configured to releasably engage the first locking mechanism in a manner to releasably retain the first locking mechanism in its locked position.

5,823,396

CHILD-RESISTANT LATCH FOR TRIGGER SPRAYER

Arno Vollmerhaus, Kierspe, and Karl-Heinz Blauert, Iserlohn, both of Germany, assignors to Calmar-Albert GmbH, Hemer, Germany

Filed Jun. 11, 1997, Ser. No. 873,251
Claims priority, application European Pat. Off., Oct. 24, 1996, 96117045
Int. Cl.[6] B67B *5/00*
U.S. Cl. 222—153.13 **8 Claims**



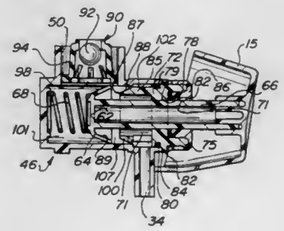
1. Removable latch means for use with a trigger actuated pump sprayer for rendering the sprayer child-resistant, the sprayer having a pump body which includes a pump cylinder, a pump piston reciprocable within said cylinder for therewith defining a variable volume pump chamber, a trigger lever pivotally mounted on said pump body and having tongue means engageable with said piston for reciprocation thereof upon manual trigger, actuation, the latch means comprising a body portion of plastic molded unitary construction extending between an underside of said lever and a confronting portion of said pump body in abutting engagement therewith for preventing trigger actuation, said latch means having a spring biased clamp molded integrally with said body portion and engaging said tongue means for removably securing said latch means to the sprayer.

5,823,397

PERSONAL HYGIENE LIQUIDS DISPENSER WITH AN IMPROVED VALVE SEAT

Amos Gil, Farmington Hills, Mich., assignor to Masco Corporation, Taylor, Mich.

Filed Apr. 15, 1997, Ser. No. 839,701
Int. Cl.[6] B67D *3/00*
U.S. Cl. 222—181.3 **9 Claims**



1. In a liquid dispenser valve characterized by:

a housing having an inlet connectable to a supply container, a cylinder sized to receive a plunger head and a discharge nozzle axially positioned along a forward position in said cylinder; a check valve mounted in said inlet to restrict the

flow of liquid upstream out of said inlet; a plunger mounted for axial movement in said cylinder; a return spring interposed between the plunger and a closed axial end of said cylinder for resiliently biasing and moving said plunger forwardly for a return stroke to a first axial position between said inlet and said discharge outlet and to allow a stroking motion to a rearward second axial position toward said inlet; said plunger having a head with a flexible skirt with an inner wall and outer wall, the flexible skirt when in the first axial position has its outer wall abutting against the cylinder wall to form a seal against leakage of liquid from a supply container to said discharge nozzle and when moved rearwardly to said second position being flexed inwardly to allow liquid to flow by said plunger head from said inlet to said discharge spout; said plunger having a plunger rod connected to said head that extends out of a front end of said cylinder and for manual access to push said plunger; a closure cap removably connected to a front end of said housing and about said plunger rod and having seals interposed between itself and said cylinder wall and said plunger rod; the improvement comprising:

an annular seat for said inner wall of said skirt for abutting said inner wall of the periphery of said plunger head when said plunger head is in said first axial position to bias said skirt outwardly to abut said cylinder wall such that a seal is formed between said skirt and said cylinder wall to prevent fluid from passing to said discharge nozzle when said plunger rests in said first axial position.

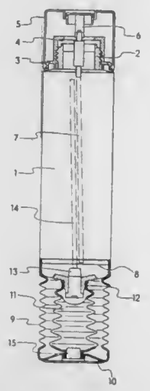
5,823,398
VALVE ASSEMBLY FOR DISPENSING CONDIMENTS
Rhonda L. Russillo, and Donald Russillo, both of 1403 Boreas Dr., Orlando, Fla. 32822
Filed Jul. 26, 1996, Ser. No. 686,520
Int. Cl.[6] B67D *5/06*
U.S. Cl. 222—185.1 **19 Claims**

1. An apparatus for dispensing preselected amounts of condiments comprising:

a chamber for storing a condiment having a granular size, the chamber having sides and a bottom; and

a push valve located in the bottom of the chamber, for filling and dispensing the condiment, the push valve having, an inner cylinder for sliding within an outer cylinder and a clearance therebetween, the clearance being smaller than the granular size, the outer cylinder having an upper portion with a first opening and a lower portion with a second opening, the upper portion extending into the chamber, the lower portion extending beneath and exterior to the chamber, the inner cylinder having an angled first through-hole with an entry port for receiving condiments when the entry port is aligned with the first opening, the first through-hole having an exit port for releasing the condiments when the exit port is aligned with the second opening.

5,823,399
CONTAINER ADAPTED FOR SPRAYING
Peter Gartner, Kirchgassweg 13, D-77815 Bühl, Germany
Filed Aug. 21, 1996, Ser. No. 700,968
Claims priority, application Germany, Aug. 26, 1995, 295 13 716.9
Int. Cl.[6] B65D *83/14*
U.S. Cl. 222—209 **2 Claims**



1. A container adapted for spraying having a top side, a bottom side, a bottom opening and an interior space and comprising:

a spray valve disposed on the top side;

a pumping device capable of generating excess air pressure in the container disposed on the bottom side of said container, said pumping device comprising an inner bellows and an outer bellows, the inner bellows having a bottom opening and being concentrically and tightly arranged inside the outer bellows, and wherein said outer bellows functions as a bottom cap;

a first valve arranged in the bottom opening of the container, said first valve capable of allowing air from the pumping device into the interior space of the container;

a second valve disposed in the bottom opening of the inner bellows, said second valve capable of allowing air only into and not out of the inner bellows;

a short attachment tube inserted into the bottom opening of the container and attached to the first valve, wherein the inner bellows is placed over the attachment tube; and

a rising tube having two ends, the first end being connected to the first valve and the second end extending into the interior space of the container,

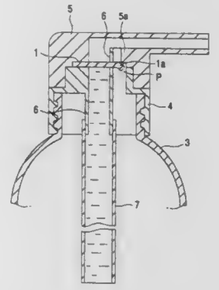
such that lifting the container allows air to enter the inner bellows through the second valve, and pressing the container down against a support forces air from the inner bellows through the first valve into the interior space of the container.

5,823,400
CONTAINER HAVING NOZZLE PLATE WITH ENGAGEMENT CANCELLATION
Toshiyuki Omori, and Yoshinori Inagawa, both of Tokyo, Japan, assignors to Kao Corporation, Tokyo, Japan
Filed Jul. 17, 1996, Ser. No. 682,168
Claims priority, application Japan, Aug. 21, 1995, 7-211834; Apr. 16, 1996, 8-093771
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—318 **6 Claims**

1. A container comprising:

a container body having an opening;

a plate member which is made of a deformable material and which has a cutaway portion disposed for supplying a liquid in the container body to said opening;

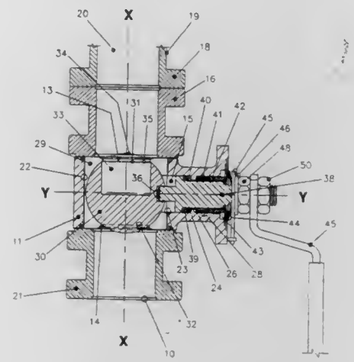


a nozzle disposed on said container body, said plate member being attached to said nozzle, said nozzle having a nozzle hole communicated with said cutaway portion,

an engagement cancellation portion in said plate member where engagement between said plate member and said nozzle can be cancelled toward said container body; and

means for communicating the liquid in the container body with said cutaway portion and not for communicating the liquid with said engagement cancellation portion.

5,823,401
SAMPLING AND DISPENSING BALL-VALVE
Roy F. Zgoda, 3601 Four Rod Rd., East Aurora, N.Y. 14052
Filed Jul. 11, 1996, Ser. No. 678,342
Int. Cl.[6] G01F *11/10*
U.S. Cl. 222—333 **9 Claims**



1. A ball-valve, comprising:

a body having an inner surface and an outer surface, said inner surface extending between a first end and a second end;

a two-piece sleeve arranged within said body, each sleeve part having an inwardly-facing spherically-segmented surface;

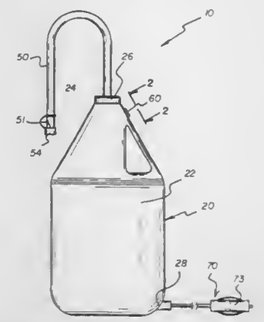
a ball rotatably mounted within said sleeve parts, said ball having a blind-bore of a known volume, said spherically-segmented surfaces sealingly engaging at least one-quarter of the surface area of said ball;

said ball adapted to be rotated between a first position, in which said blind-bore communicates with said first end, and a second position, in which said blind-bore communicates with said second end;

said sealing engagement between said spherically-segmented surfaces and said ball being maintained during rotation of said ball between said first and second positions;

whereby rotation of said ball between said first and second positions is adapted to move a predetermined volume from communication with said first end to communication with said second end.

5,823,402
FLUID DISPENSING SYSTEM
Daniel C. Moyer, and Robert W. Moyer, both of 115 Arthur St., Kittanning, Pa. 16201
Filed Nov. 6, 1996, Ser. No. 764,063
Int. Cl.[6] B67D *5/40;5/58*
U.S. Cl. 222—383.1 **13 Claims**



1. A portable fluid dispensing system totable by the hand of the user during operation of said fluid dispensing system said system comprising:

a container having an integral handle and a neck, said container defining an interior;

a container cap having a hole therethrough, said container cap matingly fitting on said neck of said container;

a pump located in the interior of said container;

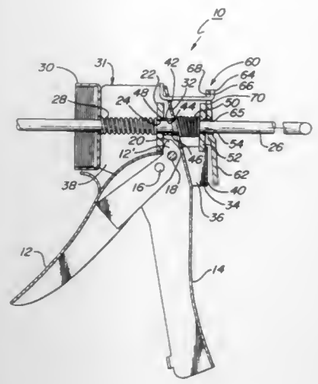
an intake hose operably coupled to said pump, said pump and said intake hose positioned in said container;

an outlet hose operably coupled to said pump, said outlet hose exiting said container through said hole in said container cap;

a control switch for activating said pump, said control switch being mounted on said container in a position proximate to said handle such that said control switch can be manipulated by a finger of a hand of a user while said hand grips said handle of said container.

5,823,403
HIGH THRUST DRIVE SYSTEM AND DEVICES EMPLOYING
Mark C. Schneider, Moorestown, N.J., assignor to Albion Engineering Company, Philadelphia, Pa.
Filed Jan. 16, 1997, Ser. No. 783,806
Int. Cl.[6] B67D *5/42*
U.S. Cl. 222—391 **8 Claims**

1. A high thrust drive system including a driving rod member, an actuating member including a trigger mounted for movement about a pivot axle and including a gripping section spaced from the pivot axle for engagement by a user's hand to move said trigger about said pivot axle through a driving stroke and a return stroke, said gripping section of said trigger being disposed adjacent to and forwardly of a handle that is engageable by the user's hand employed to move the trigger, a gripping plate having a passage therein through which the driving rod extends for gripping the driving rod and moving said rod in a forward, thrust-applying direction during the driving stroke of the trigger, said trigger including a section that is spaced from the gripping section for engaging the gripping plate to impose a high thrust on the driving



rod member through the gripping plate during the driving stroke of said trigger, said gripping plate imposing a torque on said driving rod member in a first rotational direction as said trigger is moved through the driving stroke, a recoil plate positioned rearwardly of the gripping plate having a passage through which said driving rod extends, said recoil plate being oriented to grip the driving rod adjacent the passage through the recoil plate during the return stroke of the trigger and impose a torque on said driving rod in said first rotational direction to preclude movement of said driving rod in a rearward direction opposite said thrust-applying direction, a lever positioned adjacent and rearward of both said recoil plate and said handle for engagement by the user's hand at a first location, said lever being engageable with said recoil plate at a second location spaced from both the passage through said recoil plate and said first location, said lever being mounted at a third location for pivotal movement, said second location being disposed between said first and third locations, whereby when the user's hand engages said lever at said first location and pivots the first location of said lever in a forward direction toward the handle said recoil plate is moved into an orientation for releasing the grip of said recoil plate from said driving rod to permit said driving rod to be moved manually in the rearward direction opposite the thrust-applying direction.

5,823,404

BEVERAGE CAN WITH INTEGRAL POUR SPOUT

Guglielmo L. Ronchail, Corso Duca d'Aosta, I-10129, Italy

PCT No. PCT/EP95/04151, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/13438, PCT Pub. Date May 9, 1996

PCT Filed May 9, 1996, Ser. No. 817,983

Claims priority, application Italy, Oct. 27, 1994, T094A0863

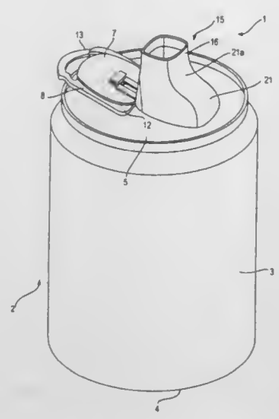
Int. Cl.[6] B65D *17/32;41/32*

U.S. Cl. 222—535 **18 Claims**

1. A container (**1**), particularly for drinks, having an end wall (**5**) which is weakened along an open line (**6**) defining the outline of a lid portion (**7**) and of a corresponding hole (**31**),

a traction member (**8**) which is connected to the outer face of the end wall (**5**) of the container (**1**) and can be operated manually to tear the wall (**5**) along the weakened line (**6**) and to displace the lid portion (**7**) thus formed from the plan of the end wall (**5**); and

a mouthpiece (**15**) connected to the lid portion (**7**) of the end wall (**5**) and disposed inside the container (**1**), beneath the end wall (**5**) before the end wall (**5**) is torn, and capable, after the wall (**5**) is torn, of being entrained by the traction member (**8**) and by the lid portion (**7**) through the corresponding hole (**31**) formed in said end wall (**5**) to a position of use in which a distal end (**18**) of the mouthpiece, which is inside the container (**1**), abuts said end wall (**5**);



characterized in that the mouthpiece (**15**) is provided with an externally bent appendage (**19**) extending from the distal end (**18**) towards a mouth end (**16**) thereof;

said appendage (**19**) being connected to the lid portion (**7**);

the traction member being a lever member (**8**) connected to said lid portion (**7**) of the end wall (**5**) so as to be pivotable, together with the lid portion (**7**) and the mouthpiece (**15**), about an axis which extends adjacent end portions (**6***a*) of the weakened line (**6**);

the arrangement being such that, after the mouthpiece (**15**) has reached said position of use, the lever member (**8**), the lid portion (**7**) and said appendage (**19**) are further pivotable away from the mouthpiece (**15**).

5,823,405

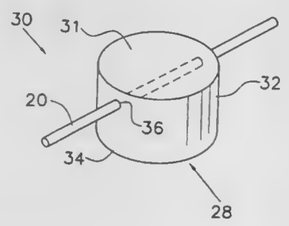
AEROSOL CAP WITH RETAINER FOR SPRAY TUBE

Michael J. Benns, 440 - Third Ave. - Suite A, Charleston, W. Va. 25303

Filed Jul. 3, 1997, Ser. No. 888,279

Int. Cl.[6] B05B *15/06*

U.S. Cl. 222—538 **9 Claims**



1. An inverted cup-shaped cover for use with a container having an associated dispensing tube releasably attachable to the pressurized container, said cover comprising:

an interior surface and an exterior surface, said interior surface defining an interior chamber; and

a retainer disposed on said interior surface and adapted to releasably retain the dispensing tube in a non-use storage position such that the dispensing tube extends from an exterior of said cover, through a wall of said cover and into said interior chamber, the dispensing tube being released from said retainer for attachment to the container when used to dispense contents from within the container.

5,823,406

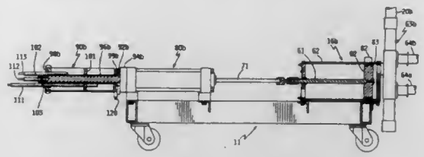
MOBILE VOLUME FLOW FILLING UNIT

Terence P. Roberts, Burnsville, Minn., assignor to Neupak, Inc., St. Paul, Minn.

Filed Apr. 8, 1996, Ser. No. 629,348

Int. Cl.[6] F04B *17/06*

U.S. Cl. 222—626 **15 Claims**



1. A mobile container filling unit, comprising:

a) a base frame mounted on wheels, and an upstanding support frame affixed to said base frame;

b) at least one pumping assembly attached to said base frame, each such pumping assembly further comprising a reciprocable pump having inlet and outlet check valves and having a piston rod aligned along a first axis; and a reciprocable motor having a drive rod aligned along said first axis, one end of said drive rod connected to said piston rod and the other end of said drive rod being movable outside said motor along said first axis;

c) a metering turret having a mounting shaft affixed to each said reciprocable motor and aligned along a second axis, said metering turret further comprising a cylinder rotatably mounted to said mounting shaft, said cylinder having an open end proximate said motor and a closed distal end, and having a plurality of headed metering rods aligned about a circle on said closed distal end, the radius of said circle being equal to the distance between said first and second axis, whereby said metering turret can be rotated to position each said metering rod in axial alignment with said first axis; and

d) a dispensing nozzle mounted to said upstanding support frame for each at least one pumping assembly, in flow communication with an outlet check valve in said reciprocable pump.

5,823,407

SECURITY GARMENT HANGER

Gerhard Joachim Mayer, 2 Wordsworth, St. Kilda, Victoria 3182, and Allan James Hooworth, Hawthorn, both of Australia, assignors to Erich Johannes Unterwurzacher; Gerhard Joachim Mayer, and Thomas Alfred Weisler, all of Australia

PCT No. PCT/AU95/00732, § 371 Date Apr. 30, 1997, § 102(e) Date Apr. 30, 1997, PCT Pub. No. WO96/14487, PCT Pub. Date May 17, 1996

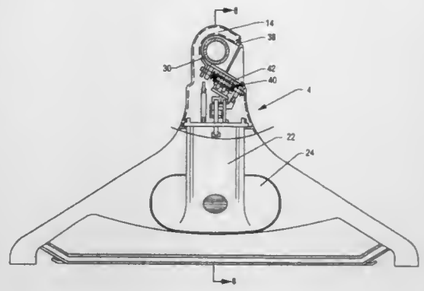
PCT Filed Nov. 3, 1995, Ser. No. 836,676

Claims priority, application Australia, Nov. 4, 1994, PM9270

Int. Cl.[6] A47G *25/14;* **E05B** *69/00*

U.S. Cl. 223—85 **15 Claims**

1. A security garment hanger (**2**) comprising a body portion (**4**), a hook (**14**) extending from the body portion, garment clamping means (**24**,**28**) mounted for movement between an open position and a clamped position in which in use a garment is clamped between the garment clamping means and the body portion, a hook closure member (**18**) which is mounted for rotational movement relative to the body portion from a closed position in which a first part of the hook closure member engages or is adjacent to the hook and an open position in which the first part (**20**) of the hook closure member is clear of the hook whereby, in use, the hook can be removed from a hanging rail (**30**), a lock (**40**) for locking the hook closure member in its closed position, and interlocking means (**56**,**60**) coupled between the hook closure member and the garment clamping means and being operable whilst the hook closure member is in its closed position to retain the garment clamping means in its clamped position.



5,823,408

DEVICE FOR MOUNTING/DEMOUNTING SPARE TIRE FOR AUTOMOBILE

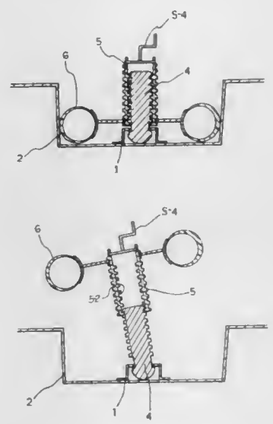
Jeong-Gi Kim, Ansan, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Nov. 12, 1997, Ser. No. 967,882

Claims priority, application Rep. of Korea, Nov. 14, 1996, 1996-53935

Int. Cl.[6] B62D *43/10;43/06*

U.S. Cl. 224—42.21 **2 Claims**



1. A device for mounting/demounting a spare tire for automobiles, comprising:

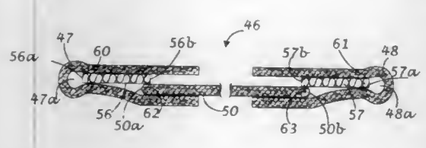
a pivot support bracket which is installed in recesses formed on the bottom of a trunk, and includes a turn support hole formed in its center;

a pivot rod including a pivot rotatively inserted into the turn support hole, and a screw formed on its outer circumference;

a moving rod including a screw on its inner circumference, which matches with the screw of the pivot rod, to move upward and downward, and a screw on its outer circumference having the same turn direction as the screw on inner circumference; and

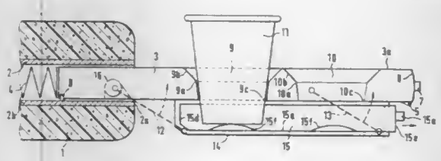
a handle installed on the moving rod to rotate it.

5,823,409
EXPANDABLE STRAP FOR A WRIST INSTRUMENT
Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Mar. 6, 1997, Ser. No. 812,873
Int. Cl.[6] A44C *5/00;5/04*
U.S. Cl. 224—175 12 Claims



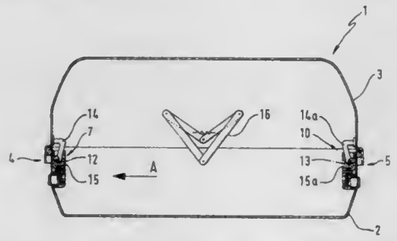
1. An improved wrist instrument of the type having a case, wherein the improvement comprises a strap comprising a first strap casing and a second strap casing, each strap casing being attached to the case, and an interconnecting strap member connected to the first strap casing and the second strap casing, the interconnecting strap member including a non-expandable strap section having an appearance similar to that of the first and second strap casing and at least one elastic strap member which is completely housed in one of the strap casings, the elastic strap member being attached to both the strap casing housing it and the non-expandable strap section of the interconnecting strap member such that when a pulling force is exerted on the interconnecting member, the elastic strap member expands within the strap casing to allow the strap to accommodate different wrist sizes without exposing the elastic strap member to view.

5,823,410
HOLDING DEVICE FOR LIQUID CONTAINERS, ESPECIALLY FOR INSTALLATION IN MOTOR VEHICLES
Peter Ackeret, Allmendstr., Switzerland, assignor to fischerwerke, Arthur Fischer GmbH & Co. KG, Waldachtal, Germany
PCT No. PCT/EP95/00329, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO95/21750, PCT Pub. Date Aug. 17, 1995
PCT Filed Jan. 31, 1995, Ser. No. 693,150
Claims priority, application Switzerland, Feb. 15, 1994, 457/94
Int. Cl.[6] B60N *3/10*
U.S. Cl. 224—281 27 Claims



1. A holding device for substantially circular liquid containers adapted to be installed in motor vehicles, comprising a holder adapted to support a liquid container at its circumferential surface; a drip tray for collecting spilled liquid and adapted to be arranged under the liquid container and movably joined to said holder; a protective housing, said holder and said drip tray being movable between an inner locked position in which said holder and said drip tray are enclosed, nested into one another, in said protective housing, and an outer locked position in which said holder and said drip tray are sufficiently far apart to enable the liquid container to be placed in said holder, and a carrier which joins said drip tray with said holder, said holder having a top wall, said drip tray being arranged to be removed parallel to said top wall in a forward direction from said carrier and to be inserted into said carrier.

5,823,411
LOCKING DEVICE FOR SUITCASES AND TRUNKS, ESPECIALLY ROOF TRUNKS FOR MOTOR VEHICLES
Rolf Grönwoldt, Ruppichteroth; Siegfried Deisenhofer, Herrieden, and Artur Hirtsiefer, Ruppichteroth-Winterscheid, all of Germany, assignors to Huwil-Werke GmbH, Ruppichteroth, and Thule GmbH, Neumarkt/Opf., both of Germany
Continuation of Ser. No. 344,461, Nov. 23, 1994, abandoned.
This application Feb. 24, 1997, Ser. No. 803,796
Claims priority, application Germany, Nov. 24, 1993, 43 40 083
Int. Cl.[6] B60R *9/055;* B65D *43/22*
U.S. Cl. 224—328 9 Claims



1. A locking device for suitcases, trunks, or roof trunks for motor vehicles, with two trunk parts, a bottom part and a lid, said locking device comprising:

at least two first hinges and at least two second hinges, both said first hinges being pivotable relative to one another around a respective hinge axis, both said first and both said second hinges adapted for positioning on a first and second side of the bottom part and the lid for allowing the two trunk parts to be opened from either the first or second sides, said bottom part and lid extending parallel relative to one another, and

each said first and second hinges having a first hinge part adapted for coupling with the lid and a second hinge part adapted for coupling with the bottom part and with said second hinge part connected to said first hinge part by a slidable non-biased joint actuating rod, the second hinge part includes a bearing housing in which the actuating rod is movably guided;

and either said first or second hinge part comprises a sleeve, with the other one of the hinge parts comprising a hinge pin which, in the direction of the hinge axis may be moved into and out of engagement with the sleeve, and said hinge pin being associated and movable with said joint actuating rod, said at least two first hinges actuatable by a single first lock and that the hinge axis of said at least two first hinges is formed by the hinge pins of said at least two first hinges, and said at least two second hinges actuatable by a single second lock and that the hinge axis of said at least two second hinges is formed by the hinge pins of said at least two second hinges.

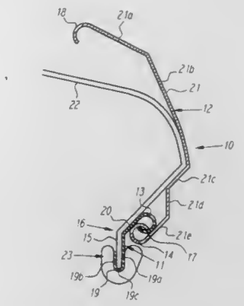
5,823,412
TWO PIECE CLIP
Louis A. Haug, Phelan, Calif., assignor to Sport Carriers, Inc., Grand Terrace, Calif.
Filed Dec. 21, 1995, Ser. No. 576,032
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—329 6 Claims

1. An attachment clip comprising:

a bottom portion adapted to attach to a door jamb of a vehicle, said bottom portion having a first c-shaped engagement lip, and

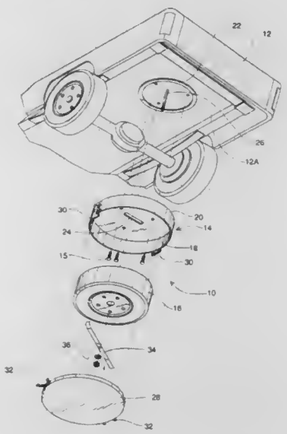
a top portion having an attachment area at a first end adapted to engage a roof-mounted rack system, and a second c-shaped engagement lip at a second end,

wherein said first engagement lip slidably interlocks said second engagement lip such that said top portion is detachably attached to said bottom portion, said first engagement lip and



said second engagement lip define a pinless hinge having a pivot axis and said first and second engagement lips are shaped to interlock with each other to prevent their connection or removal with each other except in a sliding direction parallel to said pivot axis.

5,823,413
SPARE TIRE COVER
Clarence Seltz, 9133 State Rd., Otisville, Mich. 48463
Filed Jun. 23, 1997, Ser. No. 880,758
Int. Cl.[6] B62D *43/04*
U.S. Cl. 224—402 3 Claims



1. A spare tire cover comprising:

a. a container adapted to contain a spare tire therein, the container including a substantially planar member and a wall forming a substantially perpendicular angle with the substantially planar member;

b. a fastening means adapted for fastening the container to an underside of a vehicle such that the substantially planar member is substantially adjacent the underside of the vehicle and the wall extends downwardly from the substantially planar member;

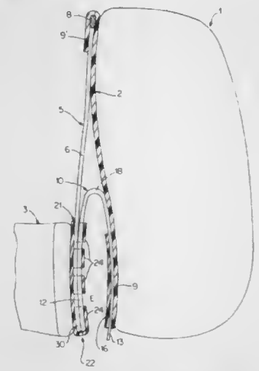
c. an aperture in the substantially planar member adapted for a spare tire support member to extend downwardly through the substantially planar member from the underside of the vehicle when the container is fastened to the underside of the vehicle;

d. a covering member configured to cover an open end of the container opposite of the substantially planar member;

e. at least two elastic straps attached to the wall of the container; and

f. the covering member having at least two strap retaining means configured to retain the straps such that the covering member is held to the container in covering relationship to the open end of the container.

5,823,414
SYSTEM FOR CARRYING ARTICLES ON ONE'S BACK
Yann Le Gal, Isere, and André Finot, Drome, both of France, assignors to Lafuma SA, France
Filed Apr. 18, 1997, Ser. No. 844,265
Claims priority, application France, Apr. 19, 1996, 96 05194
Int. Cl.[6] A45F *3/04*
U.S. Cl. 224—637 8 Claims



1. A system for carrying articles on one's back, comprising:

a load carrier (**1**) integral with a back part (**2**) of a carrying harness, said harness including a waist strap (**3**) and shoulder straps, respectively fastened to the bottom (**9**) and the top (**9'**) of the back part;

a rigid frame (**5**) shaped in the form of an inverted U having a connecting portion (**8**) and two bent branches (**6,7**) extending therefrom sized for fastening to the top (**9'**) and to the bottom (**9'**) of the back part of the load carrier, respectively, each of said bent branches having end parts (**30,31**) respectively engageable with two auxiliary coupling branches (**12–15**), each said auxiliary branch forming a downward-facing V and including:

a first auxiliary branch (**12,14**) for engaging with the bottom (**9**) of the back part; and

a second auxiliary branch (**13,15**) for engaging with a rear face (**20**) of the waist strap (**3**), respectively, defining a space (E) between the bottom (**19**) of the back part (**2**) of the load carrier and the rear face (**20**) of the waist strap (**3**).

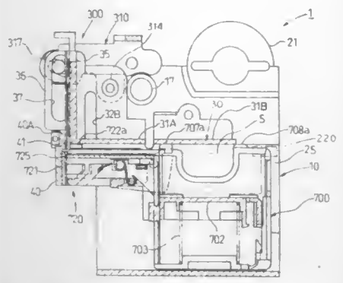
5,823,415
CARTRIDGE FOR ELECTRIC STAPLER
Hiroshi Udagawa; Kazuo Higuchi, and Toshiaki Kikuchi, all of Chuo-ku, Japan, assignors to Max Co., Ltd., Tokyo, Japan
Filed Dec. 27, 1996, Ser. No. 777,191
Claims priority, application Japan, Dec. 28, 1995, 7-343214
Int. Cl.[6] B27F *7/21*
U.S. Cl. 227—120 5 Claims

1. A cartridge for an electric stapler comprising:

a cartridge body containing a pile of sheet-staples;

a delivering portion mounted in an end of said cartridge body and having a delivery path for delivering the sheet-staples; and

a driving-out portion mounted in a front end of said delivering portion;



a U-shaped staple being driven from said driving-out portion by a reciprocating driver entering said driving-out portion;

wherein said driver is caused to enter said driving-out portion from said end of said cartridge body toward an opposite end thereof.

5,823,416

APPARATUS AND METHOD FOR SURFACE TREATMENT, AND APPARATUS AND METHOD FOR WIRE BONDING USING THE SURFACE TREATMENT APPARATUS

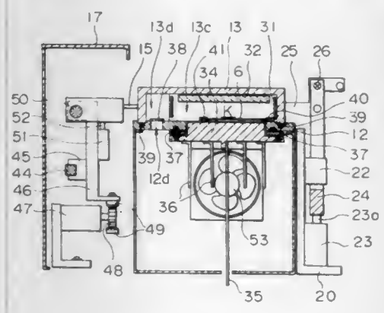
Hiroshi Haji, Chikushino, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 9, 1996, Ser. No. 680,523

Claims priority, application Japan, Jul. 28, 1995, 7-193062; Aug. 24, 1995, 7-215860; Aug. 24, 1995, 7-215862; Aug. 24, 1995, 7-215864; Aug. 25, 1995, 7-217251; Sep. 20, 1995, 7-241148

Int. Cl.[6] **B23K** *37/00;* **B01J** *19/08;* **C23F** *1/07*

U.S. Cl. 228—4.5 **43 Claims**



1. A surface treatment apparatus comprising:

a base having a transfer path for transferring an object;

a lid provided above said base for movement into and out of contact with an upper surface of said base, said lid contacting said base to form a sealed space for receiving the object on the upper surface of said base;

an engagement and disengagement mechanism for moving said lid into and out of contact with said base;

a transfer mechanism for feeding the object, disposed on said transfer path, into and out of a position beneath said lid when said lid is out of contact with said base; and

treatment means for surface treating electrodes of the object disposed in said sealed space.

5,823,417

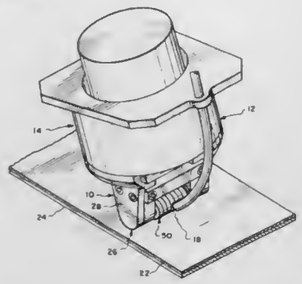
LASER PRESSURE FOOT

Jeffrey Don Johnson, 500 Crestview, Parsons, Kans. 67357

Filed Jul. 9, 1996, Ser. No. 677,094

Int. Cl.[6] **B23K** *26/08*

U.S. Cl. 228—44.3 **14 Claims**



1. In a pressure applying foot for utilization in conjunction with a laser welder having a housing, the combination of: mounting means securable to said housing; first roller means on said mounting means for engagement with the upper surface of a workpiece; and second roller means on said mounting means for engagement with the upper surface of a workpiece, the extremities of said roller means defining the edges of an elongated welding zone on said workpiece for weldment by said laser welder, said roller means applying pressure to said workpiece adjacent said zone to obtain maximum engagement of elements of the workpiece during the laser welding process.

5,823,418

DIE TRANSPORTING DEVICE

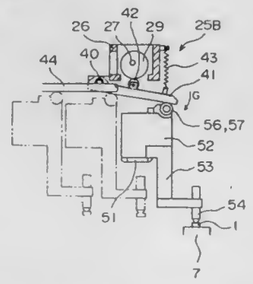
Osamu Nakamura, and Tsuneharu Arai, both of Tokyo, Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Aug. 19, 1996, Ser. No. 699,235

Claims priority, application Japan, Aug. 18, 1995, 7-232111

Int. Cl.[6] **H01L** *21/00*

U.S. Cl. 228—49.5 **5 Claims**



1. A die transporting device comprising:

a slider rail having a guide surface which is vertically oriented,

a slider which is installed so as to be descended and ascended on said slider rail,

a suction holding nozzle mounted on said slider via a nozzle attachment lever,

a horizontal driving means which causes said slider to make a horizontal movement of said slider so that said suction holding nozzle is moved between a die pick-up position and a die placement position,

a transport guide member which is installed horizontally so that said guide member regulates an upper-limit position of an ascending motion of said slider during a horizontal movement of said slider rail,

a pair of swing levers which are respectively installed in a pivotal fashion on said die pick-up position and on said die placement position so as to guide said slider upward and downward, and

a vertical driving means which causes a pivot motion of said pair of swing levers.

5,823,419

BONDING TOOL

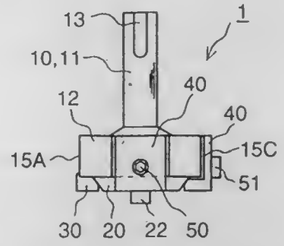
Shigeru Ichikawa, Higashiyamato, Japan, assignor to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Sep. 17, 1996, Ser. No. 715,188

Claims priority, application Japan, Sep. 18, 1995, 7-263491

Int. Cl.[6] **B23K** *3/00;* **H01L** *21/60*

U.S. Cl. 228—55 **2 Claims**



1. A bonding tool in which a tool member is detachably mounted on a lower end of a tool attachment part of a shank member, wherein side surfaces of a tool holding section of said tool member are formed as four-sided inclined surfaces, two fixed guide means on which inclined surfaces that position two adjacent inclined surfaces of said tool member are formed are fastened to said tool attachment part of said shank member, and two detachable guide means on which inclined surfaces that push against remaining two inclined surfaces of said tool member are formed are detachably fastened to said tool attachment part of said shank member so that said tool member is pushed against said fixed guide means.

5,823,420

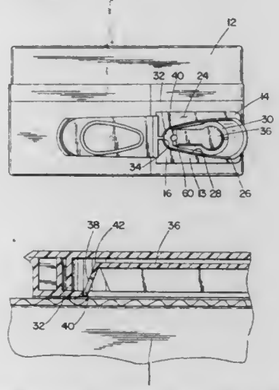
PUSH-TAB HINGE FOR A CONTAINER CLOSURE APPARATUS

Michael G. Tokarski, Dublin, Ohio; C. Daniel Miller, Rockford, Ill., and Arthur W. Robichaud, West Worthington, Ohio, assignors to Combibloc, Inc., Columbus, Ohio

Continuation of Ser. No. 521,745, Aug. 31, 1995, Pat. No. 5,639,018. This application Jan. 21, 1997, Ser. No. 792,926

Int. Cl.[6] **B65O** *5/74*

U.S. Cl. 229—125.04 **9 Claims**



1. A push-tab opening device for use on a package having pourable contents comprising:

a base having a central opening;

a push-tab hinged to said base, such that said push-tab is depressable into said package creating an opening in said package directly beneath said central opening, said push-tab operable through a first flexible joint, a spring face, and a second flexible joint, together forming a hinge enabling said push-tab to pivot about said base.

5,823,421

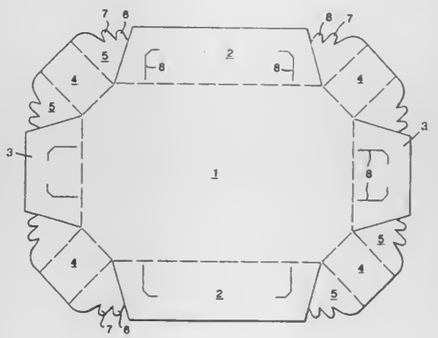
CARDBOARD OR LIKE ARTICLES

John Shilcock, Thatcham, United Kingdom, assignor to Field Group PLC, Bucks, England

Filed Dec. 26, 1996, Ser. No. 773,081

Int. Cl.[6] **B65D** *51/00*

U.S. Cl. 229—101 **17 Claims**



1. An article formed from light weight, foldable sheet material, said article comprising a tray having a base and side walls, said article further comprising a lid sized and shaped to cooperate with said tray, said lid including a main body panel, a plurality of lid side wall panels hingedly connected to said body panel to form a parametric side wall structure, and connecting means on at least some of said lid side wall panels, said connecting means cooperating with other adjoining lid side wall panels to define the shape of said lid, said connecting means being arranged to support said lid side wall panels in at least two different angular orientations with respect to said body panel, said lid side wall panels being deeper than said side walls of said tray whereby said lid may support said tray with its base spaced from another surface which is contacted by said lid side walls.

5,823,422

BEVERAGE DISPENSER WITH POP-UP DRINKING STRAW

Douglas Allen Collier, 1621 7th Ave. W., Bradenton, Fla. 34205, and Darrell Edward Brown, 3707 Gulf Dr., Holmes Beach, Fla. 34217

Filed Apr. 27, 1998, Ser. No. 66,699

Int. Cl.[6] **B65D** *5/72*

U.S. Cl. 229—103.1 **8 Claims**

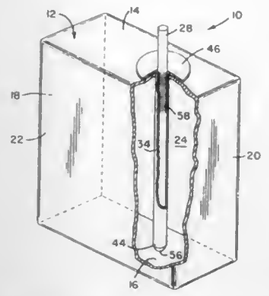
1. A beverage dispenser, comprising:

a container;

a tubular sleeve secured within said container and having an end extending through the top of said container;

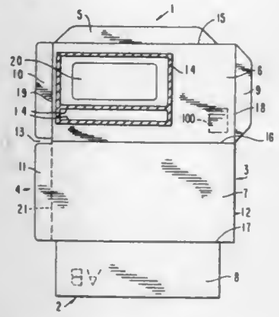
a releasable seal for closing and sealing said end of said tubular sleeve; and,

a drinking straw having a diameter smaller than that of said tubular sleeve and being slidably positioned within said tubular sleeve, and said drinking straw also having a plurality of



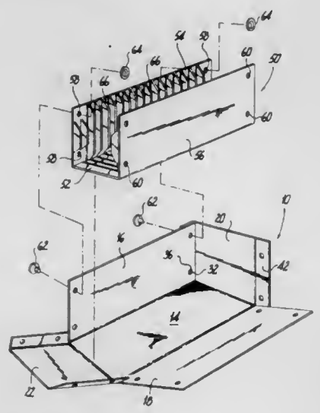
accordian pleats for compressing said straw in said tubular sleeve.

5,823,423
ENVELOPE
Thomas Murray, 28 Patrician Villas, Stillorgan, County Dublin, Ireland
Continuation of Ser. No. 681,608, Jul. 29, 1996, abandoned, which is a continuation of Ser. No. 543,494, Oct. 16, 1995, abandoned, which is a continuation of Ser. No. 211,096, Mar. 18, 1994, abandoned. This application Apr. 11, 1997, Ser. No. 827,779
Claims priority, application Ireland, Sep. 23, 1991, 3334/91; Oct. 9, 1991, 3518/91; Apr. 15, 1992, 921213
Int. Cl.[6] B65D *27/04;27/06*
U.S. Cl. 229—303 **2 Claims**



1. A blank suitable for use in making an envelope, comprising first and second contiguous substantially rectangular areas for folding over one upon the other to form front and rear envelope panels respectively, a third area contiguous with one of said first and second areas for folding between the front and rear panels for dividing the interior of the envelope into front and rear pockets, a window in the first rectangular area for exposing a portion of the third area through the front envelope panel, the portion of the third area having a printed address visible through the window when the front envelope pocket is empty, a tear-off strip joined along one side of said second rectangular area along a line of weakness, a fold-over closure flap joined along the corresponding side of said first rectangular area whereby when the first and second rectangular areas are folded to form the front and rear envelope panels, the tear-off strip and the closure flap are brought to lie one over the other, and a transparent sheet of material secured face-to-face to said first rectangular area and covering the window, the sheet of material having a tear-off portion extending beyond said one side of said first rectangular area so as to be positioned between the tear-off strip and the closure flap, the tear-off portion of the sheet being joined by a further line of weakness to the portion of the sheet secured to said first rectangular area, whereby the edge of the envelope bearing said tear-off portion, said tear-off strip and said closure flap may be closed for a first use of the envelope by securing said tear-off portion to said tear-off strip, thereafter opened by removing both said tear-off portion and said tear-off strip, and then re-closed for a second use of the envelope by folding over the closure flap and securing it to said second rectangular area.

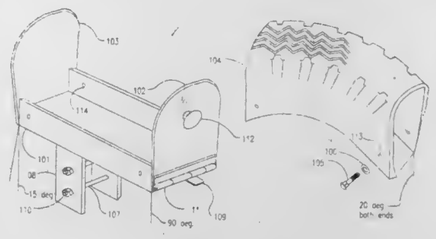
5,823,424
FOLDABLE BOX WITH INSERT
Jonathan W. Allen, Oyster Bay Cove, N.Y., assignor to Wallace Packaging Corporation, Maspeth, N.Y.
Filed Jan. 25, 1996, Ser. No. 591,704
Int. Cl.[6] B65D *5/496*
U.S. Cl. 229—120.07 **8 Claims**



1. An apparatus comprising:
a bottom wall;
four side walls, each of said side walls being pivotably connected to said bottom wall, each of said side walls having at least one bore, said at least one bore in each of said side walls mating with said at least one bore in an adjacent one of said side walls when the apparatus is in a folded configuration;
an insert having a bottom wall and two side walls, each of the insert side walls has at least one bore that mates with at least one bore in one of said side walls, said insert includes a plurality of inwardly directed projections disposed on said insert side walls,
a fastener extending through each of the mating bores in said side walls and the insert bores to maintain the shape of the apparatus in said folded configuration and to maintain the position of said insert within the folded configuration.

5,823,425
RUBBER TIRE MAILBOX
Russell Albert Jones, 3987 Buck Island Rd., Charlottesville, Va. 22902
Continuation of Ser. No. 549,511, Jan. 30, 1996, abandoned. This application Feb. 4, 1997, Ser. No. 794,924
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—17 **5 Claims**

1. A mailbox comprising a base portion, side extensions extending opposite from one another and perpendicular from a top portion of the base portion with a back wall attached to one end of the base portion between the side extensions and extending from the top portion of the base portion above the side extensions, a hinged door attached to the base portion opposite from the back wall, a pair of vertical extensions extending from a bottom portion

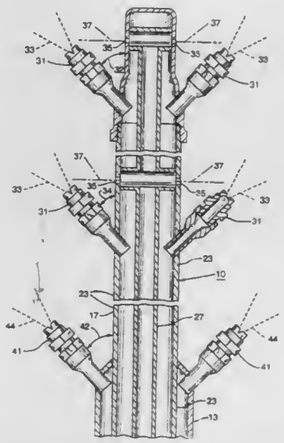


of the base portion, and a rubber tire portion having an arcuate inner surface and an outer surface having two substantially vertical side walls with the vertical side walls of the rubber tire portion being attached to the side extensions of the base portion thereby forming a closed receptacle.

5,823,426
RAILWAY PLATE AND METHOD OF MANUFACTURE
Richard Robert Calusinski, Vista, Australia, assignor to Everts & Van Der Weijden Exploitatie, Viking Hof, Netherlands
Filed Dec. 13, 1996, Ser. No. 766,515
Claims priority, application Australia, Apr. 13, 1995, PN2448
Int. Cl.[6] E01B *9/00*
U.S. Cl. 238—272 **6 Claims**

1. A railway base plate comprising:
a base section adapted to be secured to a rail foundation by securing means passing through each of a plurality of apertures in the base section;
a pair of spaced upstanding ribs formed on an upper surface of the base section, the ribs being spaced to receive a railway rail therebetween and having an innermost wall directed towards the center of the base section;
each rib having a generally central channel extending across the rib at right angles thereto;
the channel including side walls which are cut into the rib and extend into the rib below the upper surface of the rib thereby creating a pair of uppermost overhanging portions extending over a cavity created in the rib; and
wherein the pair of overhanging portions have end faces facing each other and central recesses at said end faces to create gate sections.

5,823,427
METHOD AND APPARATUS FOR MAKING SNOW
Herman K. Dupre, Champion, Pa., and Charles N. Santry, Chesnut Hill, Mass., assignors to Snow Economics, Inc., Natick, Mass.
PCT No. PCT/US96/18051, § 371 Date Jul. 24, 1997, § 102(e) Date Jul. 24, 1997. PCT Pub. No. WO91/18421, PCT Pub. Date May 22, 1997
PCT Filed Nov. 12, 1996, Ser. No. 875,627
Int. Cl.[6] F25C *3/04*
U.S. Cl. 239—14.2 **30 Claims**

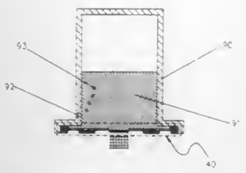


1. A snow making tower including air and first water elongated conduit means at least twenty feet high and having upper and lower ends and adapted for mounting on a support, air and first water discharge nozzle means provided adjacent the upper end of said conduit means for producing a plume of atomized water from interacting air and water discharged under pressure from said air and first water discharge nozzle means to produce snow in subfreezing ambient conditions; the improvement comprising: a second elongated water conduit having upper and lower ends and adapted for mounting on said support and extending with said first water conduit means; and a second water discharge nozzle adjacent the upper end of said second water conduit; said second water discharge nozzle positioned for directing at least a portion of water discharged therefrom under pressure in the form of a spray into said plume.

5,823,428
LIQUID SPRAY APPARATUS AND METHOD
Victor Carey Humberstone, and Andrew Jonathan Sant, both of Cambridge, United Kingdom, assignors to The Technology Partnership PLC, Hertfordshire, United Kingdom
PCT No. PCT/GB94/02692, § 371 Date May 16, 1996, § 102(e) Date May 16, 1996, PCT Pub. No. WO95/15822, PCT Pub. Date Jun. 15, 1995
PCT Filed Dec. 8, 1994, Ser. No. 646,271
Claims priority, application United Kingdom, Jun. 23, 1994, 9412669
Int. Cl.[6] B05B *17/06*
U.S. Cl. 239—4 **27 Claims**

1. A liquid droplet spray device comprising:
a perforate membrane having first face and a second face and first perforations;
an actuator, for vibrating the membrane; and
means for supplying liquid to the first face of the membrane, wherein
the first perforations in the membrane have a reverse taper, namely a larger cross-sectional area at the second face of





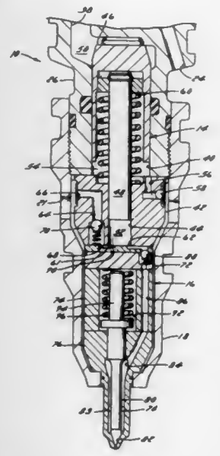
the membrane from which liquid droplets emerge than the first face of the membrane.

5,823,429

HYBRID HYDRAULIC ELECTRONIC UNIT INJECTOR

Niels J. Beck, Bonita, and Robert L. Barkhimer, Poway, both of Calif., assignors to Servojet Products International, San Diego, Calif.

Filed Jul. 12, 1996, Ser. No. 678,201
Int. Cl.[6] F02D *1/06;* **F02M** *41/16;47/02*
U.S. Cl. 239—5 **15 Claims**



1. A fuel injector assembly comprising:

(A) an injector housing having formed therein

(1) a fuel supply passage having an inlet and an outlet,

(2) a fuel discharge passage having an inlet communicating with said outlet of said fuel supply passage and having an outlet, and

(3) a central axial bore presenting a lower nozzle cavity, said lower nozzle cavity having an inlet connected to said outlet of said fuel discharge passage and having a discharge orifice;

(B) means, connected to said inlet of said fuel supply passage, for selectively pressurizing fuel;

(C) a non-return element disposed in said fuel discharge passage between said inlet and said outlet thereof;

(D) a nozzle needle disposed in said axial bore and presenting a lower needle tip around which is disposed said nozzle cavity, said nozzle needle being slidable in said bore from a seated position closing said discharge orifice to an unseated position permitting fuel ejection from said discharge orifice, an injection event initiating upon needle lift and terminating upon needle closure; and

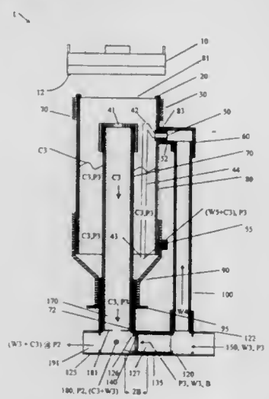
(E) a needle return spring applying a downward biasing force to said nozzle needle, wherein a volume V_{ACC} is defined by said nozzle cavity and by the portion of said fuel discharge passage located between said non-return element and said outlet thereof, wherein a maximum quantity Q_{MAX} of fuel is injected from said fuel injector assembly during an injection event, and wherein said means for pressurizing fuel, said needle return spring, said check valve, and said volume V_{ACC} are dimensioned and configured such that V_{ACC}/Q_{MAX} is more than about 1.0 and is no more than about 10.0.

5,823,430

AUTOMATIC FERTILIZING APPARATUS

George Donald Clark, Jr., 3161 Dunhill Dr., Cocoa, Fla. 32926, and Robert W. Knuutila, II, 2191 Rockledge Dr., Rockledge, Fla. 32955

Filed Jan. 10, 1997, Ser. No. 782,530
Int. Cl.[6] A62C *5/02*
U.S. Cl. 239—10 **14 Claims**



14. An automatic fertilizing apparatus comprising:

means for introducing a fluid flow from a fluid flow source;

a first splitter having a first side opening, a top opening, and a second side opening, the first side opening for receiving the fluid flow and separating the fluid flow into a first fluid path through the top opening and into a second fluid path through the second side opening;

a main body housing a chemical liquid, the main body having a first opening in an upper portion of the main body for receiving the chemical liquid therein, a second opening in the upper portion of the main body for receiving the first fluid path and providing a fluid flow path to an interior portion of the main body beneath the chemical liquid for raising the chemical liquid, and a bottom opening in the main body;

a metering cap attached to a pipe within the main body for preselecting the amount of the raised chemical liquid that passes to the bottom opening, the metering cap having a variable sized diameter through-hole thereof, the variable sized diameter through-hole being equivalent to a preselected amount of the chemical liquid to be mixed with the fluid flow, the metering cap and the pipe forming a chemical liquid path to the bottom opening;

a second splitter having a first side opening, a top opening and a second side opening, the first side opening for receiving the second fluid path, a top opening connected to the bottom opening of the main body for receiving the chemical liquid path, the second side opening connected to an output line;

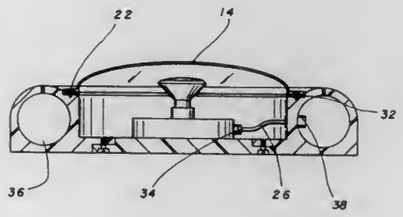
an obstruction means having a central orifice through-hole, the obstruction means positioned between the first side opening of the second splitter and the second side opening of the first splitter, wherein the obstruction means causes a pressure differential on both sides thereof with a point of lowest pressure within the second splitter, and the metering means controlling the preselected amounts of the chemical liquid being injected into the output line.

5,823,431

ILLUMINATED LAWN SPRINKLER

Adam B. Pierce, 44 Arrandale Ave., Great Neck, N.Y. 11024

Filed Aug. 13, 1996, Ser. No. 696,044
Int. Cl.[6] F21P *7/00*
U.S. Cl. 239—19 **3 Claims**



1. An illuminated lawn sprinkler system comprising:

a substantially annular sprinkler head having a connecting means for attaching a hose to the sprinkler head whereby water is introduced into an interior of the sprinkler head and dispersed through a plurality of apertures in the sprinkler head;

a battery powered light producing means for producing a light beam, the light producing means being attached to the sprinkler head, the light producing means further being positioned within a center of the annular sprinkler head, said light producing means including a light bulb having a portion extending above a plane in which the apertures lie;

a lens being for directing light towards water dispersed through the sprinkler head apertures, the lens being removably coupled to the sprinkler head, said lens being curved to form a domed cover over the light bulb with the light bulb extending into the domed cover to direct light upward and radially outward from the light bulb towards water released through the apertures in the sprinkler head;

a sealing means for sealing the coupling between the lens and the sprinkler head such that water dispersed through the sprinkler head is prevented from contacting the light producing means; and

a water sensor means for activating the light producing means when water is introduced into the interior of the sprinkler head, the water sensing means being partially positioned within the interior of the sprinkler head through an opening in the sprinkler head, the water sensing means further being coupled to the light producing means.

5,823,432

AIR FRESHNER DEVICE

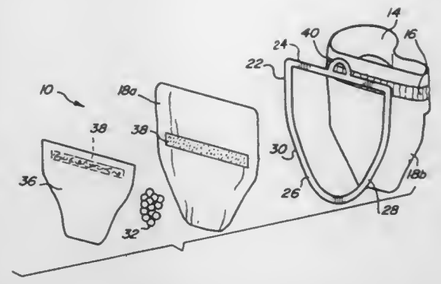
Howard D. Hogan, 603 Province Town, Auburn Hills, Mich. 48326

Filed Jul. 25, 1996, Ser. No. 686,318
Int. Cl.[6] A24F *25/00*
U.S. Cl. 239—36 **16 Claims**

1. An air freshener device, comprising:

an article of clothing;

a ventilated pouch formed in the article of clothing;



a scented material inserted into the ventilated pouch, the article of clothing emitting the scent of the scented material from the ventilated pouch;

a frame for providing shape to the article of clothing, the frame being assembled integrally with the article of clothing; and

an attachment means for hanging the frame.

5,823,433

WIND GOVERNED SPRINKLER CONTROL SYSTEM

Tracy L. Harlow, 5608 Andover, Amarillo, Tex. 79109

Filed Mar. 7, 1997, Ser. No. 813,629
Int. Cl.[6] A01G *27/00*
U.S. Cl. 239—67 **4 Claims**

1. A new and improved wind governed sprinkler control system comprising, in combination:

a sprinkler control unit adapted to provide power upon the actuation thereof;

a plurality of sprinklers connected to the sprinkler control unit and adapted to dispense water upon the receipt of power;

a wind detection switch including a cylindrical base having an outer shell constructed from a conductive material with a bore formed in a top face thereof, the bore having a top extent having an inverted frusto-conical configuration, an intermediate extent in communication with the top extent and having a spherical configuration, and a bottom extent in communication with the intermediate extent having a frusto-conical configuration, the cylindrical base further having an internal shell constructed from a conductive material, the inner shell being situated within the outer shell with a cylindrical bore formed in a top face thereof, the cylindrical base also including an intermediate shell constructed from an insulative material and situated between the outer shell and the inner shell;

a toggle flag mechanism having a pole constructed from a conductive material with a lower extent slidably coupled to an upper extent thereof for affording vertical height adjustability, the upper extent of the pole having a flag coupled adjacent to a top end thereof, the lower extent having a sphere joint integrally coupled in a center thereof adjacent to a bottom end thereof for pivotally engaging the intermediate extent of the bore of the outer shell and further in electrical communication

therewith whereby the bottom end of the lower extent of the flag has a first vertical orientation for precluding electrical communication between the inner shell and the outer shell upon the absence of wind and a second slanted orientation for allowing electrical communication between the inner shell and the outer shell upon the presence of wind thus allowing the transmission of a wind actuation signal;

a coiled spring having a top with a first diameter and a bottom with a second diameter greater than the first diameter, the bottom of the spring coupled to the top face of the outer shell of the base, the top of the spring coupled about the lower extent of the flag pole for urging the bottom of the lower extent of the flag pole to the vertical orientation thereof;

a pair of wires including a first wire connected to the outer shell of the base of the wind switch and a second wire connected to the inner shell of the base of the wind switch;

first relay means connected between the sprinkler control unit and the sprinklers and adapted to allow the transmission of power to the sprinklers only during the receipt of a first relay activation signal;

second relay means connected to the sprinkler control unit and adapted to provide power at an output thereof upon the actuation of the sprinkler control unit; and

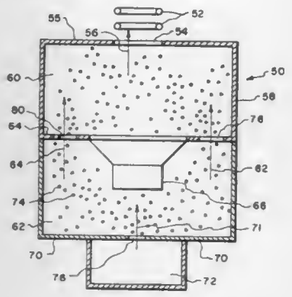
time delay control means connected to the output of the second relay means, the wires connected to the wind switch, and the first relay means, the time delay means adapted to deploy to the first relay means a first relay activation signal only upon the receipt of power in combination with a lack of receipt of the wind actuation signal for a predetermined time, the time delay control means further adapted to continue to deploy to the first relay means the first relay activation signal only during the receipt of power in combination with a lack of the wind actuation signal.

5,823,434

ELECTROMECHANICAL DRIVER FOR AN AEROSOL DISPENSING APPARATUS WHICH DISPENSES A MEDICATED VAPOR INTO THE LUNGS OF A PATIENT

Guy F. Cooper, Ventura, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 5, 1997, Ser. No. 841,817
Int. Cl.[6] B05B *1/08*
U.S. Cl. 239—102.2 **5 Claims**



1. An aerosol dispensing apparatus comprising:

a housing having a forward wall and an inner portion, the inner portion of said housing forming a chamber having a medication contained therein;

a speaker assembly mounted on a bottom portion of said housing, said speaker assembly having a cone shaped flexible diaphragm;

a signal generator connected to said speaker assembly, said signal generator providing a sawtooth waveform signal of a predetermined frequency to said speaker assembly, said sawtooth waveform signal having a ramp portion which includes a jitter component, the jitter component of said sawtooth waveform signal fluidizing said medication within said chamber to form an aerosol medication;

said sawtooth waveform signal driving the cone shaped flexible diaphragm of said speaker assembly resulting in a reciprocating motion at said predetermined frequency for said cone shaped flexible diaphragm;

said housing having an edged shaped orifice centrally located within the forward wall of said housing, said edged shaped orifice communicating with said chamber allowing said aerosol medication to exit said chamber and flow through said edged shaped orifice to form a ring vortex of aerosol medication;

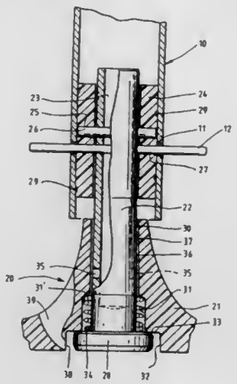
the reciprocating motion of said cone shaped flexible diaphragm at said predetermined frequency causing said aerosol dispensing apparatus to generate a train of said ring vortices of aerosol medication.

5,823,435

ROTATING NOZZLE

Sean Morgan, and Stuart Morgan, both of Cheltenham, Australia, assignors to Spray Nozzle Engineering Pty. Limited, Cheltenham, Australia

PCT No. PCT/AU95/00149, § 371 Date Oct. 10, 1996, § 102(e) Date Oct. 10, 1996, PCT Pub. No. WO95/25599, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 17, 1995, Ser. No. 716,205
Claims priority, application Australia, Mar. 18, 1994, PM4523/94
Int. Cl.[6] B05B *15/02*
U.S. Cl. 239—107 **12 Claims**



1. A rotating spray nozzle, comprising:

a rotor shaft having a lower end;

a spray head rotatably mounted on said rotor shaft;

a head element being provided on the lower end of said rotor shaft, said head element providing an annular abutment surface and a counter bore in said spray head;

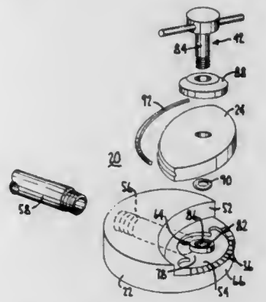
a spring located between the annular abutment and the top of the counter bore to which pressure is capable of being increased or decreased, said spring including means for flushing any solid material from between said spray head and said rotor shaft, so that when said spring is released and the pressure is decreased, said spring causes movement of said spray head against a liquid flow to form an annular space between said spray head and said rotor shaft for permitting any solid material located therebetween to be flushed therefrom.

5,823,436

MICRO ORIFICE NOZZLE HAVING FAN SPRAY PATTERN

John E. Waldrum, Ambler, Pa., assignor to Waldrum Specialties, Inc., Doylestown, Pa.

Filed Feb. 3, 1997, Ser. No. 794,116
Int. Cl.[6] B05B *15/02*
U.S. Cl. 239—123 **12 Claims**



1. A nozzle comprising:

a nozzle body having an inlet for a fluid under pressure, the inlet leading into a chamber in the nozzle body, the chamber being open over a part of a surface of the nozzle body;

a nozzle plug attachable to the nozzle body over said part of the surface of the nozzle body, so as to substantially close the chamber, at least one of the nozzle plug and the nozzle body having a plurality of grooves extending between the chamber and an external wall of the nozzle body, forming a line of orifices for emission of the fluid in a fan shaped spray pattern;

a manually operable release affixing the nozzle plug to the nozzle body, the release enabling the nozzle plug and the nozzle body to be relatively separated at the line of orifices for flushing the orifices;

a seal disposed between the nozzle plug and the nozzle body for sealing the chamber remote from the line of orifices, the seal restricting emission of the fluid to the line of orifices during said flushing; and,

wherein the release comprises a threaded shaft affixing the nozzle plug to the nozzle body, the threaded shaft being aligned substantially transverse to a line of discharge through said orifices.

5,823,437

FLUID FLOW CONTROL PLATES FOR HOT MELT ADHESIVE APPLICATOR

Edward W. Bolyard, Jr., Old Hickory, Tenn., assignor to Illinois Tool Works Inc., Glenview, Ill.

Continuation-in-part of Ser. No. 683,064, Jul. 16, 1996. This application Oct. 16, 1996, Ser. No. 734,400
Int. Cl.[6] B05B *1/00*
U.S. Cl. 239—124 **9 Claims**

1. A system usable for dispensing fluids including hot melt adhesives supplied from a reservoir onto a substrate, the system comprising:

a fluid metering device having a plurality of metered fluid outlets for supplying fluid from the reservoir;

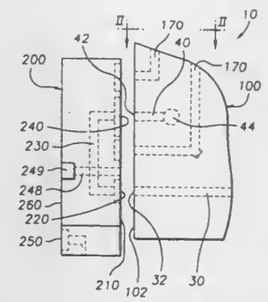
a main manifold having an end portion with a plurality of fluid outlet ports and a corresponding plurality of fluid return ports, a plurality of fluid supply conduits coupling a corresponding one of the plurality of fluid outlet ports to a corresponding metered fluid outlet of the fluid metering device, and a plurality of fluid return conduits coupling a corresponding one of the plurality of fluid return ports to the reservoir; and

at least one individual direct fluid flow nozzle adapter plate having a plate fluid inlet port on a plate fluid interface mountable to the end portion of the main manifold to couple the plate fluid inlet port of the individual direct fluid flow nozzle adapter plate to a corresponding one of the plurality of fluid outlet ports of the main manifold,

the individual direct fluid flow nozzle adapter plate having a plate fluid outlet port on a nozzle adapter interface, the plate fluid outlet port coupled to the plate fluid inlet port by a plate fluid flow conduit, the plate fluid outlet port on the nozzle adapter interface connectable to a corresponding fluid dispensing nozzle,

fluid supplied to the individual direct fluid flow nozzle adapter plate by a corresponding one of the plurality of fluid supply conduits of the main manifold directed to the plate fluid outlet port, and

the plate fluid interface of the individual direct flow nozzle adapter coupled to the end portion of the main manifold to block a corresponding one of the plurality of fluid return ports on the end portion of the main manifold.

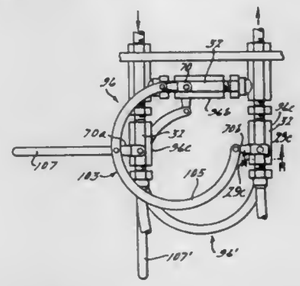


5,823,438

RECIRCULATING PAINT SYSTEM HAVING IMPROVED FLUID COUPLING ASSEMBLIES

Earl R. Holt, Rochester Hills, Mich., assignor to Hose Specialties/Capri, Inc., Highland Park, Mich.

Continuation-in-part of Ser. No. 161,825, Dec. 2, 1993, Pat. No. 5,501,397. This application Jul. 19, 1995, Ser. No. 503,979
Int. Cl.[6] B05B *9/03*
U.S. Cl. 239—127 **48 Claims**



1. A quick disconnect fluid coupling assembly comprising:

a quick disconnect connection having a first fluid bore extending therethrough, said quick disconnect connection including a first closure member movably positioned between a first position and a second position in said first fluid bore for preventing and permitting fluid to pass through said first fluid bore; and

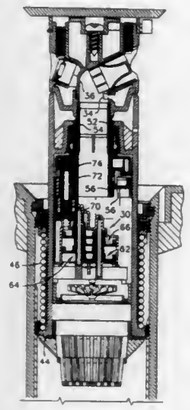
a quick disconnect stem having a second fluid bore extending therethrough, said quick disconnect stem including a second closure member movably positioned between a third position and a fourth position in said second fluid bore for preventing and permitting fluid to pass through said second fluid bore, wherein upon connecting said quick disconnect connection

with said quick disconnect stem, said first closure member is moved to said second position and said second closure member is moved to said fourth position without engagement of said first closure member against said second closure member to permit fluid to pass through said first and second fluid bores.

5,823,439
POP-UP SPRINKLER WITH SHOCK ABSORBING RISER SPRING

Richard E. Hunter, La Jolla, and Fred M. Danner, Vista, both of Calif., assignors to Hunter Industries Incorporated, San Marcos, Calif.

Filed Aug. 16, 1996, Ser. No. 698,909
Int. Cl.[6] B05B *15/10*
U.S. Cl. 239—205 **20 Claims**



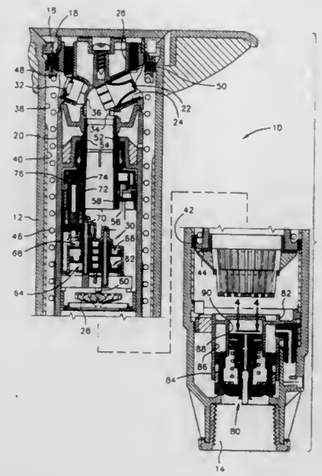
1. A sprinkler unit comprising:
a tubular housing having an inlet for connecting to a source of water;
a tubular riser telescopically reciprocally mounted in said tubular housing and moveable by water pressure from a retracted position within said housing to an extended position from said housing, said riser having an outlet for distributing a stream of water outward from said housing, and a passage connecting said inlet to said outlet;
a retraction spring normally biasing said riser to said retracted position; and
shock absorbing means on said retraction spring for damping movement of said riser to a bottomed position of said retraction spring at said extended position.

5,823,440
ROTARY SPRINKLER WITH VELOCITY CONTROLLING VALVE

Mike Clark, San Marcos, Calif., assignor to Hunter Industries, Incorporated, San Marcos, Calif.

Filed Apr. 23, 1996, Ser. No. 636,336
Int. Cl.[6] B05B *3/00*
U.S. Cl. 239—206 **17 Claims**

15. A pop-up rotary sprinkler unit comprising:
an elongated generally cylindrical housing having an inlet coaxially disposed at one end for connecting to a source of water, and an outlet including a nozzle at another end for distributing water outward from said housing, a passage connecting said inlet to said outlet; and
a flow control valve assembly in said passage at said inlet, said valve assembly comprising an annular valve seat surrounding

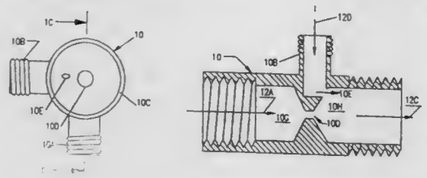


said inlet, a first cylindrical bore coaxially of said valve seat, a generally cylindrical valve member reciprocally mounted in said first bore for movement into and out of engagement with said valve seat, a second cylindrical bore defining a cylindrical fluid chamber coaxially of said first cylindrical bore, a double acting piston reciprocally mounted in said chamber and connected to said valve member, a damping fluid in said chamber limiting the rate of movement of said valve member toward and away from said valve seat, and spring means for biasing said valve member toward said valve seat.

5,823,441
SHOWER GROOMING SYSTEM

Paul T. Nicholson, 427 Ave. G, #16, Redondo Beach, Calif. 90277

Filed Oct. 22, 1996, Ser. No. 735,124
Int. Cl.[6] B05B *7/26*
U.S. Cl. 239—317 **1 Claim**



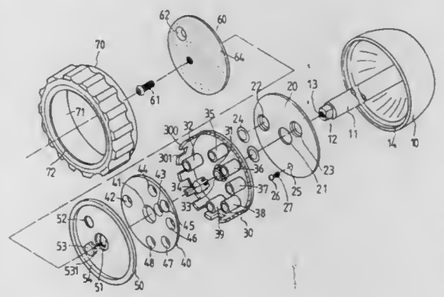
1. The A diverter adapter comprising an elongated cylindrical body having opposite open ends with threaded coupling means on each of said ends;
a central barrier disposed in said body between said opposite open ends and defining an intake chamber associated with a first end of said opposite open ends and an outlet chamber associated with a second end of said opposite open ends;
said central barrier having a central orifice defined by a circular converging wall surface terminating at said central orifice;
a central venturi including said central orifice in said barrier connecting said intake chamber with said outlet chamber;
an internal venturi return passageway of reduced size as compared with said central venturi passageway;
an auxiliary flow outlet on said body communicating said intake chamber exteriorly of said body;
a personal hygiene device detachably coupled to said auxiliary flow outlet for receiving diverted flow from said intake chamber;

a source of pressurized fluid detachably coupled to said first end of said body;
a discharge means detachably coupled to said second end of said body; and
a return flow port connecting said personal hygiene device to said outlet chamber whereby fluid from said pressurized fluid source is diverted from said intake chamber to circulate and heat and return to said outlet chamber.

5,823,442
SPRAY NOZZLE

Wen-Li Guo, No. 10, Fang Dong Road, Wen Gin Tsuen, Fang Yuan Hsiang, Chang Hua Hsien, Taiwan

Filed Apr. 22, 1996, Ser. No. 635,559
Int. Cl.[6] A62C *31/02*; **B05B** *1/12*
U.S. Cl. 239—394 **3 Claims**

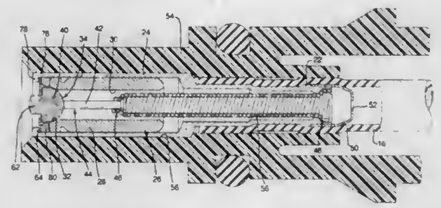


1. A spray nozzle comprising:
a casing including a mouth for connecting said casing to a water reservoir, said casing including a rod extended therefrom, said rod including a free end,
a plate secured to said casing and including a center portion engaged on said rod, said plate including a first inlet and a second inlet, said second inlet being arranged closer to said center portion of said plate than said first inlet,
a follower including a center portion rotatably engaging with said rod and including a barrel for aligning with said second inlet and including at least one first cylindrical member for aligning with said first inlet,
a disc secured to said follower and rotatably engaging with said rod, said disc including an opening for engaging with said barrel and including at least one orifice for engaging with said first cylindrical member,
a board secured to said free end of said rod and including a protrusion having at least one passage formed therein, said protrusion being allowed to be aligned with said opening, said board including an entrance for aligning with said orifice,
a cap including a peripheral portion secured to said board and including a plurality of punctures formed therein, said cap including an outlet for aligning with said entrance and for aligning with said orifice, and
a control ferrule including a peripheral portion secured to said follower so as to rotate said follower and said disc,
said follower and said disc being rotated by said control ferrule so as to align said second inlet with said barrel and so as to align said first inlet with said first cylindrical member, water contained in said casing being allowed to flow out of said punctures of said cap when said protrusion is aligned with said opening and said barrel and said second inlet, and the water being allowed to flow out of said orifice when said outlet of said cap and said entrance and said first inlet are aligned with said first cylindrical member.

5,823,443
POPPET NOZZLE FOR FUEL INJECTION

Richard Lloyd Cooper, Le Roy; Michael Raymond Salemi, Rochester, and Albert Martin Knebel, Holcomb, all of N.Y., assignors to General Motors Corporation, Detroit, Mich.

Filed Dec. 23, 1996, Ser. No. 772,397
Int. Cl.[6] F02M *55/02*
U.S. Cl. 239—533.9 **5 Claims**

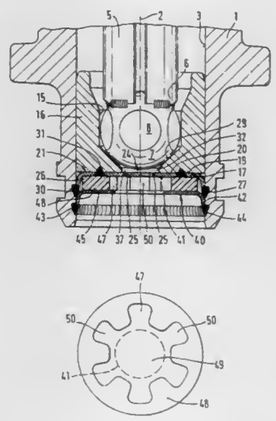


1. An fuel injection nozzle adapted to receive pulsed pressurized fuel from a source, comprising a valve seat assembly having a valve seat body with a longitudinally extending passage, said passage having an upstream end and a downstream end with a valve seat extending thereabout, a downstream opening valve element disposed within said longitudinally extending passage and operable to move into and out of sealing engagement with said valve seat to regulate the flow of pressurized fuel through said passage, an annular, ring shaped fuel directing orifice disc disposed downstream of said valve seat and including a central opening configured to receive a portion of said downstream opening valve element and fuel directing orifices extending therethrough from a first, upstream side to a second downstream side of said disc, said disc operable to limit downstream movement of said valve member and to direct fuel through said orifices into a desired fuel pattern.

5,823,444
FUEL INJECTION VALVE

Ferdinand Reiter, and Christian Preussner, both of Markgroeningen, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 20, 1996, Ser. No. 670,223
Claims priority, application Germany, Jun. 20, 1995, 195 22 284.9
Int. Cl.[6] F02M *61/18*
U.S. Cl. 239—533.12 **10 Claims**



1. A fuel injection valve for internal combustion engines, comprising a valve housing, a valve seat body disposed in a longitudinal opening of the valve housing, an injection port disk disposed

downstream of the valve seat body in the longitudinal opening, at least one injection port is provided in said disk, a gap disk (**40**) with a central hole (**41**) is disposed in the longitudinal opening (**3**) in the immediate vicinity of the at least one injection port (**25**) and at least one recess (**47, 50**) is provided between the injection port disk (**21**) and the gap disk (**40**), said at least one recess (**47, 50**) opens directly toward the central hole (**41**) and extends radially outward, fuel is injected from the at least one injection port (**25**) straight through the at least one recess (**47, 50**) and straight through the central hole (**41**), whereby said recess exerts a capillary action outward in a radial direction beyond the at least one injection port (**25**) upon the fuel emerging from the at least one injection port (**25**).

5,823,445

FUEL INJECTOR WITH ELECTROMAGNETICALLY AUTONOMOUS SUB ASSEMBLY

Daniel Sofer, Av. Julio de Mesquita 959, Apto. 112, 13025-061 Campinas, Brazil

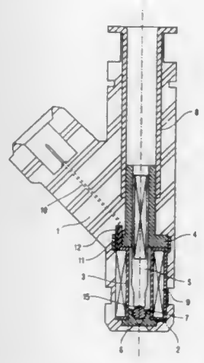
PCT No. PCT/EP95/01946, § 371 Date Nov. 26, 1996, § 102(e) Date Nov. 26, 1996, PCT Pub. No. WO95/33134, PCT Pub. Date Dec. 7, 1995

PCT Filed May 23, 1995, Ser. No. 750,123

Claims priority, application Brazil, May 26, 1994, 9401725-5

Int. Cl.[6] B05B *1/30;* **F16K** *31/02*

U.S. Cl. 239—585.1 **16 Claims**



1. A fuel injector comprising a solenoid (**9**), wound around a bobbin (**3**), which can be energized through electrical connections (**10**), a guideless magnetic valve member (**7**), a valve seat (**6**), a magnetic core (**5**), a magnetic core sustaining element (**4**), at least one magnetic coupling element (**2**), a fuel inlet tube (**8**) and an external housing (**1**), characterized in that the guideless magnetic valve member (**7**), the valve seat (**6**), the magnetic core (**5**), which is axially displaceable for calibration, the magnetic core sustaining element (**4**), the at least one magnetic coupling element (**2**), the solenoid (**9**), the bobbin (**3**) and the electrical connections (**10**) form an electromagnetically autonomous sub assembly without air gaps between static components of the magnetic circuit, which sub-assembly comprises the entire magnetic circuit and also all the electrical components of the finished injector said solenoid (**9**) and bobbin (**3**) being lodged in a space defined between the at least one magnetic coupling element (**2**) and the magnetic core (**5**), whereby said sub assembly can be tested and calibrated by the axial displacement of the magnetic core prior to the obtention of the finished fuel injector.

5,823,446

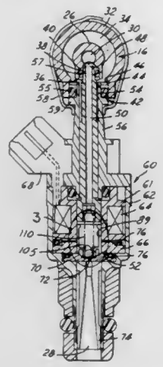
FUEL INJECTOR VALVE FOR LIQUIFIED FUEL

David E. Bennett, Lake Lillian, Minn.; Devlin A. Hunt, and Ronald H. Roche, both of Cass City, Mich., assignors to Awalbro Corporation, Cass City, Mich.

Filed Feb. 18, 1997, Ser. No. 801,493

Int. Cl.[6] F02M *51/08*

U.S. Cl. 239—585.1 **17 Claims**



12. A liquified gas fuel injector of an engine comprising:

a main body;

a fuel passage through the body;

a fuel inlet in communication with the fuel passage;

a fuel outlet communicating the fuel passage with the exterior of the body to deliver fuel from the injector;

a valve selectively communicating the fuel outlet with the fuel passage and having a valve head formed of a generally flexible and substantially resilient material and a valve seat adjacent to the fuel outlet whereby the valve head is selectively engageable with the valve seat providing a seal therebetween to prevent fuel flow through the valve; and

a metering body, the fuel passage being at least partially formed by an orifice through the metering body, the valve seat being carried by the metering body, and the valve head having a recess formed therein so that the valve head contacts the metering body around the perimeter of the orifice to provide a circumferentially continuous seal around and spaced from an edge of the orifice to prevent wear of the valve head by the edge of the orifice.

5,823,447

ANGLED FAN NOZZLE AND UNIBODY CYLINDER

Christopher Peter Maybach, Parker, Colo., assignor to Meritech, Inc., Englewood, Colo.

Filed Aug. 27, 1996, Ser. No. 703,905

Int. Cl.[6] B05B *1/00*

U.S. Cl. 239—596 **3 Claims**

1. A nozzle and recess combination comprising:

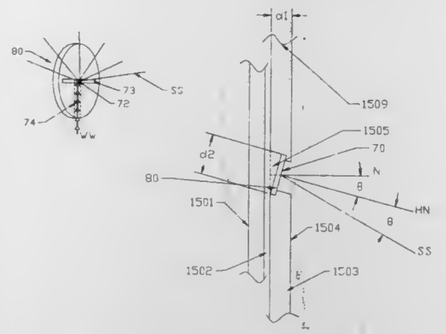
a retaining wall having a width (d_1) and a nozzle mounting recess canted at a first acute angle;

a nozzle having a flat circular base and an inlet surface and an outlet surface;

said inlet surface consisting of an inlet groove starting at a center point and extending through a central groove orifice along a radius of the base to one edge of a perimeter;

said outlet surface having an outlet groove extending through the central groove orifice along a diameter of the base and perpendicular to the inlet groove, whereby a fan pattern is formed at a second acute angle from a normal to the outlet surface;

said nozzle has an orientation which does not extend beyond a front (output) and a rear (input) side of the retaining wall; and



said orientation further comprises an alignment of the first and second acute angles such that said first and second angles are cumulative, thereby forming a fan pattern ranging between 15° and 30° from a normal to the front side of the retaining wall.

5,823,448

Patent Not Issued For This Number

5,823,449

AGRICULTURAL FEED MIXER BLADE

John C. Kooima, 2620 310th St., and Philip G. Kooima, 2634 310th St., both of Rock Valley, Iowa 51247

Filed Jul. 21, 1997, Ser. No. 897,899

Int. Cl.[6] B02C *18/08;21/02*

U.S. Cl. 241—27 **24 Claims**



23. A method of mixing agricultural feed, comprising the steps of:

(a) providing an agricultural feed mixer including a mixing bin and an auger rotatably mounted therein;

(b) providing a plurality of blades, each blade comprising a a generally triangular plate having a leading edge, a first rear edge, and a second rear edge, said plate including a plurality of teeth along said leading edge, said plurality of teeth arranged in a stepped contiguous relationship along said leading edge, each of said plurality of teeth having a face edge and a back edge, said back edge of each of said plurality of teeth being contiguous with and generally perpendicularly oriented to said face edge of an adjacent one of said plurality of teeth to form a notch, and a plurality of elongated cutting elements, each of said cutting elements being affixed to each of said plurality of teeth, said cutting element having a rear surface, a cutting edge opposite said rear surface, and a pair of end surfaces, said cutting element being located in said notch with said rear surface of said cutting element being affixed to said face edge of one of said plurality of teeth and one of said pair of end surfaces of said cutting element abutting against said back edge of an adjacent one of said plurality of teeth such that said cutting elements are arranged on said leading edge of said plate substantially without a gap between said cutting elements to thereby protect said leading edge of said plate, said cutting edge of each of said cutting being oriented generally parallel to an adjacent portion of said leading edge of said plate, said cutting edges of said cutting elements being oriented in substantially the same plane, said cutting element being a cemented carbide cutting element harder than the material forming said plate, said cutting element being of a length generally equal to that of said face edge of said plurality of teeth;

(c) mounting each of said plurality of blades on said auger in spaced relation over a length thereof, said plurality of blades being mounted on said auger such that said leading edge of said plate substantially protrudes beyond a periphery of said auger; and

(d) placing agricultural feed within said mixing bin of said agricultural feed mixer and operating said agricultural feed mixer whereby said plurality of blades and said auger cut and mix said agricultural feed placed within said mixing bin.

5,823,450

RING ROLLER MILL

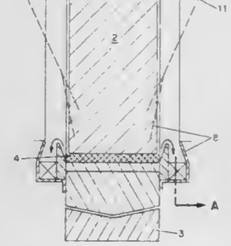
Jan Folsberg, Copenhagen, Denmark, assignor to F. L. Smidth & Co. A/S, Denmark

Continuation of Ser. No. 571,938, Jan. 5, 1996, Pat. No. 5,716,015. This application Feb. 6, 1998, Ser. No. 20,289

Claims priority, application Denmark, Aug. 2, 1993, 0893/93

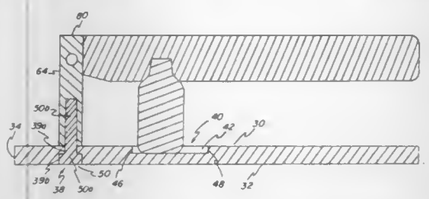
Int. Cl.[6] B02C *17/10*

U.S. Cl. 241—47 **7 Claims**



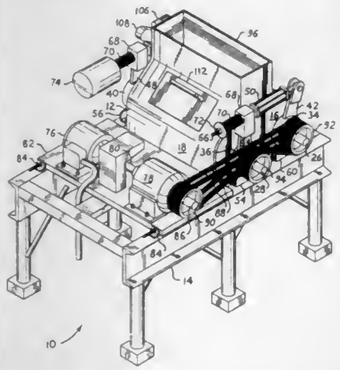
1. A ring mill comprising at least one roller (**2**) within a respective grinding ring (**1**), at least one axial end of the grinding ring being fitted with a collecting jacket (**6**) for a coarse fraction and constituting an extension of the grinding ring (**1**) and with a stationary end section (**9**); radially inwardly directed scoop plates (**7**) fitted at intervals around the collecting jacket (**6**); means for rotating the collecting jacket (**6**) at a speed below the critical speed; an air inlet opening (**11**) in the stationary end section (**9**); and an outlet opening (**12**) in the stationary end section offset radially from the axis of the grinding ring (**1**) and aligned with the interior of the grinding ring (**1**) for a fine fraction to leave the mill in suspension; characterized in that there are two of the air inlet openings (**11**) located one on each side of the outlet opening (**12**) in the rotational direction of the grinding ring, the air inlet openings providing inlets for material to be ground.

5,823,451
MEDICATION CRUSHING DEVICE
Gary L. Sharpe, Circleville, Ohio, assignor to Health Care Logistics, Inc., Circleville, Ohio
Filed Nov. 18, 1996, Ser. No. 746,814
Int. Cl.[6] B02C *19/08*
U.S. Cl. 241—169.2 20 Claims



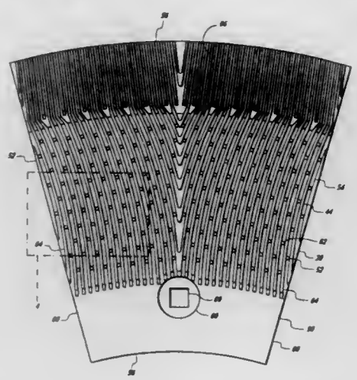
1. A device for crushing medication between a medication cup and a crushing cup, said device comprising
a base member, said base member having formed therein a recessed portion,
an upright member secured to said base member, said upright member comprising a first ear portion and a second ear portion, each ear portion having a top surface, said upright member having an additional intermediate top surface, said intermediate top surface located between the top surfaces of the ear portions and said base member, and
a crushing arm pivotally movable with respect to said upright member, said crushing arm having a crushing element mounted therewith, said crushing arm having a lower surface portion, a first end, and a bevelled surface extending upwardly from said lower surface portion to said first end.

5,823,452
FLAKER MILL
Russell Ballew, and Dale Cleavinger, both of P.O. Box 630, Dalhart, Tex. 79022
Filed May 5, 1997, Ser. No. 841,792
Int. Cl.[6] B02C *4/06*
U.S. Cl. 241—225 20 Claims



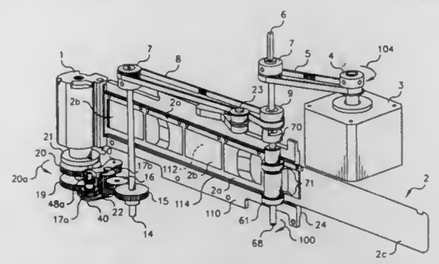
1. A flaker mill, comprising:
a frame;
a housing extending upwardly from said frame, with said housing having a front area and a rear area therein;
a single front roller positionally fixed within said front area of said housing;
a single rear roller adjustably positioned within said rear area of said housing;
said front roller and said rear roller each having an axial roller drive shaft extending therefrom and an opposite axial roller support shaft extending therefrom;
a rearwardly disposed drive motor behind said rear roller;
a speed reduction transmission connected to said motor by a drive shaft extending therebetween;
said transmission having an output shaft with an output sheave affixed thereto;
said front roller drive shaft having a front roller drive sheave affixed thereto and said rear roller drive shaft having a rear roller drive sheave affixed thereto;
at least one drive belt extending about said output sheave and said front roller drive sheave in a first direction, and about said rear roller drive sheave in an opposite second direction; and
said front roller and said rear roller rotating in opposite directions and at substantially the same speed, and defining a narrow, adjustable nip area therebetween for processing grain for animal feed.

5,823,453
REFINER DISC WITH CURVED REFINER BARS
Gregory Alexander Garasimowicz, Mukwonago, Wis., assignor to J & L Fiber Services, Inc., Waukesha, Wis.
Filed Nov. 14, 1995, Ser. No. 557,510
Int. Cl.[6] B02C *7/12*
U.S. Cl. 241—261.3 9 Claims



8. A refiner for stock containing wood fiber, comprising
a housing;
a rotor mounted to the housing for rotation about a central axis in a first direction;
a first annular refiner disc base section connected to the rotor for rotation about the axis;
a plurality of spaced first refiner bars which extend axially outwardly from the base section, wherein each bar extends generally radially along the base section and curves as it extends radially, and wherein the first refiner bars define at least two regions of opposite curvature;
a second annular refiner disc base section connected to the housing in spaced parallel relation to the rotor and the first refiner disc base section; and
a plurality of second refiner bars which protrude axially from the second base section and which extend generally radially along the second base section, wherein the first refiner bars cross the second refiner bars as the first base section is rotated about the axis with respect to the second base section, and wherein the angle of crossing between at least a portion of the first refiner bars and the second refiner bars increases as the refiner bars extend radially along the base sections.

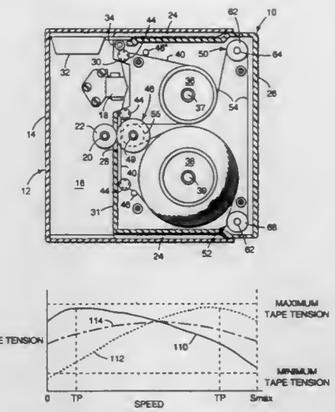
5,823,454
FILM TRANSPORT APPARATUS
Gary Lee Erck, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 26, 1996, Ser. No. 670,947
Int. Cl.[6] G03B *1/12*
U.S. Cl. 242—332 8 Claims



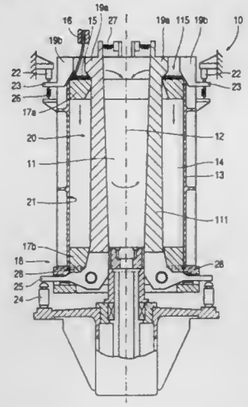
1. A film transport apparatus for selectively advancing a film out of, or rewinding a film onto, a spool shaft of a cartridge, comprising:
a) A rotatable member which engages the spool shaft;
b) a main drive shaft rotatable in either direction;
c) a first drive assembly connected to be driven from the main drive shaft, for pulling on film remote from the cartridge to assist in advancing the film out of the cartridge;
d) a transmission assembly connected to be driven from the main drive shaft, to thrust film from the spool shaft and rewind it onto the spool shaft, comprising:
a rewind gear positioned to rewind the rotatable member, and a thrust gear positioned to advance the rotatable member through a directional clutch such that when film is pulled from the spool shaft by the first drive assembly the thrust gear will disengage from the rotatable member; and
a gear train connected to be driven from the main drive shaft which selectively engages the thrust or rewind gear;
wherein the gear train comprises:
a transfer gear driven from the main drive shaft;
first and second independently moveable gears engaged with the transfer gear which selectively engage the rewind or thrust gears, respectively.

5,823,455
BELT-DRIVEN DATA STORAGE DEVICE WITH CORNER ROLLER ASSEMBLIES PRESELECTED TO HAVE DIFFERENT DRAG FORCE PROFILES
Mary R. Hable, Stillwater; Mark R. Larson, Oakdale, and Kam W. Law, Woodbury, all of Minn., assignors to Imation Corp., Oakdale, Minn.
Filed Dec. 20, 1996, Ser. No. 771,177
Int. Cl.[6] G11B *23/087;23/04;15/32*
U.S. Cl. 242—340 26 Claims

1. A belt-driven, tape cartridge having a tape tension profile and being of the type comprising first and second corner roller assemblies for guiding the drive belt of the tape cartridge, wherein:
(a) the first corner roller assembly has a first drag force profile and comprises:
(i) a first shaft;
(ii) a first rotating member comprising a first bore, wherein the first rotating member is rotatably mounted on the first shaft such that the first shaft is disposed in the first bore; and
(iii) a first lubricant disposed in the first bore between the first rotating member and the first shaft;
(b) the second corner roller assembly has a second drag force profile and comprises:
(i) a second shaft;
(ii) a second rotating member comprising a second bore, wherein the second rotating member is rotatably mounted on the second shaft such that the second shaft is disposed in the second bore; and
(iii) a second lubricant disposed in the second bore between the second rotating member and the second shaft;
wherein the first and second corner roller assemblies are configured such that the drag force profile of the first corner roller assembly is preselected to be different than the drag force profile of the second corner roller assembly in order to controllably establish the tape tension of the cartridge and the first lubricant is different than the second lubricant.



5,823,456
COILING ASSEMBLY FOR IRON AND STEEL PRODUCTS
Giuseppe Bordignon, Bicinicco; Ferruccio Tomat, Udine, both of Italy; Kurt Lennart Danielsson, Smedjebacken, Sweden, and Giorgio Lavaroni, Buttrio, Italy, assignors to Danieli & C. Officine Meccaniche SpA, Buttrio, Italy
Filed Sep. 29, 1995, Ser. No. 536,144
Claims priority, application Italy, Sep. 30, 1994, UD94A0157; May 19, 1995, UD95A0091
Int. Cl.[6] B21C *47/02;47/14;* B21F *3/00*
U.S. Cl. 242—362 13 Claims



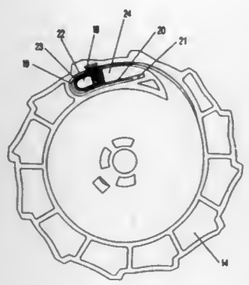
1. Coiling assembly for iron and steel products, which cooperates with a feeding element to feed the product to an upper portion of the coiling assembly, the coiling assembly comprising: a stacking element; a cylindrical drum provided around and coaxial with the stacking element defining therebetween an annular channel to

contain spirals of the product; a movably mounted annular plate provided in the annular channel to support the spirals and movable to a first high position for a start of coiling in cooperation substantially with the feeding element feeding the product, a bottom position for an end of coiling in cooperation with a bottom of the annular channel, and a plurality of intermediate positions between the first high position and the bottom position; a vertical adjustment system for lowering the annular plate during formation of the spirals and for raising the annular plate in a step of discharge of the formed coil; and circumferential means provided at an upper part of the annular channel to laterally contain spirals on the annular plate and in cooperation with the sidewalls radially defining the annular channel thereof and extending radially within the annular channel at least along a predetermined initial segment thereof to prevent the spirals from scraping against the sidewalls.

5,823,457
SAFETY BELT REELING DEVICE WITH COMFORT FUNCTION

Walter Jahn, Ehningen; Lars Axelsson, Elmshorn, and Frank Fugel, Halstenbek, all of Germany, assignors to Autoliv Development AB, Vargarda, Sweden, and Mercedes-Benz AG, Stuttgart, Germany

Filed Mar. 25, 1997, Ser. No. 823,935
Int. Cl.[6] B60R *22/44*
U.S. Cl. 242—372 **5 Claims**

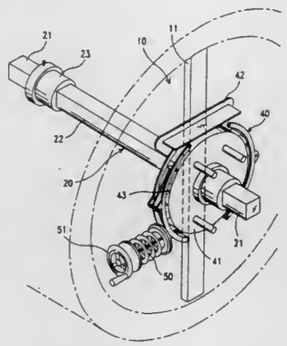


1. A safety belt reeling device with comfort function, said safety belt reeling device comprising:
a housing;
a reeling shaft rotatably supported in said housing;
a pawl wheel rotatably mounted on said reeling shaft and switchable between a locked position in which rotation of said pawl wheel is blocked and a release position in which said pawl wheel is rotatable;
a winding spring, connected with a first end to said housing and with a second end to said pawl wheel, for rotating said reeling shaft when said pawl wheel is in said release position;
a comfort spring having a weaker spring force than said winding spring;
said comfort spring connected with a first end to said pawl wheel and with a second end to said reeling shaft and serially switched with said winding spring such that, after tensioning of said comfort spring, a force of said winding spring is transmitted via said pawl wheel and said comfort spring onto said reeling shaft;
said pawl wheel having a stay with a first and a second end;
said first end of said comfort spring guided in a single loop about said first end of said stay;
an elastically deformable dampening element positioned between said first end of said stay and said single loop;
said dampening element reducing a load impact on said comfort spring, when said pawl wheel is switched into said release position, by allowing a displacement of said single loop relative to said stay.

5,823,458
CABLE SPOOL WITH A DAMPING BRAKE

Wen-Cheng Huang, Hsin-Chu, Taiwan, assignor to Jin Fong Hydrauli Company

Filed Apr. 18, 1997, Ser. No. 844,329
Int. Cl.[6] B65H *75/30*
U.S. Cl. 242—396.6 **2 Claims**

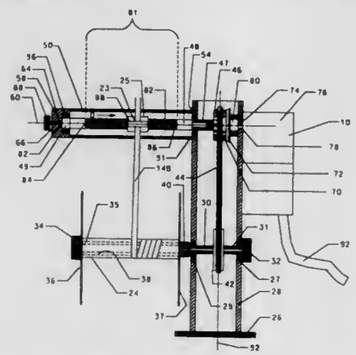


1. A cable spool with a damping brake comprising:
a supporting axle composed of two square sectional ends fixed in a supporting fixture, a square sectional middle part, and two circular sectional parts disposed on said square sectional middle part;
a cable spool mounted on said circular sectional parts of said supporting axle; and
a damping brake assembly including a brake disk mounted on one of said circular sectional parts of said supporting axle and driven to rotate by said cable spool, a brake holder and two brakes shoes fixedly supported on said square sectional middle part of said supporting axle, a pair of brake clamps supported fixedly on one of said square sectional ends of said supporting axle.

5,823,459
DEVICE FOR REWINDING USED HEAT TRANSFER FOIL

Rick York, Rte. 1, Box 43, Kellyville, Okla. 74039

Filed Apr. 3, 1997, Ser. No. 832,280
Int. Cl.[6] B65H *18/08*
U.S. Cl. 242—471 **6 Claims**

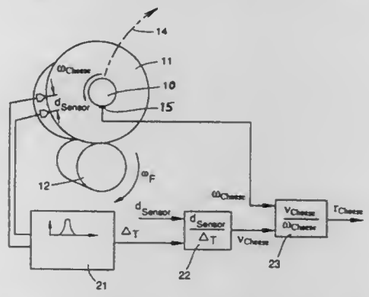


1. A device for rewinding used heat transfer foil comprising:
means for rotatably holding a spool,
means for guiding used heat transfer foil onto said spool so that the heat transfer foil is wound onto said spool in an orderly fashion, means for guiding used heat transfer foil onto said spool being coordinated in its rotation with rotation of movement of said means for rotatably holding said spool,
a motor attached via a slip drive mechanism to said means for rotatably holding said spool and attached via the slip drive mechanism to said means for guiding used heat transfer foil onto said spool,
a tensioning screw being provided on said means for guiding used heat transfer foil in order to increase and decrease friction between said slip drive mechanism and said means for guiding used heat transfer foil onto a spool, wherein said spool is removably secured to said means for rotatably holding said spool,
wherein said slip drive mechanism further comprises a rotatable drive shaft attached to said motor, a clutch plate secured to said drive shaft, a clutch disk provided on said clutch plate for frictional engagement with a pressure plate provided on said means for guiding used heat transfer foil onto a spool.

5,823,460
METHOD AND DEVICE FOR DETERMINING THE DIAMETER OF A TEXTILE YARN CHEESE

Ferdinand-Josef Hermanns, Erkelenz, Germany, assignor to W. Schlafhorst AG & Co., Moenchengladbach, Germany

Filed Jun. 23, 1997, Ser. No. 880,280
Claims priority, application Germany, Jun. 26, 1996, 196 25 512.0
Int. Cl.[6] B65H *63/08;* **G01P** *3/66*
U.S. Cl. 242—485.7 **6 Claims**



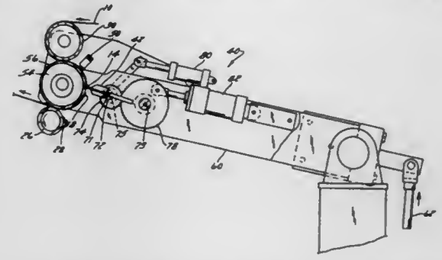
1. A method for determining the radius of a cheese while being surface driven by a friction roller during production of the cheese, comprising:
(a) determining the angular velocity of the cheese by sensing rotation of the cheese over time;
(b) determining the circumferential velocity of the cheese by
(i) detecting surface characteristics of the cheese using a first sensor and generating a first signal as a function of said determined surface characteristics:
(ii) detecting the same surface characteristics of the cheese using a second sensor and generating a second signal corresponding to the first signal as a function of said determined surface characteristics, the second sensor being disposed from the first sensor along a fixed circumferential distance:
(iii) correlating the first signal with the second signal thereby determining a time difference between the corresponding signals, and then
(iv) dividing the time difference by the fixed distance between the sensors to thereby arrive at the circumferential velocity of the cheese; and
(c) dividing said determined circumferential velocity of the cheese by said determined angular velocity of the cheese to thereby arrive at the radius of the cheese.

2. A device for determining the radius of a cheese while being surface driven by a friction roller during production of the cheese, comprising:
means for detecting the angular velocity of a component rotating with the cheese;
two sensors disposed adjacent the circumference of the cheese at a fixed circumferential distance from each other for detecting surface characteristics of the cheese and generating signals as a function of the detected surface characteristics;
a signal correlating member connected to said sensors for receiving signals therefrom, said signal correlating member correlating signals from said first sensor with signals from said second sensor for determining time differences between corresponding signals from said sensors;
a division member for calculating a circumferential velocity from the fixed distance between the sensors and the time differences; and
a division member for calculating the radius by division of the circumferential velocity of the cheese by the angular velocity of the cheese.

5,823,461
NO-FOLD BACK SPLICER WITH ELECTROSTATIC WEB TRANSFER DEVICE

John J. Hartley, Powauleo, and Richard D. Greer, Brookfield, both of Wis., assignors to Faustel, Inc., Germantown, Wis.

Filed Mar. 10, 1997, Ser. No. 814,314
Int. Cl.[6] B65H *19/28;75/28*
U.S. Cl. 242—532.3 **15 Claims**



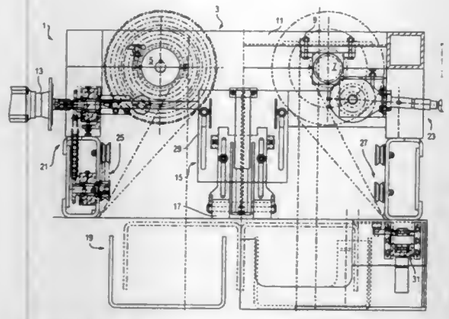
1. A method of splicing a continuously moving web comprising:
winding the moving web onto an old core of a rewinder;
positioning a new core upstream of the old core; and,
splicing the moving web onto the new core, the splicing step comprising:
electrostatically charging the web at a location upstream of the new core in order to temporarily adhere the web to a roller;
cutting the moving web across its width at a location downstream from where the web is electrostatically charged but upstream from the new core, thereby producing a tail and a new leading edge;
placing the moving web in contact with the new core; and
at a location downstream from where the web was cut, removing the new leading edge from the roller and affixing it onto the new core and thereafter winding the web around the new core.

5,823,462
EXCHANGE DEVICE FOR REPLACING TRANSPORT BELTS IN A WEB PRODUCING MACHINE

Anton Schmitt, Heidenheim, Germany, assignor to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany

Filed Jan. 28, 1997, Ser. No. 790,311
Claims priority, application Germany, Jan. 29, 1996, 196 03 029.3
Int. Cl.[6] B65H *19/22*
U.S. Cl. 242—533.8 **25 Claims**

1. An exchange device for replacing a transport belt in a dryer section of a web production machine, comprising:



a spooler device that removes a used transport belt and inserts a new transport belt;

a mobile carrier device, supporting the spooler device, movable to an exchange location for replacing the transport belt; and

the spooler device being movable along a portion of the mobile carrier device.

5,823,463

WOUND ROLL SUPPORT IN A WEB WINDING MACHINE

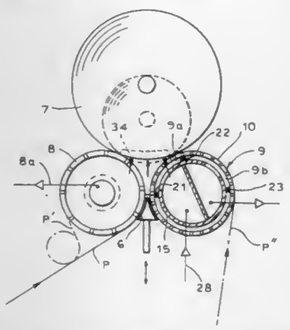
Hans-Joachim Fissmann, Konstanz, and Matthias Wohlfahrt, Ulm, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Germany

Filed Feb. 24, 1997, Ser. No. 804,814

Claims priority, application Germany, Feb. 23, 1996, 196 06 755.3

Int. Cl.[6] B65H *18/14*

U.S. Cl. 242—541.7 **24 Claims**



1. A machine for winding or unwinding a web roll of material having a width and a weight, the winding machine comprising:

at least first and second support rollers, each having a peripheral surface along its width, the support rollers being disposed proximate to one another such that the peripheral surfaces rollably support the web roll;

a rotatable and perforated roller shell forming the peripheral surface of the first support roller and having an inner surface defining an interior, the shell being rotatable about a stationary axis;

a gas pressure box being connectable to a source of pressurized gas and located in the interior of the perforated roller shell of the first support roller, the pressure box having an outer surface which includes an opening for permitting the pressurized gas to pass;

a first packing element having an exterior surface in slidable communication with the peripheral surfaces of the support rollers and extending along their widths;

the exterior surface of the first packing element, the peripheral surfaces of the rollers and an area of the web roll between the peripheral surfaces of the rollers defining a volume substantially beneath the web roll; and

circumferentially spaced apart second and third packing elements extending longitudinally along the pressure box between the outer surface of the pressure box and the inner surface of the perforated roller shell for defining a pressure zone between the second and third packing elements;

the opening in the pressure box communicating with the pressure zone and the pressure zone communicating with the volume through the perforations in the roller shell such that gas pressure is increased in the volume which counteracts the weight of the web roll.

5,823,464

DEVICE FOR GUIDING PLY WEBS OF PAPER OR THE LIKE

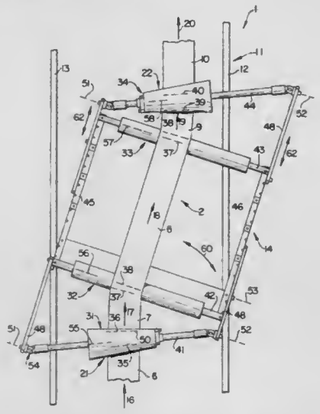
Martin Bohn, Reutlingen, and Wolfgang Scheller, Oberpleichfeld, both of Germany, assignors to bielomatik Leuze GmbH & Co., Germany

Filed May 23, 1997, Ser. No. 862,287

Claims priority, application Germany, May 23, 1996, 196 20 714.2

Int. Cl.[6] B65H *23/32;20/00*

U.S. Cl. 242—615.21 **31 Claims**



1. A device for guiding a material web (**2**) defining a web length extension, a web width extension, a web plane (**26** to **30**) and longitudinal web sections (**6**, **10**) including a fed section (**6**) and an offgoing section (**10**), the fed section (**6**) defining a first running plane (**26**) and a first running direction (**16**), the offgoing section (**10**) defining a second running plane (**30**) and a second running direction (**20**), said device comprising:

a stationary device base (**11**),

deflection means for deflecting the material web (**2**), said deflection means extending between path ends (**21**,**22**) and including a web inlet (**21**) for receiving the fed section (**6**) and a web outlet (**22**) for giving out the offgoing section (**10**), said deflection means further including between said path ends (**21**, **22**) deflectors, said deflectors (**31** to **34**) including first and second deflectors (**31**, **34**) for curving the material web (**2**) transverse to the web plane (**26** to **30**), said first deflector (**31**) defining first contact points (**35**, **36**) including a first inlet point (**35**) for initially contacting the material web (**2**), a first outlet point (**36**) for finally contacting the material web (**2**) and a first deflection arc (**23**) extending from said first inlet point (**35**) to said first outlet point (**36**) and defining a first arc axis (**55**), said second deflector (**34**) defining second contact points (**39**, **40**) including a second inlet point (**39**) for initially contacting the fed section (**6**), a second outlet point (**40**) for finally contacting the offgoing section (**10**) and a second deflection arc (**25**) extending from said second inlet point (**39**) to said second outlet point (**40**) and defining a second arc axis (**58**), between said first and second deflection arc (**23**, **25**) said deflection means guiding the material web linearly, for directly connecting to each individual contact point of said first and second contact points (**35**, **36** or **37**, **38** or **39**, **40**) remote from said first and second deflecting arcs (**23** to **25**) the material web (**2**) defining connecting sections including the fed section (**6**) and the offgoing section (**10**), and

transposition means for laterally transposing the offgoing section (**10**) along said first and second arc axes (**55**, **58**) with respect to the fed section (**6**), said first deflector (**31**) defining a first deflecting radius and said second deflector (**34**) defining a second deflecting radius, wherein at least one of said first and second deflecting radii varies along said first and second arc axes (**55**,**58**).

5,823,465

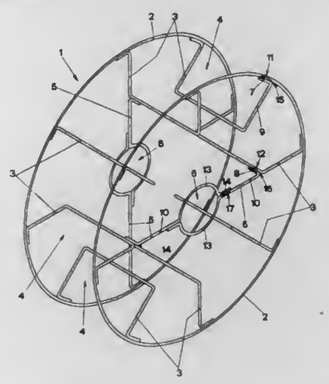
METALLIC SPOOL

Gianluigi Marangoni, Vicenza, Italy, assignor to GIMAX S.R.L., Sovizzo, Italy

Filed Jul. 9, 1996, Ser. No. 677,487

Int. Cl.[6] B65H *75/20*

U.S. Cl. 242—604.1 **6 Claims**



1. A metallic spool (**1**) for winding filiform flexible materials in the form of a skein to form a wound product, said spool having lateral bands and being constituted by a structure (**1**), said structure (**1**) being composed of two rings (**2**), said rings (**2**) being parallel and concentric and constituting the external border of the lateral bands of said spool, one of said rings being the external ring, said rings being held spaced by a plurality of sections (**3**), said sections (**3**) being shaped in the form of a "C", said sections constituting the recess (**4**) for containing and supporting said skein of said wound product and being held spaced also by a plurality of central structures (**5**) (**18**), said structures (**5**) constituting the central hub (**6**) for hooking with the operating machine, wherein said rings (**2**), said sections (**3**) and said central structures (**5**) are made of a single type of metallic wire, said sections (**3**) and said central structures (**5**) are provided at the extremities thereof with extensions (**7**) and (**8**), said extensions being folded, said extensions (**7**) and (**8**) being made of the same metallic wire of said spool, said sections (**3**) having extensions (**9**) and said structures (**5**) having extensions (**10**), said folded extensions (**7**) and (**8**) being simultaneously perpendicular to said extensions (**9**) of said section (**3**) and to said extensions (**10**) of said central structures (**5**), said external ring (**2**) having a portion (**11**) and said shaped sections (**3**) having portion (**12**), said extensions (**7**) and (**8**) being parallel, respectively to said portion (**11**) of said external ring (**2**) and to said portion (**12**) of said section (**3**).

5,823,466

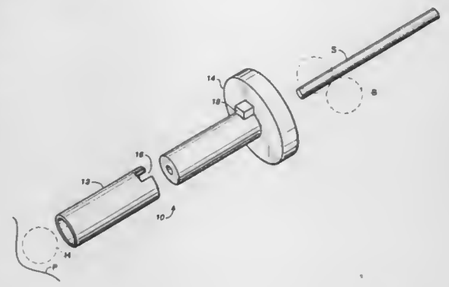
PROPELLER BALANCING METHOD AND APPARATUS

Frederick T. Jamieson, 3219 Monier Cir., Rancho Cordova, Calif. 95742

Filed Aug. 8, 1995, Ser. No. 512,551

Int. Cl.[6] B64C *11/20*

U.S. Cl. 244—65 **6 Claims**



1. A method for weight balancing a propeller about a center of gravity, said propeller having a plurality of propeller blades disposed about a hub having a center mounting hole, said method comprising the steps of:

providing a balance stand having a balance shaft;

installing an eccentric bushing into the propeller center mounting hole, said eccentric bushing having a center;

rotating said eccentric bushing within the propeller center mounting hole until said center of said eccentric bushing aligns with the center of gravity of the propeller.

5,823,467

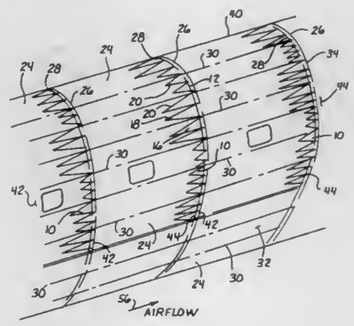
PASSIVE DAMPING WEDGE

Gopal P. Mathur, Mission Viejo, Calif., assignor to McDonnell Douglas Corp, Long Beach, Calif.

Filed Apr. 1, 1997, Ser. No. 831,532

Int. Cl.[6] B64C *1/12;1/40*

U.S. Cl. 244—1 N **20 Claims**



1. A viscoelastic wedge for absorbing flexural wave energy in a panel, said wedge comprising:

an elongated base extending upwardly from a flat lower surface;

an upper surface tapering downwardly from said base into a plurality of spaced apart front end members; and

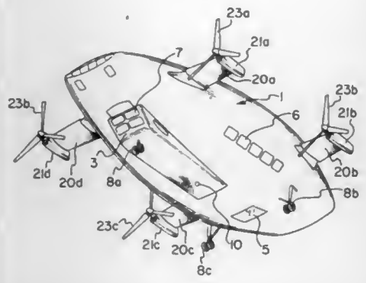
a plurality of pairs of sides, each pair of sides tapering inwardly to generally define each of said front end members.

5,823,468

HYBRID AIRCRAFT

Hans-Jurgen Bothe, 61 Scothaven, 52246 Range Road 232, Sherwood Park, Alberta, Canada

Filed Oct. 24, 1995, Ser. No. 547,574
Int. Cl.[6] B64B *1/34*
U.S. Cl. 244—2 **43 Claims**



1. An aircraft comprising: a lifting body hull, a plurality of wings spaced about the hull including a left-side forward wing, a left-side rear wing, a right-side forward wing and a right-side rear wing, each wing being shaped as an airfoil and mounted to be pivotally moveable about its neutral axis, each wing being pivotable independent of each other wing and a propelling means mounted on each wing and being pivotally moveable at least between a position in which it is disposed to provide thrust substantially vertically and a position in which it is disposed to provide forward thrust, each propelling means being pivotable independent of each other propelling means and independent of the pivotal movement of the wing to which it is attached.

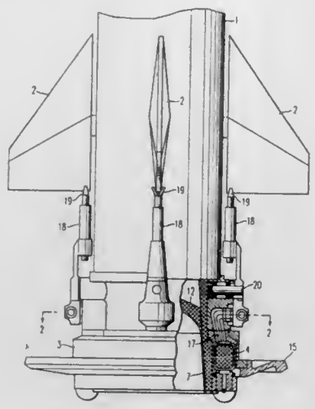
5,823,469

MISSILE LAUNCHING AND ORIENTATION SYSTEM

Ivan Ivanovitch Arkhangelsky; Eugène Gueorguevitch Bolotov; Vladimir Sergueevitch Philippov, all of Khimki; Vladimir Yakovlevitch Mizrokhi; Vladimir Grigorievitch Svetlov, both of Moscou; Gregory Andreevitch Stanevsky, Khimki; Serge Grigorievitch Khitenkov; Victor Leonidovitch Gaidoukevitch, both of Moscou, and Eugène Afanassievitch Chmikov, Khimki, all of Russian Federation, assignors to Thomson-CSF, Paris, France

PCT No. PCT/FR95/01423, § 371 Date Jun. 26, 1996, § 102(e) Date Jun. 26, 1996, PCT Pub. No. WO96/13694, PCT Pub. Date May 9, 1996
PCT Filed Oct. 27, 1995, Ser. No. 663,308
Claims priority, application Russian Federation, Oct. 27, 1994, 94040077; Jul. 3, 1995, 95110350
Int. Cl.[6] F02K *9/97;9/76*
U.S. Cl. 244—3.22 **19 Claims**

1. A launching and orientation system for a missile, comprising:
launching means;
aerodynamic control surfaces with a drive and orientation means located in a rear part of the missile including at least one gas generator and gas pipes connected to it;
a generally annular body rigidly connected to a body of the missile with said orientation means being located in the generally annular body; an internal surface of the generally annular body being in the shape of a truncated cone and being coated with a thermal insulation material forming a nozzle section, the profile of which is continuous with an internal profile of a cruise engine nozzle of the missile;
wherein the generally annular body includes ejection means to remove the generally annular body from the missile during flight; and



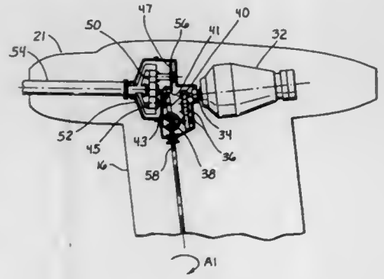
a protective shutter with a truncated cone shaped lateral surface having a profile which matches at least some parts of a surface of a cross section of said annular body nozzle section.

5,823,470

SPLIT TORQUE PROPROTOR TRANSMISSION

Gary A. Craig; Gregory F. Heath, and Vijay J. Sheth, all of Mesa, Ariz., assignors to McDonnell Douglas Helicopter Co., Mesa, Ariz.

Filed Jul. 16, 1996, Ser. No. 682,026
Int. Cl.[6] B64C *27/28;35/00*
U.S. Cl. 244—7 R **19 Claims**



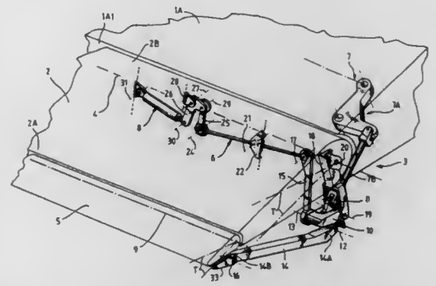
1. A proprotor transmission and driveshaft for use in a nacelle of a tiltrotor aircraft, comprising:
a wing cross shaft having a first bevel gear operatively connected thereto, the wing cross shaft having a shaft axis;
a proprotor driveshaft adapted to be connected to a proprotor, the proprotor driveshaft having a driveshaft axis;
a main transmission input shaft having a second bevel gear operatively connected thereto, the main transmission input shaft being operatively coupled to the proprotor driveshaft; and
a bevel pinion operatively connected to an engine input, the bevel pinion meshing with both the first bevel gear of the wing cross shaft and the second bevel gear of the main transmission input shaft, whereby movement of the second bevel gear relative to the bevel pinion can facilitate positional movement of the driveshaft axis relative to the shaft axis.

5,823,471

SYSTEM FOR CONTROLLING A CONTROL SURFACE ARTICULATED TO A STRUCTURE OF A VEHICLE

Francis Dazet, Saint Alban, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jul. 29, 1996, Ser. No. 688,095
Claims priority, application France, Aug. 8, 1995, 95 09605
Int. Cl.[6] B64C *13/04*
U.S. Cl. 244—75 R **8 Claims**



1. A system for controlling a control surface articulated to a structure of a vehicle about a first fixed axis, the control surface having a trailing edge, the system comprising:
a tab articulated to the trailing edge of said control surface about a second axis parallel to said first axis;
elastic linking means, comprising at least one leaf spring which has a first end and a second end, said elastic linking means being mounted to pivot about a third axis relative to said control surface;
a pilot input control mechanism for acting on said tab to cause said tab to turn in a first direction and, simultaneously, to cause the control surface to turn in a second direction which is opposite to said first direction, so as to cause said tab to be disposed in a first position selected through the pilot input control mechanism and to cause said control surface to be disposed in a second position selected through the pilot input control mechanism;
an actuating member for keeping the tab in the first position and for keeping the control surface in the second position;
a first connecting rod connected to said elastic linking means;
a second connecting rod connected to said tab;
an arm connected to said control surface; and
an intermediate mechanical member actuated by said pilot input control mechanism for actuating said first connecting rod, said second connecting rod and said arm;
wherein:
said at least one leaf spring is connected at said first end to said actuating member and at said second end to said first connecting rod; and
said elastic linking means and said actuating member are arranged to be at least substantially parallel to said first axis, situated in proximity to said first axis and upstream from said first axis relative to a motion of said vehicle.

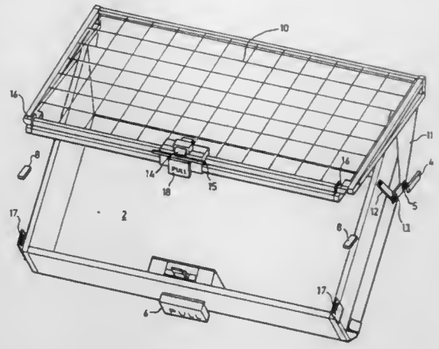
5,823,472

STOWAGE COMPARTMENT CONSTRUCTION PARTICULARLY FOR AIRCRAFT

David Luria, Tel-Aviv, Israel, assignor to Fuselage Engineering Services Ltd., Tel Aviv, Israel

Filed Jun. 4, 1996, Ser. No. 657,952
Int. Cl.[6] B64D *11/00*
U.S. Cl. 244—118.1 **20 Claims**

16. A stowage compartment to be mounted in a supporting structure, comprising:
a lower compartment section for receiving articles to be stowed;
an upper compartment section serving as an outer cover for the lower compartment section; said upper compartment section being fixed to the supporting structure, and said lower compartment section being pivotal to a closed position or to an open position with respect to said upper compartment section;



a compartment locking mechanism for locking said two compartment sections together when the lower compartment section is in its closed position with respect to the upper compartment section; said compartment locking mechanism including a handle manually engageable by a user for releasing the compartment locking mechanism to permit pivoting the lower compartment section to its open position with respect to the upper compartment section;
an inner cover between the lower compartment section and the upper compartment section, and pivotal to a closed position or to an open position with respect to the lower compartment section;
and an inner cover locking mechanism for locking the inner cover to the lower compartment section when the inner cover is in its closed position with respect to the lower compartment section;
said inner cover locking mechanism also including a handle manually engageable by a user for releasing the inner cover locking mechanism to permit pivoting the inner cover with respect to the lower compartment section, and a pair of locking tongues extending from the opposite sides of said inner cover and movable by said handle of the inner cover locking mechanism laterally outwardly to a locking position engageable with elements fixed at the opposite ends of said lower compartment section, and inwardly to a releasing position with respect to said elements;
said upper compartment section, in the closed position of said pivotal compartment section, covering said handle of the inner cover locking mechanism such as to permit manual access thereto, in order to release the inner cover locking mechanism, only after the pivotal compartment section has been pivoted to its open position with respect to the fixed compartment section.

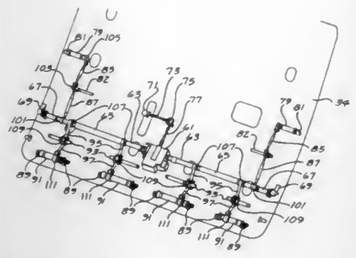
5,823,473

LATCH-LOCK MECHANISM FOR LOAD CARRYING AIRPLANE CARGO DOORS

Richard B. Odell; Stephen J. Fox, both of Kirkland; Huw J. Salmon, Renton, and John A. Ennes, Redmond, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,280
Int. Cl.[6] B64C *1/14*
U.S. Cl. 244—129.5 **14 Claims**

1. In a latch-lock mechanism for a load carrying airplane cargo door that includes a plurality of latch cams located along the closing edge of the cargo door, a plurality of latch pins located along the closing edge of the cargo door's doorway in alignment with the latch cams, a power drive unit (PDU) mounted on the cargo door for rotating the latch cams between an unlatched position whereat said latch cams do not prevent said cargo door



from opening and a latched position whereat said latch cams engage said latch pins and prevent said door from opening, first mechanical coupling for coupling the PDU to the latch cams, a plurality of lock elements associated with said plurality of latch cams and latch pins, a lock handle for moving said plurality of lock elements between a locked position and an unlocked position and second mechanical coupling for coupling the latch handle to the plurality of lock elements, the improvement comprising:

said first mechanical coupling including straight-through drive shafts mounted on said cargo door and extending outwardly from either side of said PDU to the sides of the cargo door, ending at the latch cams; and

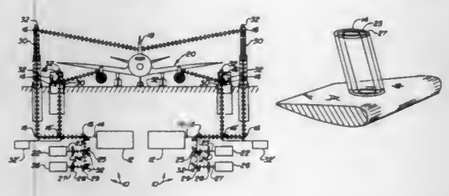
said lock elements comprising lock pawls positioned and constructed such that said lock pawls cannot be moved into a locked position unless said latch cams are in their latched position.

5,823,474

AIRCRAFT ICE DETECTION AND DE-ICING USING LASERS

William C. Nunnally, Columbia, Mo., assignor to SunLase, Inc., Tulsa, Okla.

Filed Sep. 5, 1996, Ser. No. 706,598
Int. Cl.[6] B64D *15/00*
U.S. Cl. 244—134 E **19 Claims**



1. A method of de-icing an aircraft comprising:

(a) positioning an aircraft to be de-iced remotely from a laser beam generator;

(b) reflecting a first beam of radiant energy generated by said laser beam generator from a first mirror so that said reflected first beam impinges upon and creates a first footprint upon a surface of said aircraft, said first beam having a first wavelength substantially within a range that is preferentially reflected by said aircraft surface and absorbed by ice, snow or water on said aircraft surface; and

(c) manipulating said first mirror to move said first footprint about said aircraft surface for removing ice, snow or water from said aircraft surface.

5,823,475

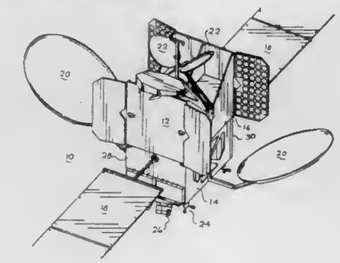
Patent Not Issued For This Number

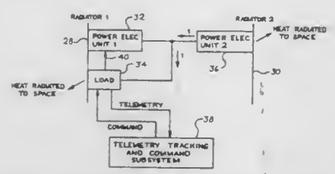
5,823,476

DEVICE AND METHOD FOR EQUALIZING HEAT DISSIPATION BETWEEN MULTIPLE RADIATORS ON A SPACECRAFT

Glenn N. Caplin, Manhattan Beach, Calif., assignor to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Dec. 22, 1995, Ser. No. 577,443
Int. Cl.[6] B64G *1/46*
U.S. Cl. 244—158 R **14 Claims**





1. A device for distributing thermal dissipation among radiator panels of a satellite comprising:

a plurality of radiator panels mounted on said satellite;

a first component mounted on a first of said plurality of radiator panels such that said first component dissipates heat to said first radiator panel when said first component is in operation;

a second component mounted on a second of said plurality of radiator panels such that said second component dissipates heat to said second radiator panel when said second component is in operation;

at least one load in communication with and controlling the operation of said first and second components, said load selectively controlling the operation of said first and second components in order to achieve a desired level of heat dissipation from said first and second components, thereby controlling the amount of heat that is dissipated to said first and second radiator panels.

5,823,477

DEVICE AND METHOD FOR MINIMIZING RADIATOR AREA REQUIRED FOR HEAT DISSIPATION ON A SPACECRAFT

Gary M. York, Gardena, Calif., assignor to Hughes Electronics Corporation, Los Angeles, Calif.

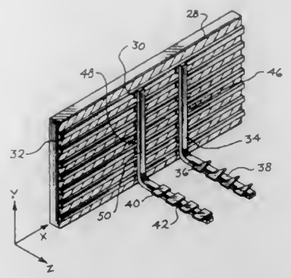
Filed Dec. 22, 1995, Ser. No. 577,574
Int. Cl.[6] B64G *1/50*
U.S. Cl. 244—163 **28 Claims**

1. A device for dissipation of heat in a satellite wherein heat is generated by first and second units having first and second states, the first unit generating a greater amount of heat in the first state than in the second state and the second unit generating a lesser amount of heat in the first state than in the second state, wherein the total heat generated by the first and the second units in either the first state or the second state is less than the sum of the maximum heat generated by the first unit and the maximum heat generated by the second unit, the device comprising:

a radiator panel having a radiator area large enough to reject the total heat generated by the first and the second units in either the first state or the second state, wherein the radiator area is smaller than a heat rejection areas required to reject an amount of heat equal to the sum of the maximum heat generated by the first unit and the maximum heat generated by the second unit;

a plurality of radiator heat pipes embedded in the radiator panel; and

first and second unit heat pipes thermally connected to the radiator heat pipes with the first unit thermally connected to the first unit heat pipe and the second unit thermally connected to the second unit heat pipe.

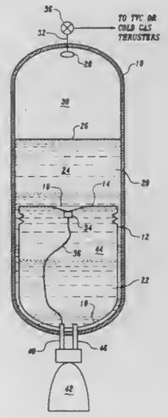


5,823,478

PRESSURE FEED FOR LIQUID PROPELLANT

Bruce P. Dunn, Vancouver, Canada, assignor to The University of British Columbia, Vancouver, Canada

Filed Jul. 17, 1995, Ser. No. 503,352
Int. Cl.[6] B64G *1/40*
U.S. Cl. 244—172 **20 Claims**



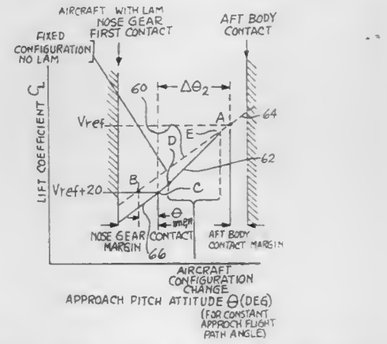
1. A pressurized fuel feeding system for a rocket engine comprising a source of a volatile liquid rocket propellant and a source of a second liquid rocket propellant, storing both said volatile and said second rocket propellants in a pressure communicating relationship, said volatile propellant having a vapor pressure sufficiently high to pressurize both said volatile and said second propellants and provide substantially the sole means for forcing said volatile rocket propellant and said second rocket propellant each from its said source to said rocket engine.

5,823,479

LANDING ATTITUDE MODIFIER FOR AIRPLANE

Brian N. Nield, Preston; Ross A. Landes, Everett, and Monte R. Evans, Federal Way, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 20, 1996, Ser. No. 650,413
Int. Cl.[6] B64C *13/18*
U.S. Cl. 244—187 **23 Claims**



1. A method of modifying the attitude of an airplane during landing, comprising:

generating a reference value for a predetermined flight condition parameter;

producing a current value for said predetermined flight condition parameter;

subtractively combining said reference value and said current value to produce a difference value for said predetermined flight condition parameter;

creating a schedule of deflection values for at least one movable surface capable of producing a lift as a function of said difference value that will meet or exceed a selected aft body contact margin and/or a selected nose gear contact margin for the airplane;

determining a first deflection value for said at least one movable surface from said schedule based on said difference value;

determining a position command based on said first deflection value; and

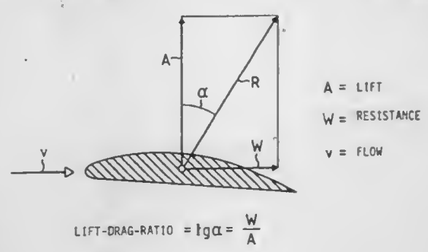
adjusting the position of said at least one movable surface by an amount equal to said position command.

5,823,480

WING WITH A WING GRID AS THE END SECTION

Ulrich La Roche, Heiligshüsli 18, 8053 Zürich, Switzerland

Continuation-in-part of Ser. No. 343,519, Dec. 5, 1994, abandoned. This application Feb. 1, 1996, Ser. No. 595,588
Claims priority, application Switzerland, Apr. 5, 1993, 1 032/93-2; Nov. 2, 1993, 3 293/93-7
Int. Cl.[6] B64C *03/42;03/54;23/06*
U.S. Cl. 244—199 **14 Claims**



1. A wing comprising the combination of

a main wing part having a substantially closed surface, a distal end, a chord, a first predetermined span and a predetermined orientation and predetermined attack angle relative to incident fluid flow for producing lift; and

a tip portion at said distal end of said main wing part, said tip portion comprising:

a grid of at least two spaced-apart winglets having a second predetermined span, said grid being attached to said distal end of said main wing part and extending the same lift per span unit of undisturbed two-dimensional flow around the profile of the main wing at the attachment to the grid's winglet tips, each of said winglets having substantially the same orientation relative to incident fluid flow as said main wing part, said second predetermined span being no greater than said first predetermined span,

said winglets having an overlap ratio of winglet chord length to spacing from an adjacent winglet equal to less than one and a ratio of chord length to winglet spacing which is substantially constant along said winglet span where said spacing is measured leading edge to leading edge, and

said winglets being vertically staggered relative to each other along a line unidirectionally angularly separated from a plane containing the chord of the main wing part.

5,823,481

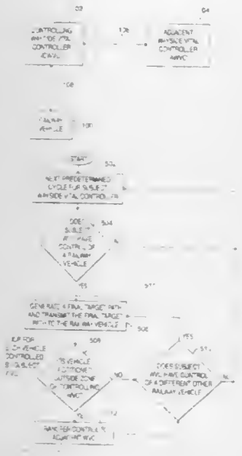
METHOD OF TRANSFERRING CONTROL OF A RAILWAY VEHICLE IN A COMMUNICATION BASED SIGNALING SYSTEM

Kenneth M. Gottschlich, Pittsburgh, Pa., assignor to Union Switch & Signal Inc., Pittsburgh, Pa.

Filed Oct. 7, 1996, Ser. No. 726,526

Int. Cl.[6] B61L *21/00*

U.S. Cl. 246—28 R **36 Claims**



9. A method of transferring control of a first railway vehicle, from a first wayside controller that controls a first zone within which the railway vehicle is positioned, to a second wayside controller that controls a second zone that is adjacent the first zone and separated from the first zone by a predetermined boundary in a communication based signaling system, comprising the steps of:

(a) periodic monitoring by the first wayside controller of a position of the first railway vehicle, in parallel with periodic monitoring by the second wayside controller for receipt of a first transmission from the first wayside controller, in parallel with periodic monitoring by the first railway vehicle for receipt of a second transmission from the first wayside controller;

(b) generating by the first wayside controller of a final target path;

(c) transmitting said final target path to the railway vehicle; and

(d) transferring control of the first railway vehicle from the first wayside controller to the second wayside controller when said position of the first railway vehicle is outside the first zone and within the second zone.

5,823,482

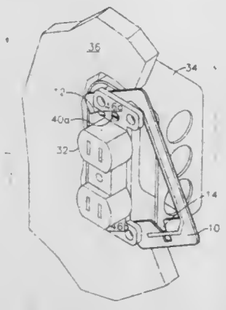
WIRING DEVICE SUPPORT

Thomas J. Gretz, Clarks Summit, Pa., assignor to Arlington Industries, Inc., Scranton, Pa.

Filed Jan. 10, 1997, Ser. No. 781,724

Int. Cl.[6] G12B *9/10;* **H01H** *9/02*

U.S. Cl. 248—27.1 **2 Claims**



2. A one-piece plastic thin planar C-shaped wiring device support comprising,

a first short end having an inner periphery, an outboard side and a connected side;

a second short end having an inner periphery, an outboard side and a connected side;

a long side having an inner periphery connecting said first short end at said connected side of said first short end and said second short end at said connected side of said second short end;

an angled notch located on said inner periphery of said first short end and having a first angled side edge, a second angled side edge and a bottom;

said first angled side edge of said angled notch extending from said bottom of said notch at an angle from the vertical;

said second angled side edge extending from said bottom of said notch at approximately 45 degrees from the vertical so that said notch diverges open;

a ramp located on said inner periphery of said second short end with said ramp extending from an inner terminus on said second short end to said outboard side of said second short end with said ramp inclined towards said outboard side at an angle from the vertical;

a thin rib extending on said first short end between said bottom of said notch at the said inner periphery of said long side and on said second short end adjacent said inner terminus of said ramp; and

said first short end, said second short end and said long side having a thickness less than the thickness of said thin rib with the overall height of said support being greater than the overall width of said support.

5,823,483

UTENSIL-HOLDER ATTACHMENT FOR CONTAINERS

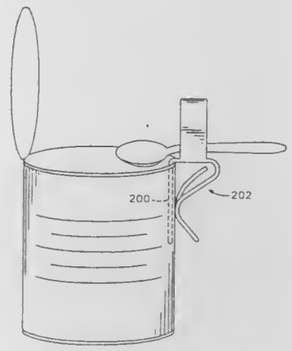
Garold B. Gaskill, 10285 SW. Mortatoc Dr., Tualatin, Oreg. 97062

PCT No. PCT/US95/10873, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO96/05759, PCT Pub. Date Feb. 29, 1996

Continuation-in-part of Ser. No. 296,315, Aug. 24, 1994, Pat. No. 5,518,211. This PCT application Aug. 24, 1995, Ser. No. 793,233

Int. Cl.[6] A47J *45/02;45/10*

U.S. Cl. 248—37.6 **1 Claim**



1. A device (**200**, **10B**, **203**, **204**, **206**) for securing a utensil (**30**) on vessels (**20**) having variable wall thickness, comprising:

an inner finger (**200**) having an upper end and a lower end;

a utensil clip (**10B**) having a front end and a rear end, the front end joined to the upper end of the inner finger;

a spring arm (**203**) having a top end and a bottom end, the top end joined to the rear end of the utensil clip, and the bottom end approaching the inner finger between the upper end and the lower end of the inner finger;

a lower stabilizer (**204**) joined to the bottom end of the spring arm, the lower stabilizer extending downward and away from the inner finger; and

an upper stabilizer (**206**) joined to the bottom end of the spring arm, the upper stabilizer extending upward and away from the inner finger.

5,823,484

HOSE PIPE, OR CONDUIT SNAP-IN SUPPORT SYSTEM

Steven W. Barnard, Redondo Beach, and Keith A. Holmes, Huntington Beach, both of Calif., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Oct. 15, 1996, Ser. No. 732,863

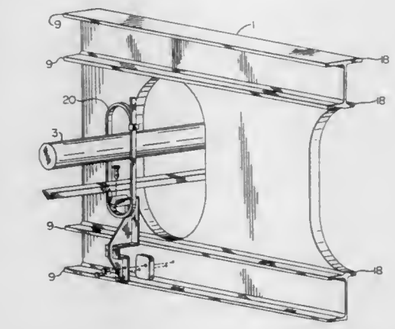
Int. Cl.[6] F16L *3/24*

U.S. Cl. 248—72 **22 Claims**

1. A bracket for attachment to a structure flange on a structural member for supporting an elongated member which extends through an opening in the structural member, comprising:

a base adapted for releasable engagement with said structure flange,

an engagement member attached to said base and adapted to extend through the opening in said structural member and releasably engage a surface of the structural member on a side of the opening opposite from said structure flange,



at least one support arm supported by said base, and p1 a support receptacle attached to said arm at the end opposite said base for supporting said elongated member.

5,823,485

AUTOMATICALLY FOLDABLE SUPPORT STAND FOR GOLF BAG

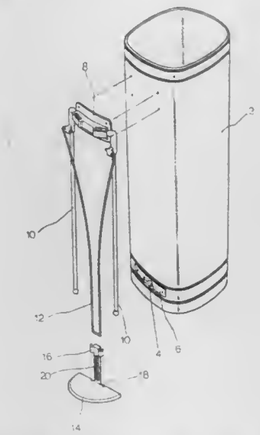
Soo-Young Park, Kyunggi-do, Rep. of Korea, assignor to Chun, Min-Jae, Seoul, Rep. of Korea

Filed Jan. 11, 1996, Ser. No. 548,810

Claims priority, application Rep. of Korea, Jan. 9, 1995, 95-209

Int. Cl.[6] A63B *55/00*

U.S. Cl. 248—96 **2 Claims**



1. An automatically foldable golf bag support stand having a V-shaped elastic rod actuated by a variation of weight applied thereto, said V-shaped elastic rod being raised or lowered along a guide configured for installation on a lower end of a golf bag thereby spreading or retracting a pair of legs interconnected to said V-shaped elastic rod, characterized in that:

a free end of said V-shaped elastic rod (**12**) is engaged with an engagement groove (**18**) of a semicircular base plate (**14**);

an elasticity enforcing part (**16**) formed at a top of a guide block (**20**) which is vertically extended from said semicircular base plate (**14**) is engaged with said V-shaped elastic rod (**12**) at a position between an upper end and a lower end of said V-shaped elastic rod (**12**) thereby shortening a coincidence point of said V-shaped elastic rod (**12**), said elasticity enforcing part (**16**) and said guide block (**20**) being integral parts of said semicircular base plate (**14**);

said guide block (**20**) has a slot formed along its height; and

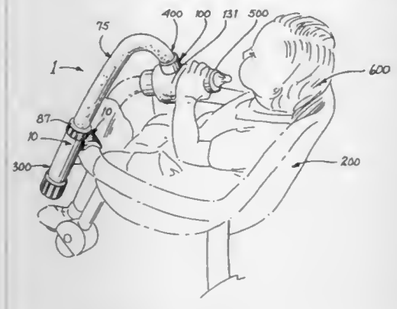
said guide including a guide shoe (4) including a neck portion which is narrower than said slot of said guide block (20) and a head portion which is broader than said slot of said guide block (20) and configured for attachment at a lower position of a golf bag penetrates through said guide block (20) whereby an up and down movement of said base plate (14) is guided.

5,823,486

UNIVERSAL FLEXIBLE ARM

Margaret K. Smith, 4565 Moonlight Way, Paradise Valley, Ariz. 85253; Jill M. Duggan, Scottsdale, Ariz.; Christopher M. Stalzer, Scottsdale, Ariz.; Scott C. Smith, Scottsdale, Ariz., and George J. Mowry, Fountain Hills, Ariz., assignors to Margaret K. Smith, Paradise Valley, Ariz.

Filed Feb. 7, 1997, Ser. No. 795,144
Int. Cl.[6] A47D *15/00*
U.S. Cl. 248—104 **20 Claims**



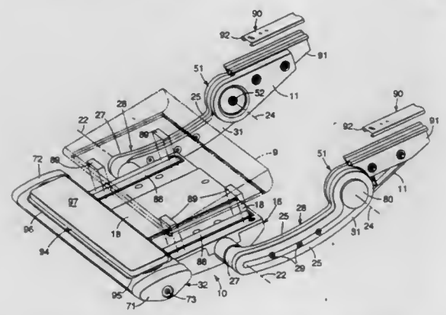
1. A flexible arm apparatus comprising:
a) a clamp assembly having a first jaw and a second jaw;
b) a screw that couples the first jaw to the second jaw wherein the screw is used to drive the clamp assembly;
c) a flexible support arm having a first end attached to the clamp assembly;
d) a lower interface component attached to a second end of the support arm;
e) an interface-mid component movably attached to the lower interface component to allow rotational movement between the interface-mid component and the lower interface component;
f) an attaching component having at least one attaching mechanism that engages to the interface-mid component wherein the attaching component is able to secure an attachment to the interface-mid component;
g) a rotation cup interfaced between the clamp assembly and the support arm wherein a portion of the rotation cup is placed in the clamp assembly and the rotation cup allows the support arm to be adjustably rotated to various positions relative to the clamp assembly, and
h) a retainer ring that is fitted around the support arm and secured to the clamp assembly wherein the retainer ring secures the support arm in a particular rotated position.

5,823,487

KEYBOARD SUPPORT ASSEMBLY

Kenneth J. Kirchhoff, Gem Lake; Robert J. Wolf, Woodbury, both of Minn.; James J. Frater, Middleton, Wis.; Manfred W. Suhr, and Lawrence J. Fenske, both of Oregon, Wis., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jan. 17, 1996, Ser. No. 587,671
Int. Cl.[6] A47B *57/00*
U.S. Cl. 248—118 **15 Claims**



1. An articulated support assembly adapted for adjustably supporting a computer keyboard along one edge of a horizontal support member having a bottom surface, said support assembly comprising
two attachment members adapted to be attached to the bottom surface of the horizontal support member in spaced relationship adjacent said edge;
a platform having an upper surface adapted to have a computer keyboard supported thereon;
a generally U shaped rigid support member having an elongate central portion having a central portion axis and having opposite axially spaced ends and generally parallel end portions projecting in the same direction from the opposite ends of said central portion;
platform mounting means mounting said platform on said central portion for pivotal movement of said platform about said central portion axis with said upper surface generally parallel to said central portion axis;
first releasable retaining means between said platform and said central portion moveable between a retaining position for restricting pivotal movement of said platform about said central portion axis, and a release position affording relatively free pivotal movement of said platform about said central portion axis;
support member mounting means adapted for mounting said end portions of said support member on said attachment members for pivotal movement about a pivot axis parallel to said central portion axis to afford revolving said central portion about said pivot axis; and
second releasable retaining means between said end portions and said attachment members moveable between an engaged position for preventing revolving movement of said central portion toward a lowered position relative to said attachment members, and a disengaged position for affording revolving movement of said central portion toward either a lowered or a raised position relative to said attachment members.

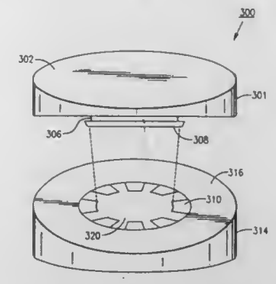
5,823,488

ARM/WRIST POSITIONING AND REST DEVICE

Bernard E. Nettekoven, Rte. 6, Box 644, Mankalo, Minn. 56001-9260

Filed Mar. 8, 1997, Ser. No. 812,534
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **11 Claims**

9. A hand and wrist positioning and rest apparatus comprising:



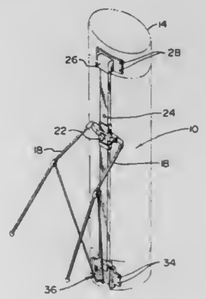
a mounting base having an outer side surface, an inclined planar top surface and a right angular planar bottom surface;
a hand and wrist supporting platform having an outer side surface, an inclined planar bottom surface and a right angular planar top surface, wherein said mounting base is configured to be rotatably coupled to said hand and wrist supporting platform such that said inclined planar bottom surface and said inclined planar top surface mate substantially flush against one another, and further wherein said right angular planar top surface forms an angle of from about 0 degrees to about 20 degrees with said right angular planar bottom surface when said mounting base and said hand and wrist supporting platform are rotatably coupled; and
a braking means having at least one friction brake tab configured to prevent accidental rotational movement between said mounting base and said hand and wrist supporting platform.

5,823,489

DETACHABLE SPORTS EQUIPMENT BAG LEG STAND

Young J. Suk, P.O. Box 591, Glen Cove, N.Y. 11542

Filed Aug. 13, 1996, Ser. No. 696,260
Int. Cl.[6] A63B *55/10*
U.S. Cl. 248—96 **1 Claim**



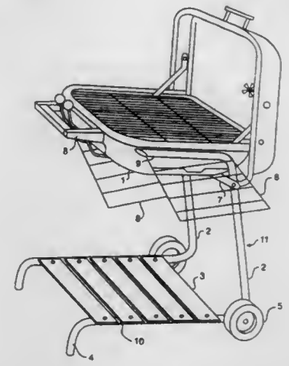
1. Improvements for a removable leg mechanism for a sports equipment bag of a type having a slide track adapted to be mounted lengthwise of said bag comprising a cooperating spaced pair of slide track-engaging members mounted adjacent opposite ends of said bag for projecting thereinto said opposite ends of said slide track , a compression spring disposed in a selected on said slide track-engaging member effective to hold said mounted slide track under spring urgency in spanning relation between said slide track-engaging members, female connecting means on said slide track. and a slide slidably disposed on said slide track having male connecting means adapted to be projected into said female connecting means for holding said slide in a position of movement along said slide track, whereby in said position of movement said slide serves as a convenient handgrip for urging said one end of said slide track in movement compressing said compression spring and correspondingly unmounting said opposite end of said slide track from said slide track-engaging member to thereby facilitate removal of said leg mechanism from said bag.

5,823,490

BARBECUE SUPPORT AND STORAGE FRAME SYSTEM

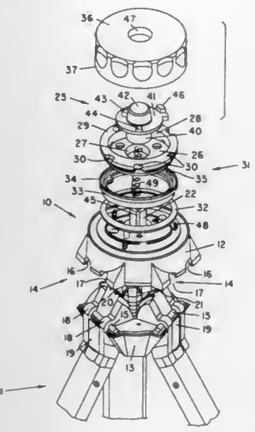
Steven A. Buono, Greeneville, Tenn., assignor to MECO Corporation, Greeneville, Tenn.

Filed Jun. 12, 1996, Ser. No. 678,491
Int. Cl.[6] A47J *37/00*
U.S. Cl. 248—129 **26 Claims**



1. A barbecue support and storage frame with a front, comprising:
a) A first generally c-shaped support, the first generally c-shaped support consisting of a first upper support with front and back ends, a first center portion with upper and lower ends, and a first lower leg with forward and rear ends, the first upper support comprising a cantilever, the first upper support cantilever being attached to a first side of a barbecue grill unit, wherein the back end of the first upper support is attached to the upper end of the first center portion, and the lower end of the first center portion is attached to the rear end of the first lower leg;
b) a second generally c-shaped support, the second generally c-shaped being spaced apart from the first generally c-shaped support, the second generally c-shaped support consisting of a second upper support with front and back ends, a second center portion with upper and lower ends, and a second lower leg with forward and rear ends, the second upper support comprising a cantilever, the second upper support cantilever being attached to a second side of the barbecue grill unit, wherein the back end of the second upper support is attached to the upper end of the second center portion, and the lower end of the first center portion is attached to the rear end of the second lower leg; and
c) at least one cross bar, the cross bar having a first end and a second end, the first end of the cross bar being fixed to the center portion of the first generally c-shaped support and the second end of the cross bar being fixed to the second center portion of the second generally c-shaped support.

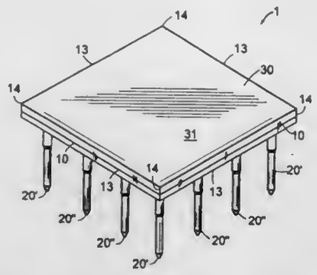
5,823,491
SPREADER UNIT FOR MULTI-LEGGED STANDS
Richard Arthur Lindsay, Eye, and Charles David Hackman, Bury St. Edmunds, both of Great Britain, assignors to Vitec Group PLC, Suffolk, United Kingdom
Filed Mar. 7, 1996, Ser. No. 612,151
Claims priority, application United Kingdom, Mar. 10, 1995, 9504929
Int. Cl.[6] F16M *11/38*
U.S. Cl. 248—169 **15 Claims**



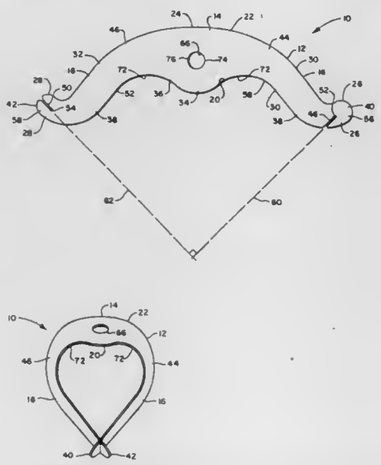
1. A spreader unit for controlling a multi-legged stand comprising:
a hub having a central axis;
a plurality of arms hinged to the hub to swing in radial planes with respect to the central axis;
a control shaft mounted in the hub for rotation about the central axis;
a reversible gear drive means integrally attached at a lower end of the shaft for engaging each one of the plurality of arms when rotation of the shaft swings the plurality of arms with respect to the hub in unison, and alternatively, movement of one of the plurality of arms rotates the shaft and swings the remaining arms; and
control means for locking the shaft against rotation with respect to the hub to hold the plurality of arms in a desired spread position with respect to the hub.

5,823,492
CARPET PROTECTOR
Anthony Gray Anselmo, 177 Main St., Harwich, Mass. 02645
Continuation of Ser. No. 496,056, Jun. 28, 1995, abandoned. This application Nov. 25, 1996, Ser. No. 755,629
Int. Cl.[6] F16M *11/20*
U.S. Cl. 618—188.1 **1 Claim**

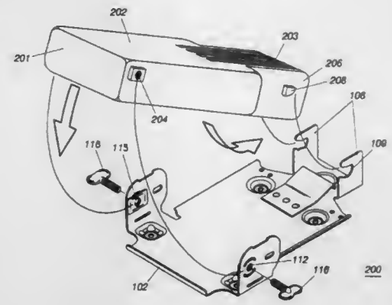
1. A carpet protector system in combination with a floor and a piece of furniture, the system comprising:
(a) a pad disposed upon the floor, said pad having H3:
(b) a carpet disposed upon said pad, said carpet comprising a pile material disposed upon a sheet of grid-like backing material, and pile material having a height H1 and said backing material having a height H2; and
(c) a carpet pad protector disposed upon said pile material, said carpet protector comprising a substantially horizontal member having an upper surface and a lower surface, said carpet pad protector further comprising a plurality of pin members extending downwardly from said lower surface, said pin members having a top portion and a bottom portion, said top portion having a length L1 shorter than said height H1 of said pile material, said bottom portion having a length L2 terminating in an end point, said length L2 being at least as long as the combined height of said H2 of said backing material and said height H3 of said pad, said top portion having a substantially uniform cross-section area along said length L1, said bottom portion having a cross-section along said L2 less than said uniform cross-section of said upper portion;
(d) said bottom portion of said pin members passing through said backing material and said pad without substantially crushing and damaging said backing material, said uniform cross-section of said top portion of said pin member through said pile material and are dimensionally restrained from coming in substantial contact with said backing material; and
(e) when a force is applied to said carpet pad protector by the weight of the piece of furniture, substantially all of said force is transmitted through said pin members and directly to said floor thereby preventing any substantial crushing and damage to said backing material and whereby points of said elongated members are in direct contact with said floor without penetrating said floor.



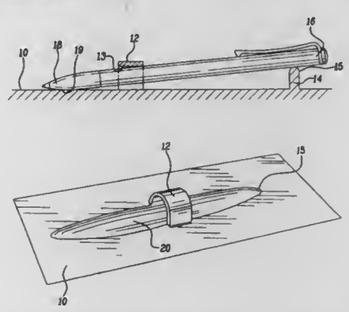
5,823,493
STRAW HOLDER
James J. Eastland, Jr., P.O. Box 314, Ivoryton, Conn. 06442, and H. Kirk Watson, 42 The Ridge, Glastonbury, Conn. 06033
Filed Oct. 18, 1996, Ser. No. 734,622
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—213.2 **12 Claims**



1. A straw holder comprising a unitary strip having first and second wing members, first and second, laterally extending edges, and a body disposed intermediate said first and second wing members, said body defining an opening for receiving a straw, said first and second wing members each comprising a tip portion said tip portion of said first wing member defining a first slot extending from said first edge and a first engagement segment extending from said first slot to said second edge, said tip portion of said second wing member defining a second slot extending from said second edge and a second engagement segment extending from said second slot to said first edge, wherein said second engagement segment is receivable in said first slot and said first engagement segment is receivable in said second slot to mount said tip portion of said first wing member to said tip portion of said second wing member.



5,823,494
PEN HOLDER
Clifford Jones, Chelmsford, and Peter P. Tsang, North Shoebury, both of Great Britain, assignors to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Dec. 14, 1995, Ser. No. 572,822
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—309.1 **2 Claims**

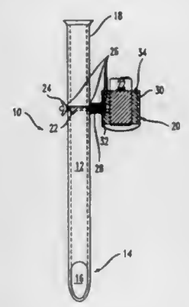


1. A pen holder for an interior automotive door comprising:
a rigid panel for attachment to said interior automotive door, said panel having an interior surface, said interior surface having a raised wall and a bridge member, said raised wall having an edge above said interior surface, and said bridge member having an under surface, said bridge member receiving an elongated article that is removably retained on said interior surface, said article being under stress by said interior surface, said undersurface, and said raised wall edge, when said article is inserted under said bridge and wedged on said raised wall and said interior surface.

5,823,495
MOUNTING APPARATUS FOR A HIGH POWER MOBILE RADIO
Steve M. Joss, Pompano Beach; William H. Robertson, Jr., Plantation, and Elias R. Mallar, Miami, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 10, 1997, Ser. No. 797,070
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—309.1 **15 Claims**

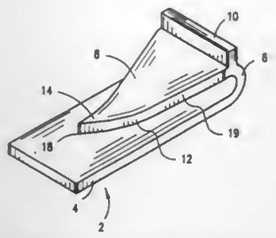
1. A mounting apparatus for securing an electronic device, the device having cavities on opposing sides, the mounting apparatus comprising:
a mounting tray having a substantially planar surface, a pair of upstanding device attachment tabs, and a pair of rear receiving portions;
said planar surface having a front end, a rear end, and a plurality of recessed fastening locations;
said device attachment tabs having substantially parallel planes located along opposing sides of said planar surface proximate to the front end, each of said tabs having a fastener opening therethrough;
said rear receiving portions having cammed roll-in features for engaging a rear portion of said electronic device, each of said receiving portions intersecting the rear end of said planar surface and having a plane perpendicular to the rear end;
a pad affixed to an inner surface of each of said device attachment tabs, each said pad having a pad opening therethrough;
a spring having a middle section and a first end, the first end forming an integral spring stopping mechanism and the middle section fixedly attached to said planar surface; and
a pair of fasteners for attaching said electronic device to said mounting tray, said fasteners each passing through a single fastener opening and a single pad opening, each of said fasteners attaching to one of the cavities in said electronic device.

5,823,496
OUTDOOR BEVERAGE HOLDER ASSEMBLY
Anthony Foley, and Sandra Foley, both of 316 A Texas Rd, Old Bridge, N.J. 08857
Filed Jun. 19, 1995, Ser. No. 492,210
Int. Cl.[6] A47F *5/00;7/00*
U.S. Cl. 248—314 **18 Claims**



1. A beverage holder assembly, comprising:
an elongated member having a pointed, ground engaging tip at a first end thereof;
a support structure for holding a beverage container, said support structure including an arcuate container-engaging member pivotally interconnected to said elongated member; and
coupling means for pivotably interconnecting said support structure to said elongated member, said coupling means being configured to maintain the support structure in a desired angular position relative to the elongated member despite sudden jarring movements thereof but allowing said user to retain a beverage container received therein in a substantially upright orientation relative to an underlying support surface.

5,823,497
BOX HOLDER
Henry A. Weatherhead, 526 Laurel, Wilmette, Ill. 60091
Filed Nov. 20, 1996, Ser. No. 752,792
Int. Cl.[5] A47G *1/10*
U.S. Cl. 248—316.7 4 Claims

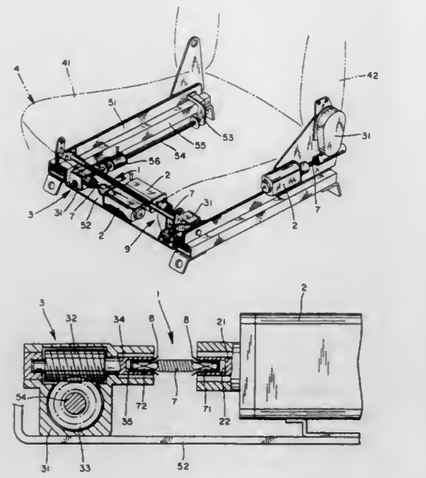


1. A bracket adapted to be mounted on a bracket support surface for suspending a side of container, comprising:
a base structure adapted to be attached to the bracket support surface, said base structure comprising a flat plate part,
an arm part being connected to said flat plate part and having a lower surface lying in confrontation to said base flat part,
said arm part being resiliently retained to said flat plate part and having a free end part disposed over said flat plate portion for attachment to the container side,
said arm part having an arm portion adjacent the free end part in at least near contact with said base flat part for retention of the container,
said base structure having a transverse section for integrally attaching said arm part (8) to said flat plate part,
said arm part having an upper surface, an upward flange projecting from said upper surface, and said upward flange being positioned adjacent said transverse section adapted to form a stop with said container,
and wherein said free end part of said arm has a tapered configuration terminating with a pointed end for insertion into the container.

5,823,498

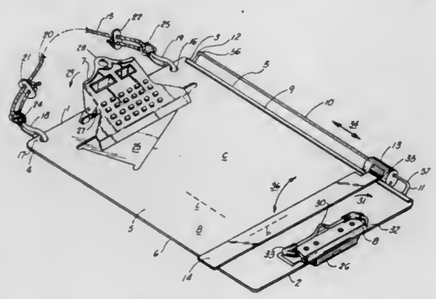
Patent Not Issued For This Number

5,823,499
DRIVE APPARATUS WITH A RESILIENT COUPLING FOR A POWER SEAT
Sadao Ito, Anjyo, and Haruo Kato, Kariya, both of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan
Filed Sep. 20, 1996, Ser. No. 706,146
Claims priority, application Japan, Sep. 22, 1995, 7-244671
Int. Cl.[6] B60N *2/06;* F16C *1/08*
U.S. Cl. 248—429 5 Claims



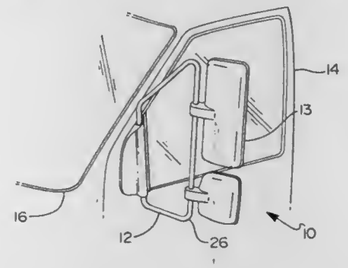
1. A drive apparatus, comprising:
an electric motor for displacing a driven member;
a reduction gear means for transmitting rotational torque from the motor to the driven member;
a resilient coupling member having polygonal end portions for connecting an output shaft of the motor to an input shaft of the reduction gear means, the input shaft being provided at an end portion with a polygonal groove which is open to an end face thereof and the output shaft being provided at an end portion with a polygonal groove which is open to an end face thereof, said polygonal end portions of the resilient coupling member being inserted in each of said grooves, respectively; and
polygonal barrel members interposed between each end portion of the coupling member and each of said grooves, respectively, each of said polygonal barrel members being made of a thin metal material having a bottom wall and at least one segment extending perpendicular thereto, said at least one segment having at least one deformable portion for aligning an axis of the coupling member with respective axes of said input and output shafts.

5,823,500
CLIPBOARD DRAFTING SYSTEM
Lee La Coste, 4013 Kent, Metairie, La. 70006
Filed Dec. 4, 1996, Ser. No. 760,034
Int. Cl.[6] A47B *97/04*
U.S. Cl. 248—444 18 Claims



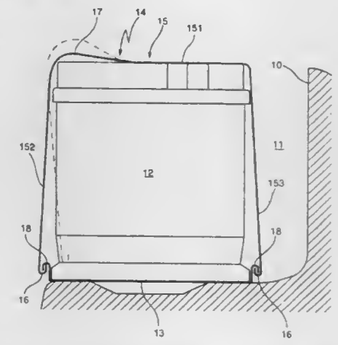
1. A clipboard, comprising:
a board having a generally flat, rigid, rectilinear construction, said board having an upper end, a lower end, first and second edges, an upper side, a lower side, and a longitudinal axis;
a main clip member situated upon the upper side of said board, said main clip situated generally near said upper end of said board;
a rail having first and second ends, said rail spaced from and aligned with said first edge and upper side of said board, said rail further having first and second lateral support members emanating from said first and second ends, said first and second lateral support members affixed to said board generally adjacent to said upper and lower ends of said board, respectively;
a generally flat, linear hold down member in transverse, pivotal, sliding communication with said rail, said linear hold down member having a longitudinal axis which is transverse to said longitudinal axis of said board, said linear hold down member configured to engage said board in surface to surface engagement.

5,823,501
VEHICULAR MIRROR MOUNTING ASSEMBLY
William P. Schmidt, 2100 Woodruff, Rockwood, Mich. 48173, and Franklin D. Hutchinson, 28000 Bell Rd., New Boston, Mich. 48164
Continuation-in-part of Ser. No. 843,508, Feb. 28, 1992, Pat. No. 5,301,916, which is a continuation-in-part of Ser. No. 419,213, Oct. 10, 1989, Pat. No. 5,106,049. This application Jun. 23, 1993, Ser. No. 81,971
Int. Cl.[6] A47F *7/14*
U.S. Cl. 248—475.1 10 Claims



1. A vehicular mirror mounting bracket for deployment over a wing window opening, the bracket comprising:
(a) a first member comprising:
(1) a mounting surface which abuts against and overlies a portion of the vehicle about the winged window opening of a door;
(2) an upper surface having a clamping portion for seating a mirror support rod;
(3) a first side wall; and
(4) an opposed curvilinear second side wall having a first radius of curvature;
(b) a second member integrally formed with the first member comprising:
(1) a clamping portion hingedly connected to the clamping portion of the first member cooperating to envelop a mirror support rod therebetween;
(2) a second portion integral with the clamping portion having a curvilinear surface facing the curvilinear wall of the first member and having a second radius of curvature different from the first radius to enable application of a continuous torque to the mirror support rod disposed between the clamping portion of the first member and the clamping portion of the second member; and
(3) a third portion integral with the second portion and extending therefrom, the third portion having a mounting surface coplanar with the mounting surface of the first member and which abuts against and overlies a portion of the vehicle about the winged window opening of a door; and
(c) means for securing the mounting surfaces to the vehicle.

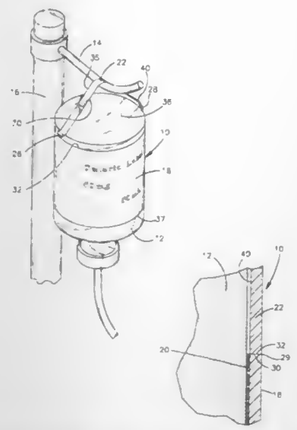
5,823,502
FASTENING DEVICE FOR A BATTERY IN A VEHICLE
Rudolf Greiner, Weil der Stadt, Germany, and Torsten Fisch, Birmingham, Ala., assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Dec. 13, 1996, Ser. No. 767,254
Claims priority, application Germany, Dec. 13, 1995, 195 46 556.3
Int. Cl.[6] A47B *97/00*
U.S. Cl. 248—503 23 Claims



1. A fastening device for a battery in a vehicle, particularly in the engine space of a motor vehicle, having:
a shell fixedly arranged in the vehicle for placing the battery;
a clamping bow extending from the shell in a U-shape over the battery, the clamping bow having on at least one bow a one piece suspension member molded thereon;
wherein the clamping bow can be suspended in a corresponding suspension member arranged on the shell;
wherein the clamping bow is constructed as a one-piece, U-shaped tension band made of spring steel, the clamping bow further having a band web pressing onto the top side of the battery and first and second band legs extending on opposite side walls of the battery to the shell; and
wherein one protuberance is constructed in the band web and directed away from the battery top side such that, by pressing the protuberance in a downward direction, a first suspension member on an end of the first band leg can be caused to lock or unlock with a corresponding suspension member on the shell, thereby facilitating a one hand movement of the clamping bow between locked and unlocked positions.

5,823,503
HANGER FOR HANGING AN INTRAVENOUS FEEDING BOTTLE
Thomas E. Wasserman, Avon lake, Ohio, assignor to Thomas Packaging Corporation, Avon Lake, Ohio
Filed Aug. 21, 1996, Ser. No. 701,107
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—683 11 Claims

1. A hanger for hanging an intravenous feeding bottle having a bottom from a hook, said hanger comprising:
an attaching portion adapted to encircle and be attached to a portion of the bottle to attach said hanger to the bottle;
a hanger portion movable relative to said attaching portion from a first position in which said hanger portion is adapted to encircle a portion of the bottle to a second position in which said hanger portion is adapted to engage the hook;
said hanger portion and said attaching portion being portions of a single piece of film;
said hanger portion having first and second end portions connected to said attaching portion;
said hanger portion consisting essentially of a single strip of said film, said strip having first and second edges and being



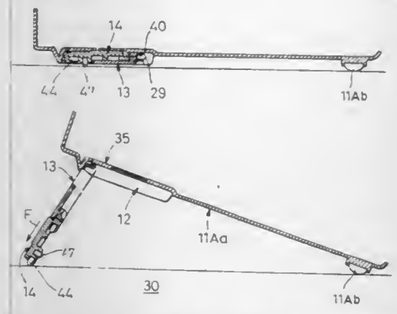
located at a terminal first end of said attaching portion when in said first position, said strip being movable from said first position to said second position by initially moving from said first position along said portion of the bottle and thereafter moving over the bottom of the bottle.

5,823,504

ADJUSTING MECHANISM FOR ADJUSTING THE INSTALLATION ANGLE OF APPLIANCES

Wataru Kuwajima, Kawasaki, Japan, assignor to Nitsuko Corporation, Kanagawa, Japan

Filed May 22, 1997, Ser. No. 861,652
Claims priority, application Japan, Jul. 3, 1996, 8-193937
Int. Cl.[6] A47G *29/00*
U.S. Cl. 248—685 **7 Claims**



1. An arrangement including an electric appliance adapted for operation with a bottom face thereof resting on an installation plane and an adjusting mechanism for adjusting an installation angle of the appliance with respect to the installation plane when the appliance is resting on the installation plane, the adjusting mechanism comprising:

a first leg part rotatably mounted at a first end portion thereof to a first end portion of the bottom face of the appliance for supporting the appliance at a first angle with respect to the installation plane with a second end portion of the first leg part and a second end portion of the bottom face resting on the installation plane at a first installation position of the adjusting mechanism to which the first leg part is rotated by a predetermined angle from a retracted position in which the first leg part is substantially parallel to the bottom face of the appliance; and

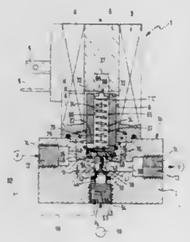
a second leg part rotatably mounted at a first end portion thereof to the second end portion of the first leg part for supporting the appliance at a second angle with respect to the installation plane larger than the first angle together with the first leg part with a second end portion of the second leg part and the second end portion of the bottom face resting on the installation plane at a second installation position of the adjusting mechanism to which the second leg part is rotated by a predetermined angle from a housed position opposing and substantially parallel to the first leg part.

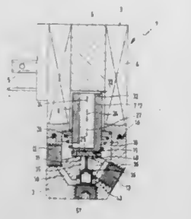
5,823,505

SOLENOID VALVE WITH AN ANCILLARY DRIVE MEMBER

Kurt Stoll, Esslingen, and Jürgen Schnatterer, Wolfschlugen, both of Germany, assignors to Festo KG, Esslingen, Germany

Filed Aug. 4, 1997, Ser. No. 905,639
Claims priority, application Germany, Aug. 10, 1996, 196 32 379.7
Int. Cl.[6] F16K *31/02*
U.S. Cl. 251—129.07 **19 Claims**





18. A solenoid valve comprising:

an inlet duct configured to be connected to a source of pressure medium,

an outlet duct configured to be connected to a load, and a transfer opening arranged between the two ducts;

a valve member arranged opposed from the transfer opening, the valve member being movable in an opening direction by an electromagnet, and engaging a valve seat surrounding the transfer opening and being urged in the closing direction,

a translatable ancillary drive member actuatable by a control pressure and which is configured to act on the valve member in the opening direction through the outlet duct;

and an acceleration spring means for driving the valve member toward the closed position at the beginning of a closing motion, the spring means only being compressed during the end phase of an opening movement of the valve member.

5,823,506

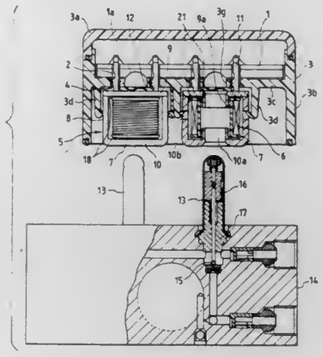
Patent Not Issued For This Number

5,823,507

PRESSURE CONTROL APPARATUS

Masahiro Inden; Yoshiyuki Katoh, and Akihiko Sugiura, all of Aichi, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 30, 1996, Ser. No. 741,364
Claims priority, application Japan, Oct. 31, 1995, 7-283963
Int. Cl.[6] F16K *31/02*
U.S. Cl. 251—129.15 **13 Claims**



1. A pressure control apparatus comprising:

an electronic control unit;

an electromagnetic-force generating portion including a solenoid electrically connected to said electronic control unit, a bobbin around which said solenoid is wound and a yoke surrounding at least two ends of said bobbin and a surface of said bobbin around which said solenoid is wound and forming a magnetic flux passage;

a valve housing having a sleeve which is inserted into said yoke and said bobbin, and said sleeve accommodating a movable plunger which is operated when electric power is supplied to said solenoid; and

a casing secured to said valve housing and covering said electronic control unit, said electromagnetic-force generating portion and said sleeve;

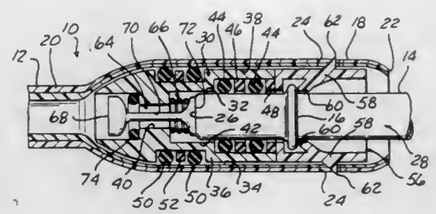
wherein said casing has a base plate portion extending an entire width of said casing and dividing an inner portion of said casing into a chamber in which said electronic control unit is disposed and a chamber in which said electromagnetic-force generating portion is disposed and to which said electronic control unit is secured to an end thereof, said base plate portion comprising a holding portion directly supporting said yoke, said bobbin has a connection terminal to which an end of said wound solenoid is connected and which is mode of conductive metal, said electronic control unit and said electromagnetic-force generating portion are electrically connected to each other by at least said connection terminal, and a transition permission portion is provided between the portion of said yoke and that of said bobbin opposite to each other in an axial direction of said sleeve so that said yoke is movable with respect to said bobbin in the axial direction of said sleeve; and an urging member for urging said yoke toward said valve housing.

5,823,508

ONE PIECE QUICK CONNECT

Tao Nie, Macomb Township, Mich., assignor to ITT Automotive, Inc., Auburn Hills, Mich.

Filed Dec. 20, 1996, Ser. No. 771,429
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.6 **25 Claims**



1. In a quick connect coupling for connecting a first fluid conduit to a second fluid conduit, said second fluid conduit having a first end with a radially outwardly protruding annular flange spaced longitudinally from said first end defining an integral male portion of said coupling, an elongate housing having an outer periphery and an aperture extending longitudinally therethrough for fluid communication between said first and second conduits, said housing having an enlarged inner diameter for receiving said first end of said second conduit therein, lock means engageable with said annular flange of said second conduit for holding said second conduit in place, the improvement comprising:

said first fluid conduit made of an expandable material and having a wall made of at least one material layer initially defining a first diameter and having a first wall thickness adjacent a longitudinal end, said longitudinal end of said first conduit expanded radially creating a second diameter greater than said first diameter and a second wall thickness less than said first wall thickness, said expanded end of said first conduit defining an integral, non-separable, unitary female portion of said coupling formed directly from said first conduit and having at least one aperture extending through said wall adjacent said longitudinal end of said first conduit;

said housing insertible within said expanded end of said first conduit;

said lock means insertible within said expanded end of said first conduit and cooperatively engageable with said at least one aperture formed in said wall of said first conduit for holding said housing in place within said first conduit; and

said annular flange and first end of said second conduit engageable within said housing in said expanded end of said first conduit while passing through said lock means, such that said lock means is engageable with said flange of said second conduit for holding said second conduit in place with respect to said first conduit after insertion within said housing.

5,823,509

DIAPHRAGM VALVE WITH MEANS FOR ADJUSTABLY SETTING THE MAXIUM VALVE OPENING

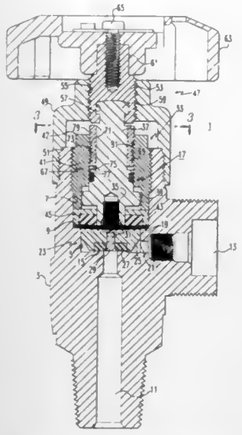
James R. Daniels, Lititz, Pa., assignor to Amcast Industrial Corporation, Dayton, Ohio

Filed Jul. 11, 1997, Ser. No. 892,260
Int. Cl.[6] F16K *31/00*
U.S. Cl. 251—335.2 **14 Claims**

1. A diaphragm valve with settable maximum lift, said valve comprising:

a valve body having an axial bore, an inlet passage axially extending from said axial bore and forming therewith a valve seat, and an outlet passage also communicating with said axial bore;

a valve assembly moveable in said axial bore toward and away from said valve seat to open and close said valve, said valve assembly including a diaphragm extending across said axial bore and forming a valve chamber through which said inlet and outlet passages communicate, and a valve stem extending axially in said axial bore outside said valve chamber; and



adjustment means comprising a moveable member adjustably positioned axially on one of said valve stem and said valve body and having first engagement means, the other of said valve stem and valve body having second engagement means, said first and second engagement means engaging to limit withdrawal of said valve assembly away from the valve seat and thereby setting said maximum lift of said valve.

5,823,510

SINTERED CERAMICS MATERIAL AND DISK VALVE ASSEMBLY

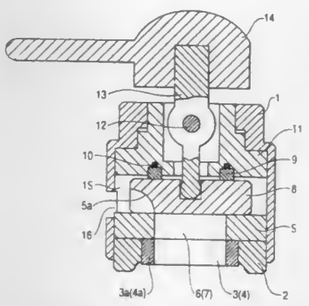
Katsutoshi Muramatsu; Toshiaki Kaneko; Kouichi Kiyohara, all of Kuwana; Kenji Ito, Ama-gun; Yoshimi Nishihara, Kuwana; Hiroyuki Inoue, and Makoto Ishihara, both of Gifu, all of Japan, assignors to NTN Corporation, Japan

Filed May 15, 1996, Ser. No. 647,762

Claims priority, application Japan, May 16, 1995, 7-142671; Jul. 31, 1995, 7-195048; Mar. 6, 1996, 8-079518

Int. Cl.[6] E03B *1/00*

U.S. Cl. 251—368 **7 Claims**



1. A sintered ceramic material which shows high sliding properties in lubrication with water, said sintered ceramics material being formed by sintering a material comprising an oxide ceramics material, and 1 to 30% by weight of iron or its oxides, nitrides carbides, as an anti-friction agent.

5,823,511

FORCE GENERATION DEVICE FOR SIMULATION OF SHOULDER-SUPPORTED ROCKET LAUNCHING

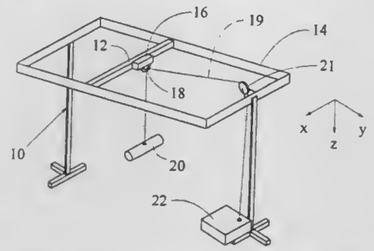
Bart Hall, North York, and Julius J. Grodski, Toronto, both of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by Minister of National Defence of her Majesty's Canadian Government, Ottawa, Canada

Filed Sep. 11, 1996, Ser. No. 712,642

Claims priority, application Canada, Apr. 9, 1996, 2173678

Int. Cl.[6] B66D *1/00;* **B66C** *13/22*

U.S. Cl. 254—264 **17 Claims**



1. A system for exerting a predetermined force on an object in a predetermined direction, said system comprising:

a reference structure disposed at a predetermined position relative to said object,

an actuator associated with said reference structure for generating a force of predetermined magnitude versus time waveform,

a control means operatively connected with said actuator for activating the actuator in a predetermined time-related manner,

a link means operatively connecting said object with said actuator for imparting, in operation, said force onto the object, and

tension maintaining means for maintaining a low predetermined tension in said link means during the absence of said force.

5,823,512

GAS SPRING

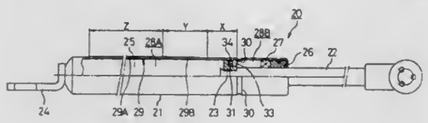
Hiroshi Oyaizu, Shizuoka, Japan, assignor to Showa Corporation, Gyoda, Japan

Filed Dec. 5, 1996, Ser. No. 760,781

Claims priority, application Japan, Dec. 6, 1995, 7-344395; Mar. 14, 1996, 8-084545

Int. Cl.[6] F16F *5/00*

U.S. Cl. 267—64.12 **3 Claims**



1. A gas spring comprising:

a hollow cylinder having an inside surface and a longitudinal extent delimited by a closed end and an open end, said open end enclosed by a guide member and a seal arranged within said cylinder, said cylinder including a stopper spaced from said enclosed end, said stopper defined by an annular depression in said cylinder which reduces a diameter of the cylinder centrally, said seal and said guide members in abutment with each other with said seal nearer said stopper, said cylinder retaining a gas therein;

a rod having a piston at one end thereof and extendable through the seal and guide members, said rod slidably movable within the cylinder together with the piston, said piston having a piston stroke range defined as a longitudinal distance of piston movement between said closed end and said stopper, said stopper delimiting movement of said piston and rod, said piston dividing the cylinder into a rod-side chamber and a piston-side chamber, said retained gas simultaneously existing within both chambers, wherein movement of said piston from said stopper towards said closed end represents a compression phase of said spring and movement from said closed end to said stopper represents an extension phase, said extension phase comprised of a damping phase, a damping reduction phase, and an airlock phase, said cylinder including an axial groove formed therein, said groove having a pair of terminal ends, one of said ends in spaced relationship to said closed end and the other of said ends in spaced relationship to said stopper, said axial groove extending along the cylinder throughout the range of the piston stroke except in a stroke range corresponding to said airlock phase of said piston extension, wherein an end of said extension phase is represented by said piston contacting against said stopper, said airlock phase corresponding to piston movement along a longitudinal extent of said cylinder which extends between said stopper and said other terminal end of said axial cylinder groove;

said piston made from an air-permeable porous material having open pores therein and having an outer edge which includes an annular groove formed around the outer edge, thereby dividing the piston into a first and second flange, said second flange including at least one axially directed notch along said outer edge, said notch communicating with said annular groove, thereby creating a passageway for communicating gas between the chamber;

seal means inserted in the annular groove, the seal means having a check function for opening the passage only in the compression phase of said spring wherein gas is allowed to flow through said passage;

said axial cylinder groove providing an extension damping force during said extension phase, said extension damping force operative only when the seal means is adapted to allow the gas to flow from the rod-side chamber into the piston-side chamber, only through the cylinder groove, wherein said seal means is further adapted to allow the gas in the rod-side chamber to flow into the piston-side chamber only through said open pores of said piston when said piston enters said airlock phase, thereby producing a damping reduction of the piston.

5,823,513

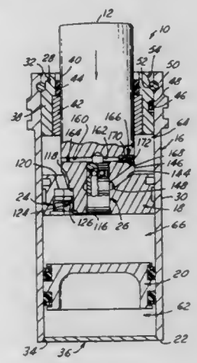
DELAY RETURN GAS SPRING

Sven Stenquist, Tranas, Sweden, assignor to Diebolt International, Inc., Plymouth, Mich.

Continuation of Ser. No. 520,384, Aug. 29, 1995, abandoned. This application Jun. 13, 1997, Ser. No. 874,256

Int. Cl.[6] F16F *5/00*

U.S. Cl. 267—64.26 **15 Claims**



1. A gas spring comprising,

an elongate tubular casing having a pair of spaced apart ends, an axially reciprocable rod received within and protruding from one end of said casing and moveable between extended and retracted positions,

a first piston within said casing and connected to said rod for movement therewith,

a second piston within said casing and disposed between said first piston and the other end of said casing,

said first piston in cooperation with said casing defining a first fluid chamber between said one end of said casing and said first piston, said first fluid chamber receiving therein an essentially incompressible liquid hydraulic fluid,

said first and second pistons in cooperation with said casing defining a second fluid chamber receiving therein said liquid hydraulic fluid,

said second piston in cooperation with said casing defining a third chamber between said other end of said casing and said second piston, said third chamber receiving therein a compressed gas under pressure which yieldably urges the first piston and rod to the extended position of the rod,

at least one check valve carried by said first piston and constructed and arranged to permit flow of the liquid hydraulic fluid from said second fluid chamber to said first fluid chamber when open and to prevent flow of the liquid hydraulic fluid from said first fluid chamber to said second fluid chamber when closed, each of said at least one check valve being closed while the rod and first piston are moving toward their extended position,

a delay valve carried by said first piston and constructed and arranged to permit flow of said liquid hydraulic fluid from said first fluid chamber to said second fluid chamber when open, to prevent flow of said liquid hydraulic fluid from said second fluid chamber to said first fluid chamber when closed, and remains closed to delay the flow of said liquid hydraulic fluid from said first fluid chamber to said second fluid chamber while each said at least one check valve is closed and after said first piston completes moving toward said other end of said casing and is disposed and urged to move toward said one end of said casing by said compressed gas in said first chamber and liquid hydraulic fluid in said second chamber, said casing being constructed to retain a constant quantity of said liquid hydraulic fluid, and said casing, first piston, and at least one check valve and delay valve are constructed and arranged so that all of the liquid hydraulic fluid flowing into and between the first and second chambers is controlled by and occurs solely through the check and delay valves.

5,823,514

VIBRATION DAMPENING MOUNTING ARRANGEMENT FOR SUPPORTING A COMPONENT ON AN INTERNAL COMBUSTION ENGINE

Thomas Howe, Esslingen, and Berndt Schütz, Stuttgart, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

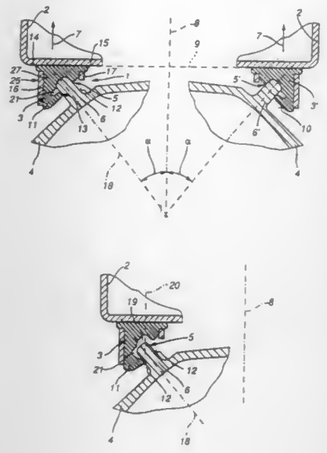
Filed Feb. 2, 1996, Ser. No. 594,626

Claims priority, application Germany, Feb. 7, 1995, 195 03 918.1

Int. Cl.[6] F16F *1/36;* **F02M** *35/04*

U.S. Cl. 267—130 **14 Claims**

1. A vibration dampening support arrangement for a component on a support structure whereby said component is removable in a predetermined direction of removal, said support structure having a projection extending therefrom, and said component including an elastic element having a shape, in cross-section, of a right triangle, and having a cavity which extends from the longer side of said triangle and receives said projection such that said component is in form-locking engagement with said support structure in said predetermined direction of removal, said projection extending with



respect to said predetermined direction of removal at an angle α of about 12° to 60°.

5,823,515

FLUID CONTAINED ENGINE MOUNTING DEVICE AND METHOD OF MANUFACTURING THE SAME

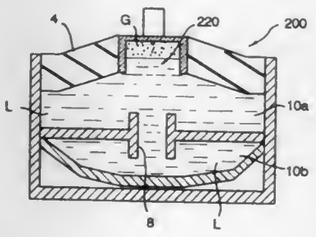
Shin Takehara; Haruyuki Taniguchi; Takahiko Tanaka, all of Higashihiroshima; Hiroshi Hashino, Hiroshima; Yoichi Komoto, Okayama; Katsutoshi Ota, Okayama, and Morihisa Hanafusa, Okayama, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, and Kurashiki Kako Co., Ltd., Okayama, both of Japan

Filed Aug. 25, 1995, Ser. No. 519,309

Claims priority, application Japan, Aug. 25, 1994, 6-200788

Int. Cl.[6] F16F *5/00*

U.S. Cl. 267—140.13 **14 Claims**



1. An automobile engine mounting device, containing a fluid in a fluid container closed up air-tightly by walls including at least a rigid cylindrical wall, an elastic top wall and an elastic bottom wall consisting of an elastic diaphragm, for mounting an engine on a vehicle body and absorbing vibrations of the engine transmitted thereto by means of expansion and contraction of the elastic top and bottom walls and the fluid, said engine mounting device comprising:

engine connecting means for connecting said engine mounting device to said engine;

body connecting means for connecting said engine mounting device to said vehicle body;

a partition wall for dividing said fluid container into a first fluid chamber closed by said elastic top wall and a second fluid chamber closed by said elastic bottom wall, said partition wall being formed with an orifice which allows said fluid to move between said first fluid chamber and said second fluid chamber due to expansion and contraction of said elastic top and bottom walls; and

gas pocket means formed in at least one of said walls for holding a predetermined quantity of a gas before assembling said walls to said fluid container placed upside down and filled with said fluid and releasing said gas into said fluid after assembling said fluid container and releasing said gas into said fluid, whereby confining said predetermined quantity of said gas in said first fluid chamber.

5,823,516

TORSION DAMPING DEVICE HAVING METALLIC SEATS FOR ITS SPRINGS, ESPECIALLY FOR A MOTOR VEHICLE

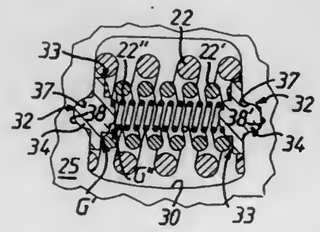
Dominique Despres, Amiens, France, assignor to Valeo, Paris, France

Filed Mar. 29, 1996, Ser. No. 623,820

Claims priority, application France, Mar. 31, 1995, 95.03844

Int. Cl.[6] F16D *3/12*

U.S. Cl. 267—168 **10 Claims**



1. A torsion damper comprising two coaxial damper parts, springs interposed circumferentially between the said coaxial damper parts, and means mounting the two coaxial damper parts for rotation of one with respect to the other in angular displacement against the action of the said springs, wherein the said springs are arranged in groups, with each group consisting of a plurality of springs arranged coaxially one within another so that each said group of springs comprises an outer spring and at least one inner spring, the torsion damping device further including a plurality of spring seats, with each said group of springs having one said spring seat at each of its ends in common engagement with the springs of the group, each spring seat having an axial cross section defining at least one step, and each spring seat further comprising an anterior part and a posterior part, the anterior part defining a circular perimeter having a diameter smaller than the internal diameter of the said outer spring of the associated group of springs, the anterior part having a back facing away from the said associated springs, with the posterior part having a back defining a projecting element which extends radially beyond the perimeter of the anterior part at each end of the projecting element, for end thrust engagement thereon by said outer spring of the associated group of springs wherein the posterior part of each said spring seat lies along a diameter of the perimeter of the anterior part, and the posterior part of each spring seat defines an axis thereof, with its anterior part having in its back at least one integral rib extending transversely to said axis.

5,823,517

ADJUSTABLE STRUT FOR MOTOR VEHICLES

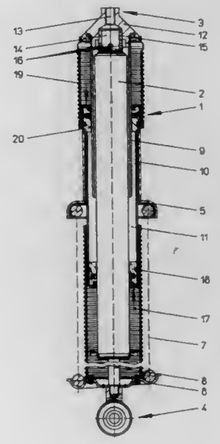
Zhen Huang, Wuppertal; Werner Busch, Weinstadt, and Gunter Nagel, Esslingen, all of Germany, assignors to August Bilstein GmbH, Ennepetal, and Mercedes-Benz AG, Stuttgart

Filed Jul. 25, 1996, Ser. No. 687,227

Claims priority, application Germany, Aug. 11, 1995, 195 29 580.3

Int. Cl.[6] B60G *17/027*

U.S. Cl. 267—221 **16 Claims**



1. An adjustable strut for motor vehicles, comprising: a dashpot having a piston in a shock-absorbing cylinder; a helical spring accommodating said shock-absorbing cylinder; said piston dividing said cylinder into two chambers; a rod attached to said piston and extending out of said cylinder through an alignment-and-sealing package at one end of said rod; said rod having one end articulated to a component of a vehicle and having another end articulated to said cylinder; first and second cup springs secured to said helical spring, said helical spring being tensioned between said cup springs; two height-adjustment cylinders surrounding said shock-absorbing cylinder concentrically, the first cup spring being attached to said shock-absorbing cylinder by said two height-adjustment cylinders, one height-adjustment cylinder sliding in and out inside the other height-adjustment cylinder; the second cup spring being attached to said rod adjacent said one end articulated to said component of said vehicle; said helical spring becoming compressed when said piston enters said shock-absorbing cylinder, said height-adjustment cylinders having a telescopic action determining how far said component is off the ground, one of said height-adjustment cylinders being an outer height-adjustment cylinder fastened to said first cup spring; said outer height-adjustment cylinder having one end facing said rod and having means for aligning and sealing said shock-absorbing cylinder, the other of said height-adjustment cylinders being an inner height-adjustment cylinder; said outer height-adjustment cylinder having another end with means for aligning and sealing said inner height-adjustment cylinder; said inner height-adjustment cylinder being fastened to said shock-absorbing cylinder and being forcible to telescope relative to said outer height-adjustment cylinder by injecting fluid into a gap between said height-adjustment cylinders and said shock-absorbing cylinder.

5,823,518

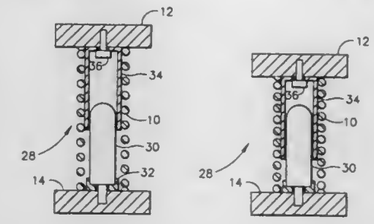
SPRING GUIDE RETAINER

Tatsuo Nagamitsu, Powell, and Robert Duane Dye, Huntsville, both of Ohio, assignors to Honda Engineering North America, Marysville, Ohio

Filed Feb. 14, 1997, Ser. No. 800,776

Int. Cl.[6] B60G *11/14;* **F16F** *1/06*

U.S. Cl. 267—291 **8 Claims**



1. A spring guide retainer for use with a spring associated with a stamping die, the stamping die having an upper die and a lower die, and further having a pad associated with the upper die for contacting a workpiece as the spring is compressed, the spring guide retainer comprising:

a spring guide housing for positioning the spring on the pad;

a spring guide pin attached to the spring guide housing for associating the spring guide housing with the upper die and such that it does not preload the spring; and

a spring guide holder for receiving the spring guide pin during compression of the spring, providing tight clearance between the spring to the holder and the housing to maintain alignment of the spring during compression, wherein the spring guide holder is capable of attachment to the upper die.

5,823,519

TOGGLE LEVER CLAMP

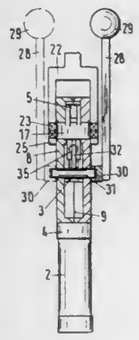
Josef-Gerhard Tunkers, Ratingen, Germany, assignor to Tünkers Maschinenbau GmbH, Ratingen, Germany

Filed Oct. 21, 1996, Ser. No. 734,640

Claims priority, application Germany, Oct. 19, 1995, 295 16 531 U

Int. Cl.[6] B23Q *3/08*

U.S. Cl. 269—29 **19 Claims**



1. A toggle lever clamp, comprising:

a clamping head, having a housing,

a cylinder abutting said clamping head as an extension thereof, in an axial direction, with a piston, alternately pressurized on either side by the pressure of a pressure fluid medium, provided in said cylinder, said piston being guided displaceably lengthwise in the axial direction and in a sealing manner, said piston being connected to a piston rod which moves with said

piston, the piston rod having a free end opposite an end thereof connected to the piston,

a toggle joint arrangement mounted at the free end of the piston rod, inside the clamping head, said toggle joint arrangement having a clamping arm associated therewith,

a manual lever that is manually operable and engages the piston rod, a handle associated with said manual lever, the manual lever cooperating with the piston rod through a joint for axial movement of the piston rod,

the clamping head consisting of two housing parts that are sbell-shaped and integral material-wise, said two housing parts encapsulating the toggle joint arrangement and a portion of the piston rod to protect the toggle joint arrangement and the piston rod from dust, dirt, and spray entering from outside the clamping head,

wherein guide grooves for the toggle joint arrangement and through bores for a pivot pin of the toggle joint arrangement and optionally at least one opening or recess for a housing for microswitches or for inductive switches or for pneumatic switches are provided in inner walls of the shell-shaped housing parts, and the manual lever is mounted on a pivot axis associated with the clamping head, and the pivot axis is connected by an articulated lever with a driver, said driver being guided and held directly in a connecting link of the piston rod.

5,823,520

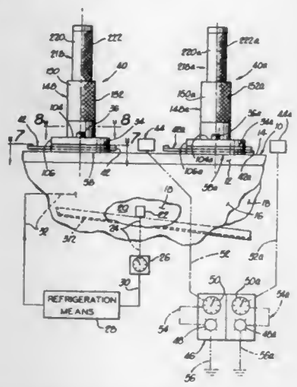
MANDREL ASSEMBLY

Terry Milton Will, Bradenton, Fla., assignor to Hi-Stat Manufacturing Co., Inc., Sarasota, Fla.

Filed May 3, 1993, Ser. No. 55,584

Int. Cl.[6] B23Q *3/00*

U.S. Cl. 269—48.3 **16 Claims**



1. A mandrel assembly for enlarging the cross-sectional area of a passage formed in a work-piece comprised of elastomeric material; said mandrel assembly comprising a first generally axially elongated resiliently deflectable mounting member; a second generally axially elongated resiliently deflectable mounting member; wherein said first mounting member comprises first and second ends; wherein said second mounting member comprises first and second ends; wherein said first and second mounting members are juxtaposed to each other as to have said first ends juxtaposed to each other and as to have said second ends juxtaposed to each other; wherein said first ends of said first and second mounting members are spaced a preselected distance from each other and wherein said second ends are resiliently deflectable toward and away from each other; wherein said first mounting member comprises an inner disposed surface; wherein said second mounting member comprises an inner disposed surface; wherein said inner disposed surfaces of said first and second mounting members generally face each other; wherein said first mounting member comprises an outer disposed surface carried by said first mounting member as to be disposed thereon generally oppositely to said inner disposed surface of said first mounting member; wherein said second mounting member comprises an outer disposed surface carried by said second mounting member as to be disposed thereon generally oppositely to said inner disposed surface of said second mounting member; wherein when said second ends are resiliently deflected toward each other said work-piece may be placed onto said first and second mounting members by having said resiliently deflected second ends inserted into said passage of said work-piece in a manner whereby at least portions of said outer disposed surfaces of said first and second mounting members are juxtaposed to the elastomeric material of said work-piece defining the surface of said passage; and further comprising an axially extending expander member; said expander member being slidable against said inner disposed surfaces of said first and second mounting members when said first and second mounting members are held axially stationary; said expander member when slid axially along said inner disposed surfaces, while said mounting members are held against axial movement, a distance sufficient to become between said second ends of said first and second mounting members being effective to move said second ends away from each other whereby said at least portions of said outer disposed surfaces are forced against said surface defining said passage and thereby expand said cross-sectional area of said passage; wherein each of said first and second mounting members are formed of relatively thin flat-stock spring steel; wherein the thickness of said flat-stock spring steel is only a small fraction of the width of said flat-stock; wherein the width of said first mounting member formed of said flat-stock spring steel is generally equal to the width of said second mounting member formed of said flat-stock spring steel.

5,823,521

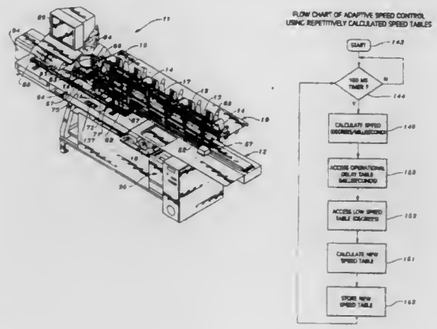
COMPUTER CONTROLLED APPARATUS AND METHOD FOR INSERTING MAIL INTO ENVELOPES

Jonathan D. Emigh; Raymond P. Porter, both of Somerset, and Motaz M. Qutub, Rancho Cordova, all of Calif., assignors to Bell & Howell Mail Processing Systems, Durham, N.C.

Filed Oct. 3, 1996, Ser. No. 720,837

Int. Cl.[6] B65H *39/00*

U.S. Cl. 270—58.06 **11 Claims**



1. A computerized control and drive system in a mail inserter machine having an operational cycle and including a plurality of sub-assemblies, each of the sub-assemblies including at least one component driven in reciprocating fashion, comprising:

a. at least one driver having a reciprocating element connected to the reciprocating component of one of the sub-assemblies, said driver being actuated between predetermined rotational positions of the operational cycle, in response to an electrical control signal;

b. tachometer means producing an output corresponding to an operational speed of the mail inserter; and,

c. computer means for producing and adapting said control signal in response both to said output and to a predetermined electro-mechanical lag time for said driver and said one sub-assembly.

5,823,522

SHEET HOLDER REMOVABLY ATTACHED TO DATA PROCESSING APPARATUS

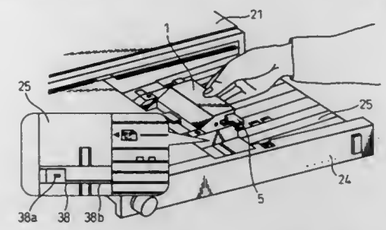
Tatsuo Fujiwara; Hiroyuki Maruyama, and Toshio Saitoh, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Aug. 13, 1996, Ser. No. 689,729

Claims priority, application Japan, Aug. 28, 1995, 7-218669

Int. Cl.[6] B65H *5/22*

U.S. Cl. 271—4.08 **20 Claims**



1. A sheet holder for use with a data processing apparatus having a hopper and a pick roller, said sheet holder being adapted to be removably attached to said hopper of said data processing apparatus, said sheet holder comprising:

a body having a wall portion forming a sheet placing area arranged such that at least one sheet can be placed on said sheet placing area and said pick roller can contact said at least one sheet on said sheet placing area when said sheet holder is attached to said hopper;

securing means for cooperation with complementary securing means arranged in said hopper for fixing said sheet holder to said hopper; and

a holding member for holding said at least one sheet on said sheet placing area, said holding member having a first end opposite to a second end, said holding member being pivotable about a pivot arranged between said first end and said second end so that said first end is manually operable and said second end can contact said at least one sheet on said sheet placing area.

5,823,523

AUTO SHEET FEEDER FOR USE IN A PRINTING APPARATUS

Jin-ho Park, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Nov. 25, 1996, Ser. No. 756,308

Claims priority, application Rep. of Korea, Nov. 24, 1995, 95-35419

Int. Cl.[6] B65H *5/00*

U.S. Cl. 271—10.04 **8 Claims**

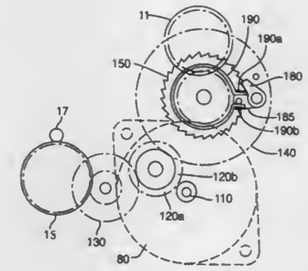
1. An auto sheet feeding device for use in a printing apparatus, said device comprising:

a motor for generating and transmitting power;

a first idle gear in mesh with a gear mounted on a rotational pivot of said motor;

a delivery roller driving portion for receiving power transmission from said first idle gear to drive a delivery roller; and

a feeding roller driving portion for intermittently driving a feeding roller with transmitted power from said first gear, said feeding roller driving portion includes a second idle gear in mesh with said first idle gear, a latch gear rotatable supported on a common axis with said second idle gear, and a latch for intermittently coupling said latch gear to said second idle gear so as to supply power to said feeding roller only when said latch gear is coupled to said second idle gear.



5,823,524

SHEET FEEDER WITH FLEXIBLE FRICTIONAL MEMBER FOR SEPARATING SHEETS

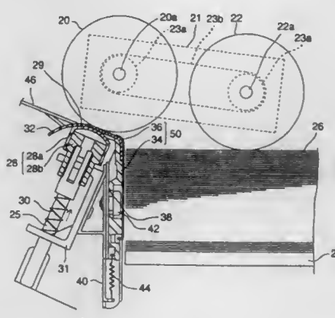
Shunichirou Kawada, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan

Filed Aug. 31, 1995, Ser. No. 522,090

Claims priority, application Japan, Aug. 31, 1994, 6-207045

Int. Cl.[6] B65H *3/52*

U.S. Cl. 271—124 **5 Claims**



1. A sheet feeder for feeding a sheet in a sheet feed direction, comprising:

a sheet separation roll having an outer circumferential surface, said sheet separation roll being drivable to rotate;

a pressing member urged onto said outer circumferential surface of said sheet separation roll;

a flexible frictional member having a plate shape interposed between said sheet separation roll and said pressing member, said flexible frictional member being supported at one end portion thereof by a biasing means upstream in said sheet feed direction with respect to said pressing member; and

a moveable member arranged upstream in the sheet feed direction with respect to said sheet separation roll and said pressing member, said movable member being movable within a predetermined range and being urged in such a direction as to move away from said sheet separation roll and said pressing member,

wherein a surface of said pressing member confronting said flexible frictional member projects toward said sheet separation roll,

wherein said flexible frictional member is supported so as to reciprocate a predetermined distance in the sheet feed direction.

wherein said one end of said flexible frictional member is attached to said movable member to reciprocate said movable member the predetermined distance in the sheet feed direction, and

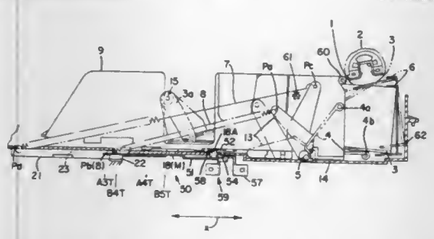
wherein said movable member is vertically movable within a predetermined range and is urged downwardly by self weight.

5,823,525

METHODS OF AND SYSTEMS FOR ADJUSTABLY FEEDING IMAGE-CARRYING MEDIA OF VARIOUS SIZES

Katsuhiko Miki, Kawasaki, Japan, assignor to Ricoh Company Ltd., Japan

Filed Jul. 22, 1996, Ser. No. 681,213
Claims priority, application Japan, Jul. 21, 1995, 7-185523
Int. Cl.[6] B65H *1/08*
U.S. Cl. 271—127 **36 Claims**



33. A system for generating an image on an image-carrying medium, comprising:

an image-generating machine having an image-synthesis engine and a feeding roller for feeding a sheet of an image-carrying medium towards the image-synthesis engine;

an image-carrying medium supplying unit detachably located near said feeding roller for feeding a stack of the image-carrying medium at a feeding position, said image-carrying medium supplying unit being adjustable to hold various sizes of the image-carrying medium;

a pressure applying unit located near said image-carrying medium supplying unit for applying a desirable pressure to the stack of the image-carrying medium towards said feeding roller; and

a control unit connected to said pressure applying unit having a linkage, said linkage selectively activating the desirable pressure in proportion to a size and an amount of the image-carrying medium held in said image-carrying medium supplying unit when said image-carrying medium supplying unit is placed at the feeding position said, linkage automatically deactivating the desirable pressure when said image-carrying medium supplying unit is removed from the feeding position.

5,823,526

SHEET DELIVERY FOR A SHEET-FED PRINTING PRESS

Michael Voge, Malsch; Roland Hirth, Römberg, and Gerhard Pollich, Heidelberg, all of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jul. 15, 1996, Ser. No. 679,983
Claims priority, application Germany, Jul. 14, 1995, 195 25 635.2
Int. Cl.[6] B65H *29/04*
U.S. Cl. 271—204 **13 Claims**

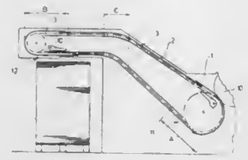
1. Sheet delivery for a sheet-fed printing press, comprising:

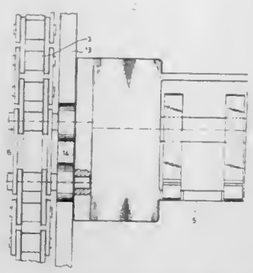
guide wheels;

conveyor chains revolvingly guided and driven by said guide wheels;

gripper systems disposed on said conveyor chains;

a locally fixed control member, said gripper systems being activatable by said locally fixed control member for gripping





sheets individually at respective leading edges thereof and for releasing the sheets in vicinity of a sheet pile;

guideways for slidingly guiding said conveyor chains;

separate roller guides arranged on a frame of the printing press;

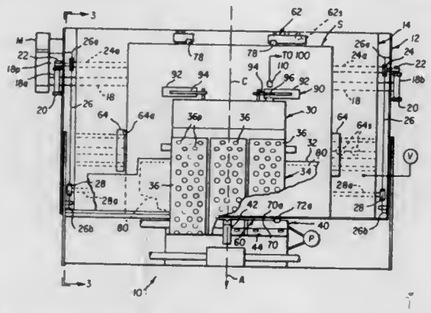
rollers with roller bearings fastened to said conveyor chains, said rollers, in regions of increased load, being movable into said separate roller guides arranged on a frame of the printing press, for transmitting to the printing press frame forces which act upon said conveyor chains; and said separate roller guides having guide elements being of concave construction and said guide elements being disposed only on a side which is in a direction in which increased loads act.

5,823,527

CONTROL FOR A SHEET STACK SUPPORTING PLATFORM

Leroy E. Burlew, Williamson; Michael T. Dobbertin, Honeoye, and Guy J. Rossi, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

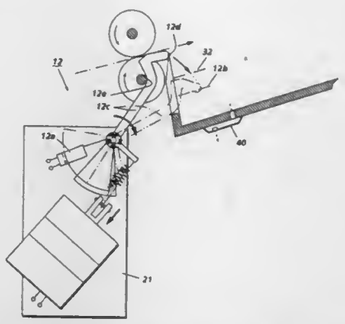
Filed Sep. 30, 1996, Ser. No. 724,713
Int. Cl.[6] B65H *7/02*
U.S. Cl. 271—265.02 **17 Claims**



1. A sheet feeder having a platform for supporting a stack of sheets, a feed head assembly for feeding sheets seriatim from the top of a sheet supply stack on said platform, means for moving said platform relative to said feed head assembly, and means for controlling operation of said platform moving means, said control means comprising:

means for determining a selected parameter of a stack of sheets supported on said platform and producing a signal corresponding to such parameter, said selected parameter determining means including means for substantially determining the area of the stack of sheets supported on said platform and producing a signal corresponding thereto, means for determining the height of the stack of sheets supported on said platform and producing a signal corresponding thereto, and means for summing the substantial area signal and the height signal to produce a signal substantially representative of the weight of the sheet supply stack; and

means for setting the speed of said platform moving means based on said selected stack parameter signal.

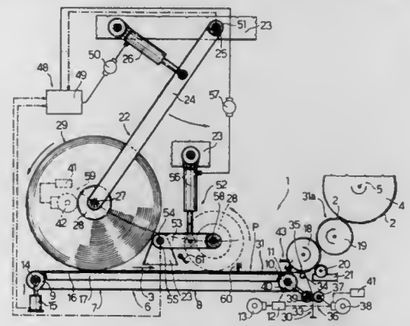


5,823,528

DEVICE FOR FEEDING BLANKS ON A CIGARETTE PACKING MACHINE

Fiorenzo Draghetti, Medicina, and Fulvio Boldrini, Ferrara, both of Italy, assignors to G.D Societa' Per Azioni, Italy

Filed Feb. 3, 1997, Ser. No. 792,995
Claims priority, application Italy, Feb. 2, 1996, BO96A0049
Int. Cl.[6] B65H *5/34*
U.S. Cl. 271—270 **14 Claims**



1.) A device for feeding blanks (**2**) on a cigarette packing machine (**1**) and along a given supply path (P); the device (**6**) being characterized by comprising first conveying means (**7**, **30**) for feeding a number of blanks (**2**), so arranged to form a first succession (**31**) of overlapping blanks (**2**) with a first given pitch, in a given traveling direction (**3**) and at a first speed along a first portion of said path (P); a pitch-change device (**35**) located at an output end of said first portion of said path (P), and for so varying said first pitch as to eliminate said overlapping arrangement and form a second succession (**31***a*) in which the blanks (**2**) are spaced with a pitch at least equal to a dimension of the blanks parallel to said traveling direction (**3**); said pitch change device comprising accelerating means (**18**) for accelerating each blank (**2**) in relation to an adjacent blank (**2**) located upstream in said traveling direction (**3**), and retaining means (**43**) for retaining said adjacent blank (**2**) so as to cause same to advance at said first speed; and second conveying means (**18**, **19**) for feeding said second succession (**31***a*) along a second portion of said path (P) at a second speed.

5,823,529

SINGLE STACK HEIGHT SENSOR FOR PLURAL SHEET STACKING BINS SYSTEM

Barry P. Mandel, Fairport; John W. Daughton; Charles D. Rizzolo, both of Rochester; John D. Hower, Jr., Fairport, and Don S. Walker, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 11, 1996, Ser. No. 585,027
Int. Cl.[6] B65H *39/10*
U.S. Cl. 271—296 **17 Claims**

1. In a sheet stacking system with an array of plural sheet stacking bins with sheet entrances for stacking plural flimsy print substrate sheets from a printed sheets output path into selected said sheet stacking bins, including a sheet feeding input path system for feeding selected said sheets into a selected said sheet stacking bin to be stacked therein, and further including a bin fullness indicator system for indicating that the estimated height of the stack of said sheets stacked in a said sheet stacking bin has reached a preset allowable maximum, and further including a stacking control system controlled by said bin fullness indicator system to control said sheet feeding input path system for said bins; the improvement comprising:

a single stack height sensing system for respective measurements of the actual stack height of the stack of said sheets stacked in respective ones of said array of plural sheet stacking bins to provide said bin fullness indicator system;

a movable carriage system for moving said single stack height sensing system from adjacent to one said bin to adjacent to another said bin for said respective measurements of the actual stack height of the stack of said sheets stacked in said respective bins;

said stack height sensing system including a stack height sensor which moves with said movable carriage system;

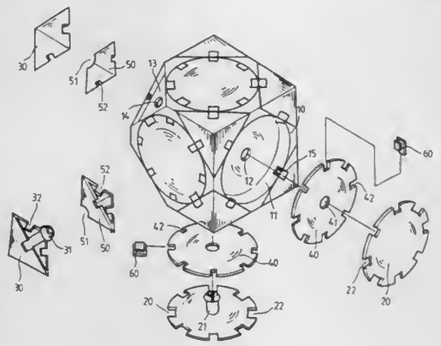
said stack height sensor including at least one movable sensing element mounted to be extended into a said bin adjacent to said movable carriage system to detect the stack height of the stack of said sheets stacked in said adjacent bin, and a signal generator responsive to said sensing element to provide control signals to said stacking control system.

5,823,530

SPATIAL PUZZLE CUBE

Ju-Shun Yang, 58, Ma Yuan West St., Taichung, Taiwan

Filed Jul. 3, 1995, Ser. No. 501,422
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—153 S **1 Claim**



1. A spatial puzzle cube comprising:

a main body having six surfaces and eight corners;

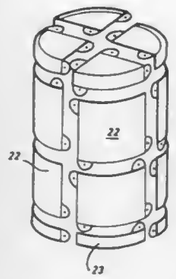
a circular depression formed on each of said surface;
a triangular depression formed on each of said corner;
a fixed disc with a plurality of slide grooves being disposed in each of said circular depression;
a rotated disc with a plurality of recesses being disposed on said corresponding fixed disc;
a fixed pyramid with three slide slots being disposed on each of said triangular depression;
a rotated trilateral pyramid with three slots being disposed on said corresponding fixed pyramid;
a plurality of slides disposed in said corresponding slide grooves;
a plurality of slides disposed in said corresponding slide slots;
means for securing the fixed disc and the rotated disc so that they can be rotated within the circular depression;
means for securing the fixed pyramid and the rotated trilateral pyramid so that they can be rotated within the triangular depression; and
a means for securing the slides in the slide grooves and the slide slots.

5,823,531

THREE-DIMENSIONAL PUZZLE ASSEMBLED FROM SEPARATE PIECES

Christian Huber, 1 rue de la Verdure, 67640 Fegersheim, France, assignor to Christian Huber, Fegersheim, and Olivier Lamat, Illkirch Graffenstaden, both of France

Filed Jun. 14, 1996, Ser. No. 666,891
Claims priority, application France, Jun. 14, 1995, 95 07259
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—156 **12 Claims**



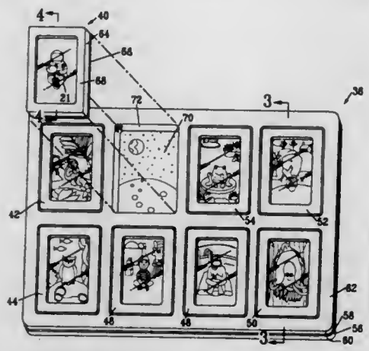
1. A three-dimensional object being formed from a plurality of separately interconnected pieces, each of said plurality of separate interconnected pieces comprising:
a main element having a first surface and an opposed second surface and a plurality of side surfaces;
said second surface having at least one lateral extension being offset with respect to and extending from said second surface of said main element along each of said plurality of side surfaces, each said lateral extension only extending a Partial distance along a length of said side surface, and said at least one lateral extension supporting a protuberance thereon;
said second surface also having at least one recess formed therein alone each of said side surfaces, said at least one recess being spaced from said at least one lateral extension and extending only partially from said second surface toward said first surface, and said at least one recess being shaped so as to releasably mate with and lock a protuberance of another interconnectable piece; and
said at least one lateral extension being rigidly supported by said main element.

5,823,532

WINDOW PUZZLE

Gail S. Goldwasser, Los Angeles; Linda M. Hawkins, Santa Monica, and Beth A. Rosenblatt, Redondo Beach, all of Calif., assignors to Small World Toys, Redondo Beach, Calif.

Filed Sep. 16, 1997, Ser. No. 931,146
Int. Cl.[6] A63F *9/12*
U.S. Cl. 273—157 R **13 Claims**



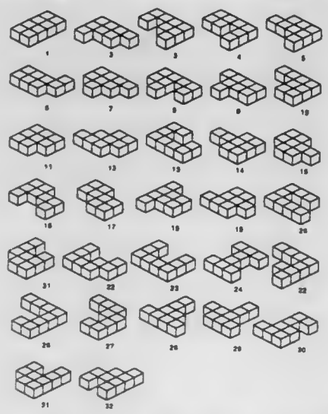
1. A puzzle comprising:
a rectangular board having a predetermined length, width, height and made of a predetermined material;
a backing attached to one side of said board and extending over the length and width of said board;
at least one cavity in said board, each cavity having a predetermined shape;
at least one puzzle piece, each puzzle piece having a frame with an outer periphery and an inner periphery defining a central opening in said frame, said outer periphery shaped to conform to said cavity; and
a transparent film extending across said central opening and including printed matter on said transparent film.

5,823,533

PUZZLES IN TWO AND THREE DIMENSIONS

Boyd F. Edwards, 19 W. Jefferson St., Westover, W. Va. 26505

Filed Mar. 21, 1997, Ser. No. 823,048
Int. Cl.[6] A63F *9/12*
U.S. Cl. 273—160 **20 Claims**



1. In a block puzzle game, the improvement comprising:
a plurality of flat puzzle pieces of uniform thickness, each piece defining a same number of unit cubes, which:

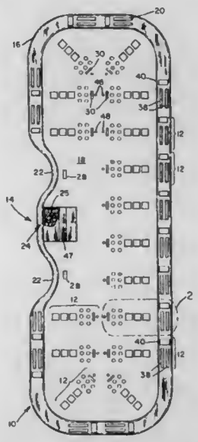
(a) can be assembled side-by-side to completely fill the interior area of a well-defined two-dimensional shape of a square or rectangle, the resulting flat two-dimensional assemblage having uniform thickness equal to the thickness of the individual pieces, and
(b) can also be assembled both vertically and horizontally to completely fill the interior volume of a well-defined three-dimensional shape of a cube or rectangular parallelopiped,
wherein each of said plurality of puzzle pieces is used once and only once in both the two-dimensional and three-dimensional assemblages.

5,823,534

TABLE BINGO GAME METHOD

Frank B. Banyai, Temecula, Calif., assignor to Jester Games International, L.L.C., Las Vegas, Nev.

Continuation-in-part of Ser. No. 558,828, Nov. 16, 1995, abandoned. This application May 10, 1996, Ser. No. 644,238
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—269 **32 Claims**



1. A method of playing a bingo game by a plurality of players employing a table having respective player stations thereabout, comprising the steps of:
(a) providing at each of the player stations a first plurality of tiles respectively bearing different numbers;
(b) providing a random number generator for drawing numbers similar to the numbers on said first pluralities of tiles;
(c) each player selecting a second plurality of tiles from the first plurality at his or her station and placing said tiles of said second plurality on the table;
(d) each player buying into a first level of play by placing a first buy-in payment on the table, and each player at his or her option may buy into a second level of play by placing a second buy-in payment on the table;
(e) using said random number generator to draw numbers until all numbers on one of said second pluralities of tiles selected by one of the players are matched by the drawn numbers, whereupon said one player is a winner and collects all of said first buy-in payments on the table, and further collects all of said second buy-in payments on the table provided said winner had bought into said second level of play; and
(f) if said winner had not bought into said second level of play, continuing the game only with the players who had bought into said second level of play by resuming the drawing of numbers until all numbers on one of said second pluralities of tiles selected by one of the continuing players are matched by the drawn numbers, whereupon said one continuing player is a winner and collects all of said second buy-in payments on the table.

5,823,535

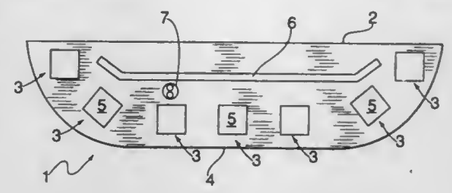
Patent Not Issued For This Number

5,823,536

BLACKJACK CARD GAME AND METHOD OF PLAYING A GAME

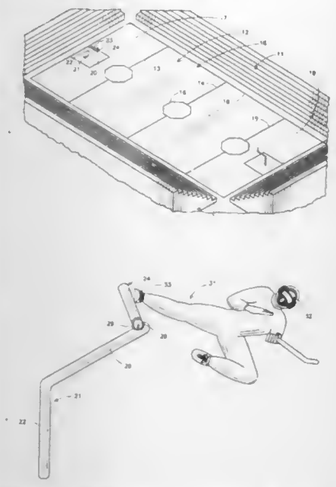
Leo Flasch, 109 Beresford Dr., Egg Harbor Township, N.J. 08234

Filed May 30, 1997, Ser. No. 866,768
Int. Cl.[6] A63F *1/00*
U.S. Cl. 273—292 **20 Claims**



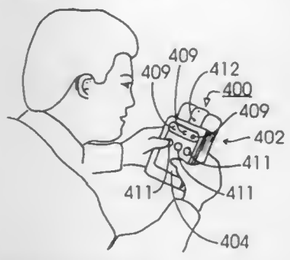
1. A method of playing a casino card game comprising:
providing at least one standard deck of 52 playing cards;
positioning a selected number of players between one and seven players around a table;
positioning a dealer employed by the casino at the table among the players;
selecting only one of the players to act as banker;
requiring each of the players except the banker to make a wager;
dealing hands by the dealer consecutively to all the players including the banker, the dealer receiving no card, starting from a player directly adjacent to the banker such that each player and the banker have hands including two initial cards;
wherein each player obtains a card point total determined by the summation of the value of the cards in his hand, wherein numbered cards are worth their face value, face cards are worth ten and aces are worth one or eleven;
allowing each player starting with the player directly adjacent to the banker, to receive additional cards in his hand, one at a time, thereby affecting his card point total until the player elects to receive no more additional cards or until the player's card point total exceeds twenty-one wherein the player loses his wager to the banker and that player is out of the game;
wherein the banker must elect to receive an additional card if his card total is less than 17 and wherein the banker must stand if his card total is greater than 16;
wherein the player has a winning hand if his card point total is less than twenty-two and is closer to twenty one than the card point total of the banker;
wherein the hand is a tie if the player and the banker have the same card point total less than twenty-two unless the player or the banker has a card point total of twenty-one based solely on the initial cards; and
wherein the player has a losing hand if he has a card point total over twenty-one or if his card point total is further from twenty-one than the card point total of the banker;
paying by the banker to the players with winning hands in accord with traditional blackjack payoff rules;
collecting the wagers by the banker from the players with losing hands;
determining a vigorish based, at least in part, on all wagers collected by the banker from the players; and
paying the vigorish to the dealer.

5,823,537
MARTIAL ARTS GAME METHOD
Stephen F. Blanton, P.O. Box 22, Tangerine, Fla. 32777
Filed Aug. 4, 1997, Ser. No. 905,651
Int. Cl.[6] A63B *67/00*
U.S. Cl. 273—440.1 **9 Claims**



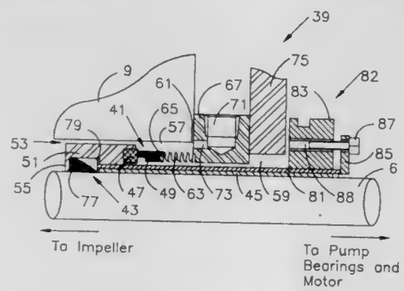
1. A martial arts game method comprising the steps of:
selecting a predetermined playing field having two end portions marked off in a predetermined manner and having a goal pole in one end portion, said goal pole having a removably attached kick scoring member attached thereto in a predetermined position;
selecting a playing baton;
selecting a plurality of martial arts players to form two teams; and
giving one team possession of the selected baton for the players to move the baton down the selected field to said goal pole to kick the kick scoring member from said goal pole over the defense of the other martial arts team using martial arts techniques to defend said goal pole in one end portion of said selected playing field; whereby martial arts is performed by multiple players in a team sport.

5,823,538
GAME WITH ACTION-DISCHARGE
Adolph E. Goldfarb, 1432 S. Eastwind Cir., Westlake Village, Calif. 91361, and Martin I. Goldfarb, Santa Monica, Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.
Continuation-in-part of Ser. No. 796,713, Feb. 6, 1997, Pat. No. 5,704,610. This application Oct. 4, 1997, Ser. No. 944,079
Int. Cl.[6] A63B *71/00*
U.S. Cl. 273—445 **21 Claims**



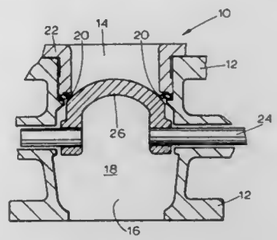
1. A game apparatus comprising:
at least one visually observable display that can be viewed by a player only when the head of the player is positioned in a predetermined player area, the display being changeable between at least two different visual conditions,
at least one game response means operable by the player in response to the condition of the display as viewed by the player, and in accordance with a predetermined game requirement, and
at least one game discharge means operatively associated with the response means to provide a discharge toward the player area dependent upon the operation of the response means.

5,823,539
ENVIRONMENTALLY SAFE PUMP HAVING A BELLOWS SEAL AND A SPLIT RING SHAFT SEAL
Robert E. Rockwood, Windham, N.H., assignor to Environamics Corporation, Hudson, N.H.
Filed Apr. 21, 1995, Ser. No. 426,780
Int. Cl.[6] F16J *15/34;* **F01D** *11/00*
U.S. Cl. 277—85 **19 Claims**



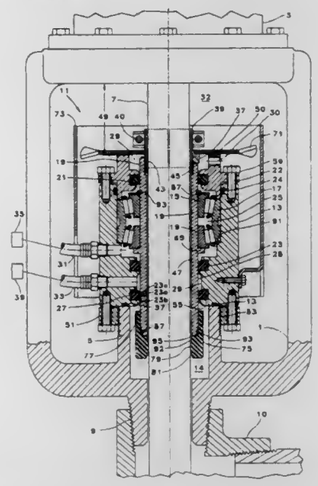
1. A seal arrangement adapted to be used in a centrifugal pump having a rotatable shaft, the seal arrangement comprising:
a bellows seal assembly adapted to be positioned circumferentially around the rotatable shaft, said bellows seal assembly for sealing the fluid being pumped and including an annular bellows for biasing a stationary annular sealing member into sealing contact with a rotatable annular sealing member so as to define a fluid seal therebetween, said rotatable annular sealing member adapted to rotate with the rotatable shaft;
a shaft seal located inboard of said bellows seal assembly such that said shaft seal is adapted to be positioned axially along the rotatable shaft between said bellows seal assembly and the inboard end of the pump, said shaft seal including a split ring having first and second mating annular members arranged so that the first mating annular member is adapted to be pressured by said second mating annular member into fluid sealing contact with the shaft;
a plurality of elongated push rods adapted to be disposed axially along the rotatable shaft, said elongated push rods for pressuring said second mating annular member so that it forces said first mating annular member radially inward into sealing contact with the shaft; and
wherein force is placed on said plurality of elongated push rods by a pressing assembly thereby causing said push rods to pressure said second mating member, and wherein said bellows seal assembly is adapted to be disposed along the shaft axially between at least a portion of said pressing assembly and said split ring.

5,823,540
POLYMER REINFORCED FLUID SEAL
Ted D. Grabau, and Robert T. Wilson, both of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Clayton, Mo.
Filed Sep. 25, 1996, Ser. No. 719,721
Int. Cl.[6] F16J *9/28*
U.S. Cl. 277—227 **18 Claims**



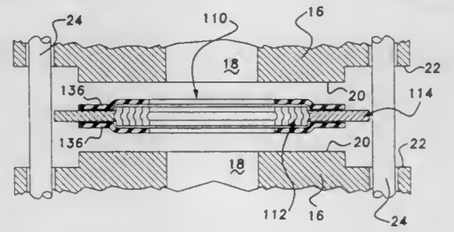
1. A nonabrasive fluid seal for flow control devices having improved chemical resistance, resistance to hydrolysis and cold flow, and wear characteristics comprising a composition comprising:
(a) about 5% to about 25% by weight of a reinforcing polymer having a tensile strength of at least about 1,600 psi at 250° C. and at least about 14,000 psi at 25° C., wherein the tensile strength is not appreciably decreased after contact with steam or water at 200° C. and 200 psi for 3,000 hours,
(b) 0.5% to about 6% by weight molybdenum disulfide, and
(c) 70% to about 95% by weight of a fluorocarbon resin,
wherein the seal has a specific gravity of at least about 1.90 to provide a fluid seal having low permeability.

5,823,541
ROD SEAL CARTRIDGE FOR PROGRESSING CAVITY ARTIFICIAL LIFT PUMPS
Lannie L. Dietle, Sugar Land, and William T. Conroy, Pearland, both of Tex., assignors to Kalsi Engineering, Inc., Sugar Land, Tex.
Filed Mar. 12, 1996, Ser. No. 615,539
Int. Cl.[6] F16J *15/32*
U.S. Cl. 277—320 **29 Claims**



1. In apparatus having a rotary drive shaft penetrating into a reservoir having process fluid therein wherein the apparatus defines support means having an internal cavity through which the rotary drive shaft extends, the improvement comprising:
(a) a seal cartridge having a bearing housing;
(b) mounting means securing said seal cartridge to the support means;
(c) a rotary wear sleeve being positioned for rotation within said bearing housing and defining a central passage through which said rotary drive shaft extends;
(d) bearing means mounting said rotary wear sleeve for rotation within said bearing housing;
(e) rotary seal means having dynamic sealing engagement with said rotary wear sleeve, said rotary seal means defining first and second lubricant filled sealed chambers located about said rotary wear sleeve and being isolated from said rotary shaft by said rotary wear sleeve, said first lubricant filled sealed chamber having said bearing means located therein;
(f) a removable longitudinally split drive coupling being secured in fixed relation about said rotary drive shaft and having rotary driving relation with said rotary wear sleeve; and
(g) said rotary wear sleeve being positioned axially and radially by said bearing means in a manner independent from axial and radial mounting of said rotary drive shaft.

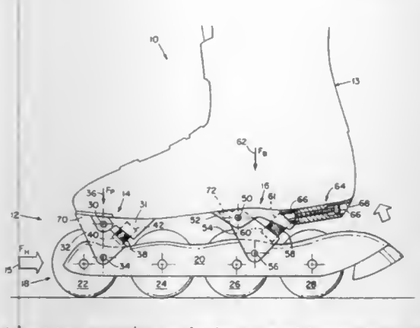
5,823,542
SPIRAL WOUND GASKET
Richard S. Owen, Houston, Tex., assignor to Lamons Metal Gasket Co., Houston, Tex.
Continuation of Ser. No. 577,132, Dec. 22, 1995, abandoned. This application Aug. 6, 1997, Ser. No. 907,103
Int. Cl.[6] F16L *23/18*
U.S. Cl. 277—603 **5 Claims**



1. A spiral wound gasket for low load sealing of a fluid conductor, said gasket comprising:
multiple windings forming a spiral gasket ring with outwardly disposed surfaces, said spiral gasket ring including interspersed windings of metal and a gasket material, said spiral ring having a predetermined thickness;
an outer guide ring mounted to an outer periphery of said spiral gasket ring, said guide ring having outwardly disposed flat surfaces; and
layers of flexible graphite applied to at least a portion of each said flat surfaces of said outer guide ring and at least a portion of each said outwardly disposed surfaces of said spiral gasket ring, said guide ring and layers of flexible graphite limiting compression of said spiral gasket ring.

5,823,543
ROLLER SKATE SHOCK ABSORBER SYSTEM
Clay Allen Burns, Boston; Peter Madelaire Nielsen, Quincy, both of Mass.; John Aloysius Sullivan, and Frederick Ballou-Viaux Sullivan, both of 53 Old Sudbury Rd., Wayland, Mass. 01778, assignors to John Aloysius Sullivan, and Frederick Ballou-Viaux Sullivan, both of Wayland, Mass.
Filed Jan. 11, 1996, Ser. No. 584,187
Int. Cl.[6] A63C *17/02*
U.S. Cl. 280—11.22 **10 Claims**

1. A roller skate shock absorber system comprising:



at least two mounting mechanisms spaced longitudinally from front to back along a skate shoe; and

a truck device including a plurality of wheels;

at least one said mounting mechanism including a first mounting member on the skate shoe and a second mounting member on the truck device and a shock absorber member interposed between said first and second mounting members for absorbing shocks imparted to the wheels of said truck device, one of said first and second mounting members including a salient element and the other a socket, said shock absorber member disposed between the distal end of said element and the closed end of said socket.

5,823,544

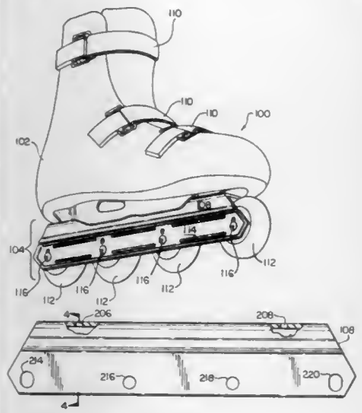
ANTI-ABRASION AND ROCKERING SYSTEM FOR AN IN-LINE SKATE

Todd D. Ellis, Boston, Mass., and Daniel A. Nolan, Salem, N.H., assignors to Reebok International Ltd., Stoughton, Mass.

Filed Feb. 6, 1997, Ser. No. 796,428

Int. Cl.[6] A63C *17/06*

U.S. Cl. 280—11.22 **4 Claims**



1. An in-line skate, comprising:

a skate boot;

a chassis having two sidewalls parallel and opposite each other, said sidewalls each having a plurality of holes formed therein so that said holes align opposite each other to form a plurality of corresponding sets of holes, wherein at least two corresponding sets of holes in said chassis are oblong;

a plurality of axles, each axle disposed in one of said corresponding sets of holes in said chassis;

a plurality of wheels, each wheel disposed on one of said axles;

a bushing disposed in each hole in said two sidewalls, wherein said bushings disposed in said two oblong sets of holes slide up and down in said oblong holes; and

a rockering plate disposed on each sidewall of said chassis, said rockering plates each having a first row of holes formed therein for accommodating said plurality of axles, said first row of holes being misaligned so that at least one of said wheels is at a different height relative to the skating surface than another of said wheels when said rockering plates are disposed on said sidewalls in a first position, and a second row of holes formed therein for accommodating said plurality of axles, said second row of holes being aligned so that said plurality of wheels are at the same height relative to the skating surface, when said rockering plates are disposed on said sidewalls in a second position, said second position being inverted relative to said first position.

5,823,545

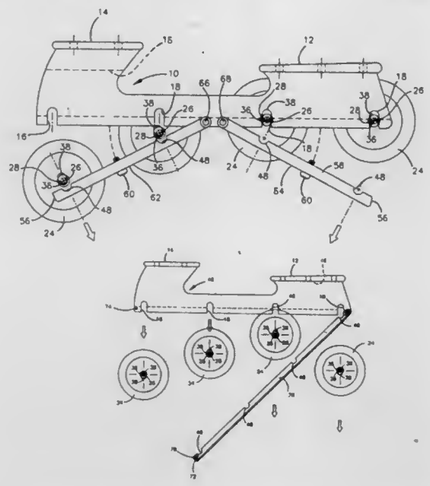
ROLLER SKATE CHASSIS

Gregory W. Goeckel, 1839 Sherwood Dr., Defiance, Ohio 43512

Continuation of Ser. No. 539,185, Oct. 4, 1995, abandoned. This application Sep. 26, 1997, Ser. No. 938,109

Int. Cl.[6] A63C *17/04*

U.S. Cl. 280—11.22 **26 Claims**



1. A chassis assembly for an inline skate adapted to be mounted to a boot and to releasably secure a plurality of preassembled wheel and axle assemblies, the chassis assembly comprising:

an elongated channel member comprising a central portion adapted to be mounted to the boot and two flanges depending from the central portion and spaced to receive upper portions of a plurality of aligned wheels therebetween, the flanges comprising lower longitudinal edges having a plurality of longitudinally spaced opposing pairs of axle slots, each pair of opposing axle slots adapted to receive through hand-insertion opposite ends of an axle of one of the wheel and axle assemblies,

at least one axle retention member adapted to be releasably mounted adjacent the lower edges of the flanges to selectively lock a plurality of the wheel and axle assemblies in respective pairs of axle slots, the retention member having a length sufficient to span a plurality of axle slots along the lower edges of the flanges and a width sufficient to span opposing pairs of axle slots, the retention member including a central portion adapted to allow free rotation of the wheels when the retention member is in position to lock the wheel and axle assemblies in the axle slots; and

means for releasably securing the retention member to the channel mainline to lock a plurality of the wheel and axle assemblies in respective pairs of axle slots, the means being operable with human fingers without the need for any auxiliary tools.

5,823,546

TOBOGGAN

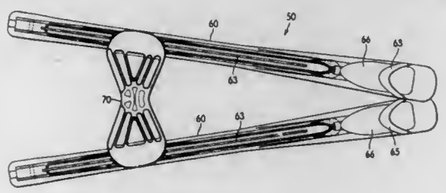
Adrian Christopher White, 79 Clifton Rd. Ruddington, Nottingham NG11 GDA, England

Continuation-in-part of Ser. No. 307,855, Sep. 30, 1994, abandoned. This application Oct. 10, 1995, Ser. No. 541,891

Claims priority, application United Kingdom, Apr. 2, 1992, 9207245

Int. Cl.[6] B62B *9/04*

U.S. Cl. 280—22.1 **27 Claims**



1. A toboggan comprising:

first and second ski members; and

a resilient coupling member connecting said first and second ski members at points intermediate the ends of said first and second ski members;

said resilient coupling member being sufficiently flexible to permit movement of said first and second ski members relative to each other under the application of force to said first or second ski members by a rider of said toboggan;

wherein said resilient coupling member is releasably secured to the first and second ski members by means of bolts, about which said resilient coupling member is molded, said bolts passing through locating holes provided in said first and second ski members and secured by means of nuts threadedly engaged with said bolts.

5,823,547

CHILD SAFETY SEAT

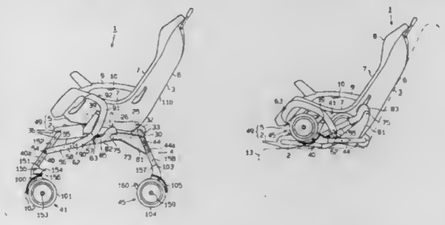
Tetsuro Otobe; Hiroshi Matsumoto; Kazuhiro Sasaki; Kazumasa Okumura, all of Kariya; Kazuo Sato, Ohbu, and Masaaki Toya, Nagoya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jodoshokki Seisakusho, Japan

Continuation of Ser. No. 326,016, Oct. 19, 1994, abandoned. This application Mar. 6, 1997, Ser. No. 812,200

Claims priority, application Japan, Oct. 19, 1993, 5-261430; Oct. 19, 1993, 5-261431

Int. Cl.[6] B62B *7/10*

U.S. Cl. 280—30 **30 Claims**



1. A child safety seat for selective use as an auxiliary seat in an automobile seat and as a stroller, said child safety seat comprising:

a seat structure attachable on the automobile seat, said seat structure having sides, a torso support and a back portion, said seat structure having a first weight;

front caster arms rotatably coupled to the seat structure for selectively extending downward from and retracting to a retracted position above a lowermost portion of the torso support;

a pair of front casters rotatably coupled to the front caster arms, respectively, said front casters moving selectively beneath and above the lowermost portion of the torso support in accordance with the extending and retracting motions of the front caster arms;

rear caster arms rotatably coupled to the seat structure for selectively extending downward from and retracting to said retracted position above the lowermost portion of the torso support, wherein the front and rear caster arms retract substantially simultaneously;

a pair of rear casters rotatably coupled to the rear caster arms, respectively, said rear casters moving beneath and above the lowermost portion of the torso support in accordance with the extending and retracting motions of the rear caster arms wherein said front caster arms, said front casters, said rear caster arms and said rear casters together defining a mobile structure weighing a second weight;

a pair of grip members respectively provided in both sides of the seat structure, each of said grip members having an intermediate portion spaced from the seat structure;

an operation lever for selectively extending and retracting the front and rear caster arms, said operation lever being operable when at least one of grip members is gripped;

first holding means for holding the front and rear caster arms in the retracted positions in response to the operation of the operation lever; and

first release means for releasing the front and rear caster arms held in the retracted positions in response to the operation of the operation lever; and

a lift handle adjustably connected to said mobile structure for lifting the child safety seat off the ground, said first weight being greater than said second weight and pivoting to automatically move said mobile structure into said retracted position when the child safety seat has been lifted off the ground.

5,823,548

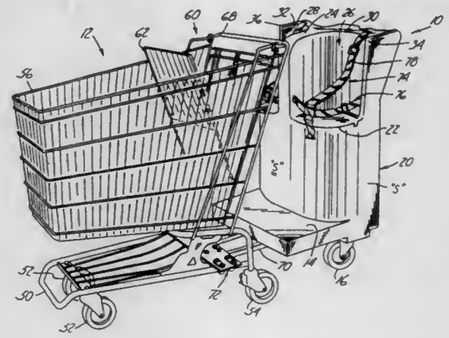
CHILD CARRIER ACCESSORY ATTACHABLE TO A SHOPPING OR LUGGAGE CART

Mary J. Reiland, Apple Valley, and Kenneth H. Reiland, Burnsville, both of Minn., assignors to Four D. Inc., Burnsville, Minn.

Continuation of Ser. No. 250,550, May 27, 1994, abandoned. This application Oct. 30, 1996, Ser. No. 732,963

Int. Cl.[6] B62D *39/00;* **B62B** *3/02*

U.S. Cl. 280—33.993 **20 Claims**



1. A child carrier accessory attached to a cart, the cart having a base frame supported by at least one rear wheel, the base frame supporting a carrying location thereon, the child carrier accessory comprising;

a platform supported by at least one platform wheel;

a carrier body located on the platform having at least one seat area;

a carrier handle attached to the carrier body for pushing the child carrier accessory; and

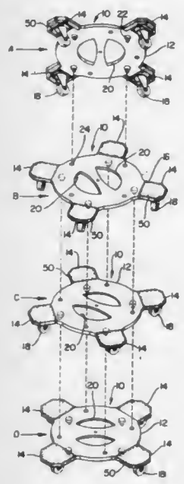
connector means rigidly connectable to the child carrier accessory and the cart so that the cart and the child carrier accessory are steered by the carrier handle, pivoting on an axis of the at least one rear wheel, the connector means maintaining the child carrier accessory a fixed distance from the cart when rigidly connected thereto, the fixed distance defining a space therebetween that permits a child to get off and on the child carrier accessory.

5,823,549

STACKING DOLLY

George Joseph Morgan, Jr., 1474 Ridgeway St., Union, N.J. 07083

Filed Jan. 11, 1996, Ser. No. 584,351
Int. Cl.[6] B62B *3/16*
U.S. Cl. 280—33.998 **27 Claims**



1. A stackable dolly comprising

a platform having upper and lower surfaces;

a plurality of legs extending radially outwardly from said platform; and

a roller member depending downwardly from each of said legs;

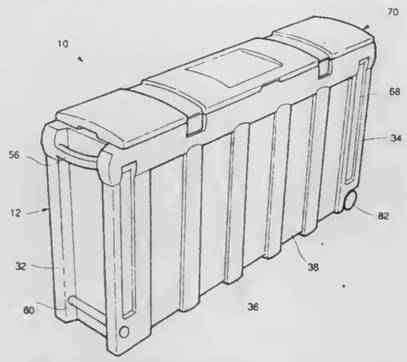
said platform having a plurality of projections extending downwardly from said lower surface of said platform with each said projection in alignment with and spaced radially inwardly from a corresponding roller member; said platform further having a plurality of indentations on said upper surface of said platform, said plurality of indentations being positioned an equal distance from a center of said platform as said projections are positioned, whereby said projections are receivable by indentations of an adjoining stackable dolly and said indentations are able to receive projections from another adjoining stackable dolly, said dolly being capable of receiving a projection from a second dolly when said dolly is stacked in vertical alignment with said second dolly.

5,823,550

PORTABLE CASE FOR TRADE SHOW MATERIALS

Joel S. Bennett, and Robert G. McRorie, III, both of Greensboro, N.C., assignors to Laarhoven Design, Inc., Norcross, Ga.

Filed Nov. 27, 1995, Ser. No. 562,908
Int. Cl.[6] B62B *1/00;3/14*
U.S. Cl. 280—47.26 **19 Claims**



1. A case for transporting articles comprising.

a) a container having a bottom, two opposing sides, two opposing ends, and an open top;

b) corner posts integrally formed with the sides and ends of the container at each corner of the container;

c) a pair of stacking feet projecting outwardly from the corner posts on one side of the container, and a pair of stacking recesses formed in the corner posts on an opposing side of the container, the stacking feet and the stacking recesses being arranged so that the stacking feet fit into the stacking recesses when two or more containers are placed in side-by-side relationship with one another;

d) first and second handles disposed at respective ends adjacent the open top of the container to allow the container to be carried by two persons lifting on the first and second handles; and

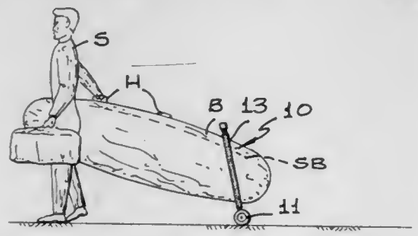
e) a lid for closing the open top of the container.

5,823,551

SURFBOARD OR SAILBOARD CARRIER

William A. Conroy, 2000 S. Hoefner Ave., Commerce, Calif. 90040

Filed Apr. 9, 1997, Ser. No. 835,585
Int. Cl.[6] B62B *1/00*
U.S. Cl. 280—47.131 **6 Claims**



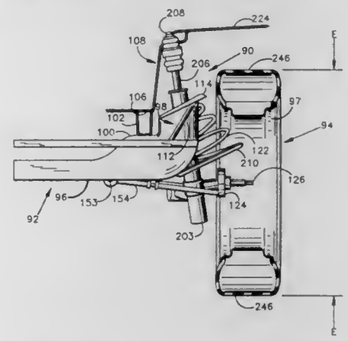
6. A carrier for a lightweight elongated load such as surfboards and the like comprising a generally U-shaped frame of polyvinyl chloride pipe material including a horizontal cross piece for supporting said load, a pair of upstanding arms secured to said horizontal cross piece which are sufficiently flexible that they can bow inwardly or outwardly as required to secure said load, plastic foam padding material on said horizontal cross piece and said upstanding arms, a second horizontal cross piece spaced from and parallel to said first cross piece, wheels secured to said second cross piece, and a strap secured to one of said upstanding arms for pulling the tops of said upstanding arms toward each other to secure said load between said arms.

5,823,552

STRUT TYPE REAR SUSPENSION

Edwin L. Etnyre, Warren, and John O. Heimbecher, Berkley, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 25, 1997, Ser. No. 918,027
Int. Cl.[6] B60G *1/00*
U.S. Cl. 280—124.179 **20 Claims**



1. A vehicle suspension system to which can be mounted a vehicle wheel and a tire, the tire having a tread surface defining a cylindrical plane, the suspension system comprising:

(1) a cross frame member having a relatively inboard portion and an outboard portion, the outboard portion including an upper spring seat portion;

(2) a spindle knuckle;

(3) a spindle to which the vehicle wheel can be coupled, the spindle being coupled to the spindle knuckle;

(4) a suspension strut coupled between the spindle knuckle and the cross frame member, the suspension strut including:

(a) a strut housing having a lower end and an upper end;

(b) a piston member axially moveable with respect to the strut housing; and

(c) a lower spring seat fixedly coupled to the strut housing; and

(5) a coil spring disposed concentrically around the strut housing, the coil spring including an upper end received by the upper spring seat portion, and a lower end received by the lower spring seat;

wherein the upper spring seat, lower spring seat, and coil spring are disposed within the cylindrical plane defined by the tire tread surface.

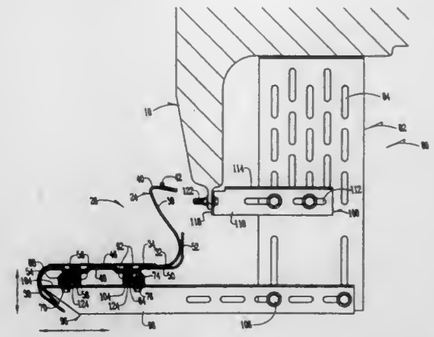
5,823,553

RUNNING BOARD ACCESSORY WITH FLAP SEAL

Scott P. Thompson, Des Moines, Iowa, assignor to DFM Corporation, Indianola, Iowa

Continuation-in-part of Ser. No. 651,962, May 21, 1996, Pat. No. 5,769,439. This application Apr. 30, 1997, Ser. No. 846,439
Int. Cl.[6] B60R *3/00*
U.S. Cl. 280—164.1 **17 Claims**

1. A vehicular body extension for attachment to a vehicle comprising:



an elongated running board having a first end, a second end, and a substantially flat wall between said first and second ends;

a flap seal disposed between said wall and said vehicle; and

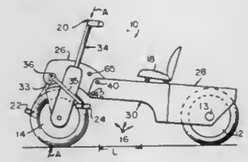
said flap seal extending from and being hinged with said wall and biased against said vehicle when said vehicular body extension is attached to said vehicle.

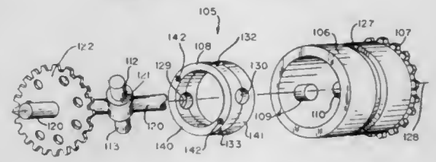
5,823,554

FOLDING, PEDAL-DRIVEN VEHICLE WITH UNIVERSAL JOINT TRANSMISSION SYSTEM

James C. K. Lau, 19515 Redbeam Ave., Torrance, Calif. 90503

Continuation-in-part of Ser. No. 226,898, Apr. 13, 1994, Pat. No. 5,486,015. This application Dec. 13, 1995, Ser. No. 572,239
Int. Cl.[6] B62M *1/02*
U.S. Cl. 280—261 **19 Claims**





1. A human powered ground vehicle comprising: a vehicle frame having a forward end and a rearward end; a steering column hingedly connected to said vehicle frame and extending across said vehicle frame; a motive power input assembly supported by said frame and adapted to derive motive power from a physical exertion of force by a driver, said motive power input assembly including at least one pedal member adapted to revolve about a laterally extending axis which traverses said vehicle frame through an area located forward of said steering column; a plurality of wheels, including a front wheel mounted for rotation proximate said steering column, and at least one rear wheel mounted for rotation proximate said rearward end of said vehicle; and means for transmitting power from said motive power input assembly to said front wheel, thereby permitting said vehicle to be driven, wherein said means for transmitting power includes a gear system rotatably mounted to said vehicle frame for rotation about a central axis that is fixed with respect to said vehicle frame, a chain arrangement including at least one chain drive gear, said chain drive gear being rotatably mounted to said steering column for rotation about a central axis that is fixed with respect to said steering column, and

an intermediate power transmitting assembly, wherein said intermediate power transmitting assembly includes a universal joint mechanically and directly connecting said gear system to said chain drive gear, said universal joint comprising a two-way pivoting member, said two-way pivoting member being pivotally connected to said gear system for pivoting movement of said two-way pivoting member about a first universal joint axis of rotation, and said two-way pivoting member being pivotally connected to said chain drive gear for pivoting movement of said chain drive gear about a second universal joint axis of rotation, and wherein said first and second universal joint axes of rotation are substantially perpendicular to one another.

5,823,555

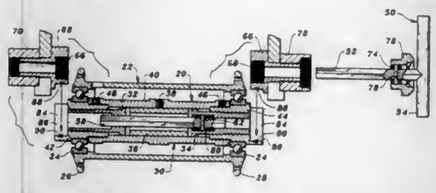
CYCLE WHEEL MOUNTING APPARATUS

J. Leonard Ashman, 3962 Third Ave., Sacramento, Calif. 95817

Continuation-in-part of Ser. No. 225,837, Apr. 11, 1994, Pat. No. 5,549,315. This application Jun. 13, 1996, Ser. No. 663,405

Int. Cl.[6] B62K *25/02*

U.S. Cl. 280—279 **12 Claims**



1. Apparatus for mounting a cycle wheel on a cycle frame, said cycle frame including at least one fork having first and second cycle legs with distal ends, said cycle legs being located away from one another and defining a space therebetween for accommodating a cycle wheel, said apparatus comprising, in combination:

a cycle wheel hub assembly including a wheel support axle and a hub member disposed about said wheel support axle and rotatably mounted on said wheel support axle, said wheel support axle including an axle primary segment located within said hub member and having opposed axle primary segment ends and first and second axle end segments connected to said primary segment at said opposed axle primary segment ends and having distal ends, at least one of said axle end segments comprising a movable axle end segment selectively movable relative to said axle primary segment between a retracted position and an extended position, the distal end of said movable axle end segment being further from said axle primary segment when in said extended position than when in said retracted position;

a first wheel support adapted for mounting at the distal end of said first cycle leg; and

a second wheel support adapted for mounting at the distal end of said second cycle leg, said axle end segments being connected to said wheel supports when said movable axle end segment is in said extended position to releasably retain said cycle wheel in the spaced defined by said cycle legs.

5,823,556

HEAD SET FOR A BICYCLE

Yi-Chen Chi, No. 139-5, An Mei Rd., Mei Shan Village, Houli Hsiang, Taichung Hsien, Taiwan

Filed Jun. 16, 1997, Ser. No. 876,498

Int. Cl.[6] B62K *1/00*

U.S. Cl. 280—279 **3 Claims**

1. A head set disposed at each one of two ends of a head tube of a bicycle, comprising:

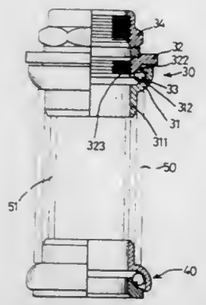
a bowl member having a neck portion inserted into said head tube and said neck portion having a skirt portion extending radially and upwardly from an upper edge thereof so as to define a first groove in an inner periphery of said skirt portion;

a ring member having a first flange extending radially from a first end thereof which extends from said neck portion, said ring member being force-fitted with an inner periphery of said neck portion by a second end thereof;

a plurality of balls received in said first groove;

an annular member having a second groove defined therein and a second flange extending radially from an edge thereof so that said balls are rotatably received between said first groove and said second groove, and

a race member having a third groove defined therein and being securely positioned to receive said annular member in said third groove, wherein said first flange and said second flange overlap each other in a longitudinal direction of said head set.



5,823,557

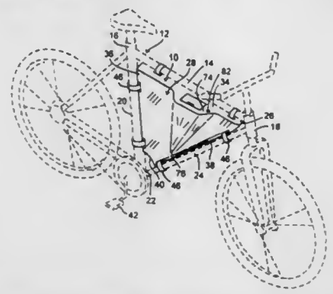
PLATFORM FOR MOUNTING SOUND EQUIPMENT ON A CYCLE

Phillip Penza, 510 W. Northern Ave., Phoenix, Ariz. 85021

Filed Jul. 31, 1996, Ser. No. 688,910

Int. Cl.[6] B62H *1/10*

U.S. Cl. 280—304.5 **18 Claims**



18. A platform for detachably mounting a sound equipment to a cycle frame comprising a first tubular member extending horizontally between a seat bracket and a front bracket, a second tubular member connecting to the seat end of first tubular member and extending downwardly therefrom to a bottom bracket, and a third tubular member extending from the bottom bracket to the front bracket, the first, second and third tubular members in combination forming a triangular opening, the platform comprising:

a hollow rigid housing having a left sheel and a right shell joined along a centerline, the hollow housing adapted to fit within a triangular opening of a cycle frame, the hollow housing having an upper edge for abutting a first tubular member of a cycle frame, a rear edge for abutting a second tubular member of a cycle frame, a front edge for abutting a third tubular member of a cycle frame, and a lower edge for abutting a bottom bracket for a cycle frame, the lower edge being arcuate in shape;

mating slots positioned along the periphery of the left shell and the right shell;

straps extending through the slots for engaging a cycle frame;

a horizontal shelf for mounting an amplifier mounted within said housing;

means for mounting a music player within said housing;

at least one L-shaped shelf for mounting at least one speaker within said housing, the at least one L-shaped shelf having a horizontal leg and a vertical leg extending upwardly therefrom;

an L-shaped shelf for mounting a battery within said housing, the L-shaped shelf having a horizontal leg and a vertical leg extending upwardly therefrom;

a door providing access to the hollow housing proximate to the means for mounting a music player within said housing;

an amplifier vent comprising a plurality of amplifier vent slits extending through the housing positioned proximate to said horizontal shelf;

a music player vent comprising a plurality of music player vent slits extending through the housing positioned proximate to said means for mounting a music player; and

and at least one speaker vent comprising a plurality of speaker vent vent slits extending through the housing positioned proximate to each of the at least one L-shaped shelves.

5,823,558

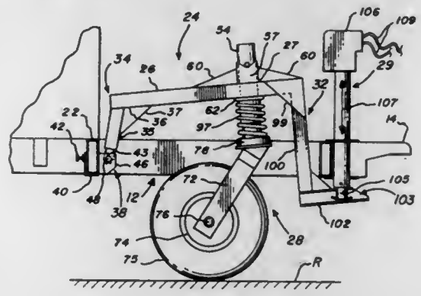
TRAILER LOADING SUPPORT

William A. Shoquist, 14815 Oakland Beach Ave., Prior Lake, Minn. 55372

Continuation-in-part of Ser. No. 496,134, Jun. 28, 1995, abandoned. This application Jan. 31, 1997, Ser. No. 792,489

Int. Cl.[6] B60G *3/02*; **B60S** *9/04*

U.S. Cl. 280—405.1 **13 Claims**



1. A device for reducing a load on a motor vehicle trailer hitch in combination with a rigid trailer frame, while the trailer is towed by the motor vehicle, comprising:

(a) a load frame, the load frame having a top side, a bottom side, a front portion and a back portion, the back portion of the load frame pivotally connected to the trailer frame;

(b) a wheel assembly comprising a sleeve affixed to the load frame and a spindle rotatably and slidably attached in the sleeve, and a tire rotatably attached to the spindle adjacent the bottom side of the load frame;

(c) a suspension mechanism coupled between the wheel assembly and the load frame; and

(d) a retracting apparatus, the retracting apparatus fixedly mounted to the trailer frame, and having an adjustment member bearing against the front portion of the load frame to thereby control and limit the pivot of the load frame about the pivotal connection to the trailer frame, to selectively adjust the loading on the trailer hitch.

5,823,559

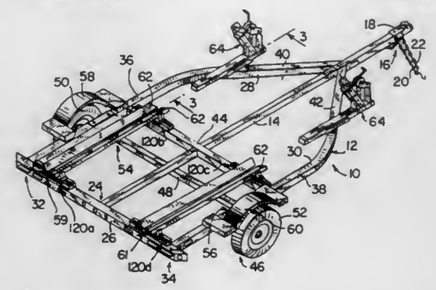
TRAILER

Tony P. Priesgen, Hartford, and Gary L. Youmans, West Bend, both of Wis., assignors to Triton Corporation, Hartford, Wis.

Filed Sep. 19, 1996, Ser. No. 715,698

Int. Cl.[6] B60P *3/10*

U.S. Cl. 280—414.1 **43 Claims**



1. A trailer, comprising:

a frame structure extending along a longitudinal axis, the frame structure including first and second side portions and first and second pair of cross frame members transverse to the longitudinal axis interconnecting the side portions, each side portion having a first end which converges toward the first end of the other side portion, the frame structure other including a central frame member extending along the longitudinal axis, the central frame member having a first side joined to the first end of the first side portion of the frame structure, and a second, opposite side joined to the first end of the second side portion of the frame structure;

a wheel and axle assembly extending along a second axis transverse to the longitudinal axis, and mounted to the side portions of the frame structure;

a channel member mounted to the frame structure, the channel member extending along an axis parallel to the longitudinal axis;

a bow stop assembly slidably mounted to the channel member, the bow stop assembly including an elongated bow stop slidably received with channel member; and

means for securing the bow stop within the channel member at a predetermined position.

5,823,560

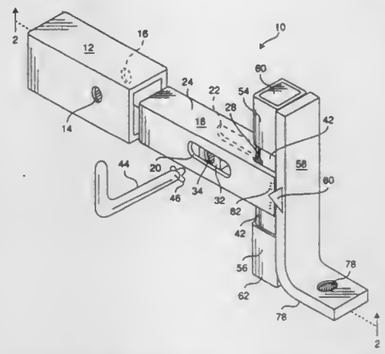
TWO WAY CUSHIONING TRAILER HITCH

Robert D. Van Vleet, 405 12th St., Sidney, Nebr. 69162

Filed Jun. 2, 1997, Ser. No. 867,211

Int. Cl.[6] B60D *1/30*

U.S. Cl. 280—484 **16 Claims**



1. Trailer hitch apparatus adapted to be removably coupled to a vehicle mounted receiver tube which has at least one aperture in an

outer wall thereof for receiving a retaining means for locking said apparatus to the tube, said apparatus being adapted to have a ball hitch connector mounted thereto, said apparatus comprising:

an elongated hollow draw bar tube adapted to be inserted within the receiver tube, said draw bar tube having an outer wall with at least one aperture therein, a hollow interior and a slide block in said interior adapted to move longitudinally therein;

a retaining means adapted to fit within at least one aperture in the receiver tube and said at least one aperture in said draw bar tube;

said slide block having a bore adapted to receive said retaining means that extends through at least one aperture of the receiving tube and said at least one aperture of said draw bar tube, said slide block being adapted to move longitudinally relative to said draw bar tube while being held stationary relative to the receiver tube by said retaining means;

a first biasing means associated with said draw bar tube for biasing said slide block against longitudinal movement;

a vertically oriented elongated support bar attached to an outer end portion of said draw bar tube, said support bar being generally transverse to said draw bar tube and having an upper end and a lower end; and

a ball hitch assembly carried by said support bar and being generally slideably vertically moveable relative thereto, said ball hitch assembly having upper and lower housing portions that overlie said upper end and said lower end of said support bar, and having a mounting element adapted to receive a ball hitch connector, said assembly including a second biasing means located between said upper housing and said upper end and between said lower housing and said lower end for biasing said assembly against vertical movement.

5,823,561

Patent Not Issued For This Number

5,823,562

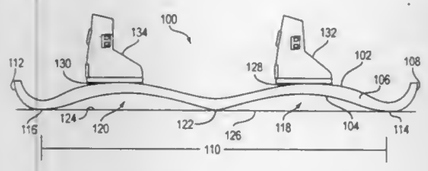
SNOWBOARD

Donald P. Stubblefield, Beaverton, Oreg., assignor to North Shore Partners, Lake Oswego, Oreg.

Filed Aug. 27, 1997, Ser. No. 918,906

Int. Cl.[6] A63C *5/04*

U.S. Cl. 280—609 **7 Claims**



1. A snowboard, comprising:

a nose portion, a tail portion, a base surface, a top surface, a central section extending longitudinally between said nose and tail portions, and a pair of mounting zones on said top surface adapted to mount a pair of boots to said central section, said central section including two longitudinally spaced, cambered portions each having upwardly arched top and bottom portions, each one of said pair of mounting zones being generally located on said upwardly arched top portion of said top surface of a respective one of said cambered portions so that the respective cambered portion is deflected downwardly toward a riding surface during use by the weight of a user, the nose portion and the tail portion having forward and rearward base surfaces, respectively, which are adapted to come into contact with said riding surface during use by the user, said central section having a base portion formed between said two cambered portions, said base portion adapted to come into contact with said riding surface during use by the user.

5,823,563

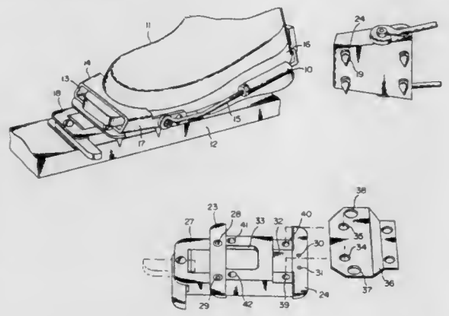
TELEMARK SKI BINDING INCLUDING A CRAMPON

Armond K. Dubuque, 3920 138th St. S. E., Sultan, Wash. 98294

Filed Feb. 5, 1997, Ser. No. 795,068

Int. Cl.[6] A63C *9/04*

U.S. Cl. 280—615 **1 Claim**



1. A ski binding for detachably attaching a ski to a ski boot, said binding comprising:

a harness and

an attachment assembly,

said harness being detachably attached to a sole of said boot,

said attachment assembly being attached to said ski,

said harness further comprising a metal plate adapted to be positioned below a toe portion of said boot and a plurality of posts having sharp tapered ends, said posts being attached to said plate with said sharp tapered ends extending downwardly away from said plate, such that said harness functions as a crampon,

said posts being adapted for engagement by said attachment assembly,

said attachment assembly including two longitudinally spaced latch bars, said latch bars being longitudinally adjustable for movement between a latched position for engaging recessed portions within at least two longitudinally spaced posts positioned between said latch bars and a release position for allowing disengagement of said posts from said attachment assembly such that when said posts are engaged by said attachment assembly said ski is attached to said boot and when said posts are disengaged from said attachment assembly said ski is removed from said boot and said harness can function as a crampon.

5,823,564

COLLAPSIBLE BABY CARRIAGE AND STROLLER

Heinz Kettler, Ense, Germany, assignor to Herlag Holzwarenfabrik GmbH & Co., Lauenfoerde, Germany

Filed Sep. 6, 1995, Ser. No. 524,423

Claims priority, application Germany, Sep. 6, 1994, 44 31 636.4

Int. Cl.[6] B62B *7/08*

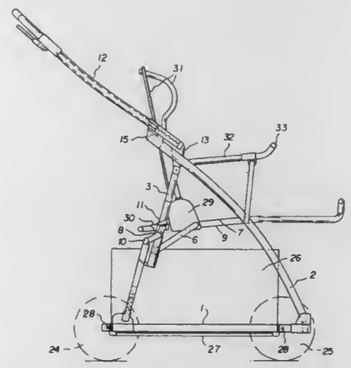
U.S. Cl. 280—642 **38 Claims**

1. A collapsible baby stroller, comprising:

a base frame;

front bearing tubes pivotally connected to said base frame;

rear support tubes each being embodied in divided form and including at least two support tube parts and each being pivotally connected to said base frame;



a folding hinge pivotally joining together said at least two support tube parts of said rear support tubes;

a mechanically actuatable safety lock associated with said folding hinge;

a common central joint element supporting said front bearing tubes and said rear support tubes;

a handlebar also connected to said common central joint element;

a seat connected to said rear support tubes and said front bearing tubes;

armrests connected to said seat;

a chest bar connected to said armrests; and

said folding hinge and said common central joint element allowing the baby stroller to be collapsed above said base frame.

5,823,565

Patent Not Issued For This Number

5,823,566

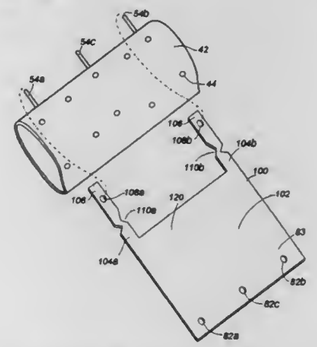
AIR BAG MODULE WITH DEPLOYMENT FLAP

Gregory B. Manire, Oxford, Mich., assignor to AlliedSignal Inc., Morristown, N.J.

Filed Oct. 16, 1996, Ser. No. 730,978

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—728.3 **13 Claims**



1. An air bag module (**10**) comprising a housing (**12**) having an open mouth (**18***a*,*b*);

an air bag (**22**) mounted within the housing prior to deployment in a compact configuration;

a retainer flap (**100**) having a tearable region thereon, the flap looped about the air bag to retain the air bag in its compact configuration prior to deployment and upon being torn a portion thereof is of sufficient length such that upon deployment of the air bag, the flap is positioned to lie between the mouth of the housing and the deployed air bag to protect the air bag.

5,823,567

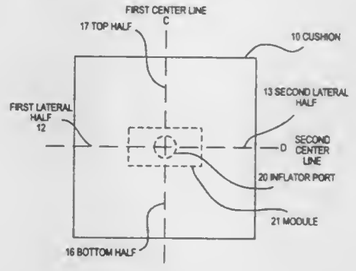
FOLDED INFLATABLE PROTECTIVE DEVICE AND METHOD FOR MAKING SAME

Vance L. Behr; James M. Nelsen, both of Albuquerque, and Kenneth W. Gwinn, Cedar Crest, all of N. Mex., assignors to Precision Fabrics Group, Inc., Greensboro, N.C., and Sandia Corporation, Albuquerque, N. Mex.

Filed Jul. 3, 1996, Ser. No. 674,817

Int. Cl.[6] B60R *21/16*

U.S. Cl. 280—743.1 **9 Claims**



1. An inflatable protective device using a cushion made of lightweight material comprising:

a cushion defined by a first lateral half and a second lateral half divided by a first center line and further defined by a bottom half and top half divided by a second center line;

an inflator port in the cushion centered on the first center line;

a first half-width stack defined by a plurality of fan folds in the first lateral half wherein neither edge of each fold extends substantially over the first center line;

a second half-width stack defined by a plurality of fan folds in the second lateral half wherein neither edge of each fold extends substantially over the first center line;

a first full-width stack defined by one or more fan folds in the top half wherein the folds are substantially centered above the second center line and are substantially over the inflator port; and

a third half-width stack defined by a plurality of fan folds in the bottom half wherein neither edge of each fold extends substantially over the second center line and the first full-width stack is located between the third half-width stack and the inflator port.

5,823,568

METHOD FOR THE ASSSEMBLY OF AN AIRBAG GENERATOR CARRIER WITH AN ASSOCIATED GAS SACK

Robert Wittmann, New-Ulm; Frank Müller, Blausteln; Serge Niederkorn, Ulm; Matin Settele, Tomerdingen; Hans-Juergen Frueth, Merklingen, and Helmut Wahlers, Elterlein, all of Germany, assignors to Takata (Europe) Vehicle Safety Technology GmbH, Ulm, Germany

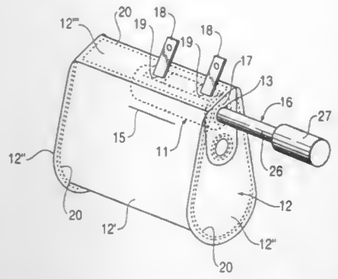
Filed Mar. 13, 1997, Ser. No. 816,716

Claims priority, application Germany, Mar. 14, 1996, 196 10 058.5

Int. Cl.[6] B60R *21/16*

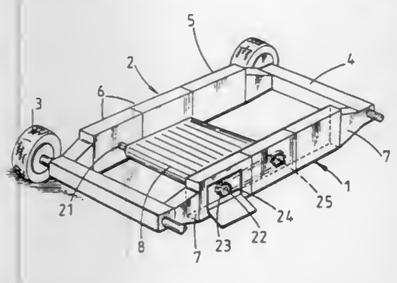
U.S. Cl. 280—743.1 **7 Claims**

1. Method of assembling an airbag generator carrier (**11**) with an associated gas sack (**12**) which has an opening (**13**) for the introduction of the generator (**14**) into the generator carrier (**11**), characterized in that



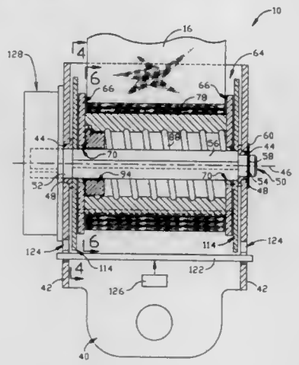
the gas sack (12) is completely sewn together apart from a short slit (15) for the introduction of the generator carrier (11),
the gas sack (12) is exposed in this state to a metal seeking apparatus,
in the case that no metal is found at the or in the gas sack (12), the generator carrier (11) is introduced through the narrow slit (15) into the gas sack (12) and is brought to its intended location within the gas sack (12); and in that
the slit (15) is subsequently sewn together while monitoring for damage to the needle and/or needle breakage.

5,823,569
CHASSIS SYSTEM
James Roy Scott, Tayside, United Kingdom, assignor to Reekie Manufacturing, Limited, Forfar, United Kingdom
PCT No. PCT/GB95/00860, § 371 Date Oct. 9, 1996, § 102(e) Date Oct. 9, 1996, PCT Pub. No. WO95/28311, PCT Pub. Date Oct. 26, 1995
PCT Filed Apr. 13, 1995, Ser. No. 722,275
Claims priority, application United Kingdom, Apr. 13, 1994, 9407578
Int. Cl.[6] B62D *21/00*
U.S. Cl. 280—781 **20 Claims**



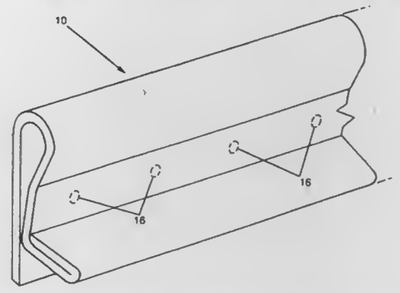
1. An agricultural vehicle or machinery having a chassis provided with ground engaging means and at least one transverse chassis member and laterally spaced apart longitudinal chassis members, characterized in that each of said longitudinal chassis members comprises a plurality of modular elements fastened together end-to-end, which modular elements are substantially hollow for housing therein moving parts of said agricultural vehicle or machinery and have access opening means for accessing said moving parts in the interiors of said substantially hollow modular elements, said access opening means being provided with closure means for preventing ingress of foreign matter into the hollow interiors of said modular elements in use of said vehicle or machinery, said modular elements being fastened to each other by releasable fastener means extending through transversely extending flanges provided at connection ends of the modular elements and defining a substantially unobstructed hollow interior space extending longitudinally along said chassis member along said plurality of modular elements for housing therein longitudinally extending moving parts.

5,823,570
SEAT BELT RETRACTOR WITH ENERGY MANAGEMENT
Wendell C. Lane, Jr., Romeo; Barney J. Bauer, Fenton; Charles E. Steffens, Jr., Washington, and Robert D. Sayles, Rochester, all of Mich., assignors to TRW Vehicle Safety Systems Inc., Lyndhurst, Ohio
Filed Oct. 10, 1996, Ser. No. 728,790
Int. Cl.[6] B60R *22/28*
U.S. Cl. 280—806 **52 Claims**



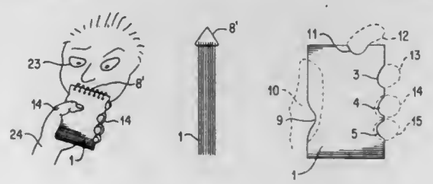
1. A seat belt webbing retractor comprising:
a spool sleeve around which seat belt webbing is wound, said spool sleeve being rotatable in webbing withdrawal and webbing retraction directions;
means for stopping rotation of said spool sleeve in the webbing withdrawal direction;
means for enabling rotation of said spool sleeve in the webbing withdrawal direction subsequent to being stopped by said means for stopping and upon the occurrence of tension in the webbing above a predetermined amount;
cutter means located radially within said spool sleeve for cutting into said spool sleeve when said spool sleeve rotates in the webbing withdrawal direction subsequent to being stopped by said means for stopping and in response to tension in the webbing above the predetermined amount;
said means for stopping said spool sleeve including a member rotatable in the withdrawal and retraction directions, and means for blocking rotation of said rotatable member in the withdrawal direction, said spool sleeve being rotatable relative to said rotatable member in response to tension in the webbing above the predetermined amount; and
a shaft fixed for rotation with said rotatable member, said cutter means being constrained to rotate with said shaft and being movable along said shaft during rotation of said spool sleeve relative to said rotatable member in the webbing withdrawal direction, said cutter means cutting a helical groove in said spool as said cutter means rotates with said shaft and moves along said shaft.

5,823,571
MUD FLAP RETAINING DEVICE FOR VEHICLES
James J. Cominsky, 11000 Painesville-Warren Rd., Painesville, Ohio 44077
Filed Aug. 26, 1996, Ser. No. 701,784
Int. Cl.[6] B62B *25/16*
U.S. Cl. 280—847 **18 Claims**



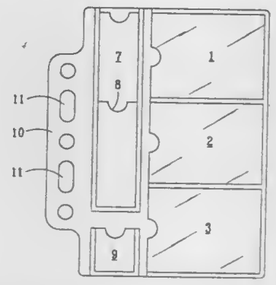
1. A mudflap retainer device for attachment to a traverse, rearward facing support frame of a truck, the device comprising:
a bracket with a flat portion mounted on a truck support frame to depend from the frame;
a means for mounting the bracket on the frame;
a spring bias clamp section formed by an arch of the flat portion bent on itself in the arch to form the spring bias clamp for clamping a mudflap against the flat portion;
the retainer clamp section extending from the spring bias clamp section of the arch to form a grip area of the bracket, the grip area attenuating a space between the flat portion and the clamp section;
a leverage strut formed by an extension of the retainer clamp section bent radially outward from the clamp section near the grip area, for opening the retainer device by applying a force on the strut; and,
means for enhancing frictional strain on a mud flap, said means associated with the bracket flat portion and the spring bias clamp section, for increased grip action on a mud flap retained by the bracket.

5,823,572
SELF DEFENSE WEAPON WITH MEMO
Yoshiro NakaMats, Landic No. 2 Akasaka Bldg. No. 10-9, 2-chome, Akasaka, Minato-ku, Tokyo 107, Japan
Filed Oct. 8, 1996, Ser. No. 727,099
Int. Cl.[6] B42D *1/00*
U.S. Cl. 281—2 **19 Claims**



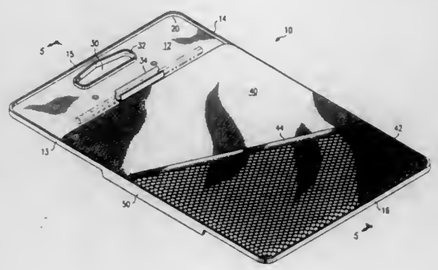
1. A self defense weapon for use by a victim subject to being attacked by a perpetrator comprising a memo pad having a plurality of pages, said memo pad having a plurality of edges, an indentation means in at least one of said edges adapted to accept at least part of at least one finger of said victim's hand such that said indentation means facilitates the victim's capability to firmly grasp and hold the memo pad in the victim's hand, whereby the memo pad can thereby be used by said victim as a self defense weapon to ward off said perpetrator.

5,823,573
LOOSE-LEAF ALBUM FOR BOTH PHOTOGRAPHS AND FILM STORAGE
Jih-Cheng Chang, 3Fl., No.4, Lane 244, Hsing Lung Rd, Sec 2, Chin Mei 11714, Taipei, Taiwan
Filed May 20, 1996, Ser. No. 650,366
Int. Cl.[6] B42F *3/02*
U.S. Cl. 281—38 **4 Claims**



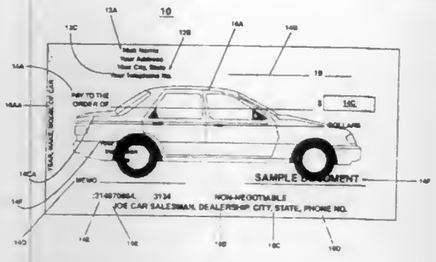
1. A loose-leaf page for both photographs and film storage comprising:
a first section of three pockets, each for single photograph storage,
a second section of pocket with an open edge in the center for storing either three, four, five, or a maximum of up to six consecutive film set, and
a third section of pocket for holding a single film.

5,823,574
WRITING BOARD WITH PADDED SURFACE
Patrick H. Sullins, and Robert D. Sullins, both of Arlington, Tex., assignors to Creative Manufacturing, Inc., Arlington, Tex.
Filed Nov. 12, 1996, Ser. No. 745,710
Int. Cl.[6] B42D *3/00*
U.S. Cl. 281—45 **12 Claims**



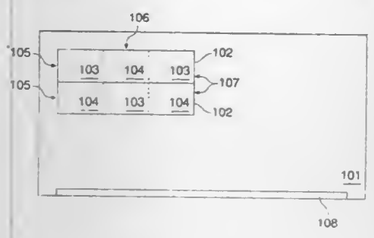
1. A writing board comprising:
a back board having front and back surfaces;
a padding unit covering at least a portion of one surface of said back board, said padding unit including a backing sheet, and padding material positioned over the backing sheet with said backing sheet being attached to said board; and
a flexible material covering at least a portion of said padding unit to form a pouch for holding objects therein.

5,823,575
ADVERTISING CHECK
John E. Ives, 1400 S. Lipan St., Denver, Colo. 80223
Filed Sep. 5, 1996, Ser. No. 708,699
Int. Cl.[6] B42D *15/10*
U.S. Cl. 283—58 4 Claims



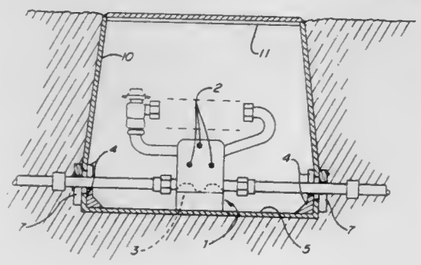
1. An advertising check (**10**) comprising:
A) a checking account name (**12A**) printed thereon;
B) a check pay endorsement (**14A**) printed thereon;
C) a check date (**14B**) printed thereon positioned above and adjacent to the check pay endorsement (**14A**);
D) a check pay amount box (**14C**) printed thereon, the check pay amount box (**14C**) further comprises a correlating check pay amount box script (**14CA**) printed adjacent thereto;
E) a check financial institute clearing code (**14E**) printed thereon positioned along a bottom edge;
F) a retail product graphical display (**16A**) printed thereon, the retail product graphical display (**16A**) further comprises a correlating retail product graphical display textual information (**16AA**) printed adjacent thereto;
G) a retail product dealer name (**16B**) printed thereon adjacent to the retail product graphical display (**16A**);
H) a retail product dealer address (**16C**) printed thereon adjacent to the retail product dealer name (**16B**);
I) a retail product dealer telephone number (**16D**) printed thereon adjacent to the retail product dealer address (**16C**);
J) checking account address (**12B**) printed thereon positioned adjacent to the checking account name (**12A**);
K) a checking account telephone number (**12C**) printed thereon positioned adjacent to the checking account address (**12B**);
L) a check financial institute name and address (**14F**) printed thereon; and
M) a retail product salesman's name (**16E**) printed thereon positioned adjacent to the retail product dealer name (**16B**).

5,823,576
COPY-RESISTANT DOCUMENT
Lew Lambert, 11938 Cedar Grey St., San Antonio, Tex. 78249, assignor to Lew Lambert, San Antonio, Tex.
Filed May 6, 1994, Ser. No. 238,812
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—93 4 Claims



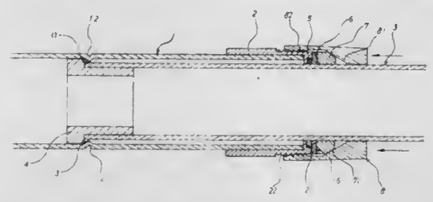
1. A document comprising:
first area printed with color dots in a first gradient print pattern that exceeds resolutions available on commonly available color copiers and color scanners; and
a second area printed with color dots in a second gradient print pattern, said second area overlapping said first area and said second gradient print pattern being aligned at an angle from said first gradient print pattern.

5,823,577
PLASTIC METER BOX BOTTOM
Sammie "J" Johnston, 446 Hwy 36 East, Searcy, Ark. 72143
Continuation of Ser. No. 495,715, Sep. 13, 1995, abandoned.
This application Oct. 7, 1997, Ser. No. 946,019
Int. Cl.[6] G01F *15/18*; F16L *55/00*
U.S. Cl. 285—30 26 Claims



1. A meter box bottom, comprising:
a floor;
a raised base extending upwardly from said floor;
at least one leg extending upwardly from said raised base, said at least one leg being disposed to contact a meter setter above a level at which said meter setter is connected to inlet and outlet pipes; and
means for securing said meter setter to said raised base.

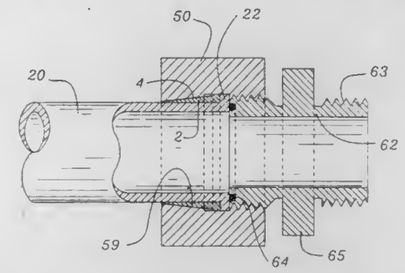
5,823,578
EXTENSIBLE METALLIC TUBE STRUCTURE
Richard Chiou, Tainan, Taiwan, assignor to Yah-De Co., Ltd., Tainan, Taiwan
Filed May 15, 1997, Ser. No. 856,592
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—38 1 Claim



1. An extensible metallic tube, comprising a big hollow tube, an engaging head, a small hollow tube, a locating column, an O-shaped ring, a washer, a C-shaped fixing means, and a controlling sleeve; wherein,
the big hollow tube is a metallic hollow pipe, having an inwardly indented groove disposed at the upper peripheral surface and an inner protruding flange disposed at the corresponding inner side thereof;
the engaging head forming a hollow sleeve is provided with a stepped groove at the inner front and outer threads at the outer front thereof;

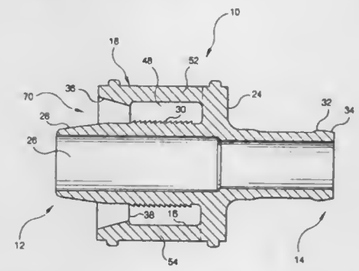
the locating column is a round hollow sleeve, having flange disposed at the outer surface;
the C-shaped fixing means is a C-shaped sleeve and is provided with a tapered conic end at the upper side;
the controlling sleeve is a round hollow sleeve having arched grooves arranged at an interval at the outer periphery thereof, and a tapered conic section at the inner front and inner threads at the inner end thereof;
whereby, the upper end of the big hollow tube is connected with the engaging head and the small hollow tube is connected with the locating column and is led through the other end of the big hollow tube; a hose engaging device is fixed to the bottom end of the big hollow tube, and in sequence, the O-shaped ring, the washer, the C-shaped fixing means, and the controlling sleeve are passed over, the upper end of the small hollow tube thereof wherein the O-shaped ring being located at the stepped groove of the engaging head and the controlling sleeve being screwed onto the engaging head via the outer threads of the engaging head; and a connecting device is fixed to the upper end of the small hollow tube for the connection of tools;
the extensible metallic tube can be adjusted into a proper length by means of the controlling sleeve; wherein the inner protruding flange of the big hollow tube will engage the flange of the locating column to prevent the small hollow tube from coming out of said big hollow tube when the small hollow tube is extended to the extreme, and the controlling sleeve tapered conic section matches the tapered conic end of the C-shaped fixing means and will push inwardly against the C-shaped fixing means, clamping said fixing means tightly against the periphery of the small hollow tube so as to locate said tube into position; the thrust generated by the controlling sleeve will abut the C-shaped fixing means tightly against the washer and the washer closely against the O-shaped ring located at the stepped groove of the engaging head to provide a tightly and closely secured connection of the big and small hollow tubes, so that the water will not flow downwards and leak outwardly at the joint when the tube is uplifted to supply water for cleaning purpose.

5,823,579
DEVICE FOR COUPLING A FLARED METAL PIPE
Gary Mackay, Ancaster, Canada, assignor to Tube-Mac Industries, Ltd., Stoney Creek, Canada
Filed May 21, 1997, Ser. No. 861,203
Int. Cl.[6] F16L *35/00*
U.S. Cl. 285—93 10 Claims



1. A pipe coupling and gauging device for holding a metal pipe having a selected diameter within a range of a nominal diameter minus a specified tolerance and the nominal diameter plus the specified tolerance and for identifying undersized pipe and oversized pipe comprising:
a. a split metal ring having a hardness greater than a hardness of the metal pipe, a diameter equal to the nominal diameter of the metal pipe, a transverse split having a width equal to the specified tolerance, an inside surface having projections extending therefrom and a tapered outside surface such that there is a major thickness at a first end of the coupling greater than a minor thickness at a second, opposite end thereof; and
b. a nut having a tapered cylindrical bore having a major diameter at one end and a minor diameter at an opposite end such that the minor diameter plus twice the minor thickness of the split metal ring equals the nominal diameter of the metal pipe plus the specified tolerance and the major diameter plus twice the thickness of the major thickness of the split metal ring equals the nominal diameter plus the specified tolerance whereby undersized pipe will slip through the split metal ring when the split metal ring is sufficiently within the nut to completely close the transverse slot, and the split metal ring will not fit fully within the nut when an oversized pipe is within the split metal ring, the nut also having female threads within at least a portion of the bore adjacent the end having the major diameter.

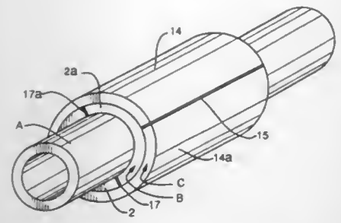
5,823,580
TUBING CONNECTOR AND SPRINKLER COUPLING ASSEMBLY
Cliff Ungerecht, Walla Walla, Wash., assignor to Nelson Irrigation Corporation, Walla Walla, Wash.
Filed Nov. 1, 1996, Ser. No. 742,910
Int. Cl.[6] F16L *33/22*
U.S. Cl. 285—242 17 Claims



1. A unitarily formed, one-piece connector comprising an inner, open ended tubular insert portion, one end of which has a plurality of radially outwardly directed annular barbs on an exterior surface thereof, said one end further provided with a radially outer sleeve, said insert portion extending axially beyond said radially outer sleeve, said sleeve having a single continuous, radially inwardly directed annular barb formed on an interior surface at a free end thereof, said radially inwardly directed annular barb located axially adjacent said plurality of radially outwardly directed annular barbs, said one end adapted to receive one end of a length of flexible tubing between said sleeve and said tubular insert portion in a direction such that said length of flexible tubing first engages said single radially inwardly directed barb before engaging said plurality of radially outwardly directed barbs.

5,823,581
PIPE COUPLING
Guy Coppolo, Box 257, Cataumet, Mass. 02534-0257
Filed Feb. 25, 1997, Ser. No. 806,567
Int. Cl.[6] F16L *47/06*
U.S. Cl. 285—373 14 Claims

1. A pipe coupling for coupling adjacent, uncoupled pipe ends, comprising,
first and second partial-sleeves each having a longitudinal axis, wherein each said first and second partial-sleeve when viewed cross-sectionally along the longitudinal axis has an inner surface in the shape of an arc, wherein each said partial-sleeve has a first and second longitudinal edge defining a longitudinal arc parallel to said partial-sleeve's longitudinal axis,

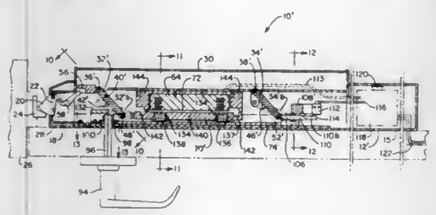


wherein said inner surfaces of said first and second partial-sleeves are provided around and against the outer surface of said pipe ends so that said first and second longitudinal edges of the first partial-sleeve are proximate to the first and second longitudinal edges of the second partial-sleeve forming a first sleeve around said pipe ends, wherein said first sleeve overlaps in both longitudinal directions said pipe ends, wherein said first sleeve has an inner radius of curvature about equal to the outer radius of curvature of said pipe ends;

a third and fourth partial-sleeve each having a longitudinal axis, wherein each said third and fourth partial-sleeve when viewed cross-sectionally along the longitudinal axis has an inner surface in the shape of an arc, wherein each said partial-sleeve has a third and fourth longitudinal edge defining a longitudinal arc parallel to said partial-sleeve's longitudinal axis, wherein said inner surfaces of said third and fourth partial-sleeves are provided around and against the outer surface of said first sleeve so that said third and fourth longitudinal edges of the third partial-sleeve are proximate to the third and fourth longitudinal edges of the fourth half-sleeve forming a second sleeve around said first sleeve, wherein said second sleeve overlaps in both longitudinal directions said pipe ends, and wherein said second sleeve has an inner radius of curvature about equal to the outer radius of curvature of said first sleeve; and

a first fixing means for holding said second sleeve in position around and against said first sleeve.

5,823,582
ELECTROMAGNETICALLY-MANAGED LATCHING EXIT BAR
George Frolov, Farmington; John E. Walsh, III, Bristol, and James J. Scott, New Britain, all of Conn., assignors to Harrow Products, Inc., Grand Rapids, Mich.
Filed Aug. 24, 1995, Ser. No. 518,759
Int. Cl.[6] E05B *65/10;* **E05C** *17/56;* **H01F** *7/00;* **H01H** *3/16*
U.S. Cl. 292—92 **34 Claims**



1. An exit bar for mounting to a door face, said exit bar comprising:

a housing adapted for mounting to a door face;

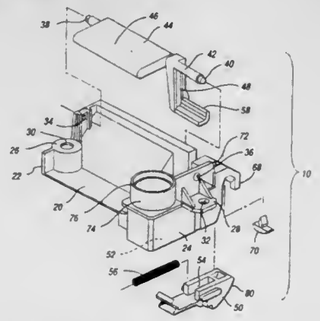
a push pad mounted to said housing, said push pad defining an exposed push face for receiving a push force:

latch means extending from said housing for releasably latching a door;

link means for linking said pad to said latch means to release said latch means when said pad is pushed; and

lock means disposed in said housing for locking said link means, said lock means comprising electromagnet means and armature means for electromagnetic bonding to said electromagnet means to lock said link means.

5,823,583
LATCH MECHANISM FOR GLOVE BOX DOOR
Chain Sandhu, Farmington Hills, and Lev Lilov, Bloomfield, both of Mich., assignors to NYX, Inc., Livonia, Mich.
Filed Dec. 29, 1995, Ser. No. 581,161
Int. Cl.[6] E05C *1/12*
U.S. Cl. 292—173 **17 Claims**



1. A latch mechanism for securing a vehicle glove box door relative to an adjoining panel surface, said door having first and second longitudinal ends, said latch mechanism comprising:

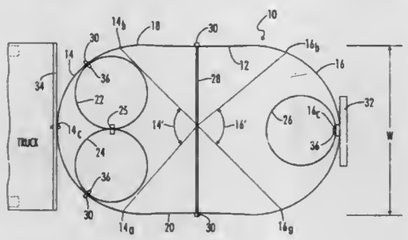
a body having first and second longitudinal ends, and forming a transverse channel through the body at one of said ends of said body and further having at least one mounting flange positioned for attachment to the door;

a latch member slidably disposed in said channel;

a handle pivotally mounted on said body for movement between latched and unlatched positions, said handle including an axle member extending longitudinally with respect to said body, and said handle further including a lever arm extending radially from said axle member for engagement with said latch member; and

a biasing member positioned with respect to said handle and said body for biasing said handle toward the latched position.

5,823,584
VEHICLE MOUNTED CRASH IMPACT ATTENUATOR
John F. Carney, III, Worcester, Mass., assignor to Vanderbilt University, Nashville, Tenn.
Filed Oct. 8, 1996, Ser. No. 727,347
Int. Cl.[6] B60R *19/22*
U.S. Cl. 293—102 **18 Claims**



1 A crash impact attenuator including:

a. an elongated, continuous perimeter band encompassing an open area,

b. said crash impact attenuator having a front end, a back end separated from said front end, and opposing sides;

c. means for connecting said front end of said crash impact attenuator to a work piece to be protected from an errant vehicle;

d. front cylinders mounted in said open area and attached to said perimeter band proximate the front end of said crash impact attenuator, said cylinders also being connected to each other;

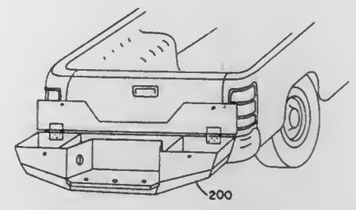
e. a rear cylinder positioned in said open area and connected to said perimeter band proximate the rear end of said crash impact attenuator;

f. said front cylinders being spaced from said rear cylinder;

g. means positioned between said front cylinders and said rear cylinder and limiting said opposing sides from moving away from each other upon an errant vehicle impacting said crash impact attenuator; and

h. said crash impact attenuator being substantially devoid of any filler material in said open area.

5,823,585
SPORTS TRUCK STORAGE BUMPER SET
Richard R. Tanguay, 39 Elm St., Box 137, Sabattus, Me. 04280
Filed Nov. 18, 1996, Ser. No. 751,748
Int. Cl.[6] B60R *19/02*
U.S. Cl. 293—106 **10 Claims**



1. A vehicle storage bumper for application to a rear of a vehicle, said bumper comprising:

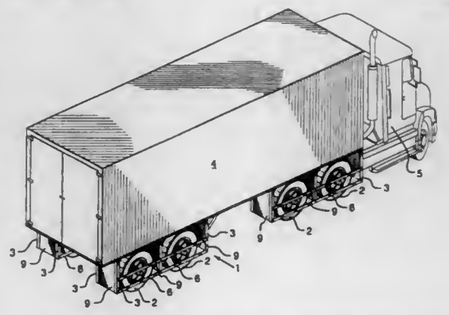
a. a first bumper section having one or more storage compartments attachable to a center rear section of a vehicle;

b. a second bumper section having one or more storage compartments, wherein said second bumper section is attachable to a first rear section of said vehicle so as to extend substantially adjacent to a first side of said vehicle, wherein said second bumper section is affixed to said first bumper section at a first side thereof, and wherein said second bumper section is deepest where it is affixed to said first bumper section and is most shallow adjacent to said first side of said vehicle;

c. a third bumper section having one or more storage compartments, wherein said third bumper section is attachable to a second rear section of said vehicle so as to extend substantially adjacent to a second side of said vehicle opposite from said first side of said vehicle, wherein said third bumper section is affixed to said first bumper section at a second side thereof opposite said first side thereof, and wherein said third bumper section is deepest where it is affixed to said first bumper section and is most shallow adjacent to said second side of said vehicle; and

d. a lid couplable to one or more of said bumper sections, wherein a width of said second bumper section tapers from where it is affixed to said first bumper section toward said first side of said vehicle at an angle of approximately 45, and a width of said third bumper section tapers from where it is affixed to said first bumper section toward said second side of said vehicle at an angle of approximately 45.

5,823,586
TRUCK WHEEL CONTAINMENT FRAME
George W. Marley, 82 Tayok Dr., Woodbridge, Ontario, Canada, L4L 2N2
Filed Aug. 4, 1997, Ser. No. 905,346
Int. Cl.[6] B62B *9/14*
U.S. Cl. 293—126 **11 Claims**



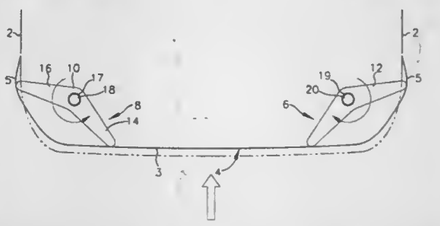
1. A truck wheel containment frame, for enclosing and containing a disengaged wheel of a vehicle within an interior of the frame, wherein the vehicle includes a plurality of wheels disposed in tandem, the frame comprising:

a plurality of support posts extending from a vehicular body and disposed laterally outward of the wheel;

containment means spanning between each adjacent post for containing a disengaged wheel within the interior of the frame bounded by the containment means, the vehicular body and a roadway surface, the containment means being disposed above the roadway a distance less than the thickness of said disengaged wheel; and wherein containment means extend between adjacent tandem wheels for preventing mutual contact therebetween, and

releasable fastening means for releasably connecting the containment means to the support posts.

5,823,587
BUMPER SYSTEM FOR VEHICLES HAVING BUMPER SUPPORTERS
Sungjai Kim, Kyungsangnam-do, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea
Filed Dec. 11, 1996, Ser. No. 763,456
Claims priority, application Rep. of Korea, Dec. 15, 1995, 95-50613
Int. Cl.[6] B60R *19/02*
U.S. Cl. 293—150 **16 Claims**



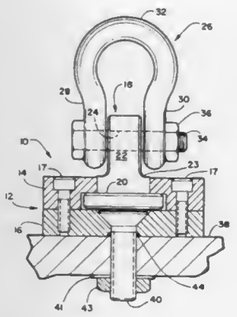
1. A bumper system in combination with a vehicle having a frame and a body, the bumper system being installed at a front or a rear of the vehicle body and preventing an impact force from transmitting to the body, the system comprising:

a bumper assembly having a transverse portion and a side extending toward the body; and

a bumper supporter extending between the bumper assembly and the frame and comprising a shaft portion fixed to the frame,

and a supporting member pivotally connected about the shaft portion, having first and second arms which are integrally connected to each other and contact an inner surface of the transverse portion and an inner surface of the side portion, respectively of the bumper assembly.

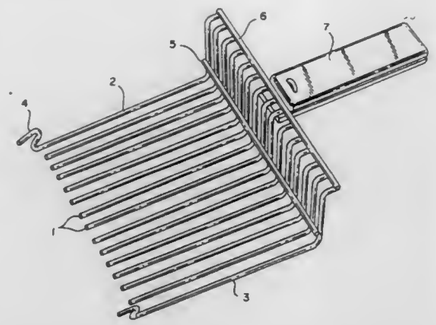
5,823,588
UNIVERSAL HOIST ASSEMBLY
Manfred A. Morghen, 6924 Hyde Park Dr., No. 200, San Diego, Calif. 92119
Filed Nov. 13, 1995, Ser. No. 556,007
Int. Cl.[6] B66C *1/66*
U.S. Cl. 294—1.1 **19 Claims**



1. A universal hoist assembly which comprises:
a housing;
said housing comprising an upper plate and a generally coextensive lower plate, said upper and lower plates secured together by a plurality of fasteners;
means fixed to said lower plate for securing said housing to a structure;
a lift swivel having a base captured in said housing and rotatable relative thereto;
said base being disk shaped and captured between opposed parallel faces of said upper plate and said lower plate for rotation in said housing;
a transversely apertured upright extension permanently secured to said base for rotation therewith and extending from said housing opposite said securing means;
a generally U-shaped shackle having first and second legs; and
a shaft extending through said first leg, said transverse aperture and said second leg.

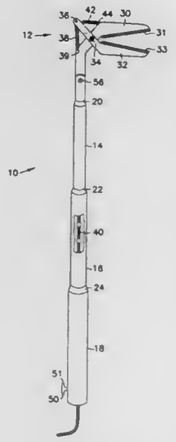
5,823,589
ACCESSORY FOR CHARCOAL GRILL
Brad Johnston, 4027 Brandywine St. NW., Washington, D.C. 20016
Filed Jun. 5, 1995, Ser. No. 463,845
Int. Cl.[6] A47J *43/28*
U.S. Cl. 294—7 **5 Claims**

1. An implement for use in connection with a cooking grill having food supported thereon, said grill including a plurality of spaced wires and a transverse wire maintaining said spaced wires in place, said implement having a handle, a plurality of spaced tines supported by said handle and extending outwardly therefrom, and at least one of said tines being longer than the remaining tines and having a hook member formed with a downwardly extending opening on the end thereof with said hook member engaging said



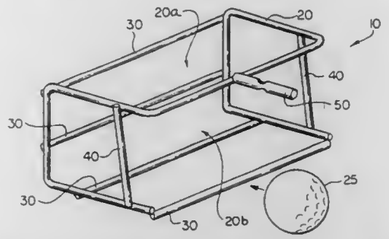
transverse wire for pivotal movement relative thereto whereby said food will be turned from one side to the other.

5,823,590
ADJUSTABLE LENGTH GRABBER
Bradley A. Forrest, 14809 Summit Oaks Dr., and Jack E. Hubbard, 14721 Summit Oaks Dr., both of Burnsville, Minn. 55337
Filed Mar. 20, 1997, Ser. No. 821,358
Int. Cl.[6] B25J *1/00*
U.S. Cl. 294—19.1 **6 Claims**



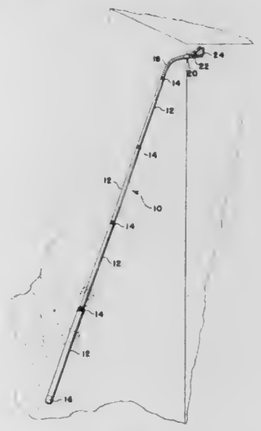
1. A variable length grabber comprising:
a telescoping pole;
a first finger coupled to a first end of the pole;
a second finger moveably coupled to the first finger for releasably gripping an object in a closed position with respect to the first finger wherein the first and second fingers each comprise a pad for contacting items to be grabbed, the pads being in contact with each other when the first and second fingers are in the closed position, wherein an angle between the pole and the fingers in the closed position may be operatively varied between zero and at least 180 degrees;
a spring coupled to the second finger for biasing the second finger in one of an open or closed position with respect to the first finger; and
a cord coupled to the second finger for controlling movement of the second finger between the closed position and the open position, at least a portion of the cord comprising an elastic material.

5,823,591
GOLF-BALL RETRIEVER
Joseph Rubinstein, 20-3 America Way, Salem, Mass. 01970
Filed Sep. 16, 1997, Ser. No. 931,144
Int. Cl.[6] B63B *47/02*
U.S. Cl. 294—19.2 **7 Claims**



1. A retriever for retrieving a golf ball, said retriever comprising:
a substantially rectangular fixed rigid wire frame head having a plurality of distinct sides defining a receiving area capable of retaining the golf ball substantially therein;
a first defined opening in a first distinct side of said rigid wire frame head capable of receiving the golf ball therethrough and into said receiving area;
a second defined opening in a second distinct side of said rigid wire frame head capable of receiving the golf ball therethrough and into said receiving area; and
a stud extending from said rigid wire frame head for attaching a handle to said rigid wire frame head;
said first distinct side and said second distinct side of said rigid wire frame head adjacent and substantially perpendicular to each other;
said plurality of distinct sides adjacent said first distinct side and said second distinct side of said rigid wire frame head sufficiently closed to retain the golf ball substantially within said receiving area of said wire frame head.

5,823,592
FLEXIBLE SWABBING TOOL
Sanyasi Raju Kalidindi, P.O. Box 10837, New Brunswick, N.J. 08906-9998
Filed Jun. 28, 1996, Ser. No. 671,731
Int. Cl.[6] B25J *1/02;15/04*
U.S. Cl. 294—24 **5 Claims**



1. A swabbing tool comprising:
a flexible tubular member having a first end and a second end;
a telescoping tubular handle attached to the second end of said flexible tubular member;
a cylindrical socket attached to the first end of said flexible tubular member, said socket having a J-shaped notch;
a clamp attachment including an upper member pivotally connected to a lower member, said upper member and said lower member each including a front end defining a jaw having a contact surface with a length and a relatively narrow width, said clamp attachment further including spring means for biasing the front end of the upper member toward the front end of the lower member, said upper member and said lower member each including a recess extending adjacent the length of each jaw and a central notch along the width of each jaw and extending perpendicular to the recess along said lower member; and
a cylindrical member extending from said lower member and insertable in said socket, said cylindrical member having a closed planar end and a circumferential surface, said planar end including a depressible peg and said circumferential surface includes a fixed ped; whereby,
upon insertion of the cylindrical member into the socket, the fixed peg engages the J-shaped notch and the depressible ped is pushed inward to securely retain the clamp attachment.

5,823,593
DEVICE FOR LIFTING WAFER CASSETTES FROM A SPRAYING TOOL
Jeffrey S. Glick, Cupertino, and Kimberly J. Spencer, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Filed Jun. 9, 1997, Ser. No. 868,847
Int. Cl.[6] B65D *25/28*
U.S. Cl. 294—27.1 **18 Claims**



1. A handler attachment device used for loading and unloading of wafer cassettes into and out of a spray processing tool, comprising:
a rectangularly-shaped main body member having a front surface, a bottom surface, a top edge, a bottom edge and opposed side edges;
said top edge having a U-shaped cut-out portion disposed in its intermediate area so as to define a narrow middle section and opposed first and second end portions, said top edge extending along a horizontal axis;
said first end section having a first angled mounting area which includes a first transverse axis extending downwardly in a counter-clockwise direction with respect to said horizontal axis so as to form a first acute angle therebetween;
said second end portion having a second angled mounting area which includes a second transverse axis extending downwardly in a clockwise direction with respect to said horizonal axis so as to form a second acute angle therebetween;
two U-shaped gripping members each having a relatively long gripping arm portion and opposed short arm portions;
one of said short arm portions having a top edge extending along a longitudinal axis and a chamfered portion formed with a third transverse axis, said third transverse axis forming a third acute angle with respect to said longitudinal axis;
said chamfered portion on said one of said short arm portions of each of said two U-shaped gripping members being mounted

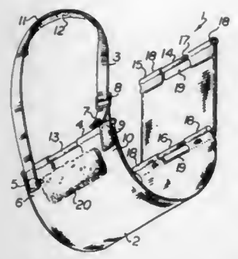
on the corresponding first and second angled mounting areas on said body member;

two L-shaped bracket members having a longer leg portion and a shorter leg portion, each of said longer leg portions being mounted on the corresponding opposed edges of said body member so that said shorter leg portions extend inwardly therefrom; and

said shorter leg portions of said L-shaped bracket members and said back surface of said body member forming a channel therebetween for contactly engaging with said wafer cassette,

whereby said relatively long gripping arm portions are allowed to be gripped by an operator so that it reduces and minimizes fatigue and stress to the hands, wrists and arms.

5,823,594
FIREWOOD TOTE
Matthew I. Hayes, San Diego; Jeffrey A. Hayes, and William R. Lilliott, III, both of Encinitas, all of Calif., assignors to Nyda Jopling Sterett, Rancho Santa Fe; Peter J. Kauffman, Del Mar, and Robert Haggstrom, Malibu, all of Calif., part interest to each
Filed Jun. 26, 1997, Ser. No. 882,894
Int. Cl.[6] B65D *63/18*
U.S. Cl. 294—142 **14 Claims**



1. The caddy for carrying firewood logs and other loose similar articles which comprises:

an oblong web made of flexible and pliable material, said web having first and second opposite short edges;

a strap having two opposite ends secured to said web proximate said first edge, said strap being shaped and dimensioned to pass over a wearer's shoulder and to position said first edge about said wearer's hips;

a first handle associated with said web and located about said second edge; and

at least one additional handle associated with said web and located between and spaced apart from said first and second edges;

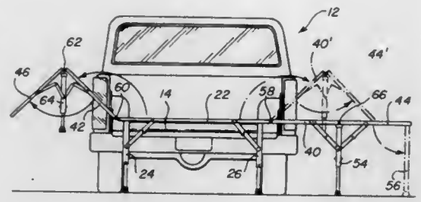
whereby the wearer can carry articles in a loop of said web formed between said first edge and one of said handles.

5,823,595
WORK BENCH
Nicholas A. Tronco, 314 Bates Mill Rd., Waterford, N.J. 08089
Filed Jul. 9, 1996, Ser. No. 677,091
Int. Cl.[6] B62D *33/023*
U.S. Cl. 296—26.03 **7 Claims**

4. A work bench apparatus comprising:

(A) means to detachably attach a work bench to an inside surface of a tailgate of an truck and to provide the capability of swinging the work bench from a first bench position abutting the inside surface of the tailgate to a second bench position outwardly and rearwardly from the tailgate while still attached to the tailgate,

(B) the work bench comprising:



(i) an elongate central table section comprising an upper work surface, a lower surface, a front lengthwise edge, a rear lengthwise edge, and end edges,

(ii) a pair of elongate first end table sections each comprising an upper work surface, a lower surface, a near end edge, and a outer end edge,

(iii) a pair of elongate second end table sections each comprising an upper work surface, a lower surface, a near end edge, and a outer end edge,

(iv) a plurality of hinge attachment means to detachably and hingeably attach adjacently positioned edges of the table sections together comprising:

(a) a first means to detachably hingeably attach the near end edges of the first end table sections to the end edges of the central table section allowing the first end table sections to swing from a first position with the upper work surfaces of the first end table sections abutting the upper work surface of the central table section to a second position with the first end table sections in a horizontal position with the upper work surfaces of the first end table sections facing upwardly, and

(b) a second means to detachably hingeably attach the outer end edges of the first end table sections to the inner end edges of the second end table sections allowing the second end table sections to swing from a first position with the lower surfaces of the second end table sections abutting the lower surfaces of the first end table sections to a second position with the second end table sections in a horizontal position with the upper work surfaces of the second end table sections facing upwardly,

wherein, when all table sections are in their respective first positions, the size and shape of the first end table sections allow the upper work surfaces of both of the first end table sections to abut the upper work surface of the central table section at same time,

wherein, when all table sections are in their respective first positions, the size and shape of the second end table sections allow the lower surfaces of both of the second end table sections to abut the lower surfaces of the first end table sections at same time, and

(v) pivotably attached leg means to support the work bench apparatus at a chosen height with the upper work surfaces of all the table sections facing upwardly.

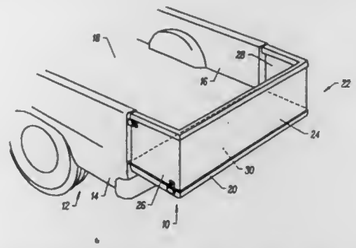
5,823,596
TRUCK TAILGATE FENCE MECHANISM
Frank H. Kulesza, 3409 Fairway Dr., Cameron Park, Calif. 95682
Filed Oct. 1, 1996, Ser. No. 724,644
Int. Cl.[6] B67C *1/06*
U.S. Cl. 296—26.08 **6 Claims**

1. A truck tailgate fence mechanism useable with the latch and striker of the latch and striker system of the tailgate and truck bed partition;

comprising:

a. a wall portion positioned in an essentially upright orientation on the extended tailgate relative to the truck bed;

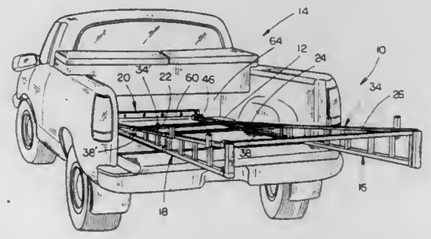
b. first fastening means for removably holding said wall portion to the truck bed partition, said first fastening means including



a first member connected to the wall portion and removably selectively fastened to the latch and striker of the latch and striker system of the tailgate and truck bed partition; and

c. second fastening means for removably holding said wall portion to the tailgate of the truck, said second fastening means including a second member connected to the wall portion and removably selectively fastened to the latch and striker of the latch and striker system of the tailgate and truck bed partition.

5,823,597
TRUCK BED EXTENDER
T. Thomas Anderson, 753 N. 16th St., Blair, Nebr. 68008
Filed Aug. 18, 1997, Ser. No. 912,696
Int. Cl.[6] B62C *1/06*
U.S. Cl. 296—26.08 **15 Claims**



12. In combination:

a vehicle having a bed for carrying a load of material, the bed having an upper surface, a length extending from a forward to a rearward end, and opposing sides; and

an apparatus removably mounted to the bed for supporting a load having a length longer that the length of the bed, including:

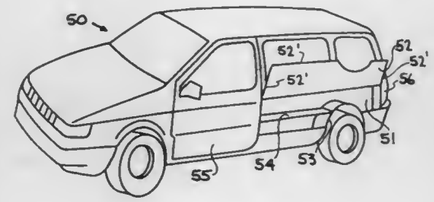
an elongated support member with forward and rearward ends and an upper support surface for supporting a load thereon;

said elongated support member including a first truss having an elongated base member with forward and rearward ends, at least one upwardly projecting leg on the rearward end of the base member, and an elongated upper member connected at a rearward end to an upper end of the leg;

said support member having a length longer than the length of the bed, and having an upper support surface for supporting a load thereon; and

a receiver connected to a forward end of the bed and having means for removably connecting the forward end of the support member thereto.

5,823,598
HIDDEN STORAGE FOR VEHICLES
Scott Clare, 3381 Shawn Ct., and Neil G. Long, 2630 Randall Way, both of Hayward, Calif. 94541
Continuation-in-part of Ser. No. 685,678, Jul. 24, 1996, abandoned, which is a continuation-in-part of Ser. No. 506,893, Jul. 26, 1995, Pat. No. 5,567,000. This application Aug. 2, 1997, Ser. No. 910,516
Int. Cl.[6] B60R *11/06*
U.S. Cl. 296—37.6 **48 Claims**



1. A hidden storage system for a conventional vehicle having contoured fender/side panels each including at least one peripheral edge and which does not substantially alter an external contoured appearance of the vehicle, said storage system comprising:

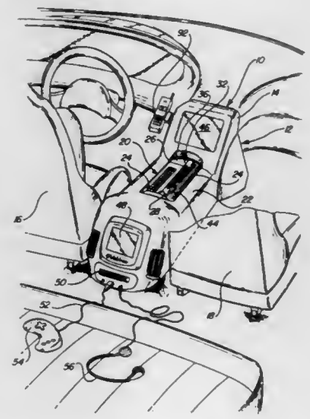
at least one storage box having an interior mounted on at least one side of said vehicle;

at least one section of one of said contoured fender/side panels on at least said one side of said vehicle being hinged and including said one peripheral edge of said one fender/side panel, whereby said at least one section can be opened to expose the interior of said storage box and closed to cover the interior of said storage box;

at least one latch mechanism mounted so as to be not exposed to an external view of the vehicle, and mounted to releasably secure said at least one hinged section of said one contoured fender/side panel; and

lock means for actuating said at least one latch mechanism.

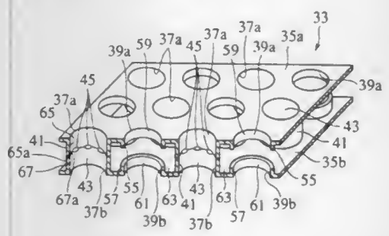
5,823,599
MECHANIZED FLOOR CONSOLE
John D. Gray, Union, N.H., assignor to Textron Automotive Company Inc., Troy, Mich.
Filed Sep. 4, 1996, Ser. No. 707,527
Int. Cl.[6] B60R *11/02*
U.S. Cl. 296—37.8 **11 Claims**



1. A vehicle passenger compartment floor console assembly comprising:

a console body having an outer shell;
an access opening disposed in said console body outer shell;
a positioning apparatus movably supported within said console body outer shell, said positioning apparatus comprising a carrousel supported for rotation about a carrousel axis;
at least two storage modules supported on said positioning apparatus for movement within said console body outer shell and between one or more concealed positions displaced from said access opening and a displayed position adjacent said access opening to provide a passenger compartment occupant selective access to any of said modules and their respective contents.

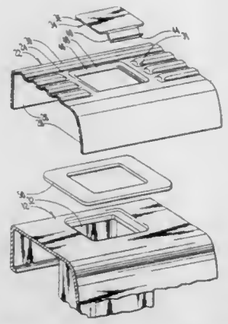
5,823,600
NOISE INSULATING WALL STRUCTURE
Keijiro Iwao, Kanagawa-ken, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Jan. 7, 1997, Ser. No. 779,888
Claims priority, application Japan, Jan. 24, 1996, 8-010360
Int. Cl.[6] B62D *33/00*
U.S. Cl. 296—39.3 **32 Claims**



1. A noise insulating wall structure comprising:
first and second noise insulating plates adjacent and spaced from each other;
first through holes formed in said first noise insulating plate and second through holes formed in said second noise insulating plate, said first and second through holes being aligned to form first and second pairs of through holes;
cylinders formed at said first pairs for establishing communication between said first through holes and said second through holes, said cylinders having
a first half integral with said first noise insulating plate and having a first abutting portion on an end face thereof;
a second half integral with said second noise insulating plate and having a second abutting portion on an end face thereof; and
a vibration varying system to adjust frequency characteristics of said cylinders such that waves transmitted through said first pair of through holes and waves transmitted through said second pair of through holes cancel each other out.

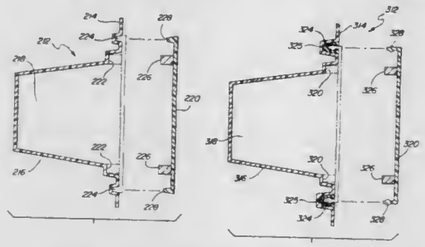
5,823,601
PLASTIC BED RAIL COVER WITH INTEGRATED FASTENING SYSTEM
John M. Stanesic, Longmont, Colo., and Scott P. Thompson, Des Moines, Iowa, assignors to DFM Corporation, Indianola, Iowa
Filed Jan. 2, 1997, Ser. No. 778,310
Int. Cl.[6] B60R *13/04*
U.S. Cl. 296—41 **9 Claims**

1. A bed rail cover for mounting to and protecting a vehicle bed rail having a stake hole pocket, comprising:
an integrally formed elongated thermoplastic rail cover having a top wall two opposing side walls and an aperture substantially aligned with said stake hole pocket, said top wall and said



side walls being shaped to substantially conform to the exterior of said bed rail; and
a one piece fastening clip having an upper wall and two opposing wings extending therefrom, said rail cover being disposed between said fastening clip and said bed rail and said wings being yieldably biased against said stake hole pocket to secure said rail cover to said bed rail;
a length of said wings along a longitudinal axis of said rail cover being sized smaller than a length of said stake hole pocket along the longitudinal axis of said rail cover, whereby said wings being allowed to slide against said stake hole pocket along the longitudinal axis of said rail cover and said rail cover being allowed to freely contract and expand about its longitudinal axis.

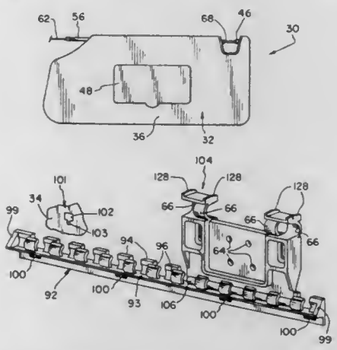
5,823,602
STRUCTURAL INSTRUMENT PANEL CARRIER ASSEMBLY
Josh Kelman, Dover; John Gray, Union, both of N.H., and Michael Gorman, Bloomfield, Mich., assignors to Davidson Textron Inc., Dover, N.H.
Continuation of Ser. No. 78,140, Jun. 15, 1993, Pat. No. 5,364,159. This application Jul. 25, 1994, Ser. No. 237,714
Int. Cl.[6] B62D *25/14*
U.S. Cl. 296—70 **8 Claims**



1. An instrument panel construction comprising:
a structural instrument panel carrier of one piece plastic construction that extends transversely across a motor body for attachment to side pillars located on opposite sides of the motor vehicle body so as to act as a cross beam connecting the side pillars,
the instrument panel carrier having portions for supporting various instrument panel components and carrying a plurality of facial instrument panel coverings for effecting the external appearance of the instrument panel construction,
the instrument panel construction having duct work integrated into it including a cross car portion of U-shaped cross section that forms an open channel of a duct that is closed by a duct closeout panel that is attached to the instrument panel carrier,
the instrument panel carrier having recessed flanges at transverse or cross car edges of an opening of the cross car portion and

the duct close out panel having seals that biasingly engage the recessed flanges to seal the duct when the duct close out panel is attached to the instrument panel carrier, and
the instrument panel carrier having transverse grooves that are spaced outwardly of the recessed flanges and the duct close out panel being attached to the instrument panel carrier by ribs at the transverse edges of the duct close out panel that are disposed in the transverse grooves.

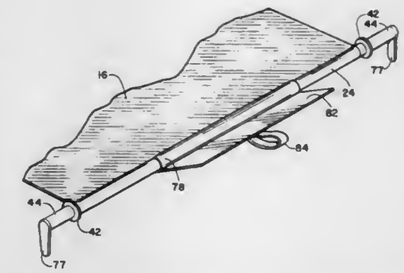
5,823,603
MODULAR SUN VISOR ASSEMBLY AND METHOD OF ASSEMBLING A SUN VISOR
Willard E. Crotty, III, Quincy, Mich., assignor to Crotty Corporation, Quincy, Mich.
Continuation-in-part of Ser. No. 515,036, Aug. 14, 1995, Pat. No. 5,580,118. This application Aug. 27, 1996, Ser. No. 703,819
Int. Cl.[6] B06J *3/02*
U.S. Cl. 296—97.12 **32 Claims**



1. A sun visor assembly comprising:
a plurality of visor core components, each of said visor core components having a core alignment element; and
a folded outer covering assembly having opposing flaps with an inner folded surface and an outer folded surface, said inner folded surface comprising a plurality of covering alignment elements which mate with said core alignment elements whereby said visor core components are secured between said flaps and have exterior surfaces which are in substantial registry with said interior surface of said opposing flaps.

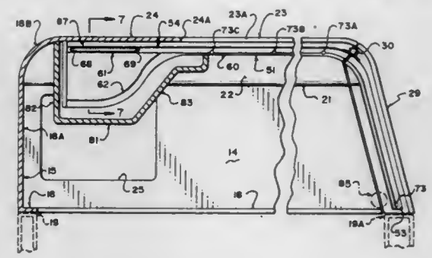
5,823,604
COVER INSTALLATION SYSTEM FOR OPEN TOPPED CONTAINERS
Lynn Chenowth, 1404 N. Marshall Ave., El Cajon, Calif. 92021
Continuation-in-part of Ser. No. 579,245, Dec. 27, 1995. This application Nov. 26, 1996, Ser. No. 755,835
Int. Cl.[6] B60P *7/04*
U.S. Cl. 296—98 **12 Claims**

1. A cover installation assembly for installing a cover over a top of an open topped container which may contain granular material extending above said open top which comprises:
a sheet of material sized to at least cover said open top having first and second ends and opposed sides;
means at said first end of said container secured to said first end of said sheet for storing said sheet with said open top generally uncovered;
a transverse rod secured to said second end of said sheet;
a tubular hub surrounding a central portion of said rod;
a first flange secured to said hub and generally parallel thereto and extending along said sheet of material on a side toward said open topped container;



a second flange secured to said hub and generally parallel thereto and extending away from said second end of said sheet at an angle to said sheet, in a direction away from said open topped container; and
and means secured at approximately the center of said hub for drawing said sheet along said container.

5,823,605
TRUCK BOX COVER
Dennis Harold Seargeant, 88 Carl Avenue, Thunder Bay, Ontario, Canada, P7B 4Z5
Filed Oct. 29, 1996, Ser. No. 738,791
Int. Cl.[6] B60P *7/02*
U.S. Cl. 296—100.09 **20 Claims**



1. A folding cover for a container comprising:
a cover body having a front cover element for connection to a front wall of the container and two side cover elements each for connection to a respective one of two side walls of the container, the front and side cover elements defining an open top;
and a cover top for extending across and covering the open top, the cover top comprising:
a plurality of cover panels each having two side edges, a front edge and a rear edge and each extending across the open top such that each side edge lies at a respective one of the side cover elements;
the cover panels being arranged in a row with the front edge of one panel adjacent the rear edge of the next panel with the row extending from a forward most panel to a rearward most panel;
a flexible hinged coupling between each panel and the next adjacent panel connecting the front edge of one panel to the rear edge of the next adjacent panel;
each side cover element having thereon a guide track cooperating with the respective side edges of the panels to allow sliding movement of the panels forwardly and rearwardly of the cover body;
the guide tracks being arranged such that, as the panels are moved forwardly, a rear edge of said forward most or first panel and connected front edge of a second panel are folded to face downwardly while a rear edge of the second panel and the connected front edge of a third panel are folded to face

upwardly so that the panels are folded in accordion manner at a forward end of the container.

20. A cover for a container comprising:

a cover body having a front cover element for connection to a front wall of the container and two side cover elements each for connection to a respective one of two side walls of the container, the front and side cover elements defining an open top;

and a cover top for extending across and covering the open top, the cover top comprising:

a plurality of cover panels each having two side edges, a front edge and a rear edge and each extending across the open top such that each side edge lies at a respective one of the side cover elements;

the cover panels being arranged in a row with the front edge of one panel adjacent the rear edge of the next panel with the row extending from a forward most panel to a rearward most panel;

a flexible hinged coupling between each panel and the next adjacent panel connecting the front edge of one panel to the rear edge of the next adjacent panel;

each side cover element having thereon a guide track cooperating with the respective side edges of the panels to allow sliding movement of the panels forwardly and rearwardly of the cover body;

wherein the cover elements stand upwardly from the container and wherein the guide tracks each include a horizontal portion and a downwardly and rearwardly inclined rear portion at a rear end of the horizontal portion;

wherein the rear inclined portion is connected to the rear end of the first portion by hinge means allowing the rear portions to pivot about a common horizontal axis transverse to the container to raise the rear portion and the panels therein; and

wherein each guide track Is mounted on a respective one of two sub panel portions each adjacent to a respective side cover element with each of the sub panel portions being pivotal relative to the respective side cover element with the rear portion of the guide track.

5,823,606

HARD-TOP VEHICLE

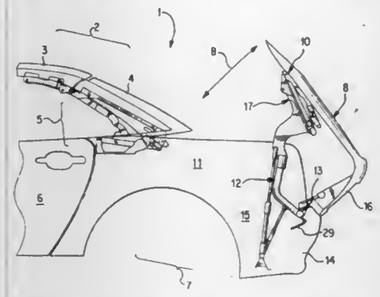
Bernhard Schenk, Boeblingen; Holger Seel, Aidlingen; Wolfgang Fussnegger, Tuebingen; Kurt Schaible, Aidlingen, and Roland Tegeler, Nussdorf, all of Germany, assignors to Mercedes-Benz AG, Germany

Filed Dec. 22, 1995, Ser. No. 577,515

Claims priority, application Germany, Dec. 22, 1994, 44 45 944.0

Int. Cl.[6] B60J *7/20*

U.S. Cl. 296—107.08 **11 Claims**



8. A pivot mechanism for a tail gate of a foldable hard-top vehicle, comprising:

a first pivot pin providing an articulation for the tail gate;

an auxiliary frame on which said tail gate is articulated via said first pivot pin, said auxiliary frame being supported via a second pivot pin on a bodywork in a lower vehicle end region, wherein the auxiliary frame comprises, beginning from an upper supporting leg, a supporting tube extending in an essentially U-shaped manner in the lower vehicle end region, said supporting tube having a base leg running perpendicularly with respect to a longitudinal axis through said vehicle, said base leg defining a pivot axis for the auxiliary frame and being supported on the bodywork via at least one hinge joint;

wherein a first movement about the first pivot pin in a first direction causes the tail gate to be pivoted into a first open position opening a trunk area towards the rear of the vehicle; and

wherein a second movement about the second pivot pin in a second direction opposite to the first direction causes the tail gate together with the auxiliary frame to be pivoted into a second opening position in which a compartment for the foldable hard-top and the trunk area is opened in an upward direction.

5,823,607

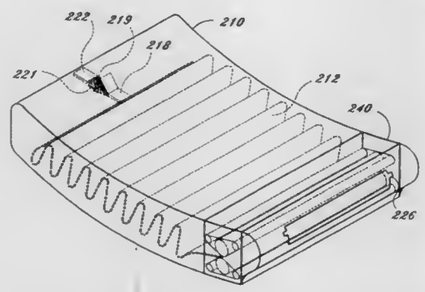
MOTOR VEHICLE COVER WITH LOW PROFILE HOUSING

Thomas William Hindson, 7810 NW. 40th St., Coral Springs, Fla. 33065

Continuation-in-part of Ser. No. 547,046, Oct. 23, 1995, Pat. No. 5,628,542. This application Jan. 10, 1997, Ser. No. 781,134

Int. Cl.[6] B60J *11/00*

U.S. Cl. 296—136 **15 Claims**



1. A vehicle cover and storage and deployment apparatus comprising:

a vehicle cover having a first end and a second end;

a generally low profile hollow housing adapted to receive said vehicle cover in an essentially accordion non-spooled orientation;

means for moving said vehicle cover, said means for moving being in frictional engagement with said vehicle cover for assisting an operator in moving said vehicle cover between a stored position within said housing and an extended position at least partially covering a vehicle;

said housing being connected to an underside of said vehicle;

said means for moving including at least one drive roller frictionally cooperating with said vehicle cover;

means for preventing said vehicle cover from wrapping around and jamming said at least one drive roller, said means for preventing jamming including at least one guide roller; and

a handle removably connected to said cover at said first end, said handle including means for controlling said means for moving.

5,823,608

DEVICE FOR OPENING VEHICLE WINDOW

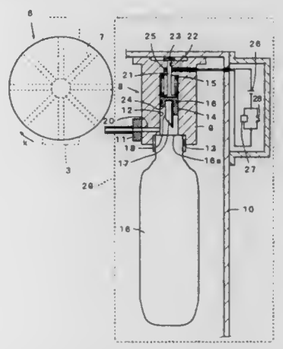
Tadao Tanaka, and Naotsuka Nagai, both of Tokyo, Japan, assignors to Nippon Pneumatics/Fluidics Systems Co. Ltd., Tokyo, Japan

Filed Dec. 17, 1997, Ser. No. 992,074

Claims priority, application Japan, Dec. 19, 1996, 8-359293; Jan. 20, 1997, 9-021089

Int. Cl.[6] B60J *1/17*

U.S. Cl. 296—146.2 **4 Claims**



1. A device for opening a window mounted in a door of a vehicle having a window-driving mechanism for causing said window to slide up or down, said device comprising:

a gas source;

a gas-ejecting mechanism for ejecting the gas of said gas source manually or automatically; and

an actuator actuated by an ejected gas from said gas-ejecting mechanism; wherein

a driving force of said actuator is transmitted to said window-driving mechanism, thus driving said window open.

5,823,609

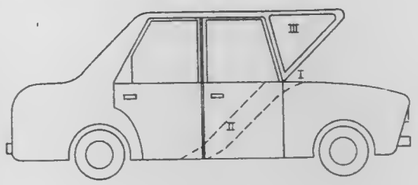
FORWARD TILT WINDSHIELD

Kalon W. Morris, Cambridge, Mass., assignor to Kalon Morris, San Clemente, Calif.

Filed Dec. 30, 1996, Ser. No. 775,180

Int. Cl.[6] B60J *1/02*

U.S. Cl. 296—180.1 **1 Claim**



1. A Forward Tilt Windshield which improves the aerodynamics of automobiles by directing the air flow encountered by the car during forward travel first downward by positioning the car's windshield such that the angle between the windshield and the hood is less than ninety (90) degrees then into a open-ended channel, passing through the middle of the car and angled similarly to the windshield and originating at the windshield's base and terminating at the underside of the car, by contouring the windshield such that its outer edges at the sides of the car are further forward than its middle.

5,823,610

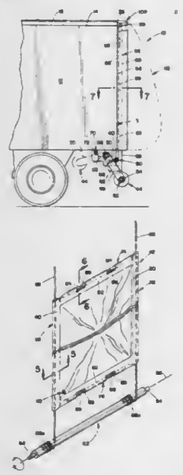
DRAG REDUCING APPARATUS FOR A VEHICLE

William J. Ryan, Danville, Ill.; J. Barry Ryan, Rochester, N.Y., and Patrick E. Ryan, Aurora, Ohio, assignors to James C. Ryan, Akron, N.Y., and Thomas J. Ryan, Absecon, N.J.

Filed Oct. 22, 1997, Ser. No. 955,225

Int. Cl.[6] B62D *35/00*

U.S. Cl. 296—180.4 **18 Claims**



1. Drag reducing apparatus for a vehicle rear end having opposed pairs of parallel walls and a generally flat upwardly extending rear surface intersecting said walls to provide opposed pairs of parallel edges therewith, an inflatable bladder having opposite ends and opposite sides, a container on said vehicle, said bladder having a stored position in said container and a deployed position relative to said container for inflation, said bladder in said deployed position overlying said surface between said opposed pairs of parallel edges, said bladder when inflated providing an aerodynamic contour extending rearwardly of said surface, and means for displacing said bladder from said stored position to said deployed position.

5,823,611

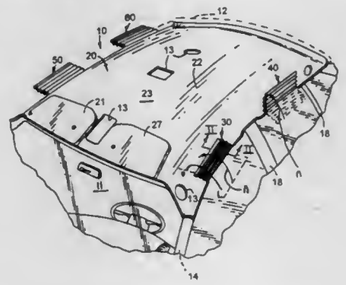
HEADLINER WITH INTEGRAL IMPACT ABSORPTION PANELS

Jeffrey A. Daniel, and Brian L. Erickson, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Sep. 18, 1995, Ser. No. 529,366

Int. Cl.[6] B60R *13/02*

U.S. Cl. 296—214 **9 Claims**



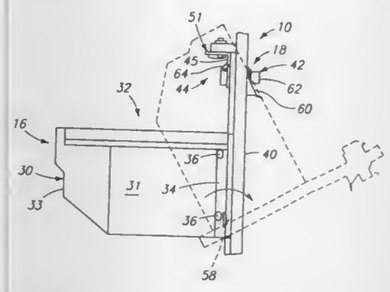
1. A decorative vehicle panel having an impact absorption panel comprising:

a decorative panel for covering a sheet metal structural member of a vehicle, said panel including an edge positioned adjacent an area which can be impacted by a vehicle occupant, said panel including a decorative outer surface and an inner surface facing the vehicle structural member;

a flap extending along said edge of said panel with a hinge joining said flap to said panel, wherein said flap is made of an accordion folded section of said decorative panel; and

an adhesive holding said flap to said inner surface of said panel impact area adjacent said edge such that said impact absorbing flap is concealed between said inner surface of said decorative panel and a vehicle structural member.

5,823,612
VEHICLE DASH STORAGE BOX ASSEMBLY
Jeffrey J. Angelo, Kirkland, Wash., assignor to PACCAR Inc, Bellevue, Wash.
Filed May 1, 1996, Ser. No. 642,205
Int. Cl.[6] B60R *7/06*
U.S. Cl. 296—37.12 **5 Claims**



1. A dashboard and glove box assembly for mounting within a vehicle comprising:

a dashboard having an opening formed therein; said opening providing access to an interior area within said dashboard; said dashboard having an outer surface;

a glove box having walls defining an enclosure; said glove box being removably insertable into said opening;

a door connected to said glove box along a front portion thereof;

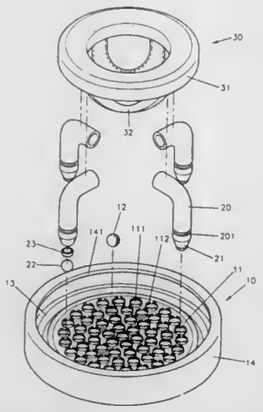
a connection joint forming a releasable connection between said glove box and said opening; said connection joint having a single pivot axis about which said glove box may be pivoted between a fully closed position and a fully opened position; said door preventing access to said enclosure when said glove box is in the fully closed position; said fully opened position allowing access to the enclosure when said glove box is moved thereto;

said glove box being constructed such that rearward portions of the enclosure engage the dashboard when the glove box is in the fully open position to stop pivotal movement of the glove box;

whereby said glove box and door may be conveniently and totally removed from said opening for providing unencumbered access to the interior area within said dashboard through said opening.

5,823,613
CIRCULAR WALKER
Chen Chin Yi, 56, Min Sheng Street, Fengyuan, Taichung, Taiwan
Filed Jun. 17, 1997, Ser. No. 877,699
Int. Cl.[6] A47D *13/04*
U.S. Cl. 297—5 **2 Claims**

1. A circular walker comprises:



a base seat having a disk plate, an annular wall surrounding the disk plate, an annular flange formed on the annular wall, an annular slide rail formed in the base seat, and a plurality of annular positioning plates disposed on the disk plate,

each of the annular positioning plates defining a recess hole to receive a ball,

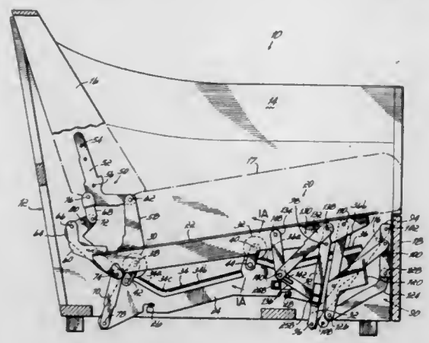
an annular holder having a ring and a band connected to the ring,

a plurality of support legs connected to the ring and disposed beneath the ring,

each of the support legs having an annular recess to receive the annular flange, a hollow taper end to receive a bearing and a spherical body, and

the spherical body inserted in the annular slide rail.

5,823,614
THREE-WAY RECLINING FURNITURE ITEM
Terry Johnson, Mantachie; Mike Hartline, Saltillo, and Nikki White, Pontotoc, all of Mich., assignors to L&P Property Management Company, Chicago, Ill.
Continuation-in-part of Ser. No. 664,000, Jun. 14, 1996, abandoned. This application Nov. 17, 1997, Ser. No. 971,804
Int. Cl.[6] A47C *1/02*; **A61G** *15/00*
U.S. Cl. 297—85 **49 Claims**



1. A three way reclining mechanism for moving an item of reclining furniture between fully upright, intermediate reclined and fully reclined positions, the mechanism comprising:

a stationary base member;

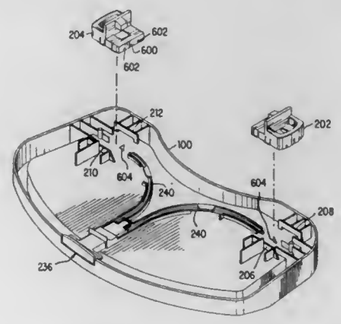
a seat supporting member;

backrest linkage connected to a rear end of said seat supporting member and including a pivoting backrest link for attachment to a backrest and operable to pivot with respect to said seat supporting member;

a footrest support operatively connected to a forward end of said seat supporting member to allow extension and retraction of said footrest support; and,

a roller and track system operatively connected between said stationary base member and said seat supporting member to allow relative forward and rearward movement therebetween, said roller and track system including at least one roller engaging a track and said track including a first section sloped downwardly from rear to front and a second section sloped upwardly from rear to front, said first and second sections being separated by a generally angled intersection, wherein said roller is disposed at an upper end portion of the first track section in the fully upright position, at said intersection in the intermediate reclined position and at an upper end portion of the second track section in the fully reclined position.

5,823,615
TRAY FOR A HIGH CHAIR
Robert E. Haut, Paoli, Pa., assignor to Graco Children's Products Inc., Eleverson, Pa.
Filed Aug. 7, 1996, Ser. No. 694,476
Int. Cl.[6] A47B *83/02*
U.S. Cl. 297—151 **20 Claims**



1. A tray adapted for connection to a juvenile product comprising:

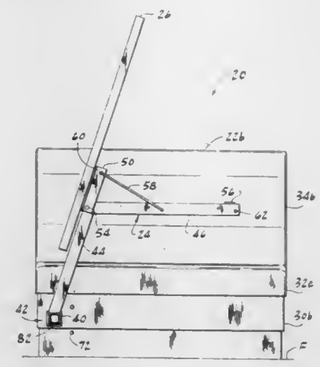
a tray portion;

a first connection member and a second connection member disposed adjacent to a bottom surface of the tray portion for connecting the tray portion to the juvenile product, each connection member being operable between an open and a closed position; and

a flexible interconnection member disposed adjacent to the bottom surface of the tray portion and connected to the first and second connection members so that an operation of the first connection member causes a corresponding operation in the second connection member.

5,823,616
FREE-STANDING BOOTH WITH TILTING TABLE
Stephen C. Scott, Warrenton, Mo., assignor to Vitro Products, Inc., St. Louis, Mo.
Filed May 8, 1997, Ser. No. 853,354
Int. Cl.[6] A47B *83/02*
U.S. Cl. 297—158.2 **20 Claims**

1. A free-standing restaurant booth capable of use remote from and without attachment to a supporting wall of a restaurant comprising:

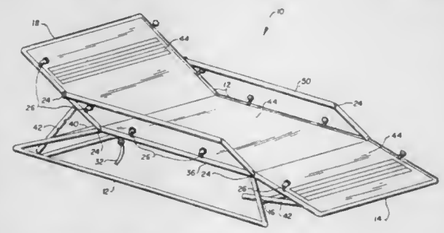


a pair of spaced apart opposing benches for providing seating to patrons of the restaurant, each of said benches having a pedestal for placement on a floor of the restaurant, a seat mounted on the pedestal and a back extending up from the seat;

a table support spaced above the floor comprising a base extending between and connecting the pedestals of said pair of opposing benches and a horizontally extending support frame rigidly connected to the base; and

a table top pivotally mounted on the support frame for movement between a substantially level position in which the top is supported by the frame for setting articles thereon and a tilted position for permitting access to the seats and the floor under the table top.

5,823,617
MISTING CHAIR
Richard D. Schafer, 13104 NE. 89th St., Vancouver, Wash. 98682-2998
Filed Aug. 13, 1997, Ser. No. 910,101
Int. Cl.[6] A47C *7/72*
U.S. Cl. 297—180.15 **4 Claims**



1. A misting chair comprising:

a plurality of tubular frame members including a plurality of upwardly directed mounting holes therein, one of said tubular frame members having a connection mounting hole therein;

tubing inserted through said tubular frame members, said tubing including T-connectors therein, there being one T-connector for each of said mounting holes;

a plurality of conduits, there being one conduit for each of said T-connectors, each conduit inserted through a respective one of said mounting holes and into a respective one of said T-connectors;

a plurality of misting devices, each misting device attached to a respective one of said conduits;

a connection T-connector in said tubing at said connection mounting hole; and

a water input hose bib attached to said connection T-connector; whereby

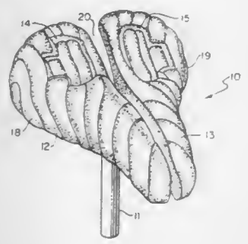
the misting chair has a plurality of misting devices arrayed along said frame members to provide a spray over and about the misting chair.

5,823,618

ANATOMICALLY COMPENSATING SIZE VARYING AND ADJUSTABLE SHOCK ABSORBING SPLIT BICYCLE SEAT

Harry M. Fox, and Joyce L. Fox, both of 14130 Mulholland Dr., Beverly Hills, Calif. 90210

Filed Feb. 1, 1997, Ser. No. 806,041
Int. Cl.[6] B62J 1/06
U.S. Cl. 297—201 6 Claims



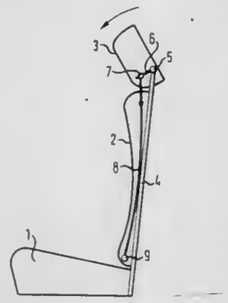
1. An anatomically compensating seat comprising:
a cushioned seat body providing support for a user during physical procedure;
said seat body having at least two elongated body portions arranged in spaced-apart relationship separated by a seat longitudinal axis and each elongated body portion having a front end and a back end;
a pedestal;
an adjustable front and back tiltable mount for detachably securing said seat body portions to said pedestal;
suspension means resiliently mounting said seat body portions to said adjustable front and back tiltable mount allowing for independent movement of said seat body portions about said seat longitudinal axis;
said suspension means includes a leaf spring having opposite ends connected to each of said seat body portions and said leaf spring having an elongated midsection between said opposite ends adjustably carried on said adjustable front and back tiltable mount;
said adjustable front and back tiltable mount includes a base secured to said pedestal and a clamp arrangement adjustably carried on said base;
said leaf spring midsection of each of said leaf springs adjustably mounted on said clamp so as to be positioned to a selected front and back position with respect to said base;
said clamp arrangement includes an upper clamp bar and a lower clamp bar separated by said elongated midsections of said leaf springs;
said elongated midsections being normal with respect to said upper clamp bar and said lower clamp bar; and
said base includes a semi-circular, concave irregular surface and said lower clamp bar having a semi-circular convex irregular surface matable with and adjustable with said base semi-circular, concave irregular surface.

5,823,619

VEHICLE SEAT

Alexander Heilig, Wissgoldingen, and Helmut Maiwald, Schechingen, both of Germany, assignors to TRW Occupant Restraint Systems GmbH, Alfdorf, Germany

Filed Feb. 27, 1997, Ser. No. 806,734
Claims priority, application Germany, Mar. 4, 1996, 296 03 991.8; Jun. 3, 1996, 296 09 786.1
Int. Cl.[6] B60N 2/42
U.S. Cl. 297—216.12 18 Claims



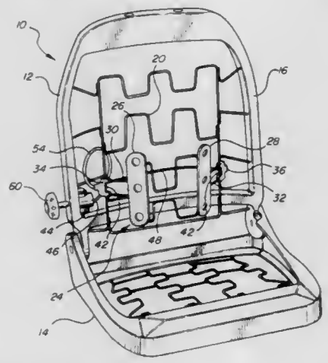
1. A vehicle seat comprising a back rest, a headrest secured to said back rest, a flexible traction element in the form of an inlay within said vehicle seat, and a mechanical setting mechanism coupling said traction element and said headrest with each other, said traction element extending through the interior of said back rest and having at one end a first attachment point at which said traction element is secured to said mechanical setting mechanism and at an opposite end a second attachment point at which it is secured to one of a vehicle and said vehicle seat, a collision force acting on said traction element in case of a rear end impact in a direction opposite to normal vehicle travel displacing said traction element and its first attachment point, said displacement of said first attachment point leading to a movement of said headrest toward the head of an occupant sitting in the vehicle seat.

5,823,620

VEHICLE SEAT HAVING LUMBAR SUPPORT

Christian Le Caz, Meaux, France, assignor to Lear Corporation, Southfield, Mich.

Filed Apr. 17, 1997, Ser. No. 847,829
Int. Cl.[6] A47C 7/46
U.S. Cl. 297—284.4 20 Claims



1. An automotive seat assembly comprising:
a backrest portion having a structural frame and a cover enveloping said frame;

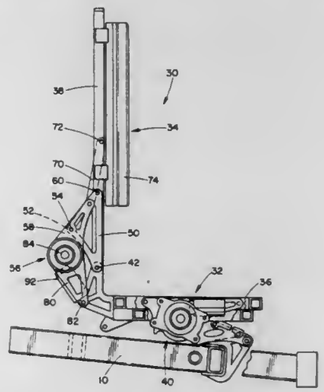
first and second applicator pads supported within said cover of said backrest portion for generally synchronized movement toward respective extended positions applying outward pressure to said cover;
a first crank operatively connected to said first applicator pad;
a second crank operatively connected to said second applicator pad;
a conduit operatively connected to said first crank, said conduit having a curved section;
a core element slidably disposed within said conduit and operatively connected to said second crank; and
an actuator operatively connected to said conduit and said core element, for applying a tensile force along said core element, wherein the curved section of said conduit causes a compressive force along said conduit to move said first crank as the tensile force is applied to said core element to move said second crank, thereby displacing said first and second applicator pads against said cover to provide lumbar support to a seated occupant.

5,823,621

REDUCED SHEAR ASSEMBLY FOR RECLINE SEAT BACK OF A WHEELCHAIR

Douglas Broadhead, Brampton, Canada, assignor to Invacare Corporation, Elyria, Ohio

Filed Nov. 12, 1996, Ser. No. 745,715
Int. Cl.[6] B60N 2/02
U.S. Cl. 297—354.13 10 Claims



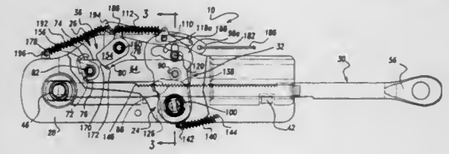
1. A reclining, reduced shear seat back assembly for a wheelchair, the seat back assembly comprising:
a seat including a seat portion and a seat back;
the seat back having a pivot member adjacent a lower end thereof for allowing the seat back to move between upright and reclined positions relative to the seat portion and a movable back member that moves toward and away from the pivot member in response to reclining movement of the seat back; and
a rotary actuator for selectively reclining the seat back relative to the seat portion including a first arm extending from the actuator and pivotally secured to the seat back through a link that has a first portion pivotally secured to the movable back member, and a second arm extending from the actuator and pivotally secured to the seat portion such that the seat back reclines as the angle changes between the first and second arms as they rotate relative to one another about an axis of rotation and the movable back member moves in response to the reclining seat back.

5,823,622

LINEAR RECLINER WITH MEMORY DUMP MECHANISM

Alfred J. Fisher, IV, New York, N.Y.; Cecil A. Collins, Sterling Heights, Mich.; Jeffery T. Bonk, and Raju K. Kalidindi, both of Clinton Township, Mich., assignors to Fisher Dynamics Corporation, St. Clair Shores, Mich.

Filed May 8, 1997, Ser. No. 852,993
Int. Cl.[6] B60N 2/20
U.S. Cl. 297—362.12 30 Claims



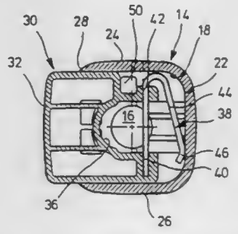
1. A seat recliner for use in a seat assembly having a seatback supported for pivotal movement relative to a seat bottom, said seat recliner comprising:
a housing adapted to be secured to one of the seatback and the seat bottom;
a recliner rod having a first end adapted to be secured to the other of the seatback and the seat bottom and a second end supported for sliding movement relative to said housing;
a locking pawl releasably latched to said housing for movement between a locked position whereat said locking pawl is in latched engagement with said second end of said recliner rod and a released position whereat said locking pawl is released from latched engagement with said second end of said recliner rod;
a recline actuator for selectively moving said locking pawl from said locked position to said released position to permit movement of said recliner rod relative to said housing for adjusting the use position of the seatback;
a lock cam supported from said housing for movement between a first position whereat said locking pawl is latched to said housing and a second position whereat said locking pawl is released from latched engagement with said housing; and
a dump actuator for selectively moving said lock cam from said first position to said second position with said locking pawl in said locked position to permit concurrent movement of said locking pawl and said recliner rod relative to said housing in response to movement of the seatback from a use position and a forward dumped position.

5,823,623

GUIDE SLEEVE FOR NECK RESTS ON VEHICLE SEATS

Christian Beck, Röttingen, Germany, assignor to ITW-ATECO GmbH, Norderstedt, Germany

Filed Mar. 27, 1997, Ser. No. 828,002
Claims priority, application Germany, Mar. 30, 1996, 296 05 983.8
Int. Cl.[6] A47C 7/36
U.S. Cl. 297—410 17 Claims



1. A guide sleeve for neck rests on vehicle seats, comprising:

bore means, defining a vertical axis of said guide sleeve, for slidably accommodating a vertically movable rod supporting a neck rest;

an enlargement disposed adjacent to the upper end of said guide sleeve and extending transversely with respect to said axis of said guide sleeve, said enlargement comprising an end wall, a pair of oppositely disposed side walls connected to opposite ends of said end wall, and an open end disposed opposite said end wall;

a slide element slidably guided within said enlargement between said pair of oppositely disposed side walls and toward and away from said end wall, and including a manually operable portion formed upon one end of said slide element and extending outwardly from said enlargement through said open end of said enlargement, and a pair of laterally spaced support portions, formed upon a second end of said slide element opposite said manually operable portion, and disposed upon opposite sides of said bore means;

a locking element having laterally spaced end portions fixedly mounted upon each one of said laterally spaced support portions of said slide element such that said locking element is movable with said slide element within said enlargement between a first position at which a central portion of said locking element is engaged with the vertically movable rod disposed within said bore means and supporting the neck rest so as to prevent axial displacement of the rod and the neck rest supported thereby whereby the rod and the neck rest supported thereby are fixed at a first vertical position, and a second position at which said central portion of said locking element is disengaged from the vertically movable rod disposed within said bore means and supporting the neck rest so as to permit axial displacement of the vertically movable rod and the neck rest supported thereby whereby the vertically movable rod and the neck rest supported thereby can be moved to a second vertical position; and

spring means engaged with said end wall of said enlargement for biasing said slide element away from said end wall of said enlargement and outwardly through said open end of said enlargement and for biasing said locking element toward said first position so as to achieve engagement of said central portion of said locking element with the vertically movable rod disposed within said bore means and supporting the neck rest, and yet permitting movement of said slide element toward said end wall of said enlargement and movement of said locking element mounted upon said slide element toward said second position against the bias of said spring means so as to achieve disengagement of said central portion of said locking element from the vertically movable rod disposed within said bore means and supporting the neck rest,

wherein said spring means and said locking element comprise a one-piece integral element.

5,823,624
MODULAR HEIGHT ADJUSTABLE VEHICLE SEAT ARMREST

Bruce B. Dahlbacka, Port Washington, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

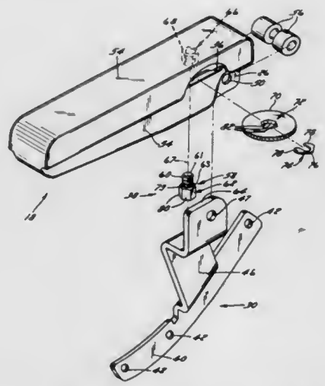
Filed Jul. 8, 1997, Ser. No. 889,527
Int. Cl.[6] A47C *7/54*
U.S. Cl. 297—411.36 **35 Claims**

24. An armrest for a vehicle seat comprising:

a. a seat frame carrying a seat occupant supporting surface upon which a seat occupant can sit;

b. an armrest mounting bracket attached to the seat frame and having a generally upwardly extending armrest mounting post with an abutment surface adjacent its uppermost end;

c. an elongate armrest frame pivotally attached adjacent one end to the post enabling the frame to be pivoted about the post between a generally horizontal operating position enabling an arm of a seat occupant to be supported thereon and a position disposed from the generally horizontal operating position, the frame having a central web portion with an interior surface



and an exterior surface, the web portion spacing apart a pair of sidewalls that extend generally downwardly from the web portion when the frame is disposed in its generally horizontal operating position, and each sidewall having a slot therein adjacent the post abutment surface with the slot in one of the sidewalls generally aligned with the slot in the other of the sidewalls;

d. a threaded portion carried by the web portion and generally overlying the abutment surface of the armrest post when the frame is disposed in its generally horizontal operating position;

e. a bolt received between the sidewalls and adjacent the web portion, the bolt having a longitudinal central axis, a threaded portion adjacent one end of the bolt with its end threadably received by the threaded portion of the web portion, a head at the opposite end of the bolt which bears against the abutment surface of the post when the armrest is disposed in its generally horizontal operating position, and an unthreaded portion between the head and the threaded portion;

f. a thumbwheel received in the slots in the armrest frame sidewalls with a portion of the thumbwheel extending outwardly from at least one slot for enabling manual engagement therewith to manually rotate the thumbwheel and the thumbwheel having a through-opening constructed and arranged to telescopically slidably receive the head and to rotatively couple the thumbwheel to the bolt such that rotation of the thumbwheel rotates the bolt while permitting the bolt to move axially relative to the thumbwheel during bolt and thumbwheel rotation;

g. a retainer carried by the bolt disposed between the bolt head and the end of the threaded portion of the bolt with the retainer having at least a portion extending radially outwardly from the bolt beyond the bolt head forming a shoulder that limits axial movement of the thumbwheel relative to the head; and

h. wherein rotation of the bolt is limited in one direction by the retainer bearing against the thumbwheel thereby limiting height adjustment in the one direction.

5,823,625
ARM AND BACK ATTACHMENT

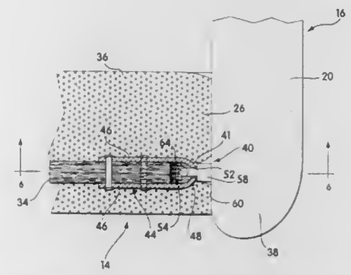
Lester Holmes, South Haven, Miss., assignor to Chromcraft/ Revington Company, Senatobia, Miss.

Filed Jun. 9, 1997, Ser. No. 871,017
Int. Cl.[6] A47C *5/04*
U.S. Cl. 297—411.44 **23 Claims**

9. A chair comprising

a seat and backrest, said backrest having side edges and a rigid core with inner and outer faces,

an arm having an upper portion extending forwardly from the backrest and a downwardly extending portion connected to the seat,

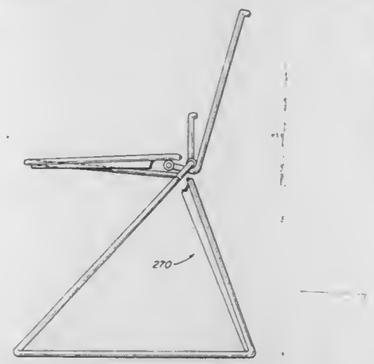


the connection between the upper portion of the arm and the backrest including a substantially U-shaped clip having a pair of arms engaging the faces of the core of the backrest and having an opening therein, a fastener on the arm and disposed adjacent the backrest when the arm is connected in its operative position to the backrest and seat, and a connecting member having a first portion mounted to the fastener and having a second portion disposed at an angle to the first portion of the connecting member and extending into the opening in the clip to join the arm to the backrest.

5,823,626
MECHANISM FOR RECLINING CHAIRS

Peter J. Haas, 48 Rayfield Rd., Westport, Conn. 06880

Filed Dec. 30, 1996, Ser. No. 775,734
Int. Cl.[6] A47C *1/032*
U.S. Cl. 297—448.2 **6 Claims**



1. A reclining chair comprising:

a) a base having (i) along each side of said chair a base portion, a rear leg extending upwardly at the rear end of said base portion and a front leg extending angularly upwardly from the front end of said base portion and along the upper end of said rear legs, (ii) a transversely extending portion interconnecting the upper ends of said front legs; and (iii) a horizontally disposed generally U-shaped seat portion extending forwardly from the upper ends of said rear legs

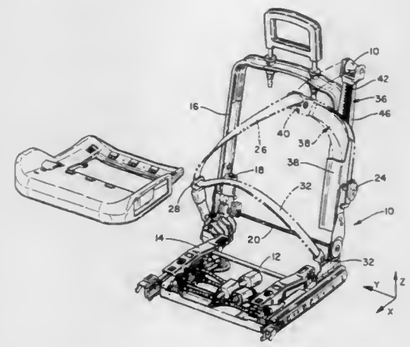
(b) a chair back supported on said transverse portion of said base for pivotal movement about a pivot point provided by said transverse portion between a substantially vertical position and a rearwardly inclined position; and

(c) lever means on the lower end of said chair back extending forwardly and bearing upon the lower surface of said seat portion, whereby pivoting of said seat back to said inclined position causing said lever means to move forward along said seat portion and exert a downward force on said transverse portion of said frame to cause said front legs to flex downwardly.

5,823,627
VEHICLE SEAT WITH INTEGRAL, LOAD LIMITING BELT SYSTEM

David Charles Viano, Bloomfield Hills; James Peter Nini, Clinton Township, Macomb County; Richard Jon Neely, Casco, all of Mich., and Hans Gert Nilson, Wuppertal, Germany, assignors to General Motors Corporation, Detroit, Mich., and Delphi Automotive Systems Deutschland GmbH, Wuppertal, Germany

Filed Apr. 11, 1997, Ser. No. 835,929
Int. Cl.[6] B60R *22/28*
U.S. Cl. 297—471 **4 Claims**



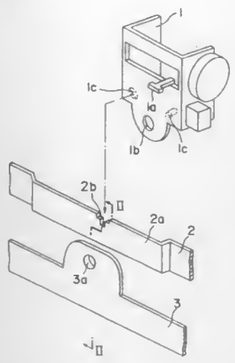
1. A vehicle seat (**10**) having a lower seat frame (**14**) and a seat back (**16**) pivoted thereto about an axis (**20**), and a shoulder belt (**26**) for restraining a seat occupant (**22**) in the event of rapid deceleration relative to a vehicle with an upper attachment point (**40**) integral to said seat back (**16**) and adapted to be located behind and above a shoulder of said occupant (**22**) and a lower attachment point (**28**) diagonally opposed to said upper attachment point (**40**) and integral to said lower seat frame (**14**), characterized in that said vehicle seat (**10**) further comprises,

a resilient, flexible elongated tower (**36**) having a sliding belt guide (**40**) at an upper end comprising said upper attachment point, said tower (**36**) being secured to said seat back so as to have substantially the same orientation as said seat back (**16**) in an unflexed condition, but capable of bending with said belt guide (**40**) down and forwardly relative to said seat back and closer to said seat back pivot axis (**20**) when a forward and downward force is applied to said belt guide (**40**), and,

an inertially locking belt retractor (**24**) rigidly fixed to said seat (**10**) below said belt guide (**40**), said retractor (**24**) providing a reserve length of belt (**50**) that extends up along a back of said tower (**36**) and over said belt guide (**40**) and continuously into said shoulder belt (**26**),

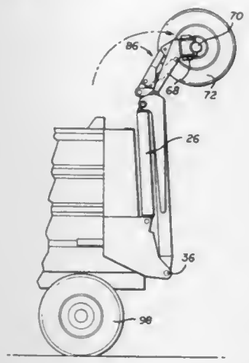
whereby, in the event of rapid vehicle deceleration, said belt retractor (**24**) locks to said belt reserve length (**50**) as said occupant (**22**) is thrown relatively forward into said shoulder belt (**26**), thereby rapidly increasing tension in said shoulder belt (**26**) and applying a forward and downward bending force to said upper belt guide (**40**) and tower (**36**), in response to which said tower (**36**) bends over and downwardly, allowing said belt reserve length (**50**) to move more horizontally along with said bending tower (**36**) as said upper guide (**40**) and shoulder belt (**26**) move forwardly with said occupant, said simultaneous belt reserve length (**50**) and shoulder belt (**26**) motions combining to reduce the resulting tension load in said shoulder belt (**26**) and the moment applied to said seat back (**16**) about said pivot axis (**20**).

5,823,628
RETRACTOR ATTACHING STRUCTURE OF SEAT BELT FOR VEHICLE
Takashi Matsuo, Hamamatsu, Japan, assignor to Suzuki Motor Company, Shizuoka-ken, Japan
Filed Mar. 12, 1997, Ser. No. 815,565
Claims priority, application Japan, Oct. 21, 1996, 8-276757
Int. Cl.[6] A47C *31/00*
U.S. Cl. 297—475 **3 Claims**



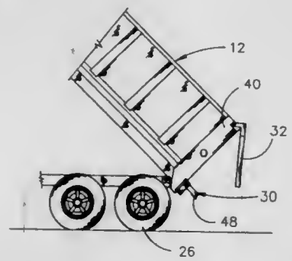
1. A vehicle seat belt retractor attaching structure for attaching a seat belt retractor to an inner panel of a vehicle body, said structure comprising: a seat belt retractor; an inner panel, which is divided into at least two parts, wherein at least an upper inner panel and a lower inner panel are obtained by division of said inner panel; and a bulged part which is provided on said upper inner panel so as to be protruded towards a vehicle cabin, wherein said seat belt retractor is fixed so as to be interposed between said upper inner panel bulged part and said lower inner panel.

5,823,629
ARTICULATING TRAILING TAG AXLE
Fred T. Smith; Fred P. Smith, both of Alpine, Utah; Brooks Strong, 11214 Lorton Dr., Houston, Tex. 77070, and William R. Johnson, American Fork, Utah, assignors to Brooks Strong, Houston, Tex.
Filed Dec. 29, 1994, Ser. No. 365,838
Int. Cl.[6] B60G *17/056;* **B60P** *1/16*
U.S. Cl. 298—23 R **38 Claims**



17. In combination,
a dump truck movable along a road and constructed to carry a load and having a tailgate movable to open the dump truck for the dumping of the load and having a pair of side panels at opposite lateral ends of the dump truck,
a trailing tag axle,
wheels on the trailing tag axle,
first means operatively coupled to the trailing tag axle and the side panels of the dump truck for moving the trailing tag axle and the wheels between a lowered position providing for a disposition of the wheels on the road and a raised position providing for a disposition of the trailing tag axle and the wheels above the dump truck, and
second means operatively coupled to the trailing tag axle and the first means for providing for a movement of the trailing tag axle and the wheels between a first position providing for a disposition of the wheels on the road and a second position providing for the disposition of the trailing tag axle and the wheels in a stored relationship with the first means above the dump truck.

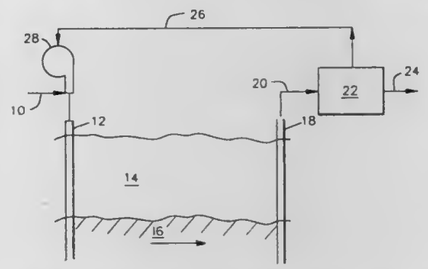
5,823,630
PIVOT LIP DUMP GATE
Donald D. Graham, Omaha, Nebr., assignor to Omni Holding Company, Omaha, Nebr.
Filed Mar. 14, 1997, Ser. No. 818,753
Int. Cl.[6] B62D *33/02*
U.S. Cl. 298—235 **6 Claims**



1. A pivot lip dump gate for a dump body having longitudinally spaced apart forward and rearward ends, a floor, a front wall, opposite side walls and an open rearward end and means for pivotally raising the forward end thereof for dumping contents from the open rearward end, the dump gate comprising:
an upper gate connected to said side walls for pivotal movement about a transverse pivot axis adjacent top rear corners of said side walls whereby said upper gate is operative to swing outwardly away from said side walls to an open position and inwardly to a closed position in engagement with said side walls to close a portion of the open rearward end of the dump body;
a lower gate connected to said dump body for pivotal movement about a transverse pivot axis adjacent and spaced rearwardly of the rearward end of said floor between an open position extending rearwardly from said floor and a closed position in engagement with said side walls to close a portion of the open rearward end of the dump body;
said lower gate including lock means engagable with said upper gate when both the upper and lower gates are in the closed position for securing said upper gate in the closed position thereof;
an extendable cylinder operatively connected between the dump body and the lower gate and operable to pivot the lower gate between the closed and open positions; and
at least one J-shaped lever having a generally vertical stem portion and a transversely projecting leg portion, the stem portion mounted to said lower gate and extending downwardly beyond a lower end of the lower gate, the leg portion projecting forwardly from the lower gate and connected to said cylinder;

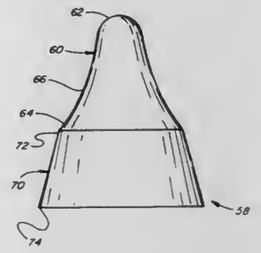
said lever pivotally connected along its stem portion to said pivot axis of the lower gate for pivotal movement with the lower gate.

5,823,631
SLURRIFIED RESERVOIR HYDROCARBON RECOVERY PROCESS
Eric Herbolzheimer, Watchung, and Paul M. Chaikin, Pennington, both of N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.
Filed Apr. 5, 1996, Ser. No. 630,954
Int. Cl.[6] E21B *43/40;* **E21C** *41/24*
U.S. Cl. 299—4 **12 Claims**



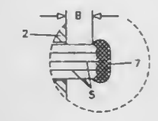
1. A process for recovering hydrocarbon containing media from a hydrocarbon containing media formation having a pore pressure located beneath an overburden comprising:
(a) accessing the formation;
(b) raising the pore pressure in the formation such that when a pressure differential is applied between injection and production wells accessing the formation, at least a portion of the hydrocarbon containing media will flow;
(c) injecting a slurry of a hydrocarbon depleted material into the formation; and
(d) displacing at least a portion of the hydrocarbon containing media through at least one production well.

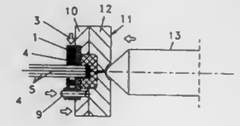
5,823,632
SELF-SHARPENING NOSEPIECE WITH SKIRT FOR ATTACK TOOLS
Kenneth H. Burkett, 410½ Main St., Benton, Ill. 62812
Filed Jun. 13, 1996, Ser. No. 661,317
Int. Cl.[6] E21C *35/183*
U.S. Cl. 299—104 **20 Claims**



1. A nosepiece and skirt for mounting on a work engaging end of an attack tool having a support surface for receiving and supporting a cutting element to be installed thereon and an outer side surface extending around the work engaging end adjacent the support surface, the nosepiece and skirt comprising:
a nosepiece portion having a rearward end adapted for attachment to the support surface of the work engaging end of the attack tool and a forwardly extending work engaging end providing a cutting element having a concave outer side surface therearound extending from the rearward end to a smaller forwardmost tip, the tip having a rounded outer shape blending smoothly with the concave outer side surface, and
an annular skirt portion formed integrally with the nosepiece portion and extending rearwardly from the nosepiece portion to protect the outer side surface of the tool from erosion, the skirt portion having an inner side surface located adjacent the rearward end of the nosepiece portion adapted for placement in overlaying relating to at least a portion of the outer side surface of the work engaging end of the attack tool and a frusto-conical outer side surface extending rearwardly and outwardly from the concave outer side surface of the work engaging end of the nosepiece portion.

5,823,633
PROCESS FOR THE PRODUCTION OF BRUSHWARE BY INJECTION MOULDING AND BRUSHWARE PRODUCED BY IT
Georg Weihrauch, Wald-Michelbach, Germany, assignor to Coronet-Werk GmbH, Wald-Michelbach, Germany
PCT No. PCT/EP95/01408, § 371 Date Aug. 30, 1996, § 102(e) Date Aug. 30, 1996, PCT Pub. No. WO95/30350, PCT Pub. Date Nov. 16, 1995
PCT Filed Apr. 14, 1995, Ser. No. 702,613
Claims priority, application Germany, May 5, 1994, 44 15 886.6
Int. Cl.[6] A46B *3/04*
U.S. Cl. 300—21 **15 Claims**

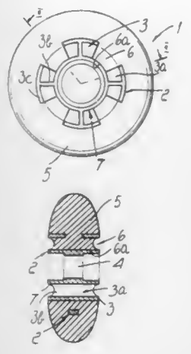




1. A process for the production of brushware having a plastic bristle carrier and at least one bristle bundle fixed to the carrier and constituted of stretched, stabilized plastic monofilaments comprising:
providing an open injection mould defining a cavity in which the bristle carrier is moulded with one part of the mould having a channel in which at least one bristle bundle is guided with an end of each bristle bundle projecting beyond a mouth of the channel and being melted to a thickening having a cross section greater than a cross section of the channel and the bundle which anchors the bundle to the carrier with the thickening being spaced a distance from the mouth of the channel; and
closing the injection mould to define the cavity and injecting a plastic melt into the cavity with the distance of the thickening of the at least one bristle bundle from the mouth of the channel permitting air and any degassing products from the plastic melt to be removed through the channel and being of sufficient length so that a length of thermally weakened monofilaments produced by a molecular reorientation during melting of the end of the at least one bristle bundle to form the thickening are surrounded by the plastic melt without the plastic melt penetrating the channel and wherein the at least one bundle is positioned and fixed in the channel so that the

distance, depending upon a diameter of the monofilaments, is between 0.1 mm and 2.0 mm.

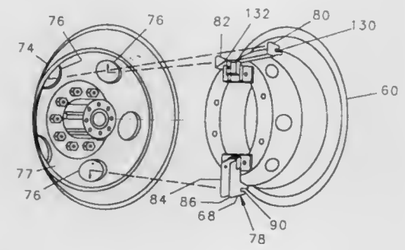
5,823,634
WHEEL, PARTICULARLY FOR SKATEBOARDS OR ROLLERSKATES
Alessandro Pozzobon, Paderno Di Ponzano Veneto, Italy, assignor to Nordica S.p.A., Trevignano, Italy
Continuation of Ser. No. 300,536, Sep. 6, 1994, abandoned. This application Feb. 7, 1997, Ser. No. 796,330
Claims priority, application Italy, Sep. 10, 1993, TV93A0083
Int. Cl.[6] B60C *7/10*
U.S. Cl. 301—5.3 **11 Claims**



1. A wheel, particularly for skateboards or rollerskates, comprising:
a central hub;
a plurality of spokes extending radially from said central hub and defining a plurality of interspaces between said spokes; and
a tire having an outer portion for rolling contact with the ground and an inner portion connected to said central hub, said outer portion and inner portion being mutually interconnected to form said tire;
wherein said inner portion of said tire comprises a plurality of wings extending at least in the interspaces between said spokes to at least partially fill the interspaces between said spokes, each of said wings having a free end arranged in contact with a wall of said hub and said tire having a radial extension extending from said outer portion to the free ends of said wings, and said plurality of wings having a degree of rigidity which is different than the rigidity of said outer portion of said tire.

5,823,635
METHOD AND APPARATUS FOR ATTACHING A COVER TO THE WHEEL OF A VEHICLE WHERE THE WHEEL HAS HAND HOLES
John G. Polka, 1355 Margate, Libertyville, Ill. 60048
Filed Jun. 27, 1996, Ser. No. 671,528
Int. Cl.[6] B60B *7/06*
U.S. Cl. 301—37.1 **13 Claims**

1. A cover for a vehicle wheel of the type having a web and a plurality of hand holes at given locations in said web, said hand holes having given dimensions, said web having an inner surface, said wheel cover comprising in combination:
a cover body shaped to cover at least a portion of said web of said wheel, said cover body having an inner surface;
an arm having a mounting portion and a finger;



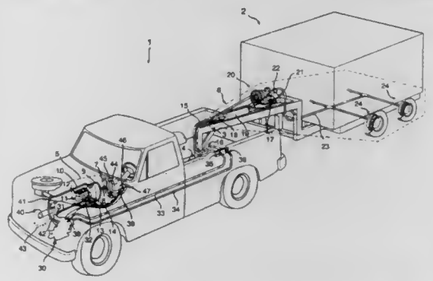
said mounting portion and said finger being maintained in a fixed relationship to each other,
retaining means for retaining said mounting portion to said inner surface of said cover body,
a compressible member between said mounting portion and said inner surface, said compressible member having a relief condition and a compressed condition;
said arm pivotable about said mounting portion while said compressible member is in said relief condition whereby said finger can be inserted through one of said hand holes of said wheel and positioned along said inner surface of said web, and
means for drawing said compressible member into a compressed condition whereby said finger is drawn toward said inner surface of said wheel cover.

5,823,636
VEHICLE BRAKING SYSTEM
Donald Lee Parker, Middletown; Donald Edward Schenk, Vandalia, and Schuyler Scott Shaw, Dayton, all of Ohio, assignors to General Motors Corporation, Detroit, Mich.
Filed Feb. 24, 1997, Ser. No. 806,003
Int. Cl.[6] B60T *13/74*
U.S. Cl. 303—3 **10 Claims**

1. A vehicle braking system comprising:
a wheel brake having a backing plate, at least one brake shoe movably mounted to the backing plate, an electric driven power screw actuator mounted to the backing plate, an apply lever pivotally engaging the actuator, and a hydraulic actuator engaging the brake shoe;
a master cylinder with a hydraulic port;
a brake line extending between the hydraulic port of the master cylinder and the hydraulic actuator of the wheel brake;
a brake pedal;
a pushrod interconnected between the brake pedal and the master cylinder wherein the master cylinder is actuated in response to the application of a force to the brake pedal;

a transducer monitoring application of the brake pedal;
an electrically actuated valve interposed in the brake line wherein the valve has three ports, a first port communicating with the hydraulic port of the master cylinder, a second port communicating with the hydraulic port of the wheel brake and a third port, wherein the first port is normally open to the second port through the valve;
a pedal feel emulating device communicating with the third port of the valve; and
an electronic controller monitoring the transducer and operating to effect movement of the valve to a position wherein the first port is in communication with the third port and the second port is closed, and operating to effect operation of the electric motor driven power screw actuator to apply the wheel brake, and wherein, when an electrical signal to the valve is absent, actuation of the wheel brake is effected through hydraulic pressurization in the master cylinder with pressure communicated to the hydraulic actuator of the wheel brake through the brake line and the valve.

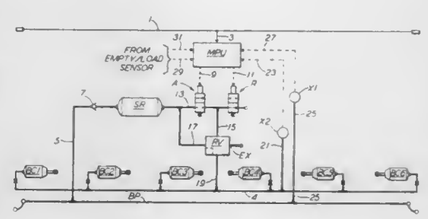
5,823,637
UNIVERSAL VACUUM PUMP APPARATUS AND METHOD
W. Scott Blue, 19355 Sundale Dr., South Bend, Ind. 46614
Filed Mar. 14, 1997, Ser. No. 818,531
Int. Cl.[6] B60T *13/46*
U.S. Cl. 303—7 **29 Claims**



1. An apparatus for use with driver-operated brake systems of a tow vehicle and a trailer towed by the tow vehicle, the apparatus comprising:
a vacuum sensor coupled to sense a vacuum supply of the trailer brake system used to generate a vacuum control signal based on a brake fluid control signal generated by operation of the tow vehicle brake system by the driver, the vacuum sensor generating a vacuum pressure level signal based on a pressure of the vacuum supply;
a controller coupled to the vacuum sensor, the controller generating a vacuum pump switch signal based on the vacuum pressure level signal; and
a vacuum pump coupled to the controller, and generating vacuum for the supply based on the vacuum pump switch signal.

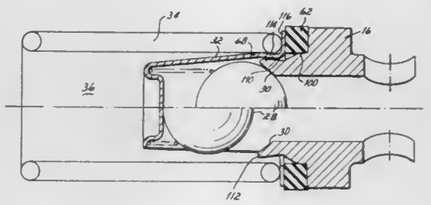
5,823,638
MICROPROCESSOR CONTROLLED ELECTRO-PNEUMATIC BRAKE SYSTEM IN A MULTI-PLATFORM RAILROAD FREIGHT CAR
Gary M. Sich, and John E. Paul, both of Irwin, Pa., assignors to Westinghouse Air Brake Company, Wilmerding, Pa.
Filed May 3, 1996, Ser. No. 642,569
Int. Cl.[6] B60G *25/00*
U.S. Cl. 303—22.1 **14 Claims**

1. An electro-pneumatic brake system in a multi-platform railroad car having a plurality of trucks for which a common braking pressure is provided comprising:



a) brake means for each said truck operative in response to said common braking pressure;
b) a single microprocessor to which is connected a design net braking ratio signal and a load weight signal for each said truck;
c) means for transmitting a command signal to said microprocessor corresponding to a desired net braking ratio for said multi-platform car;
d) said microprocessor comprising:
(i) means for calculating a required brake pressure to meet said net braking ratio command signal;
(ii) means for calculating a maximum allowable brake pressure for each said truck based on the truck design net braking ratio and the weight supported thereby;
(iii) means for selecting a limit pressure in accordance with the lowest one of said maximum allowable brake pressures of all said trucks; and
(iv) means for determining a desired brake pressure in accordance with the lowest one of said required brake pressure and said limit pressure; and
e) valve means for providing said common braking pressure in accordance with said desired brake pressure.

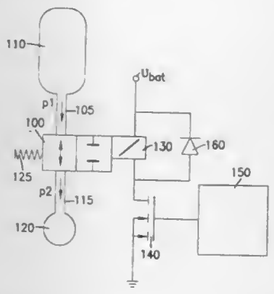
5,823,639
PISTON PUMP FOR DELIVERING HYDRAULIC FLUID IN A BLOCK-PROTECTED VEHICLE BRAKING SYSTEM
Ulrich Zinnkann, Koblenz, and Helmut Gegalski, Mülheim-Kärlich, both of Germany, assignors to Lucas Industries public limited company, United Kingdom
PCT No. PCT/EP94/04186, § 371 Date May 2, 1996, § 102(e) Date May 2, 1996, PCT Pub. No. WO95/16859, PCT Pub. Date Jun. 22, 1995
PCT Filed Dec. 16, 1994, Ser. No. 637,799
Claims priority, application Germany, Dec. 17, 1993, 9319462 U
Int. Cl.[6] F04B *21/02;* **B60T** *8/32*
U.S. Cl. 303—116.4 **14 Claims**



1. A piston pump for delivering hydraulic fluid in a block-protected braking system of a vehicle, comprising
a pump housing (**10**) with an inlet (**12**) for the admission of hydraulic fluid into the housing (**10**) and an outlet (**14**) through which the supplied hydraulic fluid leaves the housing (**10**);
a piston (**16**) guided in a pump housing (**10**), which carries out working strokes in order to supply hydraulic fluid from the inlet (**12**) to the outlet (**14**);

a valve assembly (**20**) in the delivery path of the hydraulic fluid through the housing (**10**);
a drive (**18**) which moves the piston (**16**) through the housing (**10**) for the purpose of delivery; and
a return spring (**34**) which biases the piston (**16**) towards the drive (**18**), characterized in that
the piston (**16**), the return spring (**34**) and the valve assembly (**2**) being releasably joined as an independent assembly unit and located in the pump housing (**10**), the joined independent assembly unit capable of being retrieved from the housing (**16**) as a unit and handled independently.

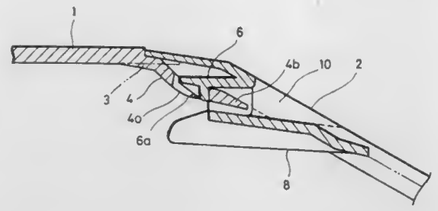
5,823,640
METHOD AND DEVICE FOR DRIVING AN ELECTROMAGNETIC VALVE
Alexander Eichhorn, Neckarsulm, and Helmut Wiss, Moglingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany
PCT No. PCT/DE95/00588, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO96/05992, PCT Pub. Date Feb. 29, 1996
PCT Filed May 5, 1995, Ser. No. 776,686
Claims priority, application Germany, Aug. 22, 1994, P 44 29 373.9
Int. Cl.[6] **B60T** *8/36;* **F16D** *1/16;* **F16K** *31/02*
U.S. Cl. 303—119.2 **5 Claims**



1. A method for driving an electromagnetic valve, comprising the steps of:
positioning the valve in a first position when a current signal assumes a first current value;
positioning the valve in a second position when the current signal assumes a second current value; and
controlling the valve via the current signal following a switch over, wherein the current signal transitions from the first current value to a third current value in a specified time interval according to a first function during a first phase, and, in a second phase, the current signal assumes at least one of a substantially constant value and a value corresponding to a pressure change over time, and wherein the third current value is between the first current value and the second current value.

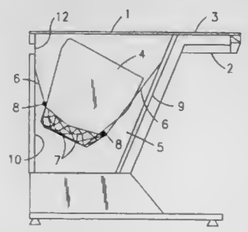
5,823,641
CABINET FOR MONITOR DEVICE
Mitsuru Goto, and Masahiro Miura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 12, 1996, Ser. No. 695,578
Claims priority, application Japan, Aug. 18, 1995, 7-232064
Int. Cl.[6] **H04N** *5/64*
U.S. Cl. 312—7.2 **4 Claims**

1. A cabinet for a monitor device comprising:
a front cabinet;
a rear cabinet; and



a pair of fasteners, each of said fasteners including one engagement portion having a first flexible and deflectable member and a guide formed on an upper inner wall portion of one of said front cabinet and said rear cabinet, wherein said first flexible and deflectable member has an inclined portion formed thereon at a tip end thereof and an engaging surface proximal to said inclined portion and wherein a gap is formed between said first flexible and deflectable member and said guide; and
one engaged portion having a second flexible and deflectable member with an engagement aperture formed therein and being formed on an upper inner wall portion of the other of said front cabinet and said rear cabinet at a position corresponding to a position of said engagement portion,
wherein said front cabinet and said rear cabinet are assembled together by introducing said second member into said gap so that sliding contact between said second member and said inclined portion deflects both said first member and said second member until said engaging surface of said engagement portion engages said engagement aperture of said engaged portion.

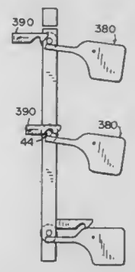
5,823,642
ADP-TABLE
Jussi Korolainen, Sinikalliontie 1, FIN-02630 Espoo, Finland
PCT No. PCT/FI95/00240, § 371 Date Nov. 5, 1996, § 102(e) Date Nov. 5, 1996, PCT Pub. No. WO95/30355, PCT Pub. Date Nov. 16, 1995
PCT Filed May 5, 1995, Ser. No. 737,266
Claims priority, application Finland, May 5, 1994, 940270 U
Int. Cl.[6] **A47B** *81/06*
U.S. Cl. 312—7.2 **8 Claims**



1. A computer desk, said desk having an upper surface, a front side, a back side, and left and right sides, wherein said upper surface includes a sheet of glass and a keyboard level on the front side of said computer desk,
said computer desk having a monitor area located below said sheet of glass, wherein said monitor area is provided with suspension elements connected to said desk and a flexible net having a front side and a back side and adjustably attached to said suspension elements at said flexible net front side and back side, said flexible net and suspension elements cooperating for receiving and suspending a monitor in an inclined position below said glass sheet, wherein the angular position of said monitor is adjustable by adjustment of the position of said flexible net along said suspension elements, and

wherein said monitor area is surrounded on at least four sides by metal walls.

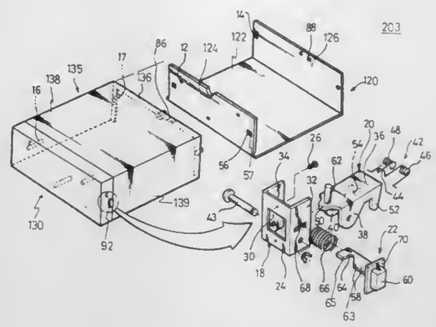
5,823,643
LOCK SYSTEM FOR CASEGOODS
Thomas G. Feldpausch, Hastings; Phillip D. Carino, Grand Rapids, and Frederick S. Faiks, Greenville, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Division of Ser. No. 628,551, Apr. 10, 1996, Pat. No. 5,709,442, which is a division of Ser. No. 138,638, Oct. 15, 1993, Pat. No. 5,553,798. This application Oct. 2, 1997, Ser. No. 942,734
Int. Cl.[6] **E05B** *65/46*
U.S. Cl. 312—221 **20 Claims**



1. A lock/interlock mechanism for use with a unit having an interior surface and at least two drawers moveable between open and closed positions, said mechanism comprising:
an elongated lock member having a plurality of lock elements positioned thereon in vertically spaced relationship;
mounting means on the interior surface of the unit for mounting said lock member for movement between unlocked and locked positions;
a plurality of force generating means on the interior surface of the unit and operatively connected to said lock member for applying a force to the lock member when a drawer is moved towards an open position, said force generated by each force generating means being less than the force needed to move the lock member to the locked position but sufficient so that when two of said force generating means apply their respective forces, said lock member is moved to the locked position; and
a plurality of control means, one on each of said drawers, for allowing said force generating means to apply their forces on said lock member upon opening movement of the drawers.

5,823,644
PERSONAL COMPUTER WITH AN EASY ASSEMBLY STRUCTURE
Dong-Ki Suh, Suwon, and Whan-haeng Jo, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 24, 1996, Ser. No. 652,969
Claims priority, application Rep. of Korea, Jun. 14, 1995, 15756/1995; Aug. 24, 1995, 22090/1995
Int. Cl.[6] **A47B** *81/00*
U.S. Cl. 312—223.2 **10 Claims**

1. A personal computer with an easy assembly structure comprising:
a bottom plate accommodating mounting of components of said personal computer, said bottom plate having a bottom surface, first and second walls erected in spaced-apart relation respectively on front and rear sides;
a front upper cover assembly, inserted to slide onto said bottom plate, said front upper cover assembly comprising:
a front cover defining a front side of said personal computer, and



an upper cover comprised of upper, left, and right lateral sides of said personal computer, and a rear flange extending around said upper, left, and right sides of said rear side of said computer; and
a locking mechanism, mounted on said front upper cover assembly, comprising:
a pivotable latching member engaging an edge of an aperture in said first wall of said bottom plate,
said pivotable latching member being supported by a U-shaped bracket having opposite first and second sidewalls separated by an intermediate front wall integrally joined to said first and second sidewalls and attached to an inside of said front cover, said first sidewall being perforated by a slot;
said pivotable latching member having opposite first and second flanges separated by an upper central web integrally joined to said first and second flanges, said first and said second flanges each having a distal end terminated by a hook extending away from said web and engaging said edge of said aperture in said bottom plate in a locked configuration, said web having a front end bearing a protrusion extending upwardly away from said flanges, said first and second flanges each having a front end coaxially and pivotally coupled between said sidewalls of said bracket to rotate around an axis generally between said protrusion and said hooks;
a button mechanism mounted within an interior formed between said bottom plate and said front upper cover assembly, said button mechanism having a coil spring biasing said button mechanism to protrude laterally outwardly beyond said first wall of said bottom plate and laterally outwardly beyond said front upper cover assembly, said button mechanism responding to manual manipulation of depression of said button mechanism toward said coil spring bias by forcing said pivotable latching member to rotate and to disengage from said edge of said aperture on said first wall, thereby allowing said front upper cover assembly to be separated from said bottom plate, wherein said push button mechanism is a monolithically integrated unit comprised of:
a push button at one end of the button mechanism; and
a flat plate part fixed at a proximal end to said button and extending to an end opposite said push button, said flat plate part comprised of a groove bounded by a latching edge on a side of said groove opposite said push button and an inclined edge on a side of said groove closest to said button, said groove engaging a protrusion on said pivotable latching member, said inclined edge of said groove camming said protrusion on said pivotable latching member as said push button is pressed, and thereby causing said pivotable latching member to pivot against said spring bias;
a detent feature for said push button comprising:
said push button protruding from said front cover assembly through a lateral side of said front cover;
a socket on the underside of said push button;
a slide groove on said lateral side of said front cover of said front upper cover assembly; and
a locking knob slidably located in said slide groove, said locking knob comprised of:
a protruding tab on one end of said locking knob that fits

into said socket underneath said push button, thus preventing said push button, from being depressed, and

a gripping protrusion located on an end of said locking knob opposite said protruding tab, said gripping protrusion containing a ball and an elastic member biasing said ball laterally inwardly against a surface of said groove, thus preventing inadvertent sliding of said locking knob, and thereby preventing inadvertent disengagement of said front cover assembly from said bottom plate.

5,823,645

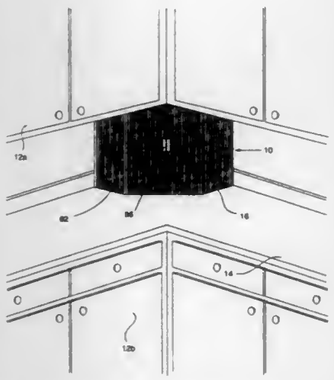
PORTABLE STORAGE COMPARTMENT

Sharon K. Darling, Rte. 3, Box 2162, Quincy, Fla. 32351

Continuation-in-part of Ser. No. 605,728, Feb. 22, 1996, abandoned. This application Jun. 13, 1997, Ser. No. 874,502

Int. Cl.[6] E06B *9/15*

U.S. Cl. 312—297 **20 Claims**



1. A portable storage compartment in combination with an upper and lower cabinet or shelf having a lower surface which can maintain and support at least one item for concealing, said portable storage compartment comprising:

a frame member being secured to an under surface of an upper cabinet or shelf via a securing means;

said frame member having a plurality of components;

said components includes at least one elongated member and at least one elbow;

each of said components include an interlocking means for allowing a preceding member to interlock with a successor member;

a channel is located within each member;

said interlocking means includes said channel;

a collapsible and foldable screen is slideably secured to said frame via a tracking means for providing said collapsible and foldable screen to extend downwardly from said frame member and towards a lower surface which has the capability of maintaining an item for concealing, and to be located in close proximity to said lower surface but not contacting said lower surface;

a gap is located between said collapsible and foldable screen and said lower surface for preventing damage to occur to said collapsible and foldable screen and said lower surface.

5,823,646

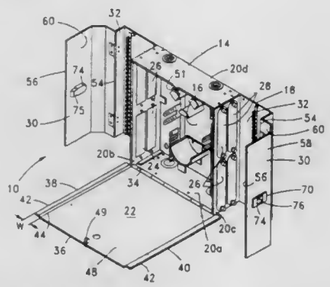
DOOR ASSEMBLY FOR OPTICAL HARDWARE CABINET

Ronald E. Arizpe, Watauga; Mark R. Dagley, North Richland Hills, both of Tex.; David C. Hall, Hickory, N.C., and Kevin L. Morgan, Paradise, Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Sep. 2, 1997, Ser. No. 922,808

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—324 **4 Claims**



1. A fiber optic cabinet comprising:

(a) a housing with a back panel and top, bottom and side walls extending therefrom defining an interior;

(b) a front door pivotally attached to one of the side walls along a horizontal axis and closeable over the interior, the front door wider than the distance between the side walls to define wing portions that overhang laterally of the side walls;

(c) at least one side door pivotally attached to the back panel along a vertical axis at a point laterally removed from the side walls, the side door having a free side opposite thereto extending vertically and overlaying one of the wing portions of the front door;

(d) a latch attached to the side door having a slidable tongue portion spaced from and extending parallel with the inside of the side door to define a gap therebetween, the one wing portion extending into the gap, the tongue portion slidable in a direction away from the free side to allow the side door to be pivoted open, the interengagement of the tongue portion with the gap sufficiently flexible such that the wing portions will slide out of the gap when the front door is pivoted away from its close position.

5,823,647

PAPER HOLDER MOUNTING MECHANISM

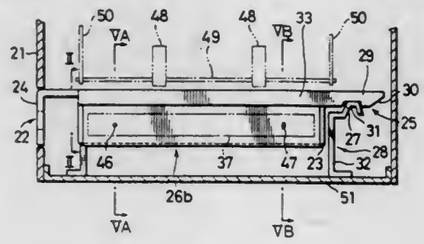
Yoshitake Miyoshi, Osaka, Japan, assignor to Mita Industrial Co., Ltd., Osaka-fu, Japan

Filed Mar. 10, 1997, Ser. No. 814,962

Claims priority, application Japan, Mar. 12, 1996, 8-054784

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—333 **16 Claims**



1. A paper holder mounting mechanism comprising:

a paper holder having a rear portion;

a paper holder-receiving apparatus which receives said paper holder;

a vertically-acting paper holder locking mechanism at the rear portion of said paper holder and having an interlocking state with said paper holder-receiving apparatus when the paper holder is inserted into the paper holder-receiving apparatus;

a first sliding guide device having first and second slide parts slidable relative to one another;

a first connection connecting one of said slide parts to said paper holder-receiving apparatus; and

first and second joints connecting the other slide part to said paper holder, said first and second joints being disposed such that the rear portion of the paper holder is swingable up and down about one of said first and second joints to effect said interlocking state of said paper holder locking mechanism.

5,823,648

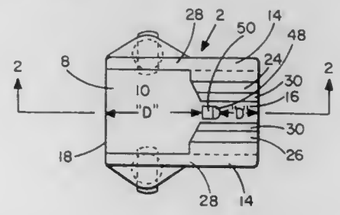
BRACKET FOR MOUNTING A DRAWER GUIDE

Georg Domenig, Kernersville, N.C., assignor to Grass America, Inc., Kernersville, N.C.

Filed Apr. 10, 1997, Ser. No. 827,688

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—334.5 **5 Claims**



5. A bracket for mounting a drawer guide in a furniture article, comprising:

a plate member having top and bottom surfaces, opposing lateral edges, and front and rear ends;

a pair of opposing spring flanges disposed on the top surface proximate the front end of the plate member, each of the opposing spring flanges having a distal end portion, the distal end portions extending toward one another and being spaced apart from one another and also being spaced from the top surface of the plate member to form a gap adapted to receive said drawer guide,

a stop member extending from the top surface between said front and rear ends of the plate member and being substantially centered between the opposing lateral edges of the plate member and substantially centered between the distal end portions of the spring flanges and being adapted to engage said drawer guide, and said stop member having a ramp surface slanting upward away from said rear end of the plate member; and

means for attaching the plate member to said furniture article.

5,823,649

DRAWER SLIDE CHILD LOCK

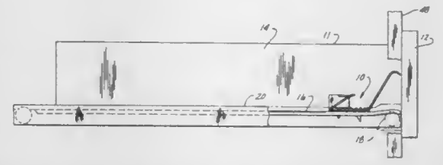
Gary M. Hinrichs, 1719 Sunset Dr., St. Charles, Mo. 63301

Filed Jul. 18, 1997, Ser. No. 896,776

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—334.45 **12 Claims**

1. A child-proof lock assembly of substantially rigid materials for a drawer disposed within a cabinet base, wherein the drawer has an external side and a male drawer slide having a flange on the external side, wherein the cabinet base has a female drawer slide mounted therein, the female drawer slide having a front end and a female guide channel for slideably receiving the male drawer slide to allow the drawer to guidably slide in and out of the cabinet base and a roller attached to the front end of the female drawer slide, the lock assembly comprising:



a latch mounted on the external side of the drawer, movable between a gravity disposed first position to prevent the drawer from opening and a second position to allow the drawer to be opened, the latch comprising:

an elongated lever arm pivotally mounted to the external side of the drawer and extending radially and upwardly toward the top and front of the drawer;

a restraining member projecting downwardly from the lever arm, the restraining edge having a forward edge facing the front of the drawer and a rear edge facing the back of the drawer;

a slot in the flange of the male drawer slide through which the restraining member may be received and project below the flange;

wherein the forward edge of the restraining member will engage the roller when the latch is disposed in the first position to prevent the drawer from opening; and

wherein the lever arm may be raised upon application of upward pressure to move the latch into the second position to allow the drawer to be opened as the restraining member passes over the roller.

5,823,650

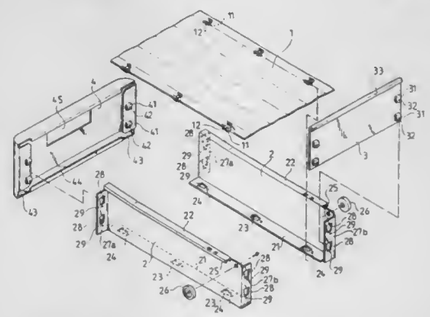
DRAWER ASSEMBLY

Tsung Lung Lin, No. 146, Min Chuan Rd., Ta Hu Village, Hu Nei Hsiang, Kaohsiung Hsien, Taiwan

Filed Mar. 28, 1997, Ser. No. 827,469

Int. Cl.[6] A47B *88/00*

U.S. Cl. 312—348.1 **4 Claims**



1. A drawer assembly, comprising:

a bottom plate having two opposite lateral sides, an underside, and a plurality of first hooks located adjacent to the two opposite lateral sides and displaced from the underside of the bottom plate, each of said first hooks having a first thickness and a first hole extending through the first thickness

a side plate respectively mounted to each of the two opposite lateral sides of the bottom plate, each of said side plates including a bottom flange member extending from a bottom thereof, a front side flange member extending from a first side thereof, a rear side flange member extending from a second side thereof, and an upper rail member extending along an upper edge, the bottom flange member including a plurality of

first openings through which associated said first hooks extend, the bottom flange member further including a plurality of first protrusions provided on an underside thereof, each of said first protrusions being adjacent to one of said first openings and engaging the first hole of the associated first hook, said rear side flange member including a plurality of second openings, said rear side flange member further including a plurality of second protrusions, each of said second protrusions being adjacent to one of said second openings, said front side flange member including a plurality of third openings, said front side flange member further including a plurality of third protrusions, each of said third protrusions being adjacent to one of said third openings;

a rear plate including a first face facing the rear side flange members and a plurality of second hooks on said first face, each of said second hooks being displaced from said first face and extending through one of said plurality of second openings, each of said second hooks having a second thickness and a second hole extending through the second thickness, each second hole engaging one of said plurality of second protrusions; and,

a front plate including a second face facing the front side flange member and a plurality of third hooks on said second face, each of said third hooks being displaced from said second face and extending through one of said plurality of third openings, each of said third hooks having a third thickness and a third hole extending through the third thickness, each third hole engaging one of said plurality of third protrusions.

5,823,651

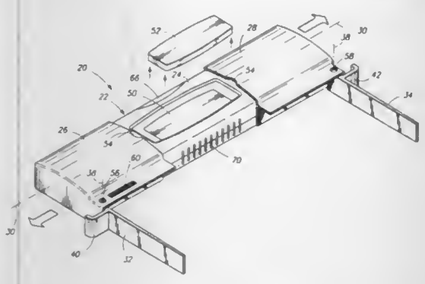
DISPLAY ADAPTER FOR OVERHEAD PROJECTOR PRESENTATION

Jacques H. Helot, 3429 SW. Hil-wood Pl., Corvallis, Oreg. 97333, and Michael D. Derocher, 2719 NW. Romancier Dr., Corvallis, Oreg. 97330

Filed Oct. 7, 1996, Ser. No. 726,598

Int. Cl.[6] G03B *21/14*

U.S. Cl. 353—120 **20 Claims**



1. A display adapter for adapting a display for use with an overhead projector, comprising:

a body;

first and second extendible sleeves slidably mounted to the body to move between an expanded position in which the sleeves are extended outward from the body in opposing directions and a collapsed position in which the sleeves are slid inward relative to the body toward each other; and

first and second support arms movably mounted to the first and second sleeves, respectively, to move between an open position in which the support arms are used to support the display and a closed position.

5,823,652

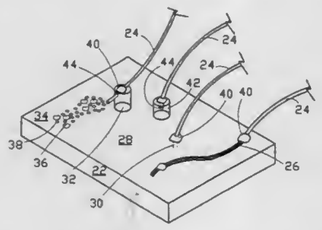
FIBER OPTIC METHODS OF LIGHTING SCULPTURED ACRYLIC

James S. Vann, 805 Garden of the Gods Rd., #G, Colorado Springs, Colo. 80907

Filed Aug. 7, 1996, Ser. No. 684,974

Int. Cl.[6] F21V *8/00*; G02B *6/00*

U.S. Cl. 362—32 **19 Claims**



1. A method of lighting clear acrylic with a fiber optic cable comprising the following steps:

carving an elongate channel on a rear side portion of the acrylic having a width marginally greater than a diameter of the fiber optic cable;

coloring a front side portion of the channel;

laying one end portion of the fiber optic cable in and along the channel;

securing the end portion of the fiber optic cable within the channel; and,

applying a light source to an other end of the fiber optic cable thereby illuminating the elongate channel.

5,823,653

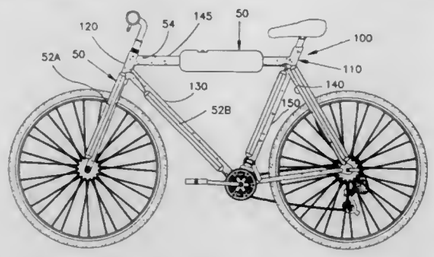
BICYCLE ILLUMINATION SYSTEM

Walter Thomas Elam, Jr., 487 S. Sanford, Pontiac, Mich. 48342, and Antoine L. Jones, 4666 Julius Blvd., Westland, Mich. 48186

Filed Aug. 20, 1997, Ser. No. 915,264

Int. Cl.[6] B62J *6/00*

U.S. Cl. 362—72 **2 Claims**



1. A bicycle illumination system, for illuminating a frame of a bicycle and hence allowing said bicycle to be visible during periods of low light, the bicycle frame comprising a fork member, lower frame member, rear axle member, crossbar member and vertical frame member, the bicycle illumination system comprising:

a) a plurality of neon light tubes affixed to the bicycle frame consisting of a fork member neon light tube affixed to the fork member, a lower neon light tube affixed to the lower frame member, a vertical member neon light tube affixed to the vertical member, and a rear neon light tube affixed to the rear axle member;

b) a power source, in electrical communication with the plurality of neon light tubes, capable of supplying power thereto and illuminating said neon light tubes; and

c) a phosphorescent coating upon the bicycle frame for accentuating the light emitted from the neon light tubes, wherein the bicycle frame is thus further distinguished during periods of low light.

5,823,654

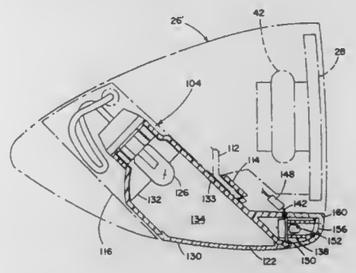
UNIVERSAL EXTERIOR VEHICLE SECURITY LIGHT

Todd W. Pastrick, Spring Lake; Mark R. Litke, Holland; David K. Willmore, Holland, and Rick Mousseau, Holland, all of Mich., assignors to Donnelly Corporation, Holland, Mich.

Continuation-in-part of Ser. No. 607,284, Feb. 26, 1996, Pat. No. 5,669,704, which is a continuation of Ser. No. 426,591, Apr. 21, 1995, Pat. No. 5,497,306, which is a continuation-in-part of Ser. No. 333,412, Nov. 2, 1994, Pat. No. 5,497,305, which is a continuation of Ser. No. 11,947, Feb. 1, 1993, Pat. No. 5,371,659. This application Jul. 26, 1996, Ser. No. 687,628

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 362—83.1 **165 Claims**



1. A light module for positionin, in an opening in an exterior mirror assembly of a vehicle, the exterior mirror assembly having a housing and a reflective element supported in the housing, the housing including an opening, said light module comprising:

an enclosure defining a compartment having an inner surface and having an axis;

a light-transmitting opening in said enclosure;

a cover extending over said light-transmitting opening for sealing said enclosure and for transmitting light from a light source in said enclosure, said cover including at least one non-planar optic surface for directing the light in a first direction from the module for illuminating a first area adjacent the vehicle and being adapted to be reoriented about said axis of said enclosure to redirect the light from the module in a second direction for illuminating a second area adjacent the vehicle,

a light source supported in said enclosure, said light source radiating light toward said light-transmitting opening and through said cover; and

said enclosure adapted for mounting in the opening of the exterior mirror housing, at least a portion of said enclosure being adapted for extending behind the reflective element supported in the housing.

5,823,655

INCONSPICUOUS MODULAR DECORATIVE LIGHTING APPARATUS

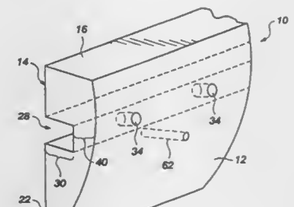
I. Morris Brooks, 3557 Marigold Way, St. George, Utah 84770

Filed Jan. 16, 1996, Ser. No. 585,859

Int. Cl.[6] F21S *1/14*

U.S. Cl. 362—145 **15 Claims**

1. Apparatus for providing a modular, inconspicuous decorative lighting trim comprising:



a three-dimensional architectural molding sized and dimensioned for attachment to a building surface, said architectural molding having a viewable surface which is configured to simulate an architectural trim;

at least one aperture formed through said architectural molding for positioning a light bulb therethrough;

a contact surface contacting said building surface and spaced apart from said viewable surface for attaching said architectural molding to said building surface; and

channel means in and formed along said contact surface for retaining and concealing electrical wires interconnected to said light bulb positioned in said at least one aperture.

5,823,656

WIDE-DISPERSION LAMP ASSEMBLY

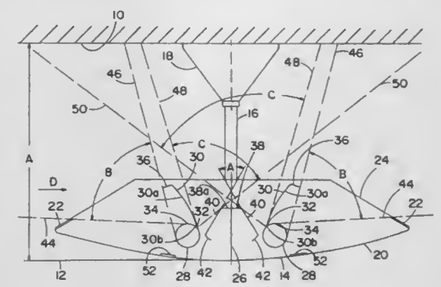
Gerhard Waldmann, Dauchingen, Germany, assignor to Herbert Waldman GmbH & Co., Germany

Filed Oct. 9, 1996, Ser. No. 731,080

Claims priority, application Germany, Oct. 10, 1995, 195 37 685.4

Int. Cl.[6] F21S *3/02*

U.S. Cl. 362—147 **10 Claims**



1. A lamp assembly comprising;

an elongated lamp housing (**14**);

a pair fluorescent tubes (**28**) in the housing, one on either side of, and equidistant from a central plane (**26**);

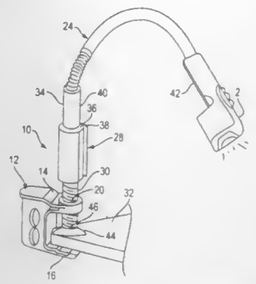
at least one first reflector (**30**) in the lamp housing next to and parallel to each fluorescent tube;

said first reflector (**30**), seen in vertical cross section, slanting upwardly and away from the central plane (**26**) from a point (**32**) on the upper half of the circumference of the associated florescent tube (**28**);

a second reflector (**38**) in an area between the two first reflectors (**30**) and the two fluorescent tubes (**28**), symmetric to the central plane (**26**) of the lamp housing (**14**), said second reflector having two flat reflective surfaces (**40**); and

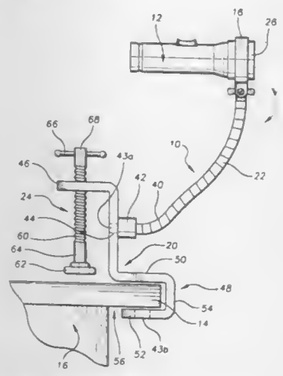
whereby light is radiated upwardly and inwardly over an angular range C having boundaries defined by said first and second reflectors (**30**, **38**).

5,823,657
LAMP CLAMP
Scott D. Price, 1154 Ridge Rd., Pylesville, Md. 21132; Alfred H. Judge, 20 La Costa Ct., Towson, Md. 21204; Thomas J. Wheeler, 418 E. Cross St., Baltimore, Md. 21230, and Robert H. Gifford, 15 Bareylyn Dr., New Freedom, Pa. 17349
Filed Aug. 9, 1996, Ser. No. 694,785
Int. Cl.[6] F21V *21/00*; F21L *15/14*
U.S. Cl. 362—191 21 Claims



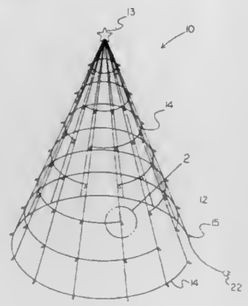
1. A lamp holder for clamping to an object, comprising:
(a) a fixed clamping jaw;
(b) an opposed moveable clamping jaw defining a lamp support;
(c) an arm defining a threaded portion and connected to and spaced from the fixed clamping jaw; and
(d) the moveable clamping jaw having a threaded portion operatively engageable with the arm threaded portion for movement towards and away from the fixed clamping jaw to clamp and unclamp, respectively, the object.

5,823,658
ANCHORABLE FLASHLIGHT SUPPORT
Patrick P. Doddy, 938 W. Central Ave., Alpha, N.J. 08865
Filed Oct. 15, 1997, Ser. No. 950,816
Int. Cl.[6] F21V *15/20*
U.S. Cl. 362—191 16 Claims



1. An anchorable flashlight support comprising:
a pivoting flashlight securing ring;
an anchor bracket assembly having a support arm brace member, a clamping brace member and a ledge receiving bend assembly having a pair of parallel members connected by a right angle attachment member that form a ledge receiving slot;
a flexible metal support arm connected between said flashlight securing ring and said anchor bracket assembly; and
a screw down clamp assembly having a threaded rod threadable through said clamping brace member of said anchor bracket assembly and a clamping contact that is swivel mounted to an end of said threaded rod and that is positioned outside of said ledge receiving slot formed by said ledge receiving bend assembly of said anchor bracket assembly.

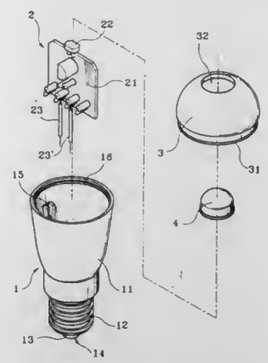
5,823,659
DECORATIVE LIGHT SYSTEM
Robert W. Klose, 615 E. Broadway, #306, Long Beach, Calif. 90802
Filed Aug. 25, 1997, Ser. No. 917,315
Int. Cl.[6] F21P *1/02*
U.S. Cl. 362—252 1 Claim



1. A new and improved decorative light system comprising, in combination:
an assembly comprising a plurality of resilient linear insulated strands each having a first end coupled to a first end of each of the remaining strands and a second free end extending downwardly and outwardly to define a cone, wherein the strands are equally spaced and are of a quantity of at least 15 with an ornament mounted on an apex of the assembly; and
a single continuous string of light bulbs including a double strand wire having a plurality of bulbs connected to the wire in a parallel configuration, the wire configured and mounted on the assembly to define at least 6 circular portions each residing in an associated horizontal plane and having a unique diameter and elevation, each circular portion being in electrical communication with an adjacent circular portion thereabove via an associated upwardly and inwardly extending linear portion, the wire having a first end connected to a plug for releasably coupling with a standard electrical receptacle and a second end situated at an apex of the cone defined by the assembly;
said bulbs spaced a greater distance closer to the first end of the wire than the second end thereof, whereby each bulb is situated at an intersection of the wire and each strand of the assembly;
said upwardly and inwardly extending linear portions each extending along an associated one of the strands of the assembly.

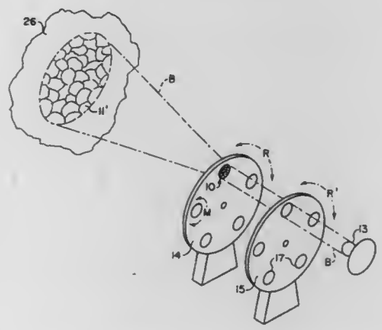
5,823,660
AUTOMATIC LIGHTING CONTROL DEVICE FOR A DECORATIVE LIGHT STRING
Yuan-Shun Hsu, No. 910, Fu-Hsing Rd., Chu-Pei City, Hsing Chu Hsien, Taiwan
Filed Mar. 5, 1996, Ser. No. 611,491
Int. Cl.[6] H05B *37/00*
U.S. Cl. 362—276 2 Claims

1. An automatic lighting control device for installation in a decorative light string to control an operation of the light string through detection of ambient light intensity, the device comprising:
a) a hollow base for installation in a lamp socket of the light string, the base including a tapered hollow shell having a



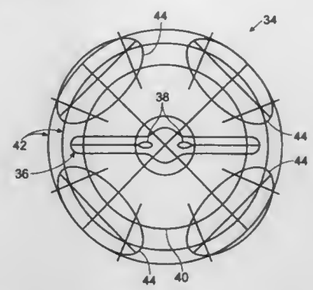
reduced bottom end and an open top end, a ring contact at the bottom end, an insulator secured to the ring contact, a tip contact secured in a center of the ring contact and separated therefrom by the insulator, and two symmetrical pairs of longitudinal mounting rails bilaterally disposed in an interior of the shell;
b) a photo-electric control device disposed within the interior of the shell and mounted on the pairs of longitudinal mounting rails;
c) a cover secured to the shell and covering the open top end; and
d) a transparent cap secured to the cover for admitting exterior light to the photoelectric control device.

5,823,661
FUSED GLASS LIGHT PATTERN GENERATOR
Steven T. Mahanay, and Byron J. Ziegler, both of Austin, Tex., assignors to High End Systems, Inc., Austin, Tex.
Filed Sep. 7, 1994, Ser. No. 301,967
Int. Cl.[6] F21V *9/00*
U.S. Cl. 362—293 6 Claims



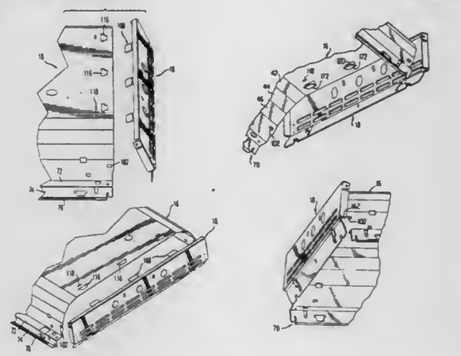
1. A gobo for generating light patterns when placed in the light beam of a light projection system comprising:
a. a substrate layer with two opposing flat surfaces,
b. particle layer including a plurality of multifaceted, three-dimensionally irregularly shaped particles which are fused into at least one surface of the substrate layer.

5,823,662
HIGH EFFICIENCY ILLUMINATION SYSTEM
Arlie R. Conner, Tualatin, Oreg., assignor to Lightware, Inc., Beaverton, Oreg.
Filed Aug. 25, 1994, Ser. No. 295,596
Int. Cl.[6] F21V *5/00*
U.S. Cl. 362—328 17 Claims



1. A method of collecting light from a source to illuminate a rectangular object in an imaging system, the source emitting light in first and second directions, the method including:
collecting and refracting onto the object with a lens light emitted in the first direction; and
collecting and reflecting onto the object with a mirror light emitted in the second direction, the light being reflected into corners of the rectangular object;
wherein the object is illuminated with (a) light refracted from the first direction but not reflected by the mirror, and (b) light reflected from the second direction but not refracted by the lens.

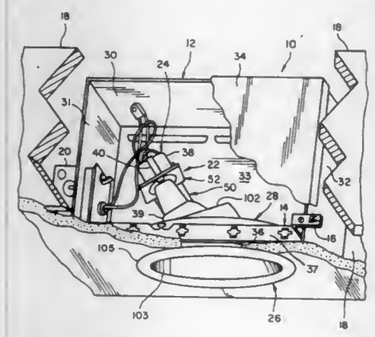
5,823,663
FLUORESCENT TROFFER LIGHTING FIXTURE
L. Michael Bell, Jonesboro, and Peter Michael Schmidt, Conyers, both of Ga., assignors to National Service Industries, Inc., Atlanta, Ga.
Filed Oct. 21, 1996, Ser. No. 731,826
Int. Cl.[6] F21M *3/28*
U.S. Cl. 362—362 29 Claims



1. A lighting fixture having at least one lamp carried within the lighting fixture, comprising:
a housing having a top wall formed on at least one end thereof, the top wall having at least one aperture formed therein near said end of said housing, the housing further being provided with side walls depending from the top wall and having at least one aperture formed in each of the side walls;
at least one end plate mounted to each end of the housing; and,

means formed integrally with each of the end plates for mounting each end plate to the housing, said means comprising at least one tab element receivable within the aperture formed in the top wall of the housing, and further comprising at least one tab element receivable into the aperture formed in each side wall to snap-fit thereinto, thereby to retain each end plate to one each of the ends of the housing without the use of separate fastening elements.

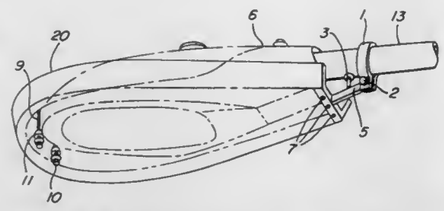
5,823,664
RECESSED LIGHTING FIXTURE
Robert J. Demshki, Jr., Riner, and Gerry F. Thornton, Christiansburg, both of Va., assignors to Hubbell Incorporated, Orange, Conn.
Filed May 29, 1996, Ser. No. 654,692
Int. Cl.[6] F21S *1/06*
U.S. Cl. 362—366 **29 Claims**



1. A recessed lighting fixture for installation in a ceiling, comprising:
a housing with a mounting frame for attachment to a ceiling structure;
a reflector attached to said housing, said reflector having an open upper end and an open lower end;
an adjustable socket assembly movably coupled to said housing for three degrees of movement, said socket assembly including an upstanding bracket with first and second pivot joints and a socket strap, said bracket being pivotally coupled to said housing adjacent a first end of said bracket via said first pivot joint, and said socket strap being pivotally coupled to a second end of said bracket via said second pivot joint, said socket strap being movably coupled for linear movement relative to said housing; and
a lamp socket coupled to said socket bracket for positioning a lamp within said reflector.

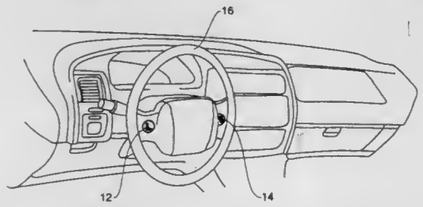
5,823,665
PROTECTIVE LENS SHIELD FOR OUTDOOR LIGHTING FIXTURES
Steven G. Braun, 1418 Ponderosa, Fullerton, Calif. 92635
Continuation-in-part of Ser. No. 356,976, Feb. 7, 1995, Pat. No. 5,651,612. This application Mar. 20, 1997, Ser. No. 821,770
Int. Cl.[6] F21V *15/00*
U.S. Cl. 362—376 **19 Claims**

1. A protective lens shield assembly for protecting a light, the protective lens shield assembly comprising:
a torsion flex shield, the shield having a first end and a second end;
a first connector connecting the first end of the flex shield to a luminaire housing; and
a second connector connecting the second end of the flex shield to a light pole;



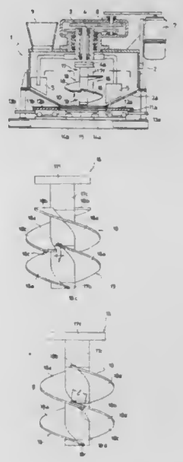
wherein the first and second connectors provide a tensioning force sufficient to flex the torsion flex shield.

5,823,666
STEERING WHEEL MOUNTED TURN SIGNAL CONTROLS AND INDICATORS
George L. Kingsolver, 8401 Pan Am Freeway 72 N.E., Albuquerque, N. Mex. 87113
Filed Oct. 16, 1997, Ser. No. 951,728
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 362—488 **1 Claim**



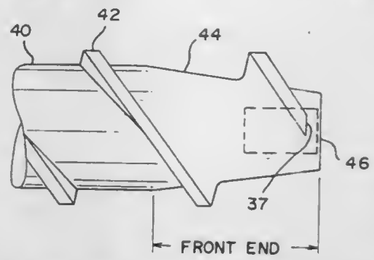
1. A turn signal control and indication system comprising:
a. a push button type left turn signal switch and a push button type right turn signal switch;
b. the push button type left turn signal switch and the push button type right turn signal switch each adapted to mount on a vehicle steering wheel;
c. the push button type left turn signal switch adapted to be wired in parallel with a lever activated left turn signal switch;
d. the push button type right turn signal switch adapted to be wired in parallel with a lever activated right turn signal switch;
e. the push button type left turn signal switch adapted to energize a set of left turn signal lights when the push button type left turn signal switch is depressed, and to de-energize the set of left turn signal lights when the push button type left turn signal switch is released;
f. the push button type right turn signal switch adapted to energize a set of right turn signal lights when the push button type right turn signal switch is depressed, and to de-energize the set of right turn signal lights when the push button type right turn signal switch is released;
g. the push button type left turn signal switch including a left switch illumination means for illuminating the push button type left turn signal switch;
h. the push button type right turn signal switch including a right switch illumination means for illuminating the push button type right turn signal switch;
i. the left switch illumination means wired in series with the push button type left turn signal switch and the lever activated left turn signal switch; and
j. the right switch illumination means wired in series with the push button type right turn signal switch and the lever activated right turn signal switch;
k. whereby the left switch illumination means will illuminate when the push button type left turn signal switch is depressed and will also illuminate when the lever activated left turn signal switch is closed, and the right switch illumination means will illuminate when the push button type right turn signal switch is depressed and will also illuminate when the lever activated right turn signal switch is closed.

5,823,667
MIXER HAVING A SEGMENTED HELICAL MIXING BLADE
Takeshi Fukushima, and Hisashi Yamamoto, both of Narashino, Japan, assignors to Pacific Machinery & Engineering Co., Ltd., Tokyo, Japan
Filed Mar. 18, 1997, Ser. No. 819,908
Claims priority, application Japan, Mar. 19, 1996, 8-063064
Int. Cl.[6] B28C *5/16*; B01F *7/24*
U.S. Cl. 366—65 **4 Claims**



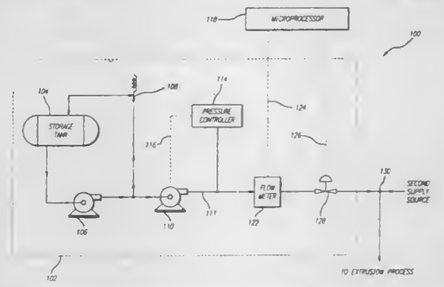
1. A mixer for producing mixture comprising:
an inside mixing means disposed at a center of a mixing vessel and connected to an inner shaft so that the inside mixing means is rotated; and
an outside mixing means disposed around the periphery of said mixing vessel and connected to an outer shaft arranged coaxially with said inner shaft so that the outside mixing means is rotated;
wherein the inside mixing means moves materials of mixture from the bottom of the center of said mixing vessel toward an upper portion of said center and thence toward an upper periphery of said mixing vessel, and then the outside mixing means moves the materials from the upper periphery toward a lower periphery of said mixing vessel and thence toward the bottom of the center of said mixing vessel, the mixer circulating and mixing the materials in said mixing vessel; and
wherein said inside mixing means comprises a shaft body connected to said inner shaft and a predetermined number of mixing blade elements which are detachably fixed to said shaft body and overlaid to adjacent mixing blade elements in the axial direction, each mixing blade element being provided with a helical mixing blade piece for mixing and moving said materials, the adjacent mixing blade elements being disposed so that the mixing blade pieces of said adjacent mixing blade elements form one substantially continuous helical blade.

5,823,668
EXTRUDER AND EXTRUSION SCREW THEREFOR
Timothy W. Womer, Edinburgh, Pa., and Vue X. Yang, Sheboygan, Wis., assignors to Spirex Corporation, Youngstown, Ohio
Filed May 29, 1997, Ser. No. 865,212
Int. Cl.[6] A21C *1/06*; B29B *7/14*
U.S. Cl. 366—89 **6 Claims**



1. An extruder for plasticating and extruding an extrudate, comprising:
an elongated barrel defining an interior elongated passage;
an elongated extrusion screw received in the interior elongated passage of said barrel, said extrusion screw including an elongated root body, a conical, tapered front end section and a thread portion helically wound about said root body and said front end section, and extending along the length of both, wherein at least the last one-half revolution of the flight of said thread portion has a pitch associated therewith which is different from the pitch of the remainder of said thread portion, and wherein the taper of said conical, tapered front end section has a diameter reduction of approximately 40%;
means for rotating said extrusion screw relative to said barrel;
means for supplying material to be plasticated to said interior elongated passage; and
means for heating said barrel and thereby the material to be plasticated as the material to be plasticated is removed through said interior elongated passage by the rotation of said extrusion screw.

5,823,669
METHOD FOR BLENDING DIVERSE BLOWING AGENTS
Clifford Jones, Lawrenceville, Ga., assignor to Lolco Packaging Corp., Studio City, Calif.
Continuation-in-part of Ser. No. 188,344, Jan. 27, 1994, Pat. No. 5,423,607, which is a division of Ser. No. 963,235, Oct. 19, 1992, abandoned, which is a continuation of Ser. No. 695,352, May 3, 1991, abandoned. This application Apr. 12, 1995, Ser. No. 421,128
Int. Cl.[6] B01F *15/04*
U.S. Cl. 366—132 **11 Claims**



1. A method for blending diverse blowing agents for delivery of the agents to an extruder which contains molten thermoplastic

resin at a pressure of at least 3500 p.s.i.g. for mixture therein with said thermoplastic molten resin to form a foamed thermoplastic extrusion mass, said method comprising:

providing a refrigerated supply of liquid carbon dioxide, maintaining said supply of carbon dioxide in said liquid state at a pressure of less than 500 p.s.i.g. and at a temperature to prevent flashing thereof, using a first pump to pump said supply of carbon dioxide in said liquid state to a pressure of approximately 550 p.s.i.g. to prevent line cavitation, further pumping said supply of carbon dioxide to a pressure of approximately 5,500 p.s.i.g. and providing a stream thereof;

providing a supply of first liquid blowing agent at a pressure of less than 500 p.s.i.g., using a second pump to pump said supply of first liquid blowing agent to a pressure of approximately 550 p.s.i.g. to prevent cavitation, further pumping said supply of first volatile liquid blowing agent to a pressure of approximately 5,500 p.s.i.g. and providing a stream thereof;

measuring the flow rate of said stream of carbon dioxide and providing a first signal proportional thereto;

measuring the flow rate of said stream of first blowing agent and providing a second signal proportional thereto;

controlling the flow rate of said stream of first blowing agent responsive to said first and second signals whereby to provide a ration of blowing agent and carbon dioxide;

mixing said streams of carbon dioxide and first blowing agent at a pressure of approximately 5,500 p.s.i.g. to form a blend thereof; and

pumping said blend into said extruder whereby to form a foamed thermoplastic mass.

5,823,670

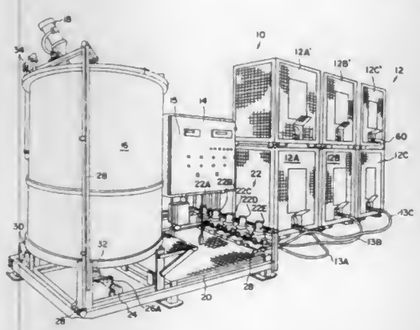
CHEMICAL DELIVERY AND ON-SITE BLENDING SYSTEM FOR PRODUCING MULTIPLE PRODUCTS

J. Mitchell Rushing, Greenville; Terry L. Scruggs, Taylors, and John J. Malone, Simpsonville, all of S.C., assignors to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 153,860, Nov. 17, 1993. This application Sep. 28, 1994, Ser. No. 314,393

Int. Cl.[6] B01F *15/04*

U.S. Cl. 366—152.1 **8 Claims**



1. An automated method of forming a plurality of preselected chemical cleaning products for use in treating machinery used to manufacture paper products, said method includes utilizing a programmable, electrical processing means having a control panel, said control panel including a plurality of product selection switches which upon activation initiates formation of a corresponding on-site chemical cleaning product, said method comprising the steps of:

supplying to a determined use site a plurality of preselected respective chemical subcomponents, said subcomponents generally being in a chemical concentrated state and including at least an alkaline solution, an acidic solution, and a detergent composition;

feeding predetermined measured amounts of certain of said subcomponents into a mixing tank upon activation of at least one of said product selection switches;

mixing said measured amounts of said subcomponents for a predetermined interval of time for forming a predetermined one of said respective chemical cleaning products;

discharging said on-site formed chemical cleaning product from said mixing tank for storage and use of said on-site chemical cleaning product to treat said machinery used in the manufacture of paper products at said site.

5,823,671

APPARATUS AND METHOD OF MIXING MATERIALS IN A STERILE ENVIRONMENT

Mark E. Mitchell, Fremont; Philip R. Palin, Pleasanton, and Daniel R. Prows, Los Gatos, all of Calif., assignors to Collagen Corporation, Palo Alto, Calif.

Continuation of Ser. No. 241,244, May 10, 1994, abandoned. This application Nov. 8, 1995, Ser. No. 555,270

Int. Cl.[6] B01F *5/12*

U.S. Cl. 366—268 **26 Claims**

12. An apparatus for distributing a first material into a second material, the apparatus comprising:

a first member having a variable volume and a second member having a variable volume, each member including a rigid wall; and

a fluid interchange defining a flow passage interconnecting said first variable volume member and said second variable volume member;

wherein each member includes a free floating piston movably received therein having at least a first position at which said variable volume has a maximum volume and a second position wherein said variable volume has a minimum volume; and

wherein each piston includes an outer circumferential wall, and at least one double lip seal or double wiper seal is disposed in engagement with the outer circumferential wall and the rigid wall of the member.

5,823,672

FOOD BLENDER WITH TWO BLADE ASSEMBLIES

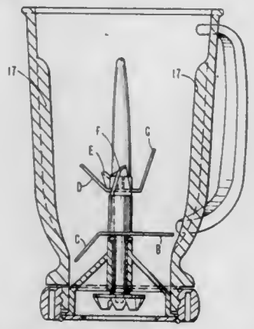
Mario John Barker, Annandale, Australia, assignor to Breville Pty Ltd, New South Wales, Australia

Filed Mar. 11, 1997, Ser. No. 815,148

Claims priority, application Australia, Mar. 13, 1996, PN 8643

Int. Cl.[6] A47J *43/046*

U.S. Cl. 366—205 **4 Claims**



1. A blender, comprising a jar or jug having a central axis and a wall with an inner surface extending substantially vertically except toward a lower end; a plurality of longitudinally extending circumferentially spaced ribs arranged on said inner surface and projecting inwardly from said wall toward said central axis; a central vertical spindle located near a bottom of said jar or jug; a driving motor provided for driving said spindle; a first rotating blade assembly arranged on said central vertical spindle; said spindle having a lower end provided with means for engaging said driving motor, said blade assembly including a pair of blades projecting radially from said central axis at about a same level, one of said blades projecting horizontally and another of said blades being directed downwardly at an angle, said horizontally projecting blade having an outer end which during rotation of said assembly passes close to said ribs; a second assembly of blades mounted on said spindle at a level higher than that of said first assembly, said second assembly including a plurality of blades extending radially outwardly from said central axis at about a same level but in different directions and at different angles to said central axis.

5,823,673

APPARATUS FOR PROCESSING DISPERSIONS OF SOLIDS IN A FATTY PHASE

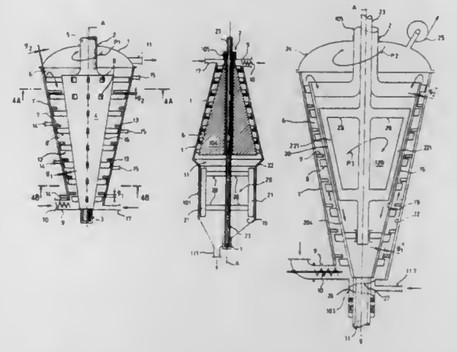
Kurt Müntener, Bad Salzuflen, Germany, assignor to Richard Frisse GmbH, Bad Salzuflen, Germany

Filed Aug. 18, 1995, Ser. No. 517,453

Claims priority, application Germany, Sep. 16, 1994, 44 33 039.1

Int. Cl.[6] B01F *7/16*

U.S. Cl. 366—303 **12 Claims**



1. An apparatus for processing dispersions of solids in a fatty phase, comprising:

at least one drive means for imparting rotational movement;

first processing means being formed as a processing container including at least one supply opening and at least one discharge opening, the processing container being of conical shape having an outer conical surface, an inner conical surface, and a smaller front plane of its conical shape located on a side of said supply opening, said supply opening and said discharge opening being located distant from each other on said first processing means;

second processing means substantially concentric to said first processing means and having an outer surface;

at least one of said first and second processing means being connected to a respective one of said at least one drive means, at least one of said first and second processing means including shearing tool means which protrude radially toward the other of said processing means, said first and said second processing means being supported in a rotatable manner relative to each other about an axis of rotation, a processing gap being formed therebetween; and

journal means for enabling rotation of one of said first and said second processing means relative to the other of said first and said second processing means;

wherein at least part of said tool means of one of said processing means comprise shearing surfaces facing an opposing surface of the other of said processing means, and forming an angle with said opposing surface so as to diverge in forward direction as seen in the direction of said rotation.

5,823,674

KNEADER MIXER

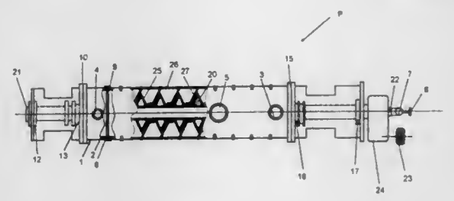
Pierre Liechti, Muttenz; Alfred Kunz, Witterswil; Jörg List, Pratteln, all of Switzerland, and Daniel Arnaud, Hiersignue, France, assignors to List AG, Arisdorf, Switzerland

Filed Aug. 28, 1996, Ser. No. 784,264

Claims priority, application Germany, Dec. 12, 1995, 195 33 693.3

Int. Cl.[6] B01F *7/00*

U.S. Cl. 366—303 **11 Claims**



1. A kneader mixer comprising:

a housing;

a kneader shaft mounted in said housing for rotation about an axis of rotation (A), said kneader shaft having a plurality of blade elements of arranged on the kneader shaft along blade planes (E) which are substantially perpendicular to the axis of rotation (A) of the kneader shaft; and

kneading-support elements mounted on said housing by means of foot portions and projecting between said blade elements, said foot portions also lying along planes (E) wherein the planes (E) are substantially central to both the foot portions and the blade elements.

5,823,675

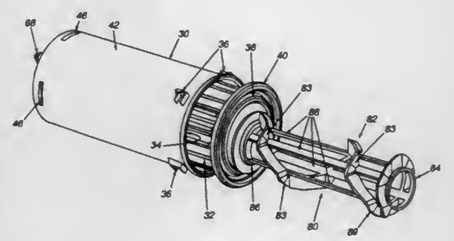
STEPPED HELICAL SCRAPER BLADE FOR ICE CREAM MAKER

R. M. Scott Myerly, Hattiesburg, Miss., assignor to Sunbeam Products, Inc., Delray Beach, Fla.

Filed Apr. 25, 1997, Ser. No. 845,349

Int. Cl.[6] A23G *9/12*

U.S. Cl. 366—310 **6 Claims**



1. A dasher for a food processing device comprising:

(a) an upper hub;

(b) a lower hub;

(c) a plurality of support members extending from said upper hub to said lower hub, said support members disposed around the perimeter of said upper and lower hubs at spaced intervals;

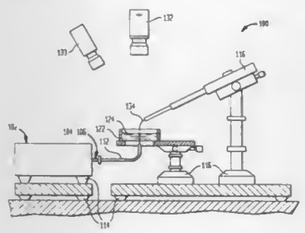
(d) a stepped helix member disposed around said plurality of support members and extending from said lower hub to said upper hub, said helix member having flat steps where said helix member intersects said support members.

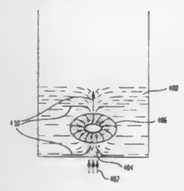
5,823,676

APPARATUS AND METHOD OF GRADIENT CONVECTION VORTEX FLUID MIXING AND PUMPING

Evgueni Khijniak, Narberth, Pa., and Marvin C. Ziskin, Cherry Hill, N.J., assignors to Technology SG, L.P., Wayne, Pa.

Filed Apr. 18, 1997, Ser. No. 844,721
Int. Cl.[6] B01F 5/00
U.S. Cl. 366—348 23 Claims





1. A method of using a convection process to create a torroidal type vortex in a liquid, comprising locally applying a beam of energy to a predetermined region of the liquid, wherein the liquid absorbs said beam of energy in said predetermined region of the liquid producing a temperature gradient sufficient to create the torroidal type vortex.

5,823,677

METHOD OF IDENTIFYING A SUBSTANCE BY INFRARED IMAGING

William K. Forester, Kalamazoo, and Timothy J. Lobbes, Menominee, both of Mich., assignors to The Board of Trustees of Western Michigan, Kalamazoo, Mich.

Filed Mar. 18, 1996, Ser. No. 617,044
Int. Cl.[6] G01N 25/00;25/18
U.S. Cl. 374—10 10 Claims

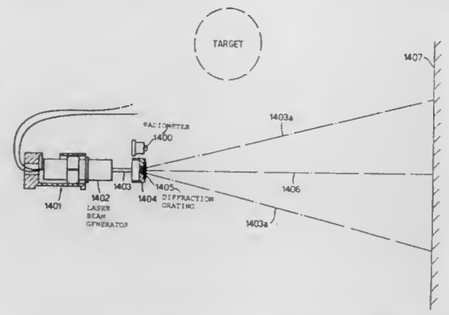
1. A method of detecting and identifying at least one substance contained in a sample which also contains a reference material comprising the steps of providing said sample at a first temperature; allowing said sample to change from said first temperature to a second temperature; scanning the sample with a means for measuring infrared radiation after said sample has reached said second temperature so as to sense the temperature of said at least one substance and of said reference material; determining the temperature difference between said at least one substance and said reference material; and identifying said at least one substance by the temperature difference between said at least one substance and the reference material.

5,823,678

LIGHT SOURCE AIMING SYSTEM AND METHOD FOR HAND-HELD TEMPERATURE MEASURING UNIT

Milton Bernard Hollander, and William Earl McKinley, both of Stamford, Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 617,265, Mar. 18, 1996, Pat. No. 5,727,880, which is a continuation-in-part of Ser. No. 348,978, Nov. 28, 1994, Pat. No. 5,524,984, which is a continuation of Ser. No. 121,916, Sep. 17, 1993, Pat. No. 5,368,392.
This application Dec. 11, 1996, Ser. No. 764,659
Int. Cl.[6] G01K 1/00; G01J 5/02; G01B 11/00; F21V 21/30
U.S. Cl. 374—121 13 Claims



1. A method for outlining an energy zone on a surface whose temperature is to be measured using the combination of a radiometer and a laser aiming device, said method comprising the steps of providing said laser device associated with said radiometer, and causing said device to emit simultaneously a plurality of more than two laser beams towards said surface to strike said surface at individual mutually spaced locations to outline said energy zone.

3. A combination of a radiometer and apparatus for outlining an energy zone on a surface whose temperature is to be measured using said radiometer, said apparatus comprising: a laser sighting device cooperating with said radiometer, said laser sighting device including a device for emitting simultaneously a plurality of more than two laser beams to strike said surface at individually spaced apart locations serving to outline said energy zone.

5,823,679

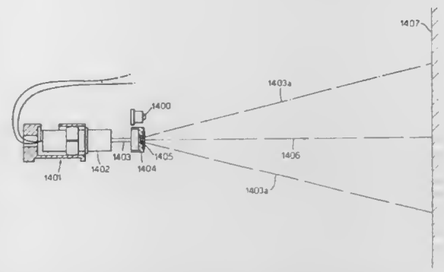
METHOD AND APPARATUS FOR MEASURING TEMPERATURE INCLUDING AIMING LIGHT

Milton Bernard Hollander, and William Earl McKinley, both of Stamford, Conn., assignors to Omega Engineering, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 764,659, Dec. 11, 1996, and Ser. No. 617,265, Mar. 18, 1996, Pat. No. 5,727,880, which is a continuation-in-part of Ser. No. 348,978, Nov. 28, 1994, Pat. No. 5,524,984, which is a continuation-in-part of Ser. No. 121,916, Sep. 17, 1993, Pat. No. 5,368,392. This application Apr. 28, 1997, Ser. No. 848,012
Int. Cl.[6] G01K 1/00; G01J 5/02; G01B 11/00; F21V 21/30
U.S. Cl. 374—121 53 Claims

1. A method for outlining an energy zone on a surface whose temperature is to be measured using the combination of a temperature measurement device and a laser sighting device, said method comprising the steps of providing a laser sighting device associated with said temperature measurement device and causing said laser device to emit a plurality of at least three laser beams toward said surface to strike said surface simultaneously at mutually spaced locations serving to outline said energy zone.

13. The combination of a temperature measurement device and a laser sighting device cooperating with said measurement device for outlining an energy zone to be measured by said temperature measurement device when measuring the temperature of a surface, said sighting device projecting more than two laser beams simultaneously toward said surface and causing said laser beams to outline the periphery of said zone.

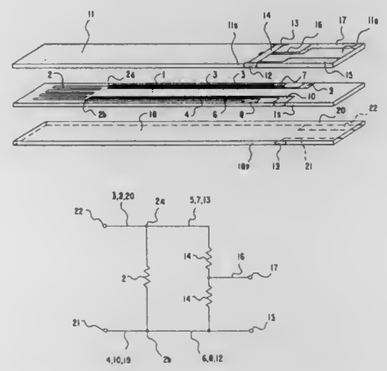


5,823,680

TEMPERATURE SENSOR

Nobuhide Kato, Aichi-prefecture, and Nobukazu Ikoma, Nagoya, both of Japan, assignors to NGK Insulators, Ltd., Nagoya, Japan

Continuation of Ser. No. 354,828, Dec. 8, 1994, abandoned.
This application Mar. 11, 1997, Ser. No. 815,431
Claims priority, application Japan, Dec. 27, 1993, 5-329306
Int. Cl.[6] G01K 7/18; H01C 3/04;1/012
U.S. Cl. 374—185 16 Claims



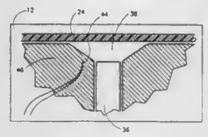
1. A temperature sensor comprising:
a ceramic substrate having a first end and a second end:
a sensing resistor, being embedded in said ceramic substrate at said first end, having a positive temperature coefficient of resistance;
a first pair of leads connected to said sensing resistor, wherein electric current can be applied to said sensing resistor through said first pair of leads;
a second pair of leads connected to said sensing resistor; and
a voltage-dividing resistor disposed at said second end of said ceramic substrate, and electrically connected to said sensing resistor by means of said second pair of leads, said voltage-dividing resistor having an electrical resistance value such that upon applying electric current having a certain fixed value to said sensing resistor, a voltage, which can be detected between said second pair of leads and is indicative of a change in temperature of the sensing resistor, is generated across said sensing resistor, said voltage being divided so that an output voltage between one of said second pair of leads and at least a portion of said voltage dividing resistor is adjusted to be a predetermined value.

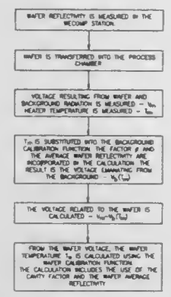
5,823,681

MULTIPOINT TEMPERATURE MONITORING APPARATUS FOR SEMICONDUCTOR WAFERS DURING PROCESSING

Dario Cabib, Timrat; Robert A. Buckwald, Ramat Ishay, and Michael E. Adel, Zichron Yakov, all of Israel, assignors to C.I. Systems (Israel) Ltd., Migdal Haemek, Israel

PCT No. PCT/US95/08521, § 371 Date Feb. 29, 1996, § 102(e) Date Feb. 29, 1996, PCT Pub. No. WO96/04534, PCT Pub. Date Feb. 15, 1996
PCT Filed Jul. 12, 1995, Ser. No. 604,997
Claims priority, application Israel, Aug. 2, 1994, 110549
Int. Cl.[6] G01J 5/08;5/02;5/28;5/62;5/06
U.S. Cl. 374—126 21 Claims





12. An emissivity compensating non-contact system for measuring the temperature of a semiconductor wafer, comprising:
(a) a semiconductor wafer emissivity compensation station for measuring the reflectivity of said wafer at discrete wavelengths;
(b) a measurement probe which is optically coupled to a semiconductor process chamber, said probe sensing wafer self emission by means of at least one optical detector and a light modulator, each of said at least one optical detector being optically coupled to the wafer by means of a transparent rod, said process chamber including a reflective cavity surface between said transparent rod and the wafer;
(c) background temperature determining means for independently sensing the temperature of a source of background radiation; and
(d) means for calculating the temperature of said semiconductor wafer based on said reflectivity, self-emission and background temperature.

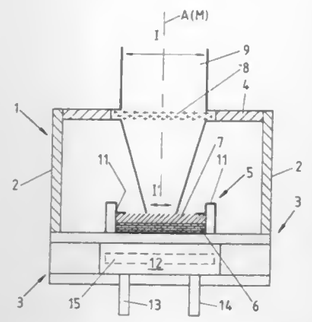
5,823,682

THERMOELECTRIC SENSOR

Josef Betz, Regensburg, Germany, assignor to Fortech HTS GmbH, Regensburg, Germany

Filed Feb. 6, 1997, Ser. No. 795,572
Claims priority, application Germany, Feb. 14, 1996, 196 05 384.6
Int. Cl.[6] G01J 5/00
U.S. Cl. 374—130 10 Claims

1. A thermoelectric sensor for determining or measuring the thermal power of radiation, especially laser radiation, having at least one thermoelectric detector or sensor element which has an active detector surface of a thin active layer (7) of a crystalline solid with anisotropic thermoelectric power, and in which a surface



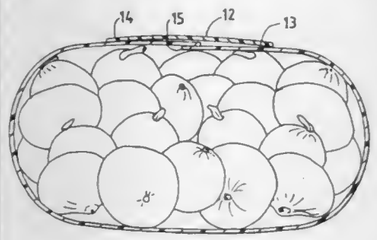
perpendicular of the layer does not coincide with one of the primary anisotropy directions, said thin active layer (7) having at least two contacts (10) for tapping a voltage dependent on the thermal output, comprising, in the path of a beam (9) to be measured, an optical means (8), which images said beam on said surface of said active layer (7) in a spot with a diameter (I') which is smaller in each axial direction lying in a plane of said surface of said active layer (7) than a dimension of said active layer (7) in a pertinent axial direction, and further comprising a cooling arrangement (12, 13, 14, 15) for said sensor element (5) which is made symmetrically to a center plane (M) which is located perpendicularly to said surface of said active layer (7) and to which said sensor element (5) is made mirror-symmetrical.

5,823,683

SELF-SEAMING PRODUCE BAG

Paul N. Antonacci, Atlanta, and Craig R. Rusert, Dunwoody, both of Ga., assignors to Amoco Corporation, Chicago, Ill.

Filed Oct. 23, 1996, Ser. No. 735,701
Int. Cl.[6] B65D *30/06*
U.S. Cl. 383—107 **17 Claims**



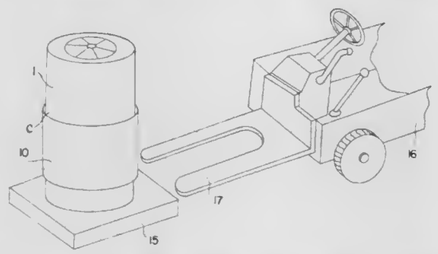
1. A produce bag comprising an open mesh fabric that defines a product-receiving and -containing space terminating at a closed, butt end of the bag, with the fabric defining at an opposed end of the space an open end capable of being closed, said bag having the fabric heat sealed to itself to form at least one longitudinal seam extending from the butt end to the opening, and wherein the fabric is heat sealable to itself and has a coefficient of friction according to ASTM 3334-80 Section 15 of less than about 30° and a Grab Strength according to ASTM 5034-95 with the fabric cut at a 45° angle to a machine direction thereof such that load at 10% elongation is at least about 0.5 pound.

5,823,684

PROTECTIVE BELT FOR A DRUM FORMED BY A TRANSPORT BAG FOR POWDERY MATERIALS

Francis Valeri, Valence, France, assignor to Europeenne de Retraitement de Catalyseurs Eurecat, France

Continuation-in-part of Ser. No. 684,393, Jul. 19, 1996, abandoned. This application Oct. 2, 1997, Ser. No. 935,340
Claims priority, application France, Jul. 21, 1995, 95 08986
Int. Cl.[6] B65D *33/02*
U.S. Cl. 383—119 **5 Claims**



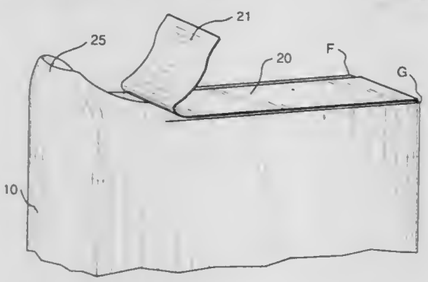
1. In combination with a flexible transport bag of a circular cross-section and having a bottom portion, a top portion and an intermediate portion therebetween, wherein when the bag is filled with a bulk material, the bag is stiffened and, wherein the bag when filled rests on the bottom end thereof, a reinforcing band comprised of a non-elastic web and having first and second relieved portions; at least one first flexible tie at the first relieved portion of the band and at least one second flexible tie at the second relieved portion of the band, the first and second ties being tied to one another to fix the diameter of the reinforcing band when fitted around the bag, the reinforcing band being placed around the intermediate portion of the bag with the bottom and top portion of the bag being exposed to provide a substantially cylindrical, stiff reinforcing band when the bag is filled with the bulk material.

5,823,685

PEEL-AWAY CLOSURE FOR A BAG

Dietmar Garlichs, Wetter, Germany, assignor to Ardex Inc., Coraopolis, Pa.

Filed Sep. 19, 1996, Ser. No. 715,555
Int. Cl.[6] B65D *33/18*
U.S. Cl. 383—211 **26 Claims**



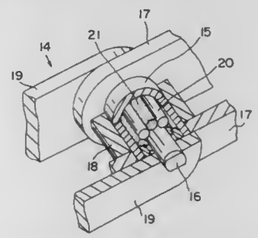
1. A bag containing a flowable material, the bag comprising:
a tubular sidewall;
a pair of oppositely disposed inwardly folded corner tucks at an end of the sidewall;
a pair of oppositely disposed inwardly folded overlapping side flaps at the end of the sidewall lying adjacent the corner tucks;
a flowable material contained in the bag; and
peel-away sheet means removably secured to the corner tucks and side flaps and including a graspable tab portion adjacent one of the corner tucks for allowing the tab portion to be grasped and peeled away from the adjacent corner tuck to allow the adjacent corner tuck to be unfolded to open the bag and to allow the flowable material to be removed from the bag while a portion of the peel-away sheet means remains secured to at least a portion of each of the side flaps.

5,823,686

CHAIN WITH OILLESS ANTIFRICTION BEARING

Tetsuya Murano, and Hiroshi Nishimura, both of Osaka-fu, Japan, assignors to Tsubakimoto Chain Co., Osaka-fu, Japan

Filed Aug. 5, 1996, Ser. No. 692,258
Claims priority, application Japan, Aug. 7, 1995, 8-200919
Int. Cl.[6] F16C *33/66*
U.S. Cl. 384—492 **11 Claims**



1. A chain comprising a series of interconnected links, each link having a pair of parallel link plates, a bush extending between said link plates at each end of the parallel link plates, a hollow cylindrical chain roller mounted on each bush, and an oilless antifriction bearing positioned between said bush and said roller, said bush providing an inner ring race and said hollow roller providing an outer ring race of said bearing, and rolling elements in the annular space between said inner and outer ring races, said space operable to have free particles therein, the improvement wherein
said rolling elements comprise metallic elements and polyethylene elements mounted in circumferential alternation within said annular space,
said metallic rolling elements constituting load-bearing components between said inner and outer ring races, and being rotated by frictional engagement therebetween,
said polyethylene elements comprising a polyethylene composition which allows particles to become embedded in said polyethylene composition which entraps any of said free particles and prevents their entry between said metallic rolling elements and said inner and outer ring races.

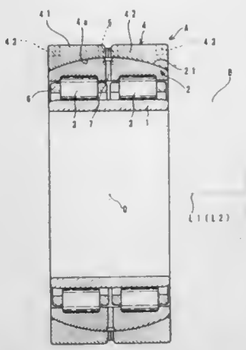
5,823,687

ROLLING BEARING WITH ALIGNING RING

Shinya Matsuda, Yao, Japan, assignor to Koyo Seiko Co., Ltd., Chuo-ku, Japan

Filed Mar. 24, 1997, Ser. No. 822,502
Claims priority, application Japan, Mar. 25, 1996, 8-096296
Int. Cl.[6] F16C *19/28*
U.S. Cl. 384—558 **2 Claims**

1. A rolling bearing, comprising:
a) a cylindrical roller bearing including:
1) an inner ring;
2) an outer ring having an outer periphery with a spherical portion; and
3) rolling elements, interposed between the inner and outer rings, and arranged in a plurality of rows;
b) an aligning ring having an imaginary axis and an inner periphery with a spherical portion conforming to the outer ring's spherical portion, and supporting and aligning with the outer ring, wherein the aligning ring includes:



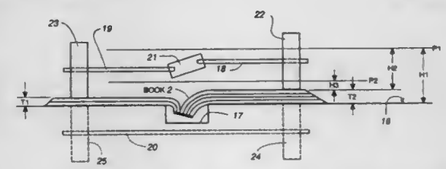
1,2) first and second annular members arranged face-to-face on opposite sides of an imaginary plane that is perpendicular to the aligning ring's axis, at a center position of the aligning ring in the aligning ring's axial direction, the first and second annular members being mutually uncoupled and separable from each other in the axial direction;
c) a first knock pin that couples the annular members to the outer ring so as to prevent relative circumferential rotation between the annular members and the outer ring; and
d) second and third knock pins engaging respective notches at axially outer ends of outer peripheries of the respective first and second annular members.

5,823,688

PRINTER INCLUDING IMPROVED PRINT HEAD CONTROL

Tokio Mizukami, Ayase, and Hiroshi Fujikura, Yokohama, both of Japan, assignors to International Mfg. and Engineering Services Co., Kana-Gawa-ken, Japan

Filed Apr. 24, 1997, Ser. No. 840,037
Claims priority, application Japan, Apr. 25, 1996, 8-105760
Int. Cl.[6] B41J *3/28*
U.S. Cl. 400—27 **10 Claims**



1. In a printer in which a print head is moved on a sheet placed on a planar supporting surface in a predetermined print direction, and said sheet is fed in a perpendicular direction to said print direction to print a plurality lines, said printer comprising:
a guide bar slidably mounting said print head thereon;
a supporting frame for supporting said guide bar in parallel to said supporting surface and said print direction, said supporting frame supporting said guide bar for movement upwardly or downwardly to position a lower end of said print head relative to said supporting surface, and said supporting frame being downwardly biased by a bias force;
a driving lever driven during non-print operation for moving upwardly with respect to said supporting frame to raise said lower end of said print head to an initial position located above said supporting surface, which is spaced from said supporting surface by a predetermined distance, and for maintaining said lower end of said print head at said initial position, said driving lever, during print operation, being driven for moving upwardly or downwardly with respect to said supporting frame, in which, when said driving lever is driven in the direction for moving upwardly with respect to said

supporting frame, said driving lever engaging with said supporting frame to move upwardly relative to said supporting frame against said bias force, and when said driving lever is driven in the direction for moving downwardly said supporting frame, said driving lever engages with said supporting frame to suppress a rapid downward movement of said supporting frame due to said bias force to slowly move downwardly said supporting frame, and said driving lever continuously moving downwardly during the time a driving force is applied to said driving lever, and disengaging from said supporting frame after said lower end of said print head lands on said sheet placed on said supporting surface;

a driving source for applying said driving force to said driving lever;

a detecting device for detecting an occurrence of a clearance between said driving lever and said supporting frame occurred by said disengagement of said driving lever from said supporting frame during said continuous movement of said driving lever; and

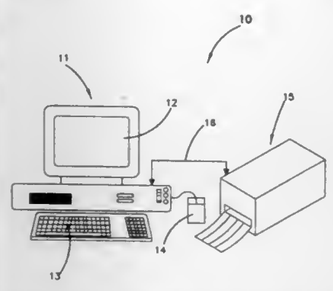
a control device responding to a print start signal for activating said driving source to apply said driving lever with a downward driving force for moving said supporting frame downwardly, and said control device responding to a detecting signal indicating said occurrence of clearance generated by said detecting device to deactivate said driving source to terminate the application of said downward driving force to said supporting frame to hold said driving lever at its stopped position, said control device responding to a completion of print operation of one line of said sheet to activate said driving source to apply said driving lever with an upward driving force for moving upwardly said driving lever from said stopped position to engage with said supporting frame to move upwardly with respect to said supporting frame.

5,823,689

COMPUTER SYSTEM WITH BI-DIRECTIONAL COMMUNICATION AND METHOD

Kelly R. Nehowig, Maple Grove; Scott W. Kullman, Plymouth, and Douglas R. Kremers, Maple Grove, all of Minn., assignors to Varitronic Systems, Inc., Minneapolis, Minn.

Filed Mar. 19, 1996, Ser. No. 618,216
Int. Cl.[6] B41J *3/46*
U.S. Cl. 400—83 **14 Claims**



1. A computer system for utilizing data representing parameters of a supply roll, the supply roll being retained on a cartridge detachably loaded in a printing machine to permit a user to create a desired output on a display device of a computing device, said printing machine operatively connected to a communication port of said computing device for bi-directional communication therebetween, said computer system comprising:

a memory circuit component attached to said cartridge and including a plurality of memory addresses for storing said supply roll parameter data in said plurality of memory addresses, said memory circuit component being electrically connected to said printing machine;

first program means stored in said computing device for transmitting first electronic signals to said printing machine, said first electronic signals representing requests for said supply roll parameter data;

second program means stored in said printing machine for receiving said first electronic signals from said computing device, for retrieving said supply roll parameter data from said plurality of memory addresses in said memory circuit component in response to said first electronic signals received from said computing device, and for transmitting second electronic signals representing said supply roll parameter data retrieved from said plurality of memory addresses in said memory circuit component;

said first program means further including means for receiving said second electronic signals representing supply roll parameter data and for formatting said supply roll parameter data to create and display on said display device a digitized pattern corresponding to said supply roll; and

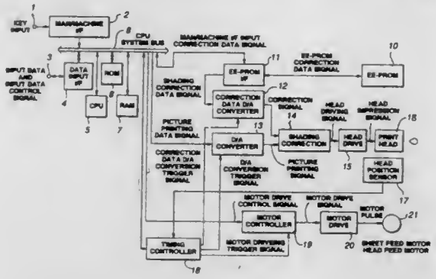
data creation means for permitting said user to create a desired output on said display device while said digitized pattern is displayed on said display device, said data creation means displaying said desired output with said digitized pattern on said display device.

5,823,690

PRINTER APPARATUS

Toshio Narushima, Kanagawa; Koichiro Kakinuma, Tokyo; Masao Araya, Kanagawa; Shinichiro Mikami, and Junko Ikegami, both of Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 23, 1996, Ser. No. 717,605
Claims priority, application Japan, Sep. 29, 1995, 7-254265
Int. Cl.[6] B41J *2/05;2/36*
U.S. Cl. 400—120.07 **4 Claims**



1. A printer apparatus for printing a half-tone picture by varying the diameter of an ink dot formed on a recording medium, comprising:

a plurality of pressure chambers into which an ink is introduced;

a plurality of nozzles respectively communicating with a plurality of said pressure chambers;

a plurality of pressurizing means provided in association with said nozzles and adapted for pressurizing the ink in said pressure chambers;

means for inputting a picture printing signal;

analog picture printing signal conversion means for analogically converting the input picture printing signal;

memory means for storing a correction value which renders ink-emitting properties of said pressurizing means uniform;

analog correction value conversion means for analogical conversion of said correction value; and

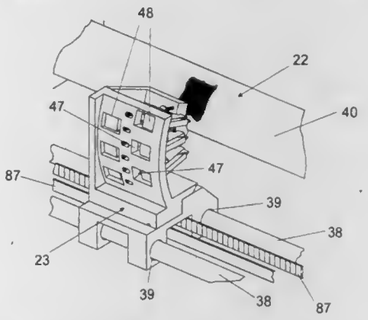
head driving condition setting means for setting the head driving conditions by said correction value and said picture printing signal as converted by analog picture printing conversion means and by said analog correction value conversion means, respectively.

5,823,691

METHOD AND APPARATUS FOR PRODUCING EMBOSSED IMAGES

Peter S. Langner, Corvallis, Oreg., assignor to The State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, Corvallis, Oreg.

Filed May 15, 1997, Ser. No. 857,475
Int. Cl.[6] B41J *3/38*
U.S. Cl. 400—127 **14 Claims**



1. An embosser for forming raised areas in a planar sheet, the embosser comprising:

an embosser platen having a surface which includes an array of elevated and depressed regions;

an embossing head that is movable relative to the platen and that bears at least one punch mechanism comprising an embossing tool having an embossing face and an actuator to move the tool toward the platen while the face of the tool is located opposite one of the depressed regions of the platen and while a sheet to be embossed is located between the platen and the head; and

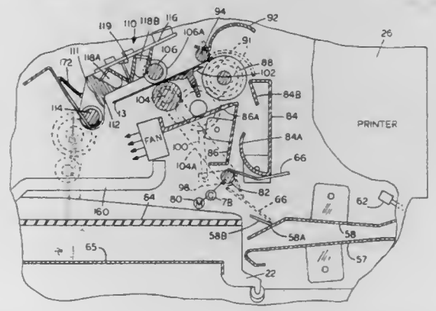
a positioning apparatus which includes a motor to vary the location of the embossing head relative to the sheet and to the platen such that the embossing face is positioned opposite one of the depressed regions of the platen to emboss the sheet at a desired location.

5,823,692

OPTICAL REGISTRATION SYSTEM FOR LABEL PRINTER CUTTER ATTACHMENT

Michael R. Tolrud, Chaska; Matthew K. Dunham, Eagan, and Gary M. Klinefelter, Eden Prairie, all of Minn., assignors to Fargo Electronics, Inc., Eden Prairie, Minn.

Continuation-in-part of Ser. No. 709,689, Sep. 9, 1996. This application Apr. 28, 1997, Ser. No. 847,712
Int. Cl.[6] B41J *11/44*
U.S. Cl. 400—582 **15 Claims**



12. A method of detecting registration marks on a sheet using a sensor that is movable along at least one axis relative to the sheet, comprising the steps of:

providing a registration mark on the sheet having a contrasting reflectivity relative to the surface of the sheet;

providing a pair of light sources of different colors to direct light onto the sheet and a light sensor to sense reflected light from the sheet;

energizing one of the light sources and relatively moving the one light source and light sensor across the registration mark and determining whether the presence of a registration mark is sensed by the light sensor; and

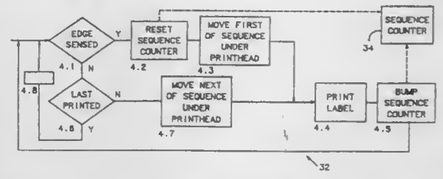
in response to a determination that the registration mark is not sensed selecting the second light source and relatively moving the second light source and light sensor across the registration mark to sense the position of the registration mark.

5,823,693

GAPLESS LABEL MEDIA AND PRINTING APPARATUS FOR HANDLING SAME

Thomas A. Henderson, Clarksville, Ohio; Thomas A. Sweet, Everett, and Joel A. Schoen, Woodinville, both of Wash., assignors to Intermec IP Corp., Beverly Hills, Calif.

Continuation-in-part of Ser. No. 566,423, Nov. 30, 1995, abandoned. This application Mar. 27, 1997, Ser. No. 824,961
Int. Cl.[6] B41J *11/26*
U.S. Cl. 400—611 **33 Claims**



1. A gapless label media for use in a printer having a sensor capable of sensing a leading edge of a label, said gapless media comprising:

a strip of media comprising a plurality of labels positioned with leading and trailing edges of adjacent ones of said plurality of labels abutting one another and defining a gapless boundary therebetween,

said plurality of labels comprising a plurality of sequences of equal numbers of said labels with a first label of each sequence of said labels having a leading edge which is sensible.

5,823,694

CUTTING DEVICE FOR CUTTING TAPE MATERIAL AND PRINTING APPARATUS INCORPORATING THE CUTTING DEVICE

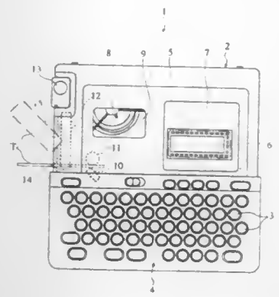
Toshimasa Ikegami, Nagano, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Nov. 8, 1996, Ser. No. 773,640
Int. Cl.[6] B41J *11/06*
U.S. Cl. 400—621 **30 Claims**

22. A printing apparatus, comprising:

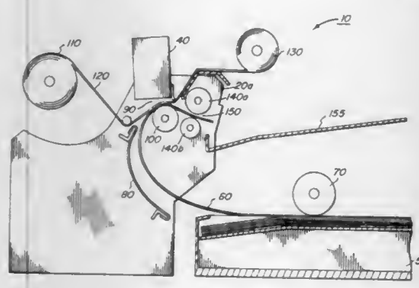
cutting means for cutting a tape material, said cutting means including tape-cutting means for cutting off tape material, said tape-cutting means having a pair of tape-cutting edges which slide past each other to thereby cut said tape material to a cut-off piece having a predetermined length, end-trimming means for trimming an end of said cut-off piece, said end-trimming means having a pair of end-trimming edges which slide past each other to thereby trim said end of said cut-off piece into a predetermined shape, and cutting operation means provided as a single component for causing said tape-cutting means and said end-trimming means to perform cutting operations, respectively;

printing means for printing a portion of said tape material as desired; and



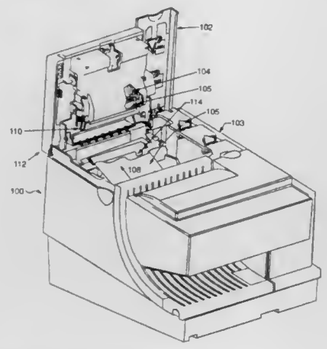
tape-feeding means for feeding said tape material to bring said tape material to said cutting means.

5,823,695
IMAGING APPARATUS INCLUDING A GUIDE FOR GUIDING A RECEIVER MEDIUM THERETHROUGH WITH REDUCED FRICTION AND A GUIDE ASSEMBLY METHOD THEREFOR
John A. Bock, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 10, 1997, Ser. No. 833,856
Int. Cl.[6] B41J *13/10*
U.S. Cl. 400—642 **9 Claims**



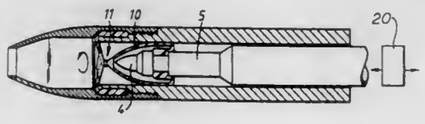
7. A guide assembly method, comprising the steps of:
(a) providing a support frame having a pair of apertures therethrough;
(b) connecting an image-forming unit to the frame for forming an image on a receiver medium;
(c) connecting a single elongate and flexible guide to the frame for guiding the receiver medium along the guide and to the image forming unit, the guide defining a longitudinal axis therethrough and having a pair of opposed parallel edges thereof extending parallel to the longitudinal axis, said guide including a par of elongate mounting members attached along respective ones of the edges, each of the mounting members having a projection extending therefrom for engaging respective ones of the apertures, whereby the guide is capable of flexing about the longitudinal axis for bringing the projections into alignment with respective ones of the apertures for assembling the guide to the frame, said guide having a predetermined coefficient of sliding friction low enough to allow the receiver medium to freely slide therealong;
(d) bringing the projections into alignment with respective ones of the apertures, so that the projections align with the apertures as the guide flexes; and
(e) engaging the projections with the apertures as the projections align with the apertures, in order to assemble the guide to the frame as the projections engage the apertures.

5,823,696
PRINTER HAVING A PAPER OUT/COVER OPEN SENSOR AND METHOD THEREFOR
Richard Hunter Harris, Raleigh, and Ronald Gary King, Apex, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Aug. 28, 1997, Ser. No. 919,910
Int. Cl.[6] B41J *29/18*
U.S. Cl. 400—708 **5 Claims**



1. A printer having a switch, comprising:
a body;
a paper path contained within the body for routing paper, the paper path having a gap which is spanned by paper present in the paper path;
a cover coupled to the body; and
a switch coupled to the cover, the switch having an extended actuator arm having a first position and a second position, the arm being in the first position when the cover is in a third position and the paper spans the gap in the paper path and wherein the arm moves into the second position by either falling into the gap when paper is not present in the paper path or when the cover is in a fourth position.

5,823,697
MARKING INSTRUMENT WITH SEALABLE DIAPHRAGM
John Mitchell Talbot, Gosport, United Kingdom, assignor to The Gillette Company, Boston, Mass.
Filed Jun. 14, 1995, Ser. No. 489,981
Claims priority, application United Kingdom, Jan. 14, 1993, 9300662
Int. Cl.[6] B43K *9/00*
U.S. Cl. 401—108 **8 Claims**

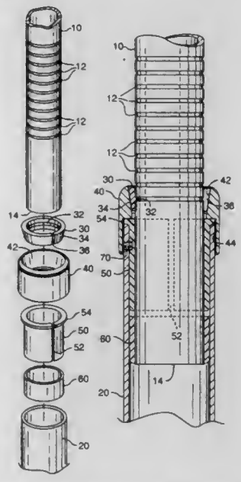


1. A retractable marking instrument comprising:
a barrel having a marker unit with a marking tip disposed therein, said marker unit being movable longitudinally relative to a surrounding part of said barrel for displacement of said marking tip between operative and retracted positions; and
a flexible annular diaphragm having the inner edge thereof sealingly connected to said marking unit and the outer edge sealingly connected to said barrel surrounding part, said marking unit and said barrel surrounding part being rotatable relative to one another to cause said diaphragm to form a sealed enclosure around said tip in the retracted position.

5,823,698

Patent Not Issued For This Number

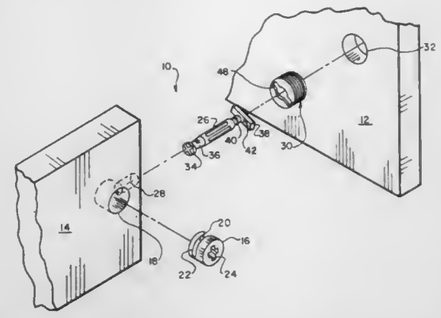
5,823,699
POST HEIGHT ADJUSTMENT FOR DENTAL EQUIPMENT
George K. Austin, Jr., Newberg, and Stephen N. Weiler, Tualatin, both of Oreg., assignors to A-Dec, Inc., Newberg, Oreg.
Filed Apr. 6, 1995, Ser. No. 417,981
Int. Cl.[6] F16B *7/10*
U.S. Cl. 403—109 **14 Claims**



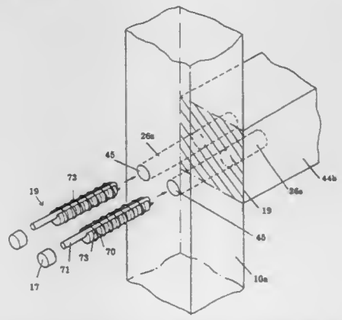
1. A system for adjusting the height of a post, comprising:
a tubular bottom post;
a top post insertable into the bottom post and having a plurality of outer grooves formed therein;
an expandable stop ring removably attached to the top post around one of the grooves, the stop ring being split to facilitate expansion of the stop ring, thereby to permit relocation of the stop ring to another one of the grooves on the top post; and
a keeper carried by the bottom post and defining between the top post and the keeper an annular space into which fits the attached stop ring, the keeper preventing expansion of the stop ring away from the top post when the stop ring is fit into the annular space.

5,823,700
DRAWER FRONT FASTENER
Robert C. Poworoznek, Jamestown, N.Y., assignor to Bush Industries, Inc., Jamestown, N.Y.
Filed Sep. 18, 1996, Ser. No. 710,672
Int. Cl.[6] F16B *12/24*; **A47B** *88/00*
U.S. Cl. 403—245 **18 Claims**

1. A fastener assembly for releasably and adjustably coupling elements together, said fastener assembly comprising:
a fastening rod extending between the elements, said rod including an elongate member at one end thereof extending substantially transverse to a longitudinal length of said rod; and
a base housing mounted within one of the elements, said base housing including a substantially cylindrical peripheral wall, a face member at one end of said cylindrical peripheral wall and extending substantially transverse to said longitudinal length of said rod, and a slot extending through said face member, said slot adapted to receive said elongate member therethrough, wherein said fastening rod is rotated to a secured position after receipt of said elongate member therethrough, wherein said elongate member overlaps said face member and said length of said rod is substantially parallel with a longitudinal axis of said cylindrical peripheral wall when said fastening rod is in said secured position.



5,823,701
CONNECTOR, METHOD FOR CONNECTING STRUCTURAL MEMBERS WITH CONNECTOR AND CONNECTION STRUCTURE BETWEEN STRUCTURAL MEMBERS
Yasuo Goto, Oita, Japan, assignor to Home Co., Ltd., Oita, Japan
Division of Ser. No. 67,576, May 26, 1993, Pat. No. 5,466,086.
This application Oct. 13, 1995, Ser. No. 542,553
Claims priority, application Japan, Apr. 14, 1993, 5-112261; Apr. 20, 1993, 5-117907; Apr. 20, 1993, 5-117908; May 18, 1993, 5-139937
Int. Cl.[6] F16B *13/00*
U.S. Cl. 403—268 **6 Claims**



1. A connector comprising an elongate member having an axial groove formed at an outer circumference thereof in a longitudinal direction and a pipe-like part fitted to said groove with one end thereof being opened at a first end of said elongate member and the other end of said pipe-like part being extended from a second end of said elongate member wherein the pipe-like part fits within said groove so that the pipe-like part fits within the outer circumference of said elongate member and said connector further comprising a plurality of spike like protrusions originating at said first end of said elongate member wherein said spike like protrusions engage

the bottom of a bore hole and thereby provide a space between the bottom of said bore hole and said first end thereby facilitating flow of an adhesive from said from said pipe-like part, said spike like protrusions further impeding the ability of said connector to rotate in said bore hole.

5,823,702

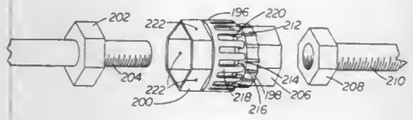
FLUID COUPLING AND FASTENER CAPTURE DEVICE

Kurt K. Bynum, 7491 Fosdick Rd., Saline, Mich. 48176

Continuation-in-part of Ser. No. 335,638, Nov. 8, 1994, Pat. No. 5,586,790, which is a continuation-in-part of Ser. No. 826,005, Jan. 27, 1992, Pat. No. 5,362,110, and Ser. No. 660,645, Feb. 25, 1991, Pat. No. 5,083,819. This application Dec. 24, 1996, Ser. No. 773,056

Int. Cl.[6] F16L *55/00*

U.S. Cl. 403—320 **5 Claims**



1. A capture device and threaded fastener combination comprising a plurality of tangs extending substantially in parallel longitudinally and axially, a thrust washer, said tangs attached at one end of each tang to the thrust washer adjacent the periphery of the thrust washer to form a single integral tang portion,

a threaded fastener portion configured for mounting of the tang portion thereon with substantially free relative axial movement of the tang portion and threaded fastener portion therebetween,

interengaging means between the tang portion and threaded fastener portion preventing relative rotational motion therebetween upon mounting,

a complementary threaded fastener portion formed with a detent portion comprising a plurality of detents separated by peaks in a substantially cylindrical configuration,

said plurality of tangs flexing longitudinally in engagement with the detent portion as the threaded fastener portions are rotationally engaged and as the tangs ratchet over the peaks between the detents,

said plurality of tangs caused to engage with the detent portion by resistance to axial movement of the tang portion in response to seating of the tang portion thrust washer.

5,823,703

SHAFT COUPLING

Steven Mark Thomas, Saginaw; Kevin Carlton Ross, Hemlock, and Michael Francis Slasinski, Saginaw, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 767,741, Dec. 17, 1996, abandoned. This application May 30, 1997, Ser. No. 866,792

Int. Cl.[6] F16B *2/10*

U.S. Cl. 403—373 **8 Claims**

1. A shaft coupling between a first shaft and a second shaft comprising:

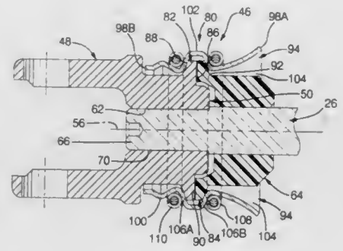
a socket in an end of one of said first shaft and said second shaft,

a plug on an end of the other of said first shaft and said second shaft disposed in said socket and cooperating therewith in coupling said first shaft and said second shaft for unitary rotation about a longitudinal centerline of said shaft coupling,

an annular first flange on said first shaft,

an annular second flange on said second shaft, and

a clamp means on said first shaft and on said second shaft operable in quick-connect fashion when said first shaft and said second shaft are advanced in relative linear translation toward each other to clamp together said first and said second flanges in the direction of said longitudinal centerline of said shaft coupling to prevent dislodgment of said plug from said socket, said clamp means including jaw means yieldable elastically to permit said relative translation and to effect such clamping together.



5,823,704

HOLDING DEVICE FOR THE ANCHORAGE OF SINGLE- OR MULTILAYER WEBS TO A STATIONARY STRUCTURAL MEMBER

Hans-Jürgen Koch, and Klaus-Michael Koch, both of Rimstring, Germany, assignors to Koch Konstruktive Membranen GmbH & Co., K.G., Rimsting, Germany

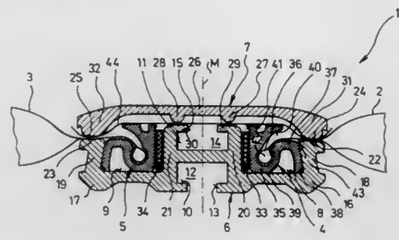
PCT No. PCT/EP96/00006, § 371 Date Dec. 13, 1996, § 102(e) Date Dec. 13, 1996, PCT Pub. No. WO96/21072, PCT Pub. Date Jul. 11, 1996

PCT Filed Jan. 3, 1996, Ser. No. 700,445

Claims priority, application Germany, Jan. 3, 1995, 295 00 055 U

Int. Cl.[6] F16B *2/02*

U.S. Cl. 403—396 **12 Claims**



1. A holding device for the anchorage of single- or multi-layered webs, preferably of air-filled cushions, to a stationary structural member, comprising:

a piping profile configured to receive a peripheral thickening of the web; and

a supporting profile that can be attached to the structural member and to which the piping profile can be fixed wherein the supporting profile comprises a receiving space for the piping profile;

a top profile closing the receiving space;

a locking plate between the piping profile and an adjacent interior border wall of the supporting profile to temporarily lock the piping profile in the receiving space; and

a clamp arranged adjacent to the receiving space which, in a mounted state of said piping profile, is configured to support a welding seam area of a double-layer web fixed in the piping profile;

wherein said clamp is formed by two clamping surfaces arranged one on top of the other, the one clamping surface is arranged on an exterior border wall of the receiving space and the other clamping surface is arranged at the top profile.

5,823,705

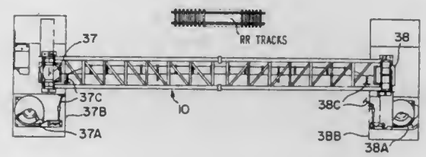
MULTIPURPOSE ENERGY ABSORBING BARRIER SYSTEM

Martin A. Jackson, Warwick, R.I., and John M. Rhatigan, Hudson, Mass., assignors to The Entwistle Company, Hudson, Mass.

Continuation-in-part of Ser. No. 549,510, Oct. 27, 1995, Pat. No. 5,624,203, and Ser. No. 549,508, Oct. 27, 1995, Pat. No. 5,634,738. This application Oct. 18, 1996, Ser. No. 733,523

Int. Cl.[6] E01F *13/00*

U.S. Cl. 404—6 **29 Claims**



1. A restraining barrier system comprising:

first and second vertically disposed towers,

having a restraint zone defined between the lower portions thereof,

first and second transport means slidably mounted to said first and second towers respectively,

drive means for moving said transport means to selectable vertical positions,

at least one of said transport means comprising a first energy absorbing means for providing a first predetermined restraining force,

a restraining barrier means for support between said first and second transport means and being vertically movable therewith,

means for supporting said barrier means to said first and second transport means and for coupling said barrier means to said first energy absorbing means,

said selectable positions including a deployed position in which said restraining barrier means blocks the path of travel of a vehicle through the restraint zone and a passive position in which said restraining barrier is positioned to permit a vehicle to pass therethrough,

at least one second energy absorbing means for providing a second predetermined restraining force, and

said second predetermined restraining force being greater than said first predetermined restraining force,

a support system,

said second energy absorbing means interconnected between said barrier means and said support system and including means for activating said second energy absorbing means after activation of said first energy absorbing means,

said first and said second energy absorbing means being joined in parallel,

whereby a vehicle of a predetermined weight range can be substantially stopped by said first energy absorbing means upon said vehicle engaging with said barrier means and a vehicle of a weight heavier than said predetermined weight range can be substantially stopped by said second energy absorbing means upon said vehicle engaging with said barrier means.

5,823,706

PAVEMENTS

David J Hoare; Imad M Alobaidi, and Gurmel Singh Ghataora, all of Birmingham, Great Britain, assignors to The University of Birmingham, Birmingham, Great Britain

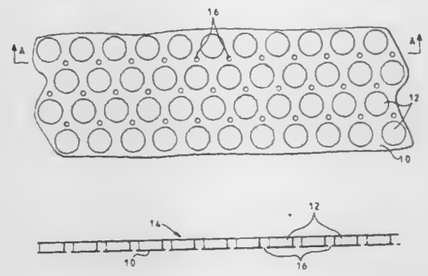
PCT No. PCT/GB94/01603, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/04190, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 26, 1994, Ser. No. 586,905

Claims priority, application United Kingdom, Jul. 27, 1993, 9315514; Mar. 23, 1994, 9405777

Int. Cl.[6] E01B *9/68;* **E01C** *3/06*

U.S. Cl. 404—28 **10 Claims**



10. A layer structure for use at the interface between a pavement subbase or ballast and a subgrade, said layer structure comprising

a lower flexible sheet material having an intermediate load-spreading layer fixed thereto, said load-spreading layer including a multiplicity of load-spreading elements which are held together in a preset arrangement so that gaps are provided between adjacent load-spreading elements for passage of water and to permit said load-spreading layer to flex, and said lower flexible sheet material being one of (a) substantially water impermeable, provided with perforations or slits therethrough at locations which open into the gaps between the load-spreading elements, (b) water vapour permeable, and substantially impermeable to liquid water, and (c) substantially impermeable to liquid water and water vapour, and

an upper flexible sheet material fixed to the load-spreading layer and being water permeable.

5,823,707

SELF-PROPELLED REMOTE-CONTROLLED STONE CRUSHER DESIGNED TO OPERATE INSIDE TRENCHES

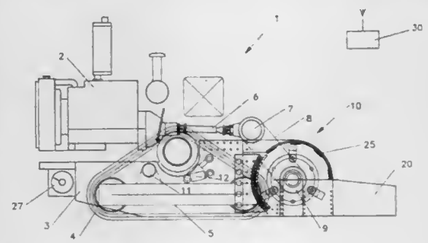
Laurini Lodovico, Busseto, Italy, assignor to Officine Meccaniche Laurini Lodovico & C.S.N.C., Busseto, Italy

Filed Nov. 15, 1996, Ser. No. 751,112

Claims priority, application Italy, Jan. 29, 1996, PC96 A 0002

Int. Cl.[6] E01C *23/08;* **B02C** *4/00;* **A01D** *55/00;* **E21C** *47/00*

U.S. Cl. 404—91 **10 Claims**



1. A self-propelled stone crusher comprising:

a machine chassis (3);

an engine unit (2) fixed to and moveable with said machine chassis;

a stone crushing mill (10) fixed to and moveable with said chassis, said stone crushing mill being connected to said engine unit for crushing stones introduced into said mill;

a crawler support structure (5);

a chassis support shaft (11) connected to and supported by said crawler support structure;

a crawler (4) moveably mounted to said crawler support structure and operatively connected to said engine unit for driving said crawler support structure with said horizontal shaft in a forward direction;

said chassis (3) being pivotally mounted to said chassis support shaft for moving in the forward direction with said crawler support structure; and

inclination control means (12) connected between said crawler support structure and said chassis for controlling an inclination of said chassis with respect to said crawler support structure by pivoting said chassis on said chassis support shaft and thereby controlling an inclination of said crushing mill with respect to said crawler support structure and with respect to said crawler while said crawler moves said chassis in the forward direction.

5,823,708

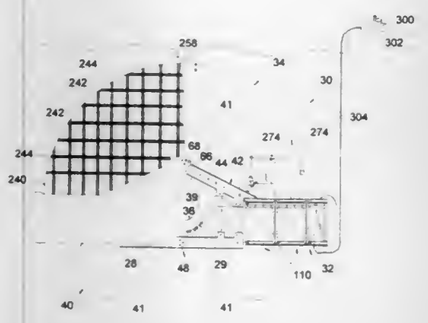
DEVICE WHICH PROVIDES AN UNDERWATER DRY WORKSHOP ENVIRONMENT FOR SHIP PROPELLER INSPECTION AND REPAIR

John M. Dwight, 414 Hewitt Rd., Chehalis, Wash. 98532, and Richard D. Benson, 3106 NW 77th, Seattle, Wash. 98117

Filed Jan. 16, 1996, Ser. No. 587,421

Int. Cl.[6] B63C *11/40;11/00*

U.S. Cl. 405—12 **90 Claims**



1. A habitat for encompassing a propeller on a ship while the ship is on the water and the propeller is in the water and comprising:

a. a truss for operatively connecting with said ship and juxtapositioned to said propeller;

b. a habitat bag which is flexible, yieldable and expandable and of such a size as to fit over the upper part of said propeller;

c. a first means for attaching said habitat bag to said truss; and,

d. a second means for introducing a gaseous fluid into said habitat bag for inflating the habitat bag with said gaseous fluid.

5,823,709

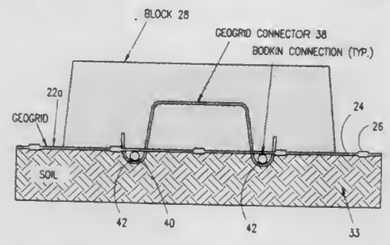
INTERCONNECTED BLOCK SYSTEM

Steve Maher, Orlando, Fla.; Mark Wayne, Alpharetta, and Philip D. Egan, Atlanta, both of Ga., assignors to The Tensar Corporation, Atlanta, Ga.

Continuation-in-part of Ser. No. 677,189, Jul. 9, 1996, abandoned. This application Oct. 15, 1996, Ser. No. 730,600

Int. Cl.[6] E02B *3/14*

U.S. Cl. 405—20 **41 Claims**



1. An interconnected block system comprising

at least one sheet of matrix material having opposite surfaces,

a plurality of block members secured to one of said surfaces of said matrix sheet in a predetermined pattern, and

at least one connector element secured to said matrix sheet for each block member, said connector element comprising a grid-like material including interconnected strands defining a plurality of apertures with portions extending beyond said one surface of said matrix sheet and defining at least one opening spaced from said one surface, the material of said block member extending into said opening and surrounding said portions of said connector element.

5,823,710

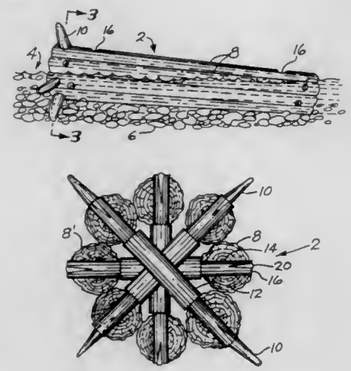
ENGINEERED WOOD STRUCTURES

James H. Dooley, Federal Way, Wash., assignor to Silverbrook Limited, Federal Way, Wash.

Filed Apr. 21, 1997, Ser. No. 844,610

Int. Cl.[6] E02B *3/06*

U.S. Cl. 405—29 **26 Claims**



1. An engineered wood structure that comprises:

an even numbered plurality of logs arranged in side-by-side contact around a longitudinal axis into an essentially hollow, generally cylindrical or frustroconical structure,

the logs located on opposite sides of the structure being joined into pairs by spars, one spar being located near each end of the logs, each spar lying on a line defining a diameter of the structure so that the spars are essentially normal to and pass through the longitudinal axis of the structure,

adjacent log pairs having the spars sufficiently displaced longitudinally so that the spars of one pair may be in contact with the spars of an adjacent pair but otherwise do not interfere spatially,

whereby the logs and spars when assembled form a rigid, unitary, interlocked structure capable of being handled and deployed as a unit.

5,823,711

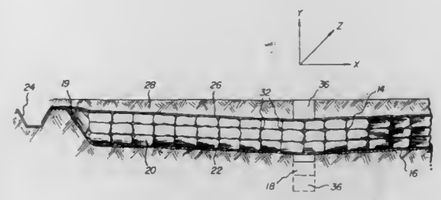
WATER DRAINAGE AND COLLECTION SYSTEM AND METHOD OF CONSTRUCTION THEREOF

Ian M. Herd; Gary Herd, both of Toronto, Canada; Laird C. Jenkins, and James E. A. Maxwell, both of Pinehurst, N.C., assignors to Environmental Golf System U.S.A., Inc., Pinehurst, N.C.

Filed Nov. 1, 1995, Ser. No. 548,317

Int. Cl.[6] E02B *13/00*

U.S. Cl. 405—36 **14 Claims**



1. A water drainage and collection system comprising:

a channel having a bottom and side wall surfaces;

a water impervious liner positioned adjacent the bottom and side wall surfaces of said channel;

a plurality of scrap tire components positioned within said channel and over said water impervious liner, each of said scrap tire components of said plurality of scrap tire components comprising a bale composed of approximately 90 to 105 scrap tires;

a water pervious membrane positioned adjacent and above said plurality of scrap tire components; and

a layer of earth positioned adjacent and above said water pervious membrane,

whereby rain and irrigation water can flow through said layer of earth and water pervious membrane, percolate through said plurality of scrap tire components, and flow over said liner toward a low collection point within said channel.

5,823,712

METHOD AND INSTALLATION FOR LAYING A PIPELINE ON A SURFACE LOCATED UNDER WATER

Piet Kalkman, Waddinxveen; Joop Roodenburg, Delft, and Anne Klaas de Groot, Odijk, all of Netherlands, assignors to Allseas Group S.A., Chatel-St. Denis, Switzerland

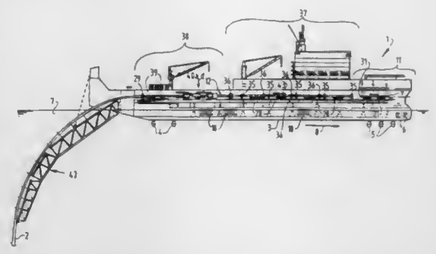
Filed Mar. 8, 1996, Ser. No. 613,190

Claims priority, application Netherlands, Mar. 10, 1995, 9500485

Int. Cl.[6] F16L *1/12*

U.S. Cl. 405—165 **8 Claims**

1. Apparatus for laying a pipeline on a surface located under water, comprising a carrier body which is supported by upward pressure and provided with tensioning means for fixedly holding the pipeline, which tensioning means extend between at least one clamping member engaging on the pipeline and at least one support member connected to the carrier body supported by upward pressure, characterized by at least one first and at least one second set of clamping jaws which can be clamped fixedly to the pipeline and which can move along with the pipeline in fixedly clamped position from a starting position into a releasing position, while said sets of clamping jaws are connected to easing holding means, wherein said sets of clamping jaws are alternatingly clampable and releasable and in released position are resettable from the releasing position to the starting position, and further characterized in that said tensioning means comprise a plurality of roller elements which each roll over a wedge surface.



5,823,713

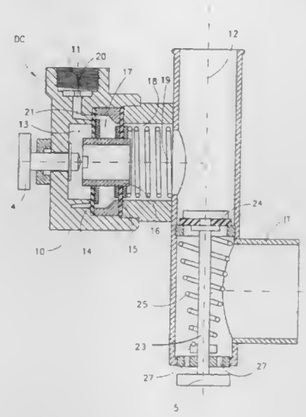
SCUBA DIVING APPARATUS WITH DEPTH CONTROL

Daniel Biran, 10 Brody Street, Ramat Aviv 69 056 Tel Aviv, Israel

Filed Jan. 3, 1994, Ser. No. 176,994

Int. Cl.[6] B63C *11/02*

U.S. Cl. 405—186 **17 Claims**



1. Scuba apparatus, comprising:

a depth control device for sensing depth of a diver and for automatically increasing buoyancy of a buoyancy compensator when the diver is submerged at a predetermined depth in water, to thereby prevent the diver from exceeding said predetermined depth, wherein said depth control device includes a housing having an inlet connectable to a pressurized gas tank, an outlet connected to an inflatable buoyancy device, a control passageway between said inlet and outlet, and a displaceable member normally urged to close said passageway but automatically displaced to open said passageway upon sensing said predetermined depth.

5,823,714

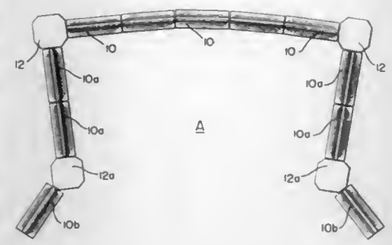
UNIVERSAL, ENVIRONMENTALLY SAFE, MODULAR CAISSON SYSTEMS AND CAISSON MUDULES FOR USE THEREWITH

Nigel Chattey, 150 Cedarlawn Rd., Irvington-on-Hudson, N.Y. 10533

Continuation of Ser. No. 766,632, Sep. 26, 1991, which is a continuation of Ser. No. 578,761, Sep. 6, 1990, Pat. No. 5,061,122. This application May 21, 1993, Ser. No. 65,819

Int. Cl.[6] E02B *17/02*

U.S. Cl. 405—204 63 Claims



1. A modular caisson installation demountably installed at a preselected water site. the modular caisson installation comprising:

a plurality of caissons having tops and bottoms and being individually demountably installed in a predetermined configuration at a preselected water site with the caisson bottoms removably seated on a bed at the preselected water site, the caissons being constructed of one or more floatable sections each being fluid trimmable and fluid ballastable and having means for trimming and ballasting the section with fluid to effect controlled lowering and positioning thereof during formation of the installation and controlled raising and removal thereof by floatation to enable demounting of the installation.

5,823,715

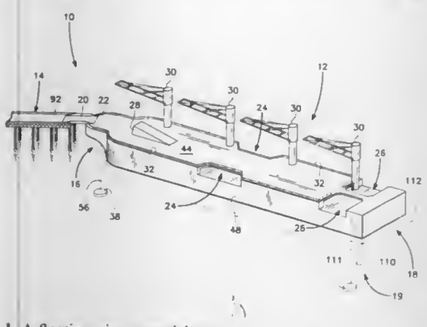
RAPIDLY DEPLOYED PIER

Michele Ann Murdoch, Ojai; Glenwood Bretz, Oxnard; Billie Rue Karrh, Santa Paula; Duane Albrecht Davis, Oxnard; Samuel J. Oppedisano, Ojai; William G. Hatch, Oxnard; Tsongshih Huang, Westlake Village; Kit L. Mack, and Sheng S. Lin, both of Camarillo, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1997, Ser. No. 937,700

Int. Cl.[6] B63C *1/00;* B63B *35/44*

U.S. Cl. 405—219 18 Claims



1. A floating pier comprising:

a floating pierhead structure adapted to be floated on a body of water adjacent a shoreline, said floating pierhead structure having a generally semicircular shaped bow, said generally semicircular shaped bow having a semicircular shaped rail mounted on the top portion of said semicircular shaped bow;

an elevated approachway having one end thereof connected to said shoreline and an opposite end thereof connected to said floating pierhead structure;

said elevated approachway including a plurality of identical two lane wide roadway spans, a traffic bypass span and a gap closing span;

said traffic bypass span being positioned approximately at a midpoint of said elevated approachway;

said gap closing span being adapted to connect a portion of said elevated approachway extending from said shoreline to another portion of said elevated approachway extending from said floating pierhead structure when installation of said elevated approachway is complete;

a bridge span having one end fixedly connected to said elevated approachway and an opposite end riding on the semicircular shaped rail of said semicircular shaped bow;

said bridge span having a winch assembly communicating with the semicircular shaped rail of said semicircular shaped bow, said winch assembly operating as a drive source to facilitate rotational movement of said floating pierhead structure through a predetermined angle about said elevated approachway.

5,823,716

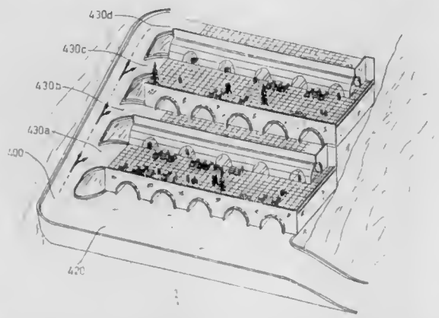
METHOD FOR PROVIDING ON A LANDSCAPE A SERIES OF TERRACES WITH AUGMENTED AVAILABILITY OF USABLE LEVEL SURFACE

Joseph Dray, Mevo Boomat 5, and Marian Cohn, Harazim Street 28, both of 90805 MeVassaret Zion, Israel

Filed Feb. 25, 1997, Ser. No. 805,424

Int. Cl.[6] E02D *29/02*

U.S. Cl. 405—258 34 Claims



1. A method for providing on a landscape a series of terraces with augmented availability of usable level surface comprising the steps of:

(i) providing an upper substantially level surface on at least one portion of said landscape;

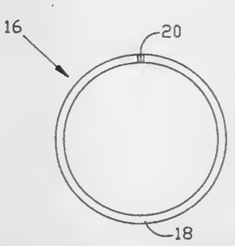
(ii) providing one or more gallery support members on the said upper level surface, each said gallery support member comprising a downwardly open upper load bearing shell defining an internal gallery volume and enclosing a first portion of said upper level surface, and further comprising at least one gallery opening in communication with a second portion of said level upper surface;

(iii) depositing a quantity of landfill material over said at least one gallery support member and over at least a portion of said upper level surface, not including said first and second portions thereof, to a predetermined depth and substantially leveling at least a portion of said landfill material to provide an uppermost terrace comprising an upper level surface;

(iv) optionally providing a new uppermost terrace on said uppermost terrace by repeating steps (ii) and (iii) on the said upper level surface of said uppermost terrace obtained in the previous step of said method;

(v) optionally repeating (iv) a plurality of times to provide, each time, a new uppermost terrace on the previously obtained uppermost terrace;

wherein said first and second portions of each said upper level surface may optionally comprise an upper layer of a suitable material.



5,823,717

FACING PANEL FOR EARTH STRUCTURES

Michel J Bastick, Puteaux; Alain Gorce, Croissy Sur Seine; Jean-Marc Jailloux, Sannois; Pierre Segrestin, Saint Germain en Laye, and Paul Schodts, Lagnieu, all of France, assignors to Societe Civile des Brevets Henri Vidal, Paris, France

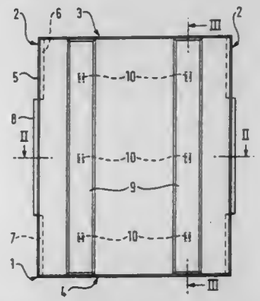
PCT No. PCT/GB95/02062, § 371 Date May 13, 1997, § 102(e) Date May 13, 1997, PCT Pub. No. WO96/06983, PCT Pub. Date Mar. 7, 1996

PCT Filed Sep. 1, 1995, Ser. No. 793,791

Claims priority, application United Kingdom, Sep. 1, 1994, 9417573

Int. Cl.[6] E02D *29/02*

U.S. Cl. 405—286 18 Claims



1. A facing panel for assembly with like facing panels to form a facing of a stabilised earth structure, the facing panel having two opposite side edges defining substantially the height of the panel, said side edges provided for arrangement edge-to-edge with the side edges of laterally adjacent facing panels, each side edge having a front portion which is straight over substantially the full height of the facing panel, and a rear portion comprising a lateral projection over part of its length and an abutment over another part of its length, the lateral projection being provided for engagement behind a respective abutment on the side edge of a laterally adjacent facing panel to restrain forward movement of the facing panel, and the abutment being provided for engagement in front of a respective lateral projection of said laterally adjacent facing panel or of another laterally adjacent facing panel to restrain rearward movement of the facing panel.

5,823,718

PILLAR BAG

Joseph A. Du Plessis, Centurion, South Africa, assignor to Alnet (Proprietary) Limited, South Africa

Filed Jan. 30, 1997, Ser. No. 790,551

Claims priority, application South Africa, Jul. 25, 1996, 96/6308

Int. Cl.[6] E21D *15/00;11/00*

U.S. Cl. 405—288 13 Claims

1. A pillar bag for defining the periphery of a vertical support to be cast, in situ, of a settable material filling the pillar bag to form a monolithic structure, the pillar bag comprising a side wall of porous circumscribing fabric material, having upper and lower ends, a plurality of sheaths around the side wall at fixed locations spaced from each other between the upper and lower ends, and a like plurality of reinforcing rings, each ring being formed from at least one closed loop of elongate material, each ring being located within one of the sheaths to provide the side wall with enhanced hoop strength.

5,823,719

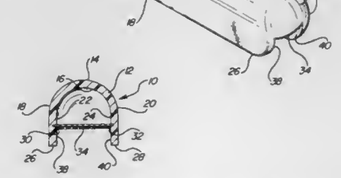
DRYWALL RASP

Gary L. Tyler, 3915 Hunters Ridge Dr., No. 1, Lansing, Mich. 48911

Filed Oct. 17, 1996, Ser. No. 731,711

Int. Cl.[6] B23D *67/00*

U.S. Cl. 407—29.1 8 Claims



1. A rasp tool for smoothing rough edges of cut drywall, said rasp tool comprising:

an elongated housing which defines an arcuate outer surface and a pair of rounded edges and which is substantially U-shaped in cross-section and which defines a pair of legs disposed spaced relative to one another with each leg defining a distal end and an inside surface;

a pair of slots defining opposed upper and lower spaced surfaces extending along said inside surface of each of said legs longitudinally relative to said housing and parallel relative to each other; and

a rasp blade having a pair of edges which are removably received in said housing by sliding said edges into said pair of slots between said upper and lower spaced surfaces in a direction parallel to the longitudinal axis of said housing and such that said blade is spaced from the distal end of said legs so as to define slide guides on said inside surface of each of said legs, said rasp blade being held against movement in a direction perpendicular to the plane of said rasp blade by said opposed upper and lower spaced surfaces of said pair of slots.

5,823,720

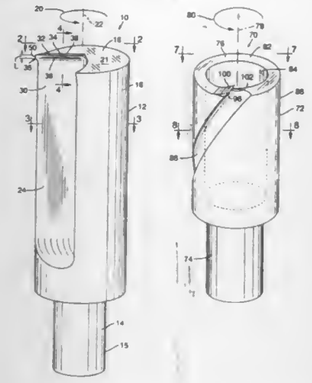
HIGH PRECISION CUTTING TOOLS

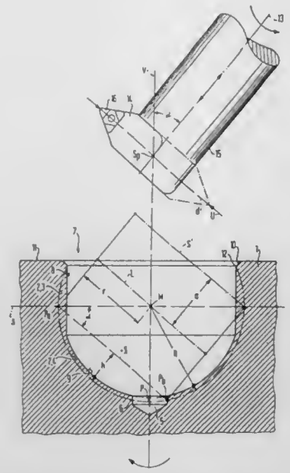
Richard A. Moore, Newport, Oreg., assignor to Bitmoore, Salem, Oreg.

Continuation-in-part of Ser. No. 602,222, Feb. 16, 1996, abandoned. This application Aug. 15, 1996, Ser. No. 698,722

Int. Cl.[6] B23B *51/00;27/00*

U.S. Cl. 408—204 **22 Claims**





1. A cutting tool for removing material from a work piece and forming a highly polished finished surface on the work piece, comprising:

a body having a driver engaging end and an opposite work engaging end, the body having a side surface and being adapted for rotation in a predetermined direction about an axis relative to the work piece when working;

a cutting tooth formed on the work engaging end, the cutting tooth including a cutting edge extending in a transverse direction to the axis and a guide projection extending a projection distance beyond the side surface of the body and laterally of the axis;

the cutting edge having first and second ends, the first end being nearer to the axis and the second end being nearer to the side surface of the body;

the guide projection having a guide face that is concentric with the axis and intersects the cutting edge to form a sharp corner; and

the cutting tooth tapering from and thereby providing relief for the guide face in a direction rearwardly of the guide face and inwardly toward the side surface of the body so that, in rotation of the cutting tool relative to and in engagement against the work piece, no portion of the cutting tooth other than the guide face contacts the surface of the work piece to prevent scoring of the finished surface of the work piece by the surface of the body as the cutting tool advances into the work piece to remove material from it;

whereby the cutting edge transfers to the material removed most of the heat generated to provide a highly polished finished surface on the work piece.

5,823,721

METHOD OF PRODUCING AN UNDERCUT, CONCAVE, SELF-CONTAINED BEARING SURFACE

Ludwig Wagenseil, Vöhringen, Germany, assignor to Bruenighaus Hydromatik GmbH, Elchingen, Germany

PCT No. PCT/EP95/00494, § 371 Date Oct. 21, 1996, § 102(e) Date Oct. 21, 1996, PCT Pub. No. WO95/23664, PCT Pub. Date Sep. 8, 1995

PCT Filed Feb. 10, 1995, Ser. No. 702,521

Claims priority, application Germany, Mar. 2, 1994, 44 06 856.5

Int. Cl.[6] B23C *9/00*

U.S. Cl. 409—132 **9 Claims**

1. Method of producing an undercut, concave and self-contained bearing surface (2), which is at least part of a spherical indentation having an at least approximately constant radius (R), which indentation extends beyond a sphere equator (A) of the spherical indentation by means of machining with the removal of material of a pre-formed indentation (7) in a workpiece (1) by means of a tool (14) having at least one tool cutting edge (16) rotating around a tool axis of rotation (13), defining a plane encompassing the orbit (U) of the tool cutting edge which has a diameter (d) which is equal to the length of a chord (S) extending up to a deepest point (P_b) of the bearing surface, whereby a cutting movement of said tool is made up of the orbital movement of the tool cutting edge and a rotational relative movement between the workpiece and the tool around a vertical axis (V) extending perpendicularly of the equator of said spherical indentation through the center (M) thereof, and wherein a feed movement of the tool is a movement of the tool relative to the workpiece along the tool axis of rotation which is obliquely set at a same angle of inclination (α) relative to the vertical axis as the plane of the cutting edge orbit is set to the sphere equator (A), characterized in that,

the diameter (d) of the plane of the cutting edge orbit (U) originates from the sphere equator (A), and in that a portion of the indentation (7) below the sphere equator (A) and a portion above the sphere equator (A) are machined one after the other with two separate said feed movements.

5,823,722

TOOL HOLDING ATTACHMENT

Koji Takenaka, Niwa-gun, Japan, assignor to Okuma Corporation, Nagoya, Japan

Filed Nov. 1, 1996, Ser. No. 742,904

Claims priority, application Japan, Nov. 6, 1995, 7-313453

Int. Cl.[6] B23C *9/00;* **B23B** *31/04*

U.S. Cl. 409—230 **4 Claims**

1. An attachment removably mounted to a spindle head of a machine tool for holding a tool removably attached thereto comprising:

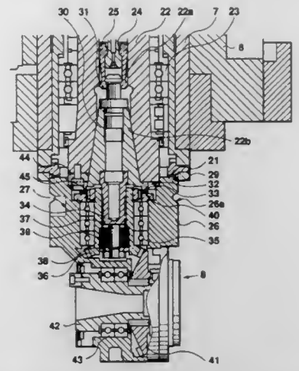
a pull stud which can be inserted into a main spindle from its tip and gripped by drawing with a collet arranged inside the main spindle;

a shank member which has the pull stud fixed at its upper end, a flange and a central shaft at its lower end face, and a shank side coupling on a lower end face of the flange;

a sleeve into which the central shaft is slidably inserted, and which has a gear at its lower end for transmitting the driving torque of the main spindle to a tool held by the attachment;

an attachment body which holds the sleeve rotatably, which has a small diameter coupling at the inner side of the upper end face engaging with the shank side coupling, and has a large diameter coupling at the outer side of the upper end face for engaging with a head side coupling provided on the spindle head of the machine tool for fixing the attachment body to the spindle head; and

an elastic member which is arranged between the sleeve and the central shaft, and forcedly fixes the large diameter coupling to the head side coupling in a compressed state, and fixes the shank member by forcedly pushing the central shaft in such a direction that the shank side coupling engages with the small diameter coupling in an expanded state.



5,823,723

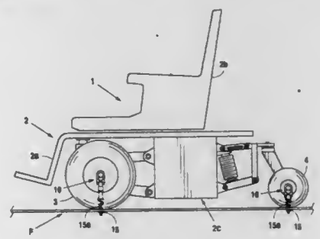
VEHICLE WHEEL TIEDOWN

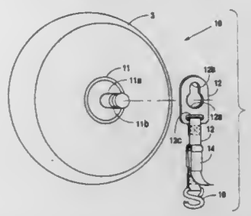
Thomas E. Finch, Spring Branch, Tex., assignor to TEFTEC Corporation, Spring Branch, Tex.

Filed Nov. 5, 1996, Ser. No. 746,099

Int. Cl.[6] B60P *7/08*

U.S. Cl. 410—22 **2 Claims**





1. A tie down apparatus for securing a vehicle wheel to a support surface having a strap anchor formed thereon vertically adjacent to said vehicle wheel, comprising in combination:

a hubcap securable to said wheel, said hubcap having a generally cylindrical external surface coaxial with the axis of the wheel;

an annular groove in said external surface of said hubcap;

a rigid connector plate of generally planar configuration;

said plate defining a generally inverted keyhole shaped opening comprising a large diameter opening permitting the axial sliding of said plate over said cylindrical surface of said hubcap, and a small diameter semi-circular opening communicating with said large diameter opening,

said small diameter semi-circular opening being proportioned to snugly engage in said annular groove, whereby said small diameter semi-circular opening can be engaged with said annular groove by axially sliding said large diameter opening over said cylindrical surface and then moving said plate downwardly;

a tie down strap;

said plate having a slot traversable by said tie down strap to form a strap loop;

means for connecting said strap loop to said strap anchor; and

buckle means for tightening said strap loop and securing said strap loop in a tightened position, thereby securing the vehicle wheel to the support surface.

5,823,724

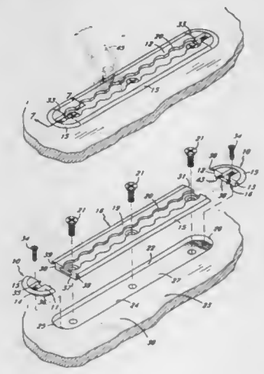
END CAPS FOR TIE-DOWN TRACK AND PROCESS FOR INSTALLING A TIE-DOWN TRACK

Ray Lee, Los Angeles, Calif., assignor to New Haven Moving Equipment Corp. of California, Inc., Los Angeles, Calif.

Filed Jul. 29, 1996, Ser. No. 687,714

Int. Cl.[6] B60P *7/08*

U.S. Cl. 410—104 **10 Claims**



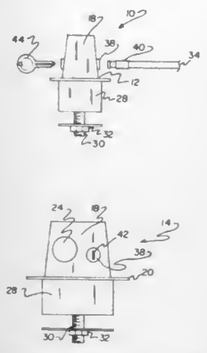
1. An end cap for insertion into an end of a length of tie down track of the type at least partially embedded in a floor, said tie down track having a flat base, two external walls, two end walls, and a track top surface with an elongated undercut opening to result in a length having a rectangular shaped profile when viewed from the top, each end wall of said length having an external shape as viewed from one of said ends, said end cap comprising:

a floor having an elongated groove formed in a floor surface thereof;

an end cap held in said elongated groove, said end cap having a track abutting face and a back, a cap top surface and a cap bottom surface which, when the track abutting face is mated against one of the end walls of said tie-down track, the cap top surface matches the track top surface and said flat base of the tie-down track to form a smooth transition from the track to the cap, two cap external walls which when the track abutting face is mated against one of said end walls, match the track external walls, said two cap external walls being curved in a semi-circular shape to meet at the back of the cap; and

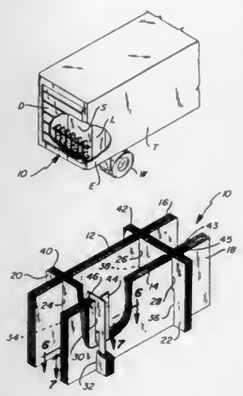
indexing means to align the end cap with one of said two end walls of said tie down track.

5,823,725
CARGO PROTECTING SECURITY CABLE FOR PICKUP TRUCKS
James L. Goodwin, 102 W. 10th #1, The Dalles, Oreg. 97058
Filed Apr. 9, 1998, Ser. No. 57,779
Int. Cl.[6] B60P 7/08
U.S. Cl. 410—117 4 Claims



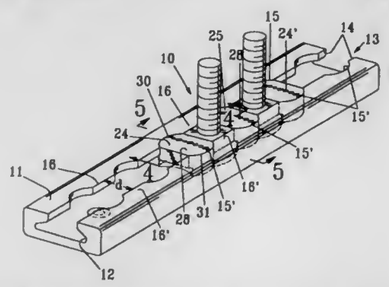
2. A new cargo protecting security cable for pickup trucks for securing belongings carried in a bed on an uncovered pickup truck comprising, in combination:
a pair of anchor portions securable within opposing stake pockets of a pickup truck bed and having a pair of apertures therethrough; and
a locking cable extending between small apertures of said pair of apertures of the pair of anchor portions, a first end of the locking cable extending through the small aperture of the second anchor portion and being fixedly secured thereto, the small aperture of the first anchor portion having a locking cylinder disposed therein, the locking cylinder receiving a second end of the locking cable in a locked orientation.

5,823,726
REINFORCED SLOTTED VOID FILLER
James L. Woods, and Robert F. Thomasino, both of Denver, Colo., assignors to Damage Prevention Company, Denver, Colo.
Filed Apr. 3, 1997, Ser. No. 832,240
Int. Cl.[6] B60P 7/16;7/135
U.S. Cl. 410—155 20 Claims



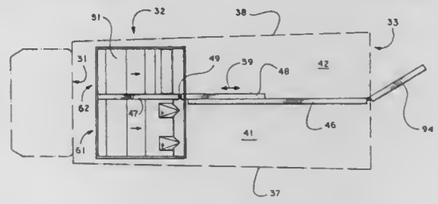
1. An void filler made from a plurality of members each having a reinforced slotted area, said members being connected and held in fixed position by said reinforced slotted areas, said reinforced slotted areas are arranged to prevent the folding and collapse of the members during use, said void filler being used to absorb a compressive load by restricting movement of a lading within a hauling vehicle, said void filler comprising:
a) two or more of said members, each member having an outer edge and being formed from a plurality of corrugated sheets, each sheet having parallel corrugated flutes, said sheets being fastened together by suitable fastening means to form a relatively thick member;
b) coupling slots formed inwardly from, the outer edge of two or more of said members and comprising a portion of the slotted areas, said slots having a generally elongated configuration defining a perimeter edge; and
C) a reinforcing means arranged around the perimeter edge of one or more of the slots to strengthen the area around said slots and the void filler members and comprising a portion of the slotted areas.

5,823,727
ANCHOR FITTINGS FOR SECURING OBJECTS ON A ELONGATED TRACK
Ray Lee, 27082 Segovia Cir., Mission Viejo, Calif. 92691
Filed Apr. 2, 1998, Ser. No. 53,895
Int. Cl.[6] F16B 27/00;39/00
U.S. Cl. 411—85 8 Claims



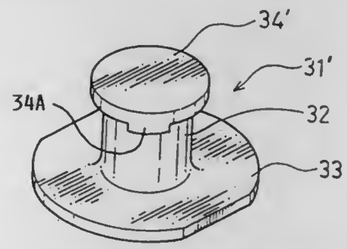
1. An anchor fitting assembly (**10**) for securing objects on an elongated track (**11**) of the type secured to a vehicle floor, said elongated track having an elongated groove with a bell shaped profile (**12**) with a groove floor (**12'**) and a track groove top (**13**) having an edge (**14**) with a plurality of opposed semicircular faces (**15, 15'**) and opposed tabs (**16, 16'**), said fittings comprising:
a securable fitting (**17**) having a stud portion (**18**) to which objects to be secured may be attached, a track groove top abutting length (**19**) below said stud portion (**18**) having four opposed sides, two of which sides (**20, 21**) which closely abut a pair of opposed tabs (**16, 16'**), and each of the remaining two sides (**22, 23**) closely abut a side of an adjacent button (**24, 25**), and an outwardly flared base (**26'**) below said track groove top abutting length (**19**), said outwardly flared base (**26**) being shaped to fit downwardly between said pairs of opposed semicircular faces (**15, 15'**) and slide sideways below said opposed tabs (**16, 16'**) and rest on a floor (**12'**) of said elongated groove (**12**);
a pair of buttons (**24, 25**) each button having a top surface (**28**), a side area (**29**) having a pair of opposed semicircular sides (**30, 31**), and at least one side portion (**32**) which abuts one of said remaining two sides of said track groove top abutting length (**19**) of said securable fitting (**17**), and each of said buttons having sides (**33', 34'**) being shaped to permit the positioning of each pair of buttons (**24, 25**) adjacent an outwardly flared base (**26'**) of a securable fitting (**17**) when said pair of buttons (**24, 25**) are resting on said groove floor (**12'**) of said bell shaped groove (**12**) whereby when an object with a flat bottom portion is secured to said stud portion (**18**) of said securable fitting (**17**) the flat bottom portion of the object prevents the buttons (**24, 25**) from rising out of said elongated track (**11**) and said buttons (**24, 25**) being prevented from sliding along said elongated track (**11**) by the contact between the pair of opposed semicircular faces (**15, 15'**) of the track groove top (**13**) and the opposed semicircular sides (**30, 31**) of said buttons (**24, 25**) and the securable fitting (**17**) is prevented from sliding along the elongated groove (**12**) by contact with the buttons (**24, 25**).

5,823,728
SEGMENTED RESIDENTIAL FRONT LOADING REFUSE COLLECTION VEHICLE
Russell Veldman, Villa Park, and Thomas A. Becvar, Lombard, both of Ill., assignors to Toccoa Metal Technologies, Inc., Toccoa, Ga.
Filed Feb. 12, 1996, Ser. No. 599,789
Int. Cl.[6] B65F 3/20
U.S. Cl. 414—510 16 Claims



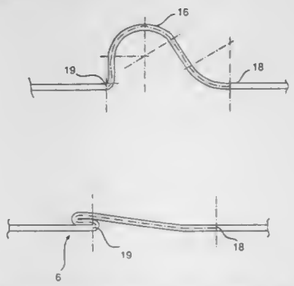
1. An apparatus for collecting waste materials comprising:
a vehicle having a frame and a bed mounted on said frame, said bed having a front, a rear, a top, and a bottom;
a refuse loading mechanism for loading refuse into said bed of said vehicle;
a fixed wall extending vertically from said bed bottom toward said bed top and extending longitudinally from said bed rear toward said bed front;
reciprocating discharge means for forcing refuse material in said compartments towards said bed rear; and
a movable wall cooperating with said fixed wall for dividing said bed into side-by-side compartments extending longitudinally, said movable wall having a first wall portion mounted to said discharge means and a second wall portion pivotally mounted to said first wall portion.

5,823,729
TEE NUT AND METHOD OF MANUFACTURING THE SAME
Yutaka Nagayama, Osaka, Japan, assignor to Nagayama Electronic Industry Co., Ltd., Wakayama, Japan
Filed Feb. 28, 1997, Ser. No. 808,242
Claims priority, application Japan, Aug. 15, 1996, 8-215665
Int. Cl.[6] F16B 37/14
U.S. Cl. 411—429 7 Claims



1. A tee nut comprising a shaft part, a flange part outwardly extending from a first end of said shaft part, and a cap part outwardly extending from a second end of said shaft part opposite said first end while blocking said second end, wherein
all of said parts consist of an integral metal material,
said shaft part comprises a hollow cylinder having a female screw threading on an inner peripheral surface thereof,
said cap part comprises a substantially planar member that protrudes radially outwardly beyond an outer peripheral surface of said hollow cylinder, and
said substantially planar member of said cap part has a first portion having a first axial thickness and a second portion having a second axial thickness different from said first axial thickness along an outer periphery of said substantially planar member.

5,823,730
CAN WITH EASY OPEN END AND PROTECTION AGAINST CUTS
Ruggiero La Rovere, Rio de Janeiro, Brazil, assignor to Rheem Empreendimentos Industriais e Comerciais S/A, Rio de Janeiro, Brazil
Filed Mar. 21, 1996, Ser. No. 619,311
Claims priority, application Brazil, Mar. 21, 1995, 9500961-2
Int. Cl.[6] B21D 51/44
U.S. Cl. 413—12 5 Claims



1. A process for forming an easy open container lid comprising the steps of:
forming a container lid blank with a continuous, semi-toroidal protuberance near a perimeter of the lid blank;
coining a scored ring between the continuous, semi-toroidal protuberance and the perimeter, and adjacent an edge of the continuous, semi-toroidal protuberance;
providing a forming press having a first die and, a second die, the first die including a first flat surface from which a pressing surface is projected perpendicularly toward the second die, a first conical surface extending from the pressing surface to a second flat surface at a same level as the first flat surface; the second die including a third flat surface located across from the first flat surface of the first die, a second conical surface extending from the third flat surface, a juncture between the third flat surface and second conical surface being located across from the pressing surface of the first die, the second conical surface corresponding to the first conical surface in both location and angle, and a fourth flat surface located across from the second flat surface; and
deforming the continuous, semi-toroidal protuberance using a deforming force having a first component force directed toward the perimeter and a second component force directed transversely to the direction of the first component force, wherein the continuous, semi-toroidal protuberance is shaped into an s-shaped bend, said step of deforming comprising pressing the first die and the second die together such that pressure exerted on the continuous, semi-toroidal protuberance between the first conical surface and the second conical surface causes the deforming force having the first component force directed toward the perimeter and the second component force directed transversely to the direction of the first component force.

5,823,731

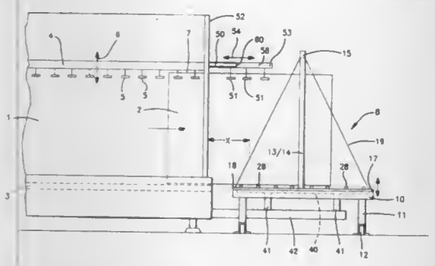
Patent Not Issued For This Number

5,823,732

DEVICE FOR MOVING INSULATING GLASS PANES

Peter Lisec, Bahnhofstrasse 34, A-3363 Amstetten-Hausmening, Austria

Filed Oct. 2, 1996, Ser. No. 724,919
Claims priority, application Austria, Oct. 13, 1995, 1700/95
Int. Cl.[6] B65G *1/16*
U.S. Cl. 414—278 16 Claims



1. An improved device for moving insulating glass panes from a sealing device comprising, in combination:
a compartmented truck with compartments bounded by cord elements;
and a glass moving device adapted for mounting on said sealing device,
said glass moving device having rollers for supporting an upper edge of an insulating glass pane, which rollers turn freely around substantially vertical axes and which are mounted on a vertically adjustable beam, and having a conveyor device which engages a lower edge of said insulating glass pane laterally and permits said insulating glass pane to move in a conveyance direction in a conveyor plane, the improvement comprising:
a jib which projects over an outlet-side edge of said sealing device;
jib rollers which turn freely around substantially vertical axes mounted on said jib;
said jib being adjustable in a vertical direction;
rollers having V-shaped peripheral surfaces which turn around axes running transversely to said conveyor direction, mounted in said compartments so that said insulating glass pane may be pushed thereupon;
supports mounted within said compartments for supporting said lower edge of said insulating glass pane; and
means to raise said rollers having V-shaped peripheral surfaces into an active position in which they project above said supports and to lower said rollers having V-shaped peripheral surfaces into a readiness position in which they are located lower than said supports.

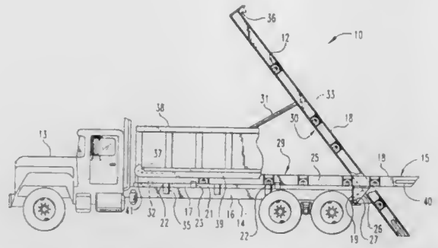
5,823,733

VEHICLE MOUNTED HOIST WITH ADJUSTABLE CONTAINER SUPPORTING ROLLER ASSEMBLIES

Kent Kruzick, Rte. 4, Box 392, Hwy. 14 West, Winamac, Ind. 46996

Filed Apr. 26, 1995, Ser. No. 429,342
Int. Cl.[6] B60P *1/28*
U.S. Cl. 414—498 14 Claims

1. In a vehicle mounted container hoist having a mainframe, a tilt frame pivotally connected to the mainframe and comprising a pair of I-beams each defining a recess, means for tilting the tilt frame relative to the mainframe, and an assembly for moving one



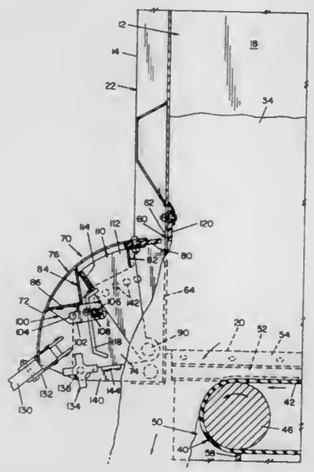
of a group of containers having runners of varying heights onto and off of the tilt frame, all for loading, transporting, dumping and/or unloading the container, adjustable roller assemblies for supporting the container, comprising:
a plurality of brace means mounted to and within the recesses of the I-beams of the tilt frame and being for supporting a plurality of rollers, wherein each of said brace means includes a pair of braces rigidly mounted to and within the recess of one of said I-beams;
a plurality of rollers sized and configured to be mounted to said brace means to collectively support the container thereon;
roller support means for rotatably holding said rollers, said roller support means configured for vertically adjustable mounting positionment to said brace means; and
wherein each of said plurality of brace means is sized and configured to hold a corresponding one of said plurality of rollers in at least two vertical positions to collectively support one of the group of containers with runners of varying heights upon its runners.

5,823,734

ROTATABLE FEEDGATE

Roland L. Hagemeyer, Rochelle, and Kenneth P. Manon, Lindenwood, both of Ill., assignors to The Louis Berkman Company, Steubenville, Ohio

Filed Sep. 7, 1995, Ser. No. 524,492
Int. Cl.[6] B60P *1/00*
U.S. Cl. 414—519 37 Claims



1. In a truck having a dump body for holding materials, said dump body including a receptacle and a conveyor, said receptacle including a base, a front wall, a rear wall and two side walls, said base lying in a base plane said rear wall including a conveyor rear opening means and feedgate means, said conveyor rear opening

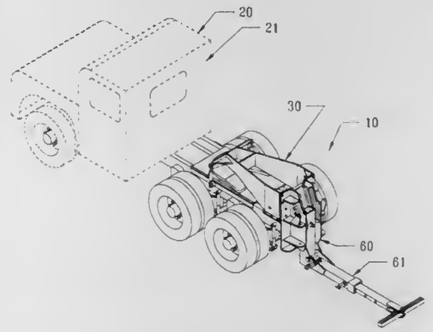
means positioned at least closely adjacent to said base plane for allowing said materials to be dispensed from said receptacle, said feedgate means adapted to regulate flow of said materials through said conveyor rear opening means and includes a face plate and two side plates on opposite sides of said face plate and extending rearwardly therefrom in a generally parallel relationship, said feedgate means movable between a closed position and an open position and rotatably mounted in a fixed axis lying at least closely adjacent to and substantially parallel to said base plane, said open position allowing said materials to pass under said feedgate means and through said conveyor rear opening means, said conveyor mounted in said base and in longitudinal alignment with said conveyor rear opening means, the improvement comprising of a side flow limiter positioned adjacent to each of said feedgate side plates, said side flow limiter independently mounted on said fixed axis and at least partially independently rotatable with respect to said feedgate means, said side flow limiter including means for causing said flow limiter to limit flow of said materials under both of said feedgate side plates when said feedgate means is pivoted about said fixed axis to said open position.

5,823,735

ATTACHING A WHEEL LIFT APPARATUS TO A ROAD TRACTOR

Roger Kooima, 44 Park La., Canton, S. Dak. 57013

Filed Feb. 14, 1997, Ser. No. 800,662
Int. Cl.[6] B60P *3/12*
U.S. Cl. 414—563 18 Claims



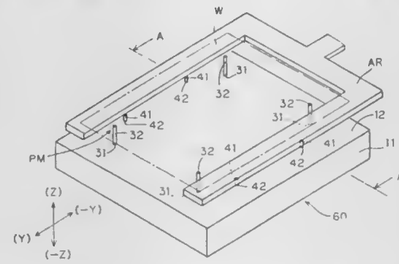
1. A mounting apparatus for attaching a towing apparatus to a road tractor, the road tractor having a tractor frame with a front and rear, said road tractor having a fifth wheel plate mounted on the tractor frame between said front and rear, said tractor frame having a forward portion between the fifth wheel plate and the front of said frame, said tractor frame having a rearward portion between said fifth wheel plate and the rear of said tractor frame, comprising:
a generally elongate mounting frame having first and second ends;
said first end being adapted for mounting on the rearward portion of said tractor frame and adapted for attachment to the towing apparatus;
an attachment means for attaching the second end of the mounting frame to the fifth wheel plate; and
a linking means for linking the second end of the mounting frame to the tractor frame, said linking means comprising a pair of link members each having opposite upper and lower ends defining a length therebetween, said upper ends each being mounted on the mounting frame in a location substantially laterally outward and upward from the fifth wheel plate when said attachment means is attached to the fifth wheel plate, said lower ends being adapted for mounting to said tractor frame at a location substantially laterally outward and downward from the fifth wheel plate when said attachment means is attached to the fifth wheel plate, wherein said link members are adapted to resist the upward vertical force applied by said attachment means to the fifth wheel plate of the tractor frame.

5,823,736

SUBSTRATE PROCESSING DEVICE AND METHOD FOR SUBSTRATE FROM THE SUBSTRATE PROCESSING DEVICE

Yoshio Matsumura, Hikone, Japan, assignor to Dainippon Screen Mfg. Co., Ltd., Japan

Filed Mar. 4, 1996, Ser. No. 610,712
Claims priority, application Japan, Mar. 6, 1995, 7-045421
Int. Cl.[6] B25J *15/06*
U.S. Cl. 414—609 29 Claims



1. A device for processing a substrate, comprising:
a) means for holding said substrate at a first level;
b) means for processing said substrate held by said holding means at the first level;
c) first pushing means for pushing up said substrate from said first level to a second level which is above said first level;
d) a pick-up device to pick-up said substrate; and
e) second pushing means for pushing up said substrate from said second level to a third level which is above said second level to locate said substrate at a position at which said substrate is capable of being removed from said device by said pick-up device, and an area of said substrate supported by said first pushing means being about the same area of said substrate supported by said pick-up device.

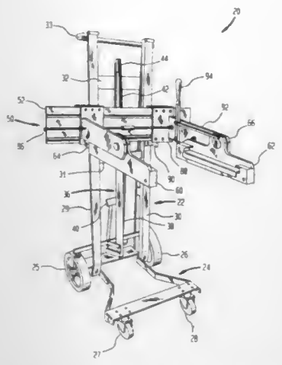
5,823,737

PROBEMAT HANDLER

Ralph D. Cook, Arvada, Colo., assignor to Lucent Technologies, Murray Hill, N.J.

Continuation of Ser. No. 550,697, Oct. 31, 1995, abandoned.
This application Oct. 10, 1997, Ser. No. 948,957
Int. Cl.[6] B66F *9/18*
U.S. Cl. 414—621 9 Claims

1. An arrangement for handling a plurality of probemat configurations, the arrangement connecting to a stationary support member of a fixture handler, the support member having front and rear sides and a longitudinal axis defined by the length of the front and rear sides, the arrangement comprising:
first and second movable opposing side arm mechanisms, each of the first and second side arm mechanisms further comprising a side arm pivotally connected to a jaw, said jaw adapted to receive at least one handle of any one of a plurality of probemat configurations, wherein said jaw pivotally tilts about a substantially horizontal axis;
a first track connected to the front side of the support member, the first track having a contact edge and oriented along the longitudinal axis of the support member;
a second track connected to the rear side of the support member, the second track having a contact edge and oriented along the longitudinal axis of the support member;



first and second rollers for rolling engagement with the contact edge for the first track, the first roller connected to the first side arm mechanism, and the second roller connected tot he second side arm mechanism;

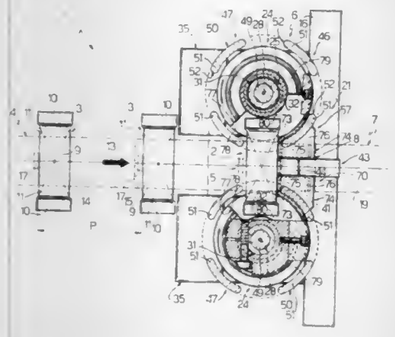
third and fourth rollers for rolling engagement with the contact edge of the second track, the third roller connected to the first side arm mechanism, and the fourth roller connected to the second side arm mechanism, such that the first through fourth rollers support the weight of the first and second side arm mechanisms and permit the first and second side arm mechanisms to slidably move on the first and second tracks along the longitudinal axis of the support member.

5,823,738

METHOD AND UNIT FOR FORMING STACKS OF ARTICLES

Mario Spatafora, and Fabrizio Tale', both of Bologna, Italy, assignors to Azionaria Costruzioni Macchine Automatiche A.C.M.A. S.P.A., Bologna, Italy

Filed Dec. 27, 1996, Ser. No. 774,043
Claims priority, application Italy, Jan. 9, 1996, BO96A0011
Int. Cl.[6] B65H *29/00;* **B65G** *57/30*
U.S. Cl. 414—795.1 **21 Claims**



I. A method of forming a stack (**2**) of articles (**3**), the method comprising the steps of: conveying articles (**3**) on a first conveying surface (**12**) and in a first traveling direction (**13**) to a pickup station (**5**);

successively lifting the articles (**3**) in a second traveling direction (**22**) by means of two counter-rotating screws (**24**) having oppositely-inclined threads (**26**) extending along respective helical paths (**27**) substantially tangent to the first surface (**12**) at the pickup station (**5**), the articles (**3**) being lifted off the first conveying surface (**12**) at the pickup station (**5**) and being transferred onto a second surface (**23**) higher than the first surface (**12**) to form on the second surface (**23**) a stack (**2**) of the articles (**3**) comprising at least two superimposed, mutually contacting ones of the articles (**3**);

guiding the articles (**3**) vertically during the lifting by guide means (**46**) respectively associated with the screws (**24**);

unloading the stack (**2**) off the second surface (**23**) by moving the guide means in relation to the helical paths (**27**); and

conveying the stack (**2**) in an outlet traveling direction (**13**);

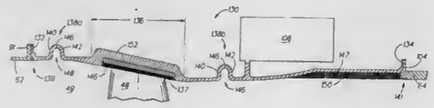
wherein the step of conveying the articles (**3**) on the first conveying surface (**12**) and the step of successively lifting the articles (**3**) are performed continuously and with substantially no interruption between these steps.

5,823,739

CONTAINMENT CASE FOR A TURBINE ENGINE

Keven G. Van Duyn, Bloomfield, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jul. 3, 1996, Ser. No. 675,765
Int. Cl.[6] F01D *21/00*
U.S. Cl. 415—9 **6 Claims**



1. A containment case for a turbine engine, the turbine engine having a flowpath extending therethrough, a rotor including a hub and an array of rotor blades extending radially outwardly from the hub and across the flowpath, the containment case being connectable to an adjacent engine case and having an impact zone, the containment case characterized by:

a penetration resistant containment ring axially coincident with the impact zone, and

at least one impact isolator extending from the containment ring and axially spaced from the impact zone for protecting the integrity of a connection between the containment case and the adjacent case in the event that a separated blade fragment strikes the containment case.

5,823,740

DISSOLVED GAS AUGMENTATION WITH MIXING CHAMBERS

Joseph M. Cybularz; Richard K. Fisher, Jr., both of Jacobus; Gary F. Franke, and Robert G. Grubb, both of York, all of Pa., assignors to Voith Hydro, Inc., York, Pa.

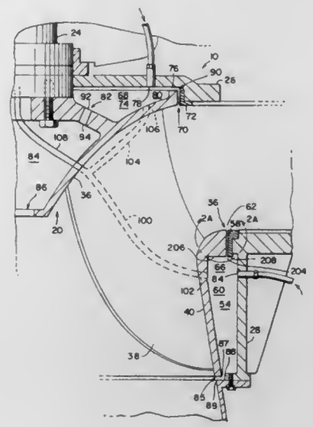
Filed Feb. 25, 1997, Ser. No. 805,286
Int. Cl.[6] F04D *29/38*
U.S. Cl. 415—115 **21 Claims**

I. A Francis turbine used to increase a level of dissolved gas in water passing through a casing provided with an upstream inlet port and a downstream outlet port, the turbine comprising:

a rotatably mounted runner having a crown, a band substantially concentric with the crown, and a plurality of blades extending between the crown and the band at spaced intervals along the crown, the band being bounded by spaced apart and oppositely facing inner and outer surfaces, an upstream edge and a distal downstream edge, each blade fixedly secured to the crown at an inner edge and to the inner surface of the band at a distal outer edge;

a stationary discharge ring substantially concentric with the band and spaced outwardly therefrom;

a band seal disposed adjacent the upstream edge of the band between the discharge ring and the band to limit water leakage into a band mixing chamber formed therebetween, the seal and the chamber being configured such that the chamber remains substantially flooded during turbine operation; and



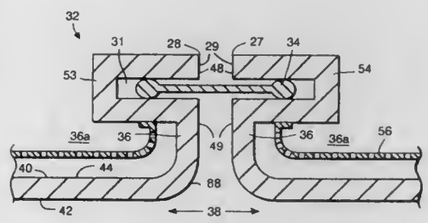
a gas admission aperture for injecting a gas into the chamber, the band mixing chamber being configured to promote mixing of the gas and water leaking into the chamber during turbine operation, thereby increasing the level of dissolved gas in the water being discharged from the downstream port.

5,823,741

COOLING JOINT CONNECTION FOR ABUTTING SEGMENTS IN A GAS TURBINE ENGINE

Daniel Ross Predmore; Iain Robertson Kellock, both of Clifton Park; Victor Hugo Correia, New Lebanon, all of N.Y.; John Howard Starkweather, Sharonville, and Dean Thomas Lenahan, Cincinnati, both of Ohio, assignors to General Electric Co., Schenectady, N.Y.

Filed Sep. 25, 1996, Ser. No. 719,666
Int. Cl.[6] F01D *25/26*
U.S. Cl. 415—134 **17 Claims**



I. In a gas turbine engine including at least one section comprising a plurality of circumferentially adjacent segments, each of said segments comprising:

a longitudinal section extending in a first direction;

a radial extension flange continuous with said longitudinal section and extending in a second direction substantially perpendicular to said first direction; and

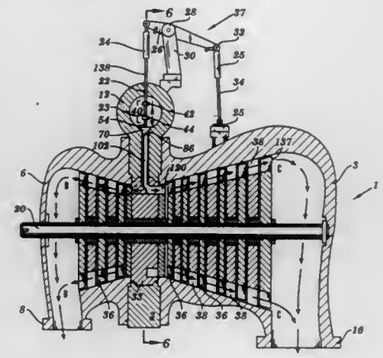
a seal joint section continuous with said radial extension flange and defining a slot, said slot being shaped to receive a sealing member in cooperation with an adjacent slot of an adjacent segment, wherein said seal joint section is radially spaced from said longitudinal section by an amount substantially corresponding to said radial extension flange defining an undercut area between said longitudinal section and said seal joint section.

5,823,742

VARIABLE AND BIDIRECTIONAL STEAM FLOW APPARATUS AND METHOD

John R. Giddings, Wellsville, N.Y., assignor to Dresser-Rand Company, Corning, N.Y.

Filed Dec. 15, 1995, Ser. No. 573,293
Int. Cl.[6] F04D *29/56*
U.S. Cl. 415—150 **29 Claims**



1. A valve apparatus for a turbomachine comprising:

a manifold casing defining a valve inlet chamber, said manifold casing comprising a top wall and a bottom wall with a plurality of vertically disposed openings through said top wall, and a plurality of openings to vertically disposed passages in said bottom wall, said passages each extending away from said bottom wall to a passage exit;

a valve lift assembly comprising a plurality of lift bars, and a plurality of lift pins, said lift pins extending vertically through the vertically disposed openings at the top wall of the manifold casing;

a plurality of valve assemblies equal in number to that of vertically disposed passages in the bottom wall, said valve assemblies comprising a valve configured to fit sealingly against the corresponding vertically disposed opening and a valve stem with one end connected to a corresponding valve and an opposite end connected to a valve stop shoulder to place each of the valve assemblies in movable association with at least one of said lift bars; and

a port ring nozzle assembly comprising a plurality of ports at least equal in number to the number of vertically disposed passages, said nozzle assembly disposed such that said ports abut the passage exits, with a first number of ports dedicated to direct a fluid in a first direction, and a second number of ports dedicated to direct a fluid in a second direction substantially opposite to the first direction.

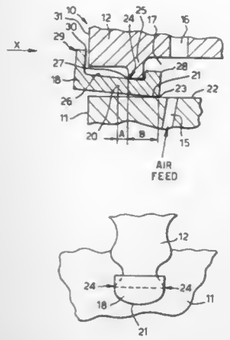
5,823,743

ROTOR ASSEMBLY FOR USE IN A TURBOMACHINE

Andrew R. Faulkner, Leicester, United Kingdom, assignor to European Gas Turbines Limited, Lincoln, United Kingdom

Filed Mar. 31, 1997, Ser. No. 829,721
Claims priority, application United Kingdom, Apr. 2, 1996, 9606899
Int. Cl.[6] F01D *5/30;11/00*
U.S. Cl. 416—96 R **19 Claims**

I. A rotor assembly for use in a turbomachine, the rotor assembly comprising: a radially inner rotor disc to which a plurality of radially outer blades are attached, and a respective seal member which is provided intermediate each blade and the rotor disc, wherein each seal member is mounted so as to be pivotable under centrifugal force about an axis, said axis being defined by a substantially straight line of contact of the seal member provided by a substantially straight edge on one of the disc and the blade,



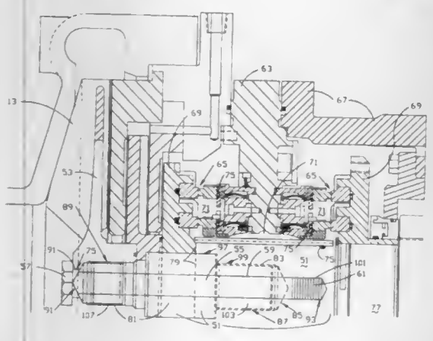
the substantially straight line of contact also defining a first sealing engagement between the seal member and the one of the disc and the blade, and wherein, when the seal member in use pivots under said centrifugal force about said axis, the seal member moves into a second sealing engagement with the other of the disc and the blade.

5,823,744

CENTRIFUGAL PUMP WITH MEANS FOR PREVENTING IMPELLER FROM UNSCREWING OFF OF SHAFT

Robert E. Rockwood, Windham, N.H., assignor to Environamics Corporation, Hudson, N.H.

Filed May 15, 1996, Ser. No. 648,278
Int. Cl.[6] F04D *29/34*
U.S. Cl. 416—204 R **15 Claims**



1. A centrifugal pump having a motor, a rotatable shaft driven by the motor, and an impeller affixed to a first end of the shaft via a first thread connection, the centrifugal pump comprising:

said motor for driving or rotating said shaft and said impeller in a first rotating direction so as to pump a fluid to be pumped;

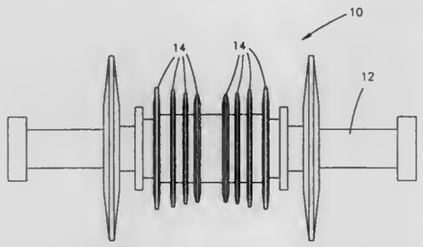
threaded connection means operatively associated with said shaft and impeller for preventing said impeller from unscrewing if said motor is started so as to rotate said shaft in a second direction, said threaded connection means including said first thread connection and a second thread connection, said first and second thread connections having different diameters and different thread pitches thereby preventing said impeller from unscrewing off of said shaft when said motor is operated so as to drive said shaft in the second direction.

5,823,745

METHOD OF REPAIRING A STEAM TURBINE ROTOR

Karl Rudolph Anderson, III, Naperville, Ill.; Gerald Richard Crawmer, Clifton Park, N.Y.; Edward Kenneth Ellis, Bangor, Me.; John Francis Nolan, Latham, N.Y.; Louis Patrick Earvolino, Holliston, Mass.; Robert Ellis Seeley, Broadalbin, N.Y.; Joseph John Pepe, Ballston Lake, N.Y.; Robert Joseph Christoffel, Schenectady, N.Y., and Joseph Louis Van Ullen, Loudonville, N.Y., assignors to General Electric Co., Schenectady, N.Y.

Filed Aug. 1, 1996, Ser. No. 691,276
Int. Cl.[6] F04D *29/34*
U.S. Cl. 416—213 R **11 Claims**



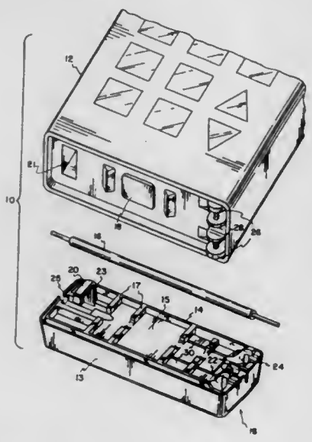
1. A turbine rotor comprising a radially-inward portion of a steel alloy and a radially-outward rim portion circumscribing the radially-inward portion, the rim portion comprising means for securing a turbine blade thereto, the rim portion being formed by a weldment that includes a nickel-base superalloy region joining the rim portion to the inward portion of the turbine rotor, the nickel-base superalloy having a room temperature ultimate tensile strength of at least about 690 MPa.

5,823,746

REUSABLE PRESSURE PLATES AND METHODS

Jay Gregory Johnson, Maple Plain, Minn., assignor to SIMS Deltec, Inc., St. Paul, Minn.

Filed Aug. 14, 1996, Ser. No. 702,384
Int. Cl.[6] F04B *43/08*
U.S. Cl. 417—53 **9 Claims**



1. A pressure plate mountable to a control module for positioning a tubing adjacent to a plurality of tube engaging members of a pumping mechanism, the pressure plate comprising:

a tubing support surface;

an anchor for mounting the tubing support surface to the control module located on the tubing support surface, the anchor including a reinforcement; and

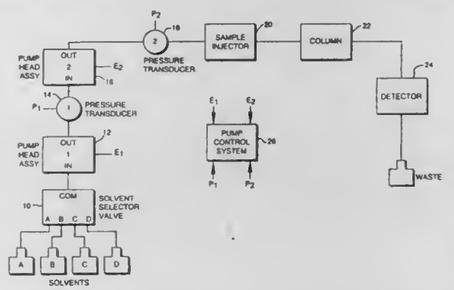
two hooks for mounting the tubing support surface to the control module, wherein the hooks each include a cantilevered spring member extending along the tubing support surface.

5,823,747

BUBBLE DETECTION AND RECOVERY IN A LIQUID PUMPING SYSTEM

Steven J. Ciavarini, Bellingham, and Robert J. Dumas, Upton, both of Mass., assignors to Waters Investments Limited, New Castle, Del.

Filed May 29, 1996, Ser. No. 654,759
Int. Cl.[6] B01D *15/08*
U.S. Cl. 417—216 **17 Claims**



1. A method of detecting gas in a fluid transported through a fluid delivery system comprising a first pump head having a first piston actuating in a first direction and a second direction within a first piston chamber and a second pump head having a second piston actuating in a first direction and a second direction within a second piston chamber, said first pump head receiving said fluid and pressurizing said fluid to form a pressurized fluid and said second pump head receiving said pressurized fluid from said first pump head, comprising the steps of:

monitoring compression volume of said pressurized fluid compressed by said second piston within said second piston chamber to determine a compression volume;

monitoring decompression volume of said pressurized fluid within said second piston chamber to determine a decompression volume;

determining a compression to decompression volume ratio representing a ratio of said compression volume to said decompression volume;

selecting a threshold level of said ratio of said compression volume to said decompression volume;

determining if said compression to decompression volume ratio exceeds said threshold level;

if said compression to decompression volume ratio exceeds said threshold level increasing a stroke length of said second piston.

9. A fluid delivery system including an apparatus detecting gas in a fluid transported through said system, comprising:

a first pump head having a first piston actuatable in a first direction and a second direction within a first piston chamber, said first pump head receiving said fluid and pressurizing said fluid to form a pressurized fluid;

a second pump head having a second piston actuatable in a first direction and a second direction within a second piston chamber, said second pump head receiving said pressurized fluid from said first pump head and pumping said pressurized fluid at a system pressure;

a first pressure transducer that senses a first pressure of said pressurized fluid output from said first piston chamber during a precompression stroke of said first piston prior to delivering said pressurized fluid to said second pump head;

a second pressure transducer that senses a second pressure of output from said second piston chamber;

an encoder to provide an indication of an amount of travel of said first piston within said first piston chamber;

a control system monitoring compression volume of said pressurized fluid compressed by said first piston within said first piston chamber to generate a compression volume signal, monitoring decompression volume of said pressurized fluid within said first piston chamber to generate a decompression volume signal, and monitoring said second pressure of output from said second piston chamber; and

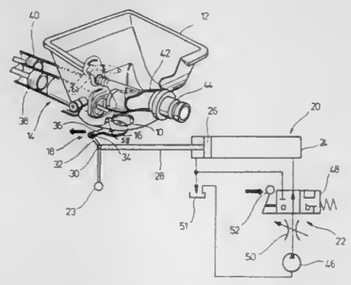
a bubble detection and recovery mechanism receiving from said control system an indication of said second pressure of output from said second piston chamber, said compression volume signal, and said decompression volume signal, said bubble detection and recovery mechanism affecting a pump control system that controls said first pump head and said second pump head to increase stroke length of at least one of said first pump head and said second pump head.

5,823,748

DEVICE FOR OPENING AND CLOSING A CLOSURE CAP

Hartmut Benckert, Filderstadt; Hellmut Hurr, Reutlingen, and Paul Baeumen, Sindelfingen, all of Germany, assignors to Putzmeister-Werk Maschinenfabrik GmbH, Aichtal, Germany

PCT No. PCT/EP94/02603, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO95/05538, PCT Pub. Date Feb. 23, 1995
PCT Filed Aug. 5, 1994, Ser. No. 596,277
Claims priority, application Germany, Aug. 13, 1993, 43 27 177.4
Int. Cl.[6] F04B *49/00*
U.S. Cl. 417—305 **14 Claims**



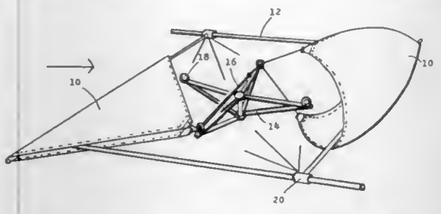
1. A device for opening and closing a closure cap arranged on a bottom-side cleaning opening of a container, comprising a pump generating a fluid pressure supply, a hydraulic drive unit, movable between initial and end positions and being coupled with the closure cap for only adjusting the closure cap from a closed position sealing off the cleaning opening when said drive unit is at said initial position to an open position at least partially exposing the cleaning opening when said drive unit is at said end position, a hydraulic correcting element fluidly connected to the hydraulic drive unit for controlling the pressure supply to the hydraulic drive unit to effect a hydraulic powered movement of the closure cap into the open position and an unpowered movement of the closure cap to the closed position, and a control means for manually simultaneously moving the closure cap to the closed position and the hydraulic drive unit to the initial position.

5,823,749

VERTICAL-AXIS WIND TURBINE WITH TWO-PHASE SAILS

Robert R. Green, 1222 W. Grand Ave., Chicago, Ill. 60622

Filed Nov. 26, 1996, Ser. No. 756,729
Int. Cl.[6] F04D *29/26*
U.S. Cl. 416—132 B 8 Claims



1. A vertical axis wind turbine rotor assembly of the type supported by a rotary mast comprising:

a horizontally disposed substantially square rotor wheel residing above the top supporting journal of said rotary mast, said rotor assembly having

substantially square sails constructed of flexible material, said sails operating in opositely disposed linked pairs alternately forming scoops to hold the wind when receding from the wind and forming wings to ride the wind when advancing into the wind, and

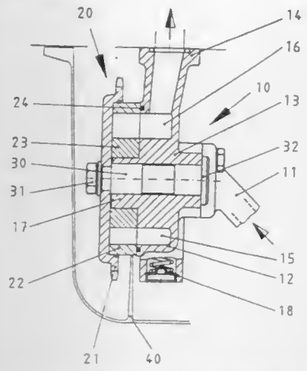
moveable means linking said sails for reciprocally adjusting, shaping and supporting said sails on each revolution of the said rotor wheel; said movable means operated solely by the force of the wind.

5,823,750

HOUSING ARRANGEMENT FOR AN EXTERNAL ROTAR DRIVEN LUBRICATING PUMP

Kurt Hoffmann, Bad Schussenried, and Franz Maucher, Bad Waldsee, both of Germany, assignors to Schwabische Huttenwerke GmbH, Aalen-Wasseralfingen, Germany

Filed Nov. 22, 1995, Ser. No. 561,927
Claims priority, application Germany, Nov. 22, 1994, 44 41 522.2
Int. Cl.[6] F04C *2/10*
U.S. Cl. 417—310 20 Claims



1. In an external rotor-driven lubricating pump of the type comprising

a) a lubricant guidance part including

a1) a suction port

a2) an outer wall

a3) a carrier section

a4) a discharge port

a5) a lubricant feed space disposed between said carrier section and said outer wall and connected with said suction port and

a6) a lubricant delivery space disposed between said carrier section and said outer wall and connected with said discharge port and

b) a pump part including

b1) a drive gear

b2) an internally-toothed external rotor having a radially outer part forming an outer enclosure of the pump part and

b3) an externally-toothed internal rotor, said external rotor and said internal rotor pumping the lubricant from said lubricant feed space into said lubricant delivery space upon meshing, and

c) a shaft supporting said drive gear in said carrier section the improvement comprising:

d) said internal rotor having one tooth less than said external rotor thereby defining said lubricant feed space,

e) said drive gear fixed to said external rotor for rotation therewith,

f) said drive gear together with said external rotor forming an outer enclosure of the lubricating pump at its pump part end, said drive gear abutting a first axial end of said external rotor and said internal rotor, said drive gear being axially spaced from said outer wall of said lubricant part;

g) said internal rotor removably mounted on a collar of said shaft carrier and;

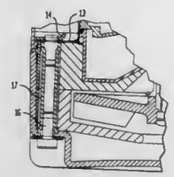
h) means forming a seal between said external rotor and said outer wall of said lubricating part whereby air infiltration into said lubricant feed space and leaking of lubricant at said delivery space is prevented.

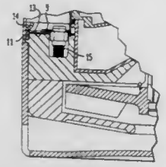
5,823,751

MOUNTING DEVICE FOR SUBMERSIBLE ELECTRIC MOTOR DRIVEN PUMP

Torbjorn Sjoblom, Johanneshov, and Bjorn Unden, Solna, both of Sweden, assignors to ITT Flygt AB, Solna, Sweden

Filed Oct. 8, 1996, Ser. No. 731,041
Int. Cl.[6] F04B *39/06*
U.S. Cl. 417—360 2 Claims





1. A device for mounting and keeping the parts of a submersible pump unit together, comprising in combination:

an electric motor having a rotor (**1**) with a shaft (**3**), and a stator (**2**), and stator housing (**8**) surrounded by a cooling jacket (**10**);

a pump housing (**5**) having an impeller (**6**) coupled to said shaft (**3**), and a seal housing (**4**) positioned between said stator housing (**8**) and said pump housing (**5**);

a first group of screw joints (**15**) and a second group of screw joints (**16**) being, alternately arranged around the periphery of the pump unit on a level with said seal housing (**4**);

a ring (**13**) being arranged around the seal housing (**4**) to enable said first group of joints (**15**) to maintain said stator housing (**8**) and said seal housing (**4**) together;

said second group of joints (**16**) maintaining together said seal ring (**13**), said pump housing (**5**), and an end of the cooling jacket (**10**) that abuts the pump housing (**5**); and

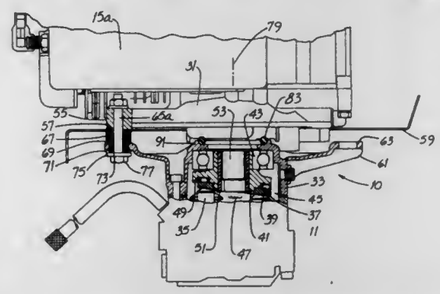
said stator housing (**8**) having outwardly directed ears (**9**) which cooperatively engage said joints (**15**).

5,823,752

ADAPTER FOR MECHANICALLY COUPLING A PUMP AND A PRIME MOVER

Herb Hoenisch; Robert D. Kern, both of Waukesha; Gerald C. Ruehlow, Oconomowoc, and Wes Sodemann, Dousman, all of Wis., assignors to Generac Portable Products, LLC, Jefferson, Wis.

Filed Feb. 28, 1997, Ser. No. 810,215
Int. Cl.[6] F04B *35/00*
U.S. Cl. 417—363 13 Claims



1. In combination, a prime mover and a pump-mount adapter mounted thereto, and wherein:

the adapter includes a central housing spaced from the prime mover;

a plurality of arms extend radially outwardly from the housing; each arm is coupled to the prime mover; and

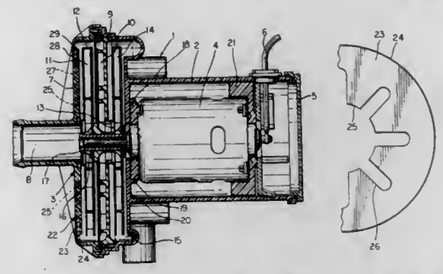
a resilient mount is interposed between each arm and the prime mover.

5,823,753

METAL REINFORCED PUMP COVER OF AN ELECTRICALLY DRIVEN AIR PUMP

Frank Kemmerling, Grevenbroich, Germany, assignor to Pierburg GmbH, Neuss, Germany

Filed Sep. 28, 1995, Ser. No. 535,660
Claims priority, application Germany, Oct. 29, 1994, 44 38 751.2
Int. Cl.[6] F04B *39/12*; F04D *29/02*
U.S. Cl. 417—423.14 15 Claims



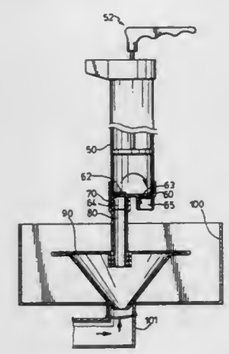
1. An electrically driven air pump comprising a housing including an electric motor in one section of the housing and a pump mechanism coupled to the motor in another section of the housing, said housing including a pump cover on said one section enclosing said pump mechanism, said pump cover being made of plastic and having an end wall including a metal reinforcement member joined by injection molding to said end wall, said metal reinforcement member having inner and outer perimetral surfaces and aperture means between said surfaces through which the plastic of said end wall extends by said injection molding to anchor the reinforcement member to said end wall, said outer perimetral surface of the metal reinforcement member being free and unobstructed for undergoing dimensional change due to temperature variation.

5,823,754

MANUAL PUMP

Tzu-Chi Lee, No. 14, Alley 2, Lane 118, Sec. 2, Ho-Ping E. Rd., Taipei City, Taiwan

Division of Ser. No. 700,115, Aug. 20, 1996, abandoned. This application Apr. 17, 1997, Ser. No. 838,057
Int. Cl.[6] F04B *39/10*; E03D *11/00*
U.S. Cl. 417—437 4 Claims



1. A manual pump for use with a drain pipe of a toilet bowl, said manual pump comprising:

a first tubular member having an upper closed end, a lower open end, and a piston member extending through and mounted movably in said first tubular member;

a second tubular member having an upper open end which is fixed sealingly to said lower open end of said first tubular member, a lower closed end, an inflow check valve, an outflow check valve, and two connecting tubes connected to an external face of said second tubular member, each of said connecting tubes being communicated with a corresponding one of said inflow and outflow check valves;

at least one extension pipe having an upper end which is connected detachably to one of said connecting tubes in an water-tight relationship and a lower end; and

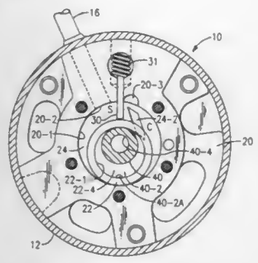
an inverted truncated conical cup member having an enlarged upper end which is connected detachably to said lower end of said at least one extension pipe and a restricted lower end, said cup member being made of a rubber material such that said restricted lower end is plugged sealingly into said drain pipe of said toilet bowl when being pressed against the same.

5,823,755

ROTARY COMPRESSOR WITH DISCHARGE CHAMBER PRESSURE RELIEF GROOVE

Francis P. Wilson, Liverpool; Andrea B. Dacosta, Syracuse, and James W. Bush, Skaneateles, all of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Filed Dec. 9, 1996, Ser. No. 762,372
Int. Cl.[6] F04C *18/356*
U.S. Cl. 418—15 15 Claims



1. In a high side rotary compressor having an interior at discharge pressure, an annular piston located in and movable in a chamber defined by a cylinder bore with bearing means located at each end of the bore and a vane coacting with said annular piston to define suction and discharge chambers, a primary discharge extending between said discharge chamber and said interior, supplemental discharge means extending between said discharge chamber and said interior and including:

a groove located in one of said bearing means and forming a portion of said supplemental discharge means;

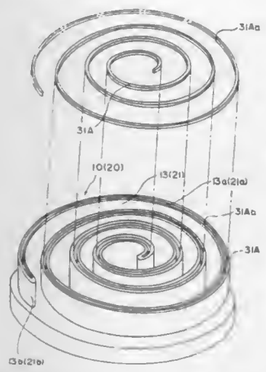
said annular piston having a bore forming a portion of said supplemental discharge means and coacting with said groove as said piston moves in said chamber whereby said piston and groove coact in the nature of a valving action to permit flow through said supplemental discharge means only when said compression chamber is undergoing discharge.

5,823,756

SCROLL FLUID DISCHARGING APPARATUS

Shinji Kawazoe, Yokobama, Japan, assignor to Anest Iwata Corporation, Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 777,195
Claims priority, application Japan, Dec. 28, 1995, 7-352526
Int. Cl.[6] F04C *18/00*
U.S. Cl. 418—55.4 4 Claims



1. A scroll fluid discharging apparatus comprising:

a plurality of scrolls with scroll laps formed on scroll bodies facing each other, a suction port being provided peripherally for sucking fluid into the apparatus, and a discharge port being provided centrally for discharging fluid from the apparatus,

tip seals at tips of said scroll laps in contact with mirror-finished opposed scroll surfaces, said fluid being compressed in sealed spaces formed by the tip seals and the mirror-finished opposed scroll surfaces during relative movement of said scrolls, the sealed spaces being progressively reduced in volume thereof while proceeding from said suction port toward said discharge port to discharge said fluid,

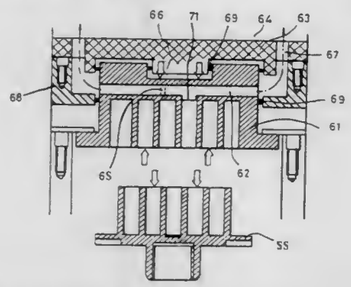
each of said scroll laps having a tip seal groove defined along its tip within which one of said tip seals is received, a first lap portion without a tip seal between its tip and the mirror-finished opposed scroll, thus providing an empty portion avoiding compression of fluid, over a predetermined range from an end of the lap on its outer peripheral side along the lap toward a central side, and a second lap portion with the tip seal in said tip seal groove extending from said predetermined range over a remaining portion of the lap and neighboring the first lap portion, said tip seal being in contact with the mirror-finished opposed scroll surface along the second lap portion, said first lap portion having a minimum length such that a ratio of said minimum length to a length (Sa) between a central side tip seal edge and a peripheral side lap edge of the first lap portion is no less than about 0.15.

5,823,757

AXIAL SEALING APPARATUS FOR SCROLL TYPE COMPRESSOR

Seon-Young Kim, Kyungki-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

PCT No. PCT/KR96/00064, § 371 Date Dec. 31, 1996, § 102(e) Date Dec. 31, 1996, PCT Pub. No. WO96/35056, PCT Pub. Date Nov. 7, 1996
PCT Filed May 2, 1996, Ser. No. 765,647
Claims priority, application Rep. of Korea, May 2, 1995, 1995/10723; Nov. 2, 1995, 1995/39366
Int. Cl.[6] F04C *18/04*
U.S. Cl. 418—55.5 2 Claims



1. An axial sealing apparatus for a scroll type compressor, comprising:

a stationary partition;

a stationary scroll adjacent said stationary partition;

a rotational scroll engaged with the stationary scroll so as to form a compression chamber therebetween;

a back pressure chamber formed between said stationary partition and the stationary scroll and having a back pressure hole communicating with the compression chamber and formed at a predetermined position where the back pressure hole is opened before a refrigerant gas compressed in the compression chamber is discharged to a discharging chamber for communicating the compression chamber and the back pressure chamber with each other and which back pressure hole is closed after the refrigerant gas is discharged to the discharging chamber; and

discharging holes communicating with the compression chamber and formed through the stationary scroll between the compression chamber and the back pressure chamber and opening at the sides of the stationary scroll for discharging the discharged gas from the compression chamber to the sides of the stationary scroll so that the stationary scroll is not axially loaded by the discharged gas, whereby an intermediate pressure having a greater pressure than a suction gas pressure and having a lower pressure than a discharging gas pressure is introduced into and maintained in the back pressure chamber.

5,823,758

FUEL COMBUSTION ENHANCING CATALYTIC COMPOSITION AND METHODS OF FORMULATING AND UTILIZING SAME

Lloyd Lack, 117 Lillie St., Battle Creek, Mich. 49015

Filed Oct. 24, 1996, Ser. No. 736,527
Int. Cl.[6] F23J *7/00*; C10L *1/12;1/18*
U.S. Cl. 431—4 18 Claims

1. The composition for enhancing combustion of LPG fuel, comprising at least one metal oxide catalyst dispersed in an organic carrier which is compatible with the LPG fuel;

said metal oxide catalyst is a mixture of chromium oxide (Cr_2O_3) and cobalt oxide (Co_3O_4); and

said organic carrier comprising primarily Stoddard solvent, as well as an emulsifier to maintain the metal oxide catalyst dispersed in the Stoddard solvent and in the LPG fuel when added thereto.

8. A combustible mixture of LPG fuel and a dispersion of a metal oxide catalyst in a liquid organic carrier compatible with the LPG fuel;

said metal oxide catalyst comprising at least one member from the group consisting of an alkaline earth metal oxide and a transition metal oxide; and

said liquid organic carrier comprising primarily Stoddard solvent, as well as an emulsifier to maintain the metal oxide catalyst dispersed in the Stoddard solvent and in the LPG fuel.

5,823,759

APPARATUS AND METHOD FOR BURNING COMBUSTIBLE GASES

Joshua Swithenbank, Sheffield, England, assignor to Cabot Corporation, Boston, Mass.

PCT No. PCT/US94/02715, § 371 Date Nov. 7, 1995, § 102(e) Date Nov. 7, 1995, PCT Pub. No. WO94/21967, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 14, 1994, Ser. No. 525,567
Claims priority, application United Kingdom, Mar. 20, 1993, 9305820
Int. Cl.[6] F23D *13/20*
U.S. Cl. 431—5 7 Claims

6. A method for burning the combustible components of a gas stream, said method comprising the steps of:

introducing a gas stream containing combustible components into one end of a stack pipe;

introducing air into the stack pipe to produce an air and gas mixture;

mixing the air and gas mixture in a mixing zone;

igniting the air and gas mixture to produce a flame and gaseous products;

stabilizing the flame produced by igniting the air and gas mixture;

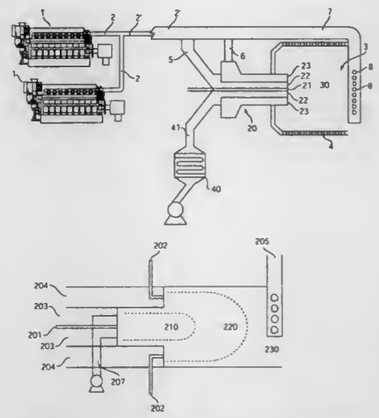
allowing the gaseous products resulting from combustion of the air and gas mixture to exit the stack pipe; and, inhibiting downwash of the gaseous products.

5,823,760

METHOD OF OPERATING A COMBINED CYCLE POWER PLANT

F. Mack Shelor, Riva, and Robert Bianco, Edgewater, both of Md., assignors to Wartsila Diesel, Inc., Annapolis, Md.

Continuation-in-part of Ser. No. 352,124, Dec. 1, 1994, Pat. No. 5,525,053. This application Jun. 10, 1996, Ser. No. 661,172
Int. Cl.[6] F23D *14/00*
U.S. Cl. 431—5 9 Claims



1. A method of operating a power plant comprising an internal combustion engine, a burner and a boiler space comprising:

routing a portion of the exhaust from the internal combustion engine to the burner;

adding fuel and air to the exhaust in order to form a mixture;

combusting said mixture in a primary combustion zone, creating burner exhaust;

routing a second portion of the engine exhaust from the internal combustion space to mix with said burner exhaust and fuel, creating a second mixture;

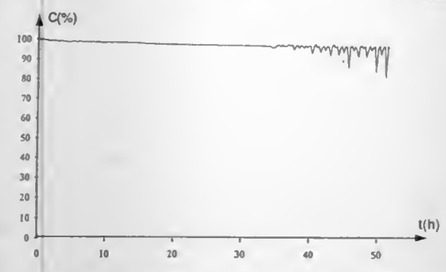
combusting said second mixture in a secondary combustion zone creating secondary burner exhaust; and

transferring the heat from said secondary burner exhaust to feedwater and steam in order to create steam.

5,823,761
PROCESS FOR CATALYTIC COMBUSTION WITH STAGED FUEL INJECTION

Patrick Euzen, Rueil Malmaison; Jean-Herve Le Gal, Paris, and Gerard Martin, Rueil Malmaison, all of France, assignors to Institut Francais Du Petrole, Rueil Malmaison, France

Filed Jan. 14, 1997, Ser. No. 783,167
Claims priority, application France, Jan. 15, 1996, 96/00513
Int. Cl.[6] F23B *7/00*
U.S. Cl. 431—7 **17 Claims**

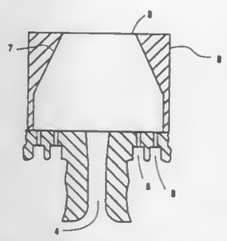


1. A process for the catalytic combustion of fuel with staged fuel injection that comprises: a first injection of fuel and air, the passage of the air-fuel mixture into a catalytic zone, and a second injection of fuel into the output gas from said catalytic zone, said process being characterized in that said catalytic zone comprises at least one catalyst that comprises a monolithic substrate, a porous refractory inorganic oxide support and an active phase that comprises (I) cerium, iron, and optionally zirconium, and (II) at least one metal selected from the group consisting of palladium and platinum; the content of the porous support is between 100 and 400 g per liter of catalyst; the cerium content is between 0.3 and 20% by weight relative to the porous support; the zirconium content is between 0 and 20% by weight relative to the porous support; the iron content is between 0.01 and 3.5% by weight of iron relative to the porous support; and the palladium and/or platinum content is greater than 3 g per liter of catalyst, said process being further characterized by the presence of a monolithic element with a ceramic or metallic cellular structure, downstream from the catalytic zone, and wherein the second fuel injection is carried out between the catalytic zone and said monolithic element.

5,823,762
COHERENT GAS JET

John Erling Anderson, Somers, N.Y., and Dennis Robert Farrenkopf, Bethel, Conn., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Mar. 18, 1997, Ser. No. 819,811
Int. Cl.[6] F23C *5/00*
U.S. Cl. 431—8 **9 Claims**

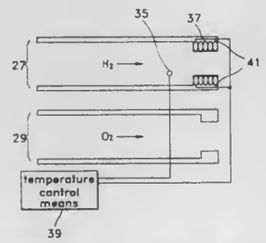


1. A method of forming a coherent gas jet comprising:
a) providing a main gas through a converging/diverging nozzle, so that the main gas exits the nozzle to form a main gas jet having a center axis, said main gas being a non-reactive gas selected from the group consisting of nitrogen, argon, carbon dioxide, and mixtures thereof;
b) supplying a flow of fuel gas around the main gas jet and a flow of oxidant gas around the flow of fuel gas and forming a flame envelope from the fuel gas and the oxidant gas, said flame envelope surrounding the main gas jet; and
c) directing said flame envelope toward the center axis of the main gas jet.

5,823,763
COMBUSTION DEVICE AND METHOD FOR USE IN A THERMAL OXIDATION FURNACE

Jung-geen An, and Jung-soo An, both of Yongin, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 6, 1996, Ser. No. 692,998
Claims priority, application Rep. of Korea, Feb. 22, 1996, 1996/4198
Int. Cl.[6] F23N *1/00*
U.S. Cl. 431—41 **5 Claims**

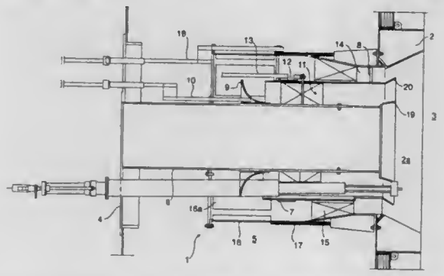


1. A combustion device for use in a furnace, comprising:
a first gas nozzle providing a first gas;
a second gas nozzle providing a second gas; and
a combustion means for directly raising a temperature of said first gas to a combustion temperature, and reacting said first gas with said second gas so as to combust said first and second gases within said combustion device, said combustion means comprising an electrical heating coil disposed in the first gas nozzle.

5,823,764
THREE-STAGE LOW NOX BURNER FOR BURNING SOLID, LIQUID AND GASEOUS FUELS

Marco Alberti, Milan; Roberto Rizzi, Monza; Marcello Martano, Adelfia; Gennaro De Michele, Pisa, and Sergio Ligasacchi, S. Ciuliano Terme, all of Italy, assignors to Ansaldo Energia S.p.A., Genoa, and Enel S.p.A., Rome, both of Italy

Filed Jul. 15, 1997, Ser. No. 891,800
Claims priority, application European Pat. Off., Oct. 8, 1996, 96116099
Int. Cl.[6] F23M *9/00*
U.S. Cl. 431—184 **11 Claims**



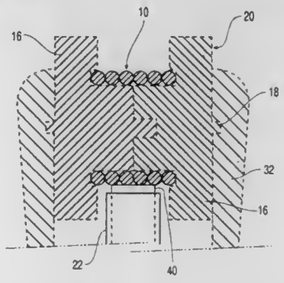
1. A low Nox burner comprising ducts for the primary, secondary and tertiary air, arranged coaxially around its longitudinal axis,

for supplying primary, secondary and tertiary air, respectively to a combustion chamber, means for accumulation of the air, means to give vorticity to the primary, secondary and tertiary air installed in the respective ducts, fuel supply means arranged within said ducts to inject the fuel into said combustion chamber, said means for giving vorticity to the secondary air comprising an axial swirler for the secondary air, formed by a plurality of blades each of which is made up of a fixed part and a mobile part connected to actuator means capable of angularly displacing said mobile part to give an air duct outlet angle between 30° and 60° , and ,means for giving vorticity to the tertiary air comprising an axial swirler for the tertiary air, in the shape of a cone and with fixed blades, a passage being formed on the tertiary air duct to feed the secondary air and the tertiary air.

5,823,765
LIGHTER HAVING A NON-ROTATING FLINT

Guy La Forest, Cascais, Portugal, assignor to BIC Corporation, Milford, Conn.

Filed Oct. 9, 1997, Ser. No. 948,382
Int. Cl.[6] F23Q *1/02*
U.S. Cl. 431—276 **13 Claims**



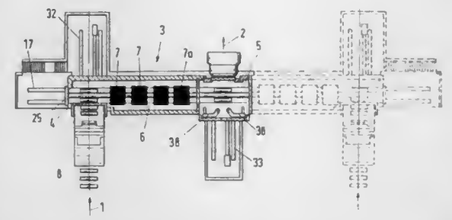
1. A flame producing lighter, comprising:
a lighter body containing a fuel reservoir with a valve for releasing fuel therefrom;
a valve actuator depressible by a user to actuate said valve and release said fuel;
a spark producing element rotatable by a user to produce sparks directed towards released fuel, said element mounted on said lighter body with at least a portion thereof exposed for manipulation and rotation by the user;
a flint contained within the lighter body and in frictional contact with the spark producing element wherein rotation of the spark producing element against the flint creates sparks directed towards released fuel; and
a means for preventing rotation of the flint about its central axis during manipulation and rotation of the spark producing element.

5,823,766
FURNACE INSTALLATION AS INTERMEDIATE STORAGE DOWNSTREAM OF A THIN-SLAB CASTING INSTALLATION

Peter Wilhelm Seiler, Oberhausen; Stanislaw Pawlowski; Eugeniusz Kania, both of Mülheim/Ruhr; Horst Wolfgang Mathejka, Dortmund, and Werner Kircher, Ratingen, all of Germany, assignors to Mannesmann Aktiengesellschaft, Düsseldorf, Germany

Filed Sep. 12, 1995, Ser. No. 529,168
Claims priority, application Germany, Sep. 15, 1994, 44 34 370.1
Int. Cl.[6] F27B *9/00*
U.S. Cl. 432—121 **11 Claims**

1. A furnace installation, comprising:

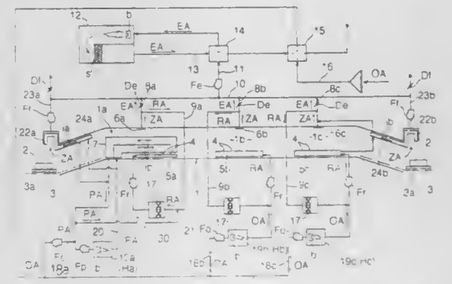


mandrel-free coiling means for coiling strip-shaped cast billet into bundles, said coiling means being arranged at a charging end of the furnace installation;
uncoiling means downstream of the coiling means for uncoiling the bundles;
means for transporting the coiled bundles from the coiling means to be uncoiling means, the transporting means include at least one transporting device that is movable between the coiling means and the uncoiling means. the transporting means further including lifting/lowering supports mounted on the transporting device for lifting and lowering the bundles, the uncoiling means being provided at a distance from the coiling means sufficient to permit a plurality of bundles to be arranged adjacent one another between the coiling means and the uncoiling means, the transporting means including running rails arranged to extend centrally below a bottom of the furnace installation and longitudinally thereto, the transporting means further including two bundle transporting cars arranged to be movable independently from one another on the running rails, a first one of the transporting cars being operative with the coiling means and a second one of the transporting cars being operative with the uncoiling means;
a bottom having an opening that extends parallel to the running rails, the supports being provided on the transporting car so as to penetrate through the opening in the bottom; and,
flaps pivotably arranged to open and close the opening, the flaps being moveable in an immediate region of the supports during movement of the transporting cars.

5,823,767
PAINT DRYING FURNACE

Makoto Watanabe; Isao Ohashi, both of Tokyo; Hisashi Umeda, Aichi-ken, and Koji Hayashi, Nagoya, all of Japan, assignors to Taikisha Ltd, Tokyo, Japan

PCT No. PCT/JP96/02884, § 371 Date Aug. 8, 1997, § 102(e) Date Aug. 8, 1997, PCT Pub. No. WO91/12691, PCT Pub. Date Apr. 10, 1997
PCT Filed Oct. 2, 1996, Ser. No. 849,405
Claims priority, application Japan, Oct. 4, 1995, 7-257348
Int. Cl.[6] F27D *17/00*
U.S. Cl. 432—72 **7 Claims**



1. A paint drying furnace having a furnace interior, the furnace comprising:

a furnace interior circulating gas passage for withdrawing a furnace interior gas from the furnace interior and returning the withdrawn gas to the furnace interior;

furnace interior heating means for heating, to a high temperature, the gas returned from the furnace interior circulation gas passage to the furnace interior, thereby to heat the furnace interior;

hot gas heat source type radiator means with radiating surfaces heated by passing a heat source hot gas through inner gas passages to radiate heat from the radiating surfaces to the furnace interior;

a radiator circulating gas passage for returning a gas outputted from the inner gas passages of the radiator means to the inner gas passages of the radiator means;

a combustion type radiator heating device disposed on the radiator circulating gas passage for heating the gas circulating through the radiator circulating gas passage;

a fresh air passage connected to a gas passage portion of said radiator circulating gas passage which transmits the gas outputted from the inner gas passages of said radiator means to said combustion type radiator heating device for mixing fresh air into the gas circulating through the radiator circulating gas passage;

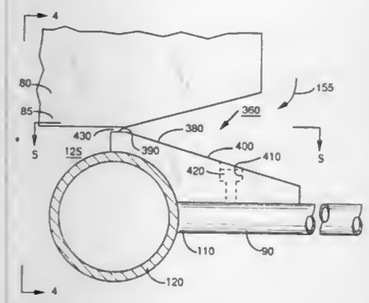
a shunt gas passage for dividing the gas outputted from the inner gas passages of said radiator means from a position of said radiator circulating gas passage upstream of a connecting point of said fresh air passage and mixing this divided gas into the gas circulating through said furnace interior circulating gas passage; and

with provision of this shunt gas passage, said combustion type radiator heating device acting also as said furnace interior heating means.

5,823,768
ROTARY COMBUSTOR AND SEAL ASSEMBLY THEREFOR

George A. Blasiole; Jeffrey Mitchell; Alvin Steffey, all of Greensburg, and Donald P. Flading, Manor Boro, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 11, 1996, Ser. No. 585,288
Int. Cl.[6] F27B *7/24*
U.S. Cl. 432—115 **2 Claims**

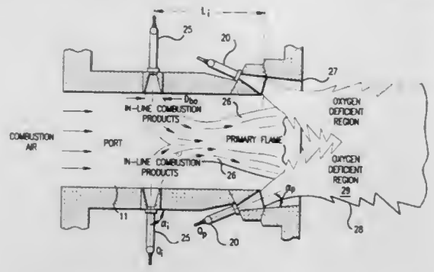


1. In a rotary combustor having a rotatable kiln having an inlet opening for receiving waste material therethrough and a shroud encircling the inlet opening, the kiln made-up of a plurality of parallel spaced-apart heat transfer tubes interconnected by a web-shaped support structure, each of the tubes having end portions thereof terminating at a ring-shaped plenum disposed adjacent to and surrounding the shroud, the shroud and the plenum defining an annular gap therebetween capable of allowing waste material therethrough, a seal assembly for simultaneously sealing the gap and protecting the plenum and the end portions of the heat transfer tubes, the seal assembly comprising a plurality of adjacent block members interposed between the shroud and the plenum for sealing the gap and extending over the plenum for protecting the plenum from damage by the waste material, each of said block members attached to the web-shaped support structure for supporting the block members thereon, wherein each of said block members has an arcuate-shaped cut-out conforming to the curvature of the tubular plenum to cover a predetermined portion of the plenum, said flange and said block members defining an annular clearance space therebetween for allowing interference-free motion of said block members relative to said flange.

5,823,769
IN-LINE METHOD OF BURNER FIRING AND NO_x EMISSION CONTROL FOR GLASS MELTING

Mahendra L. Joshi, Altamonte Springs, and Patrick J. Mohr, Mims, both of Fla., assignors to Combustion Tec, Inc., Apopka, Fla.

Filed Mar. 26, 1996, Ser. No. 622,014
Int. Cl.[6] F27D *17/00*
U.S. Cl. 432—181 **8 Claims**



1. An industrial material heating furnace comprising:

combustion air preheat means for preheating combustion air;

a combustion chamber;

at least one combustion air port connecting said combustion air preheat means to said combustion chamber and providing communication therebetween;

primary injection means for introducing a first portion of a fuel into a combustion air stream flowing through said at least one combustion air port and forming a primary flame, said primary injection means connected to said at least one combustion air port; and

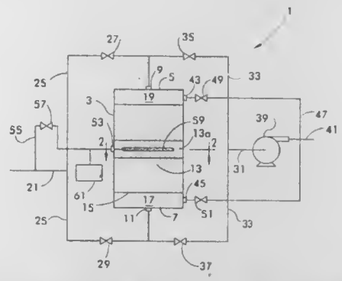
secondary injection means for introducing a remaining portion of said fuel into said combustion chamber and forming an oxygen deficient zone proximate said primary flame, said secondary injection means disposed in a same horizontal plane as said primary injection means at a distance from a bottom of said at least one combustion air port downstream of said primary injection means and connected to one of said at least one combustion air port and a wall of said combustion chamber, proximate an exit end of said at least one combustion air port.

5,823,770
PROCESS AND APPARATUS FOR OXIDIZING COMPONENTS OF A FEED GAS MIXTURE IN A HEAT REGENERATIVE REACTOR

Yurii Shaevich Matros, Chesterfield; Grigori Abramovich Bounimovitch, St. Louis, and Vadim Olegovich Strots, Clayton, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Feb. 26, 1997, Ser. No. 806,914
Int. Cl.[6] F27D *17/00*
U.S. Cl. 432—181 **34 Claims**

1. A regenerative heat transfer reactor for oxidizing components of a feed gas mixture, the reactor comprising:



a vessel having two ends, the interior of said vessel defining an unfired heat exchange/reaction zone containing a gas-permeable bed comprising heat exchange material, said heat exchange material extending substantially throughout said heat exchange/reaction zone;

a gas handling system for selectively introducing the feed gas mixture into one of said ends of said vessel and discharging reacted gas comprising oxidized components of the feed gas mixture through the other of said ends of said vessel such that each of said ends of said vessel alternately serves as an inlet for the feed gas mixture and as an outlet for the reacted gas and direction of gas flow through said vessel is reversed;

a bypass system for selectively introducing the feed gas mixture into said vessel at a point intermediate said ends of said vessel during a transitional step in reversing the direction of gas flow through said vessel, said bypass system comprising a bypass port on said vessel intermediate said ends of said vessel and in selective fluid communication with a bypass line connected to a source of the feed gas mixture;

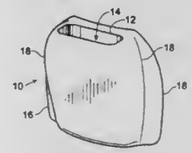
a purging system for purging unreacted feed gas mixture from said unfired heat exchange/reaction zone during the transitional step, said purged gas being reacted prior to being discharged from the reactor; and

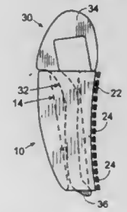
a heater disposed externally of said vessel for supplying heat to said unfired heat exchange/reaction zone.

5,823,771
VERTICAL STRAIGHT WIRE ORTHODONTIC APLLIANCE HAVING INTERCHANGEABLE ANCHOR COMPONENTS

Philip J. Nord, 840 Section Line Ave., Seaside, Oreg. 97138

Filed May 27, 1997, Ser. No. 863,484
Int. Cl.[6] A61C *7/00*
U.S. Cl. 433—14 **11 Claims**





1. An orthodontic base for receiving an orthodontic anchor comprising:

an elongate, tapered body having:

opposite occlusal and gingival ends,

a long dimension extending between said occlusal and gingival ends and sized to fit onto a surface of a tooth in parallel with a long axis of said tooth,

a width dimension smaller than said long dimension and sized to fit within a width of a surface of said tooth,

a depth dimension smaller than said width dimension, and one concave surface in a common plane of said long dimension and said width dimension; and

an elongate rectangular orifice extending through said body in parallel with said long dimension of said body, said orifice having:

an orifice width dimension extending parallel to said width dimension of said body, and

a depth dimension smaller than said orifice width dimension and extending parallel to said depth dimension of said body,

wherein said orifice depth dimension decreases in the occusal-gingival direction at predetermined, graduated rates so as to enable placement within said orifice of an undulated anchor, the subsequent removal of said anchor then requiring exertion in the gingival-occlusal direction of a predetermined removal force greater than a predetermined corrective force.

2. An orthodontic bracket comprising:

an orthodontic base for receiving an orthodontic anchor comprising:

an elongate, tapered body having:

opposite occlusal and gingival ends, a long dimension extending between said occiusal and gingival ends and sized to fit onto a surface of a tooth in parallel with a long axis of said tooth,

a width dimension smaller than said long dimension and sized to fit within a width of a surface of said tooth,

a depth dimension smaller than said width dimension, and one concave surface in a common plane of said long dimension and said width dimension; and

an elongate rectangular orifice extending through said body in parallel with said long dimension of said body, said orifice having:

an orifice width dimension extending parallel to said width dimension of said body, and

a depth dimension smaller than said orifice width dimension and extending parallel to said depth dimension of said body,

wherein said orifice depth dimension decreases in the occusal-gingival direction at predetermined, graduated rates so as to enable placement within said orifice of an undulated anchor, the subsequent removal of said anchor then requiring exertion in the gingival-occlusal direction of a predetermined removal force greater than a predetermined corrective force; and

an anchor having:

an elongate, undulated shaft sized to pass lengthwise through said aperture in a force fit;

a head disposed at a first end of said shaft further comprising a wire slot passing transversely therethrough and being open on a side thereof facing onto said base; and

a lip disposed at a second end of said shaft opposite said first end and curved towards said open side of said wire slot.

5,823,772
FOLDED ORTHODONTIC SPRING

William Vogt, RD 4, Box 4205, Bangor, Pa. 18013

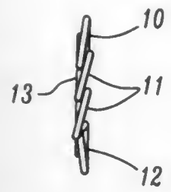
Filed Dec. 24, 1996, Ser. No. 772,912
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—21 **13 Claims**

1. An orthodontic extension spring, comprising:

a wire having first and second ends movable between relaxed and extended positions;

first attachment means located at said first end;

a plurality of bends along said wire extending from said first attachment means, said bends sequentially alternating in rota-



tional direction forming a plurality of waves in said wire wherein peaks and valleys lie substantially in a single plane when said wire is extended; and

second attachment means located at said second end directly after said bends, wherein said portion of the wire including successive bend form a figure "8".

5,823,773

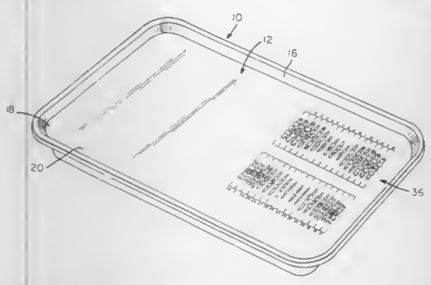
DENTAL TRAY LINER AND METHOD

Wendy L. Brysch, Rte. 1, Box 189E, Hobson, Tex. 78117

Filed Jan. 28, 1997, Ser. No. 790,265

Int. Cl.[6] A61G *15/00*

U.S. Cl. 433—77 **9 Claims**



1. A dental tray liner, consisting of a sheet of paper having a front side and a back side, said front side having a chart of the teeth of a human mouth provided thereto, and said chart having a surface area that is substantially one-quarter of that said sheet of paper.

5,823,774

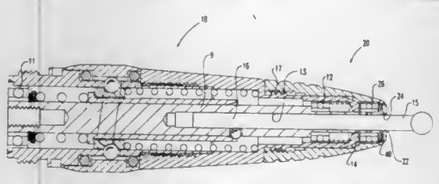
DYNAMICALLY SEALED SURGICAL DRILL

Dwight E. Abbott, and Kenneth L. Brown, both of Redding, Calif., assignors to Arthrotek, Inc., Warsaw, Ind.

Filed Jan. 31, 1996, Ser. No. 594,581

Int. Cl.[6] A61C *1/02*

U.S. Cl. 433—115 **37 Claims**



1. A dynamic seal with integral impeller for removable attachment over the distal end of a surgical drill for preventing the ingress of contaminating substances into a bearing section of the drill, said dynamic seal comprising:

(a) a housing having a proximal end for removable placement on said distal end of said drill, a distal end with a tool opening therein, and at least one discharge hole in flow communication with said tool opening; and

(b) a rotatably driven impeller located within said distal end of said housing adjacent said tool opening, said impeller being rotatably supported by said housing and removable therewith.

5,823,775

PRACTICAL CUTTING BUR AND METHOD OF TRAINING USING SAME FOR THE CUTTING OF HUMAN TEETH

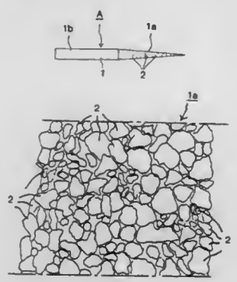
Masao Aono; Kohji Yamamoto, both of Gifu-ken; Kanji Matsutani, and Satoshi Tezuka, both of Tochigi-ken, all of Japan, assignors to Kabushiki Kaisha Matsutani Seisakusho, Tochigi-ken, Japan

Filed Dec. 6, 1995, Ser. No. 568,387

Claims priority, application Japan, Dec. 9, 1994, 6-306232

Int. Cl.[6] A61C *3/02*

U.S. Cl. 433—166 **3 Claims**



1. A method of practice training for the cutting of human teeth by cutting artificial teeth made of plastic by means of a practice cutting bur attached to a rotary instrument, wherein the practice cutting bur comprises a shank having one end adapted to be held by a rotary instrument, and another end of the shank having a cutting portion, said cutting portion having a surface, said cutting portion formed integral with said shank, and said cutting portion having, secured to the surface, a mixture of 25% of abrasive grains of grain size #600, 50% of abrasive grains of grain size #230, and 25% of abrasive grains of grain size #120.

5,823,776

ENOSSAL SINGLE TOOTH IMPLANT WITH TWISTING PREVENTION

Walter Duerr, Remchingen, and Axel Kirsch, Stuttgart, both of Germany, assignors to IMZ Fertigungs- und Vertiebsgellschaft fur dentale Technologie mbH, Filderstadt, Germany

Filed Aug. 22, 1996, Ser. No. 701,688

Claims priority, application Germany, Sep. 20, 1995, 195 34 979.2

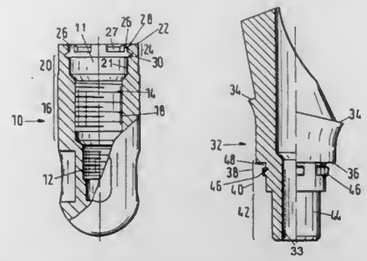
Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—173 **19 Claims**

1. A single tooth implant for a tightly fitting dental prosthesis, said implant comprising:

a substantially cylindrical basic body insertable in a bore made in a jaw bone, said basic body having an axially extending blind bore extending from one end towards a second end to provide the body with a closed end at said second end and said one end having a coronal front edge extending between an outside surface of the basic body and the blind bore,

a spacing sleeve having an axially extending passage being attachable to the coronal front edge of the basic body by means of an implant post insertable through the passage and into the blind bore, and



means for preventing twisting between the spacing sleeve and the basic body,

said blind bore of said basic body having a positive connection area adjacent the one end comprising at least one connecting element followed by a guidance area of a cylindrical surface which has a first diameter and merges into a centering area of a second diameter smaller than the first diameter,

said spacing sleeve having a plug portion separated from a fastening end adapted for receiving the prosthesis by an annular shoulder receivable on the coronal front edge when the sleeve is mounted on the basic body with the plug portion inserted into the blind bore,

said plug portion adjacent the annular shoulder having a positive connecting portion with at least one connecting element, a guidance portion spaced from the positive connecting portion towards an end of the plug portion and then a centering portion adjacent the end of the plug portion,

said guidance portion of the plug portion having an outer diameter essentially matching the first diameter of the guidance area and said centering portion of the plug portion having an outer diameter essentially matching the second diameter of the centering area,

said centering portion being receivable in the centering area of the blind bore of the basic body with the guidance portion received in the guidance area of the blind bore and the positive connection portion being disposed in the positive connection area of the blind bore as the shoulder of the spacing sleeve engages the coronal front edge,

said means for preventing twisting comprising the connecting element of one of the sleeves and basic body being a groove and the connecting element of the other of the sleeve and the basic body being a projection receivable in said groove when the plug portion of the sleeve is inserted in the blind bore with the annular shoulder engaging the coronal front edge.

5,823,777

DENTAL IMPLANTS TO OPTIMIZE CELLULAR RESPONSE

Carl E. Misch, Dearborn, Mich.; Martha Warren Bidez, and J. Todd Strong, both of Birmingham, Ala., assignors to Biohorizons, Inc., Birmingham, Ala.

Continuation-in-part of Ser. No. 356,597, Dec. 15, 1994, Pat. No. 5,628,630. This application Feb. 7, 1997, Ser. No. 796,347

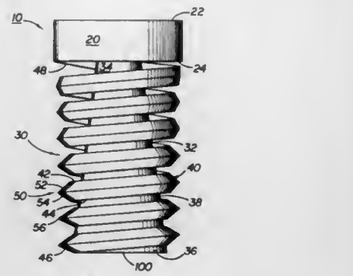
Int. Cl.[6] A61C *8/00*

U.S. Cl. 433—174 **12 Claims**

1. A dental implant having a longitudinal axis for implanting in bone, comprising:

a. a crest module having a top end, a bottom end and a wall having an outer surface; and

b. a threaded section having a crestal end and an apical end, the crestal end abutting the bottom end of the crest module, a helical thread extending along a portion of the threaded section from a base end outwardly to a distal end, the threaded section having a length, a major diameter being defined as the diameter of the threaded section measured at the distal end of the thread and a minor diameter being defined as the diameter of the threaded section measured at the base end of the helical thread, the major diameter being constant along the length of the threaded section, the minor diameter adjacent the crestal end being less than the minor diameter adjacent the apical end and the minor diameter varying along the length of the threaded section as a function of a selected biomedical characteristic.



5,823,778

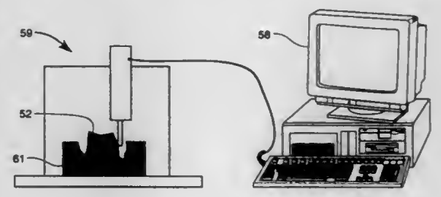
IMAGING METHOD FOR FABRICATING DENTAL DEVICES

Stephen M. Schmitt, San Antonio, Tex., and David A. Chance, Burke, Va., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 9, 1997, Ser. No. 871,118

Int. Cl.[6] A61C *9/00*

U.S. Cl. 433—214 **13 Claims**



1. A method for fabricating a dental restoration for a patient, comprising the steps of:

(a) providing a dental impression tray containing a first impression material;

(b) obtaining a dental impression of a patient using said impression tray and first impression material, said dental impression defining a cavity in said first impression material corresponding to the shape of the teeth, gums and palate of the patient;

(c) filling said cavity with a second material distinguishable from said first material and allowing said first and second materials to harden to a solid block of said first and second material;

(d) successively removing from said block thin uniform layers of predetermined known thickness of said first and second material and imaging the then remaining surface of said block after each successive layer is removed to define a contour of said second material for each said layer removed, each said contour defining the contour of the teeth, gums and palate of the patient at a corresponding known depth of removal from said block of said successive layers;

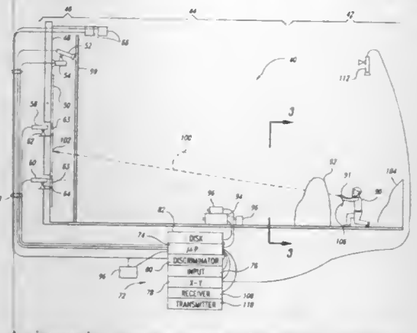
(e) generating a three dimensional computer model of the teeth, gums and palate of the patient using said contours and said corresponding known depths of removal of said successive layers; and

(f) machining a restoration corresponding to said three dimensional computer model.

5,823,779
ELECTRONICALLY CONTROLLED WEAPONS RANGE WITH RETURN FIRE

Eric G. Muehle, and Irwin C. Treat, Jr., both of Maple Valley, Wash., assignors to Advanced Interactive Systems, Inc., Tukwila, Wash.

Filed May 2, 1996, Ser. No. 644,445
Int. Cl.[6] F41G *3/26*
U.S. Cl. 434—121 **54 Claims**



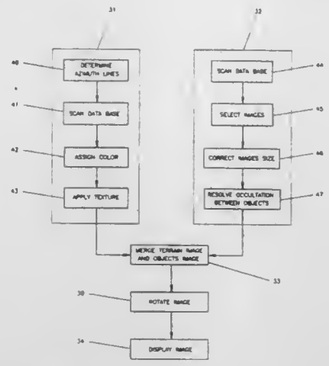
1. An interactive weapons range environment comprising:
an electronic central controller, the central controller having a first output for providing a return fire signal;
a participation zone;
an electrically controlled return fire simulator aligned to the participation zone, the return fire simulator being coupled to receive the return fire signal from the central controller, the return fire simulator being operative to emit simulated return fire toward the participation zone in response to the return fire signal; and
a participant detector aligned to the participation zone, the detector further being aligned to detect a participant within the participation zone and coupled to provide a signal to the central controller in response to the detection,
wherein the central controller further includes an alignment output for supplying an alignment signal and the return fire simulator includes an alignment input coupled to receive the alignment signal from the central controller and wherein the return fire simulator is alignable to a selected location in the participation zone in response to the alignment signal from the central controller.

5,823,780
APPARATUS AND METHOD FOR SIMULATION

Ram Arye, Rishon Le-Zion, and Menachem Lasser, Kohav-Yair, both of Israel, assignors to Simtech Advanced Training & Simulation Systems, Ltd, Holdn, Israel

Filed Dec. 14, 1995, Ser. No. 572,324
Claims priority, application Israel, Mar. 8, 1995, 112940
Int. Cl.[6] A61C *9/00*
U.S. Cl. 434—38 **28 Claims**

1. A simulation method for simulating a terrain and the objects thereabove to a viewer, the method comprising:
a. providing a first data base comprising a digital representation of said terrain;
b. providing a second data base comprising a digital representation of said objects located above said terrain;
c. generating individual images, each of which simulating a viewing volume of said terrain and said objects, said step of generating comprising:
i. producing a first image from information stored in said first data base and, independently, producing a second image from information stored in said second data base;
ii. merging said first image and said second image, thereby forming an image simulating a viewing volume; and
iii. displaying the image simulating said viewing volume on a display; and
d. repeating said step of generating, thereby producing a plurality of images simulating a plurality of viewing volumes.

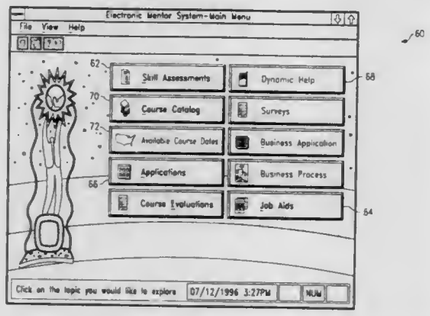


14. A simulator comprising:
a. a first data base comprising a digital representation of a terrain;
b. a second data base comprising a digital representation of objects located above said terrain; and
c. an image generating system for generating a plurality of images simulating a plurality of viewing volumes, said plurality of images comprising individual images, each individual image simulating a viewing volume of said terrain and said objects, said image generating system comprising
i. means for producing a first image from information stored in said first data base and, independently, producing a second image from information stored in said second data base;
ii means for merging said first image and said second image, thereby forming an image simulating a viewing volume; and
iii a display for displaying the image simulating said viewing volume.

5,823,781
ELECTRONIC MENTOR TRAINING SYSTEM AND METHOD

William A. Hitchcock, Oakland, Mich., and Robert C. Allen, Dallas, Tex., assignors to Electronic Data Systems Coporation, Plano, Tex.

Filed Jul. 29, 1996, Ser. No. 681,745
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—118 **24 Claims**



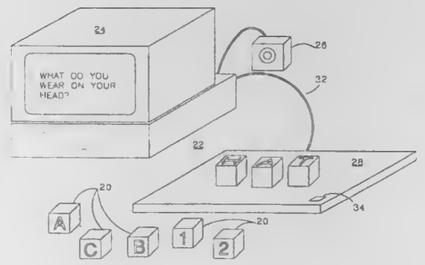
16. A method for providing a user training on a computer software application, the method performed by a computer executing a computer program, the process comprising the steps of:
diagnosing a user's skill level on the computer software application;

comparing the user's skill level on the computer software application to a predetermined minimum skill level required for the user on the computer software application;
prescribing a training plan based on the diagnosis and comparison that will provide the user training to achieve the predetermined minimum skill level; and
providing the user access to a plurality of computer based training programs to train the user on the computer software application.

5,823,782
CHARACTER RECOGNITION EDUCATIONAL SYSTEM

Brian I. Marcus, and Warren S. Heit, both of San Francisco, Calif., assignors to Tinkers & Chance, San Francisco, Calif.

Continuation of Ser. No. 581,437, Dec. 29, 1995, abandoned.
This application Jul. 9, 1997, Ser. No. 890,294
Int. Cl.[6] G09B *19/00;1/16;5/00;7/00*
U.S. Cl. 434—156 **16 Claims**



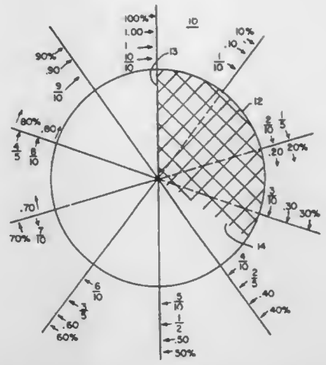
1. A system, comprising:
an object having at least one visually recognizable symbol thereon;
an emitter within said object for actively emitting a signal including encoded information uniquely representative of said at least one visually recognizable symbol; and
an enclosure, including:
a surface for supporting said object, and
a processor, including means for receiving said signal from said emitter, said processor capable of identifying said symbol from said signal, and capable of identifying a position of said object on said surface.

5,823,783
ROTATING PIE GRAPH: MATHEMATICS LEARNING TOOL

Mary Katherine Adams, P. O. Box 3040, Youngstown, Ohio 44511

Filed Jun. 14, 1995, Ser. No. 405,297
Int. Cl.[6] G09B *23/02*
U.S. Cl. 434—208 **3 Claims**

1. An apparatus for teaching mathematical skills comprising:
(a) a first chart sheet including at least once pie chart area having a center and outer perimeter configured thereon and having a radial slot within said pie chart area extending from said center to said outer perimeter said pie chart area being divided into at least two sections; and,
(b) a first rotatable disk having a radial slit extending from the center to the perimeter of said rotatable disk, said rotatable disk having a slit edge, said disk being rotatably and slidably mounted to said first chart sheet so that said slit edge passes through said slot,

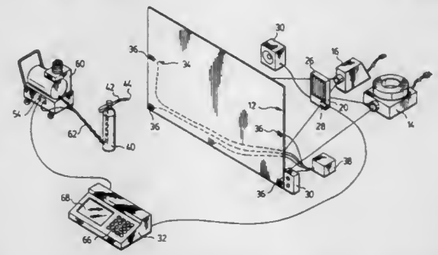


whereby upon rotation of said disk more or less of said pie chart area is exposed, demonstrating operation of fractions and/or decimals and/or percentages.

5,823,784
ELECTRIC FIRE SIMULATOR

Kerry S. Lane, 255 Glenway Cir., Newmarket Ontario, Canada, L3Y 7S6

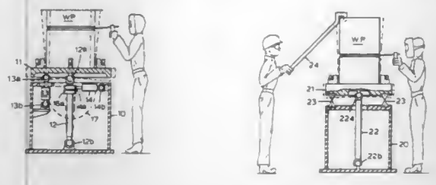
Filed May 16, 1995, Ser. No. 442,209
Claims priority, application United Kingdom, May 16, 1994, 9409790
Int. Cl.[6] G09B *19/00*
U.S. Cl. 434—226 **14 Claims**



1. A method of simulating the response of a fire to an extinguishing agent comprising the steps of projecting an image of a fire on to a screen, determining the impingement location of a beam representing a stream of extinguishing agent on said screen, adjusting control associated with said image in a manner to occlude portions thereof directly associated with said impingement location and to occlude neighboring portions thereof indirectly associated with said impingement location and polling predetermined locations spaced on said image to adjust said control in a manner to restore said image to portions associated with said predetermined locations.

10. Apparatus for simulating the response of a fire to an extinguishing agent comprising a screen, a projector to project an image of a fire on said screen, detectors to detect an impingement location of a beam representing a stream of extinguishing agent on said screen, a shutter assembly having a plurality of shutter elements each operable to occlude a respective portion of said image when in a closed state and a control to control said shutter elements and adjust said elements between an open state and said closed state, said control adjusting a shutter element directly associated with said impingement location toward a closed state upon detection of said impingement, adjusting adjacent shutter elements indirectly associated with said impingement location, and adjusting predetermined shutter elements toward an open state periodically to simulate reflash of said fire.

5,823,785
SIMULATOR FOR PIPE WELDING
Lee Matherne, Jr., 5300 Doliver, Houston, Tex. 77056
Filed Oct. 27, 1997, Ser. No. 958,507
Int. Cl.[6] G09B *19/24;25/02*
U.S. Cl. 434—234 12 Claims

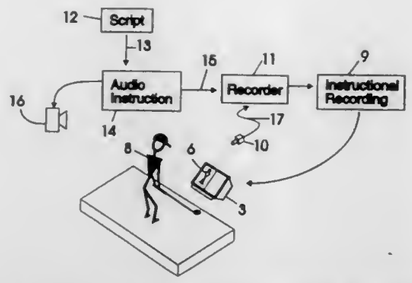


1. A procedure for simulating the movement of vertical pipe columns when being assembled at offshore platforms, the procedure comprising:
a) measuring and recording the movement of said pipe relative to said platform and recording signals characteristic of said movement on transportable medium;
b) conveying said recording to a prepared site for duplicating said movement;
c) mounting a representative specimen of said pipe on a manipulator table for limited tilt and transverse movement;
d) using the recording to control said manipulator table to move said mounted specimen as required to duplicate said movement of said column.

5. A simulator for use for training welders to weld the junctions of vertical pipe columns that move while being welded, the simulator comprising:
a) a base;
b) a manipulator table with a vertical axis and means to secure a pipe specimen thereto to extend vertically along said axis;
c) means to secure said table atop said base for limited nutating movement and limited horizontal movement relative thereto;
d) first drive means to drive said table in said nutating movement; and
e) second drive means to drive said table in said horizontal movement.

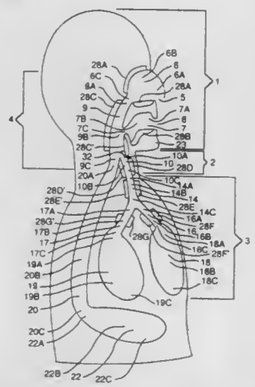
10. A simulator for training welders to weld on moving pipe strings, the simulator comprising:
a) a base with a vertical axis;
b) a manipulator table resiliently attached to said base for limited horizontal movement relative to said base and limited tilt movement relative to said axis, with means to attach a length of pipe, as a welding specimen, extending vertically therefrom;
c) a plurality of compression springs, each having a vertical axis of symmetry, peripherally distributed, upon said base, about said axis and each situated a preselected distance therefrom, by which said table is said resiliently attached; and
whereby said table is movable relative to said base by application of force to cause said tilt and said horizontal movement.

5,823,786
SYSTEM FOR INSTRUCTION OF A PUPIL
Norman John Easterbrook, Lot 100 Princes Highway, Yallah, Australia, 2530
Continuation of Ser. No. 532,738, Dec. 18, 1995, abandoned.
This application Aug. 15, 1997, Ser. No. 912,146
Claims priority, application Australia, Aug. 24, 1993, PM 0792; Sep. 16, 1993, PM 1268
Int. Cl.[6] A63B *69/00;69/36*
U.S. Cl. 434—247 18 Claims



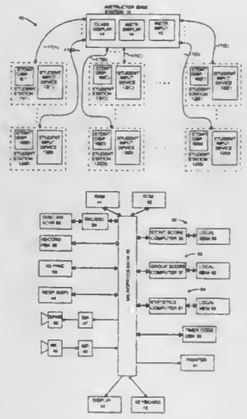
1. A system for instruction of a pupil in a physical movement, said system comprising:
(a) audio reproduction apparatus for delivering a series of prerecorded audible instructions to the pupil during a course of instruction;
(b) at least one video display apparatus to display in a comparing relationship tutor and pupil images;
(c) a mixer to receive a first pre-recorded instructional image of a tutor other than the pupil from a first source and a second image from a second source, said second image providing a real time image of the pupil, wherein the output of said first and second sources are connected to said mixer to display simultaneously said images in split-screen juxtaposition respectively on said display apparatus so the pupil may view the first image and attempt to emulate the said first instructional image following the pre-recorded audible instructions and said first image.

5,823,787
TRAINING MANNEQUIN FOR MANAGEMENT OF NORMAL AND ABNORMAL AIRWAYS
René M. Gonzalez, Coppersburg, and John J. Schaefer, III, Pittsburgh, both of Pa., assignors to Medical Plastics Laboratory, Inc., Gatesville, Tex.
Filed Sep. 17, 1997, Ser. No. 932,162
Int. Cl.[6] G09B *23/28*
U.S. Cl. 434—265 24 Claims



1. A mechanical mannequin apparatus for demonstrating medical management of human normal and abnormal airways comprising:
a head region having an adjustable jaw;
an adjustable neck region located below and in communication with said head region;
a chest region located below and in communication with said adjustable neck region;
wherein said head region and said adjustable neck region further comprising an upper airway having (a) at least one nostril aperature, (b) a nasal cavity having a proximal end, a distal end and a middle section that is disposed between said proximal end and said distal end of said nasal cavity, and wherein said nostril aperature is located at said proximal end of said nasal cavity, (c) an oral cavity having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said oral cavity, said oral cavity located below said nasal cavity, (d) a mouth opening located at said proximal end of said oral cavity, said mouth opening having an opening size determined by the position of said adjustable jaw, (e) a pharynx tube member having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said pharynx tube member, wherein said proximal end of said pharynx tube member is located below and in communication with said distal end of said nasal cavity and wherein said distal end of said oral cavity is located at and in communication with said middle section of said pharynx tube member, and (f) a larynx tube member having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said larynx tube member, wherein said larynx tube member lies below said oral cavity and in front of said pharynx tube member and wherein said proximal end of said larynx tube member is located at and in communication with said distal end of said pharynx tube member;
wherein said chest region further comprising a lower airway having (a) a trachea tube member having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said trachea tube member, wherein said proximal end of said trachea tube member is located below and in communication with said distal end of said larynx tube member, (b) at least one bronchus tube member having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said bronchus tube member, wherein said proximal end of said bronchus tube member is located below and in communication with said distal end of said trachea tube member, and (c) at least one inflatable lung sac structure having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said inflatable lung sac structure, wherein said proximal end of said inflatable lung sac structure is located below and in communication with said distal end of said bronchus tube member;
an esophagus tube member having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said esophagus tube member, wherein said esophagus tube member is located behind said trachea tube member and wherein said proximal end of said esophagus tube member is located below and in communication with said distal end of said pharynx tube member;
a stomach bag structure having a proximal end, a distal end and a middle section disposed between said proximal end and said distal end of said stomach bag structure, wherein said proximal end of said stomach bag structure is located below and in communication with said distal end of said esophagus tube member;
jaw adjusting means for opening, closing and adjusting the movement and the position of said adjustable jaw for effecting the opening size of said mouth opening, wherein said jaw adjusting means is located in juxtaposition to and in communication with said head region;
neck adjusting means for adjusting the movement and the position of said adjustable neck region and said head region, wherein said neck adjusting means is in juxtaposition to and in communication with a portion of said adjustable neck region and said head region; and
at least one restrictor means attached to at least a portion of at least one of said nasal cavity, oral cavity, pharynx tube member, larynx tube member, trachea tube member, and bronchus tube member, and combinations thereof, for causing sealing engagement against and volume restriction of at least one of said nasal cavity, oral cavity, pharynx tube member, larynx tube member, trachea tube member, and bronchus tube member, and combinations thereof.

5,823,788
INTERACTIVE EDUCATIONAL SYSTEM AND METHOD
Jerome H. Lemelson, 868 Tyner Way, Incline Village, Nev. 89450, and Christian J. Grund, 880 Crescent Dr., Boulder, Colo. 80303
Filed Nov. 13, 1995, Ser. No. 556,611
Int. Cl.[6] G09B *3/00*
U.S. Cl. 434—350 41 Claims



1. An interactive instruction system comprising an instructor's base station and a plurality of student input devices connected to said base station over respective communication links, each said student input device being for use by a student in an instruction group during an instructional session,
A. each student input device being adapted to receive (i) query response information input by a respective student in response to a query issued during said instructional session and (ii) a response transmit enable input from the respective student, each student input device generating a response message including the information input from the student and an identifier code uniquely identifying the student input device for transmission to the base station during a said instructional session in response to said response transmit enable input; and
B. the base station receiving the response messages from the student input device during the instructional session and generating
i. class response statistics from the responses as contained in the messages, and
ii. individual response statistics for an individual student from the responses and as contained in the messages and the identifier codes as contained in the messages,
as selected by the instructor.

41. An interactive method using an instructor's base station and at least one student input device for use by a student to effect interactive instruction during an instructional session, the student input device being connected to said base station over a respective communication link, the communication link transferring information between said student input device and said base station, the method comprising the steps of:
A. enabling the student input device to receive (i) query response information input by a respective student in response to a query during a said instructional session and (ii) a response transmit enable input from the respective student, each student input device generating a response message including the information input from the student and an identifier code uniquely identifying the student input device for transmission to the base station during a said instructional session in response to said response transmit enable input; and
B. enabling the base station to receive the messages from the student input device during a said instructional session and generating
i. code signals defining class response statistics from the responses as contained in the messages, and

ii. code signals defining individual response statistics for an individual student from the responses and as contained in the messages and the identifier codes as contained in the messages.

as selected by the instructor.

5,823,789

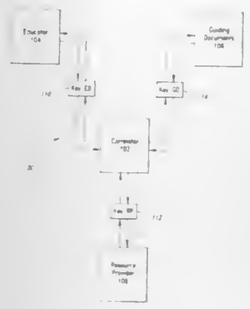
METHOD AND APPARATUS FOR CORRELATING EDUCATIONAL REQUIREMENTS

Michael E. Jay, Bellingham, Wash.; Robert J. Collins, Vancouver, Canada; Richard S. Jeffrey, Surrey, Canada, and Colin Ramsay, Abbotsford, Canada, assignors to MediaSeek Technologies, Inc., Bellingham, Wash.

Division of Ser. No. 783,406, Jan. 14, 1997, Pat. No. 5,730,604, which is a continuation of Ser. No. 259,039, Jun. 13, 1994, abandoned. This application Aug. 6, 1997, Ser. No. 907,167

Int. Cl.[6] G09B *25/00;3/00*

U.S. Cl. 434—365 **10 Claims**



1. A planning tool for identifying correlations between an instructional program having a plurality of components and components of resources for the instructional program, comprising:

a first storage medium containing a central knowledge base of conformed elements;

a correlator that correlates components of the instructional program to the conformed elements, the correlator connected to retrieve the conformed elements from the first storage medium;

an interface module for inputting to the correlator a first unidirectional key to identify correlations between individual ones of the components and corresponding conformed elements;

a second storage medium for storing the first key; and

a third storage medium containing data indicating correlation between the components of the resources and the conformed elements.

6. A method of identifying external components correlated to a component of an instructional program, comprising the steps of:

storing a first set of components on a first storage medium;

producing a first key indicating correlation between the first set of components and elements in a central knowledge base of conformed elements, the elements being stored on a second storage medium;

storing a second set of components on a third storage medium, the second including resource components,

producing a second key indicating correlation between the resource components and the elements in the central knowledge base;

selecting a component of the instructional program;

producing a third key indicating correlation between the instructional program component and the elements in the central knowledge base;

identifying elements in the central knowledge base in response to the third key; and

identifying components in the first and third storage medium correlating to the identified elements in the central knowledge base.

5,823,790

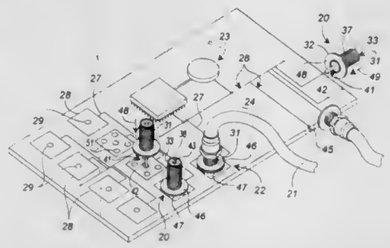
CONNECTOR FOR ATTACHING A CABLE TO A PRINTED CIRCUIT BOARD

Scott A. Magnuson, Fair Haven, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 29, 1996, Ser. No. 681,749

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—63 **7 Claims**



1. A connector for attaching a cable to a printed circuit board to connect the printed circuit board to test equipment for measuring the impedance of the printed circuit board, with the impedance discontinuity resulting from a mount junction between the connector and the board being substantially eliminated to enable a reading of the impedance of the impedance frequency generation equipment of the board with increased accuracy, comprising:

a connector body having an outer sidewall, a proximal end, and a distal end adapted to attach to the cable;

a core of a dielectric material received within said connector body between said proximal and distal end thereof,

a conductor element received and extending through said core spaced from said outer side wall of said connector body and having a diameter of less than approximately 30 mils; and

means for reducing impedance discontinuities between said connector and the board, said means comprising:

a mounting pad attached to said connector body at said proximal end thereof and adapted to engage and lie substantially flush against a mounting pad for the printed circuit board; and

means for securing the connector to the printed circuit board disposed at said engagement of said connector body mounting pad and said printed circuit board mounting pad and being substantially confined thereat.

5,823,791

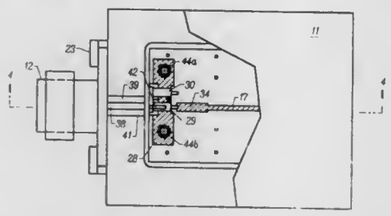
CONNECTOR ASSEMBLY FOR DETACHABLY CONNECTING A PRINTED WIRING BOARD TO A COAXIAL TRANSMISSION LINES CONNECTOR

John V. Bellantoni, Redwood City, and John S. Tobias, Sunnyvale, both of Calif., assignors to Watkins-Johnson Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 563,299, Nov. 28, 1995, Pat. No. 5,613,859. This application Nov. 6, 1996, Ser. No. 744,623

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—63 **8 Claims**



1. A connector assembly for detachably connecting a printed wiring board to a threaded coaxial connector having a coaxial center lead, said connector assembly comprising:

a coaxial transmission line section comprising a center conductor connected to said coaxial center lead of said coaxial connector, said center conductor supported in a dielectric sleeve;

a first socket to slidably receive said center conductor;

a right angle pin connected to said socket;

a transmission line lead carried on a surface of said printed wiring board, said transmission line connected to said right angle pin and having impedance matching sections for providing impedance matching between the coaxial connector and the transmission line lead;

a ground plane section carried on said printed wiring board; and

an insulating sleeve surrounding said first socket whereby said first socket forms a transmission line with said ground plane section.

5,823,792

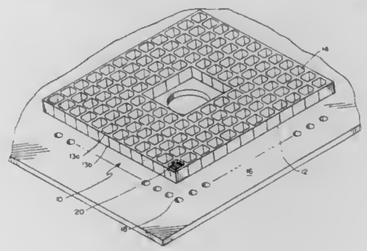
WIRE-WRAP CONNECTOR

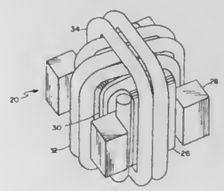
Kent E. Regnier, Lombard, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Mar. 10, 1997, Ser. No. 814,307

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—66 **20 Claims**





1. The electrical connector for electrically connecting first and second circuit components, said components each having an array of contact pads, said connector comprising:

a dielectric housing having substantially planar top and bottom surfaces and sidewalls connecting said top and bottom surfaces;

a plurality of substantially open receptacles in said housing; and

a plurality of contact members individually disposed in distinct ones of said plurality of receptacles, said contact members extending above said top surface and below said bottom surface to contact respective ones of said contact pads of said first and second circuit components, said contact members including:

an elastomeric core;

a first electrically conductive wire wrapped around said core in a first direction; and

a second electrically conductive wire wrapped around said core and said first wire in a second direction, said second wire contacting said first wire at a plurality of wire contact points to provide electrical connection between said first and second wires.

5,823,793

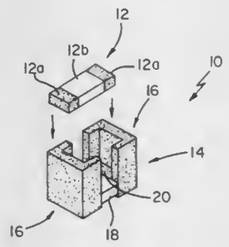
HOLDER FOR AN ELECTRICAL OR ELECTRONIC COMPONENT

Allen J. Bernardini, Southbury, Conn., assignor to Litton Systems, Inc., Watertown, Conn.

Filed Jun. 12, 1996, Ser. No. 662,211

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—68 **31 Claims**



1. A holder for an electrical or electronic component, said electrical or electronic component having two opposed terminals, comprising:

a body formed of an electrically non-conductive material and including two laterally spaced arms connected by a bight, said two laterally spaced arms and said bight defining a recess for receiving the electrical or electronic component, and

a conductive tracing on each of said arms with each conductive tracing capable of providing an electrical path between one of said two opposed terminals and a portion of a printed circuit board.

5,823,794

IC PRESSING ROTATING LEVER MECHANISM IC SOCKET

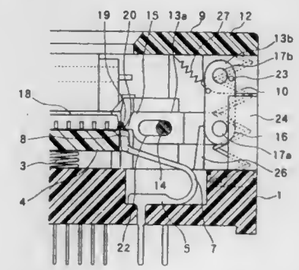
Shunji Abe, Yokohama, Japan, assignor to Yamaichi Electronics Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 826,807

Claims priority, application Japan, Mar. 26, 1996, 8-096006

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—73 **13 Claims**



1. An IC pressing mechanism in an IC socket comprising a cover mounted in such a way to be able to move upwardly and downwardly with respect to a socket body, an IC pressing lever movable between a pressing position and a releasing position with respect to an IC package in accordance with upward and downward movement of said cover, such that, when in said pressing position, said IC pressing lever is operable to urge an IC lead against a contact on a socket body, and a transmission lever for linking said cover and said IC pressing lever together, wherein said transmission lever is connected at an upper end side thereof to said cover through a pin and is rotatable inwardly and outwardly about said pin, wherein a lower end side of said transmission lever and an outer end side of said IC pressing lever are connected together through a pin con-

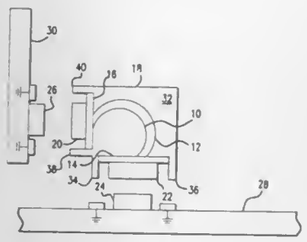
nection portion, and when said transmission lever is lowered in accordance with lowering of said cover, said pin connection portion between the lower end side of said transmission lever and the outer end side of said IC pressing lever is restricted in such a way to move downwardly and outwardly, and a pressing portion on an inner end of said IC pressing lever is caused to move upwardly and outwardly by downward movement and outward movement of said pin connection portion.

5,823,795

CONNECTOR BETWEEN A DAUGHTERBOARD AND A MOTHERBOARD FOR HIGH-SPEED SINGLE-ENDED ELECTRICAL SIGNALS

Richard A. Schumacher, Dallas, Tex., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 30, 1996, Ser. No. 741,088
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—76.1 **20 Claims**



I. A high-speed connector assembly for electrically and mechanically connecting a first printed circuit board having a first commodity connector attached thereto to a second printed circuit board having a second commodity connector attached thereto, said high-speed connector assembly comprising:

a housing member having a first side and a second side;

a third commodity connector along said first side of said housing member, said third commodity connector capable of being mated with said first commodity connector on said first printed circuit board;

a third printed circuit board attached to said third commodity connector;

a fourth commodity connector along said second side of said housing member, said fourth commodity connector capable of being mated with said second commodity connector on said second printed circuit board;

a fourth printed circuit board attached to said fourth commodity connector;

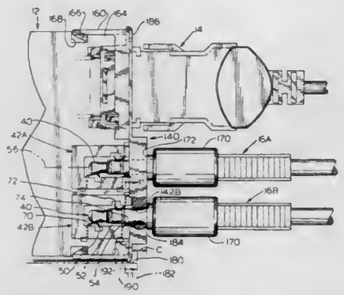
at least one impedance controlled, signal conductor having a first end and a second end, said first end of said at least one impedance controlled, signal conductor attached to said third printed circuit board, said second end of said at least one impedance controlled, signal conductor attached to said fourth printed circuit board, wherein at least one signal path exists between said first printed circuit board and said second printed circuit board when said first commodity connector is mated to said third commodity connector and said second commodity connector is mated with said fourth commodity connector, said at least one signal path traversing back and forth from said first commodity connector to said third commodity connector to said third printed circuit board to said at least one impedance controlled, signal conductor to said fourth printed circuit board to said fourth commodity connector to said second printed circuit board.

5,823,796

AUDIO/POWER JACK FOR IC CARD

Gary Cain Bethurum, Laguna Niguel, Calif., assignor to ITT Manufacturing Enterprises, Inc., Wilmington, Del.

Filed Jul. 26, 1996, Ser. No. 693,821
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—76.1 **13 Claims**



1. Apparatus for receiving a multi-contact audio-type plug that has a plug axis, that is designed for insertion along the plug axis, and that has a plurality of axially-spaced plug contacts, comprising:

an apparatus housing having a rear forming an end cap with a plug-passing passage that has a passage axis extending in a predetermined longitudinal direction that is perpendicular to vertical directions;

a circuit board mounted in said housing, said circuit board having a plurality of traces and having a rear end, said circuit board having faces that are normal to said vertical directions;

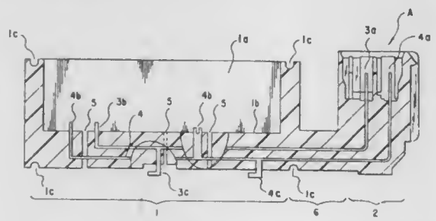
a plurality of socket contacts each having a termination end directly connected to one of said circuit board traces, with said circuit board having a slot in its rear end and with each of said plurality of socket contacts having a plug-engaging part projecting into said slot as seen in a plan view, with the plug engaging parts of said socket contacts being spaced at least partially along said passage axis to engage said axially-spaced plug contacts, and with said plug-passing passage of said end cap positioned to guide said plug generally into alignment with said slot to engage said plug-engaging parts of said contacts.

5,823,797

CONNECTOR-COMBINED UNIT CASE, METHOD OF MOLDING THEREOF, AND MOLD FOR MOLDING THEREOF

Norio Sugiyama, Haibara-gun, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Jan. 31, 1997, Ser. No. 790,298
Claims priority, application Japan, Feb. 2, 1996, 8-017555
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—76.1 **8 Claims**



1. A connector-combined unit case molded in one-piece comprising:

a unit case portion for containing electric components therein;

a connector portion for connecting said unit case to a mating connector, said connector portion being sealable against external air when coupled to said mating connector;

a connection portion connecting said unit case portion and said connector portion;

conductor means embedded as inserts during molding and extending to connect an interior of said unit case portion with said connector portion, said unit case portion having holes through which said conductor means are exposed and which are formed by holding means used to hold said conductor means in position during molding, said connection portion having no such holes;

grooves are provided at opposite sides of said unit case portion for receipt therein of means for sealing said unit case portion against external air; and

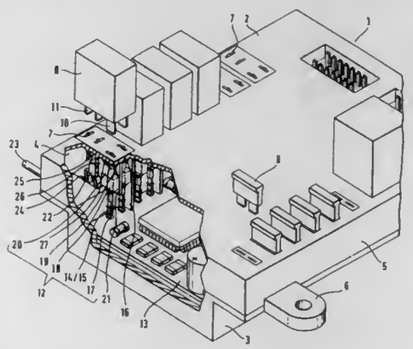
a hollow space located above said connection portion and separating said unit case portion from said connector portion so that terminals at an end of said connector portion are easily accessible for connection to said mating connector.

5,823,798

ELECTRIC CENTER FOR MOTOR VEHICLES

Albert Zintler, Gross-Gerau; Dieter Busch, Rosbach, and Horst Ullrich, Schöneck, all of Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Germany

Filed Aug. 26, 1996, Ser. No. 703,341
Claims priority, application Germany, Aug. 25, 1995, 195 31 537.5; Nov. 28, 1995, 195 44 235.0
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—76.2 **11 Claims**



1. An electric center for a motor vehicle comprising:

an electric part serving to connect a plurality of differing electric power levels to respective ones of a plurality of components of the motor vehicle;

a current feed, a holder member configured as an electric circuit board, and an insulating component support supporting the electric part, there being connections of the electric part which engage into the insulating component support;

a contact module secured to the circuit board, and a contact device engageable with the contact module;

wherein said electric part has at least one high-power connector and at least one low-load connector;

on a side of said component support facing away from said electric part, said at least one high power connector of said electric part is acted on by a higher power and is contacted with said current feed;

said at least one low-load connector of said electric part is connected via said contact device and said contact module to said holder member; and

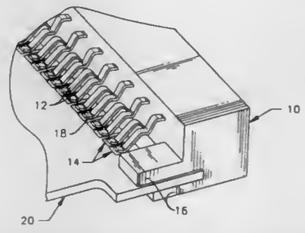
said holder member bears electronic components and is physically separated from said insulated component support.

5,823,799

SINGLE-SIDED, STRADDLE MOUNT PRINTED CIRCUIT BOARD CONNECTOR

Peng-Seng Tor; Joey Ng Kiat-Hup, and Nai-Hock Lwee, all of Singapore, Singapore, assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Oct. 23, 1996, Ser. No. 735,852
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—79 **14 Claims**



1. A connector for edge mounting onto a single-sided printed circuit board, comprising:

an elongate insulative housing having a top and bottom wall joined by spaced apart side walls, the housing including a header portion including at least one contact pin for mating electrical connection with a mating connector;

at least two gripper arm assemblies extending from and spaced along the elongated insulative housing, each of the gripper arm assemblies including a lower gripper arm and an upper gripper defining therebetween a receiving space for receiving an edge of a single-sided printed circuit board; and

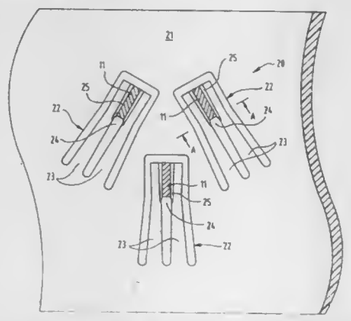
a plurality of elongate contacts supported by said housing said contacts having spring-biased solder leads extending from said housing and defining collinearly aligned tails positioned within the space defined by said upper and lower gripper arms so as to apply a positive pre-load against said edge of said suspended printed circuit board inserted therebetween.

5,823,800

PRINTED CIRCUIT BOARD SOCKET

Harry Suehrcke, Cranbrook, and Noel Wilhelmus Lovisa, Mundingburra, both of Australia, assignors to James Cook University of North Queensland, Queensland, Australia

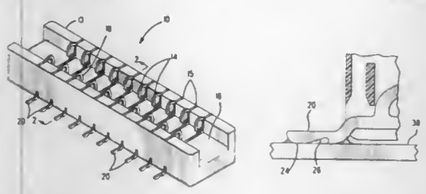
PCT No. PCT/AU95/00301, § 371 Date Nov. 25, 1996, § 102(e) Date Nov. 25, 1996, PCT Pub. No. WO95/32605, PCT Pub. Date Nov. 30, 1995
PCT Filed May 25, 1995, Ser. No. 737,988
Claims priority, application Australia, May 25, 1994, PM5835
Int. Cl.[6] H01R 9/09
U.S. Cl. 439—82 **12 Claims**



1. A board having at least one electrical socket formation therein for receiving a pin member, the socket formation comprising an

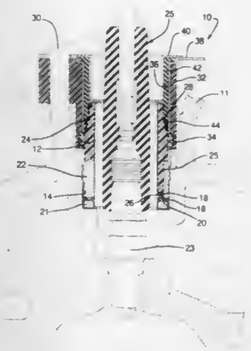
aperture in the board, the board having an integrally formed cantilevered portion defining at least part of an edge of the aperture, the cantilevered portion being resiliently movable in the plane of the board to enable the aperture to receive therein a pin member of slightly greater diametral dimension and to frictionally retain the pin member in the aperture.

5,823,801
ELECTRICAL CONNECTOR HAVING THIN CONTACTS WITH SURFACE MOUNT EDGES
Hecham Elkhatib, Mabane, N.C., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Aug. 5, 1996, Ser. No. 692,216
Int. Cl.[6] H01R *9/09*
U.S. Cl. 439—83 **6 Claims**



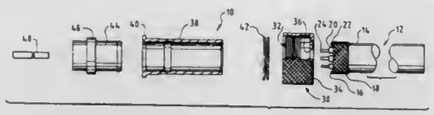
1. A contact for an electrical connector, comprising:
an electrically conductive body made of sheet material, the body having a thickness defined by thickness of the sheet material, the body including a lead having an edge which extends through the thickness, the edge being engageable with a circuit path on a substrate for surface mount solder attachment thereto, and the lead having a recess in the edge which provides a receptacle for solder during the surface mount solder attachment, the recess including an undercut which extends behind the edge to provide a lip which is available to be locked in the solder.

5,823,802
ELECTRICAL CONNECTOR WITH COMBINATION SEAL AND CONTACT MEMBER
Robert Michael Bartley, Ravenna, Ohio, assignor to General Motors Corporation, Detroit, Mich.
Filed Jul. 30, 1997, Ser. No. 902,765
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—86 **13 Claims**



1. An electrical connector for an electrical device having a hollow sleeve and an annular bonnet that has an outer electrical contact ring comprising:
an annular insulator, a lower elastomeric seal ring, a combination seal and contact member, a conductor to carry an electrical signal out of the electrical connector and a flanged metal guard ring,
the combination seal and contact member having a non-conductive elastomeric annulus and a conductive elastomeric portion that are co-molded to provide a unitary annular part,
the annulus having a flanged upper end that is bonded to the flanged metal guard ring and a thinner lower end,
the lower end having a plurality of axially spaced circumferential flexible sealing lips that project radially inwardly for biasingly engaging the bonnet above the outer electrical contact ring,
the conductive elastomeric portion being attached to the lower end in a co-molding operation where the non-conductive elastomeric annulus and the conductive elastomeric portion are molded simultaneously in a mold cavity,
the conductive elastomeric portion comprising a non-conductive elastomeric material that has conductive particles widely dispersed throughout the material before the conductive elastomeric portion is molded so that the molded conductive elastomeric portion exhibits a high electrical resistance in the uncompressed state that diminishes as the elastomeric portion is compressed,
the conductive elastomeric portion being shaped with an inner contact surface that has a minimum inner diameter that is less than the outer diameter of the outer electrical contact ring of bonnet so that the conductive elastomeric portion is biased radially outwardly and compressed by engagement with the ring contact so that the electrical resistance is reduced to a relatively low value and acts as an electrical conductor that connects the ring contact and the metal insert electrically, and
the lower elastomeric seal ring having a plurality of axially spaced flexible circumferential sealing lips that biasingly engage the bonnet so that the electrical connector sealingly engages the bonnet below as well as above the contact ring and the conductive elastomeric portion that acts as an electrical contact in the combination seal and contact member.

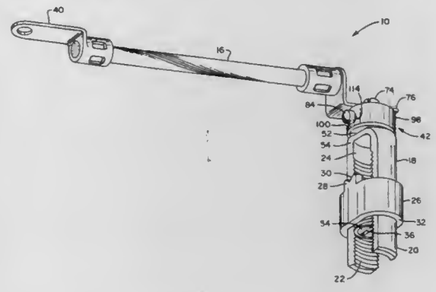
5,823,803
ELECTRICAL CABLE CONNECTOR
Brian C. Majors, Naperville, Ill., assignor to Conxall Corporation, Villa Park, Ill.
Filed Jun. 17, 1996, Ser. No. 668,043
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—98 **17 Claims**



1. A cable connector for connecting a cable to a mating connector having at least one electrical lead and an integral coupling mechanism, the cable having a cable jacket surrounding a layer of electrically-conductive material, the electrically-conductive layer including an exposed portion not covered by the cable jacket, the electrically-conductive layer surrounding at least one electrical lead having an insulting layer surrounding a wire, the cable connector comprising:
a coupling ring having an integral coupling mechanism and an interior surface placed around the cable, said coupling mechanism of said coupling ring engageable with the integral coupling mechanism of the mating connector to connect the mating connector with said coupling ring;
a tubular shield extending from said coupling ring and surrounding the cable and the exposed portion of the electrically-conductive layer; and
an insulating insert placed within said shield, said insulating insert surrounding an exposed end of the at least one electrical lead of the cable;

wherein a portion of said shield is crimped to create multiple indents in secure engagement with the cable for mechanical retention and an electrical contact between said shield and the exposed portion of the electrically-conductive layer.

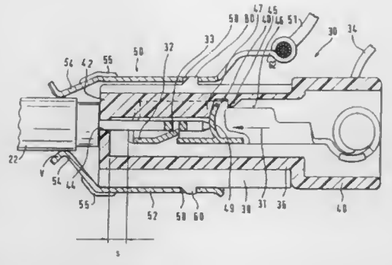
5,823,804
CABLE SHIELD CONNECTOR WITH SPARK GAP
John W. Auclair, Norfolk, Conn., assignor to Electric Motion Company, Inc., Winsted, Conn.
Filed Mar. 20, 1997, Ser. No. 821,093
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—98 **16 Claims**



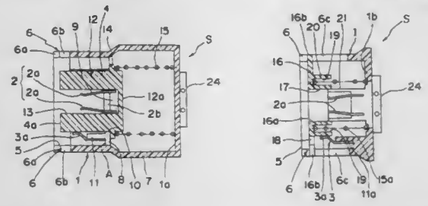
1. A cable shield connector comprising:
cable shield engagement means for engaging and providing electrical communication with said cable shield;
a ground conductor for electrically connecting said engagement means with a ground;
separator means disposed intermediate said engagement means and said ground conductor for electrically separating said engagement means from said ground conductor, said separator means comprising a separator member composed of electrically non-conductive material and comprising a passageway having first and second end portions;
electrical conductor means for conducting electricity, said conductor means being in electrical communication with said engagement means and extending into said first end portion of said passageway to a distal end; and
connector means for connecting said ground conductor to said separator member, said connector means being composed of electrically conductive material and being in electrical communication with said ground conductor, said connector means extending into said second end portion of said passageway to a distal end;
wherein said distal end of said conductor means and said distal end of said connector means define a spark gap.

5,823,805
ELECTRICAL CONNECTOR FOR A LIGHT SOURCE
Gerhard Weihing, Albert-Schweitzer-Str. 13, 72810 Gomaringen; Georg Ebinger, Jahnstr. 35, 72127 Kusterdingen, and Andreas Gauder, Mühlbachstr. 2, 70794 Filderstadt, all of Germany
PCT No. PCT/DE94/01143, § 371 Date May 26, 1995, § 102(e) Date May 26, 1995, PCT Pub. No. WO95/10730, PCT Pub. Date Apr. 20, 1995
PCT Filed Sep. 28, 1994, Ser. No. 454,109
Claims priority, application Germany, Oct. 12, 1993, 43 34 722.3
Int. Cl.[6] H01R *13/648*
U.S. Cl. 439—108 **9 Claims**

1. An electrical connector for a light source, the light source (**14**) having a contact element (**20**) for connection with a positive terminal of a voltage source the light source having a metallic base plate (**18**) and a cylindrical base section (**22**) for a ground connection, said electrical connector comprising a plug part (**30**) having a contacting receptacle (**32**) formed to fit together with and to contact the contact element (**20**) of the light source, an electrically insulating sheath (**36**, **38**, **40**), said electrically insulating sheath being provided with an opening (**44**) for insertion of the contact element (**20**) in said sheath so that the contacting receptacle is contacted by the contact element (**20**), and a ground contact element (**50**) arranged on the sheath (**38**),
wherein said ground contact element (**50**) has a sleeve-like section (**52**) arranged around the sheath (**38**) and at least one resilient contact arm (**54**), said at least one resilient contact arm (**54**) extends from said sleeve-like section (**52**) toward the light source (**14**), said at least one resilient contact arm (**54**) bears against the base plate (**18**) or base section (**22**) under tension and said at least one resilient contact arm (**54**) having an end portion bent toward the contact element (**20**) in a direction transverse to an engagement direction (**31**) of the plug part (**30**) so as to bear on the base plate (**18**) or base section (**22**) when the contact element (**20**) is plugged into the plug part (**30**).



5,823,806
LAMP SOCKET
Haruo Nagase, Kitakatsuragi-gun; Masaaki Ichikawa, Tsuzuki-gun; Hideki Hamada, Katano; Nobuo Kato, Settsu; Tomoyuki Ono, Soraku-gun, and Yasuhiro Kimura, Agatsuma-gun, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
PCT No. PCT/JP96/00365, § 371 Date Dec. 19, 1996, § 102(e) Date Dec. 19, 1996, PCT Pub. No. WO96/26559, PCT Pub. Date Aug. 29, 1996
PCT Filed Feb. 19, 1996, Ser. No. 722,157
Claims priority, application Japan, Feb. 22, 1995, 7-033246; Feb. 24, 1995, 7-037196
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—140 **18 Claims**



1. A lamp socket for use with a lamp including a lamp mouthpiece having a center contact element and a peripheral contact element, said lamp socket comprising:
a hollow casing having a lamp mounting opening defined at one end, an opposite end of said hollow casing being closed;
an electrode carrier member disposed inside said hollow casing;
a center electrode disposed on said electrode carrier member at a location coaxial with an axis perpendicular to a plane of said

lamp mounting opening, said center electrode being engageable with said center contact element in the lamp mouthpiece;

a peripheral electrode disposed on said electrode carrier member at a location offset laterally from said center electrode. said peripheral electrode also being offset from said axis, said peripheral electrode being engageable with said peripheral contact element in said lamp mouthpiece;

an electrode shield disposed within said hollow casing for movement between a projected position and a retracted position; and

a biasing device that biases said electrode shield towards said projected position, said biasing device being operable to permit said electrode shield to move towards said retracted position against a biasing force thereof in response to an insertion of the lamp mouthpiece into said lamp mounting opening.

wherein said electrode shield permits said center electrode and said peripheral electrode to be electrically engaged with said center contact element and said peripheral contact element, respectively, in said lamp mouthpiece when said electrode shield is moved to said retracted position, while concealing said center electrode and said peripheral electrode when said electrode shield is in said projected position.

5,823,807

CONNECTOR ASSEMBLY WITH MECHANISM FOR CONFIRMATION OF FITTING OF CONNECTOR HOUSING AND METHOD OF ATTACHING CONNECTOR HOUSING

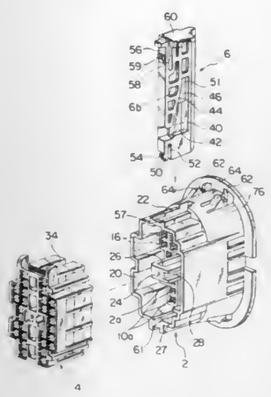
Masashi Yamasaki, Hiroshima; Kouichi Ogawa, Shiga; Katsuhiko Nishimura, Shiga; Takashi Fujiwara, Shiga; Hironori Yanagimoto, Shiga, and Tomoo Hamamoto, Tokyo, all of Japan, assignors to The Furukawa Electric Co., Ltd., Tokyo, and Ohmi Electric Wire Co., Ltd., Inukami, both of Japan

Filed Jun. 25, 1996, Ser. No. 668,333

Claims priority, application Japan, Jun. 27, 1995, 7-161215

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—157 **11 Claims**



1. A connector assembly comprising:

a first housing in which an end of at least one first signal line is attached, and which has a fitting opening and a detection insertion opening formed at a side;

a second housing in which an end of at least one second line to be connected to the end of said first signal line is attached and which fits into said fitting opening of the first housing; and

a plate shaped fitting detection pin which is inserted into said detection insertion opening so as to pass through an approximate center axis of the first housing,

said second housing being formed with a detection pin recess which allows the insertion of said fitting detection pin in a state where said second housing is fitted into said fitting opening of said first housing,

said detection pin recess comprising facing inner walls, at least one of said inner walls being formed with a projection guide rib,

cam grooves formed on opposite sides of said detection pin, said cam grooves having slanted walls constituted so that in a state where said fitting detection pin is inserted into said detection insertion opening, a front end of said projection guide rib engages with said fitting detection pin, such that a force acts in a direction pushing said second housing into said fitting opening of said first housing as said fitting detection pin is inserted into said detection insertion opening, wherein two sides of said detection insertion opening formed at a side of said first housing are formed with panel fixing lock pieces for attaching and affixing said first housing in a panel hole formed in a panel.

5,823,808

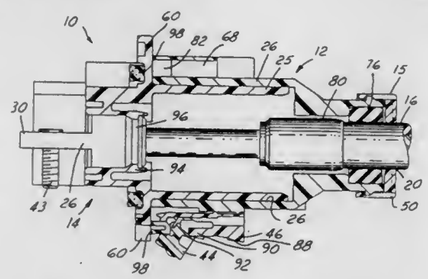
CAM LEVER OPERATED CONNECTOR

Dean B. Clark, Clawson; Kenneth Hartwig, Ortonville; Larry L. Neblett, Pinckney; Thomas E. Zielinski, China, and David B. Hansen, Grand Rapids, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 20, 1996, Ser. No. 699,837

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—157 **6 Claims**



1. An electrical connector assembly comprising a male connector member and a female connector member, pivotal cam lever means on one of said male or female connector members for causing said male connector member and said female connector member to engage each other, and locking means on the same one of said male or female connector members for holding said cam lever means in a closed position, said locking means including a sliding member slidable on a track, said sliding member engaging said cam lever means for locking said cam lever means in said closed position.

5,823,809

LEVER-TYPE CONNECTOR

Shigekazu Wakata, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Japan

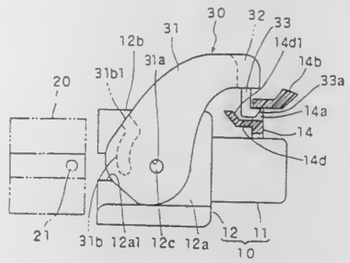
Filed Oct. 24, 1996, Ser. No. 735,991

Claims priority, application Japan, Oct. 24, 1995, 7-300614; Nov. 17, 1995, 7-323915

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—157 **14 Claims**

1. An electrical connector comprising a body, an arm pivotally attached to said body for movement between an open position and a latched position, said body having a locking member and said arm having a latch member which are interengageable to releasably retain said arm in said latched position, and a disengagement structure including an inclined face on one of said arm or said body and an operating face on the other of said arm or said body, said



operating face contacting and sliding along said inclined face to move said arm from said latched position to an unlatched position intermediate said open position and said latched position when said locking member and said latch member are released.

5,823,810

SAFETY CONNECTOR

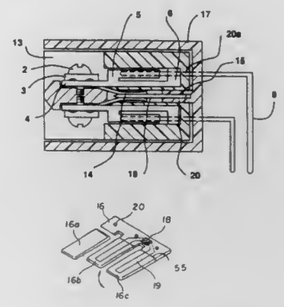
Noboru Takahashi, and Masanori Kachi, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 504,663, Jul. 20, 1995, abandoned. This application Mar. 12, 1997, Ser. No. 815,677

Claims priority, application Japan, Jul. 28, 1994, 6-176394

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—188 **31 Claims**



1. A connector for a conductor, comprising:

a socket housing comprising a terminal section having a terminal adapted to connect to the conductor and a pin contact connected to said terminal;

a separator; and

a pin header comprising a substrate pin, said separator being receivable into and coupling to said pin header, and said socket housing being receivable within said pin header in such a manner that said pin header covers said terminal section, said pin contact is electrically connected with said substrate pin, and a portion of said separator extends into said socket housing;

said socket housing comprising locking means for locking said socket housing to said pin header.

5,823,811

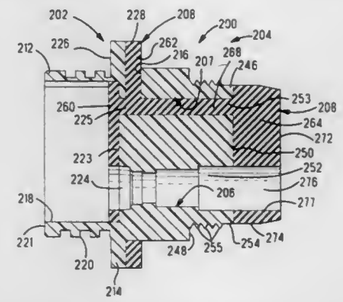
SEALED ELECTRICAL CONNECTOR

Michael Allen Blanchfield, Camp Hill; Albert Washington Frantum, Jr., and George Warren Wolverton, both of Elizabethtown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 450,460, May 25, 1995, abandoned. This application Aug. 20, 1997, Ser. No. 915,374

Int. Cl.[6] H01R *13/52*

U.S. Cl. 439—274 **13 Claims**



1. An electrical connector housing adapted to be environmentally sealed, comprising:

a rigid section having an outer surface and including a front portion having at least one front outer surface portion, a rear portion having at least one rear outer surface disposed in spaced-apart relation to said at least one front outer surface portion, and a plurality of terminal receiving cavities, said cavities being (i) in open communication with said front and rear outer surface portions of the rigid section, and (ii) defining at least one constricted portion defining forwardly and rearwardly facing terminal-engaging surfaces whereby the cavities are adapted to retain and mutually insulate a plurality of terminated electrical conductors disposed therein;

said rigid section further including a flange extending laterally outwardly therefrom circumferentially therearound, said flange having a rearwardly facing surface; and

a passageway disposed within said rigid section so as to be in fluid communication with outlets positioned at least along said rear outer surface portion and adjacent said flange at said rearwardly facing surface; and

a unitary flexible sealing member that is fixedly adhered (i) within said passageway, and (ii) to at least said rear outer surface portion and extending transversely thereacross, and (iii) along said rearwardly facing surface of said flange so as to provide at least one compliant surface thereon and having openings therethrough aligned with said terminal receiving cavities.

5,823,812

ELECTRICAL CONNECTOR

Vikram Bhargava, Coram; Timothy Kehoe, Smithtown, and Daniela Stratienco, Sound Beach, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Aug. 8, 1996, Ser. No. 693,981

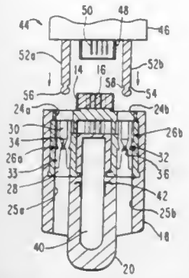
Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—345 **19 Claims**

1. A female electrical connector for connection to a male connector having a pair of solid, cylindrical posts extending in mutual parallelism and terminating in a pair of enlarged post ends, said female connector comprising:

(a) an electrical coupling portion having a connector sleeve and a mounting plate defining two apertures;

(b) a body portion molded to said coupling portion and defining a pair of female sockets, said female sockets communicating with said apertures; and



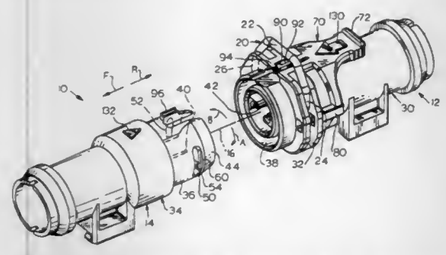
(c) a pair of flexible latch members within said sockets, said latch members including a pair of hollow, cylindrical latch sleeves, each of the latch sleeves having at least three elongated, flexible fingers symmetrically arranged about a respective longitudinal axis and having radially inwardly directed portions bounding a waist for engaging a respective post end at multiple locations about the respective axis and for holding the respective enlarged post end entirely within the respective latch sleeve.

5,823,813

CONNECTOR POSITION ASSURANCE DEVICE

David Eugene Dye, Rancho Santa Margarita, Calif., assignor to ITT Manufacturing Enterprises, Inc., Wilmington, Del.

Filed Jan. 21, 1997, Ser. No. 786,460
Int. Cl.[6] H01R *13/62*
U.S. Cl. 439—347 **7 Claims**



1. In a connector system that includes first and second connectors (**12**, **14**) that have first and second housings (**30**, **34**), respectively, wherein said connectors can be mated by moving said second connector rearwardly (**R**) along an axis relative to said first connector, where said second connector housing forms a groove with a primarily forwardly-facing shoulder (**54**) and said first connector has a spring element (**20**) with a spring part (**24**, **26**) that is movable on said first housing between an unlatched position prior to full mating of said connectors, and a latched position wherein said spring part lies in said groove to lie in line with said shoulder (**54**) when said connectors fully mate to prevent them from unmating, the improvement comprising:

a connector position assurance device (**70**) which includes a handle and a device bar (**80**) which is slidably mounted into a passage formed in one of said connectors between unlock and lock positions, wherein when said device bar is in said unlock position, said spring part lies directly in line with said device bar (**80**) and prevents said device bar from sliding toward its lock position, but when said spring part (**24**, **26**) lies in said latched position, said spring part lies out of line with said device bar to allow said device bar (**80**) to slide toward its lock position;

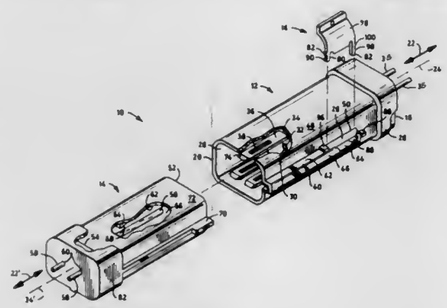
said handle being moveable in opposite forward and rearward directions to slide said device bar in said opposite directions (F, R) without substantial bending, with said spring element being bendable.

5,823,814

CONNECTOR MODULE HAVING CONNECTOR POSITIVE ASSURANCE MEMBER AND INTERNALLY LATCHING CONNECTOR HOUSINGS

K. Troy Alwine, Warren, Pa., assignor to Osram Sylvania Inc., Danvers, Mass.

Filed May 23, 1996, Ser. No. 652,080
Int. Cl.[6] H01R *13/627*
U.S. Cl. 439—352 **20 Claims**



1. A connector module comprising:

a first housing extending in the direction of a first longitudinal axis and comprising at least one first latch engagement member and a channel, said channel comprising a first side and a spaced second side which extend between a channel base and a first wall of said first housing, said channel extending in the direction of, and protruding away from, said longitudinal axis, said first side comprising a first opening;

a second housing extending in the direction of a second longitudinal axis and comprising at least one second latch engagement member, and a tab protruding from an outer surface of said second housing away from said second longitudinal axis, said first housing and said second housing being slidably engaging such that said second housing is extendable into said first housing, said at least one first latch engagement member is latchable to said at least one second latch engagement member at a position inside said first housing, and said tab is extendable into said channel, said tab being slidable along said channel to a position adjacent said first opening when said connector module is in a closed mode; and

a connector positive assurance member movably attached to said first housing and comprising a locking segment, said locking segment being moveable, when said connector module is in said closed mode and said tab is adjacent said first opening, from a first position which is adjacent said first opening and outside of said channel to a second position which is between said tab and said first wall and inside of said channel.

5,823,815

STRUCTURE OF INTERCONNECTING UNITS WITH RESPECTIVE CONNECTORS

Kensaku Takata, Nagoya, Japan, assignor to Harness System Technologies Research, Ltd., Nagoya; Sumitomo Wiring Systems, Ltd., Yokkaichi, and Sumitomo Electric Industries, Ltd., Osaka, all of Japan

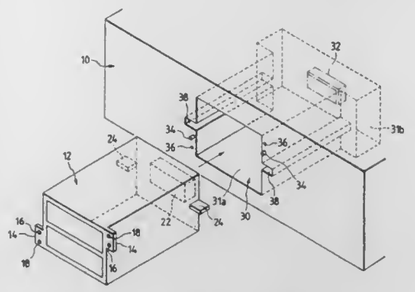
Filed Mar. 28, 1997, Ser. No. 828,299
Claims priority, application Japan, Apr. 2, 1996, 8-080332; Apr. 26, 1996, 8-107995
Int. Cl.[6] H01R *13/64*
U.S. Cl. 439—374 **22 Claims**

1. A unit interconnecting structure comprising:

a first unit having a first connector;

a second unit having a second connector, said second unit connected to said first unit; and

guide means for guiding said first and second units relative to each other in the connector-connecting direction, said guide means provided on said first and second units;



wherein at least one of said first and second connectors is mounted to allow the movement relative to the associated unit in a direction perpendicular to a connector-connecting direction;

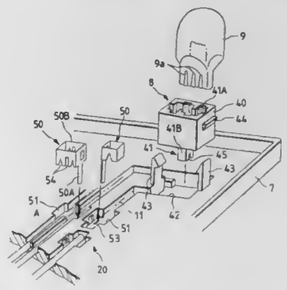
further wherein at the time of interconnecting said first and second units, said guide means guides said first and second units relative to each other until one of said first and second units reaches a predetermined fitting initiation position where housings of said first and second connectors begin to be fitted together, and said guide means releases one of said first and second units to allow the movement of said one unit relative to the associated unit in a direction perpendicular to the connector-connecting direction when one of said first and second units moves beyond said fitting initiation position.

5,823,816

VEHICULAR LAMP HAVING IMPROVED CONNECTOR STRUCTURE

Kihachiro Uchida, and Hironori Tsukamoto, both of Shizuoka, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 474,728
Claims priority, application Japan, Jun. 14, 1994, 6-131790
Int. Cl.[6] H01R *4/24*
U.S. Cl. 439—419 **29 Claims**



1. A vehicular lamp comprising:

a lamp body;

a rear cover arranged in an opening formed in a rear wall of said lamp body;

a plurality of light bulb sockets, a plurality of light bulbs fitted in respective ones of said sockets, and a plurality of cords arranged on an inner surface of said rear cover and connected to respective ones of said light bulbs through said sockets; and

a first connector comprising a plurality of terminals arranged in a connector region of said rear cover, said first connector being disposed on an outer surface of said rear cover, each of said terminals having a cord connecting end portion with a cord connecting groove in which an end portion of a respective one of said cords is inserted, each of said cord connecting grooves having an edge for cutting an insulating cover of said cord and making electrical contact to a core wire of said cord;

wherein said plurality of cords connect said first connector to said sockets such that said plurality of light bulbs are electrically connected to said plurality of terminals, and said first connector is connected to a second connector to supply electricity to each of said light bulbs via said plurality of terminals; and

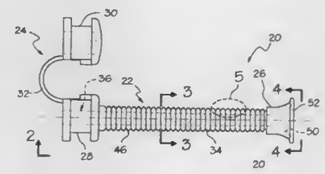
wherein said second connector is disposed within a vehicle body, and said first connector is inserted into said vehicle body to connect to said second connector.

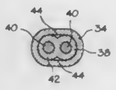
5,823,817

CORD GUARD

Michael L. Pyle, Mechanicsville, Va., assignor to Hamilton Beach/Proctor-Silex, Inc., Glen Allen, Va.

Filed Oct. 24, 1996, Ser. No. 736,445
Int. Cl.[6] H01R *13/56*
U.S. Cl. 439—447 **26 Claims**





1. A combined electrical power supply cord and cord guard therefor for use in an electrical appliance, comprising:

an electrical power supply cord having a predetermined transverse cross-sectional size and shape;

a flexible strain relief sleeve having a central passageway through which a portion of said electrical power supply cord extends, said passageway having a substantially uniform transverse cross-sectional size and shape along its length which is substantially the same as the transverse cross-sectional size and shape of said portion of said electrical power supply cord, whereby said portion of the power supply cord fits snugly within the central passageway; and

an outwardly-flared bell at one end of said strain relief sleeve open to the central passageway therein.

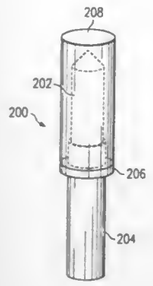
5,823,818

TEST PROBE FOR COMPUTER CIRCUIT BOARD TEST FIXTURE

James S. Bell, Cedar Park, and Franklin D. Tomlinson, Round Rock, both of Tex., assignors to Dell U.S.A., L.P., Round Rock, Tex.

Filed Jan. 21, 1997, Ser. No. 781,377
Int. Cl.[6] G01R *1/073*
U.S. Cl. 439—482 **25 Claims**

1. A bed of nails type test fixture for ensuring that a printed circuit board ("PCB") will fail unless a fillet at a test point extends at least a predetermined distance beyond a surface of said PCB, the test fixture including a plurality of test probes, each of said test probes comprising a test head disposed at one end of said test probe and a probe body comprising the remainder of said test probe, a tubular sheath, and means for securing said tubular sheath



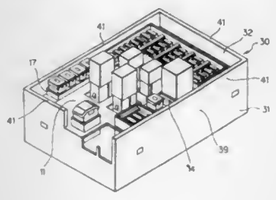
to said probe body such that said tubular sheath is disposed around said test head and is immobile with respect to said probe body, and said test head is recessed within said tubular sheath said predetermined distance.

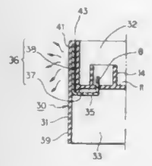
5,823,819

ELECTRIC JUNCTION BOX

Kazuharu Kondo; Tohru Yamaguchi, and Kazuaki Yokoyama, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Jun. 6, 1997, Ser. No. 870,737
Claims priority, application Japan, Jun. 7, 1996, 8-146226
Int. Cl.[6] H01R *13/00*
U.S. Cl. 439—487 **5 Claims**





1. An electric junction box comprising:

an upper case having a part-mounting floor portion on which an electric part is mountable, and a peripheral wall projecting from a periphery of said part-mounting floor portion;

a bus bar installation space formed in said peripheral wall; and

a bus bar having a tab terminal and a connecting plate to provide a feeding path for said tab terminal, said bus bar being mounted on a lower side of said part-mounting floor portion, with said tab terminal passing through said part-mounting floor portion;

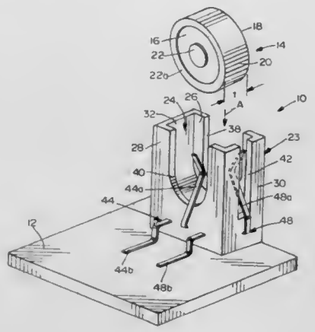
wherein said bus bar installation space receives at least a portion of said connecting plate of said bus bar.

5,823,820

MICROPHONE CONNECTOR

Arvind Patel, Naperville; Nels Pearson, Deerfield, and Robert Rushton, Villa Park, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 27, 1997, Ser. No. 804,621
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—500 **5 Claims**



1. An electrical connector for mounting a microphone which has opposite flat faces joined by an arcuate periphery, with a speaker in one of the flat faces comprising:

a dielectric housing having a generally rectangular microphone insertion cavity for receiving the microphone inserted periphery-first into the cavity, the cavity being defined at least in part by opposing side walls adapted for engaging the opposite faces of the microphone at the edges thereof near said periphery, and at least one side wall having an opening in registry with the speaker face of the microphone;

said microphone further including a miniature megaphone projecting from the speaker face of the microphone and through the opening in said one side wall, the miniature megaphone having a mounting lip about the microphone, and said opposing side walls are spaced sufficiently to accommodate the microphone and at least the mounting lip of the miniature megaphone, and

terminal means projecting into the cavity for engaging appropriate terminals on the microphone.

5,823,821

APPARATUS FOR SECURING AN ELECTRICAL OUTLET TO AN OUTLET BOX HAVING STRIPPED THREADS

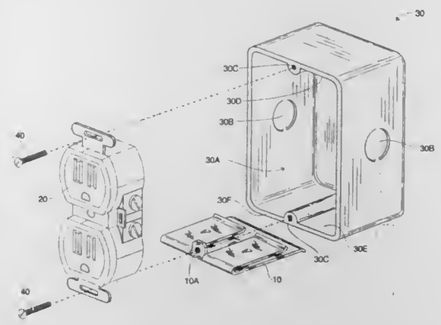
Edward Tohanczyn, Jr., 313 Mecray La., Maple Shade, N.J. 08052

Filed Mar. 31, 1997, Ser. No. 828,702
Int. Cl.[6] H02G *3/08*
U.S. Cl. 439—538 **7 Claims**

1. A retaining clip for attachment to a conventional electrical outlet box, the clip comprising:

a first plate having a first end opposite a second end;

b. the first plate turned at the second end to form at least one second plate which extends back toward the first end; and



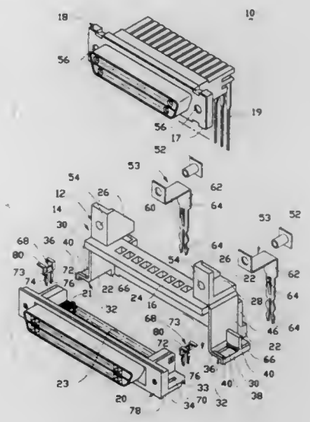
c. the first plate turned at the second end to form a tab which extends substantially perpendicularly from the first plate and includes a threaded aperture there-through.

5,823,822

BRACKET WITH BOARDLOCKS FOR ARRANGING STACKED CONNECTORS

Haw-Chan Tan, Diamond Bar; Gordon Lok, Montebello, and Joel J. Yeh, San Gabriel, all of Calif., assignors to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan

Filed Nov. 7, 1996, Ser. No. 746,248
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—541.5 **17 Claims**



1. A stacked type connector assembly comprising:

a bracket defining an upper level portion and a lower level portion for respectively receiving a first connector and a second connector therein;

a pair of side walls;

an upper level connector mounting plane defined between said pair of side walls; and

a pair of lower level connector mounting planes, whereby

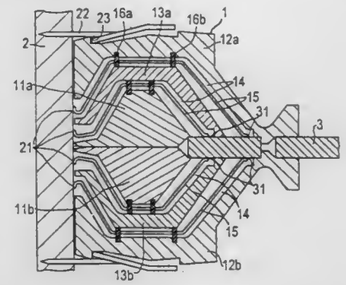
the first connector can be mountably attached to the upper level connector mounting plane at a top portion of the bracket and the second connector can be mountably attached to the lower level connector mounting plane at a front bottom portion of the bracket, and wherein a pair of boardlocks are positioned at the lower level connector mounting planes, respectively, for fastening the second connector to the bracket.

5,823,823

ELECTRICAL CONNECTOR ASSEMBLY

Jacques Longueville, Oostkamp, Belgium, and Peter Pagnin, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Mar. 29, 1996, Ser. No. 625,609
Claims priority, application Germany, Mar. 29, 1995, 195 11 508.2
Int. Cl.[6] H01R *13/73*
U.S. Cl. 439—571 **25 Claims**



1. In an electrical connector assembly having first and second printed circuit boards to be connected together, the improvement comprising:

an electrical connector having first and second halves;

holding devices disposed on the first circuit board for receiving and securing said electrical connector;

said first and second halves pivoting relative to one another on the holding devices of the first circuit board between an open and closed position for receiving and securing the second circuit board; and

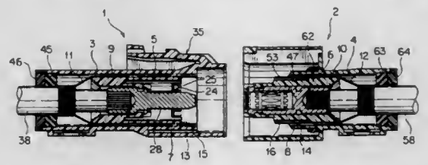
contacting devices disposed in said electrical connector for electrically contacting terminals on the printed circuit boards when said electrical connector is in said closed position.

5,823,824

SEALED CONNECTOR

Kenichi Mitamura, Fujisawa; Shinji Nakamoto, Hadano; Takayoshi Endo, and Mitsuhiro Matsumoto, both of Haibara-gun, all of Japan, assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 399,410, Mar. 6, 1995, abandoned. This application Jul. 24, 1997, Ser. No. 899,302
Claims priority, application Japan, Mar. 7, 1994, 6-035747
Int. Cl.[6] H01R *4/66*
U.S. Cl. 439—585 **4 Claims**



1. A sealed connector for sealing shield electric wires therewithin using sealing means, said sealed connector comprising:

a male connector portion comprising:

an elongated annular male connector housing including an inner housing and an outer housing, wherein said inner and outer housings of said male connector portion are both of an elongated annular shape and wherein said inner and outer housings of said male connector housing are connected to each other by a plurality of connecting portions evenly spaced in a circumferential direction between both said inner and outer housings of said male connector hous-

ing so that said inner housing, said outer housing and said connecting portion of said male connector housing form an integral one-piece body;

an elongated annular male-side metallic shield for draining noises from a portion of said shielded electric wire housed within said male connector housing, wherein said male-side metallic shield has first and second ends;

a male-side shield insertion space for housing said male-side metallic shield therewithin, wherein said male-side shield insertion space is located between said inner and outer housings of said male connector housing, and wherein said male-side shield insertion space surrounds said plurality of connecting portions;

wherein said male-side metallic shield includes a plurality of connecting protrusions, each of said connecting protrusions being formed by notching a plurality of slits in said first end of said male-side metallic shield so that said protrusions alternate with said slits in a circumferential direction of said male-side metallic shield, and each of said connecting protrusions protrude in a direction parallel to a longitudinal direction of said male-side metallic shield and said male connector portion; and

a cylindrical a terminal accommodation space, within said inner housing, for accommodating terminals therewithin;

a female connector portion comprising:

an elongated annular female connector housing including an inner housing and an outer housing, wherein said inner and outer housings of said female connector housing are also of an elongated annular shape and said inner and outer housings of said female connector housing are connected to each other by a plurality of connecting portion so that said inner housing, said outer housing, and said connecting portions of said female connector housing form an integral one-piece body,

an elongated annular female-side metallic shield for draining noises from a portion of said shielded electric wire housed within said-female connector housing, wherein said female-side metallic shield has first and second ends;

a female-side shield insertion space for housing said female-side metallic shield therewithin, wherein said female-side shield insertion space is located between said inner and outer housings of said female connector housing, and wherein said female-side shield insertion space surrounds said plurality of connecting portions;

wherein said female-side metallic shield includes a plurality of connecting protrusions, each of said connecting protrusions being formed by notching a plurality of slits in a first end of said female-side metallic shield, so that said connecting protrusions alternate with said slits in a circumferential direction of said female-side metallic shield, and each of said connecting protrusions protrude in a direction parallel to a longitudinal direction of said female-side metallic shield and said female connector portion; and

a cylindrical a terminal accommodation space, within said inner housing, for accommodating terminals therewithin; and

wherein said male connector portion is inserted into said female connector portion to form said sealed connector having said shielded electric wires sealed therewithin by said sealing means, said sealed connector having a two-piece outer housing comprised of said outer housing of said male connector portion and said outer housing of said female connector portion and a two-piece inner housing comprised of said inner housing of said male connector portion and said inner housing of said female connector portion such that said two-piece outer housing of said sealed connector surrounds said two-piece inner housing of said sealed connector and a two-piece metallic shield comprised of said metallic shield of said male connector portion and said metallic shield of said female connector portion is located between said two-piece inner housing of said sealed connector and said two-piece outer housing of said sealed connector.

5,823,825

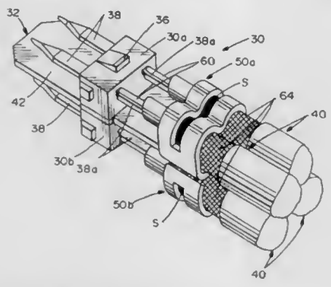
SYSTEM FOR TERMINATING THE SHIELD OF A HIGH SPEED CABLE

Paul Murphy, Naperville, Ill., assignor to Molex Incorporated, Lisle, Ill.

Continuation of Ser. No. 609,307, Mar. 1, 1996. This application Oct. 6, 1997, Ser. No. 944,718

Int. Cl.[6] H01R *9/03*

U.S. Cl. 439—610 **21 Claims**



1. A termination assembly comprising:

a pair of cables each of which cables having an inner conductor, an inner dielectric surrounding at least a portion of said inner conductor, a metallic shield surrounding at least a portion of said inner dielectric and an outer insulating jacket surrounding at least a portion of said metallic shield, a portion of said outer jacket being removed to expose an exposed portion of said metallic shield;

a terminal to which said metallic shields are to be terminated, said terminal being at least partially disposed in a dielectric housing of an electrical connector and having a termination portion formed of a generally planar base with opposed lateral edges; and

a gripping arm projecting from one of said lateral edges to at least adjacent another of said lateral edges and configured to grip at least a portion of said exposed portion of said metallic shield of each of said cables without deformation of said inner dielectric such that said metallic shields of said cables are substantially surrounded by said gripping arm and said base, said gripping arm having a slot used in bonding said exposed portions of said metallic shields to said gripping arm.

5,823,826

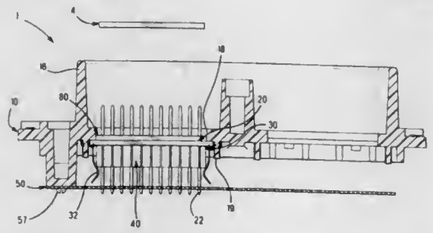
FILTERED CIRCUIT CONNECTOR WITH FRAME

Bobby Gene Ward, King; Larry George Novotny, Clemmons, and James Ray Coller, Kernersville, all of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Oct. 28, 1996, Ser. No. 741,858

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—620 **13 Claims**



1. An electrical connector, comprising:

(a) an electrically conductive housing, said housing comprises a connector subassembly receiving section and conductive subassembly locking members, wherein said conductive subassembly locking members comprise posts;

(b) a connector subassembly located in said subassembly receiving section, said connector subassembly comprises a conductive frame and a substrate;

(c) said substrate comprises circuit traces and conductive members defining an electrical circuit path therebetween;

(d) said frame comprises substrate connecting sections and housing locking members, said frame is electrically connected to said electrical circuit path by said substrate connecting sections, and said frame housing locking members are electrically connected to said conductive subassembly locking members of said housing; and

(e) said frame is thereby electrically interposed between said substrate and said housing whereby electrical continuity is made from said electrical circuit path through said frame to said housing.

5,823,827

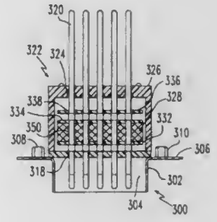
LOW COST FILTERED AND SHIELDED ELECTRONIC CONNECTOR

Yakov Belopolsky, Harrisburg, Pa., assignor to Berg Technology, Inc., Reno, Nev.

Continuation of Ser. No. 608,686, Feb. 29, 1996, Pat. No. 5,639,264. This application Jun. 16, 1997, Ser. No. 876,880

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—620 **19 Claims**



1. An electrical connector comprising:

(a) a front retaining means comprising a conductive shell having a pin receiving passageway;

(b) a plurality of conductive pins extending through the passageway of the front retaining means;

(c) a concave insulative rear retaining means having apertures through which the conductive pins pass; and

(d) a capacitive means comprising a printed wiring board having a plurality of central apertures and being interposed between said front retaining means and rear retaining means so as to receive the pins in said central apertures, and said board having a component side oriented toward the rear retaining means, and a reverse side oriented and on the component side of said board there is a conductive strip adjacent the peripheral edge of the board, on said component side, and outwardly adjacent at least some of the central apertures there are conductive bands and a capacitor is positioned between at least some of said conductive bands and the conductive strip adjacent the peripheral edge, and on the reverse side of said board a non-conductive area surrounds at least some of the central apertures and said non-conductive areas are surrounded by conductive areas; and

(e) a ferrite element filter means positioned within the rear insulating member.

5,823,828

SMART CARD CONNECTOR WITH SLIDABLE COVER

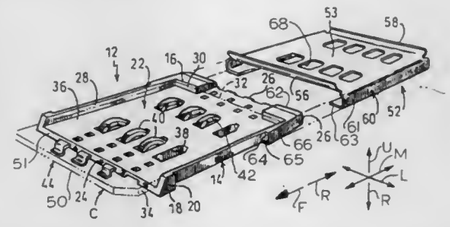
Herve' Guy Bricaud, Dole; Fabrice Valcher, Damparis, and Yves Pizard, Dole, all of France, assignors to ITT Manufacturing Enterprises, Inc.

Filed Dec. 10, 1996, Ser. No. 763,285

Claims priority, application France, Dec. 13, 1995, 95 14767

Int. Cl.[6] H01R *23/70*

U.S. Cl. 439—630 **7 Claims**



1. An electrical connector (**12**) for mounting on a circuit board (**49**) and for connecting to a primarily rectangular smart card (C) that has a card lower face with card contact pads thereon, card front and rear edges (**50**, **32**), and a predetermined length B between said edges, comprising:

an insulative support (**14**) which has walls forming a card holding recess (**22**) with an open upper recess top, said recess walls including a bottom wall (**36**), opposite recess side walls (**28**), and a recess rear end wall (**30**);

a plurality of contacts (**42**) mounted on said support, said contacts having card engaging ends (**40**) projecting above said bottom wall and positioned to engage said card contact pads when said card lies in said recess with said card rear edge abutting said recess rear end wall, with said contacts having terminals (**48**) for connecting to said circuit board;

said bottom wall has a bottom wall front end (**51**) lying at a front end of said recess, with said bottom wall front end positioned so when said card rear edge abuts said recess rear end wall said card front edge (**50**) projects a plurality of millimeters forward of said bottom wall front end and of said contacts, and with an area above and forward of said bottom wall front end being uncovered, to thereby enable the card front end to be gripped not only above but also below the card to pull out the card.

5,823,829

CONNECTION BODY'S FITTING CONNECTION STRUCTURES AND SOCKETS STRUCTURES TO HOLD AN ELECTRIC BULB

Hiroyuki Suzuki, 1309, Bukko-cho, Hodogaya-ku, Yokohama-shi, Kanagawa 240, Japan

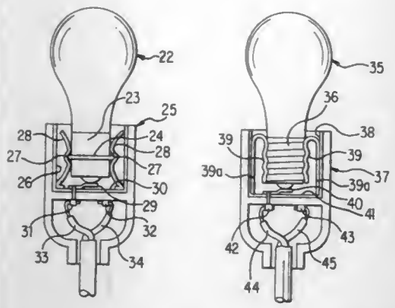
Continuation of Ser. No. 307,795, Dec. 8, 1994, abandoned. This application Dec. 20, 1996, Ser. No. 770,848

Claims priority, application Japan, Jan. 31, 1993, 5-049827; Oct. 5, 1993, 5-271178

Int. Cl.[6] H01R *17/18*

U.S. Cl. 439—668 **10 Claims**

1. In a structure to fit an electric bulb base into a socket-shaped connector, a structure to hold the electric bulb base in the socket comprising vertically curved elongated plate springs being provided at plural positions at some interval on an inner circumference of a hollow part of the socket-shaped connector, each plate spring with a first end thereof fixed in the hollow part and a second end thereof being movable with respect to inner side walls of the hollow part, these plate springs having rectangular horizontal cross-sections taken in a horizontal plane of the plate springs, these plate springs being biased inwardly and curved inwardly toward a longitudinal axis of the hollow part from said first end to said second end, and the inward curvatures of said plate springs defining a narrowest inner circumference at an intermediate transverse



plane between the first ends and the second ends, said narrowest circumference having a diameter less than the electric bulb base for releasible engaging the electric bulb base when the electric bulb base is seated in the hollow part of the socket-shaped connector by the electric bulb base forcing the second ends of said plate springs against and along the inner side walls of the hollow part to increase the radius the inward curvature of said plate springs and move said plate springs outwardly the most at said intermediate transverse plans as said plate springs tend to flatten against the inner side walls of the hollow part.

5,823,830

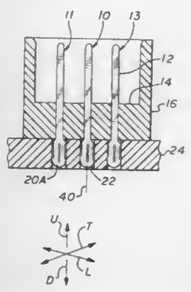
TAILESS COMPLIANT CONTACT

Woody Wurster, 502 W. Robinson, Carson City, Nev. 89703

Filed Feb. 24, 1995, Ser. No. 394,409

Int. Cl.[6] H02R *13/42*

U.S. Cl. 439—751 **8 Claims**



1. An electrical contact which has a compliant section with a vertical axis and upper and lower ends, for press-fit into a hole of a board, and which has a top section extending generally upwardly from said upper end of said compliant section, wherein said compliant section has lateral and thickness dimensions that are perpendicular to each other and to said vertical axis, and wherein said compliant section is of the eye-of-the-needle type that includes a vertically-extending slot that extends through the entire thickness of said compliant section and that leaves a pair of largely vertical beams that have merging upper and lower ends and laterally spaced beam middle portions, with said beam middle portions having inner sides at said slot and having outer sides that lie furthest from said slot and with said compliant section having a predetermined maximum lateral spacing of said outer sides, with said compliant section having an extreme lower end that forms an extreme lower end of said contact, and wherein said contact has an initial configuration prior to said press-fit, characterized by:

in said initial configuration, said lower end of said compliant section is convexly rounded, as seen in a front elevation view taken along a line extending along said thickness dimension, with said lower end extending downwardly of said slot and with said lower end, including said extreme lower end of said compliant section, having a radius of curvature (A) that is at least 20% of said predetermined maximum lateral spacing, as seen in said front elevation view, with said compliant section having a maximum thickness (R) and with said lower end of said compliant section including said extreme lower end thereof also being convexly rounded to have a radius of curvature (Q) that is at least 25% of the thickness of said compliant section as seen in a side elevation view.

5,823,831

BATTERY TERMINAL CONNECTOR

Barry Thomson Bowater, 94 Reservoir Road, Sunbury, Victoria 3429, and Garry John Owen, 74-76 Hattam Street, Golden Square, Bendigo 3555, both of Australia

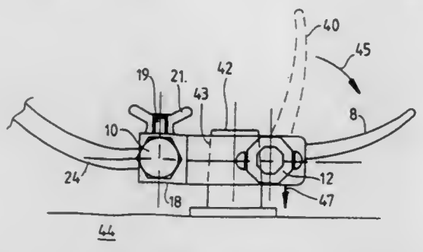
PCT No. PCT/AU94/00471, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO95/05687, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 12, 1994, Ser. No. 591,604

Claims priority, application Australia, Aug. 12, 1993, PM0514; Dec. 15, 1993, PM2963

Int. Cl.[6] H01R *4/50*

U.S. Cl. 439—773 **13 Claims**



1. A battery terminal connector comprising:

a body having means for receiving a battery terminal; and

a cam shaft rotatable within said body for engaging said terminal to lock the connector to said terminal, wherein said cam shaft on rotation between an unlock and lock position pulls said body downwards into said terminal and moves laterally across said terminal to lock said connector to said terminal.

5,823,832

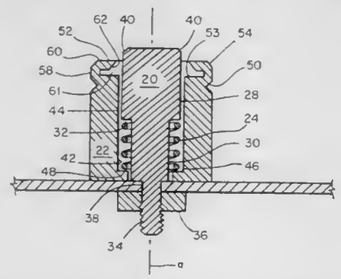
ELECTRICAL CONNECTOR FOR USE WITH AN ELECTROENCEPHALOGRAPH ELECTRODE

Mohan Das, Westbury, N.Y., assignor to Netech Corporation, Hicksville, N.Y.

Filed Dec. 23, 1996, Ser. No. 780,054

Int. Cl.[6] H01R *4/52*

U.S. Cl. 439—817 **13 Claims**



13. An electrical connector for removably mounting on the skin of a patient and structured to mate with a cup-shaped electrode, which comprises:

a stationary inner stud having a longitudinal axis;

an outer shell mounted circumferentially about the inner stud and movable longitudinally and rotationally relative to the longitudinal axis of the inner stud, the outer shell including means defining a receiving pocket for receiving the cup-shaped electrode;

biasing means for longitudinally biasing the outer shell with respect to the longitudinal axis of the inner stud and thereby causing the inner stud and outer shell to exert a holding force on the cup-shaped electrode when the electrode is inserted into the receiving pocket; and

means for mounting the electrical connector to a patient, the mounting means including:

a flexible membrane, the flexible membrane having a top surface and a bottom surface disposed opposite to the top surface, the inner stud being mounted on the flexible membrane and disposed on the top surface thereof;

a side wall mounted on the flexible membrane and extending from the bottom surface thereof, the side wall having an adhesive surface for adhesion to and mounting of the electrical connector to the skin of a patient, the side wall defining a central reservoir disposed on the bottom surface of the flexible membrane; and

an electrically conductive substance received by the central reservoir, the electrically conductive substance being in electrical communication with the inner stud and in electrical communication with the skin of a patient when the electrical connector is mounted thereon.

5,823,833

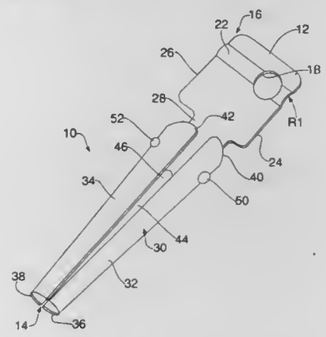
MULTI-WIRE LOCKING SYSTEM

Cosmo Castaldo, Westbury, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Continuation of Ser. No. 437,254, May 8, 1995, Pat. No. 5,662,503. This application Aug. 15, 1997, Ser. No. 911,880

Int. Cl.[6] H01R *11/22*

U.S. Cl. 439—851 **4 Claims**



1. A unitary one-piece ground contact for use as a component within an electrical connector, comprising, in combination:

a) a body formed from a single block, said body comprising:

b) a mounting tab portion formed with an opening therethrough;

c) a neck portion integral with said mounting tab portion;

d) a tube grip portion integral with said mounting tab portion via said neck portion;

e) a slot in said tube grip portion extending from a first, free end of said tube grip portion towards said neck portion providing a first gap;

f) said tube grip portion comprising:

g) two spring members formed in an arcuate configuration with their respective concave inner surfaces facing one another, said spring members being disposed so as to define a second gap between confronting, outer edges of said tube grip portion, and a receiving end flared to receive a ground pin of an electrical plug; and

h) self-centering means for aligning said contact within a bore in which said contact is disposed when in a functioning mode, said self-centering means comprising a plurality of protuberances formed as an integral part of said spring members for contacting the inner surfaces defining said bore.

5,823,834

FLAT PLUG

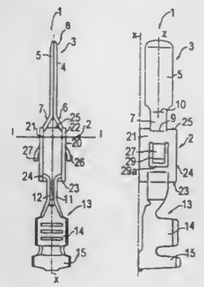
Martin Straeb, Hassloch, and Andreas Hamburger, Hagenbach, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 10, 1996, Ser. No. 631,612

Claims priority, application Germany, Apr. 10, 1995, 195 13 590.3

Int. Cl.[6] H01R *9/24*

U.S. Cl. 439—884 **16 Claims**



1. A flat plug, comprising:

a base body having a first end, a second end and a width;

said base body having a v-shaped cross-section in a folded state;

a terminal part having terminal ribs integrally connected to said first end of said base body, said terminal ribs having a given width less than said width of said base body; and

a contact blade having two blade halves, each of said two blade halves having a neck with a given width less than said width of said base body and integrally connected to said second end of said base body,

said two blade halves having a longitudinal axis and an outer contour, said blade halves being mutually symmetrical about said longitudinal axis with respect to said outer contour, said longitudinal axis defining a single folding line for folding the flat plug into the folded state;

each of said two blade halves having a broad side,

said broad side of said two blade halves resting flat against one another in the folded state, and said two blade halves being spaced apart from one another along the longitudinal axis in an unfolded state.

5,823,835

OUTBOARD MOTOR THROTTLE CONTROL

Masanori Takahashi; Hiroshi Oishi, and Hitoshi Watanabe, all of Hamamatsu, Japan, assignors to Sanshin Kogyo Kabushiki Kaisha, Shizuoka-ken, Japan

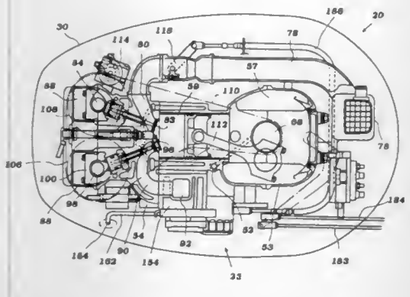
Filed Mar. 17, 1997, Ser. No. 819,595

Claims priority, application Japan, Mar. 18, 1996, 8-088760

Int. Cl.[6] B63H *20/00*

U.S. Cl. 440—2 **15 Claims**

1. An outboard motor having a cowling with an internal combustion engine positioned therein, said engine having at least one variable volume combustion chamber with a member movably mounted therein, each member connected to a generally vertically extending crankshaft, said crankshaft in driving relation with a water propulsion device of said motor, said engine having an intake system for providing air to said at least one variable volume combustion chamber, and an exhaust system for routing exhaust

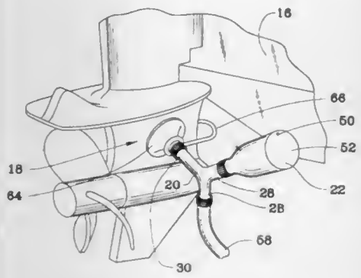


generated in said at least one variable volume chamber from said engine, said exhaust system positioned generally on a side of said engine, said motor including a liquid cooling system for cooling said engine, including at least a portion of said exhaust system, said motor further including a pilot port positioned in a side of said cowling visible from an operator station of a watercraft which is to be powered by said motor, and adjacent said exhaust system and connected to a passage of said cooling system, whereby some coolant flowing through said cooling system is diverted therefrom to said pilot port and expelled therefrom outwardly of said cowling, thereby giving a visual indicator that the cooling system is working.

5,823,836
BOAT MOTOR FLUSHING AND LUBRICATING ACCESSORY

Kenneth J. Anderson, 4190 NW. 79th Ave., Suite 2C, Miami, Fla. 33166

Filed May 22, 1997, Ser. No. 862,005
Int. Cl.[6] B63H *21/10*
U.S. Cl. 440—88 **8 Claims**

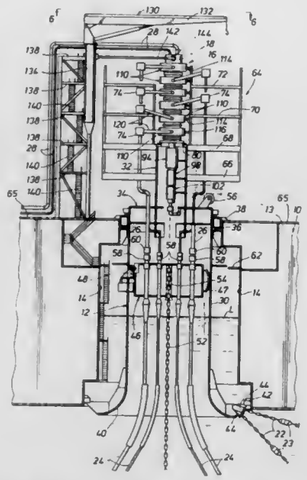


1. A flushing system accessory comprising:
a one-piece connector housing having a first intake port, a second intake port, an outlet port, and an interior chamber, said first intake port, said second intake port, and said outlet port being in fluid communication with said interior chamber;
a lubricating-fluid vessel fluidly coupled to said first intake port; and
a partition wall that divides said interior chamber into a first passageway and a second passageway, said first passageway having a first exit, and said second passageway having a second exit, said first and second exits forming complementary portions of said outlet port;
whereby said connector simultaneously attaches two sources of fluid to a single intake port on a boat motor flushing device, wherein fluids provided by the fluid sources occupy separated chambers while inside said connector and do not mix until traveling past a terminal end of said outlet port.

5,823,837
TURRENT MOORING SYSTEM WITH PRODUCT SWIVEL STACK

L. Terry Boatman, and Miles A. Hobdy, both of Houston, Tex., assignors to FMC Corporation, Chicago, Ill.

Filed Nov. 20, 1997, Ser. No. 975,230
Int. Cl.[6] B62B *22/02*
U.S. Cl. 441—5 **35 Claims**



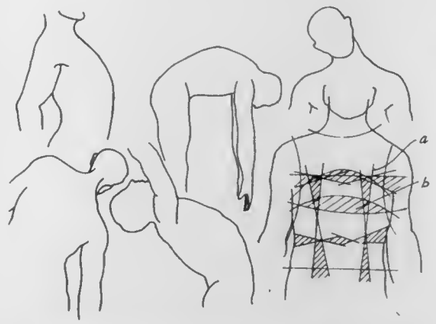
1. A mooring arrangement for a floating vessel for receiving hydrocarbon product comprising,
a turret coupled to risers which extend to the sea floor;
a plurality of anchor lines coupled to said turret and anchored to the sea floor;
first bearing means for rotatably coupling said vessel to said turret;
a swivel stack of a plurality of vertically spaced product swivels each having an inner male swivel core and an outer coaxial female swivel housing which receives each said inner male core; said stacked inner male swivel cores defining an inner male swivel core stack with said outer female swivel housing stack having an outer periphery and said inner male swivel core stack having a bore defining an inner periphery;
second bearing means for rotably coupling said inner male swivel core stack to said turret;
inlet product lines carried by said turret and connected at respective first ends to said risers and connected at respective opposite ends to said outer female housings;
outlet product lines carried by said vessel and each connected to a respective inner male core within said bore for transport of product to storage areas of said vessel; and
a platform carried by said turret and disposed alongside said swivel stack, where said inlet product lines are mounted on said platform and extend from said platform to said outer female housings for connection thereto.

5,823,838
LIFE-JACKET

Roderick Gerard Darcy, Greystones, and Aidan Kelly, Delgany Co Wicklow, both of Ireland, assignors to O'Dare International Limited, Bray, Ireland

Filed May 28, 1996, Ser. No. 655,193
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—106 **18 Claims**

1. A life-jacket comprising:
an upper body garment having a front, back, waist, armpits and neck;

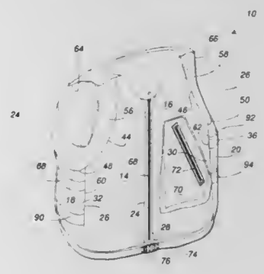


the garment being a double-skinned garment of two layers of material;
a plurality of pockets formed in the garment by joining the layers together;
separate buoyancy material in each pocket, the spacing between the pockets and the shape and deployment of the buoyancy material being such as to prevent undue contact between adjacent pockets on articulation; and
articulation zones formed in the buoyancy material for hinging and flexing of the buoyancy material, said articulation zones being coincident with the articulation zones of a wearer's upper torso during specified boating activities;
the garment being a figure hugging elasticized garment, the buoyancy material being directly affixed thereto.

5,823,839
PERSONAL FLOTATION DEVICE HAVING ELASTIC ARMHOLE PERIPHERY

Alexander Khanamirian, Miami Beach, Fla., assignor to Extrasport, Inc., Miami, Fla.

Filed Jan. 8, 1997, Ser. No. 780,210
Int. Cl.[6] B63C *9/08*
U.S. Cl. 441—106 **7 Claims**

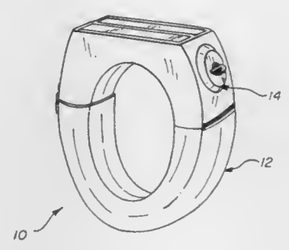


1. A personal flotation device adapted to fit about the torso, shoulders, and arms of a wearer to provide buoyancy and support for the wearer while the wearer is in water, while enabling a wide range of freedom of movement, comprising:
(a) a body formed from a series of body panels connected in series, each of said body panels being formed from a buoyant material; and
(b) a pair of armhole periphery members, each of said armhole periphery members being formed solely of an elastic material which is located between adjacent ones of said body panels, said adjacent body panels not encircling the armhole periphery, while said armhole periphery members are adapted to encircle and engage the shoulders of a wearer with the arms of the wearer received therethrough.

5,823,840
EMERGENCY FLOTATION DEVICE

William C. Powers, 2352 Locust Road, Columbia, S.C. 29223

Filed Jul. 21, 1997, Ser. No. 897,926
Int. Cl.[6] B63C *9/16*
U.S. Cl. 441—122 **12 Claims**



1. An emergency flotation device comprising:
a bracelet assembly including an upper bracelet member and a lower bracelet member that are attached by a flexible bracelet member hinge, that are pivotable into a closed position forming a wrist receiving opening, and that are securable in said closed position by a bracelet member latch, said upper bracelet member having a flotation balloon storage compartment formed therein in connection with a flotation balloon deployment window, said lower bracelet member having a bladder receiving compartment formed therein; a scored flotation balloon retaining membrane positioned over said flotation balloon deployment window of said upper bracelet member;
a valve assembly having a valve intake, a valve outlet and a manually activated valve positioned between said valve intake and said valve outlet;
a resilient bladder filled with a pressurized acid solution, said resilient bladder being positioned within said bladder receiving compartment of said lower bracelet member;
a flexible connecting tube in connection between said resilient bladder and said valve intake;
an inflatable flotation balloon positioned within said flotation balloon receiving compartment of said upper bracelet member, said inflatable flotation balloon having a balloon chamber having a supply of carbon dioxide generating crystals positioned therein; and
an acid solution delivery tube in connection between said valve outlet and said balloon chamber of said inflatable flotation balloon.

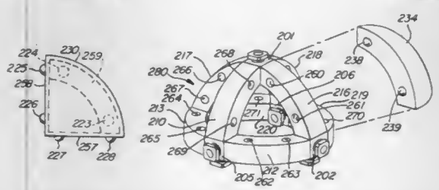
5,823,841

Patent Not Issued For This Number

5,823,842

Patent Not Issued For This Number

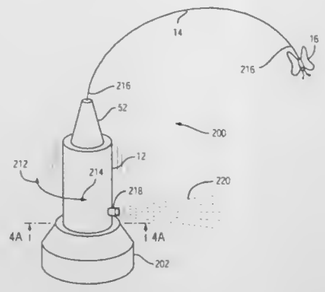
5,823,843
SPHERICAL ELEMENT COMBINATION FOR CONSTRUCTION TOY SET
Joe K. Pohlman, 8344 Regis Way, Los Angeles, Calif. 90045
Filed Feb. 6, 1997, Ser. No. 796,774
Int. Cl.[6] A63H *33/06*
U.S. Cl. 446—120 10 Claims



1. A spherical element combination construction toy comprising:
a framework for a sphere or spherical portion having a plurality of arcuate beam elements each defining an arcuate body having ends defining a first snap-fit connector structure and a plurality of couplers each defining a plurality of second snap-fit connector structures, said second snap-fit connector structures cooperating with said first snap-fit connector structures to interlockably connect said plurality of arcuate beam elements to form said framework for a sphere or spherical portion;
a plurality of spherical inserts each defining an approximate one eighth segment of a sphere; and
means for snap-fit attaching said spherical inserts to said framework to complete a sphere or spherical portion.

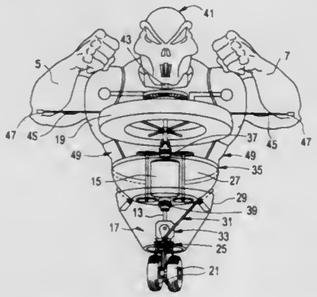
5,823,844
INTERACTIVE VIBRATING TOY
Eli Markowitz, 1173 52nd St., Brooklyn, N.Y. 11219
Filed Aug. 17, 1994, Ser. No. 291,973
Int. Cl.[6] A63H *11/02*
U.S. Cl. 446—175 6 Claims

1. A vibrating toy comprising:
a housing;
a battery mounted within said housing;
a motor mounted within said housing activated by said battery;
a shaft driven by said motor;



a means on said shaft for imparting vibration to said housing;
a play element outside of said housing;
a means for connecting said play element to said housing and through which said play element can receive vibrations generated from said means for imparting said vibration;
said housing having an aperture, a first end and a second end and said means for connecting comprising a wire fastened within the said first end and extending outward through said aperture;
said housing rotatably mounted on a stationary base member, rotation being induced by said means for imparting vibration; and
an infra-red motion detector arranged in said housing to project an infra-red light beam outward from said housing and to sense movement.

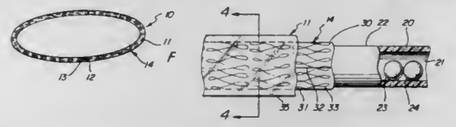
5,823,845
MOBILE, GYROSCOPICALLY STABILIZED TOY WITH CONTROLLED MULTI-ACTION MOVEMENTS
Kieran J. O'Berrigan, Kearney, N.J., assignor to Kieran Bergin, Inc., Kearney, N.J.
Filed Mar. 12, 1996, Ser. No. 615,034
Int. Cl.[6] A63H *1/20;30/04;7/00*
U.S. Cl. 446—234 24 Claims



1. A toy capable of rolling atop a support surface comprising:
a body;
gyroscopic means mounted in said body for providing, gyrostabilization, said gyroscopic means including:
an axle rotatably mounted to said body and defining an axis of rotation;
a rotor attached to said axle and capable of spinning about said axis; and
means for attaching said axle to said body, wherein said axle is free to rotate about at least one axis which is perpendicular to said axis of rotation;
selectively, intermittently operable drive means connected to said gyroscopic means for causing said axle and said rotor to spin with sufficient speed to gyrostabilize said toy;

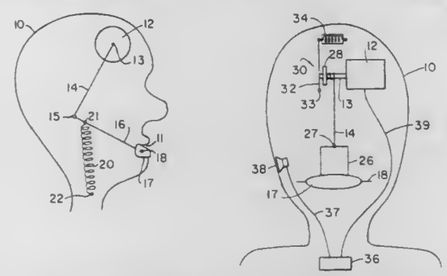
at least one appendage attached to said body;
translation means disposed at the lower portion of said toy for permitting independent directional translational movement of said toy over the support surface, said translation means forming the bottom of said toy, said translation means including at least one rolling member which provides at least one contact area for providing frictional contact with the support surface which resists the natural precessional forces of said gyroscopic means, and which substantially prevents rotation of the lower portion of said toy about an upright axis extending up from the support surface; and
a remote control for selectively controlling the gyroscopic rotation of said gyroscopic means and the motion of said at least one rolling member;
wherein said at least one rolling member is selectively motor driven by said drive means or a second drive means in response to said remote control.

5,823,846
HOOP FOR EXERCISE AND ENTERTAINMENT HAVING DECORATIVE APPEARANCE
Martin F. Arriola, Torrance; Tichakorn Chaikumnerd, Huntington Beach; Janet K. Simmons, Redondo Beach; Diana L. McDonough, Chino, and Isaak Volynsky, Beverly Hills, all of Calif., assignors to Mattel, Inc., El Segundo, Calif.
Filed Feb. 5, 1997, Ser. No. 796,005
Int. Cl.[6] A63H *33/02*
U.S. Cl. 446—236 14 Claims



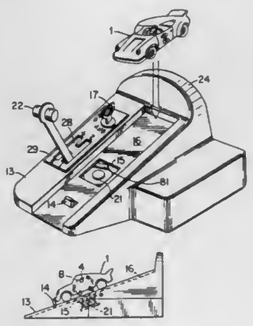
1. An exercise and entertainment hoop comprising:
an elongated member having joined ends forming a circular hoop;
a light-transmissive protective outer layer enclosing said elongated member; and
a decorative material interposed between said protective outer layer and said elongated member.

5,823,847
MOVING MOUTH MECHANISM FOR ANIMATED CHARACTERS
Jonathan Gellman, New York, N.Y., assignor to Pragmatic Designs, Inc., City Island, N.Y.
Filed Feb. 18, 1997, Ser. No. 801,197
Int. Cl.[6] A63H *03/28*
U.S. Cl. 446—301 13 Claims



1. A moving mouth mechanism for an animated character, the mechanism comprising:
a head member including a mouth having a lower lip element which is pivotably mounted in the head member;
a pivotable lever element having an inner end and an outer end, and being attached at the outer end to said pivotable lower lip element;
an electric motor mounted in said head member, said motor having a shaft rotatable in either direction and having an integral shaft extension;
an elongated flexible element having its upper end attached to said motor rotatable shaft extension and having the flexible element lower end attached to said pibotable lever element at the lever inner end;
a resilient element having upper and lower ends and being attached at its upper end to said lever element; and
an adjustable damping means arranged for providing a frictional force against sadi motor shaft extension; whereby the pivotable lower lip element is movable upward and downward by the pivotable lever element so as to simulate normal speech for the mouth of the animated character by the upper end of said elongated flexible element being intermittently wound onto and unwound form said rotatable motor shaft extension in response to the shaft intermittent rotation directions caused by the resilient element and electrical power being provided intermittently to the motor.

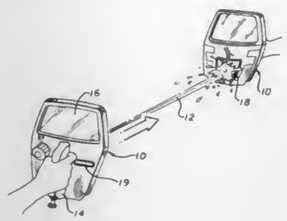
5,823,848
TOY AUTO RACING POWER SHIFTER AND CAR
Charles Cummings, 5719 Thomaridge Ct., Cincinnati, Ohio 45248
Filed May 16, 1997, Ser. No. 857,591
Int. Cl.[6] A63H *29/20*
U.S. Cl. 446—429 11 Claims

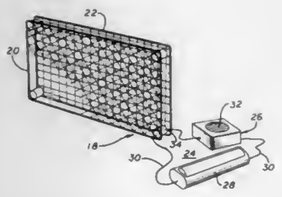


1. An auto racing kit, comprising:
a toy vehicle, said toy vehicle comprising wheels, and a flywheel, said flywheel of said toy vehicle further comprising a plurality of magnets at the periphery of said flywheel, said flywheel having the ability to be accelerated to power the vehicle; and
an electronic power shifter for powering said toy vehicle, said electronic power shifter comprising a ramp upon which the toy vehicle is positioned, a gear shift for altering the speed at which the flywheel of said vehicle rotates, said gearshift comprising and connected to a shifter blade which touches the flywheel as the gearshift is shifted, a vehicle stop for the holding and releasing of said vehicle, an electromagnet, a reed switch, and a circuit board, such that when said vehicle rolls down said ramp of said power shifter, the vehicle stops at said vehicle stop, the flywheel continues to rotate, said reed switch is triggered everytime said magnets of said flywheel revolve, said electromagnet is turned on when said reed switch is turned on, whereupon said electromagnet causes said flywheel to rotate faster each time said electromagnet is turned on, wherein shifting the gear shift of the power shifter causes the shifter blade to touch said flywheel of said vehicle causing the flywheel to slow, and such that said vehicle is released from

said power shifter by shifting said gear shift to a designated position, thereby releasing the vehicle stop from holding said vehicle in place.

5,823,849
CIRCUIT WITH INTERMITTENT SENSING OF LIQUID CONTACT, AND GAME METHOD
Roger Gardner, Lomita, and Elliot Rudell, Torrance, both of Calif., assignors to Elliot A. Rudell, Torrance, Calif.
Filed Feb. 28, 1997, Ser. No. 808,337
Int. Cl.[6] A63B *67/00;* **F41J** *5/044*
U.S. Cl. 446—473 **5 Claims**

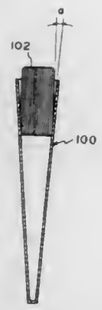




1. A toy that senses contact with a fluid, comprising:
a housing;
a spray device that is mounted on said housing and which emits a stream of fluid only in a direction away from the housing;
a conductive member that is attached to said housing;
a conductive screen that is adjacent to said conductive member so that fluid can flow through said conductive screen to said conductive member; and,
an indicator circuit that is connected to said conductive member and said conductive screen, wherein said indicator circuit provides an indication of when fluid makes contact with said conductive member and said conductive screen.

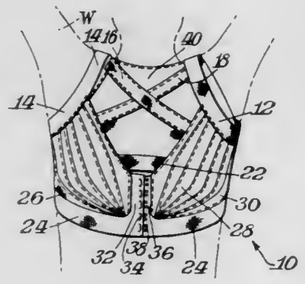
5,823,850
CONFETTI LAUNCHING DEVICE
James O. Watkins, 14920 Mt. Nebo Rd., Poolesville, Md. 20837
Continuation-in-part of Ser. No. 368,500, Jan. 4, 1995, Pat. No. 5,556,319, which is a continuation-in-part of Ser. No. 80,534, Jun. 24, 1993, Pat. No. 5,403,225, which is a continuation-in-part of Ser. No. 51,355, Apr. 23, 1993, Pat. No. 5,352,148. This application Sep. 9, 1996, Ser. No. 709,717
Int. Cl.[6] A63H *37/00*
U.S. Cl. 446—475 **21 Claims**

1. In combination:
(a) a hollow tapered wand having a barrel portion and a handle portion;
(b) a plurality of stacks of confetti, each of said stacks comprising a plurality of individual pieces of confetti, each of said pieces of confetti having a tetragonal shape, a pair of faces and a length, said plurality of individual pieces of confetti



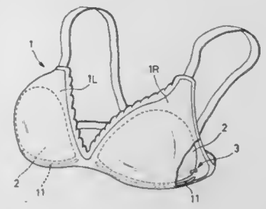
being stacked in face-to-face relationship with said lengths aligned parallel to each other to form a stack of tetragonal-shaped pieces of confetti; and
(c) said barrel portion of said wand being of a size and shape such as to receive one of said stacks of confetti wedged therein.

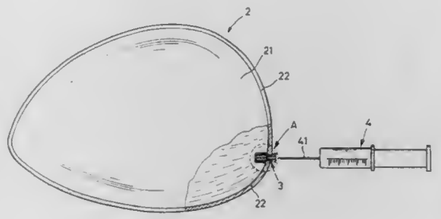
5,823,851
BRA SPORT TOP
Timothy P. Dicker, 11359 Dornfield, Lake View Ter., Calif. 91342
Filed Apr. 22, 1996, Ser. No. 636,147
Int. Cl.[6] A41C *3/00;3/12*
U.S. Cl. 450—2 **18 Claims**



1. A sport top for a woman that supports the woman's breasts and enhances her posture comprising an over-shoulder harness in the form of a pair of spaced straps located at a back of said top and extending over the shoulders to a front of said top, at least one cross-brace tension strap at said back of said top, said tension strap being connected to said harness straps, breast-tensioning and support panels at said front of said top, said panels comprising a right panel for being over the right breast and a left panel for being over the left breast, each of said panels having an upper end and a lower end, each of said panels comprising a plurality of elastic bands longitudinally secured together, said bands extending upwardly from said lower end at a location below the breast, said panel having a length and width for covering the breast, said panels being connected together at a location between the breasts, said upper end of each of said panels being secured to a respective one of harness straps at said front of said top, and said lower straps ends of said panels being secured to a support belt.

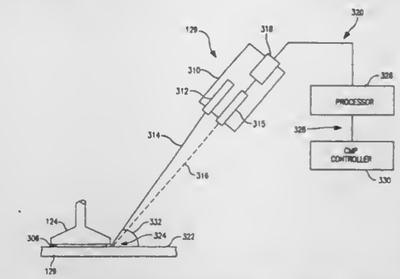
5,823,852
WATER BAG TYPE BRASSIERE PADDING WITH A VALVE
Chia-Hui Chu, 10-3 Fl., 96, Lung An Street, Taoyuan City, Taiwan
Filed May 29, 1997, Ser. No. 864,743
Int. Cl.[6] A41C *3/00;3/12;5/00;* **A41D** *27/00*
U.S. Cl. 450—38 **1 Claim**





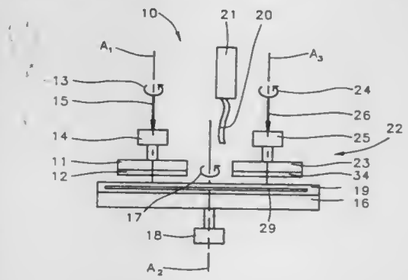
1. A water bag type brassiere, comprising:
a brassiere having a pair of fabric covered cup portions;
a pair of chambers respectively secured in each said cup portion of said brassiere, each of said chambers being formed by a pair of flexible watertight panels secured each to the other along respective peripheral edges thereof;
a liquid within said chamber;
a valve secured between said pair of panels of each said chamber at a location overlayed by said fabric covering a respective cup portion of said brassiere, said valve having a close state for preventing passage of fluid and an open state for passage of fluid, said valve including (a) a cylindrical valve body having an outer end and an inner end thereof, said valve body having a countersunk head disposed at said outer end thereof and disposed external said pair of panels of a respective chamber for tactile location of said valve through said fabric covering said cup portions of said brassiere, said valve body having a central hole extending longitudinally a predetermined distance from said outer end thereof, said central hole having a bottom, said valve body having a slit extending longitudinally between said bottom of said central hole and said inner end thereof, and (b) a binding sleeve disposed on an external surface of said cylindrical valve body, said binding sleeve imparting a compressive force on said cylindrical valve body to thereby maintain opposing wall portions of said cylindrical valve body as defined by said slit in contiguous contact for maintaining said valve in said closed state and,
a syringe having a needle for piercing said fabric covering a respective cup portion of said brassiere for introduction into said central hole, said needle overcoming said compressive force applied to said cylindrical valve body to pass through said slit and adjust a volume of said liquid within said chamber.

5,823,853
APPARATUS FOR THE IN-PROCESS DETECTION OF WORKPIECES WITH A MONOCHROMATIC LIGHT SOURCE
Anthony L. Bartels, Phoenix; Robert F. Allen, Gilbert; Paul Holzapfel, Chandler, all of Ariz., and Warren Lin, Fremont, Calif., assignors to Speedfam Corporation, Chandler, Ariz.
Continuation-in-part of Ser. No. 683,150, Jul. 18, 1996, Pat. No. 5,733,171. This application Jan. 9, 1997, Ser. No. 781,132
U.S. Cl. 451—5 **9 Claims**



1. In a chemical mechanical planarization (CMP) system having a polishing pad and a carrier element configured to hold a workpiece against said polishing pad, an apparatus for detecting the presence of extraneous material on said polishing pad during a planarization procedure, said apparatus comprising:
means for generating an interrogation signal for establishing optical communication with an area of said polishing pad proximate said carrier element during said planarization procedure;
a detector configured to receive a reflected signal produced in response to said interrogation signal;
means for converting said reflected signal into a control signal having an analog voltage, said means for converting being in communication with said detector; and
a processor connected to said means for converting, said processor being configured to process said control signal and to produce an output indicative of the presence of said extraneous material proximate said area when said analog voltage level is within a predetermined range.

5,823,854
CHEMICAL-MECHANICAL POLISH (CMP) PAD CONDITIONER
Lai-Juh Chen, Hsin-Chu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan
Filed May 28, 1996, Ser. No. 654,503
Int. Cl.[6] B24B *49/00;51/00*
U.S. Cl. 451—9 **8 Claims**



1. A method for conditioning a polishing pad comprising the steps of:

providing said polishing pad affixed to a rotatable polishing platen, said polishing pad having a counter-electrode embedded therein;

providing a rotating pad conditioner having an abrasive surface affixed thereon, a pad conditioner holder, and a plurality of electrodes embedded in the pad conditioner holder and abrasive surface;

providing a means for holding said abrasive surface of said rotating pad conditioner in juxtaposition relative to said rotating polishing pad with an applied pressure between the pad conditioner and the polishing pad;

dispensing a polishing slurry onto said rotating polishing pad;

applying a constant voltage between each electrode embedded in said rotating pad conditioner and said counter-electrode embedded within said rotating polishing pad;

measuring current density in each said embedded electrode during the pad conditioning operation;

storing in a computer memory data for current density versus polish pad conditioning time for each said electrode among the plurality of electrodes embedded in said rotating pad conditioner;

integrating the measured current density with polish pad conditioning time for each said electrode among the plurality of electrodes embedded in said rotating pad conditioner;

storing in a computer memory factors, known as Sherwood Numbers, which are the integrated current density with polish pad conditioning time for each said electrode among the plurality of electrodes embedded in said rotating pad conditioner;

comparing, for each electrode, a computed Sherwood Number during conditioning of a used polish pad to a stored Sherwood Number from a fresh polish pad;

detecting the difference between the computed Sherwood Number and the stored Sherwood Number; and

changing a conditioning parameter when a difference is detected between the computed Sherwood Number and the stored Sherwood Number.

5,823,855

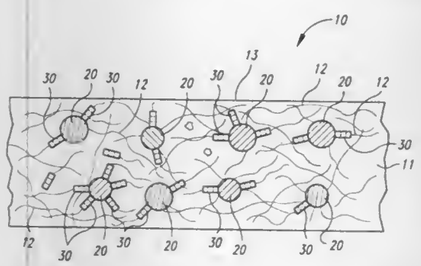
POLISHING PAD AND A METHOD FOR MAKING A POLISHING PAD WITH COVALENTLY BONDED PARTICLES

Karl M. Robinson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 589,774, Jan. 22, 1996, Pat. No. 5,624,303. This application Feb. 12, 1997, Ser. No. 798,001

Int. Cl.[6] B24B *7/04*

U.S. Cl. 451—41 **25 Claims**



1. A method of planarizing a semiconductor wafer, comprising removing material from the substrate with an abrasive polishing pad that has a body made from a matrix material, abrasive particles, and bonding molecules affixing the abrasive particles to the matrix material in manner capable of substantially maintaining the affixation between the abrasive particles and the matrix material in the presence of an electrostatic chemical-mechanical planarization slurry.

5,823,856

APPARATUS FOR TIIE RESHARPENING OF TWO-DIMENSIONALLY ACTING KNIFE SETS FOR FLAKING MACHINES, ESPECIALLY FOR WOOD FLAKING MACHINES

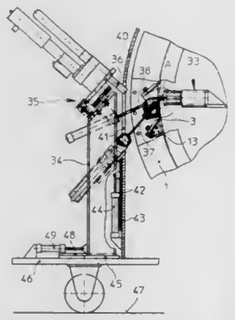
Wilhelm Pallmann, Zweibruecken, Germany, assignor to Pallmann Maschinenfabrik GmbH & Co. KG, Zweibruecken, Germany

Filed Jan. 23, 1997, Ser. No. 787,964

Claims priority, application Germany, Feb. 12, 1996, 196 05 072.3

Int. Cl.[6] B24B *1/00*

U.S. Cl. 451—45 **7 Claims**



1. Resharpening apparatus for knife sets of flakers having a two-dimensional cutting sequence for producing thin flakes from long logs and wood cut to length, said knife sets being evenly distributed around a rotatable knife rim and having a plate shaped flaking knife with a cutting edge oriented radially inward and parallel to an axis of rotation for said knife rim, said flaking knives being followed in rotation by generally axially equidistant spaced scoring blades extending from each of said respective flaking knives and having effective areas protruding radially inward with respect to said flaking knives, the resharpening apparatus comprising:

a rotatable grinding drum having an axial length adapted for corresponding to said flaking knives; and

a plurality of ring grooves circumscribing said grinding drum; said ring grooves having generally equidistant axial spacing adapted for corresponding to that of said scoring blades and a having a profile adapted for corresponding to that of said effective area of said scoring blades;

whereby resharpening of the knife sets remaining in the knife rim is carried out by moving said grinding drum in radial and axial directions with respect to the knife sets.

5,823,857

APPARATUS AND METHOD FOR PRECISION GRINDING OF FACE GEARS

Jie Tan, Mesa, Ariz., assignor to McDonnell Douglas Helicopter Company

Filed Jul. 16, 1996, Ser. No. 680,932

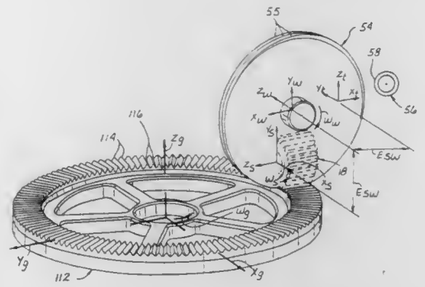
Int. Cl.[6] B23F *23/10*

U.S. Cl. 451—47 **5 Claims**

1. A method of precision grinding a plurality of face gear teeth on a face gear, the face gear teeth being adapted for meshing with a spur pinion, the method comprising the following steps:

providing a grinding worm, the grinding worm having a rotational axis;

rotating the grinding worm;



placing the rotating grinding worm into contact with the face gear to thereby precision grind the plurality of face gear teeth;

providing a dressing tool having a planar surface; and

placing the planar surface of the dressing tool into contact with the rotating grinding worm to thereby true the rotating grinding worm, an envelope generated by the dressing tool as the dressing tool contacts and grinds the rotating grinding worm approximating an envelope that the dressing tool would generate if the dressing tool were moved over a surface of a spur pinion, the placing step including a step of moving the dressing tool in a feed direction that is always substantially perpendicular to the planar surface.

5,823,858

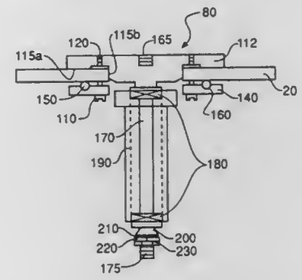
FIELD REPLACEABLE SPINDLE ASSEMBLY FOR A LASER WRITER

Thomas M. Stephany, Churchville; William Mey, Rochester; William E. Schmidtmann, Naples, and Thomas G. Lodadio, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 23, 1995, Ser. No. 409,553

Int. Cl.[6] B24B *5/01*

U.S. Cl. 451—49 **6 Claims**



1. A process for manufacturing a field replaceable laser writer spindle assembly having a shaft with two ball bearings and a spindle head, comprising the steps of:

(a) preloading both ball bearings to a predetermined level;

(b) installing a preload nut onto the shaft of the spindle assembly for initiating the preloading of the ball bearings;

(c) rotating the spindle head about a longitudinal axis of the spindle assembly; and

(d) grinding a reference surface of the spindle head to a predetermined tolerance for minimizing runout of the reference surface for producing the field replaceable spindle assembly.

5,823,859

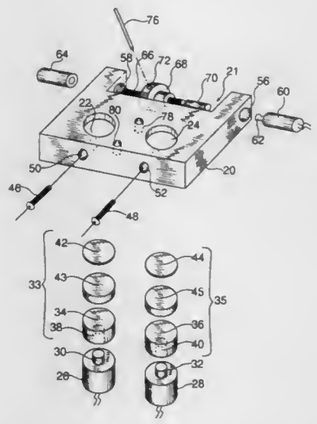
METHOD OF CONTOURING OPTICAL FIBER END FACES AND APPARATUS USED THEREFOR

Cuneyt Erdogan, 25 Magellan Way, Franklin Park, N.J. 08823, and Alfred J. Cheswick, 104 Ocean Ave., Loch Arbour, N.J. 07711

Filed Dec. 18, 1996, Ser. No. 772,145

Int. Cl.[6] B24B *7/22*

U.S. Cl. 451—65 **20 Claims**



1. An apparatus for contouring the surfaces of optical fibers comprising:

a base structure;

a plurality of contouring means rotatably disposed on said base structure;

a work fixture means for mounting thereon a plurality of optical components containing said optical fibers;

a traversing means disposed on said base structure creating linear movement of said work fixture across said plurality of contouring means;

an exchangeable positioning means comprised of a plurality of guide pins, disposed on said work fixture, said positioning means creating contact between said optical fibers and said contouring means at a predetermined angle.

5,823,860

BLASTING MEDIA CONTAINMENT SYSTEM

William Randall Lynn, Dover, and Elliott Henry Felker, Madbury, both of N.H., assignors to Integrated Foam Technologies, Inc., Dover, N.H.

Filed Nov. 13, 1995, Ser. No. 558,014

Int. Cl.[6] B24C *1/00*

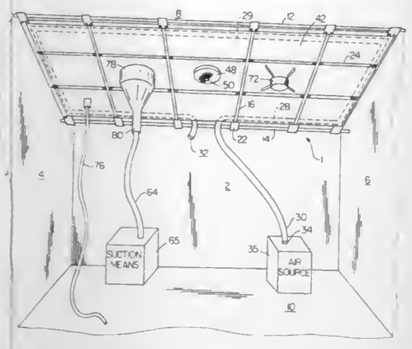
U.S. Cl. 451—89 **19 Claims**

1. A containment system for defining and enclosing a surface to be treated, located within an area, said containment system comprising:

an air source for supplying pressurized air;

a flexible barrier being spaced a desired distance from said surface;

an elongate flexible member being disposed between said flexible barrier and said surface, said elongate flexible member defining a perimeter of said area and being coupled to said air source so that when said pressurized air is supplied to said elongate flexible member, said elongate flexible member expands to provide a seal between said barrier and said surface to facilitate containment of a material to be used within said area; and



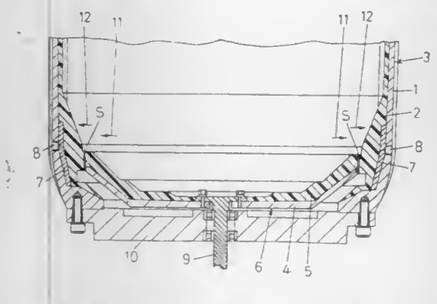
an access port being provided in said barrier for facilitating application of a desired material into said area.

5,823,861

SPIRAL-FLOW BARREL FINISHING MACHINE

Hisamine Kobayashi; Katsuhiro Izuhara, and Akihito Fujishiro, all of Nagoya, Japan, assignors to Tipton Corp., Nagoya, Japan

Filed Feb. 26, 1997, Ser. No. 806,623
Claims priority, application Japan, Feb. 26, 1996, 8-038428
Int. Cl.[6] B24B *31/02*
U.S. Cl. 451—326 **10 Claims**



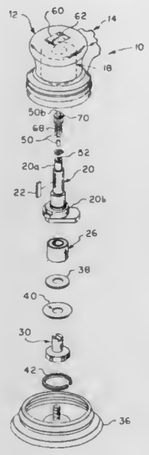
1. A spiral-flow barrel finishing machine, comprising:
a metallic cylindrical stationary barrel having an inside having a lower part, said metallic cylindrical stationary barrel having an inner wall and a first lining layer on said lower part, and said first lining layer having an inner wall and an outer wall;
a rotating barrel comprising a metallic rotational body, said metallic rotational body having an upper part provided with a second lining layer, and said second lining layer having an outer wall, wherein said first and second lining layers have a specific clearance between said inner and outer walls thereof, said specific clearance having a vertical width, and wherein said rotating barrel is loosely engaged with the inside of said metallic stationary barrel so as to block said lower part; and
a measure for allowing for thermal expansion arranged annularly between said inner wall of said metallic stationary barrel and said outer wall of said first lining layer and having a specified vertical width that corresponds to the vertical width of said specific clearance.

5,823,862

DUAL ACTION SANDER

Richard A. Heidelberger, Wheatfield, N.Y., assignor to Dynabrade, Inc., Clarence, N.Y.

Filed Feb. 21, 1997, Ser. No. 804,009
Int. Cl.[6] B24B *23/00;27/08*
U.S. Cl. 451—344 **7 Claims**



1. A dual action sander comprising in combination:
a housing;
a motor supported by the housing;
a motor shaft balancer driven by said motor for rotation relative to said housing about a drive axis;
a balancer shaft carried by said motor shaft balancer for rotation relative thereto about a second axis radially offset relative to said drive axis and having means for mounting a sanding device; and
locking means for releasably locking said balancer shaft against rotation relative to said motor shaft balancer, said locking means including latch means supported for movement lengthwise of said drive axis between unlatched and latched positions, and a manually operable control member for moving said latch means from said unlatched position into said latched position, said latch means when in said unlatched position freeing said balancer shaft for rotation relative to said motor shaft balancer and when in said latched position engaging with said balancer shaft to lock same against rotation relative to said motor shaft balancer.

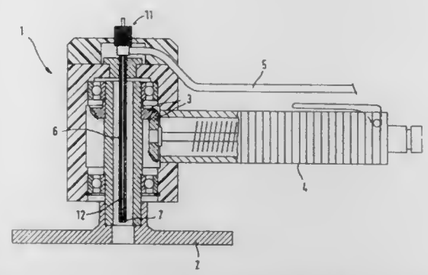
5,823,863

MACHINE FOR POLISHING AND/OR GRINDING

Roland Henneborn; Peter Holz, both of Bundesrepublik; Michael Lechner, Duesseldorf, and Wolfgang Volker, Bundesrepublik, all of Germany, assignors to Messer Griesheim GmbH, Germany

Filed Feb. 28, 1997, Ser. No. 806,388
Claims priority, application Germany, Jul. 3, 1996, 196 08 935.2; Oct. 2, 1996, 197 04 860.9
Int. Cl.[6] B24B *55/02*
U.S. Cl. 451—449 **20 Claims**

1. A machine for selectively polishing and grinding with a machining tool executing a relative movement with respect to the workpiece, the machining tool having means for the supply of liquid or supercritical CO2, wherein the means for the supply of the liquid or supercritical CO2 comprising a valve for regulating the throughflow quantity of the CO2 with an expansion nozzle for the liquid or supercritical CO2, the valve being arranged inside the machine, the valve having a pipe having an inner surface through which there runs a valve spindle having an outer surface with an annular gap between the inner surface of the pipe and the outer surface, and the annular gap between the inner surface of the pipe and the outer surface of the valve spindle is 0.2 to 2 mm.

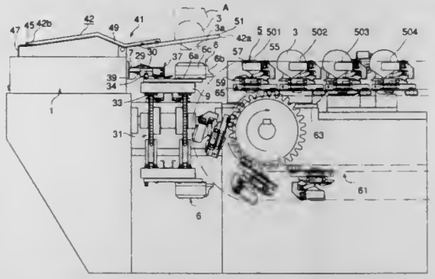


5,823,864

SHELLFISH TRANSFER DEVICE

Kohei Watanabe, Hakodate, Japan, assignor to Kabushiki Kaisha Towa Denki Seisakusho, Hokkaido, Japan

Filed Dec. 20, 1996, Ser. No. 772,114
Claims priority, application Japan, Feb. 29, 1996, 8-067413
Int. Cl.[6] A22C *29/00*
U.S. Cl. 452—182 **21 Claims**



1. A shellfish transfer device comprising shellfish holders that respectively hold at least one shellfish; a shellfish push unit that forces shellfish of a predetermined exposure toward at least one of said shellfish holders; and a shellfish press-down unit driven in synchronism with said shellfish push unit to exert a downward pressure to the shellfish held by said shellfish holder, said predetermined exposure of the shellfish being substantially maintained relative to said shellfish holder during operation by said shellfish press-down unit.

5,823,865

Patent Not Issued For This Number

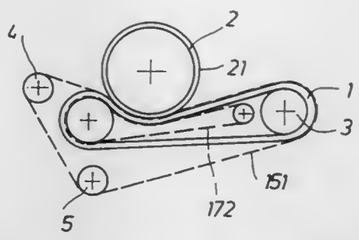
5,823,866

PRESSING BELT FOR SEPARATORS

Helmut Kunig, Bad Schwartau, Germany, assignor to Nordischer Maschinenbau Rud. Baader GmbH & Co KG, Lubeck, Germany

Filed Dec. 20, 1996, Ser. No. 771,157
Claims priority, application Germany, Dec. 27, 1995, 295 20 564 U
Int. Cl.[6] A22C *17/00*
U.S. Cl. 452—138 **17 Claims**

1. An endless flexible pressing belt for a separator apparatus comprising a hollow drum having a perforated wall defining an outer surface, around which said pressing belt is partially wrapped under pressure to form an input zone of said apparatus for introducing material to be separated between said drum and said pressing belt, wherein in said belt has a multi-layer structure comprising:
lower layer means;
intermediate layer means provided with at least one highly tenacious intercalation; and
upper layer means,
wherein said upper layer means is a separate endless belt means associated with said intermediate layer means that is functionally independent from said intermediate layer means and that lies loosely on said intermediate layer means.

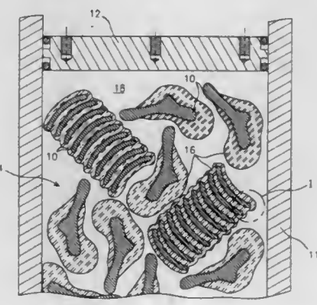


5,823,867

METHOD AND APPARATUS FOR DETACHING MEAT FROM BONE

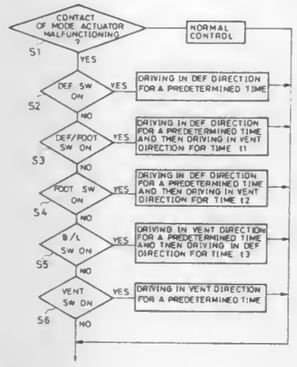
Eldon Roth, and Ronald Yockey, both of Dakota Dunes, S. Dak., assignors to Freezing Machines, Inc., Dakota Dunes, S. Dak.

Continuation-in-part of Ser. No. 799,983, Feb. 12, 1997. This application Jun. 2, 1997, Ser. No. 867,175
Int. Cl.[6] A22C *17/04*
U.S. Cl. 452—138 **20 Claims**



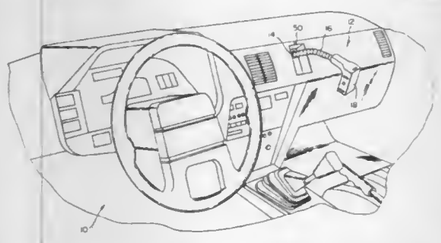
1. A method of detaching meat from bone, the method comprising the steps of:
(a) forming a matrix of material comprising bones, a compressible medium, and soft material, including meat attached to at least one of the bones; and
(b) applying fluid pressure to the entire surface area of each bone in the matrix of material so as to increase the compressive force on each bone in the matrix of material from an initial pressure to a detachment pressure, the bones in the matrix being subjected substantially only to fluid pressure throughout the compression from the initial pressure to the detachment pressure.

5,823,868
AIR-CONDITIONING SYSTEM MALFUNCTION COMPENSATION METHOD AND APPARATUS
Masashi Ohkubo, and Hideo Machida, both of Saitama-ken, Japan, assignors to Zexel Corporation, Tokyo, Japan
Filed Apr. 10, 1997, Ser. No. 827,695
Claims priority, application Japan, Apr. 25, 1996, 8-105745
Int. Cl.[6] B60H *1/00*
U.S. Cl. 454—121 **9 Claims**



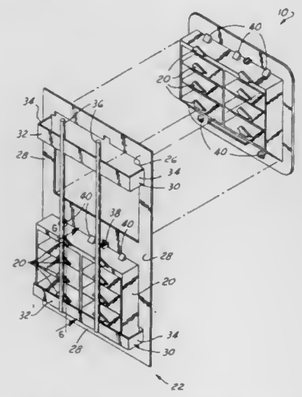
1. A malfunction compensation method for an air-conditioning system comprising an actuator which drives a mode switching door and has a setting unit consisting of contacts for setting the mode switching door to at least ventilation mode, bilevel mode, foot mode and defrost mode positions and a control unit which drives the actuator based on the operation of a mode change-over switch and stops it at a position set by the setting unit, the method comprising turning the actuator to a ventilation mode position or a defrost mode position and then turning the actuator reversely from the above position as a starting point for a predetermined time to enable the actuator to be set to another mode position at the time of malfunctioning of the setting unit.

5,823,869
EXTENDABLE AIR NOZZLE FOR USE WITHIN A VEHICLE'S INTERIOR
Renato Paturzo, 14200 NE. 171st St., ste G-208, Woodinville, Wash. 98072
Filed Aug. 22, 1997, Ser. No. 916,599
Int. Cl.[6] B60H *1/34*
U.S. Cl. 454—152 **7 Claims**



1. A extendable air source for use within a vehicle's interior comprising:
- a vehicle's air distribution system, an attachment means for attaching an air duct to said air distribution system;
- a spring loaded air conduit having one end connected to said air duct and a second end terminating as a nozzle;
- a receptacle mounted within said vehicle's interior and including a receiving chamber for receiving said air conduit and a receiving port for receiving said nozzle, and an attachment means for attaching said receptacle to said air duct, a retaining means for retaining said nozzle within said receiving port when not in use, and
- a retaining mechanism incorporated with the receiving port acting in concert with said nozzle to retain said air conduit in said receiving chamber.

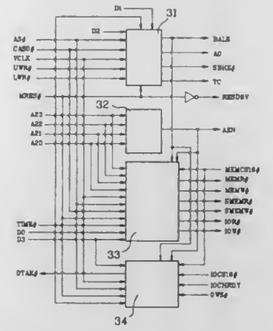
5,823,870
METHOD AND APPARATUS FOR REDUCING EXHAUST FLAP MOVEMENT
Sandy J. Emerling, Troy, Mich., and Keith Potter, Mississauga, Canada, assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Jul. 3, 1996, Ser. No. 674,947
Int. Cl.[6] B60H *1/26*
U.S. Cl. 454—162 **9 Claims**



1. A vehicle one way ventilation exhaust valve assembly with a plurality of flexible flaps comprising:
- an exhaust valve;
- a retainer, said retainer comprising:
  - a frame, said frame comprising a top edge, a bottom edge, and two generally parallel side edges;
  - a plurality of U-shaped members, each U-shaped member having a base and two legs, said U-shaped members attached to said frame proximate said top edge and said bottom edge; and
  - a plurality of flap retention members;
  - said flap retention members connected across said U-shaped members;
- said retainer operatively associated with said valve such that said retention members bias said flaps in the closed direction to prevent excessive movement of said flaps.

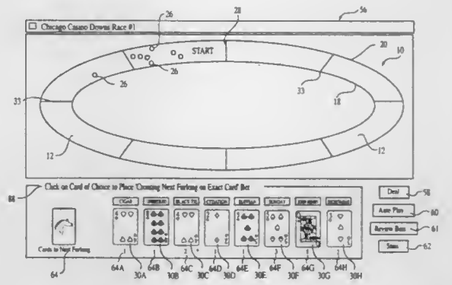
5,823,871
INTERFACE CONTROL DEVICE FOR USE WITH TV GAME EQUIPMENT
Juh-Gua Shiau, Hsin Chu, Taiwan, assignor to Holtek Microelectronics, Inc., Hsin Chu, Taiwan
Filed Nov. 8, 1995, Ser. No. 555,094
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—1 **1 Claim**

1. An interface control device to be installed between a TV game equipment and a standard PC interface card so as to allow the TV game equipment to communicate with the standard PC interface card, comprising:
- an expansion slot interface in the TV game equipment for providing address strobing signal output-enabling signal, clock signal, high-and-low byte writing signal, reset signal, selective control signal and data signals including address signals;
- a first signal generating circuit connected to said expansion slot of said TV game equipment for receiving the address strobing signal, output-enabling signal, clock signal, high-and-low byte writing signal, reset signal, selective control signal and data signals therefrom, and generating an address-latching signal, a high-and-low byte selecting signal, and a terminating count signal to be sent to a standard PC interface card connected to a standard PC bus;
- an address decoding circuit for receiving the address strobing signal and addressing signals from said expansion slot interface of said TV game equipment so as to generate an address enabling signal to be sent to said PC standard bus; only when said address enabling signal being in a low potential, an input/output port of said standard interface card for decoding an address;
- a second signal generating circuit for performing read/write operations in a memory and said input/output port of said standard PC interface card, said second signal generating circuit is connected to said expansion slot of said TV game equipment to receive the address signals, address strobing signal, output-enabling signal, clock singal, reset signal selective control signal and data signals from said expansion slot interface of said TV game equipment, said second generating circuit is also connected to said standard PC interface card, said first signal generating circuit, and said address decoding circuit for receiving the address-latching signal, a 16-bit memory selecting signal and said address enabling signal therefrom, and generating memory reading signals, memory writing signals, an input/output port reading signal and an input/output port writing signal to be sent to said standard PC interface card;
- a third signal generating circuit connected to said expansion slot of said TV game equipment, said first and second signal generating circuit, said address decoding circuit and said standard PC interface card for generating a data-transmission acknowledgment signal to be sent to said expansion slot of said TV game equipment so as to allow said TV game equipment to access data signals from said standard PC interface card connected to said PC standard bus directly.



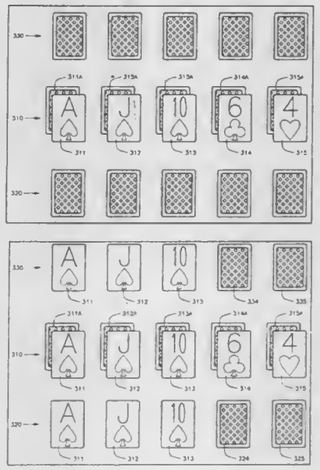
5,823,872
SIMULATED RACING GAME
Thomas A. Prather, Northbrook, and Kenneth P. R. Schmidt, River Grove, both of Ill., assignors to Chicago Casino Systems, Inc., Hoffman Estates, Ill.
Filed Sep. 18, 1996, Ser. No. 714,013
Int. Cl.[6] A63F *9/22;3/02*
U.S. Cl. 463—6 **27 Claims**

1. A simulated racing game wherein at least two tokens compete against each other on a closed track to see which token crosses a finish line first, comprising:



- at least one random number generator for determining at least one of the forward and lateral movement of said tokens on said track;
- said track having an inside and an outside, and being divided into a plurality of equal length segments, each said segment having a grid-like pattern of subsegments defining a plurality of lanes, and a plurality of spaces within each lane; and
- at least a portion of said track being curved so that in said curved portion, as one progresses from said inside to said outside, said lanes of a segment have more spaces than lanes located closer to said inside; and
- said at least one random number generator includes at least one deck of playing cards including a plurality of number cards and a plurality of face cards, and at least some of said number cards designating the amount of forward movement, and said face cards designating the amount of lateral movement for lane changing by each said token.

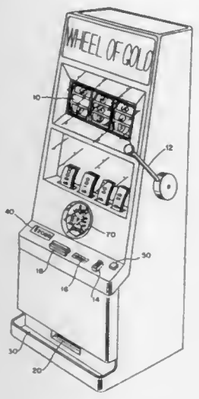
5,823,873
METHOD OF PLAYING ELECTRONIC VIDEO POKER GAMES
Ernest W. Moody, 4381 Pebble Beach Dr., Niwot, Colo. 80503
Continuation-in-part of Ser. No. 495,952, Jun. 28, 1995, Pat. No. 5,531,448, and a continuation-in-part of Ser. No. 755,174, Nov. 25, 1966, Pat. No. 5,732,950. This application Jul. 25, 1997, Ser. No. 900,965
Int. Cl.[6] A63F *1/00*
U.S. Cl. 463—13 **8 Claims**



6. A method of playing a card game comprising:
a) dealing a first hand of at least five cards all face up;

b) selecting none, one or more of the face up cards from the first hand as cards to be held;
c) discarding from the first hand the face up cards that were not selected to be held and replacing each of those cards with a face up card;
d) duplicating the cards selected to be held from the first hand into at least a second hand;
e) completing the second hand to have at least five cards by dealing additional face up cards to the second hand;
f) determining the poker hand ranking of the resulting cards of the first hand and the second hand.

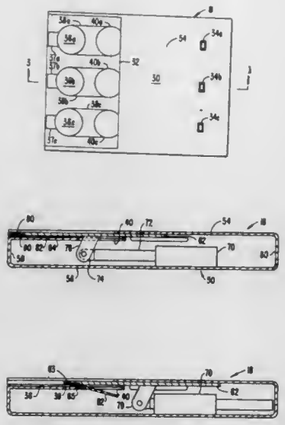
5,823,874
METHOD OF PLAYING GAME AND GAMING DEVICE WITH AN ADDITIONAL PAYOUT INDICATOR
William R. Adams, Las Vegas, Nev., assignor to Anchor Gaming, Las Vegas, Nev.
Filed Mar. 25, 1996, Ser. No. 622,430
Int. Cl.[6] G02F *17/34*
U.S. Cl. 463—17 **41 Claims**



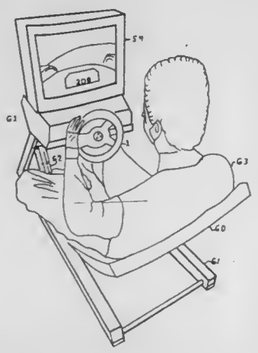
1. A gaming device comprising:
a first, standard gaming unit for displaying a randomly selected combination of indicia, said displayed indicia selected from the group consisting of reels, indicia of reels, indicia of playing cards, and combinations thereof;
means for generating at least one signal corresponding to at least one select display of indicia by said first, standard gaming unit;
means for providing at least one discernible indicia of a mechanical bonus indicator, said discernible indicia indicating at least one of a plurality of possible bonuses, wherein said providing means is operatively connected to said first, standard gaming unit and becomes actuatable in response to said signal.

5,823,875
WAGER RECEIVING APPARATUS IN A CASINO GAME
Elia R. Tarantino, Reno, Nev., assignor to Game Data, Inc., Reno, Nev.
Filed Jan. 11, 1996, Ser. No. 584,761
Int. Cl.[6] A63F *1/06*
U.S. Cl. 463—29 **16 Claims**

16. For use in accepting a wager in the form of a token, apparatus, comprising:
a receiving element having a recess for accepting the token, including a sliding member movable between a first position to provide access to the recess and a second position that prevents receiving element from accepting a token;
means for detecting presence of the token in the recess;
means for indicating that the recess contains the token, including an indicator light that radiate when the token is present;
actuating means for moving the sliding member between the first and second positions; and
a control element coupled to the actuating means for causing the actuating means to effect movement of the sliding member between the first and second positions.

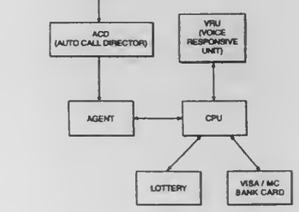


5,823,876
STEERING WHEEL SIMULATION ASSEMBLY
Erick Michael Unbehand, 21 Longstreet, Irvine, Calif. 92720
Filed May 3, 1996, Ser. No. 642,436
Int. Cl.[6] A63F *9/14*
U.S. Cl. 463—37 **8 Claims**



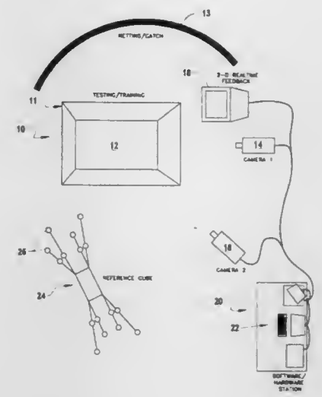
1. In a computer driven video game accessory having a steering wheel mounted on a steering shaft, and the steering shaft mounted in a frame, the invention comprises
a. a crank mounted to rotate the steering shaft;
b. one or more cylinders sealed at one end and having a seal at the other to permit each cylinder to have a sliding rod to move with respect to the seal means and each sliding rod having its own piston attached to the end of the rod within the cylinder,
c. a preselected quantity of liquid disposed within the cylinders;
d. a preselected quantity of compressible gas disposed within the cylinders;
e. the action of the piston in the cylinder causes liquid and gas to flow between a first chamber and a second chamber;
f. flow restriction means between the first chamber and second chamber regulate flow due to pressure difference between the two chambers, said pressure difference caused by movement of the pistons within the cylinders
whereby, force applied by the compressed gas within the cylinders acting through the piston rod against the crank, and momentarily against the rest of the area of the piston causes continuing force against the crank, but also, as the liquid is forced from one chamber to the other, the liquid causes non-linear momentary forces opposing the rotation of the steering wheel.

5,823,877
COMPUTERIZED LOTTERY WAGERING SYSTEM
John B. Scagnelli, Homdel, and Joseph A. Fiscella, Maywood, both of N.J., assignors to Lottotron, Inc., Hackensack, N.J.
Continuation of Ser. No. 426,145, Apr. 19, 1995, abandoned, which is a continuation-in-part of Ser. No. 181,361, Jan. 13, 1994, Pat. No. 5,415,416, which is a continuation of Ser. No. 4,633, Jan. 12, 1993, abandoned, which is a continuation of Ser. No. 489,814, Mar. 6, 1990, abandoned. This application Nov. 18, 1996, Ser. No. 751,902
Int. Cl.[6] A63F *9/22;* **H04M** *11/06*
U.S. Cl. 463—41 **15 Claims**



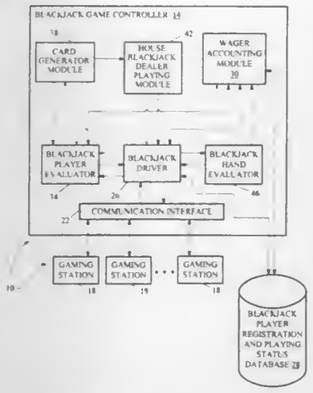
1. A wagering system for accepting wagers over a telephone comprising:
a) automatic call director means for receiving incoming messages from subscribers;
b) message responsive means connected thereto for receiving the incoming messages, for generating a series of messages requesting subscriber wager information to be input, for playing an associated series of audio messages requesting confirmation of the subscriber wager information, and for playing a confirmation message with an associated ticket number assigned to a wager; and
c) host processor means having storage means connected to said message response means for receiving said subscriber wager information, comparing said subscriber wager information to a master subscriber enrollment file for validation, storing said subscriber wager information in a master subscriber wager file in the storage means, and assigning an associated ticket number to the wager.

5,823,878
GOLF SWING ANALYSIS APPARATUS AND METHOD
Christian M. Welch, 825 S. U.S. Hwy. 1, Ste. 200, Jupiter, Fla. 33071
Filed Sep. 4, 1996, Ser. No. 709,321
Int. Cl.[6] A63B *69/36*
U.S. Cl. 463—43 **14 Claims**



1. An apparatus for analyzing a golf swing comprising:
a test station including at least two videotaping means placed at different angles for capturing a test subject performing a swing in a testing area;
a hardware station including at least one video recorder for storing said images of a test subject performing a swing in a testing area, a video processing means for manipulating said images, a reference frame means for providing relative position data of selected elements in said images, and a computer with memory for storing and running analysis software means, a graphical plotting means for generating visual output in response to input from said computer;
wherein said analysis software means includes:
(I) software means for creating a digitized global reference frame with an X, Y, and Z-axis, and with an XY and XZ-plane;
(ii) software means for digitizing said videotaped golf swing activity and producing frames of video data;
(iii) software means for digitally isolating each said frame of video data so that chosen body segments can be three-dimensionally determined and compiled in relation to a global reference frame;
(iv) software means for calculating segment vectors and mid-points for said chosen segments;
(v) software means for calculating the three dimensional velocity of the clubhead;
(vi) software means for calculating displacement data for said chosen segments;
(vii) software means for calculating velocity data from said displacement data;
(viii) software means for outputting said displacement and velocity data into files for data plotting on said plotting means, said chosen segments simultaneously plotted on a common graphical axis to facilitate application of an analysis means for determining the kinetic link between said chosen segments.

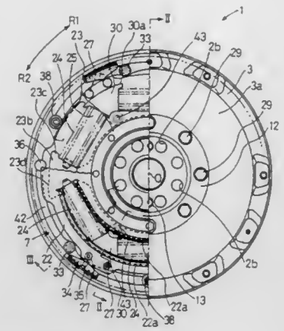
5,823,879
NETWORK GAMING SYSTEM
Sheldon F. Goldberg, 3360 E. Serene, Henderson, Nev. 89014, and John Van Antwerp, Springdale, Md., assignors to Sheldon F. Goldberg, Henderson, Nev.
Filed Dec. 3, 1996, Ser. No. 759,895
Int. Cl.[6] A63F *9/24*
U.S. Cl. 463—42 **96 Claims**



1. A method of playing blackjack, comprising:
generating an ordered collection of electronic card representations, having a particular order, for playing blackjack, wherein each said card representation of the ordered collection is eligible to be dealt in a game of blackjack according to the particular order of said card representations;
first playing a first blackjack game between a first player and a dealer module, wherein said dealer module is dealt a first sequence of card representations from said ordered collection for playing said first blackjack game;
second playing a second blackjack game between a second player and said dealer module, wherein said first and second blackjack games overlap in time and wherein said dealer module is dealt a second sequence of card representations from said ordered collection for playing said second blackjack card game;
wherein said first and second sequences have at least different card representations for a first card representation in their respective sequences.

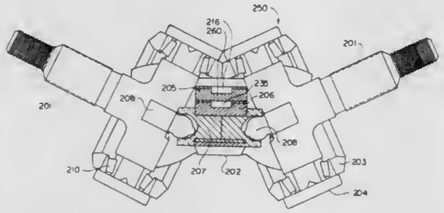
5,823,880
DUAL FLYWHEEL ASSEMBLY WITH LOCKUP MECHANISM BETWEEN TWO FLYWHEELS
Koji Kajitani, and Hiroshi Mizukami, both of Neyagawa, Japan, assignors to Exedy Corporation, Osaka, Japan
Filed Jun. 30, 1997, Ser. No. 885,883
Claims priority, application Japan, Jul. 10, 1996, 8-180942
Int. Cl.[6] F16D *3/12*
U.S. Cl. 464—66 **15 Claims**

1. A flywheel assembly comprising:
a first flywheel;
a second flywheel disposed adjacent to the first flywheel and configured to undergo limited relative rotary displacement with respect to said first flywheel;
an elastic member disposed between said first and second flywheels limiting relative rotary displacement between said first and second flywheels; and
a lever mechanism mounted on said first flywheel for pivotal movement with respect to said first flywheel, said lever mechanism being configured to be disengaged from said second flywheel in response to centrifugal force with said first and second flywheels rotating above a predetermined RPM range; and



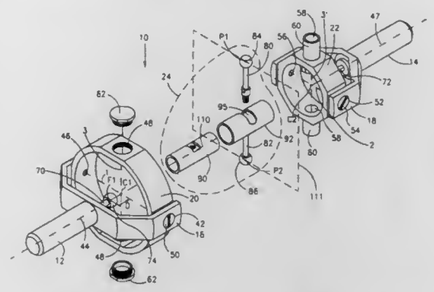
wherein in response to a predetermined amount of relative rotary displacement between said first and second flywheels in a first direction, said lever mechanism is configured to engage a portion of said second flywheel such that further relative rotary displacement between said first and second flywheel in said first direction is prevented.

5,823,881
UNIVERSAL JOINT HAVING CENTERING DEVICE
Paul Joseph Cornay, 1707 N. Main St., Suite 304, Longmont, Colo. 80501
Filed Jul. 10, 1996, Ser. No. 682,801
Int. Cl.[6] F16D *3/33*
U.S. Cl. 464—118 **10 Claims**



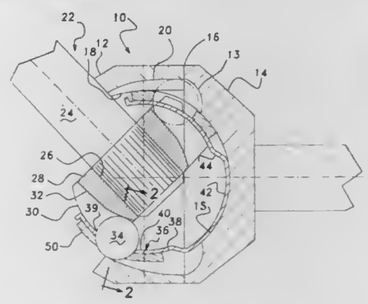
1. A universal joint comprising:
(a) first and second rings;
(b) first and second yokes disposed within the first and second rings, respectively;
(c) first and second shafts;
(d) first pin means pivotally interconnecting the first yoke and the first ring;
(e) second pin means pivotally interconnecting the first shaft and the first ring;
(f) third pin means pivotally interconnecting the second yoke and the second ring;
(g) fourth pin means interconnecting the second shaft and the second ring;
(h) a coupling means interconnecting the first yoke and the second yoke;
(i) a plurality of bearing means in each ring, the bearing means in the first ring receiving the first and second pin means, and the bearing means in the second ring receiving the third and fourth pin means; and
(j) centering means interconnecting the first shaft and the second shaft, the centering means comprising a first epicyclic bearing within a second epicyclic bearing, wherein:
(1) the first shaft is interconnected to the first yoke via the first pin means, the first ring, and the second pin means, and
(2) the second shaft is interconnected to the second yoke via the third pin means, the second ring, and the fourth pin means.

5,823,882
CONSTANT VELOCITY JOINT
Yoram Dov Kirson, Haifa, Israel, assignor to Yordak Ltd., Haifa, Israel
Filed Feb. 19, 1997, Ser. No. 803,139
Int. Cl.[6] F16D *3/26*
U.S. Cl. 464—125 **6 Claims**



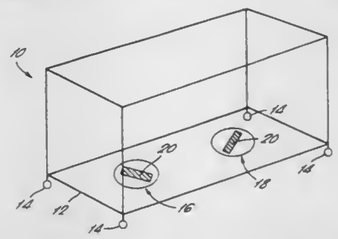
1. A constant velocity universal joint having an instantaneous homokinetic plane, the joint comprising:
a. a first shaft having a first yoke attached thereto, solid first shaft having a first shaft axis;
b. a second shaft having a second yoke, smaller then said first yoke, attached thereto, said second shaft having a second shaft axis;
c. an outer member pivotally connected to said first yoke about a first rotation axis, said first rotation axis being perpendicular to said first shaft axis;
d. an inner member pivotally connected to said second yoke about a second rotation axis, said second rotation axis being perpendicular to said second shaft axis;
wherein said outer member is pivotally connected to said inner member about a third rotation axis, said third rotation axis being perpendicular to both said first and second rotation axes and wherein all of said five axes intersect at a joint center point; and
e. constraining means for constraining said third rotation axis to continuously lie generally within said instantaneous homokinetic plane wherein said constraining means comprises at least two members which rotate with respect to each other about a constraining means axis which is normal to said instantaneous homokinetic plane.

5,823,883
CONSTANT VELOCITY JOINT WITH REACTIVE CAGE
Michael W. Hopson, Clinton Township, Mich., assignor to Ford Motor Company, Dearborn, Mich.
Filed Nov. 4, 1996, Ser. No. 743,585
Int. Cl.[6] F16D *3/16*
U.S. Cl. 464—145 **22 Claims**



7. A constant velocity universal joint comprising:
an inner race having an outer surface with a plurality of ball tracks provided therein;
an outer race having an inner surface with a plurality of ball tracks corresponding to the ball tracks of the inner race positioned adjacent the inner race;
a plurality of balls provided between the ball tracks of the inner and outer races;
a stem assembly including a plurality of ball pockets and a spherical surface provided therebetween secured to the outer race;
a cage provided between the inner and outer races, said cage having a plurality of apertures for said balls and a spherical surface corresponding with the spherical surface of the stem assembly positioned in an abutting condition with said stem; and
a spring means provided between the spherical surface of the cage and said ball apertures for urging said cage axially from said stem assembly, said spring means comprising said cage having a curvilinear portion between the spherical surface of the cage and said ball apertures, and said cage curvilinear portion having a bend formed therein for permitting deflection of the cage between the curvilinear portion and the spherical surface.

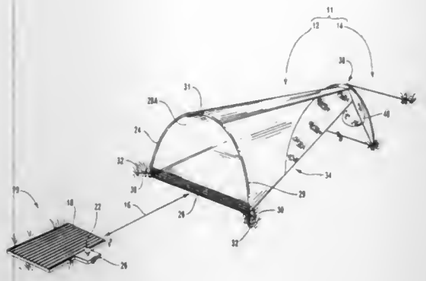
5,823,884
POWERED STAGE WAGON
Mark Allan Nicholas Ager, Isle of Wight, United Kingdom, assignor to Stage Technologies Limited, London, United Kingdom
Filed Jun. 20, 1997, Ser. No. 877,637
Claims priority, application United Kingdom, Jun. 21, 1996, 96130869
Int. Cl.[6] A63G *31/08*
U.S. Cl. 472—77 **13 Claims**



1. A powered stage wagon comprising a chassis; rolling support means mounted on the chassis for engagement with a surface over which the stage wagon is to move; first drive means mounted on the chassis and in engagement with said surface, said drive means being capable of being orientated in a first direction with respect to said chassis; second drive means mounted on the chassis and spaced from said first drive means, said second drive means again being in engagement with said surface and capable of being orientated in a second direction with respect to said chassis; input means for receiving details of a position to which the stage wagon is to move; computing means for calculating a travel path to enable the stage wagon to move to said position; and control means for controlling said first and second drive means so as to move the stage wagon along said travel path.

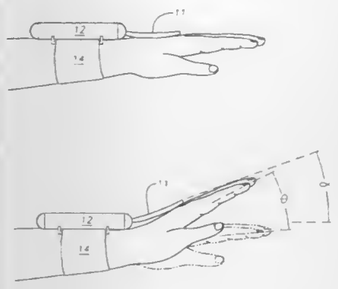
5,823,885
PORTABLE PERSONAL DRIVING RANGE AND ALL PURPOSE SPORTING NET
Frank N. Stempfer, 5351 Hamlin St., Murray, Utah 84123
Filed Nov. 25, 1996, Ser. No. 756,008
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—197 **20 Claims**

1. A portable personal sporting net, comprising:



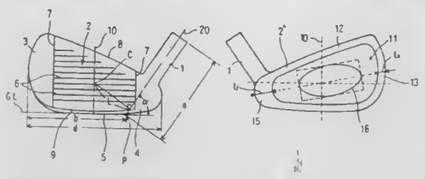
(a) a tapered cylindrical or conical-frustum or funnel-like tubular, pliable, porous net having a larger end and an opposing smaller end;
(b) a collapsible entrance aperture support structure, for holding the larger end of said tubular net open and facing a user;
(c) a collapsible exit aperture suspension structure, for stretching said net from said entrance structure and suspending the smaller end of said tubular net open and facing said user; and
(d) a used ball capture bag, attached snugly to said smaller end of said tubular net, and depending pendulously therefrom, into which spent balls drop under the force of gravity after their forward momentum has been partially absorbed and partially diverted downward by striking the portion of said bag facing said tubular net's exit aperture.

5,823,886
NON RESTRICTIVE DORSIFLEXION FEEDBACK APPARATUS FOR GOLFERS
William B. Murray, Kemah, Tex., assignor to Fred Collins and William B. Murray, a Texas Partnership, Houston, Tex.
Filed Aug. 20, 1997, Ser. No. 915,310
Int. Cl.[6] A63B *69/69*
U.S. Cl. 473—213 **10 Claims**



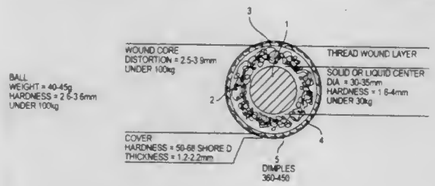
1. Wrist break feedback apparatus for producing feedback concerning breaking in wrist joint position, comprising:
a frame having a first and second member, said first member being adapted to generally align with the back of the hand, said second member being adapted to generally align with the forearm, said first and second member being pivotally connected;
a non-restrictive feedback means producing feedback when deviation of the first member from the second member from a reference point in a transverse direction relative to the forearm occurs due to dorsiflexion; and
a connector for connecting the frame to a person.

5,823,887
IRON GOLF CLUB SET
Daisuke Mikame; Masaomi Hiruta; Hirato Shimasaki, and Hiroshi Ezaki, all of Saitama-ken, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed Sep. 11, 1996, Ser. No. 712,095
Claims priority, application Japan, Sep. 11, 1995, 7-258092
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—290 **9 Claims**



1. A set of iron golf clubs, comprising:
a plurality of clubs, each of said plurality of clubs comprising a club shaft and a head, said head having a heel side and a toe side;
said plurality of clubs being configured such that as the club number ascends, a center distance between an axis of said club shaft and a center of a club head impact face is gradually longer;
said plurality of clubs further being configured such that as a club number for each of said plurality of clubs ascends, weight distributed on said heel side is gradually smaller while the weight distributed on said toe side is gradually larger, whereby both said center and a center of gravity for said head of each of said plurality of clubs are concomitantly located correspondingly larger distances from said axis of said club shaft as said club number for each of said plurality of clubs ascends;
said head for each of said plurality of clubs including structure defining a cavity in a back face thereof, a perimeter of said cavity being surrounded by a rib; and
said plurality of clubs being configured such that as said club number ascends, a toe-side rib width of said rib is gradually larger while a heel-side rib width of said rib is gradually smaller.

5,823,888
WOUND GOLF BALL
Takashi Maruko, and Junji Umezawa, both of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed May 8, 1997, Ser. No. 852,947
Claims priority, application Japan, May 10, 1996, 8-141035
Int. Cl.[6] A63B *37/08;37/06;37/12;37/14*
U.S. Cl. 473—354 **15 Claims**



1. A wound golf ball comprising a wound core consisting essentially of a center and a thread rubber layer thereon and a cover enclosing the wound core, wherein said ball has a weight of 40 to 45 grams and a hardness corresponding to a distortion of 2.6 to 3.6 mm under a load of 100 kg, said center has an outer diameter of 30 to 35 mm and a hardness corresponding to a distortion of 1.6 to 4 mm under a load of 30 kg, said cover has a Shore D hardness of 50 to 68 and a gage of 1.2 to 2.2 mm, and a percent overall dimple volume Vr which is given by the formula:

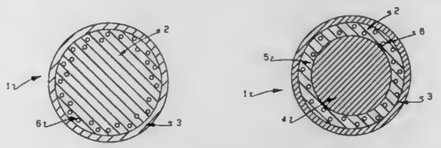
$$Vr = \frac{Vs}{\frac{4}{3}\pi R^3} \times 100 \quad (1)$$

wherein Vs is a sum of the volumes of dimple spaces each below a circular plane circumscribed by the dimple edge and R is a radius of the ball satisfies:

$$0.985-0.002Hd \leqq Vr \leqq 1.085-0.002Hd \quad (2)$$

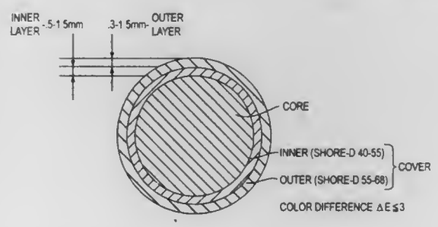
wherein Hd is the Shore D hardness of said cover.

5,823,889
SOLID GOLF BALL AND METHOD OF MAKING
Steven Aoyama, Marion, Mass., assignor to Acushnet Company, Fairhaven, Mass.
Continuation-in-part of Ser. No. 482,518, Jun. 7, 1995, Pat. No. 5,688,192. This application Aug. 1, 1997, Ser. No. 905,069
Int. Cl.[6] A63B *37/06*
U.S. Cl. 473—374 **20 Claims**



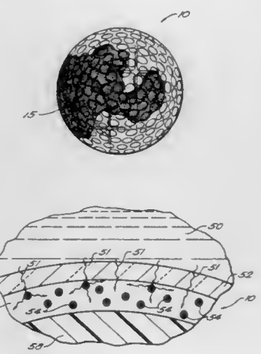
1. A finished, regulation long range, solid construction, multipiece golf ball comprising a discrete cover and a core, said core comprising an inner and an outer portion, said outer portion having a plurality of gas containing compressible cells dispersed therein and said outer portion having a specific gravity greater than 1.

5,823,890
GOLF BALL
Takashi Maruko; Shinichi Kakiuchi, and Junji Umezawa, all of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed Feb. 12, 1997, Ser. No. 797,943
Claims priority, application Japan, Feb. 16, 1996, 8-053918
Int. Cl.[6] A63B *37/12*
U.S. Cl. 473—354 **9 Claims**



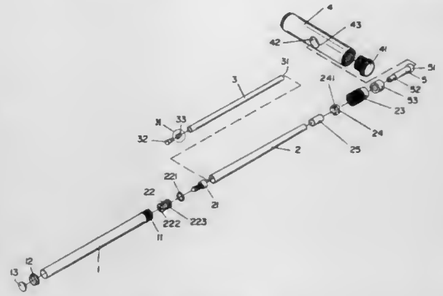
1. A golf ball comprising a core and a cover of two layer structure consisting of inner and outer layers, wherein a color difference ΔE in Lab color space between the inner and outer layers is up to 3 as measured by a calorimeter.

5,823,891
GOLF BALL WITH WATER IMMERSION INDICATOR
Robert T. Winskowicz, North Andover, Mass., assignor to Performance Dynamics, LLC, Middleton, Mass.
Filed Oct. 3, 1997, Ser. No. 943,584
Int. Cl.[6] A63B *37/12*
U.S. Cl. 473—378 **61 Claims**



49. A golf ball comprising:
a core,
a water insoluble, water permeable cover; and,
a water-activated material on said cover which changes color upon presence of water.

5,823,892
MALLET FOR CROQUET
Wen-Hai Kuo, No. 536, Sec. 2, Ho-Sheng Rd., Ping-Tung City, Taiwan
Filed Jul. 2, 1997, Ser. No. 886,941
Int. Cl.[6] A63B *59/10*
U.S. Cl. 473—412 **2 Claims**



1. A mallet for croquet, comprising:
a main shaft made from a hollow round rod having an outer thread at a front end thereof and a rear end sealed by an end cap;
an auxiliary shaft made from a hollow round rod and inserted into the front end of said main shaft and secured at a desired location, said auxiliary shaft comprising a screw member at a rear end thereof, an internally threaded expansion member threaded onto said screw member and forced to expand and to engage an inside wall of said main shaft, and a locating cap at a front end thereof, said expansion member comprising an annular groove at one end around its periphery, a rigid ring mounted on said annular groove and a split head at an opposite end,
lock means fastened to said main shaft to secure said auxiliary shaft in position, said lock means comprising a binding ring

sleeved onto said auxiliary shaft and having a plurality of longitudinal splits, and a chuck sleeve sleeved onto said auxiliary shaft and threaded onto the outer thread of said main shaft to hold down said binding ring against the periphery of the rear end of said auxiliary shaft;

an extension rod made from a hollow round rod inserted through said auxiliary shaft and extended out of the locating cap of said auxiliary shaft, said extension rod having a plug hole at a front end thereof, a locating block at a rear end thereof, and a conical split ring on said locating block, said conical split ring being forced to expand and to engage an inside wall of said auxiliary shaft when said extension rod is extended out of said auxiliary shaft, causing said extension rod to be firmly secured to said auxiliary shaft at an extended position;

a hollow cylindrical head made from aluminum and covered with a glass fiber covering, having two face members at two opposite ends thereof, a radial blind hole in the middle, and a ball seat mounted inside said radial blind hole, said ball seat having a circularly recessed face at an outer end thereof, an outer thread around its periphery, and a center hole at the center of said circularly recessed face; and

a swivel connector comprising a ball knob at one end received in the circularly recessed face, a plug pin at an opposite end plugged into the plug hole of said extension rod, and a socket having an inner thread threaded onto the outer thread of said ball seat, said socket forming with said ball seat a ball socket which receives said ball knob, for permitting said ball knob to be turned in said circularly recessed face to adjust the angular position of said extension rod relative to said head.

5,823,893

Patent Not Issued For This Number

5,823,894

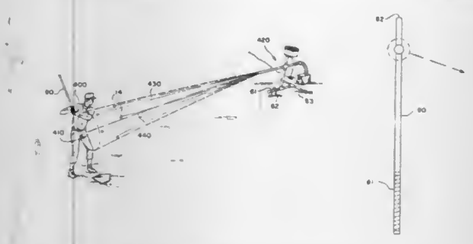
AIR-ACTUATED BALL-THROWING AND BATTING METHOD

James M. Actor, 6557 E. Lookout Dr., Parker, Colo. 80134

Division of Ser. No. 238,230, May 4, 1994, Pat. No. 5,507,271, which is a continuation-in-part of Ser. No. 77,785, Jun. 16, 1993, abandoned. This application Dec. 18, 1995, Ser. No. 574,118

Int. Cl.[6] A63B *69/40*

U.S. Cl. 473—422 **3 Claims**



1. A method for a batter to practice batting, said method comprising the steps of:

providing a ball having a weight less than about two ounces and a diameter less than about two inches;

providing a bat for the batter having a diameter of about one inch ;

providing a hit zone between said ball and said bat of less than about three inches; and

automatically propelling said ball toward said batter from an air-activated ball-throwing device at speeds less than about thirty miles per hour in a random trajectory within a strike zone.

5,823,895

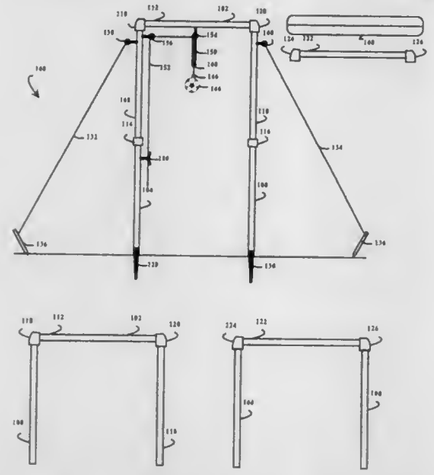
PORTABLE, COMPACT, AND DURABLE ATHLETIC TRAINING APPARATUS

Rale Rasic, Lot 15 Elizabeth Dr., Cecil Park 2171 NSW, Australia

Filed Feb. 21, 1997, Ser. No. 803,931

Int. Cl.[6] A63B *69/00;63/00*

U.S. Cl. 473—430 **14 Claims**



1. A soccer training apparatus comprising:

a support frame having a plurality of detachable firm frame segments including a first side segment, a second side segment, and a top segment, the support frame firm frame segments being detachable and mutually sized for conversion between a striking technique training structure and a soccer goal structure;

a first anchor pin affixing the position of the first side segment on a surface;

a second anchor pin affixing the position of the second side segment on the surface;

a first line for coupling to the first side segment and for stretching tautly between two anchors so that the first side segment is vertically supported;

a second line for coupling to the second side segment and for stretching tautly between two anchors so that the second side segment is vertically supported;

a suspension line for coupling, suspending and supporting a soccer ball from the top segment, the suspension line being adjustably connected to the top segment so that the soccer ball is suspended from the top segment an adjustable length to allow for a player to make various strikes of the soccer ball including kick strikes and head strikes.

5,823,896

BASKETBALL DEVICE

William L. Pearsall, 1144 Smith Rd., Unit A, Temperance, Mich. 48182

Filed Jul. 2, 1997, Ser. No. 886,517

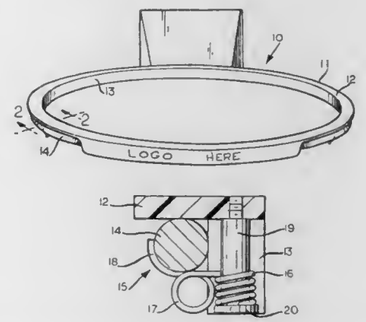
Int. Cl.[6] A63B *69/00*

U.S. Cl. 473—448 **14 Claims**

1. A basketball device, comprising:

a substantially circular shaped member having a top portion and an inner edge extending downwardly from the top portion, the inner edge forming an inner diameter smaller than an inside diameter of a regulation rim of a basketball goal; and

a plurality of clips for removably attaching said member to the regulation rim, each clip including a spring having an upwardly extending end portion and a loop portion,



wherein said member is removably attached to said regulation rim by positioning the loop portion of said spring underneath said regulation rim and by extending the end portion of said spring around said regulation rim.

5,823,897

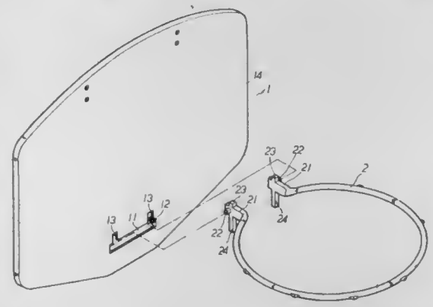
BACKBOARD ASSEMBLY FOR BASKETBALL

Lian-Cheng Wang, No. 258-22, Hai Pin Road, Wu Lu Li, Ching Shui Chen, Taichung Hsien, Taiwan

Filed Jul. 15, 1997, Ser. No. 892,726

Int. Cl.[6] A63B *63/08*

U.S. Cl. 473—481 **4 Claims**



1. A backboard assembly for basketball comprising:

a backboard having an elongate slot in a lower middle portion, said backboard having a back surface provided with a pair of projected sockets which are spaced apart from each other and each of said sockets being adjacent to an end portion of said elongate slot, each of said sockets including a shaft hole parallel to a longitudinal axis of said elongate slot, said elongate slot having a pair of cutouts which are spaced apart from each other and each of the cutouts being adjacent to an end portion of said elongate slot; and

a rim hoop ring defining an opening thereof and having a pair of mounting legs directed outward, each of said mounting legs including a pin shaft which is pivotally received within said shaft hole of said socket of said backboard, each of said mounting legs being further provided with a stopping boss at a top surface and a supporting leg at a bottom surface which are pressed against said backboard when said rim hoop ring is pivotally mounted to said backboard by the pivotal engagement between said pin shaft and said shaft hole.

5,823,898

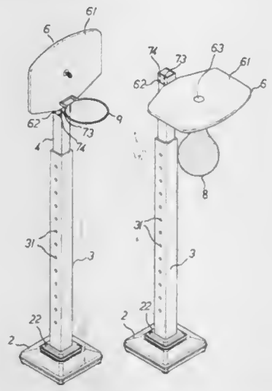
ASSEMBLY ADAPTED FOR USE BOTH AS A BASKETBALL BACKBOARD AND A BOXING TRAINING APPARATUS

Lian-Cheng Wang, No. 258-22, Hai Pin Road, Wu Lu Li, Ching Shui Chen, Taichung Hsien, Taiwan

Filed Oct. 9, 1997, Ser. No. 948,065

Int. Cl.[6] A63B *63/02*

U.S. Cl. 473—483 **2 Claims**



1. An assembly adapted for use both as a basketball backboard and a boxing training apparatus, said assembly comprising:

a base, having an insertion hole at a top end, and a screw hole at a bottom end, said screw hole communicating with said insertion hole;

a column, being an upright hollow structure having a quadrilateral cross-section and insertable into said insertion hole of said base, said column having a threaded portion at a bottom end that, when said column is inserted with its bottom end into said insertion hole, extends through said insertion hole into said screw hole to engage a screw to lock said column on said base, said column further having a plurality of adjustment holes formed on opposed walls thereof;

an adjusting stem, being an upright hollow structure having a quadrilateral cross-section slightly smaller than the cross-section of said column such that said adjusting stem can be inserted into said column and can be retractably displace therein, said adjusting stem having opposed lower pivot holes formed at a lower portion thereof, opposed upper pivot holes formed at an upper portion thereof, first locking holes next to said upper pivot holes disposed at the same level as said upper pivot holes, and second locking holes disposed below said upper pivot holes in alignment therewith;

a first reed, being adapted for adjusting the height of said assembly and having a substantially U-shape, said first reed having pivot pins that engage said lower pivot holes of said adjusting stem when said first reed is inserted into the lower portion of said adjusting stem, said pivot pins projecting respectively from said lower pivot holes, said pivot holes also engaging any pair of adjustment holes of said column when said adjusting stem is inserted into said column so as to set the height of said assembly;

a backboard means, including a backboard, a ring mounted at a front side of said backboard, a suspension bolt embedded in said backboard at a suitable position, a substantially U-shaped mounting plate disposed at a bottom end of said backboard means, said mounting plate having opposed pivot holes, first mounting holes next to said pivot holes thereof at the same level, and second mounting holes below said pivot holes in alignment therewith;

a second reed, being adapted for adjusting the angle of said backboard means and having a substantially U-shape, said second reed having opposed upper through holes and lower through holes and being inserted into the upper portion of said adjusting stem;

a boxing bag, suspendable on said suspension bolt of said backboard means;

first and second bolts; and

first and second nuts, whereby

when said first bolt is passed through said pivot holes of said mounting plate, said upper pivot holes of said adjusting stem, and said upper through holes of said second reed and locked by said first nut, and when said second bolt is passed through said second mounting holes of said mounting plate, said second locking holes of said adjusting stem, and said lower through holes of said second reed and locked by said second nut, said assembly can be used as a basketball backboard; and when said second bolt is removed and said first bolt is loosened halfway so that it serves as a pivot point, said backboard means can be turned downwardly so that said second mounting holes of said mounting plate are brought into alignment with said first locking holes of said adjusting stem to allow said second bolt to pass through said second mounting holes of said mounting plate through said first locking holes of said adjusting stem and said lower through holes of said second reed and to be locked by second second bolt, so that said boxing bag can be suspended on said suspension bolt on said backboard to turn said assembly into a boxing apparatus.

5,823,899

GAMES RACKET FRAME

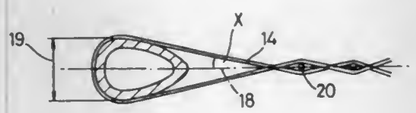
Graham Goodge, Suffolk, Great Britain, assignor to Dunlop Slazenger Group Limited, Surrey, England

Filed Jun. 27, 1997, Ser. No. 883,142

Claims priority, application United Kingdom, Jul. 24, 1996, 9615522

Int. Cl.[6] A63B *49/00*

U.S. Cl. 473—540 **13 Claims**



1. A games racket comprising a head portion defining a string bed of main strings and cross strings, a shaft portion and a handle portion, the head portion defining a crown remote from the shaft portion, wherein

(i) at the crown a cross-section through the head portion perpendicular to the string bed reduces in width towards the string bed;

(ii) at the crown the main strings wrap around the head instead of passing through drilled string holes; and

(iii) the major axis of a cross-section in the crown is generally parallel to the string bed and the major axis of a cross-section in other parts of the head portion is generally perpendicular to the string bed.

5,823,900

PROCESS AND DEVICE FOR BRINGING INTO ALIGNMENT THE STRINGS OF AN INTERLACED NETWORK

Ernst-Diethelm Harren, Salmanusstrasse 39, Würselen D-52146, Germany, and Christian Bangert, Bismarckstrasse 150, Aachen D-52066, Germany

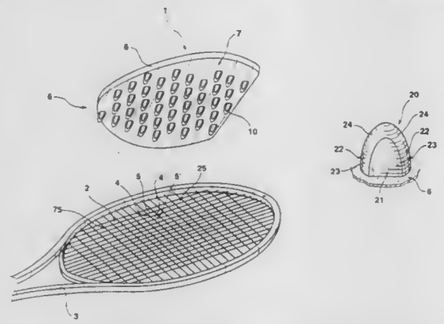
PCT No. PCT/DE95/00052, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO95/19816, PCT Pub. Date Jul. 27, 1995

PCT Filed Jan. 15, 1995, Ser. No. 687,350

Claims priority, application Germany, Jan. 19, 1994, 44 01 445.7

Int. Cl.[6] A63B *51/00*

U.S. Cl. 473—553 **18 Claims**



1. A device for bringing into alignment the strings (**4**, **4'**, **5**, **5'**) of an interlaced network (**2**) with a base plate (**6**) and at least one aligning element (**60**, **70**), whereas the aligning element (**60**, **70**) is designed as a thin plate between generally parallel spaced flat sides (**21**) which catches hold of the strings (**4**, **4'**, **5**, **5'**) near their intersection (**75**), wherein the aligning element (**60**, **70**) has rounded sides (**61**, **71**) extending laterally between said flat sides and that the rounded sides (**61**, **71**) pass smoothly, in a direction toward said base plate, from a curved aligning area (**62**, **72**) for string (**4**, **4'**, **5**, **5'**) alignment into a holding area (**63**, **73**) where said rounded sides (**61**, **71**) extend in a generally perpendicular direction to the base plate (**6**), said curved aligning areas being curved elliptically or semi-circularly in a direction from a top or outer end of said aligning element towards a bottom of said aligning element which is fixed to said base plate and in a direction generally perpendicular to said base plate.

5,823,901

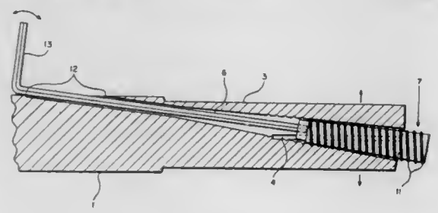
HOCKEY STICK BLADE AND HANDLE AND METHOD OF SECURING SAME

George Burger, Rockland, Calif., assignor to Hillerich & Bradsby Co., Inc., Louisville, Ky.

Filed Jun. 14, 1995, Ser. No. 490,334

Int. Cl.[6] A63B *59/12*

U.S. Cl. 473—560 **5 Claims**



1. A hockey stick comprising:

an elongated handle having first and second ends,

a blade having an object contact end and a free hosel end for attaching said blade to said first end of said handle, said hosel having a predetermined length along said blade, said hosel end having a slit extending a predetermined distance along said predetermined length;

said hosel further having a bore extending at an angle from said hosel free end towards said object contact end, and exiting through the side of said blade at a location spaced from said hosel free end;

a screw; said screw having a large diameter end and a small diameter end to thereby define a tapered configuration; said screw having a longitudinal recess in its small diameter end, said recess being configured to receive a tool;

said screw large diameter end being larger than the cross-sectional area of said bore;

said screw having its small diameter end inserted into said bore at said free hosel end such that said free hosel end will expand as said screw is turned to advance into said bore;

said hosel, when inserted into said handle first end will be fixedly locked therein as said screw **13** manually advanced into said bore by a said tool.

5,823,902

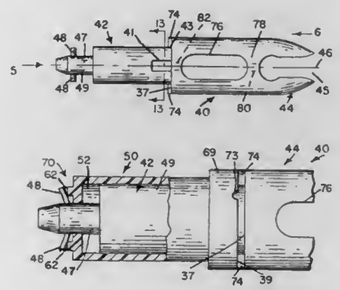
NOCK ASSEMBLY FOR ARROWS

Elmer F. Guest, 31 Hancock St., and Leon A. Eckert, 30 Plain St., both of Fitchburg, Mass. 01420

Filed Oct. 8, 1997, Ser. No. 946,705

Int. Cl.[6] F42B *6/06*

U.S. Cl. 473—578 **10 Claims**



5. A nock assembly, for an arrow, the arrow having a shaft and at least one vane, a central longitudinal shaft axis, a bore which extends along said axis, and a first rear opening to the bore, the vane being fixed to the outer cylindrical surface, which nock assembly comprises:

(a) an adapter for being fixed to the shaft within the bore at the first rear opening in a predetermined angular position about said shaft axis relative to the vane, said adapter having a socket, a rearwardly facing surface, and a second rear opening to the socket in said rearwardly facing surface;

(b) a nock having a head end, a tail end which has a rearwardly facing notch, and a central longitudinal nock axis which is coaxial with said shaft axis, said nock being removably mounted to said adapter so that said head end is located within said socket and tail end is located outside of said socket, said tail end having a forwardly facing surface at the juncture of said tail end and said head end so that said forwardly facing surface abuts said rearwardly facing surface when said head end is fully located within said socket; and

(c) retaining means for releasably locking the head end of said nock within the socket so that the nock is in a predetermined locking angular position about the shaft axis relative to the adapter and the vane and is in a predetermined position lengthwise of the shaft axis relative to the second opening, said retaining means comprising:

(1) biasing means for biasing said nock forwardly relative to said adapter; and

(2) detent means at said rearwardly facing and forwardly facing surfaces for functioning in cooperation with said biasing means for releasably retaining said nock in said locking angular position relative to said adapter.

9. A nock assembly, for an arrow, the arrow having a shaft and at least one vane, the shaft having an outer cylindrical surface, a central longitudinal shaft axis, a bore which extends along said axis, and a first rear opening to the bore, the vane being fixed to the outer cylindrical surface, which nock assembly comprises:

(a) an adapter for being fixed to the shaft within the bore at the first rear opening in a predetermined angular position about said shaft axis relative to the vane, said adapter having a socket and a second rear opening to the socket;

(b) a nock having a head end, a tail end which has a rearwardly facing notch, and a central longitudinal nock axis which is coaxial with said shaft axis, said nock being removably mounted to said adapter so that said head end is located within said socket and tail end is located outside of said socket, said tail end having a slot spaced forwardly of said rearwardly facing notch and a dividing wall between said slot and said rearwardly facing notch, said dividing wall having an aperture which extends from said rearwardly facing notch to said slot, said aperture enabling an elongated animal scent impregnated insert to be introduced into said slot through said aperture so that a portion of said insert lies within said aperture for retaining said insert within said slot; and

(c) retaining means for releasably locking the head end of said nock within the socket so that the nock is in a predetermined locking angular position about the shaft axis relative to the adapter and the vane and is in a predetermined position lengthwise of the shaft axis relative to the second opening.

5,823,903

PULLEY

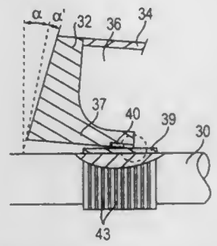
Sebastiaan Pieter Henricus Jozef Bongers, Nijmegen, Netherlands, assignor to Van Doorne's Transmissie B.V., AM Tilburg, Netherlands

Filed Nov. 2, 1995, Ser. No. 552,114

Claims priority, application Netherlands, Nov. 10, 1994, 9401877

Int. Cl.[6] F16H *9/12*

U.S. Cl. 474—25 **17 Claims**



1. A pulley adapted for use with a continuously variable transmission, comprising:

a pulley shaft having an axial direction and a rotational direction;

a first sheave fixed in said axial and rotational directions with respect to said pulley shaft;

a second sheave movable in said axial direction with respect to said pulley shaft, said first sheave and said second sheave accommodating a drive belt therebetween; and

a movement mechanism that exerts axial pressure on said second sheave to move the second sheave in said axial direction to a stable axial position, thereby inducing a reaction force from the drive belt,

wherein, when said movement mechanism imposes a stable axial position on said second sheave, the reaction force and the axial pressure form a moment that engages said second

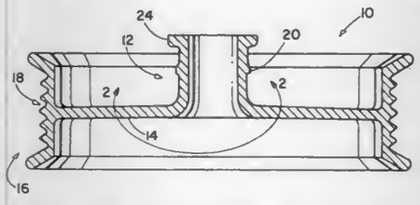
sheave to said pulley shaft and rotationally fixes said second sheave relative to said pulley shaft, so that said pulley shaft is adapted to transmit torque to the drive belt or receive torque from the drive belt.

5,823,904

RENFORCED HUB, PULLEY

Yabya Hodjat, Oxford, Mich., and Michael H. Kutzscher, London, Canada, assignors to The Gates Corporation, Denver, Colo.

Filed Nov. 19, 1996, Ser. No. 752,681
Int. Cl.[6] F16H *55/50;55/49*
U.S. Cl. 474—170 **7 Claims**



1. A pulley with an integral hub that is spun-roll formed from a disc having a thickness, the hub having a bore, a generally cylindrical external surface, a radial thickness, and formed with a portion of metal radially displaced from a side of the disc leaving a web portion having a web thickness, wherein the improvement comprises:

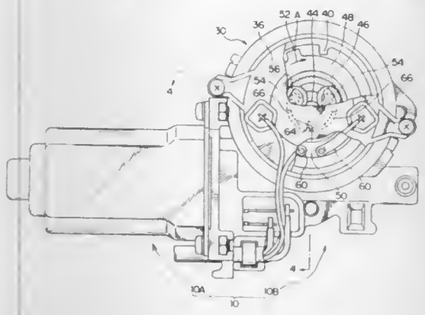
the hub having at least one annular ring integral with the hub and extending radially outwardly from the external surface of the hub and spaced from an open end of the hub and intermediate the web and wherein the ring provides a reinforcement to the hub.

5,823,905

MOBILE MEMBER POSITION DETECTION APPARATUS

Katsubiko Torii; Kengo Yamamura, both of Shizuoka-ken, and Mitsuhiro Ikeya, Hamamatsu, all of Japan, assignors to Asmo Co., Ltd., Shizuoka-ken, Japan

Filed Jan. 11, 1996, Ser. No. 584,083
Claims priority, application Japan, Jan. 10, 1995, 7-002059
Int. Cl.[6] G01D *5/02*
U.S. Cl. 475—149 **25 Claims**



1. A mobile member position detection apparatus for detecting a predetermined moving position of a mobile member moving in a forward/backward direction, comprising:

a switch unit for detecting the predetermined moving position of said mobile member on the basis of an ON/OFF-operation of a contact;

a planetary gear combination, having a ring gear and a planetary gear and moved together with said mobile member by moving force transmitted from said mobile member, for causing said ring gear to operate said switch unit at the predetermined moving position of said mobile member;

a clutch mechanism for transmitting the moving force of said rotational drive source from said planetary gear to said ring gear by preventing revolution of said planetary gear in a normal state to rotate said ring gear, and further for allowing revolving movement of said planetary, thereby interrupting transmission of forward torque from said mobile member to said ring gear after said switch unit operates, when said ring gear is rotated in the forward direction by a predetermined amount; and

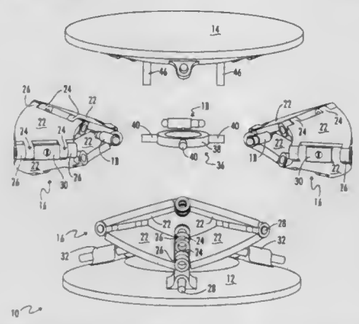
a torque increasing mechanism, arranged in the planetary gear combination, for increasing force for preventing revolution of said planetary gear by said clutch mechanism, whereby torque which can be transmitted from said mobile member to said ring gear is increased.

5,823,906

NUTATION MOTION GENERATOR

James D. Ashburn, Atlanta, Ga.; Steven W. Peterson, and Alvin M. Strauss, both of Nashville, Tenn., assignors to Vanderbilt University, Nashville, Tenn.

Filed Jan. 2, 1997, Ser. No. 778,293
Int. Cl.[6] F16H *23/08*
U.S. Cl. 475—164 **18 Claims**



1. A nutation motion generator device for transforming linear motion into nutating motion comprising:

a. a support surface;

b. a drive plate spaced from said support surface;

c. three linkage mechanisms connecting said drive plate to said support surface to create a plurality of rotation axes such that all rotation axes intersect at a common point;

d. a driver mechanism including three reciprocal motion drivers, the three reciprocal motion drivers in operable connection with the three linkage mechanisms; and

e. a three-phase power source for providing energy to the driver mechanism, the power source in operable connection with the driver mechanism.

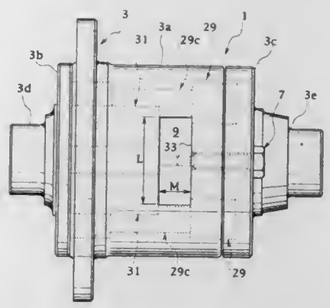
5,823,907

ACCESS HOLE FOR DIFFERENTIAL APPARATUS

Masao Teraoka; Takayuki Wakaizumi, both of Tochigi, Japan, and John J. Schoeberle, Warren, Mich., assignors to Tochigi Fuji Sangyo Kabushiki Kaisha, Japan

Filed May 29, 1997, Ser. No. 865,225
Claims priority, application Japan, May 30, 1996, 8-136955
Int. Cl.[6] F16H *48/10*
U.S. Cl. 475—248 **10 Claims**

1. A differential apparatus for a vehicle having an engine, said differential apparatus comprising:



a differential casing having an input gear fixed thereto, said differential casing being rotated by said engine through the intermediary of said input gear;

a pair of output side gears disposed in said differential casing so as to oppose to each other and rotate in coaxial with an axis of said differential casing;

even pairs of accommodating bores formed in said differential casing, said even pairs being divided equally in the circumferential direction of said differential casing, each of said even pairs of accommodating bores consisting of a first accommodating bore and a second accommodating bore, said first and second accommodating bores being arranged so that, between two neighboring pairs of the even pairs of accommodating bores in the circumferential direction, said first or second accommodating bore in the one pair adjoins the same accommodating bore of the other pair;

even pairs of pinion gears accommodated in said even pairs of accommodating bores so as to frictionally rotate therein and arranged in parallel with said axis of said differential casing, said each pair of pinion gears consisting of a long pinion gear accommodated in said first accommodating bore and a short pinion gear accommodated in said second accommodating bore, both of said long and short pinion gears having respective first gear portions meshing with said side gears, respectively and respective second gear portions meshing with each other;

a pair of output shafts connected to said output side gears, respectively so as to rotate therewith;

an antidraft member for preventing said output shafts from slipping out of said differential casing in the axial direction; and

a positioning member for positioning said output side gears and said output shafts, said positioning member being in the form of a plate;

wherein said differential casing is provided with an elongated hole which is formed so as to penetrate a peripheral wall of said differential casing at axial positions corresponding to opposing end faces of said output side gears, and of which a straight length of said elongated hole in the circumferential direction of said differential casing is established in such that said elongated hole substantially bridges said adjoining short accommodating bores when said short pinion gears are accommodated in said adjoining accommodating bores between said two adjoining pairs of said accommodating bores; and

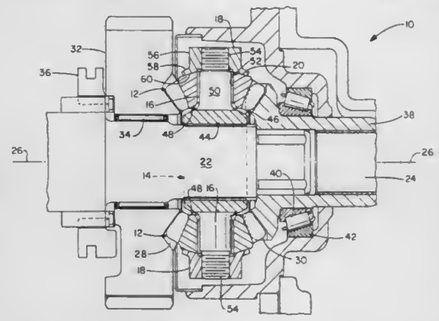
wherein said output side gears and said output shafts are located in respective positions by said positioning member which is inserted into said differential casing through said elongated hole and fixed to said differential casing.

5,823,908

DIFFERENTIAL SPIDER WITH RETAINING CAPS FOR RETAINING BEVEL PINIONS IN A DIFFERENTIAL

Gerald Andrew Stefanek, Ft. Wayne, Ind., assignor to Dana Corporation, Toledo, Ohio

Filed Oct. 11, 1996, Ser. No. 728,954
Int. Cl.[6] F16H *48/06*
U.S. Cl. 475—230 **19 Claims**



1. A differential assembly for a vehicle comprising:

a differential frame having a central hub with a plurality of arms extending radially outwardly from a proximal end to a distal end from the central hub;

a pinion gear received upon each of the plurality of arms, each said pinion gear being rotatable about the arm on which it is received; and

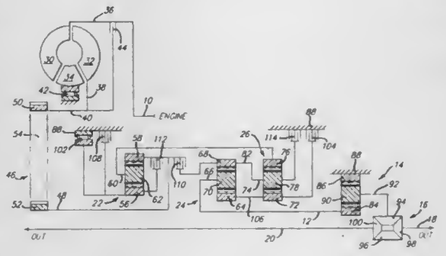
a retaining cap removably secured to the distal end of each of the plurality of arms such that the pinion gear rotatably received on the arm is held in place between the central hub and the retaining cap, each said retaining cap supported only by the differential frame and having a free outer peripheral surface and a free axial end surface.

5,823,909

MULTIPLE SPEED AUTOMATIC TRANSAXLE FOR A MOTOR VEHICLE

Rudolf Beim, Bloomfield Hills, and Daniel W. McCarrick, Canton, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Mar. 3, 1997, Ser. No. 807,971
Int. Cl.[6] F16H *3/44;3/62*
U.S. Cl. 475—269 **14 Claims**



1. A multiple-speed transmission comprising:

an input shaft;

an output shaft;

a first planetary gear unit supported on a first axis, having a sun gear, ring gear, carrier, and a first set of pinions supported rotatably on the carrier and driveably engaged with the sun

gear and ring gear, the ring gear of the first gear unit continually driveably connected to the input shaft;

a second planetary gear unit supported on a first axis, having a sun gear, ring gear, carrier, and a second set of pinions supported rotatably on the carrier and driveably engaged with the sun gear and ring gear of the second gear unit;

a third planetary gear unit supported on a first axis, having a sun gear, ring gear, carrier, and a third set of pinions supported rotatably on the carrier and driveably engaged with the sun gear and ring gear, the carrier of the first gear unit and ring gear of the third gear unit continually driveably connected mutually, the carrier of the third gear unit and ring gear of the second gear unit continually driveably connected mutually, the sun gears of the second and third gear units continually driveably connected mutually, the carrier of the second gear unit continually driveably connected to the output shaft;

a first brake for alternately holding against rotation and releasing the sun gears of the second and third gear units; and

a second brake for alternately holding against rotation and releasing the sun gear of the first gear unit.

5,823,910

TRANSMISSION INCLUDING PLANETARY GEAR SETS

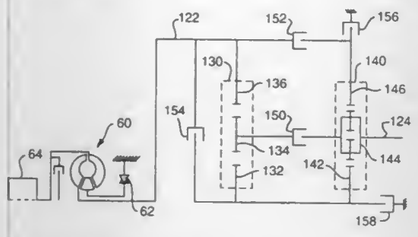
Jong-Sul Park, Seoul, Rep. of Korea, assignor to Hyundai Motor Company, Seoul, Rep. of Korea

Filed Nov. 14, 1996, Ser. No. 752,436

Claims priority, application Rep. of Korea, Nov. 23, 1995, 1995/43370; Nov. 23, 1995, 1995/43371; Dec. 11, 1995, 1995/48203; Dec. 11, 1995, 1995/48207; Dec. 11, 1995, 1995/48208

Int. Cl.[6] **F16H** *3/62*

U.S. Cl. 475—271 **23 Claims**



1. A transmission comprising:

a first simple, single pinion, planetary gear set having first, second, and third elements, the first element of the first gear set receiving rotational motion input to the transmission,

the first element of the first gear set being a first ring gear,

the second element of the first gear set being a first carrier, and

the third element of the first gear set being a first sun gear;

a second simple, double pinion, planetary gear set having first, second, and third elements, the first element of the second gear set outputting rotational motion from the transmission,

the third element of the second gear set being connected to the third element of the first gear set,

the first element of the second gear set being a second carrier,

the second element of the second gear set being a second ring gear, and

the third element of the second gear set being a second sun gear;

a first clutch selectively coupling the second element of the first gear set to the first element of the second gear set;

a second clutch selectively coupling the first element of the first gear set to the second element of the second gear set;

a third clutch selectively coupling two elements selected from the group consisting of the third element of the second gear set and the first, second, and third elements of the first gear set;

a first brake selectively braking the second element of the second gear set; and

a second brake selectively braking the third element of the second gear set.

5,823,911

SUPPORTS FOR POWER ROLLERS FOR USE IN TOROIDAL-TYPE CONTINUOUSLY VARIABLE TRANSMISSIONS

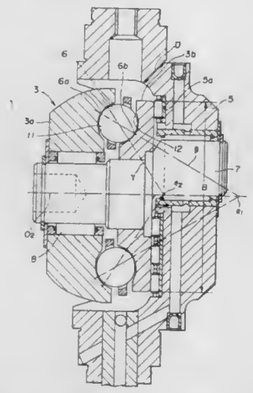
Toshifumi Hibi, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 29, 1996, Ser. No. 739,442

Claims priority, application Japan, Oct. 30, 1995, 7-281490

Int. Cl.[6] **F16H** *15/38*

U.S. Cl. 476—40 **3 Claims**



1. A continuously variable transmission comprising:

input and output discs;

a power roller held between said input and output discs for power transmission, said power roller having a rotation axis, said power roller including an inner ring that frictionally contacts said input and output discs, a rolling element, and an outer ring that receives, through said rolling element, a load input from said input and output discs to said inner ring; and

a support member arranged to rotatably support said power roller, said support member being rotatable about an oscillating axis that is perpendicular to said rotation axis of said power roller,

wherein said outer ring of said power roller is supported in a direction of said rotation axis of said power roller by a surface of said support member to sustain said load,

wherein an action line of said load on said rolling element is inclined with respect to said rotation axis of said power roller and intersects said rotation axis of said power roller at a point corresponding to said surface of said support member.

5,823,912

METHOD AND APPARATUS FOR DETECTING FRICTION HEAT OF A CLUTCH AND REGULATING THE CLUTCH

Robert Fischer; Thomas Jäger, both of Bübl, and Martin Zimmermann, Sasbach, all of Germany, assignors to Luk Getriebe-Systeme GmbH, Baden, Germany

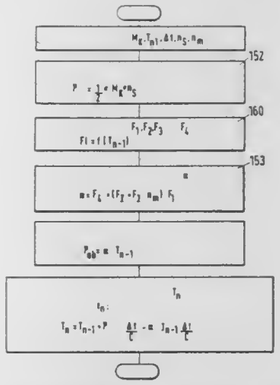
Filed Jan. 24, 1996, Ser. No. 592,855

Claims priority, application Germany, Jan. 28, 1995, 195 02 701.9

Int. Cl.[6] **B60K** *23/00;23/02*

U.S. Cl. 477—97 **67 Claims**

1. A method of regulating the operation of a torque transmission system having heat generating friction surfaces and being installed in a motor vehicle with a regulating device which is operable by a control unit, comprising the steps of transmitting to the control unit signals denoting at least the magnitude of torque being transmitted by the system, the extent of slip of said friction surfaces relative to each other, and a selected speed of a variable-speed assembly receiving torque from the system; utilizing at least one of said signals to ascertain the input of energy by the control unit into the friction surfaces of the system; calculating the temperature of at least a portion of the system as a function of time; comparing the calculated temperature with a threshold value; and utilizing the control unit to regulate the operation of the system under at least one of the circumstances including (a) detection of a calculated temperature which exceeds the threshold value and (b) starting of the vehicle at a speed of the variable-speed assembly above a predetermined maximum starting speed, said utilizing step including generating at least one signal for initiation of a corrective undertaking.



5,823,913

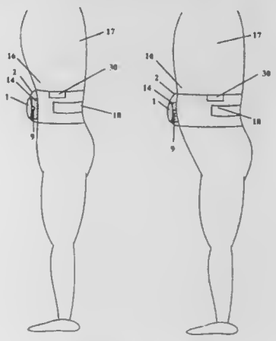
METHOD FOR EXERCISING THE ABDOMINAL MUSCLES

Alexander S. Aruin, 1141 B. W. Aaron Dr., State College, Pa. 16803, and Leonid M. Raitsin, 91 Vernadsky Str, Building 2, # 110, Moscow, Russian Federation, 117526

Filed Dec. 26, 1996, Ser. No. 774,974

Int. Cl.[6] **A63B** *23/02*

U.S. Cl. 482—4 **6 Claims**



1. A method for exercising the abdominal muscles comprising the steps of:

providing a device comprised of:

* an informing unit having a sensor activated depending on the position of the user's belly, an announciator, a switch, a battery, and a massager having several massage protrusions on one side for massaging the abdominal muscles of the user, and elements to retain said informing unit on an abdominal support;

* the abdominal support for providing a gentle pressure over a wide area of the belly of a user, and having elements to enable positioning and retaining the informing unit with the massager on the side directed to the user's belly.

placing the working informing unit on the abdominal support;

placing the abdominal support around the back of the user to retain the informing unit in place on the user's abdomen in relaxed position providing an activation of the sensor which will provide a massage application;

locking the abdominal support over the waist of the user in position when the sensor is active and there is a massage application;

drawing the belly in by contracting of the abdominal muscles releasing the activation of the sensor which will terminate the massage application;

conversely, relaxing the abdominal muscles which will activate the sensor and produce the massage of the user's abdominal muscles;

turning off the switch when the exercise session is finished.

5,823,914

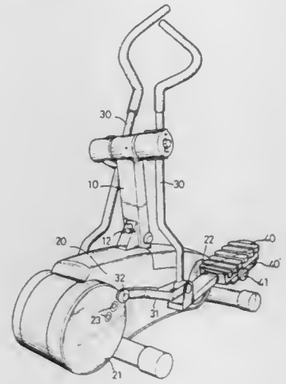
EXERCISING DEVICE

Chih-Liang Chen, No. 10, La. 1431, Kuanghsing Rd., Pateh City , Taoyuan Hsien, Taiwan

Filed Sep. 16, 1997, Ser. No. 931,475

Int. Cl.[6] **A63B** *69/16;22/04*

U.S. Cl. 482—51 **8 Claims**



1. A foot exercising device comprising:

a frame;

an energy-transmitting mechanism mounted on said frame;

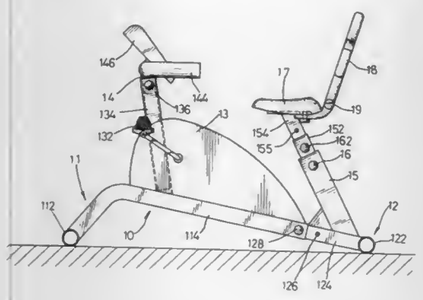
a first drum interactively coupled with said energy-transmitting mechanism for transmitting rotational energy thereto;

a second drum interactively coupled with said energy-transmitting mechanism for transmitting rotational energy thereto; and

a pair of pedals, each pedal having an elongate slot to receive a rolling element therein, one end of said rolling element is rollingly and eccentrically connected with one end surface of said first drum for rotating said first drum, each pedal being pivotably connected with said second drum by an elongate connecting rod, wherein each said rolling element is received in each said elongate slot to be capable of rolling along each said elongate slot of each said pedal, one end of each said connecting rod is pivotably connected with one end of each said pedal, another end of each said connecting rod is pivotably and eccentrically connected with said one end surface of said second drum; whereby said pedals can be alternatively

stepped down to drive said first and second drums into rotation and to follow a smooth path.

5,823,915
EXERCISE BICYCLE
Ping Chen, No. 29, Nanmei St., Nantun Ll, Nantun Dist, Taichung, Taiwan, Taiwan
Filed Oct. 6, 1997, Ser. No. 939,733
Int. Cl.[6] A63B *21/00;69/16*
U.S. Cl. 482—57 **7 Claims**

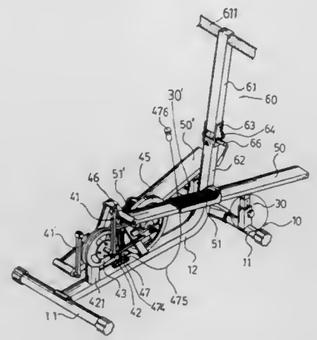


1. A exercise bicycle comprising:
a supporting base including a substantially T-shaped first body including a first supporting rod horizontally disposed and a first supporting beam having a first end portion fixedly mounted on a mediate portion of said first supporting rod and a second end portion, and a substantially T-shaped second body including a second supporting rod horizontally disposed and a second supporting beam having a first end portion fixedly mounted on a mediate portion of said second supporting rod and a second end portion adjustable mounted on said second end portion of said first supporting beam, said second supporting beam defining a plurality of adjusting holes therein:
a retaining member extending thorough said first supporting beam and through one of said plurality of adjusting holes such that said second supporting beam can be adjustabley mounted on said first supporting beam:
a hood fixedly mounted on said first supporting beam of said supporting base;
a first positioning beam fixedly mounted on said hood;
a first adjusting beam adjustabley mounted on said first positioning beam;
a handle fixedly mounted on an upper end portion of said first adjusting beam;
a second positioning beam fixedly mounted on said second supporting beam of said supporting base;
a second adjusting beam adjustabley mounted on said second positioning beam;
a third adjusting beam adjustabley mounted on said second adjusting beam;
a seat fixedly mounted on an upper end portion of said third adjusting beam;
pedal means movable mounted on said hood; and
resistance means mounted in said hood for providing resistance to movement of said pedal means.

5,823,916

Patent Not Issued For This Number

5,823,917
EXERCISING APPARATUS
Chao-Chuan Chen, No. 15, La. 9, Cheng-Kung Rd., Chin-Jung Tsun, Wu-Feng Hsiang, Taichung Hsien, Taiwan
Filed Oct. 17, 1997, Ser. No. 943,254
Int. Cl.[6] A63B *22/06*
U.S. Cl. 482—57 **3 Claims**



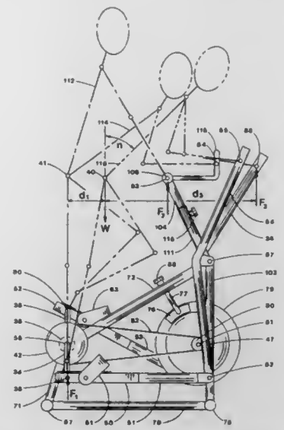
1. An improved exercising device, comprising:
a supporting stand (**10**) for being firmly supported on the floor, a steps-controlling assembly (**40**) being disposed at the central portion of the supporting stand (**10**), said supporting stand (**10**) including a disk (**43**) and a loading wheel (**45**), a driving element (**46**) that has a loop configuration is used to connect said disk (**43**) and said loading wheel (**45**), said exercising devices further comprising:
a pair of position-adjusting devices (**30**, **30'**) being disposed at the front portion of said supporting stand (**10**), said positioning-adjusting (**30**) including a supporting barrel (**31**) and an extending tube (**32**) that is telescopically and moveably received within said supporting barrel (**31**), said supporting barrel (**31**) being vertically connected to said supporting stand (**10**) and a roller (**33**) being rotationally disposed at the top of said extending tube (**32**), said roller (**33**) being freely rotated;
a damping device (**47**) being disposed with respect to said loading wheel (**45**) and providing a working load to said loading wheel (**45**); and
a pair of connecting members (**50**, **50'**), one end of said connecting members (**50**, **50'**) being connected to said crankshafts (**41**, **41'**) while the bottom of said connecting members (**41**, **41'**) being disposed onto said roller (**33**) of said position-adjusting device (**30**, **30'**), said crankshafts (**41**, **41'**) being pivotally attached to the shaft of said disk (**43**), said connecting members (**50**, **50'**) being further provided with a pedal (**51**, **51'**) for supporting the feet of the user.

5,823,918

Patent Not Issued For This Number

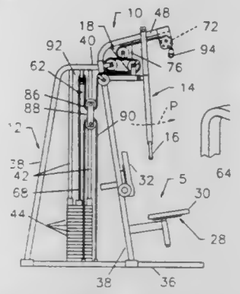
5,823,919
STANDUP EXERCISE MACHINE WITH ARM EXERCISE
Paul William Eschenbach, 143 Lakeland Ave., Moore, S.C. 29369
Filed Mar. 7, 1996, Ser. No. 614,823
Int. Cl.[6] A63B *69/16;22/00*
U.S. Cl. 482—62 **20 Claims**

1. An exercising machine comprising:
a framework means, said framework means being configured to be supported by the floor;



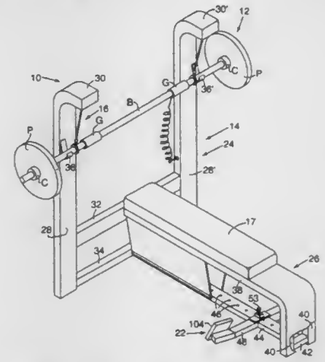
a linkage means, said linkage means containing a plurality of links pivotally connected to said framework means;
a pair of pedal means for standup exercise, each said pedal means having a first pedal pivot means and a second pedal pivot means each operably associated with said linkage means to move said pedal means in a generally back and forth direction;
an arm lever means, said arm lever means mounted to said framework means by a pivot means positioned above said pedal means for up and down movement in a generally inclined direction, said arm lever means being operably associated with said linkage means;
said pedal means coordinated with said lever means to allow said pedal means to move relative to said framework means when the foot of the user is rotating and linkage means whereby the arm lever means movement is substantially forward of said pedal means to support the upper body of the user during standup operation for arm exercise; and wherein the users back can form an incline angle up to about 45 degrees with respect to a vertical plane and the arm lever means can support up to about 20% of the users body weight.

5,823,920
EXERCISE MACHINE
Sherman P. Grider, 14829 E. Salt Lake Ave., Industry, Calif. 91746
Continuation of Ser. No. 378,957, Jan. 26, 1995, abandoned. This application May 13, 1996, Ser. No. 648,307
Int. Cl.[6] A63B *21/00*
U.S. Cl. 482—100 **12 Claims**



1. In an exercise machine, the combination comprising:
a frame having upper and lower portions,
a seat on said lower frame portion at one side of said frame,
a press arm at said one side of said frame having an upper end adjacent said upper frame portion and a lower end adjacent said seat,
means pivotally mounting the upper end of said press arm on said upper frame portion above said seat for pivotal movement of said lower end of said press arm inwardly toward and outwardly away from said frame side and movement of said lower press arm end along an arcuate exercise path toward and away from said seat,
an elongate support arm rigidly secured at one end to said press arm and extending laterally of said press arm toward said frame,
a sleeve member adjustable endwise along said support arm toward and away from said frame relative to the press arm,
means for releasably securing said member in different fixed positions along said support arm for movement of said press arm and said member in unison toward and away from said frame in each fixed position of said member along said support arm,
a stop on said frame,
means on said member engagable with said stop for limiting movement of said member toward said frame, and
force exerting means connected between said frame and said member for yieldably urging said member toward said frame and yieldably resisting movement of said member away from said frame.

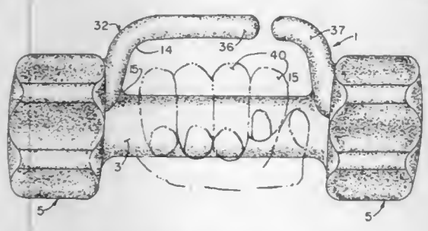
5,823,921
FREEWEIGHT BARBELL LIFTING EXERCISE MACHINE WITH USER CONTROLLABLE LIFT ASSIST AND SAFETY DEVICE
Jeffrey S. Dawson, P.O. Box 544, Canton, Conn. 06019
Continuation-in-part of Ser. No. 212,508, Mar. 11, 1994, abandoned. This application Aug. 16, 1996, Ser. No. 699,113
Int. Cl.[6] A63B *21/078*
U.S. Cl. 482—104 **35 Claims**



1. A freeweight exercise machine for use with a barbell having an axially elongated lifting bar and a plurality of weights carried by the bar, said machine comprising a frame assembly including a cable suspension frame having a pair of transversely spaced apart and upwardly extending cable suspension members each having a generally rearwardly extending cantilever upper end portion, and a bench support frame connected to a central portion of said cable suspension frame and extending longitudinally rearwardly therefrom, said bench support frame defining a generally horizontally disposed and upwardly facing bench support surface, a cable assembly having opposite end portions, cable supporting means for mounting said cable assembly on said cable suspension frame for movement relative to said cable suspension frame with each of said opposite end portions depending from an associated one of said cantilever upper end portions, attaching means for securing said opposite end portions to the lifting bar of an associated barbell

assembly in axially spaced apart relation to each other to support the barbell assembly with the lifting bar in a generally axially horizontal position, a fluid motor mounted on said bench support frame below said bench support surface, said fluid motor having a first part secured in fixed position relative to said bench frame and a second part supported for reciprocal movement relative to said first part and generally toward and away from said cable suspension frame, connecting means for attaching said cable assembly to said motor for movement with and relative to said second part and including a yoke carried by said second part, a pulley supported for rotation on and relative to said yoke, and anchoring means securing a portion of said cable assembly in fixed position to said pulley, arresting means independent of said frame assembly for limiting the angle of inclination of said lifting bar relative to said horizontal position including a pair of limit stops mounted on said pulley and engageable with said yoke to limit the angular movement of said pulley relative to said yoke, and a control system for controlling the operation of said machine and including manually operable motor control means for operating said motor to apply lifting force to the barbell assembly and to vary the magnitude of said lifting force.

5,823,922
DUMBBELL
James A. Eckmann, Libertyville, Ill., assignor to Sportworks Ltd., Vernon Hills, Ill.
Filed Apr. 23, 1997, Ser. No. 844,941
Int. Cl.[6] A63B *21/072*
U.S. Cl. 482—108 **7 Claims**



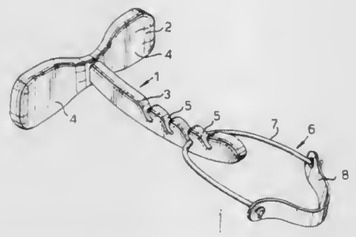
1. A dumbbell made of rigid material, said dumbbell having a central bar, and a rigid, inflexible guard-handle spaced from said bar a distance to allow the insertion of a user's fingers between said guard-handle and said bar, said handle having a center span with a long reach and a short reach spaced axially from one another to define a gap, said short reach defining a hook by which said dumbbell can be mounted removably on a belt of a user.

5,823,923

Patent Not Issued For This Number

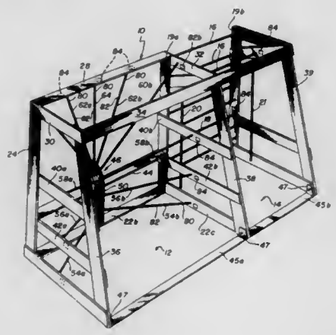
5,823,924
MUSCLE EXERCISER
Neil Summers, Beechwood House, King Georges Hill, Abinger Bottom Dorking, Surrey RH5 6JW, Great Britain
Filed May 14, 1997, Ser. No. 856,256
Claims priority, application United Kingdom, Jul. 5, 1996, 9614116
Int. Cl.[6] A63B *21/02*
U.S. Cl. 482—125 **5 Claims**

1. A muscle exerciser comprising a body having a leg support, from the centre of which projects a loop support, and a loop of material at least a portion of which is resilient, engaged with the loop support, so that, in use, when the leg support is placed behind



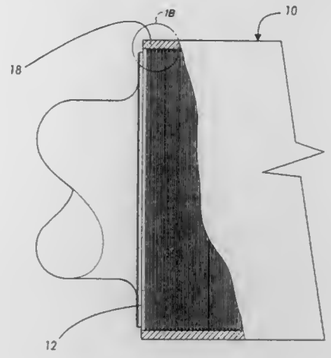
the upper legs of the user with the loop support extending between the legs towards the trunk, the loop of material can be placed round the neck of the user, the overall length of the exerciser being adjustable to accommodate users of various heights, and including a plurality of hooks provided on the loop support with any of which the loop of material can be detachably engaged.

5,823,925
STRETCHING APPARATUS USING ELASTIC CORDS
Timothy D. Webster, Concord, and Robert T. Wyld, Westford, both of Mass., assignors to Blodgett & Blodgett, P.C., Worcester, Mass.
Continuation of Ser. No. 376,874, Jul. 7, 1989, Pat. No. 5,395,296, which is a continuation of Ser. No. 270,393, Nov. 10, 1988, abandoned, which is a continuation of Ser. No. 796,287, Nov. 8, 1985, abandoned. This application Jan. 6, 1995, Ser. No. 369,795
Int. Cl.[6] A63B *21/04*
U.S. Cl. 482—129 **6 Claims**



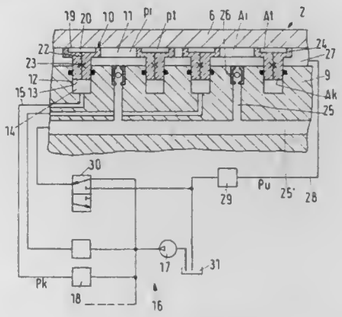
1. A stretching apparatus for a person, comprising:
a. a stationary framing having:
1) a first set of distinct, central focal connection points, formed on a rear central portion of the framing, and
2) a second set of distinct peripheral connection points formed on a front peripheral portion of the framing which is spaced horizontally from the rear central portion of the framing, the front peripheral portion of the framing being open to admit a person;
b. a flared array of smooth, rounded, tensioned cord sections, each cord section having a first end and a second end, each cord section being attached to one of the first set of central focal connection points by its first end and to one of the second set of peripheral connection points by its second end, the cord sections thus forming a flared array defining a concave space open to the front of the framing for manipulation by a person from the front and being responsive to yieldingly resist muscular exertion by a person when deflected in at least substantially any direction by the muscular exertion of a person.

5,823,926
CASTER ROLL CORE AND SHELL ASSEMBLY AND METHOD OF MANUFACTURING THE SAME
Warren C. Hartz, McKenzie, Tenn., assignor to Norandal USA, Inc., Brentwood, Tenn.
Division of Ser. No. 392,427, Feb. 22, 1995, Pat. No. 5,598,633. This application Jun. 28, 1996, Ser. No. 672,866
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—1 **26 Claims**



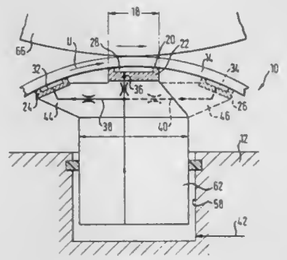
1. A roll for manufacturing metal sheets or foils comprising:
a core having a plurality of cooling channels;
a first metal overlay on the core; and
a second metal overlay on the first metal overlay, the second metal overlay having a hardness higher than the hardness of the first metal overlay, whereby the first metal overlay acts as a cushion to prevent cracking and separation of the second overlay from the core.

5,823,927
DEFLECTION CONTROLLABLE ROLLER FOR USE IN CALENDER
Rolf Van Haag, Kerken, Germany, assignor to Voith Sulzer Finishing GmbH, Krefeld, Germany
Filed Oct. 23, 1996, Ser. No. 736,355
Claims priority, application Germany, Nov. 2, 1995, 195 40 791.1
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—7 **4 Claims**



1. A deflection-controllable roller for use in a calender comprising:
a fixed bearing device;
a plurality of support elements being mounted on said bearing device;
a roller covering being supported on said bearing device by said plurality of support elements, said roller covering having an inner surface facing said bearing device;
wherein each of said plurality of support elements has a ring-shaped support surface facing said inner surface of said roller covering, at least one ring-shaped pocket being disposed in said support surface, each of said plurality of support elements has a pressure surface facing said bearing device to delimit a pressure chamber therebetween, said pressure chamber being in fluid communication with a pressure feed line, said pressure chamber is also in fluid communication, through a throttle, with said at least one pocket;
an interior chamber being enclosed by each of said plurality of support elements, each of said interior chambers being in fluid communication with a discharge line; and
a one-way check valve being disposed in each of said discharge lines, each of said check valves being selectively operative in one of an open position and a closed position, a discharge side of each of said check valves being selectively pressurized with one of an opening pressure that is less than a pressure within said respective internal chamber and a cut-off pressure that is greater than said pressure within said respective internal chamber.

5,823,928
ROLL
Christoph Link, Weingarten, and Franz Mayr, Bad Waldsee-Reute, both of Germany, assignors to Voith Sulzer Papiermaschinen GmbH, Heidenheim, Germany
Filed Jan. 8, 1997, Ser. No. 780,595
Claims priority, application Germany, Jan. 9, 1996, 196 00 576.0
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—7 **24 Claims**



1. A roll comprising a stationary carrier; a roll jacket rotatably journalled on the carriers; and at least one support element having an associated pressure piston by which the roll jacket is supported on the carrier in a region of a pressing zone defined between the roll jacket and a counter surface, the pressure piston being circular cylindrical and forming a fluid cushion between the support element and the roll jacket, with the support element having a pressing section facing the roll jacket, the pressing section lying in a region of the pressing zone being bounded in a circumferential direction of the roll jacket by outer edges which are substantially straight and extend parallel to a roll axis of the roll, a width of the pressing section measured between the outer edges being smaller than a maximum outer diameter of the circular cylindrical pressure piston.

5,823,929

RECONDITIONING PRIMARY CHARGE ROLLERS FOR ELECTROSTATOGRAPHIC IMAGING MACHINES

Vytas A. Kavolius, Charlottesville; Joseph E. White, Mt. Crawford, and Bradford G. Buttner, Charlotesville, all of Va., assignors to Genicom Corporation, Chantilly, Va.

Filed Dec. 20, 1996, Ser. No. 771,204
Int. Cl.[6] B25F *5/02*
U.S. Cl. 492—53 2 Claims

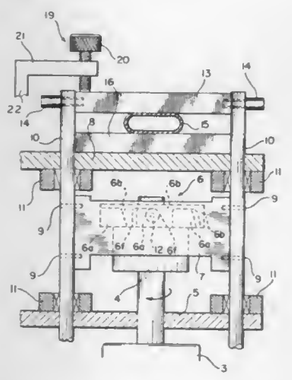
1. A reconditioned primary charge roller for an electrostatographic imager comprising an axle, an electrically conductive cylindrical foam roller surrounding said axle, and a coating on said foam roller formed of 100% solids of electrically conductive carbon black particles.

5,823,930

CAM CONTROLLED PULSATILE FLOW PUMP FOR NEONATAL AND BIVENTRICULAR CARDIAC SUPPORT SYSTEMS

Thomas M. Runge, P.O. Box 50045, Austin, Tex. 78763, and Fred O. Bohls, 2103 Meadowbrook, Austin, Tex. 78703

Filed Feb. 13, 1996, Ser. No. 600,686
Int. Cl.[6] A61M *1/10*
U.S. Cl. 600—16 8 Claims



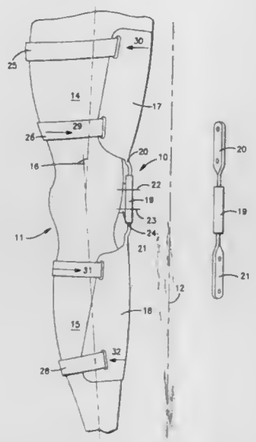
1. A cam controlled pulsatile flow pump comprising a motor having a rotary output shaft, a cylindrical cam, said cam being connected to said shaft, a selected cam profile provided on the peripheral surface of said cam, a roller follower engaging said cam profile, said roller follower being mounted on a cross-beam, opposite ends of said cross-beam being connected to a pair of spaced parallel vertically extending rods, a compression plate positioned between the upper end portions of said rods, means for detachably connecting the compression plate to the upper end portions of said rods, a fixed plate positioned below and spaced from the compression plate, at least one compressible conduit containing fluid extending between the fixed plate and compression plate and adapted to be engaged by the compression plate, whereby rotation of the cam causes the roller follower and associated cross-beam and vertically extending rods to impart vertical reciprocation to the compression plate, whereby fluid is pumped through the compressible conduit and an adjustable stop member positioned over the compression plate to thereby limit the upward movement of the compression plate, whereby the stroke volume of fluid in the conduit may be controlled.

5,823,931

KNEE BRACE

Robert Farrer Gilmour, Auckland, New Zealand, assignor to Bodyworks Healthcare Limited, Auckland, New Zealand

Filed Feb. 20, 1997, Ser. No. 802,916
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—24 16 Claims



1. A knee brace for a leg of a patient having a varus or valgus deformity, the knee brace comprising:

stiff upper and lower arms to fit against medial faces of the leg above and below a knee of the patient, respectively, said lower arm being fixedly twisted relative to said upper arm by an angle related to the varus or valgus deformity so as to limit tibial rotation; and

hinge means for longitudinally pivotably interconnecting said arms and for constraining said arms from pivoting relative to each other about a transverse axis.

5,823,932

APPARATUS AND METHOD FOR MODIFYING HUMAN BEHAVIOR BY TRIGGERING POSITIVE AND AVERSIVE POST-HYPNOTIC SUGGESTIONS

Robert B. Speigel, Mercer Island, Wash., assignor to ProGenesis Incorporated, Mercer Island, Wash.

Filed Dec. 16, 1996, Ser. No. 771,344
Int. Cl.[6] A61M *21/00*
U.S. Cl. 600—26 29 Claims

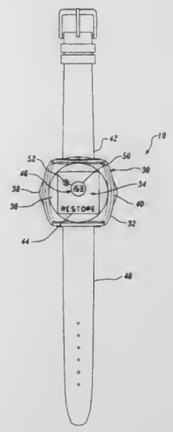
27. An apparatus for treating a behavioral problem of a subject who has undergone one or more hypnotherapy sessions to implant positive and/or aversive post-hypnotic suggestions which are to be elicited upon the occurrences of corresponding trigger events, the apparatus comprising:

(a) a first active signal generator for triggering one of a positive and an aversive post-hypnotic suggestion by generating a first active signal and presenting the first active signal to the subject;

(b) a second active signal generator for triggering the other of a positive and an aversive post-hypnotic suggestion by generating a second active signal and presenting the second active signal to the subject;

(c) a processor programmed to control the generation of the first active signal independently of the generation of the second active signal and the generation of the second active signal independently of the generation of the first active signal, the processor further programmed to automatically control the generation of an active signal for triggering a positive post-hypnotic suggestion a predetermined time period after generation of an active signal for triggering an aversive post-hypnotic suggestion; and

(d) a first manual control selectively activatable by the subject to generate the first active signal.

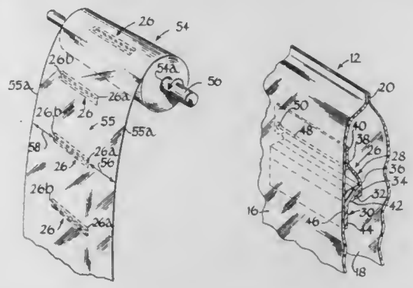


5,823,933

ZIPPERED FILM AND BAG

James W. Yeager, Mobile, Ala., assignor to Innoflex Incorporated, Mobile, Ala.

Division of Ser. No. 501,900, Aug. 9, 1995, abandoned. This application Mar. 20, 1997, Ser. No. 821,226
Int. Cl.[6] B65D *33/24;33/28*
U.S. Cl. 493—213 5 Claims



1. A method for making reclosable bags comprising:

connecting a plurality of reclosable fasteners each with two interlocking profile strips to a rectangular sheet of film having two parallel side edges and a top and a bottom edge, said reclosable fasteners being less than half the width of said rectangular sheet of film and spaced a single bag length apart, said reclosable fasteners being perpendicular to said two side edges, each profile strip of each reclosable fastener being maintained in interlocked position and being independently connected to the same side of said film, said film being maintained in a flat unfolded state,

overlapping said side edges of said film to form a tube to enclose said reclosable fasteners on the inside of said tube, said tube having a top edge and a bottom edge,

sealing said overlapped side edges of said film,

sealing said bottom edge of said tube, and

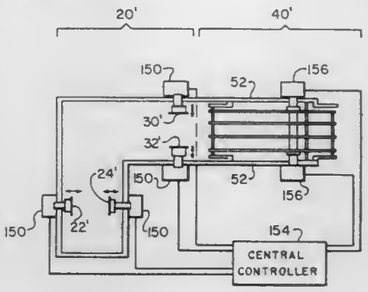
sealing said tube said single bag length from said bottom edge to form a top edge of said bag to enclose a single reclosable fastener.

5,823,934

AUTOMATIC TRIMMING MACHINE WITH SPLIT ROTARY KNIFE ASSEMBLY

Rock A. Ferrone, 1885 Main St., Pittsburgh, Pa. 15215

Continuation-in-part of Ser. No. 35,462, Mar. 23, 1993, Pat. No. 5,338,282. This application Oct. 20, 1995, Ser. No. 448,616
Int. Cl.[6] B41F *13/56*
U.S. Cl. 493—342 11 Claims



1. A trimming system for a web press comprising:

a paper perforation means for perforating a web of paper along a folding line;

a means for cutting said web of paper into individual paper sheets;

a paper folding means for folding the paper along the folding line forming a backbone along a first side of the folded paper;

a preliminary trimming unit for trimming the folded paper, said preliminary trimming unit including a plurality of knife means adapted to trim four sides of said folded paper, including said backbone; and

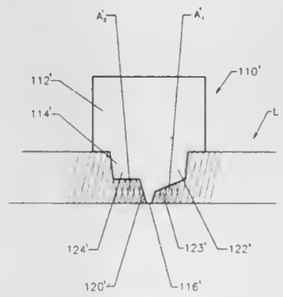
a finish trimming unit receiving the preliminarily trimmed paper from said preliminary trimming unit and adapted to cut the preliminarily trimmed paper into distinct products.

5,823,935

FIBER DENSIFICATION KNIFE

Michael K. Puhl, Victorville, Calif., assignor to Tetra Laval Holdings & Finance, S.A., Pully, Switzerland

Filed Feb. 7, 1997, Ser. No. 795,145
Int. Cl.[6] B31F *1/00*
U.S. Cl. 493—354 2 Claims



1. A cutting and compression knife for effecting a cut in an associated board-like fibrous material and for densifying an area adjacent to the cut, comprising:

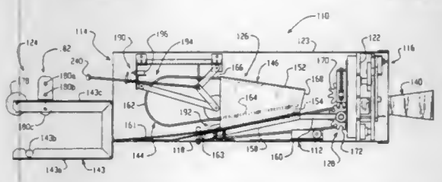
a main body portion;

a cutting edge in spaced relation to the main body portion;

first and second densifying members extending from respective opposing sides of the knife intermediate the main body portion and the cutting edge, the densifying members each having a compression surface configured to engage and compress

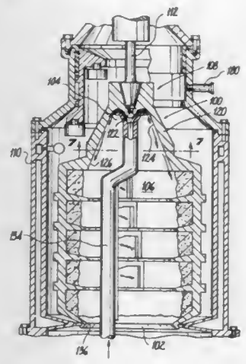
the area adjacent to the cut as the knife is urged and impressed into the board-like material and as the densifying members contact and compress the area therebeneath, respectively, each densifying member extending from the respective opposing sides of the knife at different distances from the cutting edge so as to effect different densification characteristics thereby.

5,823,936
LOADING ASSEMBLY AND METHOD FOR CUSHIONING CONVERSION MACHINE
Richard O. Ratzel, Westlake, Ohio, assignor to Ranpak Corp., Painesville, Ohio
Filed Feb. 8, 1996, Ser. No. 598,669
Int. Cl.[6] B65H *49/00;45/00*
U.S. Cl. 493—464 **16 Claims**



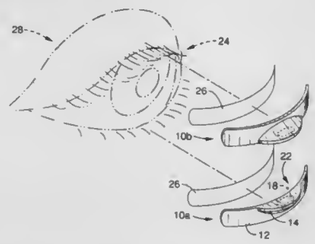
11. A method of converting a stock material into a cushioning product comprising the steps of:
inserting a leading end portion of the stock material into an upstream end of a cushioning conversion machine to a position adjacent an upstream end of a converging chute forming at least a part of a forming assembly;
using cooperating feed members located adjacent the upstream end of the converging chute to pull the stock material from a supply thereof and to push the stock material through the converging chute and out a downstream end thereof;
then disengaging at least one of the feed members with respect to stock material for normal operation of the machine; and
then operating the machine to produce a cushioning product.

5,823,937
LOW-SHEAR FEEDING SYSTEM FOR USE WITH CENTRIFUGES
Robert B. Carr, 194 Aspinwall Ave., Brookline, Mass. 02146
Continuation-in-part of Ser. No. 548,322, Nov. 1, 1995, Pat. No. 5,674,174. This application Jul. 9, 1996, Ser. No. 678,489
Int. Cl.[6] B04B *9/12;11/00;15/08*
U.S. Cl. 494—67 **1 Claim**



1. A centrifugal separator for separating the solids component of a feed liquid, comprising:
a cylindrical collection bowl being rotatable about a vertical axis, said cylindrical collection bowl having an open lower end and a closed upper end centered about said vertical axis;
an inverted feed cone located at said closed upper end of said cylindrical collection bowl, said feed cone including a conical wall opening into said cylindrical collection bowl and an annular channel located remote of said cylindrical collection bowl, said annular channel having a radially outward wall which merges with said conical wall and a radially inward wall which projects toward said cylindrical collection bowl, converging at said vertical axis and defining a generally cusp-shaped diverter; and
a feed tube located within said cylindrical collection bowl, said feed tube being adapted to introduce said feed liquid into said cylindrical collection bowl, said feed tube including an outlet which is shaped similar to said generally cusp-shaped diverter, said outlet located adjacent to and coaxial with said generally cusp-shaped diverter;
whereby said feed liquid introduced through said feed tube contacts said generally cusp-shaped diverter, moves along said annular channel, said radially outward wall and said conical wall and into said cylindrical collection bowl to be separated.

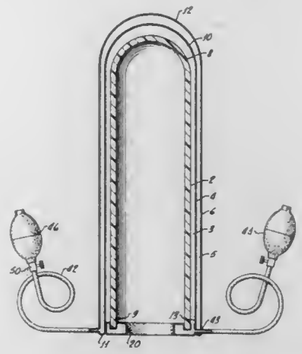
5,823,938
MAGNETIC EYELID OCCLUDING APPARATUS
Edward V. Hernandez, Elk Grove, Calif., assignor to The Regents Of The University Of Calfornia, Oakland, Calif.
Filed Mar. 27, 1997, Ser. No. 832,298
Int. Cl.[6] A61N *1/00*
U.S. Cl. 600—15 **17 Claims**



1. An apparatus attachable to the external skin surfaces of upper and lower eyelids for maintaining eyelids in a closed position, comprising:
(a) a first support member for attachment to the external skin surface of a first eyelid;
(b) a second support member for attachment to the external skin surface of a second eyelid opposing said first eyelid;
(c) a magnet carried by said first support member; and
(d) a magnetic material carried by said second support member.

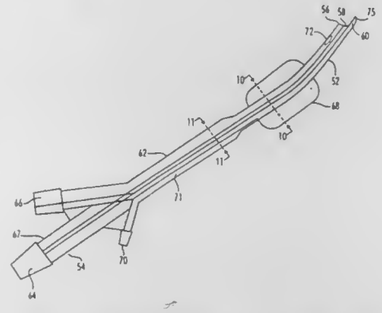
5,823,939
EXPANSIBLE PENILE PROSTHESIS
Odysseus Tsagarakis, P.O. Box 82 74 100, Rethymno, Crete, Greece
Continuation of Ser. No. 432,511, May 1, 1995, abandoned, Continuation-in-part of Ser. No. 26,824, Mar. 3, 1993, abandoned. This application Aug. 14, 1997, Ser. No. 911,562
Int. Cl.[6] A61F *5/00*
U.S. Cl. 600—38 **9 Claims**

1. An inflatable penile prosthesis comprising:
a generally cylindrical form having an open proximal end through which a penis is inserted and a closed distal end;
a first inflatable cylindrical fluid chamber extending around the form and being closed by a first elastic tube;



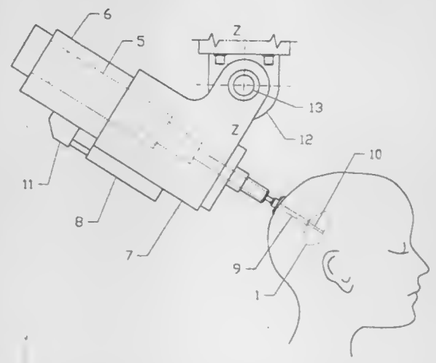
a second inflatable cylindrical fluid chamber disposed outward from said first elastic tube and being closed by a second elastic tube; and
inflation means attached to the first and second chambers for selectively inflating said first and second inflatable chambers.

5,823,940
OPTICAL SURGICAL DEVICE FOR EXAMINING GENITOURINARY TISSUE
Allen Newman, Santa Fe, Calif., assignor to Vista Medical Technologies, Inc., Carlsbad, Calif.
Continuation of Ser. No. 400,919, Mar. 8, 1995, Pat. No. 5,536,234, which is a continuation of Ser. No. 108,980, Aug. 18, 1993, abandoned. This application Mar. 7, 1996, Ser. No. 612,190
Int. Cl.[6] A61B *1/307;17/22*
U.S. Cl. 600—105 **12 Claims**



5. An optical surgical assemblage for examining tissue at an operative site within the genitourinary tract of a patient, comprising:
a. an endoscope removably inserted into one end of an endoscope channel integrally formed within a disposable sheath and extending between an open proximal end and an open distal end of the sheath, the distal end of the sheath defining a scraping tool for scraping tissue at the operative site, the proximal end of the endoscope defining a viewing port, the disposable sheath further including at least two additional channels integrally formed within the sheath and extending between the proximal and distal ends of the sheath, the at least two additional channels including an irrigation channel for directing fluid to the operative site and an inflation channel for coupling to an inflation source, the disposable sheath being semi-flexible and dimensioned for comfortable insertion into the genitourinary tract of a patient, the overall diameter of the distal end being in the range of about 3 mm to about 7 mm, and the distal half of the sheath being slightly curved for ease of insertion and viewing access within a patient;
b. an irrigation source coupled to the irrigation channel; and
c. an inflation device for inflating the operative site, said inflation device being substantially disposed about the periphery of the distal end of the sheath, and coupled to the inflation channel.

5,823,941
APPARATUS FOR DIRECTING THE MOVEMENT OF AN ENDOSCOPIC SURGICAL LASER ESPECIALLY FOR USE IN VAPORIZING BRAIN TUMORS
Jerome Shaunnessey, 910 Southbridge Dr., Aurora, Ill. 60506
Filed Oct. 23, 1995, Ser. No. 553,767
Int. Cl.[6] A61B *17/36*
U.S. Cl. 600—108 **11 Claims**



1. An apparatus for precisely positioning and rotating a beam of laser light comprising:
an endoscope including means to deliver laser light and deflect said laser light at an angle to a longitudinal axis of the endoscope, and;
an actuator tube, wherein said actuator tube has a longitudinal axis, and;
connection means for connecting one end of said actuator tube to a caudal end of said endoscope, wherein said longitudinal axis of said endoscope is coaxial with said longitudinal axis of said actuator tube, and;
a gear, suitably mounted on said actuator tube, said gear having its axis of rotation coaxial with said longitudinal axis of said actuator tube, and;
rotational means, for transmitting rotary motion to said gear suitably mounted on said actuator tube, and;
a laser beam producing means, for producing an elongated beam of laser light, wherein said elongated beam of laser light has a longitudinal optical axis coaxial with said longitudinal axis of said actuator tube, and;
a slidable connection means for slidably connecting said means for producing an elongated beam of laser light with one end of said actuator tube, and;
positioning means, for axially positioning said actuator tube along said longitudinal optical axis of said means for producing an elongated beam of laser light, and;
positioning means connection means, for connecting said positioning means to said actuator tube, wherein said positioning means connection means includes a means for allowing rotation of said actuator tube,
whereby, the deflected beam of laser light can be precisely positioned along the longitudinal optical axis of the elongated beam of laser light and precisely rotated about the longitudinal optical axis of the elongated beam of laser light.

5,823,942

ENDOSCOPE WITII SURFACE AND DEEP PORTION IMAGING SYSTEMS

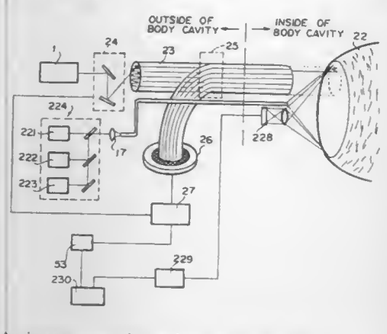
Masahiro Toida, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 487,639, Jun. 7, 1995, Pat. No. 5,716,324, which is a division of Ser. No. 111,772, Aug. 25, 1993, abandoned. This application Jul. 25, 1997, Ser. No. 898,011

Claims priority, application Japan, Aug. 25, 1992, HEI. 4-225428; Aug. 25, 1992, HEI. 4-225429; Aug. 28, 1992, HEI. 4-229794

Int. Cl.[6] A61B *1/04*

U.S. Cl. 600—160 **2 Claims**



1. An image composing endoscope comprising:

i) a deep portion image output system comprising:

a) a first flexible fiber bundle having an entry end, from which light is entered into the fiber bundle, and a radiating end, from which the light having been entered into the fiber bundle is radiated out and which is inserted into the region inside of a sample to be viewed,

b) a first light source for producing the light, which is to be entered into the first fiber bundle from the entry end, and

c) a deep portion image output means for irradiating the light, which has been radiated out of the radiating end of the first fiber bundle, to the region inside of the sample such that the light may reach portions deep from the inner surface of the sample in the region inside of the sample, and thereby generating a deep portion image signal representing a deep portion image of the region inside of the sample,

ii) a surface image output system comprising:

a) a second flexible fiber bundle having an entry end, from which light is entered into the fiber bundle, and a radiating end, from which the light having been entered into the fiber bundle is radiated out and which is inserted into the region inside of a sample to be viewed,

b) a second light source for producing the light, which is to be entered into the second fiber bundle from the entry end, and

c) a surface image output means for image of the region inside of the sample, and

iii) an image composing and displaying means for composing an image from the deep portion image, which is represented by the deep portion image signal obtained from the deep portion image output system, and the surface image, which is represented by the surface image signal obtained from the surface image output system, and displaying the composed image,

wherein the first light source of the deep portion image output system is a frequency-sweep single laser beam source capable of producing a laser beam to be entered intu the first fiber bundle from the entry end, the frequency of the laser beam being swept with the passage of time, and

the deep portion image output means of the deep portion image output system comprises:

1) a deep portion image signal forming means for causing the laser beam, which has been irradiated to the region inside of the sample and which has then been reflected from reflection planes of the sample, and the laser beam, which has been split from the laser beam before being reflected from the reflection planes of the sample and which has traveled by a predetermined optical path length, to interfere with each other, and thereby obtaining a plurality of difference-frequency beat signals such that the frequencies, at which the intensities of the difference-frequency beat signals repeatedly become high and low, may vary in accordance with the difference between depths of the reflection planes from the inner surface of the sample, and

2) a deep portion image signal output means for discriminating a difference-frequency beat signal, the intensity of which repeatedly becomes high and low at a predetermined frequency, from the plurality of the difference-frequency beat signals, and generating a deep portion image signal, which represents the form and/or structure of a portion located at a specific depth from the inner surface of the sample, from the optical intensity of the discriminated difference-frequency beat signal, the intensity of which repeatedly becomes high and low at the predetermined frequency,

wherein the first fiber bundle is a single mode image fiber bundle,

the deep portion image signal forming means comprises:

(1) a scanning means for causing the laser beam, which has been produced by the frequency-sweep single laser beam source, to impinge sequentially upon entry ends of a plurality of image fibers constituting the image fiber bundle,

(2) a fiber interference system located in an optical path of each image fiber in order to split the laser beam having been entered into the image fiber from its entry end into a laser beam, which travels by the predetermined optical path length, and a laser beam, which is radiated out of a radiating end of the image fiber, the fiber interference system thereafter causing the laser beam, which has traveled by the predetermined optical path length, and the laser beam, which has been reflected by the sample after being radiated out of the image fiber and which has then entered into the image fiber from the radiating end, to interfere with each other, and

(3) a two-dimensional optical intensity detecting means for detecting a plurality of difference-frequency beat signals obtained from the interference such that the frequencies, at which the intensities of the difference-frequency beat signals repeatedly become high and low, may vary, and

the deep portion image signal output means comprises:

(1) a frequency analyzing means for discriminating a difference-frequency beat signal, the intensity of which repeatedly becomes high and low at a predetermined frequency, from the plurality of the difference-frequency beat signals, and

(2) a reconstruction means for generating an image signal, which represents the form and/or structure of a portion located at a specific depth from the inner surface of the sample, from the discriminated difference-frequency beat signal, the intensity of which repeatedly becomes high and low at the predetermined frequency.

5,823,943

LIGHT SOURCE DEVICE FOR ENDOSCOPES

Makoto Tomioka, Hachioji; Akira Hasegawa, Akishima; Shinya Matsumoto, Machida, and Takayuki Suzuki, Hachioji, all of Japan, assignors to Olympus Optical Co., Ltd, Tokyo, Japan

Filed Aug. 1, 1995, Ser. No. 509,944

Claims priority, application Japan, Aug. 2, 1994, 6-181436; Oct. 6, 1994, 6-242684; Apr. 6, 1995, 7-081479

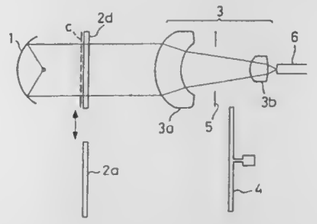
Int. Cl.[6] A61B *1/06*

U.S. Cl. 600—178 **10 Claims**

1. A light source device for endoscopes comprising:

a light source for emitting white light containing components of light belonging to a visible region and wavelength bands other than the visible region;

a condenser optical system constructed and arranged to concentrate light from said light source from a source side to an illumination side;



a light guide disposed on said illumination side of said condenser optical system so as to receive concentrated light;

a rotary color separating filter having a first position whereby said rotary color separating filter is disposed in an optical path of light from said light source and a second position whereby said rotary color separating filter is disposed out of said optical path of light from said light source;

at least one filter drive connected to said rotary color separating filter, displacement of said rotary color separating filter between said first position and said second position being executed by said at least one filter drive; and

an infrared cutoff filter for blocking light in an infrared region of wavelength bands of the white light;

wherein said light source device includes a first arrangement in which said rotary color separating filter is in said first position and the infrared cutoff filter comprises a first filter unit constructed to transmit light having wavelengths of at least 1100 nm, and a second arrangement in which said rotary color separating filter is in said second position and the infrared cutoff filter comprises a second filter unit constructed to remove substantially light having wavelengths of at least 1100 nm.

5,823,944

Patent Not Issued For This Number

5,823,945

ENDOSCOPIC INFLATABLE RETRACTION DEVICE WITH ADDITIONAL INFLATABLE CHAMBER

Frederic H. Moll; Charles Gresl, Jr., both of San Francisco; Albert K. Chin, Palo Alto, and Philip K. Hopper, Laverne, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation of Ser. No. 295,144, Aug. 24, 1994, Pat. No. 5,743,850, which is a continuation of Ser. No. 106,307, Aug. 13, 1993, abandoned, which is a division of Ser. No. 794,590, Nov. 19, 1991, Pat. No. 5,309,896, which is a continuation-in-part of Ser. No. 706,781, May 29, 1991, abandoned. This application Jun. 5, 1997, Ser. No. 869,552

Int. Cl.[6] A61B *17/02*

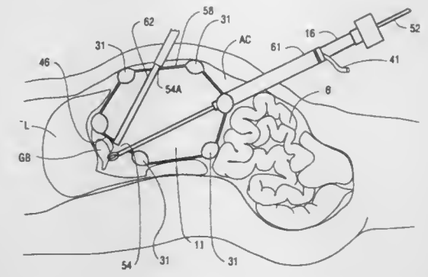
U.S. Cl. 600—204 **12 Claims**

1. An apparatus for retracting an organ inside the body to gain access to an adjacent tissue, the apparatus comprising:

a main chamber having a thin, flexible main envelope,

inflating means for selectively inflating the main chamber to an expanded condition while in place within the body, inflation of the main chamber retracting the organ to a retracted condition, and

an inflatable secondary chamber defining a cage so disposed relative to the main chamber as to maintain organs retracted by the main chamber in the expanded condition in the retracted condition independent of the main chamber, said secondary chamber having windows enabling access through the main and secondary chambers without disturbing the integrity of the secondary chamber.



5,823,946

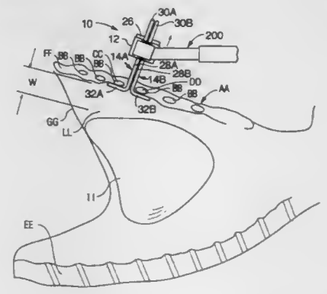
METHOD FOR CREATING A MEDIASTINAL WORKING SPACE

Albert K. Chin, Palo Alto, Calif., assignor to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation of Ser. No. 668,827, Jun. 24, 1996, Pat. No. 5,676,636, which is a continuation of Ser. No. 279,290, Jul. 22, 1994, abandoned. This application Jun. 5, 1997, Ser. No. 869,830

Int. Cl.[6] A61B *17/02*

U.S. Cl. 600—204 **11 Claims**



1. A method of elevating a rib cage having ribs and a sternum to create a working space beneath the sternum and rib cage without performing a sternotomy, said method comprising the steps of:

(a) providing a retractor device having a distal portion and a proximal portion;

(b) forming an endoscopic incision in tissue adjacent to the rib cage;

(c) passing the distal portion of the retractor device through the incision;

(d) engaging the rib cage with the retractor device;

(e) applying a lifting force to the proximal portion of the retractor device to lift the rib cage and the sternum, thus creating a mediastinal working space within the rib cage;

(f) introducing surgical instruments between a pair of the ribs which adjoin the sternum at one side of the sternum and into the mediastinal working space; and

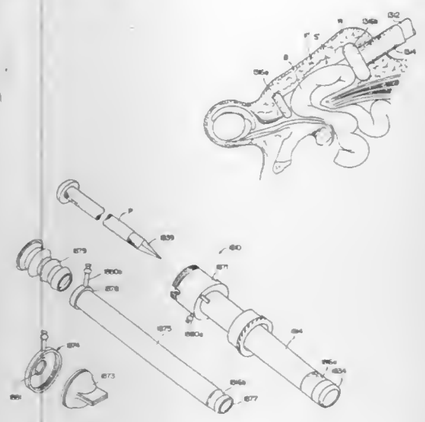
(g) performing a surgical procedure with the surgical instruments within the mediastinal working space while maintaining the lifting force for the duration of the surgery.

5,823,947

METHOD OF CREATING AN OPERATING SPACE ENDOSCOPICALLY AT AN OBSTRUCTED SITE

InBae Yoon; Suzanne J. Yoon, and Samuel C. Yoon, all of 2101 Highland Ridge Dr., Phoenix, Md. 21131

Division of Ser. No. 369,545, Jan. 6, 1995, which is a continuation-in-part of Ser. No. 596,937, Oct. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 222,776, Jul. 22, 1988, abandoned, said Ser. No. 369,545 is a continuation-in-part of Ser. No. 249,116, May 25, 1994, Pat. No. 5,514,091, which is a continuation-in-part of Ser. No. 596,937. This application Jun. 25, 1997, Ser. No. 882,158
Int. Cl.[6] A61B *17/00*
U.S. Cl. 600—207 10 Claims



1. A method of creating a space endoscopically at an obstructed anatomical site in a body including the steps of

penetrating anatomical tissue of the body with a distal end of a penetrating member disposed in a portal sleeve to position a first expandable member, carried by the portal sleeve and disposed in a non-expanded position, at the obstructed site;

moving a second expandable member distally from the portal sleeve, with the second expandable member disposed in a non-expandable position, to position the second expandable member at the obstructed site such that the second expandable member is distally spaced from the first expandable member;

introducing a distal end of an endoscope at the obstructed site;

moving the first and second expandable members from the non-expanded positions to expanded positions, respectively, to create a space at the obstructed site; and

visualizing the space with the endoscope from external of the body.

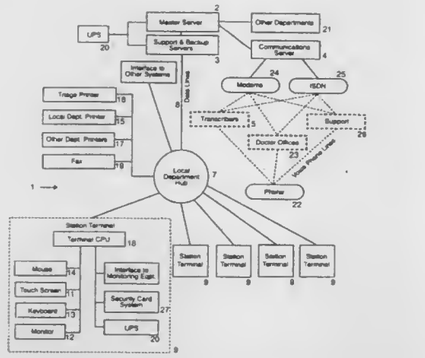
5,823,948

MEDICAL RECORDS, DOCUMENTATION, TRACKING AND ORDER ENTRY SYSTEM

James E. Ross, Jr., and William J. Lynch, both of San Antonio, Tex., assignors to RLIS, Inc., San Antonio, Tex.

Filed Jul. 8, 1996, Ser. No. 676,458
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—300 6 Claims

1. A medical records, documentation, tracking and order entry system, comprising at least one fault tolerant file server having at least one fault tolerant backup server, wherein the at least one file server has either standard hard drives or redundant array of independent drives, a software vendor, at least one communications server linked to the at least one file server for receiving incoming transcription and for remote reception of software, maintenance and system updates from the software vendor, a network having a hub and being connected to the file server, peripheral terminals



connected to the network in a star configuration with the hub, the peripheral terminals having individual central processing units (CPUs), the CPUs having hard disks, touch screens, monitor, keyboards and mouses connected to the CPUs; software provided in the at least one communication server, in the at least one file server, and in the peripheral CPUs for receiving patient data in the peripheral CPUs via the touch screens, mouses, and keyboards and for storing the patient data in the peripheral CPUs and the at least one file server; and a distributed dictation system having inputs adjacent the CPUs, a transcription system for receiving and converting dictation from the inputs into transcribed dictations and the transcription system being connected to the at least one communication server for transmitting the transcribed dictations to the at least one communications server and an electronic storage bin connected to the at least one communication server for placing the transcribed dictations in the electronic storage bin and for transferring the transcribed dictations to the at least one file server, the electronic storage bin storing the transcribed dictations as text associated with the patient data for particular patients, printers connected to the network for printing reports on individual patients and system management reports of system operations, doctor related activities, nursing related activities and patient statistics.

5,823,949

INTELLIGENT PROMPTING

Peter S. Goltra, 22717 Goltra La., Middleburg, Va. 22117

Continuation of Ser. No. 609,689, Mar. 1, 1996, abandoned. This application Aug. 11, 1997, Ser. No. 907,920
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—300 15 Claims

10. A device for intelligently prompting a user with a list of medical findings when the user is creating a medical protocol, comprising:

storage means for storing a list of possible diagnoses and a plurality of medical findings associated with each diagnosis, wherein each medical finding for each diagnosis has been assigned a numerical value;

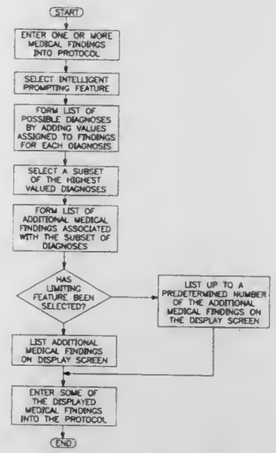
means for entering medical findings into said device and adding the entered medical findings to the medical protocol;

means for calculating a point total for each diagnosis based upon the medical findings which have been entered;

means for selecting at least one diagnosis from those having highest point totals; and

means for prompting a user on a display with additional findings which are associated with the selected at least one diagnosis and which have not yet been entered;

wherein after the user adds at least one of the additional medical findings to the medical protocol, the calculating means recalculates the point totals for each diagnosis based on all of the medical findings in the medical protocol, the selecting means selects at least one diagnosis from those having highest point totals, and the prompting means prompts the user with additional finding which are associated with the newly selected at least one diagnosis and which have not yet been entered.

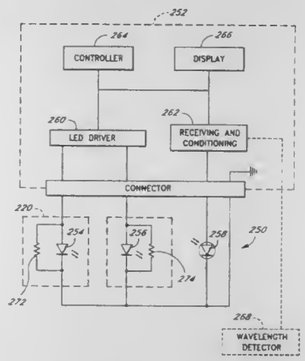


5,823,950

MANUAL AND AUTOMATIC PROBE CALIBRATION

Mohamed Kheir Diab, Mission Viejo; Esmaiel Kiani-Azarbayjany, Laguna Niguel; Charles Robert Ragsdale, Newport Beach, and James M. Lepper, Jr., Trabuco Canyon, all of Calif., assignors to Masimo Corporation, Irvine, Calif.

Division of Ser. No. 478,493, Jun. 7, 1995. This application Nov. 12, 1996, Ser. No. 745,474
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—310 12 Claims



1. A medical probe configured to transmit and detect light, said medical probe adapted to be positioned adjacent tissue material, said medical probe comprising:

at least one light emitting element, said light emitting element having an emission with a centroid transmission wavelength, said medical probe configured with said light emitting element such that when said medical probe is positioned adjacent said tissue material, at least a portion of said emission passes through said tissue material;

wavelength detection instrumentation comprising:

first and second photodetectors, said emission within the response of said first and second photodetectors;

a light directing member configured to direct light from said at least one light emitting element to said first and second photodetectors, said light directing member comprising an integrating optical sphere having said first and second photodetectors positioned about said sphere so as to receive substantially equivalent portions of light from said at least one light emitting element; and

a filter positioned between said second photodetector and said at least one light emitting element, said filter having a transition band selected to encompass said centroid transmission wavelength; and

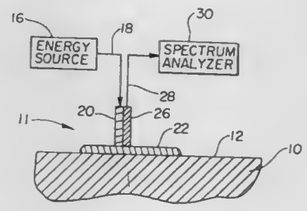
an interface adapted to couple the medical probe to a medical instrument.

5,823,951

METHOD FOR NON-INVASIVE BLOOD ANALYTE MEASUREMENT WITH IMPROVED OPTICAL INTERFACE

Robert G. Messerschmidt, Albuquerque, N. Mex., assignor to Rio Grande Medical Technologies, Inc., Albuquerque, N. Mex.

Continuation of Ser. No. 512,940, Aug. 9, 1995, Pat. No. 5,655,530. This application Apr. 18, 1997, Ser. No. 844,501
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—322 30 Claims



1. A method for non-invasive spectroscopic analysis of blood analytes in a tissue through a surface thereof, said method comprising the steps of:

(a) providing a means for irradiating said tissue with infrared energy;

(b) providing an output element, said output element operatively connected to a spectrum analyzer;

(c) providing a hydrophilic index-matching compound, said index-matching compound conforming to said surface of said tissue when applied thereto and having a refractive index closely matched to that of said tissue surface;

(d) disposing a quantity of said compound between said output element and said tissue surface to couple said output element to said tissue surface and said analytes in said tissue through said index-matching compound;

(e) irradiating said tissue with said infrared energy so that there is differential absorption of said infrared energy in said tissue; and,

(f) collecting infrared energy exiting said tissue through said output element as coupled to said tissue surface through said index-matching compound and quantifying said infrared energy with said spectrum analyzer.

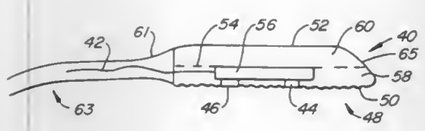
5,823,952

PULSE OXIMETER SENSOR WITH DIFFERENTIAL SLIP COEFFICIENT

Mitchell Levinson, Pleasanton; Paul Mannheimer, Danville; Steven L. Nierlich; Phillip S. Palmer, both of San Leandro, and Jessica Warring, Millbrae, all of Calif., assignors to Nellcor Incorporated, Pleasanton, Calif.

Filed Aug. 14, 1996, Ser. No. 696,129
U.S. Cl. 600—338 14 Claims

6. A perinatal sensor for application to a fetus, comprising:



a sensor body having a non-adhesive fetus engaging surface for engagement with said fetus and a maternal engaging surface of said sensor head opposite said fetus engaging surface, at least 50% of said fetus engaging surface being a higher friction surface than said maternal engaging surface; and

a sensor mounted in said sensor body.

5,823,953

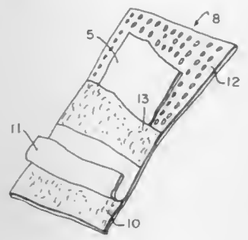
SECRETION ANALYSIS APPARATUS AND METHOD

Amy C. Roskin, 8110 Royal Palm Blvd. Ste. 108, Coral Springs, Fla. 33065, and Joanne M. Richards, Box 770041, Coral Springs, Fla. 33077

Filed Jun. 20, 1996, Ser. No. 667,078

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—367 **15 Claims**



4. A device for self-diagnostic use for distinguishing between a yeast infection causing vaginal secretions and other secretion causing conditions, the device comprising:

a structure having an outer layer and an inner layer;

a pH indicating material at or adjacent said outer layer for indicating by color the pH at least in the range of about pH 3.5–5.5 of liquids wetting the material; and

means for mounting the structure external to the body to receive thereon, and be wetted by, secretions that have drained from the vagina, whereby a color indication of pH of less than about 4.5 is indicative of a yeast infection, and so positioned that the inner layer is substantially occluded from atmospheric vaporization, such as by a wearer's thighs and by a seat when the wearer is seated or a plastic barrier film, so that there is insubstantial loss of water and volatiles from the secretions that would alter indicated pH.

5,823,954

SINGLE-USE DEVICE FOR DETECTING OR ANALYZING A BODY FLUID

Bernard Chaffringeon, 10 avenue du Léman, 1025 Saint-Sulpice, Switzerland

PCT No. PCT/FR95/01224, § 371 Date Mar. 11, 1997, § 102(e) Date Mar. 11, 1997, PCT Pub. No. WO96/09545, PCT Pub. Date Mar. 28, 1996

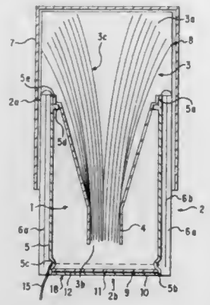
PCT Filed Sep. 22, 1995, Ser. No. 793,868

Claims priority, application France, Sep. 22, 1994, 94 11547; Nov. 21, 1994, 94 14249

Int. Cl.[6] A61B *10/00*

U.S. Cl. 600—367 **19 Claims**

1. A disposable device for analysis or detection of a component, or of a biological or biochemical state, of a body fluid present in an elongate intracorporeal cavity, said device comprising:



an elongate sampling element, adapted to be fitted and held by simple constriction of the intracorporeal cavity, said elongate sampling element being inherently and sufficiently stiff or rigid along its length for it to be pushed via one end and introduced via the other end into the intracorporeal cavity;

means for removing a sample of body fluid which are distributed or arranged outside the elongate element;

a cap having a side wall complementary to the elongate element, and separable from the elongate element; and

reaction means distributed or arranged on the side wall of said cap for reacting, in a manner perceptible or visible to the user, with at least one component of the body fluid, or in the presence of a biological or biochemical state of said fluid, and wherein the sampling means of the elongate element and the reaction means of the cap come into contact during or after insertion of the elongate element into the cap.

5,823,955

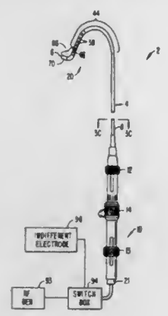
ATRIOVENTRICULAR VALVE TISSUE ABLATION CATHETER AND METHOD

Karl Heinz Kuck, Hamburg, Germany, and Frank Nguyen, San Jose, Calif., assignors to Medtronic CardioRhythm, San Jose, Calif.

Filed Nov. 20, 1995, Ser. No. 559,672

Int. Cl.[6] A61B *5/04; A61N 1/36*

U.S. Cl. 600—374 **50 Claims**



1. An ablation catheter comprising:

a shaft having proximal and distal ends with a deflectable tip at the distal end;

said tip including a curvable distal segment and a curvable proximal segment;

at least one ablation-capable electrode positioned along the deflectable tip;

a handle at the proximal end of the shaft;

an ablation energy conductor extending along the shaft between said ablation-capable electrode and the handle; and

an actuation mechanism extending distally within the shaft to the deflectable tip, the actuation mechanism adapted to curve the proximal segment in a first direction and to curve the distal segment in a second direction independently of the proximal segment, the proximal and distal segments extending along first and second lengths.

5,823,956

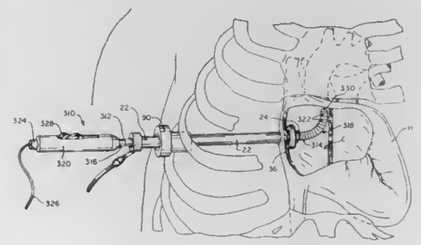
METHOD AND APPARATUS FOR THORACOSCOPIC INTRACARDIAC PROCEDURES

Alex T. Roth, Redwood City, and Hanson S. Gifford, Woodside, both of Calif., assignors to Heartport, Inc., Redwood City, Calif.

Division of Ser. No. 425,179, Apr. 20, 1995, which is a continuation-in-part of Ser. No. 163,241, Dec. 6, 1993, Pat. No. 5,571,215, which is a continuation-in-part of Ser. No. 23,778, Feb. 22, 1993, Pat. No. 5,452,733. This application May 7, 1996, Ser. No. 646,210

Int. Cl.[6] A61B *5/04;17/39;* **A61N** *1/05*

U.S. Cl. 600—374 **16 Claims**



1. A thoracoscopic electrophysiology device for introduction into an interior chamber of a patient's heart by passing through an intercostal space defined between the patient's ribs and through an opening in a muscular wall of the patient's heart, the device comprising:

a substantially rigid shaft having a distal end and a proximal end, the shaft being dimensioned and configured for introduction through an intercostal space defined between a patient's ribs and through an opening in a muscular wall of the patient's heart;

a flexible tip mounted to the distal end of the shaft;

a handle mounted to the proximal end of the shaft;

a movable actuator on the handle;

a linkage coupled to the actuator, extending through the shaft and coupled to the flexible tip, wherein moving the actuator deflects the flexible tip;

at least one electrode mounted to the flexible tip;

an electrical connector mounted to the handle configured for connection to a radiofrequency generator or an electrocardiogram machine; and

electrical coupling means extending through the shaft for connecting the electrode to the electrical connector.

5,823,957

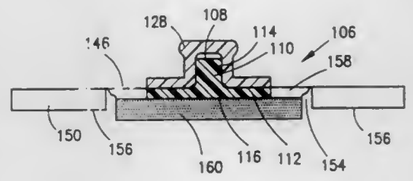
D.C. BIOPOTENTIAL SENSING ELECTRODE AND ELECTROCONDUCTIVE MEDIUM FOR USE THEREIN

Mark L. Faupel, Conyers; Burke T. Barrett, Roswell; John D. Stephens, and Seth D. Nathanson, both of Alpharetta, all of Ga., assignors to Biofield Corp, Roswell, Ga.

Continuation-in-part of Ser. No. 325,085, Oct. 17, 1994, Pat. No. 5,660,177. This application Jul. 27, 1995, Ser. No. 508,206

Int. Cl.[6] A61B *5/0408*

U.S. Cl. 600—397 **38 Claims**



1. A preassembled biopotential sensing electrode for contact with a skin surface of a human or animal subject and suitable for sensing DC biopotentials which includes an electrode sensing element, an element terminal connected to said electrode sensing element to conduct an electrical potential therefrom,

said electrode sensing element being formed from a nonmetallic, electrically conductive material forming a first electrode electrically conductive path, said nonmetallic electrically conductive material being entirely coated with a uniform external coating of an electrically conductive metal, said electrically conductive metal coating forming a second electrode electrically conductive path,

said electrode terminal being formed from a nonmetallic, electrically conductive material forming a first terminal electrically conductive path, said nonmetallic electrically conductive material forming said terminal being entirely coated with a uniform external coating of the same conductive metal which coats said electrode sensing element to form a second terminal electrically conductive path, said electrode terminal being connected to said electrode sensing element to conduct an electrical potential therefrom, the conductive metal coating for both said electrode sensing element and said electrode terminal being of a thickness within a range of from 0.5 to 1.5 mil, and

and an electroconductive medium for contact with the skin of a subject contacting said electrode sensing element for relaying a biopotential from the skin of a subject to said electrode sensing element,

said electroconductive medium having a chloride content within a range of from 6 to 15 g chloride ion per 100 g of electroconductive medium.

5,823,958

SYSTEM AND METHOD FOR DISPLAYING A STRUCTURAL DATA IMAGE IN REAL-TIME CORRELATION WITH MOVEABLE BODY

Michael Truppe, 5 Triad Center, Suite 580, Salt Lake City, Utah 84180

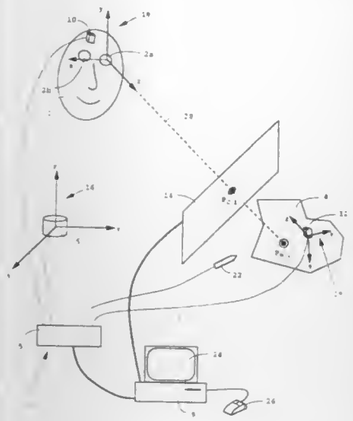
Continuation-in-part of Ser. No. 213,188, Mar. 15, 1994, Pat. No. 5,678,546, which is a continuation of Ser. No. 792,892, Nov. 15, 1991, abandoned. This application Jun. 15, 1994, Ser. No. 259,986

Claims priority, application Austria, Nov. 26, 1990, A2397/90; Nov. 26, 1990, A2398/90

Int. Cl.[6] A61G *5/05*

U.S. Cl. 600—426 **3 Claims**

1. The method of claim 1 wherein matching comprises display-



ing the data representation on a transparent display device positioned between a structural image of the body and the observer.

5,823,959

MR METHOD FOR DETERMINING THE MAGNETIC FIELD INHOMOGENEITY IN AN EXAMINATION ZONE, AND MR APPARATUS FOR CARRYING OUT THE METHOD

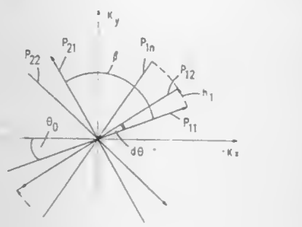
Volker Rasche, Hamburg, Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 5, 1997, Ser. No. 795,489

Claims priority, application Germany, Feb. 8, 1996, 196 04 519.3

Int. Cl.[6] A61B *5/055*

U.S. Cl. 600—410 **9 Claims**



6. An MR device comprising:

a magnet for generating a homogeneous, steady magnetic field in an examination zone,

a gradient coil system for generating a magnetic gradient field in the examination zone whose gradient can be varied in respect of magnitude and/or direction,

at least one RF coil system for transmitting RF pulses into and for receiving MR echo signals from the examination zone,

means for generating MR images from the MR echo signals and for deriving a frequency map from two MR images acquired with different echo times,

a programmable control unit for controlling said means and the coil systems, wherein the control unit can be programmed in such a manner that:

a) nuclear magnetization in the examination zone is excited by at least one respective RF pulse in a plurality of sequences,

b) after each excitation of the nuclear magnetization at least two MR echo signals are acquired along paths in the k-space which reach or emanate from the zero point of the k-space,

c) MR echo signals which reach or emanate from the zero point of the k-space in different directions in different sequences and have been acquired at the same temporal distance from the excitation of the nuclear magnetization are combined so as to form groups, each group being of MR echo signals acquired at a different temporal distance from the excitation of nuclear magnetization,

d) a plurality of MR images are reconstructed from the MR echo signals of respective different individual groups, and

e) the frequency map is derived from at least two of the plurality of MR images.

5,823,960

IMAGING SYSTEMS

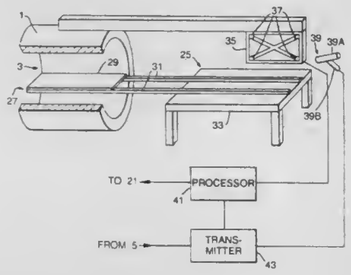
Ian Robert Young, Nr. Marlborough, England, and James Michael McNally, Geauga County, Ohio, assignors to Picker International, Inc., Cleveland, Ohio

Filed Jul. 26, 1996, Ser. No. 688,038

Claims priority, application United Kingdom, Jul. 27, 1995, 9515446

Int. Cl.[6] G61B *5/055*

U.S. Cl. 600—415 **28 Claims**



1. An imaging system comprising:

an imaging apparatus for obtaining an image of an internal part of an object placed in an examination region of the imaging apparatus;

an object support adapted to support the object and movable between first and second positions, whereby the object is positioned in the examination region when the support is in the first position and in a treatment position when the object support is in the second position;

a reference frame which carries a radiation sensing arrangement and which is fixed with respect to the second position;

a tool which is required to be accurately positioned with respect to an internal region of the object when the object is in the treatment position;

a radiation emitting arrangement associated with the tool which emits radiation for detection by the sensing arrangement to produce signals indicative of the position of the tool with respect to the reference frame; and

display means for displaying said image of the object and utilizing said signals produced by said sensing arrangement to provide a representation of said tool in said display at a position and orientation with respect to said image of the object corresponding to the position and orientation of the tool with respect to the actual object, said reference frame and said second position being fixed in position with respect to said examination region.

5,823,961

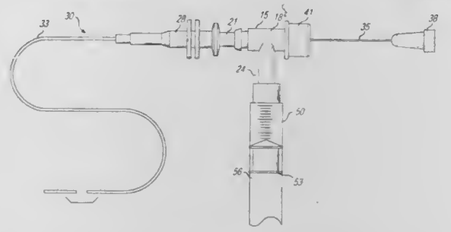
CATHETER GUIDEWIRE AND FLUSHING APPARATUS AND METHOD OF INSERTION

Charles Bruce Fields, Pittsburg, and Gretchen Keser Marchesani, San Jose, both of Calif., assignors to HDC Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 327,582, Oct. 24, 1994, abandoned, which is a continuation of Ser. No. 61,481, May 12, 1993, Pat. No. 5,357,961. This application Jun. 5, 1996, Ser. No. 665,033

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—434 **17 Claims**



1. A catheter assembly comprising:

a connector, said connector comprising an insertion port and a outlet port, said insertion port collinear with said outlet port;

a septum covering said insertion port;

a catheter fastened to said outlet port, said catheter comprising a lumen having a plurality of rails extending from a proximal end to a distal end of said catheter wherein said plurality of rails have a substantially triangular cross-section;

a guidewire having an irregular surface, said guidewire slidably disposed through said septum and extending through said insertion port and said outlet port so that said guidewire enters said peripherally inserted central catheter, thereby stiffening said peripherally inserted central catheter for venous introduction; and

means for flushing said peripherally inserted central catheter with a flushing solution, said flushing solution making said hydrophilic coating on said guidewire slippery, thereby allowing said guidewire to be removed from said peripherally inserted central catheter after venous introduction.

5,823,962

ULTRASOUND TRANSDUCER FOR DIAGNOSTIC AND THERAPEUTIC USE

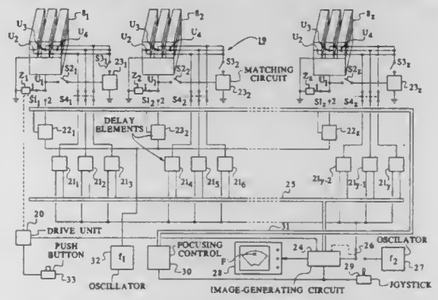
Ulrich Schaetzle, Roettenbach, Germany; Todor Sheljaskov, Linz, Austria, and Reinhard Lerch, Heroldsberg, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Sep. 2, 1997, Ser. No. 921,827

Claims priority, application Germany, Sep. 2, 1996, 196 35 593.1

Int. Cl.[6] A61B *17/22*

U.S. Cl. 600—439 **20 Claims**



1. An ultrasound transducer arrangement for diagnostic and therapeutic use for selectively generating ultrasound waves of different wavelengths respectively in a diagnostics mode and in a therapy mode, comprising:

an ultrasound transducer structure which emits ultrasound at different wavelengths in a diagnostics mode and in a therapy mode, the wavelength of the ultrasound in the diagnostics mode being shorter than the wavelength of the ultrasound in the therapy mode;

an $n\times\lambda/4$ matching layer adjoining said ultrasound transducer structure for matching said transducer structure to a propagation medium, n being an odd number and λ being the wavelength of the ultrasound emitted by said ultrasound transducer structure;

said ultrasound transducer structure comprising a piezoelectric ultrasound transducer element, a first electrode for said piezoelectric ultrasound element disposed between said matching layer and said piezoelectric ultrasound transducer element, a second electrode for said piezoelectric ultrasound transducer element disposed at a side of said piezoelectric ultrasound transducer element opposite said matching layer, and a third electrode dividing said piezoelectric ultrasound transducer element into a first region disposed at a first side of said third electrode, between said matching layer and said third electrode, and into second region disposed at a second, opposite side of said third electrode, said third electrode comprising a common ground contact for said first and second regions; and

control means connected to said first, second and third electrodes for applying respectively different electrical control signals across said first and second regions respectively in a diagnostics mode and in a therapy mode, said matching layer comprising means for matching the respective wavelengths of the ultrasound in the diagnostics mode and in the therapy mode.

5,823,963

METHOD AND APPARATUS FOR STEREOSCOPIC ULTRASONIC IMAGING

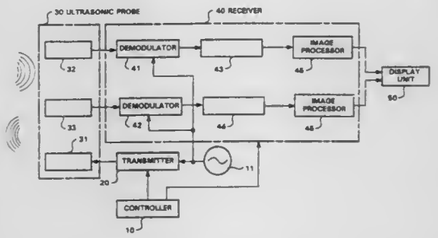
Yasuhito Takeuchi, Tokyo, Japan, assignor to GE Yokogawa Medical Systems, Limited, Tokyo, Japan

Filed Feb. 21, 1997, Ser. No. 804,440

Claims priority, application Japan, Apr. 4, 1996, 8-082467

Int. Cl.[6] A61B *8/00*

U.S. Cl. 600—443 **5 Claims**



1. A stereoscopic ultrasonic imaging method comprising the steps of:

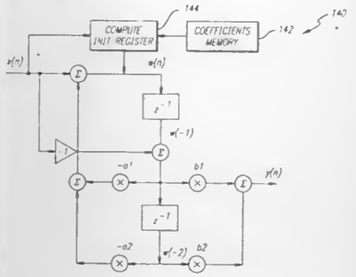
applying an ultrasonic beam from at least one ultrasonic transmitting element to a three dimensional surface;

receiving in at least a pair of ultrasonic receiving elements separated from each other by a basic line length a pair of reflected ultrasonic beams and scattered light reflected by said three dimensional surface;

processing the reflected ultrasonic beams and scattered light received by the at least pair of ultrasonic receiving elements so as to form a pair of orthoscopic images having a predetermined parallax therebetween; and

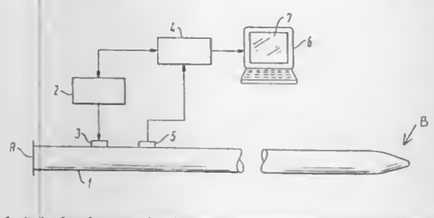
displaying the pair of orthoscopic images obtained by the processing in a stereoscopic manner so that a three dimensional image of the three dimensional surface is formed at high speed and without requirement of high volume calculations.

5,823,964
ULTRASOUND DOPPLER WALL FILTER
Dong-Chyuan Liu, Mercer Island, Wash., and Ja-Il Koo, Phoenix, Ariz., assignors to Siemens Medical Systems, Inc., Iselin, N.J.
Filed Dec. 30, 1996, Ser. No. 777,496
Int. Cl.[6] A61B *8/06*
U.S. Cl. 600—454 **6 Claims**



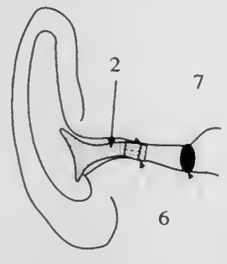
1. A method of producing a Doppler ultrasound image with reduced artifacts caused by moving artery or muscle walls, comprising:
receiving a set of digitized ultrasound echo data;
analyzing a sequence of m samples of the digitized ultrasound echo data to initialize a second order infinite impulse response digital filter of the type having a number of feedback coefficients that are related to the poles of the filter, wherein the number m is selected as being greater than a ratio of ln y/ln α, where y is a constant selected between 0 and 1, and α is a largest feedback coefficient of the filter;
applying the set of digitized ultrasound echo data to the initialized digital filter;
computing one or more spectra from the filtered ultrasound data; and displaying the one or more spectra as the Doppler ultrasound image.

5,823,965
DEVICE FOR REFLECTOMETRIC EXAMINATION AND MEASUREMENT OF CAVITIES
Steen Barbrand Rasmussen, Lynge, Denmark, assignor to RhinoMetrics A/S, Denmark
PCT No. PCT/DK95/00454, § 371 Date May 14, 1997, § 102(e) Date May 14, 1997, PCT Pub. No. WO96/14797, PCT Pub. Date May 23, 1996
PCT Filed Nov. 14, 1995, Ser. No. 836,457
Claims priority, application Denmark, Nov. 15, 1994, 1304/94
Int. Cl.[6] A61B *8/00*
U.S. Cl. 600—462 **26 Claims**



1. A device for examination and measurement of constrictions or passages in a cavity by means of acoustic reflectometry, comprising:
(a) an electric signal source;
(b) a hose having a closed distal end to be introduced through an entrance to the cavity, and a proximal end;
(c) a first transducer for converting an activation signal from said electric signal source into an acoustic excitation signal and supplying said excitation signal to and through said hose;
(d) a second transducer for reception of acoustic response signals generated in response to said excitation signal and propagated through said hose, said first and second transducers being connected with said hose close to said proximal end; and
(e) a signal analysis processor being connected with said first and second transducer for analysis of said response signals in relation to said excitation signal so as to determine the internal cross-sectional shape of said hose;
said hose having an outer wall of a soft or elastomeric material, at least in a measuring zone of said hose, and said measuring zone being movable so as to change its cross-sectional shape in response to said constrictions or passages of said cavity to be examined and measured.

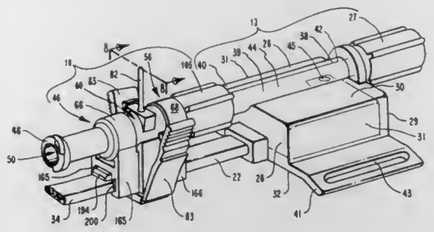
5,823,966
NON-INVASIVE CONTINUOUS BLOOD GLUCOSE MONITORING
Janusz Michal Buchert, 180 Cabrini Blvd., #79, New York, N.Y. 10033
Filed May 20, 1997, Ser. No. 859,579
Int. Cl.[6] A61B *6/00*
U.S. Cl. 600—473 **9 Claims**



3. An instrument for determining continuously a human body tissue analyte concentration by non-invasive measurement of emission spectral lines characteristic to a body tissue analyte in an infrared spectral region emitted naturally by a human body as heat, comprising:
a. a means for detecting continuously said emission spectral lines at a predetermined infrared wavelength;
b. a means for detecting continuously a spectral intensity of the emission spectral lines;
c. a means for correlating the intensity of emission spectral lines with the tissue analyte concentration.

5,823,967
FLUSH VALVE WITH CABLE ATTACHMENT
Gregory R. McArthur, Sandy, Utah, assignor to Merit Medical Systems, Inc., South Jordan, Utah
Filed Nov. 4, 1996, Ser. No. 743,636
U.S. Cl. 600—486 **33 Claims**

1. A flush valve apparatus having an electrical housing, an electrical cable projecting from the electrical housing, and a fluid transport tube mounted on the electrical housing above and in axial alignment with the electrical cable, the flush valve apparatus comprising:
(a) fluid delivery means for dispensing a fluid at a desired flow rate, the fluid delivery means having a proximal end, a distal end, an interior surface defining a primary fluid flow path extending therebetween, and means for coupling the distal

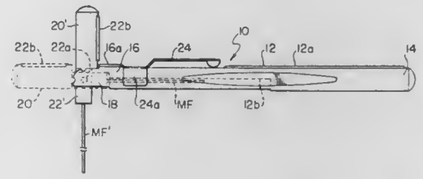


end of the fluid delivery means in fluid communication with a proximal end of the transport tube; and
(b) securing means, connected to the fluid delivery means and configured to engage a portion of the electrical cable when the distal end of the fluid delivery means is coupled to the proximal end of the transport tube, for maintaining the electrical cable in axial alignment with the transport tube and the fluid delivery means.

5,823,968

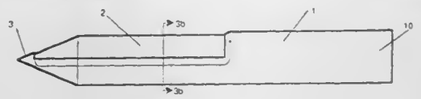
Patent Not Issued For This Number

5,823,969
TACTILE SENSORY TESTING INSTRUMENT
George M. Christy, 2108 Raven Rd., Pleasanton, Calif. 94566
Filed Jun. 27, 1996, Ser. No. 671,181
Int. Cl.[6] A61B *19/00*
U.S. Cl. 600—557 **5 Claims**



1. A hand held instrument for use by a health care examiner in test evaluation of the threshold of cutaneous sensory perception of a body surface of a human patient comprised of:
a) an instrument handle having a forward end and a rearward end, said handle provided with an elongated channel along its lower surface;
b) a pivot head member having a forward end and a rearward end, said head member being rotatably affixed proximate its rearward end to the forward end of said handle for rotational positioning of said head member alternatively between a test evaluation position and a non-test position; and
c) a monofilament element of selected standard length and bending force rating affixed to and projecting from the rearward end of said pivot head member for application to a body surface area of a patient for evaluating the sensory perception thereof,
said pivot head member and the forward end of said instrument handle having cooperative means for positioning said head member with its projecting monofilament in said test evaluation position whereby said monofilament element extends downwardly from said handle at an angle of about 90 degrees therefrom and for alternatively positioning said head member with its projecting monofilament in said non-test position with said monofilament element extending in a filament protected position along the length of said handle within said elongated channel.

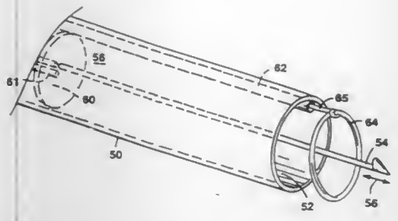
5,823,970
BIOPSY NEEDLE SET
Richard A. Terwilliger, Estes Park, Colo., assignor to Medical Device Technologies, Inc., Gainesville, Fla.
Filed Mar. 22, 1996, Ser. No. 619,389
Int. Cl.[6] A67B *10/00*
U.S. Cl. 600—564 **13 Claims**



1. A biopsy needle set comprising:
an outer cannula;
an inner cannula;
said outer cannula having an outer distal end with an outer opening;
said inner cannula having an inner distal end with an inner opening;
said inner cannula rotatably mounted inside said outer cannula;
said needle set having an open position wherein said inner opening is located adjacent said outer opening, and a closed position wherein said outer cannula covers the inner opening;
said outer cannula has a first longitudinal axis;
said inner cannula has a second longitudinal axis;
said inner cannula is rotatably mounted about the second longitudinal axis;
said outer cannula has an outer distal pointed tip;
said inner cannula has an inner distal pointed tip which mates inside of the outer distal pointed tip and is held in place inside the outer distal pointed tip in order to allow the inner cannula and the outer cannula to rotate relative to each other;
said outer opening of said outer cannula has a first cutting edge thereon;
said inner opening of said inner cannula has a second cutting edge thereon;
wherein said first cutting edge is provided down to approximately the first longitudinal axis at the outer distal pointed tip of the outer cannula and said second cutting edge is provided down to approximately the second longitudinal axis at the inner distal pointed tip of the inner cannula so that with the needle set in said open position, the inner distal pointed tip nests inside of the outer distal pointed tip; and
wherein the first and second cutting edge are without serrations in order to facilitate the slicing off of tissue as the needle set is urged past tissue along a direction co-linear with the first and second longitudinal axis.

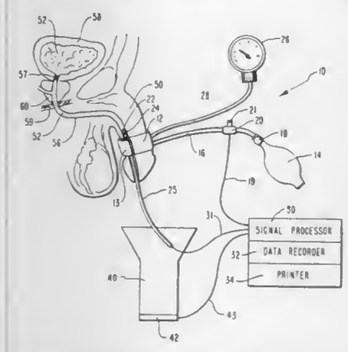
5,823,971
MULTIPLE BIOPSY SAMPLING CORING DEVICE
Donald E. Robinson, Hopkinton, Mass., and Michael S. Banik, Cincinnati, Ohio, assignors to Boston Scientific Corporation, Del.
Continuation of Ser. No. 146,447, Oct. 29, 1993, Pat. No. 5,573,008. This application Nov. 12, 1996, Ser. No. 747,591
Int. Cl.[6] A61B *10/00*
U.S. Cl. 600—567 **13 Claims**

1. A device for collecting a sample of tissue from a tissue surface, comprising:
a device body having a central axis and defining a forward facing tissue receiving opening coaxial with said central axis through which tissue may pass when said opening is near said tissue surface,
a severing element forming a severing element tissue opening coaxial with said central axis, said severing element being actuable across said tissue receiving opening when tissue from said surface extends through said tissue receiving opening and said severing element tissue opening for severing said tissue from said surface, and



a storage space proximal of and adjacent said tissue receiving opening for storage of multiple tissue samples by repeatedly passing tissue through said tissue receiving opening and actuating said severing element.

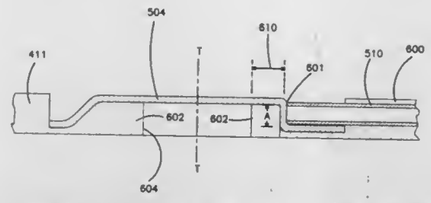
5,823,972
PRESSURE TRANSDUCER BLADDER PRESSURE AND URINARY FLOW MEASUREMENT APPARATUS AND METHOD
Lorin P. McRae, P.O. Box 309, Oracle, Ariz. 85623
Filed Jun. 6, 1996, Ser. No. 656,944
Int. Cl.[6] A61M *1/00*
U.S. Cl. 600—573 **19 Claims**



1. An apparatus for use in determining the urological condition of a male patient comprising:
a pressure cuff mountable to a penis and operable to receive pressure, said pressure causing said pressure cuff to constrict the penis to selectively control flow of urine through the urethra in the penis;
pressure sensing means for sensing urine pressure in the urethra;
pressure release means for selectively releasing said pressure in said pressure cuff;
urine collection means for collecting urine discharged from the penis;
sensing means for sensing the rate and volume of urine collected in said urine collection means; and
recording means for recording said urine pressure from said pressure sensing means and said rate and said volume of urine collected as sensed by said sensing means.

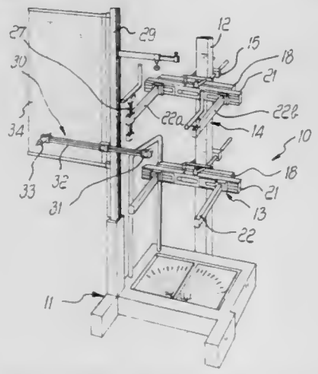
5,823,973
NEEDLE ASSEMBLY FOR FLUID SAMPLER
Joel R. Racchini, Edina, and Larry A. Walter, Minneapolis, both of Minn., assignors to InTeg, Inc., St. Paul, Mich.
Filed Sep. 6, 1996, Ser. No. 708,923
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—573 **7 Claims**

1. A membrane and needle assembly for testing constituents of body fluid while avoiding contamination of testing from undesirable elements of said fluid, said assembly comprising:



a membrane for receiving a body fluid to be tested, said membrane having a generally planar test area for infrared testing of constituents deposited in said area with a sample of said fluid, said membrane further including a transfer area disposed spaced from said test area and in fluid flow connecting with said test area for fluid to flow through said membrane from said transfer area to said test area;
a needle for penetration into a skin layer of a patient and drawing fluid along said needle, said needle having a discharge end with fluid flowing out of said discharge end along a line of travel;
said needle disposed relative to said transfer area with an opening of the needle at the discharge end being substantially parallel to and in close proximity to said transfer area with fluid flowing out of said needle along said line of travel generally perpendicular to said transfer area.

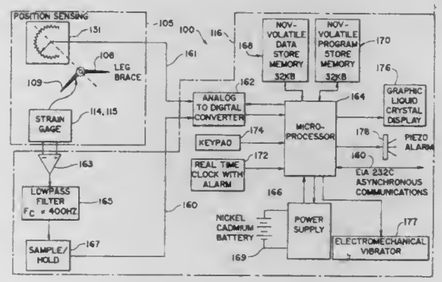
5,823,974
BIOMEDICAL APPARATUS PARTICULARLY FOR MEASURING ANISOMELIA OF THE LOWER LIMBS
Silvano Grassi, Biadene Di Montebelluna, Italy, assignor to Sponsor S.r.l., Biadene Di Montebelluna, Italy
PCT No. PCT/EP95/02340, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO95/35063, PCT Pub. Date Dec. 28, 1995
PCT Filed Jun. 16, 1995, Ser. No. 591,520
Claims priority, application Italy, Jun. 17, 1994, PD94A0112; Dec. 30, 1994, PD94A0227
Int. Cl.[6] A61B *5/103*
U.S. Cl. 600—595 **16 Claims**



1. A biomedical apparatus, particularly for measuring anisomelia of the lower limbs of a patient and the posture of the trunk of the patient in relation to the measured anisomelia, comprising:
at least one first post extending vertically from an apparatus for evaluating the anisomelia of the lower limbs; at least one postural geometry measurement device slidingly coupled to said post;
wherein said apparatus for evaluating the anisomelia of the lower limbs comprises
a footing;
a first and second foot resting supports arranged over said footing and each formed by a first and second frame arranged one over the other and hinged together;

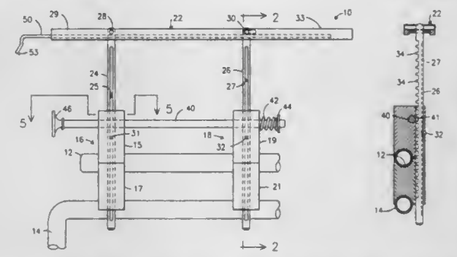
a first pneumatic actuator arranged between said footing and said second frame;
a second pneumatic actuator arranged between said footing and said first frame; and
a pneumatic locking piston and a potentiometer, both arranged between said footing and said second frame;
a platform being fixed on said first frame, the first pneumatic actuator of each of the second frames being supplied with a same internal pressure value, said second pneumatic actuator being adapted to define a rotation degree of said first frame with respect to said second frame.

5,823,975
LOCAL MONITORING SYSTEM FOR AN INSTRUMENTED ORTHOPEDIC RESTRAINING DEVICE AND METHOD THEREFOR
John G. Stark, 19390 Walden Trail, Deephaven, Minn. 55391, and Shawn B. Dempster, 45 Island Rd., North Oaks, Minn. 55127
Continuation of Ser. No. 388,879, Feb. 15, 1995, abandoned, Continuation-in-part of Ser. No. 298,591, Aug. 31, 1994, Pat. No. 5,484,389, which is a continuation of Ser. No. 733,207, Jul. 19, 1991, Pat. No. 5,368,546, which is a continuation of Ser. No. 483,139, Feb. 21, 1990, Pat. No. 5,052,375. This application Feb. 24, 1997, Ser. No. 804,950
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—595 **23 Claims**



1. A communication unit, comprising:
(a) data input means for receiving a message signal from a restraining device controller operatively coupled to a personal orthopedic restraining device, the restraining device restraining movement of a first flexibly connected body portion relative to a second flexibly connected body portion of an individual wearing the restraining device;
(b) encoder means, operatively coupled to the data input means, for encoding the message signal into a display compatible signal;
(c) modulator means, operatively coupled to the encoder means, for preparing the display compatible signal for subsequent transmission by modulating the display compatible signal; and
(d) transmitter means, operatively coupled to the modulator means, for transmitting the modulated display compatible signal over a communication channel to a local display device such that the individual wearing the restraining device can receive messages from the restraining device controller.

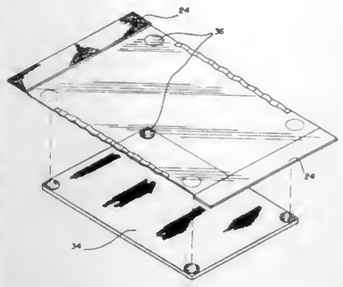
5,823,976
APPARATUS FOR TREATING UPPER EXTREMITY MOVEMENT DISORDERS
Tod Cain, 1736 Bay Hill Dr., Oldsmar, Fla. 34677, and Duane Stearns, 921 Westwinds Blvd., Tarpon Springs, Fla. 34689
Filed Apr. 19, 1996, Ser. No. 634,131
Int. Cl.[6] A61H *1/00*
U.S. Cl. 601—23 **19 Claims**



1. A therapeutic system for treating patient upper extremity disorders, comprising:
a pair of upstanding base members configured for adjustable attachment to a support member in a spaced apart relationship to one another;
an elongate mounting bar having a distal end and a proximal end;
said mounting bar further including attachment means for detachably securing preselected therapeutic devices that are manipulable by a patient;
a pair of independently mounted uprights disposed in interconnecting relation between said mounting bar and said pair of upstanding base members;
said uprights being independently slideably mounted relative to said upstanding base members and said mounting bar being slideably attached to said uprights so that said mounting bar is positionable in a plurality of functional positions of height and angular adjustment relative to said upstanding base members;
locking means for independently locking said uprights in a preselected position of adjustment;
the locking means further including a locking bar that is slideably mounted relative to said upstanding base members, said locking bar having a position of repose where said uprights are independently locked into a preselected position of adjustment and said locking bar having a nonrepose position that is slideably displaced from said position of repose, said uprights being independently movable when said locking bar is in said nonrepose position; and
the locking means further including a plurality of equidistantly spaced apart teeth formed along an extent of each of said uprights, said locking bar engaging said teeth when in its position of repose and said locking bar not engaging said teeth when in its position of nonrepose.

5,823,977
WATERPROOF PROTECTIVE COVERING FOR MEDICAL USES
Lorraine Dalyea, 132 S. Carr Dr. #7, Glendale, Calif. 91205
Filed Mar. 13, 1997, Ser. No. 816,571
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—3 **8 Claims**

1. A waterproof protective covering for fastening to a user to protect a wound or a bandage, the waterproof protective covering comprising:
a flexible waterproof covering member having a pair of opposing sides, said flexible covering member further having a pair of opposing ends,
a pair of elastic members, one of said elastic members appended to each of the respective opposing sides;



a pair of fastening means being adapted for securing the waterproof covering member around the wound or the bandage;

said pair of fastening means being positioned proximate said opposing ends; and

a coupling means for coupling a gauze member to an underside of the flexible covering;

wherein the coupling means includes hook and loop fasteners comprising hook portions and loop portions, wherein one of the portions of said hook and loop fasteners is attached to the underside of the flexible covering member and the other of the portions of said hook and loop fasteners is attached to said gauze member; and

wherein each of the portions of said hook and loop fasteners is positioned proximate a respective corner of said gauze member.

5,823,978

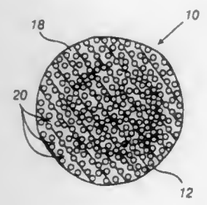
LOW MODULUS SYNTHETIC FIBER CASTING SYSTEM

Glenn F. Cueman; Henry L. Richbourg, Jr., both of Davidson, and Tony A. Williamson, Troutman, all of N.C., assignors to Clinitex Medical Corporation, Huntersville, N.C.

Filed Apr. 24, 1996, Ser. No. 639,271

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—6 **78 Claims**



1. An orthopedic casting material comprising:

a fabric comprising:

multi-filament acrylic yarns having a yarn count ranging from 7 to 36, each filament ranging from 6 denier to 0.5 denier; and

a reactive fluid prepolymer resin impregnated in said fabric, said resin penetrates and surrounds and operatively fills the interstices between the filaments of said yarns, said resin hardens when said resin is activated with an activation agent.

5,823,979

DEVICE FOR STABILIZING JOINTS OF THE LIMBS

Róbert Mezö, Kresz Géza u. 17. III.5., H-1134 Budapest, Hungary

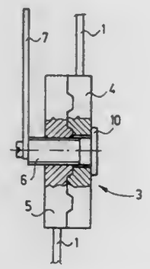
PCT No. PCT/HU96/00004, § 371 Date Jul. 24, 1997, § 102(e) Date Jul. 24, 1997, PCT Pub. No. WO96/22749, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 24, 1996, Ser. No. 875,626

Claims priority, application Hungary, Jan. 24, 1995, P9500207

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—16 **7 Claims**



1. In a device for supporting a joint of a limb, including two rods to be secured to the limb, said rods being connected by a hinge having two elements arranged on a common shaft and a locking element, wherein mating faces of the hinge elements are provided with perpendicular protrusions and indentations, respectively, the indentations are of the same shape as the protrusions and one of the hinge elements is arranged on the shaft to rotate freely, the other hinge element is fitted onto an outer thread on said shaft, the locking element being firmly anchored on the shaft; the improvement wherein the protrusions and indentations are parallel ribs and grooves, respectively and the thread on the locking element is a coarse pitch thread.

5,823,980

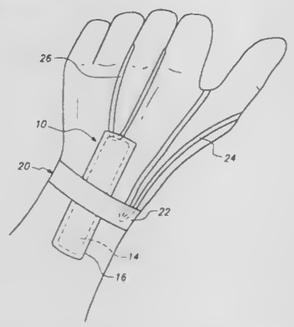
COLLAPSIBLE TACTILE SUPPORT FOR BODY JOINTS

Rudolph J. Kopfer, 131 Sage Rd., Hulen Meadows, Ketchum, Id. 83340

Filed Sep. 20, 1996, Ser. No. 717,178

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—21 **21 Claims**



1. A collapsible support providing corrective tension to a joint, comprising:

a) a means for supporting a joint and for collapsing to permit unrestrained joint movement and provide a tactile signal when a predetermined threshold level of force is exceeded and for automatically returning to its original configuration when said force is reduced below said threshold; and

b) a means for positioning said means for supporting against said joint.

5,823,981

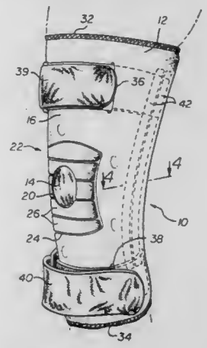
RESILIENT ORTHOPAEDIC SUPPORT WITH INDEPENDENTLY STRETCHABLE LAYERS

Tracy E. Grim, Broken Arrow, Okla.; Alec D. Bobroff, Saratoga, Calif.; John Morgan Bourne, Redondo Beach, Calif., and Joseph Michael Iglesias, Agoura, Calif., assignors to Royce Medical Company, Camarillo, Calif.

Filed Jun. 6, 1994, Ser. No. 254,111

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—26 **27 Claims**



1. A knee brace comprising:

an outer resilient layer configured to extend above and below a knee joint, said outer resilient layer being comprised of a material suitable for surrounding and supporting a knee through compression and having a patellar opening for receiving the patella of the knee; and

an inner resilient layer generally coextensive with at least a substantial portion of said outer resilient layer and extending across said patellar opening to exert a relatively light restraining force on the patella;

said inner and outer resilient layers being secured together.

5,823,982

TRACTION APPARATUS FOR PHYSICAL TIIERAPY OF HERNIATED NUCLEOSUS PULPOSUS OR SPRAIN AND STRAIN

Chang Joon Park, 244-326, Sangdo-4-dong, Dongiak-ku, Seoul, Rep. of Korea

Filed Jan. 17, 1997, Ser. No. 785,042

Claims priority, application Rep. of Korea, Jan. 18, 1996, 1996 970

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—36 **7 Claims**

1. A traction apparatus for physical therapy of a herniated nucleosus pulposus or sprain and strain comprising:

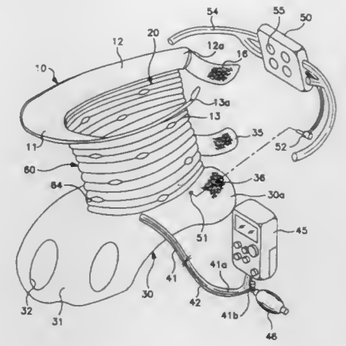
an upper support frame that supportably encircles an upper part of a patient's therapy region, said upper support frame having two free ends, having a space relation therebetween, with a first adjustable fastener that connects the two free ends;

a lower support frame that supportably encircles a lower part of the patient's therapy region, said lower support frame having two free ends, having a space relation therebetween, with a second fastener that connects the two free ends;

traction means operatively positioned between said upper support frame and said lower support frame for encircling the therapy region and for providing the therapy region with variable traction forces, said traction means having a plurality of expandable tubes stacked horizontally, wherein each of the tubes forms at least one closed compartment in flow communication with adjacent tubes and has two free ends having a space relation therebetween;

fluid pressure means for providing the traction forces; and

exercise means, rotatable fixed between said upper support frame and an uppermost tube of the tubes, for exercising the patient's therapy region.



5,823,983

BANDAGES COMPRISING COMPRESSED CELLULOSE

Paul M. Rosofsky, 83 Sussex Dr., Willingboro, N.J. 08046, and Seymour Gilbert, 76 Ross Hall Blvd. N., Piscataway, N.J. 08854

Continuation-in-part of Ser. No. 7,350, Jan. 21, 1993, Pat. No. 5,472,665. This application Dec. 5, 1995, Ser. No. 567,205

Int. Cl.[6] A61F *13/00*

U.S. Cl. 602—41 **5 Claims**



1. A pressure bandage comprising:

(a) a bandage comprising a

(i) sanitary gauze layer to be applied against a wound;

(ii) a treated compressed cellulose interior layer having a grain overlying said sanitary gauze layer; and

(iii) an outside layer overlying said sanitary gauze and compressed cellulose interior layers, said outside layer having adhesive wings which apply the bandage to a wound and an access hole punched therethrough and through the compressed cellulose interior layer defining a reservoir, whereby blood from the wound when absorbed through the gauze layer will saturate the compressed cellulose material and thereby expand said cellulose layer against said sanitary gauze and outer layers, thereby applying active pressure to the wound.

5,823,984

EXPANDABLE WRAP WITH MULTIPLE PANELS AND ATTACHABLE POCKET

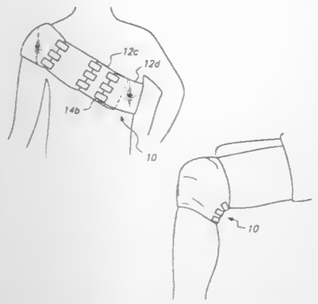
Ian Silverberg, 170 Los Carneros Way, Goleta, Calif. 93117

Filed Jun. 10, 1996, Ser. No. 661,199

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—61 **15 Claims**

1. An expandable wrap for securely fitting around a body area comprising:



a. a plurality of substantially identical panels, each panel having an exterior surface and an interior surface, wherein substantially an entire interior surface comprises a loop type fastener;
b. a hook type fastener coupled to the exterior surface of each panel for coupling to the interior surface of an adjoining panel, thereby securing the panels together, wherein the fasteners can be coupled to any portion of the surfaces of the panels for forming a body encircling loop of any length; and
c. a pocket having a pocket-mounted hook type fastener configured for attaching to the interior surface of each of the panels such that the same interior surface is configured for use for attachment to the hook type fastener coupled to the exterior surface of each panel and also to the pocket-mounted hook type fastener.

5,823,985

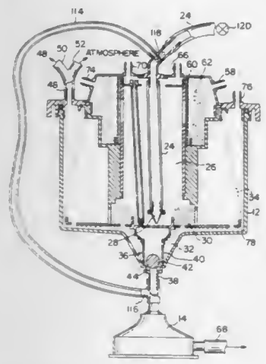
Patent Not Issued For This Number

5,823,986

PERFUSION SYSTEM

Donovan D. Peterson, Long Lake, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Feb. 8, 1995, Ser. No. 385,264
Int. Cl.[6] A61M *37/00*
U.S. Cl. 604—4 **26 Claims**



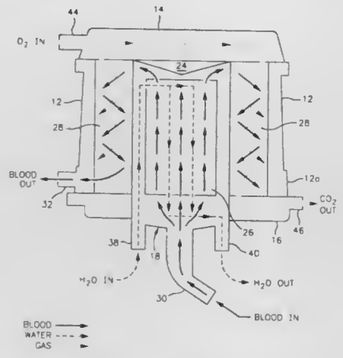
1. A perfusion system comprising:
a first line for removing blood from a patient, the first line having a proximal end and a distal end,
a sealed reservoir having at least a first connecting site connected to the proximal end of the first line, the reservoir having an interior;
a pump having a pump intake port in fluid communication with the sealed reservoir, the pump being capable of pulling negative pressure at the pump intake port so that the negative pressure is transferred to the reservoir and ultimately to the first line for removing blood from a patient through the first connecting site;
a bypass line connected at one end to the pump intake port and connected, at the other end, to and in fluid communication with the first line so that fluid in the first line can be directed around the reservoir to the pump intake port;
a cannula attached to the distal end of the first line and adapted to be inserted into blood vessels or chambers of a heart;
in which the reservoir further comprises a mixing chamber and the system further comprises a first one-way valve in fluid communication with the first line and the mixing chamber.

5,823,987

COMPACT MEMBRANE-TYPE BLOOD OXYGENATOR WITH CONCENTRIC HEAT EXCHANGER

Roger J. Elgas, Anaheim Hills, Calif., and Edmund R. Corey, Jr., Schwenksville, Pa., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jan. 11, 1996, Ser. No. 585,322
Int. Cl.[6] A61M *37/00;1/14*
U.S. Cl. 604—4 **19 Claims**



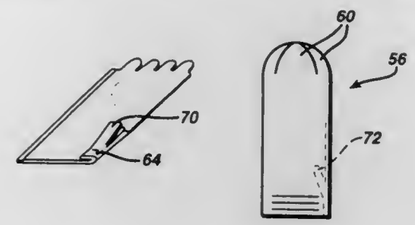
1. A blood oxygenator, comprising:
a heat exchanger including a housing and a plurality of conduits extending through an interior of the housing;
a first seal surrounding the exterior surfaces of a first set of ends of the conduits and a second seal surrounding the exterior surfaces of a second set of ends of the conduits, the first and second seals engaging an inner surface of the heat exchanger housing to prevent a heat transfer fluid flowing around the exterior surfaces of the conduits within the interior of the housing from mixing with blood flowing through the conduits;
a heat transfer fluid inlet communicating with the interior of the heat exchanger housing;
a heat transfer fluid outlet communicating with the interior of the heat exchanger housing;
a blood inlet manifold for delivering blood from a first tube to a first set of ends of the conduits of the heat exchanger;
a generally cylindrical oxygenator fiber bundle concentrically surrounding the heat exchanger;
a vessel surrounding the oxygenator fiber bundle;
a third seal surrounding the exterior surfaces of a first set of ends of a plurality of hollow fibers of the oxygenator bundle and a fourth seal surrounding the exterior surfaces of a second set of ends of a the fibers of the oxygenator bundle, the third and fourth seals engaging the housing of the heat exchanger and the vessel to prevent blood flowing around the exterior surfaces of the fibers of the oxygenator bundle from communicating with the hollow interiors of the fibers of the oxygenator fiber bundle;
a transition manifold for delivering blood from a set of second ends of the conduits of the heat exchanger around the exterior surfaces of the fibers of the oxygenator fiber bundle in a first portion of the oxygenator bundle;
an outlet manifold for delivering blood from around the exterior surfaces of the fibers of the oxygenator fiber bundle in a second portion of the oxygenator fiber bundle to a second tube;
an inlet header coupled to the vessel for directing a venous gas mixture from a first hose to the first ends of the hollow fibers of the oxygenator fiber bundle so that the gas mixture flows therethrough; and
an outlet header coupled to the vessel for directing the venous gas mixture flowing out of the second ends of the hollow fibers of the oxygenator bundle to a second hose.

5,823,988

ENVIRONMENTALLY FRIENDLY CATAMENIAL TAMPON ASSEMBLY AND METHOD OF CONSTRUCTION

John Orenga, Channahon, Ill., and Edwin H. Sailer, Ringoes, N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.

Division of Ser. No. 998,484, Dec. 31, 1992, abandoned. This application Apr. 27, 1995, Ser. No. 429,979
Int. Cl.[6] A61F *13/20*
U.S. Cl. 604—15 **19 Claims**



1. An environmentally friendly tampon assembly, comprising:
a pledget of absorbent material;
an inner sleeve for containing said pledget, said inner sleeve being fabricated from a biodegradable material, including a slot for receiving a tang and having pushing means at a forward end thereof for pushing said pledget; and
an outer sleeve for slidable containing said inner sleeve, said outer sleeve being fabricated from an outer sleeve blank comprising biodegradable material wherein said outer sleeve blank is rolled to form a tube, said outer sleeve having a tang formed from a portion of the outer sleeve blank extending inwardly from a substantially linear longitudinal seam, and said outer sleeve being closed proximate said tang.

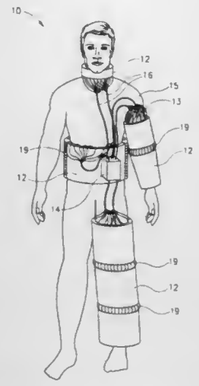
5,823,989

ELECTROPHORETIC CUFF APPARATUS DRUG DELIVERY SYSTEM

Alvin S. Ostrow, Raanana, Israel, assignor to Electromagnetic Bracing systems (EBS) Inc., Secaucus, N.J.

Filed Apr. 23, 1996, Ser. No. 636,406
Claims priority, application Israel, Apr. 23, 1995, 113459
Int. Cl.[6] A61N *1/30*
U.S. Cl. 604—20 **19 Claims**

1. An electrophoretic cuff apparatus comprising:
an applicator wrap of single or multiple connecting patch units each containing a plurality of electrophoretic electrode applicator pads;
means for simultaneously generating, an electric current in each of said applicator pads, and
a network of tubing adjacent to a surface of said applicator pads for delivering a selected pharmaceutical medium to said applicator pads, said applicator pads being selectively energized by said electric current for providing drug treatment therapy.

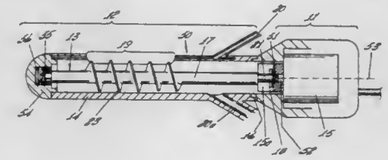


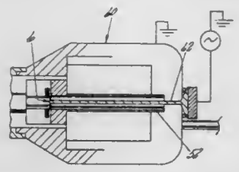
5,823,990

ULTRASONIC LIPOSUCTION HANDPIECE

Julian L. Henley, 38 Munger Rd., Guilford, Conn. 06437

Filed Jan. 16, 1997, Ser. No. 783,875
Int. Cl.[6] A61B *17/22*
U.S. Cl. 604—22 **4 Claims**





1. A handpiece comprising an invasive cannula portion and a non-invasive handle portion, said handle portion comprising an elongate case having a proximal end, a distal end, a housing, a vibrating member therewithin, a motor means adapted to rotate a drive shaft, and a power connector adapted to provide releasable connection of said handle portion to an external source of energy, said distal end of said handle portion having cannula connection means thereon, the invasive cannula portion comprising:
(a) a rigid elongate outer tube having (i) a proximal end having handle connector means thereon adapted to releasably engage said cannula connection means on said handpiece and (ii) a distal end and a hollow cylindrical wall enclosing an axial lumen therebetween, said cylindrical wall having an aperture therein with a rim wherein said rim is a stationary avulsing edge;
(b) an elongate avulsing member coaxially disposed and rotatably mounted within said lumen of said outer tube, the outermost lateral extension a portion of said avulsing member being a movable avulsing edge, wherein said avulsing edge elastically deforms away from said stationary avulsing edge in

response to pressure applied between said stationary avulsing edge and said movable avulsing edge.

5,823,991

PENILE ERECTION ASSIST DEVICE AND METHOD

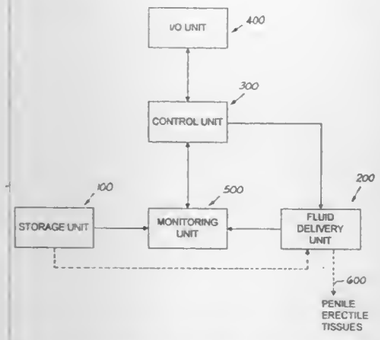
Youngtack Shim, 3905 Springstop La., Durham, N.C. 27705

Filed Jul. 31, 1996, Ser. No. 690,123

Claims priority, application Rep. of Korea, Jul. 31, 1995, 1995 23498

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 24 Claims



1. A method for treating male impotence, comprising the steps of:

positioning a section of thin sterile tubing within a patient such that a distal end is disposed at a location which is adjacent or contacting erectile penile tissue;

implanting a drug delivery device remote from the penis of a patient such that the drug delivery device is in fluid communication with the thin sterile tubing defining a first delivery pathway therebetween;

inserting a predetermined dosage of a vasodilating material into said drug delivery device; and

delivering the predetermined vasodilating material through the thin tubing to the penile erectile tissue to stimulate an erection therein.

5,823,992

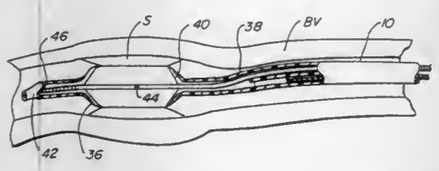
METHODS FOR USING CATHETERS HAVING COMPLIANT LUMENS

Stephen Salmon, Sunnyvale, and Ronald J. Jabba, Los Altos Hills, both of Calif., assignors to Cardiovascular Imaging Systems, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 423,589, Apr. 17, 1995, Pat. No. 5,707,354. This application Nov. 7, 1996, Ser. No. 745,036

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—53 15 Claims



1. A method for treating a body lumen, the method comprising:

introducing a catheter sheath into the body lumen, wherein the catheter sheath includes a proximal end, a distal end, a proximal region and a distal region, wherein the proximal region includes at least two lumens which are in communication with a single lumen extending through the distal region, and wherein the distal region includes a compliant portion near the distal end;

manipulating the catheter sheath to position the compliant portion near an area of the lumen to be treated;

advancing a radially expandable member from one of the proximal region lumens into the distal region lumen and up to the compliant portion; and

radially expanding the expandable member within the compliant portion to radially expand the body lumen at the treatment area.

5,823,993

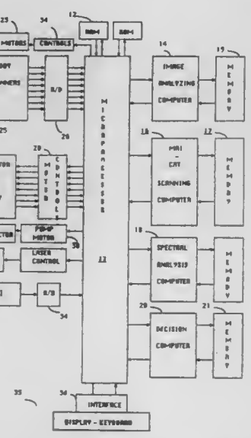
COMPUTER CONTROLLED DRUG INJECTION SYSTEM AND METHOD

Jerome H. Lemelson, Suite 286, Unit 802, 930 Tahoe Blvd., Incline Village, Nev. 89451-9436

Continuation of Ser. No. 199,720, Feb. 18, 1994, abandoned. This application Nov. 27, 1995, Ser. No. 563,850

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—51 20 Claims



1. A method for internally administering a medicinal agent to a patient, comprising the steps of:

supporting a patient on a patient support which is relatively movable with respect to an injection needle mounted on a computer controlled manipulator arm so that the injection needle may be inserted into select regions of the patient's body under control of a computer;

scanning a select portion of the patient's body with a scanning imaging device so as to generate image information relating to select regions of the patient's body;

sensing the relative positions of said patient support, said injection needle, and said scanning imaging device, and generating and feeding coded signals representing the sensed positions to a computer in digitized form;

operating the computer to calculate location coordinates of a select body region requiring treatment and defined by select pixels making of the images produced by said scanning imaging device, using the coded signals to predeterminately and relatively position of said patient support means and said imaging means;

designating and inputting to a computer select pixels of images produced by said imaging device which represent select regions of the patient's body to which it is desired to administer the medicinal agent;

calculating location coordinates of said injection needle and determining if an operating end of said injection needle is properly located at a select body region into which it is desired to administer said medicinal agent; and, when so located,

forcing the operating end of said injection needle a select distance into the body and injecting said medicinal agent into said select body region.

5,823,994

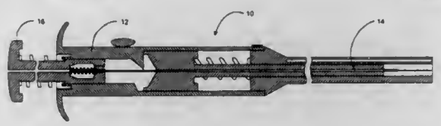
METHOD AND APPARATUS FOR SOFT TISSUE FIXATION

Hugh Sharkey, Redwood City, and Gary Fanton, Portola Valley, both of Calif., assignors to Oratec Interventions, Inc., Menlo Park, Calif.

Filed Mar. 15, 1996, Ser. No. 616,752

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—60 21 Claims



1. A soft tissue fixation pin apparatus, comprising:

an introducer trocar with a hollow lumen;

an elongated pin located in the hollow lumen, the elongated pin including a distal end, a proximal end and a central section, the elongated pin including a hydrophilic, cross-linked collagen and being introduced into the hollow lumen in a non-deployed state; and

an advancement member with a distal end and at least partially positioned in the hollow lumen, wherein the advancement member advances the elongated pin out of the introducer trocar distal end and into a soft tissue structure in the non-deployed state and across a wound in the soft tissue structure,

wherein the elongated pin transforms in shape from the non-deployed state to an enlarged deployed state when the hydrophilic, cross-linked collagen in the elongated pin begins to hydrolyze.

5,823,995

DILATATION CATHETER WITH STIFFENING WIRE ANCHORED IN THE VICINITY OF THE GUIDE WIRE PORT

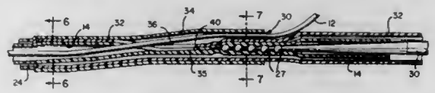
Thomas K. Fitzmaurice, Busbey Park, Galway; Patrick J. E. Duane, Newcastle, Galway, both of Ireland, and Denyse Collins, Derry, N.H., assignors to Bard Connaught, Dublin, Ireland

PCT No. PCT/US93/07943, § 371 Date Jun. 29, 1995, § 102(e) Date Jun. 29, 1995, PCT Pub. No. WO94/04216, PCT Pub. Date Mar. 3, 1994

Continuation-in-part of Ser. No. 934,948, Aug. 25, 1992, abandoned. This PCT application Aug. 24, 1993, Ser. No. 387,906

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 10 Claims



1. A dilatation catheter having a proximal end and a distal end, said dilatation catheter comprising:

an elongated tubular shaft comprising a distal shaft having a proximal end and a distal end and a proximal shaft having a proximal end and a distal end, said proximal end of said distal shaft overlapping said distal end of said proximal shaft and forming a guide wire port for entry of a guide wire into said distal shaft;

a balloon attached to said distal shaft;

an inner tube extending within said tubular shaft from a point proximal of said guide wire port within said proximal shaft through said distal shaft to said distal end of said catheter, said inner tube including an opening adjacent said guide wire port to enable a guide wire to be introduced into and extend through said inner tube through said guide wire port and said opening, said inner tube including a wire retention section proximal of said opening and within said proximal shaft, said inner tube being bonded to said proximal shaft to retain said inner tube relative to said distal shaft, with a space between said inner tube and tubular shaft providing an inflation lumen for said balloon; and

a stiffening wire positioned within said proximal shaft, said stiffening wire having a distal end permanently anchored to said inner tube in said wire retention section within said inner tube.

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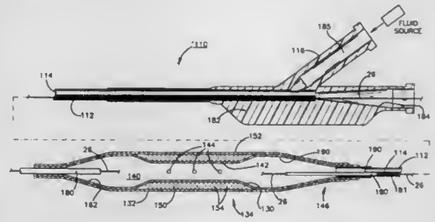
INFUSION BALLOON CATHETER

Kurt D. Sparks, Miami, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Filed Feb. 29, 1996, Ser. No. 608,641

Int. Cl.[6] A61M *29/00*

U.S. Cl. 604—96 17 Claims



1. An infusion catheter for injecting a solution into a subject comprising:

a) an elongated catheter body for delivering a solution to an infusion site within a subject including a lumen extending from a proximally located solution input port of the elongated body to a distal end of the elongated catheter body; and

b) an infusion member attached to the elongated catheter body at a distal end of said elongated catheter body; said infusion member defining i) an inner chamber having a chamber defining wall that includes a first set of holes spaced along said chamber defining wall and further having a solution entry in communication with the lumen of the elongated catheter body for routing solution passing through the lumen from outside a subject into the inner chamber and ii) an outer chamber having an outer chamber wall that includes a second set of holes having a greater total area than the area of the first set of holes in the chamber defining wall of the inner chamber, and where the outer chamber is supported adjacent to the inner chamber to overlap a portion of the inner chamber wall through which solution exits the inner chamber to the outer chamber by means of the first set of holes to pass through said second set of holes and enter the subject.

5,823,997

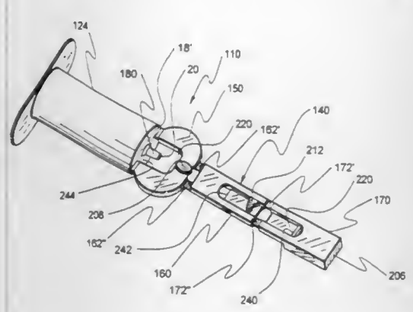
MEDICAL NEEDLE SAFETY APPARATUS AND METHODS

David L. Thorne, Kaysville, Utah, assignor to Specialized Health Products, Inc., Bountiful, Utah

Continuation-in-part of Ser. No. 744,108, Nov. 5, 1996, which is a continuation of Ser. No. 595,802, Feb. 2, 1996, Pat. No. 5,656,031, which is a continuation of Ser. No. 565,881, Dec. 1, 1995, Pat. No. 5,616,135, which is a continuation of Ser. No. 455,514, May 31, 1995, Pat. No. 5,549,708, which is a continuation of Ser. No. 370,728, Jan. 10, 1995, Pat. No. 5,480,384, and a continuation-in-part of Ser. No. 436,976, May 8, 1995, Pat. No. 5,487,734, and a continuation-in-part of Ser. No. 484,533, Jun. 7, 1995, Pat. No. 5,542,927. This application Sep. 10, 1997, Ser. No. 927,053

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—110 19 Claims



1. Integral phlebotomy apparatus requiring but two injection molded parts, said apparatus comprising:

a first molded part comprising a cylindrical barrel assembly having an opening at a first end for receiving an evacuated blood sampling tube, a needle hub disposed at an otherwise substantially closed second end wherein a hollow bore medical cannula is disposed and securely affixed to provide a fluid flow pathway to said evacuated blood sampling tube, and a foldable sheath hingeably affixed to said barrel assembly;

a hollow bore cannula disposed through said sheath, which is folded to provide a pathway therethrough, and securely affixed in said needle hub and having a sharpened tip on at least an end of the cannula to form a percutaneous insertion point;

a second molded part comprising an elongated internal pathway for protective cover for said needle and a means for being releasibly attached to said first molded part;

said sheath comprising a plurality of serially interconnected substantially rigid segments each of which is interconnected to at least one adjacent segment by a living hinge, at least one segment comprising two opposing sides wherethrough access is provided to an open pathway, through which said cannula passes to form an axis of intersection between said cannula and at least one segment, and a channel in which the cannula is fully disposed when the sheath is linearly extended, said sheath and said hinges being disposed to permit folding of the sheath proximal to the cylindrical barrel in a first state to permit usable access to said cannula and said sharpened tip in a medical procedure, and extending of the sheath along said cannula to a planar disposition about said cannula whereat the cannula is disposed along the channel, said sheath further comprising at least one latching member which catches and securely affixes the cannula relative to the sheath, said sheath and cannula thereby forming a substantially rigid body which protectively encloses said sharpened tip and denies access thereto.

5,823,998

INJECTION APPARATUS

Hideto Yamagata, Saitama, Japan, assignor to Eli Lilly Japan Kabushiki Kaisha, Hyogo, Japan

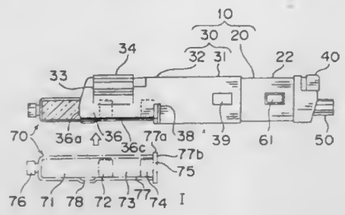
PCT No. PCT/JP95/01661, § 371 Date Feb. 20, 1997, § 102(e) Date Feb. 20, 1997, PCT Pub. No. WO96/05878, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 23, 1995, Ser. No. 793,190

Claims priority, application Japan, Aug. 24, 1994, 6-199494

Int. Cl.[6] A61M *5/20*

U.S. Cl. 604—131 21 Claims



1. An injection apparatus, comprising an ampule having a piston for sealing an agent in a syringe, comprising:

piston rod means for pressing the piston of the ampule in an axial direction;

an ampule holding part having an ampule insertion outer opening, having an original circumference, which opening is expanded circumferentially when the ampule is inserted into the opening and having an ampule insertion space for inserting the ampule thereinto, wherein the outer opening is restored to its original circumference after the ampule is inserted into the ampule insertion space, so that the ampule is held by the ampule holding part temporarily; and

ampule gripping means for gripping the ampule and preventing axial movement thereof.

5,823,999

Patent Not Issued For This Number

5,824,000

PRESSURE INFUSER APPARATUS

John A. Pavlo, 1930 Temple Terrace, Clearwater, Fla. 34624; Hiroaki Watanabe, 5-36 2-chome, Nakanoshima, Saiki-City Oita-Pref., Japan; Makoto Hirao, 2098-1 Oaza Nakahara, One-Machi, One-Gun Oita-Pref., Japan, and Masato Okubo, 2-7-15 Minami-Rokugo, Ota-Ku, Tokyo, Japan

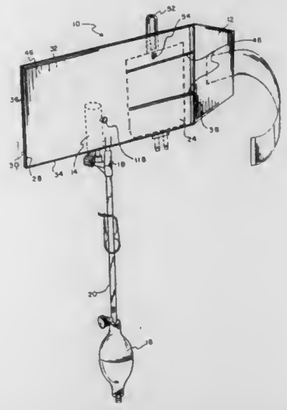
Filed Mar. 21, 1994, Ser. No. 210,907

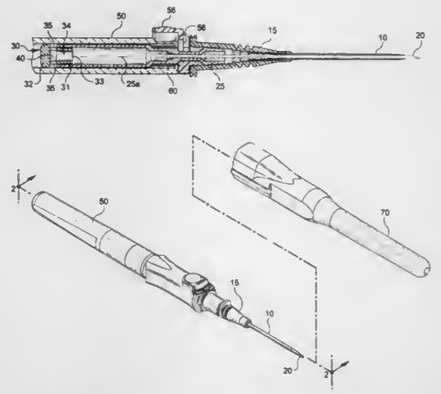
Int. Cl.[6] A61M *5/148*

U.S. Cl. 604—142 6 Claims

1. Pressure infuser apparatus for supporting a flexible bag containing fluid and for applying pressure to the bag to thereby facilitate the dispensing of the fluid from the bag, the apparatus comprising, in combination:

a cuff formed of an inner sheet and a superposed outer sheet, each sheet being of a generally rectangular configuration with longer, parallel, horizontal upper and lower edges and with shorter, parallel, vertical side edges extending between the upper and lower edges, the cuff being bendable about a vertical fold line intermediate the side edges, the sheets being fabricated of a flexible fluid-impervious material, all the edges having RF sealed lines around the periphery of the sheets to define an air chamber between the sheets and with additional RF sealed lines coupling the sheets to preclude excess ballooning of the cuff when inflated, the inner sheet being more elastic than the outer sheet to expand greater inwardly toward a supported bag than outwardly when the cuff is inflated;





a support plate with a lower extent RF coupled to the sheets adjacent to the upper edge between the fold line and one side edge, the lower extent having a hook coupled to the sheets for supporting a bag, the support plate also having an upper extent with a hole for supporting the cuff;

a strap with a first end RF coupled to the outer sheet adjacent to one side edge and a second end laterally spaced therefrom, the strap being of a length to encompass the cuff when folded with a bag supported interior thereof, pile-type fasteners secured to the first and second ends of the strap for releasably coupling the ends of the strap when supporting a bag;

a gauge to determine and display the pressure within the cuff, the gauge being formed of a housing, the housing having a lower portion with a fluid port adjacent to the bottom thereof, the housing having a central transparent portion, and the housing having an upper portion defining a chamber within the housing, a cup-shaped member located within the chamber, a normally collapsed accordion-shaped member located between the fluid port and the cup-shaped member adapted to expand and raise the cup-shaped member upon the introduction of air into the gauge, a coil spring located between the cup-shaped member against the expansion of the accordion-shaped member, indicia on the surface of the cup-shaped member adapted to be read by an operator through the central portion as a function of the pressure within the cuff as sensed by the gauge, and a support member extending from the upper end of the gauge for coupling to the cuff; and

a manifold having an upwardly extending passageway in fluid communication with the interior of the cuff, a downwardly extending passageway in fluid communication with a squeeze ball for inflating the cuff, an outwardly extending passageway with a sealing cap coupled by a friction fitting for the quick release of the cap to effect emergency deflation of the cuff, and a supplemental passageway extending upwardly from the outwardly extending passageway coupled to the accordion-shaped member and in fluid communication therewith and to assist in the securement of the gauge with respect to the cuff.

5,824,001

RADIALLY VENTED FLASHBACK CHAMBER AND PLUG ASSEMBLY

Timothy J. Erskine, Sandy, Utah, assignor to Becton Dickinson and Company, Franklin Lakes, N.J.

Filed Jun. 10, 1996, Ser. No. 662,718

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—158 5 Claims

1. A catheter and introducer needle assembly, comprising:

a catheter having a catheter hub;

a generally hollow barrel having a proximal end and a distal end;

a needle having a sharp distal tip and a proximal end disposed in the catheter;

a needle hub affixed adjacent to the proximal end of the needle having a periphery, an open proximal end and movably disposed in the barrel;

a plug disposed in the open proximal end of the needle hub, the plug having a body portion having an open distal end, a closed proximal end, a lumen extending from the open distal end to a position distal of the closed proximal end and at least one radially extending passageway located distal of the closed proximal end in fluid communication with the lumen;

a material impervious to liquid but pervious to gas located in the lumen at the juncture between the lumen and the radially extending passageway;

a spring disposed about the needle and extending between the needle hub and the distal end of the barrel; and

an activation latch movably mounted adjacent to the distal end of the barrel and adapted for selective engagement with the needle hub to hold the needle hub adjacent to the distal end of the barrel against the bias of the spring such that the needle extends beyond the distal end of the barrel and through the catheter with the catheter hub adjacent to the distal end of the barrel.

5,824,002

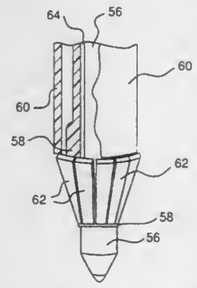
TROCAR-CANNULA DEVICE

John S. Gentelia, Madison; Sharyn E. Longo, Frankfort, and Thomas F. Bowers, Rome, all of N.Y., assignors to Conmed Corporation, Utica, N.Y.

Continuation of Ser. No. 532,053, Sep. 22, 1995, abandoned. This application Nov. 20, 1996, Ser. No. 752,387

Int. Cl.[6] A61M *5/178*

U.S. Cl. 604—164 7 Claims



1. A trocar device comprising a trocar element having a blunt tip, a sheath affixed to and surrounding the trocar element such that

at least said blunt tip of said trocar element is exposed and so that said trocar element and said sheath are movable together as a unit, and a cannula surrounding the sheath and having a distal end, said sheath including expandable means, expandable laterally outwardly responsive to an external force being exerted thereon and collapsible when said force is removed, for providing, when expanded, a substantially smooth, at least substantially continuous transition between said sheath and said cannula at the distal end of said cannula during the insertion of said trocar device into a patient so as to reduce drag on the device at said transition and for enabling, when collapsed, removal of said sheath and trocar element through said cannula, said cannula having a longitudinal axis and leaf members each comprising substantially planar elements having lateral edges and said planar elements being disposed around said longitudinal axis in a substantially continuous annular configuration with the lateral edges thereof in side by side relation.

5,824,003

Patent Not Issued For This Number

5,824,004

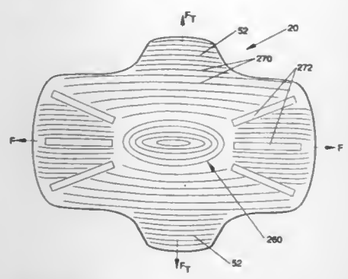
STRETCHABLE ABSORBENT ARTICLES

Thomas W. Osborn, III, Cincinnati, Ohio; Kazuko Sugahara, Osaka, Japan; Charles W. Chappell, West Chester, and Letha M. Hines, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 539,779, Jun. 18, 1990, abandoned, Ser. No. 605,583, Oct. 29, 1990, abandoned, Ser. No. 630,451, Dec. 19, 1990, abandoned, Ser. No. 637,090, Jan. 3, 1991, abandoned, Ser. No. 637,571, Jan. 3, 1991, abandoned, Ser. No. 734,392, Jul. 23, 1991, abandoned, Ser. No. 734,404, Jul. 23, 1991, abandoned, Ser. No. 734,405, Jul. 23, 1991, Pat. No. 5,334,176, Ser. No. 769,607, Oct. 1, 1991, abandoned, Ser. No. 769,891, Oct. 1, 1991, abandoned, Ser. No. 794,745, Nov. 19, 1991, abandoned, Ser. No. 810,774, Dec. 17, 1991, abandoned, Ser. No. 823,797, Jan. 22, 1992, abandoned, Ser. No. 827,555, Jan. 28, 1992, abandoned, Ser. No. 832,246, Feb. 7, 1992, abandoned, Ser. No. 874,872, Apr. 28, 1992, abandoned, Ser. No. 882,738, May 14, 1992, abandoned, and Ser. No. 892,398, May 28, 1992, abandoned. This application Jul. 23, 1992, Ser. No. 915,133

Int. Cl.[6] A61F *13/15*

U.S. Cl. 604—385.2 **19 Claims**



1. An extensible sanitary napkin for wearing in a crotch region of a pair of panties, said sanitary napkin having a body surface, a garment surface, a longitudinal dimension, a transverse dimension that is less than said longitudinal dimension, a longitudinal centerline extending in said longitudinal dimension, a transverse centerline extending in said transverse dimension, an initial dimension measured along each of said centerlines, and an extended dimension measured along at least one of said centerlines, said sanitary napkin comprising:

an extensible liquid pervious topsheet;

an extensible liquid impervious backsheet joined to said topsheet;

an extensible absorbent core positioned between said topsheet and said backsheet; and

an extensible adhesive fastener on said garment surface for removably attaching said sanitary napkin to the crotch region of the pair of panties, wherein when said sanitary napkin is subjected to outwardly-oriented stretching forces of between about 50 grams and about 1,500 grams along one of said centerlines, said sanitary napkin extends to an extended dimension along said centerline that is greater than or equal to 105% and less than 150% of its initial dimension measured along the same centerline.

5,824,005

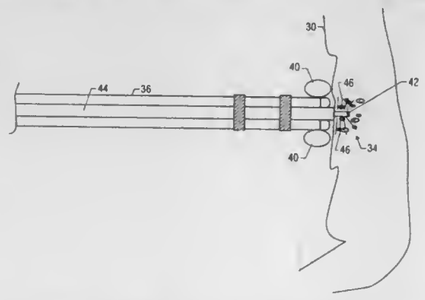
MANEUVERABLE ELECTROPHYSIOLOGY CATHETER FOR PERCUTANEOUS OR INTRAOPERATIVE ABLATION OF CARDIAC ARRHYTHMIAS

Massoud Motamedi, League City, and David L. Ware, Galveston, both of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Aug. 22, 1995, Ser. No. 517,961

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—15 **20 Claims**



1. Apparatus for ablation of cardiac tissue comprising:

a catheter adapted to access the cardiovascular system, said catheter having a distal end and a proximal end; and

a conductor extending along and within said catheter for transmitting coherent light energy to said distal end of said catheter, said conductor having a distal end which is extensible beyond the distal end of the catheter and also retractable within the catheter, said distal end of the conductor configured to penetrate cardiac tissue and to direct energy from and radially and axially relative to the conductor when the conductor is extended beyond the distal end of the catheter.

5,824,006

Patent Not Issued For This Number

5,824,007

ADJUSTABLE SURGICAL STAND

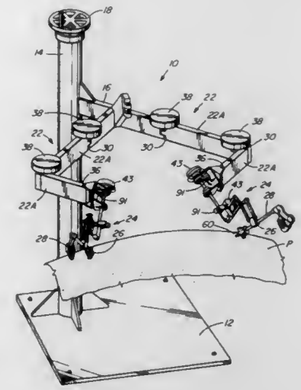
Ali Faraz, Coquitlam, and Shaharam Payandeh, Port Moody, both of Canada, assignors to Simon Fraser University, Burnaby, Canada

Filed Dec. 3, 1996, Ser. No. 758,350

Int. Cl.[6] A61B *19/00*

U.S. Cl. 606—130 **15 Claims**

1. A support stand for holding and allowing remote spherical rotation of a surgical implement about a fixed point, said support comprising:



(a) a support arm;

(b) a wrist (**24**) projecting from a distal end of said support arm (**22**), said wrist comprising:

(i) a member (**40**, **46**) pivotally mounted to said support arm for rotation about a first axis, said first axis passing through a fixed point (**60**);

(ii) a surgical instrument holder (**26**) for holding an axis of a surgical instrument (**28**) passing through said fixed point; and,

(iii) a linkage (**25**) connecting said surgical instrument holder to said member, said linkage comprising:

(1) a first link (**50**) pivotally mounted to said member (**40**, **46**) at a first pivot point (A) a first distance (L_3) from said first axis;

(2) a second link (**51**) pivotally mounted to said member (**40**, **46**) at a second pivot point (B) said first distance from said first axis;

(3) a third link (**52**) pivotally mounted to said surgical instrument holder at a third pivot point (E) said first distance from said axis of said surgical instrument; and,

(4) a fourth link (**53**) pivotally mounted to said surgical instrument holder at a fourth pivot point (G) said first distance from said axis of said surgical instrument;

wherein said first and second links are pivotally connected to said third link, said second link is pivotally connected to said fourth link and said second and third links each bend through an angle Φ at their point of pivotal connection to each other.

5,824,008

SYSTEM FOR APPLYING FASTENERS TO TISSUE

Lee Bolduc, Mountain View; Thomas A. Kramer, San Carlos; Brian A. Hodges, Foster City; Tim McCoy, and John Lunsford, both of San Carlos, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.

Continuation of Ser. No. 499,279, Jul. 7, 1995, which is a division of Ser. No. 286,878, Aug. 5, 1994, Pat. No. 5,582,616. This application Mar. 5, 1997, Ser. No. 812,959

Int. Cl.[6] A61B *17/00*

U.S. Cl. 606—43 **9 Claims**

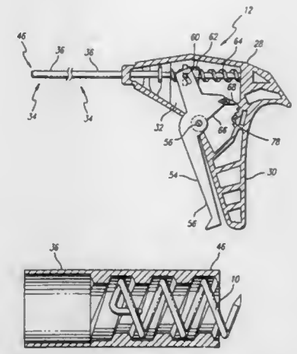
1. A system for applying fasteners to body tissue, comprising:

a plurality of fasteners, each having a helical configuration;

an applicator for applying said fasteners to body tissue, said applicator having a distal portion and a proximal portion;

said distal portion having an elongate outer tube, a connecting end and a terminal end, said terminal end having internal threads;

said proximal portion having a handle and an actuator, said proximal portion attached to said connecting end of said distal portion; and



said plurality of fasteners being configured within said distal portion and advanced through said threads upon manipulation of said actuator.

5,824,009

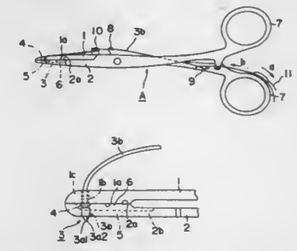
GUIDE INSTRUMENT FOR A MEDICAL NEEDLE WITH THREAD

Masatoshi Fukuda; Tadashi Obtsuka; Haruo Isaki, and Kanji Matsutani, all of Tochigi-ken, Japan, assignors to Kabushiki Kaisha Matsutani Seisakusho, Tochigi-ken, Japan

Filed Dec. 6, 1995, Ser. No. 568,346

Int. Cl.[6] A61B *17/04*

U.S. Cl. 606—144 **15 Claims**



3. A guide instrument for a medical needle with thread in which the medical needle with thread, which includes a needle body and a thread secured to a proximal end of the needle body extending in an elongated direction of the needle body, is made to pass through or between body tissues and in which the medical needle that has passed therethrough is received, the guide instrument comprising:

a pair of shafts pivotally mounted to each other having a handle on proximal ends of the shafts for manipulation;

a needle stand formed on a distal end of one of the shafts for rendering the needle body stand up by contacting either or both of a proximal end of the needle body and a part of the circumferential surface located on a proximal side of the needle body;

a thread guide formed on the distal end of one of the shafts for guiding the thread in communication with the needle stand;

a needle receiver formed on a distal end of the other of the shafts for receiving the needle body that stands;

a horizontal needle container lying in the same plane as the pair of shafts for holding the needle body lying down formed continuously to either or both of the needle stand or the needle receiver,

whereby while the distal ends of shafts are made open or after distal ends of shafts are made open, the needle body lying down on the needle container is made stand up, and while the distal ends of shafts are made close, the needle body standing

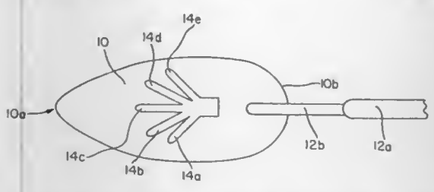
up on one of the shaft is pushed to pass through or between body tissues and to be engaged with the needle receiver formed at the other of the shafts, and while the distal ends of the shafts are made open, they are separated from the needle stand.

5,824,010

SUTURE NEEDLE GUIDE

Garth R. McDonald, 13612 Jarrettsville Pike, Phoenix, Md. 22131

Filed May 23, 1996, Ser. No. 652,378
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 **7 Claims**



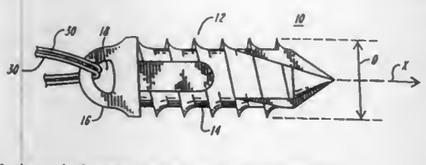
1. A suture needle guide comprising a member and a handle connected to said member, said member having a diameter suitable for insertion into a lumen of a blood vessel and being provided with a portion shaped to guide a suture needle along a path defined by said portion, said member having an upper surface and said at least one groove being concavely curved relative to said upper surface and shaped to guide a correspondingly curved suture needle.

5,824,011

SUTURE ANCHOR ASSEMBLY

Kevin R. Stone, 1 Throckmorton La., Mill Valley, Calif. 94941, and Allen H. DeSatnick, Marblehead, Mass., assignors to Kevin R. Stone, San Francisco, Calif.

Continuation of Ser. No. 388,951, Feb. 15, 1995, abandoned, which is a continuation-in-part of Ser. No. 349,677, Dec. 5, 1994, Pat. No. 5,443,482, which is a continuation of Ser. No. 81,516, Jun. 23, 1993, Pat. No. 5,370,662. This application Jun. 18, 1996, Ser. No. 665,528
Int. Cl.[6] A61B *17/04; A61F 1/00*
U.S. Cl. 606—232 **15 Claims**



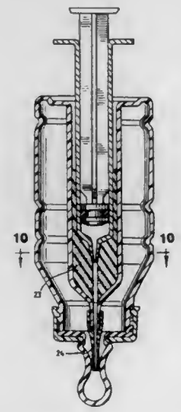
1. A surgical suture anchor assembly, comprising:
an elongated, generally cylindrical member extending along a central axis and having a maximum outer diameter D, said member including an anchor portion at a first end thereof rigidly coupled to a suture/drive portion at a second end thereof, said second end being opposite said first end,
wherein said anchor portion includes a self-drilling contour at least at points near said first end, and
wherein said suture/drive portion includes:
A. at least one eyelet positioned at or near said second end, said eyelet having a central aperture, whereby a suture path extending between two end points is defined by a region adjacent to said second end, through said aperture of said eyelet and back to said region adjacent to said second end, wherein the end points of said suture path are less than a distance equal to D'/2 from said central axis, where D' is less than or equal to said maximum outer diameter D; and
B. coupling means for receiving a distal tip of a cannulated driver rotatable about a drive axis,
whereby said cylindrical member and said distal tip are mechanically coupled for mutual rotation with said drive axis and said central axis being coaxial when said distal tip of said driver is received by said coupling means, and
wherein said anchor portion and said suture/drive portion have a continuous self-tapping thread pattern on the outer surfaces thereof, said pattern extending at least from points near said first end to points near said second end.

5,824,012

NURSING BOTTLE WITH MEDICATION DISPENSER

Mark T. Burchett, and Lori Welsandt Burchett, both of Western Springs, Ill., assignors to The Medicine Bottle Company, Inc., Chicago, Ill.

Continuation of Ser. No. 528,191, Sep. 14, 1995, abandoned, which is a continuation-in-part of Ser. No. 315,201, Sep. 29, 1994, Pat. No. 5,487,750, which is a continuation-in-part of Ser. No. 61,698, May 12, 1993, Pat. No. 5,383,906. This application Nov. 22, 1996, Ser. No. 754,894
Int. Cl.[6] A61J *17/00*
U.S. Cl. 606—236 **3 Claims**



1. A liquid medication dispenser suitable for delivering a controllable mixture of a palatable beverage into which a liquid medication has been diluted, comprising:
a. a bottle having a top opening and a bottom end;
b. a nipple attached to said top opening and having one or more perforations therein to allow liquid to pass through;
c. a fixed internal sleeve extending longitudinally from said bottom end of said bottle axially in the direction of said top opening, and having an open proximal end situated at said bottom end of said bottle and a distal end facing said top opening, said distal end of said sleeve being longitudinally separated from said nipple;
d. a removable syringe operatively attached into said internal sleeve, said syringe having a distal end and a proximal end, said proximal end being provided with a plunger, said distal end of said syringe being longitudinally separated from said nipple;
e. a variable tip formed on the distal end of said internal sleeve and extending a predetermined distance towards the perforation in said nipple assembly, said tip having a lower tip portion and an upper tip portion, said variable tip including adjustable flow means for facilitating a plurality of aperture diameters for said distal end of said internal sleeve.

5,824,013

SPINAL BRACE FOR CORRECTING LORDOSIS

Dillis V. Allen, Elgin, Ill., assignor to Vardon Golf Company, Inc., Elk Grove Village, Ill.

Filed Dec. 27, 1994, Ser. No. 364,667
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—240 **3 Claims**



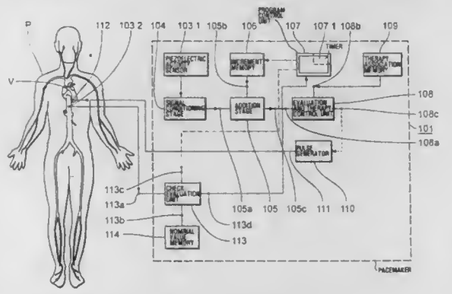
1 An orthopedic brace, comprising: a rigid base member having a generally circular outer surface, said rigid base member having a length substantially greater than its average diameter, said rigid base member being tubular in shape and having open ends substantially equal in diameter to the internal diameter of the rigid base member permitting free communication with the base member interior, resilient layer means completely encircling the base member and having portions thereof extending over and into the base member open ends, adhesive means for attaching the resilient layer means portions extending over the base member open ends to the base member open ends, said layer means having an outer body engaging generally circular surface whereby the brace may be positioned between the human body and a relatively fixed support to assist in correcting skeletal abnormalities or inadequacies, said layer means portions extending radially inwardly a substantial distance over the open ends of the rigid base, cover means surrounding the layer means and having ends that are slitted to form strips, said strips extending over the layer means portions and into the open ends of the rigid bases, said cover means holding the foam in the desired configuration.

5,824,014

MEDICAL THERAPY DEVICE PRODUCING A VARIABLE THERAPY IN RESPONSE TO MEASURED SENSOR VALUES CORRECTED WITH TEMPORAL FLUCTUATION VALUES

Tran Thong; Dennis Digby, both of Lake Oswego, Oreg., and Max Schaldach, Erlangen, Germany, assignors to Biotronik Mess- und Therapiegeraete GmbH & Co. Ingenieurburero Berlin, Berlin, Germany

Filed Mar. 3, 1997, Ser. No. 806,753
Claims priority, application Germany, Mar. 4, 1996, 196 09 409.7
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—4 **20 Claims**



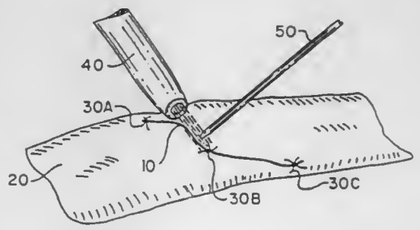
1. A medical therapy device comprising:
at least one sensor for detecting a variable that can be measured in an application of a predetermined therapy in or on a body of a patient (P) and that characterizes a physical state of the patient, said at least one sensor having an output for outputting a corresponding measured value;
an evaluating and control device having an input at least indirectly connected to the output of the at least one sensor for evaluating the measured value and determining a therapy control variable as a function of the measured value;
a therapy device for providing different therapies or therapy variables as a function of a value of the therapy control variable;
a processing unit having one input coupled to the output of the at least one sensor, a second input and an output; and
a fluctuation-value generator, including a time-controlled unit, connected between the output of the at least one sensor and the input of the evaluating and control device for feeding at least one temporal fluctuation value to the second input of the processing unit which forms a combination of the sensor measured value with the at least one temporal fluctuation value to produce a corrected value which is fed to the evaluating and control device so that the value of the therapy control variable determined by the evaluating and control device is changed in comparison to a determination of the therapy control variable for an original measured value and/or a measured value corrected with a different fluctuation value.

5,824,015

METHOD FOR WELDING BIOLOGICAL TISSUE

Philip N. Sawyer, Brooklyn, N.Y., assignor to Fusion Medical Technologies, Inc., Mountain View, Calif.

Continuation of Ser. No. 231,998, Apr. 21, 1994, abandoned, which is a continuation of Ser. No. 832,171, Feb. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 654,860, Feb. 13, 1991, Pat. No. 5,156,613. This application Jun. 5, 1995, Ser. No. 461,227
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—214 **12 Claims**



1. A method of joining or reconstructing biological tissue, said method comprising the following steps:
providing a solid filler material in the form of a preformed sheet, wherein the sheet comprises collagen, gelatin, or a mixture thereof;
placing the filler material over said biological tissue prior to applying energy, and
applying radiofrequency or optical energy to the filler material in an amount sufficient to melt or denature the filler material while said filler material is over the said biological tissue.

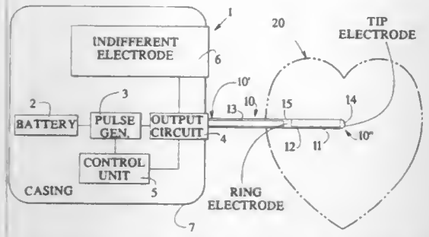
5,824,016

MEDICAL DEVICE USED TO STIMULATE TISSUE

Christer Ekwall, Spånga, Sweden, assignor to Pacesetter AB, Solna, Sweden

Filed Jan. 30, 1997, Ser. No. 791,114
Claims priority, application Sweden, Feb. 2, 1996, 9600389
Int. Cl.[6] A61N *1/375*
U.S. Cl. 607—9 **14 Claims**

1. An implantable medical device for stimulating tissue comprising:
a housing adapted for implantation in a subject;



a pulse generator in said housing which emits electrical pulses, said pulse generator containing means for storing electrical energy and for discharging said electrical energy to form said electrical pulses;

electrode means adapted for implantation in said subject for conducting said electrical pulse in vivo to tissue, said electrode means having an input end, and an output end from which said electrical pulses are delivered;

an output stage disposed in said housing connected between said pulse generator and said input end of said electrode means; and

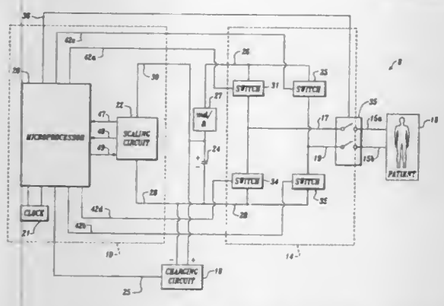
said output stage having a capacitance which is less than 1 μF and said electrode means having a capacitive element with a capacitance greater than 1 μF.

5,824,017

H-BRIDGE CIRCUIT FOR GENERATING A HIGH-ENERGY BIPHASIC WAVEFORM IN AN EXTERNAL DEFIBRILLATOR

Joseph L. Sullivan; Lawrence A. Borschowa, and Richard C. Nova, all of Kirkland, Wash., assignors to Physio-Control Corporation, Redmond, Wash.

Filed Mar. 5, 1997, Ser. No. 811,833
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 **47 Claims**



1. In an external defibrillator for applying a biphasic defibrillation pulse to a patient through first and second electrodes when said first and second electrodes are coupled to a patient, said external defibrillator including an energy storage capacitor having first and second leads and a charging system for charging said energy storage capacitor, said external defibrillator also including an H-bridge output circuit with four legs for switchably coupling the energy storage capacitor to the first and second electrodes in order to conduct the energy stored in the energy storage capacitor to a patient, a first switch in the first leg of the H-bridge output circuit coupled between the first lead of the energy storage capacitor and the first electrode, a second switch in the second leg of the H-bridge output circuit coupled between the second lead of the energy storage capacitor and the second electrode, a third switch in the third leg of the H-bridge output circuit coupled between the first lead of the energy storage capacitor and the second electrode, and a fourth switch in the fourth leg of the H-bridge output circuit coupled between the second lead of the energy storage capacitor in the first electrode, said external defibrillator further comprising a control circuit coupled to said first, second, third, and fourth switches for controlling said first, second, third, and fourth switches, the control circuit placing the first and second switches in a conducting state for a first period to conduct energy stored in the energy storage capacitor to the first and second electrodes and thereby generate the first phase of a biphasic defibrillation pulse for application to a patient, the control circuit placing the third, and fourth switches in a conducting state for a second period to conduct energy stored in the energy storage capacitor to the first and second electrodes and thereby generate the second phase of a biphasic defibrillation pulse for application to a patient, the improvement comprising:

(i) causing said charging system to charge said energy storage capacitor to a charge level of at least approximately 200 joules; and

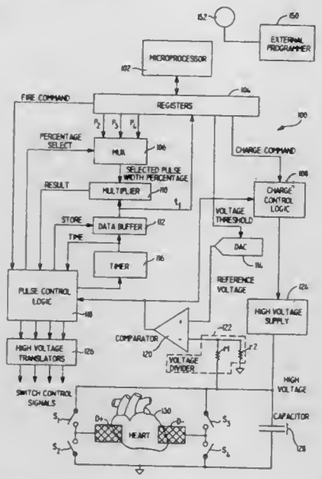
(ii) forming said first, second, third, and fourth switches of components capable of delivering at least approximately 200 joules to the first and second electrodes for application to a patient.

5,824,018

FIBRILLATION INDUCTION METHOD AND SYSTEM FOR IMPLANTABLE DEVICES

Robert Dreher, Roseville; Brian Kuhnley, Maple Grove, and Conrad L. Sowder, Minneapolis, all of Minn., assignors to Cardiac Pacemakers, Inc., St. Paul, Minn.

Continuation of Ser. No. 224,113, Apr. 6, 1994, abandoned, which is a continuation of Ser. No. 951,254, Sep. 25, 1992, abandoned. This application May 3, 1996, Ser. No. 642,806
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—6 **14 Claims**



1. A defibrillator/cardioverter system for use in inducing fibrillation comprising:

external programming means for transmitting a fibrillation command signal;

an implantable pulse generator comprising fibrillation pulse train circuitry means for generating a fibrillation inducing pulse train in response to a received fibrillation command signal, each pulse of said pulse train having a pulse width t_w and nominal voltage V_n and a delay time t_d from the immediately preceding pulse, the pulse generator also having multiphasic switching means for receiving said pulse train and outputting an output pulse train having pulses of predetermined phase; and

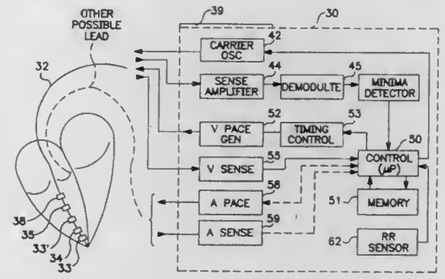
defibrillation electrodes for delivering the output pulse train to the heart.

5,824,019

PACING SYSTEM WITH PHYSIOLOGICALLY TIMED VENTRICULAR PACING

John C. Rueter, Shoreview, and Catherine R. Condie, Minneapolis, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 11, 1996, Ser. No. 729,465
Int. Cl.[6] A61N *1/365*
U.S. Cl. 607—17 **17 Claims**



1. A pacing system characterized by having a pulse generator and associated circuitry arranged and disposed to comprise a means for delivering ventricular pace pulses in timed relation to ventricular filling, comprising:

electrode delivery means for delivering said ventricular pace pulses to heart tissue,

sensing means for sensing variations in the amount of blood in said ventricle wherein said sensing means comprises impedance measuring means for obtaining a representation of intraventricular impedance in said patient's ventricle, and said detection means comprises minima means for detecting when said impedance representation is substantially at a minimum, corresponding to substantial filling of the patient's ventricle;

detection means for detecting from said variations when said ventricle has filled with blood to a desired volume level wherein said detection means comprises window means for establishing a window of a predetermined time interval around a last detected impedance minimum, and means for examining said impedance value within said window in a cycle to determine the impedance minimum for said cycle; and

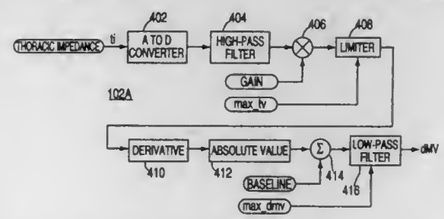
control means for controlling said means for delivering ventricular pulses as a function of detection of filling to said desired level or volume value.

5,824,020

RATE-RESPONSIVE PACEMAKER WITH RAPID MINUTE VOLUME DETERMINATION

Daniel Cooper, Hauguenau, France, assignor to Pacesetter, Inc., Sylmar, Calif.

Filed May 2, 1997, Ser. No. 850,557
Int. Cl.[6] A61N *1/365;1/362*
U.S. Cl. 607—17 **11 Claims**



1. An implantable pacemaker comprising:

a. a cardiac sensor for sensing intrinsic activity in a patient's heart and generating a sensed signal;

b. a pacing generator for generating pacing pulses in response to pacing commands;

c. a metabolic demand generator for generating a metabolic demand signal indicative of the metabolic demand of the patient; and

d. a controller for generating said commands corresponding to said sensed and metabolic demand signals; wherein said metabolic demand generator includes

i. a metabolic sensor for generating a metabolic detected signal;

ii. a metabolic detected signal processor for processing said metabolic detected signal in accordance with one of a paced and sensed heart rate, said signal processor including a derivative calculator for calculating a derivative of said metabolic detected signal; and

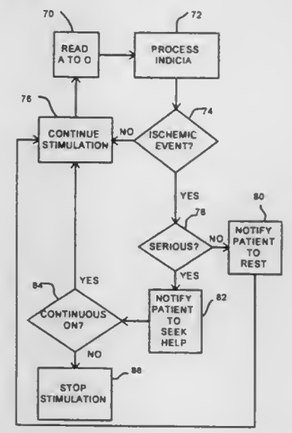
iii. a signal generator for generating said demand signal based on said derivative and said sensed signal whereby said command signals have a fast response to exercise onset.

5,824,021

METHOD AND APPARATUS FOR PROVIDING FEEDBACK TO SPINAL CORD STIMULATION FOR ANGINA

Mark T. Rise, Monticello, Minn., assignor to Medtronic Inc., Minneapolis, Minn.

Continuation of Ser. No. 637,259, Apr. 25, 1996, abandoned. This application Jul. 22, 1997, Ser. No. 898,102
Int. Cl.[6] A61N *1/08*
U.S. Cl. 607—46 **23 Claims**



1. A method of cardiac monitoring and angina pectoris treatment of a patient by using a cardiac condition detector and a stimulating electrode, comprising the steps of:

placing said cardiac condition detector at a recording site adjacent said patient or in said patient;

implanting said stimulating electrode adjacent a spinal cord or in said spinal cord of said patient;

receiving an indicia of the condition of a heart muscle of said patient through said detector;

processing said indicia to detect an occurrence of an ischemic event;

generating an indication detectable by said patient of said occurrence of said ischemic event in response to said processing;

generating electrical pulses suitable for stimulating said spinal cord to reduce angina; and

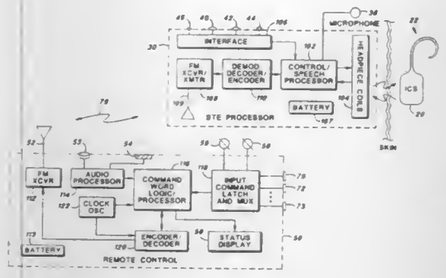
gating said pulses to said stimulating electrode, whereby said angina pectoris is reduced while the patient is given an indication of an ischemic event that otherwise would be indicated by said angina pectoris.

5,824,022

COCHLEAR STIMULATION SYSTEM EMPLOYING BEHIND-THE-EAR SPEECH PROCESSOR WITH REMOTE CONTROL

Yitzhak Zilberman, St. Louis, France, and Steven A. Hazard, Palmdale, Calif., assignors to Advanced Bionics Corporation, Sylmar, Calif.

Filed Feb. 28, 1997, Ser. No. 807,534
Int. Cl.[6] A61N *1/36;* **H04R** *25/00*
U.S. Cl. 607—57 **21 Claims**



1. A cochlear stimulation system comprising:

an implantable cochlear stimulator (ICS), including an array of implantable electrodes for insertion into the cochlea, comprising means for stimulating selected pairs of the implantable electrodes with an electrical current of a prescribed intensity, and means for receiving an information signal, the information signal specifying which of the implantable electrodes are to receive the electrical current and the intensity of such current;

a behind-the-ear (BTE) processor comprising means for generating the information signal as a function of received command signals and audio signals, means for sending the information signal to the ICS, a plurality of manual controls for defining at least some of the received command signals, a first microphone that detects audio sounds and converts them to audio signals, and receiver means for receiving external data signals from a source remote from the BTE processor; and

a remote control unit (RCU) comprising a second microphone, a plurality of command controls that when activated generate command data, means for generating data signals as a function of input signals received by the RCU, and means for transmitting the data signals to the BTE processor, the input signals received by the RCU comprising audio signals from the second microphone, audio signals derived from an electronic device, or command data generated by the command controls;

wherein the BTE processor further includes means for combining audio signals from the first microphone and audio signals from the RCU in a prescribed manner before generating the information signal and sending it to the ICS.

5,824,023

RADIATION-DELIVERY DEVICE

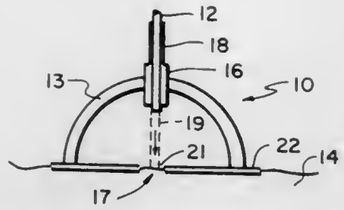
Richard Rox Anderson, Lexington, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Filed Apr. 16, 1996, Ser. No. 633,367
Int. Cl.[6] A61N *21/00*
U.S. Cl. 607—88 **30 Claims**

1. A method for irradiating a material, said method comprising:

delivering radiation to said material, the material partially re-emitting the delivered radiation,

positioning a non-diffusive reflective surface to receive substantially all of the re-emitted radiation, and



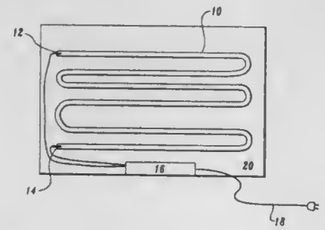
reflecting the re-emitted radiation to the material using a non-diffusive reflective surface.

5,824,024

ILLUMINATION DEVICES AND METHODS FOR TREATING LIGHT DEFICIENCY AND MOOD DISORDERS

Daniel Christoper Dial, SE. 141 Mill Creek Rd., Shelton, Wash. 98584

Filed May 3, 1996, Ser. No. 642,580
Int. Cl.[6] A61N *5/06*
U.S. Cl. 607—88 **13 Claims**



1. A method for treating light deficiency and mood disorders, including exposing a patient to a fixture comprising a length of glass tubing terminating in an electrode at each end and enclosing an illumination gas comprising mercury vapor and at least about 50% neon, the electrodes being electrically connectable to a transformer, and the transformer being electrically connectable to a power source, the fixture having an illumination output of at least 2,500 lux at a distance of 18 inches.

5,824,025

SYSTEM FOR CONVECTIVE WARMING OF A PATIENT DURING CARDIAC SURGERY

Scott D. Augustine, Bloomington, Minn., assignor to Augustine Medical, Inc., Eden Prairie, Minn.

Filed Aug. 20, 1997, Ser. No. 915,277
Int. Cl.[6] A61F *7/00*
U.S. Cl. 607—107 **16 Claims**

1. A system for warming a patient during surgery, comprising:

a source of heated air;

one or more inflatable thermal blankets, each comprising:

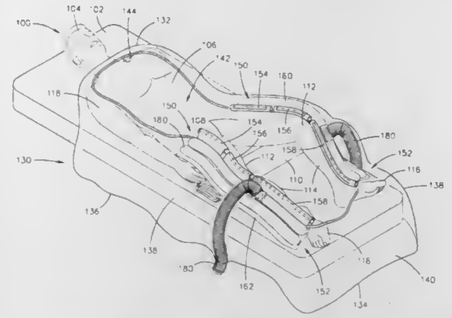
an upper sheet and an air-permeable base sheet connected together at a plurality of locations to form a first inflatable covering;

an air inlet in the first inflatable covering for receiving a temperature-controlled inflating medium from the source of heated air;

the first inflatable covering being adapted to inflate upon the inflating medium being introduced into the air inlet;

the first inflatable covering configured for disposition proximate a portion of at least one of the patient's legs;

a second inflatable covering attached to the first inflatable covering, the second inflatable covering being adapted to



remain initially uninflated upon the inflating medium being introduced into the air inlet; and

a control device for controllably allowing the inflating medium to flow from the first inflatable covering to the second inflatable covering to inflate the second inflatable covering; and

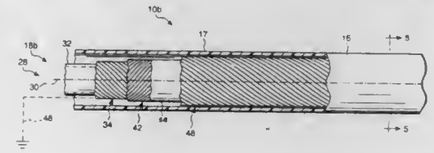
a surgical drape adapted to be disposed over the patient and the first inflatable covering.

5,824,026

CATHETER FOR DELIVERY OF ELECTRIC ENERGY AND A PROCESS FOR MANUFACTURING SAME

Cesar M. Diaz, Colorado Springs, Colo., assignor to The Spectranetics Corporation, Colorado Springs, Colo.

Filed Jun. 12, 1996, Ser. No. 662,799
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—116 **22 Claims**



1. A catheter comprising:

a core having an axis extending between a proximal end and a distal end of said catheter;

a first layer of stranded fibers stranded over said core;

a first electrically non-conductive layer disposed over said layer of stranded fibers such that said first layer of stranded fibers is enclosed substantially within an interior space defined by said first electrically non-conductive layer,

a second layer of stranded fibers stranded over said core;

said second layer of stranded fibers being disposed between said first layer of stranded fibers and said core;

a second electrically non-conductive layer, said second electrically non-conductive layer being disposed between said first layer of stranded fibers and said second layer of stranded fibers thereby preventing flow of electrical current between said first layer and said second layer of stranded fibers; and

a third layer of stranded fibers stranded over said second layer of stranded fibers,

wherein said third layer of stranded fibers is disposed between said first non-conductive layer and said second layer of stranded fibers, said second and third layers of stranded fibers thereby providing structural support for said catheter,

said first layer of stranded fibers includes a plurality of electrically conductive fibers stranded between said proximal end and said distal end thus permitting a transfer of electrical energy between said proximal end and said distal end of said catheter along said plurality of electrically conductive fibers.

substantially all fibers of said first layer of stranded fibers are arranged to form a substantially contiguous layer of stranded fibers, and

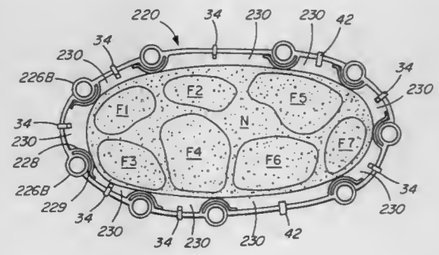
said core, said first layer of stranded fibers, and said first electrically non-conductive layer act in cooperation to provide structural support to said catheter and to permit a transfer of torque between said proximal end and said distal end of said catheter.

5,824,027

NERVE CUFF HAVING ONE OR MORE ISOLATED CHAMBERS

Joaquin Andreas Hoffer, Anmore; Yunquan Chen, Vancouver; Kevin D. Strange, Port Moody, and Paul Richard Christensen, Burnaby, all of Canada, assignors to Simon Fraser University, Burnaby

Filed Aug. 14, 1997, Ser. No. 911,604
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—118 **28 Claims**



27. A nerve cuff comprising:

(a) a segment comprising a cuff body wall portion;

(b) first and second longitudinally extending blunt ridge members extending along the cuff body wall portion and defining an open-sided chamber extending between the first and second ridges;

(c) a band member connectible between first and second sides of the cuff body wall portion to define a bore; and,

(d) one or more electrodes or one or more fluid conduits extending into the chamber;

wherein the band member is capable of holding the cuff body wall portion to a nerve passing through the bore with the ridges sealing against an outer surface of the nerve and the nerve closing the open side of the chamber.

5,824,028

LINE ELECTRODE ORIENTED RELATIVE TO FIBER DIRECTION

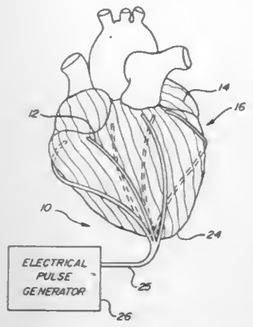
Stephen B. Knisley, Vestavia Hills, Ala., assignor to The UAB Research Foundation, Birmingham, Ala.

Filed Sep. 20, 1996, Ser. No. 717,416
Int. Cl.[6] A61N *1/00;* **A61B** *5/04*
U.S. Cl. 607—119 **11 Claims**

1. A device for delivering a stimulation pulse to an elongated fiber forming a tissue of a patient, said device comprising:

at least one elongated electrode terminal having a first end and a second end, and a portion therebetween,

said terminal adapted for orientation in a direction parallel to said fiber of said tissue which is adjacent to said terminal from said first end to said second end of said terminal, said electrode terminal further comprising a nonconductive facing layer attached to one side of said terminal, said facing layer comprised of a material of decreasing stiffness from said first end to said second end of said terminal, and



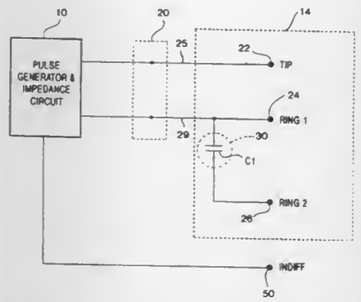
means for electrically energizing said terminal, whereby the energization of said terminal reduces the nonuniformity of the transmembrane voltage change in the tissue proximate said electrode produced during said stimulation pulse.

5,824,029

IMPLANTABLE MEDICAL SYSTEM FOR PERFORMING TRANSTHORACIC IMPEDANCE MEASUREMENTS ASSOCIATED WITH CARDIAC FUNCTION

Koen J. Weijand, Hoenbroek, Netherlands, and John D. Wahlstrand, Shoreview, Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 28, 1994, Ser. No. 233,901
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **39 Claims**



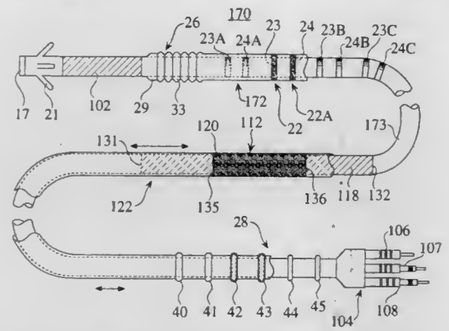
1. A medical electrical lead for performing impedance sensing associated with cardiac function comprising:
- a lead body having A distal end and a proximal end, said lead body having a first conductor and a second conductor each extending along said lead body, said lead body having a terminal assembly disposed upon said proximal end for providing a connection between said plurality of conductors and a connector block of a medical device;
- a first electrode coupled to said first conductor, said first electrode disposed on said lead body;
- a second electrode coupled to said second conductor, said second electrode disposed on said lead body at a point spaced proximally back from said first electrode; and
- a third electrode capacitively coupled to said second electrodes, said third electrode disposed on said lead body at a point spaced proximally back from said first electrode.

5,824,030

LEAD WITH INTER-ELECTRODE SPACING ADJUSTMENT

Weiqun Yang, San Jose, and Peter A. Altman, San Francisco, both of Calif., assignors to Pacesetter, Inc., Sunnyvale, Calif.

Filed Dec. 21, 1995, Ser. No. 576,873
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—122 **22 Claims**



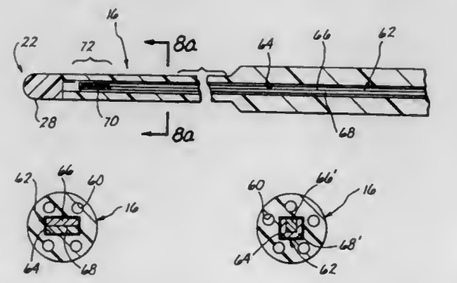
14. A lead with inter-electrode spacing adjustability, to be introduced in a patient's body, comprising in combination:
- an elongated lead body extending between a tip at a distal end, and a proximal end;
- an outer sheath extending coaxially with at least part of said lead body, between said proximal end and said distal end including a first expandable member formed on said outer sheath for enabling said outer sheath to slide coaxially relative to said lead body; and
- one or more effective electrodes including one or more windows that are positioned along said outer sheath, adjustable relative to said tip by sliding said outer sheath along said lead body.

5,824,031

APPARATUS AND METHOD FOR DEFLECTING A TIP OF A LEAD OR CATHETER

H. Stephen Cookston, Malibu, and Eli S. Gang, Los Angeles, both of Calif., assignors to Cardio Source, Malibu, Calif.

Filed Feb. 28, 1996, Ser. No. 608,557
Int. Cl.[6] A61M *25/01;25/00;* A61N *1/05*
U.S. Cl. 607—122 **8 Claims**



1. An improvement in a flexible pacemaker or defibrillator lead having a proximal and distal portion, and a longitudinal lumen defined at least part way therein, said pacemaker or defibrillator lead being without prebiased shape for permanent compatibility in a heart, comprising:
- a stylet disposed in said lumen within at least said distal portion, said stylet provided to selectively define a curvature on said distal portion of said pacemaker or defibrillator lead according to user determination,

wherein said stylet comprises a filament disposed within said lumen and attached at a distal end of said filament at said distal portion of said pacemaker or defibrillator lead, a proximal end of said filament extending to said proximal portion of said pacemaker or defibrillator lead and being retractable at least to a degree from said lumen to cause said distal portion to curve by user-selected amounts, and further comprising an inflatable lumen defined within said pacemaker or defibrillator lead for straightening said pacemaker or defibrillator lead when said inflatable lumen is pressurized with a fluid,

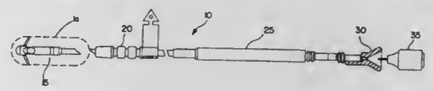
whereby variable curvatures can be selectively defined within said distal portion of said pacemaker or defibrillator lead.

5,824,032

MEDICAL ELECTRICAL LEAD FEATURING A ONE PIECE LEAD ANCHORING SLEEVE WITH WRAP-AROUND LOCKING ARMS

Elisabeth Lacy Belden, Plymouth, Minn., assignor to Medtronic Inc., Minneapolis, Minn.

Filed Aug. 9, 1996, Ser. No. 694,976
Int. Cl.[6] A61N *1/05*
U.S. Cl. 607—126 **30 Claims**



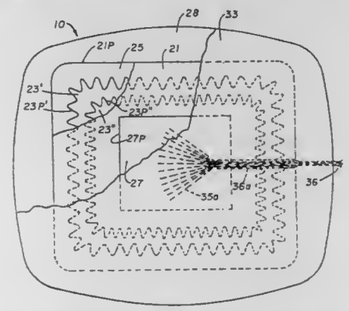
1. A lead anchoring sleeve for anchoring medical leads and catheters to body tissue, the sleeve comprising:
- (a) a tubular sleeve having a central lumen through which a medical lead can extend;
- (b) a lead securing portion extending from the tubular sleeve, the securing portion having a partially annular portion generally aligned with the central lumen, a wall having a slot, and a wrapping portion, the wrapping portion having a locking means for securably connecting the wrapping portion to the wall having a slot.

5,824,033

MULTIFUNCTION ELECTRODE

R. Keith Ferrari, Thompson Station, Tenn., assignor to Ludlow Corporation, Chicopee, Mass.

Continuation-in-part of Ser. No. 739,586, Oct. 30, 1996, Pat. No. 5,733,324, which is a continuation-in-part of Ser. No. 569,567, Dec. 8, 1995, Pat. No. 5,571,165. This application Mar. 18, 1997, Ser. No. 820,303
Int. Cl.[6] A61N *1/36*
U.S. Cl. 607—142 **18 Claims**



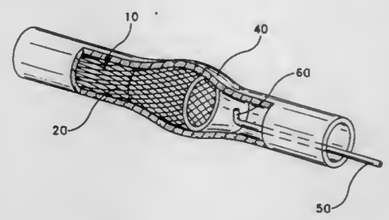
1. A disposable transcutaneous electrode comprising:
- (a) a sheet electrode member of polymeric material having upper and lower sides and an outer perimeter;
- (b) an electrically conductive metallic layer conductively affixed to a least a major portion of the lower side of the sheet electrode member, the electrically conductive metallic layer having a region of high conductivity in a central region located inwardly from the outer perimeter of the sheet electrode member and a region of low conductivity in an encircling region surrounding the central region and adjacent the outer perimeter of the sheet electrode member;
- (c) means for conducting and distributing energy from a medical device to an area of the sheet electrode member less than an area defined by the outer perimeter of the sheet electrode member, the means for conducting and distributing the energy being conductively affixed to the sheet electrode member; and
- (d) a pad of electrically conductive gel having an upper surface underlying the metallic layer, the pad conducting the energy from the metallic layer to a patient on which the electrode is disposed.

5,824,034

METHOD FOR REPOSITIONING A RADIALLY SELF-EXPANDING IMPLANTABLE INTRALUMINAL DEVICE

Peter J. Schmitt, Garnerville, N.Y., and David J. Lentz, Randolph, N.J., assignors to Meadox Medicals, Inc., Oakland, N.J.

Division of Ser. No. 945,064, Sep. 14, 1992, Pat. No. 5,562,725. This application Jun. 5, 1995, Ser. No. 461,040
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **7 Claims**



1. A method for repositioning an implanted radially self-expanding intraluminal hollow thermoplastic tubular braid comprising the step of:
- introducing a guide wire having on its distal end at least one finger-like member for grasping only one end of the implanted thermoplastic braid so that the implanted thermoplastic braid may be repositioned within a lumen wherein the braid is made from a thermoplastic materia: which is heat-set for a sufficient time and temperature to effectuate a permanent memory in an expanded state and is a three dimensional braid.

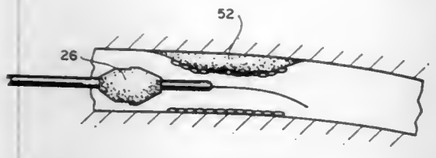
5,824,035

PROSTHESIS DELIVERY SYSTEM WITH DILATING TIP

George T. Roberts, Weston, Mass., and Erik Andersen, Jyllinge, Denmark, assignors to Boston Scientific Corporation, Watertown, Mass.

Continuation of Ser. No. 48,287, Apr. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 46,237, Apr. 13, 1993, abandoned. This application Aug. 21, 1995, Ser. No. 517,456
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 **5 Claims**

1. A system for delivering a prosthesis into a body lumen of a patient, comprising:
- an elongated catheter with a catheter shaft defining an axis and having a proximal end that remains outside the body, a distal end, and a supporting portion for supporting a prosthesis



configured in a radially compact form for delivery of the prosthesis to a desired location inside the body,

a bi-directional, rigid dilating tip fixed to said catheter at a point distal of said prosthesis, said tip having a distal dilating portion, a proximal dilating portion, and a maximum diameter portion therebetween,

said maximum diameter portion having a diameter that is about equal to or greater than the radially compact form of said prosthesis,

said distal dilating portion extending distally over an axial length to a smaller diameter and having a smooth profile that is free of sharp edges, said smaller diameter being about equal to the diameter of the catheter shaft, and said axial length being greater than the diameter of said maximum diameter portion of said tip, and

said proximal dilating portion extending proximally over an axial length to a smaller diameter and having a smooth profile that is free of sharp edges, said smaller diameter being about equal to the diameter of the catheter shaft, and said axial length being greater than the diameter of said maximum diameter portion of said tip, said proximal dilating portion constructed for gradually dilating said lumen during proximal motion of said catheter while withdrawing the catheter after releasing said prosthesis, said proximal dilating portion of said tip including a shelf-portion of constant diameter over an axial length, said shelf portion having a diameter corresponding to the inner diameter of said sheath such that distal portions of said sheath can engage said shelf portion when extended over said prothesis to protect said prosthesis against exposure to body fluids, said shelf portion comprising a compressible polymer o-ring fitted into a groove in said shelf portion, and

a thin walled retractable protective sheath sized to be coaxially disposed about and closely conform to said prosthesis when supported on said catheter in said radially contracted form during said delivery to said desired site, and

said tip further constructed in cooperation with said sheath such that said sheath engages said tip when said sheath is coaxially disposed about said prosthesis and the outer diameter of said sheath is no greater than the diameter of said maximum diameter portion of said tip to protect said sheath during said distal motion while delivering said prosthesis.

2. A method for delivering a prosthesis into the esophagus of a patient, comprising:

providing an elongated catheter with a shaft defining an axis and having a proximal end that remains outside the body, a distal end, and a supporting portion for supporting a prosthesis configured in a radially compact form, said catheter further including a bi-directional dilating tip fixed to said catheter at a point distal of said prosthesis, said tip having a distal dilating portion, a proximal dilating portion, and a maximum diameter portion therebetween, a prosthesis carried upon said catheter,

said maximum diameter portion having a diameter that is about equal to or greater than the radially compact form of said prosthesis,

said distal dilating portion extending distally over an axial length and with a smooth profile that is free of sharp edges to a smaller diameter, said smaller diameter being about equal to the diameter of the catheter shaft, and said axial length being greater than the diameter of said maximum diameter portion of said tip, and

said proximal dilating portion extending proximally over an axial length and with a smooth profile that is free of sharp edges to a smaller diameter, said smaller diameter being about equal to the diameter of the catheter shaft, and said axial length being greater than the diameter of said maximum diameter portion of said tip,

placing said catheter into a body lumen and positioning said prosthesis at a desired location,

expanding said prosthesis to a diameter no larger than said maximum diameter of said tip,

withdrawing said catheter to engage the proximal dilating portion of the tip and the prosthesis, and

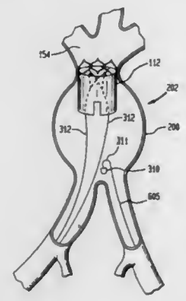
continuing to withdraw said catheter so said tip widens the passage through the prosthesis so the catheter can be removed from the body immediately after deployment.

5,824,036

STENT FOR INTRALUMINAL GRAFTS AND DEVICE AND METHODS FOR DELIVERING AND ASSEMBLING SAME

Karl L. Lauterjung, Munich, Germany, assignor to Datascope Corp, Montvale, N.J.

Filed Sep. 29, 1995, Ser. No. 536,691
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **2 Claims**



1. A stent graft device for insertion into a lumen by an insertion catheter comprising:

an expandable stent having multiple recurring sections,

a graft secured to said stent,

a band for preventing the stent and the graft from expanding,

a release means for severing the band to allow the stent and the graft to expand,

means for retaining the stent and the graft in a set position while removing the stent and graft from an insertion catheter, said retaining means including a) a fork shaped means in a form of a letter V for engaging the stent, b) receiving means on the stent having a shape of an eye opening of a sewing needle for receiving the fork shaped means, and c) a fork control means for retaining and moving the forks by manipulation of a wire attached to the fork shaped means with said wire extending out from both ends of the insertion catheter,

means for securing the multiple recurring sections of the stent to each other,

means for retaining an outer surface of the graft substantially in one plane as the insertion catheter is removed from the stent and the graft, and

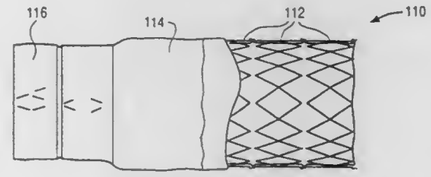
means for holding a front portion of the graft from folding back upon itself during deployment from the insertion catheter.

5,824,037

MODULAR INTRALUMINAL PROSTHESES CONSTRUCTION AND METHODS

Thomas J. Fogarty, Portola Valley; Kirsten Freislinger, Menlo Park, both of Calif.; Steven Weinberg, League City, Tex.; Brian J. Cox, Los Altos, Calif.; Michael A. Evans, Palo Alto, Calif.; Steven W. Kim, Sunnyvale, Calif., and Jay A. Lenker, Los Altos, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 3, 1995, Ser. No. 538,706
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **23 Claims**



1. A liner-limited stent-graft comprising:

a resilient radially expandable tubular frame having an inner surface and an outer surface; and

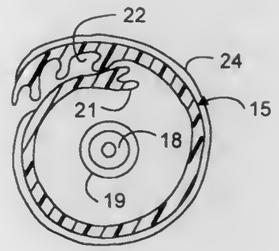
a plastically expansible tubular liner disposed over at least a portion of one of the surfaces of the frame, the liner limiting the resilient expansion of at least a portion of the frame when the stent-graft is in a relaxed state.

5,824,038

ANGIOPLASTY STENT

W. Henry Wall, 1004 P Oak Chase Dr., Tucker, Ga. 30084

Continuation of Ser. No. 129,834, Dec. 8, 1987. This application Dec. 26, 1995, Ser. No. 578,504
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **5 Claims**



1. An implantable intralumenal stent for use in maintaining an opening along a damaged vessel, said stent comprising:

a sleeve having a spiral wall, said wall defining an inner longitudinal edge portion and an outer longitudinal edge portion for allowing said sleeve selectively to assume a first contracted spiral position wherein said inner longitudinal edge portion is spiraled inwardly of said outer longitudinal edge portion for providing a collapsed diameter of the sleeve and the sleeve is small enough to move longitudinally through a vessel, and a second expanded position where said inner longitudinal edge position is moved outwardly for providing an expanded diameter for said sleeve and the sleeve is large enough to engage and support the vessel;

means for urging said wall toward said collapsed diameter; and

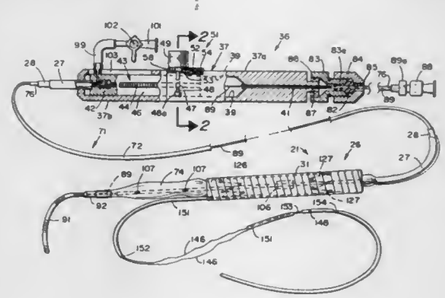
locking means for holding said wall in said expanded position and preventing motion of said wall toward said collapsed diameter, said locking means including a plurality of lugs positioned on an outer surface of the inner longitudinal edge portion and an inner surface of the outer longitudinal edge portion of said wall, said wall being formed with an array of openings therein for promotion of epithelialization and the incorporation of the stent into the vessel.

5,824,039

ENDOVASCULAR GRAFT HAVING BIFURCATION AND APPARATUS AND METHOD FOR DEPLOYING THE SAME

Alec A. Piplani, Mountain View; Dinab B. Quiachon, San Jose, and Wesley D. Sterman, San Francisco, all of Calif., assignors to Endovascular Technologies, Inc., Menlo Park, Calif.

Division of Ser. No. 66,414, May 21, 1993, Pat. No. 5,489,295, which is a continuation of Ser. No. 684,018, Apr. 11, 1991, abandoned. This application Jan. 19, 1996, Ser. No. 588,813
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **13 Claims**



1. A device for deploying a craft having a bifurcation, the device comprising:

a capsule catheter formed from a flexible elongate tubular member having proximal and distal extremities;

a capsule mounted proximate the distal extremity of the tubular member of said capsule catheter, said capsule having an open end;

a graft having a bifurcation disposed within said capsule;

a balloon catheter formed from a flexible elongate tubular member having proximal and distal extremities and extending through said graft, through said capsule and through the tubular member of said capsule catheter;

a balloon secured proximate the distal extremity of the tubular member of said balloon catheters;

retention means carried by the tubular member of said balloon catheter for engaging said graft; and

a control mechanism including a handle having first and second parts movable relative to each other, wherein the proximal extremity of the tubular member of said capsule catheter is secured to the first part, and wherein the tubular member of said balloon catheter extends through the first part,

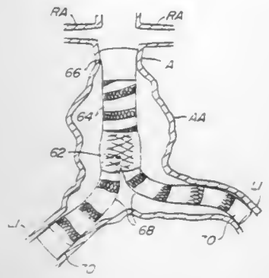
said control mechanism further including means for causing relative movement of the first part with respect to the second part so as to withdraw said capsule from said graft, wherein said retention means retains said craft in a fixed position relative to said balloon catheter.

5,824,040

ENDOLUMINAL PROSTHESES AND THERAPIES FOR HIGHLY VARIABLE BODY LUMENS

Brian Cox, Cupertino; Michael A. Evans, Palo Alto; Allan Will, Atherton; Jay A. Lenker, Los Altos Hills; Steven W. Kim, Sunnyvale, and Kirsten Freislinger, Menlo Park, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Mar. 13, 1996, Ser. No. 615,697
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 23 Claims



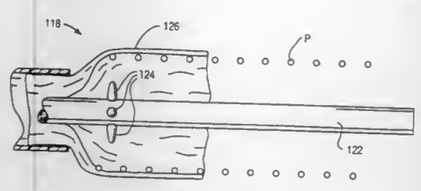
1. A branching endoluminal prosthesis for use in a branching body lumen system which includes a trunk lumen and first and second branch lumens, the prosthesis comprising;
a radially expandable tubular trunk portion having a prosthetic trunk lumen;
radially expandable tubular first and second branch portions with first and second prosthetic branch lumens; and
a radially expandable tubular lumen separation portion which provides fluid communication between the prosthetic trunk lumen and the first and second prosthetic branch lumens;
a non-uniform flexible frame extending along at least a portion of the trunk and lumen separation portions, the frame adapted so that the expanded trunk portion is more axially flexible than the expanded lumen separation portion.

5,824,041

APPARATUS AND METHODS FOR PLACEMENT AND REPOSITIONING OF INTRALUMINAL PROSTHESES

Jay A. Lenker, Los Altos; Kirsten Freislinger, Menlo Park; Michael A. Evans, Palo Alto; Gwendolyn A. Watanabe, Mountain View; Timothy J. Ryan, Los Gatos; Christopher K. Zarins, Portola Valley, and Richard O. Murphy, Mountain View, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 388,561, Feb. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 339,911, Nov. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 290,021, Aug. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 255,681, Jun. 8, 1994, abandoned. This application Jun. 28, 1996, Ser. No. 683,806
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 14 Claims



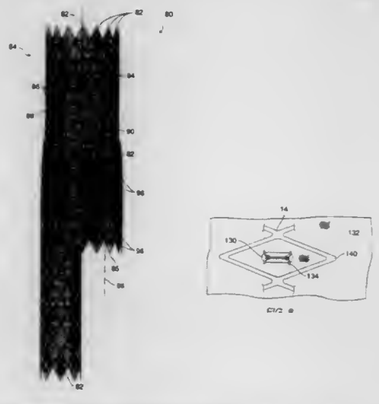
9. A catheter system comprising:
a resilient, radially compressible endoluminal prosthesis having a proximal end and a distal end;
an elongate flexible shaft having a proximal end and a distal end;
a retaining structure attached near the distal end of the shaft which releasably holds the axial position of the prosthesis on the shaft; and
a sheath slidably received over the shaft to cover the prosthesis while said prosthesis is axially held on the shaft by the retaining structure;
wherein the retaining structure extends distally over the prosthesis and within the sheath from a proximal end of the prosthesis beyond the distal end of the prosthesis while the sheath covers the retaining structure.

5,824,042

ENDOLUMINAL PROSTHESES HAVING POSITION INDICATING MARKERS

Sylvie Lombardi, Palo Alto; Steven W. Kim; Darin C. Gittings, both of Sunnyvale; Michael A. Evans, Palo Alto; Jay A. Lenker, Los Altos Hills, and Allan R. Will, Atherton, all of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Apr. 5, 1996, Ser. No. 628,797
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 26 Claims



1. An endoluminal prosthesis for deployment in a body lumen of a patient body, the prosthesis comprising:
a tubular fabric liner having a proximal end, a distal end, and a lumen therebetween;
a radially expandable frame supporting the liner; and
a plurality of imagable bodies attached to the liner, each imagable body comprising a plate having at least one passage therethrough to facilitate attaching the imagable body to the liner, the imagable bodies providing a sharp contrast so as to define a pattern which indicates the prosthesis position when the prosthesis is imaged within the patient body.

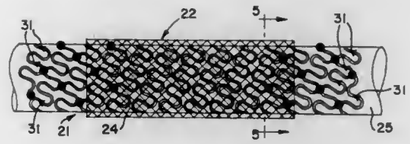
5,824,043

ENDOPROSTHESIS HAVING GRAFT MEMBER AND EXPOSED WELDED END JUNCTIONS, METHOD AND PROCEDURE

Robert J. Cottone, Jr., Fort Lauderdale, Fla., assignor to Cordis Corporation, Miami Lakes, Fla.

Division of Ser. No. 208,612, Mar. 9, 1994, Pat. No. 5,549,663. This application May 23, 1996, Ser. No. 652,297
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 8 Claims

1. A method for forming an implantable transluminal endoprosthesis, comprising the steps of:



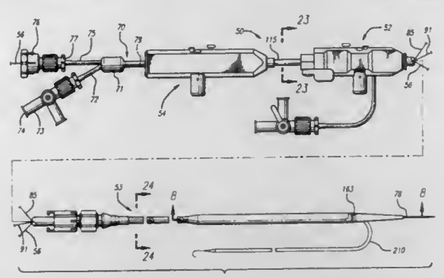
providing an elongated strand of malleable material, forming said strand into a repeating pattern of undulations having repeating bendable connecting portions, wrapping the strand with the repeating pattern of undulations to follow a generally helical axis having a plurality of full circle windings which are substantially continuous with each other along the generally helical axis until the bendable connecting portions of one of the full circle windings are generally adjacent to respective bendable connecting portions of an adjacent full circle winding to define a plurality of adjacent pairs of bendable connecting portions to thereby form a stent component having an interior surface and an exterior surface, said stent component having a central length portion between two end length portions, each said end length portion having a plurality of said full circle windings;
welding together a plurality of said pairs of connecting portions of adjacent said full circle windings of the end length portions to form two welded end lengths; and
positioning a graft component along said interior and exterior surfaces of the stent component, including overlying an inner and outer member of the graft component over less than the entirety of the interior and exterior surfaces, respectively, of the stent component, said positioning step exposing a substantial axially extending length of each of said two welded end length portions of the stent component such that the thus exposed welded end length portions are uncovered by the graft component, and said overlying of the positioning step includes overlying at least one welded full circle winding of both of said welded end lengths.

5,824,044

BIFURCATED MULTICAPSULE INTRALUMINAL GRAFTING SYSTEM

Dinah B. Quiachon, San Jose; Alec A. Piplani, Mountain View; Steve G. Baker, Sunnyvale; Ronald G. Williams, Menlo Park; Richard S. Williams, Sunnyvale; Kenneth L. Osborn, Mountain View; Ted W. Layman, Palo Alto, and Peter K. Johansson, San Jose, all of Calif., ., assignors to Endovascular Technologies, Inc., Menlo Park, Calif.

Continuation-in-part of Ser. No. 241,476, May 12, 1994, Pat. No. 5,628,723. This application Sep. 3, 1996, Ser. No. 707,179
Int. Cl.[6] A61F 2/06;2/04
U.S. Cl. 623—1 20 Claims



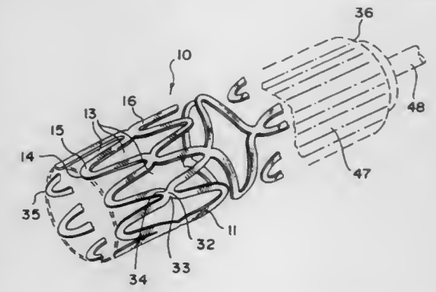
1. A system for implanting a prosthesis in a corporeal lumen having a wall, said system comprising:
a graft having a plurality of ends;
a plurality of capsule assemblies, each said capsule assembly having an elongate tubular member having proximal and distal ends and each being positioned on the outside of said graft, each said capsule adapted to releasably retain one end of said graft; and
at least one handle assembly, said handle assembly including a rack and pinion configured in a coaxial arrangement with one of said elongate tubular members.

5,824,045

VASCULAR AND ENDOLUMINAL STENTS

Eckhard Alt, Ottobrunn, Germany, assignor to Inflow Dynamics Inc., (Delaware Corporation), Arlington, Va.

Filed Oct. 21, 1996, Ser. No. 733,553
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 17 Claims



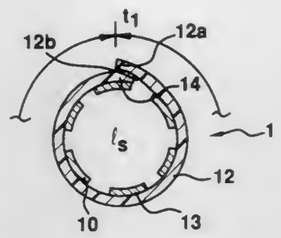
1. A vascular or endoluminal stent adapted for deployment in a vessel or tract of a patient to maintain an open lumen therein, comprising:
a biocompatible metal hollow tube having a multiplicity of openings through an open-ended tubular wall thereof, said tube constituting a single member from which the entire stent is fabricated and having a predetermined inner diameter in a production state and adapted to be expanded to a larger diameter for deployment in said vessel or tract, and
a thin, tightly adherent coating of gold of substantially uniform thickness and density overlying the entire exposed surface area of the tube including edges of said openings as well as exterior and interior surfaces and ends of said wall,
said gold coating being composed of plural tightly bonded layers superposed atop one another.

5,824,046

COVERED STENT

Scott R. Smith, Chaska; David Sogard, Edina, and Susan Shoemaker, Elk River, all of Minn., assignors to Scimed Life Systems, Inc., Maple Grove, Minn.

Filed Sep. 27, 1996, Ser. No. 720,091
Int. Cl.[6] A61F 2/06;2/04
U.S. Cl. 623—1 14 Claims



1. A composite intraluminal device comprising:

an elongate radially expandable tubular stent having an interior luminal surface and an opposed exterior surface extending along a longitudinal stent axis; and

a stent cover positioned about the stent and which is formed of unsintered ePTFE which is expandable upon said radial expansion of said stent,

wherein said stent covering includes an elongate segment of said unsintered ePTFE having an original longitudinal expanse, said segmnent being expanded in a transverse direction so as to reduce said original longitudinal expanse, said segment being positioned generally transverse to said longitudinal stent axis, and being expandable longitudinally upon said radial expansion of said stent to return said expanded segment to said original longitudinal expanse to thereby control said radial expansion of said stent.

5,824,047

VASCULAR GRAFT FABRIC

Janet L. Moreland, Newburyport, Mass., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 11, 1996, Ser. No. 728,750
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **14 Claims**

1. A vascular graft fabric for repairing or augmenting a weakened vascular wall, comprising:

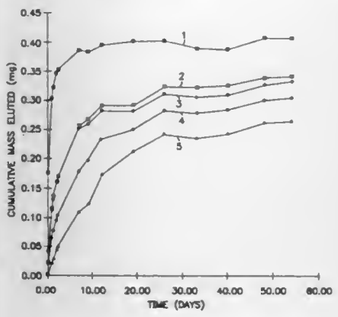
a biologically compatible and implantable weave of synthetic yarns having a greater number of picks per inch than ends per inch and having a double wall thickness of less than 0.02 inches, wherein said weave is formable into a tubular configuration having an outer diameter and a lumen extending therethrough which exhibits limited radial compliance, greater than 5 percent but that does not exceed 35 percent of the outer diameter when a fluid at a physiologic pressure of 120–200 mm Hg is flowing through the lumen and wherein the tubularly configured weave does not exhibit radial dilation, more than an additional 5% beyond the limited radial compliance, or appreciable longitudinal expansion after flow of fluid through the lumen at a physiologic pressure of 120–200 mm Hg for approximately 72 hours.

5,824,048

METHOD FOR DELIVERING A THERAPEUTIC SUBSTANCE TO A BODY LUMEN

Ronald J. Tuch, Plymouth, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 482,246, Jun. 7, 1995, Pat. No. 5,679,400, which is a continuation-in-part of Ser. No. 52,878, Apr. 4, 1993, Pat. No. 5,464,650. This application Oct. 9, 1996, Ser. No. 731,106
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **9 Claims**



1. A method for delivery of a therapeutic substance to the interior of a body lumen comprising the steps of:

(a) providing a generally cylindrical stent body having a surface;

(b) providing a coating on the surface of the stent body comprising a polymer and a therapeutic substance in a solid/solid solution with the polymer, the coating further comprising a first coating layer nearer the stent body having a first concentration of therapeutic substance overlaid by a second porous coating layer having a second lesser concentration of therapeutic substance;

(c) introducing the stent transluminally into a selected portion of the body lumen; and

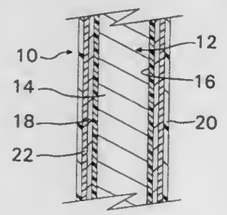
(d) radially expanding the stent into contact with the body lumen.

5,824,049

COATED IMPLANTABLE MEDICAL DEVICE

Anthony O. Ragheb, West Lafayette; Brian L. Bates, Bloomington; Neal E. Fearnot, West Lafayette; Thomas G. Kozma, West Lafayette, and William D. Voorhees, III, West Lafayette, all of Ind., assignors to MED Institute, Inc., West Lafayette, Ind.

Continuation of Ser. No. 645,646, May 16, 1996, which is a continuation-in-part of Ser. No. 484,532, Jun. 7, 1995, Pat. No. 5,609,629. This application Oct. 31, 1996, Ser. No. 741,565
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **16 Claims**



1. An implantable vascular device, comprising:

A. a stent structure adapted for introduction into a vascular system of a patient, the stent structure comprising a biocompatible metal;

B. at least one bioactive material posited on one surface of the structure of the stent, thereby defining a bioactive-material-free stent surface on which the at least one bioactive material is not posited; and

C. a porous layer posited over the at least one bioactive material and the bioactive-material-free surface, wherein said porous layer is at least about 5000 Å thick and is adequate to provide for a controlled release of the at least one bioactive material through said porous layer.

5,824,050

PROSTHESIS WITH IN-WALL MODULATION

Theodore Karwoski, Hudson; Paul Martakos, Pelham, both of N.H.; Peter Gingras, Bedford, Mass.; Steve A. Herweck, Nashua, and Tom Swanick, Mont Vernon, both of N.H., assignors to Atrium Medical Corporation, Hudson, N.H.

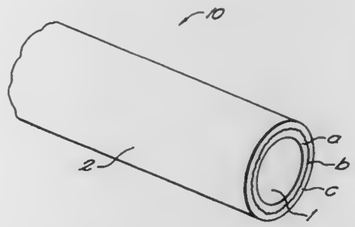
Filed Dec. 3, 1996, Ser. No. 760,115
Int. Cl.[6] A61F 2/06;2/04
U.S. Cl. 623—1 **11 Claims**

1. A prosthetic member comprising

a prosthesis wall having at least first, second and third portions along a wall thickness,

said first portion including a porous inner portion extending continuously along an axis

said second portion being contiguous to said first portion and forming a barrier impenetrable to cell growth and being permeable with a water entry pressure higher than said first portion



said third portion lying over said second portion and extending as a continuous body along said axis

said first, second and third portions being coalesced together to form said wall having cellularly penetrable first and third portions and said second portion modulates cellular penetration of said first and third portions.

5,824,051

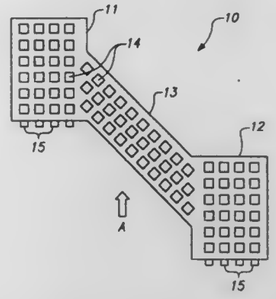
Patent Not Issued For This Number

5,824,052

COILED SHEET STENT HAVING HELICAL ARTICULATION AND METHODS OF USE

Farhad Khosravi, San Mateo; Michael Hogendijk, Palo Alto, and John Spiridigliozzi, Belmont, all of Calif., assignors to EndoTex Interventional Systems, Inc., Cupertino, Calif.

Filed Mar. 18, 1997, Ser. No. 819,967
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **30 Claims**



1. A stent for supporting a body lumen, the stent comprising:

resilient first and second coiled sheet portions, each of the first and second coiled sheet portions being concentrically coiled;

a helical articulation joining the first and second coiled sheet portions;

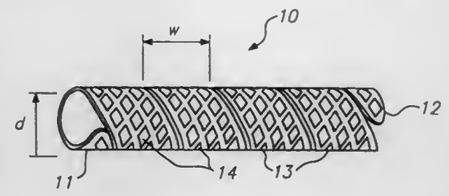
wherein the stent has a first diameter suitable for transluminal delivery when in a contracted state and a second larger diameter when deployed.

5,824,053

HELICAL MESH ENDOPROSTHESIS AND METHODS OF USE

Farhad Khosravi, San Mateo; Michael Hogendijk, Palo Alto, and Michael R. Ross, Hillsborough, all of Calif., assignors to EndoTex Interventional Systems, Inc., Menlo Park, Calif.

Filed Mar. 18, 1997, Ser. No. 820,212
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **21 Claims**



1. A stent for supporting a body lumen, the stent comprising:

a helical mesh coil comprising a plurality of turns and first and second free ends, the stent having a maximum expanded diameter, each turn having a substantially rectangular cross-section and a width about equal to the maximum expanded diameter of the stent, the helical mesh coil including a lattice formed of a multiplicity of openings,

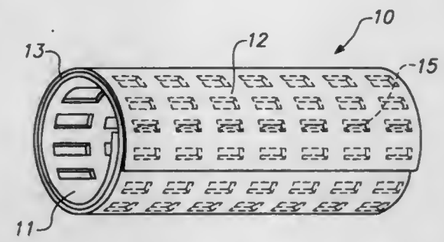
wherein the helical mesh coil is delivered transluminally to a position within the body lumen in a contracted state and supports the body lumen in an expanded state.

5,824,054

COILED SHEET GRAFT STENT AND METHODS OF MAKING AND USE

Farhad Khosravi, San Mateo; Michael Hogendijk, Palo Alto; John Spiridigliozzi, Belmont, and Michael R. Ross, Hillsborough, all of Calif., assignors to Endotex Interventional Systems, Inc., Menlo Park, Calif.

Filed Mar. 18, 1997, Ser. No. 820,213
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 **67 Claims**

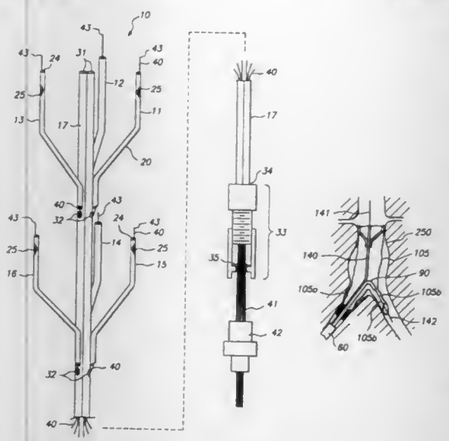


1. A prosthesis for treating a section of a body lumen, the prosthesis comprising:

a coiled sheet portion having a contracted state wherein the coiled sheet portion is wound to a first diameter to form a series of overlapping turns, and an expanded state wherein the coiled sheet portion forms a tubular member having a second diameter greater than the first diameter, the coiled sheet portion expandable to the expanded state when released from the contracted state; and

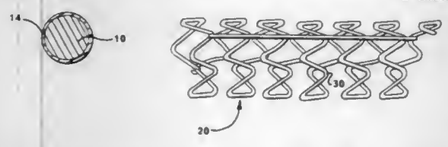
a graft material that is biocompatible affixed to the coiled sheet portion by a biocompatible adhesive, the graft material being wound within the overlapping turns of the coiled sheet portion when the coiled sheet portion is in the contracted state.

5,824,055
STENT GRAFT DELIVERY SYSTEM AND METHODS OF USE
John Spiridigliozzi, Belmont; Amir Abolfathi, Palo Alto; Farhad Khosravi, San Mateo, and Michael R. Ross, Hillsborough, all of Calif., assignors to Endotex Interventional Systems, Inc., Menlo Park, Calif.
Filed Mar. 25, 1997, Ser. No. 824,012
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 30 Claims



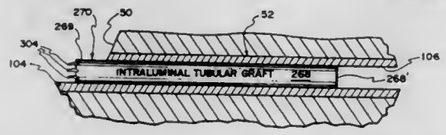
1. A method of implanting a graft in a hollow-body organ or vessel, the method comprising steps of:
providing a graft, an introducer catheter and a graft delivery component having a plurality of fingers, each of the fingers including a retention wire that releasably engages the graft, the fingers and the graft retained in a contracted state by the introducer catheter;
inserting the graft delivery component and introducer catheter transluminally to deliver the graft to a desired position in the hollow-body organ or vessel; and
retracting the introducer catheter to allow the fingers to resiliently deploy to an expanded state in which the graft is held in apposition to an interior wall of the hollow-body vessel or organ.

5,824,056
IMPLANTABLE MEDICAL DEVICE FORMED FROM A REFRACTORY METAL HAVING A THIN COATING DISPOSED THEREON
Duane L. Rosenberg, Columbia Heights, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.
Division of Ser. No. 568,028, Dec. 6, 1995, Pat. No. 5,765,418, which is a continuation-in-part of Ser. No. 243,348, May 16, 1994, abandoned. This application Apr. 3, 1997, Ser. No. 834,779
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 1 Claim



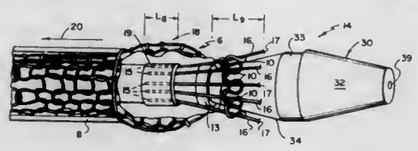
1. An implantable medical device comprising an elongated article intended for exposure to body tissue or body fluids, the elongated article comprising a refractory metal coated by a physical vapor disposition process to form a coating thereon, the coating forming a biologically inert metal lubricant having a thickness ranging between about 500 Angstrom and about 3000 Angstrom, the article being drawn in a diamond die to form a smooth biocompatible surface finish.

5,824,057
ANTI-STENOTIC METHOD AND PRODUCT FOR OCCLUDED AND PARTIALLY OCCLUDED ARTERIES
Mark Plaiá, Tigard; Vincent A. Reger, Portland, and Gregory N. Nordgren, Wilsonville, all of Oreg., assignors to Endo-Vascular Instruments, Inc., Vancouver, Wash.
Continuation of Ser. No. 403,096, Mar. 13, 1995, Pat. No. 5,662,701, which is a division of Ser. No. 73,002, Jun. 7, 1993, Pat. No. 5,571,169. This application May 16, 1997, Ser. No. 857,224
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 8 Claims



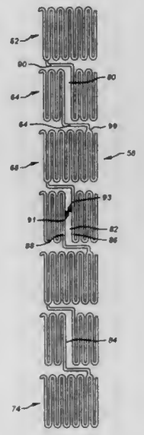
1. An uninterrupted method of treating a vessel, comprising the following steps in succession without appreciable delay between steps:
creating an entry site into the vessel;
inserting a treating instrument into the vessel through the entry site;
treating plaque from within a segment of the vessel using the treating instrument;
removing the treating instrument through the entry site;
placing a vascular graft through the entry site and at a location within and as a contiguous internal lining for the vessel at least co-extensive with and predominantly concealing the segment using an insertion and placement instrument;
removing the insertion and placement instrument through the entry site;
securing the vascular graft within said vessel at said location.

5,824,058
PROSTHESIS DELIVERY
Adrian C. Ravenscroft, Boston, and George T. Roberts, Weston, both of Mass., assignors to Boston Scientific Corporation, Watertown, Pa.
Continuation of Ser. No. 550,511, Oct. 30, 1995, abandoned, which is a continuation of Ser. No. 65,238, May 20, 1993, Pat. No. 5,480,423. This application Jul. 21, 1997, Ser. No. 897,944
Int. Cl.[6] A61F 2/06;2/04;29/00
U.S. Cl. 623—1 2 Claims



1. A system for positioning a self-expanding prosthesis in contact with tissue within a patient, comprising:
a self-expanding prosthesis having a proximal end and a distal end and a tissue-engaging body therebetween,
a catheter having a portion supporting a prosthesis in a radially compact form,
said portion of said catheter supporting said prosthesis including members positioned to engage the distal end of said prosthesis to maintain corresponding portions of the prosthesis compact at a fixed axial position with respect to the catheter while other portions of said prosthesis are radially expanded to engage tissue,
said distal end of said prosthesis engaged by said members being releasable from said catheter at said fixed axial position by relative axial motion between said members and said prosthesis, so that said members disengage from said prosthesis,
a retractable sheath positioned over and in contact with said prosthesis when said prosthesis is in the compact form, and
a tensioning element applying an axial force to said prosthesis to reduce frictional force between said sheath and said prosthesis while retracting said sheath to expose said prosthesis.

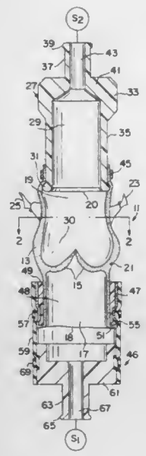
5,824,059
FLEXIBLE STENT
Bandula Wijay, 1903 Carriage Creek Dr., Friendswood, Tex. 77546
Filed Aug. 5, 1997, Ser. No. 906,054
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—1 20 Claims



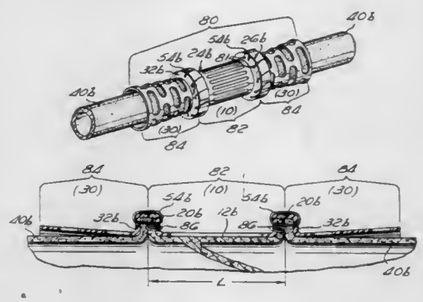
1. A flexible stent, comprising:
a plurality of rings forming a generally cylindrical shape about a longitudinal axis;
each said ring connected to an adjacent ring by a crosstie;
at least one first ring being one of said rings and formed having a gap which extends generally in the direction of the longitudinal axis and having crossties which extend from opposing segments of said ring which define said gap, respectively, to a ring above and a ring below in a manner which resists enlargement of the gap as the ring which defines said gap is radially expanded.

5,824,060
NATURAL TISSUE HEART VALVE FIXATION
Grant W. Christie, Auckland, New Zealand, and Carol E. Eberhardt, Fullerton, Calif., assignors to Medtronic, Inc., Minneapolis, Minn.
Filed Sep. 29, 1993, Ser. No. 129,636
Int. Cl.[6] A61F 2/24
U.S. Cl. 623—2 29 Claims

1. A method of fixing a natural tissue heart valve which includes a tubular wall defining a passage and valve leaflets dividing the passage into an inflow section leading to the leaflets and an outflow section leading away from the leaflets with the leaflets being openable to allow flow from the inflow section to the outflow section, said method comprising:
attaching a first fixture to the inflow section to provide an inflow chamber, said first fixture having an inlet leading to the inflow chamber;
attaching a second fixture to the outflow section to provide an outflow chamber, said second fixture having an inlet leading to the outflow chamber;
subjecting the exterior of the valve to a fixative fluid at a first pressure,
flowing fixative fluid under a second pressure through said inlet leading to the inflow chamber, and
flowing fixative fluid under a third pressure through said inlet leading to the outflow chamber.



5,824,061
VASCULAR AND VENOUS VALVE IMPLANT PROSTHESES
Rodolfo C. Quijano, Meggen, Switzerland, and Aws Nashef, Huntington, Calif., assignors to Baxter International Inc., Deerfield, Ill.
Division of Ser. No. 264,225, Jun. 22, 1994, Pat. No. 5,609,626, which is a continuation of Ser. No. 871,414, Apr. 21, 1992, abandoned, which is a continuation-in-part of Ser. No. 500,821, Mar. 28, 1990, abandoned, which is a continuation-in-part of Ser. No. 359,449, May 31, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 467,496
Int. Cl.[6] A61F 2/06
U.S. Cl. 623—2 34 Claims



1. A vascular implant system for facilitating the surgical implantation of a tubular vascular graft between opposing cut ends of a

blood vessel from which a segment has been resected and removed, said system comprising:

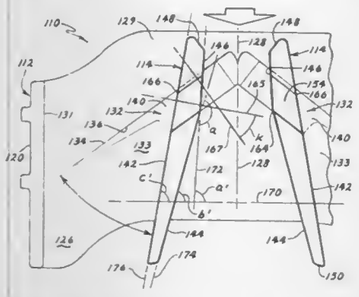
a) an exovascular stent component configured to receive and hold said tubular vascular graft therein, said exovascular stent component comprising:
   a tubular stent body having a first end, a second end, and a hollow bore extending longitudinally therethrough;
   a first flange formed around the first end of said tubular body;
   a second flange formed around the second end of said tubular body;
   said stent component being sized relative to said tubular vascular graft such that said tubular graft is coaxially positionable in the hollow bore of said stent with the ends of said graft being in contact with said first and second flanges; and
b) first and second dilation restrictor components respectively positionable on the cut ends of said blood vessel for limiting the extent to which said blood vessel may dilate relative to the size of said tubular vascular graft, each of said dilation restrictor components comprising:
   an elongate tubular body having a first end, a second end and a hollow bore extending longitudinally therethrough;
   an outwardly extending flange formed about the second end of said tubular body;
   the tubular body of such dilation restrictor component being sized and configured to pass, first end first, over the cut end of said blood vessel such that said cut end may be attached to the flange of said dilation restrictor component with the tubular body of said restrictor component remaining disposed around said blood vessel to prevent said blood vessel from dilating to a size larger than the hollow bore of said surrounding tubular body.

5,824,062

BILEAFLET HEART VALVE HAVING DYNAMIC PIVOT MECHANISM

Nandkishor G. Patke, Shoreview; Adel A. Mikhail, Bloomington; Gene E. Stobbs, Brooklyn Park, and Shelley N. Johnson, Minnetonka, all of Minn., assignors to CV Dynamics, Inc., Inver Grove Heights, Minn.

Continuation-in-part of Ser. No. 412,696, Mar. 29, 1995, abandoned, and a continuation-in-part of Ser. No. 546,210, Oct. 20, 1995, abandoned. This application Mar. 29, 1996, Ser. No. 626,170
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **15 Claims**



3. A bileaflet heart valve prosthesis for controlling a circulation of a fluid within a heart of a patient, said bileaflet heart valve prosthesis comprising

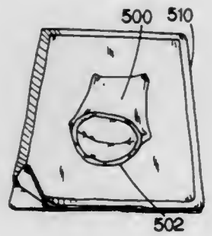
an annular base and first and second leaflets, the first leaflet and the second leaflet being mounted within the annular base for pivotal movement between a fully closed position and a fully open position, the annular base defining a bore extending through the base, the annular base having a first lateral side having a first lateral surface, a second lateral side having a second lateral surface, and a pair of transverse sides individually disposed between the first and second lateral sides wherein each of the respective leaflets have first and second sides, the first side being a top side and the second side being a bottom side, the bottom sides of the respective leaflets generally facing one another when the respective leaflets are in the fully open position; and wherein each bottom side is substantially defined by an upper surface lying generally in a first plane and a lower surface lying generally in a second plane, the first plane lying at an angle to the second plane; and the top sides of the respective leaflets having a top surface lying generally in a third plane, the third plane lying at an angle to each of the first and second planes.

5,824,063

METHOD OF REPLACING ATRIOVENTRICULAR HEART VALVES USING FLEXIBLE TUBES

James L. Cox, 7 Dromara Rd., Ladue, Mo. 63124

Division of Ser. No. 459,979, Jun. 2, 1995, Pat. No. 5,713,950, which is a division of Ser. No. 146,938, Nov. 1, 1993, Pat. No. 5,480,424. This application Nov. 14, 1996, Ser. No. 749,335
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **5 Claims**



1. A method of surgically creating an atrioventricular replacement valve in a patient's heart, comprising the following steps:

a. creating a tubular segment having an inlet end, a thin and flexible wall portion having diametrically opposing sides, and an outlet end;

b. surgically removing from the patient's heart an atrioventricular valve which does not function properly, thereby generating an unoccupied valve annulus between an atrial chamber and a ventricular chamber, wherein removal of the atrioventricular valve includes removal of native valve leaflets and at least some chordae tendinae while leaving at least some papillary muscles intact in the ventricular chamber;

c. circumferentially securing the inlet end of the tubular segment to the unoccupied valve annulus;

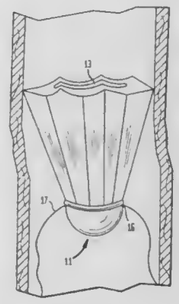
d. coupling selected portions of the outlet end of the tubular segment to papillary muscles in the ventricular chamber, in a manner which allows the flexible wall portion of the tubular segment to be manipulated by fluid pressure so that the opposing sides of the tubular segment will open during diastole and close during systole, in a manner similar to leaflets in a natural atrioventricular valve, wherein opposing sides of the tubular segment during systolic contraction of the heart creates a line of commissure which resembles native leaflet commissure, thereby preventing backflow of blood into the atrial chamber during systole without impeding flow through the replacement valve during diastole.

5,824,064

TECHNIQUE FOR AORTIC VALVE REPLACEMENT WITH SIMULTANEOUS AORTIC ARCH GRAFT INSERTION AND APPARATUS THEREFOR

Syde A. Taheri, 268 Dan Troy, Williamsville, N.Y. 14221

Continuation-in-part of Ser. No. 435,851, May 5, 1995, abandoned. This application Nov. 19, 1996, Ser. No. 752,336
Int. Cl.[6] A61F *2/06;2/24*
U.S. Cl. 623—2 **7 Claims**



1. A method for repairing an aortic aneurysm in a patient, with a prosthetic aortic graft, said prosthetic aortic graft having one or more branches corresponding to one or more of the left subclavian, right subclavian and carotid arteries, one branch corresponding to one artery, said method comprising the steps of:

exposing and dissecting one or more of said left subclavian, right subclavian and left carotid and right carotid arteries, and said patient's left femoral artery;

catheterizing each of said exposed subclavian and carotid arteries;

a first threading of a first end of a guide wire through each of said catheters in each of said exposed subclavian and carotid arteries toward and through said exposed, dissected femoral artery, each of said catheters having a different guide wire threaded therethrough, while maintaining a second end of each of said guide wires at said exposed, dissected subclavian and carotid arteries;

the second threading of each of said first ends of said guide wires through the branch in said prosthetic aortic graft and back through the catheter toward said exposed, dissected subclavian and carotid arteries corresponding to the artery through which said guide wire was first threaded, while anchoring each of said guide wires to their respective branches;

placing said prosthetic aortic graft into an openable and closeable capsule;

drawing said prosthetic aortic graft in said capsule from said femoral artery toward said patient's aortic arch by pulling on said first and second ends of said guide wires;

aligning each of said branches of said prosthetic aortic graft with said corresponding artery by pulling on the appropriate one of said guide wires;

securing said prosthetic aortic graft to said patient's aortic wall;

removing said catheters and guide wires; and

closing and covering said dissected, exposed arteries.

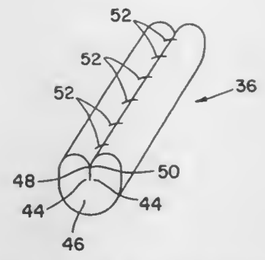
5,824,065

SEWING TUBE FOR A XENOGRAFT MITRAL VALVE

Jeffrey M. Gross, Mission Viejo, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 566,229, Dec. 1, 1995, Pat. No. 5,662,704. This application Jul. 7, 1997, Ser. No. 888,480
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **8 Claims**

1. A sewing tube for a xenograft mitral valve made according to the steps of:



providing a piece of flexible material in the shape of a rectangle having opposed transverse edges;

bringing together the opposed transverse edges to form a mitral valve sewing tube having an interior;

directing the opposed transverse edges toward the interior of the tube; and

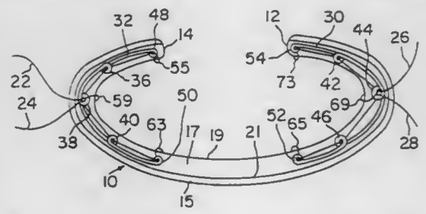
attaching the opposed transverse edges to each other.

5,824,066

ANNULOPLASTY PROSTHESIS

Jeffrey M. Gross, Mission Viejo, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 565,134, Dec. 1, 1995, abandoned. This application May 21, 1997, Ser. No. 861,245
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **45 Claims**



40. An annuloplasty prosthesis, comprising a frame member configured to extend from a trigone toward a posterior leaflet to a point proximally adjacent the posterior leaflet, a fabric covering at least a portion of the frame member, and a drawstring affixed to and cooperatively arranged with the frame member such that tension may be applied by the drawstring between two points on the frame member to deflect the frame member.

5,824,067

PHYSIOLOGIC MITRAL VALVE BIOPROSTHESIS

Jeffrey M. Gross, Mission Viejo, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Division of Ser. No. 566,229, Dec. 1, 1995, Pat. No. 5,662,704. This application Jul. 7, 1997, Ser. No. 888,563
Int. Cl.[6] A61F *2/24*
U.S. Cl. 623—2 **1 Claim**

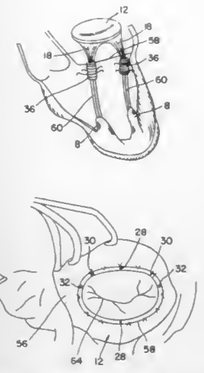
1. A method for replacing a damaged or diseased mitral valve in a human comprising the steps of:

(a) collecting a whole animal heart having endocardium, a mitral valve having an annulus, chordae tendineae, papillary heads, left ventricle and left atrium shortly after the death of the animal;

(b) exposing the mitral valve, chordae tendineae and papillary heads of the animal heart;

(c) fixing the mitral valve;

(d) excising the mitral valve from the result of step c to include a portion of the endocardium containing the papillary heads



so that for each set of chordae tendineae and papillary head, the entire chordae tendineae and substantially the entire corresponding papillary head are removed;

(e) attaching an annular cover to the annulus of the mitral valve;

(f) covering the remnants of the papillary heads with a section of flexible material;

(g) fashioning a sewing tube of a flexible material;

(h) attaching the sewing tube directly to the remnant of the papillary head so that the sewing tube extends away from the mitral valve;

(i) locating trigones and short axis of the human mitral valve for geometric reference;

(j) removing the human mitral valve from the human heart;

(k) cutting the chordae tendineae in the human heart near the papillary heads;

(l) placing pledgeted sutures through native papillary heads;

(m) trimming the sewing tube in length to correspond to the length of the human papillary head to annulus dimension;

(n) sliding the sewing tube down the pledgeted sutures into contact with the native papillary head;

(o) securing the sewing tube to the native papillary head;

(p) placing the replacement mitral valve in the human heart annulus aligned with stay sutures; and

(q) sewing the replacement mitral valve into position in the human heart annulus using the stay sutures.

5,824,068

CARDIAC VALVE HOLDERS

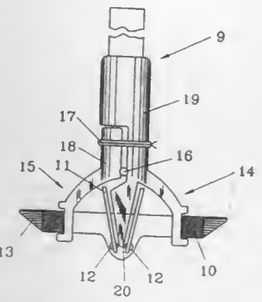
Mogens Bugge, Göteborg, Sweden, assignor to St. Jude Medical, Inc., St. Paul, Minn.

Continuation of Ser. No. 663,303, Jun. 21, 1996, abandoned. This application Aug. 7, 1997, Ser. No. 908,193

Claims priority, application Sweden, Dec. 22, 1993, 9304234; Sep. 13, 1994, 9403043

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **13 Claims**



1. A holder for an artificial heart valve of the type having an inlet, an outlet and a first valve blade providing a first profile in relation to the inlet and a second profile in relation to the outlet, wherein the first profile and the second profile are different, the holder comprising:

a holder body configured to selectively couple to a heart valve;

a handle extending from the holder body; and

a safety member, spaced apart from the holder body, extending from the handle and configured to mate with exactly one of the profiles when the holder body is in abutted contact with the heart valve, wherein the safety member prevents the holder body from mating with the other profile.

5,824,069

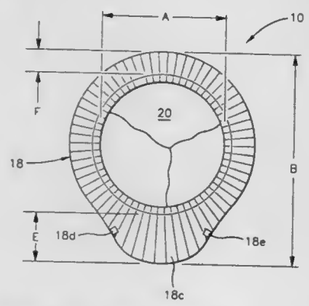
PROSTHETIC HEART VALVE WITH SUTURING MEMBER HAVING NON-UNIFORM RADIAL WIDTH

Gerald M. Lemole, Huntingdon Valley, Pa., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 712,395, Sep. 13, 1996, abandoned. This application Oct. 27, 1997, Ser. No. 967,349

Int. Cl.[6] A61F *2/24*

U.S. Cl. 623—2 **21 Claims**



20. A prosthetic heart valve, comprising:

a circular frame element defining an opening for the passage of blood therethrough;

a check valve element connected to the circular frame element and extending across the opening; and

a generally pear-shaped suturing member surrounding the circular frame element.

5,824,070

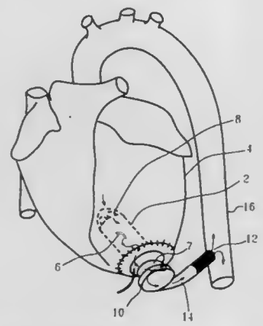
HYBRID FLOW BLOOD PUMP

Robert Jarvik, 124 W. 60 St., New York, N.Y. 10023

Filed Oct. 30, 1995, Ser. No. 544,989

Int. Cl.[6] A61M *1/12*

U.S. Cl. 623—3 **6 Claims**



1. A blood pump comprising,

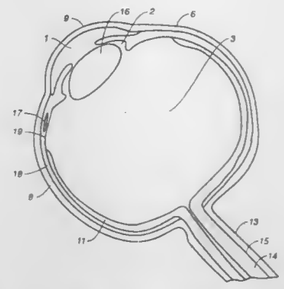
a. hydrodynamic pump impeller means, contained within a generally cylindrical chamber having an inflow and an outflow opening, said impeller means supported by bearing means and driven by power means,

b. means for receiving blood from said inflow opening in an axial direction, impart rotational momentum to the blood, and eject said blood in a substantially axial direction through said outflow opening, and,

c. volute means comprising,

1. a chamber downstream of said outflow opening into which blood enters axially with rotational as well as axial fluid momentum and within which the flow channel is expanded radially, and

2. generally tangential discharge means.



5,824,071

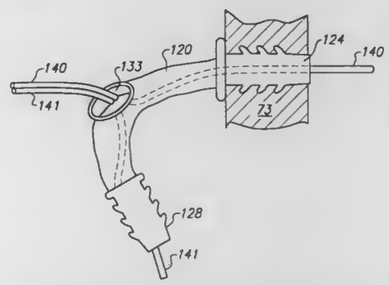
APPARATUS FOR TREATMENT OF ISCHEMIC HEART DISEASE BY PROVIDING TRANSVENOUS MYOCARDIAL PERFUSION

James A. Nelson, Seattle, and Ascher Shmulewitz, Mercer Island, both of Wash., assignors to Circulation, Inc., Menlo Park, Calif.

Division of Ser. No. 714,466, Sep. 16, 1996, Pat. No. 5,655,548. This application Feb. 12, 1997, Ser. No. 798,700

Int. Cl.[6] A61M *1/10*

U.S. Cl. 623—3 **22 Claims**



1. Apparatus for use in treating ischemic heart disease by providing long-term retrograde transvenous myocardial perfusion, the apparatus comprising;

a conduit adapted to be disposed between a patient's left ventricle and the patient's coronary sinus, so that blood flows through the conduit from the left ventricle to the coronary sinus during cardiac systole;

means for partially occluding the patient's coronary ostium; and

a valve for limiting a peak pressure attained within the coronary sinus by venting blood from the conduit into the patient's right atrium when the pressure attained within the coronary sinus exceeds a predetermined value.

5,824,072

BIOCOMPATIBLE OCULAR IMPLANTS

Vernon G. Wong, Rockville, Md., assignor to Oculex Pharmaceuticals, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 437,573, May 9, 1995, abandoned, which is a continuation of Ser. No. 153,184, Nov. 15, 1993, Pat. No. 5,443,505. This application Aug. 14, 1996, Ser. No. 698,238

Int. Cl.[6] A61F *2/14*

U.S. Cl. 623—4 **17 Claims**

1. A method for treating an eye condition which comprises:

providing an implant comprising a physiologically active therapeutic agent encapsulated in a pharmacologically acceptable biocompatible polymer;

producing by surgical means an avascular region external to the vitreous and proximal to the site of said eye condition; and

introducing said implant into the avascular region produced by said surgical means, thereby permitting diffusion of said therapeutic agent from said implant into the vitreous, and in proximity to said eye condition;

wherein said agent is maintained at an effective dosage for said eye condition at the site of said eye condition for an extended period of time.

5,824,073

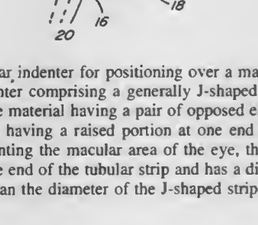
MACULAR INDENTOR FOR USE IN THE TREATMENT OF SUBRETINAL NEOVASCULAR MEMBRANES

Gholam A. Peyman, 2020 Gravier St., Ste. B, New Orleans, La. 70112-2234

Continuation-in-part of Ser. No. 617,114, Mar. 18, 1996, Pat. No. 5,743,274. This application Sep. 20, 1996, Ser. No. 717,302

Int. Cl.[6] A61F *2/14*

U.S. Cl. 623—4 **10 Claims**



1. A macular indenter for positioning over a macular area of an eye, the indenter comprising a generally J-shaped tubular strip of biocompatible material having a pair of opposed ends and a diameter, the strip having a raised portion at one end of the J-shaped strip for indenting the macular area of the eye, the raised portion closes the one end of the tubular strip and has a diameter which is not greater than the diameter of the J-shaped strip.

5,824,074

INTRAOCCULAR LENS ARRANGEMENT AND METHOD FOR CORRECTING ASTIGMATISM

Hans-Reinhard Koch, Friedrich-Ebert Str. 23, Bonn, Germany, D-53177

PCT No. PCT/DE95/00135, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/20926, PCT Pub. Date Aug. 10, 1995

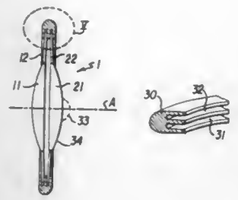
PCT Filed Feb. 2, 1995, Ser. No. 687,408

Claims priority, application Germany, Feb. 3, 1994, 44 03 326.5

Int. Cl.[6] A61F *2/16*

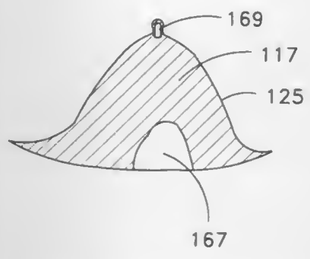
U.S. Cl. 623—6 **17 Claims**

1. An intraocular lens structure for implantation in an eye of a patient, the intraocular lens structure comprising a plurality of at



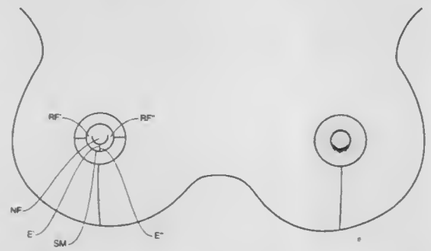
least two intraocular lenses aligned along a common optical axis, each of said at least two intraocular lenses being provided with an optical compensation section adapted to correct an astigmatism with a linear orientation, and support means for retaining each of said at least two intraocular lenses for rotation about the common optical axis relative to one another when in an implanted state.

5,824,075
CUSTOM FORMED NATURAL FIT ARTIFICIAL BREAST APPLIANCE
Janice Marie Thielbar, 48 Drakes Bay Dr., Corona Del Mar, Calif. 92625
Continuation of Ser. No. 447,793, May 23, 1995, abandoned, which is a continuation of Ser. No. 267,104, Jun. 23, 1994, abandoned. This application May 28, 1997, Ser. No. 864,178
Int. Cl.[6] A61F *2/12*
U.S. Cl. 623—7 **3 Claims**



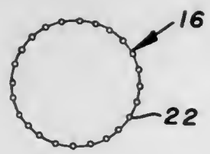
1. A breast appliance for conformance to the chest surface of a wearer comprising:
a mass of partially cured silicone;
a layer of skin silicone material enveloping and cured with and to said mass of partially cured silicone, such that said mass of partially cured silicone will not separate from said layer of skin silicone, a portion of said layer of skin silicone material having a back wall molded to conform to an impression taken from the chest of the wearer, said back wall having a tapering edge about the periphery of said back wall to assist in blending said breast appliance into an area of surrounding skin of said wearer, said skin silicone material having a front portion continuous with said tapering edge of said back wall and having a first shade of color additive dispersed within a volume of material of said skin portion of said front portion, and having a second shade of color additive different than said first shade of color additive dispersed within a volume of material of a nipple portion of said front portion of said skin silicone material, said nipple portion continuous with and cured to said skin portion and having a greater hardness than said skin portion of said front portion of the layer of skin silicone material and; wherein a third shade of color additive is dispersed throughout said mass of partially cured silicone; and wherein said first and said second and said third shades of color additive are a face powder dispersion color additive and form a suspension having color and depth tones comparable with a surface color and a depth of skin tone of said wearer.

5,824,076
SURGICAL METHOD FOR BREAST RECONSTRUCTION USING A NEOVASCULAR TISSUE PEG
Edward W. Knowlton, 5478 Blackhawk Dr., Danville, Calif. 94506
Continuation-in-part of Ser. No. 408,599, Mar. 22, 1995, Pat. No. 5,765,567. This application Nov. 12, 1996, Ser. No. 745,726
Int. Cl.[6] A61F *2/12;* **A61B** *19/00*
U.S. Cl. 623—8 **32 Claims**



20. A method for reconstructing a breast comprising a nipple from an expanded breast envelope, said method comprising steps of:
performing a mastectomy which substantially preserves a cutaneous breast envelope;
placing a breast expander beneath a muscle;
expanding the cutaneous envelope, whereby the expanded envelope is at least as large as a contralateral breast;
providing a time period sufficient for growth of neovascular connections between the muscle and at least a portion of the envelope; and,
reconstructing a nipple with the expanded neovascularized portion of the envelope, whereby the expanding step directly contributed an amount of tissue that permitted achievement of the breast reconstruction.

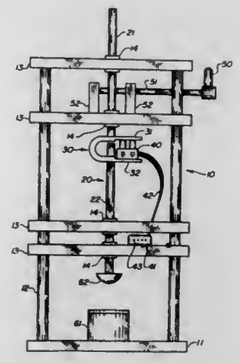
5,824,077
CLAD COMPOSITE STENT
David W. Mayer, Bloomington, Minn., assignor to Schneider (USA) Inc, Plymouth, Minn.
Continuation of Ser. No. 6,216, Jan. 19, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 469,810
Int. Cl.[6] A61F *2/02;2/06*
U.S. Cl. 623—11 **15 Claims**



1. A body compatible device comprising:
a length of elongate filament substantially uniform in lateral cross-section and including an elongate cylindrical core and an elongate tubular case surrounding the core at least substantially over the length of filament, a lateral cross-sectional area of the core being at least about ten percent of a lateral cross-sectional area of the length of filament;
wherein one of the core and case is constructed of a first material having a linear attenuation coefficient of at least 25 cm^{-1} at 100 KeV, the other of the core and case is constructed of a second material, and the first material is more radiopaque than the second material; and

wherein the length of filament, due at least in part to a heating of the length of filament to a temperature of about 700° F. to about 1900° F. after a final annealing, exhibits (a) an at least 10 percent greater modulus of elasticity; (b) a greater yield strength at 0.2 percent offset; and (c) a greater tensile strength, as compared to an otherwise identical length of filament which has not been heated to a temperature of about 700° F. to about 1900° F. after a final annealing.

5,824,078
COMPOSITE ALLOGRAFT, PRESS, AND METHODS
Carl Nelson, Little Rock; J. Marcus Hollis, Milton; Charlene Flahiff, North Little Rock, and William Hogue, Little Rock, all of Ark., assignors to The Board of Trustees of The University of Arkansas, Little Rock, Ark.
Filed Mar. 11, 1996, Ser. No. 647,424
Int. Cl.[6] A61F *2/00;* **B30B** *15/14*
U.S. Cl. 623—66 **6 Claims**



1. A press for molding a composite allograft composed of components having a lattice-like structure and having a predetermined shape defined by an inner surface and an outer surface, the press comprising:
a mold comprising an inner mold for forming said inner surface and an outer mold for forming said outer surface;
a plunger guided by a plurality of linear bearings, said plunger being affixed to said inner mold and disposed so as to apply said compression load between said inner mold and said outer mold; a rack-and-pinion gear set comprising a rack gear operatively connected to said plunger and a pinion gear; and means operatively connected to said pinion gear for manually applying said compression load; and
a plurality of load switches in communication with said mold, each of said load switches having means to indicate a predetermined load between said inner mold and said outer mold.

5,824,079
SWELLING TYPE COPOLYMERIC COMPOSITE MATERIAL WITH SELF-FIXATION CHARACTERISTICS
Sorin Siegler, Merion, Pa.; Surya Kalidindi, Turnersville, N.J., and Abdel Abusafieh, Philadelphia, Pa., assignors to Drexel University, Philadelphia, Pa.
Filed Aug. 23, 1996, Ser. No. 702,231
Int. Cl.[6] A61B *17/04*
U.S. Cl. 623—11 **25 Claims**

1. A method of anchoring soft tissue to bone comprising:
providing a mixture of a hydrophobic monomer and a hydrophilic monomer and a crosslinking agent to form a swellable copolymer;

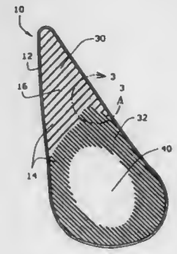


adding a soft tissue attachment element to said mixture, wherein a portion of said soft tissue attachment element protrudes from said mixture;
polymerizing said mixture to form said copolymer;
implanting said copolymer into bone and attaching a soft tissue to said protruding portion of said attachment element to anchor said soft tissue to said bone.

5,824,080
PHOTOCHEMISTRY FOR THE PREPARATION OF BIOLOGIC GRAFTS—ALLOGRAFTS AND XENOGRAFTS
Glenn M. Lamuraglia, Winchester, Mass., assignor to The General Hospital Corporation, Boston, Mass.
Filed Sep. 4, 1996, Ser. No. 708,376
Int. Cl.[6] A61F *2/02*
U.S. Cl. 623—11 **7 Claims**

1. A method for reducing host rejection of a biologic graft, said method comprising the steps of:
(a) contacting a tissue graft with a photosensitizing compound, and
(b) exposing said graft to electromagnetic radiation for a predetermined time and in an amount effective to transform the photosensitizing compound into an excited state, wherein said exposure results in the activation of the photosensitizing compound to produce an activated free-radical moiety which causes the death of rejection-inducing cells of the graft.

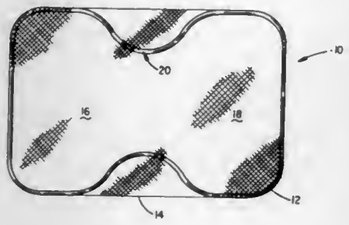
5,824,081
HYDRAULIC FOAM TISSUE IMPLANT
Terry R. Knapp, Neuchatel, Switzerland; Winston A. Andrews, Danville, Calif., and Pierre Comte, Neuchâtel, Switzerland, assignors to LipoMatrix Incorporated, Virgin Islands (Br.)
Filed Sep. 13, 1996, Ser. No. 710,180
Int. Cl.[6] A61F *2/02*
U.S. Cl. 623—11 **27 Claims**



1. A tissue implant comprising a flexible shell, a fluid filler within the shell, a compound foam body disposed within said shell, the compound foam body comprising a distinct first foam region having a substantially uniform first cellular density throughout said first foam region, and a distinct second foam region having a substantially uniform second cellular density throughout said second foam region, the second cellular density being different than

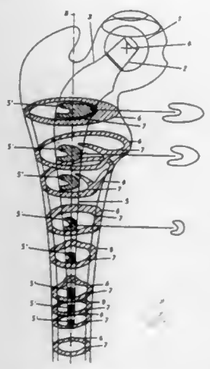
the first cellular density, and a cavity in said compound foam body adapted to provide a hydraulic reservoir for the fluid filler. said cavity being substantially larger than any cell.

5,824,082
PATCH FOR ENDOSCOPIC REPAIR OF HERNIAS
Roderick B. Brown, 1920 N. Lakeshore Dr., Glenwood, Minn. 56334
Filed Jul. 14, 1997, Ser. No. 892,533
Int. Cl.[6] A61F *2/02;2/06*
U.S. Cl. 623—11 **5 Claims**



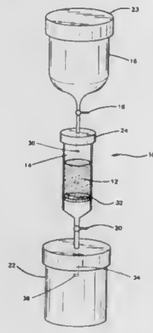
1. A hernia repair patch comprising:
(a) a wire frame formed from a shape memory alloy wherein the wire frame has an hour-glass shape when the shape memory alloy is in a austenite form and a rolled compact shape when in a martensite form; and
(b) a prosthetic fabric material attached to and supported along a periphery thereof by said frame.

5,824,083
CEMENT-FREE FEMORAL PROSTHESIS COMPONENT AND METHOD OF PRODUCING IT
Klaus Draenert, Gabriel-Max-Str. 3, D-8000 München 80, Germany
PCT No. PCT/EP93/01003, § 371 Date Oct. 21, 1994, § 102(e) Date Oct. 21, 1994, PCT Pub. No. WO93/21864, PCT Pub. Date Nov. 11, 1993
PCT Filed Apr. 26, 1993, Ser. No. 356,286
Claims priority, application Germany, Apr. 26, 1993, 42 13 598.2
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—16 **15 Claims**



1. A method of producing a femoral prosthesis component for cement-free anchoring in the femoral portion near the hip joint, which component provides the largest possible surface for the transmission of forces and which component's mass and/or stiffness is adjustable to the individual properties of the femur, comprising the following process steps:
three-dimensionally reconstructing the medullary cavity of the femur from a series of sections;
producing a contour model of the femur with outer and inner contours;
determining the mean density of the bone in individual bone sections; and
adapting the prosthesis to the medullary cavity of the femur using a correlation factor which correlates the mass and/or stiffness of the prosthesis with the mean bone density in the individual bone sections.

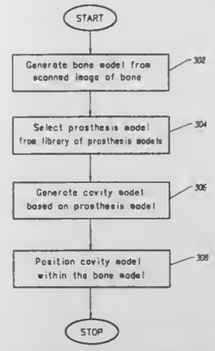
5,824,084
METHOD OF PREPARING A COMPOSITE BONE GRAFT
George Frederick Muschler, Cleveland Heights, Ohio, assignor to The Cleveland Clinic Foundation, Cleveland, Ohio
Filed Jul. 3, 1996, Ser. No. 675,498
Int. Cl.[6] A61F *2/28;2/02*
U.S. Cl. 623—16 **23 Claims**



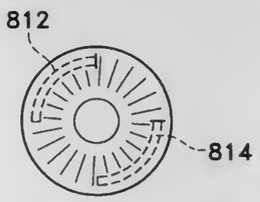
1. A method for preparing an improved composite bone graft comprising the steps of:
(a) providing a bone marrow aspirate suspension; and
(b) passing the bone marrow aspirate suspension through a porous, biocompatible, implantable substrate to provide an effluent and a composite bone graft, said composite bone graft comprising said substrate and a heterogeneous population of nucleated bone marrow cells and an enriched population of connective tissue progenitor cells.

5,824,085
SYSTEM AND METHOD FOR CAVITY GENERATION FOR SURGICAL PLANNING AND INITIAL PLACEMENT OF A BONE PROSTHESIS
Alind Sahay, Sacramento; Brent Mittelstadt, Placerville; Willie Williamson, Jr., Roseville; Joel Zuhars, and Peter Kazanzides, both of Sacramento, all of Calif., assignors to Integrated Surgical Systems, Inc., Sacramento, Calif.
Filed Sep. 30, 1996, Ser. No. 724,497
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—16 **30 Claims**

27. A method for planning the position of a prosthesis within a bone, said prosthesis having a proximal and a distal portion, said method comprising:
providing a model of the bone;
providing a first cavity model intended to accommodate the prosthesis within the bone, said cavity model comprising an access region, a distal cavity region dimensioned to provide an interference fit between a prosthesis model and the bone, and a distal extension region extending beyond the distal cavity region; and
positioning the cavity model in the bone model.



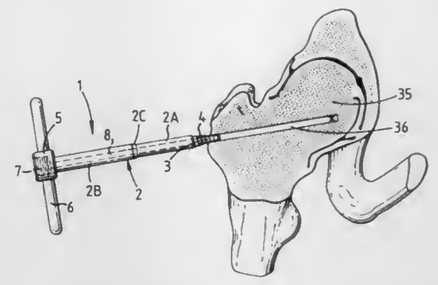
5,824,086
SEGMENTED PRE-FORMED INTRASTROMAL CORNEAL INSERT
Thomas A. Silvestrini, Alamo, Calif., assignor to KeraVision, Inc., Fremont, Calif.
Continuation of Ser. No. 559,892, Nov. 2, 1995, abandoned, which is a continuation of Ser. No. 101,438, Aug. 2, 1993, abandoned. This application Sep. 20, 1996, Ser. No. 718,291
Int. Cl.[6] A61F *2/14*
U.S. Cl. 623—5 **54 Claims**



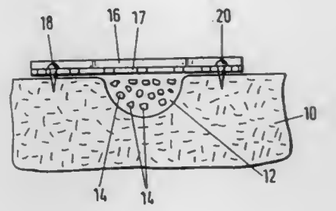
1. An intracorneal insert for introduction into the cornea of a human eye, said insert comprising an arcuate, physiologically compatible synthetic, polymeric segment having a predetermined shape prior to implantation in the cornea, said segment subtending an arc substantially less than 360° and being adapted for implantation within a human cornea and configured for altering the shape of the cornea by substantially a predetermined amount, said segment being constructed to substantially retain said predetermined shape over time after implantation in the cornea.

5,824,087
BONE REGENERATION
Richard Malcom Aspden, Ellon; Srimathi Rajagopalan Murali, and Richard William Porter, both of Aberdeen, all of United Kingdom, assignors to Aberdeen University and Plasma Biotal Limited, United Kingdom
PCT No. PCT/GB95/00815, § 371 Date Jan. 21, 1997, § 102(e) Date Jan. 21, 1997, PCT Pub. No. WO95/27518, PCT Pub. Date Oct. 19, 1995
PCT Filed Apr. 10, 1995, Ser. No. 727,396
Claims priority, application United Kingdom, Apr. 11, 1994, 9407135
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—16 **9 Claims**

1. An intraosseous injection device comprising:
(a) an elongated shaft having a proximal and distal end and a through bore beginning at the proximal end and terminating at the distal end in a frusto-conical connector portion for releasable interconnection with cortical bone;
(b) a handle means associated with said elongated shaft at the proximal end for turning said shaft so that said shaft is releasably interconnected with the cortical bone; and
(c) a syringe for the injection of an intraosseous liquid suspension into the through bore in said elongated shaft wherein said syringe is connected to said shaft.



5,824,088
COVER DEVICE FOR BONE VOIDS AND METHOD FOR THE MANUFACTURE THEREOF
Axel Kirsch, Talstr. 23, 70772 Filderstadt, Germany
PCT No. PCT/EP95/00519, § 371 Date Dec. 17, 1996, § 102(e) Date Dec. 17, 1996, PCT Pub. No. WO95/28900, PCT Pub. Date Nov. 2, 1995
PCT Filed Feb. 13, 1995, Ser. No. 732,224
Claims priority, application Germany, Apr. 27, 1994, 44 14 675.2
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—16 **11 Claims**



8. In a cover device for temporarily covering a bone void in a proper bone tissue of the body, which void is filled with ossiferous material including hydroxyl apatite granules, said cover device comprising a perforated reinforcement element for covering the void in an essentially shape-stable fashion that is composed of a relatively stiff but flexible material being shaped to a surface of the bone tissue having the void, and a cover membrane carried by the reinforcement element, the improvement comprising the cover membrane including a stretchable base film on a surface of the reinforcement element and at least one layer being applied as a solution film directly onto the base film subsequent to shaping of the element to engage the surface of the bone tissue so that the base film is between the solution film and the reinforcement element.

5,824,089

CERAMIC BODIES OF ZIRCONIUM OXIDE STABILIZED WITH YTTRIUM OXIDE

Wolfhart Rieger, Zur Mühle, Switzerland, assignor to Metoxit AG, Thayngen, Switzerland

Continuation of Ser. No. 613,326, Mar. 11, 1996, abandoned, which is a continuation of Ser. No. 237,621, May 4, 1994, abandoned. This application Jun. 19, 1997, Ser. No. 879,081
Claims priority, application Switzerland, May 7, 1993, 01410/93
Int. Cl.[6] A61F *2/28*
U.S. Cl. 623—16 **6 Claims**

1. A prosthetic article comprising a ceramic body comprising a yttrium oxide stabilized zirconium oxide of predominantly tetragonal form having a composition consisting essentially of between 92.1 to 93.5% ZrO_2, between 4.5 to 5.5% Y_2O_3, between 1.8 to 2.2% HfO_2, and impurities not to exceed 0.2% of the total.

5,824,090

Patent Not Issued For This Number

5,824,091

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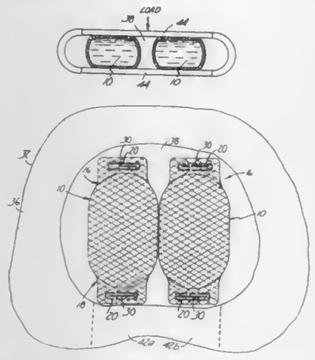
Patent Not Issued For This Number

5,824,093

PROSTHETIC SPINAL DISC NUCLEUS

Charles D. Ray, Williamsburg, Va.; Eugene A. Dickhudt, New Brighton, and Robert L. Assell, Mendota Heights, both of Minn., assignors to RayMedica, Inc., Bloomington, Minn.

Continuation-in-part of Ser. No. 638,306, Apr. 26, 1996, Pat. No. 5,674,295, which is a continuation of Ser. No. 324,142, Oct. 17, 1994, abandoned. This application Jun. 6, 1997, Ser. No. 870,866
Int. Cl.[6] A61F *2/44*
U.S. Cl. 623—17 **14 Claims**



1. A prosthetic spinal disc nucleus for implantation into a human disc space having a nucleus region defined by an anulus and adjacent vertebral end plates, the prosthetic spinal disc nucleus comprising:

a hydrogel core having an oval-shaped frontal cross-section defining a major axis and a minor axis, wherein the hydrogel core is configured to expand from a dehydrated state to a hydrated state; and

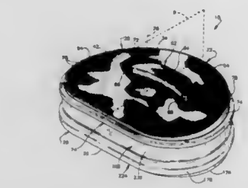
a constraining jacket surrounding the hydrogel core, wherein the constraining jacket maintains the hydrogel core in the hydrated state at a major axis diameter in the range of approximately 10–20 millimeters and a minor axis diameter in the range of approximately 5–15 millimeters.

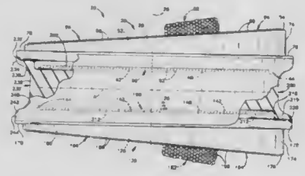
5,824,094

SPINAL DISC

Hassan Serhan, Cleveland; James Kuras, Macedonia; Carl McMillin, Brecksville, and Maarten Persenaire, Chagrin Falls, all of Ohio, assignors to AcroMed Corporation, Cleveland, Ohio

Filed Oct. 17, 1997, Ser. No. 954,293
Int. Cl.[6] A61F *2/44*
U.S. Cl. 623—17 **17 Claims**





1. A spinal disc prosthesis to replace a damaged spinal disc in a spinal column of a human, said spinal disc prosthesis comprising:

an elastomeric core having upper and lower surfaces which are parallel to each other;

an upper rigid plate, said upper rigid plate having opposed first and second surfaces, said first surface being affixed to said upper surface of said elastomeric core, said second surface being inclined relative to said first surface; and

a lower rigid plate, said lower rigid plate having opposed third and fourth surfaces, said third surface being affixed to said lower surface of said elastomeric core and extending parallel to said first surface, said fourth surface being inclined relative to said third surface, said second and fourth surfaces being inclined relative to each other.

5,824,095

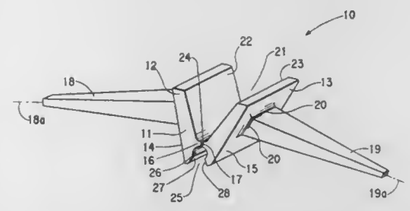
ANATOMICALLY NEUTRAL JOINT

William G. Di Maio, Jr., Boothwyn; Michele Staud Marcolongo, Lansdowne, both of Pa., and Arnold-Peter C. Weiss, Barrington, R.I., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del., and De Puy DuPont Orthopedics, Warsaw, Ind.

Filed Apr. 23, 1997, Ser. No. 842,166
Int. Cl.[6] A61F *2/42*
U.S. Cl. 623—18 **15 Claims**

1. A surgically implantable, anatomically neutral, joint, comprising:

(a) a one-piece main body of flexible, elastomeric, material including first and second spaced-apart end sections with first



and second outer faces and a thinner web section extending between and joining said end sections for flexing movement about a particular flexing axis through the web section, whereby the first and second outer faces are at an angle from 20 to 40 degrees from each other, and are diverging toward the top of the main body, the main body functions as a hinge with said end sections and said web section together defining

(i) a v-shaped groove across the top of the main body, having first and second v-shaped groove sides converging into the main body; and

(ii) a key-hole shaped groove across the bottom of the main body, having a key-hole hole segment of circular cross-section through the main body defining the bottom of the web section, and first and second key-hole side segments converging into the main body, and opening into said key-hole hole segment between said end sections; and

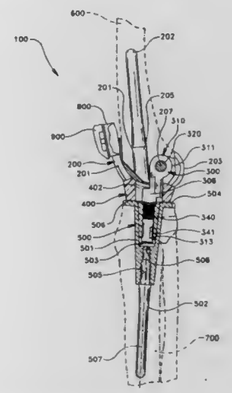
(b) first and second stems of flexible, elastomeric, material connected to and extending out from and perpendicular with the first and second end sections of said main body in directions normal to said flexing axis, the intersections of said first and second stems with said first and second outer faces having radii of at least 0.07 centimeter and said first and second stems being implantable within cooperating intramedullary canals of adjacent bones, defining said joint.

5,824,096

HINGED KNEE PROSTHESIS WITH CONDYLAR BEARING

Michael J. Pappas, Stuart, and Frederick F. Buechel, Naples, both of Fla., assignors to Biomedical Engineering Trust I, N.J.

Filed Dec. 12, 1994, Ser. No. 354,480
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **32 Claims**



1. A prosthetic joint for accommodating articulation between a first bone and a second bone, the joint comprising:

a first element for attachment to a first bone, the first element having a first surface facing substantially away from the first bone;

a second element for attachment to a second bone generally along a first axis, the second element having a second surface facing substantially away from the second bone;

a bearing between and in articulating contact with the first and second surfaces for transferring substantially all of the load from the first element to the second element, the bearing means being configured such that the articulating contact between the bearing and the first surface enables articulation of the first element between a first angular position relative to said bearing and a second angular position relative to said bearing, the first surface being in congruent contact with the bearing in the first angular position and in incongruent contact with the bearing in the second angular position; and

a hinge including a member for attachment to the second element and hinged to the first element, the member being secured to the second element such that the hinge transfers relatively negligible load from the first element to the second element in a direction along the first axis and for supporting the first and second elements in a direction transverse the first axis.

5,824,097

MEDICAL FASTENING SYSTEM

Stefan M. Gabriel, Lakeville, and Dennis P. Colleran, Plainville, both of Mass., assignors to Johnson & Johnson Professional, Inc., Raynham, Mass.

Continuation-in-part of Ser. No. 685,289, Jul. 23, 1996. This application Aug. 14, 1996, Ser. No. 696,495
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **6 Claims**

1. A medical fastening system for a modular knee prosthesis comprising:

a femoral component having a superior surface, an inferior surface, and an aperture extending therebetween;

a bolt including a head portion engagable with the superior surface of the femoral component to inhibit movement of the bolt through the aperture in the femoral component, and an elongate shaft portion extending from the head portion of the bolt, the elongate shaft portion having a length sufficient to protrude through the aperture in the femoral component beyond the inferior surface of the femoral component; and

a supplemental component having an outer surface for engaging an elongate prosthetic component, the supplemental component being engagable with the elongate shaft portion of the bolt to place an end portion of the supplemental component in contact with the inferior surface of the femoral component,

wherein the supplemental component is a Morse taper post, and

wherein the supplemental component includes a longitudinal axis, a base defining an aperture therein for receiving the elongate portion of the bolt therein and defining a plane that is angled less than 90 degrees with respect to the longitudinal axis.

5,824,098

PATELLO-FEMORAL JOINT REPLACEMENT DEVICE AND METHOD

Daniel Stein, 2415 Buckeye St., Newport Beach, Calif. 92660

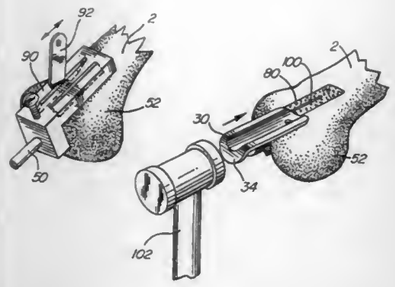
Continuation-in-part of Ser. No. 328,140, Oct. 24, 1994, Pat. No. 5,571,196. This application Oct. 3, 1996, Ser. No. 725,394
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **20 Claims**

1. A method for inserting a patello-femoral prosthesis using no bone cement comprising the steps of:

opening a knee joint to expose a trochlear groove of a femur;

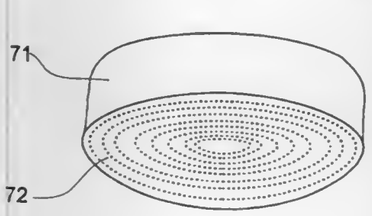
driving a guide rod into a distal end of the femur, parallel to the long axis of the femur;

inserting a router guide frame onto the guide rod;



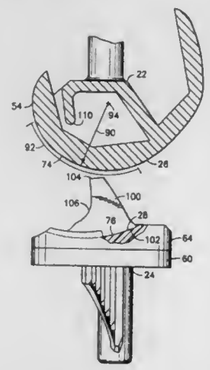
using a router to cut a longitudinal groove into a distal region of the femur, size and depth of the groove controlled by the guide frame;
removing the router guide frame;
inserting a vane guide frame onto the guide rod, the vane guide frame fitting into the groove;
using a saw guided by the guide frame to cut diverging vane slots into sides of the groove;
removing the vane guide frame and the guide rod;
providing an elongate femoral prosthesis with an aperture for an insertable peg near a first end and having spreading apart, nonparallel cross-sectionally, vanes of biocompatible material protruding from a lower, biocompatible surface, the vanes sized and oriented to fit the vane slots;
sliding the first end of the femoral prosthesis into a distal end of the longitudinal groove, the vanes of the femoral component aligning with and sliding into the vane slots and directly contacting the bone with no bone cement therebetween;
driving the femoral prosthesis into the groove by exerting force on a second end thereof until the second end of the prosthesis reaches the distal end of the groove;
drilling a hole in the femur by inserting a drill through the aperture in the first end of femoral prosthesis;
screwing an insertable peg through the aperture and into the drilled hole; and
closing the knee joint allowing bone to grow onto and to adhere to the prosthesis unimpeded by any bone cement.

5,824,099
SURGICAL METHOD AND TOOL FOR REPAIRING A PATELLA OF THE KNEE JOINT
David Mendes, and Ruth Beer, both of 8 Keller St., Hafia, Israel, 34483
Continuation-in-part of Ser. No. 375,085, Jan. 19, 1995, Pat. No. 5,580,353. This application Oct. 24, 1996, Ser. No. 735,927
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **11 Claims**



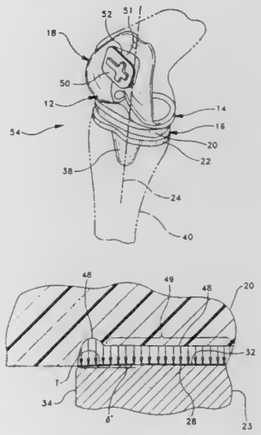
1. A method of repairing a natural patella, comprising the steps of:
(a) preparing a natural patella by removing a portion thereof so as to leave a substantially convex remaining portion; and
(b) fixing a patella implant onto said substantially convex remaining portion of the natural patella, said patella implant including:
(i) an upper surface for sliding over a femoral articulating member;
(ii) a substantially concave undersurface for fixation to said substantially convex remaining portion of the natural patella; and
(iii) a circumferential facet.

5,824,100
KNEE PROSTHESIS WITH INCREASED BALANCE AND REDUCED BEARING STRESS
Mark A. Kester, Upper Saddle River, N.J., and Marc G. Weissman, Derby, Conn., assignors to Osteonics Corp., Allendale, N.J.
Filed Oct. 30, 1996, Ser. No. 741,435
Int. Cl.[6] A61F *2/42*
U.S. Cl. 623—20 **18 Claims**



1. In a knee prosthesis for replacing the natural knee, the knee prosthesis having a femoral component and a tibial component, the tibial component including a bearing member and the femoral component including at least one condylar element for confronting and engaging the bearing member to accomplish articulation of the knee prosthesis throughout a range of flexion, including a primary range of flexion between a hyperextended position and a flexed position, the femoral component and the tibial component ordinarily being aligned axially along a mechanical axis passing through the femoral head of the corresponding hip joint and the engagement between the condylar element of the femoral component and the bearing member of the tibial component ordinarily taking place at a contact area along articular surface areas of the condylar element and the bearing member, the improvement comprising:
complementary medial-lateral surface profile contours extending along the articular surface areas, the medial-lateral surface profile contours having a single medial-lateral articular radius defining an arcuate profile common to the medial-lateral surface profile contours; and
anterior-posterior surface profile contours along the condylar element and the bearing member, the anterior-posterior surface profile contour along the condylar element having an essentially constant anterior-posterior articular radius throughout the articular surface area of the condylar element which contacts the bearing member during articulation throughout the primary range of flexion, such that the contact area along the articular surface areas of the condylar element and the bearing member is maintained at a maximum throughout at least the primary range of flexion for minimizing stresses in the bearing member during articulation within the primary range of flexion.

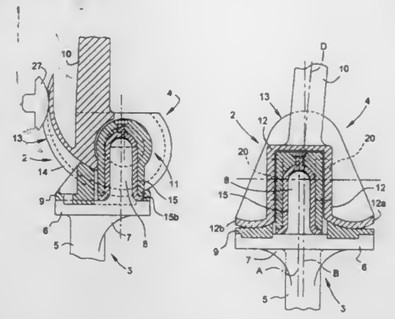
5,824,101
PROSTHESIS WITH ARTICULATING SURFACE STRESS REDUCING CONTACT EDGE
Michael J. Pappas, Caldwell, N.J., assignor to Biomedical Engineering Trust I, N.J.
Continuation-in-part of Ser. No. 345,302, Nov. 28, 1994, Pat. No. 5,683,467. This application Aug. 19, 1997, Ser. No. 914,126
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **24 Claims**



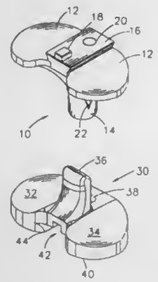
1. A prosthetic joint comprising: first and second members each having a surface sliding under load and in contact with one another, a combination comprising:
a first member having a first surface; and
a second member having a second surface said first and second surfaces sliding under load and in contact with one another, said second surface including an edge, said second surface engaging the first surface in sliding contact such that said first surface and said second surface, including said edge thereof, are under compressive load during said sliding contact, said compressive load causing portions of said first member in engagement with the second member to exhibit a contact stress of at least a first value, said second surface having a gradual convex tapering region extending inwardly on said second surface from said edge a selected distance so as to cause the first member to exhibit an increased edge contact stress concentration in portions of the first member in engagement with the tapering region of the second member, said increased edge contact stress being of a second value which is no more than about twice said first value.

5,824,102
TOTAL KNEE PROSTHESIS
Christian Buscayret, 3bis Boulevard des Arceaux, 34000 Montpellier, France
Continuation of Ser. No. 347,381, Jan. 12, 1995, abandoned. This application Jul. 21, 1997, Ser. No. 897,533
Claims priority, application France, Jun. 19, 1992, 92 07843
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **14 Claims**

1. A knee prosthesis having a top, a bottom, a front, a rear and inward and outward sides when implanted in a leg of a body, the knee prosthesis comprising:
a tibial implant; and
a femoral implant, the tibial implant being able to pivot with respect to the femoral implant about a substantially horizontal axis to permit a flexion/extension movement of the leg, and about a vertical axis to permit a limited pivoting of the tibia about the vertical axis, wherein the vertical axis, about which the tibial implant pivots, is formed by a stud slidingly mounted within a bore provided-in at least one of the femoral and tibial implants which serves as a rotational bearing therefor and which is configured to extend above a tibial plateau of the tibial implant and inside the horizontal articulation, and wherein the vertical axis, about which the tibial implant pivots, is a central longitudinal axis of the stud and is offset towards the front of the knee prosthesis with respect to the horizontal axis and is offset towards the inward side of the knee prosthesis with respect to a central longitudinal axis of the tibial implant.



5,824,103
TIBIAL PROSTHESIS
Welcome H. Williams, Wayne, N.J., assignor to Howmedica Inc.
Filed May 12, 1997, Ser. No. 854,827
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **23 Claims**



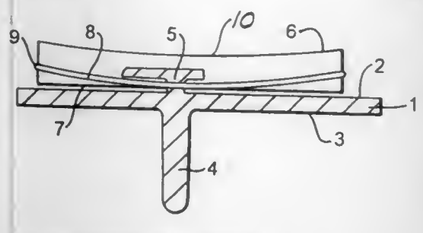
1. A tibial prosthesis comprising:
a) a base support member having a proximal supporting surface and a single integrally formed centrally located proximally flared protrusion which substantially bisects said supporting surface; and
b) a bearing surface member having a pair of proximal bearing surfaces and a single distal distally tapered groove, said distally tapered groove dimensioned to slideably embrace said single integrally formed centrally located proximally flared protrusion.

5,824,104

MENISCAL KNEE PROSTHESIS HAVING BOLLARD AND MOORING ATTACHMENT MEANS

Michael Anthony Tuke, Guildford, United Kingdom, assignor to Finsbury (Instruments) Limited, Leatherhead, United Kingdom

Filed Apr. 17, 1997, Ser. No. 841,895
Claims priority, application United Kingdom, Apr. 17, 1996, 9607927
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **14 Claims**



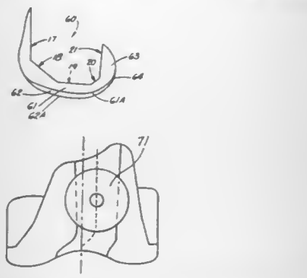
1. An endoprosthetic knee comprising:
a tibial plate having a smooth proximal face and a distal face, an anchor on the distal face for anchoring the tibial plate to the proximal end of a resected tibia, and a bollard on the proximal face of the tibial plate;
a unicompartmental meniscal component having a substantially flat distal face for glidable seating on the tibial plate and a dished proximal face for receiving an articulating condylar surface of a femoral component anchorable to the distal end of a resected femur; and
a flexible mooring for mooring the meniscal component to the bollard on the tibial plate to permit limited gliding movement of the meniscal component upon the tibial plate.

5,824,105

ASYMMETRIC FEMORAL PROSTHESIS

Michael Ries, Cooperstown, N.Y., and Brian Schumacher, Cordova, Tenn., assignors to Smith & Nephew, Inc., Memphis, Tenn.

PCT No. PCT/US95/09705, § 371 Date May 1, 1997, § 102(e) Date May 1, 1997, PCT Pub. No. WO96/03939, PCT Pub. Date Feb. 15, 1996
Continuation-in-part of Ser. No. 285,917, Aug. 4, 1994, Pat. No. 5,549,688. This PCT application Aug. 1, 1995, Ser. No. 793,027
Int. Cl.[6] A61F *2/38*
U.S. Cl. 623—20 **40 Claims**



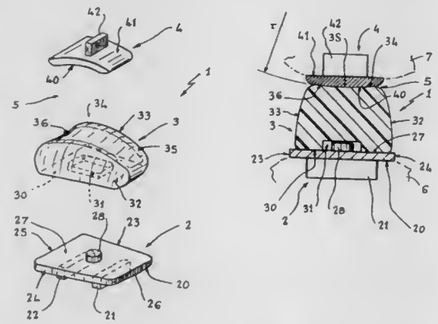
1. A knee prosthesis for surgical implantation in a patient's knee having a mechanical axis and a normal range of motion comprising:
a) a femoral companent having distal and pposterior articulating surface poprtions comprising lateral and medial condylar articulating surfaces and an internal non-articulating surface;
b) a tibial component having concave articulating surfaces that receive the articulating surfaces of the femoral component during use,
c) wherein the distance between the internal non-articulating surface and the lateral condylar articulating surface is different from the distance between the internal non-articulating surface and the medial condylar articulating surface of the femoral component and
d) wherein the differnet distance so measures over a sufficient area of the articulating surfaces to enable the angle of femoral rotation about the mechanical axis changes when going through a normal range of motion of the knee.

5,824,106

ANKLE PROSTHESIS

Stéphane Fournol, Paris, France, assignor to Tornier SA, Saint Ismier, France

Filed Apr. 9, 1997, Ser. No. 833,720
Claims priority, application France, Apr. 11, 1996, 96 04759
Int. Cl.[6] A61F *2/42*
U.S. Cl. 623—21 **20 Claims**



1. An ankle prosthesis adapted to be implanted between a tibia and an astragalus, the prosthesis comprising:
an astragalus plate having upper and lower surfaces,
a tibial plate having upper and lower surfaces,
an intermediate element having a lower surface adapted to cooperatively engage said upper surface of said astragalus plate and an upper surface adapted to cooperatively engage said lower surface of said tibial plate so as to permit articular movement therebetween, said upper surface of said intermediate element having a configuration which is generally concave relative to a frontal plane of the prosthesis and generally convex relative to a sagittal plane of the prosthesis taken generally perpendicularly to the frontal plane, and said lower surface of said tibial plate being complimentary in configuration to said upper surface of the intermediate element so as to permit relative movement therebetween.

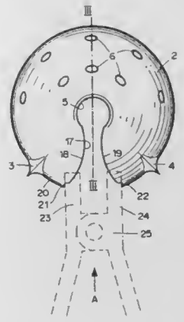
5,824,107

PROSTHETIC JOINT CUP AND INSERT THEREFOR

Ernst Tschirren, Steinhübeliweg 9, 3074 Muri b. Berne, Switzerland

Filed May 12, 1995, Ser. No. 440,131
Int. Cl.[6] A61F *2/34*
U.S. Cl. 623—22 **12 Claims**

1. A cup, especially for a hip joint prosthesis, having a rim, said cup comprising an aperture having side edges and extending from an interior of said cup to said rim, each of said side edges including at least one niche for the placement of pincers, and said rim



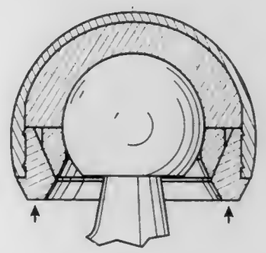
including first engagement means running along at least part of said rim for engagement with an insert.

5,824,108

BIPOLAR ACETABULAR CUP

Randall J. Huebner, Aloha, Oreg., assignor to Johnson & Johnson Professional, Inc., Raynham, Mass.

Filed Mar. 26, 1997, Ser. No. 824,778
Int. Cl.[6] A61F *2/32*
U.S. Cl. 623—22 **17 Claims**



1. An acetabular cup assembly for use with a femoral implant having a generally spherical head, the cup comprising:
an outer shell with a generally spherical outer surface, an open end and a cavity extending into the shell from the open end, the cavity having a generally cylindrical section adjacent the open end and a top disposed opposite said open end, the cylindrical section including a first circumferential groove;
a bearing liner having an upper surface and a lower surface, the lower surface including a generally hemispherical pocket configured to receive the spherical head, the bearing liner configured to be disposed in the cavity in the shell with the upper surface disposed adjacent the top of the cavity and the lower surface facing the open end of the shell;
a generally annular retaining ring configured to be disposed adjacent the lower surface of the bearing liner, the retaining ring including an inner surface that tapers inwardly and downwardly from the lower surface of the bearing liner toward a pocket opening to form a generally spherical continuation of the hemispherical inner pocket of the bearing liner, where the pocket opening has an adjustable perimeter size, the retaining ring further including an outer surface that tapers inwardly and downwardly from the lower surface of the bearing liner; and
a generally annular locking ring including an upper end, a lower end, a cylindrical outer surface disposed between the upper end and the lower end and an inner surface that tapers inwardly and downwardly from the upper surface, where the cylindrical outer surface includes at least one small circumferential rib and is configured to fit slidably into the cylindrical section of the cavity, the locking ring having a locked configuration in the cavity in which the rib is engaged in the first circumferential groove and the inner surface is disposed closely around the retaining ring to preventing expansion of the perimeter of the pocket opening and thereby preventing passage of the femoral implant head through the pocket opening, the locking ring further having a free configuration in which the locking ring is spaced apart from the bearing liner and the perimeter of the pocket opening is thereby free to expand to pass the femoral implant head, where the locking ring is slidable during installation and removal between the locked and free configurations and at least part of the locking ring between the upper and lower ends is formed as a closed loop to prevent radial contraction of the locking ring inner surface as the locking ring is slid between the free and locked configurations.

5,824,109

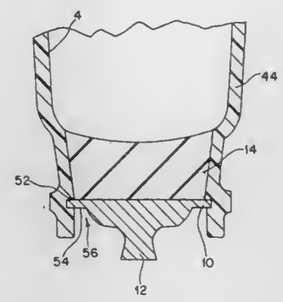
Patent Not Issued For This Number

5,824,110

PROSTHETIC SOCKET AND PROSTHETIC SOCKET COMPONENT FOR CONNECTING A PROSTHESES TO AN AMPUTATED EXTREMITY

Vernon R. Rothschild, Berlin; John R. Fox, Trappe, and Russell J. Rothschild, Kent Island, all of Md., assignors to Rothschild's Orthopedics, Salisburg, Md.

Division of Ser. No. 637,041, Apr. 24, 1996, Pat. No. 5,711,973. This application Feb. 20, 1997, Ser. No. 803,278
Int. Cl.[6] A61F *2/60;2/78*
U.S. Cl. 623—36 **6 Claims**



1. A prosthetic socket for connecting a prosthesis to an amputated extremity, comprising:
a molded cast into which the amputated extremity conforms; said molded cast having a distal end and a proximal end;
an attachment means including a mounting plate and a foam material layer affixed on an upper surface of said mounting plate and in abutting engagement with said distal end of said

molded cast for detachably connecting said molded cast to an artificial limb; and

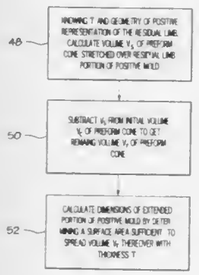
a plastic layer formed around a portion of said attachment means and at least said distal end of said molded cast.

5,824,111

METHOD FOR FABRICATING A PROSTHETIC LIMB SOCKET

Scott R. Schall, Englewood, and Tracy C. Slemker, Clayton, both of Ohio, assignors to Prosthetic Design, Inc., Clayton, Ohio

Filed Jan. 31, 1997, Ser. No. 791,934
Int. Cl.[6] A61F *2/60;2/78*
U.S. Cl. 623—33 15 Claims



1. A method for fabricating a thermoplastic prosthetic limb socket comprising the steps of;

obtaining a representation of a patient's residual limb, the representation of the patient's residual limb having dimensions and a proximate end;

determining a desired thickness of the thermoplastic socket;

selecting a thermoplastic preform cone having dimensions;

computing a first volume of a portion of the preform cone, which is to be molded over the representation of the patient's residual limb and has the desired thickness, based upon the dimensions of the representation of the patient's residual limb and the desired thickness of the thermoplastic socket;

subtracting the first volume from an initial volume ol the preform cone, to produce a remaining volume of the preform cone;

calculating dimensions of an extension, which is to be added to the proximate end of the representation of the patient's residual limb, the calculated dimensions being sufficient to mold a remaining portion of the preform cone with the desired thickness;

forming a positive mold based upon a combination of the dimensions of the extension and the dimensions of the representation of the patient's residual limb;

heating the preform cone; and

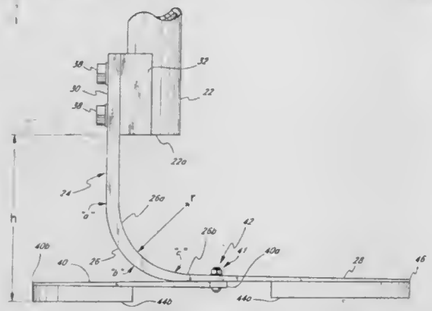
stretching the heated preform cone over the positive mold.

5,824,112

PROSTHETIC DEVICE INCORPORATING LOW ANKLE DESIGN

Van L. Phillips, 4702 San Jacinto Terrace, Fallbrook, Calif. 92028

Continuation-in-part of Ser. No. 977,654, Nov. 17, 1992, abandoned, which is a continuation of Ser. No. 337,374, Apr. 13, 1989, Pat. No. 5,181,932, and a continuation-in-part of Ser. No. 844,898, Mar. 3, 1992, abandoned, which is a continuation of Ser. No. 585,920, Sep. 21, 1990, abandoned. This application Mar. 31, 1993, Ser. No. 43,150
Int. Cl.[6] A61F *2/66*
U.S. Cl. 623—52 15 Claims



1. A lower limb prosthesis for providing resilient kinematic support to an amputee relative to a ground surface, comprising:

a pylon member having an upper end and a lower end, said lower end sized to be in the range of about 2½" to about 5" from said ground surface when said prosthesis is in use, said pylon member being substantially rigid along substantially its entire length; and

a flexible foot member being monolithically formed of superimposed laminates of resin-impregnated filamentary material, said foot member comprising:

an upper attachment section rigidly attaching said foot member to said lower end of said pylon member, said upper attachment section being substantially rigid along its length and substantially vertically aligned along substantially its entire length;

a toe section being substantially flexible along its length and defining a lever arm having a length of about 4½", said toe section being substantially horizontally aligned along substantially its entire length such that said upper attachment section and said toe section are at approximately a 90° angle with one another; and

an ankle section joining said upper attachment section and said toe section in a smoothly curving manner from said upper attachment section curving forwardly to said toe section, said ankle section having a radius of curvature of between 1½" and 3";

said ankle section and said toe section together comprising a curved cantilevered flexing member curving downward from adjacent said attachment section and forward through said toe section, said flexing member providing substantially the sole means of energy storage and return for said foot member and whereby said flexing member is sized and configured such that the component of horizontal deflection at a point adjacent the tip of said toe section is less than about one-third of the component of vertical deflection at said point in response to an upward force directed at said point.

5,824,113

METHOD OF MODIFYING KERATIN FIBER

Hiroshi Hojo, 105 Fumizoe, Hidakacho, Kounan-shi, Aichi-ken, Japan

Continuation of Ser. No. 456,573, Jun. 1, 1995, abandoned. This application Jan. 16, 1997, Ser. No. 784,962
Claims priority, application Japan, Jun. 7, 1994, 6-125092; Nov. 28, 1994, 6-293502; Apr. 4, 1995, 7-078633
Int. Cl.[6] D06M *13/262;11/50*
U.S. Cl. 8—128.3 19 Claims

1. A method of modifying keratin fibers comprising the steps of:

a) a catalyst solution impregnation step, comprising sequentially applying a mechanical force to keratin fibers by repeatedly bending or twisting the fibers to the extent of at least 20% followed by relaxation in the presence of an aqueous solution of a transition metal salt at a first pH as a catalyst to weaken and destroy non-keratin under layers jointed to keratin layers in the cuticle cells of said keratin fibers due to differences in mechanical properties of the keratin layers and non-keratin under layers so as to distribute the catalyst solution to the non-keratin under layers;

b) a catalyst deposition step, which involves adjusting pH of the aqueous solution of step a) to induce the precipitation of the metal salt catalyst wherein said metal salt catalyst is precipitated at the under layers and;

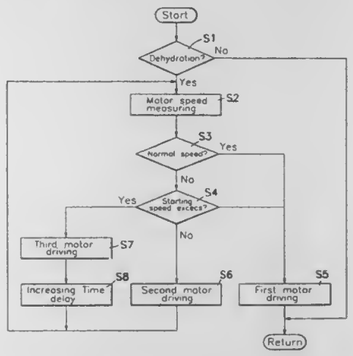
c) a keratin layer removing step, comprising reacting at least one non-chlorine based oxidizing agent with the keratin fibers in the presence of the precipitated metal salt catalyst, to cause a rapid oxidation reaction at the non-keratin under layers so that the keratin layers may be removed from the non-keratin layers and the under layers may be exposed.

5,824,114

CONTROL METHOD FOR DIRECT-COUPLED WASHING MACHINE

Sang Yeon Pyo, Yongin, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 13, 1997, Ser. No. 782,284
Claims priority, application Rep. of Korea, Jan. 16, 1996, 1996-714
Int. Cl.[6] D06F *33/02*
U.S. Cl. 8—159 1 Claim



1. A method for controlling a direct-coupled washing machine having a washing motor embodied as a switched reluctance motor, said washing motor having a copper-core rotation shaft connected with said dehydration water tub, said method comprises the steps of:

judging whether a dehydration step is being performed;

sensing a speed of said washing motor when said dehydration step is being performed;

relatively increasing the conduction time of each stator winding when said washing motor's rpm is below a constant starting rpm; and

relatively reducing said conduction time of each stator winding when said washing motor's rpm is beyond said constant starting rpm.

5,824,115

METHOD FOR IMPROVING CELLULOSE FIBER

Yuichi Kubota, Wakayama; Eiichi Hoshino, and Koji Aigami, both of Tochigi, all of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP96/00941, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO96/31645, PCT Pub. Date Oct. 10, 1996
PCT Filed Apr. 5, 1996, Ser. No. 750,037
Claims priority, application Japan, Apr. 6, 1995, 7-081265
Int. Cl.[6] D06M *3/388;11/13*
U.S. Cl. 8—194 2 Claims

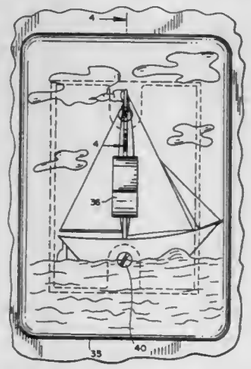
1. A method for improving the water absorbing and moisture absorbing and discharging properties of a cellulose fiber, which comprises bringing the cellulose fiber into contact with a cellulose dissolving agent which is a mixture of N,N-dimethylacetoamide and lithium chloride under conditions where the cellulose fiber can not be dissolved with said agent thereby improving the water absorbing property and moisture absorbing and discharging property of the cellulose fiber.

5,824,116

IMAGED LIGHT SWITCH PLATE

Bruce Zutler, Port Washington, N.Y., assignor to MCI Products Group, Inc., Plainview, N.Y.

Filed Nov. 12, 1996, Ser. No. 746,597
Int. Cl.[6] D06P *5/00;* H02G *3/14;* H05K *5/03*
U.S. Cl. 8—471 6 Claims



1. A method for applying an image to one surface of a decorative accessory and a head of at least one screw used for mounting said accessory to a wall or other supporting surface, the method comprising the steps of:

preparing a thermal paper transfer sheet in order to create a pictorial image or illustration on one side thereof;

inserting said at least one screw through a pre-designed hole formed in said accessory such that said one surface and said screw head face in a common direction;

positioning said one side of said transfer sheet in facing relationship with said accessory surface and said screw head;

pressing together said paper transfer sheet and said accessory while said head of said inserted at least one screw remains flush along aid accessory's surface; and

applying heat to said sheet and said accessory during said pressing step in a quantity sufficient to cause said pictorial image to be transferred simultaneously along said accessory surface and said screw head such that said image is pictured continuously and without interruption therealong.

5,824,117

NITROBENZISOTHIAZOLE AZO DYESTUFF

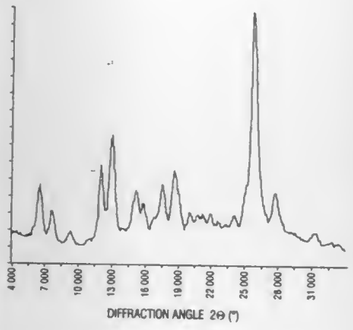
Ulrich Bühler, Alzenau; Jürgen Kühlwein, Heusenstamm, and Hubert Kruse, Königstein, all of Germany, assignors to Dystar Japan Ltd., Fukuoka, Japan

Filed Jun. 28, 1996, Ser. No. 671,574

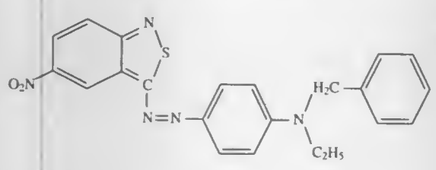
Claims priority, application Germany, Jun. 30, 1995, 195 23 924.5

Int. Cl.[6] C09B *67/48;* **D06P** *3/54*

U.S. Cl. 8—526 **8 Claims**



1. A crystal modification of the dyestuff of the formula I



(I)

5,824,118

DYEING AUTOMOBILE SEAT COVERS CONTAINING ACRYLIC OR CATIONIC-DYEABLE POLYESTER

Minoru Akai; Itsuo Suda; Katsumi Nonomura, and Kumiko Arai, all of Tokyo, Japan, assignors to Hodogaya Chemical Co., Ltd., Tokyo, Japan

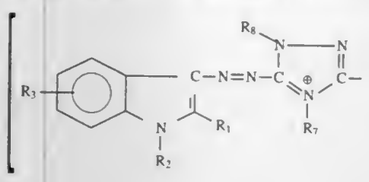
Continuation of Ser. No. 141,538, Oct. 27, 1993, abandoned. This application Sep. 8, 1995, Ser. No. 525,245

Claims priority, application Japan, Oct. 27, 1992, 4-310788; Mar. 19, 1993, 5-083864

Int. Cl.[6] C09B *29/00;45/00;* **B44C** *1/28;* **B32B** *9/04;27/36*

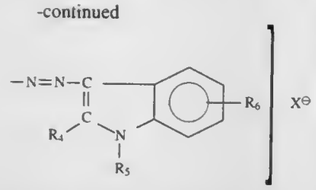
U.S. Cl. 8—662 **9 Claims**

1. A method of dyeing an automobile seat cover material made of an acrylic or cationic-dyeable polyester fiber comprising dyeing said fiber with the red dye represented by formula (1):



(1)

-continued



wherein R_1 represents aryl; R_2 represents lower alkyl; R_3 represents hydrogen; R_4 represents aryl; R_5 represents lower alkyl; R_6 represents hydrogen, R_7 and R_8 each represent lower alkyl; and X represents an anion of an inorganic or organic acid and incorporating the dyed fiber in the automobile seat cover material, and preparing an automobile seat cover from the dyed automobile seat cover material.

5,824,119

PROCESS FOR IMMERSING A SUBSTRATE IN A PLURALITY OF PROCESSING BATHS

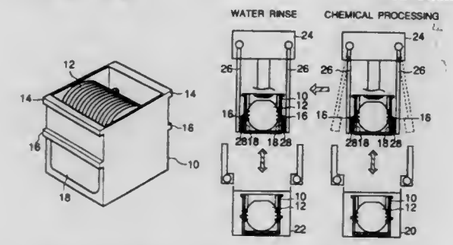
Mitsuo Takeuchi, Kawasaki, Japan, assignor to Fujitsu Limited, Kaswasaki, Japan

Filed Oct. 4, 1995, Ser. No. 539,202

Claims priority, application Japan, Jan. 9, 1995, 7-001388

Int. Cl.[6] B08B *3/00;* **B44C** *1/22;* **C03C** *15/00;25/06*

U.S. Cl. 29—25.01 **12 Claims**



1. A substrate processing method for immersing a substrate in a plurality of processing baths which are filled respectively with chemicals or pure water to subject the substrate to chemical processing and water rinse, such that

when a substrate carrier for holding the substrate is moved from a first one of the processing baths to a second one of the processing baths, the substrate carrier is moved to the second processing bath with a chemical or pure water from the first processing bath held in the substrate carrier.

5,824,120

ELECTRICALLY CONDUCTIVE ADHESION PROMOTERS FOR CURRENT COLLECTORS

Porter H. Mitchell, Las Vegas, and M. Yazid Saidi, Henderson, both of Nev., assignors to Valence Technology, Inc., Henderson, Nev.

Filed Apr. 10, 1996, Ser. No. 634,752

Int. Cl.[6] H01M *4/60*

U.S. Cl. 29—623.1 **26 Claims**

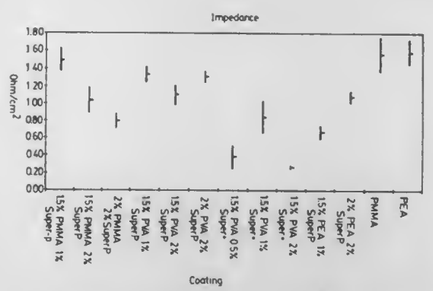
1. A method of preparing an electrode/current collector that comprises the steps of:

providing a metal current collector,

forming a layer of an electrically conductive adhesion promoter formed on at least one surface of the metal current collector which comprises an electrically conductive material and an adhesive polymer;

applying a mixture comprising a solvent, a polymeric binder, and an anodic material or cathodic material onto the layer of electrically conductive adhesion promoter wherein the polymeric binder is a polymer that is derived by polymerizing monomers or prepolymers; and

removing said solvent from the mixture to form a composite electrode that is attached to said layer of electrically conductive adhesion promoter, wherein the composite electrode is selected from the group consisting of a composite cathode and a composite anode, wherein the thickness of said electrically conductive adhesive promoter is sufficient to bind the composite electrode to said metal current collector and wherein no curing to polymerize the polymeric binder is required subsequent to applying the mixture onto the layer of electrically conductive adhesion promoter.



5,824,121

APPARATUS FOR THE PRESSURE GASIFICATION OF FINELY DIVIDED FUELS

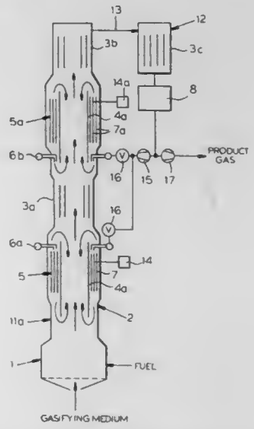
Johannes Kowoll, Bochum, Germany, assignor to Krupp Koppers GmbH, Essen, Germany

Filed Sep. 20, 1995, Ser. No. 531,032

Claims priority, application European Pat. Off., Oct. 28, 1994, 94117069

Int. Cl.[6] C10J *3/20;9/04*

U.S. Cl. 48—85 **9 Claims**



1. An apparatus for pressure gasification of a finely divided fuel, said apparatus comprising:

a gasification reactor receiving a finely divided fuel and discharging a raw gas;

a quencher connected to said gasification reactor and receiving said raw gas therefrom said quencher comprising:

a mixing tube having an inlet end communicating with said gasification reactor and an outlet end,

a gas cooling heat exchanger surrounding said mixing tube and traversed by a portion of a quenched gas mixture from said outlet, and

means for introducing a driving gas into said gas cooling heat exchanger for inducing flow of said portion of said quenched gas mixture through said gas cooling heat exchanger, cooling of said portion of said quenched gas mixture in said gas cooling heat exchanger, and combination with said drive gas to form a quenching gas which is admitted to said mixing tube to quench raw gas received from said gasification reactor and produce said quenched gas mixture;

at least one further heat exchanger connected to said outlet for abstracting heat from at least another portion of said quenched gas mixture to produce a product gas;

a flow cross section of said mixing tube and a flow cross section of said gas cooling heat exchanger being so dimensioned as to sustain gas velocities therein in a range of 3 to 20 m/g, said means for introducing said driving gas being so operated as to create a gas velocity at an inlet to said gas cooling heat exchanger in excess of 40 m/s; and

means for controlling a flow rate of said driving gas thereby regulating the portion of said quenched gas mixture passed through said gas cooling heat exchanger and the cooling of the raw gas to a quenching temperature.

5,824,122

PROCESS AND APPARATUS FOR PURIFYING FLAMMABLE GAS

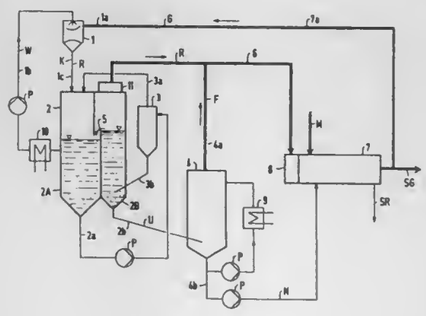
Gerd Baumgärtel, Röttenbach, and Herbert Tratz, Ottensoos, both of Germany, assignors to Siemans Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 425,955, Apr. 19, 1995, abandoned. This application May 27, 1997, Ser. No. 863,359

Claims priority, application Germany, Oct. 23, 1992, 42 35 894.9

Int. Cl.[6] C10K *3/06;1/011;1/08*

U.S. Cl. 48—128 **7 Claims**



1. An apparatus for purifying flammable gas, comprising:

inlet line for scrubbing medium and a discharge line for condensate;

a discharge line for scrubbed gas in fluid communication with said gas scrubber;

a distillation unit in communication with said discharge line for condensate;

a line for volatile constituents leading from said distillation unit to said discharge line for scrubbed gas;

a fuel gas burner connected to said discharge line for scrubbed gas to mix said scrubbed gas with said volatile constituents; and

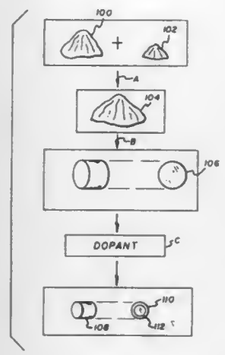
a line for non-volatile constituents leading from said distillation unit.

5,824,123

ZIRCONIA ARTICLES HAVING TETRAGONAL CORES AND MONOCLINIC CASES AND PREPARATION AND SINTERING METHODS

Dilip Kumar Chatterjee; Syamal K. Ghosh, and Debasis Majumdar, all of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 231,870, Apr. 25, 1994. This application Aug. 15, 1996, Ser. No. 698,531
Int. Cl.[6] B24D *3/02*
U.S. Cl. 51—309 2 Claims



1. A cutting tool for use with a machine, said cutting tool including a core and an exterior, said core consisting essentially of a mass of sintered particles having a substantially tetragonal crystalline structure and an elemental composition including Zr, O, and at least one element selected from the group consisting of Mg, Ca, Y, Sc and rare earth elements, said exterior having a joinable portion and a contact portion, said joinable portion being joinable to said machine, said contact portion including a cutting edge, said cutting edge being at least substantially unabraded, said cutting edge consisting essentially of a mass of sintered particles having a substantially monoclinic crystalline structure and an elemental composition including Zr and O.

5,824,124

Patent Not Issued For This Number

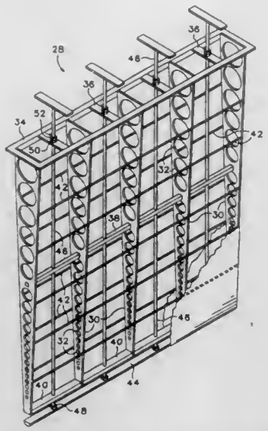
5,824,125

DUST COLLECTOR

Glen R. Sherwood, 14615 Paynes Creek Rd., Red Bluff, Calif. 96080

Filed Jul. 1, 1996, Ser. No. 674,064
Int. Cl.[6] B01D *46/02*
U.S. Cl. 55—379 2 Claims

1. A dust collector, comprising:
a) a hollow housing having a top clean air outlet, a bottom particulate solids outlet and an intermediate air inlet for solids-laden air to be cleaned,
b) a plurality of vertically and horizontally elongated filter assemblies mounted vertically in spaced apart relation in the housing, each filter assembly comprising:
1. a framework having open sides and top end and tapered substantially uniformly downward to narrower dimension at the bottom end than at the top end,
2. a sheet of filter fabric material configured in the form of a glove that removably covers the tapered sides and bottom of the framework,
3. seal means surrounding the top end of the framework.



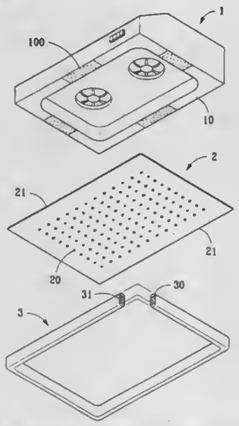
c) support means in the housing releasably engaging the seal means and releasably supporting the filter assemblies in said housing,
d) a nose bar disposed along the bottom of the framework within said fabric glove and engaging the inner side of the bottom of the glove, and
e) operating means extending from the top of the framework downward within said framework and engaging said nose bar, the operating means being operable at its upper end to move the nose bar relative to the framework and against the inner surface of said fabric glove to vary the degree of stretching of the fabric glove over the framework.

5,824,126

SOOT FILTERING CAP IN A RANGE HOOD

Cheng Ho Chen, No. 38, Lane 359, Sec. 1, Fu-Chien Rd., Tainan, Taiwan

Filed May 21, 1997, Ser. No. 861,124
Claims priority, application Taiwan, Oct. 24, 1996, 85216809
Int. Cl.[6] B01D *46/10*
U.S. Cl. 55—501 1 Claim



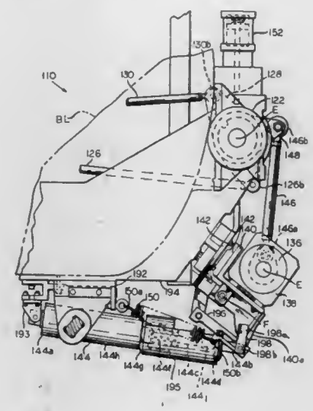
1. A soot filtering cap for a range hood having a hood body, comprising
a plurality of hook and loop fasteners provided on a peripheral rim of a vent cap of said hood body;
a soot absorbing perforated filter which is made of fabric material having strong oil absorbability and strong gas penetrability and has a plurality of fine vent holes provided on a surface thereof for smoothly venting during operation of said range hood while soot is completely absorbed by said soot absorbing perforated filter so as to achieve an effect of soot removal, wherein said soot absorbing perforated filter has a plane area larger than a cross sectional area of said vent cap of said hood body and forms a protective edge on a periphery thereof, said soot absorbing perforated filter being fastened onto said vent cap of said hood body by means of said hook and loop fasteners and said protective edge of said soot absorbing perforated filter is folded upwardly to cover said peripheral rim of said vent cap of said hood body; and
a magnetic strip frame, which is made of a magnetic strip encased with a rubber sheath, fitly mounted on an outer periphery of said protective edge for sticking said protective edge of said soot absorbing perforated filter onto said peripheral rim of said hood body, thereby said soot absorbing perforated filter not only is fastened on said peripheral rim of said vent cap by said hook and loop fasteners, but also is stuck and positioned magnetically beneath said hood body by said magnetic strip frame in order to prevent said soot absorbing perforated filter from falling off due to heavily absorbing soot and reduction of bonding power between said soot absorbing perforated filter and said hook and loop fasteners and to assure said soot absorbing perforated filter fastening on said peripheral rim of said vent cap and to facilitate soot absorption of said soot absorbing perforated filter.

5,824,128

GLASS GOB SHEARING APPARATUS WITH IMPROVED CUSHIONING OF SHEAR BLADE CARRIAGES

Frank J. DiFrank, and Andrew B. Menzie, both of Toledo, Ohio, assignors to Owens-Brockway Glass Container Inc., Toledo, Ohio

Filed Apr. 18, 1997, Ser. No. 839,894
Int. Cl.[6] C03B *7/10*
U.S. Cl. 65—159 8 Claims



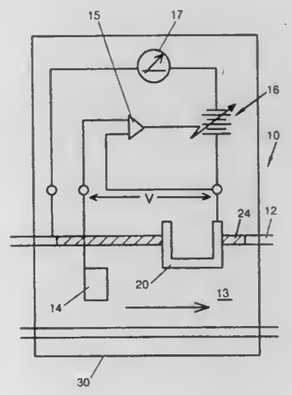
1. In an apparatus for shearing at least one stream of molten glass from a glass feeder into individual gobs of molten glass for processing into glass containers in a forming machine, said apparatus having first shearing means, second shearing means, and mounting means for mounting said first shearing means for motion toward and away from said second shearing means and for mounting said second shearing means for parallel motion toward and away from said first shearing means, means for imparting reciprocating motion to the first shearing means and the second shearing means comprising:
a unidirectionally acting servo motor;
a bell crank having a central axis;
first connecting rod means connecting said servo motor to said bell crank for imparting oscillating motion to said bell crank about its central axis;
second connecting rod means connecting said bell crank to said first shearing means;
third connecting rod means connecting said bell crank to said second shearing means;
said second connecting rod means and said third connecting rod means being pivotably attached to said servo motor at spaced apart locations thereof;
a pivoting bracket;
said servo motor being mounted on said pivoting bracket;
an adjustable stop means for controllably limiting the pivoting movement of said pivoting bracket in a first direction;
pneumatic means for biasing said pivoting bracket against said adjustable stop means;
means for cushioning said pneumatic means to absorb shock loads on said apparatus; and
spring means acting on said pivoting bracket to retract said pivoting bracket from said adjustable stop means.

5,824,127

ARSENIC-FREE GLASSES

James C. Bange, Corning; William G. Dorfeld, Beaver Dams; James C. Hayes, Painted Post, and Josef C. Lapp, Corning, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 28, 1996, Ser. No. 742,610
Int. Cl.[6] C03B *5/16;5/18;15/02*
U.S. Cl. 65—90 30 Claims



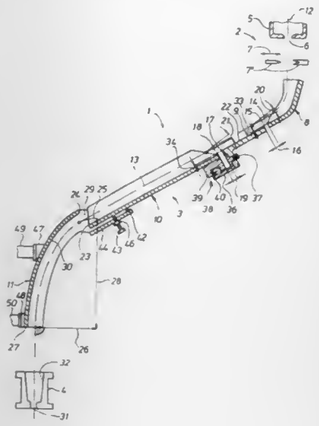
1. A method of making a silicate glass comprising:
melting and downdraw forming a silicate sheet glass and selecting batch constituents of said silicate glass so that the resultant glass contains less than 0.2 mole percent arsenic expressed as As_2O_3, and the β-OH of said glass is below about 0.5/mm.

5,824,129

GOB DELIVERY APPARATUS FOR A GLASSWARE FORMING MACHINE

Manfred Struckmeier, Obernkirchen; Andreas Graefe, Seggebruch, and Eckhard Möller, Obernkirchen, all of Germany, assignors to The Firm Hermann Heye, Obernkichen, Germany

Division of Ser. No. 142,386, Nov. 22, 1993, Pat. No. 5,599,370. This application Jun. 7, 1995, Ser. No. 472,862
Claims priority, application Germany, May 22, 1991, 41 16 593.4; WIPO, Feb. 28, 1992, PCT/EP92/00432
Int. Cl.[6] C03B *7/16*
U.S. Cl. 65—207 **20 Claims**



1. A delivery apparatus for transporting gobs of molten glass from a gob feeder into molds of at least one glassware forming machine, comprising:

a curved scoop for catching a gob coming from the gob feeder and directing the gob downward at an angle;

a trough which is approximately linear and downward sloping, said trough having an upper end for receiving the gob and a lower end, and said trough being articulately mountable relative to the glassware forming machine at the trough upper end;

an setting device for raising and lowering the lower end of said trough;

a curved deflector for receiving the gob coming from the trough and deflecting the gob in a downwards path coaxial with a longitudinal axis of a mold;

a setting device for adjusting said deflector in infinite direction in a plane perpendicular to the longitudinal axis of the mold for aligning said deflector with said mold;

wherein the setting device comprises at least one coupling member carrying the deflector;

wherein each said coupling member is rotatable to allow rotational movement of each said coupling member and said deflector about an axis parallel to the longitudinal axis of the mold; and

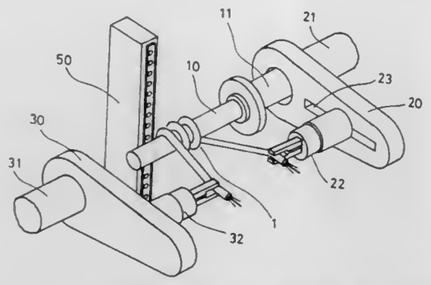
wherein each said coupling member is adjustable in a plane perpendicular to the longitudinal axis of the mold.

5,824,130

APPARATUS FOR MANUFACTURING SPIRAL FLUORESCENT TUBE

Toshiyoshi Oga, Otsu; Masaru Saito, Takatsuki, and Shunji Asai, Otsu, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Division of Ser. No. 757,459, Nov. 27, 1996, Pat. No. 5,766,295, which is a division of Ser. No. 405,995, Mar. 17, 1995, Pat. No. 5,610,476. This application Jul. 31, 1997, Ser. No. 904,231
Int. Cl.[6] C03B *23/04*
U.S. Cl. 65—276 **8 Claims**



1. A device for manufacturing a spiral fluorescent tube comprising:

a rod aerially supported from a first predetermined direction;

a first clamp supporting a straight fluorescent tube from a second direction which is at right angles to said first predetermined direction;

heating means for heating a part of said straight fluorescent tube, which is not facing said rod, to a glass softening temperature;

two second clamps disposed parallel to an axial direction of said rod for clamping ends of said straight fluorescent tube; and

means for winding said straight fluorescent tube around said rod by rotating said two second clamps in opposite directions to each other around an axis of said rod while shifting said two second clamps away from each other in the axial direction parallel to said first predetermined direction.

5,824,131

MOLD OPENING AND CLOSING MECHANISM FOR AN I.S. MACHINE

Marty J. Grant, Wethersfield, and Joseph L. Lehman, Simsbury, both of Conn., assignors to Emhart Glass Machinery Investments Inc., Wilmington, Del.

Filed Nov. 6, 1997, Ser. No. 965,296
Int. Cl.[6] C03B *9/40;9/13*
U.S. Cl. 65—359 **4 Claims**

1. A mold opening and closing mechanism for an I.S. machine having a plurality of individual sections each comprising

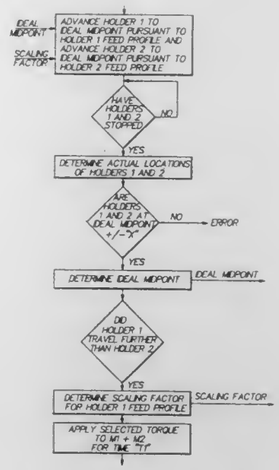
a pair of opposed mold support mechanisms displaceable between a separated retracted position whereat each mold support mechanism is located at a start position and an advanced position whereat molds carried by said mold support mechanisms will forcefully engage,

an electronic motor operatively associated with each of said mold support mechanisms to displace said associated mold support mechanism between said retracted and advanced positions, and

means for controlling the operation of said electronic motors including

means for operating each of said electronic motors to displace its associated mold support mechanism to a center location one half the distance between said start positions,

means for verifying that each of the displaced mold support mechanisms is located within a selected distance from said center location, and



means for driving each of said electronic motors to apply a predetermined torque for a selected period of time.

4. A mold opening and closing mechanism for an I.S. machine having a plurality of individual sections each comprising

a pair of opposed mold support mechanisms displaceable between a separated retracted position whereat each mold support mechanism is located at a start position and an advanced position whereat molds carried by said mold support mechanisms will forcefully engage.

an electronic motor operatively associated with each of said mold support mechanisms to displace said mold support mechanism between said retracted and advanced positions, and

means for controlling the operation of said electronic motors including

means for instructing each of said electronic motors to displace its associated mold support mechanism in accordance with a selected feed profile to a center location to an ideal midpoint position one half the distance between said start positions,

means for determining that the displacement of each of said mold support mechanisms to said center location has stopped.

means for determining the difference in the distance traveled by each of the stopped mold support mechanisms, and

means for scaling the feed profile of one of said electronic motors to reduce a difference in the distance traveled by said mold support mechanisms.

5,824,132

METHOD OF PHOSPHORIC ACID CONCENTRATION

Bronislava Kopyleva, and Yuriy Shvartsman, both of 120-07 85th Ave., Kew Gardens, N.Y. 11415

Filed Feb. 12, 1997, Ser. No. 799,975
Int. Cl.[6] B01D *1/00;1/26*
U.S. Cl. 71—43 **15 Claims**

1. A process for concentrating phosphoric acid contained in aqueous mixtures, which comprises;

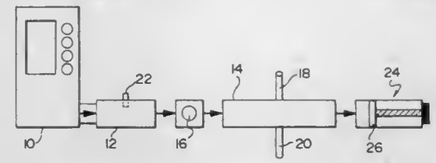
evaporating water from the aqueous mixture, in the presence of a mixture of anionic surfactants.

5,824,133

MICROWAVE TREATMENT OF METAL BEARING ORES AND CONCENTRATES

James M. Tranquilla, Fredericton, Canada, assignor to EMR Microwave Technology Corporation, New Brunswick, Canada

Filed Mar. 12, 1996, Ser. No. 614,352
Int. Cl.[6] C22B *4/00*
U.S. Cl. 75—10.13 **27 Claims**



1. A method for bringing about metallurgical effect in a metal-containing ore or concentrate comprising the steps of generating microwave energy, delivering said energy to a resonant microwave cavity containing said ore or concentrate while maximizing electric field strength of said energy to said ore or concentrate in said cavity.

5,824,134

DIRECT REDUCTION OF IRON ORE UTILIZING ORGANIC HAZARDOUS MATERIALS

Jim Powers, 3 Santa Lucia Ave., Ormond Beach, Fla. 32174

Filed Jan. 29, 1997, Ser. No. 790,527
Int. Cl.[6] C21B *13/04*
U.S. Cl. 75—473 **1 Claim**



1. A method of making iron carbide and iron by direct reduction of iron oxide in a closed pressurized DRI reactor by utilizing hydrocarbons comprising organic hazardous materials, or optionally as an admixture with methane comprising the steps of:

a) supplying said reactor with iron ore as an iron source;

b) supplying hydrocarbons comprising organic hazardous materials having associated polluting fractions selected from the group consisting of organic phosphates, organic sulfurs, organic nitrogens, organic mercury and organic tin and optionally methane;

c) dissociating by pyrolysis said hydrocarbons into a heated reducing gas comprising CH_4, CO, CO_2, H_2 and H_2O and remnants of said polluting fractions selected from the group consisting of mercury, tin and acid gases of phosphates, sulfurs or nitrates, said constituents characteristic of the hydrocarbon feedstock selected;

d) reducing said iron ore with said reducing gas to form iron and carburizing said iron to form iron carbide and to form an off gas including H_2O and containing polluting fractions selected from the group consisting of mercury, tin and acid gases of phosphates, sulfurs or nitrates and

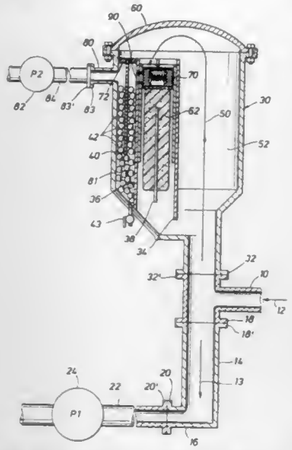
e) continuously scrubbing said off-gas to purge said off-gas of any H_2O and any polluting fractions including any mercury, tin or acid gases of phosphates, sulfurs or nitrates characteristic of the feed stock that otherwise lowers the quality of the iron products.

5,824,135

HIGH VOLUME AIR-WATER SEPARATOR

Thomas J. Minihan, P.O. Box 15310, Houston, Tex. 77220-5310

Filed Nov. 27, 1996, Ser. No. 757,342
Int. Cl.[6] B01D *19/00*
U.S. Cl. 95—24 **16 Claims**



1. A method for separating a composite fluid into a water component and a dry air component, comprising the steps of:
(a) providing an inlet to receive said composite fluid;
(b) connecting a water chamber to said inlet to enable at least a portion of said water component of said composite fluid to flow into said water chamber; and
(c) connecting an air separation chamber to said inlet so that an air component of said composite fluid flows into said air separation chamber, wherein said air separation chamber comprises
(i) a condensate chamber for said air component flow to separate said air component into said water component and said dry air component, wherein said air is flowed through a material, within said condensate chamber, in a serpentine path thereby separating said air into said water component and said dry air component, and wherein said dry air flows from an output of said condensate chamber,
(ii) a float assembly which moves with a level of water within said air separation chamber, and
(iii) a valve assembly which is conveyed by said float and which terminates the flow of said air into said condensate chamber, by closing an air flow path into said condensate chamber, when said water level within said air separation chamber reaches a predetermined level, wherein said valve assembly closes said air flow passage by blocking said flow passage with a valve pad.

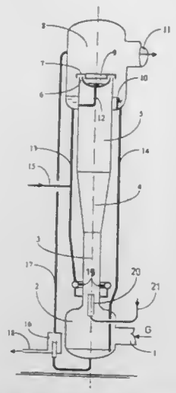
5,824,136

PROCESS FOR THE PURIFICATION OF A GAS BY SCRUBBING — VENTURI COLUMN FOR CARRYING OUT SAID PROCESS

François Meline, Paris, France, assignor to Societe Generale Pour les Techniques Nouvelles SGN, France

PCT No. PCT/FR94/01064, § 371 Date Feb. 28, 1996, § 102(e) Date Feb. 28, 1996, PCT Pub. No. WO95/07132, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 9, 1994, Ser. No. 602,858
Claims priority, application France, Sep. 10, 1993, 93 10769
Int. Cl.[6] B01D *51/08*
U.S. Cl. 95—29 **16 Claims**

1. In a process for the purification of a gas (G) contaminated by liquid and/or solid particles, in a vertical-axis Venturi column, comprising, at the throat (3) of a Venturi, the pneumatic atomization of a scrubbing liquid in a rising stream of said gas, said scrubbing liquid being injected in a direction substantially perpendicular to that of said stream, and, downstream of said throat, the elimination of the vesicles of scrubbing liquid entrained by said gas stream and laden with contaminants, the improvement which comprises generating a sound field at said throat (3) of the Venturi in order to cause the contaminating particles to shift relative to the vesicles of scrubbing liquid.

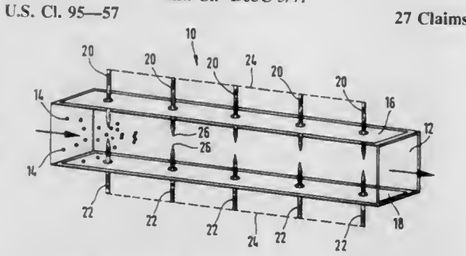


5,824,137

PROCESS AND APPARATUS TO TREAT GAS-BORNE PARTICLES

Andreas Gutsch, Seldeneckstrasse 16, D-76185 Karlsruhe; Friedrich Jacob Loffler, deceased, late of Karlsruhe; Elisabeth Löffler, Im Eichbäumle 28, 76139 Karlsruhe; Martin Löffler-Mang, Töpperstrasse 26, 76131 Karlsruhe, and Walter Löffler, Ziegelbrunner Strasse 9, 70374 Stuttgart, all of Germany

Filed Jul. 12, 1996, Ser. No. 679,269
Claims priority, application Germany, Jan. 13, 1994, 44 00 827.9
Int. Cl.[6] B03C *3/41*
U.S. Cl. 95—57 **27 Claims**



1. Process for treating gas-borne particles for the electrically induced agglomeration of such particles, comprising the following steps:
directing a particle-laden flow of gas through a closed elongated flow duct, and
coupling into the flow duct an electric field which is suitable for the ionization of the gas flowing through the flow duct via at least one pair of needle-shaped ungrounded electrodes having opposite polarity, the electrodes of each electrode pair being disposed radially opposite each other in the flow duct with no structure residing therebetween along the length of the duct occupied by the electrodes, the electrodes being spaced an effective distance such that ionization of the gas takes place between the electrodes, causing an agglomeration of the particles in the flow duct during flow therethrough.

15. Apparatus for electrically inducing agglomeration of gas-borne particles, comprising:

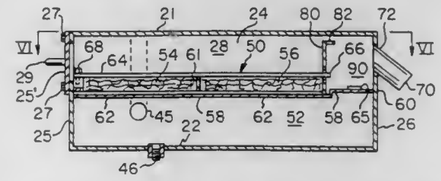
a closed and elongated flow duct (12),
a plurality of needle-shaped electrodes (20, 22) arranged in pairs in the flow duct (12), the electrodes being arranged in pairs radially opposite each other in the flow duct (12), the electrodes being insulated with respect to the walls of the flow duct and wired so as to be ungrounded, the electrodes of each said pair having opposite polarity and having no structure residing therebetween along the length of the duct occupied by the electrodes, and
a current source connected to the electrodes, the current source having a strength sufficient to produce corona discharges between the electrodes of each said pair so that ionization of the gas takes place between the electrodes, causing an agglomeration of the particles in the flow duct during flow therethrough.

5,824,138

SYSTEM FOR REMOVING NOXIOUS ODORS FROM A CHEMICAL TANKER TRUCK

C. Milton Taylor, III, 512 Allegheny St., Boswell, Pa. 15531

Filed May 1, 1997, Ser. No. 847,276
Int. Cl.[6] B01D *46/00*
U.S. Cl. 95—288 **14 Claims**



1. Apparatus for removing noxious odors from a tank truck for transporting hot coal, tar, pitch, or other volatile product, comprising:
a) a condensation box affixed to the tank, said box having a top, a bottom, and enclosing side and end walls defining an open interior therein;
b) filter means positioned within the interior of the condensation box at a location spaced above the bottom thereof, said filter means including a perforate metal filter media;
c) vent means associated with the condensation box in a location spaced above said filter means to permit communication between the interior of the condensation box and an exterior atmosphere; and
d) conduit means having a first end in communication with an interior portion of the tank where hot vapors are present and a second end communicating with the interior of the condensation box in a location spaced below the filter means, whereby, in use, hot vapor leaves the tank and passes through the conduit means to enter the condensation box to pass upwardly through the perforate metal filter media of the filter means, wherein the hot vapor cools as it passes through the metal filter media and a noxious fraction of said hot vapor liquefies to collect at the bottom of the condensation box and a fraction of less noxious vapor leaves the box in a gaseous state via the vent means to the atmosphere.

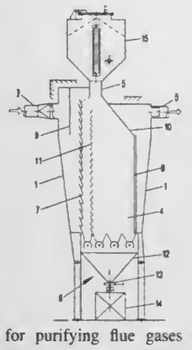
13. A method of removing noxious odors from a tank truck hauling hot coal tar, pitch or other volatile products, the method comprising:
a) drawing off hot noxious vapors from the tank;
b) directing the hot noxious vapors to a condensation box;
c) flowing the hot noxious vapors through a filter media;
d) cooling the hot noxious vapors in the filter media to condense out a liquid noxious fraction;
e) collecting the liquid noxious fraction in the condensation box, and;
f) venting from the condensation box to the atmosphere a less noxious fraction of cooled vapors which passes through the filter media.

5,824,139

ADSORBER FOR PURIFYING COMBUSTION GASES

Hermann Brüggendick, Schermbeck, Germany, assignor to STEAG Aktiengesellschaft, Essen, Germany

PCT No. PCT/EP95/03996, § 371 Date May 14, 1997, § 102(e) Date May 14, 1997, PCT Pub. No. WO96/14918, PCT Pub. Date May 23, 1996
PCT Filed Oct. 11, 1995, Ser. No. 849,547
Claims priority, application Germany, Nov. 14, 1994, 44 40 584.7
Int. Cl.[6] B01D *53/02*
U.S. Cl. 96—109 **9 Claims**



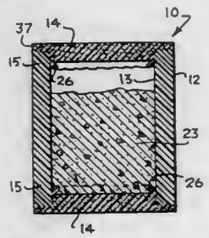
1. An adsorber for purifying flue gases of a furnace, said adsorber comprising:
a housing having a flue gas inlet and a flue gas outlet;
said housing comprising an adsorption medium chamber;
a fill socket extending from a top of said housing;
a removal device extending from a bottom of said housing;
said chamber comprising substantially vertical, gas-permeable walls for delimiting said chamber at said inlet side and at said outlet side;
said chamber further comprising a vertical gas-permeable partition and a slanted non-gas-permeable wall;
said wall at said inlet side being a louver wall extending upwardly to a level of said fill socket;
said wall at said outlet side being a slotted screen connected with said slanted, non-gas-permeable wall to said fill socket, wherein said flue gas outlet is located opposite said non-gas-permeable wall.

5,824,140

CANISTER WITH POROUS PLASTIC ENDS

Lora L. Berger, Amherst, N.Y., assignor to Multisorb Technologies, Inc., Buffalo, N.Y.

Continuation of Ser. No. 449,016, May 24, 1995, Pat. No. 5,641,088, Division of Ser. No. 219,400, Mar. 29, 1994, Pat. No. 5,503,662. This application Jun. 19, 1997, Ser. No. 878,937
Int. Cl.[6] B01D *53/00*
U.S. Cl. 96—108 **32 Claims**



1. A canister comprising an elongated hollow plastic canister body having a wall, inner and outer surfaces on said wall, an edge portion on said wall defining an open end, an extreme outer end on said edge portion which extends at an angle to said inner and outer

surfaces, a gas-treating material in said canister body, and a plastic closure extending across said open end, said plastic closure having an outer edge portion fused to said extreme outer end of said edge portion of said wall for securing said plastic closure to said wall, said plastic closure also having an inner central porous portion located radially inwardly of said outer edge portion of said plastic closure, said central porous portion extending into said canister body and having an outer surface fused to said inner surface of said wall adjacent said extreme outer end for additionally securing said plastic closure to said wall and said central porous portion extending at substantially the same angle to said outer edge portion of said plastic closure as said extreme outer end extends to said inner surface.

5,824,141

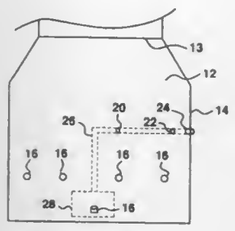
APPARATUS FOR MIXING A TANK AND IMPROVING AIR/LIQUID CONTACT IN AN OXIDIZED SYSTEM

Wadie F. Gohara, Barberton; Kevin J. Rogers, Wadsworth; Fred C. Owens, II, North Canton, and Steven Feeney, Norton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Division of Ser. No. 550,438, Oct. 30, 1995, Pat. No. 5,676,716. This application Jun. 4, 1997, Ser. No. 869,188

Int. Cl.[6] B01D *47/06*

U.S. Cl. 96—235 **7 Claims**



1. An apparatus for use in a flue gas desulfurization system for a furnace for mixing oxidization air with a liquid in a tank having a side wall, upper end, lower end, and a minimum liquid level, the apparatus comprising:

means for removing the liquid from the tank at a point adjacent the lower end of the tank;

means for supplying oxidization air to the tank adjacent the lower end; and

means for supplying the liquid to each of a plurality of conduits positioned above said removing means, each connected to the side wall of the tank at one of a plurality of openings spaced relative to each other between the lower end and the minimum liquid level, the plurality of openings being circumferentially spaced at approximately the same vertical position.

5,824,142

INK COMPOSITION, PROCESS FOR ITS PREPARATION, AND INK-JET RECORDING PROCESS

Hideto Yamazaki, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 10, 1996, Ser. No. 677,967

Claims priority, application Japan, Jul. 17, 1995, 7-180095

Int. Cl.[6] C09D *11/02*

U.S. Cl. 106—20 R **9 Claims**

1. An ink composition comprising a dye or a pigment, dissolved or dispersed in an aqueous medium, wherein said ink composition contains nitrates, and wherein a total content of nitrates and nitrites in the ink composition is less than 5 ppm.

5,824,143

METHOD FOR COMPOUNDING CERAMIC POWDER BATCHES

Devi Chalasani, Painted Post; Robert J. Locker, Corning, and Constance B. Sawyer, Lindley, all of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Filed Oct. 17, 1997, Ser. No. 951,878

Int. Cl.[6] C09D *101/28;101/00;* **C04B** *35/636;35/628*

U.S. Cl. 106—181.1 **18 Claims**

1. A method for compounding a plasticized inorganic powder batch comprising a cellulosic binder, water, and at least one inorganic powder exhibiting hydrophilic surface behavior which comprises the steps of:

prior to contacting the inorganic powder with water or cellulosic binder, contacting the powder with an organic surface treatment agent to decrease the water affinity thereof; and thereafter

combining and mixing the powder with water and the cellulosic binder to form the plasticized inorganic powder batch.

5,824,144

POWDER COATING COMPOSITION AND METHOD

Mingbo He, St. Louis Park, Minn., and Michael T. Venturini, Yorktown Heights, N.Y., assignors to Engelhard Corporation, Iselin, N.J.

Filed Apr. 11, 1997, Ser. No. 827,783

Int. Cl.[6] C09C *1/62*

U.S. Cl. 106—403 **24 Claims**

1. A lamellar metal-containing pigment having a sticky surface layer thereon.

5,824,145

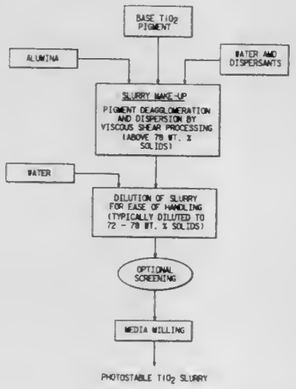
METHOD FOR MAKING A PHOTODURABLE AQUEOUS TITANIUM DIOXIDE PIGMENT SLURRY

Robert Elroy Marganski, and Michael Warren Ott, both of Newark, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 14, 1997, Ser. No. 856,062

Int. Cl.[6] C09C *1/36*

U.S. Cl. 106—442 **20 Claims**



1. A method for making a photodurable, aqueous titanium dioxide pigment slurry, comprising mixing amorphous alumina, TiO_2 pigment particles, water, and at least one dispersant to produce a photodurable, aqueous TiO_2 slurry comprising at least about 78 wt. % TiO_2 solids based on the total weight of slurry and at least about 3 wt. % alumina based on the total weight of TiO_2 solids.

5,824,146

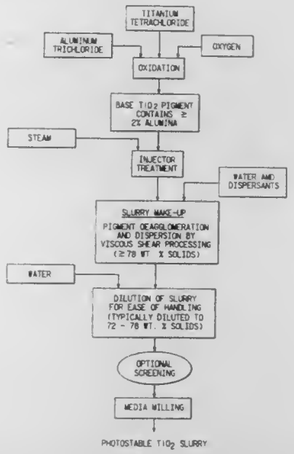
METHOD FOR MAKING A PHOTODURABLE AQUEOUS TITANIUM DIOXIDE PIGMENT SLURRY USING A HIGH LEVEL OF ALUMINUM CO-OXIDANT

Michael Warren Ott, Newark, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 3, 1997, Ser. No. 888,083

Int. Cl.[6] C09C *1/36*

U.S. Cl. 106—442 **12 Claims**



1. A method for making a photodurable, aqueous titanium dioxide pigment slurry, comprising the steps of:

(a) reacting titanium tetrachloride, aluminum chloride and an oxygen-containing gas in the presence of a nucleant in the vapor phase to produce TiO_2 pigment, wherein sufficient aluminum chloride is added to provide at least 2 wt. % alumina in the TiO_2 pigment based on total weight of TiO_2 solids;

(b) separating the TiO_2 pigment from the reaction gases; and

(c) mixing the TiO_2 pigment with sufficient water to produce a TiO_2 slurry comprising at least 78 wt. % TiO_2 solids, based on total slurry weight.

5,824,147

SILICATE COMPOUND

Andreas Drechsler, Seligenstadt; Daniel Neupert, Alzenau, both of Germany; Simon Newham, Billingshurst, England, and Ingo Rademacher, Dieburg, Germany, assignors to Redland Technologies Limited, England

PCT No. PCT/DE95/00346, § 371 Date Feb. 20, 1997, § 102(e) Date Feb. 20, 1997, PCT Pub. No. WO95/29139, PCT Pub. Date Nov. 2, 1995

PCT Filed Mar. 11, 1995, Ser. No. 722,156

Claims priority, application Germany, Apr. 22, 1994, 44 13 996.9

Int. Cl.[6] C04B *14/04*

U.S. Cl. 106—600 **50 Claims**

1. A coating composition consisting of silicon dioxide, alkali oxide selected from the group consisting of lithium oxide, potassium oxide, sodium oxide and mixtures thereof and one or more oxides selected from the group consisting of aluminum oxide, calcium oxide, titanium dioxide, magnesium oxide, zirconium dioxide and boric oxide, wherein the mol ratio of silicon dioxide to alkali oxide is 4–25:1, the mol ratio of aluminum oxide to silicon dioxide is 0–0.8:1, the mol ratio of calcium oxide to silicon dioxide is 0–0.45:1, the mol ratio of titanium dioxide to silicon dioxide is 0–0.45:1, the mol ratio of magnesium oxide to silicon dioxide is 0–0.45:1, the mol ratio of zirconium dioxide to silicon dioxide is 0–0.45:1 and the mol ratio of boric oxide to silicon dioxide is 0–0.45:1, and wherein said composition hardens at a temperature less than 100° C.

5,824,148

SOUND ABSORBING CEMENTITIOUS COMPOSITION AND METHOD OF MAKING SAME

Charles E. Cornwell, 5902 Mount Eagle Dr., Alexandria, Va. 22303

Filed May 16, 1997, Ser. No. 857,851

Int. Cl.[6] C04B *38/00;38/10;24/16*

U.S. Cl. 106—678 **24 Claims**

1. A cementitious composition with improved sound absorbing capability having an interconnected open cellular structure such that at least 20–100% of said composition's surface area is open to provide access to sound waves and has an air-dry density in a range of about 12–95 pounds per cubic foot, the composition comprising

at least one cement,

at least one aggregate, water, and

a foaming agent,

wherein the foaming agent is a surfactant solution comprising an ammonium salt of a C_{10-12} linear alcohol ethoxylate (2EO) sulfate surfactant that is preblended with water at a dilution ratio in a range of water to surfactant of from about 40:1 to 10:1.

5,824,149

METHOD AND APPARATUS FOR CONTROLLING CRYSTAL TEMPERATURE GRADIENTS IN CRYSTAL GROWING SYSTEMS

Zhixin Li, Hudson, N.H., assignor to Ferrofluidics Corporation, Nashua, N.H.

Filed Feb. 27, 1997, Ser. No. 807,400

Int. Cl.[6] C30B *15/20*

U.S. Cl. 117—14 **15 Claims**

1. A method for controlling temperature gradients in a solid crystal formed by pulling a seed crystal from a molten charge material which method comprises the steps of:

A. positioning at least a portion of said solid crystal within an enclosing structure having an inner surface in thermal contact with a surface of the crystal portion;

B. sensing temperature at the crystal portion surface with a sensing means; and

C. controlling temperature on a portion of the enclosing structure which portion is less then the entire inner surface of the enclosing structure in response to the temperature sensed in step B.

5,824,150

PROCESS FOR FORMING DEPOSITED FILM BY USE OF ALKYL ALUMINUM HYDRIDE

Nobuo Mikoshiba; Kazuo Tsubouchi, and Kazuya Masu, all of Sendai, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

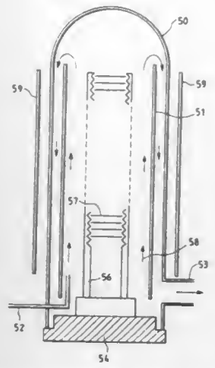
Continuation of Ser. No. 580,486, Dec. 29, 1995, abandoned, which is a division of Ser. No. 264,498, Jun. 23, 1994, abandoned, which is a division of Ser. No. 902,829, Jun. 23, 1992, Pat. No. 5,328,873, which is a division of Ser. No. 578,672, Sep. 7, 1990, Pat. No. 5,179,042. This application Oct. 10, 1997, Ser. No. 948,401

Claims priority, application Japan, Sep. 9, 1989, 1-233924; Sep. 9, 1989, 1-233926; Jan. 16, 1990, 2-6557; Jan. 16, 1990, 2-6558

Int. Cl.[6] C30B *25/02*

U.S. Cl. 117—84 **14 Claims**

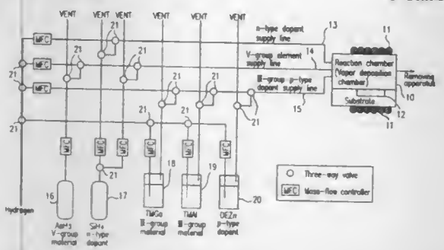
1. A method for selectively forming an aluminum thin film, comprising the steps of:



forming on a silicon substrate an oxidized film mask having an opening and

introducing dimethyl aluminum hydride as a starting gas onto the silicon substrate by a chemical vapor deposition method to selectively deposit an aluminum thin film only on a silicon surface exposed from the opening.

5,824,151
VAPOR DEPOSITION METHOD
Nobuhiro Ohkubo, Ikoma, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed May 21, 1997, Ser. No. 861,034
Claims priority, application Japan, May 23, 1996, 8-128829
Int. Cl.[6] C30B *23/00;25/00*
U.S. Cl. 117—89 **8 Claims**



1. A method of forming a III-V group compound semiconductor crystalline layer on a semiconductor crystal containing at least V-group compound, comprising the steps of:

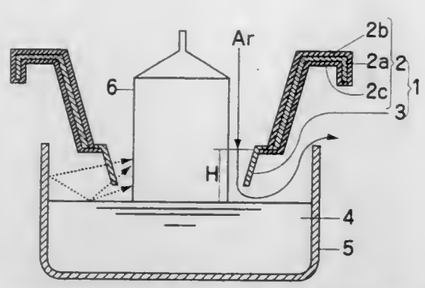
(a) supplying an n-type dopant and a material compound containing a V-group element onto the semiconductor crystal without causing the crystal growth of the III-V compound semiconductor crystalline layer, and

(b) performing crystal growth of the III-V compound semiconductor crystalline layer.

5,824,152
SEMICONDUCTOR SINGLE-CRYSTAL PULLING APPARATUS
Toshimichi Kubota; Toshiro Kotooka; Toshiaki Saishoji, and Tetsuhiro Iida, all of Hiratsuka, Japan, assignors to Komatsu Electronic Metals Co., Ltd., Hiratsuka, Japan
Filed Jul. 9, 1996, Ser. No. 680,522
Int. Cl.[6] C30B *15/14*
U.S. Cl. 117—217 **13 Claims**

1. Semiconductor single-crystal pulling apparatus comprising:

a crucible in which a semiconductor single-crystal raw material is melted;

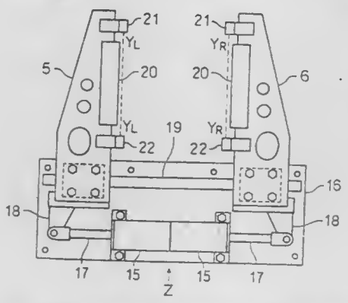


a heater provided at a periphery of the crucible, for heating the raw material in the crucible;

a pulling mechanism for performing pulling of a single crystal by deposition of a single crystal on to a seed crystal as nucleus, the seed crystal been dipped into the raw material molten liquid melted by the heater and pulled from a dipped region where the seed crystal was dipped; and

a radiation screen provided above a vicinity of the molten liquid and comprising a conical heat insulating sleeve surrounding the region, the conical heat insulating sleeve having an upper and a lower part, and the radiation screen is constituted such that heat insulation performance of the lower part is lower than heat insulation performance of the upper part.

5,824,153
APPARATUS WITH MOVABLE ARMS FOR HOLDING A SINGLE-CRYSTAL SEMICONDUCTOR INGOT
Ayumi Suda, Chigasaki; Yoshinobu Hiraishi, and Koichi Shimomura, both of Omura, all of Japan, assignors to Komatsu Electronic Metals Co., Ltd, Hiratsuka, Japan
Filed Dec. 10, 1996, Ser. No. 762,583
Claims priority, application Japan, Dec. 13, 1995, 7-346826
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—208 **13 Claims**



1. A single crystal ingot holding apparatus for taking out from a semiconductor single crystal pulling apparatus a single crystal ingot which has been pulled up by the semiconductor single crystal pulling apparatus, and conveying the single crystal ingot, comprising:

a shaft;

a base installed on the shaft and movable along the shaft in a vertical direction;

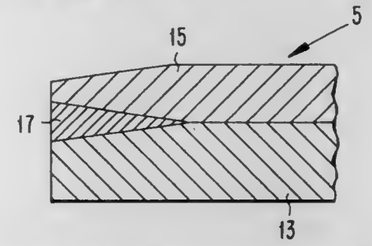
at least one pair of holding arms installed on the base for holding at tip ends thereof an outer periphery of the single crystal ingot from opposite sides;

drive means for independently driving each holding arm;

sensors disposed on the holding arms for detecting a position where a distance between one of the holding arms and the outer periphery of the single crystal ingot is equal to a distance between another of the holding arms and the outer periphery of the single crystal ingot; and

control means for controlling to stop or drive each of the holding arms in response to detection signals from the sensors and, when the position is detected, for simultaneously starting the drive of each pair of holding arms to hold the single crystal ingot by each pair of the holding arms.

5,824,154
COATING BLADE
Silvano Freti, Bursinel, Switzerland, assignor to BTG Eclépens S.A., Eclépens, Switzerland
Filed Mar. 10, 1997, Ser. No. 814,039
Claims priority, application Sweden, Dec. 20, 1996, 9604737
Int. Cl.[6] B05C *11/02*
U.S. Cl. 118—126 **20 Claims**



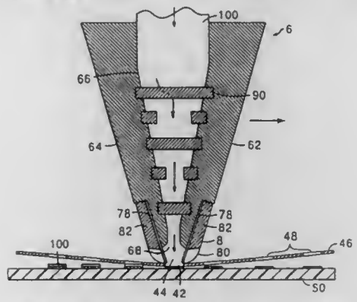
1. A coating blade for controlled application and smoothing of a coating composition on a traveling paper web supported by a co-rotary roll, the blade comprising:

a steel strip, the steel strip being elongated in a first direction between first and second edge sections;

an abrasive wear resistant deposit; and

an intermediate layer positioned between the deposit and the steel strip, the layer having a higher resistance to abrasive wear than the deposit.

5,824,155
METHOD AND APPARATUS FOR DISPENSING VISCOUS MATERIAL
Vinh Van Ha, Southfield; John Trublowski; Brenda Joyce Nation, both of Troy; Jeff Lin, Canton, and Chin-Yuan Perng, Ann Arbor, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Filed Nov. 8, 1995, Ser. No. 555,253
Int. Cl.[6] B05C *3/02*
U.S. Cl. 118—410 **21 Claims**



1. An apparatus for compressing a viscous material through openings in a stencil, comprising:

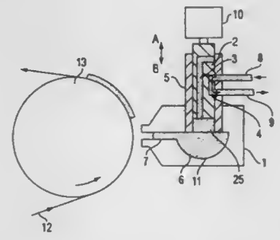
a reservoir containing a supply of the viscous material;

a pressure source operably connected to said reservoir whereby pressure is applied to the supply of viscous material;

a housing having a first opening in fluid communication with said reservoir and having a compression headcap formed from contiguous walls of said housing and a pair of wiping blades forming a V-shaped neck for defining a second opening for expelling the viscous material under pressure into openings in the stencil, and

means for biasing each of said wiping blades into sliding communication over the stencil, wherein the size of said second opening changes as said wiping blades are displaced against said biasing means.

5,824,156
INTERMITTENT COATING APPARATUS, INTERMITTENT COATING METHOD AND MANUFACTURING METHOD OF BATTERY ELECTRODES, AND NON AQUEOUS ELECROLYTE CELL
Masaru Watanabe, Hyogo; Yasuhiro Ueyama, Osaka; Toshikazu Nakamura, Osaka; Yorihito Ohana, Osaka, and Tetsuya Hayashi, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Dec. 27, 1995, Ser. No. 579,267
Claims priority, application Japan, Dec. 27, 1994, 6-325175
Int. Cl.[6] B05C *5/00*
U.S. Cl. 118—410 **14 Claims**



1. An intermittent coating apparatus, comprising:

a roll for making a base material run continuously,

a nozzle for applying paint on said base material, said nozzle defining a suction chamber and a slit having an exit, and

an intermittent device for supplying paint intermittently to said nozzle,

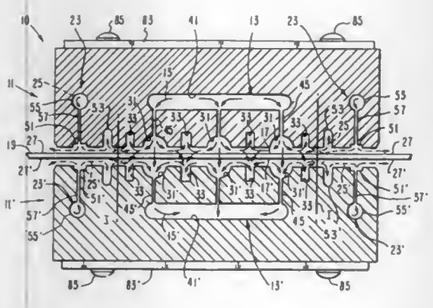
wherein said intermittent device, when the paint application is suspended, stops flow of said paint to said nozzle to be guided to the suction chamber, at the same time sucks said paint staying within said nozzle and at the exit of the slit in to a specified place provided inside said nozzle; and when the paint application is resumed, releases said paint flow to said nozzle, at the same time returns said paint that was sucked in said specified place to inside of said nozzle.

5,824,157
FLUID JET IMPREGNATION
Elizabeth F. Foster, Friendsville, Pa.; Jeffrey C. Hedrick, Park Ridge, N.J.; Robert M. Japp, Vestal, N.Y.; Konstantinos Papathomas, Endicott, N.Y.; Stephen L. Tisdale, Enowell, N.Y., and Alfred Viehbeck, Fishkill, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Sep. 6, 1995, Ser. No. 523,881
Int. Cl.[6] B05C *3/12*
U.S. Cl. 118—419 **18 Claims**

1. An apparatus for applying fluid to a porous work piece to coat and impregnate the work piece comprising:

a head member,

means for directing a fluid at a first positive pressure at one side of said work piece and across the surface of that side; and



means for directing said fluid at a second negative pressure at the opposite side of said work piece and across the surface of that side so that said fluid is passed both over and through said work piece to thereby coat and impregnate the work piece.

5,824,158

CHEMICAL VAPOR DEPOSITION USING INDUCTIVELY COUPLED PLASMA AND SYSTEM THEREFOR

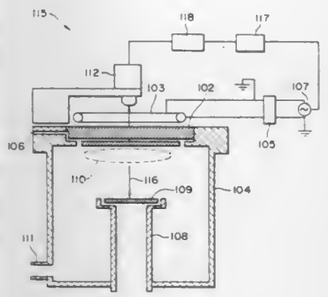
Koichiro Takeuchi, Nishiwaki; Hirokazu Ueda, and Akira Narai, both of Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation of Ser. No. 266,468, Jun. 27, 1994, abandoned. This application Aug. 27, 1997, Ser. No. 917,803

Claims priority, application Japan, Jun. 30, 1993, 5-151441; Jun. 30, 1993, 5-161442; Jun. 30, 1993, 5-161443; Jun. 30, 1993, 5-161444

Int. Cl.[6] C23C *16/00*

U.S. Cl. 118—723 IR **4 Claims**



1. A plasma CVD system, comprising:

a dielectric viewing port, which is disposed on the outer periphery of a vacuum vessel, comprising a gas passage, in the dielectric viewing port, connected to an inlet port for a CVD process gas and a gas discharge port for discharging the process gas in said gas passage within said vacuum vessel;

an antenna formed in a loop, which is disposed in close proximity to said dielectric viewing port provided outside of said vacuum vessel for inducing a high frequency electric field within said vacuum vessel; and

a sample stage within said vacuum vessel;

wherein said dielectric viewing port, said antenna and said sample stage are disposed along the axis of said vacuum vessel, such that the directions of the planes thereof are parallel to each other.

5,824,159

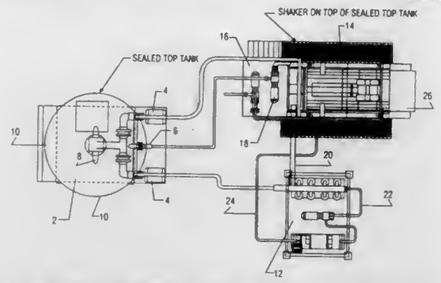
PROCESS FOR TREATING SURFACE STORED CONTAMINATED SOLIDS

Robert D. Tate, Lafayette, La., assignor to Ambar, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 282,875, Jul. 29, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,393

Int. Cl.[6] B08B *3/04;7/00*

U.S. Cl. 134—3 **5 Claims**



1. A process for treating surface stored contaminated solids which are contaminated with alkaline earth metal or silica based scales which have entrained naturally occurring radioactive material, comprising:

performing a pre-wash treatment to remove hydrocarbon material from the contaminated solids;

performing an acidizing step to acidize acid soluble material from the contaminated solids;

transferring said contaminated solids into a fluid contact zone;

contacting, in said contact zone, said contaminated solids with a treatment fluid capable of causing said entrained naturally occurring radioactive material to be released from the scale;

agitating said treatment fluid in said contact zone to suspend said contaminated solids in said treatment fluid;

heating said treatment fluid to a temperature high enough to increase chemical reaction, and maintaining said temperature of said treatment fluid throughout the time said contaminated solids are in said contact zone;

shearing said contaminated solids that are in contact with said treatment fluid to increase the surface area of said contaminated solids that are in contact with said treatment fluid;

determining the level of radioactivity of the solids being contacted in said contact zone through sampling, and if the level of activity has reached a preselected level of activity, then separating said solids from said treatment fluid.

5,824,160

METHOD FOR THE THERMO-CHEMICAL DEWAXING OF LARGE DIMENSION LINES

Carlos Nagib Khalil; Alberto Cunha Carneiro Da Silva; Celso Rodrigo De Souza; Maria Cristina Brum, all of Rio de Janeiro; Claudio Silvio Viana Martins, Niteroi, and Sonia Maria Cabral De Menezes, Rio de Janeiro, all of Brazil, assignors to Petroleo Brasileiro S.A. Petrobras, Rio de Janeiro, Brazil

Filed Oct. 31, 1996, Ser. No. 742,126

Claims priority, application Brazil, Nov. 22, 1995, 9505262-3; Nov. 29, 1995, 9505556-8

Int. Cl.[6] B08B *7/00;9/00*

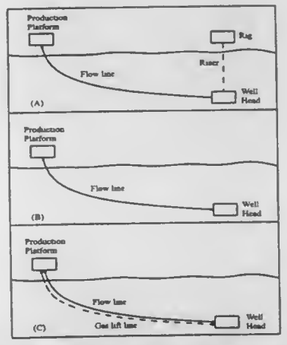
U.S. Cl. 134—5 **14 Claims**

1. A method for the thermo-chemical dewaxing of a hydrocarbon transmission conduit containing paraffin deposit, said method comprising the steps of:

(a) introducing into said conduit an emulsion comprising an internal aqueous phase and an external organic phase, said aqueous phase comprising an oxidizing nitrogen salt, a reducing nitrogen salt and water, and said organic phase comprising a non-polar organic liquid, said emulsion comprising a delayed action activator for inducing the reaction of said oxidizing nitrogen salt and said reducing nitrogen salt, wherein said delayed action activator is a linear, aliphatic polyanhydride, said polyanhydride being insoluble in the organic phase as well as the aqueous phase;

(b) maintaining said emulsion in said conduit under conditions sufficient to fluidize paraffin deposit and to generate nitrogen gas and heat from the reaction of said oxidizing nitrogen salt and said reducing nitrogen salt; and

(c) removing the fluidized paraffin deposit from said conduit.



5,824,161

DEVICE AND METHOD FOR HANDLING INJURIOUS MATERIALS

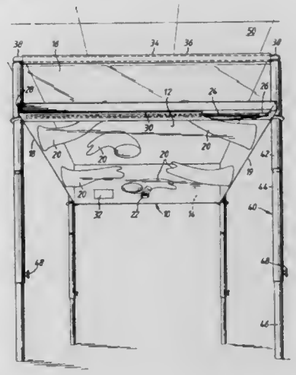
William Francis Atkinson, 16b Theodore Rd, Lewisham, London. SE13, England

Continuation of Ser. No. 200,833, Jun. 1, 1988, abandoned. This application Mar. 5, 1991, Ser. No. 664,492

Claims priority, application United Kingdom, Jun. 4, 1987, 13066/87

Int. Cl.[6] B08B *7/04*

U.S. Cl. 134—6 **6 Claims**



1. An apparatus for confining asbestos fibers and the like floating in the air adjacent to a ceiling as a consequence of removing or repairing ceiling materials, comprising:

a flexible bag having an open top adapted to be positioned adjacent to a ceiling in surrounding relation to a desired area to be worked upon;

support means adapted for resting on a floor below said ceiling and formed for supporting said bag at desired elevations above said floor;

height regulating means on said support means formed for moving said bag toward and away from said ceiling; and

glove means of flexible material sealed to said bag and extending into the interior thereof, said glove means being adapted for receiving and protecting a hand and a portion of an arm inserted into said glove means.

5,824,162

MOLECULAR LEVEL CLEANING OF CONTAMINATES FROM PARTS UTILIZING AN ENVIRONMENTALLY SAFE SOLVENT

Lawrence A. Clark, Alameda, Calif., assignor to Lawrence Industries, Inc., Alameda, Calif.

Continuation of Ser. No. 580,840, Dec. 29, 1995, Pat. No. 5,616,549. This application Mar. 28, 1997, Ser. No. 827,219

Int. Cl.[6] B08B *3/08;* **C11D** *7/30;7/24;7/26*

U.S. Cl. 134—31 **17 Claims**

1. A solvent mixture for use in a vapor degreasing system, said solvent mixture comprising:

90 percent to about 96.5 percent n-propyl bromide; and

3.5 percent to about 5 percent of a mixture of low boiling solvents, said solvent mixture comprising 0.5 percent to about 1 percent nitromethane, 0.5 percent to about 1 percent 1,2-butylene oxide and 2.5 percent to about 3 percent 1,3-dioxolane.

5,824,163

METAL CLEANING PROCESS THAT DOES NOT DAMAGE PLASTIC

Donald P. Murphy, Rochester Hills, Mich., assignor to Henkel Corporation, Plymouth Meeting, Pa.

Filed Feb. 28, 1997, Ser. No. 808,549

Int. Cl.[6] C11D *3/06*

U.S. Cl. 134—39 **10 Claims**

1. A process of cleaning a soiled metal surface, which may or may not be covered with a protective organic coating and which is in a fixed spatial position with respect to at least one plastic surface, by contacting the soiled metal surface with an aqueous liquid cleaning composition and maintaining relative motion between the liquid cleaning composition and the soiled metal surface to remove at least some of the soil from the metal surface by dissolving and/or dispersing the soil in the liquid cleaning composition, the contacting of the soiled metal surface being by a method that also results in contacting at least part of the plastic surface with respect to which the soiled metal surface is in a fixed spatial position, wherein the improvement comprises utilizing as the aqueous liquid cleaning composition a composition that has a pH value in the range from about 3 to about 9 and comprises water and:

(A) dihydrogen phosphate ions; and

(B) a surfactant component of molecules selected from the group consisting of molecules that are resistant to attack by micro-organisms.

5,824,164

Patent Not Issued For This Number

5,824,165

GIANT MAGNETORESISTIVE HETEROGENEOUS ALLOYS AND METHOD OF MAKING SAME

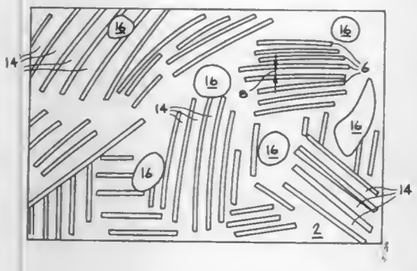
Johannes J. Bernardi, Berkeley; Gareth Thomas, Oakland, and Andreas R. Huetten, Berkeley, all of Calif., assignors to The Regents, University of California, Oakland, Calif.

Filed Sep. 1, 1995, Ser. No. 526,745

Int. Cl.[6] H01F *1/14*

U.S. Cl. 148—313 **30 Claims**

1. A bulk material that exhibits giant magnetoresistance upon application of an external magnetic field comprising, a plurality of



regions termed grains having a eutectic structure of magnetic and nonmagnetic material within the grains and characterized by

a) a presence of approximately parallel magnetic lamellae wherein the lamellae are separated by a distance smaller than the mean free path of the conduction electrons; and

b) a matrix composition having nonmagnetic properties that is interposed between the lamellae within the grains.

5,824,166

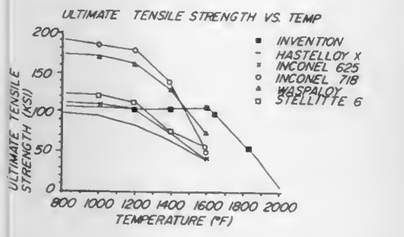
INTERMETALLIC ALLOYS FOR USE IN THE PROCESSING OF STEEL

Robert R. McDonald, Traverse City, Mich., assignor to Metallamics, Traverse City, Mich.

Continuation of Ser. No. 834,598, Feb. 12, 1992, abandoned. This application May 20, 1994, Ser. No. 246,578

Int. Cl.[6] C22C *19/05*

U.S. Cl. 148—428 **12 Claims**



1. A material handling apparatus for processing heated formed ferrous metal products and/or hot glass products, comprising:

a cast metal apparatus having an as-cast structure consisting essentially of

a face centered cubic intermetallic single phase of metal aluminide and having the property of retaining at least 75% of its ultimate tensile strength as measured at room temperature when heated to about 1600° F. wherein the metal of the metal aluminide consists essentially of nickel, aluminum and chromium, wherein the nickel ranges from 74–87.3 weight percent; chromium is present in an amount from about 6 to 10% by weight and aluminum is present in an amount of 6 to 14 percent by weight.

5,824,167

BERYLLIUM-COPPER ALLOY EXCELLENT IN STRENGTH, WORKABILITY AND HEAT RESISTANCE AND METHOD FOR PRODUCING THE SAME

Shuhei Ishikawa; Hiroyuki Hiramitsu; Yoshihisa Ishiguro, and Kazumasa Yashiro, all of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

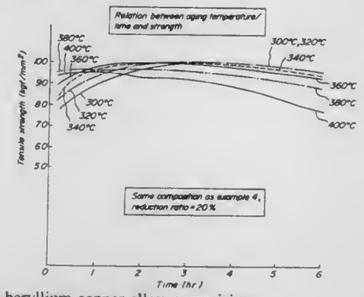
PCT No. PCT/JP94/02253, § 371 Date Oct. 30, 1995, § 102(e) Date Oct. 30, 1995, PCT Pub. No. WO95/18873, PCT Pub. Date Jul. 13, 1995

PCT Filed Dec. 27, 1994, Ser. No. 513,887

Claims priority, application Japan, Jan. 6, 1994, 6-022997; Nov. 7, 1994, 6-272464

Int. Cl.[6] C22C *9/06*

U.S. Cl. 148—435 **1 Claim**



1. A beryllium-copper alloy, comprising:

0.5 to 1.5% by weight of Be;

0.3 to 1.5% by weight of at least one member selected from the group consisting of Ni and Co;

0.5 to 2.5% by weight of at least one member selected from the group consisting of Si and Al;

and the balance being substantially Cu;

said alloy containing as an intermetallic compound at least one of NiBe and CoBe in the range of 0.20 to 0.90% by weight, at least 45% thereof being present as fine particles having a diameter of 0.1 μm or less.

5,824,168

PROCESS FOR GEAR-ROLLING A HIGH ACCURACY GEAR

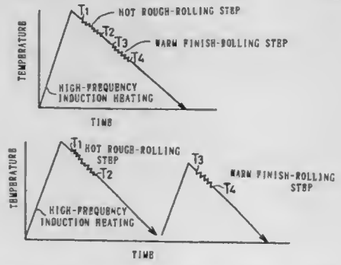
Noritaka Miyamoto; Masazumi Onishi, both of Toyota; Yasuyuki Fujiwara, Aichi-ken; Toshiaki Tanaka, Nagoya; Masatoshi Sawamura, Nagoya, and Atsushi Danno, Nagoya, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 4, 1996, Ser. No. 706,251

Claims priority, application Japan, Sep. 6, 1995, 7-229273

Int. Cl.[6] C21D *1/10;9/32*

U.S. Cl. 148—573 **12 Claims**



1. A process for gear-rolling a high accuracy gear from a workpiece made of iron-based material using:

a roller die for generating teeth and a finishing roller die for finishing the teeth; and

the process comprising the steps of:

a heating step of heating an outer circumferential portion of said workpiece having a disk shape;

a hot rough-rolling step of hot-rolling said outer circumferential portion of said heated workpiece by use of said roller die to generate teeth at said outer circumferential portion of said workpiece so that a rolled-gear is formed; and

a warm finish-rolling step of warm-rolling said teeth of said rolled-gear by use of said finishing roller die,

wherein said hot rough-rolling step has a starting temperature T_1 set in the range from approximately 850° through 1100° C., and a terminating temperature T_2 of said hot rough-rolling step set in the range from approximately 500° through 700° C., and

wherein said warm finish-rolling step has a starting temperature T_3 set in the range from approximately 400° through 700° C., and a terminating temperature T_4 of said warm finish-rolling step set in the range from approximately 200° through 650° C.

5,824,169

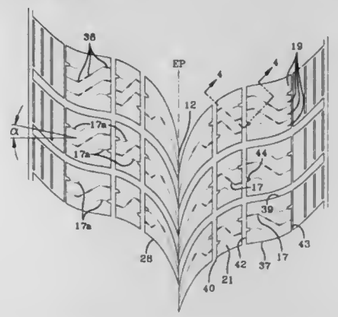
PNEUMATIC TIRE HAVING IMPROVED WEAR PROPERTIES

Samuel Patrick Landers, Uniontown; John Steven Attinello, Hartville; James Christopher Stroble, Kent, and Joel Joseph Lazeration, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Jan. 20, 1995, Ser. No. 376,207

Int. Cl.[6] B60C *3/00;11/01;11/12;115/00*

U.S. Cl. 152—209 R **9 Claims**



1. A radial ply pneumatic automobile tire for use on paved surfaces comprising a pair of annular beads, carcass plies wrapped around said annular beads, a tread disposed over said carcass plies in a crown area of said tire, and sidewalls disposed between said tread and said beads, wherein said tire has an aspect ratio of 0.35 to 0.8 and said tread has a footprint net-to-gross ratio of 40% to 70% and at least one annular center groove having a width of about 10% to 25% of total tread width based on the footprint of the tire at standard inflation and standard load, said annular center groove having a depth of 78% to 100% of total tread depth and a curvate U-shape, and lateral grooves intersecting circumferential grooves between said annular center groove and a shoulder, intersections of the circumferential grooves and the lateral grooves defining lugs wherein said lugs are traversed by sipes which improve traction and contain tie bars which stabilize the lug, and wherein an angle α of principle lug stiffness in each shoulder lug is ±80° to 90° in the top 25% of the lug with respect to the equatorial plane of the tire, wherein the ratio of a radius of curvature at the edge of the tread corresponding to the edge of the footprint to a radius of curvature at the equatorial plane of the tire is 0.024/1 to 0.044/1, wherein a circumferential edge of a lug is substantially bisected by a notch (**44**) which substantially parallels a sipe (**17**) in that portion of the lug and is substantially aligned with a sipe (**17**) in an adjacent lug (**28**), and wherein tie bars (**38**) are located near each change in direction of sipe (**17**).

5,824,170

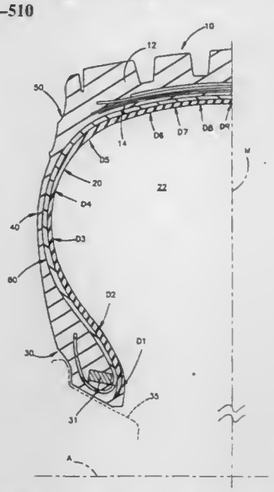
TIRE WITH A PROFILED INNERLINER

David Alan Weston, Taylors, and Cesar Enrique Zarak, Greenville, both of S.C., assignors to Michelin Recherche Et Technique S.A., Switzerland

Continuation-in-part of Ser. No. 373,915, Jan. 17, 1995, abandoned, which is a continuation of Ser. No. 119,934, Sep. 10, 1993, abandoned. This application Feb. 26, 1996, Ser. No. 613,757

Int. Cl.[6] B60C *5/14*

U.S. Cl. 152—510 **12 Claims**



1. In a pneumatic tire for a vehicle having a tread and a belt package between a pair of shoulder portions; a pair of bead segments axially spaced apart; a sidewall between each shoulder portion and a respective bead segment; a carcass with at least one reinforced ply extending between and attached to a respective bead segment, an improvement comprising:

a profiled innerliner ply having a temperature change along its extent in association with a cross-sectional temperature profile of the tire with nominal operating load and pressure during predetermined nominal running conditions of the vehicle wherein the permeability of air through said innerliner ply is made approximately uniform along its extent for improving the aging of said tire by continuously varying thickness of said innerliner ply along its extent to correspond to said temperature change and wherein an inflation pressure loss rate in the tire is a predetermined allowable value.

5,824,171

PNEUMATIC RADIAL TIRES INCLUDING A TIRE COMPONENT CONTAINING GROUPS OF REINFORCING ELEMENTS

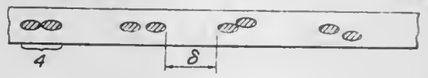
Toshiya Miyazono; Yoshihide Kohno; Hiroyuki Koseki, and Yoichi Okamoto, all of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Division of Ser. No. 341,038, Nov. 15, 1994, which is a continuation of Ser. No. 13,802, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 742,807, Aug. 9, 1991, abandoned. This application Jan. 7, 1997, Ser. No. 779,436

Claims priority, application Japan, Aug. 10, 1990, 2-210201; Feb. 4, 1992, 4-018985; Feb. 5, 1992, 4-020099; Feb. 5, 1992, 4-020100

Int. Cl.[6] B60C *9/00;9/04;9/08;9/20*

U.S. Cl. 152—526 **4 Claims**



1. A pneumatic radial tire including a tire component comprised of a reinforcing layer, said tire component being selected from the group consisting of: a belt serving to reinforce a tread portion, a carcass ply wound around each of a pair of bead cores from an inside of a tire to an outside thereof, and a bead portion reinforcing layer extending along each turnup portion of said carcass ply, said reinforcing layer being comprised of a rubber-coated layer containing a given number of reinforcing elements separately arranged in parallel with each other therein, wherein 30% to less than 50% of all reinforcing elements included in said rubber-coated layer are divided into plural groups each consisting of 2–9 reinforcing elements, a distance between mutually adjacent and opposite reinforcing elements which are not grouped together, is wider than a distance between mutually adjacent reinforcing elements within each of said groups and, said distance between mutually adjacent reinforcing elements within each of said groups is not the same in all of said groups, wherein at least some of the reinforcing elements in said groups are shifted with each other in the radial direction.

3. A pneumatic radial tire including a tire component comprised of a reinforcing layer, said tire component being selected from the group consisting of: a belt serving to reinforce a tread portion, a carcass ply wound around each of a pair of bead cores from an inside of a tire to an outside thereof, and a bead portion reinforcing layer extending along each turnup portion of said carcass ply, said reinforcing layer being comprised of a rubber-coated layer containing a given number of reinforcing elements separately arranged in parallel with each other therein, wherein at least 50% of all reinforcing elements included in said rubber-coated layer are divided into plural groups each consisting of 2–9 reinforcing elements, a distance between mutually adjacent and opposite reinforcing elements, which are not grouped together, is wider than a distance between mutually adjacent reinforcing elements within each of said groups and, said distance between mutually adjacent reinforcing elements within each of said groups is not the same in all of said groups, wherein at least some of the reinforcing elements in said groups are shifted with each other in the radial direction.

5,824,172

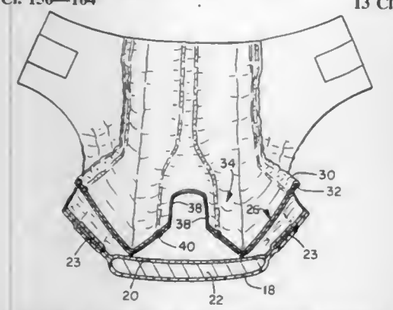
METHOD OF MAKING AN ABSORBENT GARMENT COMPRISING DUAL CONTAINMENT FLAPS

David Peter Kielpikowski, Appleton, Wis., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Division of Ser. No. 260,659, Jun. 16, 1994, Pat. No. 5,669,896. This application Apr. 11, 1997, Ser. No. 834,663

Int. Cl.[6] A61F *13/15*

U.S. Cl. 156—164 **13 Claims**



1. A method of producing an absorbent garment having a front portion, a rear portion and a crotch portion between said front portion and said rear portion, the steps of the method comprising:

providing a first integral sheet of containment flap material;

attaching a pair of first elastic members to said first sheet of containment flap material;

attaching a pair of second elastic members to said first sheet of containment flap material, said pair of second elastic members being generally inboard of said first elastic members;

removing a portion of said first sheet of containment flap material between said pair of second elastic members to form a containment flap assembly; and

attaching said containment flap assembly to a garment chassis to define a pair of outer containment flaps each having a proximal edge and a distal edge with one of said first elastic members adjacent said distal edge and a pair of inner containment flaps having a proximal edge and a distal edge with one of said second elastic members adjacent said distal edge, said garment chassis comprising an outer cover, a bodyside liner, and an absorbent core located between said outer cover and said bodyside liner.

5,824,173

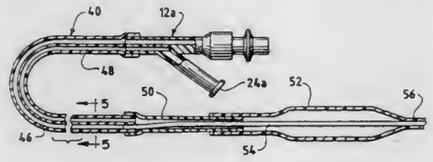
METHOD FOR MAKING A BALLOON CATHETER

Carlos A. Fontirroche, Miami Springs, and Stephen J. Querns, Boca Raton, both of Fla., assignors to Cordis Corporation, Miami Lakes, Fla.

Continuation-in-part of Ser. No. 189,209, Jan. 31, 1994, Pat. No. 5,538,510. This application Jun. 28, 1996, Ser. No. 673,391

Int. Cl.[6] B29C *49/02*

U.S. Cl. 156—86 **7 Claims**



1. A method of making a balloon catheter, comprising the steps of:

providing a flexible balloon having proximal and distal ends, and a tubular outer shaft member;

forming a tubular inner shaft member by coextruding a length of flexible plastic tube by bringing a tubular, molten outer plastic layer into contact with a tubular, molten inner plastic layer, thereby bonding said plastic layers together during the coextrusion process; and thereby forming a unitary, multilayer plastic tube, the plastic material of said inner plastic being more lubricious than the outer plastic layer; and

affixing the balloon proximal end to a distal end of the outer shaft member, and affixing the balloon distal end to a distal end of the inner shaft member, thereby defining an annular inflation lumen between the outer and inner shaft members, and defining a guidewire lumen within the inner shaft member.

5,824,174

LIGHT TRANSMISSION SCREEN AND ITS MANUFACTURING METHOD

Katsuaki Mitani, Ibaraki; Hirokazu Sakaguchi, Toyonaka, and Satoshi Aoki, Kadoma, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 390,779, Feb. 17, 1995. This application Mar. 7, 1997, Ser. No. 813,542

Claims priority, application Japan, Mar. 11, 1994, 6-041243

Int. Cl.[6] C03C *27/12*

U.S. Cl. 156—99 **4 Claims**

1. A manufacturing method for a light transmission screen comprising the steps of:

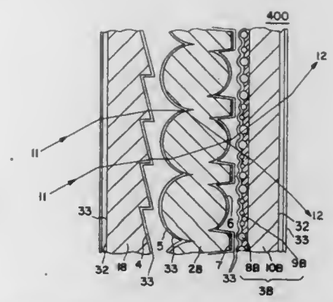
(a) producing a Fresnel lens sheet;

(b) producing a lenticular lens sheet;

(c) producing a front diffusion panel comprising the steps of:

(1) producing a transparent plate;

(2) disposing a diffusion layer on a surface of said transparent plate by applying thereto a mixture of a binder and a light



diffusing diffusion material by means of one method selected from printing, transferring, coating and painting; and

(d) assemblying said Fresnel lens sheet, said lenticular lens sheet and said front diffusion panel.

5,824,175

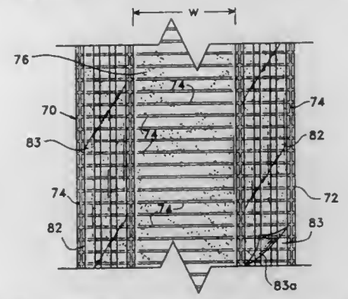
CARPET SEAMING TAPE AND METHOD

Merle R. Hoopengardner, Lafayette, Calif., assignor to Step Loc Corporation, Lafayette, Calif.

Filed Jan. 23, 1996, Ser. No. 589,902

Int. Cl.[6] B29C *65/00;* **B32B** *31/26*

U.S. Cl. 156—229 **6 Claims**



1. A method for making a face-seamed joint or seam between two sections of carpet, and for stretching the carpet across the joint in a manner to minimize seam peaking at the joint, comprising:

providing a hot melt carpet seaming tape having a narrow band of hot melt, non-pressure-sensitive adhesive for activation by a seaming iron, the hot melt adhesive being no more than about one inch to one and one-fourth inches in width and positioned on a wider carrier strip which includes carrier strip margins at left and right of the hot melt adhesive, the carrier strip margins each having as an uppermost layer a pressure sensitive adhesive, and the tape having a total width approximately that of a standard carpet seaming iron, in the range of about 3 inches to about 6 inches,

with the two sections of carpet facing upwardly and their backings downward, placing the hot melt carpet seaming tape beneath the backings of the two sections of carpet, straddling the two sections of carpet at their edges,

face seaming the two sections of carpet to form the joint by using a carpet seaming iron, by advancing the iron along the tape and in contact with the hot melt non-pressure-sensitive adhesive while the carpet edges ride over the iron and then pressing the edges of the carpet sections down into the resulting molten hot melt adhesive behind the carpet seaming iron, while also bonding the carpet backings to the carpet seaming tape by pressing the backings down against the pressure sensitive adhesive on the carrier strip margins of the tape to form firm bonds with the carpet backings at the carrier strip margins, and

stretching the joined carpet sections across the seam and thereby minimizing seam peaking by concentrating tension of the stretch in the permanent bond provided by the hot melt non-pressure-sensitive adhesive in the narrow central band of the tape while causing the carpet backings to pull away and shear slightly outwardly over the carrier strip margins during stretching due to stretching and shearing of the pressure sensitive adhesive while still retaining a firm bond between the tape and the carpet backings at the carrier strip margins.

5,824,176

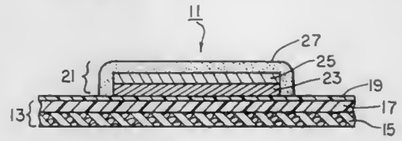
HEAT-TRANSFER LABEL

Samuel H. Stein, Westborough; Eleanor R. Snay, Worcester; Friedrich H. H. Geurtsen, Holliston, and James S. Nugent, Hudson, all of Mass., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jul. 1, 1996, Ser. No. 673,128

Int. Cl.[6] B44C *1/16;* **B32B** *7/06;27/08*

U.S. Cl. 156—239 **17 Claims**



1. A method of labelling an article, the article being a silane-treated glass container, said method comprising the steps of:

(a) providing a heat-transfer label, said heat-transfer label comprising:

(i) a support portion, and

(ii) a transfer portion over said support portion for transfer of the transfer portion from the support portion to the article upon application of heat to the support portion while the transfer portion is placed into contact with the article, said transfer portion comprising an adhesive layer, said adhesive layer comprising an adhesive of the type present in a water-based adhesive emulsion or in a water-based adhesive dispersion, said adhesive being an acrylic adhesive, the transfer portion further comprising an ink layer and a protective lacquer layer, said protective lacquer layer comprising an organic solvent-soluble phenoxy lacquer, said ink layer being positioned over said protective lacquer layer and comprising an organic solvent-soluble polyester ink, said adhesive layer being positioned over said ink layer; and

(b) transferring said transfer portion from said support portion to the article.

5,824,177

METHOD FOR MANUFACTURING A SEMICONDUCTOR DEVICE

Shinji Yoshihara, Nagoya; Sumitomo Inomata, Toyota; Fumio Ohara, and Takashi Kurahashi, both of Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 12, 1996, Ser. No. 678,822

Claims priority, application Japan, Jul. 13, 1995, 7-177506

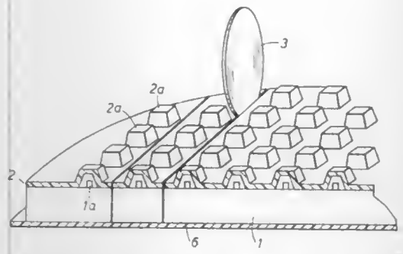
Int. Cl.[6] B32B *31/18;* **H01L** *21/301*

U.S. Cl. 156—250 **17 Claims**

1. A method for handling a semiconductor wafer comprising:

preparing a protective sheet which has a recessed part by using an adhesive sheet; and

sticking to a surface of a semiconductor wafer said prepared protective sheet so as to align said recessed part with a structure which is provided on said semiconductor wafer and has a mechanical strength capable of being broken by an external force, said protective sheet being stuck to said semi-



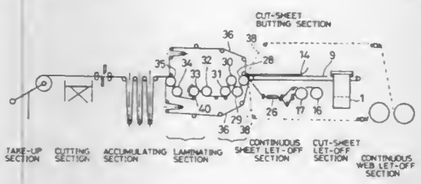
conductor wafer while there is a gap between said structure of said semiconductor wafer and an inner wall of said recessed part.

5,824,178

PREPARATION OF LAMINATED SHEETS

Jyunichi Shingu; Katsuyuki Morita, both of Aichi; Toshihiro Toyoda, Hyogo; Shinji Tachihara, Aichi; Kojiro Motai, and Satoru Kishi, both of Kanagawa, all of Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

Filed Apr. 29, 1996, Ser. No. 638,786
Claims priority, application Japan, May 1, 1995, 7-107337
Int. Cl.[6] B32B *5/12;* B29C *35/00*
U.S. Cl. 156—265 17 Claims



1. A preparation process of a laminated sheet, comprising:

successively cutting a fiber-reinforced thermoplastic resin sheet into a plurality of cut sheets each having a predetermined dimension, said resin sheet having been obtained by forming continuous fibers into a sheet with the fibers oriented in one direction and then impregnating the oriented fiber sheet with a thermoplastic resin;

successively feeding the cut sheets into a butting apparatus and bringing adjacent end faces of the cut sheets into abutment against each other without any space therebetween while aligning corresponding cut end faces of the cut sheets together, said cut sheets being passed through a space between a belt conveyor, which is arranged before a laminating section and which is driven at a speed higher than a laminating speed of the laminating section, and a lifting prevention element disposed above said belt conveyor to cause the cut sheets to pass with a difference in speed between each preceding cut sheet and a trailing cut sheet to bring a front end face of the trailing cut sheet into abutment against a rear end face of the preceding cut sheet to obtain a butted cut sheet group;

feeding the cut sheet group and a continuous sheet, which is another fiber-reinforced thermoplastic resin sheet and is caused to run in a superposed relationship with the cut sheet group, into the laminating section and causing the cut sheet group and the continuous sheet to cling to a heating roller, whereby the cut sheet group and the continuous sheet are subjected to melt welding;

supporting and joining under pressure the melt-welded cut sheet group and continuous sheet between nip rollers;

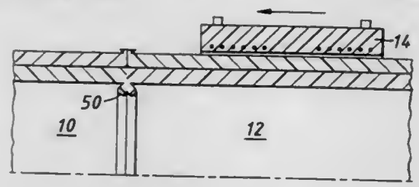
causing the joined cut sheet group and continuous sheet to cling to a cooling roller to cool and harden the joined cut sheet group and continuous sheet and passing the joined cut sheet group and continuous sheet between said cooling roller and a correcting roller while moving the correcting roller along said cooling roller so that the amount of contact arc of the joined cut sheet group and continuous sheet with said cooling roller is changed to adjust the amount of warp of the joined cut sheet group and continuous sheet, whereby the joined cut sheet group and continuous sheet are subjected to total welding to continuously prepare a laminated sheet.

5,824,179

METHOD OF JOINING REINFORCED THERMOPLASTIC PIPES

John Martyn Greig, Whitley Bay, Great Britain, assignor to British Gas plc, London, England

PCT No. PCT/GB94/01566, § 371 Date Mar. 12, 1996, § 102(e) Date Mar. 12, 1996, PCT Pub. No. WO95/03162, PCT Pub Date Feb. 2, 1995
PCT Filed Jul. 19, 1994, Ser. No. 582,991
Claims priority, application United Kingdom, Jul. 20, 1993, 9314971
Int. Cl.[6] B32B *31/20;* F16L *47/02*
U.S. Cl. 156—274.2 7 Claims



1. A method of joining two reinforced thermoplastic pipes by a butt fused welded joint, comprising the steps of:

determining that each pipe has an inside surface, an outside surface, a pipe wall extending between the inside and the outside surface, and one or more layers of reinforcement fibres lying within an outer half of the pipe wall and extending to end portions of the pipes to be butt fused,

heating the end portions of the pipe by forcing the end portions against a heater plate interposed between the end portions so that thermoplastic material from the end portions of the pipes becomes molten,

removing the heater plate,

forcing of the end surfaces together so that molten material from the end portions is upset involving inward and outward flow of thermoplastic material to form internal and external beads, and so that the or each reinforcement layer is wholly or primarily displaced outwardly by said outward flow during upsetting from an original position so that, at the welded joint, there is a layer of thermoplastic material between the layer or layers of reinforcement fibres and the common inside surface is free from reinforcement fibres, and

allowing the pipes to cool.

5,824,180

METHOD OF BONDING OR DECORATING ARTIFICIAL NAIL

Hiroyuki Mikuni, and Yuko Nishiyama, both of Tokyo, Japan, assignors to Three Bond Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 730,025, Oct. 11, 1996. This application Oct. 30, 1996, Ser. No. 741,117
Claims priority, application Japan, Oct. 19, 1995, 7-296281; Jan. 12, 1996, 8-022037
Int. Cl.[6] A45D *31/00*
U.S. Cl. 156—275.3 15 Claims

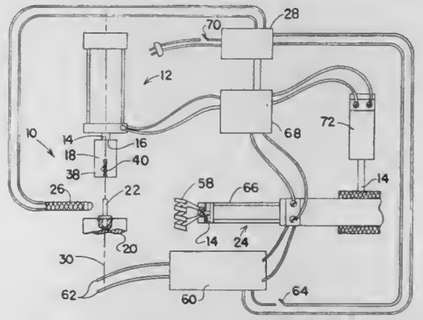
1. A method of bonding an artificial nail to a nail with an adhesive or of bonding a decorative article to an artificial nail or a nail using an adhesive, said adhesive being a photocurable cyanoacrylate adhesive, said method comprising applying said adhesive to a bonding surface of at least one adherend selected from the group consisting of a nail, an artificial nail and a decorative article, subsequently superposing a plurality of the adherends on each other, and then irradiating said superposed adherends with light to cure the adhesive and complete the bonding.

5,824,181

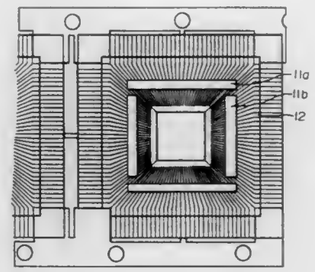
SURGICAL IMPLEMENT HANDLE MACHINE

Brian D. Salyer, and John E. Hand, both of Warsaw, Ind., assignors to Othy, Inc., Warsaw, Ind.

Filed Jan. 19, 1996, Ser. No. 588,993
Int. Cl.[6] B32B *31/20;* B23Q *15/00*
U.S. Cl. 156—379.8 25 Claims



1. A machine for applying surgical implements to handles comprising a fluid actuated power cylinder, said cylinder having a moveable rod, said rod having a distal end, a handle holder secured to said distal end, said handle holder having a handle cavity therein for holding a surgical implement handle having an implement stud opening therein, an implement holder having an implement cavity therein for holding a surgical implement with a handle stud facing said stud opening, said stud opening and said handle stud being on the same axis, a stud heater, a stud temperature sensor, and a control unit, said control unit being operatively connected to said cylinder and said heater and said sensor, said control unit upon command turning said stud heater on until said stud is heated to a predetermined stud temperature sensed by said sensor, and then activating said cylinder to force said stud into said stud opening of said handle, thereby securing said handle to said stud implement.



5,824,182

ADHESIVE TAPES

Yukinori Sakumoto; Shigeyuki Yokoyama; Akihiro Shibuya, and Atsushi Koshimura, all of Shizuoka, Japan, assignors to Tomoegawa Paper Co., Ltd., Tokyo, Japan

Division of Ser. No. 417,457, Apr. 5, 1995, which is a continuation of Ser. No. 137,608, Oct. 14, 1993, which is a division of Ser. No. 814,236, Dec. 23, 1991, Pat. No. 5,277,972, which is a continuation of Ser. No. 414,012, Sep. 28, 1989, abandoned.
This application May 2, 1995, Ser. No. 433,243
Claims priority, application Japan, Sep. 29, 1988, 63-242265; Nov. 15, 1988, 63-286832; Feb. 23, 1989, 1-41637; Feb. 23, 1989, 1-41638
Int. Cl.[6] H05K *7/14*
U.S. Cl. 156—300 5 Claims

1. A method of compensating for a shift of lead pins, comprising the steps of:

adhering an adhesive tape comprising non-thermoplastic resin to lead pins; and

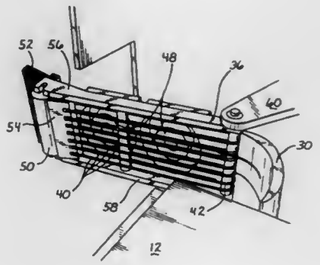
compensating for the shift of the lead pins by providing the adhesive tape with a heat resistant base film having an average coefficient of linear thermal expansion along the width thereof at from 20° to 300° C. (as measured according to ASTM D-696-44) of from 0.4×10^{-5} to 2.5×10^{-5} cm/cm/° C. and a coefficient of dimensional change along the width thereof after heating at 300° C. for 3 minutes (as measured according to JIS C2318-6.3.5) being not higher than 0.15%, the step of adhering arising with an adhesive layer laminated on at least one surface of the base film.

5,824,183

HIGH SPEED CORNER LABELER

Michael Crankshaw, 10119 Gridley Rd., Santa Fe Springs, Calif. 90670

Filed Apr. 3, 1996, Ser. No. 627,077
Int. Cl.[6] B65C *3/00;9/37;9/36;9/42*
U.S. Cl. 156—486 22 Claims



1. A high speed corner labeler for applying labels to articles having a front side, a proximal side, and a corner joining said front and proximal sides, wherein said articles are conveyed through a labeling station, said labeler comprising:

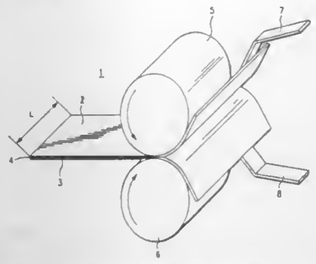
a label dispenser for dispensing adhesive-backed labels for application to each of said articles; and

a label carrier having a label receiving position and a label applying position, and being adapted to apply a single label to the front and proximal sides of each article as it is conveyed through said labeling station, such that the label is wrapped about said corner, the label carrier further including a transport drive for transporting each label from a proximal end to a distal end of said label carrier;

said labeling station being disposed at the distal end of the label carrier;

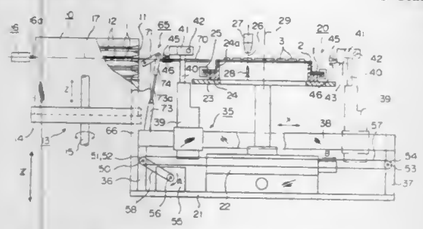
wherein the labeler is adapted so that a label may be dispensed from said label dispenser while another label is simultaneously being applied to an article passing through the labeling station, thereby increasing the labeling speed of the labeler.

5,824,184
STRUCTURE FOR REMOVING A PEEL-OFF BACKING FROM AN ADHESIVE TAPE
Noriyuki Kamijo, Suwa; Kenji Watanabe, Tokyo; Takanobu Kameda, Tokyo; Tomoyuki Shimmura, Tokyo, and Chieko Aida, Tokyo, all of Japan, assignors to Seiko Epson Corporation, and King Jim Co., Ltd., both of Tokyo, Japan
Filed Aug. 10, 1995, Ser. No. 513,370
Claims priority, application Japan, Aug. 10, 1994, 6-188264
Int. Cl.[6] B32B *35/00*
U.S. Cl. 156—584 16 Claims



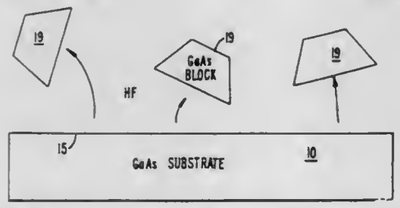
9. A structure for removing a peel-off backing from an adhesive tape, said adhesive tape including said peel-off backing on one side, a base material on an opposite side and an adhesive compound sandwiched between said peel-off backing and said base material, said structure comprising:
adhesion means for adhering to an end area of at least one side of said adhesive tape so that said end area of said adhesive tape adheres to said adhesion means; and
means for pulling said adhesion means to cause said peel-off backing and said base material to be separated from each other; and
means for releasing said at least one side of said adhesive tape from said adhesion means whereby said adhesion means is continuously reusable for adhering to subsequent adhesive tape and for causing said peel-off backing and said base material to be separated in said subsequent adhesive tape.

5,824,185
WAFER RING SUPPLY AND RETURN DEVICE
Osamu Nakamura, Kokubunji; Shigeru Ichikawa, Higashiyamato, and Tsuneharu Arai, Fussa, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Aug. 16, 1996, Ser. No. 698,667
Claims priority, application Japan, Aug. 18, 1995, 7-232109
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—584 5 Claims



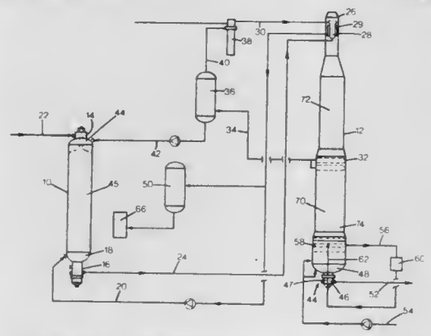
1. A wafer ring supply and return device comprising:
a wafer ring cassette hi which wafer rings having wafer sheets with semiconductor pellets adhesively mounted thereon are accommodated at a fixed pitch, an elevator device which raises and lowers said wafer ring cassette,
a wafer ring conveying means comprised of upper and lower claws that hold said wafer rings, conveys said wafer rings one at a time from said wafer ring cassette to a pellet pick-up device, and then returns used wafer rings from which said semiconductor pellets have been removed to empty wafer ring accommodating sections of said wafer ring cassette, and
a sensor means installed on either one of said upper claw and lower claw of said wafer ring conveying means, said sensor means for detecting if no wafer ring is held by said claw, the wafer ring has fallen out of the claws or the wafer ring has not been released from the claws.

5,824,186
METHOD AND APPARATUS FOR FABRICATING SELF-ASSEMBLING MICROSTRUCTURES
John Stephen Smith, and Hsi-Jen J. Yeh, both of Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 169,298, Dec. 17, 1993, Pat. No. 5,545,291. This application Jun. 7, 1995, Ser. No. 485,478
Int. Cl.[6] H01L *21/00*
U.S. Cl. 156—655.1 28 Claims



1. A method of assembling a microstructure on a substrate, said substrate comprising a top surface with at least one recessed region thereon, comprising the steps of:
providing a plurality of shaped blocks in a fluid to form a slurry; and
circulating said slurry over said substrate at a rate where at least one of said shaped blocks is disposed at a selected orientation into said recessed region, each of said shaped blocks comprising a tapered edge to fit into said recessed region at said selected orientation.

5,824,187
METHOD FOR THE CONTINUOUS COOKING OF PULP
Johan Richter, Oslo, Norway, and Ole Richter, Karlstad, Sweden, assignors to Kvaerner Pulping AB, Sweden
Continuation-in-part of Ser. No. 663,213, Jun. 12, 1996, Pat. No. 5,716,497. This application Feb. 18, 1997, Ser. No. 801,524
Claims priority, application Sweden, Dec. 29, 1993, 9304333
Int. Cl.[6] D21C *7/00*
U.S. Cl. 162—41 27 Claims

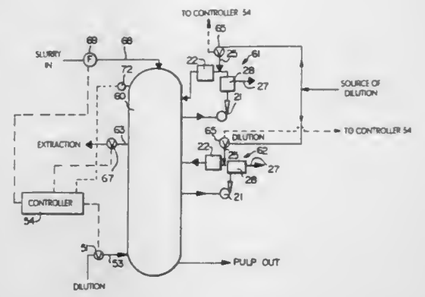


1. A method for continuously producing pulp, comprising the steps of:

providing a finely divided fiber material and an impregnation vessel, the impregnation vessel maintaining a cooking pressure;
providing a digester having a top and a bottom and at least one screen disposed therein, the digester being adapted to facilitate a cooking reaction, the screen being adapted to withdrawing spent liquor, the digester having a concurrent cooking zone, the concurrent cooking zone having a beginning and an end;
providing a hot black liquor and a cooking liquor, an amount of the cooking liquor being required for the cooking reaction wherein the cooking liquor is white liquor;
transferring the hot black liquor to the impregnation vessel;
while transferring the hot black liquor, heating and thoroughly impregnating the fiber material disposed in the impregnation vessel by exposing the fiber material to the black liquor injected in a direction that is concurrent with a flow of the fiber material wherein the liquor injected for impregnating the fiber material consists of the hot black liquor;
while heating and impregnating the fiber material, transferring the heated and thoroughly impregnated fiber material from the impregnation vessel to the top of the digester;
while transferring the heated and thoroughly impregnated fiber material, supplying at least 60% of the amount of cooking liquor required for the cooking reaction to the top of the digester;
while supplying the cooking liquor, digesting the fiber material in the concurrent cooking zone of the digester;
while digesting the fiber material, withdrawing spent liquor, that have passed at least one cooking zone of the digester, at the screen of the digester so that the spent liquor has an amount of effective alkali that is at least 13 grams per liter and only an insignificant portion of the spent liquor withdrawn is directly recirculated to a cooking zone in the digester;
while withdrawing spent liquor, feeding out pulp at the bottom of the digester;
while feeding out pulp, maintaining a first temperature that is below 160 degrees Celsius at the beginning of the concurrent cooking zone of the digester;
while maintaining the first temperature, supplying a sufficient amount of cooking liquor to the top of the digester; and
while supplying the cooking liquor, obtaining a first level of effective alkali that is at least 35 grams per liter at the beginning of the concurrent cooking zone of the digester.

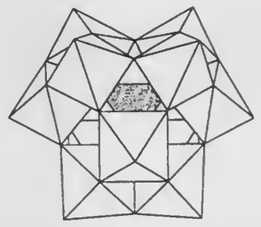
5,824,188
METHOD OF CONTROLLING THE PRESSURE OF A CONTINUOUS DIGESTER USING AN EXTRACTION-DILUTION
J. Robert Prough, Queensbury; Bruno S. Marcoccia, South Glens Falls; Richard O. Laakso, Queensbury, and Carl L. Luhrmann, Glens Falls, all of N.Y., assignors to Ahlstrom Machinery Inc., Glens Falls, N.Y.
Continuation-in-part of Ser. No. 148,269, Nov. 8, 1993, Pat. No. 5,536,366, Continuation-in-part of Ser. No. 127,548, Sep. 28, 1993, Pat. No. 5,547,012, Continuation-in-part of Ser. No. 56,211, May 4, 1993, Pat. No. 5,489,363. This application Sep. 12, 1996, Ser. No. 712,977
Int. Cl.[6] D21C *7/12;7/14*
U.S. Cl. 162—49 17 Claims

1. A method of controlling the pressure of a vertical continuous comminuted cellulosic fibrous material digester having a countercurrent washing zone with wash screens, a main extraction, and at least one additional extraction-dilution loop distinct from the main extraction and the countercurrent washing zone, comprising the step of:



(a) extracting liquor from, and varying the flow of dilution liquor introduced into, the digester at the at least one additional extraction-dilution loop to maintain the pressure in the digester at a desired superatmospheric level while avoiding non-uniform, unstable material movement in the countercurrent washing zone.

5,824,189
OXIDATIVE DELIGNIFICATION OF WOOD PULP OR FIBERS USING TRANSITION METAL-SUBSTITUTED POLYOXOMETALATES
Ira A. Weinstock, Madison, Wis., and Craig L. Hill, Atlanta, Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C., and Emory University, Atlanta, Ga.
Continuation of Ser. No. 660,971, Jun. 12, 1996, Pat. No. 5,695,605, which is a continuation of Ser. No. 219,041, Mar. 28, 1994, Pat. No. 5,552,019, which is a continuation-in-part of Ser. No. 937,634, Aug. 28, 1992, Pat. No. 5,302,248. This application Aug. 14, 1997, Ser. No. 911,572
Int. Cl.[6] D21C *3/00*
U.S. Cl. 162—79 13 Claims



1. A method for delignifying wood pulp comprising the steps of:
obtaining a wood pulp; and
contacting the wood pulp with a solution of a polyoxometalate of the formula $[V_lMo_mW_nNb_oTa_p(TM)_qX_rO_s]^{z-}$ where l is 0–18, m is 0–40, n is 0–40, o is 0–10, p is 0–10, q is 0–9, r is 0–6, TM is a d-electron-containing transition metal ion, and X is a heteroatom, which is a p or d block element, where $l+m+n+o+p \geq 4$, $l+m+q>0$ and s is sufficiently large that $x>0$, wherein a mixture is formed, under conditions wherein
the pH of said mixture is adjusted to 1.5 or higher;
the consistency of said wood pulp and polyoxometalate mixture is approximately 1 to 20%;
said mixture is heated in a temperature controlled vessel under conditions of temperature and time wherein the polyoxometalate is reduced and enhanced delignification of wood pulp occurs.

5,824,190

METHODS AND AGENTS FOR IMPROVING PAPER PRINTABILITY AND STRENGTH

Gerald Guerro, Trumbull; David Dauplaise, and Rajiv Bazaj, both of Stamford, all of Conn., assignors to Cytec Technology Corp., Stamford, Conn.

Filed Aug. 6, 1996, Ser. No. 693,037
Int. Cl.[6] D21H *21/16*
U.S. Cl. 162—135 **24 Claims**

1. A method for improving the printability or strength of printing paper or board which comprises:

applying to the surface of paper or board a mixture comprising:

(i) a synthetic, polymeric surface size containing at least about 40 mole percent hydrophobic groups; and

(ii) a substantially hydrophilic polyacrylamide;

wherein the ratio of said surface size to said polyacrylamide is from about 30–95 parts by weight surface size to about 70–5 parts by weight polyacrylamide based on 100 parts by weight combined total surface size and polyacrylamide, said mixture applied in an amount effective to improve one or both of the printability or strength of the paper or board.

5,824,191

PROCESS FOR MAKING A PAPER BASED PRODUCT EMPLOYING A POLYMERIC LATEX BINDER

Homan B. Kinsley, Jr., Powhatan, Va., assignor to FiberMark Filter & Technical Products, Inc., Richmond, Va.

Continuation of Ser. No. 472,663, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 103,133, Aug. 9, 1993, Pat. No. 5,466,336. This application Mar. 28, 1997, Ser. No. 829,477
Int. Cl.[6] D21H *17/10*
U.S. Cl. 162—146 **25 Claims**

1. A process for making a paper based product which comprises

(i) preparing a slurry comprised of a cellulosic pulp and a polymeric latex binder;

(ii) breaking the stability of the polymeric latex so that the polymer particles are able to be deposited on the fibers of the cellulosic pulp;

(iii) draining the liquid from the slurry to form a web; and

(iv) drying the web on dryer cans;

with a release effecting amount of an emulsion comprised of lecithin and a fatty acid or derivative thereof, the amount of lecithin being sufficient to provide a stable emulsion with the fatty acid or derivative thereof, being introduced into the process such that the emulsion coats the surface of the dryer cans to thereby avoid sticking of the web on the dryer cans.

5,824,192

METHOD AND ADJUVANT COMPOSITION TO IMPROVE RETENTION OF PARTICLES ON A WIRE SCREEN

Georges Radu, Brossard, Canada, assignor to E. QU. I. P. International Inc., Quebec, Canada

Filed May 24, 1996, Ser. No. 653,646
Int. Cl.[6] D21H *21/10*
U.S. Cl. 162—158 **16 Claims**

1. In a method for the production of paper comprising the step of laying an aqueous mixture comprising lignocellulosic fibers and fines and an aqueous medium on a wire screen of a paper machine to form a sheet of paper, the improvement wherein:

medium on a wire screen of a paper machine to form a sheet of paper, the improvement wherein:

a retention and drainage aid composition comprising:

30 to 80% by weight of a phenolic resin or a modified phenolic resin,

10 to 50% by weight of a sulfonated melamine formaldehyde resin, and

5 to 35% by weight of at least one naphthalene sulphonate salt selected from the group consisting of naphthalene sulphonate sodium, potassium, ammonium, calcium, aluminum and mixtures thereof;

said ingredients being either under a granulated form or dissolved in an aqueous solution;

and a solution of at least one polyethylene oxide having a molecular weight varying from 1×10^6 to 13×10^6;

are admixed with said aqueous mixture in such amounts that from 50 to 1500 grams of said retention and drainage aid and from 10 to 1500 grams of said at least one polyethylene oxide are present per ton of dry matter in said aqueous mixture;

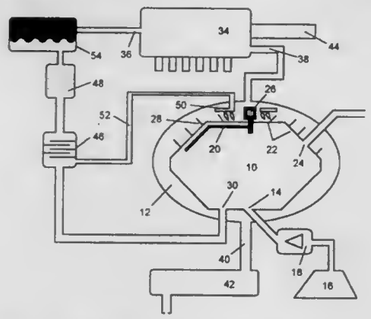
said at least one polyethylene oxide being admixed with said aqueous mixture when the latter already contains at least a part of said retention and drainage aid composition.

5,824,193

METHOD OF THERMALLY TREATING PLASTICS MATERIAL

Raymond S. Edwards, 18510 NE. 189th Ct., Brush Prairie, Wash. 98606

Filed Mar. 27, 1997, Ser. No. 826,256
Int. Cl.[6] C10B *53/08;51/00*
U.S. Cl. 201—7 **28 Claims**



1. A method of thermally treating plastics material, including the following steps:

heating a treatment chamber to a temperature in the range between the melting point of at least a fraction of said plastic material and a point not significantly exceeding the point where the liquid phase of the molten material undergoes a transition into a gaseous phase;

maintaining an oxygen level in said treatment chamber below combustion level of liquid or gaseous products from said plastic material;

feeding said plastic material into said treatment chamber at a rate ensuring a build-up of a film of liquified plastic material on at least a part of the interior of the surface of said treatment chamber, with said liquified plastic material undergoing a transition into the gaseous phase as a result of the heating of said treatment chamber; and

exiting of the gaseous phase out of said treatment chamber caused by vaporization pressure of the gaseous phase within said treatment chamber.

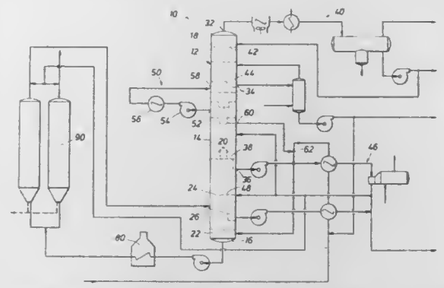
5,824,194

FRACTIONATOR SYSTEM FOR DELAYED COKING PROCESS

Charles J. Kruse, Cypress, Tex., assignor to Bechtel Corporation, Houston, Tex.

Filed Jan. 7, 1997, Ser. No. 779,396
Int. Cl.[6] C10B *21/18;* **B01D** *3/14;* **C10G** *9/14*
U.S. Cl. 201—29 **11 Claims**

1. A method of separating coker drum vapors, comprising:



introducing coker drum vapors into a flash zone of a coker fractionating column having multiple separation trays above the flash zone;

removing a light coker gas oil stream from the coker fractionating column at a first draw near an upper separation tray;

removing a heavy coker gas oil stream from the coker fractionating column at a second draw near a lower separation tray;

removing a middle liquid stream from the coker fractionating column at a middle port between the first and second draws;

cooling the middle liquid stream; and

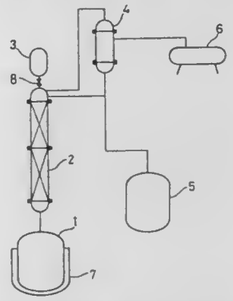
reintroducing the cooled middle liquid stream to the coker fractionator column above the middle port.

5,824,195

PROCESS FOR DISTILLING CRUDE ACRYLIC SILANE SOLUTION

Yoichi Kimae; Katsuyoshi Tsuchiya; Takashi Matsuo, and Kiyoto Fukuda, all of Kumamoto, Japan, assignors to Chisso Corporation, Osaka-fu, Japan

Filed Jun. 26, 1996, Ser. No. 670,442
Claims priority, application Japan, Jul. 10, 1995, 7-196966; Aug. 1, 1995, 7-216792; Aug. 28, 1995, 7-242535; Aug. 30, 1995, 7-245484; Sep. 7, 1995, 7-257020; Apr. 18, 1996, 8-121047
Int. Cl.[6] B01D *3/34;* **C07F** *7/20*
U.S. Cl. 203—8 **13 Claims**



1. In a process for distilling a crude acrylic silane solution for separating acrylic silane expressed by formula (I) by distilling the crude acrylic silane solution in the presence of a hindered phenol and/or amine as polymerization inhibitor by using a distillation apparatus provided with a distillation still and a distillation column arranged above the distillation still, the improvement comprising conducting the distillation while adding a liquid mixture containing a N-nitrosophenylhydroxylamine salt as further polymerization inhibitor from an upper portion of the distillation column

$$CH_2{=}CR^1COO(X)_mSiR^2{}_nR^3{}_{3-n} \quad (I)$$

wherein R^1 represents hydrogen atom, an alkyl group having 1 to 8 carbon atoms, or an aryl group having 6 to 10 carbon atoms, X represents CH_2CH_2O or CH_2, or combination of these two groups, m is an integer of 1 to 12, R^2 represents a hydrolyzable group, R^3 represents an alkyl group, alkenyl group, or aryl group having 1 to 12 carbon atoms, and n is an integer of 1 to 3.

5. In a process for distilling a crude acrylic silane solution for separating acrylic silane expressed by formula (I) by distilling the crude acrylic silane solution in the presence of a hindered phenol and/or amine as polymerization inhibitor, the improvement comprising adding simultaneously a N-nitrosophenylhydroxylamine salt as further polymerization inhibitor to the solution

$$CH_2{=}CR^1COO(X)_mSiR^2{}_nR^3{}_{3-n} \quad (I)$$

wherein R^1 represents hydrogen atom, an alkyl group having 1 to 8 carbon atoms, or an aryl group having 6 to 10 carbon atoms, X represents CH_2CH_2O or CH_2, or combination of these two groups, m is an integer of 1 to 12, R^2 represents a hydrolyzable group, R^3 represents an alkyl group, alkenyl group, or aryl group having 1 to 12 carbon atoms, and n is an integer of 1 to 3.

5,824,196

DECONTAMINATION OF RPET BY STEAM DISTILLATION

Francis M. Schloss, Perrysburg, Ohio, assignor to Plastic Technologies, Inc., Holland, Ohio

Filed Apr. 8, 1996, Ser. No. 629,166
Int. Cl.[6] B01D *3/38;* **C08J** *11/14*
U.S. Cl. 203—95 **1 Claim**

1. A process for removing a contaminant from recycled polyethylene terepthalate (RPET) flakes, comprising the steps of:

providing a plurality of RPET flakes having a contaminant diffused thereinto;

comminuting the RPET flakes, to prepare a plurality of RPET particles having an average mean particle size from about 0.005 inch to about 0.05 inch in diameter; and

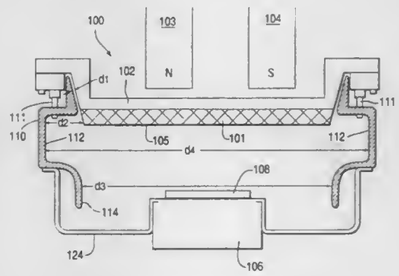
contacting the RPET particles with steam by immersing the RPET particles in water that is maintained at a boiling temperature from about 100° C. to about 190° C., to steam-strip and cause to diffuse out substantially all of the contaminant from the RPET particles.

5,824,197

SHIELD FOR A PHYSICAL VAPOR DEPOSITION CHAMBER

Yoichiro Tanaka, Narita, Japan, assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed Jun. 5, 1996, Ser. No. 658,771
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.12 **6 Claims**



1. A physical vapor deposition chamber comprising

a target having a front, sputtering surface and a back surface;

a magnet mounted to the back surface of the target;

a susceptor for supporting a substrate to be processed mounted parallel to and spaced from said target; and

a shield that is spaced from and surrounds the target and extends in the direction of the susceptor, said shield having a curved, concave surface at least a portion of, the curved, concave surface being spaced below the surface of said target so as to provide a spacing between the shield and magnetic field lines generated by said magnet.

5,824,198

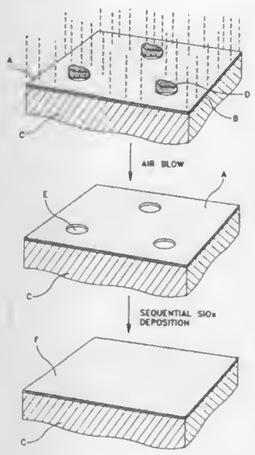
PROCESS FOR BARRIER COATING OF PLASTIC OBJECTS

Joel L. Williams, Cary; Susan L. Burkett, Hillsborough, both of N.C., and Shel McGuire, Omaha, Nebr., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.

Continuation-in-part of Ser. No. 125,704, Sep. 23, 1993, Pat. No. 5,364,666. This application Jun. 24, 1994, Ser. No. 265,290

Int. Cl.[6] C23C *14/00*

U.S. Cl. 204—192.14 **7 Claims**



1. A method of sequentially depositing a film on the surface of a plastic substrate in an evacuation chamber comprising:
(a) placing a plastic substrate in an evacuation chamber;
(b) cleaning the surface of said substrate with a first energy inert ion beam having an energy level in the range from about 100 eV to about 2,000 eV;
(c) after said cleaning, sputtering metallic nitrides, metallic borides, or metallic carbides in said evacuation chamber by a second ion beam having an energy of about 1 eV to about 50 eV and at a rate and in direction to cause such substance to deposit on said substrate;
(d) simultaneously with said sputtering, exposing the substrate to a third energy ion beam at an energy level in the range from about 0.1 KeV to about 500 KeV to concurrently strike said substrate to cause growth of a first layer having a thickness of about 10 Å to about 2,000 Å on said substrate;
(e) removing and/or redistributing foreign surface particles from said first layer; and
(f) repeating steps (c) through (e) above, thereby depositing a second layer.

5,824,199

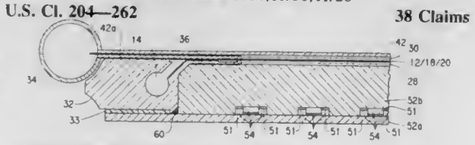
ELECTROCHEMICAL CELL HAVING AN INFLATABLE MEMBER

Walter John Simmons, Martinsburg, W. Va.; Clarence Garlan Law, Jr., West Trenton, N.J.; James Arthur Trainham, III, Greenville, Del., and John Scott Newman, Kensington, Calif., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 432,343, May 1, 1995, abandoned, which is a continuation-in-part of Ser. No. 156,196, Nov. 22, 1993, Pat. No. 5,411,641, and Ser. No. 246,909, May 20, 1994, Pat. No. 5,580,437. This application Oct. 17, 1997, Ser. No. 951,787

Int. Cl.[6] C25B *9/04;11/06;11/20*

U.S. Cl. 204—262 **38 Claims**



1. An electrochemical cell, comprising:
(a) an electrode;
(b) a membrane disposed in contact with one side of the electrode;
(c) a current bus for conducting current to the electrode, wherein the current bus is disposed on the other side of the electrode; and
(d) a conductive inflatable member disposed between the electrode and the current bus, wherein the inflatable member provides uniform electrical contact between the electrode and the current bus.

4. The electrochemical cell of claim 1, further including a current distributor disposed between the membrane and the current bus, wherein the inflatable member is disposed between the current distributor and the current bus for providing uniform contact between the electrode, and the current bus through the current distributor, wherein the inflatable member comprises a pair of flexible plates, and one plate is thinner than the other plate.

8. The electrochemical cell of claim 4, further including a flow channel disposed in between the plates for providing a path for cooling fluid.

5,824,200

GENERATION OF ELECTROLYTICALLY ACTIVE WATER AND WET PROCESS OF A SEMICONDUCTOR SUBSTRATE

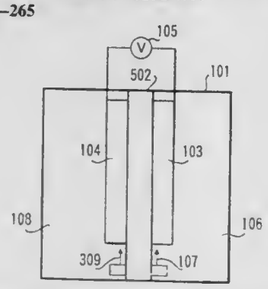
Hiroshi Kitajima, and Yoshimi Shiramizu, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 405,780, Mar. 17, 1995, abandoned. This application Apr. 8, 1997, Ser. No. 832,199

Claims priority, application Japan, Mar. 25, 1994, 6-056106

Int. Cl.[6] C25B *9/00*

U.S. Cl. 204—265 **4 Claims**



1. An apparatus for generating electrolytically activated water comprising:
an electrolytic cell having an anode cell and a cathode cell for retaining treated water, said anode cell and said cathode cell being separated by a partition comprised of ion exchange resin; an anode provided in said anode cell;
a cathode provided in said cathode cell;
a power supply unit for applying DC voltage between said anode and said cathode;
bubbler means positioned in said anode cell, but independent from said anode, and operatively associated with a source of gas containing at least one member selected from the group consisting of chlorine, hydrogen chloride, hydrogen bromide and hydrogen iodide to water for supplying said gas in said anode cell while the water is electrolyzed; and
means for retaining said gas in said anode cell during electrolysis.

5,824,201

ELECTRODE FOR USE IN MEMBRANE ELECTROLYZERS

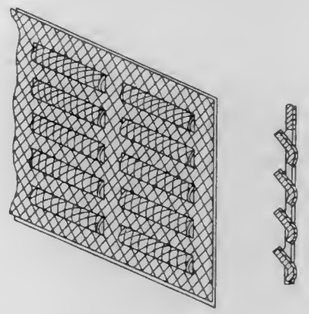
Peter Fabian, Hanau, Germany, and Emilio Zioni, Trezzano, Italy, assignors to De Nora S.p.A., Italy

Continuation of Ser. No. 743,108, Nov. 4, 1996, Pat. No. 5,770,024. This application Oct. 30, 1997, Ser. No. 960,568

Claims priority, application Italy, Nov. 22, 1995, MI95A2421

Int. Cl.[6] C25B *11/00*

U.S. Cl. 204—284 **7 Claims**



1. An electrode for electrochemical processes forming gaseous products comprising a metal sheet shaped to produce a louvered profile comprising bent metal strips and attached thereto is a thin metal sheet having a thickness which ensures rigidity to the electrode and which is provided with an electrocatalytic coating having the same louvered profile as that of the metal sheet wherein the profiles of the thin metal sheet and metal sheet are coincident.

5,824,202

ELECTRODE FOR USE IN MEMBRANE ELECTROLYZERS

Peter Fabian, Hanau, Germany, and Emilio Zioni, Trezzano, Italy, assignors to De Nora S.p.A., Italy

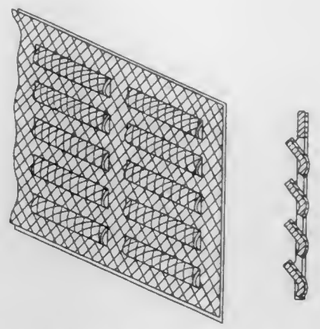
Division of Ser. No. 743,108, Nov. 4, 1996, Pat. No. 5,770,024. This application Oct. 30, 1997, Ser. No. 960,829

Claims priority, application Italy, Nov. 22, 1995, MI95A2421

Int. Cl.[6] C25B *11/00*

U.S. Cl. 204—284 **3 Claims**

1. A process for reactivating an electrode made of a metal sheet provided with a louvered profile and having an exhausted electrocatalytic coating thereon comprising forming a metal mesh or a thin metal sheet which has a thickness which ensures rigidity of the electrode, and which metal mesh or thin metal sheet are made of the same metal as the metal sheet provided with an electrocatalytic coating with a profile coincident with that of the metal sheet and attaching the metal mesh or thin metal sheet by welding.



5,824,203

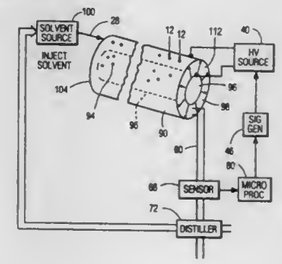
METHOD AND MEANS FOR CHANGING CHARACTERISTICS OF SUBSTANCES

John L. Remo, St. James, N.Y., assignor to SGI International, La Jolla, Calif.

Continuation-in-part of Ser. No. 162,410, Dec. 3, 1993, which is a continuation of Ser. No. 832,285, Feb. 10, 1992, abandoned. This application Feb. 4, 1994, Ser. No. 192,096

Int. Cl.[6] B03C *5/00*

U.S. Cl. 204—559 **24 Claims**



1. The method of converting oil residues to usable substances, which comprises:
passing the oil residues along a path;
passing a solvent for that oil residues along the path;
forming an electric field with a pulsating voltage in the range of 3,000 to 10,000 volts;
untangling molecular assemblages in the oil residues by subjecting the oil residues and the solvent to the electric field at a frequency to untangle the molecular assemblages so as to change the oil residues; and
forming said voltage with electrodes of substantially stationary relative to each other.

5,824,204

MICROMACHINED CAPILLARY ELECTROPHORESIS DEVICE

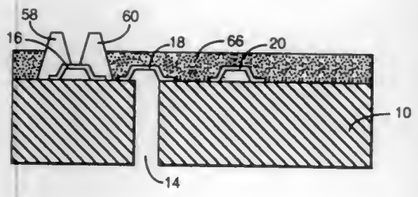
John H. Jerman, Palo Alto, Calif., assignor to IC Sensors, Inc., Milpitas, Calif.

Filed Jun. 27, 1996, Ser. No. 671,428

Int. Cl.[6] G01N *27/26*

U.S. Cl. 204—601 **16 Claims**

15. A fluid handling structure comprising:



a planar substrate of a first dielectric material and having a principal surface;

a plurality of channel structures formed on the principal surface, each channel structure extending from the principal surface and being of a second differing dielectric material, and defining a fluid-carrying channel between the channel structure and the principal surface;

at least one through-hole defined in the substrate and communicating with one of the channels; and

an electrode on a backside surface of the planar substrate and extending into the through-hole.

5,824,205

PROTECTIVE COATING

John Foster, Avon, England, assignor to Praxair S.T. Technology, Inc., Danbury, Conn.

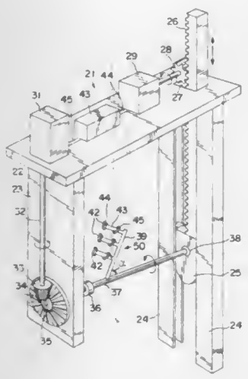
PCT No. PCT/GB95/01745, § 371 Date May 16, 1996, § 102(e) Date May 16, 1996, PCT Pub. No. WO96/03535, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 24, 1995, Ser. No. 619,723

Claims priority, application United Kingdom, Jul. 22, 1994, 9414859

Int. Cl.[6] C25D *15/02;* **C23C** *18/16*

U.S. Cl. 205—109 **10 Claims**



1. A method of producing a coating on a substrate which comprises first aluminising, chromising or siliconising said substrate, then depositing on said substrate, by electrolytic or electroless deposition, a metal matrix M_1 from a bath containing particles of $CrAlM_2$, said bath having a particle distribution of 25 percent between 15 and 12 microns, 45 percent between 12 and 10 microns and 30 percent of less than 10 microns, to co-deposit the particles with the matrix as M_1CrAlM_2, wherein M_1 is at least one element selected from the group consisting of Ni, Co, and Fe and M_2 is at least one element selected from the group consisting of Y, Si. Ti, Hf, Ta, Nb, Mn, Pt and rare earth elements, wherein said co-deposition of M_1CrAlM_2 is at a current density of less than 5 mA per square centimeter and forms a layer less than 50 microns thick.

5,824,206

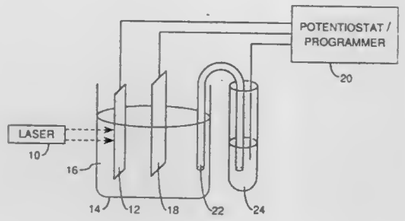
PHOTOELECTROCHEMICAL ETCHING OF P-INP

Kenneth P. Quinlan, Newton, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 28, 1996, Ser. No. 674,229

Int. Cl.[6] C25F *3/12*

U.S. Cl. 205—646 **9 Claims**



1. A method for photoelectrochemical etching of p-InP, said method consisting of the steps of:

selecting an appropriate p-InP wafer;

cleaning said wafer;

attaching an electrode wire to said wafer;

cleaning said wafer with said electrode wire attached;

placing said wafer into an optical cell;

placing a counterelectrode into said cell;

placing one end of a salt bridge into said cell and the other end into a calomel reference electrode;

attaching said wafer electrode wire, said counterelectrode and said reference electrode to a potentiostat being controlled by a programmer to adjust a voltage output as a function of time;

placing a nitric acid solution into said optical cell;

applying a selected negative voltage to said wafer for a selected length of time;

concurrently applying a selected laser beam of a elected light intensity to said wafer for a selected length of time to etch said wafer;

removing said wafer from said optical cell after said applying the selected laser beam; and

cleaning said wafer.

5,824,207

METHOD AND APPARATUS FOR OXIDIZING AN ORGANIC LIQUID

Andrei G. Lyapin, Moscow, Russian Federation, and Zakhar R. Khait, Brooklyn, N.Y., assignors to Novetek Octane Enhancement, Ltd., New York, N.Y.

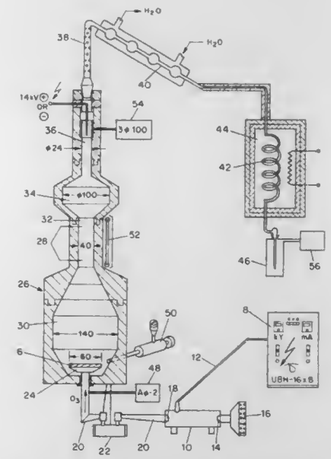
Filed Apr. 30, 1996, Ser. No. 643,074

Int. Cl.[6] C07C *24/10*

U.S. Cl. 208—3 **18 Claims**

1. A process for converting an organic liquid comprising a mixture of higher molecular weight hydrocarbons into a mixture comprising lower molecular weight hydrocarbons, said method comprising:

(a) generating an oxidizing gas which comprises O_3^{-2}, and



(b) reacting the organic liquid with the oxidizing gas, thereby converting the mixture of higher molecular weight hydrocarbons into a mixture comprising lower molecular weight hydrocarbons.

5,824,208

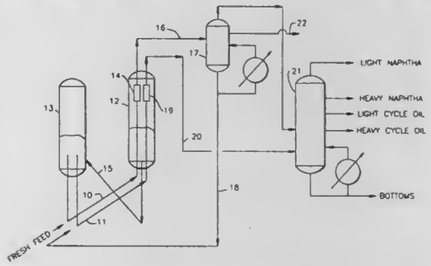
SHORT CONTACT TIME CATALYTIC CRACKING PROCESS

Martin G. Bienstock, Succasunna, and Paul K. Ladwig, Randolph, both of N.J., assignors to Exxon Research & Engineering Company, Florham Park, N.J.

Continuation of Ser. No. 250,257, May 27, 1994, abandoned. This application Jul. 28, 1995, Ser. No. 508,774

Int. Cl.[6] C10G *51/02*

U.S. Cl. 2108—76 **10 Claims**



1. A catalytic cracking process for maximizing olefin yield and minimizing distillate aromatic yield, which process comprises:

(a) contacting a hydrocarbon feed with regenerated cracking catalyst under catalytic cracking conditions including a contact time of less than five seconds to form a first cracked hydrocarbon product in which less than 50 wt % of the first cracked hydrocarbon product has a boiling point of less than or equal to 430° F.;

(b) separating from the first cracked hydrocarbon product a gas oil containing bottoms fraction having an initial boiling point of at least 550° F.; and

(c) contacting the gas oil containing bottoms fractions from step (b) and regenerated cracking catalyst without the present of an additional hydrocarbon feedstock under catalytic cracking conditions which include a reaction temperature that is greater than that used under the catalytic cracking conditions of step (a) and a contact time greater than the contact time of step (a) to form a second cracked hydrocarbon product; and

(d) recovering from the first cracked hydrocarbon product and the second cracked hydrocarbon product a recovered hydrocarbon product having a boiling point no greater than 430° F., said recovered hydrocarbon product accounting for more than 65 wt % of the total of the first cracked hydrocarbon product and the second cracked hydrocarbon product.

5,824,209

METHOD AND APPARATUS FOR CATALYTIC LOW TEMPERATURE AIR PRESSURE REFORMING OF LIGHT HYDROCARBON FUELS FOR SELECTIVE PRODUCTION OF AROMATICS, OLEFINS, AND SATURATES

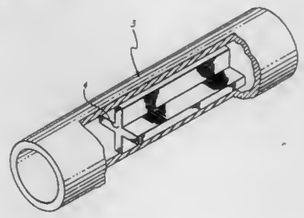
Anthony J. Arand, Escondido, and John K. Arand, Jr., Rancho Palos Verdes, both of Calif., assignors to Pac Rim Products, Inc., Escondido, Calif.

Continuation-in-part of Ser. No. 941,408, Sep. 8, 1992, Pat. No. 5,393,413. This application Feb. 28, 1995, Ser. No. 395,870

The portion of the term of this patent subsequent to Feb. 28, 2012, has been disclaimed.

Int. Cl.[6] C10G *35/04;35/06;* **F02M** *27/02*

U.S. Cl. 208—135 **3 Claims**



1. A method for reforming of light hydrocarbon fuels to obtain high quality fuel at a pressure in the range of approximately 10 to 100 psia and a temperature in the range between approximately −50° and 250° F. comprising the steps of:

a) drawing said light hydrocarbon fuels from a fuel source;

b) passing said fuel into a non-electrical conducting chamber and over a metal alloy catalyst at a Reynolds Number in a range of 2×10^3 to 20×10^4, said metal alloy catalyst selected from a group consisting of Aluminum alloy 2024, Ledloy C1018 and Titanium Ti6Al4v; and

c) recirculating said fuel over said catalyst between 1 and approximately 100 cycles.

5,824,210

SEPARATION OF MINERALS

Michael H. Kuryluk, 71 Ilsley Ave. Unit 10, Dartmouth, N.S., Canada, B3B 1L5

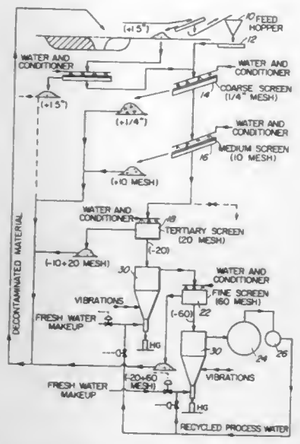
Continuation-in-part of Ser. No. 470,994, Jun. 6, 1995, Pat. No. 5,564,574. This application Jul. 29, 1996, Ser. No. 681,700

Claims priority, application Canada, May 28, 1996, 2177555

Int. Cl.[6] B03B *1/00;5/66*

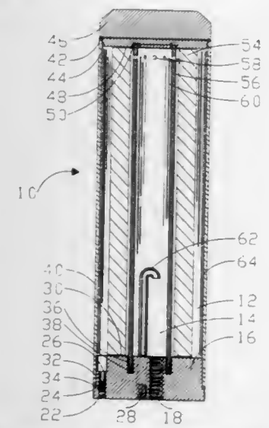
U.S. Cl. 209—3 **35 Claims**

1. A process for the separation of higher density minerals from lower density minerals comprising supplying material in the form of a mixture of liquid and particulate material in a selected particle size range to a hydraulic mineral separator; maintaining a generally upwardly flowing stream of liquid in said separator while said mixture is supplied to the upwardly flowing stream such that higher density minerals fall downwardly by gravity forces against the upwardly flowing steam while the lower density minerals are moved upwardly by said stream; and removing the downwardly moving higher density minerals from said separator through a lower discharge opening while the upwardly moving lower density minerals are removed via an upper outlet opening and supplying



sonic vibrations to the mixture within the separator to induce the higher density mineral particles to coalesce together and form larger particles which more readily settle downwardly toward the discharge opening to enhance the recovery of the higher density minerals.

5,824,211
OIL RECLAMATION DEVICE
Charles A. Lowry, 3848 Overland Ave. #208, Culver City, Calif. 90232, assignor to Charles A. Lowry, Salt Lake City, Utah
Filed May 3, 1995, Ser. No. 434,187
Int. Cl.[6] B01D *35/01*
U.S. Cl. 210—92 **16 Claims**



1. An oil reclamation device for removing the impurities and contaminates of particles and liquids from lubricating oils, comprising

(a) a housing including a base, an outer cylinder having first and second open ends, the first open end of said outer cylinder being mounted axially to said base and projecting axially from said base, base attachment means to removably attach said base to the first end of the outer cylinder, an inner cylinder having first and second open ends, said inner cylinder having an outer diameter less than an inner diameter of said outer cylinder, said inner cylinder being mounted within said outer cylinder with the first end of the inner cylinder engaged axially to said base and projecting axially from said base;

(b) a filter positioned between said outer cylinder and said inner cylinder;

(c) an oil inlet bore positioned radially between said outer cylinder and said inner cylinder and extending through said base so as to allow passage of oil from outside the device into a space between the filter and outer cylinder so as to direct the flow of oil through the filter toward the inner cylinder;

(d) an evaporation chamber within said housing, the base defining a lower limit thereof, the inner cylinder defining an outermost periphery thereof;

(e) an oil drain bore opening into said evaporation chamber and extending through said base to allow passage of oil to a location outside the device;

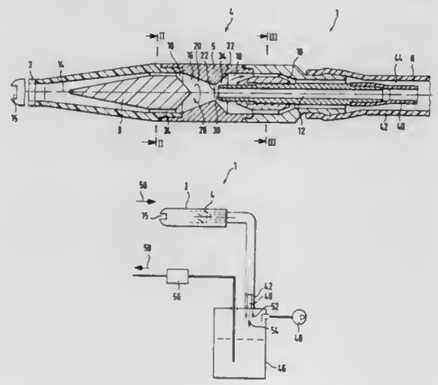
(f) a vent comprising a vent bore extending through said base, a vent tube positioned within said evaporator chamber having first and second open ends, means for fluidly connecting the first end of said vent tube to said vent bore, wherein the second end of said vent tube is spaced axially from said base to allow passage of air and vapor from said evaporation chamber to a location outside the device;

(g) a filter chamber within said housing, the base defining a lower limit thereof, the outer cylinder defining an outermost periphery thereof, the inner cylinder defining an innermost periphery thereof;

(h) a lid engaged axially with the second end of said outer cylinder and the second end of said inner cylinder, lid attachment means for removably attaching said lid to the second open end of said outer cylinder for, wherein said lid closes said filter chamber and said evaporation chamber and defines an upper limit of said filter chamber and said evaporation chamber;

(i) wherein said inner cylinder includes fluid passage means for enabling fluid to flow from said filter chamber into said evaporation chamber.

5,824,212
CYCLONE APPARATUS FOR REMOVAL OF AIR FROM AIR CONTAINING BLOOD
Alexander Brockhoff, Fürstentum, Liechtenstein, assignor to Kevin Business Corporation, Obarrio, Panama
Filed Dec. 13, 1995, Ser. No. 571,490
Claims priority, application Germany, Dec. 6, 1995, 195 45 404.9
Int. Cl.[6] B01D *21/26;19/00*
U.S. Cl. 210—194 **21 Claims**



1. A cyclone device for removing gas from blood, the blood having a blood phase and a gaseous phase, the cyclone device comprising:

a cyclone wall having an inner surface extending around a middle axis;

a cyclone eddy chamber defined by the inner surface of the cyclone wall, the chamber having an inlet at one axial end for receiving the blood and an outlet at an opposite axial end for the blood to exit;

a cyclone inlet being substantially tangentially directed and disposed at the inlet of the eddy chamber such that, when the blood passes through the eddy chamber, the blood phase forms a radial outer component and the gaseous phase forms a radial inner component of the blood;

a first cyclone outlet for removing the blood phase from the blood, the first cyclone outlet being formed by the inner surface of the cyclone wall at the outlet of the cyclone eddy chamber; and

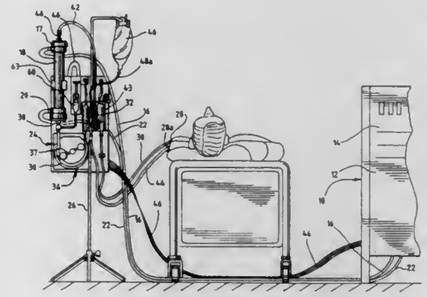
a second cyclone outlet for removing the gaseous phase from the blood, the second cyclone outlet being arranged coaxially within the first cyclone outlets.

16. A blood recirculation system for conditioning blood from a source, the blood having a blood phase and a gaseous phase, the recirculation system comprising:

a cyclone device according to claim 1 for receiving the blood from the source and separating the gaseous phase from the blood phase; and

a blood conditioning device for receiving the blood phase from the cyclone device, producing conditioned blood and returning the conditioned blood to the source.

5,824,213
SEPARABLE HEMODIALYSIS SYSTEM
David S. Utterberg, Seattle, Wash., assignor to Medisystems Technology Corporation, Las Vegas, Nev.
Continuation of Ser. No. 301,765, Sep. 7, 1994, abandoned. This application Sep. 24, 1997, Ser. No. 937,121
Int. Cl.[6] B01D *61/28;61/30*
U.S. Cl. 210—241 **27 Claims**



22. A hemodialysis system which comprises:

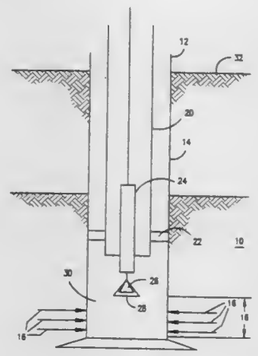
a dialyzate handling unit for providing hemodialysis solution to the patient;

a blood handling unit which comprises a membrane dialyzer holder and equipment for safely handling blood as it passes from the patient, through a membrane dialyzer, and back to the patient, said blood handling unit being carried on a movable stand, separate from said dialyzate handling unit;

a first conduit for conveying fresh dialyzate from said dialyzate handling unit to a membrane dialyzer in the blood handling unit, and a second conduit for conveying spent hemodialysis solution away from said blood handling unit;

said dialyzate handling unit and said blood handling unit being spaced and movably separate from each other and free of any mechanical connection preventing them from being movable in all directions relative to each other while hemodialysis is being performed, the dialyzate handling unit being free of blood-contacting components and the blood handling unit being free of dialysis solution processing components other than said membrane dialyzer.

5,824,214
METHOD FOR HYDROTREATING AND UPGRADING HEAVY CRUDE OIL DURING PRODUCTION
James M. Paul, DeSoto, and R. Michael Davis, Ft. Worth, both of Tex., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Jul. 11, 1995, Ser. No. 504,052
Int. Cl.[6] C01G *47/00;* **E21B** *43/00;* **C01B** *53/00;* **C09K** *7/00*
U.S. Cl. 208—107 **41 Claims**



1. A method for hydrotreating and upgrading heavy crude oil containing at least 1% weight water and having less than 20 degree API gravity in a production well penetrating a subterranean, heavy crude oil containing formation comprising:

producing heavy crude oil from the formation; subjecting the heavy crude oil containing water downhole in the production well to sonic energy in the frequency range of 400 to 10 kHz at prevailing downhole temperature and pressure in the presence of a metal hydrogenation catalyst to cause the water in the crude oil to react and form hydrogen in-situ in the production well, wherein the hydrogen is formed according to the equation below:

$$2H_2O \xrightarrow{>>>} \xrightarrow[\text{catalyst}]{} 2H_2 + O_2,$$

and is formed in the absence of hydrazine: hydrotreating the heavy crude oil in-situ in the production well with the hydrogen to form an upgraded, hydrotreated oil of lower gravity and viscosity than the heavy crude oil.

5,824,215
WATER PURIFIER
Sang-Wook Suh, Pyungtaek, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Feb. 6, 1997, Ser. No. 795,562
Claims priority, application Rep. of Korea, Feb. 6, 1996, 1996-2834
Int. Cl.[6] B01D *35/30*
U.S. Cl. 210—249 **5 Claims**

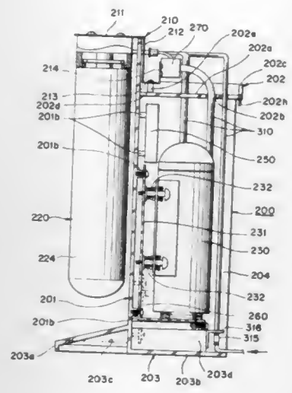
1. A water purifier for removing harmful materials from fresh water, comprising:

a body having a bottom section upon which the body is supported in an upright manner, the body including a front side and a rear side;

a filter assembly comprising a plurality of water filtering members disposed at the front side of the body, at least one of the filtering members producing waste water;

a bracket mounted on the body for supporting the filtering members;

a compression pump mounted on the body at the rear side thereof for forcing fresh water through at least one of the filtering members;



a waste water control valve mounted on the body at the rear side thereof and operably connected to the filter assembly for discharging waste water;

a high voltage transformer mounted on the body at the rear side thereof for supplying an operating voltage; and

a circuit board mounted on the body at the rear side thereof and operably connected to the pump, control valve, and transformer;

wherein the body comprises a vertical wall panel defining the front and rear sides, a pair of vertical side panels disposed at opposite edges of the vertical wall panel, a horizontal upper panel interconnecting upper ends of the side panels, a horizontal lower panel interconnecting lower ends of the side panels;

wherein the bracket comprises:

a first horizontal part protruding forwardly from an upper side of the body in order to support the filtering members;

a first vertical part bent downwardly at a right angle from a rear side of the first horizontal part in order to contact the rear side of the vertical wall panel of the body;

a second horizontal part bent rearwardly at a right angle from a lower edge of the first vertical part; and

a second vertical part bent upwardly at a right angle from a rear edge of the second horizontal part.

5,824,216

BLOOD COLLECTION CONTAINER

Michel Joie, Ernage; Jack Debrauwere, Halle; Jean-Claude Bernes, Faimes, all of Belgium, and Richard Goldhaber, Lake Forest, Ill., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 241,080, May 11, 1994, abandoned. This application May 17, 1996, Ser. No. 650,929

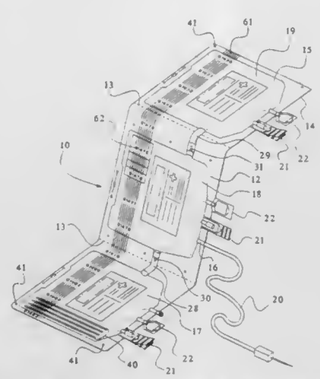
Int. Cl.[6] A61M *1/00;* **B65D** *30/22*

U.S. Cl. 210—257.1 **15 Claims**

12. A container for housing blood comprising:

an integral body defining at least two interior chambers for housing blood, each chamber having an exterior edge formed along one side of each of the chambers forming a continuous edge of the body and a common edge wherein the chambers are joined at the common edge and further wherein each of the at least two interior chambers includes a connection site and an exterior port located on the exterior edge;

a port located through the common edge of the at least two chambers, the port including a frangible member in the port that upon breakage allows fluid flow from one of the at least two chambers of the body to another one of the at least two chambers; and



a tube allowing blood to be received in one of the at least two chambers.

5,824,217

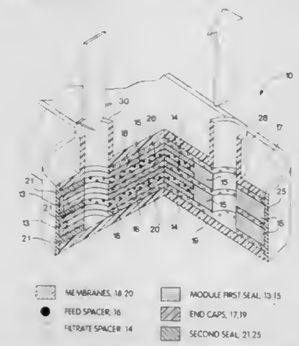
MEMBRANE FILTRATION APPARATUS

Steven R. Pearl, Nashua; Wayne S. Merrill, Derry, and Christopher J. Petersen, Amherst, all of N.H., assignors to Millipore Corporation, Bedford, Mass.

Filed Mar. 27, 1996, Ser. No. 624,830

Int. Cl.[6] B01D *63/08*

U.S. Cl. 210—321.75 **26 Claims**



1. A membrane filter apparatus of unitary sealed construction for carrying out tangential flow filtration comprising:

at least one module layer including at least one membrane filter and at least one first spacer layer,

said apparatus having at least three ports,

at least one of said ports being a feed port, at least one of said ports being a retentate port and at least one of said ports being a filtrate port, said feed and retentate ports being in fluid communication with each other, each filtrate port being sealed from fluid communication with both said feed port and said retentate port,

said at least one module layer being sealed to form a perimeter seal about said at least one spacer layer and said at least one membrane filter and to form a first port seal which isolates said at least one filtrate port from said feed and retentate ports,

at least one second spacer layer positioned adjacent each said at least one module layer and being insert molded to form a perimeter seal about the periphery of said at least one second spacer layer and said at least one module layer which seals said at least one feed port and said at least one retentate port from said at least one filtrate port and which permits fluid flow within said apparatus to introduce a feed into said apparatus and to remove a retentate and a filtrate from said apparatus.

5,824,218

PERMANENT ESPRESSO FILTER INSERT

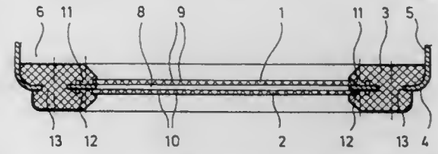
Ruedi Gasser, Burglen, and Jurg Strub, Oberageri, both of Switzerland, assignors to Maxs AG, Sachseln, Germany

Filed Oct. 30, 1995, Ser. No. 550,412

Claims priority, application Germany, Dec. 20, 1994, 94 20 340 U

Int. Cl.[6] B01D *25/02*

U.S. Cl. 210—337 **14 Claims**



1. Permanent espresso filter insert for insertion into an espresso machine, having a substantially flat filter disc which is penetrated by a plurality of filter openings substantially in a flow direction of a medium to be filtered, the improvement comprising that a perforated disc also having a plurality of filter openings substantially in the flow direction of the medium to be filtered is designed and arranged downstream of said filter disc in the flow direction, said perforated disc being provided with swirl inducing edges by means of which the medium to be filtered undergoes increased swirling and deflection.

5,824,219

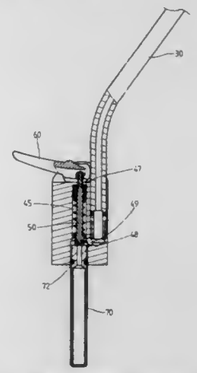
WATER SPOUT SEAT OF WATER FILTRATION DEVICE

Cheng-Chen Lai, P.O. Box 453, Taichung, Taiwan

Filed Dec. 5, 1997, Ser. No. 985,569

Int. Cl.[6] B01D *35/157*

U.S. Cl. 210—418 **1 Claim**



1. A water spout seat of a water filtration device, said water spout seat comprising:

a main body provided at one end thereof with a water outlet engageable with a water discharge tube of the water filtration device, and at another end thereof with a water inlet having a female threaded portion, said main body further provided with a chamber extending along the direction of a longitudinal axis of said main body such that said chamber is located between said water outlet and said water inlet;

a stop valve located in said chamber of said main body and provided with an elastic member, a pull rod, and a tapered washer;

a trigger member engaged with said pull rod of said stop valve; and

a water admitting tube provided with a male threaded portion engaged with said female threaded portion of said water inlet of said main body, said water admitting tube further provided with a tapered hole engaged with said tapered washer of said stop valve;

wherein said main body is provided with a recess in communication with a through hole located in said chamber, and a stop edge located between said through hole and said chamber;

wherein said main body is further provided with a stop lip located between said water inlet and said chamber, and an inclined connection hole located between said water outlet and said stop lip;

wherein said through hole, said chamber and said water inlet are located coaxially.

5,824,220

INORGANIC POROUS SUPPORT FOR A FILTER MEMBRANE, AND METHOD OF MANUFACTURE

André Grangeon, Valreas, and Philippe Lescoche, Nyons, both of France, assignors to T.A.M.I. Industries, Nyons, France

PCT No. PCT/FR96/00128, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 24, 1996, PCT Pub. No. WO96/22829, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 25, 1996, Ser. No. 704,776

Claims priority, application France, Jan. 25, 1995, 95 01063

Int. Cl.[6] B01D *69/10;* **C22C** *29/12;* **B22F** *1/00;1/04*

U.S. Cl. 210—490 **14 Claims**

1. A sintered inorganic support made by sintering a body formed from inorganic feedstock and inorganic binder at a temperature in the range of 1200° C. to 1500° C. wherein said inorganic feedstock is a metal compound containing a single metal selected from the group consisting of aluminum, silicon and titanium and said inorganic feedstock has a grain size greater than 20 microns;

said inorganic binder is selected from the group consisting of clay and titanate having the formula TiMO wherein M is a metal and said inorganic binder is present in an amount which is less than 70% relative to the amount of inorganic feedstock;

whereby compounds which can cause the formation of microcracks therein are essentially absent from said support and said sintered inorganic support has a porosity greater than 25%;

with the proviso that said inorganic support has a mechanical strength defined by ultimate bending stress greater than 15 MPa when said inorganic support is in a planar configuration and a mechanical strength defined by a tensile strength value greater than 5 MPa when said inorganic support is in the form of a tube.

6. The inorganic support of claim 1 which further includes at least one separator layer thereon adapted to separate molecules or particles contained in a fluid medium to be treated.

5,824,221

WATER PURIFICATION PROCESS

Markus Thüer, Rheinfelden; Gerhard Stucki, Ormalingen, and Michael Reisinger, Himmelried, all of Switzerland, assignors to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.

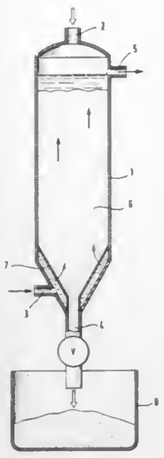
Filed Mar. 5, 1993, Ser. No. 26,914

Claims priority, application Switzerland, Nov. 3, 1992, 00 785/92

Int. Cl.[6] C02F *3/08*

U.S. Cl. 210—605 **19 Claims**

1. A process for purifying water contaminated with organic compounds, which comprises passing said contaminated water upwardly in countercurrent through both zones of a reactor containing a moving bed adsorber having an upper and lower adsorption zone and containing an adsorbent that is colonized with one or more microorganisms in said lower zone, and removing adsorbent colonized with one or more microorganisms and loaded with



contaminants together with activated sludge from the bottom end of said lower zone and adding fresh adsorbent from above to said upper adsorption zone that is not colonized with microorganisms.

5,824,222

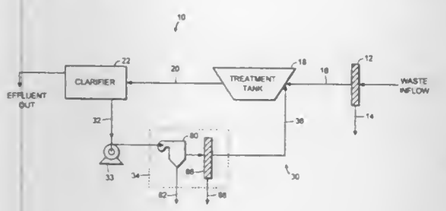
METHOD FOR REMOVING SUSPENDED INERT SOLIDS FROM A WASTE STREAM

Gene E. Keyser, Jacksonville, and Donald Marvin Holcombe, Orange Park, both of Fla., assignors to Micronair, LLC, Jacksonville, Fla.

Division of Ser. No. 555,516, Nov. 8, 1995, Pat. No. 5,658,458. This application Apr. 29, 1997, Ser. No. 840,675

Int. Cl.[6] C02F *3/00*

U.S. Cl. 210—607 **13 Claims**



1. A method of treating waste comprising:

a. providing first and second containment vessels;

b. conducting liquid-borne waste to the first vessel for biological treatment, the liquid-borne waste including inert solids, the treatment including contact with biological solids;

c. conducting the biologically treated waste from the first vessel to the second vessel for clarification and settling; and

d. continuously recirculating the settled biologically treated waste from the second vessel to the first vessel, and removing during recirculation suspended inert solids without significant removal of biological solids larger in size than at least some of the inert removed solids.

5,824,223

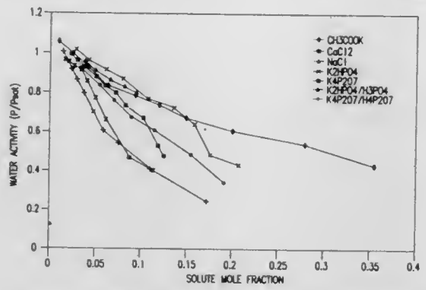
METHODS AND APPARATUS FOR OSMOTIC DISTILLATION

Alan Sherman Michaels, Chestnut Hill, Mass., and Robert Johnson, Queensland, Australia, assignors to Rentiers Machinery Proprietary Ltd., Victoria, Australia

Filed Nov. 8, 1995, Ser. No. 555,209

Int. Cl.[6] B01D *11/04;11/00;43/00*

U.S. Cl. 210—642 **9 Claims**



1. A method of osmotic distillation for the concentration of a sample of relatively low osmotic pressure comprising:

providing a sample to be concentrated having first osmotic pressure;

providing a solution having a higher osmotic pressure than said sample, said solution comprising a saturated or near-saturated aqueous solution containing one or more nonhalide salts, wherein said salts are chemically stable at temperatures up to the normal boiling point of the saturated solution of said salts, non-toxic to humans and animals, odorless and tasteless in aqueous solution, substantially incapable of forming precipitates when exposed to volatile components of feed solutions to be concentrated, non-corrosive to process equipment, and have large positive temperature coefficients of solubility in aqueous solution; and

placing said sample and said solution on opposite sides of a hydrophobic microporous membrane;

wherein said nonhalide salts are selected from the group consisting of tripotassium orthophosphate (K_3PO_4), dipotassium monohydrogen orthophosphate (K_2HPO_4), potassium dihydrogen orthophosphate (KH_2PO_4), tetrapotassium pyrophosphate ($K_4P_2O_7$), tripotassium monohydrogen pyrophosphate ($K_3HP_2O_7$), dipotassium dihydrogen pyrophosphate ($K_2H_2P_2O_7$), monopotassium trihydrogen pyrophosphate ($KH_3P_2O_7$), and blends thereof.

5,824,224

PROCESS AND APPARATUS FOR THE EXTRACTION AND PURIFICATION OF DNA

Masatoshi Fujishiro; Akio Togashi; Youichiro Tani, and Takamaro Ishii, all of Tokyo, Japan, assignors to Tomy Seiko Co., Ltd., Tokyo, Japan

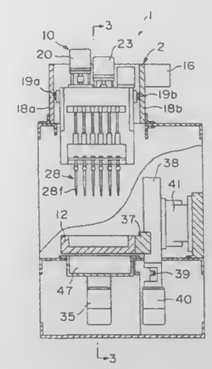
Continuation of Ser. No. 582,700, Jan. 4, 1996, Pat. No. 5,645,723. This application Feb. 7, 1997, Ser. No. 796,949

Claims priority, application Japan, Aug. 4, 1995, 7-199391

Int. Cl.[6] B01D *61/00;63/00*

U.S. Cl. 210—651 **3 Claims**

1. A process for the extraction and purification of DNA which comprises the steps of (a) moving a first tube rack having at least one first filter tube disposed therein and a second tube rack having at least one second filter tube disposed therein by means of transfer devices, so as to lay one of said tube racks on top of the other and define a vacuum chamber therebetween, (b) placing a transformant culture sample in said first filter tube and effecting the lysis of bacterial cells, the denaturation of unwanted proteins and chromosomal DNA, and optionally the hydrolysis of RNA, (c) filtering the sample through said first filter tube with the aid of a vacuum device to remove any impurities and transfer the filtrate to said second filter tube, and (d) effecting the adsorption, washing and elution of DNA in said second filter tube.



5,824,225

PURIFICATION PROCESS

Richard Llewellyn Powell, Tarporley; Alan John Handley, Widnes, and Richard Dominic Clarke, Northwich, all of United Kingdom, assignors to Imperial Chemical Industries PLC, London, England

PCT No. PCT/GB95/00847, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/29003, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 13, 1995, Ser. No. 727,462

Claims priority, application United Kingdom, Apr. 21, 1994, 9407886

Int. Cl.[6] B01D *15/08*

U.S. Cl. 210—656 **10 Claims**

1. A process for purifying a crude material containing one or more desired compounds in impure form, comprising the steps of (1) passing the crude material through a chromatography column packed with a particulate absorbent solid using a solvent comprising at least one hydrofluorocarbon selected from the group consisting of trifluoromethane, fluoromethane, difluoromethane, pentafluoroethane, 1,1,1-trifluoroethane, 1,1,2,2-tetrafluoroethane, 1,1,1,2-tetrafluoroethane, 1,1,1,2.2,3-hexa-fluoropropane, 1,1,1,3,3,3-hexafluoropropane to transport the crude material through the packed column and (2) collecting the one or more desired compounds as they emerge from the column as a solution in the solvent.

5,824,226

SILANE-MODIFIED CLAY

Mary K. Boyd, Evanston, and G. Robert Goss, Quincy, both of Ill., assignors to Loyola University of Chicago, Chicago, Ill.

Division of Ser. No. 360,311, Dec. 21, 1994, abandoned. This application Feb. 3, 1997, Ser. No. 789,070

Int. Cl.[6] B01D *15/00*

U.S. Cl. 210—679 **10 Claims**

1. A process for removing an organic compound contaminant from an aqueous medium contaminated with said organic compound comprising contacting said aqueous medium under conditions effective to remove said organic contaminant with a particulate silane-modified clay having a volatile matter content of no more than about 15 percent and a porosity of at least about 0.3 milliliters per gram;

said silane modified clay having R-silyl groups bonded to the surface of the particular clay in an amount sufficient to render the particulate clay hydrophobic, and the R being a hydrophobic hydrocarbon group containing up to 30 carbon atoms.

5,824,227

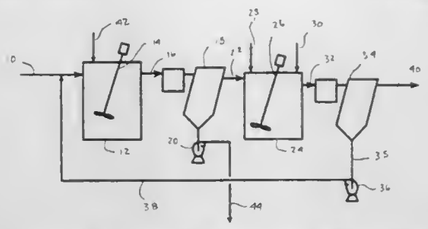
METHOD FOR REMOVING FLUORIDE FROM WATER

Daniel A. Cargnel, New Freedom, and Mark K. Crescenzi, Dillsburg, both of Pa., assignors to WMX Technologies, Inc., Oak Brook, Ill.

Filed Mar. 19, 1997, Ser. No. 820,589

Int. Cl.[6] C02F *1/58*

U.S. Cl. 210—713 **14 Claims**



1. A process for removing fluoride from a fluoride containing aqueous feed stream comprising the steps:

a. contacting the fluoride containing aqueous feed stream with alum and sodium aluminate in a first reactor for a period of time sufficient to allow at least a portion of fluoride to react with the alum and sodium aluminate to give an aqueous first reactor effluent stream having a fluoride concentration less than the fluoride concentration of the aqueous feed stream;

b. directing the aqueous first reactor effluent stream into a clarifier to give a clarified stream;

c. directing the clarified stream into a second reactor to give a second reactor aqueous feed; and

d. adding alum and sodium aluminate to the second reactor and allowing the alum and sodium aluminate to contact the second reactor aqueous feed for a period of time sufficient to give a second reactor aqueous product stream having a fluoride concentration less than the fluoride concentration of the first reactor effluent stream.

5,824,228

METHOD AND DEVICE FOR REMOVAL, WITHIN A CLOSED REACTOR, OF THE PHASE OF THE LOWEST DENSITY FROM A BIPHASE SYSTEM WITH PRESENCE OF INTERFACE

Denis Bolomier, Chaponost; Maurice Bailloud, Saint Gents Laval, and Pascal Dubost, Villars les Dombes, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

PCT No. PCT/FR95/00316, § 371 Date Jan. 22, 1997, § 102(e) Date Jan. 22, 1997, PCT Pub. No. WO95/24957, PCT Pub. Date Sep. 21, 1995

PCT Filed Mar. 16, 1995, Ser. No. 714,131

Claims priority, application France, Mar. 16, 1994, 94 03306

Int. Cl.[6] B01D *17/12*

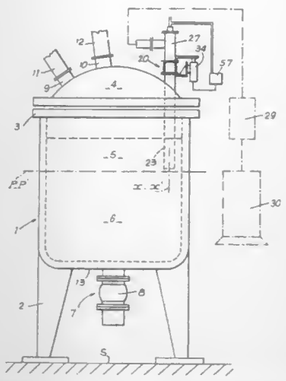
U.S. Cl. 210—740 **11 Claims**

1. Method for removal within a closed reservoir of a phase of lowest density from a biphase system contained in the reservoir and having an interface, said method comprising:

immersing a tube in the reservoir within a volume occupied by a phase to be removed from above the reservoir and removing said phase by suction means until a plane of phase separation is close to a plane of a suction port of the tube, said immersing and removing steps including:

arranging, beneath and at a distance from the plane of the suction port of the tube, a detector for detecting a level of the interface in the biphase system between two phases of different density, so as to determine the phase of highest density,

displacing the tube and the detector via guiding and motorization means in a reciprocal, rectilinear path parallel to the axis of the tube until said interface is detected by the detector, and



sucking the phase of lowest density until the suction means are deenergized.

5,824,229

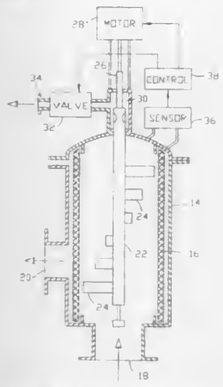
FILTRATION OF ROLLING SOLUTIONS

James G. Larkey, 18 Elora Drive, Hamilton, Ontario, Canada, L9C 7J1; Richard E. Bowering, 3170 Pine Meadow Drive, Burlington, Ontario, Canada, L7M 2Z6; John Dragasevich, 38 Richbourne Court, Scarborough, Ontario, Canada, M1T 2T6, and Yitzhak Orlans, 4210 Grand Ave., Ojai, Calif. 93023

Filed Apr. 19, 1996, Ser. No. 632,538

Int. Cl.[6] B01D *37/00;29/68*

U.S. Cl. 210—741 **8 Claims**



1. A method of filtering a body of rolling solution used in a cold rolling mill, comprising the steps of:

(a) passing the solution under pressure through a filter element while monitoring back pressure across the filter element

(b) while continuing step (a) activating a scanning flushing system presenting at least one flushing nozzle to an upstream side of the filter element to execute a flushing cycle for flushing successively scanned minor portions of said filter element in response to increase of said pressure above a predetermined level; and

(c) connecting the nozzle to an exhaust outlet while the scanning filter system is active so as to remove particulates to the exhaust outlet without substantial reduction of total flow through said filter element during said flushing cycle.

8. Apparatus for filtering a body of rolling solution used in a cold rolling mill, comprising:

(a) means to strain particles above a predetermined maximum size from solution drawn from said body;

(b) means to pressureize said solution;

(c) a filter casing and a cylindrical filter mesh dividing the casing into inner and outer chambers, the cylindrical filter mesh being selected to capture particles having a minimum size between 25 and 300 microns, the filter casing receiving solution into the inner chamber from said pressurizing means;

(d) an output conduit connected to the outer chamber of the filter casing;

(e) at least one flushing nozzle mounted for movement in a spiral path about a longitudinal axis of the cylindrical filter mesh within said inner chamber so as to scan an inside surface of the cylindrical filter mesh;

(f) an exhaust valve connected to said at least one nozzle;

(g) a motor operative to move said at least one flushing nozzle along said spiral path to scan the filter mesh; and

(h) means responsive to a predetermined pressure difference between said inner and outer chambers to open said exhaust valve and activate said motor to scan the filter mesh;

the at least one flushing nozzle being of sufficient diameter and providing sufficient clearance from the mesh to commit the passage of particles passing said strainer through said nozzle and said exhaust valve, but of sufficiently restricted dimensions that only a minor proportion of the solution from the pump is diverted through the exhaust valve.

5,824,230

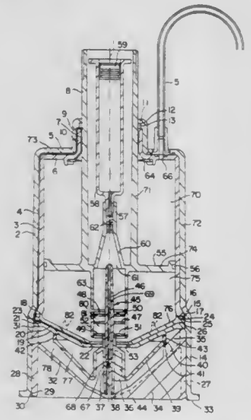
METHOD AND DEVICE FOR SEPARATING A COMPONENT SUCH AS FIBRIN 1 FROM BLOOD PLASMA

Niels Erik Holm, Birkerød, Denmark, and Peter A. D. Edwardson, Chester, United Kingdom, assignors to E.R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 566,348, Dec. 1, 1995, Pat. No. 5,738,784, which is a continuation-in-part of Ser. No. 348,668, Dec. 2, 1994, abandoned. This application Nov. 7, 1996, Ser. No. 745,119

Int. Cl.[6] B01D *21/26*

U.S. Cl. 210—749 **29 Claims**



1. A process for separating fibrin from plasma comprising the steps of:

feeding said plasma into a reaction chamber defined by an outer wall, and a bottom wall;

contacting fibrinogen within said plasma with an agent which converts said fibrinogen into a non-crosslinked fibrin polymer;

subjecting said reaction chamber, plasma and agent to sufficient centrifugation during said contacting step so as to separate said non-crosslinked polymer from said plasma, and deposit, said non-crosslinked fibrin polymer onto said outer wall as a thin gel film.

5,824,231

METHOD AND A DEVICE FOR SEPARATION AND COLLECTION OF SUBSTANCES FLOATING IN WATER

Erling Blomberg, Göteborg, Sweden, assignor to Erling Blomberg AB, Västra Frölunda, Sweden

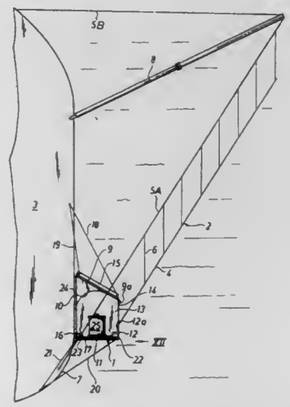
PCT No. PCT/SE94/01148, § 371 Date Jul. 12, 1996, § 102(e) Date Jul. 12, 1996, PCT Pub. No. WO95/15417, PCT Pub. Date Jun. 8, 1995

PCT Filed Nov. 30, 1994, Ser. No. 652,434

Claims priority, application Sweden, Nov. 30, 1993, 9303985; Jan. 2, 1994, 9400003; Jan. 9, 1994, 9400031; Jan. 21, 1994, 9400172; Feb. 8, 1994, 9400409; Nov. 15, 1994, 9403930

Int. Cl.[6] E02B *15/04*

U.S. Cl. 210—776 **14 Claims**



10. A method for separating and collecting a substance floating in water comprising the following steps:

moving a vessel in a forward direction relative to the water;

deploying a collecting wall member to extend at an angle outward from the vessel and guiding the water and the floating substance through an upper, inlet portion of a side opening of an outboard vortical circulation chamber and along an inner wall of the circulation chamber, the water thereby moving substantially in a rotating motion within the circulation chamber, the floating substance thereby collecting in a vortex region within the circulation chamber; and

removing the floating substance within the vortex region;

towing the collecting wall member and the circulation chamber through the water so that at least some unprocessed water at a level beneath a lowermost point of the collecting wall member flows past a side opening of the circulation chamber, water exiting the circulation chamber substantially horizontally through a lower outlet portion of the side opening thereby increasing ejection of separated water from the circulation chamber.

5,824,232

CORRUGATED FILTER SHEET CONFIGURED INTO A CYLINDRICAL FILTER MEDIA HAVING NEAR CIRCULAR CONCENTRIC CHANNELS

Thomas L. Asher, and John R. Hampton, both of Houston, Tex., assignors to Filtration Technologies Corporation, Houston, Tex.

Filed Apr. 15, 1996, Ser. No. 632,631

Int. Cl.[6] B01D *27/06*

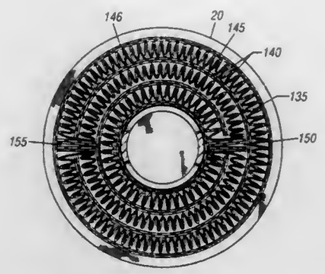
U.S. Cl. 210—787 **21 Claims**

20. A method of filtering a fluid, comprising the steps of:

flowing said fluid along a plurality of interconnected near circular concentric channels formed of a filter sheet of rigid, corrugated, perforated material forming a cylindrical filter media having a plurality of near circular concentric channels and defining a first and second radial flow path interconnecting said channels and radially extending across the filter;

passing said fluid through a sheet of filtration media; and

collecting said fluid in a central core of the cylindrical filter media.



5,824,233

MICROMECHANICAL COMPONENT WITH A DIELECTRIC MOVABLE STRUCTURE, MICROSYSTEM, AND PRODUCTION PROCESS

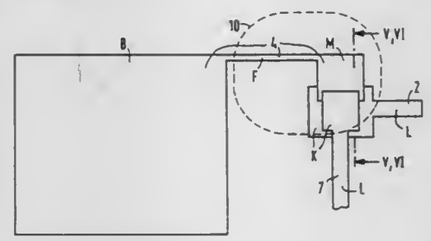
Thomas Zettler, Müchen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Division of Ser. No. 431,492, Apr. 28, 1995, Pat. No. 5,602,411. This application Nov. 26, 1996, Ser. No. 756,348

Claims priority, application Germany, Apr. 28, 1994, 44 14 969.7

Int. Cl.[6] H01L *21/306;* **H01G** *7/00*

U.S. Cl. 216—2 **6 Claims**

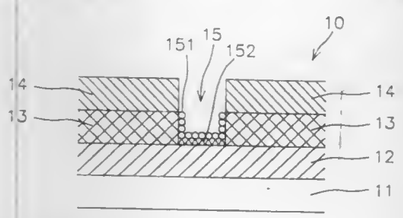


1. A production process for a micromechanical component, which comprises:

forming fixed and movable micromecbanical structures being separated from one another by an intervening insulating layer, the fixed micromechanical structure having a pair of capacitor plates being formed of at least one conductive layer and being spaced apart defining an interstice therebetween, and the movable micromechanical structure being formed of a dielectric layer to be introduced into and removed from the interstice between the plates; and

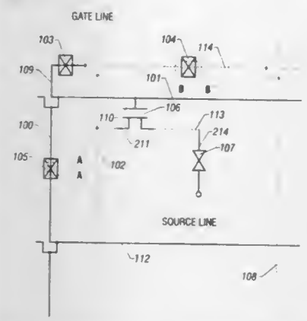
removing the insulating layer around the movable micromechanical structure and at least partly within the interstice between the plates with an etching process being selective for the fixed and movable micromechanical structures and having an isotropic component.

5,824,234
METHOD FOR FORMING LOW CONTACT RESISTANCE BONDING PAD
Chon-Shin Jou, Hsinchu-Hsien; Ting-Sing Wang, Hsinchu; Chun-Lin Chen, Hsinchu; Ming-Huan Tsai, Hsinchu, and Ming-Ru Tsai, Hsinchu, all of Taiwan, assignors to Mosel Vitelic, Inc., Hsinchu, Taiwan
Filed Oct. 2, 1996, Ser. No. 725,122
Int. Cl.[6] H01L *21/00*
U.S. Cl. 216—18 **29 Claims**



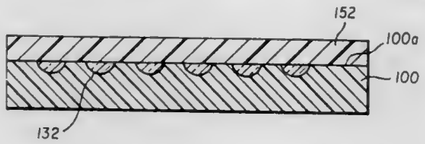
1. A method for forming a bonding pad having a low contact resistance, comprising steps of:
a) forming a bonding pad structure on a substrate having a metal layer by forming a passivation layer over said metal layer and etching said passivation layer with a fluorine-containing gas by which a fluorine-containing layer is formed on a surface of said bonding pad structure; and
b) removing said fluorine-containing layer for reducing a contact resistance of said bonding pad structure.

5,824,235
METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE
Shunpei Yamazaki, Tokyo, and Jun Koyama, Kanagawa, both of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan
Filed Jul. 29, 1996, Ser. No. 688,018
Claims priority, application Japan, Aug. 4, 1995, 7-219532; May 8, 1996, 8-139456
Int. Cl.[6] H01L *21/00;* **B44C** *1/22*
U.S. Cl. 216—23 **16 Claims**



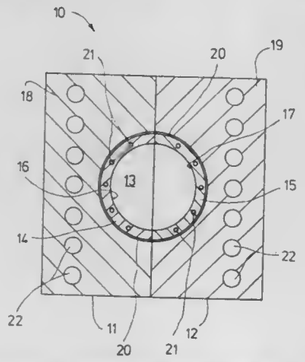
1. A method of manufacturing a semiconductor device comprising the steps of:
forming a first wiring including a gate electrode for a thin film transistor over a substrate;
forming an interlayer insulator on said first wiring;
forming a second wiring on said interlayer insulator, said second wiring being connected to one of source and drain regions of said thin film transistor;
forming a second interlayer insulator on said second wiring;
forming a conductive film on said second interlayer insulator; and then
patterning said conductive film by etching,
wherein said first and second wirings are shorted with each other at least during the formation of said second interlayer insulator and said conductive film; and
wherein at least one of said first and second wirings is provided with a discharge pattern.

5,824,236
METHOD FOR FORMING INORGANIC LENS ARRAY FOR SOLID STATE IMAGER
Gilbert Alan Hawkins, Mendon; David Newell Nichols; David Lawrence Losee, both of Fairport, and Robert Leroy Nielsen, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Mar. 11, 1996, Ser. No. 613,877
Int. Cl.[6] B44C *1/22*
U.S. Cl. 216—26 **7 Claims**



1. A method of making an imager, comprising the steps of:
(a) providing a semiconductor substrate;
(b) forming a plurality of spaced image pixels in the substrate;
(c) depositing a dielectric layer over the image pixels and making this layer optically planar by chemical mechanical polishing, thereby forming an optically flat surface;
(d) forming a plurality of depressions in the optically flat surface;
(e) uniformly depositing a lens material on the optically flat surface, entirely filling the depressions; and
(f) forming the lens material.

5,824,237
APPARATUS FOR MANUFACTURING PLASTIC ARTICLES
Hauke Stumpf, Alsfeld, and Karl Schulte, Buchholz, both of Germany, assignors to TUHH Technologie GmbH, Hamburg, Germany
Filed Nov. 22, 1995, Ser. No. 562,147
Claims priority, application Germany, Nov. 24, 1994, 44 41 815.9
Int. Cl.[6] B29C *33/02;45/73*
U.S. Cl. 249—80 **15 Claims**



1. An apparatus for manufacturing a plastic article, comprising:
a mold having at least one hollow chamber, which has an inner contour that corresponds to the outer contour of said article,

said mold also having an inner region adjoining said at least one hollow chamber and an outer region remote from said at least one hollow chamber, said inner region being made at least in part of a material that has a different thermal diffusivity than does the material of said outer region;
at least one insulating layer, which is disposed between said inner region and said outer region and has a temperature-dependent heat transfer coefficient; and
means for adjusting said heat transfer coefficient of said insulating layer.

5,824,238
ALCOHOL RESISTANT FILM-FORMING FLUOROPROTEIN FOAM CONCENTRATES
Gilbert Garcia, Eaubonne, and Pierre Durual, Vernaison, both of France, assignors to Elf Atochem S.A., France
Filed Jul. 26, 1996, Ser. No. 686,598
Claims priority, application France, Jul. 27, 1995, 95 09139
Int. Cl.[6] A62D *1/00;1/04*
U.S. Cl. 252—8.05 **18 Claims**

1. Film-forming fluoroprotein firefighting foam concentrate comprising a protein hydrolysate used in combination with:
(a) at least one fluorinated cotelomer corresponding to the following formula:

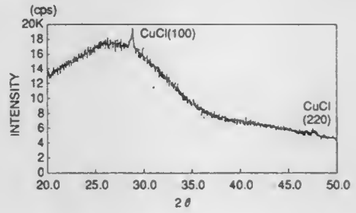
$$Rf—(CH_2)_k—X_m—(CH_2)_n—S_p—(M^1)_{q^1}(M^2)_{q^2}—Y \quad (1)$$

in which:
Rf denotes a perfluoroalkyl radical with a linear or branched chain containing at least 6 carbon atoms,
k in an integer ranging from 0 to 6 but other than 0 if m is equal to 1
X denotes an oxygen atom or a CO_2 or OCO group,
m is equal to 0 or 1,
n is an integer ranging from 0 to 6, but other than 0 if m and/or p is equal to 1,
p is equal to 0 or 1,
M^1 denotes an anionic hydrophilic monomer unit and M^2 a nonionic hydrophilic monomer unit,
q^1 and q^2 are numbers whose sum is between 5 and 100, the ratio q^2/q^1 being between 1 and 20,
Y denotes a hydrogen atom when p is equal to 1 and an iodine, bromine or chlorine atom when p is equal to 0; and
(b) at least one fluorinated surface-active agent an aqueous solution of which at a concentration of 1 g/l has a surface tension at 20° C. which is lower than 25 mN/m;
wherein said foam concentrate does not contain any thixotropic hydrophilic polymer of high molecular weight of the polysaccharide type.

5,824,239
METHOD TO REMOVE BIGUANIDE FROM AN AQUEOUS SOURCE
Percy A. Jaquess, Tigrett, Tenn., assignor to Buckman Laboratories International, Inc., Memphis, Tenn.
Filed Aug. 14, 1997, Ser. No. 911,167
Int. Cl.[6] C02F *5/02;5/08*
U.S. Cl. 252—175 **18 Claims**

1. A method to remove at least a portion of biguanide present in an aqueous source comprising the step of bringing a composition comprising at least one polymeric metaphosphate into contact with the aqueous source in a sufficient amount to form particles comprising biguanide.

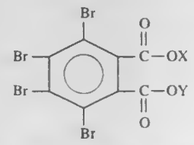
5,824,240
NONLINEAR OPTICAL ELEMENT AND PROCESS FOR THE PREPARATION OF SAME
Katsuhiro Sato; Yoshiyuki Ono, and Shigetoshi Nakamura, all of Minami Ashigara, Japan, assignors to Fuji Xerox Co. Ltd., Tokyo, Japan
Filed Feb. 14, 1994, Ser. No. 195,011
Claims priority, application Japan, Feb. 12, 1993, 5-046158; Mar. 18, 1993, 5-082503; Jun. 4, 1993, 5-158142; Jan. 12, 1994, 6-013110
Int. Cl.[6] F21V *9/00;9/04*
U.S. Cl. 252—582 **6 Claims**



1. A process for the preparation of a nonlinear optical element that gives a nonlinear response to incident light, comprising:
mixing a solution of a matrix-forming substance containing a functional group with a metal, a semiconductor or precursor thereof to form a uniform solution,
accelerating dissolution of said metal, semiconductor or precursor by interaction with said functional group;
reducing or eliminating said interaction between said functional group and said metal, semiconductor, or precursor to form a matrix while precipitating finely divided grains of said metal or semiconductor in said matrix.

5,824,241
BROMINATED TETRABROMOPHTHALATE ESTER FLAME RETARDANTS FLAME RETARDANT POLYMER COMPOSTIONS
Stephen G. Horvat, Solon, Ohio, assignor to Albemarle Corporation, Richmond, Va.
Filed May 19, 1997, Ser. No. 858,757
Int. Cl.[6] C09K *21/00;* **C07C** *69/76*
U.S. Cl. 252—609 **10 Claims**

1. A brominated tetrabromophthalate diester of the formula:



(1)

where X and Y are the same or different and have the formula:

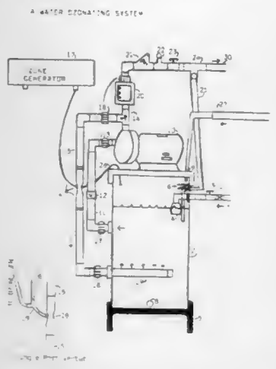
RCR'BrCR'R'Br

where R is a linear or branched chain alkylene radical and each R' is independently either hydrogen or a linear or branched chain alkyl radical.

5,824,242
CHEMILUMINESCENT SOLUTION
Jacques Ladyjensky, assignor to Prolufab S.A.R.L., Argenteuil, France, and Chemical Light Technologies Inc., Johnston, R.I.
PCT No. PCT/BE96/00034, § 371 Date Sep. 30, 1997, § 102(e) Date Sep. 30, 1997, PCT Pub. No. WO96/30461, PCT Pub. Date Oct. 3, 1996
PCT Filed Mar. 26, 1996, Ser. No. 945,402
Claims priority, application Belgium, Mar. 31, 1995, 9500289
Int. Cl.[6] C09K *3/00*
U.S. Cl. 252—700 **10 Claims**

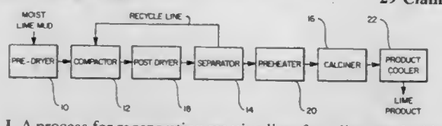
1. A solution for producing, after mixing with another solution known per se, a chemiluminescent reaction, said solution containing a solvent, an oxalate, rubrene and a soluble polymer characterised in that the solution contains also 2 to 40% by weight of a suspension of a powder polymer which is weakly or not at all soluble and in which a red fluorescer has been incorporated.

5,824,243
WATER OZONATING SYSTEM
Edward M. Contreras, 14204 Banbury Way, Tampa, Fla. 33624
Filed Feb. 12, 1997, Ser. No. 798,695
Int. Cl.[6] B01F *3/04*
U.S. Cl. 261—36.1 **1 Claim**



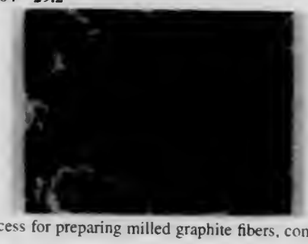
1. A water ozonating system for maintaining ozone in the water in its active state comprising a storage tank having a removable lid, a water inlet to said tank comprising a ball valve for controlling water flow, a float valve for regulating a water level in said tank, and a solenoid valve for shutting off incoming water, said tank having an overflow safety switch mounted above said float valve for activating said solenoid valve to prevent water from spilling over into the surrounding environment, said tank further having a self-priming pump/motor with a suction side connected to said tank through a first water line containing a check valve for preventing loss of prime to said pump/motor and two unions for quick disconnect and servicing to said pump/motor, said pump/motor having a discharge line with a tee for simultaneously allowing water to flow when needed upon demand and recirculating water back to said tank through a second water line connecting said tee and said storage tank, said second water line comprising a venturi/check valve and tubing for drawing ozone, said ozonating system further comprising an ozone generator for supplying ozone to said venturi/check valve and tubing, a tube connected between said venturi/check valve and said tank for collecting excess ozone in said tank and supplying said excess ozone to said venturi/check valve, said second water line also comprising unions for quick disconnect and servicing to said system and a diffuser having pin holes attached to the end of said second water line and positioned inside said tank for allowing even distribution of ozonated water, said ozonating system also comprising mounted above and connected to said tee a water flow sensor for activating said pump/motor upon demand, a pressure regulator for setting the demand line pressure, a pressure gauge for indicating said line pressure, another ball valve for shutting off service to said system, a pressure relief valve for overriding any potential excess pressure, and a discharge hose for feeding back water to said tank.

5,824,244
LIME MUD REGENERATION PROCESS
John T. Kelly, Los Gatos, and Mehdi Namazian, Palo Alto, both of Calif., assignors to Altex Technologies Corp., Santa Clara, Calif.
Continuation of Ser. No. 325,888, Oct. 19, 1994, abandoned. This application Jan. 31, 1997, Ser. No. 797,688
Int. Cl.[6] B27B *17/00*; **B29B** *17/00*
U.S. Cl. 264—37.29 **29 Claims**



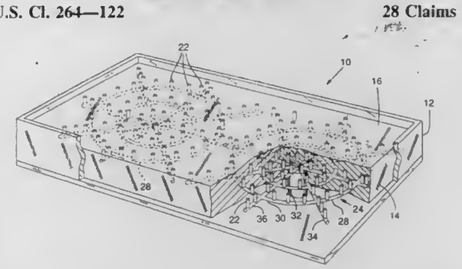
1. A process for regenerating reactive lime from lime mud which is comprised of a) precipitated calcium carbonate particles, b) water and c) contaminates comprised of sodium compounds, the process comprising the steps of
compacting an input supply of the lime mud in a compaction zone under a mechanical compaction pressure which is sufficient to form the lime mud into discrete agglomerates which have outer surface portions and interior portions,
binding the calcium carbonate particles together sufficient to stiffen at least the outer surface portions of the agglomerates,
causing a plurality of the stiffened agglomerates to come adjacently together in a three-dimensional bed of agglomerates in a reaction zone with interstitial spaces being formed between adjacent agglomerates,
enabling the bed of agglomerates to move in a downward path responsive to gravity, and
directing a gas through said interstitial spaces in heat exchange relationship with the agglomerates with the gas being at a reaction temperature which is sufficient to calcine the agglomerates and decompose the calcium carbonate into reactive lime whereby motion of the agglomerates during calcination breaks bonding at agglomerate contact areas obviating large scale agglomeration.

5,824,245
PROCESSES FOR PREPARING MILLED GRAPHITE FIBERS
Toshio Tamaki; Minoru Tamaki, and Yasushi Katsuta, all of Kamisu-machi, Japan, assignors to Petoca, Ltd., Tokyo, Japan
Filed Sep. 28, 1995, Ser. No. 535,747
Claims priority, application Japan, Sep. 29, 1994, 6-259013
Int. Cl.[6] D01F *9/155*
U.S. Cl. 264—29.2 **1 Claim**



1. A process for preparing milled graphite fibers, comprising the steps of:
milling carbon fibers obtained by carbonizing mesophase pitch fibers at 600° to 1,200° C. by treating said fibers with a milling apparatus in which said milling is performed by a nitride-treated milling part treated to improve abrasion resistance thereof by collision with the fibers; and
graphatizing the milled carbon fibers at 2,500° C. or higher, said process further comprising controlling said milling and temperature of carbonization such that the metallic components contained in the milled carbon fibers before said graphatizing step present in addition to metallic components originally contained in the fibers themselves are limited to not more than 50/1,000,000, as measured by weight.

5,824,246
METHOD OF FORMING A THERMOACTIVE BINDER COMPOSITE
William R. Reetz, Boise, Id., assignor to Engineered Composites, Boise, Id.
Continuation-in-part of Ser. No. 468,512, Jun. 5, 1995, which is a continuation of Ser. No. 131,204, Oct. 1, 1993, which is a continuation-in-part of Ser. No. 959,228, Oct. 9, 1992, Pat. No. 5,356,278, which is a continuation-in-part of Ser. No. 677,416, Mar. 29, 1991, Pat. No. 5,155,146. This application Jun. 7, 1995, Ser. No. 487,285
Int. Cl.[6] B29C *43/00*
U.S. Cl. 264—122 **28 Claims**



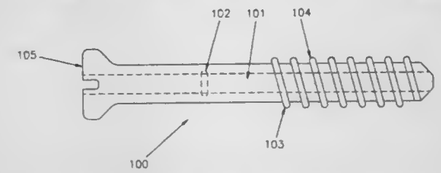
1. A method of forming a thermoactive binder composite product comprising the steps of:
choosing a base material including a thermoactive binder component;
forming the base material into a mat having at least one surface expanse;
providing jet structure for delivering a pressurized hot non-condensable gas toward and into the base material through the surface expanse, the jet structure including a plurality of jets adapted to be disposed in a predetermined distribution over the surface expanse with the plurality of jets having an average opening size and being spaced apart in the predetermined distribution by an average distance substantially greater than the average opening size;
injecting, via the provided jet structure, the hot non-condensable gas into the base material, where the pressure of the gas is substantially dissipated in passage through the jets prior to entry into the base material at least during a portion of the step of injecting; and
pressing the base material to compress it to a first density.

9. A method of forming a thermoactive binder composite product comprising the steps of:
supplying a base material including a thermoactive binder component;
providing a platen press with a pair of opposed platens to compress a press change formed from the base material;
choosing platens having an insulating inner face for contacting the press charge to thereby substantially limit conductive heat transfer between the platens and the press charge;
injecting a hot dry gas into the press charge; and
compressing the press charge.

16. A method of forming a thermoplastic binder composite product comprising the steps of:
selecting a gas permeable base material including a thermoplastic binder component, where the gas permeability of the base material varies upon activation of the thermoplastic binder;
injecting a substantially dry hot gas into the base material from a plurality of discrete locations, where the temperature of the gas is greater than the activation temperature of the thermoplastic binder component of the base material;
regulating the gas flow among the plurality of discrete locations so that variations in the permeability of the base material in the proximity of one or more of the plurality of discrete locations does not substantially affect gas flow into the base material from one of the one or more discrete locations relative to another of the plurality of discrete locations.

23. A method of forming a thermoactive binder and cellulosic composite product comprising the steps of:
selecting a gas permeable base material including a thermoactive binder component and a cellulosic component;
injecting a substantially dry hot gas into the base material where the temperature of the gas is greater than 400° F., where the gas consists essentially of air; and
limiting the exposure of the base material to gas with a temperature greater than 400° F. in step of injecting to avoid combustion.

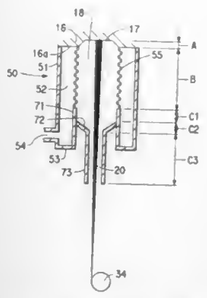
5,824,247
PROCESS FOR FORMING HIGH STRENGTH INTERNAL BONE FIXATION DEVICES
Deger C. Tunc, East Brunswick, N.J., assignor to Howmedica, Inc.
Division of Ser. No. 661,285, Jun. 10, 1996. This application May 12, 1997, Ser. No. 854,430
Int. Cl.[6] B29C *39/12*
U.S. Cl. 264—135 **17 Claims**



1. A process for fabricating a high strength bone fixation device, comprising the steps of:
(a) forming a self-supporting highly molecularly oriented thermoplastic polymer inner core member;
(b) forming an interfacial layer for improving interracial strength between said inner core member and a thermoplastic polymer outer layer for said device, said interfacial layer including at least one of (i) means for mechanically entangling said core member and said outer layer, and (ii) a polymeric bonding layer; and
(c) forming said thermoplastic polymer outer layer for said device including A step of bonding said outer layer to said inner core member over said interfacial layer.

5,824,248
SPINNING POLYMERIC FILAMENTS
Gregory Eugene Sweet, Greenville, N.C., and George Vassilatos, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Oct. 16, 1996, Ser. No. 731,541
Int. Cl.[6] D01D *5/092*
U.S. Cl. 264—211.14 **3 Claims**

1. In a melt-spinning process of spinning continuous polymeric filaments in a path from a heated polymeric melt in a spinneret to a roll that is driven at a surface speed of at least 500 meters/minute, wherein cooling gas is introduced to freshly-extruded molten filaments in a zone below the spinneret, the improvement that comprises passing the filaments and cooling gas together out of said zone through a tube that is of restricted dimensions and that surrounds the filaments as they cool, and controlling dimensions



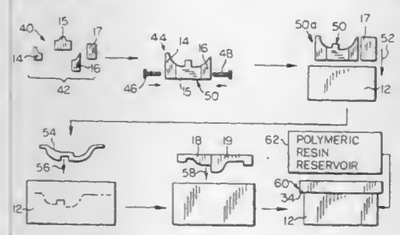
and location of the tube and amount of gas so that the gas is accelerated but leaves the tube at a speed that is less than the speed of the filaments.

5,824,249

MODULAR MOLDING METHOD AND ASSOCIATED MOLD

James Leitch, and Richard Olds, both of Madison, Conn., assignors to Dow-UT Composite Products, Inc., Wallingford, Conn.

Filed Feb. 28, 1996, Ser. No. 608,490
Int. Cl.[6] B29C *33/30*
U.S. Cl. 264—219 **22 Claims**



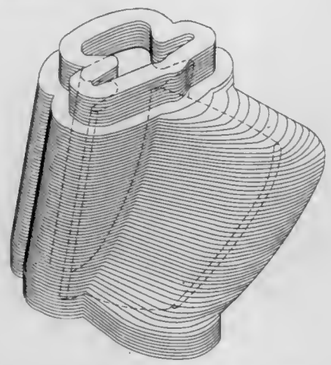
1. A fabrication method consisting essentially of:
providing a mold detail family comprising a plurality of mold details having respective molding surfaces defining respective contours;
selecting a first subset of said mold details from the detail family to form a first part;
locating the selected first subset of mold details adjacent to one another in a first predetermined spatial relationship so that the molding surfaces of the selected first subset of mold details are contiguous, to define a first molding cavity for producing the first part;
placing the selected first subset of mold details into a mold frame;
injecting a hardenable polymeric material into the first molding cavity to form the first part;
at least partially disassembling the selected first subset of mold details from one another;
extracting the first part from the first molding cavity;
selecting a second subset of mold details from the detail family to form a second part which differs in shape from the first part;
locating the selected second subset of mold details adjacent to one another in a second predetermined spatial relationship so that the molding surfaces of the selected mold details are contiguous to define a second molding cavity for producing the second part;
placing the selected second subset of mold details into the mold frame; and
injecting a hardenable polymeric material into the second molding cavity to form the second part.

5,824,250

GEL CAST MOLDING WITH FUGITIVE MOLDS

Philip J. Whalen, Sparta; Vikram R. Jamalabad, Somerville, both of N.J.; John P. Pollinger, Redondo Beach, Calif.; Mukesh Agarwala, Highland Park, and Stephen C. Danforth, Belle Mead, both of N.J., assignors to AlliedSignal Inc., Morris Township, N.J.

Filed Jun. 28, 1996, Ser. No. 672,858
Int. Cl.[6] C04B *33/28*
U.S. Cl. 264—219 **11 Claims**



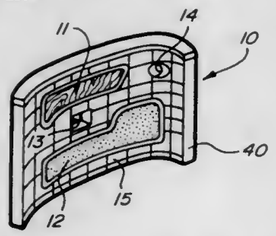
1. A process for manufacture of a net shape ceramic component, comprising the 5 steps of:
(a) generating a rapid prototype format computer model of a ceramic component from a CAD file, said model being designed to account for part shrinkage during sintering;
(b) preparing a fugitive mold for the ceramic component using rapid prototyping based on the model generated in step (a);
(c) gelcasting ceramic slurry into the mold of step (b) and heating the mold to cause gelation of the component;
(d) removing the component from the mold by dissolution of the mold in a solvent or decomposition of the mold by heating; and
(e) processing the formed component into a dense functional component by drying and sintering.

5,824,251

METHOD FOR FORMING PLASTIC MOLDED PANELS WITH INSERTS

Clark Morrison, West Bloomfield, and Vittorio Strapazzini, Warren, both of Mich., assignors to Duotec Products Associates, Troy, Mich.

Continuation of Ser. No. 662,505, Jun. 13, 1996, abandoned, which is a continuation of Ser. No. 335,313, Nov. 7, 1994, abandoned, which is a continuation of Ser. No. 905,799, Jun. 29, 1992, Pat. No. 5,411,688. This application Sep. 4, 1997, Ser. No. 923,102
Int. Cl.[6] B29C *45/14;45/16*
U.S. Cl. 264—259 **2 Claims**



1. A method for forming molded plastic panels, for use as trim panels, and interior door panels, comprising the steps of:
(a) Adding a plastic material into a first mold;

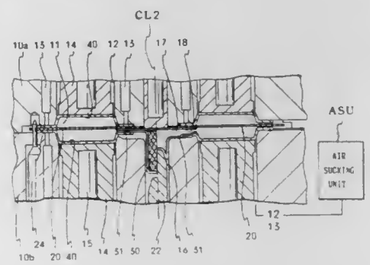
(b) Forming a thin, flexible, plastic sheet from said plastic material into a predetermined size and shape to provide a blank having an outer surface and an inner surface, said blank being readily shapable to conform to the surface of the first mold, adding separate parts, comprising brackets, bosses, window parts, motors, drain tubing, wires or switches on the blank in said mold;
(c) Positioning a second mating mold adjacent said first mold in a closed position forming a cavity between said second mold and said blank;
(d) Adding into said cavity while the molds are closed and bonding a relatively thick plastic substrate against the inner surface of the blank for bonding together the overlapping surfaces of the blank and substrate, said thick plastic substrate forming a rigid foundation backing for the panel and forming said parts integrally into said backing;
(e) thereafter, removing the molded panel from the mold to provide a composite plastic panel having an exposed exterior surface formed of the outer surfaces of the blank.

5,824,252

METHOD OF RESIN MOLDING AND RESIN MOLDING MACHINE FOR THE SAME

Fumio Miyajima, Togura, Japan, assignor to Apic Yamada Corporation, Nagano, Japan

Filed Feb. 15, 1996, Ser. No. 602,024
Claims priority, application Japan, Feb. 22, 1995, 7-033493
Int. Cl.[6] B29C *33/68;45/02*
U.S. Cl. 264—272.17 **20 Claims**



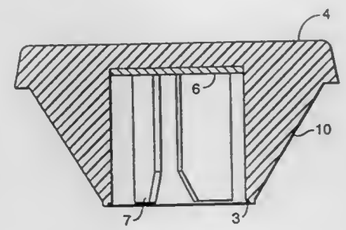
1. A method of molding upon an insert-member in a resin molding machine, the resin molding machine including an upper die and a lower die, a cavity in at least one of said upper die and said lower die, a pot in which resin is introduced, and a resin path which allows the resin to flow from said pot into said cavity and onto said insert-member set in said dies,
said method comprising the steps of:
setting a film member between a parting face of said die, in which said resin path is formed, and said insert-member so as to cover a part of said insert-member corresponding to said resin path, wherein an edge of said film member coincides with at least one of said edges of said cavity;
clamping said insert-member by said dies together with said film member; and
filling said resin into said cavity via said resin path.

5,824,253

METHOD FOR MOLDING A PROTECTIVE COVER FOR AN EXPOSED END OF A BAR

Vasken Kassardjian, Newport Beach, and Patrick Joseph Wilson, Dove Canyon, both of Calif., assignors to Don De Cristo Concrete Accessories, Inc., Irvine, Calif.

Division of Ser. No. 322,160, Oct. 13, 1994, Pat. No. 5,523,043, which is a division of Ser. No. 245,018, May 18, 1994, Pat. No. 5,381,636. This application Dec. 5, 1995, Ser. No. 567,166
Int. Cl.[6] B29C *45/14*
U.S. Cl. 264—275 **5 Claims**



1. A method of molding a concrete reinforcing bar protective cover, the concrete reinforcing bar protective cover for covering an exposed end of a bar so as to prevent injury to an individual coming into contact with the end of the bar, the method comprising the steps of:
positioning a metal seat in an injection mold;
sealing the mold containing the metal seat;
injecting a molten material into the mold; and
extracting, after the molten material has cooled, from the mold the concrete reinforcing bar protective cover which includes the metal seat,
wherein, in the injecting step, a cap section and a collar section are formed around the metal seat such that the metal seat is disposed between the cap section and the collar section of the concrete reinforcing bar protective cover.

5,824,254

PROCESS FOR MOULDING A THERMOPLASTIC MATERIAL BY INJECTION ONTO A ROTATING CORE

Claude Debennau, Waterloo; Vito Leo, Glimes, and Charles Cuvelliez, Rhode-Saint-Genese, all of Belgium, assignors to Solvay (Société Anonyme), Brussels, Belgium

Filed Jul. 31, 1996, Ser. No. 688,928
Claims priority, application Belgium, Aug. 1, 1995, 09500665
Int. Cl.[6] B29C *45/00*
U.S. Cl. 264—312 **9 Claims**

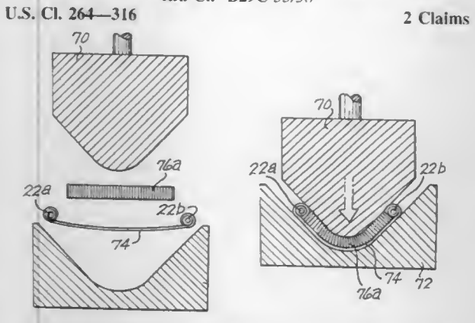
1. A process for injection moulding a thermoplastic material in a mould including a rotating core, comprising steps for:
injecting molten thermoplastic material in a filling stage into said mould to fully occupy said mould, and
cooling said molten thermoplastic material in a dwell stage under pressure in said mould including a rotating core having a period of rotation of at least ten seconds in which parts of the mould are in relative rotation during at least a portion of the cooling step, the mean shear rate to which the thermoplastic material is subjected being at least 25 s^{-1} and ending this rotation before the end of the dwell stage.

5,824,255

HONEYCOMB CORE FORMING PROCESS

William T. Ross, Cheney, and Bradley J. Blonigen, Wichita, both of Kans., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 330,490, Oct. 28, 1994, Pat. No. 5,529,480.
This application May 21, 1996, Ser. No. 651,473
Int. Cl.[6] B29C *33/58*
U.S. Cl. 264—316 2 Claims



1. A process of forming and shaping a preheated workpiece, said workpiece being made of honeycomb core material and having a top surface, a bottom surface, and side surfaces, by using a press including complementary male and female dies, said process comprising the steps of:

(a) providing a carrier sheet means for supporting said workpiece, said carrier sheet means being suspended over said female die by two shaft means supported by support tower means;

(b) loading said preheated workpiece onto said carrier sheet means suspended over said female die;

(c) applying rotational torque to each of said shaft means whereby said carrier sheet means is wrapped around each of said shaft means thereby applying tension to said carrier sheet means and pulling said shaft means toward each other and into pressing contact with the side surfaces of said workpiece while said carrier sheet means supports the bottom surface of said workpiece;

(d) closing said male die and said female die against said workpiece while maintaining said shaft means in pressing contact with the side surfaces of said workpiece and while said carrier sheet means supports the bottom surface of said workpiece, whereby said workpiece is formed and shaped by said complementary male and female dies into a formed workpiece of desired shape; and

(e) opening said male and female dies and removing said formed workpiece.

5,824,256

METHOD OF MOLDING A THERMOPLASTIC CONTAINER

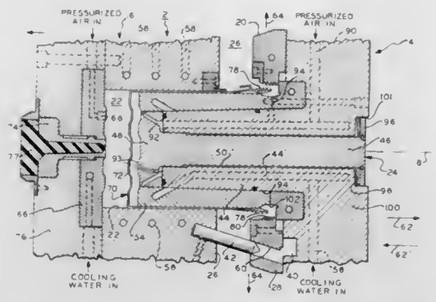
Jose F. Ballester, Guaynabo, Puerto Rico, assignor to Fortiflex, Inc., Bayamon, Puerto Rico

Filed Dec. 5, 1996, Ser. No. 760,488
Int. Cl.[6] B29C *45/44*
U.S. Cl. 264—318 20 Claims

1. A method of molding a thermoplastic cylindrical container comprising:

providing female and male mold members defining a mold cavity;

injecting thermoplastic material into said mold cavity for injection molding a one piece polyethylene thermoplastic material cylindrical container having a bottom wall and an annular side wall extending from the bottom wall and terminating at an annular rim, said male member having an annular substantially one piece outer surface for forming the interior surface of said container side wall including at least a portion of the radially inward portion set forth below;



said injection molding including molding at least one rib extending radially outwardly from said side wall adjacent to said rim;

molding during said injection molding a radially inwardly extending portion in said side wall aligned with said at least one rib, said radially inwardly extending portion extending a radially inward distance from said side wall an amount sufficient that causes said side wall to stretch at least about 6% in response to ejection of said container from said male member; and

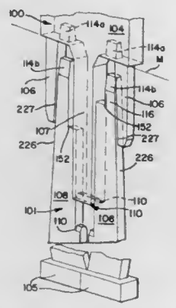
ejecting the molded container from said mold members, said male member stretching the container side wall said at least about 6% during said ejecting with no permanent deformation of said material.

5,824,257

MOLDING CORE CONSTRUCTION AND PROCESS FOR MOLDING OF IIIGH-DENSITY ELECTRICAL CONNECTOR HOUSINGS

Vladimir A. Dashevsky, Batavia; Robert A. Owsley, Lisle; Gregory R. Pratt, Naperville, and Kent E. Regnier, Lombard, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 14, 1997, Ser. No. 800,695
Int. Cl.[6] B29C *45/36;45/44*
U.S. Cl. 264—328.1 18 Claims



1. A method of molding electrical edge card connector housings, comprising the steps of:

providing a hollow mold;

providing a core detail tooling assembly insertable into said mold that cooperates with said mold to define a mold cavity having at least one opening that corresponds to the shape of a connector housing molded therein, the core detail tooling assembly including a plurality of pairs of interlocking first and second core detail tooling elements, each of said first and second core detail tooling elements of each said pair including vertical engagement surfaces disposed thereon such that the first core detail tooling element vertical engagement surfaces oppose the second core detail tooling element vertical engagement surfaces when said pairs of said first and second core detail tooling elements are interlocked together;

forming a mold cavity within said mold by: (a) interlocking respective said pairs of first and second core detail tooling elements together at upper and lower locations of said core detail tooling assembly such that said interlocking of said respective pairs of first and second core detail tooling elements at one of said upper and lower interlocking locations occurs within said mold, but exterior of said mold cavity opening, and (b) abuttingly engaging said first and second core detail tooling element opposing vertical engagement surfaces together within said mold cavity opening at locations adjacent at least one of said upper and lower locations of said core detail tooling assembly;

injecting a molten molding material into said mold cavity opening;

permitting said molten molding material to solidify in said mold cavity opening to form a molded connector housing; and,

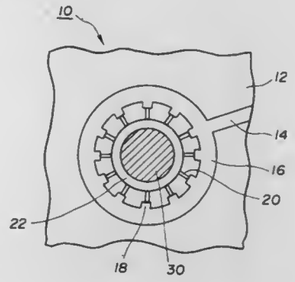
ejecting said molded connector housing from said mold.

5,824,258

INJECTION MOLD FOR GOLF BALLS AND USE THEREOF

Takehiko Yamaguchi, Chichibu, Japan, assignor to Bridgestone Sports Co., Ltd., Tokyo, Japan

Filed May 23, 1997, Ser. No. 862,243
Claims priority, application Japan, May 28, 1996, 8-156093
Int. Cl.[6] B29C *45/00*
U.S. Cl. 264—328.1 14 Claims



1. An injection mold for a golf ball having dimples comprising; a pair of separable mold segments defining a spherical cavity when mated along a parting line, a plurality of hollow tubular gates disposed in the surfaces of the mold segments to be mated along the parting line and in fluid communication with the cavity, wherein a stock material is injected into the cavity through the gates to mold a golf ball,

at least ten gates provided substantially equidistantly spaced in a circumferential direction such that each of said gates is positioned at an area corresponding to a land of the golf ball and has a non-circular cross-sectional shape, which is divided into two opposed portions by said parting line of the mold segments so that said two opposed portions of each of said gates has substantially an equal cross-sectional area.

4. The injection mold of claim 1 wherein said gates have a cross-sectional area of 0.2 to 1.8 mm^2.

5,824,259

PROCESS AND INSTALLATION FOR THE MANUFACTURE OF PARTS BY PHOTOTRANSFORMATION OF MATERIAL

Al Allanic, Nancy; Claude Medard, Villers-les-Nancy, and P. Schaeffer, Atton, all of France, assignors to Laser International S.A., Villers-les-Nancy, France

PCT No. PCT/FR94/01414, § 371 Date Oct. 8, 1996, § 102(e) Date Oct. 8, 1996, PCT Pub. No. WO95/15842, PCT Pub. Date Jun. 15, 1995
PCT Filed Dec. 5, 1994, Ser. No. 656,234
Claims priority, application France, Dec. 9, 1993, 93 14818
Int. Cl.[6] B29C *35/08;41/02*
U.S. Cl. 264—401 33 Claims

1. Process for the manufacture of a three-dimensional part, in which the starting material is a material in a liquid, quasi-liquid or powder state capable of solidifying under the effect of light that is in a tank having a support for supporting the object to be manufactured, means for altering and adjusting the relative height of the material to be solidified and the support, means for selectively illuminating predetermined regions of the surface of the material contained in the tank, means for successively depositing a layer of unsolidified material on the surface of each previously solidified layer, the method comprising the steps of:

repeating the steps of depositing a layer of unsolidified material and solidifying the deposited material so that the part is produced in successive layers; and

providing at least one casing structure (**10**; **21**, **22**; **31**, **32**; **41**; **51**; **61**, **62**; **71**, **72**) adjacent an edge of the part during said depositing and solidifying steps, this casing structure forming a covering, the portion of which closest to the part substantially follows the contour of the part while being separated therefrom by a distance (e; e1, e2) which is sufficiently small for a reduced-perturbation region to be created in the vicinity of the part as each successive layer of unsolidified material is deposited.

5,824,260

METHOD OF PRODUCING A STRONG, DIMENSIONALLY STABLE OBJECT

Marc Raymond Sauerhoefer, Chicopee, Mass., assignor to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 490,278, Jun. 14, 1995, abandoned.
This application Apr. 17, 1997, Ser. No. 839,261
Int. Cl.[6] B29C *33/56;35/08;41/02*
U.S. Cl. 264—401 7 Claims

1. A method of producing a strong, dimensionally stable object comprising the steps of providing a three dimensional, rapid free form fabricated object filled with a strengthening material, said object having a hollow external cavity and flowing a wear resistant material into the external cavity, thereby producing a strong, dimensionally stable object with secondary reinforcement.

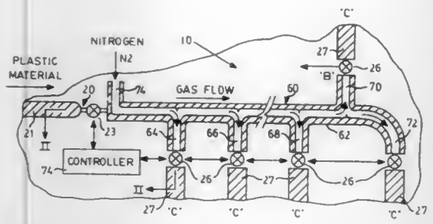
5,824,261

MULTI-VENTING MOLDING APPARATUS

Karl Berdan, Midland, Canada, assignor to JPE, Inc., Ann Arbor, Mich.

Filed Jul. 10, 1996, Ser. No. 677,947
Int. Cl.[6] B29C *45/00*
U.S. Cl. 264—572 5 Claims

1. A method of injection molding an article in a mold cavity having an inlet and plurality of outlets comprising the steps of injecting moldable material into said cavity through the inlet, closing said inlet to inhibit movement of material therethrough, injecting gas under pressure into said cavity to expel a portion of said moldable material therefrom through said outlets, closing said outlets during injection of gas into said cavity to pressurize said cavity and opening said outlets, one at a different time than another to permit expulsion of said material through each of said outlets at



varying times so that said moldable material is expelled in a controlled progressive manner, and ejecting said article from said cavity.

5,824,262

METHOD FOR PREPARATION OF A CATALYST FOR PURIFYING EXHAUST GAS

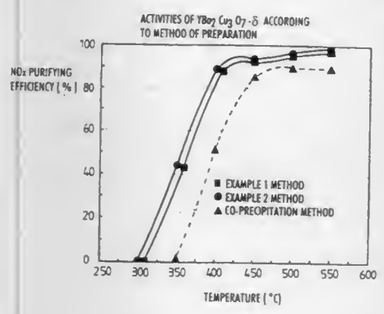
Sang-Ho Kim, Seoul; Kyu-Hun Choi, Puch'On, and Sok-Jin Chung, Yong'In-Kun, all of Rep. of Korea, assignors to Kia Motors Corporation, Seoul, Rep. of Korea

Filed Feb. 23, 1996, Ser. No. 606,247

Claims priority, application Rep. of Korea, Nov. 3, 1995, 1995/39603

Int. Cl.[6] C04B *33/32*

U.S. Cl. 264—661 **6 Claims**



1. A method for preparing $YBa_2O_3Cu_3O_7$-d catalyst for purifying an exhausi gas, comprising steps of:

(a) mixing Y_2O_3, Ba_2CO_3 and CuO at a mole ratio of 1:4:6, respectively, to prepare a mixture,

(b) performing a first grinding of the resultant mixture to obtain fine powder;

(c) sintering the fine powder obtained in the first grinding step at a temperature of 800° C. to 900° C.

(d) annealing the fine powder from the sintering temperature to room temperature;

(e) pelletizing the powder from the annealing step to form pellets;

(f) performing a second grinding of the pellets from the pelletizing step to obtain fine powder;

(g) re-sintering the resultant fine powder obtained in the second grinding step at a re-sintering temperature of 800° C. to 920° C.; and

(h) re-annealing the fine powder from the re-sintering temperature to room temperature.

5,824,263

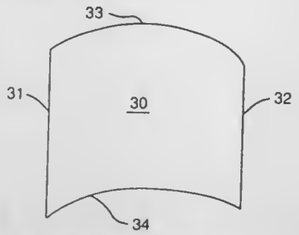
LADLE BRICK LEVELING SET

Edward L. Erny, Bethel Park, Pa., and William J. Winters, Hundson, Ohio, assignors to Harbison-Walker Refractories Company, Dallas, Tex.

Filed Jan. 22, 1996, Ser. No. 589,709

Int. Cl.[6] C21B *7/04*

U.S. Cl. 266—283 **17 Claims**



6. A vessel for containing high temperature molten metal, said vessel having a supporting shell with side walls and a sloping bottom to form an interior for containing said molten metal, said interior of said vessel including a lining of refractory bricks, an interconnected refractory brick leveling assembly comprising a first plurality of high temperature refractory bricks assembled into a first partial ring and a second plurality of high temperature refractory bricks assembled into a second partial ring, all of said bricks having dimensions of height, width and thickness, each brick of each partial ring having a sloping height and a median dimension of height different from each adjacent brick in said each partial ring.

5,824,264

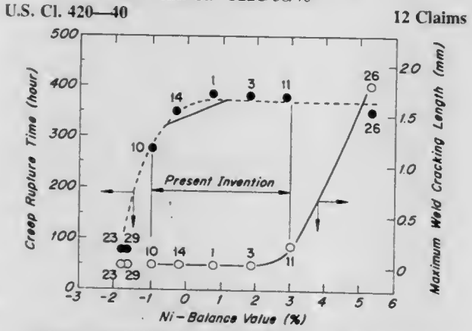
HIGH-TEMPERATURE STAINLESS STEEL AND METHOD FOR ITS PRODUCTION

Hideki Uno; Yoshitaka Nishiyama; Yoshiatsu Sawaragi; Nobuo Otsuka; Kazuhiro Ogawa, and Toshiro Anraku, all of Nishinomiya, Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Jul. 25, 1996, Ser. No. 686,397

Int. Cl.[6] C22C *38/40*

U.S. Cl. 420—40 **12 Claims**



1. A high-temperature austenitic stainless steel having improved weldability, which consists essentially, by weight, of:

C: 0.05%–0.15%, Si: less than 1.0%, Mn: 2.0% or less,

P: 0.04% or less, S: 0.01% or less, Cr: 20%–30%,

Ni: 10%–15%, N: 0.10%–0.30%,

B: 0.0010%–0.01%,

one or two of La and Ce: 0.01%–0.10% in total,

Al: 0.01%–0.20%, and

a balance of Fe and incidental impurities, wherein the contents of N and Al satisfy the following inequality:

$$\%\ N+2\times\%\ Al \leq 0.500\%$$

and the value for Ni balance (Ni bal.) of the steel calculated by the following formula is in the range of from −1.0% to +3.0%:

Ni bal. (%)=% Ni+0.5×% Mn+30×(% C+% N)−1.1×(% Cr+1.5×% Si)+8.2.

5,824,265

STAINLESS STEEL ALLOY FOR PULP REFINER PLATE

John Dodd, Arvada, Colo., assignor to J & L Fiber Services, Inc., Waukesha, Wis.

Filed Apr. 24, 1996, Ser. No. 637,114

Int. Cl.[6] C22C *38/42;38/48;* **C21D** *9/00*

U.S. Cl. 420—60 **10 Claims**



1. A portion of an apparatus for processing papermaking fibers comprising a refiner disk having a composition consisting essentially of from about 0.2 percent to about 0.4 percent carbon, from about 0.5 to about 1.5 percent manganese, about 0.5 percent to about 1.5 percent silicon, a maximum of 0.05 percent sulfur, a maximum of 0.05 percent phosphorus, from about 14 percent to about 18 percent chromium, from about 2 percent to about 5 percent nickel, from about 2 percent to about 5 percent copper, a maximum of about 1 percent molybdenum, and from about 1.5 percent to about 2.5 percent niobium, the balance essentially iron with incidental impurities.

5,824,266

APPARATUS FOR TREATING A FLUID PRODUCT BY INJECTION OF STEAM AND THE FLUID PRODUCT

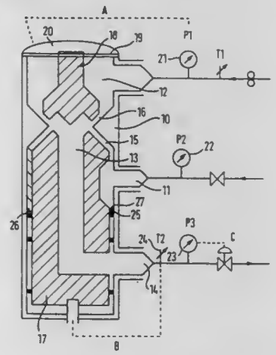
Ernest Badertscher, Orbe, and Paul-Henri Poget, Bretonnieres, both of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Filed Mar. 21, 1997, Ser. No. 822,442

Claims priority, application European Pat. Off., Dec. 4, 1996, 96200988

Int. Cl.[6] A61L *2/08*

U.S. Cl. 422—26 **18 Claims**



12. A process for steam treating a fluid product which comprises injecting steam into a mixing chamber in an apparatus for steam treating a fluid product through a steam injection opening in said mixing chamber, in which steam injection opening a first valve member is disposed;

injecting a fluid product into said mixing chamber through a product injection opening in said mixing chamber, in which product injection opening a second valve member is disposed, the position of said first and said second valve members determining the size of a substantially annular discharge orifice around each valve member, said discharge orifices facing one another;

treating said fluid product with said steam by contact therebetween within said mixing chamber;

permitting movement of the second valve member in response to the pressure in the product inlet by means of pressure sensitive displacement means, and

discharging the treated product through an outlet in the mixing chamber.

5,824,267

METALLIC BACTERICIDAL AGENT

Shinroku Kawasumi; Michio Yamada, and Masatoshi Honma, all of Kanagawa, Japan, assignors to Kawasumi Laboritories, Inc., Kanagawa, Japan

Filed Aug. 1, 1995, Ser. No. 509,102

Claims priority, application Japan, Aug. 1, 1994, 6/200085

Int. Cl.[6] A61L *2/16;* **A01N** *25/34;59/16*

U.S. Cl. 422—28 **8 Claims**

1. A method for sterilizing liquid or solid materials, which comprises bringing the liquid or solid material into contact with a number of bactericidal particles consisting essentially of ceramic or base metal particles of a mean diameter of 0.01 to 0.5 μm and silver metal particles of a mean diameter of 0.0001 to 0.1 μm dispersively fixed on the ceramic or base metal particle, the mean diameter of the silver metal particles being 1 to 20% of the mean diameter of the ceramic or base metal particles.

5,824,268

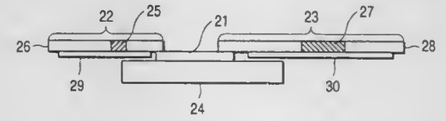
RAPID SELF-CONTAINED ASSAY FORMAT

David Bernstein, Eldersburg; Mary Ann Childs, Baltimore, both of Md.; William Trainor, Hillsboro Beach, Fla.; Majorie Wier, and Erick Gray, both of Columbia, Md., assignors to Universal Health Watch, Inc., Columbia, Md.

Continuation of Ser. No. 444,721, May 19, 1995, abandoned. This application Oct. 14, 1997, Ser. No. 950,331

Int. Cl.[6] G01N *33/558*

U.S. Cl. 422—56 **16 Claims**



1. A test strip for use in determining analyte in a test sample, comprising:

(a) a reservoir consisting essentially of an absorbent pad;

(b) a reaction zone lying directly above the reservoir comprising an upper surface and a lower surface, a first portion of the upper surface containing analyte binding substance and a second portion lacking the substance, and wherein the lower surface is in physical contact with the reservoir pad;

(c) an elongated sample zone lying above and in physical contact with a portion of the upper surface of the reaction zone that does not contain analyte binding substance; and

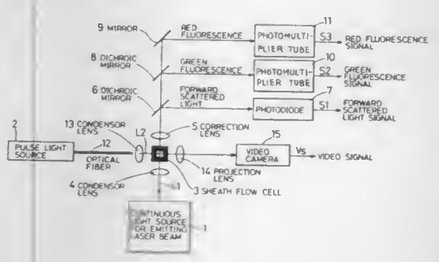
(d) an elongated detection reagent zone lying above and in physical contact with the portion of the upper surface of the reaction zone that does not contain analyte binding substance,

wherein the sample and detection reagent zones lie opposite each other over the reaction zone with their long axes perpendicular to the physical contact between the lower surface of the reaction zone and the reservoir.

5,824,269
FLOW CYTOMETER

Tokihiro Kosaka; Hiroyuki Nakamoto, and Fumio Kubota, all of Hyogo, Japan, assignors to Toa Medical Electronics Co., Ltd., Hyogo, Japan

Filed Dec. 22, 1995, Ser. No. 577,241
Claims priority, application Japan, Dec. 26, 1994, 6-323134; Dec. 26, 1994, 6-323135
Int. Cl.[6] G01N *33/00*
U.S. Cl. 422—73 **11 Claims**



1. The flow cytometer in combination comprising:

a sheath flow cell for forming a sample stream containing particles;

detection means for detecting a particle at a first area of the sample stream to generate a signal representative of the particle;

imaging means operatively connected to the detection means for imaging the particle at a second area of the sample stream, the second area being a different area than the first area;

display means for displaying a read image of the particle;

calculation means for calculating a plurality of characteristic parameters indicating characteristics of the particle based on the generated signal;

distribution preparation means for preparing a distribution of the characteristic parameters and displaying the distribution on the display means;

region designation means for designating at least one predetermined region in the distribution;

region storage means for storing the at least one designated predetermined region;

decision means for deciding whether the characteristic parameters of the particle detected at the first area by the detection means are located in the at least one designated predetermined region stored in the region storage means;

imaging control means for allowing the imaging means to image the particle when the characteristic parameters are located in the at least one designated predetermined region;

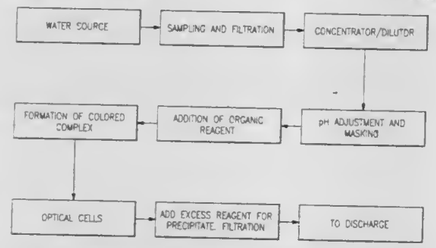
image storage means for storing the image of the particle obtained by the imaging means; and

displaying control means for selectively reading the image of the particle to form a read image and for allowing the display means to display the read image.

5,824,270
ON-LINE WATER MONITOR

Tenneti V. Rao, 128 W. Pleasant St., Apt. #G1, Manlius, N.Y. 13104

Continuation of Ser. No. 515,301, Aug. 15, 1995, abandoned. This application Jul. 16, 1997, Ser. No. 895,078
Int. Cl.[6] G11N *21/27*
U.S. Cl. 422—82.09 **13 Claims**



1. An on-line instrument for measuring an impurity in a water source, comprising:

(a) intake means for receiving, on-line, a water sample from the water source;

(b) means for mixing a reagent with the water sample such that a selective color complex is formed from a reaction with the reagent and the impurity in the water sample;

(c) processing means, in direct fluid communication with said intake means and said mixing means, for processing the water sample prior to mixing in said mixing, means, said processing means consisting essentially of:

(i) filter means for removing particulate matter from said water sample,

(ii) means for introducing a chemical masking agent to the water sample, such that other impurities in the water sample are masked and substantially prevented from interfering with the selective color complex produced by said mixing means,

(iii) means for adjusting the pH of the water sample,

(iv) means for adjusting the concentration of the impurity in the water sample, and

(v) means for checking the transmittance of the water sample;

(d) means, including a spectrophotometric cell in fluid communication with said mixing means, for measuring the absorbance of the selective color complex in the cell by way of a laser spectrophotometric technique;

(e) discharge means for draining the selective color complex from the spectrophotometric cell after the absorbance measurement is made, whereby a flow-through path for the water sample is defined from said intake means to said discharge means; and

(f) control means, operatively coupled to said flow-through path, for controlling the on-line operation of said instrument.

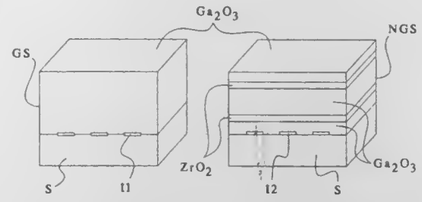
5,824,271
GAS SENSOR

Joachim Frank, Ottobrunn; Maximilian Fleischer, Höhenkirchen, and Hans Meixner, Haar, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/01242, § 371 Date Mar. 13, 1997, § 102(e) Date Mar. 13, 1997, PCT Pub. No. WO96/08712, PCT Pub. Date Mar. 21, 1996
PCT Filed Sep. 11, 1995, Ser. No. 809,264
Claims priority, application Germany, Sep. 14, 1994, 44 32 729.3
Int. Cl.[6] G01N *27/403*
U.S. Cl. 422—98 **10 Claims**

1. A gas sensor comprising:

a substrate carrying a first electrode and a second electrode, the first and second electrodes being disposed adjacent to one another,



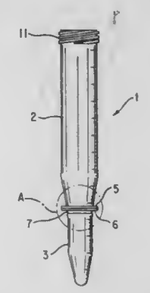
the first electrode being disposed between the substrate and a gas-sensitive component, the gas sensitive component comprising an n-type semiconductor, the gas-sensitive component having a resistance that is gas-dependent and temperature-dependent, and

the second electrode being disposed between the substrate and a non-gas-sensitive component, the non-gas-sensitive component comprising a n-type semiconductor and a p-type semiconductor, the non-gas-sensitive component having a resistance that is temperature-dependent and that is not gas-dependent.

5,824,272
COMPOUND CENTRIFUGE TUBE

Toshiki Uchida, 20-17-303, Hoshikuma 2-chome, Jonan-ku, Fukuoka-shi, Fukuoka, Japan

Filed Dec. 16, 1996, Ser. No. 768,074
Int. Cl.[6] B01L *3/00*
U.S. Cl. 422—102 **15 Claims**



1. A compound centrifuge tube, comprising:

a first bottomless tube portion, defining a volume, and having a top, a bottom end, an inner wall, and a first annular flange disposed around the bottom end;

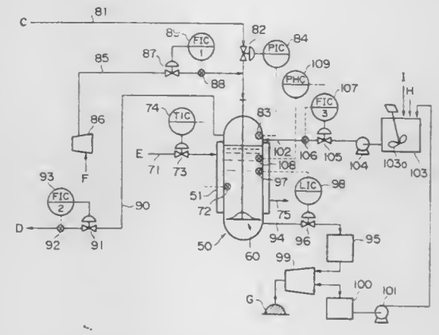
a second tube portion in one piece with the first tube portion, defining a volume smaller than the volume of the first tube portion, having a top end in one piece with the bottom end of the first tube portion, a bottom, an inner wall, a second annular flange formed around the top end of the second tube portion; and

an annular groove formed between the first and second annular flanges, forming a frangible wall portion and separable boundary portion between the first and second tube portions.

5,824,273
GAS REFINING SYSTEM

Atsushi Tatani; Makoto Susaki; Kazuaki Kimura; Taku Shimizu, all of Tokyo; Toshikuni Sera, and Kenji Inoue, both of Hiroshima-ken, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 30, 1996, Ser. No. 655,735
Claims priority, application Japan, Jun. 23, 1995, 7-157688; Jun. 23, 1995, 7-157689
Int. Cl.[6] B01D *53/34*
U.S. Cl. 422—171 **4 Claims**



1. A gas refining system for adsorbing a reducing gas obtained by pressure gasification of coal or oil, said system comprising:

a reducing gas stream obtained by gasification of a coal or oil, said reducing gas stream comprising sulfur-containing compounds;

a section for adsorbing and removing sulfur-containing compounds in said reducing gas stream and being connected to said reducing gas stream;

an adsorbent contained within said adsorbing and removing section, said adsorbent being arranged for contacting said reducing gas stream to form a sulfide thereon;

a first oxygen-containing gas stream which enters said adsorbing and removing section for contact with said adsorbent having sulfide formed thereon to form a regeneration gas containing sulfur dioxide;

a calcium compound-containing liquid slurry stream;

a reactor which receives said regeneration gas, a second oxygen-containing gas stream, and said calcium compound-containing liquid slurry stream and wherein said gas and liquid streams are brought into gas-liquid contact to effect adsorption of sulfur dioxide by said liquid slurry and precipitation of a gypsum compound selected from the group consisting of α-gypsum hemihydrate and gypsum dihydrate from said liquid slurry; and

a means for controlling temperature of said calcium compound-containing liquid slurry stream in said reactor, said temperature control means being capable of maintaining the temperature within a first temperature range which causes α-gypsum hemihydrate to precipitate or within a second temperature range which causes gypsum dihydrate to precipitate, said temperature control means comprising:

a temperature sensor for detecting the temperature of said calcium compound-containing slurry within said reactor;

a coolant passage formed around said reactor;

a flow control valve for controlling a flow rate of coolant passed through said coolant passage; and

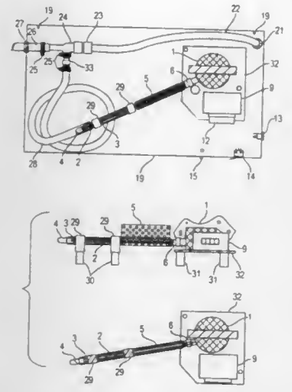
a temperature controller for controlling an opening of flow control valve according to the deviation of an output valve of said temperature sensor from a predetermined temperature in such a direction to causes the output valve to be equal to the predetermined temperature.

5,824,274

OZONE TREATMENT SYSTEM FOR POINT OF USE PURIFICATION OF WATER AND SANITIZING AGENT FOR SURFACES, ARTICLES AND FOODS

Ron Long, 122 Scott River Rd., Fort Jones, Calif. 96032

Filed Jan. 28, 1997, Ser. No. 790,281
Int. Cl.[6] B01J *19/08;* **C02F** *1/78*
U.S. Cl. 422—186.07 **12 Claims**



1. An ozonating water purifier and surface sanitizer requiring no air dryer, the purifier and surface sanitizer comprising:

(a) a housing;

(b) a high-voltage supply at least partially inside the housing;

a first electrode having an outer diameter and including coupling means for electrically coupling to the high-voltage supply;

(c) a dielectric tube of glassy material, having an inner diameter and including an internal length sufficient to accept entirely the first electrode;

(d) a second electrode at least partially surrounding the dielectric tube and including ventilation means for air to pass between the outside of the dielectric tube and the second electrode;

(e) water flow means for ozonating including venturi means for drawing air through the ventilation means and into a flow of water such that the water is ozonated; and

(f) easy-cleaning means for axially removing the dielectric tube from the first electrode and the second electrode;

whereby the dielectric tube may be cleaned without any need for the air dryer.

5,824,275

SECONDARY AND TERTIARY AIR NOZZLE FOR FURNACE APPARATUS

Alan S. Bitzer, and George J. Prohazka, both of Simsbury, Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

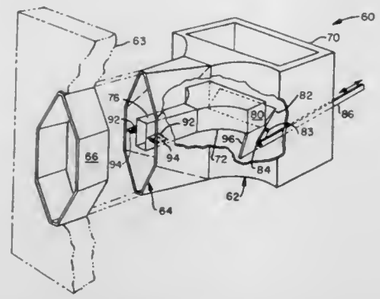
Continuation of Ser. No. 998,966, Dec. 29, 1992, abandoned. This application Mar. 7, 1995, Ser. No. 399,669
Int. Cl.[6] B09B *3/00*
U.S. Cl. 422—184 **19 Claims**

1. An air nozzle assembly for use in associated combustion apparatus to supply combustion air for combustion within the combustion apparatus which comprises:

a first housing, said first housing being elongated in a direction that is coincident with an axis thereof said first housing (a) having an interior, (b) having first and second ends and (c) having first and second axial portions that respectively include said first and second ends, said second axial portion communicating with said interior of said first housing and tapering axially from a smaller cross section to a larger cross section at said second end, said first end having a cross section dimension perpendicular to said axis that is greater in a first direction than in a second direction, said first direction being perpendicular to said second direction;

a second housing, said second housing being elongated in a direction that is coincident with an axis thereof, said second housing (a) having an interior, (b) having first and second ends and (c) having first and second axial portions that respectively include said first and second ends, said first axial portion of said second housing being open to the interior of said second housing, at least said first axial portion of said second housing being disposed within said first housing, said second axial portion of said second housing tapering axially from a smaller to a larger cross section at said second end; and

means for selectively preventing flow in said second housing.

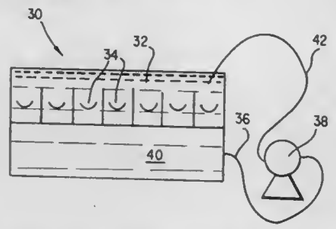


5,824,276

METHOD AND APPARATUS FOR UNIFORMLY DISPERSING ARTICLES IN A TREATMENT SOLUTION

Robert A. Janssen, Alpharetta; Barbara L. Heyl, Atlanta; Roger J. Hoffman, Cumming, and Thomas E. Shank, Sugar Hill, all of Ga., assignors to CIBA Vision Corporation, Duluth, Ga.

Continuation of Ser. No. 349,716, Dec. 5, 1994, Pat. No. 5,665,420. This application Apr. 8, 1996, Ser. No. 629,288
Int. Cl.[6] A61L *9/00*
U.S. Cl. 422—292 **8 Claims**



1. An apparatus for uniformly treating an ophthalmic lens in a chemical treatment solution, wherein the lens has a density differing from the treatment solution, comprising:

(a) a tray having a plurality of wells, each well capable of receiving and retaining a contact lens and sufficient solution to immerse said lens;

(b) a pump in fluid connection with said wells, said pump capable of passing solution substantially vertically into said wells,

wherein the pump is capable of applying a force on the lens for a period of time by applying a solution flow opposite the direction of the stagnant force on the article, said applied force being sufficient to prevent said lens from contacting said well for an extended period of time, and said solution flow causing mixing of said solution, thereby enhancing uniformity of article treatment by reducing localized concentration gradients due to container proximity or static conditions.

5,824,277

PLASMA OXIDATION OF AN EXHAUST GAS STREAM FROM CHLORINATING TITANIUM-CONTAINING MATERIAL

Daniel Campos, and Stephen Erwin Lyke, both of Wilmington, Del., assignors to E. I.du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1996, Ser. No. 761,734
Int. Cl.[6] B01D *53/48;* **C01B** *17/50*
U.S. Cl. 423—242.1 **8 Claims**

1. A process for treating an exhaust gas stream comprising COS, wherein the exhaust gas stream is produced from the chlorination of titanium-containing material, comprising the steps of:

(a) passing the exhaust gas stream into a cold plasma generating zone generating a cold plasma at a temperature within the range of about −20° C. to about 500° C. in the presence of oxygen, and

(b) oxidizing COS to SO_x, wherein x is 2 or 3.

5,824,278

PROCESS FOR PRODUCING PEROVSKITE TYPE COMPLEX OXIDE PRECIPITATES

Takeshi Yao, Katano, Japan, assignor to Takeshi Yao, Osaka, and Hoya Corporation, Tokyo, both of Japan

PCT No. PCT/JP96/00669, § 371 Date Nov. 14, 1996, § 102(e) Date Nov. 14, 1996, PCT Pub. No. WO96/28386, PCT Pub. Date Sep. 19, 1996
PCT Filed Mar. 15, 1996, Ser. No. 737,132
Claims priority, application Japan, Mar. 15, 1995, 7-056346; Sep. 27, 1995, 7-249866
Int. Cl.[6] C01F *17/00;* **C01G** *25/02*
U.S. Cl. 423—263 **35 Claims**

1. A process for producing perovskite structure complex oxide precipitates represented by the formula (I):

$$M^1{}_xM^2{}_yO_z \quad (I)$$

wherein M^1 represents at least one metal selected from the group consisting of a rare earth metal and an alkaline earth metal atom optionally along with an alkali metal atom, M^2 represents at least one metal selected from the group consisting of a transitional metal and a IIA group metal atom of the periodic table optionally along with an alkaline earth metal atom, x, y and z are each a number making said oxide electrically neutral, which process comprises:

(a) forming an aqueous solution or hydrofluoric acid solution containing

(1) at least one compound selected from the group consisting of

(i) metal fluoro complex compounds represented by the formula (II):

$$A_aM^1{}_bF_c \quad (II)$$

wherein A represents a hydrogen atom, an alkali metal atom, an ammonium group or coordinated water; M^1 has the same meaning as defined above; a, b and c are each a number of 1 or more; when b is 1, a is a number obtained by subtracting the valence of M^1 from c, and when a is two or more, the A's are the same or different from each other and when b is two or more, the M's are the same or different from each other; and

(ii) a metal fluoride which excludes the metal fluoro complex compound of formula (II) and is at least one metal fluoride selected from the group consisting of beryllium fluoride, magnesium fluoride, calcium fluoride, strontium fluoride, barium fluoride and rare earth metal fluorides optionally along with an alkali metal fluoride; and

(2) at least one compound selected from the group consisting of

(i) metal fluoro complex compounds represented by the formula (III):

$$A_aM^2{}_dF_f \quad (III)$$

wherein A and M^2 have the same meanings as defined above, d, e and f are each a number of 1 or more; when e is 1, d is a number obtained by subtracting the valence of M^2 from f, when d is two or more the A's are the same or different from each other and when e is two or more, the M^2's are the same or different from each other, and

(ii) a metal fluoride selected from the group consisting of transition metal fluorides and fluorides of group IIIA metals of the periodic table, optionally along with an alkaline earth metal fluoride selected from the group consisting of beryllium fluoride, magnesium fluoride, calcium fluoride, strontium fluoride and barium fluoride, and

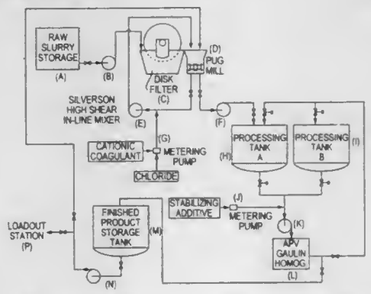
(b) adding at least one of a fluoride ion-capturing agent selected from the group consisting of boric acid, borates, sodium hydroxide, aqueous ammonia, aluminum, titanium, iron, nickel, magnesium, copper, zinc, glass, silicon, calcium oxide, boron oxide, aluminum oxide, silicon dioxide, magnesium oxide in a homogeneous state or heterogeneous state to the resulting mixed solution in an amount sufficient to cause precipitation of the perovskite structure complex oxide to form said complex oxide precipitates having the metal atoms M^1 and M^2.

5,824,279

PROCESS FOR PRODUCING STABILIZED MAGNESIUM HYDROXIDE SLURRIES

Alvin Richmond, and Robert J. Gutowski, both of Manistee, Mich., assignors to Martin Marietta Magnesia Specialties, Inc., Raleigh, N.C.

Filed Jan. 19, 1995, Ser. No. 375,442
Int. Cl.[6] C01F *5/14*
U.S. Cl. 423—265 **37 Claims**



1. A deflocculated stabilized magnesium hydroxide slurry comprising:

a solids content ranging from about 30% to about 80%;

a liquor comprising a controlled chloride concentration at least above a first threshold level of about 2.7 g/l or above a second threshold level of about 4.0 g/l;

wherein if said liquor comprises a chloride concentration between said first threshold level and said second threshold level, said slurry does not require a cationic coagulant to achieve stability;

wherein if said liquor comprises a chloride concentration greater than or equal to said second threshold level, said liquor also comprises a cationic coagulant;

wherein said cationic coagulant acts as a dispersant and contributes to stability; and

wherein said stabilized deflocculated slurry demonstrates stability by having a drainage test result of at least 90% after 7 days, a drainage test result of at least 85% after 14 days, and a drainage test result of at least 80% after 28 days.

9. A method for producing a deflocculated stabilized magnesium hydroxide slurry comprising:

providing a starting magnesium hydroxide slurry comprising a solids content of about 30 to about 80% and a liquor;

determining a first chloride concentration in said liquor;

comparing the first chloride concentration in the liquor to a first threshold level of about 2.7 g/l and to a second threshold level of about 4.0 g/l;

controlling a chloride concentration in said liquor by adding chloride to achieve at least a second chloride concentration in the liquor ranging from said first threshold level to less than said second threshold level, if said first chloride concentration in the liquor is less than said first threshold level;

wherein if said liquor comprises a chloride concentration between said first threshold level and said second threshold levels, said slurry does not require cationic coagulant to achieve stability;

adding cationic coagulant to said magnesium hydroxide slurry, if said first chloride concentration in the liquor is greater than or equal to said second threshold level, wherein said cationic coagulant acts as a dispersant and contributes to stability; and

deflocculating said magnesium hydroxide slurry;

wherein said deflocculated stabilized magnesium hydroxide slurry demonstrates stability by having a drainage test result of at least 90% after 7 days, a drainage test result of at least 85% after 14 days, and a drainage test result of at least 80% after 28 days.

34. A stabilized magnesium hydroxide slurry comprising magnesium hydroxide solids and a liquor, wherein said liquor comprises chloride ion at a concentration between about 2.7 g/l and 4.0 g/l, and wherein said slurry does not contain cationic coagulant.

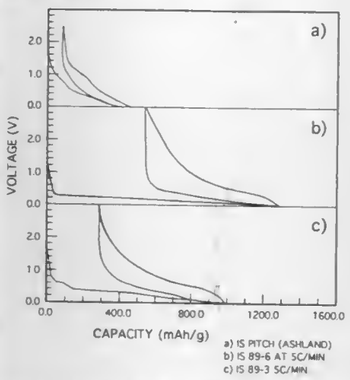
35. A stabilized magnesium hydroxide slurry comprising magnesium hydroxide solids and a liquor, wherein said liquor comprises chloride ion at a concentration above about 4.0 g/l and a cationic coagulant, wherein said cationic coagulant acts as a dispersant in said magnesium hydroxide slurry, and wherein said cationic coagulant contributes to stability.

5,824,280

ELECTRODES FOR LITHIUM ION BATTERIES USING POLYSILOXANES

Jeffery Raymond Dahn, Surrey, Canada; Katsuya Eguchi, Kanagawa-ken, Japan; Alf M. Wilson, Vancouver, Canada; Weibing Xing, Burnaby, Canada, and Gregg Alan Zank, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jun. 11, 1996, Ser. No. 664,278
Int. Cl.[6] H01M *4/48*
U.S. Cl. 423—325 **12 Claims**



1. A method of forming an electrode material for a lithium ion battery comprising:

(A) pyrolyzing a composition comprising a siloxane polymer of the structure

$$(R^1R^2R^3SiO_{0.5})_w(R^4R^5SiO)_x(R^6SiO_{1.5})_y(SiO_{4/2})_z$$

wherein each R^1, R^2, R^3, R^4, R^5 and R^6 are independently selected from the group consisting of hydrogen and hydrocarbons of 1–20 carbon atoms, w is in the range of 0 to about 0.8, x is in the range of 0 to about 0.9, y is in the range of 0 to about 0.9, z is in the range of 0 to 0.9 and w+x+y+z=1 to form a ceramic material; and

(B) introducing lithium ions into the ceramic material to form an electrode material.

5,824,281

PROCESS FOR PRODUCING SILICON CARBIDE FIBERS

Hiroshi Ichikawa, Yokohama; Michio Takeda, Yamato; Junichi Sakamoto, and Akinori Saeki, both of Yokohama, all of Japan, assignors to Nippon Carbon Co., Ltd., Tokyo, Japan

Filed May 21, 1996, Ser. No. 650,974
Claims priority, application Japan, May 22, 1995, 7-145138
Int. Cl.[6] C01B *31/36*
U.S. Cl. 423—345 **4 Claims**

1. A process for producing silicon carbide fibers having tensile strength in GPA between 2.22 and 3.15 and tensile elastic modulus in GPA 404–425 having a C/Si molar ratio of from 0.85 to 1.39, comprising the steps of:

1) spinning an organosilicon polymer compound which is a member selected from the group consisting of a polycarbosilane, to obtain precursor fibers;

2) irradiating said precursor fibers with an electron beam whereby infusible fibers are obtained;

3) subjecting said infusible precursor fibers from step 2) to a primary baking step in a hydrogen gas by heating up to 1200°–1300° C. to obtain primarily baked fibers wherein said primary baking step is carried out initially with hydrogen gas and when the temperature has reached 700°–950° C., said primary baking step is carried out only with an inert gas;

4) then subjecting said primarily baked fibers from step 3) to a secondary baking step, said secondary baking step being performed in an atmosphere of a mixed gas of an inert gas with hydrogen chloride gas at 1,500° to 2,200° C.

5,824,282

METHOD OF SULFUR PURIFICATION

Hideki Nagata, Kosaka-machi; Shuji Kuramochi, and Norihito Ishimori, both of Akita, all of Japan, assignors to Akita Zinc Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 314,937, Sep. 29, 1994, Pat. No. 5,656,251, which is a continuation-in-part of Ser. No. 27,278, Mar. 5, 1993, abandoned. This application Mar. 12, 1997, Ser. No. 814,902
Claims priority, application Japan, Dec. 2, 1992, 4-356198
Int. Cl.[6] C01B *17/02*
U.S. Cl. 423—578.1 **16 Claims**

1. A method of purifying sulfur comprising removing at least one impurity selected from the group consisting of Hg, Cu, Pb, Zn, Fe and Cd from molten sulfur recovered from a direct pressure leaching of a zinc concentrate by contacting the molten sulfur with activated alumina.

5,824,283

PROCESS FOR PRODUCING NICKEL HYDROXIDE FROM ELEMENTAL NICKEL

Juraj Babjak; Victor Alexander Ettel, both of Mississauga; Stephen Joseph Baksa, Oakville, and Raymond Augustus Bradford, Woodbridge, all of Canada, assignors to Inco Limited, Toronto, Canada

Filed Apr. 28, 1997, Ser. No. 847,715
Int. Cl.[6] C01B *13/14;* **C01G** *53/00*
U.S. Cl. 423—592 **17 Claims**

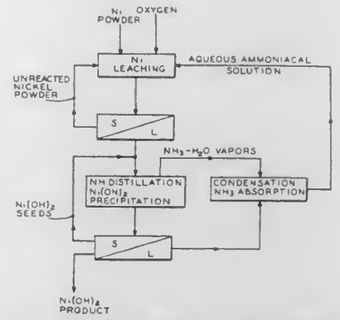
1. A method of producing nickel hydroxide from elemental nickel comprising the steps of:

a) introducing elemental nickel into an aqueous solution to form a mixture, the aqueous solution containing at least 4N aqueous ammonia, and the elemental nickel of the mixture being activated for dissolution into the aqueous solution;

b) adding oxygen to the aqueous solution to dissolve the elemental nickel in the aqueous ammonia solution to form a loaded solution containing nickel and hydroxyl ions, and the aqueous solution having a reducing potential during the dissolving of the elemental nickel;

c) distilling the loaded solution to precipitate nickel hydroxide and to vaporize the aqueous ammonia solution; and

d) recycling the vaporized aqueous ammonia solution to dissolve additional quantities of the elemental nickel.



5,824,284

CATHODE MATERIAL FOR LITHIUM SECONDARY BATTERY AND METHOD FOR PRODUCING LITHIATED NICKEL DIOXIDE AND LITHIUM SECONDARY BATTERY

Tomoari Satoh; Kenji Nakane, and Yasunori Nishida, all of Tsukuba, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 457,181, Jun. 1, 1995, abandoned, which is a division of Ser. No. 274,414, Jul. 13, 1994, abandoned. This application Mar. 28, 1997, Ser. No. 827,497
Claims priority, application Japan, Jul. 15, 1993, 05-175198; Dec. 27, 1993, 05-330242; May 12, 1994, 06-098379
Int. Cl.[6] C01G *53/00;* **H01M** *4/32*
U.S. Cl. 423—594 **15 Claims**

1. A process for producing lithiated nickel dioxide for use in a cathode of a lithium secondary battery, the lithiated nickel dioxide having an α-$NaFeO_2$ structure, the lithiated nickel dioxide having a coulomb efficiency of 80% or higher at the first charging and discharging of the lithiated nickel dioxide in the cathode of a lithium secondary battery, comprising the steps of dispersing a nickel compound in a solvent-containing lithium nitrate solution, the nickel compound being insoluble in the solvent-containing lithium nitrate solution, then evaporating the solvent to obtain a mixture of lithium nitrate and the nickel compound and firing the mixture in an atmosphere containing oxygen.

5,824,285

METHOD OF MAKING LITHIUM MANGANESE OXIDE COMPOUNDS

Rene Koksbang, Odense, Denmark, assignor to Valence Technology, Inc., Henderson, Nev.

Filed Oct. 23, 1996, Ser. No. 735,771
Int. Cl.[6] C01G *45/12*
U.S. Cl. 423—599 **2 Claims**

1. A method for chemically preparing a compound of the nominal general formula $Li_2Mn_2O_4$, with x greater than 1, which has excess lithium as compared to conventional chemically prepared $LiMn_2O_4$ said method comprising: forming a mixture of a manganese compound and a lithium compound each in particle form in a proportion which provides said nominal general formula, and an ammonium compound being in particle form and intermingled with said particles of said lithium and manganese compounds, and heating said mixture at a temperature ranging from 650° C. to about 750° C. to react said lithium compound with said manganese compound, in the presence of a reducing atmosphere comprising gaseous ammonia produced by decomposition of said ammonium compound, said decomposition being initiated before said reaction which produces a product of said nominal general formula in the presence of said ammonia gas which forms said reducing atmosphere; wherein said lithium, manganese and ammonium compounds are each independently selected from the group consisting of carbonates and acetates.

5,824,286

MAMMOGRAPHY METHOD

Gary D. Hodgen, Norfolk, Va., assignor to The Medical College of Hampton Roads, Norfolk, Va.

Continuation-in-part of Ser. No. 233,696, Apr. 26, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 464,048
Int. Cl.[6] A61K *31/00;49/00*
U.S. Cl. 424—9.1 **14 Claims**

1. A mammographic method in which the image on the mammographic film has enhanced readability relative to a mammogram effected in the absence of the method, comprising the steps of administering to a premenopausal women an agent consisting essentially of an amount of a gonadotropin releasing hormone antagonist or mime thereof effective to deplete circulating estrogen and effecting a mammogram before said depletion effect of the antagonist or mime thereof having a gonadotropin releasing hormone antagonist activity has dissipated, wherein said administration is a single or multiple dose and wherein the time from initial agent administration to the mammogram does not exceed about 10 days.

5,824,287

MUTAGENESIS TESTING USING TRANSGENIC NON-HUMAN ANIMALS CARRYING TEST DNA SEQUENCES

Joseph A. Sorge, San Diego, and Jay M. Short, Encinitas, both of Calif., assignors to Stratagene, La Jolla, Calif.

Continuation of Ser. No. 398,933, Mar. 6, 1995, Pat. No. 5,589,155, which is a continuation of Ser. No. 947,947, Sep. 18, 1992, abandoned, which is a continuation of Ser. No. 505,676, Apr. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 45,037, May 1, 1987, abandoned. This application Jun. 5, 1995, Ser. No. 462,995
Int. Cl.[6] A61K *49/00;* **C12N** *5/00;15/00*
U.S. Cl. 424—9.2 **14 Claims**

1. A method for testing the mutagenic potential of an agent comprising:

(a) exposing a transgenic non-human mammal to an agent to be tested, said transgenic mammal comprising somatic and germ cells containing an integrated transgenic test DNA sequence, said test DNA sequence being flanked by a packaging site of a bacteriophage and recoverable from said cells via said packaging site, the expression of said test DNA sequence being capable of detection in a microorganism by bioassay, wherein said test DNA sequence encodes a protein detectable by bioassay;

(b) isolating a sample of genomic DNA from said exposed transgenic mammal

(c) treating said sample of genomic DNA with a bacteriophage packaging extract to excise said integrated transgenic test DNA sequence and then package said excised test DNA sequence;

(d) infecting a microorganism with said packaged test DNA sequence;

(e) determining by bioassay in said infected microorganism if said test DNA sequence has been mutated.

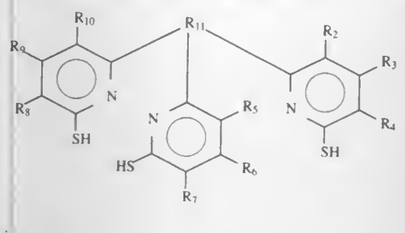
5,824,288

THIO-SUBSTITUTED PYRIDINES AS MRI LIGAND PRECURSORS

Wei-Jen Peng; Humberto Ramos, Jr., and Daniel A. Aguilar, all of Corpus Christi, Tex., assignors to Hoechst Celanese Corporation, Somerville, N.J.

Filed Aug. 21, 1997, Ser. No. 915,943
Int. Cl.[6] A61K *49/04;* C07F *1/00;* C07D *213/62;401/14*
U.S. Cl. 424—9.4 18 Claims

1. A composition of matter having the formula



wherein
R_{11} is COR or P
R_2–R_{10} are each independently selected from the group consisting of
(a) R
(b) OR
(c) N_2
(d) NHC(O)R
(e) COO^- M'
(f) $C(O)N_2$ and,
(g) SO_3^- M'
wherein R and M' are defined herein wherein R is selected from the group consisting of
(i) H
(ii) C_1–C_{20} alkyl
(iii) hydroxyalkyl (C_1–C_{30})
(iv) $CH_2CH(OH)CH_2$ ($O\ CH_2CH(OH)CH_2)_nOH$ (n=0–10)
(v) $CH_2CH\ (O\ CH_2CH_2)_nOH$ (n=0–10)
(vi) ribose
(vii) glucose
(viii) peptide or polypeptide, and
(ix) PO_3^{2-} 2M'
and M' is Na^+ or meglumine.

5,824,289

DENTAL FLUORIDE FOAM

Edwin I. Stoltz, Delray Beach, Fla., assignor to Sultan Dental Products, Englewood, N.J.

Filed Mar. 5, 1996, Ser. No. 611,205
Int. Cl.[6] A61K *7/18;33/16*
U.S. Cl. 424—45 24 Claims

1. A formable dental fluoride composition comprising
(a) from about 0.5 to about 10 percent by weight available dental fluoride;
(b) from about 1.0 to about 10 percent by weight of an emulsifier, said emulsifier selected from the group consisting of cetyl phosphate and stearic acid, indeceth carboxylic acids, acid forms of ethoxylated fatty alcohols, oleth 3, oleth 5, oleth 10, oleth 20, steareth-10, celeth-20, and mixtures thereof;
(c) from about 0.5 to about 5 percent by weight of an emulsion stabilizer, said emulsion stabilizer being selected from the group consisting of oleth-3-phosphate, oleth-10 phosphate, cetyl phosphate, PPG-10 cetyl ether phosphate, cetostearyl alcohol, stearyl alcohol, olelyl alcohol and related fatty alcohols with linear carbon chains and wax-like materials having high molecular weights, behenic acid and mixtures thereof; and
(d) from about 0.5 to about 3.0 percent by weight of a surfactant.

5,824,290

Patent Not Issued For This Number

5,824,291

CHEWING GUM CONTAINING A TEETH WHITENING AGENT

Herman S. Howard, Stamford, Conn., assignor to Media Group, Stamford, Conn.

Filed Jun. 30, 1997, Ser. No. 885,226
Int. Cl.[6] A61K *9/68;7/16;7/20;7/26*
U.S. Cl. 424—48 14 Claims

1. A teeth whitening chewing gum, comprising 1) a water-insoluble gum base, a flavorant, a sweetener and a plasticizer as the inactive ingredients; and 2) alkali metal carbonate peroxyhydrate, sodium bicarbonate, parsley extract and neem oil as active ingredients wherein said gum inactive ingredients comprise from about 97 to about 99 wt. % of the total gum composition.

5,824,292

ORAL CARE COMPOSITIONS

Stuart William Carr, Liverpool; Karen Marie Pickup, Spital; Philippa Margaret Smith, Millane, and Kurt Matthew Schilling, Wirral, all of Great Britain, assignors to Quest International B.V., Naarden, Netherlands

Filed Apr. 12, 1996, Ser. No. 631,219
Claims priority, application European Pat. Off., Apr. 12, 1995, 95302471
Int. Cl.[6] A61K *7/16;33/30;39/40*
U.S. Cl. 424—49 5 Claims

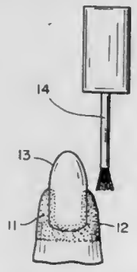
1. An anti-plaque agent suitable for oral use in an oral composition, characterized in that the anti-plaque agent is colloidal zinc oxide coated with a targeting system selected from the group consisting of polymers which contain carbohydrate structures which are specifically recognized by bacterial adhesins, peptide structures which are specifically recognized by bacterial adhesins, antibodies which recognize plaque bacterial antigens and antibody fragments which recognize plaque bacterial antigens.

5,824,293

NAIL POLISHING METHOD AND PRODUCT

John Zajac, 1137 Angmar Ct., San Jose, Calif. 95121

Filed Sep. 1, 1995, Ser. No. 522,751
Int. Cl.[6] A61K *7/04;9/00*
U.S. Cl. 424—61 13 Claims



1. In a method of polishing nails, the steps of: applying a water soluble masking material comprising the ingredients of liquid detergent, toothpaste, a coloring agent and water to skin surrounding a nail and to portions of the nail, removing the masking material from the nail to form a sharp line of demarcation between the nail and the skin surrounding the nail, applying a nail polishing lacquer to the nail and to portions of the masking material adjacent to the nail, allowing the lacquer to dry, and removing the masking material and any lacquer on the masking material from the skin around the nail.

5,824,294

SAND REMOVING BODY POWDER

Trevor David Abramson, and Adele Abramson, both of 2055 Holmby Ave., Los Angeles, Calif. 90025

Filed Oct. 15, 1997, Ser. No. 950,689
Int. Cl.[6] A61K *7/035;33/42;33/00;47/00*
U.S. Cl. 424—69 8 Claims

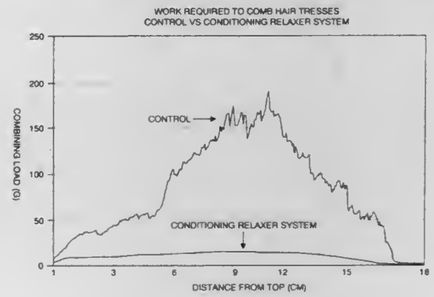
1. A method for removing sand from a user's body comprising the steps of:
liberally applying a powder composition containing a major amount of cornstarch to an area of the body having sand adhered thereto;
rubbing said composition on said area; and
wiping said composition and said sand off the area using one's hands or a towel or the like.

5,824,295

COMPOSITION FOR DECREASING COMBING DAMAGE AND METHODS

Ali N. Syed, 13220 Georgetown Dr., Orland Park, Ill. 60462, and Kaleem Ahmad, 7013 W. 74th St., Chicago, Ill. 60638

Continuation-in-part of Ser. No. 267,829, Jun. 29, 1994, abandoned. This application Apr. 4, 1996, Ser. No. 627,345
Int. Cl.[6] A61K *7/06;7/09*
U.S. Cl. 424—70.4 8 Claims



1. A hair relaxer composition that decreases combine damage due to relaxation of hair in at least two components comprising:
(a) a first component containing an aqueous relaxer cream base comprising an alkaline hydroxide of an earth metal cation in combination with a water-dispersible cationic polymer admixture comprising the polymer dimethylaminoethylmethacrylate, mineral oil and PPG-1 trideceth 6 wherein the polymer is present in a concentration of from about 0.5% to about 3%; and
(b) a second component containing an activator comprising an aqueous solution of a water-soluble organic salt of an organic base, the salt having an anion capable of being precipitated by the alkaline earth metal cation of the first component under a range of alkaline conditions from pH 11 to pH 13.5;
whereby for use the first and second components are admixed to produce a hair relaxer composition which decreases combing damage to hair.

5,824,296

SOLID HAIR COMPOSITION CONTAINING A PARTICULAR STRUCTURE AGENT

Claude Dubief, Le Chesnay; Arnaud De Labbey, Aulnay-Sous-Bois; Roland De La Mettrie, Le Vestinet, and Christine Rondeau, Sartrouville, all of France, assignors to L'Oreal, Paris, France

Filed Jul. 11, 1995, Ser. No. 500,752
Claims priority, application France, Jul. 11, 1994, 94 08567
Int. Cl.[6] A61K *7/00*
U.S. Cl. 424—70.11 17 Claims

1. A hair composition, comprising, in a cosmetically acceptable medium, i) an active agent; and ii) a structuring agent insoluble in said medium and formed of solid particles, in an effective amount which imparts a deformable solid appearance to said hair composition in which said medium is contained, said structuring agent being capable of being removed from hair using a diluent.

5,824,297

TISSUE-DERIVED TUMOR GROWTH INHIBITORS, METHODS OF PREPARATION AND USES THEREOF

Kenneth K. Iwata, Westbury; J. Gordon Foulkes, Huntington, both of N.Y.; Peter Ten Dijke, Uppsalla, Sweden, and John D. Haley, Great Neck, N.Y., assignors to Oncogene Science, Inc., Uniondale, N.Y.

Continuation-in-part of Ser. No. 543,341, Jun. 25, 1990, Pat. No. 5,262,319, Ser. No. 543,348, Jun. 25, 1990, abandoned, and Ser. No. 992,479, Dec. 15, 1992, abandoned, which is a continuation-in-part of Ser. No. 948,005, Sep. 21, 1995, abandoned. This application Sep. 1, 1993, Ser. No. 115,519
Int. Cl.[6] A61K *38/19;38/18;* C07K *14/475;14/495*
U.S. Cl. 424—85.1 29 Claims

1. A method for inhibiting cytotoxic poisoning of normal epithelial cells in a subject which comprises administering to the subject an amount of a TGF-β3 effective to slow the growth of the normal epithelial cells and thereby inhibit the cytotoxic poisoning of the normal epithelial cells in the subject.

5,824,298

Patent Not Issued For This Number

5,824,299

MODULATION OF ENDOTHELIAL CELL PROLIFERATION WITH IP-10

Andrew Luster, Wellesley, and Philip Leder, Chestnut Hill, both of Mass., assignors to President & Fellows of Harvard College, Cambridge, Mass.

Filed Jun. 22, 1995, Ser. No. 493,638
Int. Cl.[6] A61K *38/19;38/16*
U.S. Cl. 424—85.1 13 Claims

1. A method of inhibiting non-neoplastic endothelial cell proliferation in a mammal having a pathological condition involving non-neoplastic endothelial cell proliferation, said method comprising administering to said mammal an IP-10 polypeptide, said administering in an amount sufficient to decrease non-neoplastic endothelial cell proliferation.

5,824,300

TREATMENT OF NEOPLASTIC DISEASE WITH ORAL INTERFERON

Joseph M. Cummins, Amarillo, Tex., assignor to The Texas A&M University System, College Station, Tex.

Division of Ser. No. 305,418, Sep. 13, 1994, which is a continuation of Ser. No. 9,353, Jan. 26, 1993, abandoned, which is a continuation of Ser. No. 875,071, Apr. 28, 1992, abandoned, which is a continuation of Ser. No. 110,501, Oct. 26, 1987, abandoned, which is a continuation-in-part of Ser. No. 927,834, Nov. 6, 1986, abandoned. This application Jun. 7, 1995, Ser. No. 479,958

Int. Cl.[6] A61K *38/21*

U.S. Cl. 424—85.7 12 Claims

1. A method for treating a human patient afflicted with neoplastic disease and in need of a disease-corrective response, said method consisting essentially of the steps of delivering a saliva soluble solid dosage form of human interferon into the mouth of the human patient, holding the solid dosage form in the patient's mouth for a period of time sufficient to dissolve it and form a saliva solution of the interferon in contact with the patient's oral and pharyngeal mucosa to stimulate an anti-neoplastic disease response, wherein the interferon is administered in an amount of about 0.01 to about 5 IU/lb of patient body weight per day.

5,824,301

Patent Not Issued For This Number

5,824,302

METHOD OF CONTROLLING INSECT LARVAE COMPRISING FEEDING AN INSECTICIDAL AMOUNT OF A TRANSGENIC MAIZE PLANT EXPRESSING A POLYPEPTIDE HAVING BT-CRYSTAL PROTEIN TOXIC PROPERTIES

Gleta Carswell, Morrisville, N.C.; Christian Harms, Bad Krozingen, Germany; Yin-Fu Chang, Carrboro, and Mary-Dell Chilton, Raleigh, both of N.C., assignors to Novartis Finance Corporation

Continuation of Ser. No. 445,526, May 22, 1995, Pat. No. 5,595,733, which is a division of Ser. No. 269,677, Jul. 1, 1994, which is a continuation of Ser. No. 24,875, Mar. 1, 1993, Pat. No. 5,350,689, which is a continuation of Ser. No. 276,210, Nov. 23, 1988, abandoned, which is a continuation-in-part of Ser. No. 178,170, Apr. 6, 1988, abandoned, which is a continuation-in-part of Ser. No. 56,552, May 29, 1987, abandoned, and Ser. No. 56,506, May 29, 1987, abandoned, which is a continuation-in-part of Ser. No. 53,241, May 22, 1987, abandoned, which is a continuation-in-part of Ser. No. 52,440, May 20, 1987, abandoned. This application Dec. 17, 1996, Ser. No. 768,325

Int. Cl.[6] A01N *65/00;* C12N *5/04;5/14*

U.S. Cl. 424—93.21 28 Claims

1. A method of controlling insect larvae comprising:

(a) feeding the larvae an insecticidal amount of transgenic *Zea mays* cells containing a synthetic DNA which encodes a polypeptide having the insect toxicity properties of a *Bacillus thuringiensis* crystal protein wherein the cells have been grown or cultured in a manner to permit expression of the toxin in the cells, wherein said cells comprise a part of a fertile *Zea mays* plant, wherein said insect larvae is selected from the group consisting of lepidopteran, coleopteran and dipteran insect larvae.

5,824,303

ECK RECEPTOR LIGANDS

Timothy D. Bartley, Thousand Oaks; William J. Boyle, Moorpark; Gary M. Fox, Newbury Park; Andrew A. Welcher, Glendale; Ella Magal; Richard A. Lindberg, both of Thousand Oaks, and Vann P. Parker, Newbury Park, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation-in-part of Ser. No. 145,616, Nov. 9, 1993, abandoned, which is a continuation-in-part of Ser. No. 977,708, Nov. 13, 1992, abandoned. This application May 19, 1995, Ser. No. 445,065

Int. Cl.[6] A61K *38/45;38/00;* C12N *9/12*

U.S. Cl. 424—94.5 8 Claims

1. A method of modulating the endogenous activity of an eck receptor in a mammal comprising administering to the mammal an effective amount of an eck receptor binding protein to modulate the activity of said receptor wherein the eck receptor binding protein has the amino acid sequence as shown in SEQ ID NO.1 or a fragment thereof.

5,824,304

PERIPHERALIZATION OF HEMATOPOIETIC STEM CELLS

Thalia Papayannopoulou, 702 35th Ave., Seattle, Wash. 98122

Division of Ser. No. 436,339, Nov. 15, 1993, which is a continuation-in-part of Ser. No. 977,702, Nov. 13, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,298

Int. Cl.[6] A61K *39/395;38/19*

U.S. Cl. 424—132.1 12 Claims

1. A method of treating AIDS in a patient comprising the steps of:

(1) peripheralizing CD34+ cells by administering an anti-VLA-4 antibody which blocks the binding of VLA-4 antigen on the surface of said CD34+ cells to VCAM or fibronectin;

(2) collecting peripheral blood containing the CD34+ cells by leukapheresis;

(3) enriching the CD34+ cells by immunoadsorption using anti-CD34 antibodies;

(4) administering chemotherapy and/or radiotherapy to the patient; and

(5) returning the enriched CD34+ cells to the patient's circulating blood.

5,824,305

METHOD OF TREATING DISEASES MEDIATED BY CYCLIC NUCLEOTIDE PATHWAYS WITH PURIFIED STEM BROMELAIN PROTEASE

Tracey Leahanne Mynott, Middlesex, Great Britain, assignor to Cortecs (UK) Limited, Great Britain

PCT No. PCT/GB94/01368, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO95/00169, PCT Pub. Date Jan. 5, 1995

PCT Filed Jun. 24, 1994, Ser. No. 578,701

Claims priority, application United Kingdom, Jun. 25, 1993, 9313188

Int. Cl.[6] A61K *38/46;* C12N *9/50*

U.S. Cl. 424—94.65 3 Claims

1. A method to treat a disease or a condition mediated by cyclic nucleotide pathways, the method comprising administering to a patient in need of such treatment an effective amount of isolated and purified stem bromelain protease of the amino acid sequence of SEQ ID NO:1, wherein said disease or condition is not diarrhoea.

5,824,306

DIROFILARIA AND BRUGIA ANKYRIN PROTEINS, NUCLEIC ACID MOLECULES, AND USES THEREOF

Liang Tang, and E. Scot Blehm, both of Fort Collins, Colo., assignors to Heska Corporation, Fort Collins, Colo.

Division of Ser. No. 847,429, Apr. 24, 1997. This application Feb. 26, 1998, Ser. No. 31,485

Int. Cl.[6] A61K *35/14;* C07K *14/00*

U.S. Cl. 424—130.1 14 Claims

1. An isolated ankyrin protein, wherein said protein is encoded by a Dirofilaria or Brugia nucleic acid molecule selected from the group consisting of: a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:14, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:22, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:35, SEQ ID NO:37 and SEQ ID NO:40; and an allelic variant of a nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:4, SEQ ID NO:6, SEQ ID NO:9, SEQ ID NO:11, SEQ ID NO:14, SEQ ID NO:17, SEQ ID NO:19, SEQ ID NO:22, SEQ ID NO:25, SEQ ID NO:27, SEQ ID NO:30, SEQ ID NO:32, SEQ ID NO:35, SEQ ID NO:37 and SEQ ID NO:40.

5,824,307

HUMAN-MURINE CHIMERIC ANTIBODIES AGAINST RESPIRATORY SYNCYTIAL VIRUS

Leslie Sid Johnson, Germantown, Md., assignor to MedImmune, Inc., Gaithersburg, Md.

Continuation-in-part of Ser. No. 813,372, Dec. 23, 1991, abandoned. This application Aug. 15, 1994, Ser. No. 290,592

Int. Cl.[6] A61K *39/42;* C07K *16/08*

U.S. Cl. 424—133.1 30 Claims

1. A neutralizing antibody against RSV, comprising:

a human constant region and a variable region, said variable region comprising heavy and light chain framework regions and heavy and light chain CDRs, at least a portion of the heavy and light chain framework regions being derived from a human antibody, said neutralizing antibody against respiratory syncytial virus binding to the same epitope as an antibody comprising three heavy chain CDRs comprising amino acids 31–37, 52–67 and 100–109 of SEQ ID NO:31, and three light-chain CDRs comprising amino acids 24–33, 51–56 and 89–96 of SEQ ID NO:34.

5,824,308

Patent Not Issued For This Number

5,824,309

RECOMBINANT GAS VESICLES AND USES THEREOF

Shiladitya DasSarma; Fazeela Morshed; Elizabeth Stuart, all of Amherst, and Samuel Black, Leverett, all of Mass., assignors to University of Massachusetts, Boston, Mass.

Filed Dec. 5, 1996, Ser. No. 759,444

Int. Cl.[6] A61K *39/21;39/02;39/295;* C07K *14/195*

U.S. Cl. 424—188.1 10 Claims

1. A composition comprising substantially pure recombinant gas vesicles comprising a selected peptide inserted in-frame into a structural protein of said recombinant gas vesicle, said composition, when injected into a mammal, elicits antibodies which specifically bind said selected peptide.

5,824,310

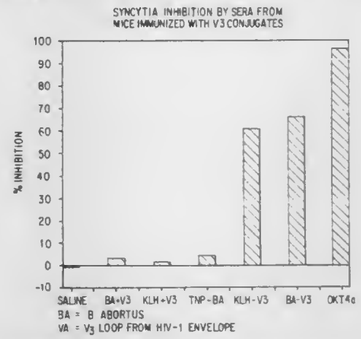
LIPOPPLYSACCHARIDE CONJUGATE VACCINES

Basil Golding, Rockville, Md., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Continuation of Ser. No. 780,205, Oct. 22, 1991, abandoned. This application Jan. 6, 1995, Ser. No. 369,565

Int. Cl.[6] A61K *39/385;39/21;* C07K *17/00*

U.S. Cl. 424—193.1 4 Claims



1. A conjugate molecule comprising a carrier molecule of purified lipopolysaccharide (LPS) from *Brucella abortus*, covalently coupled to an antigenic component of an infectious organism, a tumor antigen or a biological effector molecule.

5,824,311

TREATMENT OF TUMORS WITH MONOCLONAL ANTIBODIES AGAINST ONCOGENE ANTIGENS

Mark I. Greene, Penn Valley, Pa., and Jeffrey A. Drebin, Baltimore, Md., assignors to Trustees of The University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 573,527, Aug. 27, 1990, abandoned, which is a continuation-in-part of Ser. No. 126,572, Nov. 30, 1987, abandoned. This application Nov. 30, 1994, Ser. No. 347,019

Int. Cl.[6] C07K *16/30;16/28*

U.S. Cl. 424—138.1 24 Claims

1. A method of treating mammalian cancer tumors having cells which express p185 the translation product of the neu oncogene on their surfaces, comprising the steps of:

a) providing a first antibody specific for a first epitope on an extracellular domain of said translation product;

b) providing a second antibody specific for a second epitope on an extracellular domain of said translation product, the combination of said first and second antibodies being selected to produce synergistic inhibition of tumor growth; and

c) contacting said cells with said first and second antibodies under conditions which allow said first and second antibodies to bind to said translation product on the surfaces of said cells to a degree sufficient to inhibit the growth of the tumor.

5,824,312

SUNSCREEN AGENTS FROM NATURAL SOURCES

Evan C. Unger, and Thomas P. McCreery, both of Tucson, Ariz., assignors to ImaRx Pharmaceutical Corp., Tucson, Ariz.

Continuation of Ser. No. 209,531, Mar. 10, 1994, abandoned. This application Dec. 15, 1995, Ser. No. 573,590

Int. Cl.[6] A61K *35/78;7/40;7/42*

U.S. Cl. 424—195.1 18 Claims

1. A purified, photoabsorptive plant extract which is prepared by a process comprising

(a) extracting a reproductive part of a plant selected from the group consisting of *Prosopis juliflora, Cercidium floridum,*

Cercidium microphyllum and *Parkinsonia aculeata* with a non-polar organic solvent;

(b) concentrating said non-polar organic extract from (a) to produce a concentrate which is extracted with a polar, organic solvent; and

(c) concentrating said polar organic extract from (b) to produce the purified, photoabsorptive plant extract.

5,824,313

VACCINE COMPOSITIONS AND METHOD FOR INDUCTION OF MUCOSAL IMMUNE RESPONSE VIA SYSTEMIC VACCINATION

Raymond A. Daynes, Park City, and Barbara A. Araneo, Salt Lake City, both of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation-in-part of Ser. No. 123,844, Sep. 9, 1993, Pat. No. 5,518,725, which is a continuation-in-part of Ser. No. 13,972, Feb. 4, 1993, abandoned, and Ser. No. 779,499, Oct. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 412,270, Sep. 25, 1989, Pat. No. 5,540,919. This application Jun. 7, 1995, Ser. No. 480,567

Int. Cl.[6] A61K *39/00;39/145;39/155;39/07*

U.S. Cl. 424—184.1 **61 Claims**

1. A method for inducing an antigen-specific mucosal immune response in a vertebrate animal, comprising administering an effective amount of a lymphoid organ modifying agent selected form the group consisting of 1,25-dihydroxy-16-ene Vitamin D_3 and calcipotriene to the vertebrate animal at a peripheral, non-mucosal site which drains into a peripheral lymphoid organ or compartment, and administering an effective amount of a specific antigen to the vertebrate animal at a peripheral, non-mucosal site which drains into said peripheral lymphoid organ or compartment.

5,824,314

Patent Not Issued For This Number

5,824,315

BINDING AFFINITY OF ANTIGENIC PEPTIDES FOR MHC MOLECULES

Bishwajit Nag, Fremont, Calif., assignor to Anergen, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 227,371, Apr. 14, 1994, and Ser. No. 329,010, Oct. 25, 1994, which is a continuation-in-part of Ser. No. 143,575, Oct. 25, 1993, abandoned. This application Apr. 30, 1996, Ser. No. 640,344

Int. Cl.[6] A61K *39/00*

U.S. Cl. 424—195.11 **32 Claims**

1. A Major Histocompatibility Complex "MHC" Class II-modified peptide complex capable of binding a T cell receptor comprising:

an MHC Class II component comprising an antigen binding site; and

an antigenic peptide of the formula human MBP(83–102)Y83, wherein the antigenic peptide is bound to the antigen binding site.

5,824,316

LEADER-PROTEINASE DELETED FOOT-AND-MOUTH DISEASE VIRUSES AND THEIR USE AS VACCINES

Marvin J. Grubman, Southold, N.Y.; Peter W. Mason, Killingworth, Conn.; Maria Elisa Piccone, Buenos, Aires, Argentina, and Elizabeth Rieder, Westbrook, Conn., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed May 24, 1996, Ser. No. 653,037

Int. Cl.[6] A61K *39/135;* **C12N** *7/04*

U.S. Cl. 424—216.1 **5 Claims**

1. A live recombinant foot-and-mouth disease virus, wherein said virus lacks an active leader (L) proteinase protein, the Lb portion of the protein having been deleted.

5,824,317

Patent Not Issued For This Number

5,824,318

AVIRULENT HERPETIC VIRUSES USEFUL AS TUMORICIDAL AGENTS AND VACCINES

Ian J. Mohr, Fort Lee, and Yakov Gluzman, deceased, late of Upper Saddle River, both of N.J., by Ilan Gluzman, administrator, assignors to American Cyanamid Company, Madison, N.J.

Filed Jul. 24, 1996, Ser. No. 686,631

Int. Cl.[6] A61K *39/245;* **C12N** *7/02*

U.S. Cl. 424—229.1 **12 Claims**

1. A herpes simplex virus 1 (HSV-1) which is avirulent and selectively replicates in and destroys neoplastic cells having a genome from which the γ34.5 genes controlling virulence have been deleted and which has at least one additional mutation to the genome between the BstEII and NruI sites on the BamHI Z restriction fragment corresponding to nucleotides 145316 and 146008 (Genbank Accession No. X14112, strain 17).

5,824,319

VARICELLA-ZOSTER VIRUS ANTIGEN

Abbas Vafai, Rockford, Ill., assignor to Research Corporation Technologies, Inc., Tucson, Ark.

Continuation of Ser. No. 864,961, May 12, 1992, abandoned, which is a continuation-in-part of Ser. No. 592,766, Oct. 4, 1990, abandoned. This application Jul. 6, 1994, Ser. No. 271,397

Int. Cl.[6] A61K *39/245;39/12;* **C07K** *1/00;14/00*

U.S. Cl. 424—230.1 **16 Claims**

1. A vaccine for immunization against chicken pox and shingles comprising an effective amount of secretory truncated VZV gp and a pharmaceutically acceptable vaccine carrier.

5,824,320

COSMETIC OR PHARMACEUTICAL COMPOSITIONS CONTAINING, AS ACTIVE INGREDIENT, MANGIFERINE OR ITS DERIVATIVES, IN PURE FORM OR IN PLANT EXTRACTS

Francoise Rouillard, Longjumeau; Annabelle Josse, Thiais, and Jean-Renaud Robin, Saint-Denis, all of France, assignors to Laboratories de Biologie Vegetale Yves Rocher, La Gacilly, France

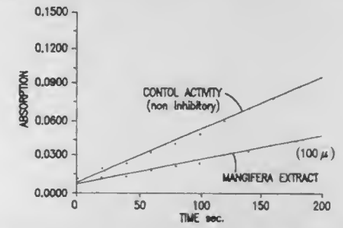
PCT No. PCT/FR95/01552, § 371 Date Sep. 18, 1996, § 102(e) Date Sep. 18, 1996, PCT Pub. No. WO96/16632, PCT Pub. Date Jun. 6, 1996

PCT Filed Nov. 23, 1995, Ser. No. 682,616

Claims priority, application France, Nov. 25, 1994, 94 14176; Mar. 24, 1995, 95 03513; Jun. 22, 1995, 95 07508

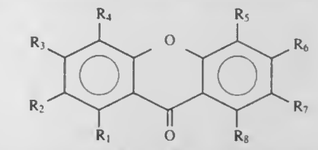
Int. Cl.[6] A61K *7/48*

U.S. Cl. 424—401 **13 Claims**



1. A method of cosmetic treatment, which comprises applying to the skin, lips or the hair an effective amount of a cosmetic composition comprising a compound of the following general formula I:

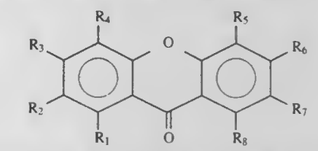
Formula I



where R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 are selected from the group consisting of —H, —OH, —OCH_3, and a glucosyl radical or one of its pharmaceutically acceptable salts, in admixture with a topically acceptable carrier.

12. A method for protecting the skin, the lips or the hair against ultraviolet rays, wherein a cosmetic composition comprising a compound of the following general formula I:

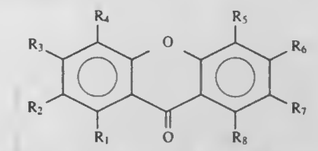
Formula I



where R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 are selected from the group consisting of —H, —OH, —OCH_3, and a glucosyl radical or one of its pharmaceutically acceptable salts, is applied to the skin, the lips or the hair.

13. A method for enhancing the structural quality of the skin, which comprises applying to the skin an effective amount of a cosmetic composition comprising a compound of the following general formula I:

Formula I



where R_1, R_2, R_3, R_4, R_5, R_6, R_7, R_8 are selected from the group consisting of —H, —OH, —OCH_3, and a glucosyl radical or one of its pharmaceutically acceptable salts, in admixture with a topically acceptable carrier.

5,824,321

CLONED LEPTOSPIRA OUTER MEMBRANE PROTEIN

David A. Haake, Culver City, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 249,013, May 25, 1994, Pat. No. 5,643,754. This application Jul. 1, 1997, Ser. No. 886,863

Int. Cl.[6] A61K *39/002*

U.S. Cl. 424—266.1 **10 Claims**

1. An isolated OmpL2 polypeptide, wherein:

a) the peptide is an outer membrane protein of Leptospira

b) the peptide binds an antibody specific for SEQ ID NO:2.

2. The polypeptide of claim 1, wherein the polypeptide is characterized as having a molecular weight of about 63 kD as determined by SDS polyacrylamide gel electrophoresis.

5,824,322

COMPOSITIONS AND METHODS FOR GROWTH PROMOTION

Mannarsamy Balasubramanian, Roswell, Ga., assignor to CytRx Corporation, Norcross, Ga.

Filed Aug. 20, 1996, Ser. No. 700,074

Int. Cl.[6] A61K *45/00;47/32;* **A01N** *31/14*

U.S. Cl. 424—280.1 **8 Claims**

1. A method for increasing an immune response in a human or animal to an antigen comprising administering to the human or animal the antigen and a nonionic block copolymer having the following formula:

$$HO(C_3H_6O)_b(C_2H_4O)_a(C_3H_6O)_bH$$

POP POE POP

wherein "b" represents a number such that the molecular weight of the hydrophobe $(C_3H_6O)_b$ is between approximately 2,000 and 10,000, and "a" represents a number such that the percentage of hydrophile $(C_2H_4O)_a$ is between approximately 5% and 30%.

5,824,323

SKIN LOTION COMPOSITION AND SOFTGEL FILLED THEREWITH AND METHODS FOR MAKING AND USING SAME

Yoram Fishman, Los Angeles, Calif., assignor to Absolute Beauty Company, High Point, N.C.

Filed Nov. 1, 1996, Ser. No. 742,365

Int. Cl.[6] A61K *7/43*

U.S. Cl. 424—401 **15 Claims**

1. A skin lotion composition consisting essentially of:

a) a fine particulate;

b) at least one aliphatic hydrocarbon;

c) a moisturizing agent; and

d) an emulsifying agent.

5,824,324

PERSONAL LIQUID CLEANSER PRODUCT WITH PARTICULATE BICARBONATE SUSPENSION PHASE

Melinda Cettina, Robbinsville, and Wolfgang R. Bergmann, Princeton, both of N.J., assignors to Church & Dwight Co., Inc.

Filed Nov. 6, 1996, Ser. No. 744,526

Int. Cl.[6] A61K *7/00;* **C11D** *1/755*

U.S. Cl. 424—401 **13 Claims**

1. A fluid cleanser composition of ingredients consisting essentially of (1) between about 2–60 weight percent of surfactant; (2) between about 5–50 weight percent of a stable suspension phase of alkali metal bicarbonate or carbonate which comprises sodium bicarbonate, potassium bicarbonate, sodium carbonate or potassium carbonate or any mixture thereof having an average particle size between about 10–250 microns; (3) between about 1–10

weight percent of suspending agent; and (4) between about 10–60 weight percent of water; wherein the composition has a pH between about 7–10.5, and a viscosity in the range between about 1000–145,000 centipoises.

5,824,325

Patent Not Issued For This Number

5,824,326

ACTIVITY ENHANCEMENT OF FERULIC ACID WITH DIMETHYL ISOSORBRIDE IN COSMETIC COMPOSITIONS

Brian Andrew Crotty, Branford; Alexander Paul Znaiden, Trumbull, and Anthony Johnson, Fairfield, all of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.

Filed Jun. 27, 1997, Ser. No. 884,177
Int. Cl.[6] A61K *7/48*
U.S. Cl. 424—401 **9 Claims**

1. A cosmetic composition comprising:
(i) from 0.01 to 5% by weight of ferulic acid;
(ii) from 0.1 to 20% by weight of dimethyl isosorbide; and
(iii) a pharmaceutically acceptable carrier.

5,824,327

KOJIC DIPALMITATE SKIN WHITENING COMESTIC COMPOSITION

Jerry Whittemore, 3300 Shelby Dr., Los Angeles, Calif. 90034, and Robert Neis, 201 E. 79th St. #3J, New York, N.Y. 10021

Filed Apr. 6, 1998, Ser. No. 55,489
Int. Cl.[6] A61K *6/00;7/00*
U.S. Cl. 424—401 **6 Claims**

1. An anhydrous topical skin cream for skin whitening comprising, by weight: 0.1 to 25% kojic dipalmitate; 1–20% fumed silica base; 4–30% hectorite compound; and anhydrous ingredients selected from emollients and anhydrous alcohol.

5,824,328

INSECTICIDAL DELIVERY COMPOSITIONS AND METHODS FOR CONTROLLING A POPULATION OF INSECTS IN AN AQUATIC ENVIRONMENT

Richard Levy, Fort Myers, Fla., assignor to Stockhausen GmbH, Krefeld, Germany

Continuation of Ser. No. 560,286, Jul. 30, 1990, abandoned, which is a continuation of Ser. No. 211,895, Jun. 27, 1988, abandoned, which is a division of Ser. No. 32,532, Apr. 1, 1987, Pat. No. 4,818,534. This application May 18, 1994, Ser. No. 245,816
Int. Cl.[6] A01N *25/34;* **A61K** *9/14*
U.S. Cl. 424—409 **14 Claims**

1. A controlled release insecticidal delivery composition for controlling a population of aquatic environment insects in preflood or flood conditions comprising (1) at least one superabsorbent organic polymer, wherein said superabsorbent polymer is selected from at least one of the group consisting of: hydrolyzed starch-polyacrylonitrile and metal salts thereof; 2-propenenitrile, homopolymer, hydrolyzed, sodium salt; starch-g-poly(acrylonitrile) and metal salts thereof; starch-g-poly(acrylamide-co-sodium acrylate); poly(2-propenamide-co-2-propenoic acid, sodium salt); starch-g-poly(2-propenamide-co-2-propenoic acid, potassium salt); starch-g-poly(2-propenamide-co-2-propenoic acid); starch-g-poly(2-propenamide-co-2-propenoic acid, sodium salt); poly-2-propenoic acid, sodium salt; starch grafted sodium polyacrylates and metal salts thereof; crosslinked polyacrylamide and metal salts thereof; and copolymer acrylamide acrylate and metal salts thereof; which polymer will, when in contact with water, absorb over 100 times its weight in water, (2) at least one insecticidal agent, said polymer and insecticidal agent being present in a total amount effective to control the population of aquatic environment insects; and (3) inert diluent ingredients, wherein the weight ratio of superabsorbent polymer to insecticidal agent and inert diluent ingredients is from about 0.1:100 to about 100:0.001, and wherein said composition is an admixture formed by mixing the superabsorbent polymer, the insecticidal agent, and the inert diluent ingredients such that the superabsorbent polymer is impregnated with the insecticidal agent and with the inert diluent ingredients to control the release rate in the aquatic environment, and wherein said composition will, when in contact with water in the aquatic environment, after being applied by delivering said composition to a target habitat of an aquatic environment insect, be effective in the environment to control the population of insects in that said composition will absorb water and provide variable time release of the insecticidal agent, thereby allowing for controlled release of the insecticidal agent into the aquatic environment to kill insects in various stages selected from the group consisting of eggs, larvae, pupae, nymphs, emerging adults, adults, and combinations thereof.

5,824,329

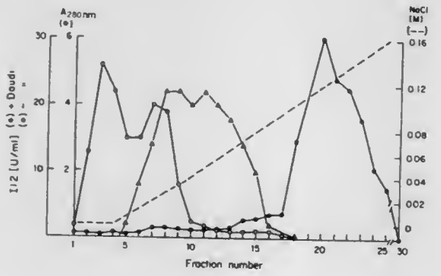
Patent Not Issued For This Number

5,824,330

HIGHLY PURIFIED INTERLEUKIN-2 AND METHOD

Roland Mertelsmann, Chappaqua; Karl Welte, New York, both of N.Y., and Salvatore Venuta, Naples, Italy, assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 89,909, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 964,492, Oct. 21, 1992, abandoned, which is a continuation of Ser. No. 462,647, Jan. 9, 1990, abandoned, which is a continuation of Ser. No. 205,423, Jun. 10, 1988, Pat. No. 4,925,919, which is a division of Ser. No. 603,580, Apr. 25, 1984, Pat. No. 4,778,879, which is a continuation-in-part of Ser. No. 370,223, Apr. 20, 1982, abandoned. This application Apr. 4, 1994, Ser. No. 222,326
Int. Cl.[6] A61F *2/02;* **A61K** *45/05;38/20;* **C07K** *14/55*
U.S. Cl. 424—423 **12 Claims**



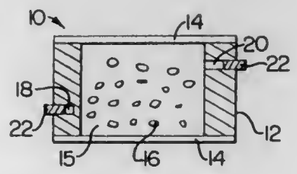
1. A composition comprising a therapeutically effective amount of a purified human interleukin-2 and a pharmaceutically acceptable aqueous carrier wherein the purified human interleukin-2 is characterized by a molecular weight of about 14,000 ±2,000 daltons as measured by gel filtration and sodium dodecyl sulfate-polyacrylamide gel electrophoresis and a specific activity of at least 9×10^5 U/mg in the murine interleukin-2 dependent cytotoxic T-cell line assay.

5,824,331

BIOARTIFICIAL DEVICES AND CELLULAR MATRICES THEREFOR

Anton-Lewis Usala, Winterville, N.C., assignor to Encelle, Inc.

Continuation-in-part of Ser. No. 300,429, Sep. 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 841,973, Feb. 24, 1992, abandoned. This application Dec. 7, 1995, Ser. No. 568,503
Int. Cl.[6] A61F *2/02;* **A61K** *47/30;* **C12N** *11/04*
U.S. Cl. 424—424 **51 Claims**



1. An improved storage matrix for prolonging the functional survival of cellular tissue, comprising: denatured collagen and intact collagen for providing binding sites for said tissue in an amount of about 0.01 to 30 mM; a liquid in a n amount of about 15 to 96.5 percent by weight; a polymeric buffer substrate for reducing cellular damage to said islets at said storage temperature in an amount of about 0.01 to 1000 micromolar, wherein said substrate forms a membrane coating having a porosity to permit passage of nutrients and biological agents and prevent passage of immunogenic agents.

5,824,332

METHOD AND APPARATUS FOR TREATMENT OF NEUROGENIC DIABETES MELLITUS, AND OTHER CONDITIONS

Peter J. Jannetta, 214 Schenley Rd., Pittsbrugh, Pa. 15217

Continuation of Ser. No. 539,341, Oct. 5, 1995, Pat. No. 5,589,183. This application Sep. 5, 1996, Ser. No. 706,537
Int. Cl.[6] A61F *2/02*
U.S. Cl. 424—423 **10 Claims**



1. A neurovascular bridge implant for relieving the pressure between a blood vessel and a preselected region of the brainstem, said implant comprising one of a preconfigured shredded plastic implant and a preconfigured thermoplastic implant.

179-297 OG-98-18 - QL3

5,824,333

INJECTABLE LIQUID COPOLYMERS FOR SOFT TISSUE REPAIR AND AUGMENTATION

Angelo G. Scupelianos; Rao S. Bezwada, both of Whitehouse Station, and Steven C. Arnold, Sparta, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Continuation of Ser. No. 324,952, Oct. 18, 1994. This application Nov. 6, 1996, Ser. No. 746,180
Int. Cl.[6] A61F *2/02;2/08;* **A61K** *31/765;* **C08G** *63/91*
U.S. Cl. 424—423 **20 Claims**

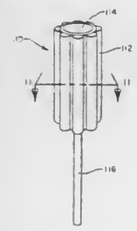
1. A method for repairing or augmenting soft tissue in animals comprising the steps of:
selecting the animal soft tissue to be repaired or augmented and
placing into the animal's soft tissue an injectable, bioabsorbable liquid copolymer suitable for use as a soft tissue repair or augmentation material composed of a liquid copolymer selected from the group consisting of liquid polymers composed of a plurality of at least two different first lactone repeating units and liquid polymers of a plurality of first lactone and second lactone repeating units; wherein the first lactone repeating units are selected from the group consisting of ϵ-caprolactone repeating units, trimethylene carbonate repeating units, ether lactone repeating units and combinations thereof; and the second lactone repeating units are selected from the group consisting of glycolide repeating units, p-dioxanone repeating units and combinations thereof; wherein the liquid copolymers are liquids at room temperature (25° C.).

5,824,334

TOBACCO SUBSTITUTE

Theodore H. Stanley, Salt Lake City, and Brian I. Hague, West Valley City, both of Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Continuation of Ser. No. 439,127, May 11, 1995, abandoned, which is a continuation-in-part of Ser. No. 333,233, Nov. 2, 1994, abandoned, which is a continuation of Ser. No. 152,396, Nov. 12, 1993, abandoned, which is a division of Ser. No. 403,751, Sep. 5, 1989, Pat. No. 5,288,497. This application Apr. 19, 1996, Ser. No. 636,828
Int. Cl.[6] A61K *9/68*
U.S. Cl. 424—440 **17 Claims**



1. A selectively removable nicotine-containing dosage form for use in the transmucosal delivery of nicotine to a patient, the dosage form comprising:
(a) a powdered compressed carbohydrate matrix dissolvable in the oral cavity of a patient;
(b) a pharmacologically effective dose of nicotine dispersed in the matrix such that when the matrix dissolves in the mouth of the patient, the pharmacologically effective dose of nicotine is released for absorption through the mucosal tissue of the mouth, pharynx, and esophagus of the patient;
(c) a buffering agent to modify the saliva pH in the mouth of the patient; and
(d) a holder member secured to the matrix, said holder member being so configured as to facilitate manipulation of the nicotine-containing dosage form in and to permit the selective removal and insertion of the dosage form into and out of the patient's mouth.

5,824,335

NON-WOVEN FABRIC MATERIAL COMPRISING AUTO-CROSSLINKED HYALURONIC ACID DERIVATIVES

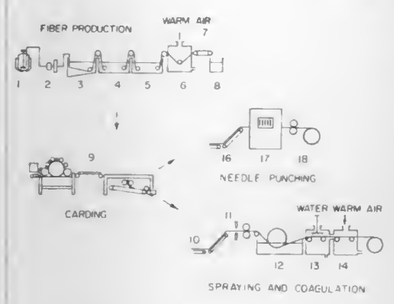
Franco Dorigatti, Via Segantini 23, 38015 Lavis,Trento; Lanfranco Callegaro, Via Bravi, 35, 35020 Ponte di Brenta, Padova, and Aurelio Romeo, Viale Ippocrate, 93, 00171 Rome, all of Italy

Continuation-in-part of Ser. No. 992,700, Dec. 18, 1992, Pat. No. 5,520,916. This application Jun. 7, 1995, Ser. No. 487,407

Claims priority, application Italy, Dec. 18, 1991, PD91A0229

Int. Cl.[6] A61K *31/7025;* A61L *15/28;* B32B *27/02;27/04*

U.S. Cl. 424—443 20 Claims



1. A non-woven fabric material, consisting essentially of auto-crosslinked hyaluronic acid.

5,824,336

CHEWABLE FLUBENDAZOLE TABLETS FOR COMPANION ANIMALS

Eugene Maria Jozef Jans, Meerhout, and Paul Marie Victor Gilis, Beerse, both of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

PCT No. PCT/EP95/01801, § 371 Date Oct. 31, 1996, § 102(e) Date Oct. 31, 1996, PCT Pub. No. WO95/31963, PCT Pub. Date Nov. 30, 1995

PCT Filed May 12, 1995, Ser. No. 732,263

Claims priority, application European Pat. Off., May 20, 1994, 94201434

Int. Cl.[6] A61K *9/20*

U.S. Cl. 424—441 7 Claims

1. An anthelmintic composition palatable to companion animals which consists essentially of flubendazole and brewer's yeast.

5,824,337

SYNTHETIC MEMBRANES FORMING MICELLES AND MICELLE-LIKE STRUCTURES COMPRISING LIPO-GLYCOPROTEIN MEMBRANES

Elaine Mullen, 6733 W. Wakefield Dr., B2, Alexandria, Va. 22307

Continuation-in-part of Ser. No. 280,520, Jul. 26, 1994. This application Mar. 26, 1996, Ser. No. 621,611

Int. Cl.[6] A61K *9/127;9/107*

U.S. Cl. 424—450 11 Claims

1. A method of producing a micelle comprising the steps of:

(1) slowly introducing a small amount of a polar solution containing glycoprotein in an amount sufficient to form an emulsion into a non-polar composition with agitation until an emulsion is formed;

(2) adding to the emulsion formed in step (1) a third composition containing at least one lipid or lipophilic agent with the proviso that said third composition contains a lipid or lipophilic agent which is not the same as the non-polar material used in step (1) and agitating; and

(3) adding to the composition formed in step (2) a polar solvent which may, additionally, contain glycoprotein and agitating until micelles are formed.

5,824,338

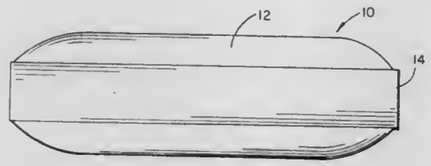
CAPLET AND GELATIN COVERING THEREFOR

Richard L. Jacobs, Portage, and Shirish A. Shah, Kalamazoo, both of Mich., assignors to L. Perrigo Company, Allegan, Mich.

Filed Aug. 19, 1996, Ser. No. 699,450

Int. Cl.[6] A61K *9/64;9/48*

U.S. Cl. 424—460 13 Claims



1. A medicament comprising:

a solid caplet comprising a pressed mixture of excipients and active ingredients, said caplet including a generally elongated body having a peripheral land extending around the center line thereof, and

a gelatin cover for said caplet comprising two dissolvable shells, each with a longitudinally extending peripheral recess defining an external land and wherein the internal diameter of each of said shells is selected to receive said caplet with said peripheral recesses of said shells aligned with and extending over said peripheral land of said caplet, wherein said shells are shaped to conform to the external surface of said caplet.

5,824,339

EFFERVESCENT COMPOSITION AND ITS PRODUCTION

Toshihiro Shimizu, Hyogo; Tetsuro Tabata, and Junichi Kikuta, both of Osaka, all of Japan, assignors to Takeda Chemical Industries, Ltd, Osaka, Japan

Filed Sep. 5, 1996, Ser. No. 708,663

Claims priority, application Japan, Sep. 8, 1995, 7-257064

Int. Cl.[6] A61K *9/46*

U.S. Cl. 424—466 14 Claims

1. An effervescent composition which comprises

(a) a core-shell powder which comprises a fine granular core having a specific volume not exceeding about 5 ml/g coated with a layer comprising a water-soluble polymer and an effective amount of an acid-sensitive physiologically active substance and an enteric coating layer, wherein the average particle diameters of the core-shell powder do not exceed about 300 μm;

(b) an effervescing component; and

(c) an auxiliary effervescing agent; wherein the proportion of (c) is from about 1.0 to about 2.0 equivalents relative to (b).

5,824,340

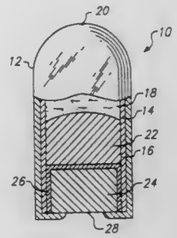
RUMINAL DRUG DELIVERY DEVICE

Frederick H. Maruyama, San Jose, and Judy A. Magruder, Mountain View, both of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Division of Ser. No. 475,916, Jun. 7, 1995, Pat. No. 5,639,477, which is a continuation-in-part of Ser. No. 081,743, Jun. 23, 1993, Pat. No. 5,431,919. This application Nov. 5, 1996, Ser. No. 743,807

Int. Cl.[6] A61K *9/24*

U.S. Cl. 424—473 9 Claims



1. An improved ruminal drug delivery device for placement in an environment of use, said device comprising:

a semipermeable wall forming a semipermeable cup having an open end and defining a compartment,

an osmotic expandable driving member;

a drug formulation containing a drug to be dispensed;

a density element;

an exit orifice; and

coupling means for engaging the density element with the semipermeable cup.

5,824,341

COMPOSITION PROVIDING SELECTIVE RELEASE OF AN ACTIVE INGREDIENT

Pawan Seth, Strasbourg, and Andre Stamm, Griesheim, both of France, assignors to Pharma Pass, France

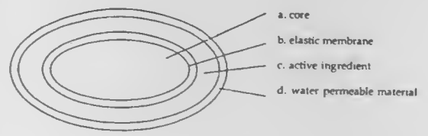
PCT No. PCT/FR95/01079, § 371 Date Apr. 22, 1997, § 102(e) Date Apr. 22, 1997, PCT Pub. No. WO96/04893, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 11, 1995, Ser. No. 776,797

Claims priority, application France, Aug. 11, 1994, 94 09963

Int. Cl.[6] A61K *9/22*

U.S. Cl. 424—473 22 Claims



1. A composition comprising, successively:

(a) a core (**1**) consisting of a water-swellable material;

(b) a layer (**2**) of an elastic material that allows water to pass and is insoluble in water;

(c) a layer (**3**) containing at least one active ingredient; and

(d) a layer (**4**) of a material that is water-permeable in a predetermined aqueous medium, wherein said layer (**4**) is capable of rupturing under the effect of expansion of said core (**1**).

5,824,342

FLASH FLOW FORMED SOLLOID DELIVERY SYSTEMS

Subraman R. Cherukuri, Towaco, N.J.; Gerald E. Battist, Reston, and James H. Perkins, Boyce, both of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

Division of Ser. No. 484,794, Jun. 7, 1995, Pat. No. 5,549,917, which is a division of Ser. No. 269,679, Jul. 1, 1994. This application Apr. 9, 1996, Ser. No. 629,780

Int. Cl.[6] A61K *9/00*

U.S. Cl. 424—484 1 Claim



1. A pharmaceutical product comprising:

a plurality of solloids, said solloids comprising a solid suspension of a solid non-fat substrate having an active associated therewith dispersed in a solid fat which is solidifiable at room temperature and having a flow point lower than the melting point of said non-fat solloid substrate, wherein a predominant amount of said solloids have substantially the active content and at least about 60% of said solloids in said plurality have a particle size less than about 300 to about 400 microns.

5,824,343

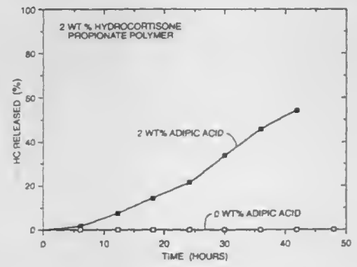
BIOERODIBLE POLYMERS, COMPOSITIONS AND THERAPEUTIC METHOD

Steve Y. W. Ng, San Francisco, and Jorge Heller, Woodside, both of Calif., assignors to Pharmaceutical Delivery Systems, Menlo Park, Calif.

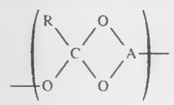
Division of Ser. No. 725,319, Jul. 8, 1991, Pat. No. 5,336,505, which is a continuation-in-part of Ser. No. 568,433, Aug. 16, 1990, abandoned, which is a continuation-in-part of Ser. No. 556,645, Jul. 20, 1990, abandoned, which is a continuation-in-part of Ser. No. 400,532, Aug. 28, 1989, Pat. No. 5,030,457. This application Apr. 11, 1994, Ser. No. 226,279

Int. Cl.[6] A23P *1/00*

U.S. Cl. 424—486 44 Claims



1. A polymer comprising repeating mer units of the structure



wherein

R is hydrogen or (C_1–C_{10}) alkyl; and

A is selected from the group consisting of cycloalkylene and cyclooxyalkylene of at least 5 carbon atoms, and alkylene of the chemical formula

wherein

x is 0 or 1;

y is greater or equal to 3; and

R" is independently selected from the group consisting of H or $(C_1–C_{10})$alkyl; and mixtures thereof.

5,824,344

PHARMACEUTICAL THERMAL INFUSION GRANULES

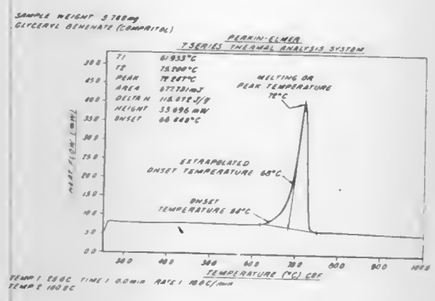
Nageswara R. Palepu, Lansdale, and Gopadi M. Venkatesh, King of Prussia, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Continuation of Ser. No. 433,368, May 4, 1995, Pat. No. 5,690,959. This application May 25, 1995, Ser. No. 450,608

Claims priority, application United Kingdom, May 29, 1993, 9311188; Aug. 5, 1993, 9316252; Sep. 11, 1993, 9318920

Int. Cl.[6] A61K *9/14*

U.S. Cl. 424—489 **16 Claims**



1. Thermal infusion granules prepared by a process which comprises:

(a) blending amoxicillin trihydrate and glyceryl behenate in a range of from about 50% to 98% by weight of amoxicillin trihydrate;

(b) compacting, milling and screening said blend; and

(c) thermally infusing the screened blend in a fluid bed granulator by raising the temperature of the fluidized granules from ambient (about 18° C.) to about 50° C. over a period of about 10 minutes maintaining the temperature at about 50° C. for about 25 minutes and cooling to ambient temperatures over a period of about 15 minutes;

(d) blending the prepared cooled granules with microcrystalline cellulose in a range of from about 5% to 50% by weight of microcrystalline cellulose;

to yield thermal infusion granules.

5,824,345

FRAGRANCES AND FLAVORANTS

Sam J. Milstein, Larchmont, N.Y., assignor to Emisphere Technologies, Inc., Hawthorne, N.Y.

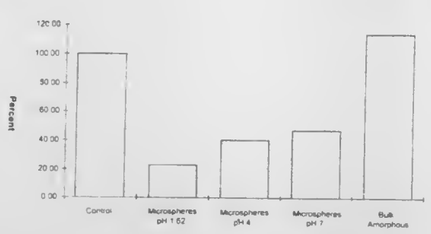
Filed Jun. 7, 1995, Ser. No. 484,293

Int. Cl.[6] A61K *7/46;9/14;9/52;9/66*

U.S. Cl. 424—489 **22 Claims**

1. A composition comprising a microsphere, said microsphere comprising:

(a) an active agent comprising a member selected from the group consisting of a perfume, a vapor, or a combination thereof, and



(b) (i) a proteinoid, (ii) a modified hydrolyzed vegetable protein wherein said protein is modified with an amine reactive agent, or (iii) a combination thereof;

wherein said microsphere can release the active agent.

5,824,346

COMBINATION THERAPY FOR ADVANCED CANCER

Margaret H. Dugan, Woodside, N.Y., assignor to Schering Corporation, Kenilworth, N.J.

Filed Aug. 22, 1996, Ser. No. 701,343

Int. Cl.[6] A61K *31/33;33/24*

U.S. Cl. 424—649 **16 Claims**

1. A method for treating advanced cancer sensitive to the combination below in patients in need of such treatment comprising administering temozolomide and cisplatin wherein the amount of temozolomide administered is from 50 to 400 mg per m^2 of the patients body surface area per day for a period of from 2 to 10 days and the amount of cisplatin administered is from 25 to 300 mg per m^2 of the patients body surface area as a single dose on the first day of temozolomide administration.

5,824,347

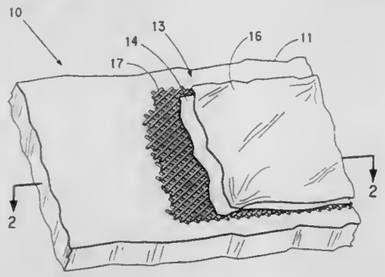
CONCRETE FORM LINER

Franco Luigi Serafini, Leudelange, Luxembourg, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 27, 1996, Ser. No. 721,873

Int. Cl.[6] B28B *7/36;* **E04G** *9/10*

U.S. Cl. 425—84 **17 Claims**



1. A concrete form liner for lining a concrete form and containing a concrete mixture poured into the concrete form during the manufacture of a concrete article, comprising:

a microporous membrane having pores that transmit at least 1 liter of water per square meter of the membrane during 30 minutes when the water is under a hydrostatic head of 1 cm, but which pores prevent the passage of at least 99% of particles with a diameter larger than 2 microns in water under a hydrostatic head of 150 cm, said microporous membrane having a first side and an opposite second side;

a porous sheet having a first side and an opposite second side, said second side of said porous sheet juxtaposed with said first side of said microporous membrane, said porous sheet having

at least one layer of pores 95% of which have a diameter in the range of 0.2 microns to 60 microns, which layer is coextensive with the porous sheet, the air permeability of said porous sheet, measured according to ASTM D 737 at a pressure of 500 Pa, being at least 5 times greater than the air permeability of the microporous membrane, measured according to ASTM D 737 at a pressure of 500 Pa;

wherein said concrete form liner is permeable to air and water in a concrete mixture poured against the first side of said porous sheet, but is substantially impermeable to particles in the concrete mixture of at least 2 microns in diameter.

5,824,348

APPARATUS FOR MANUFACTURING A STEERING SHAFT

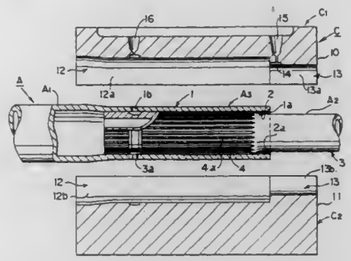
Isao Fujiu, and Mitsuo Yabutsuka, both of Kiryu, Japan, assignors to Kabushiki Kaisha Yamada Seisakusho, Gunma-ken, Japan

Division of Ser. No. 350,182, Nov. 30, 1994, Pat. No. 5,640,884. This application Jan. 16, 1997, Ser. No. 783,907

Claims priority, application Japan, Dec. 3, 1993, 5-338971

Int. Cl.[6] B29C *45/14*

U.S. Cl. 425—120 **8 Claims**



1. An apparatus for manufacturing a steering shaft, comprising:

a mold including an outer shaft supporting mold portion to accommodate an outer shaft of said steering shaft, and an inner shaft supporting mold portion to accommodate an inner shaft of said steering shaft, said outer shaft supporting mold portion including a first molten resin injection guide portion being positioned in alignment with a hole formed in the outer shaft and a circumferential groove in the inner shaft to enable injection of resin through the hole into the groove; said inner shaft supporting mold portion including a second molten resin injection guide portion communicating with a first opening formed between said outer shaft and said inner shaft to enable injection of resin into said first opening.

5,824,349

STRESS-FREE DOUGH SHEETER WITH PNEUMATICALLY ASSISTED RELEASE

Bernardus Wilhelmus Muller, Blythewood, S.C., assignor to Interko, Inc., Blythewood, S.C.

Continuation-in-part of Ser. No. 491,117, Jun. 16, 1995, Pat. No. 5,733,583. This application Dec. 28, 1995, Ser. No. 579,724

Int. Cl.[6] A21C *3/10;9/08;11/10*

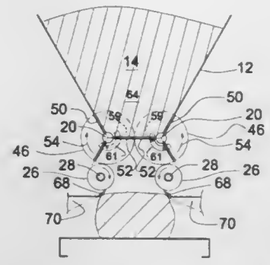
U.S. Cl. 425—145 **30 Claims**

1. A dough sheeting system, comprising:

(a) a cutter assembly for engaging, along a dough to assembly interface, pulling and cutting elongated chunks of dough from a hopper containing dough;

(b) a mechanically driven system for movably mounting said cutter assembly;

(c) a receiving surface disposed beneath said cutter assembly;



(d) a pneumatic air system for introducing air, under pressure and at said dough to assembly interfaces between a cut chunk and said cutter assembly to promote disengagement of said chunk from said cutter assembly;

(e) a motor for advancing said receiving surface in a direction of dough feed;

(f) a calendar assembly for receiving dough output by said receiving surface and outputting a sheet of dough;

(g) a level sensor for monitoring the height of accumulated dough at the input of said calendar assembly and for producing a signal when said input height exceeds a predetermined level, said motor being responsive to said signal from said level sensor to stop advancing said receiving surface when said level exceeds said predetermined level and being responsive to said signal when said height is reduced; and

(h) a movement sensor monitoring the advancement of said receiving surface to actuate said cutter assembly to pull and cut a chunk of dough when said surface has advanced a predetermined distance from the position at which said surface was positioned when a prior chunk of dough was delivered to said surface.

5,824,350

DEVICE FOR MOLDING OR INJECTION-MOLDING POLYMER COMPOUNDS, AND MOLD ACCESSORIES

Bernhard Wietrzynski, Bad Friedrichshall, Germany, assignor to DME Normalien GmbH, Kocher, Germany

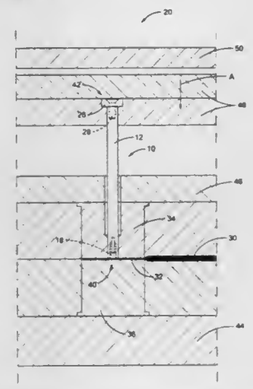
PCT No. PCT/DE95/00524, § 371 Date Feb. 7, 1997, § 102(e) Date Feb. 7, 1997, PCT Pub. No. WO95/29049, PCT Pub. Date Nov. 2, 1995

PCT Filed Apr. 20, 1995, Ser. No. 737,087

Claims priority, application Germany, Apr. 26, 1994, 94 06 940.9

Int. Cl.[6] B29C *45/40*

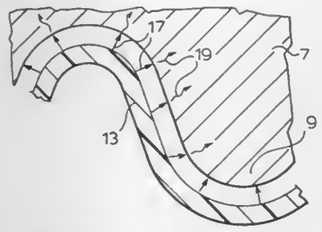
U.S. Cl. 425—190 **12 Claims**



1. A mold ejector device for a mold for molding polymer compounds, said device comprising:

an ejector pin having a first end and a second end, said first end being proximate to said mold when molding;
a marker unit disposed in said first end, said marker unit being detachably fastened to said ejector pin.

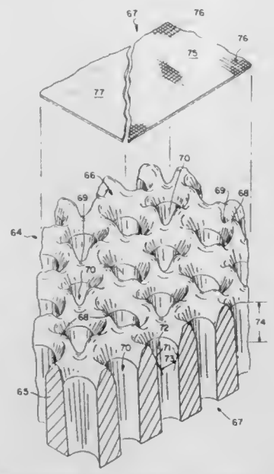
5,824,351
MOLDING APPARATUS WITH NON-REFLECTIVE MOLD TUNNELS
Manfred A. A. Lupke, 92 Elgin Street, Thornhill, Ontario, Canada, L3T 1W6, and Stefan A. Lupke, 32 Vintage Lane, Thornhill, Ontario, Canada, L3T 1X6
Filed Jul. 5, 1996, Ser. No. 677,368
Int. Cl.[6] B29C *33/06;53/30*
U.S. Cl. 425—233 **2 Claims**



1. A pipe molding apparatus comprising an extruder which feeds molten plastic to a moving mold tunnel comprised of a plurality of mold blocks each of which is formed by mold block sections which close and move with one another along said mold tunnel to shape the pipe, each mold block section having an interior surface onto which the plastic flows from the extruder to shape the pipe in an upstream region of the mold tunnel, the interior surface of each mold block section having a non-reflective surface treatment such that the interior surface of each mold block sections absorbs heat energy radiated from the pipe after the pipe cools and shrinks away from the interior surface of each mold block section in a downstream region of the mold tunnel, and each mold block section being made from a heat conductive material which conducts the heat energy absorbed through the interior surface of each mold block section through each mold block section away from the pipe.

5,824,352
APPARATUS FOR PRODUCING AN APERTURED PLASTIC FILM HAVING A TRICOT TEXTURE
Ching-Yun Morris Yang, Princeton Junction; Charles Shimalla, Plainsboro, and Mordechai Turi, Princeton Junction, all of N.J., assignors to McNeil-PPC, Iinc., Skillman, N.J.
Continuation of Ser. No. 307,973, Sep. 16, 1994, abandoned. This application Nov. 12, 1996, Ser. No. 747,937
Int. Cl.[6] B26F *1/26*
U.S. Cl. 425—290 **2 Claims**

1. An apparatus for producing an apertured film having a tricot texture, the apparatus comprising:
a backing support member comprising a rotatable hollow drum having a cylindrical side wall and a pattern of apertures extending through the side wall from a top surface to a bottom surface, the top surface having a topography comprising a plurality of peaks and valleys, each of said apertures being surrounded by a cluster of the peaks and valleys formed in the sidewall, the apertures each having a section just below the valleys which has the shape of a truncated cone whereby the aperture diameter at the top surface of said section is greater than the aperture diameter at the bottom surface of said section, the pattern of apertures, peaks, and valleys being adapted to produce a film having a tricot texture;
means for positioning a stretchable thermoplastic polymer film on the apices of the peaks on the top surface of the drum;



means located outside the drum for projecting adjacent fluid streams simultaneously against said film and then against the peaks and then through the apertures and into the drum;
means for rotating the drum while said fluid is being projected against the top surface;
means disposed inside the drum to remove the fluid from the top surface of the drum; and
means for removing the apertured film having a tricot texture from the top surface of the drum.

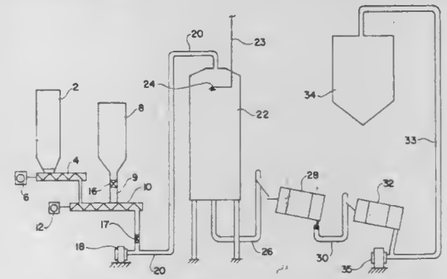
5,824,353
MINERAL WATER
Kenji Tsunoda, Urawa, and Kazumi Osada, Sendai, both of Japan, assignors to Taisho Pharmaceutical Co., Ltd., Tokyo, Japan
PCT No. PCT/JP96/00018, § 371 Date Jun. 10, 1997, § 102(e) Date Jun. 10, 1997, PCT Pub. No. WO96/21622, PCT Pub. Date Jul. 18, 1996
PCT Filed Jan. 10, 1996, Ser. No. 849,862
Claims priority, application Japan, Jan. 13, 1995, 7-003731
Int. Cl.[6] A23L *2/00*
U.S. Cl. 426—66 **2 Claims**

1. A mineral water having a potassium ion concentration of 100 ppm or more and containing potassium ions, magnesium ions and calcium ions in a weight ratio of potassium ions:magnesium ions:calcium ions of 1:0.3–4.5:0.5–8.5.

5,824,354
PROCESS FOR REDUCING STEROLS AND FREE FATTY ACIDS FROM ANIMAL FAT
Chris Ritter, Shawnee, Kans.; Chris Sikorski, Whiting, Ind.; Wen Shieh, and Allan Hedges, both of Crown Point, Ind., assignors to Cerestar USA, Inc., Hammond, Ind.
Continuation of Ser. No. 694,796, Aug. 9, 1996, abandoned, which is a continuation of Ser. No. 392,361, Feb. 22, 1995, abandoned. This application Aug. 19, 1997, Ser. No. 914,452
Int. Cl.[6] A23D *7/04*
U.S. Cl. 426—417 **18 Claims**

1. A process for reducing sterols and free fatty acids from liquefied animal fat using a high water to fat ratio (5:1 to 2:1) comprising the steps of:
(a) forming a uniform, milky white, oil-in-water stable emulsion in less than 30 seconds at a temperature of about 50° C. to about 60° C. by mixing liquefied animal fat, water and cyclodextrin wherein the water to fat weight ratio is about 5:1 to about 2:1 and said cyclodextrin is present in an amount of about 3% to about 10% by weight of water;
(b) moving said emulsion through a conduit without vigorously stirring said emulsion in said conduit, said emulsion having a residence time in said conduit of about 5 to 60 minutes so that complexes form between the cyclodextrin and said free fatty acids and said sterols in said animal fat; and
(c) separating said complexes from said fat such that said fat has a reduced content of sterol and fatty acids.

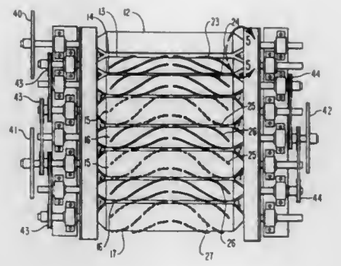
5,824,355
METHOD FOR MANUFACTURING PROTEIN PROTECTED RUMINANT FEED
Glen V. Heitritter, Omaha; James B. Yeates, Fort Calhoun, and Phillip L. Huffman, Omaha, all of Nebr., assignors to Ag Processing, Inc., Omaha, Nebr.
Filed Jan. 16, 1996, Ser. No. 586,614
Int. Cl.[6] A23L *1/20*
U.S. Cl. 426—459 **9 Claims**



1. A process for manufacturing a cooked protein protected ruminant feed comprising the steps;
(a) mixing oil seed meal with hulls to give a combined feed solids mixture having a hull/oil seed meal weight ratio of from about 1:100 to about 10:100;
(b) adding water to the combined feed solids mixture in an amount ranging from about 30 to about 50 wt. % of the oil seed meal weight in the combined feed solids mixture to give a moist meal feed;
(c) cooking the moist meal feed in a cooker for a period of time sufficient to give a moist cooked meal having a temperature of at least 200° F. and a moisture content based on the weight of oil seed meal in the combined feed solids mixture of from about 21 to about 26 wt. %;
(d) drying the moist cooked meal in a dryer at conditions of temperature and time sufficient to give a dried meal having a moisture content based upon the weight of oil seed meal used in the combined feed solids mixture of from about 12 to about 16 wt. %; and
(e) cooling the dried meal in a cooler to give a protein protected ruminant feed having a temperature less than 25° F. above ambient temperature.

5,824,356
METHOD AND APPARATUS FOR CLEANING ROOTS, TUBERS, BULBS, AND THE LIKE
Barnard Stewart Silver, 4391 Carol Jane Dr., Salt Lake City, Utah 84124-3601, and Robert V. Zimmerman, 1813 S. Glencoe St., Denver, Colo. 80222-3918
Filed Aug. 7, 1996, Ser. No. 692,087
Int. Cl.[6] A23N *15/00;* **B07B** *13/02;13/04;13/05*
U.S. Cl. 426—481 **41 Claims**

39. The method for cleaning articles, using an apparatus including at least one pair of spaced article-transport cylindrical rollers, said cylindrical rollers spaced apart sufficiently to allow at least some debris to fall therebetween and sufficiently close to prevent the articles to be cleaned from falling therebetween, helices on the cylindrical surfaces of said article-transport rollers for scrolling at least some of the articles to be cleaned toward at least one end of said at least one pair of article-transport rollers, comprising the steps of:
feeding articles to be cleaned in a direction substantially perpendicular to said at least one pair of article-transport rollers;
laterally moving at least a majority of the articles by said at least one pair of article-transport rollers toward at least one end of said at least one pair of said article-transport rollers; and
removing the articles from at least one end of said at least one pair of article-transport rollers.

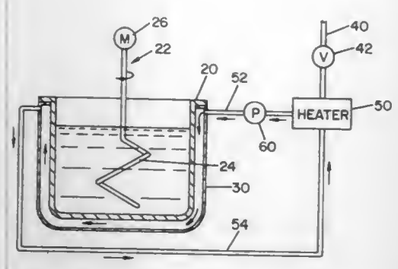


5,824,357
PREPARATION OF MILK AND COFFEE COMPOSITION FOR BEVERAGE PREPARATION
Michel Chaveron, La Tour-de-Peilz; Jürg Schlaginhaufen, Ostermundigen, and Heinz Wyss, Oberdiessbach, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland
Continuation of Ser. No. 404,309, Mar. 10, 1995, Pat. No. 5,620,733. This application May 14, 1996, Ser. No. 645,809
Claims priority, application European Pat. Off., Apr. 2, 1994, 94105214
Int. Cl.[6] A23C *9/156;* **A23F** *5/00*
U.S. Cl. 426—580 **15 Claims**

1. In a process for preparing a product for preparation of a beverage wherein a lactic concentrate is prepared from a milk product comprising a substance selected from the group consisting of a milk and a milk derivative and combinations thereof and by heat treating and concentrating the milk product to obtain the lactic concentrate and wherein the lactic concentrate is heat treated and then spray dried, the improvements comprising:
preparing the lactic concentrate so that the lactic concentrate has a pH between 5.8 and 6.3 and heat treating the lactic concentrate to flocculate whey protein to obtain a heat-treated concentrate containing flocculated whey protein;
adding a liquid coffee extract to the heat-treated concentrate to obtain a mixture;
spray drying the mixture to obtain a spray-dried product.

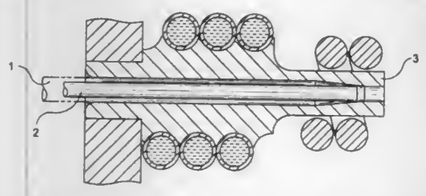
5,824,358
FAT FREE EDIBLE COMPOSITION AND METHOD OF MAKING AND USING SAME
Douglas A. Bye, Salem, Oreg., and Joann Maxwell, Wadsworth, Ohio, assignors to The J. M. Smucker Company, Orrville, Ohio
Filed Nov. 19, 1996, Ser. No. 752,732
Int. Cl.[6] A23L *1/236;1/307*
U.S. Cl. 426—658 **104 Claims**

1. A method of making a fat free edible crystalline composition having the physical temperature characteristics of being generally solid at 70° F. and generally spreadable at 110° F., said method comprises the steps of:



a) forming an aqueous solution of water and crystalline sorbitol with at least five times the weight of sorbitol compared to said water;
b) including a food flavor ingredient in said aqueous solution;
c) heating said solution to a temperature in the range of 80° F. to 110° F.; and,
d) cooling said solution to less than 70° F.

5,824,359
MEDICAL DEVICE LUBRICANT CONTAINING LECITHIN
Azhar J. Khan, West Valley, and Mohammad A. Khan, Sandy, both of Utah, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Filed Jun. 30, 1997, Ser. No. 884,780
Int. Cl.[6] B05D *3/02;5/08;* **C07F** *9/02*
U.S. Cl. 427—2.3 **19 Claims**

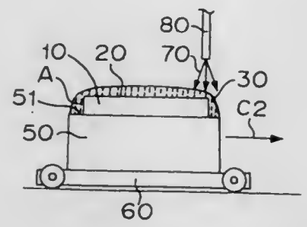


1. A method for forming a shaped tip on a catheter comprising:
applying lecithin to a a portion of an untipped catheter tubing that is to be tipped;
placing the untipped catheter tubing on a mandrel;
heating the untipped catheter tubing to soften the portion of the untipped catheter tubing that is to be tipped;
engaging the mandrel with a die to form the catheter tip; and
removing the shaped catheter tubing from the die and mandrel.

5,824,360
METHOD OF PLANARIZING FILM IN SEMICONDUCTOR DEVICE
Naoki Nagashima, Kanagawa, Japan, assignor to Sony Corporation, Japan
Filed Aug. 9, 1996, Ser. No. 695,305
Claims priority, application Japan, Aug. 15, 1995, 7-229711
Int. Cl.[6] B05D *5/12*
U.S. Cl. 427—126.2 **23 Claims**

1. A method of planarizing films in a semiconductor device, comprising the steps of:
forming a first, silicon-containing film on at least the top of a step portion provided on a base body;
covering said step portion with a second, glass film containing phosphorus in an amount of from 6 to 9 wt % and being higher in polishing rate than said first film; and
(c) polishing said second film to expose said first film formed on the top of said step portion.

5,824,361
METHOD FORMING A UNIFORM PHOTORESIST FILM USING GAS FLOW
Yuji Asanuma, Saku, Japan, assignor to TDK Corporation, Tokyo, Japan
Continuation of Ser. No. 510,661, Aug. 3, 1995, abandoned. This application Apr. 2, 1997, Ser. No. 831,183
Claims priority, application Japan, Aug. 5, 1994, 6-184625
Int. Cl.[6] B05D *3/04*
U.S. Cl. 427—127 **2 Claims**

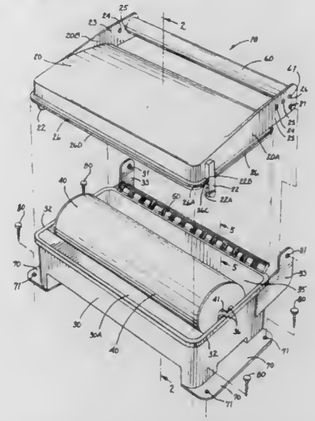


1. A method for forming a substantially uniform photoresist film on a substrate, comprising the steps of:
mounting a substrate on a supporting surface of a supporter so that a stepped portion is produced between the supporting surface and a top surface of the substrate;
forming a non-uniform photoresist coating on a top surface and a side surface of the substrate, the side surface showing up at the stepped portion; and then;
blowing a gas onto the photoresist on the top surface from a gas supply nozzle, in such a way that the flow of the gas makes the photoresist a film having a substantially uniform thickness, and
scanning said gas relative to said top surface, during said blowing step, along a path having at least one linear portion by moving the gas supply nozzle with respect to the top surface of the substrate.

5,824,362
PLATEMAKING PROCESS FOR PERFORATING STENCIL PRINTING SHEET
Hideo Watanabe, Tokyo, Japan, assignor to Riso Kagaku Corporation, Tokyo, Japan
Continuation of Ser. No. 284,174, Aug. 2, 1994, abandoned. This application Jan. 9, 1997, Ser. No. 779,920
Claims priority, application Japan, Aug. 4, 1993, 5-193638
Int. Cl.[6] B05D *1/00;* **B41N** *1/24;* **B41C** *1/14*
U.S. Cl. 427—143 **9 Claims**

1. A platemaking process for perforating a stencil printing sheet comprising the steps of:
providing a stencil printing sheet comprised of a layer of a solvent-soluble resin selected from the group consisting of a polyester, polycarbonate and polyvinyl ether; and
feeding a solvent comprising at least one organic solvent selected from the group consisting of alcohols, ketones, and esters, to a portion of said solvent-soluble resin layer using a solvent feed means positioned in the non-contact with said portion thereby perforating the portion of said solvent soluble resin layer.

5,824,363
WALLPAPER PASTING MACHINE AND METHOD OF MAKING AND USING THE SAME THEREOF
Daniel L. Poole, Phoenix, and Robert N. Poole, Pinetop, both of Ariz., assignors to Blackhawk Metal Products, Inc., Phoenix, Ariz.
Filed Apr. 11, 1997, Ser. No. 840,140
Int. Cl.[6] B05D *1/00*
U.S. Cl. 427—207.1 **20 Claims**

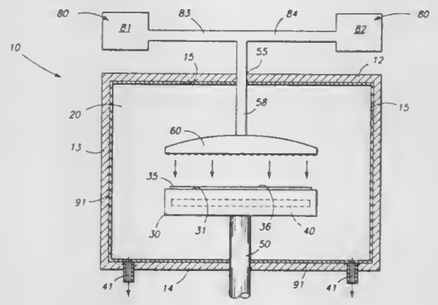


1. An improved wallpaper pasting machine for applying paste or glue to a wallpaper wherein the machine has an input end for inputting the wallpaper into the machine and has an output end for outputting the wallpaper from the machine comprising:
a trough having an inner compartment for holding paste or glue,
a trough roller mounted in the trough so that the trough roller is able to rotate within the inner compartment to pick up the paste or glue in the trough and contact a side of the wallpaper to which the paste or glue is applied,
a lid that guides and presses the wallpaper to the trough roller wherein the lid is hingedly attached to the trough and is pivotable between an open position and a closed position and wherein the wallpaper is able to be pulled through the machine between the lid and the trough,
a scraper bar mounted at an angle to the trough near the output end wherein the scraper bar scrapes and guides excess paste or glue back into the trough, and
a return roller mounted to the lid that is adjustable in position relative to the scraper bar wherein the return roller is able to rotate and contactingly guide the wallpaper so that amounts of paste or glue applied to the wallpaper can be controllably varied.

5,824,364
METHODS OF MANUFACTURE FOR HIGHLY LOADED FIBER-BASED COMPOSITE MATERIAL
Laurent Cousin, Annecy le Vieux, and Fernand Mora, Frangy, both of France, assignors to International Paper Company, Purchase, N.Y.
Division of Ser. No. 342,680, Nov. 21, 1994, Pat. No. 5,731,080, which is a continuation of Ser. No. 44,234, Apr. 7, 1993, abandoned. This application Jan. 22, 1997, Ser. No. 786,277
Claims priority, application France, Apr. 7, 1992, 92 04474
Int. Cl.[6] B05D *7/24;1/12*
U.S. Cl. 427—212 **18 Claims**

1. A process for producing a fiber-based composite material comprising the steps of:
providing an aqueous suspension of a fiber-based material, including a plurality of fibers of expanded specific surface area and hydrophilic character, having microfibrils on their surface, wherein said surface area of said fibers are in the range of 3 to 200 m^2/g;
adding calcium ions, Ca^{++}, to said aqueous suspension and mixing with moderate agitation to form a mixed suspension;
diluting said mixed suspension to a solids concentration which is less than or equal to 5% by weight and maintaining said mixed suspension at a temperature between 10° to 50° C.;
adding carbonate ions, CO_3^{--}, to said mixed suspension and vigorously agitating to effect crystallization of calcium carbonate, $CaCO_3$ (PCC), in situ, wherein the crystals of PCC are organized essentially in clusters of granules directly grafted onto said microfibrils, without binders or retention aids present at the interface between said crystals of PCC and said microfibrils, so the majority of said crystals of PCC trap said microfibrils by reliable and non-liable mechanical bonding to form the composite material.

5,824,365
METHOD OF INHIBITING DEPOSITION OF MATERIAL ON AN INTERNAL WALL OF A CHEMICAL VAPOR DEPOSITION REACTOR
Gurtej S. Sandhu; Ravi Iyer, and Donald L. Westmoreland, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.
Filed Jun. 24, 1996, Ser. No. 668,855
Int. Cl.[6] B05D *7/22;* **C23C** *16/00*
U.S. Cl. 427—239 **2 Claims**



1. A method of inhibiting deposition of material on an internal wall of a chemical vapor deposition reactor, comprising:
providing a chemical vapor deposition reactor having a wall which has an inside facing surface, and wherein the inside facing surface of the chemical vapor deposition chamber reactor wall comprises an electrically conductive metallic material, and wherein the inside facing surface at least partially defines a chemical vapor deposition reactor chamber;
forming a first electrically insulative material layer comprising silicon nitride immediately against the inside facing surface of the chemical vapor deposition reactor chamber before loading a substrate to be processed into the chemical vapor deposition reactor chamber, and wherein the first material layer has a thickness of about 10 to about 50 Angstroms;
after forming the first material layer, positioning the substrate in the chemical vapor deposition reactor chamber, the substrate having an outer surface; and
chemical vapor depositing a second material layer on the substrate; the second material layer being selected from the group consisting essentially of aluminum, titanium, tungsten, and compounds of aluminum, titanium, tungsten and mixtures thereof, the chemical vapor depositing of the second material layer being performed in a manner which is selective to the substrate outer surface and not the first material layer of silicon nitride, thereby restricting deposition of the second layer on the reactor inside facing surface, and wherein the first and second material layers are different.

5,824,366

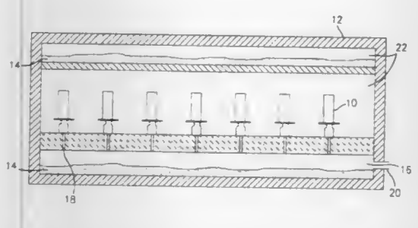
SLURRY COATING SYSTEM

Krishnangshu Bose, Manchester, Conn.; Terry T. Perry, Bar Mills, Me.; David W. LaFlamme, Colchester, and Lester J. Magyar, Wallingford, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Division of Ser. No. 862,115, May 22, 1997. This application Dec. 10, 1997, Ser. No. 988,198

Int. Cl.[6] B05D *3/02;7/14*

U.S. Cl. 427—239 **8 Claims**



1. A process for forming an oxidation and corrosion resistant coating on selected surfaces of an airfoil comprising:

forming a dry chemical composition consisting essentially of from about 2.5 wt % to about 7.0 wt % aluminum fluoride, from about 5.0 wt % to about 20 wt % of a chromium-aluminum powder, and from about 75 wt % to about 92.5 wt % of Al_2O_3;

mixing said dry chemical composition with a cellulose compound and water so as to form a slurry composition; and

placing said slurry composition into contact with internal surfaces of said airfoil.

5,824,367

METHOD FOR THE DEPOSITION OF DIAMOND FILM ON AN ELECTROLESS-PLATED NICKEL LAYER

Jung-Il Park, Anyang, and Kwang-Ja Park, Seoul, both of Rep. of Korea, assignors to National Institute of Technology and Quality, Kwacheon, Rep. of Korea

PCT No. PCT/KR94/00115, § 371 Date Feb. 21, 1997, § 102(e) Date Feb. 21, 1997, PCT Pub. No. WO96/06206, PCT Pub. Date Feb. 29, 1996

PCT Filed Aug. 24, 1994, Ser. No. 793,256

Int. Cl.[6] C23C *28/00;16/26;* **B05D** *3/10*

U.S. Cl. 427—249 **3 Claims**

1. The method for the deposition of a diamond film, comprising the steps of:

immersing a metallic or nonmetallic substrate in an electroless nickel plating bath containing a reducing agent to form a nickel layer on said substrate; and

depositing said diamond film on said electroless nickel-plated substrate.

5,824,368

PROCESS OF DIAMOND GROWTH FROM C_{70}

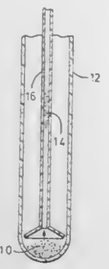
Martin Moskovits, 145 Chiltern Hill Rd., Toronto Ontario, Canada, M6C 3C3, and Kejian Fu, 30 Tannery St. #210, Mississanga Ontario, Canada, L5M 6B7

Continuation-in-part of Ser. No. 391,705, Feb. 21, 1995, Pat. No. 5,614,258. This application Mar. 24, 1997, Ser. No. 828,148

Int. Cl.[6] C23C *16/26;* **C01B** *31/06*

U.S. Cl. 427—249 **16 Claims**

1. A process for growing diamonds, comprising;



exposing diamond seed particles to vapor phase C_{70} in the presence of a gas phase metal carbonyl at an effective temperature to cause at least some of the diamond seed particles to grow.

5,824,369

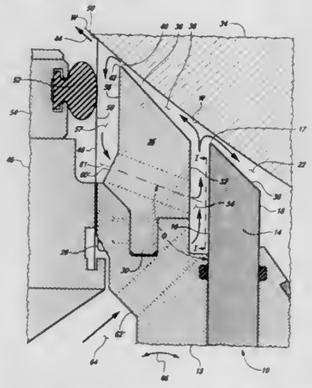
METHOD AND APPARATUS FOR COATING A TRAVELING PAPER WEB

Alfred C. Li, Napierville; Pamela K. Hynnek, Rockton, both of Ill.; James P. Alfano, Janesville, Wis.; Xuekui Lan, Roscoe, Ill., and Rex A. Becker, Janesville, Wis., assignors to Beloit Technologies, Inc., Wilmington, Del.

Filed Jun. 24, 1996, Ser. No. 669,688

Int. Cl.[6] B05D *3/12;* **B05C** *3/18*

U.S. Cl. 427—345 **8 Claims**



1. A method of coating a traveling paper web, having a predetermined width, with a film of coating material having a weight per unit area of web, the method utilizing a rotatable backing roll for supporting the paper web, a coating applicator having an operating width extending in the cross-machine direction for at least the effective width of the traveling paper web, the coating applicator including a coater head, a metering blade for metering the weight of coating film remaining on the web after the coating has been applied to the web, a baffle having a distal end for directing one portion of coating material onto the traveling web, and for permitting another portion to fall away from the traveling web, and a flow stabilizer having a converging lip, the flow stabilizer providing distinct surfaces in proximity to 1) the baffle, 2) the web over the backing roll, 3) the metering blade, to define therewith corresponding mixing, convergent and recirculation channels, respectively, the method comprising the steps:

1) introducing a flow of fresh coating material via an inlet nozzle into the mixing channel, and against the baffle, for substantially the width of the traveling web at a location upstream of where the baffle directs a portion of the coating material against the traveling web;

2) controlling the flow of coating material through the inlet nozzle by directing the coating material through a plurality of inlet orifices which comprise the inlet nozzle;

3) directing the flow of coating material downstream into the mixing channel to the web supported on the backing roll;

4) splitting the flow of coating material proximate the distal end of the baffle of the mixing channel into a larger portion, which is directed to flow upstream over the baffle and out of the coating applicator, and a smaller portion, which flows downstream against the traveling web, and is carried downstream by the traveling web;

5) directing the smaller portion into the convergent channel extending and converging in the direction of web travel, the convergent channel having a convergent angle and ending in a converged gap between the converging lip and the web supported on the backing roll, and in upstream spaced adjacency with the metering blade, whereby some coating material is urged against, and is carried by, the web to the metering blade;

6) dividing the portion of coating material passing the flow stabilizer lip into film and recirculating portions, the film portion carried by the traveling web past the metering blade for coating the traveling paper web, and the recirculating portion passing into the recirculation chamber;

7) directing the recirculating portion of the coating material into a plurality of flow-metering orifices, disposed in spaced adjacency in the flow stabilizer and extending substantially for the effective width thereof, the orifices extending longitudinally between the recirculation and mixing chambers, and entering the mixing chamber by being projected thereinto to intercept the oncoming flow of the fresh coating material at an obtuse angle relative to the direction of the oncoming flow of coating material in the mixing channel, whereby the recirculating portion and fresh coating material are mixed in an improved manner and control of vortices in the coating material is promoted.

5,824,370

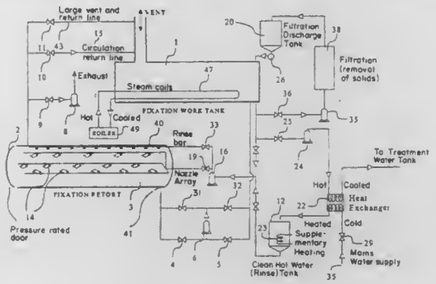
PROCESS FOR TREATING WOOD

Anthony J. Bergervoet, Bli Bli, Australia; James L. Marcinko, Kannapolis, and Paul Joseph Walcheski, Mount Ulla, both of N.C., assignors to Chemical Specialties, Inc., Charlotte, N.C.

Continuation-in-part of Ser. No. 609,087, Feb. 29, 1996, Pat. No. 5,652,023. This application Feb. 26, 1997, Ser. No. 805,503

Int. Cl.[6] B05D *3/00*

U.S. Cl. 427—297 **8 Claims**



1. A process for treating wood with a heat-fixable preservative which comprises the steps of:

(A) placing the wood to be treated in a treatment vessel;

(B) applying a vacuum to the treatment vessel to thereby reduce the pressure in a treatment vessel below atmospheric pressure;

(C) introducing a treatment solution comprising an aqueous medium and the preservative into the treatment vessel while maintaining the pressure in the vessel below atmospheric pressure;

(D) raising the pressure in the treatment vessel to a level above atmospheric pressure and impregnating the wood with the preservative;

(E) reducing the pressure in the treatment vessel to a level of about atmospheric pressure, recovering any excess preservative in the treatment vessel and removing the treated wood from the treatment vessel;

(F) placing the treated wood resulting from step (e) in a fixation vessel;

(G) fixing the preservative in the treated wood by contacting the treated wood with an aqueous heat transfer fluid which has been pre-heated to a temperature of about 55° to 95° C. for a period of time of about thirty minutes to two hours, said fluid containing an oxidant comprising an inorganic chlorate salt which will oxidize any wood extractives resulting from such contact without any significant reaction occurring between the oxidant and the preservative;

(H) removing from the fixation vessel the heat transfer fluid together with rinse water heated to a temperature of up to about 95° C. which has been introduced into the fixation vessel as recited in step (K);

(I) reducing the level of any contamination of the aqueous heat transfer fluid resulting from any wood extractives, any unfixed preservative and/or any particulate matter present in the fluid by one or more of the following procedures, in any combination thereof:

(a) cooling the heat transfer fluid and the rinse water removed from the fixation vessel by heat exchange with clean water, thereby producing (i) cooled heat transfer fluid and rinse water which are used for preparing the treatment solution and (ii) heated clean water which is reserved for step (K);

(b) filtering the heat transfer fluid and rinse water removed from the fixation vessel to remove any particulate matter contained therein;

(c) adding to the heat transfer fluid and the rinse water removed from the fixation vessel a pH adjustment agent; and

(d) establishing a pressure in the fixation vessel which will oppose movement of any wood extractives and any unfixed preservative into the heat transfer fluid and rinse water;

(J) reducing the pressure in the fixation vessel to a level of about 0.3 to 0.9 atmosphere and maintaining such reduced pressure in the fixation vessel for a period of time of about 5 to 30 minutes;

(K) introducing rinse water heated to a temperature of up to about 95° C. into the fixation vessel and rinsing the treated and fixed wood in the vessel; and

(L) raising the pressure in the fixation vessel to about atmospheric pressure and removing the treated and fixed wood and the rinse water from the vessel.

5,824,371

CORROSION RESISTANT METAL ARTICLE COATED WITH EMERALDINE BASE POLYANILINE

Arthur J. Epstein, Bexley, and Shashi G. Jasty, Columbus, both of Ohio, assignors to Ohio State University Research Foundation, Columbus, Ohio

Filed Feb. 3, 1995, Ser. No. 383,346

Int. Cl.[6] B05D *7/14*

U.S. Cl. 427—388.1 **12 Claims**

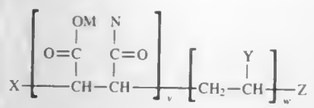
1. A corrosion resistant metal article which comprises:

(a) a metal body normally prone to corrosion when subjected to potentially corrosive conditions; and

(h) a coating of neutral, undoped polyaniline in the emeraldine base form on a portion of the metal body, where the distance between coated and uncoated portions of the metal is effective to protect the uncoated portion of the metal as well as the coated portion of the metal.

5,824,372
MALEIC ACID COPOLYMERS WITH FLUORINATED THIOETHER END CAP
Engelbert Pechhold, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Division of Ser. No. 617,518, Mar. 13, 1996, Pat. No. 5,712,348. This application Sep. 25, 1997, Ser. No. 937,953
Int. Cl.[6] B32B *27/02*
U.S. Cl. 427—393.5 **6 Claims**

1. A process for providing soil resistance and resistance to staining by acid dyes to fibers comprising application of an effective amount of a composition comprising a copolymer having units of Formula II:



II

wherein

M is H, alkali metal, ammonium cation, or a mixture thereof;

N is OM or a mixture of OM, OR, and NR_1R_2 in a molar ratio of (OM):(OR):(NR_1R_2) of [1−(e+f)]:e:f, wherein e and f) are each independently 0 to 0.5, provided that (e+f) is less than 0.8;

R, R_1, and R_2 are each independently H or a branched or straight chain $C_{1\text{-}20}$ alkyl;

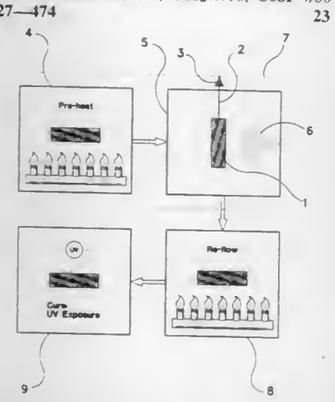
Y is a $C_{2\text{-}10}$ alkyl, $C_{6\text{-}12}$ aryl, or $C_{4\text{-}12}$ alkoxy;

X is a fluorinated thiol radical;

Z is H;and

v and w are each a positive number such that the molar ratio of v to w is from about 0.4:1 to about 1.3:1.

5,824,373
RADIATION CURING OF POWDER COATINGS ON WOOD
Kevin M. Biller, Columbus, and Ben A. Mac Fadden, Circleville, both of Ohio, assignors to Herbert's Powder Coatings, Inc., Hilliard, Ohio
Continuation of Ser. No. 369,471, Jan. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 230,232, Apr. 20, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 611,970
Int. Cl.[6] B05D *1/04;7/24;* **C08J** *7/18;* **C08F** *4/00*
U.S. Cl. 427—474 **23 Claims**



14. A method for applying a powder coating to a wooden substrate comprising the steps of:

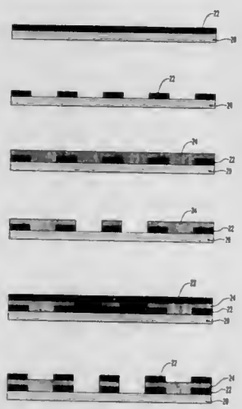
a) electrically grounding said wooden substrate;

b) electrostatically charging a powder coating comprising; i) a radiation curable resin mixture comprising a mixture of acrylourethane resin and an unsaturated polyester resin wherein the polyester resin is chosen from the group consisting of maleate containing resins and fumarate containing resins, and, ii) a photoinitiator chosen from the group consisting of morpholino containing photoinitiators, phenol containing photoinitiators, ketal containing photoinitiators, and phosphine containing photoinitiators, wherein said photoinitiator comprises from approximately 0.8% to approximately 7.5% of the total weight of said radiation curable resin mixture, and, iii) a plasticizer in sufficient quantity to cause the flow temperature of said powder to be less than approximately 200 degrees Fahrenheit;

c) directing said electrostatically charged powder onto said substrate until substantially all of said substrate requiring coating is coated with said powder; and,

d) curing said powder coating, forming thereby a continuous coating on said substrate.

5,824,374
IN-SITU LASER PATTERNING OF THIN FILM LAYERS DURING SEQUENTIAL DEPOSITING
Richard Alan Bradley, Jr.; Nancy Lee Schultz Yamasaki; Christopher Wayne Lantman, and Bryant Hichwa, all of Santa Rosa, Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.
Filed Jul. 22, 1996, Ser. No. 681,125
Int. Cl.[6] B05D *3/00*
U.S. Cl. 427—555 **20 Claims**



1. A method for patterning a plurality of different and sequentially applied coating materials to form a coated substrate, the method comprising steps of:

(a) providing a first substrate having a first substrate surface to be coated;

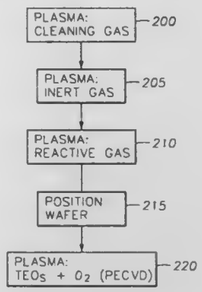
(b) applying a first coating material to substantially all of the first substrate surface;

(c) removing one or more regions of the first coating material to a first controlled depth by laser ablation to form a first patterned surface having regions coated with said first coating material and regions without coating;

(d) applying at least a second coating material to substantially all of the first patterned surface; and

(e) removing one or more regions of the second coating material to a plurality of second controlled depths by laser ablation to form a second patterned surface having a plurality of different regions selected from the group consisting of regions coated with said second coating material overlying said first coating material, regions coated with said first coating material and regions without coating.

5,824,375
DECONTAMINATION OF A PLASMA REACTOR USING A PLASMA AFTER A CHAMBER CLEAN
Anand Gupta, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.
Filed Oct. 24, 1996, Ser. No. 735,904
Int. Cl.[6] H05H *1/24;* **B08B** *6/00*
U.S. Cl. 427—569 **16 Claims**



1. A method for reducing sorbable contaminants in a reactor, comprising the steps of:

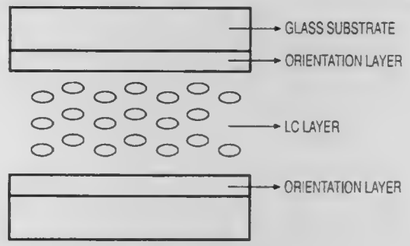
cleaning a reactor with a plasma comprising a cleaning gas that leaves sorbable contaminants in the reactor; and

removing sorbable contaminants from the reactor with a plasma consisting of an inert gas.

5,824,376

Patent Not Issued For This Number

5,824,377
PHOTOSENSITIVE MATERIAL FOR ORIENTATION OF LIQUID CRYSTAL DEVICE AND LIQUID CRYSTAL DEVICE THEREOF
Grit Pirwitz, Worrstedt; Horst Zaschke, Holle; Andrea Hohmuth, Rudisleben, all of Germany; Yuriy Reznikov, Kyyiv, Ukraine; Oleg Yaroshchuk, Kyyiv, Ukraine, and Igor Cerus, Kyyiv, Ukraine, assignors to LG Electronics Inc., Seoul, Rep. of Korea
Continuation of Ser. No. 652,041, May 23, 1996, abandoned. This application Oct. 22, 1997, Ser. No. 956,494
Claims priority, application Rep. of Korea, Nov. 20, 1995, 42222/1995
Int. Cl.[6] G02F *1/1337*
U.S. Cl. 428—1 **11 Claims**

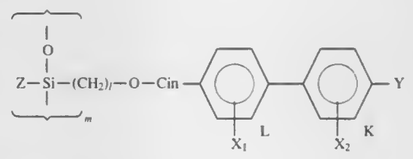


1. A liquid crystal device, comprising:

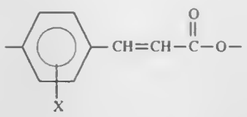
a substrate;

a liquid crystal layer; and

an orientation layer between said substrate and said liquid crystal layer for orienting said liquid crystal layer, said orientation layer including a compound of the formula;



wherein Cin is:



wherein Z is selected from the group consisting of OH, CH_3, C_2H_5, C_6H_5, and a mixture of OH and CH_3;

m is from 10 up to 100;

is from 1 up to 10;

L is 0 or 1;

K is 0 or 1; and

X, X_1, X_2, Y are selected from the group consisting of H, F, Cl, CN, CH_3, CF_3, OCF_3, C_nH_{2n+1}, and OC_nH_{2n+1}, wherein n is from 1 up to 10.

5,824,378
FOLDABLE PINATA
Esther Armendariz; Victor Mireles, and Michael Angel Balibrera, all of El Paso, Tex., assignors to Aztec Imports Inc., El Paso, Tex.
Filed May 8, 1995, Ser. No. 436,962
Int. Cl.[6] A63H *33/00*
U.S. Cl. 428—7 **20 Claims**



1. A piñata, comprising:

a hollow container consisting of a first piece of cardstock which has been folded into a predetermined shape, without any structural elements which are not cardstock, wherein said container will hold candy and small treats;

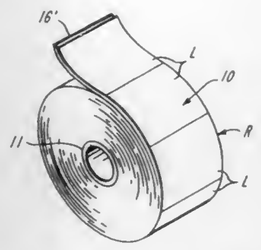
a second piece of cardstock which has been folded into a hollow shape and attached to said hollow container;

retentive elements to fasten portions of said hollow container to each other in said predetermined shape;

an attachment point for attachment of a suspension element to said hollow container;

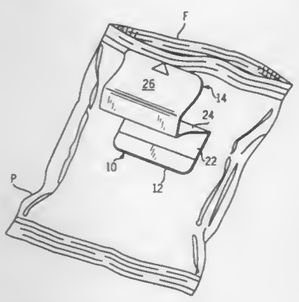
wherein said container will break when struck sharply.

5,824,379
COMPOSITE LABEL WEB
Brad S. Riley, Xenia, and Frederick M. Pou, Bellbrook, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio
Filed Dec. 11, 1995, Ser. No. 570,038
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—40.1 6 Claims



1. A composite label web wound into a roll, comprising: a carrier web having a free end, a printable label web having pressure sensitive adhesive and being releasably adhered by the pressure sensitive adhesive to the carrier web, longitudinally spaced laterally extending lines of severing essentially completely severing only the label web into a series of labels, longitudinally spaced laterally extending lines of weakening in the carrier web, the lines of severing in the label web being spaced longitudinally further from the free end than the lines of weakening in the carrier web to provide an outwardly projecting lateral tab in the carrier web to facilitate manual separation of a label from the carrier web, and registration marks on the carrier web for registering the labels in a printer.

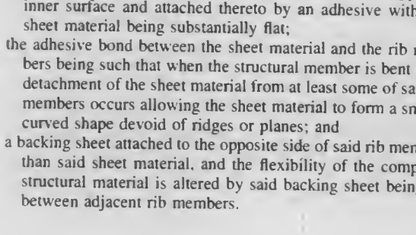
5,824,380
PACKAGE RECLOSURE LABEL AND PACKAGE
Ronald G. Hagen, Larsen, Wis., assignor to Menasha Corp., Neenah, Wis.
Filed Apr. 24, 1997, Ser. No. 842,312
Int. Cl.[6] B32B *3/04*
U.S. Cl. 428—41.9 14 Claims



1. A package reclosure label comprising:
a base sheet having a top surface and a bottom surface;
a multi-panel top sheet having a top side and a bottom side, said top sheet being accordion-folded with first, second, and third panels serially connected along fold lines, said first panel being connected to said second panel along a first fold at one edge of said second panel, and said third panel being connected to said second panel along a second fold at an opposite edge of said second panel, said third panel extending from said second fold to a tab area of said third panel which is beyond said first fold;
an area of adhesive forming a releasable bond on said top side of said top sheet in an area of said second panel which is adjacent to said second fold, said area of releasable adhesive holding said first fold closed; and
an area of adhesive forming a resealable bond on the bottom side of said top sheet in an area of said tab, said resealable bond area holding said second fold closed and being adherable to said package for holding said package reclosed.

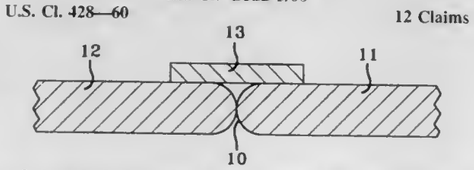
5,824,381
Patent Not Issued For This Number

5,824,382
CONTROL OF DELAMINATION IN CONTOURED LAMINATED STRUCTURES
Victor L. Ruby, Lealand Design, 1736 Fleet St., Baltimore, Md. 21231
Continuation of Ser. No. 174,318, Dec. 30, 1993, Pat. No. 5,618,601. This application Jul. 10, 1996, Ser. No. 678,067
Int. Cl.[6] B32B *3/10;3/14;3/30*
U.S. Cl. 428—56 5 Claims



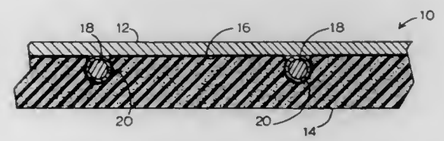
1. A composite structural material having an outer surface for surface-covering applications, comprising:
a sheet material having an outer surface and an opposing inner surface;
a plurality of parallely-spaced rib members extending substantially across the width of said sheet material on the opposing inner surface and attached thereto by an adhesive with said sheet material being substantially flat;
the adhesive bond between the sheet material and the rib members being such that when the structural member is bent a self detachment of the sheet material from at least some of said rib members occurs allowing the sheet material to form a smooth curved shape devoid of ridges or planes; and
a backing sheet attached to the opposite side of said rib members than said sheet material, and the flexibility of the composite structural material is altered by said backing sheet being cut between adjacent rib members.

5,824,383
METHODS OF SECURING SPLICES IN CURABLE RUBBER ARTICLES
James Robert Tuttle, Hudson; Frederick Forbes Vannan, Jr., Clinton, and William James Head, Ravenna, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 25, 1996, Ser. No. 738,215
Int. Cl.[6] B32B *3/06*
U.S. Cl. 428—60 12 Claims



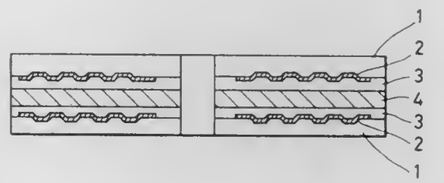
1. A method of securing a splice between two ends of curable rubber, said method comprising steps of:
(a) covering the splice and two ends of uncured rubber with syndiotactic 1,2-polybutadiene in the form of a powder; and
(b) adhering the syndiotactic 1,2-polybutadiene to the uncured rubber, wherein the uncured rubber does not have syndiotactic 1,2-polybutadiene formulated therein.

5,824,384
HAIR PERMING MAT MATERIAL AND APPARATUS
John E. Hickox, 12230 SW. Breyman Ave., Portland, Oreg. 97219
Continuation of Ser. No. 740,859, Jul. 31, 1991, abandoned, which is a continuation of Ser. No. 393,973, Aug. 14, 1989, abandoned. This application Jan. 29, 1993, Ser. No. 11,120
Int. Cl.[6] B32B *3/02;* A45D *2/00*
U.S. Cl. 428—61 12 Claims



1. In a perming mat for use with hair care solutions, the mat being flexible and absorbent and including malleable wire stiffeners for user-molded shape retention of the mat, the improvement comprising a substantially hair-care-solution-inert covering associated with each wire stiffener for substantially preventing corrosion of the wire stiffeners when in contact with hair care solutions, said covering being approximately 1 mil thick.

5,824,385
OPTICAL DISC AND METHOD FOR MANUFACTURING THE SAME
Masahide Itoigawa; Shinichi Hanzawa; Yoshitaka Nonaka; Junichi Watanabe, and Haruhisa Maruyama, all of Yamanashi, Japan, assignors to Pioneer Electronic Corporation, Tokyo, and Pioneer Video Corporation, Yamanashi, both of Japan
Filed Aug. 28, 1996, Ser. No. 704,079
Claims priority, application Japan, Aug. 30, 1995, 7-245397
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 6 Claims

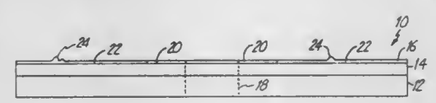


1. An optical disc comprising;
a pair of light-transmissible circular substrates
each comprising an inner non-data region disposed around a center hole thereof, a data region disposed around the inter non-data region for bearing signals corresponding to information to be recorded and an outer non-data region disposed around the data region which are formed on a major surface of the substrate,
a reflective layer formed on said data region, and
a protective layer made of an ultraviolet ray setting resin containing metal ions formed on said reflective layer; and
an adhesive layer made of an adhesive composition containing an ultraviolet ray setting component and an anaerobic hardening component disposed between said protective layers of the circular substrates for adhering said circular substrates.

5,824,386
ZIRCONIA DISK SUBSTRATE HAVING HIGH SURFACE FINISH
Ronald W. Laconto, Sr., Leicester, and Oh-Hun Kwon, Westboro, both of Mass., assignors to Saint-Gobain/Norton Industrial Ceramics Corporation, Worcester, Mass.
Continuation of Ser. No. 521,152, Aug. 29, 1995, abandoned. This application Aug. 15, 1997, Ser. No. 911,837
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 6 Claims

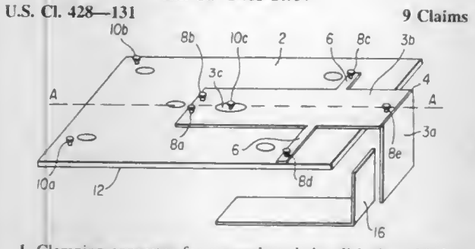
1. A disk substrate consisting essentially of zirconia partially stabilized by a rare earth oxide, the disk substrate having a surface roughness Ra, as measured by optical profilometry, of no more than 8 angstroms and about 0.06 wt % impurities.

5,824,387
MAGNETIC DISC WITH CARBON PROTECTIVE LAYER HAVING REGIONS DIFFERING IN HARDNESS
Zine-Eddine Boutaghou, Owatonna; Dallas W. Meyer, Burnsville, both of Minn., and Bo Wei, Daly City, Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed Aug. 8, 1996, Ser. No. 694,155
Int. Cl.[6] G11B *5/82*
U.S. Cl. 428—65.5 7 Claims



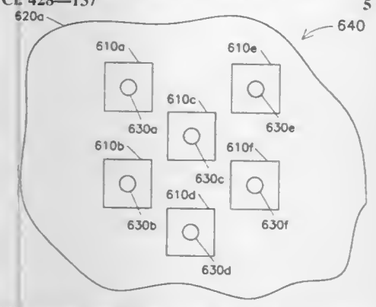
1. A magnetic disc for use in a disc drive data storage system, the magnetic disc having a contact start-stop region and a data storage region, the magnetic disc comprising:
a substrate;
a layer of magnetic material deposited on the substrate; and
a carbon overcoat layer deposited on the layer of magnetic material, the carbon overcoat layer comprising:
a first region in which the carbon overcoat layer has a first hardness associated therewith, wherein the first region of the carbon overcoat layer corresponds to the contact start-stop region of the magnetic disc; and
a second region in which the carbon overcoat layer has a second hardness associated therewith, the second hardness being softer than the first hardness, wherein the second region of the carbon overcoat layer corresponds to the data storage region of the magnetic disc.

5,824,388
CLAMPING APPARATUS FOR IMPRINTING DISK-SHAPED INFORMATION MEDIUM
Michael Freund, Schorndorf, and Alexander Hirsch, Stuttgart, both of Germany, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 8, 1996, Ser. No. 727,062
Claims priority, application Germany, Oct. 12, 1995, 195 37 921.7
Int. Cl.[6] B41F *21/04*
U.S. Cl. 428—131 9 Claims



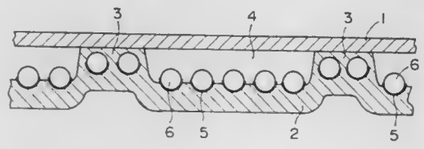
1. Clamping apparatus for a preselected size disk-shaped information medium having a central hole, the disk-shaped information medium having a surface upon which information is to be printed, comprising:
a baseplate having holes;
a slider guidably mounted on the baseplate for centering the disk-shaped information medium with the central hole;
stationary holding elements arranged in first and second circular patterns on the baseplate, and movable holding elements arranged in third and fourth circular patterns on the slider, in such a way that when a disk-shaped information medium is placed in the clamping apparatus the first circular pattern of the stationary holding elements and the third circular pattern of the movable holding elements are arranged along the outer periphery of the disk-shaped information medium, and the second and fourth circular patterns of the stationary and movable holding elements, respectively, being arranged along the inner periphery of the central hole of the disk-shaped information medium;
a bottom plate positioned under the baseplate and movable perpendicular thereto; and
information medium contact elements which are formed on the bottom plate and adapted to pass through holes in the baseplate and contact the disk-shaped information medium.

5,824,389
MICROMACHINED MICROSCOPIC PARTICLE SELECTING APPARATUS
Michael D. Rostoker, Boulder Creek, Calif., assignor to LSI Logic Corporation, Milpitas, Calif.
Division of Ser. No. 205,661, Mar. 3, 1994, Pat. No. 5,514,150. This application May 30, 1995, Ser. No. 454,539
Int. Cl.[6] B03C *7/00*; B32B *3/24*
U.S. Cl. 428—137 5 Claims



1. Microscopic particle selecting apparatus, comprising:
a planar, electrically insulating substrate having a first side, and a second, opposite side;
a first conductive layer disposed on the first side of the planar substrate;
a second conductive layer disposed on the second side of the planar substrate, the first conductive layer being electrically isolated from the second conductive layer by the planar substrate;
at least one aperture extending through the planar substrate and the conductive layers.

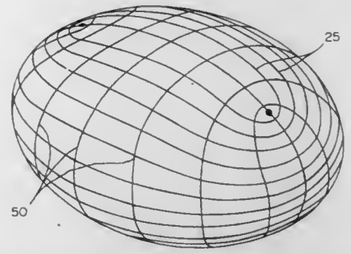
5,824,390
METHOD FOR PRODUCING RETROREFLECTIVE SHEETING USING A COUPLING AGENT
Katsura Ochi, Kashiwa; Osamu Tanaka, Hiratsuka, and Masaki Yoshizawa, Sano, all of Japan, assignors to Nippon Carbide Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 20, 1995, Ser. No. 504,309
Claims priority, application Japan, Jul. 22, 1994, 6-191218
Int. Cl.[6] G02B *5/128*; B32B *31/12*
U.S. Cl. 428—143 17 Claims



1. A method for producing retroreflective sheeting comprising (1) partially embedding an at least substantial monolayer of glass beads in a thermoplastic resin layer forming at least one surface of a temporary support; (2) vapor depositing a metal over the non-embedded portions of the glass beads and the thermoplastic resin layer in which the glass beads are partially embedded, thereby forming a metal film layer over the exposed surfaces of the glass beads and exposed surfaces of the thermoplastic resin layer of the temporary support; (3) forming a thin film of, or containing, a coupling agent on the metal film layer, said coupling agent being at least one coupling agent selected from the group consisting of silane coupling agents, titanate coupling agents, aluminum coupling agents, and zircoaluminate coupling agents, said thin film containing up to 20 parts of resin per 100 weight parts of the coupling agent, (4) superposing a thermoformable support film over the thin film layer formed in step (3) to form a superposed structure; (5) heat pressing the superposed structure from step (4) to thereby embed the metal layer covered portions of the glass beads in the thermoformable support film; and (6) peeling the temporary support from the thermoformable support film such that the at least substantial monolayer of glass beads with associated metal film layer remains embedded in the thermoformable support film;
whereby after the temporary support and thermoformable support film are separated in step (6) transfer of the portions of metal film layer on the thermoplastic resin layer of the temporary support to the thermoformable support film is substantially prevented.

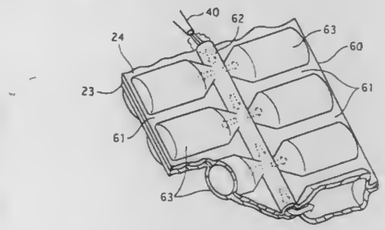
5,824,391
APPLIQUES TO ELIMINATE PAINTED COATINGS ON SURFACES HAVING COMPLEX CURVATURE
Keith J. Davis, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Jun. 7, 1995, Ser. No. 486,300
Int. Cl.[6] B32B *5/00*
U.S. Cl. 428—174 15 Claims

1. An appliqué having complex curvature for applying a substantially complete, bubble-free, wrinkleless coating to a curved surface of a vehicle as a replacement for paint and having complex curvature complimentary with the curvature of the appliqué, comprising:



a curved, nonplanar, freestanding organic resin matrix composite film as a base material molded to have a generally rectilinear shape in plan view, the shape having a lateral diagonal and a transverse diagonal, the lateral diagonal having substantially one, constant Gaussian curvature and being alienable on the surface along a line of substantially the same constant Gaussian curvature while the transverse diagonal has a changing Gaussian curvature and, optionally, an adhesive on at least one face of the base material for adhering the base material to the surface having substantially the same Gaussian curvature.

5,824,392
METHOD OF PRODUCING AN AIR CUSHION AND AN APPARATUS FOR THE SAME
Shuichi Gotoh, Tokyo, and Yukio Yamashita, Nagoya, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan
PCT No. PCT/JP95/00540, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/25681, PCT Pub. Date Sep. 28, 1995
PCT Filed Mar. 24, 1995, Ser. No. 556,949
Claims priority, application Japan, Mar. 24, 1994, 6/053680
Int. Cl.[6] B32B *3/28;31/00*
U.S. Cl. 428—178 17 Claims



1. An air cushion comprising:
two plastic films that are stacked together and that extend in an elongated direction; and
at least two longitudinally extending seals and a plurality of transverse seals that extend between the plastic films to connect the plastic films together, the longitudinally extending seals extending in a longitudinal direction of the plastic films and the transverse seals extending between the longitudinally extending seals, wherein:
the plastic films define bubbles that extend between the seals and that are expanded by air and the seals are further formed and arranged so that the bubbles have a length measured in a transverse direction of the plastic films that is at least twice the diameter of the bubbles measured in the longitudinal direction of the film; and
each transverse seal is comprised of a plurality of first seal portions that are separated by at least one opening therebetween and at least one second seal portion that closes the at least one opening between the first seal portions.

5,824,393
FORGERY-PREVENTING TEXTURED EMBLEM
Shigeyuki Nakamura, Kyoto, Japan, assignor to Nakamura Label Inc., Kyoto, Japan
Filed Oct. 26, 1995, Ser. No. 548,833
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 1 Claim



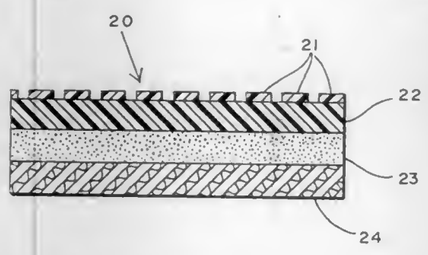
1. A forgery-preventing textured emblem having an identification mark of letters, figures or other indicia woven thereinto, said identification mark being made of thread having inorganic fluorescent material applied thereon, said inorganic fluorescent material selected from the group consisting of yttrium, europium and salts thereof, and said inorganic fluorescent material normally appearing in at least one particular color under a visible light, but when illuminated with ultraviolet radiation in a range of wavelength between 300 nm and 400 nm, emitting light in at least one color characteristic of said inorganic fluorescent material which is different from said at least one particular color in which said inorganic fluorescent material appears under said visible light.

5,824,394
BIAXIALLY ORIENTED LAMINATED POLYESTER FILM
Shinichi Kinoshita, Tokyo, and Narihiro Masuda, Nagahama, both of Japan, assignors to Diafoil Hoechst Company, Limited, Tokyo, Japan
Filed Dec. 11, 1995, Ser. No. 570,436
Int. Cl.[6] B32B *15/08;27/08;27/30;27/36*
U.S. Cl. 428—195 21 Claims

1. A biaxially oriented laminated polyester film, comprising:
a layer A, comprising a polyester having no crystalline melt peak at 230° C. or more in the differential thermal analysis and having a thickness of not more than 0.5 μm;
a layer B comprising a polyester other than the polyester of layer A; and
a coating layer comprising not less than 50 wt % of an acrylic resin or urethane resin as a coating component,
said layer A being laminated onto at least one surface of said layer B, and said coating layer being disposed on a surface of said layer A,
wherein said polyester film has less than 30 gf of anti-block properties, and wherein said polyester film is produced by a method comprising:
(1) forming an unstretched polyester film by a process, comprising
(a) separately drying the polyester resins for layer A and layer B,
(b) extruding from separate extruders the separately dried polyester resins,
(c) either laminating layers A and B before a slot die in a feed block coextruder or laminating in the die head in a multi-manifold coextruder,
(d) melt-extruding the above-obtained laminate onto a sheet, and
(e) cooling and solidifying the sheet on a casting drum, thus obtaining an unstretched film;

(2) stretching said unstretched film in the machine direction;
(3) applying to the machine stretched film said coating component;
(4) stretching said film in the transverse direction; and
(5) heat-setting said film.

5,824,395
METHOD OF TRANSFERRING A GRAPHIC IMAGE FROM A TRANSFER HAVING A PAPER BACKING, A RELEASE LATER, AND A DISCONTINUOUS LATER
Richard S. Zemel, 1236 Harvey Rd., Knoxville, Tenn. 37922
Continuation of Ser. No. 406,549, Mar. 20, 1995, abandoned. This application Jun. 23, 1997, Ser. No. 880,300
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 **13 Claims**



1. A graphic transfer comprising:
a backing substrate formed of a gum and starch coated absorbent paper,
an image printed on said paper utilizing a non-water soluble ink or laser printer copier toner,
and an acrylic lacquer applied in a discontinuous gritty feeling coating over the image and dried.

5,824,396
DIGITAL OFFSET PRINTING MEDIA
Gregory E. Missell, Penfield, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Feb. 6, 1997, Ser. No. 795,827
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—195 **20 Claims**

1. A toner image receiver sheet comprising:
a resin-coated paper substrate; and
an image-receiving layer disposed on a resin-coated surface of said substrate, said image-receiving layer comprising a 60:40 to 90:10 weight ratio blend of an imino-functionalized polymer and a polyurethane;
wherein said image-receiving layer provides a glossy, non-tacky surface with excellent toner transfer and adhesion characteristics.

5,824,397
USE OF LABELS FOR THE LABELLING OF RUBBER PARTS, IN PARTICULAR TIRES
Arne Koops, Hamburg; Klaus Külper, Pinneberg; Ulrich Ofer, and Christian Kreft, both of Hamburg, all of Germany, assignors to Beiersdorf AG, Hamburg, Germany
Filed Aug. 19, 1996, Ser. No. 699,276
Claims priority, application Germany, Aug. 25, 1995, 195 31 332.1
Int. Cl.[6] G09F *3/02*
U.S. Cl. 428—207 **14 Claims**

1. A label suitable for labelling rubber parts, formed from a rubber blend which is covulcanizable with the rubber parts being

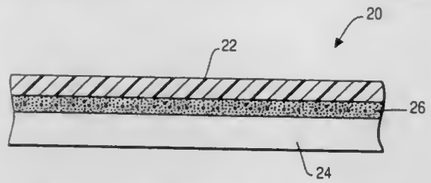


labelled and which contains an additive that produces a color change upon being irradiated with laser energy.

5,824,398
PLASTICIZED POLYESTER FOR SHRINK FILM APPLICATIONS
Wayne Ken Shih, Kingsport, Tenn., assignor to Eastman Chemical Company, Kingsport, Tenn.
Filed Jan. 31, 1997, Ser. No. 792,123
Int. Cl.[6] B32B *3/00;* **C08F** *283/00;* **C08G** *63/91*
U.S. Cl. 428—211 **12 Claims**

1. A heat-shrinkable film or sheet comprising a blend of:
(A) 90 to 99 weight percent of a polyester having a glass transition temperature of 40° C. to 150° C. and an inherent viscosity of 0.5 to 1.2 dL/g, comprising
(1) a dicarboxylic acid component comprising repeat units from at least 80 mole percent of an aromatic dicarboxylic acid having 8 to 14 carbon atoms, and
(2) a diol component comprising repeat units from at least 10 mole percent of 1,4-cyclohexanedimethanol, based on 100 mole percent dicarboxylic acid and 100 mole percent diol; and
(B) 1 to 10 weight percent of a plasticizer selected from a C_5 to C_{35} monoglyceride prepared from the reaction of glycerol and a fatty acid having 4 to 30 carbon atoms, wherein the combined weights of (A) and (B) total 100 percent.

5,824,399
MULTILAYERED THERMAL TRANSFER MEDIUM WITH OPAQUE SUB-COAT
Jeffery S. Denton, Miamisburg, and Michael W. Olmstead, West Carrollton, both of Ohio, assignors to NCR Corporation, Dayton, Ohio
Filed Jun. 27, 1996, Ser. No. 671,049
Int. Cl.[6] B41M *5/26*
U.S. Cl. 428—212 **14 Claims**

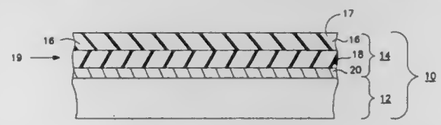


1. A thermal transfer medium which transfers images to a receiving substrate when exposed to the print head of a thermal printer wherein said thermal transfer medium comprises:
a transparent substrate,
a first coating positioned on said transparent substrate having a coat weight of from 0.39–1.94 g/m^2 and comprising a dark colored pigment in an amount sufficient to render said thermal transfer medium opaque and at least 40 weight percent of a binder resin, based on dry components; and
a second coating positioned on said first coating having a coat weight of from 1.94–6 g/m^2 and comprising a binder resin distinct from the binder resin of the first coating, at least 40 weight percent wax, based on the dry components, and optionally a colorant or sensible transparent dye or insoluble particles;
wherein the first coating has a softening point higher than that of the second coating and said first coating does not transfer to a receiving substrate when exposed to the print head of a thermal printer.

5,824,400
PLASTIC ARTICLE AND PROCESS FOR THE PREPARATION THEREOF
Jordanis Petrakis, Burscheid; Wolfgang Hoge; Torsten Leenaerts, both of Wuppertal, all of Germany; Marinus Alfenaar, Munstergeleen, and Johannes G. M. Nieuwkamp, Limbricht, both of Netherlands, assignors to DSM N.V., Heerlen, Netherlands
Filed Jan. 25, 1996, Ser. No. 613,429
Claims priority, application Germany, Aug. 5, 1993, 43 26 326.7
Int. Cl.[6] B32B *7/02;* **C08J** *9/00;* **C08L** *53/00*
U.S. Cl. 428—218 **22 Claims**

1. A foamed plastic article comprising a plurality of thermoplastic elastomers wherein said thermoplastic elastomers comprise:
(1) a thermoplastic polyolefin elastomer based on a blend of a polypropylene and a crosslinked elastomer, and
(2) a) or b),
wherein a) is at least one of (i) elastomeric styrene/ethylene/butylene/styrene block copolymer and (ii) an elastomeric styrene/butadiene/styrene block copolymer, and
wherein b) is at least one of (i) a thermoplastic elastomer based on a blend of a polypropylene and an elastomeric styrene/ethylene/butylene/styrene block copolymer and (ii) a thermoplastic elastomer based on a blend of a polypropylene and an elastomeric styrene/butadiene/styrene block copolymer.

5,824,401
OIL-BARRIER WATERPROOFING MEMBRANCE LAMINATE
Robert Francis Jenkins, Wakefield, and Robert Alan Wiercinski, Lincoln, both of Mass., assignors to W.R. Grace & Co.-Conn., New York, N.Y.
Continuation of Ser. No. 314,171, Sep. 28, 1994, abandoned. This application Oct. 10, 1997, Ser. No. 949,209
Int. Cl.[6] B32B *7/10;11/04;27/08;27/32*
U.S. Cl. 428—215 **11 Claims**



1. An oil barrier waterproofing membrane laminate for waterproofing structural surfaces, comprising: a waterproofing membrane which is self-adherable to structural surfaces, said membrane having a first and second major face and comprising a bituminous rubber adhesive having oil; and, attached to one of said membrane faces, a continuous carrier support structure comprising at least three polymer films; a first polymer film thereof being located outermost with respect to said oil-containing membrane and comprising polyethylene and at least one light-reflective additive selected from the group consisting of titanium dioxide, calcium carbonate, and zinc oxide whereby said film is operative to reflect sunlight energy, a second polymer film thereof being located innermost with respect to said oil-containing membrane and comprising polyethylene and carbon black, whereby said innermost second polyethylene film is operative to absorb sunlight energy, and, interposed between said outermost first and innermost second polyethylene films, at least one oil-barrier film comprising a polymer selected from the group consisting of a polyamide, a polyethylene terephthalate, a polyvinyl acetate, and a polyvinylidene chloride.

5,824,402
AROMATIC POLYETHER
David John Kemmish; Alan Branford Newton, both of North Yorkshire, and Philip Anthony Stanilaud, Cleveland, all of England, assignors to Victrex Manufacturing Ltd., Lancashire, England
Division of Ser. No. 442,149, May 16, 1995, Pat. No. 5,654,393, which is a continuation of Ser. No. 320,790, Oct. 11, 1994, abandoned, which is a continuation of Ser. No. 133,767, Oct. 7, 1993, abandoned, which is a continuation of Ser. No. 911,797, Jul. 10, 1992, abandoned, which is a continuation of Ser. No. 430,351, Nov. 2, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 487,405
Claims priority, application United Kingdom, May 8, 1989, 8910549
Int. Cl.[6] B32B *5/06*
U.S. Cl. 428—297.4 **5 Claims**

1. A composition containing an aromatic polyether and 5–40 volume percent of fibers, said polyether containing within its chain the repeat units

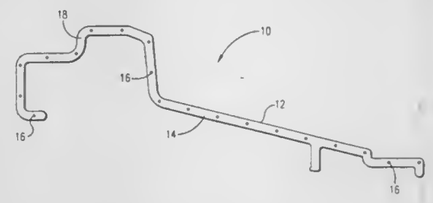
Ph—CO—Ph— I

and

—[Ph—SO_2—Ph]$_n$— II

at a molar ratio I/II in the range 98:2 to 80:20 wherein Ph represents paraphenylen;
the repeat units are linked through ether oxygen; and
n is at least 1.1.

5,824,403
ELECTROSTATICALLY COATED PULTRUSIONS AND METHODS OF MAKING
Amy C. Eidenschink, Rogers, Minn., assignor to Pella Corporation, Pella, Iowa
Filed Apr. 15, 1996, Ser. No. 632,243
Int. Cl.[6] B32B *5/06*
U.S. Cl. 428—300.4 **39 Claims**



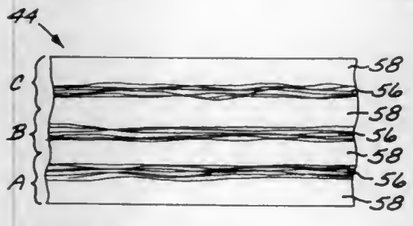
1. A pultrusion suitable for electrostatic coating and comprising an elongated, synthetic resin, pultruded body presenting a pair of ends with a plurality of elongated, spaced apart conductive elements embedded in said body and extending along the length thereof between said ends to define respective conductive paths, and means for electrically coupling said conductive elements at one of said ends, said electrical coupling means being selected from the group consisting of conductive coatings, adhesives, gels, water, tapes and foils.

5,824,404

HYBRID COMPOSITE ARTICLES AND MISSILE COMPONENTS, AND THEIR FABRICATION

Janis Brown, Tucson, Ariz.; Ron Allred, Albuquerque, N. Mex.; Tom Duncan; Andrew Facciano, both of Tucson, Ariz., and Kevin Kirby, Calabasas Hills, Calif., assignors to Raytheon Company, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 488,004
Int. Cl.[6] B32B 5/06
U.S. Cl. 428—301.4 11 Claims



1. A composite article, comprising:
a substrate;
a first composite layer overlying and bonded to the substrate, the first composite layer comprising a first-layer reinforcement embedded in a first-layer organic matrix material; and
a second composite layer overlying and bonded to the first composite layer, the second composite layer comprising at least in part a second-layer reinforcement embedded in a second-layer pre-ceramic matrix material, the second-layer pre-ceramic matrix material being a material which is co-curable with the first-layer organic matrix material and which is convertible to a refractory material.

5,824,405

BARRIER MEMBRANE FOR PROTECTIVE CLOTHING

Lloyd Steven White, Columbia, Md., assignor to W. R. Grace & Co.-Conn., New York, N.Y.

Filed Jun. 7, 1996, Ser. No. 659,806
Int. Cl.[6] B32B 7/00
U.S. Cl. 428—304.4 15 Claims

1. An article of protective cloth having a water vapor rate of transmission of at least 500 g/m^2/day and a hexane vapor resistance of greater than 10,000 s/m, the article composed of a plurality of layers wherein the outer layers are composed of fabric and at least one inner layer is composed of a flexible, porous film formed of an asymmetric gas separation membrane which comprises a polyimide.

5,824,406

Patent Not Issued For This Number

5,824,407

FOAM MOLDED ARTICLE WITH INTEGRAL SKIN HAVING AN ANTIBACTERIAL EFFECT

Itsuki Hayashi; Yoshio Ushida, both of Inazawa, and Sadao Ucbida, Ichinomiya, all of Japan, assignors to Toyoda Gosei Co., Ltd., Aichi-ken, Japan

Filed Jul. 29, 1996, Ser. No. 687,980
Claims priority, application Japan, Jul. 28, 1995, 7-193815
Int. Cl.[6] B32B 5/20; C08J 9/34
U.S. Cl. 428—318.8 18 Claims

1. An integral-skin foam molded article which comprises:
a main body comprising at least one flexible urethane foam molding material; and
a coating layer formed on a surface of the main body, said coating layer comprising at least one polyurethane material and containing one or more of an inorganic or organic antibacterial agent.

5,824,408

WHITE ELECTROCONDUCTIVE COATING COMPOSITION AND TRANSFER MATERIAL-CARRYING MEMBER

Akiya Kume, Kawasaki; Yoshiaki Nishimura, Tokyo; Jun Murata, Kawagoe; Nobutoshi Hayashi, Machida; Yukinori Nagata, and Hiroshi Mayuzumi, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1996, Ser. No. 638,188
Claims priority, application Japan, Apr. 28, 1995, 7-105511
Int. Cl.[6] B32B 05/16
U.S. Cl. 428—323 5 Claims



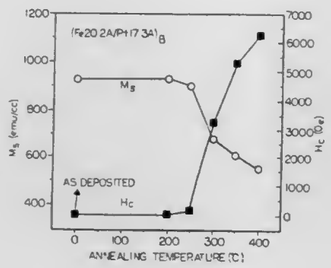
1. A transfer material-carrying member comprising a support and a white electroconductive coating layer formed on the support; wherein said white electroconductive coating layer comprises a white pigment having a whiteness of at least 60, a white conductive material having a whiteness of at least 50 and a volume resistivity of at most 1×10^{10} ohm.cm, and a binder; and exhibits a whiteness of at least 60 and a surface resistivity of at most 1×10^{11} ohm/□.

5,824,409

HIGH COERCIVITY LONGITUDINAL RECORDING MEDIA AND METHOD FOR ITS PREPARATION

David J. Sellmyer, and Chun-Ping Luo, both of Lincoln, Nebr., assignors to Board of Regents, Lincoln, Nebr.

Filed Nov. 13, 1995, Ser. No. 558,272
Int. Cl.[6] G11B 5/66
U.S. Cl. 428—332 16 Claims



1. A longitudinal magnetic recording medium having a coercivity (H_c) of 3000 Oe to 6300 Oe comprising:
a substrate and
a magnetic recording layer which is composed of alternate thin film layers of Platinum (Pt)
and an element selected from the group consisting of Iron (Fe) and Cobalt (Co)
deposited on said substrate.

5,824,410

FIBER REINFORCED THERMOPLASTIC RESIN STRUCTURE, PROCESS FOR PRODUCTION OF SAME, AND EXTRUDER FOR PRODUCTION OF SAME

Hidetoshi Sakai, Nagoya; Motoki Hiratsuka, Chita-gun; Akihiko Watanabe, Nagoya, and Motonobu Yamada, Nagoya, all of Japan, assignors to Toray Industries, Inc., Japan

Division of Ser. No. 277,477, Jul. 19, 1994, Pat. No. 5,679,456.
This application May 16, 1997, Ser. No. 858,062
Claims priority, application Japan, Jul. 21, 1993, 5-180524; Dec. 1, 1993, 5-301445; Jun. 14, 1994, 6-130736
Int. Cl.[6] D02G 3/22
U.S. Cl. 428—361 6 Claims

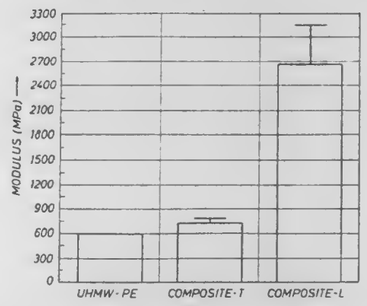
1. A fiber reinforced thermoplastic resin structure comprising pellets obtained by cutting a sheet shaped or rod shaped fiber reinforced thermoplastic resin structure comprising a thermoplastic resin and reinforcing fibers, having a ratio (Lw/Ln) of the number average fiber length (Ln) to the weight average fiber length (Lw) of the uniformly dispersed reinforcing fibers of 1.1 to 5, and having a weight average fiber length of 1.0 mm to 200 mm.

5,824,411

SELF-REINFORCED ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE COMPOSITES

Shalaby W. Shalaby, Anderson, and Meng Deng, Clemson, both of S.C., assignors to Poly-Med, Inc., Pendleton, S.C.

Division of Ser. No. 110,155, Aug. 20, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,848
Int. Cl.[6] D02G 3/32
U.S. Cl. 428—364 7 Claims



1. A composite of high tensile and impact strength, elastic modulus, and creep resistance, the composite comprising:
an essentially non-oriented matrix of an ultra-high molecular weight polyethylene polymer; and
a reinforcement of ultra-high molecular weight polyethylene dispersed in and bonded to said matrix in sufficient amount to increase the tensile and impact strength, elastic modulus, and creep resistance of the composite above the tensile and impact strength, elastic modulus, and creep resistance of non-reinforced ultra-high molecular weight polyethylene matrix polymer, the reinforcement comprising up to about 12 percent by weight of the composite, the reinforcement selected from the group consisting of fibers, plies of fibers, and textile constructs;
wherein a unidirectionally reinforced segment of the composite exhibits a transverse strength equal to or greater than the strength of a non-reinforced ultra-high molecular weight polyethylene matrix polymer of substantially similar dimensions.

5,824,412

THERMOPLASTIC POLYBUTYLENE TEREPHTHALATE COMPOSITIONS FOR WIRE COATING APPLICATIONS

Karlheinz Hausmann, Neuchatel, Switzerland, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US92/08956, § 371 Date Jul. 14, 1994, § 102(e) Date Jul. 14, 1994, PCT Pub. No. WO93/08234, PCT Pub. Date Apr. 29, 1993
Continuation of Ser. No. 211,624, Jul. 14, 1994, abandoned, and a continuation-in-part of Ser. No. 781,459, Oct. 24, 1991, abandoned. This PCT application Oct. 26, 1992, Ser. No. 620,481
Int. Cl.[6] C08L 67/02
U.S. Cl. 428—378 10 Claims

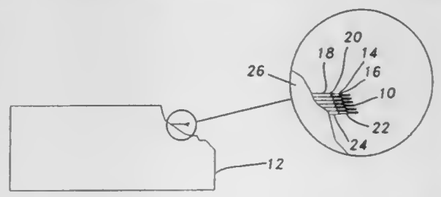
1. A partially grafted, flexible thermoplastic composition formed by melt blending comprising:
(a) 40–65% by weight of poly (1,4-butylene) terephthalate;
(b) 5–30% by weight of a polymeric grafting agent which is a copolymer of at least 50% by weight ethylene, 0.5–15% by weight of at least one reactive moiety selected from the group consisting of (i) an unsaturated epoxide of 4–11 carbon atoms, (i) an unsaturated isocyanate of 2–11 carbon atoms, (iii) an alkoxy or alkyl silane wherein the alkyl group is from 1–12 carbon atoms, (iv) an alkyl halide, (v) an alkyl alpha-halo ketone or aldehyde, and (vi) oxazoline, and 0–49% by weight of a moiety selected from at least one of an alkyl acrylate, alkyl methacrylate, vinyl ether, carbon monoxide, and sulfur dioxide, where the alkyl and ether groups above are of 1–12 carbon atoms;
(c) about 5–20% by weight of an ethylene copolymer which comprises at least 50% by weight of ethylene, 1–35% by weight of an acid-containing unsaturated mono-carboxylic acid, and 0–49% by weight of a moiety selected from at least one of alkyl acrylate, alkyl methacrylate, vinyl ether, carbon monoxide and sulfur dioxide, and further wherein the acid groups are neutralized from 0–100% by a metal ion; and
(d) 5–25% by weight of a thermoplastic elastomer selected from the group consisting of a copolyester ester and a copolyether ester;
provided that:
(1) the total of (a)–(d) is 100%; and
(2) the total polyester content of (a) and (d) does not exceed 70%.

5,824,413

SECONDARY COATING FOR FIBER STRANDS, COATED STRAND REINFORCEMENTS, REINFORCED POLYMERIC COMPOSITES AND A METHOD OF REINFORCING A POLYMERIC MATERIAL

Philip L. Schell, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 15, 1996, Ser. No. 679,777
Int. Cl.[6] D02G 3/00
U.S. Cl. 428—378 24 Claims



1. A fiber strand adapted to reinforce a polymeric matrix material, at least a portion of a surface of the fiber strand having applied thereto a primary coating of a sizing composition and thereupon an aqueous secondary coating composition, the aqueous secondary coating composition comprising:
(a) a urethane-containing polymer; and

(b) a polymer prepared by addition polymerization of a monomer selected from the group consisting of acrylic acid, methacrylic acid and a mixture thereof,

the aqueous coating composition being free of acrylic latex, the aqueous coating composition being different from the sizing composition.

5,824,414

PREPARATION OF SPHERICAL POLYPHENOL PARTICLES

Shiro Kobayashi; Hiroshi Uyama, both of Miyagi-ken; Sunao Maeda, Aichi-ken, and Shinichirou Tawaki, Kanagawa-ken, all of Japan, assignors to Mitsui Chemicals, Inc., Tokyo, and Shiro Kobayashi, Miyagi-ken, both of Japan

Filed Apr. 17, 1996, Ser. No. 633,378

Claims priority, application Japan, Apr. 28, 1995, 7-105380

Int. Cl.[6] C12P *1/00*

U.S. Cl. 428—402 **12 Claims**

1. A process for preparing a spherical polyphenol particle which comprises preparing a solution comprising a phenol, a water-miscible organic solvent, water, a peroxidase and a dispersing agent selected from the group consisting of poly(methyl vinyl ether), poly(N-vinyl-2-pyrrolidone), poly(oxyethylene), poly(2-ethyl-2-oxazoline), poly(vinyl alcohol), poly(acrylamide), hydroxyethyl cellulose and soluble starch, without forming micelles in the solution, adding hydrogen peroxide into the solution to obtain a reaction mixture and separating the spherical polyphenol particles from the reaction mixture.

5,824,415

DECORATIVE MATERIAL

Masahiro Kanki; Masaki Tsukada, and Tadamichi Ishii, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

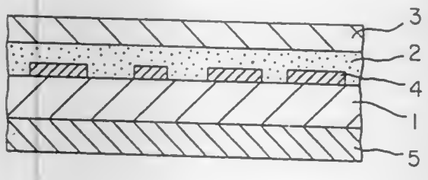
PCT No. PCT/JP95/01217, § 371 Date Apr. 25, 1996, § 102(e) Date Apr. 25, 1996. PCT Pub. No. WO95/35210, PCT Pub. Date Dec. 28, 1995

PCT Filed Jun. 20, 1995, Ser. No. 602,727

Claims priority, application Japan, Jun. 22, 1994, 6-162931; Jun. 22, 1994, 6-162932; Jun. 22, 1994, 6-162933; Mar. 15, 1995, 7-056321

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—411.1 **9 Claims**



1. A decorative material comprising:

a substrate comprising a thermoplastic resin:

a heat-sensitive adhesive layer formed on one side of said substrate, said heat-sensitive adhesive layer comprising a random copolymer of an olefin with methacrylic acid or a random copolymer of an olefin with acrylic acid, wherein carboxyl groups present randomly in molecules of the copolymer are crosslinked among the molecules through hydrogen bonding; and

a resin layer provided on said substrate through said heat-sensitive adhesive layer, said resin layer being formed of a resin of a copolymer of ethylene with an α,β-unsaturated carboxylic acid, which has been partially or completely neutralized with a metal ion.

5,824,416

FUSER MEMBER HAVING FLUOROELASTOMER LAYER

Jiann Hsing Chen; Muhammad Aslam, both of Rochester, and William Joseph Staudenmayer, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1996, Ser. No. 612,698

Int. Cl.[6] B32B *25/00;25/04;25/14*

U.S. Cl. 428—422 **2 Claims**

1. A fuser member comprising:

a support;

a fluoroelastomer layer comprising a fluoroelastomer of from 42 to 58 mole percent vinylidene fluoride, 26 to 44 mole percent tetrafluoroethylene, and 5 to 22 mole percent hexafluoropropylene;

and release agent on said fluoroelastomer layer; said release agent comprising a non(alkylene oxide)-functionalized poly(organosiloxane) fluid, a poly(alkylene oxide)-functionalized poly(organosiloxane) fluid, and an antioxidant.

5,824,417

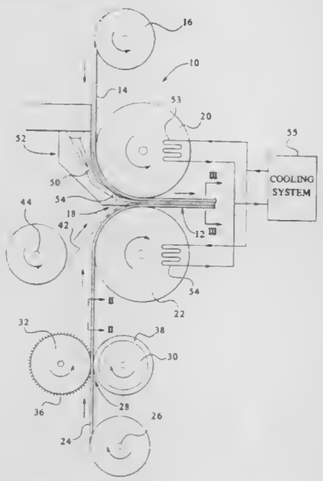
LAMINATED SHEETING AND METHOD FOR ITS FABRICATION

Daniel S. Smith, Sioux Falls, and Clark R. Lee, Brandon, both of S. Dak., assignors to Raven Industries, Inc., Sioux Falls, S. Dak.

Filed Jul. 3, 1996, Ser. No. 675,599

Int. Cl.[6] B32B *27/08*

U.S. Cl. 428—424.4 **21 Claims**



1. A laminated film comprising:

a sheet;

an imperforate second sheet in facing relation with said first sheet with a tie layer sandwiched therebetween, said tie layer adhesively securing the first sheet to the second sheet, said tie layer comprising a reinforcing sheet encapsulated therein, said reinforcing sheet comprising multi filament polyester, said first sheet having a plurality of perforations therethrough, spaced apart over a surface of said first sheet.

5,824,418

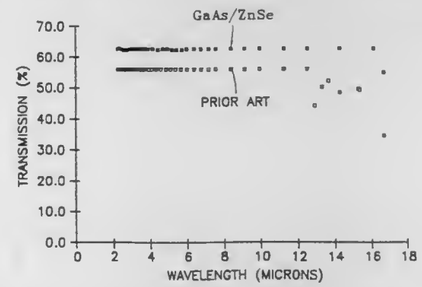
OPTICALLY TRANSPARENT, ELECTRICALLY CONDUCTIVE SEMICONDUCTOR WINDOWS

John W. Tully, Rolling Hills Estates; Don L. McCoy, Lakewood, and Richard F. Sorensen, Long Beach, all of Calif., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Sep. 5, 1995, Ser. No. 523,733

Int. Cl.[6] H01L *33/00*

U.S. Cl. 428—426 **16 Claims**



1. A conductive transparent window comprising:

a substrate formed in a manner to be substantially transparent over wavelengths of intended operation,

said substrate made of a polycrystalline material having a grain size less than about 70 microns,

said substrate being made to be transparent to infrared radiation,

a thin sheet of infrared transparent semiconductor material with a dopant included therein in a manner to render said sheet electrically conductive having a significant carrier concentration of donors or acceptors, and

said sheet and said substrate being placed in intimate contact for bonding the sheet to the surface of the substrate without diffusion, growth or deposition on the surface to thereby form a conductive window transparent to infrared radiation across the wavelengths of operation.

5,824,419

THIN FILM OF POTASSIUM NIOBATE, PROCESS FOR PRODUCING THE THIN FILM, AND OPTICAL DEVICE USING THE THIN FILM

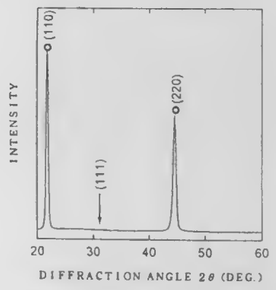
Hideki Kawai; Hidekazu Hashima, and Sadao Nakajima, all of Hyogo, Japan, assignors to Yamamura Glass Co., Ltd., Hyogo, Japan

Filed Jul. 29, 1996, Ser. No. 688,273

Claims priority, application Japan, Jul. 28, 1995, 7-212859

Int. Cl.[6] B32B *17/00*

U.S. Cl. 428—432 **13 Claims**



1. An amorphous substrate having a thin film of a perovskite-type transparent potassium niobate formed thereon.

5,824,420

INTERMEDIATE TRANSFER MEMBER FOR THERMAL TRANSFER PRINTER

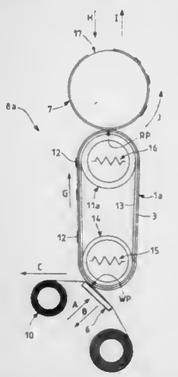
Koichi Dobashi; Isao Ohwada, both of Iwate-ken; Hiroyoshi Zama, Iwate-ken; Makoto Sato, and Noboru Shimamoto, both of Gunma-ken, all of Japan, assignors to Alps Electronic Co., Ltd., Japan

Filed Oct. 4, 1995, Ser. No. 539,095

Claims priority, application Japan, Oct. 4, 1994, 6-240262; Apr. 7, 1995, 7-082517

Int. Cl.[6] B41M *5/40*

U.S. Cl. 428—447 **20 Claims**



1. An intermediate transfer member for a thermal transfer printer adapted to transfer an ink image from an ink ribbon onto the intermediate transfer member and to subsequently transfer the ink image from the intermediate transfer member onto a printing medium, the intermediate transfer member comprising:

a transfer layer having a surface layer of silicon rubber containing:

(a) alkenyl-group-containing organopolysiloxane;

(b) organohydrogenpolysiloxane

(c) non-reactive organopolysiloxane expressed by the following formula (1):

$$R^1-(SiO)_n-Si-R^1 \quad (1)$$

(with R^2 substituents on the Si atoms)

where R^1 is one of a monovalent hydrocarbon group having no aliphatic unsaturated group and a hydroxyl group, R^2 includes one or more of methyl groups and phenyl groups, and where 1 mol % to 30 mol % of each molecule comprises phenyl groups; and

(d) a hydrosilylated reactive catalyst, wherein said silicon rubber contains no inorganic filler.

5,824,421

OIL- AND WATER-REPELLENT COATING COMPOSITION

Hideki Kobayashi, and Toru Masatomi, both of Chiba, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Oct. 30, 1996, Ser. No. 741,271

Claims priority, application Japan, Nov. 28, 1995, 7-334049

Int. Cl.[6] B32B *9/04;* **C09D** *133/00;169/00;183/04*

U.S. Cl. 428—447 **5 Claims**

1. A curable coating composition comprising:

(A) 100 parts by weight of an organic resin; and

(B) 0.01–50 parts by weight of a fluorosilicone having the empirical formula:

$$\{F(CF_2)_a-R^1-(R^2{}_bSiO_{(3-b)/2})\}_n(R^2{}_cSiO_{(4-c)/2})_m$$

wherein R^1 is an alkylene group or alkyleneoxyalkylene group, each R^2 is independently an alkyl group or aryl group, a is an integer of 4 or greater, b is 0–2, c is 0–3, n is a number greater than 0, and m is 0 or greater.

5. An article of manufacture comprising a substrate presenting at least one surface and said at least one surface being coated with the cured composition of claim 1.

5,824,422

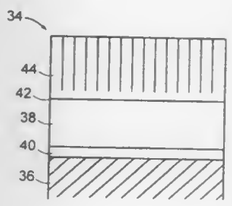
Patent Not Issued For This Number

5,824,423

THERMAL BARRIER COATING SYSTEM AND METHODS

Douglas Hugh Maxwell, Southlake, Tex., and Giel Marijnissen, Beringe, Netherlands, assignors to N.V. Interturbine, Netherlands

Filed Feb. 7, 1996, Ser. No. 597,841
Int. Cl.[6] B32B *15/00;15/20*
U.S. Cl. 428—623 **11 Claims**



1. A substantially chromium-free bond coat of a thermal barrier coating system on a superalloy substrate, the thermal barrier coating system including a ceramic topcoat, said bond coat comprising:
20 to about 30 weight percent aluminum;
between trace amounts and about 3 weight percent of a reactive element selected from the group consisting of yttrium, zirconium, lanthanum, and scandium, and mixtures thereof; and
balance selected from the group consisting of nickel, cobalt, iron and mixtures thereof, wherein said bond coat is further characterized by an absence of chromium, said bond coat having a thickness of less than 90 microns.

5,824,424

CATIONIC ELECTRODEPOSITABLE COATING COMPOSITION AND COATING METHOD USING THE SAME

Hidehiko Haneishi; Masanobu Kudoh, both of Hiratsuka; Koji Kamikado, Yokohama; Kyoichi Horibe; Masafumi Kume, both of Hiratsuka; Takahisa Kasukawa, Yokohama; Toshio Ohkoshi, Atsugi; Akimasa Nakahata; Tadayoshi Tatsuno, both of Hiratsuka, and Masaru Mitsuji, Zama, all of Japan, assignors to Kansai Paint Co., Ltd., Japan

Division of Ser. No. 515,592, Aug. 16, 1995, Pat. No. 5,739,185. This application Jan. 12, 1998, Ser. No. 5,483
Claims priority, application Japan, Aug. 17, 1994, 6-214323; Oct. 20, 1994, 6-279688
Int. Cl.[6] C25D *13/06*
U.S. Cl. 428—626 **18 Claims**

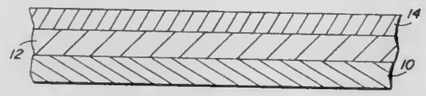
5. A coating method comprising:
(I) coating by electrodeposition, on a material to be coated, a cationic electrodepositable coating composition comprising:
(I) a polyurethane-modified epoxy resin-amine adduct obtained by a reaction of:
(A) a polyurethane compound having one terminal isocyanate group in the molecule, obtained by a reaction of (a) polyhydroxy compound having a number-average molecular weight of 50–8,000, (b) a polyisocyanate compound, and (c) a compound having one active hydrogen atom in the molecule,
(B) a bisphenolic epoxy resin having at least two epoxy groups in the molecule, and
(C) an active-hydrogen-containing amine compound, and
(II) a nonionic film-forming resin,
and containing substantially no pigment, followed by heat-curing the electrodeposited coating,
(2) coating, on the cured electrodeposited coating, an aqueous coating containing a metallic pigment, a coloring pigment or mixture thereof, as a first top coat, followed by heat-curing the first top coat, and
(3) coating, on the cured first top coat, a powder coating containing substantially no pigment, as a second top coat, followed by heat-curing the coated powder coating.

5,824,425

METHOD FOR JOINING RHENIUM TO NIOBIUM

Donald Lee Mittendorf, 2145 S. Ananea, Mesa, Ariz. 85203

Division of Ser. No. 655,036, May 29, 1996, Pat. No. 5,704,538. This application Jun. 10, 1997, Ser. No. 872,796
Int. Cl.[6] B32B *15/01*
U.S. Cl. 428—655 **1 Claim**



1. An article comprising:
a first layer of rhenium;
a second layer from the group consisting of niobium and niobium-based alloys;
a bond layer disposed between said first and second layers for bonding said layers together, said bond layer comprising a first portion of mixed ruthenium-rhenium adjacent to said first layer, a second portion adjacent to said first portion comprised of a gold-nickel combination, a gold-palladium-nickel combination, BAu-5, or a nickel-palladium combination, and a third portion of mixed ruthenium-niobium adjacent to said second layer.

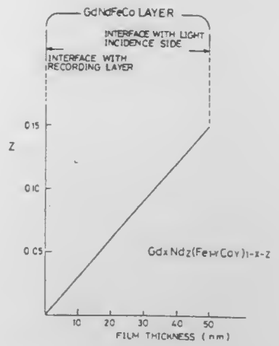
5,824,426

MAGNETO-OPTICAL RECORDING MEDIUM

Naoyasu Iketani, Tenri; Yoshiteru Murakami, Nishinomiya; Akira Takahashi, Nara, and Kenji Ohta, Kitakatsuragi-gun, all of Japan, assignors to Sharp Kabushiki kaisga, Osaka, Japan

Filed Sep. 28, 1995, Ser. No. 535,967
Claims priority, application Japan, Oct. 14, 1994, 6-249795
Int. Cl.[6] G11B *5/716;11/00;5/66*
U.S. Cl. 428—694 ML **20 Claims**

1. A magneto-optical recording medium, comprising:
a light incidence side comprising a light transmitting substrate having disposed thereon magnetic layers to form a film, the magnetic layers comprising:
(a) a readout layer disposed adjacent one side-of the light transmitting substrate, wherein the readout layer comprises rare earth—transition metal alloy containing light rare earth metal and wherein in-plane magnetization of the readout layer appears at room temperature and a transition occurs from in-plane magnetization to perpendicular magnetization when temperature rises, and



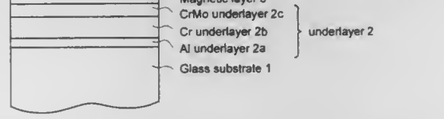
(b) a recording layer for storing information disposed above the readout layer;
wherein density of the light rare earth metal in the readout layer decreases in film thickness direction from the light incidence side to the recording layer side.

5,824,427

MAGNETIC RECORDING MEDIA AND METHODS FOR PRODUCING THE SAME

Masato Kobayashi, Tokyo; Keiji Moroishi; Jun-ichi Horikawa, both of Yamanashi, and Osamu Nozawa, Tokyo, all of Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jun. 27, 1996, Ser. No. 673,754
Claims priority, application Japan, Jun. 28, 1995, 7-161941
Int. Cl.[6] C23C *14/34;* **G11B** *5/62;5/64*
U.S. Cl. 428—694 TS **9 Claims**



1. A magnetic recording medium comprising a non-magnetic underlayer and a CoPt magnetic layer provided on a substrate in this order, wherein the CoPt magnetic layer is a magnetic layer consisting of an alloy comprising Co and Pt and wherein the non-magnetic underlayer comprises one or more non-magnetic layers, one of the non-magnetic layers which is in contact with the CoPt magnetic layer consists mainly of Cr and Mo, and difference $(d_{(002)}-d_{(110)})$ obtained by subtracting a crystalline lattice spacing of bcc (110) faces in the non-magnetic layer consisting mainly of Cr and Mo from a crystalline lattice spacing of hcp (002) faces in the magnetic layer falls within a range of from 0.002 to 0.032 Å.

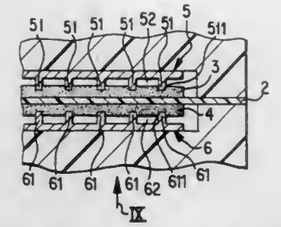
5,824,428

FUEL CELL

Koji Nishida, Anjo; Daisuke Yamada, Toyota, and Taku Matsutani, Toyama Pref, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 27, 1995, Ser. No. 549,202
Claims priority, application Japan, Oct. 27, 1994, 6-264271
Int. Cl.[6] H01M *8/04*
U.S. Cl. 429—26 **11 Claims**

1. A fuel cell comprising:



a sheet-shaped solid electrolyte which has first and second opposite surfaces and which exhibits ion conductivity;
a fuel electrode to which is to be supplied fuel working as a negative electrode active material, said fuel electrode having first and second opposite surfaces, said fuel electrode being disposed on the first surface of said solid electrolyte so that the first surface of said fuel electrode faces the first surface of said solid electrolyte;
an oxygen electrode to which is to be supplied oxygen working as a positive electrode active material, said oxygen electrode having first and second opposite surfaces, said oxygen electrode being disposed on the second surface of said solid electrolyte so that the first surface of said oxygen electrode faces the second surface of said solid electrode;
a fuel electrode electricity collector having a plurality of first projecting portions in contact with said fuel electrode;
an oxygen electrode electricity collector having a plurality of second projecting portions in contact with said oxygen electrode;
a plurality of fuel passages through which fuel is to be passed, each fuel passage being formed by a space bounded by said fuel electrode, said fuel electrode electricity collector and two side-by-side first projecting portions;
a plurality of oxygen passages through which oxygen is to be passed, each oxygen passage being formed by a space bounded by said oxygen electrode, said oxygen electrode electricity collector and two side-by-side second projecting portions;
at least one of said first projecting portions or one of said second projecting portions having a curved portion; and
at least one of said first projecting portions penetrating and extending below the second surface of the fuel electrode or at least one of said second projecting portions penetrating and extending below the second surface of the oxygen electrode.

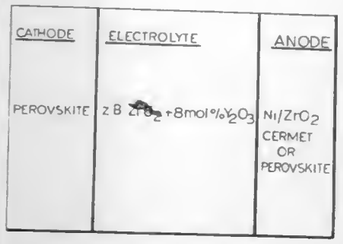
5,824,429

PEROVSKITE ELECTRODES AND HIGH TEMPERATURE FUEL CELLS FITTED THEREIN

Dasarathi Das, Bombay, India; Jimmie Edwards, Toledo, Ohio; Lutz Kindermann, Aachen, Germany; Klaus Hilpert, Jülich, Germany, and Günther Pütz, Jülich, Germany, assignors to Forschungszentrum Julich GmbH, Julich, Germany

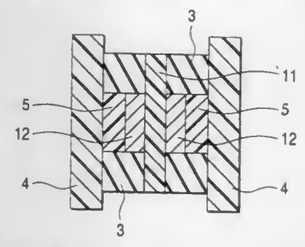
PCT No. PCT/DE95/00026, § 371 Date Oct. 29, 1996, § 102(e) Date Oct. 29, 1996, PCT Pub. No. WO95/19053, PCT Pub. Date Jul. 13, 1995
PCT Filed Jan. 10, 1995, Ser. No. 682,508
Claims priority, application Germany, Jan. 11, 1994, 44 00 540.7
Int. Cl.[6] H01M *4/90*
U.S. Cl. 429—44 **5 Claims**

1. A high temperature fuel cell which comprises:
(1) a cathode;
(2) an anode; and
(3) a solid electrolyte in electrical contact with said cathode and said anode, wherein said cathode consists essentially of:
(a) a perovskite base material having a lattice structure; and
(b) a platinum group metal oxide addition to the lattice structure of said perovskite base material, said platinum group metal oxide addition doping the perovskite base material in order to inhibit electrical contact along a bound-



ary between said perovskite base material and said solid electrolyte thereby stabilizing said perovskite base material against additional phase formations which are detrimental to fuel cell operation.

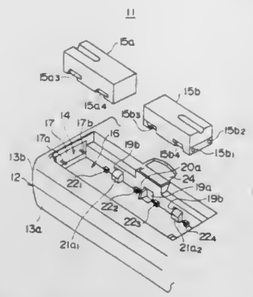
5,824,430
SEPARATOR FOR BATTERY
Hiroyuki Higuchi; Kiichiro Matsushita, and Soji Nishiyama, all of Osaka, Japan, assignors to Nitto Denko Corporation, Osaka, Japan
Filed Feb. 7, 1997, Ser. No. 797,298
Claims priority, application Japan, Feb. 9, 1996, 8-023810
Int. Cl.[6] H01M *2/16*
U.S. Cl. 429—62 **16 Claims**



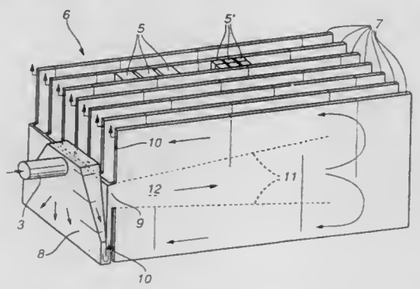
1. A separator for battery, comprising a porous laminate film, wherein said porous laminate film comprises a porous high molecular weight polypropylene layer having a weight average molecular weight of 660,000 or more and a porous layer comprising a material having a melting point of from 100° to 140° C., and has a Gurley value at 25° C. of from 200 to 1,500.

5,824,431
PORTABLE APPARATUS AND BATTERY LOCKING MECHANISM
Shinichiro Tsurumaru, and Shyuzi Sasaki, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Sep. 11, 1996, Ser. No. 712,381
Claims priority, application Japan, Mar. 19, 1996, 8-063537
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—97 **11 Claims**

1. A portable apparatus capable of using batteries as an energy source, comprising:
- a battery case portion having walls forming a space defining a first region at one end of said space for containing a first battery, a second region at the other end of said space for containing a second battery, and a third region located between said first and second regions;
- means forming openings in one of said walls communicating with each of said first, second and third regions, respectively;
- a resilient locking member fixed to an exterior side of said one wall and having contacting portions arranged to extend into said first and second regions of said space when said first and second batteries, respectively, are absent therefrom, and being individually displaceable from each said region when each said region is occupied by a battery;
- a slide member mounted on said apparatus for sliding movement in a direction between said first and second regions of said battery case portion, an engaging portion on said slide member operative to extend into said third region of said space and being movable to positions adjacent a battery occupying a region upon removal of the other battery from the battery case portion; and
- means forming a hooking portion on said locking member adjacent each said contacting portions and each being operative to engage said slide member when the adjacent contacting portion extends into said space of said battery case portion and thereby prevent simultaneous removal of both batteries from the battery case portion.



5,824,432
HIGH-TEMPERATURE BATTERY
Joachim Currle, Stuttgart, Germany, assignor to Mercedes-Benz AG, Stuttgtart, Germany
Filed Jun. 1, 1995, Ser. No. 456,405
Claims priority, application Germany, Jun. 1, 1994, 44 19 281.9
Int. Cl.[6] H01M *10/50*
U.S. Cl. 429—120 **15 Claims**

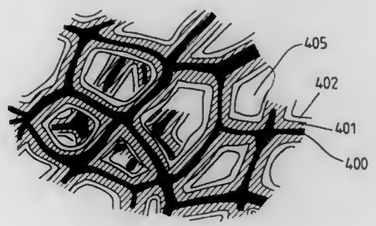


1. High temperature battery for the power supply of electrically powered vehicles and the like, containing battery cells designed in the shape of a bar said battery including a thermally insulated housing and a cooling system including a cooling body inside said housing through which coolant flows, said cooling body comprising:
- a plurality of parallelly arranged plate shaped cooling body elements in the form of hollow bodies through which coolant flows, said cooling body elements being spaced from one another to form battery accommodating spaces,
- a coolant inlet connecting element at one side of the cooling body,
- a coolant outlet connecting element at said one side of the cooling body,
- at least one coolant inlet opening on a narrow side of each cooling body element which faces said one side of the cooling body,
- at least one coolant outlet opening on said narrow side of each cooling body element which faces said one side of the cooling body,
- an inlet funnel connecting the coolant inlet connecting element with the coolant inlet openings of the cooling body elements, said inlet funnel widening in a coolant flow downstream direction in a cooling body breadth direction, and
- an outlet funnel connecting the coolant outlet connecting element with the coolant outlet openings of the cooling body elements, said outlet funnel narrowing in a coolant flow downstream direction in the cooling body breadth direction.

5,824,433
HIGH CONDUCTIVITY ELECTROLYTE SOLUTIONS AND RECHARGEABLE CELLS INCORPORATING SUCH SOLUTIONS
Charles Austen Angell, Mesa; Sheng-Shui Zhang, Tucson, and Kang Xu, Tempe, all of Ariz., assignors to Arizona Board of Regents, Tempe, Ariz.
Filed Nov. 12, 1996, Ser. No. 748,009
Int. Cl.[6] H01M *6/14*
U.S. Cl. 429—194 **10 Claims**

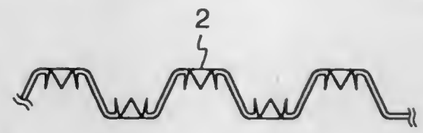
1. A sulfonyl/phospho-compound electrolyte solvent selected from the group consisting of Cl_3PNSO_2Cl, $Cl_3PNP(O)Cl_2$, Cl_3PNCH_3 and $Cl_3PNCH_2CH_3$.

5,824,434
SECONDARY BATTERY
Soichiro Kawakami; Shinya Mishina, and Naoya Kobayashi, all of Nara, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Nov. 30, 1993, Ser. No. 159,141
Claims priority, application Japan, Nov. 30, 1992, 4-320557; Nov. 30, 1992, 4-320558; Nov. 30, 1992, 4-320559; Nov. 30, 1992, 4-320560; Apr. 5, 1993, 5-078342
Int. Cl.[6] H01M *4/02*
U.S. Cl. 429—209 **16 Claims**



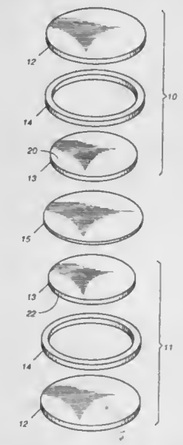
1. A secondary battery having a negative electrode made of a negative electrode active material and a positive electrode made of a positive electrode active material and arranged in such a manner that said negative electrode active material and said positive electrode active material are separated from each other by a separator, said secondary battery comprising:
- a multi-layered metal oxide film disposed between said positive electrode and said negative electrode and having small apertures to pass therethrough ions generated during operation of said secondary battery and to inhibit growth of dendrites grown from said negative electrode or said positive electrode during said battery operation.

5,824,435
NON-SINTERED TYPE NICKEL ELECTRODE
Hiroshi Kawano, Ibaraki; Takayuki Hayashi, Moriguchi, and Isao Matsumoto, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 20, 1996, Ser. No. 603,339
Claims priority, application Japan, Jun. 22, 1995, 7-155912
Int. Cl.[6] H01M *4/64*
U.S. Cl. 429—223 **2 Claims**



1. A nickel electrode for a cell, comprising:
- an electrode substrate coated at its opposite surfaces with an active material for the cell, said electrode substrate comprising a metal member in the form of one of a metal plate and a metal foil, said metal member being worked into a corrugated shape and having a thickness defined by a distance from a crest of said corrugated metal member to a bottom thereof, said thickness after the working being not less than three times the thickness of said metal member before said working, at least one of said crest and said bottom being provided with openings defined by three-dimensional projections extended from said metal member toward an interior of a space defined by said distance from said crest to said bottom; and
- a microscopically-irregular layer formed on most of each of the opposite surfaces of said metal member.

5,824,436
ELECTRICALLY CONDUCTIVE POLYMERIC COATING FOR AN ELECTROCHEMICAL CHARGE STORAGE DEVICE
Ke Keryn Lian, Palatine; Han Wu, Barrington, and Changming Li, Vernon Hills, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Feb. 28, 1997, Ser. No. 808,269
Int. Cl.[6] H01M *4/66;* **H01G** *9/00*
U.S. Cl. 429—245 **12 Claims**



1. An electrochemical charge storage device comprising first and second electrode assemblies, and an electrolyte disposed therebetween, each electrode assembly comprising a layer of an electrode active material, a current collecting material layer, and a layer of an electrically conductive, polymeric protection material opera-

tively disposed therebetween, said layer of protection material comprising a layer of a polymeric material having dispersed therein an intermetallic compound.

5,824,437

MASK AND METHOD OF CREATING MASK AS WELL AS ELECTRON-BEAM EXPOSURE METHOD AND ELECTRON-BEAM EXPOSURE DEVICE

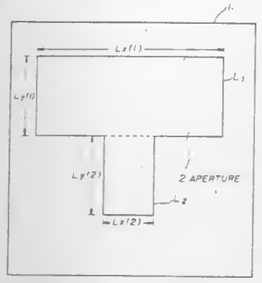
Takayuki Sakakibara; Satoru Sagoh, both of Kasugai; Satoru Yamazaki, Kawasaki; Kiichi Sakamoto, Kawasaki, and Hiroshi Yasuda, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 22, 1996, Ser. No. 685,958

Claims priority, application Japan, Jan. 9, 1996, 8-001608; Mar. 19, 1996, 8-063535

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **30 Claims**



1. A mask having a plurality of pattern exposure blocks, an electron beam passing through said at least one aperture of a selected one of said blocks and directed to an object forming a pattern on said object, said mask comprising:

a plate capable of blocking said electron beam; and

micro rectangular regions forming said pattern on said plate, each of said micro rectangular regions containing one or more respective micro apertures formed therein and extending through said plate, and said one or more of said micro apertures having a total area size smaller than that of said respective micro rectangular region,

wherein a total area size of said micro apertures is smaller than a predetermined size.

5,824,438

STRUCTURE OF PHASE SHIFTING MASK AND METHOD OF MANUFACTURING THE SAME COMPRISING AN ADHESIVE LAYER BETWEEN A PHASE SHIFT LAYER AND A LIGHT BLOCKING LAYER

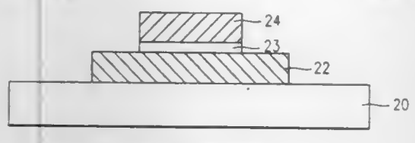
Yong-Kyoo Choi, Chungcheongbuk-do; Chan-Min Park, Pusan-si, and Jun-Seok Lee, Seoul, all of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jan. 31, 1997, Ser. No. 791,577

Claims priority, application Rep. of Korea, Jul. 31, 1996, 31662/1996

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **40 Claims**



1. A phase shifting mask, comprising:

a light transmitting substrate;

a phase shifting layer formed on said light transmitting substrate;

an adhesive layer formed on said phase shifting layer; and

a light shielding layer formed on said adhesive layer, wherein said adhesive layer is formed between said phase shifting layer and said light shielding layer.

5,824,439

PHASE SHIFITING MASK AND METHOD OF MANUFACTURING THE SAME

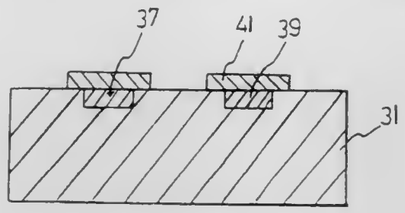
Jun-Seok Lee, Seoul, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed May 22, 1997, Ser. No. 861,939

Claims priority, application Rep. of Korea, Sep. 2, 1996, 1996 37790

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **33 Claims**



1. A phase shifting mask comprising:

a transparent substrate having a groove;

a light-shading layer in the groove for shading an incident light; and

a phase shifting layer on the light-shading layer and a portion of the transparent substrate for shifting a phase of the incident light,

wherein a surface portion of the substrate includes an etch stop layer surrounding the light-shading layer.

5,824,440

METHOD OF FABRICATING X-RAY MASK

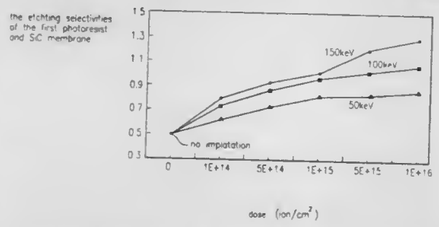
Ki-Chang Song; Don-Hee Lee; Young-Sam Jeon, and Chil-Keun Park, all of Kyungki-do, Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jun. 17, 1997, Ser. No. 877,657

Claims priority, application Rep. of Korea, Nov. 30, 1996, 60338/1996

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—5 **13 Claims**



1. A method of fabricating an X-ray mask, comprising the steps of:

(a) forming a membrane on a substrate;

(b) forming a first material on the membrane;

(c) implanting predetermined ions into the first material;

(d) planarizing the membrane by removing a part of the first material and membrane;

(e) forming an absorber on the membrane planarized and forming a second material on the absorber;

(f) implanting predetermined ions into the second material;

(g) planarizing the absorber by removing a part of the second material and membrane; and

(h) patterning the absorber planarized to have a predetermined shape.

5,824,441

LITHOGRAPHIC PROCESS FOR DEVICE FABRICATION UTILIZING BACK-SCATTERED ELECTRON BEAM SIGNAL INTENSITY FOR ALIGNMENT

Reginald Conway Farrow, East Brunswick, and Masis Mkrtchyan, Stirling, both of N.J., assignors to Lucent Technologies Inc., Murray, N.J.

Filed Dec. 3, 1996, Ser. No. 753,855

Int. Cl.[6] G03F *9/00*

U.S. Cl. 430—22 **10 Claims**

1. A process for device fabrication comprising:

placing a substrate with an energy sensitive layer of material thereon in a lithography tool having an electron beam generator and a backscattered electron detector;

aligning the substrate in the lithography tool by projecting a beam of electrons on the substrate surface and observing a signal associated with electrons backscattered from the substrate and determining from the signal whether the wafer is in the aligned state or the non-aligned state wherein the substrate has at least one alignment mark therein with at least one dimension selected by determining a relationship between a ratio of the backscattered signal intensity from the substrate in the aligned state to the backscattered signal intensity from the substrate in the non-aligned state and the ratio of the depth of the mark in the substrate (h) to the range of the scattered electrons in the substrate (R); selecting a desired ratio of the backscattered signal intensity from the substrate in the aligned state to the backscattered signal intensity from the substrate in the non-aligned state and selecting at least one mark dimension (h) that provides a desired contrast based upon the relationship.

5,824,442

DEVELOPING METHOD, IMAGE FORMING METHOD, AND HEAT FIXING METHOD, WITH TONER

Hirohide Tanikawa; Hiroaki Kawakami; Masatsugu Fujiwara, all of Yokohama, and Kazunori Kato, Mitaka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 555,173, Nov. 8, 1995, Pat. No. 5,707,770. This application Aug. 28, 1997, Ser. No. 919,260

Claims priority, application Japan, Nov. 8, 1994, 6-298017; Nov. 9, 1994, 6-299072; Nov. 18, 1994, 6-308382; Dec. 6, 1994, 6-329805; Dec. 15, 1994, 6-332876; Dec. 21, 1994, 6-335147

Int. Cl.[6] G03G *13/20;13/14;13/01*

U.S. Cl. 430—45 **161 Claims**

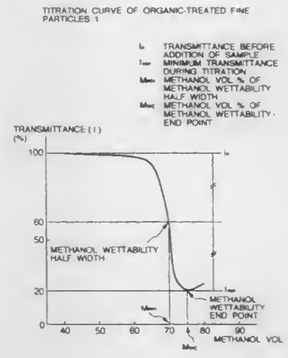
71. An image forming method comprising;

forming toner images superimposingly on an electrostatic latent image bearing member or an intermediate transfer member by the use of a plurality of toners; and

transferring the toner images at one time as a multiple toner image to a recording medium;

wherein said toner comprises toner particles containing a binder resin and a colorant, and fine titanium oxide particles or fine alumina particles; and the surfaces of said fine titanium oxide particles or fine alumina particles have been subjected to an organic treatment and have a methanol wettability half value of 55% or more.

72. The image forming method according to claim 71, wherein said multiple toner image is formed on said electrostatic latent image bearing member by repeating times the step of development to form a toner image on said electrostatic latent image bearing member.



73. The image forming method according to claim 72, wherein said multiple toner image is formed by at least two color toners selected from the group consisting of a cyan toner, a magenta toner and a yellow toner.

5,824,443

METHOD OF MANUFACTURING SILILCON-TYPE CHARGE TRANSPORTING MATERIALS

Nobuo Kushibiki, and Kikuko Takeuchi, both of Kanagawa, Japan, assignors to Dow Corning Asia, Ltd., Tokyo, Japan

Filed Nov. 4, 1996, Ser. No. 743,265

Claims priority, application Japan, Nov. 6, 1995, 7-287634

Int. Cl.[6] G03G *5/00;5/14*

U.S. Cl. 430—59 **3 Claims**

1. A method of manufacturing silicon charge transporting materials A-$[R^1SiR^2_{3-n}Q_n]_p$ where A is a vinyl group containing aromatic substituted tertiary amine with a plurality of aromatic groups; R^1 is an alkylene group of 1–18 carbon atoms; R^2 is a monovalent hydrocarbon group or a monovalent halogen-substituted hydrocarbon group of 1–15 carbon atoms; Q is a hydrolyzable group; and n and p are each 1–3;

the said method comprising introducing a hydrocarbon group between an aromatic ring of the compound having charge transporting properties which contains a vinyl group substituted onto the aromatic ring, and a silicon atom of an organic silicon compound with a hydrogen atom bonded to silicon, by means of hydrosilylation.

5,824,444

IMAGE FORMING APPARATUS

Akira Kinoshita, Hino, and Katsumi Matsuura, Hachioji, both of Japan, assignors to Konica Corporation, Tokyo, Japan

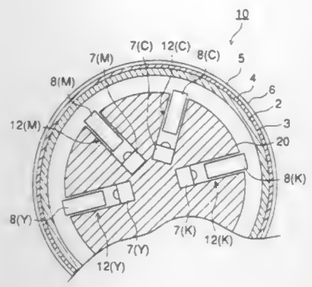
Division of Ser. No. 533,525, Sep. 25, 1995, Pat. No. 5,660,960. This application May 13, 1997, Ser. No. 855,036

Claims priority, application Japan, Sep. 29, 1994, 6-235476

Int. Cl.[6] G03G *15/02*

U.S. Cl. 430—59 **16 Claims**

1. An electrophotographic photoreceptor comprising a transparent support provided thereon a transparent layer, a charge carrier generation layer and a charge carrier transport layer, wherein a



transmittance of said charge carrier generation layer is 20% or less, and a carrier drift mobility of said charge carrier transport layer is 1×10^{-6} cm^2/V sec or more under an electric field intensity of 2×10^5 V/cm.

5,824,445

PROCESS FOR PRODUCING IMAGE AND TWO-COMPONENT DEVELOPER

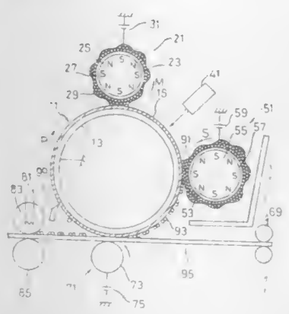
Eiji Ochiai; Makoto Hamaguchi, and Hiroyoshi Tode, all of Mie, Japan, assignors to Kyocera Corporation, Kyoto, Japan

Continuation of Ser. No. 484,725, Jun. 7, 1995, abandoned. This application May 12, 1997, Ser. No. 855,789

Claims priority, application Japan, Jun. 30, 1994, 6-173335

Int. Cl.[6] G03G *9/083*

U.S. Cl. 430—106.6 **26 Claims**



1. A process for producing an image comprising the steps of:

electrically charging a photoreceptor under dark;

forming a latent image on said photoreceptor through selective imagewise exposure to light; and

developing said latent image with a two-component developer comprising a carrier and a toner,

said photoreceptor comprising a conductive substrate having thereon a photoconductive layer comprising amorphous silicon having a thickness of 25 μm or less,

wherein said carrier is a composite carrier comprising a mixture of (a) a magnetic material carrier comprising particles of a magnetic material having an average particle diameter of from 35 to 60 μm, where the content of particles having a diameter of 44 μm or more is 35% by weight or more, and (b) a magnetic resin carrier comprising particles of a binder resin dispersed therein fine particles of a magnetic material.

5,824,446

TONERS FOR DEVELOPING ELECTROSTATICALLY CHARGED IMAGES

Yoshikazu Nishihara, Itami; Ichiro Demizu, Toyonaka; Yoshihiro Mikuriya, Amagasaki; Fumiko Nakazawa, Iwata, and Hiroshi Fukao, Osaka, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Apr. 22, 1997, Ser. No. 837,862

Claims priority, application Japan, Apr. 23, 1996, 8-101284; Apr. 23, 1996, 8-101292

Int. Cl.[6] G06G *9/097*

U.S. Cl. 430—110 **20 Claims**

1. A toner for developing an electrostatically charged image comprising at least a binder resin, a coloring agent and a wax, wherein said wax comprises a polyethylene and a polypropylene, at least 90% by number of fine wax particles contained in the toner have a major axis in the range of 0.1 to 10 μm, at least 60% by number of the fine wax particles with a major axis of 2 μm or more have a ratio (a/b) of major axis (a) to minor axis (b) of 3/2 or more, and at least 68% by number of the fine wax particles with a major axis of less than 2 μm have the ratio (a/b) less than 3/2.

5,824,447

APPARATUS FOR SECURITY PRINTING USING TONER PARTICLES

Serge Tavernier, Lint; Dirk Broddin, Edegem; Stefaan De Meutter, Antwerp; Leon Vermeulen, Herenthout, and Michel Boulonne, Kappelle-op-den-Bos, all of Belgium, assignors to AGFA-Gevaert, N.V., Mortsel, Belgium

Filed Jul. 8, 1997, Ser. No. 889,301

Claims priority, application European Pat. Off., Jul. 11, 1996, 96201964

Int. Cl.[6] G03G *13/20*

U.S. Cl. 430—124 **13 Claims**

1. A single pass apparatus for security printing of a document on a substrate, having a first and second side, comprising:

i) means for feeding variable data in a predetermined digital format to a plurality of printing stations,

ii) at least two printing stations for image-wise depositing toner particles on said substrate in accordance with said predetermined format of said variable data,

iii) means for non-contact fusing said toner particles to said substrate by radiant heat, thereby forming a fused toner image, wherein

a) said apparatus further includes means for introducing security features in said document and

b) said means for fusing said toner particles to said substrate includes means for heating and melting said toner particles whereby between said melting toner particles and said substrate a contact angle of at most 900° is formed and leave at most 25 mg/m^2 of an external releasing agent on said fused toner image.

5,824,448

NEGATIVE WORKING DIAZO COLOR PROOFING SHEET WITH ADHESIVE LAYER HAVING REDUCED TACKINESS

Shuchen Liu, Annandale, N.J., and Robert J. von Trebra, Wheeling, Ill., assignors to Bayer Corporation, Pittsburgh, Pa.

Filed Dec. 4, 1995, Ser. No. 566,764

Int. Cl.[6] G03F *7/30;7/021;* **G03C** *11/12*

U.S. Cl. 430—143 **24 Claims**

1. A photographic element which comprises, in order:

i) a substrate having a release surface; and

ii) a single photosensitive layer directly on said release surface, which photosensitive layer comprises in admixture, a light sensitive, negative working, polymeric diazonium compound in an amount sufficient to photosensitive the layer; a resinous binder composition in an amount sufficient to bind the layer components, which resinous binder composition contains a major amount of at least one resin selected from the group consisting of a polyvinyl butyral polymer and a styrene-maleic anhydride copolymer half ester; and at least one colorant in an amount sufficient to color the layer; and

iii) an adhesive layer directly adhered on said photosensitive layer, which adhesive layer comprises in admixture at least one copolymer selected from the group consisting of copolymers of methyl methacrylate and ethyl acrylate and copolymers of acrylic acid and acrylic esters having an acid number of from about 80 to about 100, said polymer having a Tg in the range of from about 45° C. to about 65° C.; and a sufficient amount of at least one compatible plasticizer such that the adhesive layer has a softening point in the range of from about 40° C. to about 120° C.

12. A method for forming a colored image which comprises:

A) providing a photographic element which comprises, in order:

i) a substrate having a release surface; and

ii) a single photosensitive layer directly on said release surface, which photosensitive layer comprises in admixture, a light sensitive, negative working, polymeric diazonium compound in an amount sufficient to photosensitize the layer; a resinous binder composition in an amount sufficient to bind the layer components, which resinous binder composition contains a major amount of at least one resin selected from the group consisting of a polyvinyl butyral polymer and a styrene-maleic anhydride copolymer half ester; and at least one colorant in an amount sufficient to color the layer; and

iii) an adhesive layer directly adhered on said photosensitive layer, which adhesive layer comprises in admixture at least one copolymer selected from the group consisting of copolymers of methyl methacrylate and ethyl acrylate and copolymers of acrylic acid and acrylic esters having an acid number of from about 80 to about 100, said copolymer having a Tg in the range of from about 45° C. to about 65° C.; and a sufficient amount of at least one compatible plasticizer such that the adhesive layer has a softening point in the range of from about 40° C. to about 120° C.; and

B) either

i) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; and imagewise exposing said photosensitive layer to actinic radiation; or

ii) imagewise exposing said photosensitive layer to actinic radiation; and laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and removing said substrate by the application of peeling forces; or

iii) laminating said element with heat and pressure via said adhesive layer to a developer resistant receiver sheet; and imagewise exposing said photosensitive layer to actinic radiation; and removing said substrate by the application of peeling forces; and

C) removing the non-exposed areas of said photosensitive layer with a liquid developer, which removing is conducted at a temperature at which said adhesive layer is substantially non-tacky.

5,824,449

PROCESS FOR PRODUCING D-MALIC ACID

Norimasa Ohnishi, Kawasaki; Chisa Niwa, Saga-ken, and Kenzo Yokozeki, Kawasaki, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Apr. 18, 1997, Ser. No. 840,448

Claims priority, application Japan, Apr. 19, 1996, 8-098110

Int. Cl.[6] C12P *7/46*

U.S. Cl. 435—145 **20 Claims**

1. A process for producing D-malic acid, comprising:

contacting a mixture with a microorganism or a treated form of said microorganism,

wherein said microorganism is selected from the genera consisting of Erwinia, Mycoplana, Sporosarcina, Vibrio, Geotrichum, Torulaspora, and mixtures thereof, and

said mixture comprises maleic acid.

5,824,450

LIGHT IRRADIATION METHOD AND OPTICAL INFORMATION RECORDING METHOD

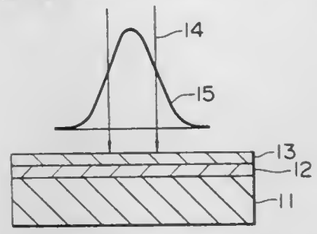
Michiharu Abe, Yokohama, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 458,858, Jun. 1, 1995, abandoned, which is a continuation of Ser. No. 915,950, Jul. 17, 1992, abandoned. This application Feb. 2, 1996, Ser. No. 597,567

Claims priority, application Japan, Jul. 19, 1991, 3-204782

Int. Cl.[6] G11B *7/00*

U.S. Cl. 430—269 **2 Claims**



2. An optical information recording method comprising the step of applying a minute light beam spot to an optical information recording medium comprising a substrate, an optical information recording layer and an auxiliary layer whose transmittance or reflectance increases in a real time manner correspondingly to the energy of an incident light thereto, to form a corresponding optical mark in a region substantially narrower than the spreading of said minute light beam spot, wherein the transmittance of said auxiliary layer, after the application of light thereto, returns to the transmittance thereof before the application of light thereto, when said step of applying light is terminated, and wherein the light-absorbing contrast-increasing layer comprises a cyanine dye which becomes transparent when irradiated, with the light absorption thereof being saturated.

5,824,451

POSITIVE PHOTOSENSITIVE COMPOSITION

Toshiaki Aoai, and Tsukasa Yamanaka, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 3, 1995, Ser. No. 497,795

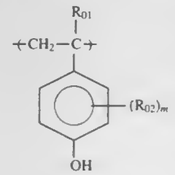
Claims priority, application Japan, Jul. 4, 1994, 6-152218; Jul. 8, 1994, 6-157278; Jul. 12, 1994, 6-160143

Int. Cl.[6] G03F *7/004*

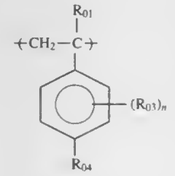
U.S. Cl. 430—270.1 **20 Claims**

1. A positive photosensitive composition comprising:

(a) a resin insoluble in water and soluble in an aqueous alkali solution, the resin containing a structure unit represented by formula (A) and at least one structure unit represented by formulae (B) to (E):



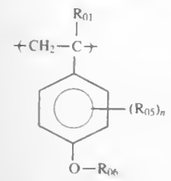
(A)



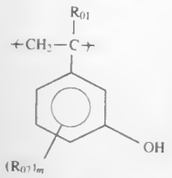
(B)

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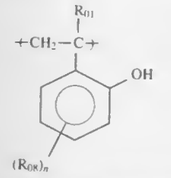
(C)



(D)



(E)



wherein, R_{01} represents a hydrogen atom or a methyl group;
R_{02} each independently represents a hydrogen atom, an alkyl group, a cycloalkyl group which may possess a substituent, an alkoxy group which may possess a substituent, a hydroxy group, a cyano group, a nitro group, or a halogen atom, R_{03} each independently represents a hydrogen atom, an alkyl group which may possess a substituent, a cycloalkyl group which may possess a substituent, an alkoxy group which may possess a substituent, a cyano group, a nitro group, or a halogen atom,
R_{04} represents a hydrogen atom, an alkyl group which may possess a substituent, a cycloalkyl group which may possess a substituent, an aryl group which may possess a substituent, a cyano group, a nitro group, or a halogen atom,
R_{05} each independently represents a hydrogen atom, an alkyl group which may possess a substituent, a cycloalkyl group which may possess a substituent, an alkoxy group which may possess a substituent, a hydroxy group, a cyano group, a nitro group, or a halogen atom, R_{06} represents an alkyl group which may possess a substituent or an acyl group which may possess a substituent, R_{07} and R_{08} each independently represents a hydrogen atom, an alkyl group which may possess a substituent, a cycloalkyl group which may possess a substituent, an alkoxy group which may possess a substituent, a hydroxy group, a cyano group, a nitro group or a halogen atom, m and n are independently 0 or an integer of from 1 to 3, and a plurality of R_{02}, R_{03}, R_{05}, R_{07} or R_{08} may be the same or different;

(b) a compound which generates an acid with irradiation of an active ray or radiation; and

(c) a low molecular weight acid-decomposable dissolution inhibitor having a molecular weight of not more than 3000, which possesses a tertiary alkyl ester group and whose solubility in an aqueous alkali solution is increased by the action of acid;

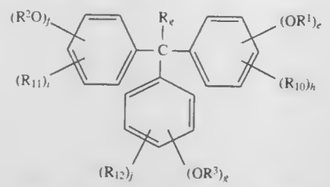
wherein compound (c) is at least one compound selected from the group consisting of:

(i) a compound having at least two tertiary alkyl ester groups, in which the longest distance with respect to the distance between two tertiary ester groups selected arbitrarily comprises at least 10 bonding atoms except for the atoms contained in the ester groups, and

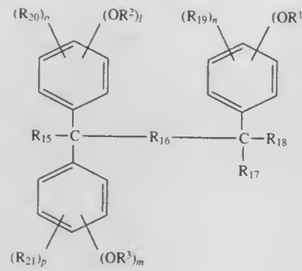
(ii) a compound having at least three tertiary alkyl ester groups, in which the longest distance with respect to the distance between two tertiary ester groups selected arbitrarily comprises at least 9 bonding atoms except for the atoms contained in the ester groups;

and wherein said compound (c) is represented by at least one of the following formula (VI), (VII), (VIII), (XII), (XIII), (XV), (XVI), (XVII), (XVIII), (XIX) or (XX):

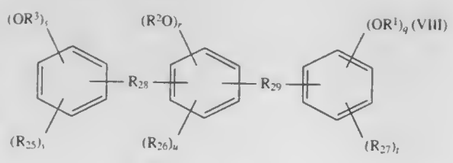
(VI)



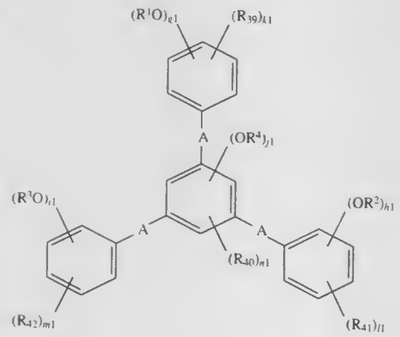
(VII)



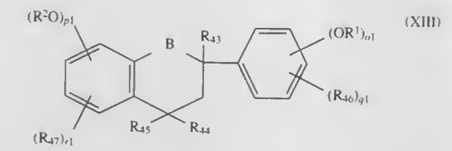
(VIII)



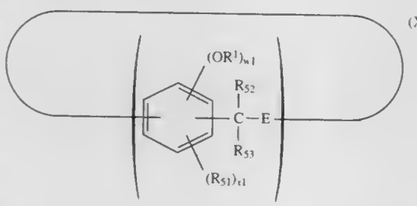
(XII)



(XIII)

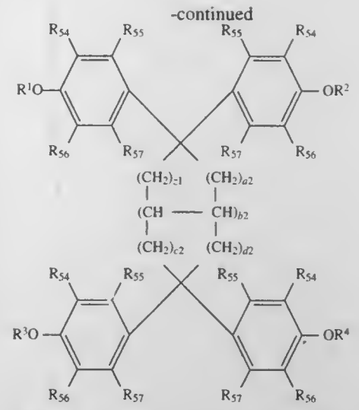


(XV)

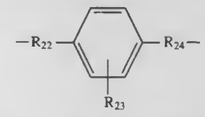


-continued

(XVI)



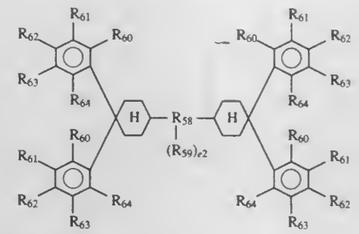
wherein:
R^1, R^2, R^3 and R^4 may be the same or different and are a hydrogen atom or $—R^0—COO—C(R^{01})(R^{02})(R^{03})$; wherein R^{01}, R^{02} and R^{03} may be the same or different and are an alkyl group, a cycloalkyl group or an alkenyl group; two of R^{01} to R^{03} may be bonded to form a ring; and R is a bi- or multi-valent aliphatic or aromatic hydrocarbon group;
R_9 to R_{12}, R_{15}, R_{17} to R_{21}, R_{25} to R_{27}, R_{39} to R_{42}, R_{46} to R_{47}, and R_{51} may be the same or different and are a hydrogen atom, a hydroxyl group, an alkyl group, an alkoxy group, an acyl group, an acyloxy group, an aryl group, an aryloxy group, an aralkyl group, an aralkyloxy group, a halogen atom, a nitro group, a carboxyl group, a cyano group, or $—N(R_{13})(R_{14})$;
where R_{13} and R_{14} are independently a hydrogen atom, an alkyl group or an aryl group;
R_{16} is a single bond, an alkylene group or



R_{22} and R_{24} may be the same or different and are a single bond, an alkylene group, —O—, —S—, —CO—, or a carboxyl group;
R_{23} is a hydrogen atom, an alkyl group, an alkoxy group, an acyl group, an acyloxy group, an aryl group, a nitro group, a hydroxy group, a cyano group, or a carboxyl group, where the hydroxy group may be substituted with a t-butoxycarbonyl group;
R_{28} and R_{29} may be the same or different and are a methylene group, a lower alkyl-substituted methylene group, a halomethylene group, or a haloalkyl group;
R_{43} to R_{45} may be the same or different and are a hydrogen atom, an alkyl group, an alkoxy group, an acyl group, or an acyloxy group;
R_{52} and R_{53} may be the same or different and are a hydrogen atom, a lower alkyl group, a lower haloalkyl group or an aryl group;
R_{54} to R_{57} may be the same or different and are a hydrogen atom, a hydroxyl group, a halogen atom, a nitro group, a cyano group, a carbonyl group, an alkyl group, an alkoxy group, an alkoxycarbonyl group, an aralkyl group, an aralkyloxy group, an acyl group, an acyloxy group, an alkenyl group, an alkenyloxy group, an aryl group, an aryloxy group or an aryloxycarbonyl group, provided that the four substituents represented by the same symbol may be the same or different;
B is a single bond or —O—;
A is a ethylene group, a lower alkyl-substituted methylene group,
a halomethylene group or a haloalkyl group;
E is a single bond or oxymethylene group;

when e to v, g_1 to y_1 are two or more, the group in the parentheses may be the same or different;
e to q, s, t, v, q_1 to i_1, k_1, to m_1, o_1 and q_1, are independently 0 or an integer of 1 to 5;
r, u, p_1, r_1, w_1, x_1, are independently 0 or an integer of 1 to 4;
j_1, n_1, z_1, a_2, b_2, c_2, and d_2 are independently 0 or an integer of 1 to 3, provided that at least one of z_1, a_2, c_2 and d_2 is 1 or more;
y_1 is an integer of 3 to 8;
(a+b), (e+f+g), (k+l+m), (q+r+s), $(g_1+h_1+i_1+j_1)$ and (o_1+p_1), $\geqq 2$; $j_1+n_1) \leqq 3$;
(r+u), (p_1+r_1), and $(x_1+w_1) \leqq 4$; and
(e+h), (f+i), (g+j), (k+n), (l+o), (m+p), (q+t), (s+v), (g_1+k_1), (h_1+l_1), (i_1+m_1), and $(o_1+g_1) \leqq 5$;

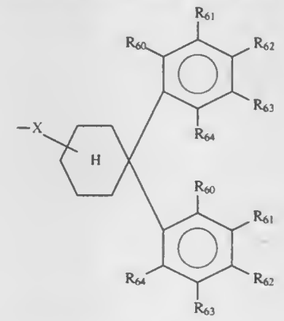
(XVII)



wherein:
R_{53} is an organic group, a single bond, —S—, —SO—, or

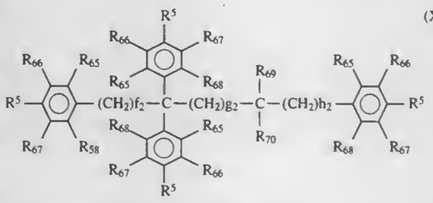


R_{59} is a hydrogen atom, a monovalent organic group or



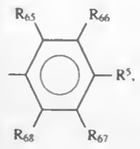
where R_{60} to R_{64} may the same or different and are a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, an alkoxy group, an alkenyl group or $—O—R^0—COO—C(R^{01})(R^{02})(R^{03})$; provided that at least two of R_{60} to R_{64} are the group, $—O—R^0—COO—C(R^{01})(R^{02})(R^{03})$; and each 4 to 6 substituents represented by the same symbol may be the same or different; and
X is a divalent organic group; and
e_2 is 0 or 1;

(XVIII)



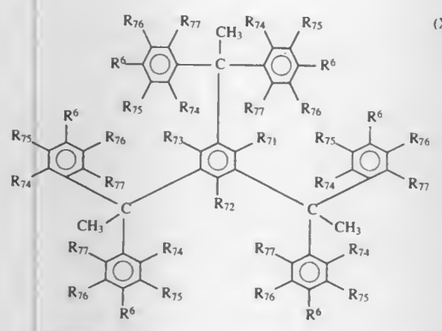
wherein:
R_{65} to R_{68} may be the same or different and are a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, an

alkoxy group, or an alkenyl group; provided that each 4 to 6 substituents represented by the same symbol may be the same or different; R_{69} and R_{70} are a hydrogen atom, an alkyl group or



at least two of R_5 are —O—R^0—COO—C(R^{01}) (R^{02}) (R^{03}) and the other substituents are a hydrogen atom or a hydroxy group; and f_2, q_2, and h_2 are 0 or an integer of 1 to 5;

(XIX)

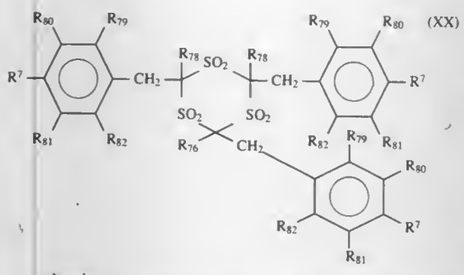


wherein:

R_{71} to R_{77} may be the same or different, and are a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, an alkoxy group, a nitro group, an alkenyl group, an aryl group, an aralkyl group, an alkoxycarbonyl group, an arylcarbonyl group, an acyloxy group, an acyl group, an aryloxy group or an aralkoxy group; provided that 6 substituents represented by each of R_{74} to R_{77} may be the same or different; and

at least two of R_6 are —O—R^0—COO—C(R^{01}) (R^{02}) (R^{03}) and the other substituents are a hydrogen atom or a hydroxy group; and

(XX)



wherein:

R_{78} is a hydrogen atom or an alkyl group; provided that all the substituents may be the same or different; R_{79} to R_{82} are a hydrogen atom, a hydroxy group, a halogen atom, an alkyl group, or an alkoxy group; provided that each three substituents represented by the same symbol may be the same or different; and at least two of R_7 are —O—R^0—COO—C(R^{01}) (R^{02}) (R^{03}) and the other substituents are a hydrogen atom or a hydroxy group.

5,824,452

RESIST COMPOSITIONS AND PROCESS FOR THE FORMATION OF RESIST PATTERNS

Koji Nozaki; Ei Yano; Keiji Watanabe; Takahisa Namiki; Miwa Igarashi, and Yoko Kuramitsu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 4, 1996, Ser. No. 610,345

Claims priority, application Japan, Mar. 27, 1995, 7-068056

Int. Cl.[6] G03C *5/00; 1/725*

U.S. Cl. 430—313 **7 Claims**

1. A process for the formation of resist patterns which comprises the steps of:

coating a resist composition on a substrate to be fabricated, said resist composition comprising:

A. a (meth)acrylate copolymer having a weight average molecular weight of 2,000 to 1,000,000, said copolymer comprising the following repeating units:

(a) a vinyl monomer unit which contains, in a side chain thereof, at least one carbon—carbon double bond which does not concern itself with any polymerization reaction, but is able to be crosslinked with a crosslinking agent which is used in combination with said copolymer, said monomer unit being able to be copolymerized with an acrylic acid or methacrylic acid ester and being in an amount of more than 0 mole % and not more than 50 mole % based on said copolymer,

(b) an acrylamide or methacrylamide monomer unit in an amount of more than 0 mole % and not more than 70 mole % based on said copolymer,

(c) an acrylic acid or methacrylic acid monomer unit in an amount of more than 0 mole % and not more than 30 mole % based on said copolymer,

(d) an acrylic acid or methacrylic acid adamantyl monomer unit in an amount of more than 0 mole % and not more than 70 mole % based on said copolymer, and

B. a crosslinking agent capable of being decomposed upon exposure to a patterning radiation and then causing a crosslinking reaction of said copolymer upon the subsequent heating, thereby forming a resist coating;

selectively exposing said resist coating to a patterning radiation capable of causing a decomposition of said crosslinking agent in said resist composition;

heating the exposed resist coating to a temperature at which a crosslinking reaction of said copolymer in said resist composition is induced; and

developing the heated resist coating with an aqueous basic solution as a developer.

5,824,453

FABRICATING METHOD OF GAAS SUBSTRATE HAVING V-SHAPED GROOVES

Sung-Bock Kim; Seong-Ju Park; Jeong-Rae Ro, and El-Hang Lee, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon-shi, Rep. of Korea

Continuation of Ser. No. 801,724, Jan. 13, 1997, abandoned, which is a continuation of Ser. No. 341,866, Nov. 15, 1994, abandoned. This application Oct. 9, 1997, Ser. No. 946,915

Claims priority, application Rep. of Korea, May 16, 1994, 1994-10638

Int. Cl.[6] G03F *7/00*

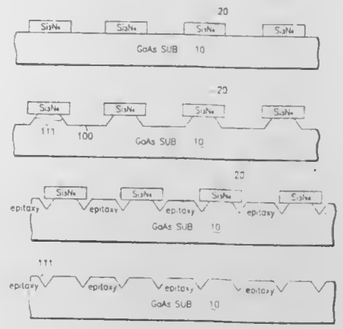
U.S. Cl. 430—313 **3 Claims**

1. A fabricating method of a GaAs substrate having V-shaped grooves, the method comprising the steps of:

forming a Si_3N_4 layer on a GaAs substrate having a (100) surface;

patterning the Si_3N_4 layer using photo-lithography to form a Si_3N_4 masking layer;

wet-etching the GaAs substrate using the patterned Si_3N_4 masking layer as a mask, so as to form GaAs side facets each having a (111) surface beneath the patterned Si_3N_4;



selectively epitaxially growing a GaAs film on the etched GaAs substrate to form the GaAs substrate having V-shaped grooves; and

removing the Si_3N_4 layer.

5,824,454

METHOD OF PHOTOLITHOGRAPHICALLY METALLIZING AT LEAST THE INSIDE OF HOLES ARRANGED IN ACCORDANCE WITH A PATTERN IN A PLATE OF AN ELECTRICALLY INSULATING MATERIAL

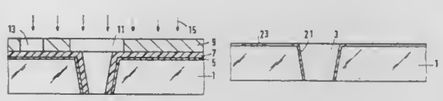
Gijsbertus A.C.M. Spierings; Willem L.C.M. Heijboer, and Leo O. Remeeus, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 419,588, Apr. 7, 1995, abandoned. This application Mar. 26, 1997, Ser. No. 827,335

Claims priority, application European Pat. Off., Apr. 12, 1994, 94200976

Int. Cl.[6] G03F *7/26*

U.S. Cl. 430—318 **8 Claims**



1. A method of photolithographically metallizing at least the inside of holes arranged in accordance with a pattern in a plate of an electrically insulating material, using a negative, photosensitive cataphoretic lacquer coating, to form a selection plate or control plate for a plasma display, field-emission display or thin electron display, characterized in that the method comprises the following steps:

providing a chromium layer on at least one surface of the plate and on the walls of the holes;

providing an aluminum layer on the chromium layer;

providing a third metal layer on the aluminum layer, the metal of the third metal layer being selected from the group consisting of chromium, cobalt, nickel, zirconium and titanium, and alloys of two or more of said metals;

electrophoretically providing the negative, photosensitive, cataphoretic lacquer coating on the third metal layer;

exposing the lacquer coating in accordance with a pattern, thereby forming exposed and unexposed portions of the lacquer coating, exposed portions being formed at least in association with the holes;

developing the lacquer coating, so that the portion of the third metal layer underneath the unexposed portions of the lacquer layer is uncovered;

removing the uncovered portion of the third metal layer and the underlying aluminum and chromium layers to the surface of the plate by means of etching, while preserving the portions of the third metal, chromium and aluminum layers underneath the exposed portions of the lacquer coating; and

stripping the exposed portions of the lacquer coating.

5,824,455

PROCESSING METHOD AND APPARATUS

Toshiyuki Komatsu, Hiratsuka; Yasue Sato, Kawasaki, and Shin-Ichi Kawate, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 251,666, May 31, 1994, which is a continuation of Ser. No. 764,939, Sep. 24, 1991, abandoned. This application Apr. 25, 1995, Ser. No. 428,518

Claims priority, application Japan, Sep. 26, 1990, 2-254196; Sep. 27, 1990, 2-255148; Sep. 29, 1990, 2-261670; Oct. 5, 1990, 2-266461; Nov. 19, 1990, 2-313589; Nov. 19, 1990, 2-314951; Nov. 19, 1990, 2-314953; Nov. 19, 1990, 2-314954

Int. Cl.[6] G03F *7/26*

U.S. Cl. 430—323 **13 Claims**

1. A processing method comprising the steps of:

subjecting in a modifying gas atmosphere the surface of a substrate to selective irradiation with light that has an energy greater than a binding energy of a compound present in the form of a film constituting said surface of the substrate to reduce an area of said compound subjected to the selective irradiation, said selective irradiation thereby forming on said surface of the substrate a pattern of a surface-modified area and a surface-unmodified area, said surface-modified area constituting a reduced product and said surface-unmodified area constituting a non-reduced product; and

etching the surface-unmodified area using said surface -modified area as a protective film.

5,824,456

COMPOSITION FOR FORMING METAL OXIDE THIN FILM PATTERN AND METHOD FOR FORMING METAL OXIDE THIN FILM PATTERN

Katsumi Ogi; Tsutomu Atsuki; Go Sasaki; Tadashi Yonezawa, and Nobuyuki Soyama, all of Omiya, Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan

Continuation of Ser. No. 361,837, Dec. 22, 1994, Pat. No. 5,637,440. This application Jan. 16, 1997, Ser. No. 786,367

Claims priority, application Japan, Dec. 27, 1993, 5-330971; Mar. 22, 1994, 6-50382

Int. Cl.[6] G03F *7/40;* **G03C** *1/492*

U.S. Cl. 430—325 **18 Claims**

1. A composition for forming a metal oxide thin film pattern, which comprises a solution containing one or more hydrolytic organometallic compounds, said one or more hydrolytic organometallic compounds being compounds that form metal hydroxides through hydrolysis; and a photosensitizer which forms water under irradiation with active rays, wherein said composition forms a metal oxide when irradiated with active rays and then heat treated.

13. A method for forming a metal oxide thin film pattern, which comprises the steps of:

coating the composition of claim 1 onto a substrate to form a coating film,

subjecting the resultant coating film to image-forming exposure with active rays,

developing the exposed film with a solvent to remove a non-exposed portion, and

then heat-treating the developed film to convert the exposed film portion into a metal oxide.

5,824,457

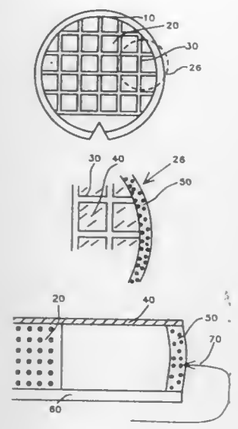
USE OF WEE (WAFER EDGE EXPOSURE) TO PREVENT POLYIMIDE CONTAMINATION

Hsiang Liu; Chien-Ming Chung, both of Hsin-chu; Liang Szuma, Taipei, and Ding-Shan Wang, Hsin-Chu, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Oct. 2, 1996, Ser. No. 720,639

Int. Cl.[6] G03F 7/20

U.S. Cl. 430—394 23 Claims



1. A method for sealing the edge of a wafer comprising the steps of:

providing a wafer;

providing an interlevel dielectric on said wafer;

mounting said wafer on a rotatable chuck;

exposing the edge of said wafer on said rotatable chuck to a first light source;

exposing said wafer to a second light source through a mask;

developing said wafer; and

forming a wafer edge exposure (WEE) seal.

5,824,458

DEVELOPER AND FIXING SOLUTION FOR SILVER HALIDE PHOTOGRAPHIC MATERIAL AND PROCESSING METHOD USING THE SAME

Eiichi Okntsu, and Rikio Inoue, both of Kanagawa, Japan, assignors to Fujl Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 650,551, May 20, 1996, abandoned, which is a continuation of Ser. No. 394,744, Feb. 27, 1995.

This application May 19, 1997, Ser. No. 858,881

Claims priority, application Japan, Feb. 28, 1994, 6-030203; Mar. 22, 1994, 6-050388

Int. Cl.[6] G03C 5/305

U.S. Cl. 430—490 2 Claims

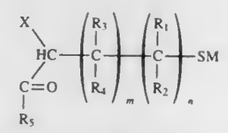
1. A one-part liquid developer for a black-and-white silver halide photographic material comprising the following composition:

(a) an ascorbic acid or a derivative thereof as a developing agent present in an amount of from 5 to 80 g per l of the developer, provided that the developing agent is not hydroquinone;

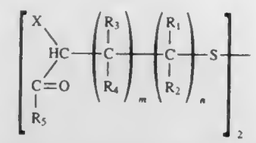
(b) an auxiliary developing agent having super-additivity present in an amount of from 5×10^{-4} to 5×10^{-2} mol per l of the developer;

(c) an alkali agent necessary at least for giving a pH of 9.0; and

(d) a compound represented by formula (I) or (II) present in a concentration of from 0.1 to 5 mol/l of the developer:



(I)



(II)

wherein R_1 and R_2 each represents a hydrogen atom, an alkyl group having from 1 to 3 carbon atoms or a phenyl group, R_3 and R_4 each represents a hydrogen atom or an alkyl group having from 1 to 3 carbon atoms, m and n each represents 0, 1 or 2, R_5 represents a hydroxyl group, an amino group or an alkyl group having from 1 to 3 carbon atoms, M represents a hydrogen atom, an alkali metal atom or an ammonium group, X represents a hydrogen atom, a alkyl group having from 1 to 3 carbon atoms, a sulfonyl group, an amino group, an acylamino group, a dimethylamino group, an alkylsulfonylamino group or an arylsulfonylamino group, wherein said developer is accommodated in a packing material comprising at least one of a saponified product of an ethylene-vinyl acetate copolymer and a nylon, said packing material having an oxygen permeability of 50 ml/m^2.atm.day or less (at a temperature of 20° and a relative humidity of 65%).

5,824,459

SYMMETRICAL THORACIC CAVITY IMAGING RADIOGRAPHIC ELEMENT

Robert E. Dickerson, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1997, Ser. No. 909,313

Int. Cl.[6] G03C 1/46;5/16;1/035

U.S. Cl. 430—502 7 Claims

1. A medical diagnostic radiographic element comprised of

a film support having first and second major surfaces and capable of transmitting radiation to which the radiographic element is responsive and, coated on each of the major surfaces,

processing solution permeable hydrophilic colloid layers which are fully forehardened including at least one spectrally sensitized tabular grain emulsion,

a particulate dye (a) capable of absorbing radiation to which the silver halide grains are responsive, (b) present in an amount sufficient to reduce crossover to less than 5 percent, and (c) capable of being substantially decolorized during processing,

WHEREIN, to facilitate medical diagnostic imaging of thoracic cavity anatomical features as well as rapid processing with low wet pressure sensitivity in a symmetrical film format,

less than 35 mg/dm^2 of hydrophilic colloid is coated on each of the major surfaces of the support,

the hydrophilic colloid layers including on each major surface of the support inner and outer emulsion layers containing a spectrally sensitized tabular grain emulsion having a grain equivalent circular diameter coefficient of variation of greater than 25 percent, the outer layers being coated over the inner layers,

the outer emulsion layers contain (a) silver halide grains accounting for from 30 to 70 percent of the total weight of the outer emulsion layers, and (b) from 20 to 80 percent of the total silver forming the silver halide grains within the radiographic element,

the inner emulsion layers contain (a) the dye particles and (b) from 20 to 80 percent of the total silver forming the silver halide grains within the radiographic element,

the dye particles and the silver halide grains together account for from 30 to 70 percent of the total weight of each of the inner emulsion layers, and

the silver halide grains within the inner emulsion layers contain a rhodium dopant to increase point γ(a) to greater than 3.0 at a first reference point at a density of 2.0 above minimum density, (b) to greater than 1.5 at a second reference point lying at a 0.3 log E lower exposure than the first reference point, and (c) to greater than 0.5 at a third reference point lying at a 0.6 log E lower exposure than the first reference point.

5,824,460

SYMMETRICAL RADIOGRAPHIC ELEMENTS FOR GASTROINTESTINAL TRACT IMAGING

Robert E. Dickerson, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 14, 1997, Ser. No. 911,788

Int. Cl.[6] G03C 1/46;5/16;1/035

U.S. Cl. 430—502 8 Claims

1. A medical diagnostic radiographic element comprised of

a film support capable of transmitting radiation to which the radiographic element is responsive having first and second major surfaces and, coated on each of the major surfaces,

fully forehardened processing solution permeable hydrophilic colloid layers including underlying and overlying superimposed spectrally sensitized radiation-sensitive tabular grain silver halide emulsion layers, the overlying emulsion layer being coated over the underlying emulsion layer,

the underlying emulsion layers additionally including a particulate dye (a) capable of absorbing radiation to which the silver halide grains are responsive, (b) present in an amount sufficient to reduce crossover to less than 15 percent, and (c) capable of being substantially decolorized during processing,

WHEREIN, to facilitate medical diagnostic imaging of the gastrointestinal tract the radiographic element is constructed to provide

less than 35 mg/dm^2 of hydrophilic colloid on each major surface of the support,

a maximum density of less than 3.0,

a contrast in the range of from 1.0 to 2.0 over a lower exposure region extending over an exposure range of 0.3 log E,

a contrast greater than 3.5 over an intermediate exposure region extending over an exposure range of 0.6 log E, and

a contrast of in the range of from 1.0 to 2.0 over a higher exposure region extending over an exposure range of 0.3 log E, where E is in each occurrence exposure in lux-seconds,

the underlying emulsion layers being comprised of a lower speed emulsion that contributes to image formation in the higher exposure region, the silver halide grains of the lower speed emulsion exhibiting a coefficient of variation of greater than 30 percent and accounting for from 10 to 40 percent of the silver halide grains present in the underlying and overlying emulsion layers,

the radiation-sensitive silver halide grains in the overlying emulsion layers being provided by a blend of a higher speed tabular grain emulsion responsible for contrast in the lower exposure region and an intermediate speed tabular grain emulsion component responsible for imparting a contrast of greater than 3.0 in the intermediate exposure region,

the silver halide grains of the higher speed emulsion component having a coefficient of variation of greater than 30 percent, and

the silver halide grains of the intermediate speed emulsion component accounting for from 30 to 60 percent of the silver halide grains in the underlying and overlying emulsion layers, having a coefficient of variation of less than 15 percent, and containing on a molar basis rhodium in an amount of less than 1×10^{-7} based on silver,

the recited coefficient of variation in each instance being based on grain equivalent circular diameters.

5,824,461

FLUOROPOLYETHER CONTAINING AQUEOUS COATING COMPOSITIONS FOR AN IMAGING ELEMENT

Brian A. Schell, Honeoye Falls; Michael W. Orem, Rochester, and Yongcai Wang, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1997, Ser. No. 932,014

Int. Cl.[6] G03C 1/89;1/76

U.S. Cl. 430—529 21 Claims

1. An imaging element comprising;

a support;

at least one imaging layer superposed on said support; and

a protective overcoat superposed on said support, said overcoat formed by coating and subsequent drying of a coating composition comprising a continuous aqueous phase having therein colloidal polymer particles having a glass transition temperature of greater than 20° C. and a fluoropolyether comprising more than 90 mole % units selected from the group consisting of —CF_2—CF_2—O—, —CF_2—O—, —$CF(CF_3)$—O—, and —CF_2—$CF(CF_3)$—O—, and a functional group selected from the group consisting of —COOH, —CH_2—OH, —CH_2—COOH, —CH_2—SO_3H, —CH_2—PO_3H, —(CH_2—CH_2—O)—H, and —(CH_2—$CH(CH_3)$—O—)—H.

5,824,462

RESIN-COATED PAPER

Tetsuya Ashida; Touru Noda; Osamu Kojima; Tomoichi Morita, all of Tokyo; Nobushige Ikeya; Takuya Seri, both of Kurashiki, and Kohhei Nitta, Ishikawa, all of Japan, assignors to Mitsubishi Paper Mills Limited, and Mitsubishi Chemical Corporation, both of Tokyo, Japan

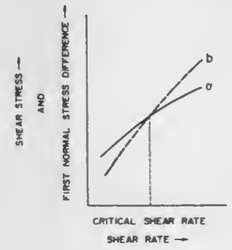
Continuation of Ser. No. 367,252, Jan. 12, 1995, abandoned.

This application Sep. 13, 1996, Ser. No. 713,370

Claims priority, application Japan, May 17, 1993, 5-114849; Dec. 15, 1993, 5-315532

Int. Cl.[6] G03C 1/76;1/775; B32B 7/02;27/08

U.S. Cl. 430—531 19 Claims



15. A resin-coated paper comprising a paper substrate and a first resin layer formed on one side of the paper substrate, wherein the first resin layer has a melt flow rate prescribed in JIS K 6760 of 1.0–40 g/10 min, a density of 0.930–0.971 g/cm^3 and a critical shear rate of 10 (l/sec) or less.

5,824,463

METHOD TO INCREASE THE PRODUCTION RATE OF PHOTOGRAPHIC PAPER THROUGH APPLICATION OF OZONE

Eric E. Arrington, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 24, 1997, Ser. No. 823,527
Int. Cl.[6] G03C *1/795;1/775;1/79*
U.S. Cl. 430—532 14 Claims

1. A method for manufacturing a photographic support comprising:

providing a support;

laminating a surface of said support with a polymer resin formulation containing from 0.001 to 1 weight percent antioxidant at a temperature of from 344° to 360° C. while exposing the polymer resin formulation to an ozone containing gas at a rate of greater than 0.1 mg/m^2 of said support.

5,824,464

PHOTOGRAPHIC ELEMENT WITH IMPROVED DRYING CHARACTERISTICS

Brian A. Schell, Honeoye Falls; Michael W. Orem, Rochester, and Yongcai Wang, Penfield, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 17, 1997, Ser. No. 932,597
Int. Cl.[6] G03C *1/89;1/795;1/76*
U.S. Cl. 430—533 12 Claims

1. A photographic element comprising;

a support having a front surface and a back surface;

a silver halide imaging layer superposed on the front surface of said support; and

a backing layer superposed on the back surface of said support, said backing layer formed by coating and subsequent drying of a coating composition comprising an aqueous medium having therein a mixture of film-forming colloidal particles and non-film-forming colloidal particles and a fluoropolyether comprising more than 90 mole % units selected from the group consisting of —CF_2—CF_2—O—, —CF_2—O—, —$CF(CF_3)$—O—, and —CF_2—$CF(CF_3)$—O—, and a functional group selected from the group consisting of —COOH, —CH_2—OH, —CH_2—COOH, —CH_2—SO_3CH, —CH_2—PO_3H, —(CH_2—CH_2—O)—H, and —(CH_2—$CH(CH_3)$—O—)—H.

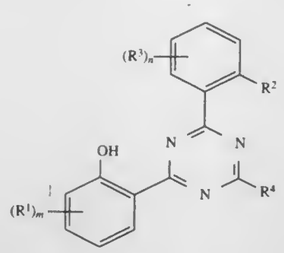
5,824,465

POLYALKYLENE NAPHTHALATE FILM COMPRISING SPECIFIC UV-ABSORBER

August Marien, Westerlo, Belgium; Jörg Hagemann, Köln, and Beate Weber, Leichlingen, both of Germany, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Mar. 30, 1998, Ser. No. 50,247
Claims priority, application European Pat. Off., Apr. 7, 1997, 97201024
Int. Cl.[6] G03C *1/005;* C08F *20/00;* C08G *63/18*
U.S. Cl. 430—631 9 Claims

1. Polyester film made of polyalkylene naphthalate or a derivative thereof and containing an UV-absorber according to following general formula:



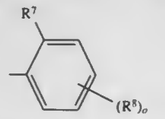
(I)

wherein

R^1 and R^3 each independently represent hydrogen, halogen, —OR^6, mercapto, alkyl, aryl, alkoxy, aryloxy, acyl, alkylthio, —NR5—R^6, alkoxycarbonyl, carbamoyl, sulfamoyl, aryloxycarbonyl, each of which can be further substituted,

R^2 represents hydrogen, hydroxy, halogen or alkyl, each of which can be further substituted,

R^4 represents alkyl, alkoxy, alkylthio, aryloxy, arylthio, each of which can be further substituted, or a moiety represented by



R^5 represents hydrogen, alkyl or aryl, each of which can be further substituted,

R^6 represents hydrogen, alkyl, aryl, acyl, alkoxycarbonyl, aryloxycarbonyl, carbamoyl, sulfamoyl or sulfonyl, each of which can be further substituted,

R^7 and R^8 have one of the significances given for R^2 and R^3 respectively, and wherein

m, n and o each independently represent 1,2,3 or 4.

5,824,466

PURIFIED POLYPEPTIDE OF HUMAN PAPILLOMAVIRUS TYPE 49 (HPV49) TYPE 50 (HVP50), AND TYPE 55 (HPV55)

Gerard Orth, Sceaux; Michel Favre; Dina Kremsdorf, both of Paris, and Gérard Pehau-Arnaudet, Montreuil, all of France, assignors to Institut Pasteur, and Institut National de la Sante et de la Recherche Medicale (INSERM), both of France

Division of Ser. No. 466,291, Jun. 6, 1995, Pat. No. 5,591,574, which is a division of Ser. No. 240,497, May 10, 1994, Pat. No. 5,534,439, which is a continuation of Ser. No. 951,118, Sep. 25, 1992, Pat. No. 5,342,930, which is a continuation of Ser. No. 351,125, May 12, 1989, abandoned. This application Apr. 20, 1996, Ser. No. 626,347
Claims priority, application France, May 13, 1988, 88 06486; Jun. 21, 1988, 88 08324
Int. Cl.[6] C12Q *1/70;* C12N *7/00;7/01;* A61K *39/12*
U.S. Cl. 435—5 52 Claims

1. A purified polypeptide encoded by a gene of HPV49 selected from the group consisting of E1, E2, E6, E7, L1, and L2.

18. A purified polypeptide encoded by a gene of HPV50 selected from the group consisting of E1, E2, E6, E7, L1, and L2.

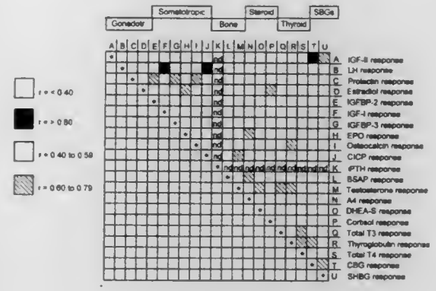
35. A purified polypeptide encoded by a gene of HPV55 selected from the group consisting of E1, E2, E6, E7, L1, and L2.

5,824,467

METHODS FOR PREDICTING DRUG RESPONSE

Desmond Mascarenhas, Los Altos Hills, Calif., assignor to Celtrix Pharmaceuticals, Santa Clara, Calif.

Filed Feb. 25, 1997, Ser. No. 805,808
Int. Cl.[6] C12Q *1/00;1/54;* G01N *33/53*
U.S. Cl. 435—4 6 Claims



1. A method for predicting the effect of the administration of insulin-like growth factor I (IGF-I) on serum levels of procollagen peptide (C1CP) and IGFBP-3 in a subject. comprising:

measuring the subject's serum level of thyroid stimulating hormone ("[TSH]");

measuring the subject's serum level of total tetraiodothyronine ("[tT4]");

measuring the subject's serum level of IGF-I ("[IGF-I]"); and

calculating said subject's responsiveness by the formula

$$P = \frac{\log([TSH] + 1.) \times [tT4]}{[IGF - 1]}$$

wherein P is the subject's responsiveness, [TSH] is the basal concentration of TSH in micro international units per milliliter of serum (μIU/mL), [tT4] is the basal concentration of total T4 in nanograms per milliliter of serum (ng/mL), and [IGF-I] is the basal concentration of IGF-I in ng/mL.

5,824,468

DETECTION OF LISTERIA BY MEANS OF RECOMBINANT BACTERIOPHAGES

Siegfried Scherer, and Martin Loessner, both of Friesing, Germany, assignors to Merck Patent Gesellschaft mit beschrankkter Haftung, Darmstadt, Germany

Filed May 17, 1996, Ser. No. 648,978
Claims priority, application Germany, May 18, 1995, 195 17 940.4
Int. Cl.[6] C12Q *1/70;1/04;* C12N *15/00;15/64*
U.S. Cl. 435—5 12 Claims

1. An infectious recombinant bateriophage derived from a myophage of morphotype A1, species A511, comprising a marker gene exogenous to bacteria of the genus Listeria, wherein said gene encodes a marker gene product.

3. A regent composition comprising a bacteriophage of claim 1 and growth medium for bacteria of the genus Listeria.

5. A method for the detection of bacteria of the genus Listeria in a sample, comprising:

a) mixing the sample with a reagent of claim 3 under conditions wherein said bacteriophage infects bacteria of the genus Listeria;

b) culturing the mixture of a) such that said marker gene is expressed in bacteria of the genus Listeria;

c) detecting the presence of the marker gene product in b), wherein expression of the marker gene product indicates the presence of bacteria of the genus Listeria in the sample.

5,824,469

METHOD FOR PRODUCING NOVEL DNA SEQUENCES WITH BIOLOGICAL ACTIVITY

Marshall S. Horwitz, and Lawrence A. Loeb, both of Bellevue, Wash., assignors to University of Washington, Seattle, Wash.

Continuation of Ser. No. 105,108, Aug. 11, 1993, abandoned, which is a continuation of Ser. No. 881,607, May 12, 1992, abandoned, which is a continuation of Ser. No. 368,674, Jun. 19, 1989, abandoned, which is a continuation-in-part of Ser. No. 887,070, Jul. 17, 1986, abandoned. This application Sep. 30, 1994, Ser. No. 316,415
Int. Cl.[6] C12Q *1/68;* C12N *15/11;15/10;* C12P *19/34*
U.S. Cl. 435—6 3 Claims

3. A method of obtaining an oligonucleotide that confers a predetermined biological function on a cell, comprising:

(a) cloning into an expression vector a heterogeneous pool of oligonucleotides, n nucleotides in length wherein n is 54 or fewer nucleotides, having nucleic acid sequences representing a random sampling of the 4^n possible sequences for oligonucleotides of said length, wherein said cloned oligonucleotides are transcribed or act as a regulatory sequence;

(b) introducing a random sampling of said cloned heterogeneous pool of oligonucleotides into a population of cells that do not exhibit the predetermined biological function;

(c) thereafter biologically selecting from the population of cells a subpopulation of cells exhibiting the predetermined biological function, by contacting the population of cells with a selective medium in which only cells exhibiting the predetermined biological function survive; and

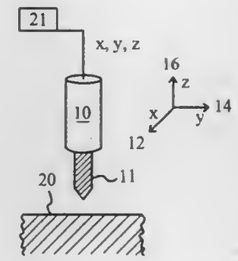
(d) isolating from the selected subpopulation of cells an oligonucleotide that confers the predetermined biological function; wherein said predetermined biological function is regulation of expression or a biological activity of a polypeptide.

5,824,470

METHOD OF PREPARING PROBES FOR SENSING AND MANIPULATING MICROSCOPIC ENVIRONMENTS AND STRUCTURES

John D. Baldeschwieler, Pasadena, Calif.; David Randall Baselt, Alexandria, Va.; Marc A. Unger, and Stephen D. O'Connor, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Filed May 30, 1995, Ser. No. 453,958
Int. Cl.[6] C12Q *1/68;* G01N *33/53;21/00;* C01B *25/00*
U.S. Cl. 435—6 5 Claims



1. A method of preparing a probe for sensing or manipulating a microscopic environment or structure comprising the steps of:

(a) protecting a small area at the tip of the probe, wherein said area of protection is in the range of about 10,000 Å^2 to 3 Å^2;

(b) passivating the unprotected area of said probe tip;

(c) deprotecting the protected area of said probe tip; and

(d) functionalizing the deprotected area at the tip of said probe with a desired moiety.

5,824,471

DETECTION OF MISMATCHES BY CLEAVAGE OF NUCLEIC ACID HETERODUPLEXES

Robert Mashal, Brookline; Jeffrey Sklar, Chestnut Hill, and Richard Kolodner, Jamaica Plain, all of Mass., assignors to Brigham and Women's Hospital, and Dana-Farber Cancer Institute, both of Boston, Mass.

Filed Jun. 5, 1995, Ser. No. 460,899
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 30 Claims

1. A method of detecting a mismatch between a first nucleic acid strand and a second nucleic acid strand comprising:

forming a plurality of duplexes, each duplex including a molecule of said first nucleic acid strand, or a portion thereof, and a molecule of said second nucleic acid strand, or a portion thereof;

contacting a first bacteriophage resolvase and a second bacteriophage resolvase with said plurality of duplexes, wherein said first and said second resolvases are different;

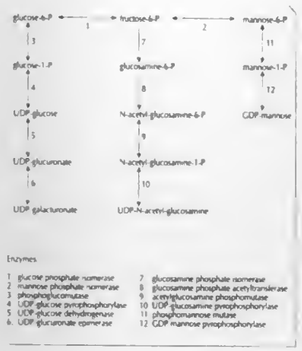
determining if said plurality of duplexes is cleaved by either or both of said first and said second resolvases, wherein cleavage indicates the presence of a mismatch.

5,824,472

PROCESS FOR THE SYNTHESIS OF SUGAR NUCLEOTIDES USING RECOMBINANT-DNA METHODS

Michael R. Betlach; Daniel H. Doherty, and Rebecca W. Vanderslice, all of Boulder, Colo., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 147,451, Nov. 5, 1993, abandoned, which is a continuation of Ser. No. 642,552, Jan. 18, 1991, abandoned, which is a continuation of Ser. No. 334,801, Apr. 3, 1989, abandoned, which is a continuation of Ser. No. 201,261, May 16, 1988, abandoned, which is a continuation of Ser. No. 29,091, Mar. 23, 1987, abandoned, which is a continuation-in-part of Ser. No. 843,349, Mar. 24, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 467,145
Int. Cl.[6] C12Q *1/68;* C12P *21/00;19/06;* C12N *1/21*
U.S. Cl. 435—6 30 Claims



1. A method for producing one or more sugar nucleotides comprising:

(a) culturing a gram-negative microorganism comprising a cloned nucleotide sequence from Xanthomonas encoding at least one enzyme selected from the group consisting of UDP-glucose dehydrogenase, phosphoglucomutase, phosphomannose mutase, GDP-mannose pyrophosphorylase and UDP-glucose pyrophosphorylase under conditions appropriate for the synthesis of at least one sugar nucleotide; and optionally

(b) harvesting said sugar nucleotide.

5,824,473

NUCLEIC ACID MEDIATED ELECTRON TRANSFER

Thomas J. Meade, Altadena; Jon Faiz Kayyem, Pasadena, and Scott E. Fraser, Newport Beach, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 166,036, Dec. 10, 1993, Pat. No. 5,591,578. This application Jun. 7, 1995, Ser. No. 475,051
Int. Cl.[6] C12Q *1/68;1/70;* C07H *21/04;21/02*
U.S. Cl. 435—6 22 Claims

1. A method of detecting a target sequence in a nucleic acid sample comprising:

a) initiating electron transfer by applying an initiation signal to a hybridization complex comprising said target sequence, if present, hybridized to a single-stranded probe nucleic acid containing at least one electron donor moiety and at least one electron acceptor moiety, wherein said electron donor moiety and said electron acceptor moiety are covalently attached to said probe nucleic acid, and wherein said electron donor moiety and said electron acceptor moiety are not redox proteins; and

b) detecting electron transfer between said electron donor and said electron acceptor moieties as an indication of the presence or absence of said target sequence.

5,824,474

METHOD FOR DETECTING NUCLEIC ACID

Akio Matsuhisa, Osaka; Kiyotaka Shiba, Tokyo, both of Japan; Yoshikazu Mikawa, San Diego, Calif., and Yuichiro Kishi, Wakayama, Japan, assignors to Fuso Pharmaceutical Industries, Ltd., Osaka, Japan

PCT No. PCT/JP93/01124, § 371 Date Feb. 8, 1996, § 102(e) Date Feb. 8, 1996, PCT Pub. No. WO95/04832, PCT Pub. Date Feb. 8, 1996
PCT Filed Aug. 10, 1993, Ser. No. 592,293
Int. Cl.[6] C12Q *1/68;* C07H *21/02;21/04*
U.S. Cl. 435—6 27 Claims

1. A method of detecting a nucleic acid which comprises bringing a membrane suspected to carry or contain a nucleic acid into contact with a polyamine to which a label capable of generating a detectable signal or a precursor thereof is bound, to form an electrostatically bonded complex between said nucleic acid and said polyamine on the membrane, said precursor, if used, converting into said label, removing the polyamine which has not formed any electrostatically bonded complex before or after the conversion of said precursor and then detecting said label to thereby detect the nucleic acid.

5,824,475

OLIGONUCLEOTIDE SCREENING ASSAY USING DNA-ALTERING AGENTS AND PROBES WITH PROTECTABLE LABELS

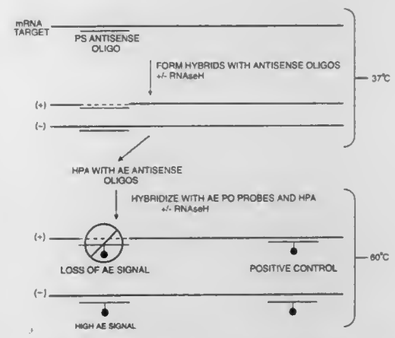
Norman C. Nelson; Jorge Velarde, Jr., and Daniel L. Kacian, all of San Diego, Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 94,577, Jul. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,884
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 31 Claims

20. A homogenous method of assaying the ability of a first agent to alter a target nucleic acid comprising the steps of:

a) contacting a test sample containing said target nucleic acid with said first agent to form a treated test sample;

b) contacting the treated test sample with a labeled probe under stringent hybridization conditions, wherein said probe can hybridize to a non-altered target nucleic acid sequence such that the probe label is protected from subsequent chemical inactivation but said probe cannot hybridize to an altered target nucleic acid sequence leaving said probe label unprotected from subsequent chemical inactivation;



c) treating the probe-contacted test sample with a second agent which inactivates said unprotected probe label in said sample; and

d) measuring the hybridization of said probe to non-altered target nucleic acid by measuring the amount of protected probe label.

5,824,476

COMPETITIVE HYBRIDIZATION TECHNIQUE

R. Bruce Wallace, S. Pasadena, Calif., assignor to City of Hope, Duarte, Calif.

Continuation of Ser. No. 71,210, Jul. 8, 1997, Pat. No. 5,582,970. This application Feb. 28, 1996, Ser. No. 607,425
Int. Cl.[6] C12Q *1/68;* C07H *21/02;21/04*
U.S. Cl. 435—6 10 Claims

1. A hybridization assay for discriminating between first and second nucleic acid molecules, said first nucleic acid molecule including a target nucleotide sequence and said second nucleic acid molecule including a mutant sequence which differs by as little as one nucleotide from said target nucleotide sequence, which comprises:

subjecting a biological sample suspected of containing at least one of said first and second nucleic acid molecules to hybridization conditions in the presence of first and second oligonucleotide probes,

said first oligonucleotide probe including a sequence complementary to said target sequence of said first nucleic acid molecule,

said second oligonucleotide probe being non-complementary to said target sequence but complementary to said mutant sequence,

said second probe being present in substantial excess during said hybridization to suppress hybridization of said first probe to said second nucleic acid molecule.

5,824,477

ELECTROCHEMICAL DENATURATION OF DOUBLE-STRANDED NUCLEIC ACID

Christopher J. Stanley, Huntingdon, England, assignor to Scientific Generics Limited, Harston, England

Continuation-in-part of Ser. No. 288,231, Aug. 9, 1994, Pat. No. 5,527,670, which is a continuation of Ser. No. 30,138, Mar. 12, 1993, abandoned. This application Apr. 1, 1996, Ser. No. 617,675
Claims priority, application United Kingdom, Sep. 12, 1990, 9019946; Jun. 14, 1991, 9112911; WIPO, Sep. 12, 1991, PCT/GB91/01563
Int. Cl.[6] C12Q *1/68;* C12P *19/34*
U.S. Cl. 435—6 47 Claims

1. A process for denaturing double-stranded nucleic acid comprising the steps of:

applying a voltage to said double-stranded nucleic acid with an electrode; and

converting at least a proportion of said nucleic acid to a wholly or partially single stranded form so as to produce single-stranded nucleic acid not bound to said electrode, which single-stranded nucleic acid is capable of renaturation to double-stranded form, wherein

said step of applying the voltage with the electrode includes immersing the electrode in an aqueous solution containing a buffer whose nature and ionic strength are such as not to interfere with strand separation of the nucleic acid.

5,824,478

DIAGNOSTIC METHODS AND PROBES

Uwe Richard Müller, Plano, Ill., assignor to VYSIS, Inc., Downers Grove, Ill.

Filed Apr. 30, 1996, Ser. No. 643,109
Int. Cl.[6] C12Q *1/68;* G01N *33/53;33/566*
U.S. Cl. 435—6 32 Claims

1. A method for detecting an analyte in a sample, said method comprising the steps of:

contacting said sample with a detector probe and a capture probe to form a detector probe-analyte-capture probe complex, wherein said detector probe comprises a moiety having a predetermined pI and comprising a detectable label;

separating said complex from any detector probe that is not bound in said complex;

releasing said moiety from said complex;

isolating said moiety released from said complex and concentrating said moiety by isoelectric focusing; and

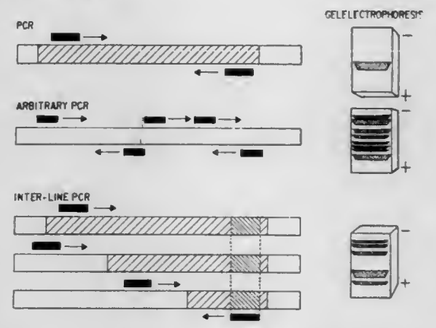
detecting said moiety as a measure of the presence of said analyte in said sample.

5,824,479

INTER-LINE-PCR

Jan Smida, Freising; Stefan Leibhard, Oberschleissheim; Ludwig Hieber, Kirchheim, and F. Eckardt-Schupp, Pfaffenhofen, all of Germany, assignors to Forschungszentrum fur, Umwelt und Gesundheit GmbH, Oberschleissheim, Germany

Filed May 21, 1996, Ser. No. 646,809
Claims priority, application Germany, May 22, 1995, 195 18 769.5
Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*
U.S. Cl. 435—6 24 Claims



1. An oligonucleotide sequence selected from the group consisting of:

(1) GAA GGG TCT TTG CCA AAC TC (SEQ.-ID.-No. 1)

(2) CAC TTT CCC AAA CAC CCT TC (SEQ.-ID.-NO. 2)

(3) CCA TGT CTA TCT CCA TGC AC (SEQ.-ID.-No. 3)

(4) GTG CAT GGA GAT AGA CAT GG (SEQ.-ID.-No. 4)

(5) GGC TGC CTT TAT ATG TTA CTG GCC (SEQ.-ID.-No. 5)

(6) GGA GTG CTG ACT CAT ACA GCC TCC (SEQ.-ID.-No. 6) and
(7) CCT GTC TAG TGG TGA GAG TGG TG (SEQ.-ID.-No. 7).

5,824,480
METHOD OF DIFFERENTIATING PELVIC INFLAMATORY DISEASE AND LOCAL ISOLATES OF *NEISSERIA GONORRHOEAE*

Stella Nowicki; Bogdan Nowicki, and Garland D. Anderson, all of Galveston, Tex., assignors to The Board of Regents of the University of Texas System, Austin, Tex.

Filed May 10, 1996, Ser. No. 644,426
Int. Cl.[6] C12Q *1/68*; C12P *19/34*; C07H *21/04*
U.S. Cl. 435—6 **6 Claims**

5'TATCTOCAGC ATCTCCTTTC CAACCCAATT TTCCTTTOTC
ACCAATAAAA CTTTOCATAT TTCTAOCCAT TTCTCCAATG
OTACCAOCAC TTTTAOAAAO ACTTTCTAAT CCCTOCOCTC
CTTTTTOAAT CATAOTTTOA OCTAATCTCO TAGATOCAGA
TTTCTTTTCA GATOCTOTTT CACTTCCOCC TOCACCCAOT
CCTATTOCAA TOOCAOAOOC AATAOAAOAA OCATTOCTOA
TATTAAATTO TTOOCCAATC TTCTTACCTC OATCAAOAAC
OTAAOATAAT TTTCTACTTT CAOCTOCATC CAAACCCATT
CCOTAACCTT CAGAOOCACT TCTA 3'

1. A method of differentially diagnosing pelvic inflammatory disease from local infection of *Neisseria gonorrhoeae* in an individual, comprising the step of determining the presence of a 344 base pair DNA sequence from the 2.2 kb sac-4 region of the *Neisseria gonorrhoeae* JC1 strain in a clinical isolate obtained from said individual, and, wherein said 344 base pair DNA has the sequence of SEQ ID No. 3 and wherein the presence of said 344 base pair DNA sequence is indicative of pelvic inflammatory disease.

5,824,481
DNA ANALYZING METHOD

Hideki Kambara, Hachiouji; Kazunori Okano, Shiki; Satoshi Takahashi, Kunitachi; Keiichi Nagai, Higashiyamato; Kazuko Kawamoto, and Hiroko Furuyama, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

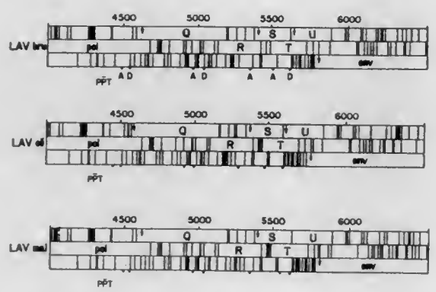
Continuation of Ser. No. 263,663, Jun. 22, 1994, Pat. No. 5,650,274. This application Mar. 6, 1997, Ser. No. 812,698
Claims priority, application Japan, Jul. 25, 1993, 5-155534; Jul. 30, 1993, 5-189624
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 435—6 **2 Claims**

1. A DNA analyzing and classifying method comprising:
i) digesting a double stranded DNA with a restriction enzyme to produce DNA fragments,
ii) ligating a double stranded oligomer having a known base sequence to termini of the DNA fragments,
iii) hybridizing primers to the DNA fragments ligated to the oligomer, under conditions sufficient to allow hybridization,
wherein said primers comprise sixteen different primers each having a known base sequence identical in all the primers and two bases directly adjacent to the known base sequence at the 3' terminus of each of the primers,
wherein sequences of the two bases are selected from the group consisting AA, AT, AC, AG, TA, TT, TC, TG, CA, CT, CC, CG, GA, GT, GC and GG, and
wherein the known base sequence of each of the primers includes a base sequence which can be hybridized with at least a part of the oligomer ligated to termini of the DNA fragments and has a recognition sequence for the restriction enzyme in the DNA fragments ligated by the DNA oligomer,
iv) extending the primer hybridized with the DNA fragments ligated to the oligomer to synthesize DNA complementary to the strands of the DNA fragments ligated to the oligomer, and
v) analyzing products from step iv) and classifying the DNA fragments ligated to the oligomer based upon which primers are extended,
wherein the DNA fragments ligated to the oligomer are classified by a difference in a sequence of two bases directly adjacent to the recognition sequence in the DNA fragments ligated to the oligomer.

5,824,482
PURIFICATION, CLONING, AND CHARACTERIZATION OF A NOVEL HUMAN IMMUNODEFICIENCY VIRUS LAV_{MAL}

Marc Alizon; Pierre Sonigo, both of Paris; Simon Wain-Hobson, Montigney Les Bretonneux, and Luc Montagnier, Le Plessis Robinson, all of France, assignors to Institut Pasteur, Paris, France

Continuation of Ser. No. 154,397, Nov. 18, 1993, which is a continuation of Ser. No. 988,530, Dec. 10, 1992, abandoned, which is a continuation of Ser. No. 656,797, Feb. 19, 1991, abandoned, which is a division of Ser. No. 38,330, Apr. 13, 1987, Pat. No. 5,030,714. This application Jun. 6, 1995, Ser. No. 471,474
Claims priority, application France, Jun. 23, 1986, 86 40138
Int. Cl.[6] G01N *33/53*; C12Q *1/70*; C12N *7/00*; A61K *39/21*
U.S. Cl. 435—7.1 **4 Claims**



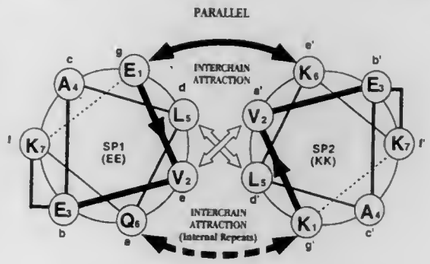
2. A method for the in vitro detection of the presence of an antibody directed against a LAV virus in a human body fluid, which comprises contacting said body fluid with an antigen obtained from a virus LAV_{MAL}, said antigen selected from the group consisting of:
a purified or synthetic peptide having an amino acid sequence of one of the open reading frames set forth in FIGS. 7A–7I;
a purified or synthetic peptide having the amino acid sequence set forth as residues 37–130 of the envelope glycoprotein of LAV_{MAL};
a purified or synthetic peptide having the amino acid sequence set forth as residues 211–289 of the envelope glycoprotein of LAV_{MAL};
a purified or synthetic peptide having the amino acid sequence set forth as residues 488–530 of the envelope glycoprotein of LAV_{MAL};

a purified or synthetic peptide having the amino acid sequence set forth as residues 490–620 of the envelope glycoprotein of LAV_{MAL};
a purified or synthetic peptide having the amino acid sequence set forth as residues 680–700 of the envelope glycoprotein of LAV_{MAL}; purified or synthetic peptide having the amino acid sequence set forth as residues 1–530 of the envelope glycoprotein of LAV_{MAL};
a purified or synthetic peptide having the amino acid sequence set forth as residues 34–530 of the envelope glycoprotein of LAV_{MAL}; and
a purified or synthetic peptide having the amino acid sequence set forth as residues 531–877 of the envelope glycoprotein of LAV_{MAL} and detecting the immunological reaction between said antigen and said antibody.

5,824,483
CONFORMATIONALLY-RESTRICTED COMBINATIORIAL LIBRARY COMPOSITION AND METHOD

Michael E. Houston, Jr., and Robert S. Hodges, both of Edmonton, Canada, assignors to Pence Inc., Edmonton, Canada

Continuation-in-part of Ser. No. 260,199, Jun. 15, 1994, Pat. No. 5,738,996, and Ser. No. 249,507, May 18, 1994, abandoned. This application Jun. 16, 1995, Ser. No. 491,527
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.1 **13 Claims**



1. A combinatorial library of different-sequence polypeptide members, where each member of the library comprises
(a) first and second polypeptides bound to one another to form an alpha-helical coiled-coil dimer scaffold characterized by (i) an internal region formed by regularly repeating, invariant, hydrophobic amino acid residues in both polypeptides, (ii) first and second exposed regions formed by regularly repeating amino acid residues in the individual first and second polypeptides, respectively, (iii) a polypeptide length of at least seven residues for each polypeptide, and (iv) a covalent intrachain bond between invariant residues in at least one of the polypeptides, effective to stabilize that polypeptide in its α-helical conformation, where the scaffold is stabilized by hydrophobic interactions among the subunits in the internal region of the scaffold and the intrachain bond, and
(b) a unique variation of amino acid residues in the exposed region of at least one of the polypeptides.

5,824,484
RXR HOMODIMER FORMATION

Magnus Pfahl, Solana Beach; Xiao-kun Zhang, La Jolla; Jürgen M. Lehmann, Solana Beach; Marcia I. Dawson, Menlo Park; James F. Cameron, Palo Alto; Peter D. Hobbs, Moss Beach, and Ling Jong, Sunnyvale, all of Calif., assignors to La Jolla Cancer Research Foundation, La Jolla, Calif.

Division of Ser. No. 982,174, Nov. 25, 1992, Pat. No. 5,552,271, which is a continuation-in-part of Ser. No. 901,719, Jun. 16, 1992, abandoned. This application Jan. 22, 1996, Ser. No. 589,528
Int. Cl.[6] G01N *33/53*; C07D *69/76*;*317/00*;*339/00*
U.S. Cl. 435—7.1 **11 Claims**

7. A method of selectively activating retinoid X receptor (RXR) homodimer formation in a cell comprising adding to the cell a homodimer formation specific ligand, thereby selectively activating RXR homodimer formation in the cell.

5,824,485
METHODS FOR GENERATING AND SCREENING NOVEL METABOLIC PATHWAYS

Katie A. Thompson, Del Mar; Lyndon M. Foster, Carlsbad; Todd C. Peterson, Chula Vista; Nicole Marie Nasby, and Paul Brian, both of San Diego, all of Calif., assignors to Chromaxome Corporation, San Diego, Calif.

Continuation-in-part of Ser. No. 427,244, Apr. 25, 1995, abandoned, and Ser. No. 427,348, Apr. 25, 1995, abandoned. This application Apr. 24, 1996, Ser. No. 639,255
Int. Cl.[6] C12Q *1/68*; C12P *21/02*; C12N *15/64*; C07H *21/02*
U.S. Cl. 435—6 **45 Claims**

1. A combinatorial gene expression library, comprising a pool of expression constructs, each expression construct containing one or more cDNA or genomic DNA fragment, wherein the cDNA or genomic DNA fragments in the pool of expression constructs are derived from a plurality of species of donor organisms, and wherein the cDNA or genomic DNA fragments in each expression construct are operably-associated each with one or more regulatory regions that drives expression of genes encoded by the cDNA or genomic DNA fragments in an appropriate host organism.

5,824,486
GLYCINE TRANSPORTER-TRANSFECTED CELLS AND USES THEREOF

Laurence A. Borden, Hackensack, N.J.; Michael De Vivo, New York, N.Y.; Midori Yokoyama, Highland Park, and Vivian R. Albert, Montclair, both of N.J., assignors to Allelix Neuroscience Inc., South Plainfield, N.J.

Filed May 31, 1996, Ser. No. 655,836
Int. Cl.[6] G01N *33/567*
U.S. Cl. 435—72 **16 Claims**

1. A method for the analysis of or screening for an agent that is an enhancer or inhibitor of glycine transport, comprising culturing separately a first and second avian cell, wherein the first and second avian cells are of the same strain and comprise an exogenous nucleic acid encoding a glycine transporter, contacting the first avian cell with the agent, and screening for the enhancement or inhibition of glycine transport into the first avian cell as compared to glycine transport into the second avian cell that was not contacted with the agent, wherein the glycine transport of the avian cell comprising the exogenous nucleic acid is greater than the glycine transport of the avian cell not comprising the exogenous nucleic acid.

5,824,487

METHOD FOR SCREENING FOR TARGETS FOR ANTI-INFLAMMATORY OR ANTI-ALLERGIC AGENTS

Jeffrey V. Ravetch, New York, N.Y., and Tomohiro Kurosaki, Fort Lee, N.J., assignors to Sloan-Kettering Institute for Cancer Research, New York, N.Y.

Continuation of Ser. No. 52,269, Apr. 23, 1993, abandoned. This application Oct. 13, 1995, Ser. No. 542,686

Int. Cl.[6] G01N *33/53;33/567;33/536;* **C07K** *7/08*

U.S. Cl. 435—7.8 **9 Claims**

1. A method for isolating a cellular molecule capable of being a target for designing drugs for treating autoimmune disease, inflammation or allergy which comprises

(a) contacting a cell lysate with a molecule having an amino acid sequence, ARNTITYSLLKHP (SEQ ID. NO:1) under the conditions permitting formation of a complex between the cellular target molecule with the amino acid sequence AENTITYSLLKHP;

(b) isolating the complex formed in step (a); and

(c) testing the complex for biochemical activities, thereby identifying the cellular molecule capable of being a target for designing drugs for treating autoimmune disease, inflammation or allergy.

5,824,488

IMMORTALIZED AND MALIGNANT HUMAN PROSTATIC CELL LINE

Mukta M. Webber, Eagle, Mich., and Johng S. Rhim, Potomac, Md., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich., and The United States of America as represented by the Deparmtent of Health and Human Services, Washington, D.C.

Filed Apr. 28, 1994, Ser. No. 234,843

Int. Cl.[6] G01N *33/574;33/567;33/53;* **C12N** *5/00*

U.S. Cl. 435—7.23 **20 Claims**

1. An immortalized adult normal non-malignant human prostatic epithelial cell line, free of other cell types and containing DNA of a human papillomavirus, deposited as ATCC CRL-11609.

2. An immortalized malignant human adult prostatic epithelial cell line, free of other cell types and containing DNA of a human papillomavirus and further containing an activated Ki-ras oncogene or DNA of a virus containing an activated ras (V-ras) which causes the cell line to become malignant, wherein the malignant cell line is deposited as ATCC CRL-11610.

5,824,489

IN VITRO METHOD FOR OBTAINING AN ISOLATED POPULATION OF MAMMALIAN NEURAL CREST STEM CELLS

David J. Anderson, Altadena, and Derek L. Stemple, Pasadena, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 969,088, Oct. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 920,617, Jul. 27, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 290,229

Int. Cl.[6] C12N *5/00*

U.S. Cl. 435—7.21 **21 Claims**

1. A method for obtaining an isolated population of mammalian neural crest stem cells, said method comprising:

a) contacting an embryonic neural tube with a first culture medium and a first substrate to allow the migration of neural crest cells from said neural tube onto said first substrate;

b) preparing a suspension comprising a population of emigrated neural crest cells and

c) isolating a population of neural crest stem cells by contacting at least a portion of said neural crest cell suspension with a second culture medium and said first or a second substrate which permits self-renewal of one or more neural crest stem cells in said population, wherein said neural crest stem cells are capable of self-renewal in a feeder cell-independent culture medium and express low-affinity nerve growth factor receptor (LNGFR) and nestin, but do not express glial fibrillary acidic protein (GFAP), wherein at least one cell of said neural crest stem cell population is capable of differentiation to a peripheral nervous system neuronal cell that does not express LNGFR or nestin but does express neurofilament-160, and wherein at least one cell of said neural crest stem cell population is capable of differentiation to a peripheral nervous system glial cell that expresses LNGFR, nestin and GFAP.

5,824,490

METHOD FOR DETECTING PROSTATE CANCER USING A REAGENT WHICH BINDS PROSTATE CANCER-1 PROTEIN

Donald S. Coffey, Lutherville; Alan W. Partin, Baltimore, both of Md., and Robert H. Getzenberg, Pittsburgh, Pa., assignors to The Johns Hopkins University School of Medicine, Baltimore, Md.

Continuation-in-part of Ser. No. 15,624, Feb. 9, 1993, abandoned. This application May 31, 1995, Ser. No. 455,558

Int. Cl.[6] G01N *33/574;33/53*

U.S. Cl. 435—7.23 **3 Claims**

1. An in vitro method for detecting prostate cancer in a human subject comprising contacting a specimen from the subject with an antibody which binds to PC-1 (prostate cancer-1) protein and detecting binding of the antibody to PC-1 protein, wherein the presence of PC-1 protein in the specimen is indicative of prostate cancer.

5,824,491

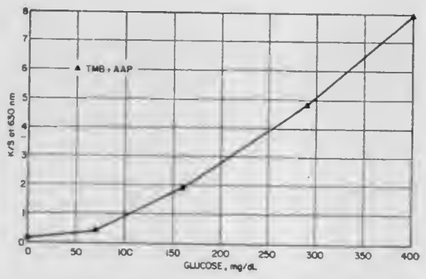
DRY REAGENT TEST STRIP COMPRISING BENZIDINE DYE PRECURSOR AND ANTIPYRINE COMPOUND

John Hedger Priest, Everett, and Eric Michael Nelson, Redmond, both of Wash., assignors to Mercury Diagnostics, Inc., Scotts Valley, Calif.

Filed May 17, 1996, Ser. No. 649,777

Int. Cl.[6] C12Q *1/54;1/26;1/28;* **G01N** *33/53*

U.S. Cl. 435—28 **14 Claims**



1. A dry reagent test strip for determining the concentration of an analyte in a liquid sample, the test strip comprising a matrix containing reagent detection chemistry, the reagent detecting chemistry comprising: an oxidase enzyme that utilizes the analyte as a substrate forming hydrogen peroxide; a benzidine dye precursor; a peroxidase enzyme; and an antipyrine compound, wherein the antipyrine compound produces a standard curve of analyte concentration versus reflectance which is substantially linear in the desired range when the analyte contacts the reagent detecting chemistry.

5,824,492

POLYPEPTIDES HAVING KINASE ACTIVITY, THEIR PREPARATION AND USE

Ian D. Hiles; Michael J. Fry; Ritu Dhand; Michael D. Waterfield; Peter J. Parker; Masayuki Otsu; George Panayoutou; Stefano Volinia, and Ivan Gout, all of London, England, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

PCT No. PCT/GB93/00761, § 371 Date Feb. 7, 1994, § 102(e) Date Feb. 7, 1994, PCT Pub. No. WO93/21328, PCT Pub. Date Oct. 28, 1995

PCT Filed Apr. 13, 1993, Ser. No. 162,081

Claims priority, application United Kingdom, Apr. 13, 1992, 9208135

Int. Cl.[6] C12N *9/12;* **C12Q** *1/48*

U.S. Cl. 435—15 **7 Claims**

1. Isolated, human polypeptide which has PI3 kinase activity and a molecular weight of about 110 kilodaltons as determined by SDS-PAGE.

5,824,493

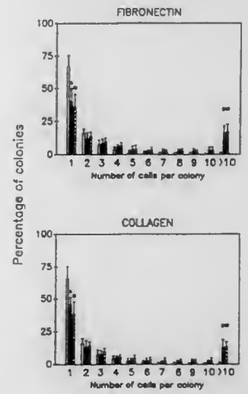
DIAGNOSTIC TEST FOR INTERSTITIAL CYSTITIS

Ada Elgavish, Birmingham, Ala., assignor to University of Alabama Research Foundation, Birmingham, Ala.

Filed Feb. 23, 1996, Ser. No. 604,810

Int. Cl.[6] C12Q *1/02;1/04;* **G01N** *33/53;33/20*

U.S. Cl. 435—29 **26 Claims**



1. A method of diagnosing interstitial cystitits in an individual, comprising the steps of:

obtaining primary cultures of urothelial cells from bladder biopsies of said individual;

using primary cultures and a growth medium containing low levels of calcium and growth factors to select urothelial cells of basal type and produce secondary cultures thereof;

measuring colony size distribution in secondary cultures of basal urothelial cells by examining randomly chosen 100 colonies, determining the number of cells in each colony and dividing the colonies in 7 groups according to the number of cells per colony;

determining the number of single cells and the number of large colonies as a percentage of all colonies examined in the secondary culture;

comparing percentage of single cells and percentage of large colonies to those in a sample of similarly cultured urothelial cells taken from an individual not suspected of having interstitial cystitis.

5,824,494

METHOD FOR ENUMERATING BACTERIAL POPULATIONS

Simon Feldberg, Rehovot, Israel, assignor to Sirotech Ltd., Ness Ziona, Israel

Filed Apr. 26, 1995, Ser. No. 429,340

Claims priority, application Israel, May 1, 1994, 109492

Int. Cl.[6] C12Q *1/08*

U.S. Cl. 435—40 **3 Claims**

1. A method for determining the number of microorganisms in a liquid sample comprising:

dividing a known volume of a liquid sample into a plurality of separate sub-samples, wherein it is known that the liquid sample contains a number of microorganisms which is substantially less than the number of sub-samples;

measuring the magnitude of at least one impedance component across each of the sub-samples; and

determining the number of the sub-samples for which the measured magnitude of the at least one impedance component is lower, by a preselected difference, from the at least one impedance component measured across others of the sub-samples, the number of sub-samples for which the measured magnitude of the at least one impedance component is lower, by a preselected difference, from the at least one impedance component measured across others of the sub-samples being an indication of the number of microorganisms in the liquid sample.

5,824,495

CELL FIXATIVE AND PREPARATION, KIT AND METHOD

George P. Hemstreet, III; Robert E. Hurst, and Rebecca B. Bonner, all of Oklahoma City, Okla., assignors to Southpac Trust International, Inc.

Continuation-in-part of Ser. No. 605,342, Feb. 9, 1996, Pat. No. 5,741,648, which is a continuation of Ser. No. 984,191, Nov. 20, 1992, Pat. No. 5,733,721. This application Mar. 20, 1997, Ser. No. 821,378

Int. Cl.[6] C12Q *1/06;* **G01N** *33/53*

U.S. Cl. 435—40.5 **37 Claims**

34. A method of fixating cells of a urological sample in preparation for further analysis of the method comprising the steps of:

providing a urological sample containing bladder cells;

providing a fixative for fixating the cells of the urological sample, the fixative comprising a preservative, a buffer, and a crystal-inhibiting means in an amount sufficient to substantially dissolve or inhibit formation of crystals in the urological sample wherein the crystal inhibiting means is selected from the group consisting of derivatives of tetraacetic acid which chelate calcium and/or magnesium; and

adding to the urological sample an effective amount of the fixative effective in fixating and preserving the cells and in inhibiting crystals in the urological sample.

5,824,496

CONTROL OF ABERRANT EXPRESSION VECTOR ACCUMULATION DURING FERMENTATION PROCEDURES

William L. Muth, Greenwood, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

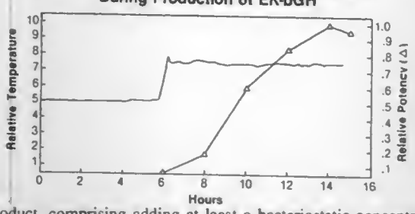
Continuation of Ser. No. 24,897, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 371,579, Jun. 26, 1989, abandoned. This application Aug. 10, 1995, Ser. No. 513,598

Int. Cl.[6] C12P *21/02;19/34;* **C12N** *15/70;1/21*

U.S. Cl. 435—69.1 **25 Claims**

1. A method of controlling outgrowth of cells having an aberrant expression vector during fermentative production of an expression

Figure 6
A Fermentation Process Using Cinoxacin to Control Aberrant Expression Vector Replication During Production of EK-bGH



product, comprising adding at least a bacteriostatic concentration of an antibiotic to a fermentation mixture at approximately the time at which product expression is induced.

5,824,497
HIGH EFFICIENCY TRANSLATION OF MRNA MOLECULES

David W. Andrews; Martin John Glenton Hughes, both of Hamilton, and Akaterini Vassilakos, Toronto, all of Canada, assignors to McMaster University, Hamilton, Canada

Filed Feb. 10, 1995, Ser. No. 386,921
Int. Cl.[6] C12P *21/02;* **C07H** *21/04;* **C12N** *15/67*
U.S. Cl. 435—69.1 **19 Claims**

1. A method of translating a selected mRNA molecule to provide an increased level of translation thereof, which comprises:
coupling to a nucleic acid molecule transcribable to or which itself is an mRNA molecule at the 5'-end thereof a first nucleotide sequence heterologous to the nucleic acid molecule comprising a Xenopus β-globin 5'-untranslated region (UTR) coupled to a translation initiation sequence for said nucleic acid molecule comprising a Kozak consensus ANNAUGG and effective to increase the rate of translation initiation of said mRNA molecule in a cell,
coupling to said nucleic acid molecule at the 3'-end thereof a second nucleotide sequence heterologous to the nucleic acid molecule, comprising at least a portion of a 3'-untranslated region (UTR) of a prolactin gene shown in FIG. 2 and selected from the group consisting of nucleotide sequences having SEQ ID NOS: 1, 3, 8, 9, 10, 11, 12 and 14 in Table I and effective to increase the period of translation of said mRNA molecule in a cell, and
effecting translation of said mRNA molecule in said cell.

5,824,498

Patent Not Issued For This Number

5,824,499

Patent Not Issued For This Number

5,824,500
NUCLEIC ACID ENCODING NOVEL HUMAN KDEL RECEPTOR

Olga Bandman, Mountain View; Jennifer L. Hillman, San Jose, and Surya K. Goli, Sunnyvale, all of Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Nov. 21, 1996, Ser. No. 753,159
Int. Cl.[6] C12N *15/12;* **C07K** *14/705*
U.S. Cl. 435—69.1 **8 Claims**

1. An isolated and purified polynucleotide molecule encoding a polypeptide having the amino acid molecule of SEQ ID NO:1.

5,824,501
NUCLEIC ACIDS OF THE BLOOM'S SYNDROME GENE

Nathan A. Ellis; James German, both of New York, N.Y., and Joanna Groden, Cincinnati, Ohio, assignors to New York Blood Center, New York, N.Y., and University of Cincinnati, Cincinnati, Ohio

Filed Nov. 15, 1995, Ser. No. 559,303
Int. Cl.[6] C12N *15/12;15/63;15/00;* **C07H** *21/04*
U.S. Cl. 435—69.1 **15 Claims**

5. A purified and isolated wild type nucleic acid encoding a human functional variant of the amino acid sequence shown in FIG. 2 (SEQ. ID. NO. 78), said nucleic acid mapping between loci D15S1108 and D15S127 of human chromosome 15.

5,824,502
METHOD FOR SECRETORY PRODUCTION OF PROTEIN

Masaru Honjo; Naokazu Naito, and Hiroshi Uchida, all of Chiba, Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

Filed Mar. 27, 1997, Ser. No. 825,217
Claims priority, application Japan, Mar. 28, 1996, 8-074193
Int. Cl.[6] C12N *15/00*
U.S. Cl. 435—69.1 **8 Claims**

1. A recombinant plasmid containing
(i) a gene encoding a native human growth hormone or an allelic variant thereof having a molecular weight of about 20,000;
(ii) at least one Sec gene obtained from *Escherichia coli* which Sec gene is selected from the group consisting of SecB, SecD/F, SecG and SecE/Y, wherein the expression of said at least one Sec gene is under the control of an inducible promoter; and
(iii) a repressor operably linked to said inducible promoter which provides for suppression of the expression of said Sec protein gene, thereby enhancing the secretory production of said human growth hormone.

5,824,503
GENE ENCODING ENDOGLYCOCERAMIDASE ACTIVATOR

Yoko Kurome; Hiroyuki Izu, both of Kusatsu; Yoshiya Izumi, Onojyo; Mutsumi Sano, Otsu; Ikunoshin Kato, Uji, and Makoto Ito, Fukuoka, all of Japan, assignors to Takara Shuzo Co, Ltd., Kyoto-fu, Japan

Filed Jun. 28, 1996, Ser. No. 672,564
Claims priority, application Japan, Jun. 29, 1995, 7-188466
Int. Cl.[6] C12N *15/00*
U.S. Cl. 435—69.1 **9 Claims**

1. An isolated DNA having a sequence encoding a polypeptide possessing endoglycoceramidase activator activity wherein said isolated DNA comprises a DNA sequence selected from the group consisting of:
(a) a DNA sequence of SEQ ID NO:2 or SEQ ID NO:4,
(b) a DNA sequence encoding an amino acid sequence of SEQ ID NO:1 or SEQ ID NO:3; and
(c) a DNA sequence which hybridizes (a) or (b) above.

5,824,504
HUMAN 7-TRANSMEMBRANE RECEPTOR AND DNA

Nabil A. Elshourbagy; Derk J. Bergsma, and Catherine E. Ellis, all of SmithKline Beecham Corporation, Corporate Intellectual Property - UW2220, P.O. Box 1539, King of Prussia, Pa. 19406-0939

Filed Oct. 31, 1996, Ser. No. 742,011
Int. Cl.[6] C12N *15/12;15/85;15/63;* **C07K** *14/705*
U.S. Cl. 435—69.1 **10 Claims**

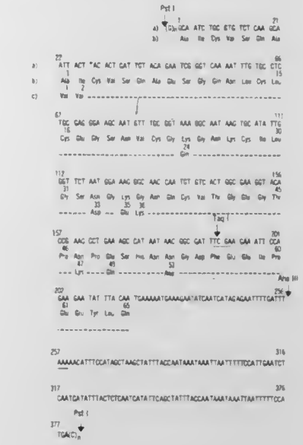
1. An isolated polynucleotide comprising a polynucleotide sequence encoding a polypeptide comprising the amino acids of

SEQ ID NO: 2; or a polynucleotide which is fully complementary to the polynucleotide sequence.

5,824,505
VECTORS, TRANSFORMED CELLS AND PROCESS FOR THE PREPARATION OF HIRUDIN

Paul Tolstoshev, Mundelsheim; Richard Harvey; Michael Courtney, both of Strasbourg, and Jean-Pierre LeCocq, Reichsteet, all of France, assignors to Transgene S.A., Paris, France

Continuation of Ser. No. 312,972, Sep. 30, 1994, abandoned, which is a continuation of Ser. No. 159,697, Dec. 1, 1993, abandoned, which is a continuation of Ser. No. 26,220, Mar. 1, 1993, abandoned, which is a continuation of Ser. No. 793,287, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 554,076, Jul. 16, 1990, abandoned, which is a continuation of Ser. No. 432,318, Nov. 3, 1989, abandoned, which is a continuation of Ser. No. 808,447, Nov. 25, 1985, abandoned. This application Jul. 10, 1995, Ser. No. 500,111
Claims priority, application France, Mar. 27, 1984, 84 04755; Aug. 27, 1984, 84 13250; WIPO, Mar. 27, 1985, PCT/FR85/00062
Int. Cl.[6] C12P *21/02;* **C12N** *15/63;1/21*
U.S. Cl. 435—69.2 **8 Claims**



1. A vector for producing a hirudin variant in a transformed host procaryotic cell, said vector comprising a DNA fragment encoding a hirudin variant having an amino acid sequence as follows:

Ile	Thr	Tyr	Thr	Asp	Cys	Thr	Glu	Ser	Gly
Gln	Asn	Leu	Cys	Leu	Cys	Glu	Gly	Ser	Asn
Val	Cys	Gly	Lys	Gly	Asn	Lys	Cys	Ile	Leu
Gly	Ser	Asn	Gly	Lys	Gly	Asn	Gln	Cys	Val
Thr	Gly	Glu	Gly	Thr	Pro	Asn	Pro	Glu	Ser
His	Asn	Asn	Gly	Asp	Phe	Glu	Glu	Ile	Pro
Glu	Glu	Tyr	Leu	Gln,					

said vector being capable of expressing said variant.

5,824,506
DENGUE VIRUS PEPTIDES AND METHODS

Lily Chan, and Ming Guan, both of Singapore, Singapore, assignors to Genelabs Diagnostics PTE. Ltd., Singapore

Filed Aug. 15, 1994, Ser. No. 290,268
Int. Cl.[6] G01N *33/53;* **C12P** *21/00*
U.S. Cl. 435—69.3 **7 Claims**

1. A peptide antigen, consisting of a peptide fragment derived from dengue virus serotype NS1 protein as shown in FIG. 2, characterized by:
(i) containing less than about 30 amino acid residues, and
(ii) containing an epitope formed by the peptide sequence presented as SEQ ID NO: 9.

5,824,507
HEPATITIS G VIRUS AND MOLECULAR CLONING THEREOF

Jungsuh P. Kim; Kirk E. Fry; LaVonne Marie Young, all of Palo Alto; Jeffrey M. Linnen, Foster City, all of Calif., and John Wages, Corvallis, Oreg., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Continuation-in-part of Ser. No. 344,271, Nov. 23, 1994, which is a continuation-in-part of Ser. No. 285,561, Aug. 3, 1994, which is a continuation-in-part of Ser. No. 246,985, May 20, 1994, abandoned, and a continuation-in-part of Ser. No. 389,886, Feb. 15, 1995, which is a continuation-in-part of Ser. No. 357,509, Dec. 16, 1994, which is a continuation-in-part of Ser. No. 329,729, Oct. 26, 1994, abandoned, and a continuation-in-part of Ser. No. 285,543, Aug. 3, 1994, abandoned, which is a continuation-in-part of Ser. No. 246,985, May 20, 1994, abandoned. This application May 19, 1995, Ser. No. 444,733
Int. Cl.[6] C12Q *1/70;* **C12N** *15/03*
U.S. Cl. 435—69.3 **28 Claims**

1. A purified Non-A Non-B Non-C Non-D Non-E Hepatitis Virus (HGV) polypeptide at least 10 amino acids in length, where HGV is characterized by: (i) production of elevated serum alanine aminotransferase levels in an infected primate, (ii) its serological distinction from hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus, and hepatitis E virus (HEV), (iii) membership in the virus family Flaviviridae and (iv) a viral genome comprising a polynucleotide region that is selectively hybridizable with SEQ ID NO:19.

5,824,508
NON-SPLICING VARIANTS OF GP350/220

Richard Spaete, 2501 Coronet Blvd., Belmont, Calif. 94002, and Winthrop T. Jackman, 1828 Delaware St., #1, Berkeley, Calif. 94703

Division of Ser. No. 783,774, Jan. 15, 1997, which is a division of Ser. No. 229,291, Apr. 18, 1994, abandoned. This application Aug. 25, 1997, Ser. No. 917,320
Int. Cl.[6] C12N *15/38;7/04;5/10;1/21*
U.S. Cl. 435—69.3 **12 Claims**

1. An isolated DNA sequence encoding EBV gp350 protein or a shortened version of EBV gp350 having a deletion in the membrane spanning region resulting in a secreted product, a deletion of the membrane spanning region and the remaining C terminus, and/or a deletion of the signal sequence, said DNA sequence having a mutation at one or more splice sites preventing formation of gp220 mRNA transcript.

5,824,509

RECOMBINANT LYMPHOTOXIN CDNA AND VARIANTS

Bharat B. Aggarwal, San Mateo; Patrick W. Gray, San Francisco, both of Calif., and Glenn E. Nedwin, Guilford, Conn., assignors to Genentech, Inc., S. San Francisco, Calif.

Division of Ser. No. 836,765, Feb. 14, 1992, Pat. No. 5,683,688, which is a division of Ser. No. 732,312, May 9, 1985, abandoned, which is a continuation-in-part of Ser. No. 616,503, May 31, 1984, abandoned. This application May 19, 1995, Ser. No. 444,653

Int. Cl.[6] C12N *15/19;* C07K *14/475;14/495*

U.S. Cl. 435—69.5 20 Claims

1. An isolated DNA molecule comprising

(a) the nucleotide sequence of FIG. 2A which encodes amino acid residues his+24 to leu+171 as shown in FIG. 2A, or

(b) a fragment of the nucleotide sequence of a cDNA molecule isolated from a mammalian library which encodes a mature, biologically active mammalian lymphotoxin polypeptide, wherein the cDNA molecule hybridizes under low stringency conditions to a probe having the nucleotide sequence of (a).

5,824,510

MONOCLONAL ANTIBODIES TO HUMAN INFLUX PEPTIDE TRANSPORTER

Stuart W. Bright, Indianapolis; Anne H. Dantzig, Crawfordsville; Linda B. Tabas, Carmel, all of Ind., and J. Richard Sportsman, Palo Alto, Calif., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 84,686, Jun. 29, 1993, Pat. No. 5,500,346. This application Dec. 1, 1994, Ser. No. 347,760

Int. Cl.[6] C07K *16/00;* C12P *12/08*

U.S. Cl. 435—70.21 13 Claims

1. A composition of matter comprising an antibody which binds to human influx peptide transporter protein of approximately 120,000 Dalton, wherein said antibody is a monoclonal antibody, F(ab')2, F(ab'), F(ab) or chimeric thereof, said chimeric having a human constant region substituted for a mouse constant region.

5,824,511

METHOD FOR ENHANCING THE PRODUCTION OF HEMOPROTEINS

James R. Mattoon, and George Bajszár, both of Colorado Springs, Colo., assignors to University Technology Corporation, Boulder, Colo.

Filed Aug. 1, 1995, Ser. No. 509,951

Int. Cl.[6] C12P *21/06*

U.S. Cl. 435—69.6 16 Claims

1. A method of expressing a hemoprotein, comprising:

transforming a host cell with a nucleic acid sequence encoding a rate-limiting enzyme in a heme biosynthetic pathway;

culturing said host cell under conditions effective to provide expression of said sequence to produce a desired concentration of heme; and

expressing a sufficient amount of a heme-binding apoprotein of said hemoprotein, which apoprotein complexes with heme produced by said cell, to reduce the concentration of free heme within said cells thereby resulting in the expression of said hemoprotein.

5,824,512

BACTERIA EXPRESSING METALLOTHIONEIN GENE INTO THE PERIPLASMIC SPACE, AND METHOD OF USING SUCH BACTERIA IN ENVIRONMENT CLEANUP

Mehran Pazirandeh, Silver Spring, and James R. Campbell, Olney, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 22, 1996, Ser. No. 754,431

Int. Cl.[6] C12P *21/06;* C12N *1/20;* C07H *17/00;* C07K *14/00*

U.S. Cl. 435—69.7 12 Claims

1. A device for removing a heavy metal from an aqueous media, said device comprising a nonviable biomass made of killed bacteria and capable of specifically binding at least one heavy metal, said biomass being covalently attached to a solid support, said killed bacteria having been made by killing recombinant bacteria comprising a bacterial host and a plasmid within said bacterial host, said plasmid being a vector that expresses metallothionein into said periplasmic space of said bacterial host.

5,824,513

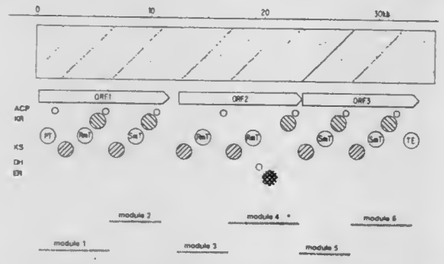
RECOMBINANT DNA METHOD FOR PRODUCING ERYTHROMYCIN ANALOGS

Leonard Katz, Waukegan; Stefano Donadio, and James B. McAlpine, both of Libertyville, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.

Filed Jan. 17, 1991, Ser. No. 642,734

Int. Cl.[6] C12P *19/62;* A61N *31/335;* C12N *15/52;15/76*

U.S. Cl. 435—76 28 Claims



1. A method for directing the biosynthesis of a specific erythromycin analog by genetic manipulation of a gene encoding the deoxyerythronolide B synthase function of an erythromycin-producing microorganism, said method comprising the steps of:

(a) isolating a genomic DNA segment comprising the eryA gene of *Saccharopolyspora erythraea;*

(b) identifying discrete fragments of said genomic DNA each encoding a separate polypeptide domain, wherein each domain provides no more than one of the enzymatic activities associated with said deoxyerythronolide B synthase function, said enzymatic activities consisting of β-ketoreductase, dehydratase, acyl carrier protein, enoylreductase, β-ketoacyl ACP synthase and acyltransferase;

(c) altering at least one region of said eryA gene by modifying said DNA fragments to produce at least one alteration of said deoxyerythronolide B synthase function, said alteration selected from the group consisting of (i) inactivation of one or more domains providing enzymatic activity affecting the processing of β-carbonyl groups of polyketide subunits, (ii) addition of one or more domains providing enzymatic activity affecting the processing of β-carbonyl groups of polyketide subunits, (iii) inactivation of one or more domains providing enzymatic activity affecting the condensation of carbon units to a nascent deoxyerythronolide B structure, (iv) addition of domains providing enzymatic activities affecting the length of said deoxyerythronolide B structure, (v) deletion of one or more domains providing one or more enzymatic activities affecting the length of said deoxyerythronolide B structure, and (vi) substitution of one acyltransferase domain with another isologous acyltransferase domain of different specificity;

(d) transforming a cell of said erythromycin-producing microorganism with said altered region of said eryA gene under conditions suitable for the occurrence of a homologous recombination event replacing a corresponding region of said cell's eryA gene with said altered region;

(e) growing a culture of said transformed cell under conditions suitable for the formation of said specific erythromycin analog; and

(f) isolating said specific erythromycin analog from said culture.

5,824,514

PROCESS FOR THE PRODUCTION OF EXPRESSION VECTORS COMPRISING AT LEAST ONE STOCHASTIC SEQUENCE OF POLYNUCLEOTIDES

Stuart Alan Kauffman, Santa Fe, N. Mex., and Marc Ballivet, Geneva, Switzerland, assignors to Stuart A. Kauffman, Santa Fe, N. Mex.

Division of Ser. No. 349,510, Dec. 2, 1994, Pat. No. 5,723,323, which is a continuation of Ser. No. 133,952, Oct. 8, 1993, abandoned, which is a continuation of Ser. No. 977,307, Nov. 16, 1992, abandoned, which is a continuation of Ser. No. 616,319, Nov. 21, 1990, abandoned, which is a continuation of Ser. No. 942,630, Nov. 20, 1986, abandoned. This application Jun. 5, 1995, Ser. No. 464,142

Claims priority, application Switzerland, Mar. 30, 1985, 485003; WIPO, Jun. 17, 1985, CH85/00099

Int. Cl.[6] C12P *19/34;* C12N *15/63;15/00;* C07H *21/04*

U.S. Cl. 435—91.1 46 Claims

1. A process for the production of an expression vector which comprises at least one stochastic sequence of polynucleotides, comprising the steps of:

providing in an appropriate buffer at least three different sequences of oligonucleotides, said oligonucleotides each comprising at least 7 nucleotide residues;

polymerizing said oligonucleotides to form a stochastic sequence of polynucleotides; and

ligating said stochastic sequence of polynucleotides into a linearized expression vector.

5,824,515

PROCESS FOR AMPLIFYING NUCLEIC ACID

Adrian Vivian Sinton Hill, Oxford, United Kingdom, assignor to Isis Innovation Ltd., Oxford, United Kingdom

Continuation of Ser. No. 50,232, May 14, 1993, Pat. No. 5,525,492. This application Jun. 11, 1996, Ser. No. 661,767

Claims priority, application United Kingdom, Nov. 5, 1990, 9024005

Int. Cl.[6] C12P *19/34;* C12Q *1/68;* C07H *21/02*

U.S. Cl. 435—91.1 15 Claims

1. An oligonucleotide which comprises from 10 to 30 nucleotides in length, and which hybridizes to a nucleic acid sequence, or its complementary sequence, encoding an amino acid sequence selected from the group consisting of SEQ ID No. 6, SEQ ID No. 7, SEQ ID No. 8, SEQ ID No. 9 and SEQ ID No. 10.

5,824,516

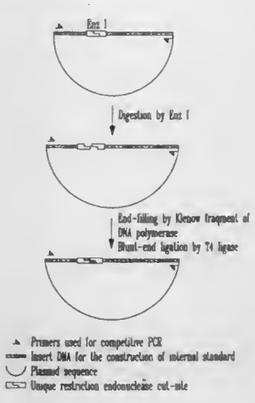
INTERNAL STANDARDS FOR QUANTITATIVE COMPETITIVE PCR

Robert Collu; JianQing Tang, both of Montréal, and Ginette Lagacé , Boucherville, all of Canada, assignors to Centre de Recherche de l'Hôpital Ste-Justine, Montréal, Canada

Filed Oct. 25, 1996, Ser. No. 736,724

Int. Cl.[6] C12P *19/34;* C07H *21/04;21/02;21/00*

U.S. Cl. 435—91.2 5 Claims



1. A method for constructing internal standards used in competitive polymerase chain reaction (PCR) for determining the amount of a target nucleic acid sequence in a sample, said method comprising:

a) digesting the target nucleic acid sequence, which has been cloned into a plasmid vector with a cohesive-end generating restriction endonuclease to form a linear fragment;

b) filling said restriction endonucleage cohesive-ends of step a) by Klenow fragment of DNA polymerase; and

c) blunt-end ligating the fragment of nucleic acid of step b) to recircularize the plasmid and form said internal standard;

wherein said internal standard nucleic acid sequence differs from said target nucleic acid sequence such that a restriction endonuclease recognition site is destroyed and the size difference between said target nucleic acid sequence and said internal standard nucleic acid sequence can be detected by gel electrophoresis.

5,824,517

METHOD FOR AMPLIFYING NUCLEIC ACID SEQUENCES BY STRAND DISPLACEMENT USING DNA/RNA CHIMERIC PRIMERS

Philippe Cleuziat, Lyon, and Bernard Mandrand, Villeurbanne, both of France, assignors to Bio Mericux, Marcy-L'Etoile, France

PCT No. PCT/FR96/01166, § 371 Date May 16, 1997, § 102(e) Date May 16, 1997, PCT Pub. No. WO97/04126, PCT Pub. Date Feb. 6, 1997

PCT Filed Jul. 24, 1996, Ser. No. 817,035

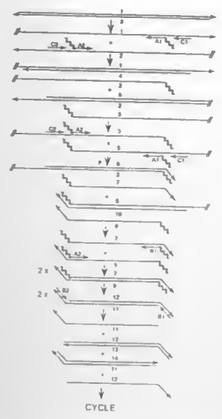
Claims priority, application France, Jul. 24, 1995, 95 08945

Int. Cl.[6] C12Q *1/68;* C12P *19/34;* C07H *21/04*

U.S. Cl. 435—91.2 13 Claims

1. A method for amplifying a target nucleic acid sequence, said sequence comprising, starting from its 5' end, an upstream region, and, starting from its 3' end, a downstream region,

said method comprising the steps of:



obtaining a DNA-type single-stranded polynucleotide comprising a first segment corresponding to the target sequence to be amplified and at least a second segment of arbitrary sequence located downstream of the 3' end of said first segment; and

placing said single-stranded polynucleotide in contact with an excess amount of a set of primers, in the presence of an enzyme system with DNA-dependent DNA polymerase activity, strand displacement activity, and RNAse H activity, and in the presence of an excess amount of deoxyribonucleotide triphosphates such that said target nucleic acid sequence is amplified, said set of primers comprising at least one primer selected from the group consisting of:

1) a first chimeric primer comprising successively, in the 5'→3' direction: an RNA-type segment with a sequence complementary to at least a portion of said second segment of said single-stranded polynucleotide, said portion comprising at least the 5' end of said second segment, and a DNA-type segment capable of hybridizing with at least a portion of said downstream region, said portion comprising at least the 3' end of said downstream region, and

2) a second chimeric primer comprising successively, in the 5'→3' direction: an RNA-type segment of arbitrary sequence, and a DNA-type segment homologous with at least a portion of said upstream region, said portion comprising the 5' end of said upstream region,

wherein:

either the first primer further comprises, upstream of the RNA-type segment, a second DNA-type segment of arbitrary sequence having a 3' end capable of hybridizing with the 3' end of said polynucleotide when said RNA segment is shorter than said second segment of said single-stranded polynucleotide,

or the first primer does not comprise such a second DNA-type segment, then said set of primers further comprises a third primer comprising a 3' end capable of hybridizing with at least a portion of said second segment of said single-stranded polynucleotide,

and wherein:

either the second primer further comprises, upstream of the RNA-type segment, a second DNA-type segment of arbitrary sequence,

or the second primer does not comprise such a second DNA-type segment, then said set of primers further comprises a fourth primer comprising a 3' end that is homologous with at least a portion of the sequence of the RNA-type segment of the second primer.

5,824,518

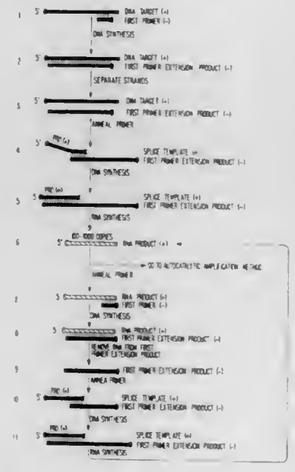
NUCLEIC ACID SEQUENCE AMPLIFICATION METHODS

Daniel Louis Kacian, San Diego, and Timothy J. Fultz, Vista, both of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 550,837, Jul. 10, 1990, Pat. No. 5,480,784, which is a continuation-in-part of Ser. No. 379,501, Jul. 11, 1989, abandoned. This application Jun. 6, 1995, Ser. No. 469,067

Int. Cl.[6] C12P *19/34*

U.S. Cl. 435—91.21 **14 Claims**



10. A method for synthesizing multiple RNA transcripts comprising the steps of:

(a) combining:

a target nucleic acid comprising said target sequence, wherein said target sequence may be initially present or produced by a preliminary procedure;

a first oligonucleotide comprising a primer able to hybridize to a 3'-terminal portion of said target sequence;

a second oligonucleotide which is a blocked splice template comprising a first and a second nucleic acid region, wherein said first region is located 3' of said second region, comprises a nucleotide sequence able to hybridize to a 3'-terminal portion of a complementary target sequence, and is blocked at its 3'-terminus to inhibit extension by a DNA polymerase, and said second region comprises a promoter sequence recognized by an RNA polymerase;

a reverse transcriptase; and

said RNA polymerase;

(b) incubating the mixture of step (a) under DNA priming and nucleic acid synthesizing conditions which include the necessary substrates and buffer conditions for primer extension and production of RNA transcripts; and

(c) synthesizing multiple RNA transcripts.

5,824,519

TISSUE-SPECIFIC AND TARGET RNA-SPECIFIC RIBOZYMES

James S. Norris, Mt. Pleasant, S.C., and Gary A. Clawson, Hershey, Pa., assignors to Medical University of South Carolina, Charleston, S.C.

Filed Nov. 8, 1995, Ser. No. 554,369

Int. Cl.[6] C12P *19/34;* **C12N** *15/11;* **C07H** *21/02*

U.S. Cl. 435—91.31 **16 Claims**

1. A DNA comprising a tissue-specific promoter upstream from a sequence encoding a triple ribozyme, comprising a) a 5' autocatalytically cleaving ribozyme, b) a trans-acting ribozyme that binds and cleaves a selected RNA and c) a 3' autocatalytically cleaving ribozyme.

5,824,520

PHAGE-DISPLAY OF IMMUNOGLOBULIN HEAVY CHAIN LIBRARIES FOR IDENTIFICATION OF INHIBITORS OF INTRACELLULAR CONSTITUENTS

Mary Jo Mulligan-Kehoe, Springfield, Va., assignor to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 437,815, May 9, 1995, Pat. No. 5,702,892. This application Jul. 19, 1997, Ser. No. 897,040

Int. Cl.[5] C12P *19/34;* **C12N** *15/13;15/64;15/79*

U.S. Cl. 435—91.41 **12 Claims**

1. A method for preparing a eukaryotic expression construct that codes for an intracellular constituent-binding polypeptide, comprising the steps of:

(a) obtaining a phage-display library comprising a plurality of recombinant phage, each of said phage having incorporated therein a polynucleotide coding for a single-chain recombinant polypeptide encompassing a region spanning from upstream of an immunoglobulin heavy chain CDRI to a position downstream of CDRIII, wherein a DNA sequence encoding either CDR1 or CDRIII is replaced by a randomly ordered DNA sequence, a fusion protein comprising the polypeptide encoded by said polynucleotide is expressed in the absence of an immunoglobulin light chain protein or portions thereof on an outer surface of recombinant phage of the library;

(b) screening said library to identify a phage clone which binds an intracellular constituent and thereby inhibit a measurable biological activity thereof;

(c) purifying phage DNA from said phage clone;

(d) isolating from said phage DNA a polynucleotide encoding said single-chain recombinant polypeptide, but lacking a secretion leader; and

(e) incorporating said polynucleotide into a eukaryotic expression vector to create said eukaryotic expression construct.

5,824,521

SACCHARIDE COMPOSITION CONTAINING TREHALULOSE, ITS PREPARATION AND USES

Tomoyuki Nishimoto; Hiroto Chaen; Shigeharu Fukuda, and Toshio Miyake, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Division of Ser. No. 811,003, Mar. 4, 1997. This application Apr. 9, 1998, Ser. No. 57,562

Claims priority, application Japan, Mar. 4, 1996, 8-70913; Mar. 29, 1996, 8-99566

Int. Cl.[6] C12P *19/12;19/14;19/00;* **C07H** *3/04*

U.S. Cl. 435—100 **9 Claims**

1. A process for producing a saccharide composition containing trehalulose, which comprises allowing a maltose/trehalose converting enzyme to act on a sucrose solution under conditions sufficient to produce said trehalulose, and collecting the resulting trehalulose-containing mixture.

5,824,522

RECOMBINANT DECARBAMYLASES FOR PRODUCING D-ALPHA-AMINO ACIDS

Yasuhiro Ikenaka, Akashi; Hirokazu Nanba, Takasago; Masayuki Takano, Akashi; Kazuyoshi Yajima, Kobe; Yukio Yamada, Kakogawa; Satomi Takahashi, Kobe; Kazuma Okubo, Kakogawa; Kazuhiko Yamada, Akashi, and Yoshiro Hiraishi, Himeji, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka-Fu, Japan

Continuation-in-part of Ser. No. 971,758, Apr. 12, 1993, abandoned, Ser. No. 917,111, Aug. 7, 1992, Pat. No. 5,565,344, and Ser. No. 211,641, Apr. 11, 1994, abandoned. This application Aug. 22, 1994, Ser. No. 294,871

Int. Cl.[6] C12P *13/04;* **C12N** *11/00;9/14;1/20*

U.S. Cl. 435—106 **12 Claims**

1. A decarbamylase having improved thermostability wherein said decarbamylase comprises an amino acid sequence as shown in the even-numbered SEQ IDs selected from the group consisting of SEQ ID Nos. 4 to 68.

7. A decarbamylase having an amino acid sequence of amino acids No. 1 to No. 311 of SEQ ID 70.

5,824,523

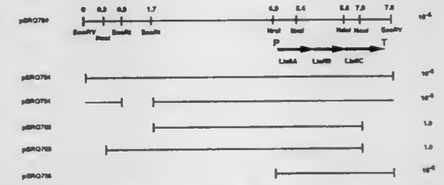
ISOLATED DNA ENCODING ENZYME FOR PHAGE RESISTANCE

Sylvain Moineau, Bradenton, Fla.; Shirley A. Walker, Raleigh, N.C.; Ebenezer R. Vedamuthu, Bradenton, and Peter A. Vandenbergh, Sarasota, both of Fla., assignors to Quest International Flavors & Food Ingredients Company, Division of Indopco, Inc., Bridgewater, N.J.

Continuation-in-part of Ser. No. 366,480, Dec. 30, 1994, abandoned. This application Apr. 19, 1995, Ser. No. 424,641

Int. Cl.[6] C12N *15/09;1/21;15/63;* **C07H** *21/04*

U.S. Cl. 435—172.3 **24 Claims**



1. An isolated DNA encoding only an enzyme which is selected from the group consisting of LlaIIA, LlaIIB and LlaIIC wherein the DNA is in a sequence which encodes one or more of the enzymes and wherein the enzymes restrict or modify a phage DNA.

5,824,524

NUCLEOTIDE SEQUENCES MEDIATING FERTILITY AND METHOD OF USING SAME

Marc C. Albertsen, West Des Moines; Larry R. Beach, Des Moines; John Howard, Des Moines, and Gary A. Huffman, Des Moines, all of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Continuation of Ser. No. 103,739, Aug. 2, 1993, Pat. No. 5,478,369, and a continuation-in-part of Ser. No. 573,183, Jun. 12, 1990. This application Jun. 7, 1995, Ser. No. 474,404

Int. Cl.[6] C12N *15/00;15/05;* **A01H** *1/00*

U.S. Cl. 435—172.3 **15 Claims**

1. A method for mediating male fertility in a plant comprising repressing expression of a nucleotide sequence encoding the amino acid sequence (SEQ. ID. No.2):

Glu Phe Gly Thr Arg Ser Thr Ser Met Glu Glu Lys Arg Lys Leu
5 10 15

-continued

Gln Trp Arg Arg Gly Arg Asp Gly Ile Val Gln Tyr Pro His Leu
20 25 30
Phe Phe Ala Ala Leu Ala Leu Ala Leu Leu Val Ala Asp Pro Phe
35 40 45
Gly Leu Ser Pro Leu Ala Glu Val Asp Tyr Arg Pro Val Lys His
50 55 60
Glu Leu Ala Pro Tyr Gly Glu Val Met Gly Ser Trp Pro Arg Asp
65 70 75
Asn Ala Ser Arg Leu Arg Arg Gly Arg Leu Glu Phe Val Gly Glu
80 85 90
Val Phe Gly Pro Glu Ser Ile Glu Phe Asp Leu Gln Gly Arg Gly
95 100 105
Pro Tyr Ala Gly Leu Ala Asp Gly Arg Val Val Arg Trp Met Gly
110 115 120
Glu Glu Ala Gly Trp Glu Thr Phe Ala Val Met Asn Pro Asp Trp
125 130 135
Ser Glu Glu Val Cys Ala Asn Gly Val Asn Ser Thr Thr Arg Lys
140 145 150
Gln His Glu Lys Glu Glu Phe Cys Gly Arg Pro Leu Gly Leu Arg
155 160 165
Phe His Gly Glu Thr Gly Glu Leu Tyr Val Ala Asp Ala Tyr Tyr
170 175 180
Gly Leu Met Val Val Gly Gln Ser Gly Gly Val Ala Ser Ser Val
185 190 195
Ala Arg Glu Ala Asp Gly Asp Pro Ile Arg Phe Ala Asn Asp Leu
200 205 210
Asp Val His Arg Asn Gly Ser Val Phe Phe Thr Asp Thr Ser Met
215 220 225
Arg Tyr Ser Arg Lys Asp His Leu Asn Ile Leu Leu Glu Gly Glu
230 235 240
Gly Thr Gly Arg Leu Leu Arg Tyr Asp Pro Glu Thr Ser Ala Val
245 250 255
His Val Val Leu Lys Gly Leu Val Phe Pro Asn Gly Val Gln Ile
260 265 270
Ser Glu Asp His Gln Phe Leu Leu Phe Ser Glu Thr Thr Asn Cys
275 280 285
Arg Ile Met Arg Tyr Trp Leu Glu Gly Pro Arg Ala Ser Glu Val
290 295 300
Glu Val Phe Ala Asn Leu Pro Gly Phe Pro Asp Asn Val Arg Ser
305 310 315
Asn Gly Arg Gly Gln Phe Trp Val Ala Ile Asp Cys Cys Arg Thr
320 325 330
Pro Ala Gln Glu Val Phe Ala Lys Arg Pro Trp Leu Arg Thr Leu
335 340 345
Tyr Phe Lys Phe Pro Leu Ser Leu Lys Val Leu Thr Trp Lys Ala
350 355 360
Ala Arg Arg Met His Thr Val Leu Ala Leu Leu Asp Gly Glu Gly
365 370 375
Arg Val Val Glu Val Leu Glu Asp Arg Gly His Glu Val Met Lys
380 385 390
Leu Val Ser Glu Val Arg Glu Val Gly Ser Lys Leu Trp Ile Gly
395 400 405
Thr Val Ala His Asn His Ile Ala Thr Ile Pro Tyr Pro Leu Glu
410 415 420
Asp Xaa Pro Xaa Ser Met Leu Phe Gln Cys Leu Leu Ile Cys Val
425 430 435
Arg Leu Xaa Met Ser Asn Ala Val Thr Gly Cys Asn Leu Val Cys
440 445 450
Val Trp Gln Ile Gly Ile Ile Met Asp Arg Phe Asn Gly Gln Lys
455 460 465
Lys Lys Lys Lys Lys Leu Glu
470

5,824,525

CONSTRUCTION OF *PASTEURELLA HAEMOLYTICA* VACCINES

Robert E. Briggs, Boone, and Fred M. Tatum, Ames, both of Iowa, assignors to Biotechnology Research and Development Corporation, Peoria, Ill., and The United States of America as represented by the Department of Agriculture, Washington, D.C.

Division of Ser. No. 162,392, Dec. 6, 1993, Pat. No. 5,587,305. This application May 8, 1996, Ser. No. 643,301

Int. Cl.[6] C12N *1/21*

U.S. Cl. 435—172.3 **5 Claims**

1. A method for producing a mutation in a particular region of DNA of a *P. haemolytica* genome comprising the step of:

isolating said region of the genome from *P. haemolytica;*

introducing a mutation into said region to form a mutated DNA region;

introducing said mutated DNA region into a *P. haemolytica* cell which does not express a PhaI restriction endonuclease, to form transformants; and

screening said transformants for those which have said mutation in said region on chromosomal DNA of said *P. haemolytica* cell.

5,824,526

DOPED SOL-GEL GLASSES FOR OBTAINING CHEMICAL INTERACTIONS

David Avnir; Michael Ottolenghi; Sergei Braun, and Rivka Zusman, all of Jerusalem, Israel, assignors to YISSUM, Research Development Company of the Hebrew University of Jerusalem, Israel, Jerusalem, Israel

Continuation of Ser. No. 266,441, Jun. 28, 1994, Pat. No. 5,650,311, which is a continuation of Ser. No. 937,259, Aug. 31, 1992, abandoned, which is a division of Ser. No. 637,873, Jan. 8, 1991, Pat. No. 5,300,564. This application Jun. 21, 1996, Ser. No. 667,746

Claims priority, application Israel, Jan. 23, 1990, 93134

Int. Cl.[6] G01N *1/00;* A61K *9/50;* B01J *13/18*

U.S. Cl. 435—176 **11 Claims**

1. A reactive sol-gel comprising a porous solid gel containing a chemically reactive cell-free dopant of biological origin trapped therein and formed by non-denaturing polymerization of at least one monomer of the formula $M(R)_n(P)_m$ and selected from the group consisting of metal alkoxides, semi-metal alkoxides, metal esters and semi-metal esters, wherein M is a metallic or semi-metallic element, R is a hydrolyzable substituent, n is an integer of 2 to about 6, P is a non-polymerizable substituent and m is an integer of 1 to about 6, in the presence of said dopant, said polymerization including a gelling step conducted at not greater than about room temperature, and the dopant being chemically reactive after preparation of the gel.

5,824,527

FRUCTOSYL AMINO ACID OXIDASE AND PROCESS FOR PRODUCTING THE SAME

Nobuo Kato, Kameoka; Yasuyoshi Sakai, Otsu; Yoshiki Tani; Masayuki Yagi, both of Kyoto, and Fumiyo Funatsu, Hirakata, all of Japan, assignors to Kyoto Daiichi Kagaku Co., Ltd., Kyoto-fu, Japan

Filed Apr. 11, 1996, Ser. No. 630,175

Claims priority, application Japan, Apr. 11, 1995, 7-085261

Int. Cl.[6] C12N *9/06;9/02;* C12Q *1/26*

U.S. Cl. 435—191 **7 Claims**

1. An isolated fructosyl amino acid oxidase, which is produced by culturing a strain of Penicillium capable of producing a fructosyl amino acid oxidase in a fructosyl lysine-containing medium, and has physicochemical characteristics as follows:

1) it catalyzes the oxidation of an amadori compound in the presence of oxygen to generate a-ketoaldehyde, amine derivatives and hydrogen peroxide;

2) it is stable in the pH range of 4.0 to 11.0 with an optimal pH of 7.5;

3) it is stable in the temperature range of about 15° to 50° C. with an optimal temperature of 25° C.; and

4) the molecular weight is about 38,700 Da;

5) it is more specific to fructosyl valine than to fructosyl lysine.

5,824,528

CLONING AND EXPRESSION OF AUTOGENES ENCODING RNA POLY,ERASES OF T7-LIKE BACTERIOPHAGES

F. William Studier, Stony Brook, and John W. Dubendorff, Sound Beach, both of N.Y., assignors to Associated Universities, Inc., Washington, D.C.

Continuation of Ser. No. 879,687, May 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 876,972, May 1, 1992, abandoned. This application Aug. 15, 1994, Ser. No. 292,081

Int. Cl.[6] C12N *1/21;9/12;15/54;15/70*

U.S. Cl. 435—194 **32 Claims**

1. An autogene, comprising a gene encoding a T7-like bacteriophage RNA polymerase under the control of an autogene promoter recognized by said polymerase.

5,824,529

METHOD FOR CLONING AND PRODUCING THE PSHAI RESTRICTION ENDONUCLEASE

Zhiyuh Chang, Beverly, and Richard D. Morgan, Middleton, both of Mass., assignors to New England Biolabs, Inc., Beverly, Mass.

Filed Mar. 6, 1996, Ser. No. 611,510

Int. Cl.[6] C12N *9/22;15/55*

U.S. Cl. 435—199 **7 Claims**

1. Isolated DNA coding for the PshAI restriction endonuclease, wherein the isolated DNA is obtainable from *Plesiomonas shigelloides.*

5,824,530

OVEREXPRESSION OF RECOMBINANT BACTERIOPHAGE T4 ENDONUCLEASE VII AND USES THEREOF

Börries Kemper, Köln; Stefan Golz, Essen, and Rainer P. Birkenbihl, Köln, all of Germany, assignors to Variagenics, Inc., Cambridge, Mass.

Filed Mar. 28, 1996, Ser. No. 621,708

Int. Cl.[6] C12N 9/22

U.S. Cl. 435—199 **19 Claims**

1. A method for the production of recombinant bacteriophage T4 endonuclease VII (T4 Endo VII), said method comprising:

(a) providing a host cell that comprises a nucleic acid encoding T4 Endo VII, wherein expression of said T4 Endo VII is inducible;

(b) inducing expression of said T4 Endo VII by applying a chemical stimulus; and

(c) recovering said inducibly expressed T4 Endo VII from said host cell.

5,824,531

ALKALINE BACILLUS AMYLASE

Helle Outtrup; Henrik Bisgård-Frantzen; Peter Rahbek Østergaard; Michael Dolberg Rasmussen, and Pia Van der Zee, all of Bagsvaerd, Denmark, assignors to Novid Nordisk, Bagsværd, Denmark

PCT No. PCT/DK95/00142, § 371 Date Jun. 1, 1995, § 102(e) Date Jun. 1, 1995, PCT Pub. No. WO95/26397, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 29, 1995, Ser. No. 446,803

Claims priority, application Denmark, Mar. 29, 1994, 353/94; Nov. 3, 1994, 1271/94; Feb. 3, 1995, 123/93

Int. Cl.[6] C12N *9/28;9/44*

U.S. Cl. 435—202 **9 Claims**

1. An isolated α-amylase having the same activity as an α-amylase obtained from an alkalophilic Bacillus species, having a molecular weight of approximately 55 kD as determined by SDS-PAGE, a specific activity at least 25% higher than the specific activity of a *Bacillus licheniformis* α-amylase having the amino acid sequence of SEQ ID NO. 4 at a temperature in the range of 25° C. to 55° C. and at a pH value in the range of 8 to 10, and having the amino acid sequence depicted in SEQ ID No. 1 or SEQ ID No. 2.

5,824,532

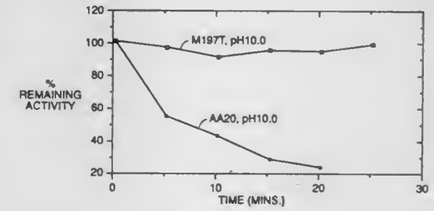
OXIDATIVLEY STABLE ALPHA-AMYLASE

Christopher C. Barnett, South San Francisco; Colin Mitchinson, Half Moon Bay; Scott D. Power, San Bruno, and Carol A. Requadt, Tiburon, all of Calif., assignors to Genencor International, Inc., Rochester, N.Y.

Division of Ser. No. 194,664, Feb. 10, 1994, which is a continuation-in-part of Ser. No. 16,395, Feb. 11, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 468,220

Int. Cl.[6] C12N *15/56;9/28;1/21;15/63*

U.S. Cl. 435—202 **11 Claims**



1. DNA encoding a mutant alpha-amylase, the mutant alpha-amylase derived from Bacillus and comprising:

(a) a substitution of an amino acid selected from the group consisting of threonine, leucine, alanine, arginine, asparagine, aspartic acid, glutamic acid, glycine, isoleucine, lysine, phenylalanine, proline, serine, valine, histidine and glutamine or a deletion of a methionine residue at a position equivalent to M197 in *Bacillus licheniformis* alpha-amylase; and/or

(b) a substitution of an amino acid selected from the group consisting of leucine, threonine, asparagine, aspartate, serine, valine, and isoleucine for a methionine residue at a position equivalent to M15 in *Bacillus licheniformis* alpha amylase.

5,824,533

***ORPINOMYCES* XYLANASE PROTEINS AND CODING SEQUENCES**

Xin-Liang Li; Lars G. Ljungdahl, and Huizhong Chen, all of Athens, Ga., assignors to University of Georgia Research Foundation, Inc., Athens, Ga.

Filed May 19, 1995, Ser. No. 445,090

Int. Cl.[6] C07H *21/04;* C12N *9/42*

U.S. Cl. 435—209 **32 Claims**

1. An isolated recombinant DNA molecule comprising a nucleotide sequence encoding a xylanase protein from Orpinomyces, wherein said nucleotide sequence is at least 90% homologous to a nucleotide sequence as given in SEQ ID NO:1 nucleotides 169–1185.

5,824,534

AMINOPEPTIDASE GX, AND A METHOD OF HYDROLYZING A PROTEIN WITH THE SAME

Minao Asano; Misako Kawai; Tetsuya Miwa, and Noriki Nio, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Mar. 7, 1997, Ser. No. 813,591
Claims priority, application Japan, Mar. 8, 1996, 8-051848; Feb. 14, 1997, 9-030458
Int. Cl.[6] C12N *9/48;* C12P *13/04;13/20;13/14*
U.S. Cl. 435—212 5 Claims

1. A purified aminopeptidase GX derived from germinated soybean cotyledon, having the following properties:

a) optimum pH occurs in the range: about 5.5 to about 9.5;

b) optimum temperature occurs in the range: about 25° to about 60° C.;

c) temperature stability: about 80% or more activity remains after being kept at 50° C. for 80 minutes or about 40% or more activity remains after being kept at 60° C. for 40 minutes;

d) molecular weight: about 400 to 550 kD (gel filtration), about 380 to 460 kD (native PAGE), and three subunits of about 53 to 60 kD, about 30 to 32 kD, and about 25 to 28 kD (SDS-PAGE after reduction and heating);

e) substrate specificity: decomposes a peptide or protein containing glutamic acid or aspartic acid at the N-terminus to release the glutamic acid or aspartic acid;

f) inhibitors: inhibited by leuhistin, actinonin, alphamenine A or 1,10-orthophenanthroline; and

g) effect of metal ions: inhibited by magnesium or copper.

5,824,535

IDENTIFICATION, PURIFICATION AND DETECTION OF WSBV (BACULOVIRUS ASSOCIATED WITH WHITE SPOT SYNDROME)

Guang-Hsiung Kou, Department of Zoology, National Taiwan University; Chung-Hsiung Wang, Department of Plant Pathology and Entomology, National Taiwan University, and Chu-Fang Lo, Department of Zoology, National Taiwan University, all of Taipei, Taiwan

Filed Jan. 17, 1996, Ser. No. 587,670
Int. Cl.[6] C12N *7/02*
U.S. Cl. 435—239 6 Claims

1. A method for obtaining a viral isolate of non-occluded baculovirus (NOB) from a host organism infected thereby, comprising the steps of:

a) obtaining a sample from a host organism infected with a NOB virus;

b) treating the sample with protease inhibitors in an amount to inhibit the degradation of the NOB virus; and

c) purifying the virus.

5,824,536

INFLUENZA VIRUS REPLICATED IN MAMMALIAN CELL CULTURE AND VACCINE PRODUCTION

Robert G. Webster, Memphis, Tenn., and Nicolai V. Kaverin, Moscow, Russian Federation, assignors to St. Jude Children's Research Hospital, Memphis, Tenn.

Continuation of Ser. No. 628,384, Apr. 5, 1996, abandoned, which is a continuation-in-part of Ser. No. 340,254, Nov. 16, 1994, abandoned, which is a continuation-in-part of Ser. No. 294,644, Aug. 23, 1994, abandoned. This application Jun. 17, 1996, Ser. No. 664,783
Int. Cl.[6] C12N *5/00;7/02;7/00*
U.S. Cl. 435—235.1 12 Claims

1. A method for replicating at least one high growth strain of a passaged clinical isolate, or reassortant, derived from at least one naturally occuring mammalian influenza virus strain, comprising

(a) infecting cultured primary mammalian cells with said high growth strain of said passaged clinical isolate or said reassortant to obtain infected cells; and

(b) culturing said infected cells in the presence of trypsin at a continuous concentration range of 0.05–1.0 μg/ml in the culture medium during the influenza virus growth cycle, to obtain replicated mammalian influenza virus, wherein

(i) when said passaged clinical isolates are used to provide said high growth strain, the passaged clinical isolates have not been passaged in avian eggs; and

(ii) said cultured mammalian cells lack adventitous agents to the extent that said cells are suitable to be certified for mammalian virus vaccine production.

5,824,537

PROCESSES FOR THE IN VITRO CULTURE, ATTENUATION OF THE VIRULENCE AND CLONING OF PARASITES OF THE GENUS BABESIA AND THEIR APPLICATIONS

Philippe Mähl, Villeneuve-Loubet, and Marie-Hélène Dick-Madelpuech, Paris, both of France, assignors to Laboratoires Virbac, Carros, France

Filed Sep. 8, 1995, Ser. No. 525,080
Claims priority, application France, Sep. 8, 1994, 94 10762
Int. Cl.[6] C12N *1/00;1/10;* A01N *63/00;* A61K *39/018*
U.S. Cl. 435—243 27 Claims

1. A process for the in vitro culture of parasites of the genus Babesia comprising the steps of:

(a) incubating in a culture medium erythrocytes parasitized by the parasites, wherein the incubation is performed in the presence of nonparasitized homologous erythrocytes and in the presence of an immortalized animal cell line other than erythrocytes or Babesia parasites.

5,824,538

SHIGELLA VECTOR FOR DELIVERING DNA TO A MAMMALIAN CELL

Arthur A. Branstrom, Rockville; Donata R. Sizemore, Gaithersburg, both of Md., and Jerald C. Sadoff, Washington, D.C., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 6, 1995, Ser. No. 523,855
Int. Cl.[6] C12N *1/00;1/20;15/00*
U.S. Cl. 435—252.1 17 Claims

1. A delivery vehicle for delivering a mammalian expression plasmid into a mammalian cell, said vehicle comprising a pure culture of attenuated Shigella cells into which said expression plasmid has been introduced, wherein said Shigella cells have at least one genetic mutation such that they lyse once inside said mammalian cell, thereby delivering said expression plasmid therein.

5,824,539

Patent Not Issued For This Number

5,824,540

PSEUDOMONAS PUTIDA STRAIN WITH DIOXYGENASE ACTIVITY

Neal C. Connors, Fanwood, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Jun. 18, 1996, Ser. No. 665,660
Int. Cl.[6] C12N *1/20*
U.S. Cl. 435—253.3 1 Claim

1. A biologically pure culture of *Pseudomonas putida* 421-5, ATCC 55687.

5,824,541

METHOD FOR ACCELERATED REMEDIATION AND METHOD OF USING AN APPARATUS THEREFOR

Terry Dean Horn, White Salmon; Ronald Dean Horn, Vancouver, both of Wash.; Bradley S. Glaze, Lyons, and Kenneth R. Warner, Gladstone, both of Oreg., assignors to H&H Eco Systems, Inc., North Bonneville, Wash.

Continuation-in-part of Ser. No. 223,523, Apr. 5, 1994, Pat. No. 5,593,888, which is a continuation-in-part of Ser. No. 43,666, Apr. 6, 1993, abandoned, which is a division of Ser. No. 918,528, Jul. 21, 1992, abandoned. This application Jul. 23, 1996, Ser. No. 685,116
Int. Cl.[6] B09B *3/00;* B02C *19/00;1/00;19/02*
U.S. Cl. 435—262.5 46 Claims

1. A method of using an apparatus in the accelerated remediation of a contaminated material which has been combined with at least one chemical amendment to form a treated contaminated material comprising the steps of generating an air stream at a velocity sufficient for entraining the treated contaminated material therein, entraining the treated contaminated material in said air stream, and microenfractionating the treated contaminated material under conditions sufficient to form a microenfractionated treated contaminated material thereby facilitating subsequent accelerated remediation under conditions sufficient for conducting said accelerated remediation.

5,824,542

METHODS FOR THE PRODUCTION OF HYBRID SEED

Lyle D. Crossland, Chapel Hill; Annmarie Tuttle, Garner, and Jeffrey I. Stein, Chapel Hill, all of N.C., assignors to Novartis Finance Corporation, New York, N.Y.

Division of Ser. No. 368,773, Jan. 3, 1995, Pat. No. 5,659,124, which is a division of Ser. No. 950,348, Sep. 24, 1992, Pat. No. 5,409,823. This application May 23, 1995, Ser. No. 449,514
Int. Cl.[6] C12N *15/82;15/29;15/31;* A01H *1/02*
U.S. Cl. 435—320.1 2 Claims

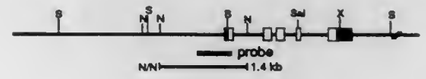
1. A vector comprising an expression cassette comprising an anther-specific 5' regulatory region operably linked to a nucleotide sequence encoding a transactivator polypeptide not naturally associated with plants, wherein said transactivator polypeptide turns on transcription that is otherwise off in the absence of said transactivator polypeptide.

5,824,543

METHOD FOR EXPRESSION AND ISOLATION OF BIOLOGICALLY ACTIVE MOLECULES IN URINE USING A MOUSE UROPLAKIN-II PROMOTER

Tung-Tien Sun, Scarsdale, N.Y., assignor to New York University, New York, N.Y.

Filed Jun. 5, 1995, Ser. No. 464,961
Int. Cl.[6] C07H *21/04;* C12N *15/09;15/63;15/00*
U.S. Cl. 435—320.1 1 Claim



1. A recombinant nucleic acid construct comprising a mouse UP-II promoter operatively linked to a heterologous gene wherein said promoter directs expression of said heterologous gene in the urothelium in vivo.

5,824,544

ADENOVIRUS VECTORS FOR GENE THERAPY

Donna Armentano, Belmont; Helen Romanczuk, Westboro, and Samuel Charles Wadsworth, Shrewsbury, all of Mass., assignors to Genzyme Corporation, Framingham, Mass.

Continuation-in-part of Ser. No. 409,874, Mar. 24, 1995. This application Oct. 6, 1995, Ser. No. 540,077
Int. Cl.[6] C12N *15/00*
U.S. Cl. 435—320.1 6 Claims

1. A replication-defective adenovirus vector having a deleted E1 region of the adenovirus genome, and in which the protein IX gene has been relocated in the adenovirus genome to a location thereof other than the location in which said protein IX gene normally resides, such that generation of replication-competent adenoviruses is minimized or eliminated.

5,824,545

IDENTIFICATION OF EUKARYOTIC GROWTH-RELATED GENES AND PROMOTER ISOLATION VECTOR AND METHOD OF USE

Yigal Koltin, Newtown; Perry Riggle, Norwood; Vicky Gavrias, Watertown; Chris Bulawa, Arlington, and Ken Winter, Cambridge, all of Mass., assignors to Millennium Pharmaceuticals, Inc., Cambridge, Mass.

Filed Nov. 1, 1995, Ser. No. 551,437
Int. Cl.[6] C12N *15/00*
U.S. Cl. 435—320.1 10 Claims

1. An isolated polynucleotide encoding a chitin synthase 1 (CSH1) polypeptide having a molecular weight of about 116 kD as determined by reducing SDS-PAGE.

5,824,546

REGULATION OF A SIGMA FACTOR FROM *MYCOBACTERIUM TUBERCULOSIS*

William R. Bishai, Baltimore, Md., and James DeMaio, Tacoma, Wash., assignors to The Johns Hopkins University, Baltimore, Md.

Filed Mar. 27, 1996, Ser. No. 622,352
Int. Cl.[6] C12N *5/10;1/00;15/31;15/63*
U.S. Cl. 435—325 10 Claims

1. An isolated and purified subgenomic DNA segment encoding a *Mycobacterium tuberculosis* orfX, which orfX comprises amino acids 98 to 242 of the sequence set forth as SEQ ID NO:3.

5,824,547

METHOD FOR PRODUCTION OF TRANSFECTED CELLS

Kimikazu Hashino, Takatsuki; Hideyuki Matsushita, Kusatsu, and Ikunoshin Kato, Uji, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto, Japan

PCT No. PCT/JP95/02425, § 371 Date May 22, 1997, § 102(e) Date May 22, 1997, PCT Pub. No. WO96/17073, PCT Pub. Date Jun. 6, 1996
PCT Filed Nov. 29, 1995, Ser. No. 836,854
Claims priority, application Japan, Nov. 29, 1994, 6-317721
Int. Cl.[6] C12N *5/02;5/10;5/16;5/22*
U.S. Cl. 435—325 12 Claims

1. A method for efficient production of cells transfected by cell perforation comprising the step of culturing target cells in the presence of a cell-adhesive substance after infection of a foreign gene by cell perforation into the target cells.

5,824,548

METHOD OF INCREASING SURVIVAL OF CULTURED PRIMATE EMBRYOS IN MEDIUM CONTAINING EXOGENOUS GONADOTROPHIN RELEASOR HORMONE

John P. Hearn, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed May 29, 1996, Ser. No. 654,723
Int. Cl.[6] A61B *17/435;* A61D *7/00*
U.S. Cl. 435—363 2 Claims

1. A method of increasing survival of fertilized primate embryos up to 12 days in vitro comprising culturing a fertilized embryo in a culture medium containing a physiologically sufficient concentration of exogenous gonadotrophin releasor hormone to increase fertilized embryo survival from the time of said embryo's suspension in culture medium up to implantation in a receptive uterus, wherein the fertilized embryo is selected from the group consisting of a morula, blastomere, and blastocyst.

5,824,549

TRANSFORMED HUMAN T CELL

John Stephen Haskill, Chapel Hill, N.C., and Peter Ralph, Orinda, Calif., assignors to Chiron Corporation, Emeryville, Calif.

Division of Ser. No. 425,232, Apr. 18, 1995, which is a continuation of Ser. No. 791,474, Nov. 8, 1991, abandoned, which is a continuation-in-part of Ser. No. 594,827, Oct. 9, 1990, abandoned. This application Jun. 2, 1995, Ser. No. 459,092
Int. Cl.[6] C12N *5/08*
U.S. Cl. 435—372.3 8 Claims

1. An isolated and transformed human T cell, said cell transformed to express therein a human intracellular IL-1 receptor antagonist (icIL-1ra), whereby CD4 expression in said T cell is down regulated.

5,824,550

VOLTAGE-GATED CALCIUM CHANNEL AND ANTISENSE OLIGONUCLEOTIDES THERETO

Keith A. Hruska, St. Louis, Mo.; Peter A. Friedman, Lebanon; Elizabeth L. R. Barry, Hanover, both of N.H., and Randall L. Duncan, Indianapolis, Ind., assignors to Barnes-Jewish Hopital, St. Louis, Mo.

Filed Oct. 28, 1994, Ser. No. 330,433
Int. Cl.[6] C12N *5/10;* C07H *21/00;* C12Q *1/68*
U.S. Cl. 435—375 11 Claims

1. An antisense oligonucleotide that hybridizes with a region of a voltage-gated calcium channel α_1 subunit mRNA and inhibits strain-induced increase in whole cell conductance in osteoblasts, having a sequence selected from the group consisting of SEQ ID NO:2 and SEQ ID NO:3.

5,824,551

METHOD FOR MODULATING CELL APOPTOSIS

Jo Van Damme, Brussels; Paul Proost, Heverlee; Frédéric Houssiau, and Jean-Christophe Renauld, both of Brussels, all of Belgium, assignors to Ludwig Institute For Cancer Research, New York, N.Y.

Filed Oct. 10, 1995, Ser. No. 541,905
Claims priority, application United Kingdom, Sep. 12, 1995, 9518611
Int. Cl.[6] C12N *5/06;5/08;5/00;* A61K *39/395*
U.S. Cl. 435—375 9 Claims

1. A method for inhibiting apoptosis, comprising administering to a cell containing sample an amount of an apoptosis inhibiting I-309 β chemokine sufficient to inhibit apoptosis of cells in said cell containing sample.

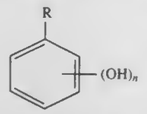
5,824,552

MEDIUM FOR CULTURING ANIMAL CELLS

Yoshiharu Takazawa; Takami Arai; Masamichi Motoki, all of Hino; Kenji Nagura, Iwakuni; Seiichi Yokoyama, Tokyo; Yoshinobu Miyatsu, Kumamoto, and Hiroshi Mizokami, Koushi-machi, all of Japan, assignors to Teijin Limited, and Juridical Foundation The Chemo-Sero-Therapeutic Research Institute, both of Japan

PCT No. PCT/JP95/00113, § 371 Date Aug. 15, 1996, § 102(e) Date Aug. 15, 1996, PCT Pub. No. WO95/22599, PCT Pub. Date Aug. 24, 1995
PCT Filed Jan. 30, 1995, Ser. No. 693,291
Claims priority, application Japan, Feb. 18, 1994, 6-021248
Int. Cl.[6] C12N *5/00*
U.S. Cl. 435—384 14 Claims

1. A cell culture medium for culturing animal cells which contains a compound represented by the general formula



(I)

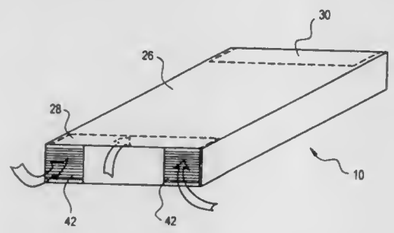
wherein, R denotes COOM or CHO, herein M denotes hydrogen, an alkali metal or a C_1 to C_3 alkyl group, and n is an integer of 1 to 3.

5,824,553

DISPOSABLE STERILIZATION TEST PACK FOR EVALUATING STEAM AND ETHYLENE OXIDE STERILIZATION

Patrick J. McCormick, Honeoye Falls; James Jay Kaiser, Webster, and Paul M. Eckardt, Rochester, all of N.Y., assignors to Getinge/Castle, Inc., Rochester, N.Y.

Filed Feb. 9, 1994, Ser. No. 193,712
Int. Cl.[6] C12Q *1/22*
U.S. Cl. 436—1 16 Claims



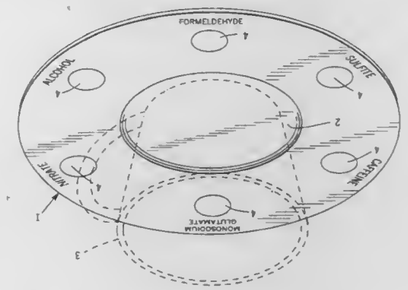
13. A method of evaluating sterilization efficacy comprising:
providing structure for evaluating sterilization efficacy, said structure including an indicator centrally positioned within a porous member having homogeneous porosity and having a cavity formed through the thickness of said porous member for retaining said indicator and restricting access thereto and an outer covering enclosing said porous member and said indicator, said outer covering being of material rendered impervious to penetration of gases, providing restricted pathways for passage of gases, and having removable portions for enlarging said pathways;
placing said structure into a sterilizer apparatus;
cycling said sterilizer apparatus;
removing said structure from said sterilizer following said cycling; and
processing said indicator to evaluate sterilization.

5,824,554

DETECTION OF ALLERGENIC SUBSTANCES IN FOOD PRODUCTS

Florine M. McKay, 1403 Burr Ridge Club, Burr Ridge, Ill. 60521

Division of Ser. No. 303,640, Sep. 9, 1994, abandoned. This application Jan. 26, 1996, Ser. No. 592,011
Int. Cl.[6] G01N *33/02*
U.S. Cl. 436—20 2 Claims



1. A method for the detection of allergenic substances in food products, comprising:
a) providing an absorbent dining mat used in a dining establishment, said dining mat having an upper surface, a peripheral edge, and a plurality of isolated zones disposed on said upper surface of said dining mat, each zone being spaced from adjacent zones and each zone containing a reagent which reacts with a specific allergenic substance in the food product to change the characteristics of said reagent, wherein a label is positioned adjacent each zone to identify the specific allergenic substance tested;
b) contacting at least one of said reagents located on said dining mat with a food product prepared in a dining establishment; and
c) determining a change in the characteristics of said reagent as an indication of whether the food product prepared in said dining establishment contains the respective allergenic substance.

5,824,555

METHOD OF DETECTING GYNECOLOGICAL CARCINOMAS

Yan Xu, Mayfield Heights, and Graham Casey, Moreland Hills, both of Ohio, assignors to The Cleveland Clinic Foundation, Cleveland, Ohio

Filed May 30, 1996, Ser. No. 655,551
Int. Cl.[6] G01N *33/50*
U.S. Cl. 436—64 13 Claims

1. A method for diagnosing the presence of a gynecological carcinoma selected from the group consisting of peritoneal carcinoma, endometrial carcinoma, cervical carcinoma, and combinations thereof in a subject comprising the following steps:
(a) preparing a plasma sample from a blood specimen collected from the subject;
(b) assaying for the presence of lysophosphatidic acid at a concentration of 0.1 μM or greater in said plasma sample; and
(c) correlating the presence of lysophosphatidic acid at said concentration of 0.1 μM or greater in said plasma sample with the presence of said gynecological carcinoma in said subject.

5,824,556

PEPTIDE MASS LADDERS GENERATED USING CARBON DISULFIDE

George E. Tarr, 640 Essex St., So. Hamilton, Mass. 01982

Filed Jun. 11, 1997, Ser. No. 872,888
Int. Cl.[6] G01N *33/00*
U.S. Cl. 436—89 1 Claim

1. A method for producing a set of truncated peptides from a peptide or protein for analysis by mass spectrometry, comprising the steps of:
(a) reaction of an N-terminal amino group of said peptide or protein with a reagent carbon disulfide to yield a dithiocarbamyl-peptide or protein,
(b) removal of excess reagent and byproducts,
(c) treatment of said dithiocarbamyl-peptide or protein with acid, which will:
(1) in part, remove one amino acid residue from the N-terminus of said dithiocarbamyl-peptide or protein, and
(2) in part, regenerate said peptide or protein of (a),
(d) removal of excess acid and byproducts,
(e) repetition of steps (a) through (d) any desired number of times, and
(f) analysis of said set of truncated peptides by mass spectrometry.

5,824,557

METHOD FOR DETECTING AND QUANTITATING NUCLEIC ACID IMPURITIES IN BIOCHEMICAL PREPARATIONS

Thomas J. Burke, Madison; Randall E. Bolger, Oregon, and Francis J. Lenoch, Madison, all of Wis., assignors to Pan-Vera Corporation, Madison, Wis.

Filed Apr. 2, 1996, Ser. No. 626,520
Int. Cl.[6] C12Q *1/68;* G01N *33/48*
U.S. Cl. 436—94 13 Claims

1. A process for detecting and quantitating an amount of a nucleic acid in a protein solution, comprising:
a) measuring at least one light-emitting characteristic of a plurality of test solutions, each having a different known amount of nucleic acid and each having a nucleic acid detecting label;
b) forming a curve based on the light-emitting characteristic measurements of step a);
c) adding the label to a sample of the protein solution having a detergent and measuring at least one light-emitting characteristic from the sample; and,
d) comparing the light-emitting characteristic measurements of step c) with the curve and determining the amount of nucleic acid in the sample.

5,824,558

Patent Not Issued For This Number

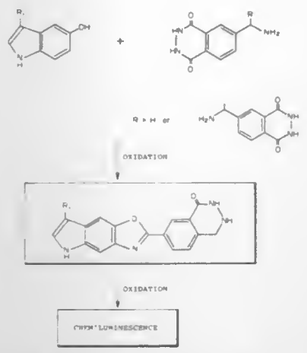
5,824,559

METHOD OF ANALYZING 5-HYDROXYINDOLES AND CATECHOLAMINES, AND A DEVICE FOR PERFORMING THE SAME

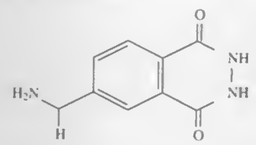
Hitoshi Nohta, Hamakita; Masatoshi Yamaguchi, Fukuoka; Junichi Ishida, Fukuoka; Kivoshi Zaitsu, Fukuoka, and Hiroko Iida, Fukuoka, all of Japan, assignors to Laboratory of Molecular Biopbotonics, Hamakita, Japan

Filed Jun. 17, 1996, Ser. No. 664,909
Claims priority, application Japan, Jun. 15, 1995, 7-149126; Jun. 22, 1995, 7-156164; Jun. 22, 1995, 7-156177
Int. Cl.[6] G01N *33/48;21/76;30/02*
U.S. Cl. 436—111 13 Claims

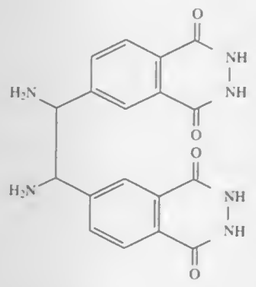
1. A method for analyzing 5-hydroxyindoles and catecholamines, said method comprising the steps of:



reacting at least one member selected from the group consisting of 5-hydroxyindoles and catecholamines with at least one chemiluminescent labeling agent to form at least one derivative, said chemiluminescent labeling agent being selected from the group consisting of:



and



oxidizing said derivative, and

detecting luminescence emitted by said step of oxidizing said derivative.

5,824,560

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE WITH BICMOS CIRCUIT

Willem Van Der Wel; Alexander C. L. Jansen, both of Nijmegen; Ronald Koster, Eindhoven, all of Netherlands, and Armand Pruijmboom, Albuquerque, N. Mex., assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 27, 1996, Ser. No. 623,383

Claims priority, application European Pat. Off., Mar. 28, 1995, 95200773

Int. Cl.[6] H01L *21/265*

U.S. Cl. 437—31 **4 Claims**

1. A method of manufacturing a semiconductor device with a bipolar transistor and a MOS transistor which are formed in a silicon body which is provided with a field insulation region by which semiconductor regions adjoining a surface of said body are mutually insulated, with a first region for the bipolar transistor and a second region for the MOS transistor, after which the first and second regions are consecutively provided with a gate dielectric layer and an auxiliary layer of non-crystalline silicon, whereupon the auxiliary layer and the gate dielectric layer are removed from the first region, and subsequently an electrode layer of non-crystalline silicon is deposited in said first and second regions and an emitter electrode is formed in the electrode layer on the first region and a gate electrode is formed both in the electrode layer and in the auxiliary layer on the second region, characterized in that, before the emitter electrode and the gate electrode are formed, the electrode layer is subjected to a treatment whereby a portion of non-crystalline silicon of said electrode layer is removed in a manner such that a remaining layer of non-crystalline silicon is provided at the surface of the silicon body, which remaining layer has substantially the same thickness at the first and second regions.

5,824,561

THERMOELECTRIC DEVICE AND A METHOD OF MANUFACTURING THEREOF

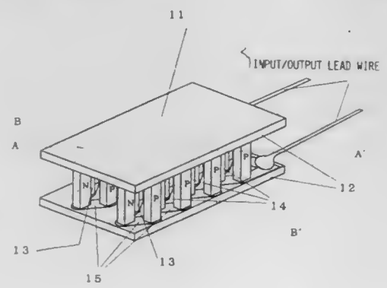
Matsuo Kishi; Hirohiko Nemoto, and Hiroshi Okano, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed May 19, 1995, Ser. No. 445,168

Claims priority, application Japan, May 23, 1994, 6-108757; Jun. 3, 1994, 6-122873; Jul. 29, 1994, 6-178987; Apr. 7, 1995, 7-082906

Int. Cl.[6] H01L *21/60*

U.S. Cl. 437—209 **25 Claims**



1. A method of making a thermoelectric device, comprising the steps of: forming electrodes on each of two sheets of substrates; bonding a P-type thermoelectric material plate to one of the substrates; bonding an N-type thermoelectric material plate to the other of the substrates; cutting and eliminating portions of each bonded thermoelectric material plate to form separate substrates bonded with P-type and N-type thermoelectric material chips, respectively; and integrating the thermoelectric device by opposing the substrate bonded with the P-type thermoelectric material chips to the substrate bonded with the N-type thermoelectric material chips and bonding the electrodes formed on the substrates to distal ends of the thermoelectric material chips to thereby form pairs of PN-junctions.

5,824,562

MANUFACTURING METHOD FOR FILLING A TRENCH OR CONTACT HOLE IN A SEMICONDUCTOR DEVICE

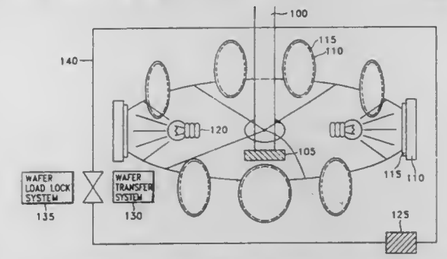
Tai-su Park, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jul. 25, 1995, Ser. No. 506,654

Claims priority, application Rep. of Korea, Jul. 26, 1994, 1994-18077

Int. Cl.[6] H01L *21/465*

U.S. Cl. 437—228 TR **12 Claims**



1. A manufacturing method of a semiconductor device comprising the steps of:

forming an opening on a semiconductor substrate;

coating a material layer on said opening so as to fill said opening; and

rotating said substrate and simultaneously heating said substrate up to a temperature at which said material layer can flow, to completely fill said opening with said material layer.

5,824,563

METHOD FOR FORMING LOWER ELECTRODE OF CAPACITOR

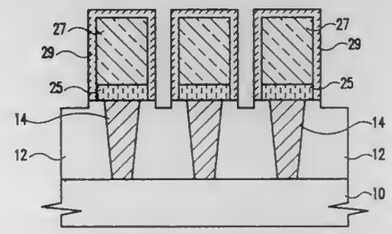
Cheol-sung Hwang, Seongnam, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 17, 1995, Ser. No. 560,087

Claims priority, application Rep. of Korea, May 29, 1995, 1995 13694

Int. Cl.[6] H01L *21/00;21/8242*

U.S. Cl. 438—3 **12 Claims**



1. A method for manufacturing a capacitor, comprising the steps of:

forming a conductive plug in an insulating film formed on a semiconductor substrate, the conductive plug having a top surface, the top surface of the conductive plug being planar to a top surface of the insulating film;

forming a first layer over the conductive plug and the insulating film, the first layer serving as a barrier layer to prevent diffusion of impurities from the conductive plug and the semiconductor substrate;

forming a second layer over the first layer, the second layer comprising a material easier to pattern than Pt;

sequentially patterning the second layer and the first layer;

forming a third layer over the semiconductor substrate and the patterned second and first layers, the third layer comprising a material having lower leakage current properties than RuO_2, and

etching back the third layer to form an isolated third layer in a cell unit, the isolated third layer being formed over the patterned first and second layers.

5,824,564

METHOD OF MANUFACTURING THIN-FILM TRANSISTOR ARRAY SUBSTRATE

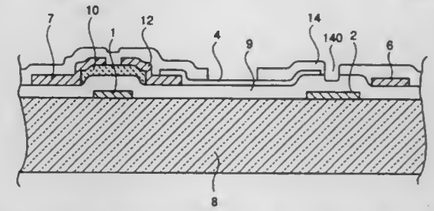
Takahiko Watanabe, Tokyo, Japan, assignor to Nec Corporation, Tokyo, Japan

Filed Feb. 26, 1997, Ser. No. 806,987

Claims priority, application Japan, Feb. 28, 1996, 8-041049

Int. Cl.[6] H01L *21/00;21/84*

U.S. Cl. 438—30 **8 Claims**



1. A method of manufacturing a thin film transistor array substrate comprising:

a step of forming a light shielding pattern on the same plane of a substrate where a first wiring group constituting gate electrodes is formed arranged in parallel;

a step of forming a first insulating film so as to cover the first wiring group and the light shielding pattern;

a step of depositing an a-Si film on desired thin film transistor regions and regions covering at least said light shielding pattern;

a step of forming a photoresist film on the a-Si film and the first insulating film;

a step of providing a slit to expose a first portion of the insulating film and a second portion of the a-Si film located on said light shielding pattern;

a step of etching said first portion and said second portion exposed at said slit without revealing said light shielding pattern;

a step of forming a second wiring group, source electrodes and drain electrodes of the thin film transistors; and

a step of forming transparent electrodes connected to said source electrodes.

5,824,565

METHOD OF FABRICATING A SENSOR

Guang Xuan Li; Zuoying Lisa Zhang, both of Gilbert, and Frank A. Shemansky, Jr., Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 29, 1996, Ser. No. 608,790

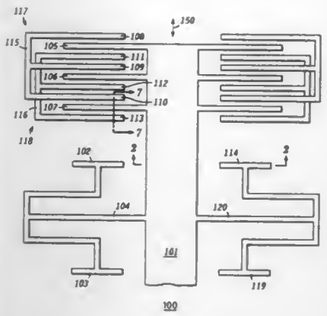
Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—48 **28 Claims**

1. A method of fabricating a sensor comprising the steps of:

providing a substrate having a surface;

providing a temporary layer overlying the surface;



providing a first structure overlying the surface;

providing a second structure overlying the temporary layer wherein a capacitance is formed between the first and second structures;

increasing a sensitivity of the sensor by providing a dielectric layer between the first structure and the second structure to increase the capacitance; and

removing the temporary layer such that the second structure is movable in a direction approximately parallel to the surface, wherein the removing step occurs after the increasing step.

5,824,566

METHOD OF PRODUCING A PHOTOVOLTAIC DEVICE

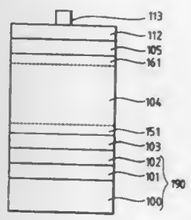
Masafumi Sano, Soraku-gun, and Keishi Saito, Nara, both of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Sep. 24, 1996, Ser. No. 719,409

Claims priority, application Japan, Sep. 26, 1995, 7-247196; Sep. 26, 1995, 7-247197; Sep. 26, 1995, 7-247198; Sep. 26, 1995, 7-247204; Sep. 26, 1995, 7-247205

Int. Cl.[6] H01L *31/0216*

U.S. Cl. 438—69 **21 Claims**



1. A method for producing a photovoltaic device comprising a base member comprising a substrate and superposingly formed thereon a reflecting layer and a reflection enhancing layer, and a pin photo active layer structure formed of non-single crystal n-type, i-type and p-type semiconductor layers containing silicon atoms, the pin layer structure being repeated at least once on the base member, the method comprising the sequential steps of:

(a) depositing the reflecting layer at a substrate temperature of from 200° to 500° C.;

(b) lowering the substrate temperature to 100° C. or below after step (a); and

(c) depositing the reflection enhancing layer on the reflecting layer at a substrate temperature of from 200° to 400° C.

5,824,567

METHODS FOR WAVELENGTH DISCRIMINATION OF MONOCHROMATIC LIGHT BEAMS

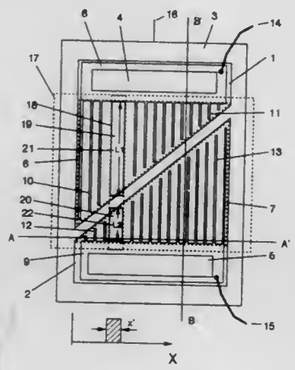
Ishiang Shih, 3300 Bahama St., Brossard, Quebec, Canada, J4Z 2R4; Linh Ngo Phong, 1035 Viger, Sante Foy, Quebec, Canada, G1W 2P8; Cindy Xing Qiu, 6215 Bienville St., Brossard, Quebec, Canada, J4Z 1W6, and Philips Laou, 4980 Longelier St., Montreal , Quebec, Canada, H1M 2A1

Division of Ser. No. 310,329, Sep. 22, 1994, Pat. No. 5,703,357. This application Jul. 9, 1996, Ser. No. 679,382

Claims priority, application Canada, Sep. 27, 1993, 2107062

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—73 **16 Claims**



1. A method for fabrication at least one pair of a first junction photo detector and a second junction photo detector for detection and wavelength discrimination of a monochromatic light beam comprising the steps of:

depositing a first electrically insulating layer over a front surface of a semiconductor substrate of one conduction type;

removing selectively said first electrically insulating layer from at least a pair of polygon areas on surface of said semiconductor substrate;

diffusing impurities into said polygon areas of semiconductor substrate to form active areas of another conduction type for said first and second junction photo detectors;

depositing a second electrically insulating layer over said front surface;

removing selectively said second electrically insulating layer from said polygon areas and at least a region on surface of said substrate;

depositing a layer of ohmic contact metal over surface of said substrate and polygon areas;

removing selectively said layer of ohmic metal to form at least an ohmic contact to said substrate and ohmic contacts each with fingers in said polygon areas, regions between adjacent fingers forming photo sensitive elements of said detectors, area per unit distance of said photo sensitive elements of said first detector increasing in one direction, while area per unit distance of said photo sensitive elements of said second detector decreases with distance in said direction; and

attaching electrical wires to ohmic contact to said substrate and ohmic contacts to said polygon areas.

5,824,568

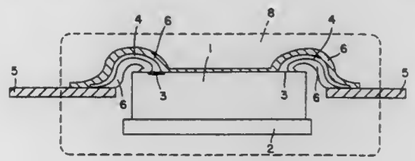
PROCESS OF MAKING AN INTEGRATED CIRCUIT CHIP COMPOSITE

John Harold Zechman, Endicott, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 445,381, May 19, 1995, Pat. No. 5,622,898, which is a division of Ser. No. 988,849, Dec. 10, 1992, Pat. No. 5,656,830. This application Jul. 5, 1996, Ser. No. 675,822

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—112 **12 Claims**



1. A method for fabricating a composite which comprises providing an integrated circuit chip having electrically conductive site thereon; interconnecting conductive lead to said conductive site with electrically conductive wire wherein said wire is at least 5 mm long; then conformally coating said wire with a dielectric material wherein said dielectric is parylene; and then encapsulating the chip, wire and portion of said conductive lead in a dielectric encapsulating composition.

5,824,569

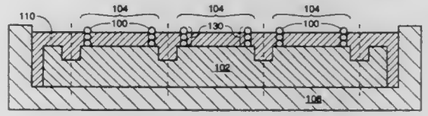
SEMICONDUCTOR DEVICE HAVING BALL-BONDED PADS

J. Mike Brooks, Caldwell; Alan G. Wood, and Kevin G. Duesman, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation-in-part of Ser. No. 225,196, Apr. 8, 1994, Pat. No. 5,496,775, which is a continuation of Ser. No. 914,275, Jul. 15, 1992, abandoned. This application Mar. 5, 1996, Ser. No. 611,314

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—127 **20 Claims**



1. A method for forming a semiconductor device comprising the following steps:

providing a semiconductor die having a plurality of pads thereon with at least one discrete conductive element on at least one of said pads;

providing a holder having a cavity therein;

placing said semiconductor die in said cavity;

subsequent to placing said die within said cavity, forming a layer of encapsulation material within said cavity thereby covering said die with said encapsulation material; and

subsequent to forming said layer of encapsulation, removing said encapsulated die from said cavity.

5,824,570

METHOD FOR DESIGNING A SEMICONDUCTOR INTEGRATED CIRCUIT

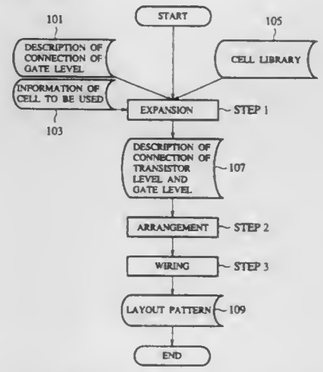
Sachiko Aoki, Yokohama, and Chiharu Mizuno, Tokyo, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 15, 1996, Ser. No. 616,727

Claims priority, application Japan, Mar. 15, 1995, 7-055883; Mar. 13, 1996, 8-056487

Int. Cl.[6] H01L *21/82*

U.S. Cl. 438—128 **3 Claims**



1. A method for designing a semiconductor integrated circuit comprising the steps of:

generating a gate level connection description describing a plurality of gates;

replacing at least one of said plurality of gates with cells from a cell library, wherein said cell library is prepared in advance;

replacing others of said plurality of gates with transistor level connections; and

designing a layout to be used in said semiconductor integrated circuit comprising said cells and said transistor level connections.

5,824,571

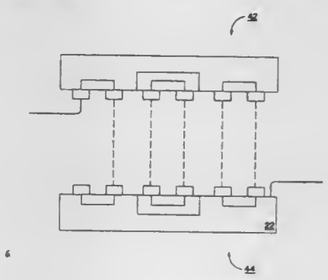
MULTI-LAYERED CONTACTING FOR SECURING INTEGRATED CIRCUITS

Matthew Rollender, Gilbert, and Ray Hirt, Mesa, both of Ariz., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 20, 1995, Ser. No. 575,295

Int. Cl.[6] H01L *21/82*

U.S. Cl. 438—130 **6 Claims**



4. A method for securing confidential circuitry from observation by unauthorized inspection, comprising the steps of:

placing first circuitry on a face of a first semiconductor layer;

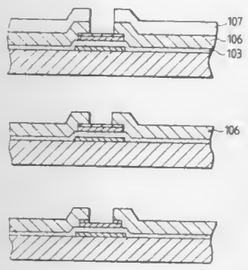
placing second circuitry on a face of a second semiconductor layer;

covering the face of the first semiconductor layer with the face of the second semiconductor layer, said covering directly connecting the first circuitry to the second circuitry the face of the first semiconductor layer directly contacting the face of the second semiconductor layer.

5,824,572
METHOD OF MANUFACTURING THIN FILM TRANSISTOR

Hirofumi Fukui, and Chae Gee Sung, both of Miyagi-ken, Japan, assignors to Frontec Incorporated, Miyagi-Ken, Japan

Filed Mar. 28, 1997, Ser. No. 825,447
Claims priority, application Japan, Mar. 31, 1996, 8-101988
Int. Cl.[6] H01L *21/336;21/00*
U.S. Cl. 438—158 **1 Claim**



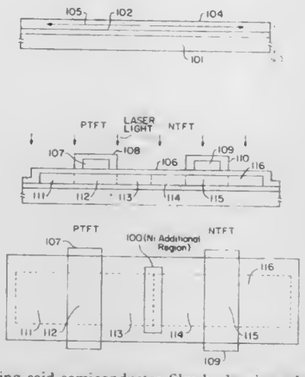
1. A method of manufacturing a thin film transistor comprising the steps of:
forming a gate electrode on a surface of a substrate;
forming a gate insulation film covering the gate electrode;
forming an active semiconductor layer and an active ohmic contact layer on the gate insulation film;
forming a Cr film;
forming a resist on the Cr film in a pattern of a source/drain electrode;
forming a source/drain electrode made of Cr;
peeling at least partially or entirely the resist; and
removing a portion of the ohmic contact layer except for the portion in contact with the source/drain electrode by using an etching solution,
wherein the step of removing the ohmic contact layer is conducted after at least partially or entirely peeling the resist on the source/drain electrode made of Cr.

5,824,573
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Hongyong Zhang; Toru Takayama, and Yasuhiko Takemura, all of Kanagawa, Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Division of Ser. No. 248,682, May 25, 1994, Pat. No. 5,481,121. This application Jun. 5, 1995, Ser. No. 462,748
Claims priority, application Japan, May 26, 1993, 5-147004
Int. Cl.[6] H01L *21/84*
U.S. Cl. 438—150 **11 Claims**

3. A method of manufacturing a semiconductor device having at least one thin film transistor, comprising the steps of:
disposing a catalyst containing material in contact with a selected region of a semiconductor film on an insulating surface of a substrate to be crystallized, said catalyst being capable of promoting crystallization of said semiconductor film wherein said selected region has a rectangular shape lengthened in a first direction;

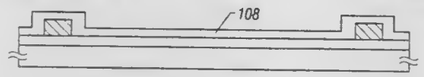


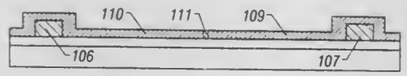
crystallizing said semiconductor film by heating where crystals grow from said selected region in a second direction orthogonal to the first direction and parallel with said insulating surface;
patterning said semiconductor film into an island after the step of crystallization thereof so that said island comprise the crystals extending in the second direction; and
forming source and drain regions in said island with a channel region defined therebetween,
wherein said island is so arranged that the crystals of the transistor extend between the source and drain regions through the channel region in a direction which is coincidence with a direction in which carriers of the transistor flow.

5,824,574
SEMICONDUCTOR MATERIAL, A SEMICONDUCTOR DEVICE USING THE SAME, AND A MANUFACTURING METHOD THEREOF

Shunpei Yamazaki, Tokyo; Akiharu Miyanaga, and Satoshi Teramoto, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Kanagawa-ken, Japan

Filed Mar. 18, 1996, Ser. No. 620,759
Claims priority, application Japan, Mar. 17, 1995, 7-086331; Mar. 21, 1995, 7-088787; Apr. 28, 1995, 7-128920
Int. Cl.[6] H01L *21/84*
U.S. Cl. 438—150 **31 Claims**



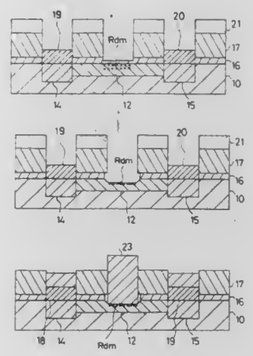


1. A method of manufacturing a semiconductor, comprising:
forming a first semiconductor film on a substrate having an insulating surface;
applying a first energy to said first semiconductor film to crystallize said first semiconductor film;
patterning said first semiconductor film to form a region as a seed crystal;
etching said seed crystal to selectively leave a crystal face in an upper face of said seed crystal;
forming a second semiconductor film to cover said upper face of seed crystal; and
applying a second energy to said second semiconductor film to conduct a crystal growth starting from said seed crystal in said second semiconductor film, to form a single crystal or a substantially single crystal with said crystal face in an upper face of said second semiconductor film.

5,824,575
SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURING THE SAME

Hiromasa Fujimoto; Hiroyuki Masato, both of Osaka; Yorito Ota, Hyogo, and Tomoya Uda, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 22, 1995, Ser. No. 517,854
Claims priority, application Japan, Aug. 22, 1994, 6-196606; Mar. 23, 1995, 7-063971
Int. Cl.[6] H01L *21/338*
U.S. Cl. 438—174 **11 Claims**

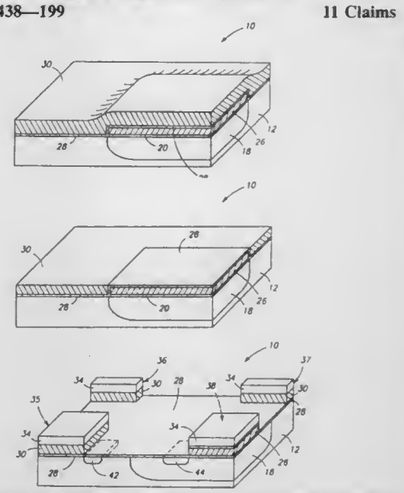


1. A method of manufacturing a semiconductor device functioning as an FET and formed at a portion of a compound semiconductor substrate comprising the steps of:
forming an active layer of a first conductivity type at a portion of said compound semiconductor substrate, said active layer having a carrier concentration required for operation of said FET and forming a channel region of said FET;
forming a first insulating film on said active layer;
forming a partial hole by removing an upper portion of said first insulating film so as to provide an opening for formation of a gate electrode, simultaneously with the formation of a low carrier concentration layer at a portion of said active layer, which is located beneath said partial hole by damaging said portion of said active layer by means of implantation of etching-ions into said portion of said active layer through the remaining portion of said first insulating film which is left unetched at the bottom of said partial hole, said partial hole being formed via an etching process;
forming a through hole by removing said remaining portion of said first insulating film at the bottom of said partial hole without damaging said active layer;
forming a gate electrode of said FET at a portion of said active layer in a self-alignment manner by depositing a conductive film within said through hole; and
forming source/drain regions of said FET connected to said active layer by introducing impurity into portions of said compound semiconductor substrate at opposite sides of said gate electrode;
said formation of said low carrier concentration layer comprising an etching process for removing an upper layer portion of said first insulating so as to form an opening for said gate electrode, said etching process simultaneously reducing said carrier at said portion of the surface region of said active layer.

5,824,576
METHOD OF FORMING COMPLEMENTARY TYPE CONDUCTIVE REGIONS ON A SUBSTRATE

Trung Tri Doan, Boise, and Charles H. Dennison, Meridian, both of Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Feb. 23, 1996, Ser. No. 606,205
Int. Cl.[6] H01L *21/336;21/28*
U.S. Cl. 438—199 **11 Claims**

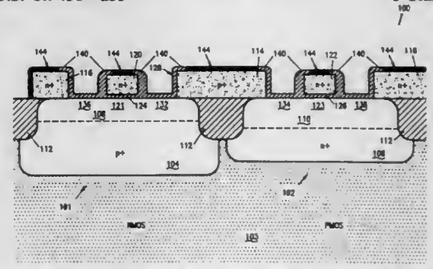


1. A method of forming complementary type conductive regions on a substrate comprising:
providing a first conductive layer of a first conductive material over a substrate;
forming an opening within the first conductive layer;
forming a second conductive layer of a second conductive material over the first conductive layer and within the opening, the second material being different from the first material;
removing the second conductive layer from over the first conductive layer to eliminate all second conductive material from atop the first conductive layer and leave second conductive material within the opening; and
after removing the second conductive layer, patterning and etching the remaining first conductive layer and remaining second conductive layer to define complementary discrete circuit devices from the first and second conductive layers.

5,824,577
MOSFET WITH REDUCED LEAKAGE CURRENT

Thomas Luich, Puyallup, Wash., assignor to National Semiconductor Corporation, Santa Clara, Calif.

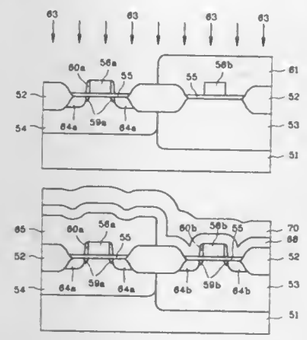
Division of Ser. No. 389,720, Feb. 16, 1995, abandoned. This application May 24, 1995, Ser. No. 448,798
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 438—233 **6 Claims**



1. A method of fabricating an integrated circuit including a metal-oxide-semiconductor field effect transistor (MOSFET) with reduced leakage current, said method comprising the steps of:

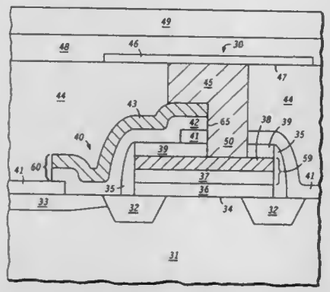
providing an integrated MOSFET which includes:
a drain region;
a drain terminal connected to a first portion of said drain region, wherein said drain terminal includes opposing sides and opposing edges;
a source region;
a source terminal connected to a first portion of said source region, wherein said source terminal includes opposing sides and opposing edges;
a channel region between said drain and source regions;
a gate terminal disposed opposite said channel, wherein said gate terminal includes opposing sides and opposing edges;
depositing a nonsilicide layer on a second portion of said drain region; and
depositing a silicide layer on said drain terminal and on said gate terminal, wherein said silicide layer on said drain terminal is narrower than said drain terminal.

5,824,578
METHOD OF MAKING A CMOS TRANSISTOR USING LIQUID PHASE DEPOSITION
Ching-Nan Yang, Hsinchu, Taiwan, assignor to Mosel Vitelic Inc., Hsinchu, Taiwan
Filed Dec. 12, 1996, Ser. No. 764,336
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 438—231 **24 Claims**



1. A method of making a complementary metal semiconductor field effect transistor (CMOSFET) using liquid phase deposition which comprises the steps of:
(a) preparing a silicon substrate, upon which are formed at least one field oxide region, a P-well, an N-well and a plurality of gate electrodes with underlying gate oxide layers;
(b) performing a P^- type ion implant with a first mask shielding the area designated to be an N-channel field effect transistor, to form P^- type lightly doped drain (LDD) areas;
(c) depositing a first silicon dioxide layer using liquid phase deposition without removing said first mask;
(d) etching said first silicon dioxide layer to form first sidewall spacers along sidewalls of one of said gate electrodes;
(e) performing a P^+ type ion implant without removing said first mask to form P^+ type source/drain areas and completing a P-channel field effect transistor;
(f) depositing a second silicon dioxide layer as a second mask on the P-channel field effect transistor by liquid phase deposition;
(g) performing an N^- type ion implant without removing said second mask to form N^- type LDD areas;
(h) depositing a dielectric layer over the entire silicon substrate;
(i) etching said dielectric layer to form second sidewall spacers along sidewalls of gate electrodes not covered by said second mask;
(j) performing an N^+ type ion implant, to form N^+ type source/drain areas and completing a N-channel field effect transistor; and
(k) sequentially depositing a first insulating layer and a second insulating layer on the field oxide layer, the second silicon dioxide layer and the transistors, completing the CMOSFET.

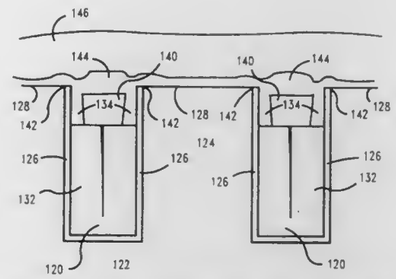
5,824,579
METHOD OF FORMING SHARED CONTACT STRUCTURE
Chitra K. Subramanian, and James D. Hayden, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 15, 1996, Ser. No. 632,207
Int. Cl.[6] H01L *21/8244*
U.S. Cl. 438—238 **9 Claims**



1. A method for forming a semiconductor device having a shared contact, the method comprising the steps of:
providing a semiconductor substrate having a surface and an active region;
forming a first dielectric layer overlying the surface of the semiconductor substrate;
forming a first coupling layer on the first dielectric layer, wherein the first coupling layer is separated from the semiconductor substrate;
forming a second dielectric layer on the first coupling layer;
forming a first opening in the second dielectric layer to expose a portion of the active region in the semiconductor substrate;
forming a second coupling layer on the second dielectric layer and in the first opening, the second coupling layer being physically isolated from the first coupling layer and in physical contact with the active region of the semiconductor substrate;
forming a third dielectric layer overlying the second coupling layer;
forming a first opening in the third dielectric layer to provide an exposed portion of the second coupling layer and an exposed portion of the first coupling layer; and
forming a third coupling layer on the third dielectric layer so that the third coupling layer is in electrical contact with the exposed portion of the second coupling layer and the exposed portion of the first coupling layer.

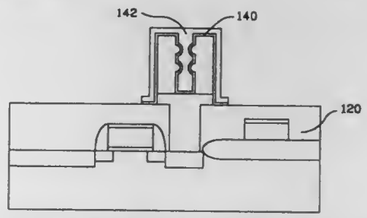
5,824,580
METHOD OF MANUFACTURING AN INSULATED GATE FIELD EFFECT TRANSISTOR
Manfred Hauf; Max G. Levy, both of Wappingers Falls, and Victor Ray Nastasi, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y., and Siemens Aktiengesellschaft, Munich, Germany
Filed Jul. 30, 1996, Ser. No. 688,346
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—243 **9 Claims**

1. A method of forming Field Effect Transistors (FETS) on a semiconductor layer of a wafer comprising the steps of:
a) forming trenches in a surface of said semiconductor layer;
b) forming a pad dielectric stack on said surface of said semiconductor layer;



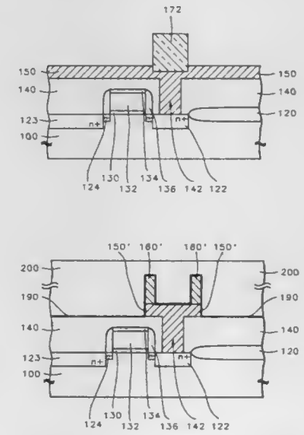
c) forming an Oxide-Nitride-Oxide (ONO) layer on said pad dielectric stack and in said trenches whereby said ONO layer lines said trenches;
d) forming a layer of conductive material on said ONO layer where located on said pad dielectric stack surface and in said trenches;
e) removing portions of said layer of conductive material and said ONO layer where located on said pad dielectric stack;
f) diffusing an oxidation catalyst into and along said ONO layer in said trenches;
g) removing said pad dielectric stack to expose said surface of said semiconductor layer, said ONO layer remaining in said trenches;
h) forming a gate oxide on said exposed surface of said semiconductor layer, wherein thickness of said gate oxide is inversely proportional to horizontal distance of said gate oxide from said ONO layer; and
i) forming FET gates on said gate oxide.

5,824,581
METHOD FOR FORMING A DRAM CAPACITOR WITH ROUNDED HORIZONTAL FINS
Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan
Filed Oct. 28, 1996, Ser. No. 738,574
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—253 **13 Claims**



1. A method for forming a capacitor of a dynamic random access memory cell, said method comprising:
forming a first dielectric layer on a substrate;
forming a first photoresist layer on the first dielectric layer, wherein said first photoresist layer defines a storage node area over a portion of said substrate;
removing a portion of the first dielectric layer using the first photoresist layer as a mask, thereby forming a trench in the first dielectric layer;
forming a polysilicon layer on the first dielectric layer so as to fill the trench in the first dielectric layer;
forming a nitride layer on said polysilicon layer;
forming a dielectric stack over said nitride layer, said dielectric stack comprising alternating layers of a second dielectric material and a third dielectric material, the second dielectric material possessing a first etch rate and the third dielectric material possessing a second etch rate, wherein the first etch rate is different from the second etch rate;
forming a second photoresist layer on the dielectric stack, wherein said second photoresist layer is aligned with the trench, said second photoresist layer having a width that is less than or equal to the width of said trench;
isotropically etching the second photoresist layer, thereby narrowing the width of the second photoresist layer;
removing portions of said dielectric stack using the second photoresist layer as a mask, thereby forming a laminated pillar;
removing said second photoresist layer;
isotropically etching said dielectric stack to form recessed cavities in a sidewall of the pillar in said dielectric stack;
removing portions of the nitride layer using the pillar as a mask;
forming a doped polysilicon layer over said dielectric stack, said doped polysilicon layer filling the recessed cavities;
removing portions of said doped polysilicon layer to expose an upper surface of the pillar, thereby forming a sidewall spacer around the pillar, said sidewall spacer having rounded fins extending into the recessed cavities of the pillar; and
removing the pillar while leaving the sidewall spacers substantially intact, thereby forming an electrode of the capacitor of the dynamic random access memory cell.

5,824,582
STACK DRAM CELL MANUFACTURING PROCESS WITH HIGH CAPACITANCE CAPACITOR
Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan
Filed Jun. 4, 1997, Ser. No. 868,607
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—254 **19 Claims**



1. A method of forming a stack direct random access memory DRAM cell with high capacitance capacitor comprising the steps of:
providing a semiconductor substrate having source, drain and field oxide regions formed therein;
forming a patterned gate oxide layer on said semiconductor substrate;
forming a gate electrode on said gate oxide layer;
forming a first dielectric layer over said semiconductor substrate wherein said first dielectric layer covers said gate electrode, and said source and drain regions;
patterning said first dielectric layer to form a hole;
depositing a first polysilicon layer over said dielectric layer on said semiconductor substrate to fill said hole;
depositing and patterning a layer of photoresist over first said first polysilicon layer;

etching through said layer of patterned photoresist to form a trench in said first polysilicon layer;
depositing a second dielectric layer over said first polysilicon layer to fill said trench;
removing partially said second dielectric layer to form a dielectric plug in said trench;
etching partially said first polysilicon layer;
depositing a second polysilicon layer over said partially etched first polysilicon layer;
etching back said second polysilicon layer to form polysilicon spacer adjacent to said trench;
removing said dielectric plug from said trench;
forming a third dielectric layer over said first polysilicon layer and said polysilicon spacer; and
patterning a third polysilicon layer over said third dielectric layer to form said capacitor.

5,824,583

NON-VOLATILE SEMICONDUCTOR MEMORY AND METHOD OF MANUFACTURING THE SAME

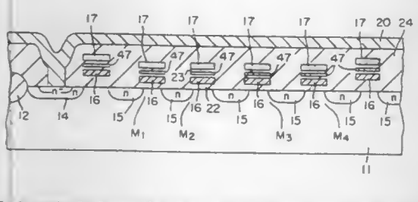
Masamichi Asano, Tokyo-To; Hiroshi Iwahashi, Yokohama; Ryouhei Kirisawa, Yokohama; Ryozo Nakayama, Yokohama; Satoshi Inoue; Riichiro Shirota, both of Kawasaki; Tetsuo Endoh, and Fujio Masuoka, both of Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, and Toshiba Micro-Electronics Corporation, both of Kawasaki, Japan

Continuation of Ser. No. 720,299, Sep. 27, 1996, abandoned, which is a division of Ser. No. 247,589, May 23, 1994, Pat. No. 5,597,748, which is a division of Ser. No. 499,342, Jun. 21, 1990, Pat. No. 5,323,039. This application Oct. 14, 1997, Ser. No. 949,819

Claims priority, application Japan, Oct. 21, 1988, 63-265370; Aug. 19, 1989, 1-224006

Int. Cl.[6] H01L *21/8247*

U.S. Cl. 438—258 **2 Claims**



1. A method of manufacturing a NAND-type non-volatile semiconductor memory such that a semiconductor substrate is separated into a plurality of regions arranged in a row direction by band-shaped gate electrodes formed on the semiconductor substrate and extending in a column direction, the band-shaped gate electrodes composing elements of a plurality of separation transistors, wherein a plurality of memory cell transistors arranged in the column direction are formed in each said region, the method comprising the steps of:
forming an insulating film over an entire surface of the semiconductor substrate, wherein parts of the insulating film are used as band-shaped gate insulating films of the separation transistors;
forming a first resist film over the insulating film and patterning the first resist film to obtain a plurality of first band-shaped resists extending in the column direction and arranged at regular intervals, wherein a plurality of memory cells arranged at regular intervals in the column direction are formed in each gap formed between two adjacent first band-shaped resists;
etching the insulating film using the first band-shaped resists as masks until a surface portion of the substrate is exposed in each gap between two adjacent first band-shaped resists and through the insulating film, wherein the insulating film covered with the band-shaped resists remain as the band-shaped gate insulating films extending in the column direction;
forming a first oxide film on the surface portion of the substrate exposed, to obtain floating gate oxide films of the plurality of memory cells;
depositing a first poly silicon film over an entire surface of the band-shaped gate insulating films and an entire surface of the first oxide films;
forming a second resist film over the poly silicon film and patterning the second resist film to obtain (a) a plurality of second band-shaped resist pieces extending in the column direction and approximately a same shape as the band-shaped gate insulating films of the plurality of separation transistors, and (b) linearly arranged resist pieces, wherein each resist piece is approximately a same shape as a floating gate of each of the plurality of memory cells;
etching the first poly silicon film, the first oxide film, and the insulating film using the patterned second resist pieces as masks to obtain the floating gates of the plurality of memory cells and gate electrodes of the plurality of separation transistors;
forming a second oxide film over entire surfaces of the floating gates, the gate electrodes, and the substrate;
depositing a second poly silicon film over an entire surface of the oxide film;
etching the second poly silicon film to obtain band-shaped control gates extending in the row direction, wherein each of the band-shaped control gates are located over, and correspond to each of the floating gates arranged in the column direction; and
implanting ions using the control gates extending in the row direction and the gate electrodes extending in the column direction as masks, to obtain source and drain regions of the plurality of memory cells.

5,824,584

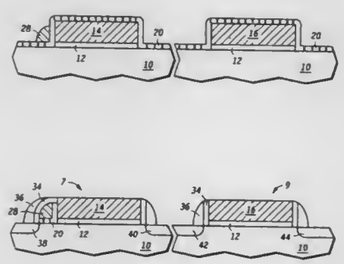
METHOD OF MAKING AND ACCESSING SPLIT GATE MEMORY DEVICE

Wei-Ming Chen; Lee Z. Wang; Kuo-Tung Chang, and Craig Swift, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 16, 1997, Ser. No. 876,326

Int. Cl.[6] H01L *21/336*

U.S. Cl. 438—267 **14 Claims**



1. A method of forming a split gate transistor structure comprising the steps of:
providing a substrate;
forming a first dielectric region over the substrate;
forming a first conductive region over the first dielectric region to form a first gate;
forming an oxide layer over the substrate following the step of forming a first conductive region;
doping the oxide layer with a semiconductor dopant, to form a doped layer; and
forming a conductive second gate adjacent to the first gate, wherein the conductive second gate is a conductive sidewall gate.

5,824,585

SEMICONDUCTOR READ-ONLY MEMORY DEVICE AND METHOD OF FABRICATING THE SAME

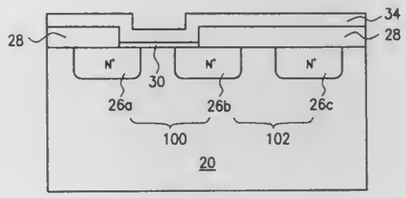
Jemmy Wen, Hsinchu, Taiwan, assignor to United Microelectronics Corp, Hsinchu, Taiwan

Filed Apr. 16, 1997, Ser. No. 834,422

Claims priority, application Taiwan, Jan. 10, 1997, 86100208

Int. Cl.[6] H01L *21/8246*

U.S. Cl. 438—275 **5 Claims**



1. A method for fabricating a ROM device having a plurality of MOS-transistor memory cells, comprising the steps of:
(1) preparing a semiconductor substrate of a first type;
(2) performing a photolithographic and etching process so as to form a photoresist layer over the substrate, the photoresist layer having a plurality of openings to expose the surface areas of the substrate where a plurality of bit lines are to be formed;
(3) by using the photoresist layer as a mask, conducting an ion implantation process so as to diffuse an impurity material of a second type into the exposed areas of the substrate to form a plurality of diffusion regions serving as the bit lines for the ROM device;
(4) removing the photoresist layer;
(5) forming an insulating layer formed over the substrate, the insulating layer being predefined to form a contact window associated with one memory cell of the ROM device that is to be set to a permanently-ON state;
(6) forming a gate dielectric layer in the contact window on the substrate, the gate dielectric layer being thinner than the insulating layer; and
(7) forming a plurality of substantially parallel-spaced conductive layers serving as a plurality of word lines over the insulating layer, the word lines being formed in such a manner as to intercross the bit lines, wherein each of the memory cells being located on one word line between one neighboring pair of the bit lines.

5,824,586

METHOD OF MANUFACTURING A RAISED SOURCE/DRAIN MOSFET

Donald L. Wollesen, Saratoga, and Deepak Nayak, Santa Clara, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Oct. 23, 1996, Ser. No. 735,464

Int. Cl.[6] H01L *21/28*

U.S. Cl. 438—300 **8 Claims**

1. A method of manufacturing a MOSFET, wherein the method comprises:
forming a source region and a drain region in a substrate;
forming a gate oxide region on a surface of the substrate;
forming a gate on the gate oxide region;
forming gate oxide spacers adjacent to the gate and contiguous with the gate oxide region;
depositing undoped amorphous silicon;
ion implanting wherein the source and drain junctions are formed;
a first rapid thermal anneal wherein limited solid phase epitaxial silicon growth takes place in regions of the amorphous silicon with underlying silicon; and
etching the remaining amorphous silicon.

5,824,587

METHOD FOR MAKING CONVEX DEVICE WITH ELEVATED GATE STRUCTURE

Zoran Krivokapic, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 890,063, Jul. 9, 1997. This application Aug. 29, 1997, Ser. No. 920,966

U.S. Cl. 438—300 **35 Claims**



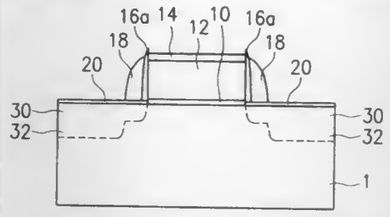
1. A method for forming a transistor on a substrate, said method comprising the steps of:
(a) forming an insulative layer of material on said substrate;
(b) forming a gate template structure on top of said insulative layer of material, wherein said gate template structure has a length that is substantially equal to the narrowest length of a gate structure for the transistor, wherein said gate template structure resides over a region of said substrate which will be overlaid by said gate structure;
(c) growing a field oxide from said insulative layer of material, wherein said field oxide extends outward from said gate template structure and upward from said insulative layer of material;
(d) removing said gate template structure to form a gate structure cavity that extends through said field oxide, wherein said gate structure cavity is defined by cavity sidewalls and a base, wherein said base is a mask window portion of said insulative layer of material; and
(e) masklessly forming said gate structure in said gate structure cavity.

5,824,588

DOUBLE SPACER SALICIDE MOS PROCESS AND DEVICE

Han-Hsing Liu, Shuang-Hsi, Taiwan, assignor to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Sep. 24, 1996, Ser. No. 719,139
Claims priority, application Taiwan, Jun. 27, 1996, 85107754
Int. Cl.[6] H01L *21/336;21/3205*
U.S. Cl. 438—302 **14 Claims**



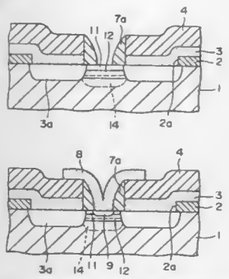
1. A method for fabricating salicide MOS devices on a substrate, comprising the steps of:
depositing an oxide layer on said substrate;
depositing a polysilicon layer on said oxide layer;
depositing a stuffed layer on said polysilicon layer;
etching said stuffed layer, said polysilicon layer and said oxide layer through a prescribed photomask which defines said polysilicon layer and said oxide layer as a gate structure;
forming a first dielectric layer continuously on a top face and side walls of said stuffed layer and said gate structure;
forming lightly doped source and drain regions in said substrate adjacent to the side walls of said gate structure;
anisotropically etching said first dielectric layer to form a first spacer at the side walls of said gate structure;
forming a second spacer at side walls of said first spacer;
removing said stuffed layer;
forming heavily doped source and drain regions in said substrate adjacent to said lightly doped source and drain regions, respectively; and
forming salicide regions upon said gate structure and said heavily doped regions.

5,824,589

METHOD FOR FORMING BIPOLAR TRANSISTOR HAVING A REDUCED BASE TRANSIT TIME

Hiroyuki Miwa, Kanagawa, Japan, assignor to Sony Corporation, Japan

Division of Ser. No. 532,057, Sep. 22, 1995, abandoned. This application Aug. 21, 1997, Ser. No. 915,729
Claims priority, application Japan, Sep. 26, 1994, 6-229612
Int. Cl.[6] H01L *21/331*
U.S. Cl. 438—309 **3 Claims**



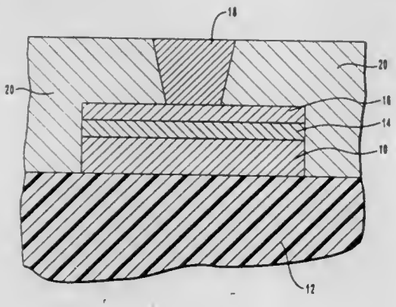
1. A method of fabricating a bipolar transistor comprising the steps of:
forming on a semiconducting substrate a first insulating film having a pattern in which the surface of said semiconducting substrate is partially exposed from said first insulating film;
sequentially forming a first conductive film and a second insulating film over the surface of said semiconducting substrate formed with said first insulating film, and then forming an opening portion so as to expose the surface of said semiconducting substrate;
forming a third insulating film on said opening portion and said first conductive film;
forming a first impurity diffusion layer having a first conducting type by applying ion implantation to said semiconducting substrate at a first energy through said third insulating film;
forming a second impurity diffusion layer having the first conducting type by applying ion implantation to said semiconducting substrate at a second energy;
forming a third impurity diffusion layer having the first conducting type in said semiconducting substrate connected to said first conductive layer;
forming side walls made of a fourth insulating layer on side walls of said opening portion of said semiconducting substrate in which said first, second and third impurity diffusion are formed;
forming a second conductive film in said opening portion so as to be connected to said first impurity diffusion layer; and
forming a fourth impurity diffusion layer having a second conducting type in said second impurity diffusion layer by ion implantation applied through said second conductive layer.

5,824,590

METHOD FOR OXIDATION AND CRYSTALLIZATION OF FERROELECTRIC MATERIAL

Daryl C. New, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jul. 23, 1996, Ser. No. 685,049
Int. Cl.[6] H01L *21/324;21/477*
U.S. Cl. 438—393 **37 Claims**



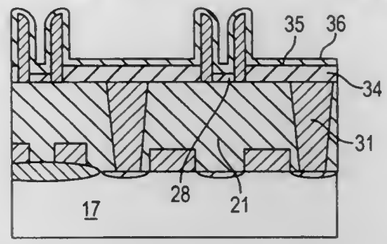
1. A method for forming a composite structure, comprising:
providing a barrier layer situated on a semiconductor wafer;
depositing a ferroelectric layer on the barrier layer;
heating the semiconductor wafer at a temperature in a range of about 400° C. to about 700° C. in the presence of oxygen to oxidize the ferroelectric layer; and
heating the semiconductor wafer at a temperature in a range of about 700° C. to about 900° C. in a non-oxidizing ambient to crystallize the oxidized, ferroelectric layer.

5,824,591

METHOD FOR MANUFACTURING A STACKED CAPACITOR

Takashi Sakoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1997, Ser. No. 805,972
Claims priority, application Japan, Feb. 29, 1996, 8-043311
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—396 **16 Claims**



1. A method for manufacturing a semiconductor device having a stacked capacitor on an interlayer insulating film and having a cylindrically structured storage electrode, the method comprising the steps of:
a) forming an interlayer insulating film on a semiconductor substrate having a conductive layer followed by opening on the interlayer insulating film a contact hole which reaches the conductive layer;
b) forming a first conductive film on an overall surface of the semiconductor substrate, the surface extending over said interlayer insulating film and an inside of said contact hole;
c) forming a first insulating film on the overall surface of the substrate;
d) patterning the first insulating film and the first conductive film so that the first insulating film and the first conductive film are allowed to remain on a storage electrode formation area;
e) forming a second conductive film which constitutes an external circumference part of the storage electrode on a side wall of said first insulating film and said first conductive film which have been patterned;
f) forming a second insulating film on the overall surface of the semiconductor substrate, so that the upper surface of the second insulating film is set higher than the upper surface of said first insulating film;
g) removing said second insulating film until the upper surface of said first insulating film is exposed; and
h) etching back said first insulating film and said second insulating film under a high selectivity etching condition until said first insulating film is removed, and so that the top of said second insulating film is at a level lower than the top of said second conductive film.

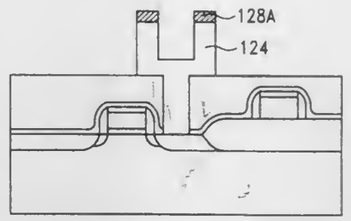
5,824,592

METHOD FOR FORMING A STACKED CAPACITOR OF A DRAM CELL

Horng-Huei Tseng, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsinchu, Taiwan

Filed Dec. 3, 1997, Ser. No. 984,388
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—396 **5 Claims**

1. A method for forming a capacitor of a dynamic random access memory cell, said method comprising:
forming a first dielectric layer on a semiconductor substrate;
patterning said first dielectric layer to form a node contact in said first dielectric layer, thereby exposing a portion of the substrate;
forming a polysilicon layer on said first dielectric layer, said polysilicon layer filling the node contact in said first dielectric layer;
forming a photoresist layer on said polysilicon layer;



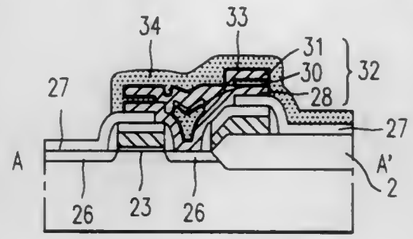
etching said polysilicon layer using said photoresist layer as a mask;
laterally eroding a portion of said photoresist layer;
implanting oxygen atoms into said polysilicon layer using said eroded photoresist layer as a mask, thereby forming at least one oxygen region in said polysilicon layer;
annealing said polysilicon layer to convert said at least one oxygen region into at least one silicon oxide region;
etching a portion of said polysilicon layer using said at least one silicon oxide region as an etch mask;
forming a second dielectric layer on said polysilicon layer; and
forming a conductive layer on said second dielectric layer.

5,824,593

METHOD FOR MAKING A CAPACITOR ON A SEMICONDUCTOR DEVICE

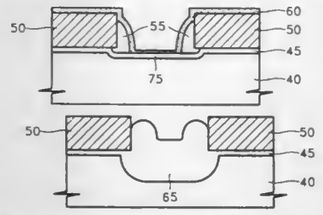
Hong-Sun Kim, Dael-dong, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea

Filed Jun. 9, 1995, Ser. No. 489,118
Claims priority, application Rep. of Korea, Jun. 9, 1994, 12995/1994
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—397 **12 Claims**



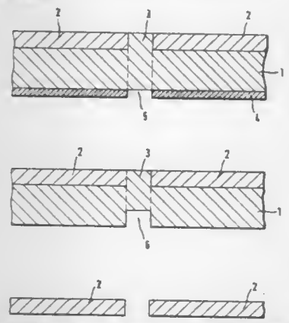
1. A method for making a capacitor on a semiconductor device comprising the steps of:
providing a semiconductor device;
forming a first insulating layer, having a first contact hole on said semiconductor device;
forming a first conductive layer on the first insulating layer and in the first contact hole;
forming a second insulating layer on the first conductive layer such that said second insulating layer at least partially fills said first contact hole;
selectively removing a portion of the second insulating layer at both sides of the first contact hole to form second and third contact holes in the second insulating layer;
forming a second conductive layer on the second insulating layer and in the second and third contact holes;
removing the second insulating layer remaining under the second conductive layer;
forming a dielectric film on the first and second conductive layers; and
forming a third conductive layer on the dielectric film such that said third conductive layer at least partially fills said first contact hole.

5,824,594
INTEGRATED CIRCUIT DEVICE ISOLATING METHODS INCLUDING SILICON SPACERS AND OXIDATION BARRIER FILMS
Sung-eui Kim, Cheju-do, and Young-dae Kim, Kyungki-do, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed Apr. 14, 1997, Ser. No. 837,208
Claims priority, application Rep. of Korea, Apr. 29, 1996, 96-13470; Jul. 23, 1996, 96-29884
Int. Cl.[6] H01L 21/76
U.S. Cl. 438—446 20 Claims



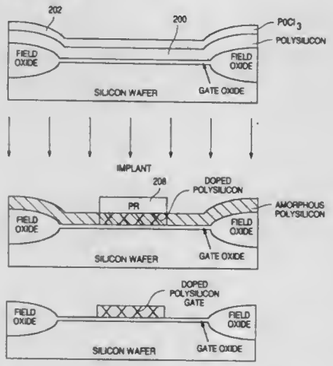
9. An integrated circuit device isolating method comprising the steps of:
forming a first pad oxide layer on an integrated circuit substrate;
forming a mask pattern on said first pad oxide layer, said mask pattern including sidewalls which selectively expose said first pad oxide layer therebetween;
removing said first pad oxide layer from said integrated circuit substrate, between said sidewalls;
recessing said integrated substrate between said sidewalls;
forming a second pad oxide layer on said recessed integrated circuit substrate between said sidewalls;
forming a silicon spacer on said sidewalls;
forming an oxidation-barrier film on said silicon spacer and on said second pad oxide layer; and
oxidizing said integrated circuit substrate through said oxidation-barrier film to form a device isolating layer.

5,824,595
METHOD OF SEPARATING ELECTRONIC ELEMENTS
Gunter Igel, Emmendingen, and Martin Mall, Freiburg, both of Germany, assignors to Deutsche ITT Industries GmbH, Freiburg, Germany
Filed Oct. 3, 1996, Ser. No. 720,771
Claims priority, application Germany, Oct. 17, 1995, 195 38 634.5
Int. Cl.[6] H01L 21/301;21/46;21/78
U.S. Cl. 438—464 15 Claims



1. A method of separating elements associated within a body during a continuous process of removing material from said body, said method comprising the steps of:
creating a separation region within said body between said elements leaving a region of said body to be thinned:
depositing a delay layer on said body for delaying the removal of material within the region of the body to be thinned, said delay layer having an opening around said separation region and a lower removal rate relative to said body; and,
removing material from said delay layer, said separation region, and said region of said body to be thinned in said continuous process.

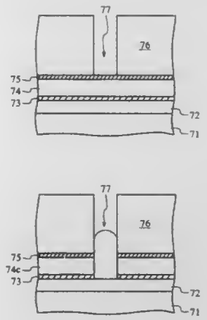
5,824,596
$POCl_3$ PROCESS FLOW FOR DOPING POLYSILICON WITHOUT FORMING OXIDE PILLARS OR GATE OXIDE SHORTS
Abdalla A. Naem, Sunnyvale, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.
Filed Aug. 8, 1996, Ser. No. 689,335
Int. Cl.[6] H02L 21/77
U.S. Cl. 438—566 7 Claims



1. A method introducing phosphorous into a layer of polysilicon, the method comprising:
(a) forming a layer of source material including phosphorous oxychloride ($POCl_3$) on the layer of polysilicon;
(b) utilizing heat to transfer phosphorous from the source layer to the layer of polysilicon;
(c) removing a surface portion of the layer of source material;
(d) removing the layer of source material that remains after step (c), utilizing a solution including HF, to expose the layer of polysilicon;
(e) masking the layer of polysilicon to define exposed portions of the layer of polysilicon;
(f) amorphizing the exposed portions of the layer of polysilicon; and
(g) removing the amorphized portions of the layer of polysilicon.

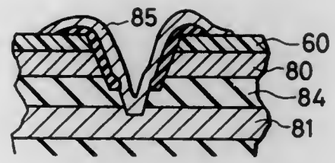
5,824,597
METHOD OF FORMING CONTACT HOLE PLUG
Jeonge Hong, Cheongju-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-do, Rep. of Korea
Continuation of Ser. No. 631,513, Apr. 12, 1996, abandoned. This application Sep. 15, 1997, Ser. No. 929,372
Claims priority, application Rep. of Korea, Apr. 12, 1995, 1995-8455
Int. Cl.[6] H01L 21/28
U.S. Cl. 438—625 26 Claims

1. A method of reducing an aspect ratio of a contact hole in an insulating layer of a semiconductor device, comprising the steps of:
(1) forming a lower wiring layer consisting of a multi-layer metal structure;
(2) forming said insulating layer on said lower wiring layer;



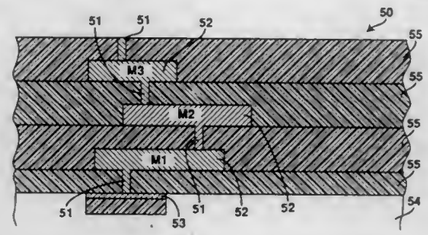
(3) forming said contact hole through said insulating layer and exposing a region of the lower wiring layer; and
(4) carrying out a rapid thermal anneal heat treatment, wherein the multi-layer metal structure of the lower wiring layer is formed of materials such that an alloying reaction occurs as a result of said heat treatment, wherein as a result of the alloying reaction said lower wiring layer expands upward into the contact hole, wherein the aspect ratio of the contact hole is reduced.

5,824,598
IC WIRING CONNECTING METHOD USING FOCUSED ENERGY BEAMS
Hiroshi Yamaguchi, Fujisawa; Mikio Hongo, Yokohama; Tateoki Miyauchi, Yokohama; Akira Shimase, Yokohama; Satoshi Haraichi, Yokohama; Takahiko Takahashi, Tokyo, and Keiya Saito. Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Division of Ser. No. 318,267, Oct. 5, 1994, Pat. No. 5,497,034, which is a division of Ser. No. 238,888, May 6, 1994, Pat. No. 5,472,507, which is a division of Ser. No. 13,539, Jan. 28, 1993, abandoned, which is a continuation of Ser. No. 705,957, May 28, 1991, abandoned, which is a continuation of Ser. No. 389,862, Aug. 4, 1989, abandoned, which is a division of Ser. No. 32,753, Mar. 31, 1987, Pat. No. 4,868,068. This application Nov. 21, 1995, Ser. No. 561,310
Claims priority, application Japan, Mar. 31, 1986, 61-70979
Int. Cl.[6] H10L 21/44
U.S. Cl. 438—676 16 Claims



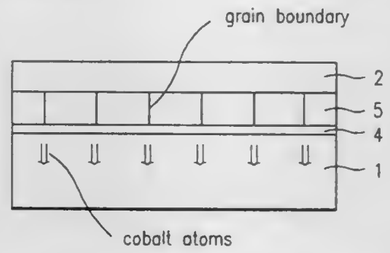
1. An IC wiring connecting method for an IC device having conductive lines located under at least an insulating film, comprising the steps of:
forming at least two holes through the insulating film formed over the conductive lines, at separated positions of the insulating film, to expose each of the conductive lines to be interconnected, by irradiating a first focused energy beam at the separated positions of the insulating film; and
depositing metal by decomposing a gaseous metal compound by irradiating a second focused energy beam in the holes and on the insulating film to connect electrically the exposed conductive lines to be interconnected.

5,824,599
PROTECTED ENCAPSULATION OF CATALYTIC LAYER FOR ELECTROLESS COPPER INTERCONNECT
Yosef Schacham-Diamand, Ithaca, N.Y.; Valery M. Dubin, Cupertino; Chiu H. Ting, Saratoga, both of Calif.; Bin Zhao; Prahalad K. Vasudev, both of Austin, Tex., and Melvin Desilva, Dallas, Tex., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.; Intel Corporation, Santa Clara, Calif., and Sematech, Inc., Austin, Tex.
Filed Jan. 16, 1996, Ser. No. 587,264
Int. Cl.[6] H01L 21/44
U.S. Cl. 438—678 22 Claims



1. A method of forming a protected catalytic seed surface in order to deposit metal by electroless deposition to form an interconnect structure on a semiconductor wafer, comprising the steps of:
depositing a barrier layer;
depositing a catalytic seed layer on said barrier layer under vacuum;
depositing a protective layer over said catalytic seed layer without breaking vacuum seal from the previous step in order to prevent oxidation of said catalytic seed layer;
subjecting said wafer to an electroless deposition solution, wherein said electroless deposition solution dissolves said protective layer to expose said underlying catalytic seed layer, which then allows copper to be electrolessly deposited thereon.

5,824,600
METHOD FOR FORMING A SILICIDE LAYER IN A SEMICONDUCTOR DEVICE
Jeong Soo Byun, and Hyung Jun Kim, both of Seoul, Rep. of Korea, assignors to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea
Continuation-in-part of Ser. No. 183,329, Jan. 19, 1994, abandoned. This application Sep. 6, 1995, Ser. No. 524,457
Claims priority, application Rep. of Korea, Jan. 19, 1993, 616/1993
Int. Cl.[6] H01L 21/44
U.S. Cl. 438—682 21 Claims



1. A method for forming a silicide layer in a semiconductor device, comprising the steps of:
forming a refractory metal layer on a semiconductor substrate;
forming a cobalt layer on the refractory metal layer;

implanting impurity ions in the interface between the refractory metal layer and the cobalt layer to have an amorphous structure at a lower part of the cobalt layer and an upper part of the substrate;

heat treating the semiconductor substrate such that cobalt atoms from the cobalt layer pass through the refractory metal layer and form a cobalt silicide epitaxy layer on the semiconductor substrate; and

removing the remaining cobalt layer and the remaining refractory metal layer.

5,824,601

CARBOXYLIC ACID ETCHING SOLUTION AND METHOD

Patrick P. H. Dao, Chandler; Paul William Dryer, Gilbert; Ping-Chang Lue, Scottsdale; Michael J. Davison, Mesa; Terry Andrew Willett; Margaret Leslie Kniffin, both of Tempe, and Rita Prasad Subrahmanyan, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1997, Ser. No. 885,265

Int. Cl.[6] B44C *1/22*

U.S. Cl. 438—713 **41 Claims**

1. An etching solution, comprising:

a carboxylic acid, wherein said carboxylic acid comprises at least one member selected from the group consisting of oxalic acid, lactic acid, tartaric acid, malic acid, succinic acid, and citric acid; and

hydrogen fluoride.

5,824,602

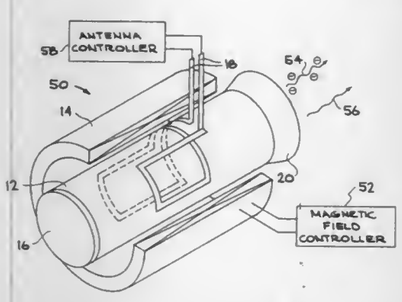
HELICON WAVE EXCITATION TO PRODUCE ENERGETIC ELECTRONS FOR MANUFACTURING SEMICONDUCTORS

Arthur W. Molvik, Livermore, and Albert R. Ellingboe, Fremont, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 21, 1996, Ser. No. 734,219

Int. Cl.[6] H01L *21/00*; **C23C** *16/00*

U.S. Cl. 438—714 **30 Claims**



1. A process for etching an insulator formed on a non-insulator surface comprising the steps of:

adjusting a magnetic field of a helicon plasma source between a first level to generate a small amount of energetic electrons that fail to significantly charge an exposed surface of said insulator and a second level to generate a large amount of energetic electrons that charge said exposed surface of said insulator, wherein said magnetic field is maintained at said first level or said second level; and

forming an ionic plasma that etches said exposed charged surface of said insulator.

5,824,603

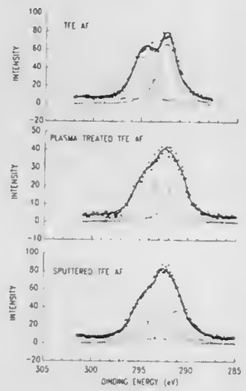
METHOD OF FORMING A LOW-K LAYER IN AN INTEGRATED CIRCUIT

Chih-Chen Cho, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 148,779, Nov. 5, 1993, Pat. No. 5,468,561. This application Jun. 7, 1995, Ser. No. 483,422

Int. Cl.[6] H01L *21/302*

U.S. Cl. 438—725 **11 Claims**



1. A method of forming a low-k layer in an integrated circuit, comprising:

depositing a low-k layer comprising a tetrafluoroethylene/2,2-bis(trifluoromethyl)-4,5-difluoro-1,3-dioxol copolymer on a partially completed integrated circuit, wherein the low-k layer has an exposed face;

dry etching the exposed face of the low-k layer;

depositing a photoresist layer on the etched, exposed face of the low-k layer;

patterning the photoresist layer to expose portions of the low-k layer;

depositing a mask layer on the patterned photoresist layer and exposed portions of the low-k layer,

wherein the mask layer comprises aluminum;

removing the patterned photoresist layer and the portions of the mask layer overlying the patterned photoresist layer; and

dry etching the integrated circuit to remove the low-k layer except in areas underlying the mask layer, whereby a patterned low-k layer is formed.

5,824,604

HYDROCARBON-ENHANCED DRY STRIPPING OF PHOTORESIST

Ronny Bar-Gadda, Palo Alto, Calif., assignor to Mattson Technology, Inc., Fremont, Calif.

Filed Jan. 23, 1996, Ser. No. 590,228

Int. Cl.[6] H01L *21/302*

U.S. Cl. 438—725 **41 Claims**

1. A process for removing hardened or implanted photoresist from a silicon wafer comprising

a. placing the silicon wafer having hardened or implanted photoresist and oxide thereon into the wafer processing chamber of a plasma-generating reactor;

b. forming reactive species by generating a plasma of a gas comprising oxygen, a halogen-containing compound, and a hydrocarbon under conditions capable of causing undesired etching of the oxide in the absence of the hydrocarbon, wherein the reactive species include ions formed from the hydrocarbon;

c. exposing the surface of the silicon wafer to reactive species from the plasma, including at least some of the ions formed from the hydrocarbon; and

d. maintaining the flow of the hydrocarbon such that the selectivity of etching of the photoresist relative to the oxide is substantially increased over the selectivity that would exist in the absence of the hydrocarbon.

5,824,605

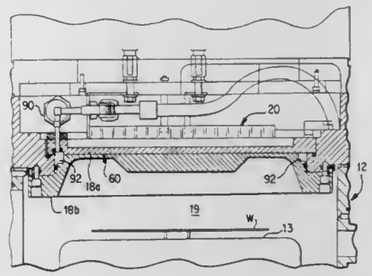
GAS DISPERSION WINDOW FOR PLASMA APPARATUS AND METHOD OF USE THEREOF

Ching-Hwa Chen, Milpitas; David Liu, Saratoga, and Mark J. Christensen, Fremont, all of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Jul. 31, 1995, Ser. No. 509,080

Int. Cl.[6] H05H *1/00*

U.S. Cl. 438—729 **21 Claims**



1. A method for treating an article with plasma comprising the steps of:

placing an article within a plasma reaction chamber;

introducing process gas into the plasma reaction chamber; and

plasma treating the article by generating an electron flow in the process gas so as to form a plasma in contact with the article, the electron flow being generated by passing radiofrequency energy through a dielectric window forming a wall of the plasma reaction chamber, the dielectric window comprising first and second members of dielectric material, the second member having first and second surfaces wherein the first surface faces the first member and the second surface faces an interior of the plasma reaction chamber, the second member including a plurality of gas dispersion openings having inlets in the first surface and outlets in the second surface, the outlets being in fluid communication with the interior of the plasma reaction chamber and the process gas being introduced into the chamber through the gas dispersion openings.

5,824,606

METHODS AND APPARATUSES FOR CONTROLLING PHASE DIFFERENCE IN PLASMA PROCESSING SYSTEMS

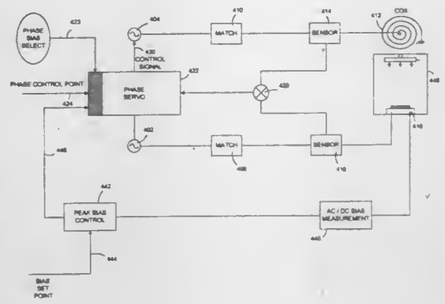
Robert D. Dible; Stephen G. Bradley, and Seyed Jafar Jafarian-Tehrani, all of Fremont, Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed Mar. 29, 1996, Ser. No. 642,172

Int. Cl.[6] H01L *21/00*; **B44C** *1/22*

U.S. Cl. 438—729 **16 Claims**

15. In a plasma processing system, a method for modifying a phase difference between a first radio frequency (RF) signal and a second RF signal, said first RF signal being supplied by a first RF power source to a first electrode and said second RF signal being supplied by a second RF power source to a second electrode of a plasma processing system, said second RF power source being coupled to said first RF power source as a slave RF power source in a master-and-slave configuration, said method comprising:



ascertaining a phase difference between a phase of said first RF signal and a phase of said second RF signal;

comparing said phase difference with a phase control set point signal to output a control signal to said second RF power source, whereby said second RF power source, responsive to said control signal, modifies said phase of said second RF signal to cause said phase difference to approximate a phase difference value represented by said phase control set point signal.

5,824,607

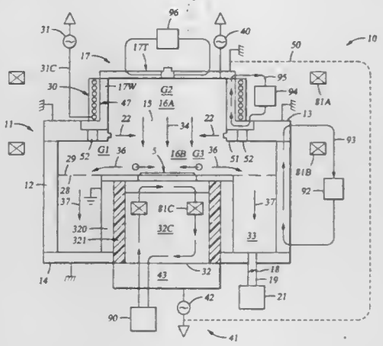
PLASMA CONFINEMENT FOR AN INDUCTIVELY COUPLED PLASMA REACTOR

John Trow, San Jose, and Tetsuya Ishikawa, Santa Clara, both of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Feb. 6, 1997, Ser. No. 796,166

Int. Cl.[6] H01L *21/461*; **B05C** *11/02*; **C13F** *1/62*; **B08B** *6/00*

U.S. Cl. 438—732 **24 Claims**



1. A plasma processing system, comprising:

(a) a vacuum chamber having a top a bottom and a sidewall;

(b) a wafer support member disposed in the vacuum chamber;

(c) a plasma source disposed adjacent to the vacuum chamber, providing a plasma flux to the vacuum chamber;

(d) a first magnet disposed adjacent to the chamber to generate at least a first magnetic field to attract the plasma flux toward the sidewall; and

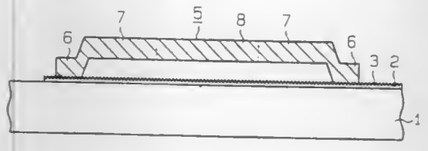
(e) a second magnet disposed below an upper surface of the wafer support member to generate at least a second magnetic field to repel the plasma flux from the wafer support member.

5,824,608

SEMICONDUCTOR PHYSICAL-QUANTITY SENSOR AND METHOD FOR MANUFACTURING SAME

Yoshitaka Gotoh, Toyoake; Makiko Fujita, Nisshin, and Yukihiro Takeuchi, Nishikamo-gun, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 27, 1996, Ser. No. 671,473
Claims priority, application Japan, Jun. 27, 1995, 7-161065
Int. Cl.[6] H01L *29/82*
U.S. Cl. 438—745 **40 Claims**



1. A method for manufacturing a semiconductor physical-quantity sensor comprising a semiconductor substrate and a movable portion of a beam structure composed of a thin film, the method comprising the steps of:

forming an underlying film having an irregularities portion on a flat surface of the semiconductor substrate in a region between the semiconductor substrate and a movable portion location;

forming a sacrificial layer on the underlying film;

forming a movable portion thin film on the sacrificial layer; and

removing the sacrificial layer beneath the movable portion thin film by etching to thereby form a movable portion of the beam structure.

5,824,609

Patent Not Issued For This Number

5,824,610

NONWOVEN FABRIC OF NON-CELLULOSE FIBERS HAVING IMPROVED WATER TENSILE PROPERTIES

David F. Diehl, Akron, Ohio, assignor to GenCorp Inc., Fairlawn, Ohio

Continuation-in-part of Ser. No. 535,599, Sep. 28, 1995, abandoned. This application Apr. 22, 1997, Ser. No. 844,894
Int. Cl.[6] D04H *1/58*
U.S. Cl. 442—164 **20 Claims**

1. A nonwoven fabric of chemically bonded non-cellulose fibers having improved wet tensile properties comprising:

a random arrangement of non-cellulose fibers; and

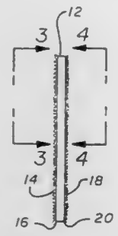
an essentially formaldehyde free latex binder to bond said non-cellulose fibers, said latex binder prepared by emulsion polymerization of a monomeric mixture in the presence of about 15–35 wt % polymeric surfactant, the monomeric mixture including about 50–70 wt % conjugated diene monomer, about 16–50 wt % vinyl substituted aromatic monomer and at least about 6.7 wt % vinyl cyanide monomer, the nonwoven fabric having at least a 10% improvement in wet tensile strength over a comparable nonwoven fabric having a latex binder essentially free of formaldehyde and free of vinyl cyanide monomer in the monomeric mixture.

5,824,611

DUAL PURPOSE CLEANING CARD

Stanley Hamilton Eyler, Simi Valley, Calif., assignor to Clean Team Company, San Diego, Calif.

Continuation of Ser. No. 323,151, Oct. 14, 1994, Pat. No. 5,525,417. This application Mar. 11, 1996, Ser. No. 613,293
Int. Cl.[6] B32B *27/00;* **A47L** *25/00*
U.S. Cl. 442—401 **23 Claims**



1. A dual purpose cleaning card for cleaning equipment, said cleaning card comprising:

a flat, semirigid base having a first side surface and a second side surface;

a first abrasive material bonded to said first side surface of said base, said first abrasive material being substantially impenetrable to cleaning solvents; and

a second soft non-abrasive material bonded to said second side surface of said base, said second soft non-abrasive material being a spunlaced fabric that is penetrable to cleaning solvents.

5,824,612

Patent Not Issued For This Number

5,824,613

LAMINATES COMPRISING TEXTILE STRUCTURES COMPRISING LINEAR LOW DENSITY POLYETHYLENE FIBERS

James D. Geiman, Alpharetta; Rakesh K. Gupta, Conyers; Randall E. Kozulla, Social Circle; Richard J. Legare, and Robert G. MacLellan, both of Conyers, all of Ga., assignors to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 287,973, Aug. 9, 1994. This application May 3, 1996, Ser. No. 642,839
Int. Cl.[6] D03D *3/00;* **B32B** *7/00*
U.S. Cl. 442—240 **36 Claims**

1. A laminate consisting essentially of (1) at least one layer of a textile structure comprising linear low density polyethylene staple fiber and (2) at least one layer of a textile structure comprising nonmelting fiber or fiber having a melting point higher than the linear low density polyethylene fiber, needlepunched and thermally consolidated together.

5,824,614

ARTICLES HAVING A CHAMBRAY APPEARANCE AND PROCESS FOR MAKING THEM

Dean R. Gadoury, Asheville, N.C., assignor to BASF Corporation, Mt. Olive, N.J.

Filed Apr. 24, 1997, Ser. No. 845,290
Int. Cl.[6] B32B *27/00;27/34*
U.S. Cl. 442—415 **4 Claims**

1. A heat and flame resistant chambray fabric comprising:

from about 20% to nearly 100% melamine fiber that is substantially undyed when exposed to basic dyestuffs in a dyebath; and

dyed aramid fiber that is dyed with basic dyestuffs when exposed to said dyestuffs in a dyebath such that said fabric exhibits a chambray appearance.

5,824,615

OPTICAL GLASS COMPOSITION FOR PRECISE PRESS MOLDING

Myeong Soo Chang, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Continuation-in-part of Ser. No. 622,818, Mar. 27, 1996, abandoned. This application Jul. 29, 1997, Ser. No. 903,039
Claims priority, application Rep. of Korea, May 12, 1995, 1996-11780
Int. Cl.[6] C03C *3/17*
U.S. Cl. 501—48 **1 Claim**

1. An optical glass composition for precise press molding, consisting essentially of, in weight %, 73.9–81.5% of P_2O_5, 6.7–8.3% of ZnO, 1.3–7.3% of BaO, 0.9–2.9% of SrO, 0.8–1.1% of MgO, 4.9–6.1% of Li_2O, 1.1–1.4% of K_2O, 0.4–1.5% of Al_2O_3 and 0.2–0.3% of Sb_2O_3, of which the contents are based on oxides calculated from the batch.

5,824,616

DIELECTRIC CERAMIC COMPOSITIONS

Hiroshi Kagata; Junichi Kato, and Keiji Nishimoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Feb. 22, 1996, Ser. No. 606,693
Claims priority, application Japan, Mar. 2, 1995, 7-043292; Jul. 14, 1995, 7-179123
Int. Cl.[6] C04B *35/46*
U.S. Cl. 501—136 **20 Claims**

1. A dielectric ceramic composition comprising a component represented by Formula 1:

$$(1-x)Re_{1+a}(A_{2/3}Nb_{1/3})O_{3+1.5a}-xB_{1+b}TiO_{3+b} \quad \text{Formula 1}$$

wherein Re represents a component comprising a rare earth element, A represents a component comprising at least one element selected from the group consisting of Mg and Zn, B represents a component comprising Ca, x represents a number in the range of 0.40 to 0.80, a represents a number in the range of 0 to 0.15, and b represents a number in the range of 0 to 0.08.

5,824,617

LOW ALKALINE INVERTED IN-SITU CRYSTALLIZED ZEOLITE MEMBRANE

Wenyih Frank Lai, Fair Lawn, N.J., assignor to Exxon Research & Engineering Company, Florham Park, N.J.

Filed Jul. 8, 1994, Ser. No. 267,760
Int. Cl.[6] B01J *20/28*
U.S. Cl. 502—4 **17 Claims**

1. A zeolite membrane comprising a substrate and a layer of zeolite crystals wherein said layer of zeolite crystals is a polycrystalline layer with at least 99% of said zeolite crystals having at least one point between adjacent crystals that is ≦20 Å and wherein at least 90% of said crystals have widths of from about 2 to about 50 microns and wherein at least 75% of said crystals have a thickness within 20% of the average crystal thickness and



wherein said membrane has at most 1 V % voids in said zeolite layer, and wherein said substrate is selected from the group consisting of porous and non-porous substrates.

5,824,618

CATALYST COMPONENTS FOR POLYMERIZATION OF OLEFINS

Yoshio Tajima; Naoki Kataoka; Yosuke Numao; Takashi Seki, and Kazuo Matsuura, all of Yokohama, Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 905,583, Jun. 26, 1992, Pat. No. 5,451,555. This application Jun. 6, 1995, Ser. No. 467,494
Claims priority, application Japan, Jun. 27, 1991, 3-183272; Sep. 27, 1991, 3-276673
Int. Cl.[6] B01J *31/00;37/00;* **C08F** *4/02;4/60*
U.S. Cl. 502—108 **15 Claims**

1. A catalyst component for use in the polymerization of olefinic hydrocarbons, said catalyst component comprising:

(i) a compound (A) of the formula

$$Ti(OR^1)_pR^2_qX^1_{4-p-q}$$

where R^1 and R^2 are independently hydrocarbon moieties of 1–24 carbon atoms selected from the group consisting of alkyl, alkenyl, aryl, and aralkyl group; X^1 is a halogen atom; $0 \leqq p \leqq 4$; $0 \leqq q \leqq 4$; and $0 \leqq p+q \leqq 4$;

(ii) a compound (B) of the formula

$$M^2(OR^3)_mR^4_nX^2_{z-m-n}$$

where R^3 and R^4 are independently hydrocarbon moieties of 1–24 carbon atoms; X^2 is a halogen atom; M^2 is a metal of Groups Ia–IIIa or IIb of the Periodic Table; z is the valence of M^2; $0 \leqq m \leqq 3$; $0 \leqq n \leqq 3$; and $1 \leqq n+m \leqq 3$; and

(iii) an organocyclic compound (C) having two or more conjugated double bonds and selected from the group consisting of indene, azulene, fluorene, hydrocarbyl-substituted cyclopentadiene, hydrocarbyl-substituted indene, hydrocarbyl-substituted azulene, and hydrocarbyl-substituted fluorene.

5,824,619

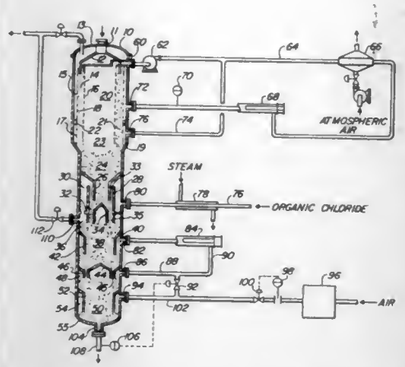
PARTICULATE COOLING PROCESS WITH REDUCED THERMAL CHANNELING

Paul A. Sechrist, Des Plaines; Roger R. Lawrence, Elmhurst, and Frank T. Micklich, Joliet, all of Ill., assignors to UOP, Des Plaines, Ill.

Continuation of Ser. No. 241,874, May 12, 1994, abandoned. This application Mar. 6, 1996, Ser. No. 610,561
Int. Cl.[6] B01J *3/04*
U.S. Cl. 502—34 **16 Claims**

1. A method for cooling and inhibiting speckling of particles, said method comprising:

(a) withdrawing particles containing a Group VIII noble metal from a first zone, at least periodically passing said particles to a second zone, forming in said second zone a packed bed of



said particles, and at least periodically moving said bed to establish a particle thermal flow rate;

(b) passing a first portion of a first gas stream through said bed and contacting said particles in said bed with said first portion at a gas flow rate that establishes a gas thermal flow rate such that the ratio of said gas thermal flow rate to said particle thermal flow rate in said bed is less than about 0.9 or more than about 1.15, thereby cooling said particles and producing a heated first portion;

(c) withdrawing said heated first portion from said second zone, and combining said heated first portion and a second portion of said first gas stream to form a second gas stream;

(d) heating said second gas stream to produce a heated second gas stream, passing said heated second gas stream to said first zone, and contacting said particles in said first zone with said heated second gas stream; and

(e) at least periodically withdrawing cooled particles from said second zone.

5,824,620

HETEROGENEOUS METALLOCENE CATALYSTS AND USE THEREOF IN OLEFIN POLYMERIZATION PROCESS

Wilfried Michiels Vega, Alcala De Henares; Pilar Lafuente Cañas, Madrid; Antonio Muñoz-Escalona Lafuente, Pozuelo De Alarcon; Gerardo Hidalgo Llinas; Jose Sancho Royo, both of Madrid, and Luis Mendez Llatas, Mostoles, all of Spain, assignors to Repsol Quimica S.A., Madrid, Spain

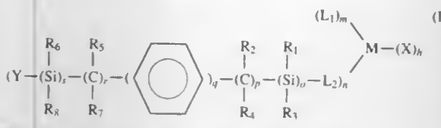
Continuation of Ser. No. 691,308, Aug. 2, 1996, abandoned. This application Oct. 27, 1997, Ser. No. 958,880

Claims priority, application Spain, Aug. 3, 1995, 9501586

Int. Cl.[6] C08F *4/64*

U.S. Cl. 502—117 **20 Claims**

1. A catalyst component obtained by contacting a metallocene compound with an inorganic support to chemically bond the metallocene compound and the inorganic support, wherein the metallocene compound has a formula (I):



(I)

wherein:

M is a metal selected from the group consisting of group IVb, group Vb, and group VIb of the periodic table;

each X is independently selected from the group consisting of hydrogen, halogen, C_1–C_{10} alkyl, C_6–C_{10} alkoxy, C_6–C_{10} aryl, C_6– C_{10} aryloxy, C_2–C_{10} alkenyl, C_7–C_{40} arylalkyl, C_7–C_{40} alkylaryl, and C_8–C_{40} arylalkenyl;

L_1 and L_2 are independently selected from the group consisting of cyclopentadienyl, substituted cyclopentadcienyl, indenyl fluorenyl, substituted indenyl and substituted fluorenyl, wherein the substituents are independently selected from the group consisting of C_1–C_{10} linear or branched alkyl, C_5–C_7 cycloalkyl, optionally substituted by an alkyl group C_6–C_{10} aryl, C_6–C_{10} aryloxy, C_2–C_{10} alkenyl, C_7–C_{40} arylalkyl C_7–C_{40} arylalkyl, and C_8–C_{40} arylalkenyl;

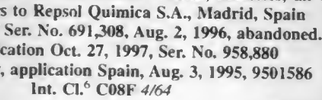
R_1, R_2, R_3, R_4, R_5, and R_7 are independently selected from the group consisting of hydrogen, C_1–C_{10} linear or branched alkyl, C_5–C_7 cycloalkyl optionally substituted by a C_1–C_6 alkyl, C_6– C_{10} aryl, C_2–C_{10} alkenyl, C_7–C_{40} arylalkyl, C_7–C_{40} alkylaryl, and C_8–C_{40} arylalkenyl;

R_6 and R_8 are independently selected from the group consisting of hydrogen, C_6–C_{10} linear or branched alkyl, C_5–C_7 cycloalkyl optionally substituted by a C_1–C_6 alkyl, C_6–C_{10} aryl, C_2–C_{10} alkenyl, C_7–C_{40} arylalkyl, C_7–C_{40} alkylaryl, C_8–C_{40} arylalkenyl, and Y, wherein Y is selected from the group consisting of halogen, amino, alkylamino, and hydroxy;

o, p, q, r, and s are from 0 to 10; and

m=0 or 1, n=1 or 2, and h=2 or 3, such that m+n+h=4;

wherein the metallocene compound is selected from the group consisting of (chlorodimethylsilylcyclopentadienyl) cyclopentadienyl zirconium dichloride, bis(chlorodimethylsilylcyclopentadienyl)zirconium dichloride, bis(chlorodimethylsilylcyclopentadienyl)zirconium dimethyl, (bromodimethylsilylcyclopentadienyl)cyclopentadienyl zirconium dichloride, bis(bromodimethylsilylcyclopentadienyl)zirconium dichloride, chlorodimethylsilylcyclopentadienyl zirconium trichloride, (2 (chlorodimethylsilyl)ethylcyclopentadienyl)cyclopentadienyl zirconium dichloride, (3(chlorodimethylsilyl)propylcyclopentadienyl) cyclopentadienyl zirconium dichloride, (chlorodimethylsilylcyclopentadienyl)cyclopentadienyl zirconium dimethyl, (bromodimethylsilylcyclopentadienyl)cyclopentadienyl zirconium dimethyl, bis(bromodimethylsilylcyclopentadienyl) zirconium dimethyl, (2(chlorodimethylsilyl)ethylcyclopentadienyl)cyclopentadienyl zirconium dimethyl, (3(chlorodimethylsilyl)propylcyclopentadienyl)cyclopentadienyl zirconium dimethyl, (chlorodimethylsilylcyclopentadienyl)cyclopentadienyl titanium dichloride, bis(chlorodimethylsilylcyclopentadienyl) titanium dichloride, and (chlorodimethylsilylcyclopentadienyl) fluorenyl zirconium dichloride; and wherein the inorganic support contains hydroxy-groups or has been previously modified by reaction of hydroxy-groups with compounds of formula (II):



(II)

wherein:

R_9 is halogen or OR, R being selected from the group consisting of C_{1-C10} linear or branched alkyl, C_5–C_7 cycloalkyl optionally substituted by a C_1–C_6 alkyl, C_6–C_{10} aryl, C_2–C_{10} alkenyl, C_7–C_{40} arylalkyl, C_7–C_{40} alkylaryl, and C_8–C_{40} arylalkenyl;

R_{10}, R_{11}, R_{12}, R_{13}, and R_{14} are independently selected from the group consisting of hydrogen, C_1–C_6 lineal or branched alkyl, C_5–C_7 cycloalkyl, C_6–C_{10} aryl, C_2–C_{10} alkenyl, C_7–C_{40} arylalkyl, C_7–C_{40} alkylaryl, C_8–C_{40} arylalkenyl, C_1–C_{10} alkoxy, and aryloxy;

Z is selected from the group consisting of NH_2, NHR, SH, OH, PHR, Cl, Br, and I;

v+z+w=3 with v different from 0; and

t and u are from 0 to 10;

and wherein the inorganic support has a surface area, a pore volume, and an average particle size, the surface area of the inorganic support being 10–1000 m^2/g, the pore volume of the inorganic support being 0.2–4.0 cm^3/g, and the average particle size of the inorganic support being 1–1000 microns.

5,824,621

EXHAUST GAS CLEANER

Akira Abe; Kiyohide Yoshida; Gyo Muramatsu; Satoshi Sumiya; Naoko Irite, and Mika Saito, all of Kumagaya, Japan, assignors to Kabushiki Kaisha Riken, Tokyo, Japan

Division of Ser. No. 360,025, Dec. 20, 1994, abandoned. This application Jun. 27, 1995, Ser. No. 495,029

Claims priority, application Japan, Dec. 28, 1993, 5-350492; Dec. 28, 1993, 5-350657; Mar. 31, 1994, 6-085770; Mar. 31, 1994, 6-085790; May 11, 1994, 6-121914; May 11, 1994, 6-121925; Jun. 4, 1994, 6-092955; Oct. 2, 1994, 6-037864

Int. Cl.[6] B10J *23/00*

U.S. Cl. 502—305 **6 Claims**

1. An exhaust gas cleaner for removing nitrogen oxides by reduction and unburned components of carbon monoxide and hydrocarbons by oxidation from an exhaust gas discharged from a stationary combustion apparatus, gasoline engine or diesel engine and containing nitrogen oxides and oxygen in an amount greater than the stoichiometric amount or oxygen required for completely oxidizing said unburned components in said exhaust gas, wherein said exhaust gas cleaner consists essentially of:

(a) a first catalyst disposed on an inlet side of said exhaust gas cleaner, said first catalyst consisting essentially of a first porous inorganic oxide supporting 0.2–15 weight % of at least one silver component selected from the group consisting of Ag and compounds thereof and 0.01–2 weight % of at least one base metal component selected from the group consisting of W, V, Mn, and Mo, each weight percentage being expressed on the basis of the base metal; and

(b) a second catalyst disposed on an outlet side of said exhaust gas cleaner, said second catalyst consisting essentially of a second porous inorganic oxide supporting 0.01–5 weight % of at least one noble metal component selected from the group consisting of Pt, Pd, Ru, Rh, Ir, and Au, the weight percentage being expressed on the basis of the noble metal;

said first porous inorganic oxide being at least one ceramic selected from the group consisting of alumina and alumina-based composite oxides containing at least one of silica, titania, and zirconia and having an alumina content of 50 weight % or more; and

said second porous inorganic oxide being at least one ceramic selected from the group consisting of titania, alumina, zirconia, silica, and composite oxides thereof.

5,824,622

POROUS MICROCOMPOSITE OF PERFLUORINATED ION-EXCHANGE POLYMER AND METAL OXIDE, A NETWORK OF SILICA, OR A NETWORK OF METAL OXIDE AND SILICA DERIVED VIA A SOL-GEL PROCESS

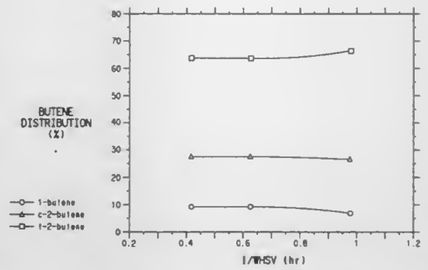
Mark Andrew Harmer, and Qun Sun, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 362,063, Dec. 22, 1994, abandoned, which is a continuation-in-part of Ser. No. 180,250, Jan. 12, 1994, abandoned. This application Dec. 19, 1995, Ser. No. 574,751

Int. Cl.[6] B01J *20/26;20/00;20/10;20/12*

U.S. Cl. 502—407 **16 Claims**

1. A porous microcomposite comprising perfluorinated ion-exchange polymer with pendant sulfonic acid groups, carboxylic acid groups, or sulfonic acid and carboxylic acid groups entrapped within and highly dispersed throughout a network of metal oxide, a network of silica, or a network of metal oxide and silica, wherein the weight percentage of perfluorinated ion-exchange polymer in the micro-composite is from about 0.1 to about 90 percent, wherein the size of a first set of pores in the microcomposite is about 0.5 nm to about 75 nm, and wherein the microcomposite optionally further comprises a second set of pores having a size in the range of about 75 nm to about 1000 nm.



5,824,623

THERMAL TRANSFER IMAGE-RECEIVING SHEET

Satoru Kawai; Masayasu Yamazaki; Kenichiro Sudo, and Hitoshi Saito, all of Tokyo-To, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Filed Jun. 28, 1996, Ser. No. 672,593

Claims priority, application Japan, Jun. 30, 1995, 7-186595

Int. Cl.[6] B41M *5/035;5/38*

U.S. Cl. 503—227 **6 Claims**

1. A thermal transfer image-receiving sheet comprising: a substrate sheet; and an image-receiving layer provided on one side of the substrate sheet, the image-receiving layer comprising a copolymer, having an average degree of polymerization of 930 to 2000, of at least vinyl chloride and vinyl acetate as main comonomers.

5,824,624

HERBICIDAL 2-(HECTERO)ARYLOXY-6-ARYPYRIDINES AND 2-ARYL-4-(HETERO)ARYLOXYPYRIMIDINES

Axel Kleeman, Gau-Alegesheim; Helmut Siegfried Baltruschat, Schweppenhausen, and Thelka Hülsen, Amöneburg, all of Germany, assignors to American Cyanamid Company, Madison, N.J.

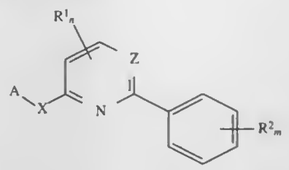
Continuation of Ser. No. 454,044, May 30, 1995, abandoned. This application Dec. 6, 1996, Ser. No. 761,479

Claims priority, application European Pat. Off., Jan. 26, 1995, 95101057

Int. Cl.[6] C07D *239/32;401/12;403/12;* **A01N** *43/54*

U.S. Cl. 504—242 **7 Claims**

1. A herbicidal composition which comprises a carrier and/or a surface-active agent and as an active ingredient one or more compound of the formula I



(I)

wherein

A represents a substituted phenyl or naphthyl group, or an optionally substituted 5- or 6- membered nitrogen containing heteroaromatic group selected from the group consisting of pyrazolyl, imidazolyl, triazolyl, tetrazolyl, pyridyl, pyrazinyl, pyrimidyl, pyridazinyl, isoxazolyl, isothiazolyl, trizinyl and difluorobenzodioxolyl groups;

m represents an integer from 0 to 5;

n represents an integer from 0 to 2;

R^1 (or each R^1) independently represents a hydrogen atom, a halogen atom, an optionally substituted alkyl, alkenyl, alkinyl, alkoxy, alkoxyalkoxy, alkoxyalkyl, dialkoxyalkyl, alkylthio, amino, alkylamino, dialkylamino, alkoxyamino or formamidino group;

R^2 (or each R^2) independently represents a hydrogen atom, a halogen atom, an optionally substituted alkyl, alkenyl, alkinyl, alkoxy, alkoxyalkyl, alkoxyalkoxy, alkylthio, alkylsulphinyl, alkylsulphonyl group or a nitro, cyano, haloalkyl, haloalkoxy, haloalkylthio or SF_5 group;

wherein any of the above mentioned moieties comprising an alkyl, alkenyl or alkinyl group, contain 1 to 12 carbon atoms; any alkyl portion of a haloalkyl, haloalkoxy, alkylthio, haloalkylthio or alkoxy group has from 1 to 4 carbon atoms; and the number of carbon atoms in the alkoxyalkyl, alkoxyalkoxy or dialkoxyalkyl groups is less than 6; and wherein any moiety defined above as comprising an optionally substituted alkyl group, including alkyl parts of haloalkyl, alkoxy, alkylthio, haloalkoxy, alkylamino and dialkylamino groups, may be substituted by phenyl, halogen atoms, nitro, cyano, hydroxyl, C_{1-4}-alkoxy, C_{1-4}-haloalkoxy and C_{1-4}-alkoxycarbonyl groups; and any moiety defined above as comprising a substituted phenyl or naphthyl group or an optionally substituted 5- or 6- membered nitrogen containing heteroaromatic group selected from the group consisting of pyrazolyl, imidazolyl, triazolyl, tetrazolyl, pyridyl, pyrazinyl, pyrimidyl, pyridazinyl, isoxazolyl, isothiazolyl and triazinyl groups, may be substituted by 1 to 5 substituents selected from halogen atoms, and nitro, cyano, amino, hydroxyl, C_{1-4}-alkyl, C_{1-4}-alkoxy, C_{1-4}-haloalkyl, C_{1-4}haloalkoxy, C_{1-4}haloalkylthio and halosulfanyl groups;

X represents an oxygen or sulphur atom; and

Z represents a nitrogen atom.

5,824,625

SUBSTITUTED PYRIDINE COMPOUNDS

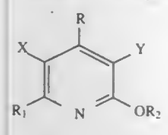
Donald Edwin Korte, St. Louis, and Len Fang Lee, St. Charles, both of Mo., assignors to Rohm and Haas Company

Division of Ser. No. 339,994, Nov. 15, 1994, Pat. No. 5,512,536, which is a division of Ser. No. 45,154, Apr. 12, 1993, Pat. No. 5,391,540, which is a division of Ser. No. 871,525, Apr. 20, 1992, Pat. No. 5,228,897, which is a division of Ser. No. 660,480, Feb. 25, 1991, Pat. No. 5,125,956. This application Jun. 6, 1995, Ser. No. 471,918

Int. Cl.[6] C07D *401/04*

U.S. Cl. 504—252 **18 Claims**

1. A compound represented by the formula



wherein:

R_1 is fluorinated methyl, chlorofluorinated methyl or fluorinated ethyl;

R_2 is hydrogen, C1–C7 alkyl, trichloromethyl, C2–C8 cyanoalkyl, C3–C7 alkenyl, or C3–C7 alkynyl;

R is C1–C6 straight or branched alkyl, C1–C7 haloalkyl, C2–C14 alkylthioalkyl, C2–C14 alkoxyalkyl, C2–C8 carboxyalkyl, C3–C4 cycloalkyl, or cyclopropylmethyl; and

X and Y are each independently selected from 1-pyrrolyl; 4,5-dihydro-2-oxazolyl;4,5-dihydro-2-thiazolyl;tetrahydro-4-methylene-5-oxo-2-furanyl; 1,3-dithiolan-2-yl, 1,3-dioxolan-2-yl; 1,3-dithian-2-yl; 5,6-dihydro-4H-1,3-thiazin-2-yl; 5,6-dihydro-4H-1,3-oxazin-2-yl; 1,3,4-oxadiazol-2-yl; 1,3-dioxan-2-yl; 5-oxazolyl; 2-oxazolyl; (dihydro-2(3H)-furanylidene) amino; 1,3-oxathiolan-2-yl; 4-oxo-1,3-dioxolan-2-yl; 3-oxathiolan-2-yl; 3,3-dioxo-1,3-oxathiolan-2-yl; and 2-thiazole.

5,824,626

PROCESS FOR PREPARING TRITHIANES AND PHOSPHORUS ACID AND/OR THIOPHOSPHORUS ACID DERIVATIVES

Roger L. Sowerby, Concord, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

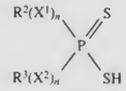
Continuation-in-part of Ser. No. 640,173, Jan. 11, 1991, abandoned. This application Jul. 9, 1992, Ser. No. 910,967

Int. Cl.[6] C10M *135/34;141/10*

U.S. Cl. 508—300 **32 Claims**

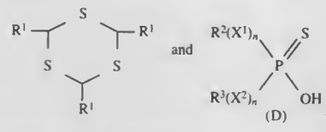
1. A process for the preparation of an extreme pressure additive comprising:

reacting (A) R^1CHO and



(B)

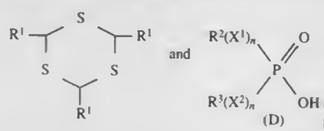
at an (A):(B) molar ratio of 1:1 and at a temperature of from ambient up to about 150° C. forming



and

(D) OH as a product

or at an (A):(B) molar ratio of 2:1 and at a temperature of from ambient up to about 150° C. forming



and

(D) OH as a product

wherein R^1 is

CH_3CH_2-, $CH_3CH_2CH_2-$, $CH_3CH(CH_3)-$, $CH_3(CH_2)_3-$,

$CH_3CH_2CH(CH_3)-$, $CH_3CH(CH_3)CH_2-$, $CH_3(CH_2)_4-$,

$CH_3CH_2CH_2CH_2CH(CH_3)-$, $CH_3CH_2CH(CH_3)CH_2-$, $CH_3(CH_2)_5-$,

$CH_3(CH_2)_{10}-$, $CH_3(CH_2)_{12}-$, $CH_3(CH_2)_{14}-$, $CH_3(CH_2)_{16}-$,

or $CH_3CH_2CH_2CH(C_2H_5)-$

R^2 and R^3 are each independently a hydrocarbyl group containing from 1 to about 30 carbon atoms, X^1 and X^2 are each independently oxygen or sulfur and n is independently zero or one.

5,824,627

HETEROMETALLIC LUBE OIL ADDITIVES

Jonathan M. McConnachie, Flemington; Catherine Louise Coyle, Mendham, both of N.J.; Mark Alan Greaney, Upper Black Eddy, Pa., and Edward Ira Stiefel, Bridgewater, N.J., assignors to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Dec. 13, 1996, Ser. No. 766,829

Int. Cl.[6] C10M *139/00*

U.S. Cl. 508—363 **20 Claims**

1. A lubricating oil composition, comprising: a major amount of an oil of lubricating viscosity to which is added a minor amount of an additive having the formula $M_{4-y}Mo_yS_4L_nQ_z$ and mixtures thereof, wherein M is a metal selected from Cr, Mn, Fe, Co, Ni, Cu, and W, L is independently selected organic groups selected from dithiophosphates, thioxanthates, phosphates, dithiocarbamates, thiophosphates and xanthates, having a sufficient number of carbon atoms to render the additive soluble or dispersible in the oil, and Q is a neutral electron donating compound, y is 1 to 3, n is 2 to 6, and z is zero to 4, and the L provide a total charge sufficient to neutralize the charge on the $M_{4-y}Mo_yS_4$ core.

5,824,628

LUBRICATING COMPOSITIONS

David Coates, Cholsey, and Andrew Gelder, Wallingford, both of United Kingdom, assignors to Castrol Limited, Swindon, United Kingdom

PCT No. PCT/GB96/01173, § 371 Date Jan. 23, 1998, § 102(e) Date Jan. 23, 1998, PCT Pub. No. WO96/36682, PCT Pub. Date Nov. 21, 1996

PCT Filed May 16, 1996, Ser. No. 945,887

Claims priority, application United Kingdom, May 18, 1995, 9510071

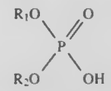
Int. Cl.[6] C10M *137/04;137/12*

U.S. Cl. 508—433 **9 Claims**

1. A lubricating composition comprising:

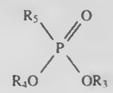
(a) a base oil,

(b) from about 0.05 to 0.6% by total weight of (a), (b) and (c) of an acid ester of phosphoric acid of formula:



where R_1 is a monovalent organic group containing from 3 to 30 carbon atoms and R_2 is hydrogen or a monovalent organic group containing from 3 to 30 carbon atoms and

(c) from 0.1 to 0.7% by total weight of (a), (b) and (c) of a phosphonate ester of formula:



where R_3 and R_4 are independently monovalent organic groups containing from 1 to 10 carbon atoms and R_5 is a monovalent organic group containing from 4 to 30.

5,824,629

EFFERVESCENT HAIR CLEANSING AND CARE TABLETS

Erich Petritsch, Währinger Strasse 76, Wien A-1090, Austria

PCT No. PCT/AT94/00194, § 371 Date Jun. 26, 1996, § 102(e) Date Jun. 26, 1996, PCT Pub. No. WO95/15745, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 12, 1994, Ser. No. 656,265

Int. Cl.[6] C11D *1/65;7/12;7/08*

U.S. Cl. 510—120 **13 Claims**

1. A single solid compacted body of cleansing and care agent for human hair, comprising:

at least one solid surfactant compatible with hair and skin;

at least one of an additive and an auxiliary compound;

a base compound which, upon contact with water, sets free a physiologically harmless gas, said base compound being formed from a combination of at least one of a carbonate, carbonate and hydrogen carbonate and at least one organic acid in solid form;

wherein the cleansing and care agent is provided in the form of cleansing and care unit, each unit having a volume of 0.5 to 2.5 cm^3, and has the following composition with respect to the total mass of the solid body or tablet;

Gas-generating base compound system; 40–60%;

Surfactant(s): 25–45%;

Additives for hair and scalp care: 3–12%, wherein the additives for hair and scalp care comprises at least one effectual additive for hair and skin care selected from the group consisting of anti-irritants, radical trapping substances, ammonium chloride, growth promoters, Pyrithione salts, selenium disulfide, anti fat additives, and final treatment additives;

Auxiliary compounds and additives: 1–5%, wherein the auxiliary compounds and additives are selected from the group consisting of magnesium oxide, alkali aluminate, distilled oils, talcums, sodium or magnesium sulfate, starch, cellulose derivates, carboxy methyl cellulose, alginates, silicon dioxide, titanium dioxide, cured castor oil, metal soaps, gloss agents, dry saccharose, lactose, glucitol and dyes or colorants, and wherein the relative stoichmetric concentration of the acids in the base compound which promotes disintegration, is higher than the concentration of the components in the base compound which generate the gas, and wherein the cleansing and care agent has a total pH-value of less than 6.8,after the solid bodies or the tablet have disintegrated or dissolved or are distributed in the aqueous phase.

5,824,630

MACHINE DISHWASHING COMPOSITION CONTAINING OXYGEN BLEACH AND PARAFFIN OIL AND NITROGEN COMPOUND SILVER TARNISHING INHIBITORS

Julie Ann Christie, West Jesmond; Fiona Susan MacBeath, Gosforth, and John Christopher Turner, Ponteland, all of Great Britain, assignors to The Procter & Gamble Company

PCT No. PCT/US94/06879, § 371 Date Mar. 19, 1996, § 102(e) Date Mar. 19, 1996, PCT Pub. No. WO95/02680, PCT Pub. Date Jan. 26, 1995

PCT Filed Jun. 17, 1994, Ser. No. 583,105

Claims priority, application European Pat. Off., Jul. 16, 1993, 93202095

Int. Cl.[6] C11D *7/18;7/24;7/32*

U.S. Cl. 510—220 **5 Claims**

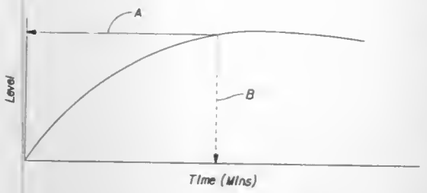
1. An automatic dishwashing detergent composition comprising:

(a) from about 1% to about 80% by weight of the composition of a detergency builder compound;

(b) from about 2% to 15% of an inorganic peroxyhydrate bleaching agent;

(c) from about 0.005% to about 2.5% by weight of the composition of paraffin oil;

(d) from about 0.005% to about 3% by weight of the composition of a nitrogen containing corrosion inhibitor compound; and



(e) from about 0.01% to about 3% by weight of the composition of a corrosion inhibitor selected from the group consisting of C_4–C_{20} mercaptans, and mixtures thereof.

5,824,631

COMPOSITIONS FOR DISSOLUTION OF SOFT METALS

John H. Wagenknecht, 7510 Horseplay La., Cedar Hill, Mo. 63016, and Gary V. Johnson, 4 Westford Ct., St. Charles, Mo. 63304

Continuation-in-part of Ser. No. 719,893, Sep. 25, 1996, abandoned, which is a division of Ser. No. 513,660, Aug. 11, 1995, Pat. No. 5,565,039, which is a continuation of Ser. No. 253,667, Jun. 3, 1994, abandoned. This application May 29, 1997, Ser. No. 864,930

Int. Cl.[6] C11D *7/22;7/50;* **B01F** *1/00;* **C23G** *5/00*

U.S. Cl. 510—254 **18 Claims**

1. A liquid composition useful for selective dissolution of soft metal, the composition being non-aqueous and comprising:

an organic nitrocompound that, upon exposure to the soft metal, oxidizes the soft metal to form a first soft metal salt;

a carboxylic acid that, upon exposure to the soft metal salt, reacts with the first soft metal salt to form a second metal salt that is soluble in the composition; and

from about 80 to 99% by weight of the composition of at least one organic solvent, wherein said organic solvent is other than said organic nitrocompound and said carboxylic acid.

5,824,632

AZEOTROPES OF DECAMETHYLTETRASILOXANE

Ora Ley Flaningam; David Lee Morgan, and Dwight Edward Williams, all of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 28, 1997, Ser. No. 791,041

Int. Cl.[6] C11D *7/26;7/50*

U.S. Cl. 510—411 **4 Claims**

1. A composition consisting essentially of an azeotrope of about 2–15% by weight decamethyltetrasiloxane and about 85–98% by weight 1-butoxy-2-propanol, wherein the composition is homogenous and azeotropic at a temperature within the range of about 25°–180.7° C. inclusive, wherein the composition has a vapor pressure of about 1.2 Torr at 25° C. when the composition consists essentially of 2% by weight decamethyltetrasiloxane and 98% by weight 1-butoxy-2-propanol, and wherein the composition has a vapor pressure of about 1,000 Torr at 180.7° C. when the composition consists essentially of 15% by weight decamethyltetrasiloxane and 85% by weight 1-butoxy-2-propanol.

3. A composition consisting essentially of an azeotrope-like composition selected from the group consisting of:

(a) about 37–79% by weight decamethyltetrasiloxane and about 21–63% by weight 1-(2-methoxy-1-methylethoxy)-2-propanol, wherein the composition is homogenous and azeotrope-like at a temperature within one degree of 180.2° C. at 760 Torr; and

(b) about 43–83% by weight decamethyltetrasiloxane and about 17–57% by weight 1-(2-ethoxy-1-methylethoxy)-2-propanol, wherein the composition is homogenous and azeotrope-like at a temperature within one degree of 186.7° C. at 760 Torr.

5,824,633

HETEROGENEOUS SURFACTANT GRANULES

Ditmar Kischkel, Monheim; Karl Schmid, Mettman; Andreas Syldath, Monheim, and Thomas Krobnen, Duesseldorf, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP95/01544, § 371 Date Jan. 31, 1997, § 102(e) Date Jan. 31, 1997, PCT Pub. No. WO95/29981, PCT Pub. Date Nov. 9, 1995

PCT Filed Apr. 24, 1995, Ser. No. 732,422

Claims priority, application Germany, May 2, 1994, 44 15 369.4

Int. Cl.[6] C11D *17/00*

U.S. Cl. 510—349 **12 Claims**

1. Heterogenous surfactant granules having an inner core consisting of

a) alkyl sulfates corresponding to formula (I):

$$R^1O—SO_3X \quad (I)$$

in which R^1 is an alkyl radical containing 16 to 18 carbon atoms and X is an alkali metal or alkaline earth metal, ammonium, alkylammonium, alkanolammonium or glucammonium, and

b1) alkyl sulfates corresponding to formula (II):

$$R^2O—SO_3X \quad (II)$$

in which R^2 is an alkyl radical containing 12 to 14 carbon atoms and X is as defined above, or

b2) alkyl ether sulfates corresponding to formula (III):

$$R^3O(CH_2CH_2)_nSO_3X \quad (III)$$

in which R^3 is an alkyl radical containing 16 to 18 carbon atoms, n is a number of 1 to 3 and X is as defined above,

and a coating over said inner core consisting of alkyl sulfates corresponding to formula (II), with the provisos that the ratio by weight of component a) to component b) in the inner core is 100:0 to 30:70, and the ratio by weight of said inner core to said coating is 99.5:0.5 to 90:10.

5,824,634

CLEANING COMPOSITIONS WITH DECAFLUOROPENTANE AND ACETONE

Abid Nazarali Merchant, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 135,242, Oct. 13, 1993, Pat. No. 5,531,916, which is a continuation of Ser. No. 787,998, Nov. 7, 1991, abandoned, which is a continuation-in-part of Ser. No. 595,833, Oct. 11, 1990, Pat. No. 5,064,559, Ser. No. 595,834, Oct. 11, 1990, Pat. No. 5,064,560, and Ser. No. 723,312, Jun. 28, 1991, Pat. No. 5,100,572, which is a continuation-in-part of Ser. No. 592,565, Oct. 30, 1990, abandoned. This application Jul. 2, 1996, Ser. No. 674,707

Int. Cl.[6] C11D *7/30;7/26;7/50;* **B08B** *3/08*

U.S. Cl. 510—412 **6 Claims**

1. A cleaning composition consisting essentially of, by weight, about 55% to about 99% 1,1,1,2,3,4,4,5,5,5-decafluoropentane, at least about 1% acetone, and optionally at least one co-solvent selected from the group consisting of C_{1-4} alcohols, C_{1-4} chlorinated hydrocarbons, and C_{1-4} chlorinated hydrocarbons with fluorine.

5,824,635

CATIONIC COMPOSITIONS CONTAINING HYDROXYESTER

Robert O. Keys, 1600 Preston Ct., Columbus, Ohio 43235

Filed Apr. 26, 1996, Ser. No. 638,530

Int. Cl.[6] C11D *7/26;1/40*

U.S. Cl. 510—433 **6 Claims**

1. A homogeneous liquid cationic composition comprising:

(a) a coupling agent selected from the group consisting of compounds of the formula (1)

$$R^A—C(O)O—R^C—(OC(O)R^E)_{0-1} \quad (1)$$

and mixtures thereof,

wherein R^A is saturated, straight, branched or cyclic alkyl containing 1 to 14 carbon atoms, and R^A is optionally substituted with 1 to 3 hydroxyl groups; and wherein R^C is a residue of 2,2,4-trimethyl-1,3-pentanediol and R^C can optionally be substituted with a group of the structure $OC(O)R^E$ wherein R^E is straight, cyclic or branched alkyl containing 1 to 14 carbon atoms which is optionally substituted with a hydroxyl group, wherein the compounds of formula (1) contain 7 to 16 carbon atoms and are substituted with a total of 1 to 3 hydroxyl groups; and

(b) 5–90 wt. % of one or more quaternary ammonium cationic agents.

5,824,636

ANTIPROLIFERATIVE PROTEIN FROM *BACILLUS THORINGIENSIS* VAR. *THURINGIENSIS*

Bharat B. Aggarwal, Houston, Tex., and Cristina Rodriguez-Padilla, Monterrey, Mexico, assignors to Research Development Corporation, Carson City, Nev., and Universidad Autonoma de Nuevo Leon, Nuevo Leon, Mexico

Continuation of Ser. No. 454,636, May 31, 1995, abandoned. This application Nov. 4, 1996, Ser. No. 743,553

Int. Cl.[6] A61K *39/07;38/16;* **C07K** *14/32*

U.S. Cl. 514—2 **11 Claims**

1. An isolated and purified protein derived from *Bacillus thuringiensis* subspecies *thuringiensis*, having a molecular weight of approximately 20 kDa as determined by SDS-PAGE, said protein having the partial amino acid sequence shown in SEQ ID No. 1, and wherein said protein displays cytotoxic effects against tumor cells.

5,824,637

ACTIVIN ANTAGONISTS AS NOVEL CONTRACEPTIVES

William F. Crowley, Newtonville, Mass.; J. Larry Jameson, Winnetka, Ill.; Alan L. Schneyer, Arlington, Mass., and Jeffrey Weiss, Chicago, Ill., assignors to The General Hospital Corporation, Boston, Mass.

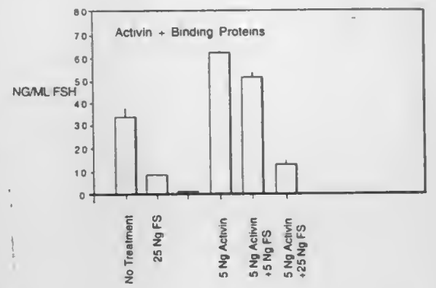
Continuation of Ser. No. 234,261, Apr. 28, 1994, Pat. No. 5,658,876. This application Feb. 28, 1997, Ser. No. 807,713

Int. Cl.[6] A61K *38/03;38/16;38/17*

U.S. Cl. 514—2 **18 Claims**

1. A method for contraception by inhibiting the release, biosynthesis, or biosynthesis and release of FSH in a mammal in need thereof, said method comprising:

administering to the mammal a contraceptive agent comprising a peptide up to 70 amino acids in length which, when complexed with an activin receptor exhibits activin-antagonist activity, such that said contraceptive agent inhibits activin-stimulated release, biosynthesis, or release and biosynthesis of FSH in the mammal, thereby resulting in a decrease in fertility and facilitating contraception in the mammal.



5,824,638

ORAL INSULIN DELIVERY

Beth A. Burnside, Silver Spring; Carol E. Mattes, Gaithersburg; Charlotte M. McGuinness, Rockville; Edward M. Rudnic, North Potomac, and George W. Belendiuk, deceased, late of Potomac, all of Md., by Krystyna Belendiuk, executrix, assignors to Shire Laboratories, Inc., Gaithersbury, Md.

Filed May 22, 1995, Ser. No. 446,399

Int. Cl.[6] A61K *37/26*

U.S. Cl. 514—3 **18 Claims**

1. A pharmaceutical composition comprising:

(a) a water-in-oil emulsion comprising:

(i) a continuous hydrophobic phase comprising at least one member selected from the group consisting of oleic acid, gadoleic acid, erucic acid, linoleic acid, linolenic acid, ricinoleic acid, arachidonic acid, glyceryl esters of such acids, oleyl alcohol and d-alpha-tocopherol polyethylene glycol succinate;

(ii) a discontinuous aqueous hydrophilic phase;

(iii) at least one surfactant for dispersing said hydrophilic phase in said hydrophobic phase as a water-in-oil emulsion, wherein said at least one surfactant includes a member selected from the group consisting of poloxamer 124, a polyglycolized glyceride, sorbitan laurate and polyoxyethylene (20) sorbitan monooleate; and

(b) insulin in said aqueous hydrophilic phase.

5,824,639

MODIFIED FACTOR VII ANTICOAGULANT PROTEINS

Kathleen L. Berkner, Seattle, Wash., assignor to ZymoGenetics, Inc., Seattle, Wash.

Division of Ser. No. 951,295, Sep. 21, 1992, Pat. No. 5,288,629, which is a continuation of Ser. No. 471,313, Jan. 29, 1990, abandoned. This application Nov. 12, 1993, Ser. No. 152,199

Int. Cl.[6] C07K *14/745;* **A61K** *38/36;38/48;* **C12N** *9/64*

U.S. Cl. 514—12 **22 Claims**

1. A composition comprising Factor VII having at least one amino acid substitution or deletion modification in the activation cleavage site of the activation region wherein said Factor VII is resistant to activation by Factor Xa and inhibits the clotting activity of wild-type Factor VIIa.

5,824,640

SUBSTANCES OF POLYPEPTIDE NATURE USEFUL IN HUMAN THERAPY

Alberto Bartorelli, and Angela Turiano, both of Milan, Italy, assignors to Zetesis S.p.A., Milan, Italy

PCT No. PCT/EP91/02354, § 371 Date Jul. 28, 1993, § 102(e) Date Jul. 28, 1993, PCT Pub. No. WO92/10197, PCT Pub. Date Jun. 25, 1992

Continuation of Ser. No. 74,806, Jul. 28, 1993, abandoned. This PCT application Dec. 9, 1991, Ser. No. 403,121

Claims priority, application Italy, Dec. 11, 1990, 22341A/90

Int. Cl.[6] A61K *38/02;* C07K *14/46*

U.S. Cl. 514—12 3 Claims

1. A preparation containing extracts of polypeptide nature obtainable by extraction with $HClO_4$ and 3M KCl from goat liver homogenates, which extracts have the following characteristics:

molecular weight ranging from 10,000 to 50,000 daltons (by polyacrylamide gel electrophoresis) and electrophoretic bands on polyacrylamide gel of about 50,000, 20,000, 14,800 and 12,000 daltons;

capable of inducing the formation of antibodies which specifically bind in vivo or in vitro antigens which are present in human tumoral cells, when administered to different animal species;

capable of affecting pain, induce an effect of cell lysis, and inhibit or slow tumor growth, when administered to humans affected by malignant tumors of different kinds.

5,824,641

METHOD OF TREATING OF PREVENTING INFLUENZA

Elisha P. Zeelon, Mishmar Hashiva; Mosbe M. Werber, Tel Aviv, and Avigdor Levanon, Rehovot, all of Israel, assignors to Bio-Technology General Corp, Iselin, N.J.

Division of Ser. No. 225,442, Apr. 8, 1994, Pat. No. 5,635,474, which is a continuation-in-part of Ser. No. 45,805, Mar. 9, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 467,389

Int. Cl.[6] A61K *38/58*

U.S. Cl. 514—12 4 Claims

1. A method of treating or preventing influenza comprising administering to a subject suffering from influenza or at risk of contracting influenza, an amount of a polypeptide effective to treat or prevent influenza comprising the amino acid sequence

(SEQ ID NO. 1))

X— Y— CYS GLN GLU GLU GLU CYS PRO ASP PRO TYR
LEU CYS SER PRO VAL THR ASN ARG CYS GLU CYS THR
PRO VAL LEU CYS ARG MET TYR CYS LYS PHE TRP ALA
LYS ASP GLU LYS GLY CYS GLU ILE CYS LYS CYS GLU
GLU LEU CYS GLN ASN GLN ASN CYS THR LYS ASP MET
LEU CYS SER SER VAL THR ASN ARG CYS ASP CYS GLN
ASP PHE LYS CYS PRO GLN SER TYR CYS — Z

wherein X is MET or absent; Y is 0–29 amino acids of the sequence LYS MET CYS TRP ASN LYS GLY CYS PRO CYS GLY GLN ARG CYS ASN LEU HIS ARG ASN GLU CYS GLU VAL ILE ALA GLU ASN ILE GLU, (SEQ. ID NO. 2) with the proviso that if Y is more than 0 amino acids, then the carboxy-terminal sequence of Y beginning with Glu as the carboxy-terminal amino acid is present and wherein Val^{24} may be preceded by Gly; and Z is absent or all or a part of the sequence Pro^{110}-Lys^{156} shown in FIG. 7, with the proviso that if Z is more than 0 amino acids, then the amino-terminal sequence of Z beginning with Pro as the amino-terminal amino acid is present.

5,824,642

TREATMENT OF PARTIAL GROWTH HORMONE INSENSITIVITY SYNDROME

Kenneth Attie, San Francisco, Calif.; Lena M. S. Carisson, Goteborg, Sweden; Neil Gesundheit, Los Altos, and Audrey Goddard, San Francisco, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Continuation of Ser. No. 410,452, Mar. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 224,982, Apr. 7, 1994, Pat. No. 5,646,113. This application Jun. 6, 1995, Ser. No. 468,580

Int. Cl.[6] C07K *13/00;* A61K *38/00;38/28*

U.S. Cl. 514—12 16 Claims

1. A method for increasing the growth rate of a human patient having partial growth hormone insensitivity syndrome comprising administering an effective amount of growth hormone to said patient, whereby said patient has a height less than about −2 standard deviations below normal for age and sex, has a serum level of high-affinity growth hormone binding protein that is at least 2 standard deviations below normal levels, has a serum level of IGF-1 that is below normal mean levels, and has a mean or maximum stimulated serum level of growth hormone that is at least normal, wherein the patient does not have Laron syndrome.

5,824,643

THERAPEUTIC USES OF KERATINOCYTE GROWTH FACTOR

Glenn Francis Pierce, Rancho Santa Fe; Regina Mae Housley, Thousand Oaks, and Charles Frederick Morris, Newbury Park, all of Calif., assignors to Amgen Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 312,483, Sep. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 40,742, Mar. 26, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,251

Int. Cl.[6] C07K *14/91;* A61K *38/18*

U.S. Cl. 514—12 24 Claims

1. A method of treating a condition in a patient, said method comprising administering to such patient an effective amount of a keratinocyte growth factor product to stimulate the proliferation or differentiation of epithelial cells selected from the group consisting of hepatocytes, type II pneumocytes, mucin-producing goblet cells, and other epithelial cells and their progenitors contained within the liver, lung, and gastrointestinal tract.

5,824,644

METHOD OF ATTENUATING ARTERIAL STENOSIS

Dana R. Abendschein, St. Louis, Mo., assignor to G. D. Searle & Co., Chicago, Ill.

Continuation-in-part of Ser. No. 648,777, May 16, 1996, abandoned, which is a continuation-in-part of Ser. No. 271,930, Jul. 7, 1994, abandoned. This application Jul. 3, 1996, Ser. No. 675,122

Int. Cl.[6] A61K *38/00;* C07K *14/00;* A61F *13/00*

U.S. Cl. 514—12 14 Claims

1. A method for attenuating stenosis after balloon angioplasty in a mammal comprising administering parenterally or locally to the luminal surface of a blood vessel subjected to said balloon angioplasty an effective amount of Tissue Factor Pathway Inhibitor (TFPI) for a prolonged period of time sufficient to substantially reduce the extent of stenosis.

5,824,645

METHOD OF TREATING INFLAMMATION

Alan Justice, Sunnyvale; Tejinder Singh, Palo Alto; Kishor Chandra Gohil, Richmond; Karen L. Valentino, San Carlos, and George P. Miljanich, Redwood City, all of Calif., assignors to Neurex Corporation, Menlo Park, Calif.

Continuation of Ser. No. 675,354, Jul. 3, 1996, which is a continuation of Ser. No. 49,794, Apr. 15, 1993, Pat. No. 5,587,454, which is a continuation-in-part of Ser. No. 814,759, Dec. 30, 1991, abandoned. This application Nov. 1, 1996, Ser. No. 742,774

Int. Cl.[6] A61K *38/00;38/02;* C07K *5/00;7/00*

U.S. Cl. 514—12 9 Claims

1. A method of treating inflammation in a subject, in need of said treatment comprising

administering to the subject a pharmacologically effective dose of an omega-conopeptide effective to (i) block voltage-gated calcium channels, (ii) bind with high affinity to an omega conopeptide binding site, and (iii) inhibit neurotransmitter release from nervous tissue.

5,824,646

INTRAVAGINAL DELIVERY OF BIOLOGICALLY ACTIVE POLYPEPTIDES

Takeru Fujii, Naruto; Seiichi Sako, Anan; Shigeyuki Takama, Itano-gun; Toru Hibi, and Akiya Yamada, both of Takamatsu, all of Japan, assignors to Teikoku Seiyaku Co., Ltd., Kagawa, Japan

Division of Ser. No. 899,165, Jun. 15, 1992, which is a continuation of Ser. No. 315,502, Mar. 1, 1989, abandoned, which is a continuation-in-part of Ser. No. 167,163, Mar. 11, 1988, abandoned. This application Nov. 17, 1997, Ser. No. 971,329

Int. Cl.[6] A61K *38/00;* C07K *7/10*

U.S. Cl. 514—12 5 Claims

1. An improved method for administering calcitonin or an analog thereof to a mammal in need of such treatment, comprising intravaginally administering a pharmaceutical composition comprising a stable biologically active polypeptide selected from the group consisting of a calcitonin and calcitonin analogs, in an amount sufficient to elicit a pharmacological effect when administered intravaginally; an absorption promoter consisting essentially of a combination of nonionic surfactant and a saturated medium chain aliphatic carboxylic acid having from 6 to 16 carbon atoms or alkali salt thereof, the total concentration of absorption promoter in the composition being between 0.01 and 5 w/v%, said concentration being sufficient to enhance absorption of the polypeptide through the vaginal mucosa; and a nontoxic pharmaceutically acceptable carrier therefor, in a formulation suitable for intravaginal administration.

5,824,647

CHEMOTACTIC WOUND HEALING PEPTIDES

Arnold E. Postlethwaite, 635 Bethany Rd., Eads, Tenn. 38028; Jerome Seyer, 1412 Carr Ave., Memphis, Tenn. 38104, and Andrew Kang, 2334 Massey Rd., Memphis, Tenn. 38119

Continuation-in-part of Ser. No. 127,909, Sep. 28, 1993, Pat. No. 5,436,228, which is a continuation-in-part of Ser. No. 626,631, Dec. 12, 1990, abandoned. This application Jun. 1, 1995, Ser. No. 457,353

Int. Cl.[6] A61K *38/00;38/04;* C07K *5/00;7/00*

U.S. Cl. 514—13 7 Claims

1. A chemotatic peptide wherein the amino acid sequence of the peptide is selected from the group consisting of SEQ ID NO. 21, SEQ ID NO. 22, SEQ ID NO. 23, SEQ ID NO. 24, SEQ ID NO. 25 and analogs thereof.

5,824,648

RNASE-CV (CORIOLUS VERSICOLOR)

Mable M. P. Yang, and George Chen, both of Block, 17B, fourth Fl., Baguio Villa, Hong Kong

Continuation-in-part of Ser. No. 983,238, Nov. 30, 1992, Pat. No. 5,374,714. This application Dec. 19, 1994, Ser. No. 359,222

Int. Cl.[6] A61K *38/00;* C07K *17/00*

U.S. Cl. 514—14 4 Claims

1. A polypeptide isolateable from Coriolus versicolor, Cov-1 having a partial amino acid sequence GTAAAKEFERQHM SEQ ID NO:1.

5,824,649

DNA SEQUENCES OF ENTERICALLY TRANSMITTED NON-A/NON-B HEPATITIS VIRAL AGENT AND CHARACTERISTIC EPITOPES THEREOF

Gregory R. Reyes, Palo Alto; Patrice O. Yarbough, Redwood Shores, both of Calif.; Daniel W. Bradley, Lawrenceville; Krzysztof Z. Krawczynski, Tucker, both of Ga.; Albert Tam, San Francisco, and Kirk E. Fry, Palo Alto, both of Calif., assignors to Genelabs Technologies, Inc., Redwood City, Calif.

Division of Ser. No. 279,823, Jul. 25, 1994, which is a continuation-in-part of Ser. No. 505,888, Jul. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 420,921, Oct. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 367,486, Jun. 16, 1989, abandoned, which is a continuation-in-part of Ser. No. 336,672, Apr. 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 208,997, Jun. 17, 1988, abandoned. This application Jun. 7, 1995, Ser. No. 475,807

Int. Cl.[6] A61K *38/00;* C07K *1/00;* C07H *21/04;* C12P *21/06*

U.S. Cl. 514—12 35 Claims

1. An isolated protein which is (a) specifically immunoreactive with antibodies present in individuals infected with hepatitis E virus (HEV) and (b) encoded by a sequence contained an open reading frame (ORF) in an HEV genome, where said genome has a sequence that is greater than 70% identical with the sequence presented as SEQ ID NO:6.

5,824,650

TOPICAL COMPOSITION CONTAINING A SUBSTANCE P ANTAGOINST

Olivier De Lacharriere, Paris, and Lionel Breton, Versailles, both of France, assignors to L'Oreal, Paris, France

Filed Dec. 19, 1995, Ser. No. 575,682

Claims priority, application France, Dec. 19, 1994, 94 15253

Int. Cl.[6] A61K *38/00;31/135*

U.S. Cl. 514—15 16 Claims

1. A method of treating or preventing irritation to sensitive skin which occurs upon topical administration of at least one product which normally elicits an irritant side effect to sensitive skin if topically administered in the absence of an effective amount of a substance P antagonist, which comprises topically administering to a subject having sensitive skin a composition comprising (i) said product which normally elicits an irritant side effect, upon topical application to sensitive skin (ii) an amount of at least one substance P antagonist sufficient to reduce or eliminate said irritant side effect, and (iii) a pharmaceutically acceptable medium.

5,824,651

PROCESS FOR MODIFICATION OF IMPLANT SURFACE WITH BIOACTIVE CONJUGATES FOR IMPROVED INTEGRATION

Antonio Nanci, Dollard-des Ormeaux; Marc D. McKee, Pointe-Claire; Edward Sacher, Côte-St-Luc; Oumarou Savadogo, and James Wuest, both of Montréal, all of Canada, assignors to Universite de Montreal, Quebec, Canada

Continuation of Ser. No. 322,998, Oct. 14, 1994, abandoned, which is a continuation-in-part of Ser. No. 226,345, Apr. 12, 1994, abandoned, which is a continuation-in-part of Ser. No. 58,753, May 10, 1993, abandoned. This application Jun. 28, 1996, Ser. No. 672,243

Int. Cl.[6] A61K *38/18;38/39;* **A61F** *2/28;* **B05D** *3/04*

U.S. Cl. 514—21 **19 Claims**

1. A process for covalently coating a titanium implant with a bioactive conjugate, which comprises the steps of:

a) chemically cleaning a titanium implant surface by electrochemical deoxidation in a solution selected from the group consisting of ethanol, perchloric acid-butanol-methanol, H_2O_2—NaCl—NaH_2PO_4; and

b) without exposure to air, coating the cleaned titanium implant surface from step a) to form a covalently attached bioactive thiolate conjugate layer, wherein said thiolate conjugate has the following structural formula I:

—R—X—P I

wherein

R is S covalently attached to the titanium implant surface;

X is a linker covalently attached to R and selected from a bond, linear or branched chains of 1 to 30 covalently attached atoms of at least one of C, N, O, Si or S, rings of at least one of C, N, O, Si or S, and a combination thereof, and

P is a covalently attached bioactive molecule moiety which promotes tissue growth, stabilization or integration;

and wherein said bioactive moiety retains its biological activity.

5,824,652

HETEROCYCLIC ACYLDIPEPTIDES, PROCESSES FOR THE PREPARATION THEREOF AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Danijel Kikelj; Elizabeta Suhadolc, both of Ljubljana; Alenka Rutar, Radlje ob Dravi; Slavko Pecar, Domzale; Alesa Puncuh, Kostanjevica ob Krki; Uros Urleb, Ljubljana; Vesna Leskovsek, Velenje; Gasper Marc, Vipava; Marija Sollner, Borovnica; Ales Krbavcic; Gregor Sersa, both of Ljubljana; Srdjan Novakovic, Grosuplje; Lucka Povsic, and Anton Stalc, both of Ljubljana, all of Slovenia, assignors to Univerza v Ljubljani, Fakulteta za naravoslovje in tehnologijo, Oddelek za farmacijo, and LEK, tovarna farmacevtskih in kemicnih izdelkov, d.d., both of Ljubljana, Slovenia

PCT No. PCT/SI94/00003, § 371 Date Jan. 4, 1996, § 102(e) Date Jan. 4, 1996, PCT Pub. No. WO94/24152, PCT Pub. Date Oct. 27, 1994

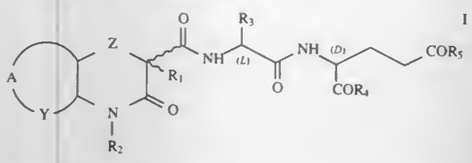
PCT Filed Apr. 21, 1994, Ser. No. 537,782

Claims priority, application Slovenia, Apr. 22, 1993, P-9300212

Int. Cl.[6] A61K *38/00;* **C07D** *471/02*

U.S. Cl. 514—19 **19 Claims**

1. Heterocyclic acyldipeptides of the formula I



I

wherein

Z represents an oxygen or sulphur atom or a —CH_2—group;

R_1 represents hydrogen, a straight or branched chain 1–4C alkyl, trifluoromethyl or benzyl group;

R_2 represents hydrogen, a straight or branched chain 1–4C alkyl or benzyl group;

R_3 represents hydrogen, a straight or branched chain 1–12C alkyl or trifluoromethyl group;

R_4 and R_5, which are identical or different, represent an OR_6 or NHR_6 group, wherein

R_6 is hydrogen, a straight or branched chain 1–18C alkyl or benzyl group;

Y represents a —CH_2—, =CH— or =N— group;

A represents a —$(CH_2)_3$— group when Y is —CH_2—, wherein fusion of the Z containing ring with the A containing ring being trans, or a



group,

wherein R_7 represents H, F, Br, Cl, a straight or branched chain 1–4C alkyl, 1–4C alkoxy, trifluoromethyl, nitro, amino, alkylamino or dialkylamino group, when Y is =CH— or =N—;

and optical diastereomers thereof and their pharmaceutically acceptable salts.

5,824,653

ANTHELMINTIC COMPOSITIONS FOR EQUIDAE

Vincent Beuvry, Coogee, and Michael Forster, Sydney, both of Australia, assignors to Virbac S.A., Carros, France

Filed Nov. 27, 1995, Ser. No. 562,932

Claims priority, application Australia, Nov. 28, 1994, PM9699

Int. Cl.[6] A61K *30/70;31/335*

U.S. Cl. 514—30 **11 Claims**

7. A method for controlling and treating an infestation by *Anoplocephala perfoliata* in equine animals, comprising orally administering to said animals, a dose of 0.5 to 2.0 mg of praziquantel per kg of animal body weight in combination with a dose of about 0.2 mg of an anthelmintic agent selected from the group consisting of avermectins and milbemycins per kg of animal body weight.

5,824,654

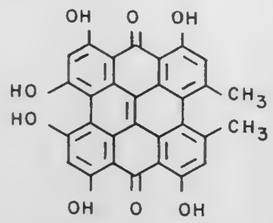
METHOD FOR DELIVERY OF NUCLEIC ACIDS TO CELLS USING HYPERICIN POLYAMINE COMPLEXES

Gad Lavie, Rehovot, Israel, and Alfred M. Prince, Pound Ridge, N.Y., assignors to New York University, and New York Blood Center, both of New York, N.Y.

Filed Sep. 2, 1994, Ser. No. 300,725

Int. Cl.[6] A61K *48/00;* **C09B** *3/40;* **C12N** *5/00*

U.S. Cl. 514—44 **19 Claims**



1. A method for delivering nucleic acids to cells comprising the steps of:

(i) contacting

(a) hypericin or a hypericin analogue, or salts thereof; and

(b) a polycation to form a non-covalent binary complex;

(ii) incubating said binary complex with said nucleic acid, wherein said incubating step forms a non-covalent ternary complex between said hypericin or hypericin analogue, said polycation, and said nucleic acid; and

(iii) contacting said cells with said ternary complex.

5,824,655

ANTI-TRANSFORMING GROWTH FACTOR-β GENE THERAPY

Wayne A. Border, Salt Lake City, Utah, assignor to The University of Utah, Salt Lake City, Utah

Filed Feb. 15, 1995, Ser. No. 389,887

Int. Cl.[6] A01N *43/04*

U.S. Cl. 514—44 **7 Claims**

1. A method for reducing deleterious accumulation of TGF-β induced extracellular matrix in tissue of a subject, said method comprising:

(a) introducing into the subject a heterologous nucleic acid encoding a TGF-β inhibitory agent selected from the group consisting of a proteoglycan, a TGF-β receptor, an anti-TGF-β antibody, a fragment of the proteoglycan, a fragment of the TGF-β receptor, and a fragment of the anti-TGF-β antibody, where each agent has the TGF-β inhibitory function of reducing deleterious accumulation of TGF-β induced extracellular matrix; and

(b) expressing in cells in said subject the introduced nucleic acid encoding the TGF-β inhibitory agent and secreting the TGF-β inhibitory agent encoded by the introduced nucleic acid for a time and under conditions effective to produce an amount of the TGF-β inhibitory agent effective to reduce the deleterious accumulation of extracellular matrix material in said tissue of a subject where deleterious accumulation of extracellular matrix material induced by TGF-β occurs.

5,824,656

RECOMBINANT AND NATIVE GROUP B *EIMERIA TENELLA* IMMUNOGENS USEFUL AS COCCIDIOSIS VACCINES

Helen Profous-Juchelka, Staten Island, N.Y.; Mervyn J. Turner, Westfield, and Paul A. Liberator, Holmdel, both of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 87,914, Jul. 6, 1993, abandoned, which is a continuation of Ser. No. 695,485, May 3, 1991, abandoned, which is a continuation of Ser. No. 588,510, Sep. 21, 1990, abandoned, which is a continuation of Ser. No. 286,936, Dec. 22, 1988, abandoned, which is a continuation of Ser. No. 145,802, Jan. 15, 1988, abandoned. This application Jun. 2, 1995, Ser. No. 458,590

Int. Cl.[6] A61K *48/00;* **C07H** *21/04*

U.S. Cl. 514—44 **4 Claims**

1. A recombinant DNA molecule having a nucleotide sequence encoding an amino acid sequence of the Group B immunogen SO7 depicted in Table 8.

3. An immunogenic composition comprising the DNA of claim 1.

4. A method of immunizing poultry against *E. tenella* induced coccidiosis comprising administering an therapeutically effective dose of the composition of claim 3.

5,824,657

AMINOACYL SULFAMIDES FOR THE TREATMENT OF HYPERPROLIFERATIVE DISORDERS

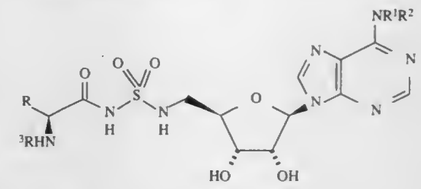
Jason M. Hill, Newtonville, and Arthur F. Kluge, Lincoln, both of Mass., assignors to Cubist Pharmaceuticals, Inc., Cambridge, Mass.

Filed Mar. 18, 1997, Ser. No. 820,249

Int. Cl.[6] A61K *31/70;* **C07H** *19/16;19/167*

U.S. Cl. 514—46 **19 Claims**

1. A compound of the Formula:



(a) wherein R is selected from the group consisting of hydrido, alkyl, cycloalkyl, aryl and arylalkyl;

(b) wherein each of R^1 and R^2 is independently selected from the group consisting of hydrido, alkyl, aryl and arylalkyl;

(c) wherein R and R^3 can together form a pyrrolidine ring, alternatively, R^3 is hydrido; and pharmaceutically-acceptable salts thereof.

5,824,658

TOPICAL COMPOSITION CONTAINING HYALURONIC ACID AND NSAIDS

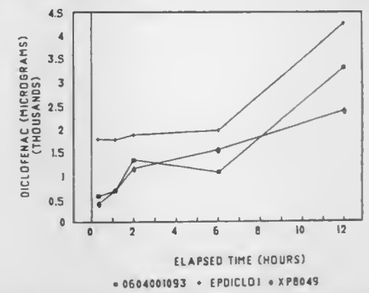
Rudolf Edgar Falk, and Samuel Simon Asculai, both of Toronto, Canada, assignors to Hyal Pharmaceutical Corporation, Mississauga, Canada

Division of Ser. No. 290,848, Aug. 19, 1994, which is a continuation-in-part of Ser. No. 838,675, Feb. 21, 1992, Pat. No. 5,639,738, which is a continuation-in-part of Ser. No. 675,908, Jul. 3, 1981. This application Aug. 7, 1995, Ser. No. 468,329

Claims priority, application Canada, Feb. 20, 1992, 2061566

Int. Cl.[6] A61K *31/715;47/36*

U.S. Cl. 514—54 **10 Claims**



1. A method of treating pain topically, said method comprising administering topically to the skin or exposed tissue of a human, a dosage amount of a pharmaceutical composition, said dosage amount comprising:

(1) a non-steroidal anti-inflammatory drug (NSAID) in a therapeutically effective amount to treat pain of the skin or exposed tissue and;

(2) a form of hyaluronic acid selected from the group consisting of hyaluronic acid, its non-toxic salts and combination thereof being between 1% and 3% by weight of the composition,

characterized in that said dosage amount of said composition is in a dosage form suitable for topical application to the skin or exposed tissue and in a dosage amount in which component

(2) exceeds 10 mg/cm^2 of the skin or exposed tissue to which the dosage amount is to be applied, and is in such form that component (2) is immediately available to transport component (1) percutaneously into the epidermis of the skin or exposed tissue to the site of trauma or pathology of pain to be treated, in the skin or exposed tissue, and wherein the molecular weight of the form of hyaluronic acid is less than 750,000 daltons.

5,824,659

CYTOPROTECTIVE OLIGOSACCHARIDE FROM ALOE PREVENTING DAMAGE TO THE SKIN IMMUNE SYSTEM BY UV RADIATION

Faith M. Strickland; Ronald P. Pelley, both of Galveston, and Margaret L. Kripke, Kingwood, all of Tex., assignors to Board of Regents, The University of Texas System, Austin, Tex.

Filed Sep. 4, 1996, Ser. No. 697,974

Int. Cl.^{6} A61K *31/715;* **C08B** *37/00;* **C07G** *3/00*

U.S. Cl. 514—54 **6 Claims**

1. A purified oligosaccharide having a molecular weight of 1,000–5,000 daltons, said oligosaccharide being separated from Aloe and is able to inhibit loss of skin immunocompetency induced by ultraviolet irradiation, wherein said olicosaccharide is about 75% glucose, about 25% mannose and with trace galactose.

5,824,660

METHOD OF INHIBITING GLOMERULONEPHRITIS

Peter G. Tipping, Clayton, Australia, and Tze-Chein Wun, St. Louis, Mo., assignors to G. D. Searle & Co., Chicago, Ill.

Filed Jun. 10, 1996, Ser. No. 661,236

U.S. Cl. 514—56 **5 Claims**

1. A method of inhibiting fibrin-dependent glomerulonephritis in a warm-blooded mammal in need thereof as being vulnerable to glomerulonephritis caused by glomerular fibrin deposition comprising administering to said mammal a pre-formed heparin/TFPI complex consisting of a weight ratio of at least 1.25 parts of heparin to one part of TFPI.

5,824,661

SULFUR-CONTAINING PHOSPHONATE COMPOUNDS, PHARMACEUTICAL COMPOSITIONS, AND METHODS OF TREATING ABNORMAL CALCIUM AND PHOSPHATE METABOLISM

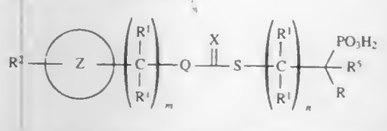
Marion David Francis, Cincinnati, Ohio; Susan Mary Kaas, Norwich, N.Y., and Frank Hallock Ebetino, Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 891,309, May 29, 1992, abandoned. This application Sep. 7, 1994, Ser. No. 301,514

Int. Cl.^{6} A61K *31/66;31/665;31/675;* **C07F** *9/65*

U.S. Cl. 514—75 **14 Claims**

1. Sulfur-containing phosphonate compound, or a pharmaceutically-acceptable phosphonic acid salt or ester thereof, having the following structure:



wherein m and n are integers 0 to 10 and m+n equals 0 to 10, and wherein

(a) X is O or S;

(b) Z is a covalent bond or a monocyclic or polycyclic carbocyclic ring moiety;

(c) Q is a covalent bond; O; or S;

(d) R is [COOH, SO_3H,]PO_3H_2 or $P(O)(OH)R^4$, wherein R^4 is a substituted or unsubstituted C_1–C_8 alkyl;

(e) each R^1 is independently selected from —SR^6; —R^8SR^6; nil; hydrogen; unsubstituted or substituted C_1–C_8 alkyl; monocyclic or polycyclic carbocyclic ring moiety; unsubstituted or substituted aryl; substituted or unsubstituted thiophene; substituted or unsubstituted oxathiazole; substituted or unsubstituted pyranone; substituted or unsubstituted furan; hydroxy; amido; —CO_2R^3; —O_2CR^3; —NR^3_2; —OR^3; —$N(R^3)C(O)R^3$; —$C(O)N(R^3)_2$; substituted or unsubstituted benzyl; nitro; or combinations thereof;

(f) R^2 is independently selected from —SR^6; —R^8SR^6; —CO_2R^3; —O_2CR^3; —$C(O)N(R^3)_2$; —$N(R)^3C(O)R^3$; —OR^3; nil; hydrogen; unsubstituted or substituted C_1–C_8 alkyl; unsubstituted or substituted aryl; hydroxy; substituted or unsubstituted benzyl; nitro; or combinations thereof;

(g) each R^3 is independently selected from hydrogen; substituted or unsubstituted C_1–C_8 alkyl; or [R^8SR^6] —R^8SR^6;

(h) R^5 is selected from —SR^6; [R^8SR^6] —R^8SR^6; hydrogen; hydroxy; amino; halogen; or unsubstituted or substituted C_1–C_8 alkyl;

(i) R^6 is independently selected from H, —$C(O)R^7$; or $C(O)N(R^7)_2$; where R^7 is hydrogen, or unsubstituted or substituted C_1–C_8 alkyl; and

(j) R^8 is substituted or unsubstituted C_1–C_8 alkyl;

provided that if Z is a covalent bond and m is 0, then R^2 is other than nil.

5,824,662

TREATMENT OF GLOBAL AND FOCAL ISCHEMIA USING NAALADASE INHIBITORS

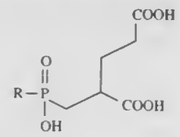
Barbara S. Slusher, Kingsville, and Paul F. Jackson, Bel Air, both of Md., assignors to Guilford Pharmaceuticals Inc., Baltimore, Md.

Filed Sep. 27, 1996, Ser. No. 718,703

Int. Cl.^{6} C07F *9/38;9/58;* **A61K** *31/65*

U.S. Cl. 514—75 **12 Claims**

1. A method for treating glutamate abnormalities which comprises administering an effective amount of a NAALADase inhibitor to an animal, wherein the NAALADase inhibitor is a compound having the formula:



where

R is hydroxy, C_1–C_6 straight or branched chain alkyl or alkenyl group, C_3–C_8 cycloalkyl, C_5–C_7 cycloalkenyl, or Ar_1,

wherein said alkyl, alkenyl, cycloalkyl, cycloalkenyl or Ar_1 group is optionally substituted with C_1–C_8 cycloalkyl, C_5–C_7 cycloalkenyl, C_1–C_4 alkyl, C_1–C_4 alkenyl, hydroxy, halo, nitro, trifluoromethyl, C_1–C_6 straight or branched chain alkyl or alkenyl, C_1–C_4 alkoxy, C_1–C_4 alkenyloxy, phenoxy, benzyloxy, amino, or Ar_1, and where Ar_1 is selected from the group consisting of naphthyl, or phenyl, having one to three substituents which are independently selected from the group consisting of hydrogen, halo, hydroxy, nitro, trifluoromethyl, C_1–C_6 straight or branched alkyl or alkenyl, C_1–C_4 alkoxy or C_1–C_4 alkenyloxy, phenoxy, benzyloxy, and amino;

or a pharmaceutically acceptable salt, hydrate, or a mixture thereof.

5,824,663

ALTERNATIVE ENZYME SUBSTRATES AS DEODORANTS

Sue Brockett Lyon, Bethesda; Clifford O'Neal, Gaithersburg, and Hermes Van Der Lee, Olney, all of Md., assignors to The Gillette Company, Boston, Mass.

Continuation of Ser. No. 89,599, Jul. 12, 1993, Pat. No. 5,514,671, which is a continuation of Ser. No. 824,884, Jan. 22, 1992, abandoned, which is a continuation of Ser. No. 685,161, Apr. 12, 1991, abandoned, which is a continuation of Ser. No. 478,363, Feb. 12, 1990, abandoned. This application Mar. 13, 1996, Ser. No. 614,586

Int. Cl.^{6} A61K *31/66*

U.S. Cl. 514—104 **2 Claims**

1. A deodorant composition comprising a dermatologically acceptable vehicle and a compound of the formula HOOC—$CH(NH_2)$—CH_2—X wherein X is OR and R is such that R—OH, produced by cleavage of the aforesaid compound by an amino-acid β-lyase enzyme, has a pleasant odor.

5,824,664

SUPPRESSION OF HIV EXPRESSION BY ORGANIC THIOPHOSPHATE

Philip S. Schein, Bryn Mawr, Pa., and Thea Kalebic, Bethesda, Md., assignors to U.S. Bioscience, Inc., West Conshohocken, Pa., and National Institutes of Health, The National Cancer Institute, Rockville, Md.

Filed Mar. 26, 1993, Ser. No. 37,633

Int. Cl.^{6} A01N *57/10;57/00;* **A61K** *31/66;31/13*

U.S. Cl. 514—143 **24 Claims**

1. A single agent therapy for inhibiting HIV replication in a subject infected with HIV, comprising administering to the subject an organic thiophosphate selected from the group consisting of $CH_3NH(CH_2)_3NH(CH_2)_3SPO_3H_2$ (WR 151327), $CH_3NH(CH_2)_3NH(CH_2)_3SH$ (WR 151326), an S-ω(ω-aminoalkylamino)alkyl dihydrogen phosphorothioate of the formula R—NH—(C_nH_{2n})—NH—(C_mH_{2m})—SPO_3H_2 wherein R is hydrogen or an alkyl group containing 1 to 7 carbon atoms and m and n independently have a value of from 2 to 6, and mixtures thereof, in an amount capable of suppressing expression of HIV proteins in a cell chronically infected with HIV.

5,824,665

REDUCTION OF HAIR GROWTH

James Henry, 6776 Wood Duck Ct., Frederick, Md. 21701; Gurpreet Ahluwalia, 8632 Stableview Ct., Gaithersburg, Md. 20852, and Douglas Shander, 16112 Howard Landing Dr., Gaithersburg, Md. 20878

Division of Ser. No. 565,728, Nov. 30, 1995, Pat. No. 5,652,273. This application Apr. 23, 1997, Ser. No. 842,054

Int. Cl.^{6} A61K *31/13;31/35*

U.S. Cl. 514—143 **20 Claims**

1. A method of reducing mammalian hair growth which comprises

selecting an area of skin from which reduced hair growth is desired; and

applying to said area of skin a dermatologically acceptable composition comprising an inhibitor of phosphofructokinase in an amount effective to inhibit hair growth.

5,824,666

LOW PH, HYDROLYTICALLY STABLE, COSMETIC COMPOSITIONS CONTAINING ACIDIC ACTIVES

George Endel Deckner, Cincinnati; Marie Antoinette Rinaldi, and Victoria Claire Szymanski, both of Mainville, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 212,413, Mar. 11, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,264

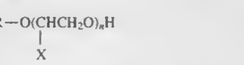
Int. Cl.^{6} A61K *7/44;7/40;9/10;* **A01N** *37/10*

U.S. Cl. 514—152 **24 Claims**

1. A skin care composition, comprising:

(A) from about 0.05% to about 20% of an acidic active ingredient having a solubility parameter of from about 6 to about 12, wherein the acidic active is selected from the group consisting of salicylic acid, acetyl salicylic acid, cis-retinoic acid, trans-retinoic acid, azelaic acid, tetracycline, ibuprofen, naproxen, acetominophen, hydrocortisone, resorcinol, phenoxyethanol, phenoxypropanol, pbenoxyisopropanol, 2,4,4'-trichloro-2'-hydroxy diphenyl ether, 3,4,4'-trichlorocarbanilide, octopirox, 2-phenylbenzimidazole-5-sulfonic acid, dihydroxyacetone, and mixtures thereof;

(B) from about 0.1% to about 25% of a hydrophobic alkoxylated alcohol of the formula:



wherein R is an alcohol having a chain length of from about 2 to about 18 carbon atoms; n is an integer from about 3 to about 40; and X is selected from the group consisting of methyl, ethyl, propyl and mixtures thereof,

(C) from about 1% to about 20% of an acid stable, hydrophobic, structuring agent selected from the group consisting of saturated C_{16} to C_{30} fatty alcohols, saturated C_{16} to C_{30} fatty alcohols containing from about 1 to about 5 moles of ethylene oxide, saturated C_{16} to C_{30} diols, saturated C_{16} to C_{30} monoglycerol ethers, saturated C_{16} to C_{30} hydroxy fatty acids, and mixtures thereof, having a melting point of at least about 45° C.;

(D) from about 0.05% to about 10% of an acid stable, hydrophilic emulsifying surfactant mixture comprising a cationic surfactant, a high HLB nonionic surfactant having an HLB of at least about 6 to about 18 selected from the group consisting of ethoxylated alcohols derived from straight or branched chain C_8–C_{30} alkyl groups and having from about 6 to about 30 ethylene oxide groups and ethoxylated alkyl phenols, and a low HLB nonionic surfactant having an HLB of from about 1 to less than about 6 selected from the group consisting of ethoxylated alcohols derived from straight or branched chain C_8–C_{30} alkyl groups and having, from about 1 to about 5 ethylene oxide groups; and

(E) from about 25% to about 99.7% water;

wherein the pH of the composition is about 3.5 or less and the composition is in the form of a leave on skin care composition.

5,824,667

COMPOSITION FOR CONTRACEPTION

Jürgen Spona, Wien, Austria; Bernd Düsterberg, Berlin, Germany, and Frank Lüdicke, Geneva, Switzerland, assignors to Schering Aktiengesellschaft, Germany

Continuation of Ser. No. 268,996, Jun. 30, 1994, Pat. No. 5,583,129. This application Oct. 31, 1996, Ser. No. 742,147

Claims priority, application Germany, Dec. 22, 1993, 4344462

Int. Cl.^{6} A61K *31/565;31/57;31/585*

U.S. Cl. 514—170 **10 Claims**

1. A combination product for oral contraception, comprising

(a) 23 or 24 dosage units, each containing an estrogen selected from

> 2.0 to 6.0 mg of 17β-estradiol and

0.020 mg of ethinylestradiol;
and a gestagen selected from
0.25 to 0.30 mg of drospirenone and
0.1 to 0.2 mg of cyproterone acetate,
and
b) 5 or 4, respectively, active ingredient-free placebo pills or other indications to show that the daily administration of the 23 or 24 dosage units respectively, is to be followed by 5 or 4, respectively pill-free or placebo pill days.

5,824,668

FORMULATION FOR ADMINISTRATION OF STEROID COMPOUNDS

Joseph Rubinfeld, Contra costa County, Calif.; Julius A. Vida, Fairfield County, Conn.; H. Leon Bradlow, Holliswood, N.Y., and Elliott L. Fineman, Contra Costa County, Calif., assignors to Supergen, Inc., San Ramon, Calif.

Filed Nov. 7, 1996, Ser. No. 744,979
Int. Cl.[6] A61K *31/56*
U.S. Cl. 514—170 **43 Claims**

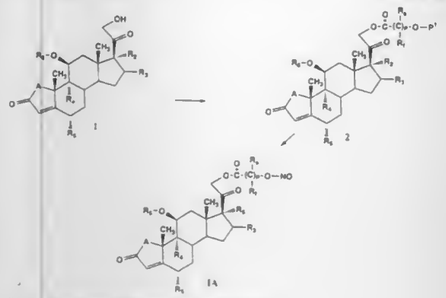
1. A composition of matter comprising at least one 5 β steroid and an amorphous cyclodextrin.

5,824,669

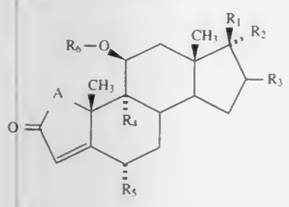
NITROSATED AND NITROSYLATED COMPOUNDS AND COMPOSITIONS AND THEIR USE FOR TREATING RESPIRATORY DISORDERS

David S. Garvey; L. Gordon Letts, both of Dover; H. Burt Renfroe, Wellesley, all of Mass., and Stewart K. Richardson, Ashford, Conn., assignors to NitroMed, Inc., Bedford, Mass.

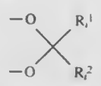
Filed Mar. 22, 1996, Ser. No. 620,882
Int. Cl.[6] A61K *31/58;* **C07J** *71/00;7/00;5/00*
U.S. Cl. 514—174 **19 Claims**



1. A compound having the structure:



wherein
A is selected from —CH=CH— or —CH_2—CH_2—;
R_1 is selected from hydrogen or —C(O)CH_2—B—D, wherein B is oxygen or sulfur and D is selected from (i) hydrogen, (ii) —NO and (iii) —NO_2, with the provision that when B is oxygen then D is H or —NO;
R_2 and R_3 are independently selected from hydrogen, hydroxyl, lower alkyl, —O(O)C—R_i, or —S—R, wherein R_i is hydrogen, lower alkyl or lower haloalkyl, or when taken together are:



wherein R_1^1 and R_i^2 are independently selected from R_i wherein R_i is defined as above;
R_4 and R_5 are independently selected from hydrogen or halogen;
R_6 is selected from hydrogen, —NO, —NO_2 and —C(O)CH_2—B—D, wherein B is oxygen or sulfur and D is selected from hydrogen, —NO and —NO_2, with the provision when R_1 is hydrogen, or the D group of R_1 is hydrogen or —NO, with the B group being oxygen then R_6 is selected from the group consisting of —NO and —C(O)CH_2—B—D, wherein B is oxygen or sulfur and D is —NO or —NO_2;
or an ester or thioester of said compound.

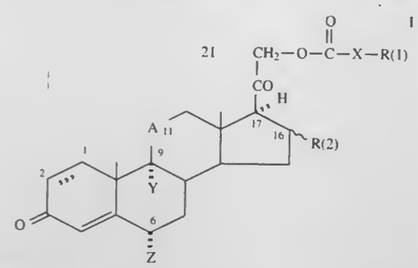
5,824,670

17-DEOXYCORTICOSTEROID-21-[O]CARBOXYLIC ESTERS, PROCESSES FOR THEIR PREPARATION AND PHARMACEUTICALS CONTAINING THESE COMPOUNDS

Ulrich Stache, Hofheim; Hans-Georg Alpermann, Königstein, and Manfred Bohn, Hofheim, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Filed Sep. 18, 1995, Ser. No. 529,668
Claims priority, application Germany, Sep. 20, 1994, 44 33 374.9
Int. Cl.[6] A61K *31/57;* **C07J** *5/00;43/00*
U.S. Cl. 514—177 **11 Claims**

1. A 17-deoxycorticoid-21-dicarboxylic ester of the formula I



in which:
A is CHOH, CH_2, or C=O;
X is (C_2–C_4) aliphatic hydrocarbon, unsaturated once or more than once;
Y is hydrogen, fluorine or chlorine;
Z is hydrogen, fluorine or methyl;
R(1) is optionally substituted or fused aryl or hetaryl; and
R(2) is hydrogen or α-methyl or β-methyl.

5,824,671

THERAPEUTIC METHODS AND DELIVERY SYSTEMS UTILIZING SEX STEROID PRECURSORS

Fernand Labrie, Quebec, Canada, assignor to Endorecherche Inc, Quebec, Canada

Division of Ser. No. 5,619, Jan. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 480,592
Int. Cl.[6] A61K *31/56*
U.S. Cl. 514—178 **14 Claims**

1. A therapeutic method of treating reduced or imbalanced concentrations of sex steroids comprising applying an effective amount of a pharmaceutical composition for percutaneous or transmucosal delivery to an outer surface of skin or mucosa of a patient in need of such treatment, said pharmaceutical composition comprising a carrier having dissolved therein at least one sex steroid precursor selected from the group consisting of dehydroepiandrosterone, dehydroepiandrosterone sulfate, and compounds converted in vivo into either of the foregoing, said precursor being present at a concentration of at least 7% by weight relative to the total pharmaceutical composition, and said carrier being compatible with skin or mucosa and allowing penetration of said precursor through said skin or mucosa, said carrier having sufficient viscosity to maintain said precursor on a localized area of skin or mucosa, without running or evaporating, for a time period sufficient to permit substantial penetration of said precursor through said localized area of said skin or mucosa to achieve a DHEA blood serum level of about 4 to about 13 micrograms per liter.

5,824,672

PRESERVATION OF TISSUE DURING REMOVAL, STORAGE AND IMPLANTATION

James W. Simpkins; Pattie S. Green, and Kelly E. Gridley, all of Gainesville, Fla., assignors to University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation-in-part of Ser. No. 685,574, Jul. 24, 1996. This application Jan. 10, 1997, Ser. No. 782,883
Int. Cl.[6] A61K *31/56*
U.S. Cl. 514—182 **15 Claims**

1. A method for enhancing cell viability in a population of graft cells during a transplantation procedure, comprising:
a) selecting an effective dose of a four ring cyclopentanophenanthrene compound having a terminal phenolic A ring in a physiological acceptable formulation;
b) exposing at least one of: a donor of the graft cells at an effective time prior to removal of the graft cells; the population of graft cells in an ex vivo storage medium; and a recipient subject at an effective time prior to receipt of the donor graft cells; to the formulation containing the compound; and
c) conferring cytoprotection on the population of graft cells.

5,824,673

PHARMACEUTICAL COMPOSITIONS COMPRISING METAL COMPLEXES

Michael J. Abrams, Glenmore, Pa.; Simon P. Fricker; Barry A. Murrer, both of Berkshire, United Kingdom, and Owen J. Vaughan, Stockholm, Sweden, assignors to Johnson Matthey Public Limted Company, London, England

PCT No. PCT/GB94/01817, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO95/05814, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 19, 1994, Ser. No. 602,814
Claims priority, application United Kingdom, Aug. 25, 1993, 9317686
Int. Cl.[6] A61K *31/555;31/295*
U.S. Cl. 514—184 **19 Claims**

1. A method of modulating NO levels in the body so as to avoid undesired excesses thereof which comprises administering to a host in need of such modulation, an effective amount of a neutral, anionic or cationic metal complex having at least one site for coordination with NO, of formula

$$[M_a(X_bL)_cY_dZ_e]^{n\pm} \qquad \text{formula I,}$$

where:
M is a ruthenium ion;
X is a cation or a mixture of cations;
L is a ligand, or mixture of ligands each containing at least two different donor atoms selected from nitrogen, oxygen and sulphur donor atoms;
Y is a ligand, or a mixture of the same or different ligands each containing at least one donor atom, which donor atom is selected from nitrogen, oxygen, sulphur, carbon or phosphorus, provided that the ligand is not a sulphoxide group, 1,10-phenanthroline or substituted 1,10-phenanthroline, substituted 2,2-bypyridine or dihydrophenazine;
and
Z is a halide or pseudohalide ion or a mixture of halide ions and pseudohalide ions;
a=1–3; b=0–12; c=0–18; d=0–18; e=0–18; and
n=1–10;
provided that at least one of c, d and e is I or more;
and where c is 0; b is also 0;
and where a is 1; c, d and e are not greater than 9 in total;
and where a is 2; c, d and e are not greater than 12 in total;
and where a is 3; c, d and e are not greater than 18 in total;
and where d is 3, Y is not a basic heterocyclic compound containing at least one nitrogen atom.

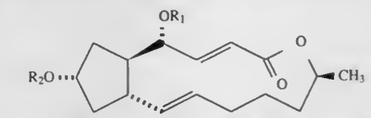
5,824,674

BREFELDIN A DERIVATIVES AND THEIR UTILITY IN THE TREATMENT OF CANCER

Louis Malspeis, Frederick; B. Rao Vishnuvajjala, Rockville; Jeffrey G. Supko, Monrovia, all of Md., and Charles Theodore Kane, Jr., Amherst, N.Y., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C., and Starks Associates, Buffalo, N.Y.

Division of Ser. No. 267,525, Jun. 29, 1994, Pat. No. 5,696,154. This application Nov. 20, 1997, Ser. No. 974,902
Int. Cl.[6] A61K *31/365;31/55*
U.S. Cl. 514—211 **2 Claims**

1. A method for treating tumors, which comprises administering to a patient an effective antitumor amount of at least one compound according to a compound of the formula:



(II)

wherein one of R_1 and R_2 is H and the other of R_1 and R_2 is a substituent group having 1 to 12 carbon atoms containing a nitrogen selected from the group consisting of primary amines, secondary amines, tertiary amines, and quaternary ammonium groups and salts thereof.

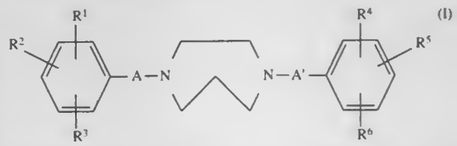
5,824,675

PREVENTIVE AND THERAPEUTIC AGENT FOR KIDNEY DISEASES

Yoichi Yamauchi, Komae; Takashi Nakagawa, Tokorozawa, and Junichi Kawagoe, Tsurugashima, all of Japan, assignors to Kowa Co., Ltd., Nagoya, Japan

PCT No. PCT/JP96/02341, § 371 Date Apr. 28, 1997, § 102(e) Date Apr. 28, 1997, PCT Pub. No. WO97/07806, PCT Pub. Date Mar. 6, 1997
PCT Filed Aug. 22, 1996, Ser. No. 817,639
Claims priority, application Japan, Aug. 29, 1995, 7-220109
Int. Cl.[6] A61K *31/55*
U.S. Cl. 514—218 **18 Claims**

1. A preventive and therapeutic agent for a kidney disease selected from the group consisting of renal failure and edema, wherein the agent comprises as its active component a compound of the following formula (I):



(I)

(wherein each of R^1, R^2, R^3, R^4, R^5, and R^6, which may be identical to or different from one another, represents a lower alkoxyl group, and each A and A', which may be identical to or

different from each other, represents a lower alkylene group); an acid addition salt thereof; or a hydrate of the compound of formula (I) or of the acid addition salt thereof.

5,824,676

5-HT2 RECEPTOR LIGANDS

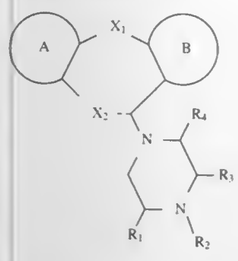
Ashok Tehim, Mississauga, Canada; Jian-min Fu, Elmsford, N.Y., and Sumanas Rakhit, Mississauga, Canada, assignors to Allelix Biopharmaceuticals Inc., Mississauga, Canada

Division of Ser. No. 354,765, Dec. 12, 1994, Pat. No. 5,602,124. This application Dec. 10, 1996, Ser. No. 763,255

Int. Cl.[6] A61K *31/55;* **C07D** *403/04;417/04;413/04*

U.S. Cl. 514—220 **17 Claims**

1. A compound of Formula 1:



wherein

A and B are benzene unsubstituted or substituted with substituents selected independently from hydroxyl, halo, C_{1-4} alkyl, amino, nitro, cyano, halo-substituted C_{1-4}alkyl, C_{1-4}alkoxy, halo-substituted C_{1-4} alkoxy, C_{1-4}alkoxycarbonyl, C_{1-4} CO—, cyclo-C_{3-7}alkyl, HS—C_{1-4}alkylene, C_{1-4}alkylthio, halo-substituted C_{1-4}alkylthio, cyanothio, tetrazolyl, N-piperidinyl, N-piperazinyl, N-morpholinyl, acetamido, C_{1-4} alkylsulfonyl, halosulfonyl, halo-substituted C_{1-4} alkylsulfonyl, C_{1-4}alkylsulfoxyl SO_2NH_2, C_{1-4}alkylseleno, and OSO_3H;

X_1 is selected from O, and S;

X_2—is N=;

R_1 is C_{1-6}alkyl unsubstituted or substituted with a substituent selected from OH, halo, C_{1-4}alkyl and C_{1-4}alkoxy; and

R_2, R_3 and R_4 are independently selected from H and R_1;

and acid addition salts, solvates and hydrates thereof.

5,824,677

SUBSTITUTED AMINO ALCOHOL COMPOUNDS

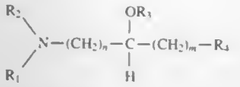
J. Peter Klein, Vashon; Gail E. Underiner, Brier, and Anil M. Kumar, Seattle, all of Wash., assignors to Cell Therapeutics, Inc., Seattle, Wash.

Division of Ser. No. 303,842, Sep. 8, 1994, Pat. No. 5,641,783, which is a continuation-in-part of Ser. No. 152,650, Nov. 12, 1993, Pat. No. 5,801,181, and Ser. No. 164,081, Dec. 8, 1993, Pat. No. 5,470,878, said Ser. No. 152,650 and Ser. No. 164,081, each is a continuation-in-part of Ser. No. 40,820, Mar. 31, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 474,816

Int. Cl.[6] A61K *31/385;31/445;31/47;31/505*

U.S. Cl. 514—222.5 **18 Claims**

1. A compound, including resolved enantiomers and/or diastereomers, hydrates, salts, solvates and mixtures thereof, the compound having a straight or branched aliphatic hydrocarbon structure of formula I:



wherein:

n is an integer from one to four;

m is an integer from four to twenty;

independently, R_1 and R_2 are hydrogen, a straight or branched chain alkyl, alkenyl or alkynyl of up to twenty carbon atoms in length or $—(CH_2)_w R_5$, w being an integer from one to twenty and R_5 being an hydroxyl, halo, C_{1-8} alkoxyl group or a substituted or unsubstituted carbocycle or heterocycle; or

jointly R_1 and R_2 form a substituted or unsubstituted, saturated or unsaturated heterocycle having from four to eight carbon atoms, N being a hetero atom;

R_3 is hydrogen or C_{1-3}; or

jointly one of R_1 or R_2 and R_3 form a substituted or unsubstituted linking carbon chain, having from one to four carbon atoms, joining the O and N in a cyclic structure, an integer sum equal to n+a number of carbon atoms in the linking carbon chain being less than six;

a total sum of carbon atoms comprising R_1 or R_2, $(CH_2)_l$ and $(CH_2)_m$ does not exceed forty; and

R_4 is a substituted or unsubstituted heterocycle having one ring or two-fused rings, each ring having five or six ring atoms, wherein a hetero atom other than nitrogen of the R_4 heterocycle is attached to a terminal carbon atom of $(CH_2)_m$.

5,824,678

MORPHOLINE DERIVATIVES AND THEIR USE AS THERAPEUTIC AGENTS

Timothy Harrison, Great Dunmow; Andrew Pate Owens, Rushden, and Christopher John Swain, Duxford, all of Great Britain, assignors to Merck Sharp & Dohme Ltd., Hoddesdon, England

PCT No. PCT/GB95/01868, § 371 Date Feb. 13, 1997, § 102(e) Date Feb. 13, 1997, PCT Pub. No. WO96/05181, PCT Pub. Date Feb. 22, 1996

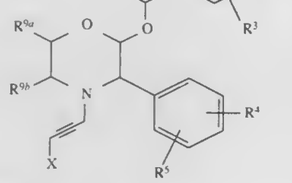
PCT Filed Aug. 7, 1995, Ser. No. 793,186

Claims priority, application United Kingdom, Aug. 15, 1994, 9416427; May 11, 1995, 9509605

Int. Cl.[6] A61K *31/533;* **C07D** *265/32;413/06*

U.S. Cl. 514—237.8 **17 Claims**

1. A compound of the formula (I):



(I)

wherein

X is a group of the formula NR^6R^7 or a C— or N-linked imidazolyl ring;

Y is hydrogen or C_{1-4}alkyl optionally substituted by a hydroxy group;

R^1 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy, CF_3, NO_2, CN, SR^a, SOR^a, SO_2R^a, CO_2R^a, $CONR^aR^b$, C_{2-6}alkenyl, C_{2-6}alkynyl or C_{1-4}alkyl substituted by C_{1-4}alkoxy, wherein R^a and R^b each independently represent hydrogen or C_{1-4}alkyl;

R^2 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy substituted by C_{1-4}alkoxy or CF_3;

R^3 is hydrogen, halogen or CF_3;

R^4 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy, hydroxy, CF_3, NO_2, CN, SR^a, SOR^a, SO_2R^a, CO_2R^a, $CONR_aR^b$, C_{2-6}alkenyl, C_{2-6}alkynyl or C_{1-4}alkyl substituted by C_{1-4}alkoxy, wherein R^a and R^b are as previously defined;

R^5 is hydrogen, halogen, C_{1-6}alkyl, C_{1-6}alkoxy substituted by C_{1-4}alkoxy or CF_3;

R^6 is hydrogen, C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, phenyl, or C_{2-4}alkyl substituted by C_{1-4}alkoxy or hydroxy;

R^7 is hydrogen, C_{1-6}alkyl, C_{3-7}cycloalkyl, C_{3-7}cycloalkylC_{1-4}alkyl, phenyl, or C_{2-4}alkyl substituted by one or two substituents selected from C_{1-4}alkoxy, hydroxy or a 4, 5 or 6 membered heteroaliphatic ring containing one or two heteroatoms selected from N, O and S;

or R^6 and R^7, together with the nitrogen atom to which they are attached, form a saturated or partially saturated heterocyclic ring of 4 to 7 ring atoms, which ring may optionally contain in the ring one oxygen or sulphur atom or a group selected from NR^8, S(O) or $S(O)_2$ and which ring may be optionally substituted by one or two groups selected from hydroxyC_{1-4}alkyl, C_{1-4}alkoxyC_{1-4}alkyl, oxo, COR^a or C_2R^a where R^a is as previously defined;

or R^6 and R^7 together with the nitrogen atom to which they are attached, form a non-aromatic azabicyclic ring system of 6 to 12 ring atoms;

R^8 is hydrogen, C_{1-4}alkyl, hydroxyC_{1-4}alkyl or C_{1-4}alkoxyC_{1-4}alkyl; and

R^{9a} and R^{9b} are each independently hydrogen or C_{1-4}alkyl, or R^{9a} and R^{9b} are joined so, together with the carbon atoms to which they are attached, there is formed a C_{5-7} ring;

or a pharmaceutically acceptable salt thereof.

5,824,679

PHOSPHANOXIDES—PREPARATION AND USE

Wolfgang Von Der Saal, Weinheim; Herbert Leinert, and Karlheinz Stegmeier, both of Heppenheim, all of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

PCT No. PCT/EP95/03382, § 371 Date Feb. 28, 1997, § 102(e) Date Feb. 28, 1997, PCT Pub. No. WO96/06849, PCT Pub. Date Mar. 7, 1996

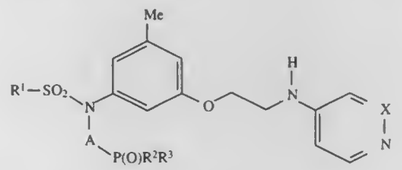
PCT Filed Aug. 26, 1995, Ser. No. 793,446

Claims priority, application Germany, Aug. 30, 1994, 44 30 755.1

Int. Cl.[6] A61K *31/535;* **A01N** *43/58;* **C07D** *401/00;211/68*

U.S. Cl. 514—252 **15 Claims**

1. A compound of the formula:



wherein

R^1 is a group which is phenyl, naphthyl, furan, thiophene, pyrrole, oxazole, isoxazole, thiazole, isothiazole, imidazole, pyrazole, triazole, tetrazole, pyridine, pyridazine, benzothiophene, dibenzothiophene, benzimidazole, carbazole, benzophuran, benzofurazan, benzo-2,1,3-thiadiazole, which group is unsubstituted or substituted at least once by at least one of nitro, halogen, nitrile, hydroxy, carboxy, C_1–C_6-alkoxycarbonyl, phenyl-C_1–C_6-alkoxycarbonyl, phenyl, C_1–C_6, alkyl, trifluoromethyl,C_1–C_6 alkoxy, C_3–C_6 alkenyloxy, C_1–C_6 alkinyloxy, benzyloxy, C_1–C_6 alkylthio, C_1–C_6 alkylsulfinyl,C_1–C_6 alkylsulfonyl, amino, C_1–C_6 alkylamino, di-C_1–C_6 alkylamino, benzylamino, bis(benzyl)amino,C_1–C_6 alkylsulfonylamino, C_1–C_6 alkylcarbonylamino, formylamino, carbamoyl, thiocarbamoyl,C_1–C_6 alkylaminocarbonyl, di-C_1–C_6-alkylaminocarbonyl or ethoxycarbonylmethoxy; and

R^2 and R_3-are independently a straight-chain or-branched C_1–C_6 alkyl;

A is a straight-chain or branched C_1–C_6 alkylene residue; and

X is a CH group or a nitrogen atom; or an optically active form, racemate, diastersomer mixture, hydrate, solvate or physiologically acceptable salt thereof.

5,824,680

IPSAPIRONE FOR THE TREATMENT OF ALZHEIMER'S DISEASE BY IMPROVING MEMORY

Jonathan Turner, and Belinda Cole, both of Berlin, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

Continuation of Ser. No. 39,128, Apr. 15, 1993, abandoned. This application Jun. 5, 1995, Ser. No. 464,947

Claims priority, application Germany, Aug. 31, 1991, 41 35 551.2

Int. Cl.[6] A61K *31/495;31/50*

U.S. Cl. 514—253 **1 Claim**

1. A method of treating Alzheimer's Disease in a patient suffering therefrom by improving the memory of said patient, said method comprising administering to said patient a memory improving effective amount of ipsapirone or a physiologically compatible salt thereof.

5,824,681

ORGANIC SALTS OF N,N'-DIACETYL CYSTINE

Carl-Magnus Alexander Andersson, Lund; Håkan Sten Axel Magnus Bergstrand, Bjärred; Bo-Göran Josefsson; Magnus Leif Lindvall, both of Lund, and Bengt Olof Särnstrand, Bjärred, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

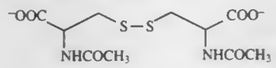
Division of Ser. No. 335,941, Nov. 8, 1994, which is a continuation of Ser. No. 981,373, Nov. 25, 1992, Pat. No. 5,385,904. This application Jun. 7, 1995, Ser. No. 484,143

Claims priority, application Sweden, Nov. 29, 1991, 9103572

Int. Cl.[6] A61K *31/495*

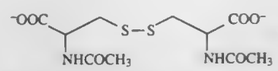
U.S. Cl. 514—255 **5 Claims**

1. A method for preparation of a medicament with immunomodulating activity which comprises adding to a pharmaceutical composition for parenteral, peroral, topical administration, or inhalation as an active ingredient a salt of an organic base and N,N'-diacetyl cystine having the formula:



Ia

or



Ib

or a hydrate or a solvate thereof, wherein the organic base, R^+ or R^2, is selected from the group consisting of lysinium, ethylenediaminium, N,N'-dibenzylethylenediaminium, N-benzyl-2-phenylethylaminium, piperazinium and 1-adamantanaminium.

5,824,682
VASOCONSTRICTIVE DIHYDROBENZOPYRAN DERIVATIVES

Guy Rosalia Eugène Van Lommen, Berlaar; Piet Tom Bert Paul Wigerinck, Turnhout; Marcel Frans Leopold De Bruyn, Wortel; Wim Gaston Verschueren, Berchem, and Marc Francis Josephine Schroven, Wiekevorst, all of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

PCT No. PCT/EP94/02703, § 371 Date Jan. 30, 1996, § 102(e) Date Jan. 30, 1996, PCT Pub. No. WO95/05383, PCT Pub. Date Feb. 23, 1995

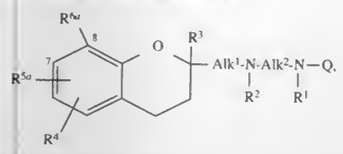
PCT Filed Aug. 12, 1994, Ser. No. 586,760

Claims priority, application European Pat. Off., Aug. 18, 1993, 93202441; Aug. 18, 1993, 93202442; Aug. 18, 1993, 93202443

Int. Cl.[6] **A61K** *31/35;* **C07D** *493/04;405/12;311/58*

U.S. Cl. 514—256 **7 Claims**

1. A compound having the formula:



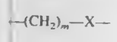
(I)

a pharmaceutically acceptable acid or base addition salt thereof, or a stereochemically isomeric form thereof, wherein

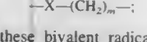
R^1, R^2 and R^3 each independently are hydrogen or C_{1-6}alkyl;

R^4 is hydrogen, halo, C_{1-6}alkyl, hydroxy, C_{1-6}alkyloxy, aryloxy or arylmethoxy;

R^{5a} and R^{6a} are taken together to form a bivalent radical, which is linked to the 7 and 8 position of the dihydrobenzopyran moiety, and has the formula



or



in these bivalent radicals one or two hydrogen atoms may be substituted with C_{1-6}alkyl, C_{1-6}alkylcarbonyl or C_{1-6}alkyl-S(O)—;

X is —O—, —S—, —S(O)—, —$S(O)_2$—, —C(O)— or —NR^7—;

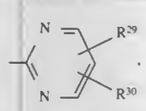
m is 2 or 3;

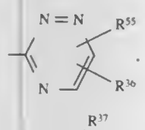
R^7 is hydrogen, C_{1-6}alkyl, C_{1-6}alkylcarbonyl or C_{1-6}alkyl-S(O)—;

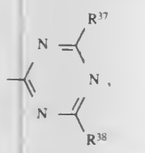
Alk^1 is C_{1-5}alkanediyl;

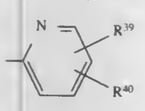
Alk^2 is C_{2-15}alkanediyl; and

Q is a radical of formula

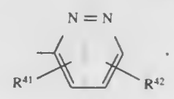


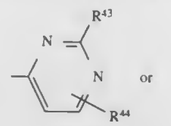




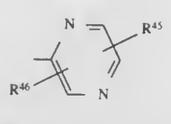


-continued





or



wherein

R^{29}, R^{30}, R^{36}, R^{37}, R^{38}, R^{39}, R^{40}, R^{41}, R^{42}, R^{43}, R^{44}, R^{45}, R^{46} and R^{55} each independently are hydrogen, hydroxy, halo, C_{1-6}alkyl, C_{1-6}alkyloxy, aryloxy, arylC_{1-6}alkyl, C_{1-6}alkylthio, cyano, amino, mono- or di(C_{1-6}alkyl)amino, mono- or di(C_{3-6}cycloalkyl)amino, aminocarbonyl, C_{1-6}alkyloxycarbonylamino, C_{1-6}alkylaminocarbonylamino, piperidinyl or pyrrolidinyl.

5,824,683
2'-[[4'-HALO-[1,1'-BIPHENYL]-4-YL]METHYL]-5'-METHYL-SPIRO[CYCLOPENTANE-1,7' (8'H)-[3H] IMIDAZO[2,1-B]PURIN]-4' (5'H)-ONES

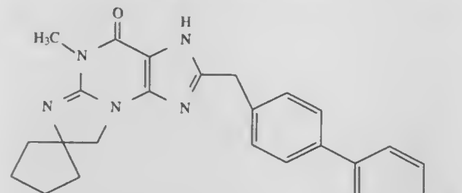
Brian A. McKittrick, Bloomfield, N.J., and Deen Tulshian, Lebanon, N.J., assignors to Schering Corporation, Kenilworth, N.J.

Filed Nov. 26, 1996, Ser. No. 756,508

Int. Cl.[6] **A61K** *31/505;* **C07D** *487/14;473/18;473/40*

U.S. Cl. 514—257 **6 Claims**

1. A compound having the structural formula



or a pharmaceutically acceptable salt thereof, wherein:

X is chloro, fluoro or bromo.

5,824,684
METHOD FOR TREATING DRUG AND ALCOHOL ADDICTION

Norman Viner, Ottawa, Canada, assignor to Synapse Pharmaceuticals International, Inc., Ottawa, Canada

Filed Feb. 21, 1997, Ser. No. 803,722

Int. Cl.[6] **A61K** *31/44;31/15*

U.S. Cl. 514—291 **25 Claims**

1. A method for treating drug and alcohol addiction comprising administering to a human suffering from drug and alcohol addiction an acetylcholine esterase reactivator in an amount effective to treat such addiction.

5,824,685
METHOD OF PREVENTING PROLIFERATION OF RETINAL PIGMENT EPITHELIUM BY RETINOIC ACID RECEPTOR AGONISTS

Peter A. Campochiaro, Baltimore, Md.; Larry A. Wheeler, Irvine, Calif.; Roshantha A. Chandraratna, Mission Viejo, Calif., and Sunil Nagpal, Irvine, Calif., assignors to The Johns Hopkins University School of Medicine, Baltimore, Md., and Allergan, Waco, Tex.

Filed Feb. 1, 1995, Ser. No. 383,741

Int. Cl.[6] **A61K** *31/435;31/07*

U.S. Cl. 514—277 **12 Claims**

1. A method for amelioration of proliferative vitreoretinopathy or traction retinal detachment comprising contacting the retinal pigmented epithelial cells of a subject in need thereof with a therapeutic amount of a retinoic acid receptor agonist selected from the group consisting of ethyl-6-[2-(4,4-dimethylthiochroman-6-yl)ethynyl]nicotinate, 6-[2-(4,4-dimethylchroman-6-yl)ethynyl] nicotinic acid, and p-[(E)-2-(5,6,7,8-tetrahydro-5,5,8,8-tetramethyl- 2-naphthyl)propenyl]-benzoic acid.

5,824,686
METHOD OF TREATING ANDROGENIC ALOPECIA WITH 5-ALPHA REDUCTASE INHIBITORS

Glenn J. Gormley; Keith D. Kaufman; Elizabeth Stoner, all of Westfield, and Joanne Waldstreicher, Scotch Plains, all of N.J., assignors to Merck & Co., Inc., Rahway, N.J.

PCT No. PCT/US94/11507, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/10284, PCT Pub. Date Apr. 20, 1995

Continuation-in-part of Ser. No. 138,520, Oct. 15, 1993, abandoned, and a continuation-in-part of Ser. No. 214,905, Mar. 17, 1994, Pat. No. 5,547,957. This PCT application Oct. 11, 1994, Ser. No. 596,339

Int. Cl.[6] **A61K** *31/44*

U.S. Cl. 514—284 **5 Claims**

1. A tablet useful for the treatment of androgenic alopecia, consisting essentially of 17β-(N-tert-butylcarbamoyl)-4-aza-5alpha-androst-1-ene-3-one as the active ingredient wherein the dosage is about 0.05 to 3.0 mg.

5,824,687
PYRIDINIUM SALTS AND THEIR USE FOR THE CONTROL OF HELICOBACTER BACTERIA

Jörg Senn-Bilfinger, Konstanz, Germany, assignor to BYK Gulden Lomberg Chemische Fabrik GmbH, Konstanz, Germany

PCT No. PCT/EP94/01218, § 371 Date Oct. 20, 1995, § 102(e) Date Oct. 20, 1995, PCT Pub. No. WO94/24130, PCT Pub. Date Oct. 27, 1994

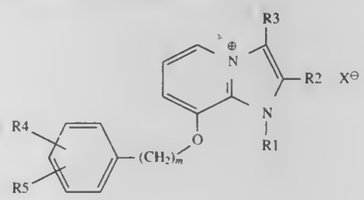
PCT Filed Apr. 20, 1994, Ser. No. 537,772

Claims priority, application Switzerland, Apr. 22, 1993, 1232/93

Int. Cl.[6] **A61K** *31/435;* **C07D** *471/04*

U.S. Cl. 514—300 **11 Claims**

1. A compound of the formula I



(I)

in which

R1 is C_nH_{2n}—A, where

A is hydrogen (H), 1–4C-alkylcarbonyl, carboxyl (COOH), 1–4C-alkoxycarbonyl, carbamoyl ($CONH_2$), naphthyl, phenyl or phenyl which is substituted by one or two identical or different substituents from the group consisting of halogen, 1–4C-alkyl, phenyl, 1–4C-alkoxy, cyano, carboxyl (COOH), 1–4C-alkoxycarbonyl, trifluoromethyl and trifluoromethoxy, and

n is the number 1, 2, 3 or 4,

R2 is 1–4C-alkyl,

R3 is hydrogen (H), 1–4C-alkyl, 2–4C-alkenyl, 2–4C-alkynyl, hydroxy-1–4C-alkyl, amino or cyanomethyl,

R4 is hydrogen (H), 1–4C-alkyl, 1–4C-alkoxy or halogen,

R5 is hydrogen (H), 1–4C-alkyl, 1–4C-alkoxy or halogen,

m is the number 1, 2 or 3 and

$X^{\ominus}$ is a suitable anion,

and the a salt (betaine) of a carboxylic acid thereof, where R1 is not methyl when R2 is methyl, R3 is cyanomethyl, m is the number 1 and R4 and R5 are hydrogen (H).

5,824,688
HIV PROTEASE INHIBITORS

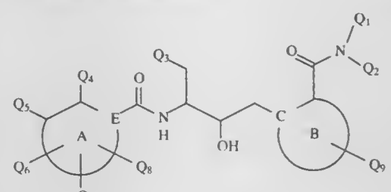
Vincent J. Kalish; Siegfried Heinz Reich, both of San Diego; John H. Tatlock, Poway, all of Calif., and Michael J. Rodriguez, Indianapolis, Ind., assignors to Agouron Pharmaceuticals, Inc.

Division of Ser. No. 190,764, Feb. 2, 1994, Pat. No. 5,484,926, which is a continuation-in-part of Ser. No. 133,543, Oct. 7, 1993, abandoned, and a continuation-in-part of Ser. No. 133,696, Oct. 7, 1993, abandoned, and a continuation-in-part of Ser. No. 137,254, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,621, Dec. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 473,363

Int. Cl.[6] **A61K** *31/47;31/425;31/40;31/38*

U.S. Cl. 514—307 **15 Claims**

1. A compound of the formula:



wherein:

Q_1 and Q_2 are each independently selected from hydrogen and substituted and unsubstituted alkyl and aryl;

Q_3 is selected from mercapto and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, and aryl;

Q_4, Q_5, Q_6, Q_7, and Q_8 are each independently selected from hydrogen, hydroxyl, mercapto, nitro, halogen, —O—J, where J is a substituted or unsubstituted hydrolyzable group, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, sulfinyl, sulfonyl, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, aryl, and $L_6C(O)L_4$, where L_6 is a single bond, —O or —N, and further where L_4 is alkyl, hydroxyl, alkoxyl or hydrogen; and further wherein any one or more of Q_4, Q_5, Q_6, Q_7, and Q_8 may be a member of a spiro ring, and any two of Q_4, Q_5, Q_6, Q_7, and Q_8 may together be members of a ring;

E is carbon or nitrogen;

Q_9 is selected from hydrogen, halogen, hydroxyl, mercapto, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, and aryl, where Q_9 may form part of a ring;



is a monocyclic or polycyclic carbocycle or heterocycle, which is optionally further substituted, and when



is heterocycle, each heterocyclic ring has one to three heteroatoms independently selected from nitrogen, oxygen, and sulfur; and

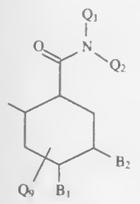


is a monocyclic or polycyclic carbocycle or heterocycle, which is optionally further substituted, and when



is heterocycle, each heterocyclic ring has from one to three heteroatoms independently selected from nitrogen, oxygen and sulfur, with the proviso that

is neither a 5- or 6-membered monocyclic ring, which is optionally further substituted, nor



where B_1 and B_2 form part of a ring having from 3 to 10 members, which is optionally further substituted;

wherein at least one of



is a heterocycle; or a prodrug or pharmaceutically acceptable salt of said compound.

5,824,689

QUINOLINE COMPOUND EXTRACTED FROM SCOLOPENDRA SUBSPINIPES, AND DERIVATIVES THEREOF

Ho-Seong Lee; Young-Jun Park; Min-Hwan Kim, all of Daejun; Seok-Shik Moon, Chungnam; Nam-Sun Cho, Chungbuk; Jong-Hyun Shin, Daejun; Young-Whan Suh, Kyungki-do, and Jung-Ok Lee, Daejun, all of Rep. of Korea, assignors to Samsung General Chemicals Co., Ltd., Chungchungnam-do, Rep. of Korea

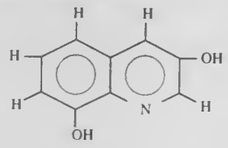
Filed May 30, 1997, Ser. No. 865,126

Claims priority, application Rep. of Korea, May 31, 1996, 96-19136; Apr. 3, 1997, 97-12307

Int. Cl.[6] A61K *31/47;* **C07D** *215/24;215/20*

U.S. Cl. 514—312 **20 Claims**

1. A quinoline compound in substantially pure form which is represented as the following formula (I):



(I)

5,824,690

SUBSTITUTED PYRROLIDIN-3-YL-ALKYL-PIPERIDINES

Timothy P. Burkholder, Fairfield; Elizabeth M. Kudlacz, Cincinnati; Tieu-Binh Le, Cincinnati, and George D. Maynard, Cincinnati, all of Ohio, assignors to Hoechst Marion Roussel Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 332,027, Oct. 31, 1994, Pat. No. 5,635,510, which is a continuation-in-part of Ser. No. 225,371, Apr. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 58,606, May 6, 1993, abandoned. This application Feb. 11, 1997, Ser. No. 798,664

Int. Cl.[6] C07D *409/00*

U.S. Cl. 546—202 **69 Claims**

29. The compound (+)- or (−)-1-[2-[3-(3,4-dichlorophenyl)-1-(3,4,5-trimethoxybenzyl)-pyrrolidin-3-yl]-ethyl]-4-phenyl-piperidine-4-carboxylic acid amide or a mixture thereof.

5,824,691

GUANIDINE DERIVATIVES AS INHIBITORS OF NA^+/H^+ EXCHANGE IN CELLS

Atsushi Kuno, Toyono-gun; Yoshikazu Inoue, Amagasaki; Hisashi Takasugi, Sakai; Hiroaki Mizuno, Osaka, and Kumi Yamasaki, Nishinomiya, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

PCT No. PCT/JP94/00786, § 371 Date Nov. 9, 1995, § 102(e) Date Nov. 9, 1995, PCT Pub. No. WO94/26709, PCT Pub. Date Nov. 24, 1994

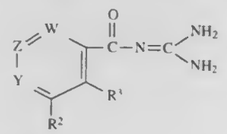
PCT Filed May 12, 1994, Ser. No. 532,804

Claims priority, application United Kingdom, May 17, 1993, 9310074; Dec. 10, 1993, 9325268

Int. Cl.[6] A61K *31/34;31/38;31/40;31/535*

U.S. Cl. 514—335.5 **12 Claims**

1. A compound of the formula:



wherein

Y is C—R^1, wherein R^1 is hydrogen, lower alkyl, hydroxy, protected hydroxy, lower alkoxy, hydroxy(lower)alkyl, protected hydroxy(lower)alkyl, amino(lower)alkyl, protected amino(lower)alkyl, carboxy(lower)alkoxy, protected carboxy-(lower)alkyloxy, hydroxy(lower)alkoxy, protected hydroxy-(lower)alkoxy, acyl, aryl or pyrrolyl,

R^2 is a substituted or unsubstituted heterocyclic group or heterocyclic(lower)alkyl, wherein R^2 excludes saturated monoheterocyclic groups bonded to the remainder of the molecule through a nitrogen heteroatom on said group, and which contain either nitrogen as the only heteroatom, two nitrogens as the only heteroatoms, one nitrogen and one oxygen as the only heteroatoms, or one nitrogen and one sulfur as the only heteroatoms,

R^3 is hydrogen, lower alkoxy, hydroxy, protected hydroxy, or heterocyclic group,

Z is C—R^4, wherein R^4 is hydrogen, carboxy, protected carboxy, nitro, halogen, hydroxy(lower)alkyl, protected hydroxy(lower)alkyl, cyano, lower alkoxy(lower)alkyl, carboxy(lower)alkenyl, protected carboxy(lower)alkenyl, hydroxy, protected hydroxy, di(lower)aikylamino(lower)alkyl, amino(lower)alkyl, protected amino(lower)alkyl, hydroxy(lower)alkoxy, protected hydroxy(lower)alkyoxy, hydroxyimino(lower)alkyl, heterocyclic group, substituted or unsubstituted heterocyclic(lower)alkyl, alkanoyl, carbamoyl which is unsubstituted or substituted with one or two substituent(s) selected from the group consisting of lower alkyl, diamino(lower)alkylidene, di(lower)alkylamino(lower)alkyl and heterocyclic(lower)alkyl, or heterocycliccarbonyl unsubstituted or substituted with hydroxy, protected hydroxy or lower alkyl; and

W is C—R^{12}, wherein R^{12} is hydrogen, lower alkoxy, nitro, hydroxy or protected hydroxy,

and pharmaceutically acceptable salts thereof.

5,824,692

PHARMACEUTICAL COMPOSITIONS FOR PREVENTION AND TREATMENT OF CENTRAL NERVOUS SYSTEM DISORDERS

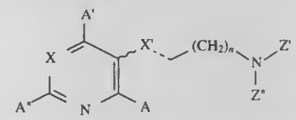
Patrick Michael Lippiello, 1233 Arboretum Dr., Lewisville, N.C. 27023; Merouane Bencherif, 5437-B Countryside Dr., Winston-Salem, N.C. 27105; William Scott Caldwell, 1270 Yorkshire Rd., Winston-Salem, N.C. 27106, and Gary Maurice Dull, 1175 Sequoia Dr., Lewisville, N.C. 27023

Filed Jan. 6, 1995, Ser. No. 364,977

Int. Cl.[6] A61K *31/44*

U.S. Cl. 514—343 **26 Claims**

1. A method for treatment of a neurodegenerative disease, the method comprising administering to a subject an effective amount of a compound having the formula:



where X is nitrogen or carbon bonded to a substituent species characterized as having a sigma m value between about −0.3 and about 0.75; n is an integer which can range from 1 to 5; Z' and Z" individually represent hydrogen or alkyl containing one to five carbon atoms; A, A' and A" individually represent hydrogen, alkyl containing one to seven carbon atoms, or halo; the dashed line in the structure represents a C—C single bond, a C—C double bond or a C—C triple bond; the wavy line in the structure represents a cis (Z) or trans (E) form of the compound when the dashed line is a C—C double bond; X' represents CH_2 when the dashed line is a C—C single bond, CH when the dashed line is a C—C double bond, and C when the dashed line is a C—C triple bond; and when the dashed line is a C—C double bond, the compound has the trans (E) form except for (E)-metanicotine, A, A' , A" and Z' all are hydrogen, n is 2, and Z" is methyl, the substituent species is characterized as having a sigma m value not equal to 0.

5,824,693

METHOD FOR TREATMENT FOR PULMONARY DISEASE

Dennis I. Goldberg, Palatine, Ill., assignor to Transcend Therapeutics, Inc., Cambridge, Mass.

Continuation of Ser. No. 57,122, May 3, 1993, abandoned, which is a continuation of Ser. No. 830,554, Feb. 3, 1992, abandoned, which is a continuation of Ser. No. 639,275, Jan. 10, 1991, abandoned. This application Jun. 6, 1995, Ser. No. 470,094

Int. Cl.[6] A61K *31/425;31/13*

U.S. Cl. 514—365 **17 Claims**

1. A method for treating a human in need thereof and at risk of acute respiratory distress syndrome precipitated by primary bacterial or viral pneumonia, aspiration of gastric contents, direct chest trauma, prolonged or profound shock, burns, near drowning, fat embolism, blood transfusion, cardiopulmonary bypass or acute hemorrhagic pancreatitis comprising administering to the human a glutathione ester in an amount sufficient to reduce the risk of acute respiratory distress syndrome in the human in need thereof.

5,824,694

THIAZOLIDINE DERIVATIVES FOR THE TREATMENT OF PSORIASIS

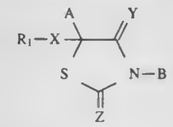
Theodore W Kurtz, Mill Valley, and Harrihar A Pershadsingh, Bakersfield, both of Calif., assignors to Bethesda Parmaceuticals, Inc., Mill Valley, Calif.

Continuation of Ser. No. 460,384, Jun. 2, 1995, abandoned, and a continuation of Ser. No. 263,446, Jun. 22, 1994, Pat. No. 5,594,015. This application Apr. 18, 1996, Ser. No. 639,942

Int. Cl.[6] A61K *31/425*

U.S. Cl. 514—369 **21 Claims**

1. A method for treating acne vulgaris in a human in need thereof by administration of an effective amount of a 5-aryl substituted thiazolidine derivative of formula I



where:

R_1 is an unsaturated carbocyclic or an unsaturated heterocyclic;

A is H or methyl;

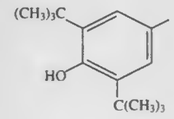
B is H or methyl;

X is a lower alkylene or a bond; or —HC═CH—; or O, CH_2, CH_2S, CH_2SO_2, S, SO, or SO_2;

Y is oxo or imino;

Z is oxo or imino;

and pharmaceutically acceptable salts thereof with the proviso that if X is H_2C═ and Y is imino, then R_1 is not of the formula



5,824,695

METHOD FOR THE PRODUCTION OF BIOCIDAL OR BIOSTATIC 3-ISOTHIAZOLINONE COMPOSITIONS

Rüdiger Baum, Waghäusel, Germany, assignor to Thor Chemie GmbH, Germany

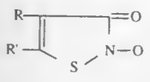
Filed Nov. 15, 1996, Ser. No. 751,223

Claims priority, application European Pat. Off., Nov. 17, 1995, 95118145

Int. Cl.[6] C07D *275/02*

U.S. Cl. 514—372 **3 Claims**

1. A method for the production of qualitatively improved biocidal or biostatic compositions which comprise water and/or a polar or organic solvent, and which contain at least one 3-isothiazolinone of the general formula



in which

Y is a hydrogen atom or an unsubstituted alkyl radical having 1 to 18 carbon atoms, an unsubstituted or halogen-substituted alkenyl radical or alkinyl radical having 2 to 8 carbon atoms, a cylo alkyl radical having 5 to 8 carbon atoms, an aralkyl radical having 7 to 11 carbon atoms or an aryl radical having 6 to 10 carbon atoms and R and R' are in each case a hydrogen atom or halogen atom or a C_1 to C_4 -alkyl radical, the 3-isothiazolinone being stabilized by the addition of a nitrate, said method characterized by the fact that the mixture obtained upon the production of the 3-isothiazolinone is subjected, after the addition of the nitrate, to an additional stabilization by storing it at a pH of 0.2 to 1.5 and a temperature of at most 40° C. for a period of at least 48 hours and thereupon bringing it again to a higher pH.

5,824,696

MEDICAMENTS

Don Edgar Griswold, North Wales, Pa., and John Wharton, London, United Kingdom, assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Sep. 1, 1993, Ser. No. 115,968

Int. Cl.[6] A61K *31/41;31/415*

U.S. Cl. 514—382 **11 Claims**

1. A method of treating chronic inflammatory diseases in a mammal in need thereof which comprises administering to said mammal an effective amount of an angiotensin II receptor antagonist selected from:

(E)-3-[2-n-Butyl-1-{4-carboxyphenyl)-methyl}-1H-imidazol-5-yl]-2-(2-thienyl)methyl-2-propenoic acid, or a pharmaceutically acceptable salt thereof;

(E)-3-[2-n-Butyl-1-{4-carboxynaphth-1-yl)methyl}-1H-imidazol-5-yl]-2-(2-thienyl)methyl- 2-propenoic acid, or a pharmaceutically acceptable salt thereof;

2-n-Butyl-4-chloro-1-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl]-5-(hydroxymethyl)-imidazole, or a pharmaceutically acceptable salt thereof;

2-n-Propyl-4-pentafluoroethyl-1-[2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl] imidazole-5-carboxylic acid, or a pharmaceutically acceptable salt thereof;

5,7-Dimethyl-2-ethyl-3-(2'-(tetrazol-5-yl)biphenyl-4-yl)methyl-3H-imidazo[4,5-b]pyridine;

2-Ethyl-4-{(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methoxy]quinoline. or a pharmaceutically acceptable salt thereof;

{[3-Bromo-2-[2-tetrazol-5-yl)phenyl]-5-benzofuranyl]methyl}-2-butyl- 4-chloro-1H-imidazole-5-carboxylic acid, or a pharmaceutically acceptable salt thereof;

2-n-Butyl-4-spirocyclopentyl-1-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl]- 2-imidazolin-5-one, or a pharmaceutically acceptable salt thereof;

(S)-N-(1-carboxy-2-methyl-prop-1-yl)-N-pentanoyl-N-[(2'-(1H-tetrazol- 5-yl)biphenyl-4-yl)methyl]amine, or a pharmaceutically acceptable salt thereof;

4'-[(2-n-Butyl-6-cylcohexylamino-carbonyl)amino-benzimidazol-1-yl)methyl]biphenyl-2-carboxylic acid, or a pharmaceutically acceptable salt thereof; or

1-(Cyclohexyloxycarbonyloxy)ethyl-2-ethoxy-1-[(2'-(1H-tetrazol-5-yl)biphenyl-4-yl)methyl] -benzimidazole-7-carboxylate.

5,824,697

Patent Not Issued For This Number

5,824,698

ANTIBACTERIAL DIBENZIMIDAZOLE DERIVATIVES

Walter Häsler; Yu-Hua Ji, both of Basel, and Werner Leupin, Liestal, all of Switzerland, assignors to Hoffman-La Roche Inc., Nutley, N.J.

PCT No. PCT/CH95/00255, § 371 Date May 14, 1997, § 102(e) Date May 14, 1997, PCT Pub. No. WO96/16042, PCT Pub. Date May 30, 1996

PCT Filed Nov. 2, 1995, Ser. No. 836,423

Claims priority, application Switzerland, Nov. 17, 1994, 3459/94

Int. Cl.[6] A61K *31/415;* **C07D** *235/18*

U.S. Cl. 514—394 **12 Claims**

1. Compounds useful as antibacterial agents selected from the group consisting of:

2-fluoro-4-[2'-(3-fluoro-4-hydroxyphenyl)-6,6'-dibenzimidazol-2-yl]-phenol,

4-[2'-(4-hydroxy-3-methoxy-phenyl)-6,6'-dibenzimidazol-2-yl]-2-methoxy-phenol,

5-[2'-(3-hydroxy-4-methoxy-phenyl)-6,6'-dibenzimidazol-2-yl]-2-methoxy-phenol,

2,2'-bis-(4-methoxy-phenyl)-6,6'-dibenzimidazole,

2,2'-bis-(4-ethoxy-phenyl)-6,6'-dibenzimidazole,

4-[2'-(4-ethoxy-phenyl)-6,6'-dibenzimidazol-2-yl]-phenol,

4-[2'-(4-hydroxy-phenyl)-6.6'-dibenzimidazol-2-yl]-benzonitrile,

2,2'-difuran-2-yl-6,6'-dibenzimidazole,

as well as the pharmaceutically acceptable salts thereof.

5,824,699

CARBAZOLE INHIBITORS OF COX-2

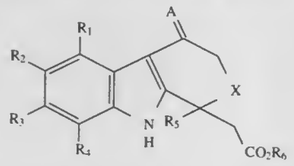
Anthony F. Kreft, Langhorne, Pa.; Craig E. Caufield; Amedeo A. Failli, both of Princeton Junction, N.J.; Thomas J. Caggiano, Morrisville, Pa.; Alexander A. Greenfield, Princeton Junction, N.J., and Dennis M. Kubrak, Philadelphia, Pa., assignors to American Home Products Corporation, Madison, N.J.

Division of Ser. No. 888,983, Jul. 7, 1997, Pat. No. 5,776,967. This application Mar. 16, 1998, Ser. No. 39,871

Int. Cl.[6] A61K *31/40;* **C07D** *209/82*

U.S. Cl. 514—411 **9 Claims**

1. A compound of formula I having the structure



I

wherein

R_1, R_2, R_3 and R_4 are, each, independently, hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkynyl of 2–7 carbon atoms, alkoxy of 1–6 carbon atoms, aralkoxy of 7 to 12 carbon atoms, trifluroalkoxy, alkanoyloxy of 2–6 carbon atoms, hydroxy, halo, trifluoromethyl, cyano, amino, mono- or di-alkylamino in which each alkyl group has 1–6 carbon atoms, alkanamido of 2–6 carbon atoms, or alkanesulfonamido of 1–6 carbon atoms;

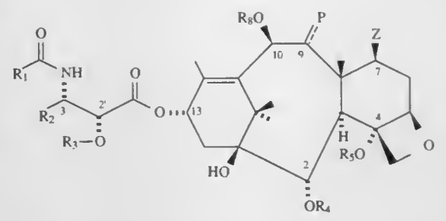
R_5 is hydrogen, alkyl of 1–6 carbon atoms, alkenyl of 2–7 carbon atoms, alkoxyalkyl in which each alkyl moiety has 1–6 carbon atoms or alkylcycloalkyl in which the alkyl moiety has 1–6 carbon atoms and the cycloalkyl moiety has 3–8 carbon atoms;

R_6 is hydrogen, alkyl of 1–6 carbon atoms or alkenyl of 2–7 carbon atoms;

X is methylene;

A is NZ;

Z is hydroxyl, alkoxy, aryloxy, carboxyalkyloxy of 2–7 carbon atoms, arylamino, or alkylsulfonyamino of 1–6 carbon atoms; or a pharmaceutically acceptable salt thereof.



wherein:

R^1 is selected from the group consisting of aryls, substituted aryls, aralkyls, substituted aralkyls, alkyls and substituted alkyls;

R^2 is an aryl or substituted aryl;

R^3 is H, a $C_{1\text{-}10}$ alkoxy, $SiEt_3$, or

$$-\underset{\underset{Y}{\|}}{C}-(CH_2)_n-X-R_9;$$

Y is O or S;

R^4 is H or an aroyl of the formula

$$-\underset{\underset{Y}{\|}}{C}-Ar,$$

where Ar is an aromatic, substituted aromatic or heteroaromatic group;

R^5 is H, CH_3CO or a substituted acetic acid derivative;

Z is H or OR_6 where R_6 is selected from the group consisting of H, $C_{1\text{-}8}$ alkyls, $C_{1\text{-}8}$ substituted alkyls, $C_{1\text{-}8}$ alkoxy, $C_{1\text{-}8}$ aralkyls, substituted aryls, aralkyls, substituted aralkyls, $SiEt_3$,

$$-\underset{\underset{Y}{\|}}{C}-(CH_2)_n-X-R_9 \text{ and } -\underset{\underset{Y}{\|}}{C}-NH-NH-R_9;$$

P is O or OH;

(n) is zero or a positive integer;

X is oxygen or NL, where L is selected from the group consisting of hydrogen, $C_{1\text{-}8}$ alkyls, aryls and aralkyls; and

R_8 is H, $Si(CH_3)_3$, $Si(C_2H_5)_3$, CH_3CO, or a substituted acetic acid derivative of the formula:

$$R_{10}CH_2-\underset{\underset{Y}{\|}}{C}-.$$

where R_{10} is an alkyl, aryl, halogen or hydrogen, or

$$-\underset{\underset{Y}{\|}}{C}-(CH_2)_n-X-R_9;$$

R_9 is selected from the group consisting of substantially non-antigenic polymers substituted $C_{1\text{-}12}$ alkyls, $C_{1\text{-}12}$ alkyls, and bifunctional moieties containing a terminal group of the formula:

$$-X-(CH_2)_n-\underset{\underset{Y}{\|}}{C}-$$

and one of R_3, R_6 and R_8 is

$$-\underset{\underset{Y}{\|}}{C}-(CH_2)_n-X-R_9.$$

5,824,700

ORTHO-QUINONE DERIVATIVES NOVEL SYNTHESIS THEREFOR AND THEIR USE IN THE INHIBITION OF NEOPLASTIC CELL GROWTH

Benjamin J. Frydman; Donald T. Witiak; Jerry Sbunneng Sun, and Andrew H. Geiser, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

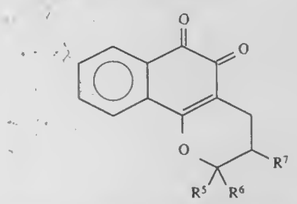
Filed Feb. 20, 1996, Ser. No. 604,131

Int. Cl.[6] A61K *31/35;* **C07D** *311/92*

U.S. Cl. 514—454 **7 Claims**

1. A compound of Formula II:

Formula II



wherein R^5 and R^6 are each, independently, selected from the group consisting of H, C_1–C_6 alkyl, C_1–C_6 alkenyl, C_1–C_6 alkoxy, C_1–C_6 alkoxycarbonyl, $-(CH_2)_n$-aryl, and $-(CH_2)_n$-phenyl; and R^7 is selected from the group consisting of $-(CH_2)_n$-amino, β-alanyl, malonyl, $-(CH_2)_n$-aryl, and $-(CH_2)_n$-phenyl, and n is an integer of from 0 to 10, and salts thereof.

5,824,701

TAXANE-BASED PRODRUGS

Richard B. Greenwald, Somerset, and Annapurna Pendri, Matawan, both of N.J., assignors to Enzon, Inc., Piscataway, N.J.

Continuation-in-part of Ser. No. 351,462, Dec. 12, 1994, Pat. No. 5,622,986, which is a continuation-in-part of Ser. No. 140,346, Oct. 20, 1993, abandoned. This application Feb. 3, 1997, Ser. No. 794,730

Int. Cl.[6] A61K *31/335;* **C07D** *305/14*

U.S. Cl. 514—449 **28 Claims**

1. A taxane-based composition comprising a moiety of the formula:

5,824,702

GENISTEIN AS PREVENTIVE AGAINST ULTRAVIOLET INDUCED SKIN PHOTODAMAGE AND CANCER

Huachen Wei, Forest Hills, N.Y., assignor to Mount Sinai School of Medicine of the City University of New York, New York, N.Y.

Filed Jun. 7, 1996, Ser. No. 657,915
Int. Cl.[6] A61K *31/35*
U.S. Cl. 514—456 **10 Claims**

1. A chemopreventative method of treatment of the human skin in order to inhibit the harmful effect of UVR exposure to the human skin comprising topically applying a therapeutically effective amount of genistein to the skin at a time sufficiently close to the time of UVR exposure to inhibit UVR-induced damage to the skin whereby said harmful effect is inhibited by a chemopreventive mechanism.

5,824,703

METHOD OF ASSISTING NORMAL BREATHING IN A MAMMAL HAVING A LUNG DISORDER

Leland C. Clark, Jr., Cincinnati, Ohio, assignor to Synthetic Blood International, Inc., Seattle, Wash.

Continuation of Ser. No. 439,590, May 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 242,310, May 13, 1994, Pat. No. 5,674,913. This application Dec. 27, 1996, Ser. No. 777,399
Int. Cl.[6] A61K *31/34*
U.S. Cl. 514—461 **30 Claims**

1. A method of assisting respiration of a mammal having a lung disorder wherein lung surfactant or lung flexibility is inadequate to allow normal respiration so that the mammal can breathe normally using ambient gas without mechanical assistance, the method comprising the step of instilling a liquid mixture through the trachea of said mammal in sufficient quantity to coat alveolar sacs of lungs of said mammal, said liquid mixture comprising a high vapor pressure perfluorocarbon with a boiling point at or below 140° C. at standard atmospheric conditions, selected so that the high vapor pressure perfluorocarbon evaporates from the lungs before significantly diffusing into lung tissue and before causing any hyperinflation of the lung and a minimum effective quantity, said effective quantity being less than 0.1 ml/kg of body weight, of a low vapor pressure liquid perfluorocarbon having a boiling point of at least 150° C. at standard atmospheric conditions and being permeable to ambient gas for spreading to coat inside surfaces of and to persist within said alveolar sacs without inducing hyperinflated lung syndrome, thereby enabling said mammal to breathe said ambient gas without mechanical assistance and with essentially normal O_2/CO_2 blood gas exchange.

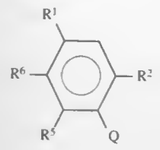
5,824,704

ANTI-VIRAL AROMATIC O-ALKYLATED OXIMES, ETHERS AND THIOETHERS

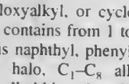
Walter Gerhard Brouwer, Guelph, Canada, assignor to Uniroyal Chemical Co./CIE., Elmira, Canada

Continuation-in-part of Ser. No. 346,819, Nov. 30, 1994, Pat. No. 5,663,199. This application May 8, 1997, Ser. No. 852,939
Int. Cl.[6] A61K *31/34;31/16;* **C07D** *307/02;* **C07C** *327/00*
U.S. Cl. 514—471 **16 Claims**

1. A compound of the formula



wherein Q is



or —XR':

X is oxygen or sulphur;

R^1 is hydrogen, halogen, C_1–C_4 alkyl or C_1–C_4 alkoxy;

R^2 is hydrogen, halogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, mono-, di- or tri- halomethyl, trifuluoromethoxy, C_1–C_4 alkylthio, C_3–C_4 branched alkylthio, nitro, or cyano;

R^3 is hydrogen or C_1–C_4 alkyl;

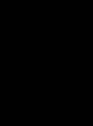
R^4 is heterocyclylalkyl, wherein the heterocyclic moiety is morpholinyl, piperidinyl, pyrrolidinyl, piperazinyl, oxiranyl, oxetanyl, furanyl, tetrahydropyranyl or tetrahydrofuranyl;

R' is C_1–C_8 haloalkyl, C_1–C_8 haloalkenyl, C_1–C_8 alkoxyalkyl, C_1–C_8 alkylthioalkyl, C_1–C_8 hydroxyalkyl, C_1–C_8 acyloxyalkyl, C_1–C_8 aroyloxyalkyl, C_1–C_8 aminoalkyl, C_1–C_8 alkylaminoalkyl, C_1–C_8 dialkylaminoalkyl, C_1–C_8 trialkylsilylalkyl, wherein each of the aforementioned alkyl moieties may be straight-chain or branched; C_1–C_6 alkylphenyl, C_7–C_{12} arylalkyl, C_7–C_{12} alkarylalkyl, or heterocyclylalkyl, wherein the heterocyclic moiety is morpholinyl, piperidinyl, pyrrolidinyl, piperazinyl, oxiranyl, oxetanyl, furanyl, tetrahydropyranyl or tetrahydrofuranyl;

R^5 is hydrogen, halo, methyl, mono-, di- or tri-halomethyl; and

R^6 is

1) R^Z —NH—, wherein R^Z is



A)

wherein R^a and R^b are independently hydrogen or C_1–C_6 alkyl; and Z^1 is O or S;

B)

wherein Z^2 is O or S; and

R^4 is:

a) fully unsaturated, partially or fully reduced or substituted oxathiinyl, furanyl, dithiinyl, dioxinyl, thienyl, thiazolyl, oxazolyl, isoxazolyl, isothiazolyl, thiadiazolyl, pyrazolyl, pyrrolyl, imidazolyl, pyranyl, oxathiazinyl, oxadiazolyl, or indolyl;

b) substituted or unsubstituted, linear or branched C_1–C_8 alkyl, C_3–C_8 alkenyl, C_3–C_8 alkynyl, C_1–C_8 alkoxy, C_3–C_8 alkenyloxy, C_3–C_8 alkynyloxy, or C_1–C_8 mono- or di-alkylamino; C_3–C_7 cycloalkyl, C_3–C_8 cycloalkyloxy, C_3–C_8 cycloalkylalkoxy, C_3–C_7 cycloalkyl C_1–C_6 alkyl, C_3–C_7 cycloalkenyl, unsubstituted or substituted by C_1–C_6 alkyl or C_7–C_8 phenylalkyl; or

c) aryl, aralkyl, aryloxyalkyl, or cycloalkylaryloxy wherein each alkyl moiety contains from 1 to 10 carbon atoms and each aryl moiety is naphthyl, phenyl or phenyl substituted by one or more halo, C_1–C_8 alkyl, carboxyl, C_1–C_8 haloalkyl, C_1–C_8 alkylthio, phenyl, nitro, amino, C_1–C_8 alkoxycarbonylamino, hydroxyl, acetyl, acetyloxy, phenoxy, C_1–C_8 alkoxycarbonyl or C_1–C_8 alkylcarbonyl;

(d) R^7 —W—, wherein

W is O, NH or NR^f wherein R^f is C_1–C_4 alkyl; and

R^7 is linear or branched, unsubstituted or halo-substituted C_1–C_8 alkyl, C_3–C_8 alkenyl, C_3–C_8 alknyl, C_3–C_7 cycloalkyl C_1–C_6 alkyl, C_3–C_7 cycloalkenyl unsubstituted or substituted by C_1–C_6 alkyl, unsubstituted phenyl or phenyl substituted by halo, C_1–C_6 alkyl, C_1–C_6 alkoxy, carboxyl, C_1–C_8 alkythio, phenyl, nitro, amino, hydroxyl, acetyl, acetyloxy, phenoxy, C_1–C_8 alkoxycarbonyl, or C_1–C_8 alkylcarbonyl; furanylalkyl, tetrahydrofuranylalkyl, oxetanylalkyl, or oxiranylalkyl;

e) R^8 —W—R^f, wherein

R^f is a linear or a branched C_1–C_6 alkylidene;

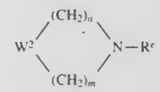
W^1 is O or S; and

R^8 is linear or branched C_1–C_4 alkyl;

f) R^9 R^{10} —N —R , wherein

R^e is as defined above; and

R^9 and R^{10} are independently linear or branched C_1–C_4 alkyl;



wherein

R^e is as defined above;

W^2 is O, S, NH, NR^{11} or $CR^{12}R^{13}$; wherein R^{11} is linear or branched C_1–C_4 alkyl; R^{12} and R^{13} are independently hydrogen or linear or branched C_1–C_4 alkyl; and

n' and m are independently 1, 2 or 3;

h) R^{14}—O_2—C—R^e, wherein

R^e is as defined above; and

R^{14} is linear or branched C_1–C_6 alkyl, C_3–C_6 alkenyl, or C_3–C_6 alkynyl; or C_3–C_7 cycloalkyl, C_3–C_7 cycloalkyl C_1–C_6 alkyl, or C_3–C_7 cycloalkenyl, unsubstituted or substituted by C_1–C_6 alkyl;

i) U—R^e—, wherein

R^e is as defined above; U is hydroxyl, acyloxy, aryloxy, arylsulphonyloxy, nitro, cyano or trimethylsilyl;

j) 1-adamantyl, 2-adamantyl or bornyl;

k) Ar^1 —R^e—, wherein

R^e is as defined above; and

Ar^1 is phenyl or phenyl substituted independently with one to three halogen, mono-, di- or tri- halomethyl, nitro, C_1–C_4 alkyl, C_3–C_4 alkenyl, C_1–C_4 alkyloxy, C_3–C_4 alkenyloxy, or C_3–C_4 alkynyloxy.

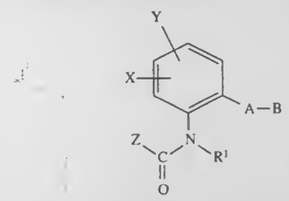
5,824,705

CARBAMATES AND CROP PROTECTION AGENTS CONTAINING THEM

Bernd Mueller, Frankenthal; Hubert Sauter, Mannheim 1; Franz Roehl, Schifferstadt; Reinhard Doetzer, Weinheim; Gisela Lorenz, Neustadt, and Eberhard Ammermann, Heppenheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

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PCT Filed Jan. 18, 1993, Ser. No. 256,628
Claims priority, application Germany, Jan. 29, 1992, 42 02 386.6; Jun. 26, 1992, 42 21 007.0; Oct. 9, 1992, 42 34 081.0; Oct. 9, 1992, 42 34 028.4; Oct. 9, 1992, 42 34 012.8; Oct. 9, 1992, 42 34 067.5
Int. Cl.[6] A61K *31/27;31/17;* **C07C** *271/28;275/28*
U.S. Cl. 514—485 **19 Claims**

1. A compound of the formula I



where

Z is a trifluoromethyl, trichloromethyl, methoxy, amino, methylamino or dimethylamino;

X,Y are hydrogen, fluoro, chloro, bromo, trifluoromethyl, cyano, nitro, alkyl, alkenyl, alkynyl, alkoxy, alkenyloxy, alkynyloxy, or

X,Y together form a substituted aromatic, alicyclic, partially or completely hydrogenated ring;

R^1 is alkoxy, alkenyloxy, alkynyloxy, cycloalkoxy, cycloalkenyloxy, or alkoxycarbonyloxy;

A is a single bond, O, S, CR^2=CR^3, CHR^2O, CHR^2S, CHR^2—ON=CR^4, CR^2=NO, ON=CR^4, C≡C, CHR^2—CHR^3, CHR^2O—CO, or $OCHR^2$;

B is hydrogen, optionally substituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkenyl, cycloalkynyl, aryl, arylalkyl, cycloalkylalkyl, or cycloalkenylalkyl;

R^2,R^3 are hydrogen, alkyl, alkenyl, alkynyl, or cycloalkyl;

R^4 is hydrogen, cyano, alkyl, alkenyl, alkynyl, alkoxy, or cycloalkyl;

provided that B is not hydrogen when A denotes a single bond.

5,824,706

METHOD, COMPOSITIONS, AND APPARATUS FOR TREATING AND PREVENTING RESPIRATORY VIRAL INFECTIONS

Raymond F. Schinazi, 1524 Regency Walk Dr., Decatur, Ga. 30033, and Craig L. Hill, 2941 Cravey Dr., Atlanta, Ga. 30349

Continuation-in-part of Ser. No. 312,561, Sep. 26, 1994, abandoned. This application Mar. 3, 1995, Ser. No. 399,700
Int. Cl.[6] A01N *55/02;59/14;59/16;59/20*
U.S. Cl. 514—492 **21 Claims**

1. A method for treating an animal suffering from respiratory viral infection, comprising administering to said animal an effective amount of a polyoxometalate, wherein said respiratory viral infection is selected from the group consisting of influenza A, influenza B, and RSV and said polyoxometalate is selected from the group consisting of

$[(NMP)_2H]_3PW_{12}O_{40}$
$[(DMA)_2H]_3PMo_{12}O_{40}$
$(NH_4)_{17}Na[NaSb_9W_{21}O_{86}]$
a- and b-$H_5BW_{12}O_{40}$
a- and b-$H_6ZnW_{12}O_{40}$
a- and b-$H_6P_2W_{18}O_{62}$
α-$(NH_4)_6P_2W_{18}O_{62}$
$K_{10}Cu_4(H_2O)_2(PW_9O_{34})_2.20H_2O$
$K_{10}Co_4(H_2O)_2(PW_9O_{34})_2.20H_2O$
$Na_7PW_{11}O_{39}$
$Na_7PW_{11}O_{39}.20H_2O$+2 $C_6H_5P(O)(OH)_2$
$(n\text{-}Bu_4N)_4H_3PW_{11}O_{39}$
b-$Na_8HPW_9O_{34}$
$(n\text{-}Bu_4N)_3PMoW_{11}O_{39}$
a-$[(nBu)_4N]_4Mo_8O_{26}$
$(n\text{-}Bu_4N)_2W_6O_{19}$
$(n\text{-}Bu_4N)_2Mo_6O_{19}$
a-$(NH_4)_nH_{(4-n)}SiW_{12}O_{40}$
a-$(NH_4)_nH_{(5-n)}BW_{12}O_{40}$
a-$K_5BW_{12}O_{40}$
$K_4W_4O_{10}(O_2)6$
b-$Na_9HSiW_9O_{34}$
$Na_6H_2W_{12}O_{40}$
$(NH_4)_{14}[NaP_5W_{30}O_{110}]$
a-$(NH_4)_5BW_{12}O_{40}$
a-$Na_5BW_{12}O_{40}$
$(NH_4)_4W_{10}O_{32}$
$(Me_4N)_4W_{10}O_{32}$
$(HISH^+)_nH_{(5-n)}BW_{12}O_{40}$
$(LYSH^+)_nH_{(5-n)}BW_{12}O_{40}$
$(ARCH_+)_nH_{(5-n)}BW_{12}O_{40}$
$(HISH_+)_nH_{(4-n)}SiW_{12}O_{40}$
$(LYSH^+)_nH_{(4-n)}SiW_{12}O_{40}$
$(ARGH^+)_nH_{(4-n)}SiW_{12}O_{40}$
a-$K_8SiW_{11}O_{39}$
a-$K_8SiW_{11}O_{39}$
$K_{10}(H_2W_{12}O_{42})$
$K_{12}Ni_3(II)(PW_9O_{34})_2.nH_2O$
$(NH_4)_{10}Co_4(II)(PW_9O_{34})_2.nH_2O$
$K_{12}Pd_3(II)(PW_9O_{34})_2.nH_2O$

$Na_{12}P_2W_{15}O_{56}.18H_2O$
$Na_{16}Cu_4(H_2O)_2(P_2W_{15}O_{56})_2.nH_2O$
$Na_{16}Zn_4(H_2O)_2(P_2W_{15}O_{56})_2.nH_2O$
$Na_{16}Co_4(H_2O)_2(P_2W_{15}O_{56})_2.nH_2O$
$Na_{16}Ni_4(H_2O)_2(P_2W_{15}O_{56})_2.nH_2O$
$Na_{16}Mn_4(H_2O)_2(P_2W_{15}O_{56})_2.nH_2O$
$Na_{16}Fe_4(H_2O)_2(P_2W_{15}O_{56})_2.nH_2O$
$K_{10}Zn_3(H_2O)_2(PW_9O_{34})_2.20H_2O$
$K_{10}Ni_4(H_2O)_2(PW_9O_{34})_2.nH_2O$
$K_{10}Mn_4(H_2O)_2(PW_9O_{34})_2.nH_2O$
$K_{10}Fe_4(H_2O)_2(PW_9O_{34})_2.nH_2O$
$K_{12}Cu_3(PW_9O_{34})_2.nH_2O$
$K_{12}(Co\ H_2O)_3(PW_9O_{34})_2.nH_2O$
$K_{12}Zn_3(PW_9O_{34})_2.15H_2O$
$K_{12}Mn_3(PW_9O_{34})_2.15H_2O$
$K_{12}Fe_3(PW_9O_{34})_2.25H_2O$
$(ARGH^+)_{10}(NH_4)_7Na[NaSb_9W_{21}O_{86}]$
$(ARGH^+)_5HW_{11}O_{39}.17H_2O$
$K_7Ti_2W_{10}O_{40}$
$[(CH_3)_4N]_7Ti_2W_{10}O_{40}$
$Cs_7Ti_2W_{10}O_{40}$
$[HISH+]_7Ti_2W_{10}O_{40}$
$(LYSH+)_nNa_{7-n}PTi_2W_{10}O_{40}$
$(ARGH+)_nNa_{7-n}PTi_2W_{10}O_{40}$
$Cs_4[SiW_{11}O_{39}.O(SiCH_2CH_2C(O)OCH_3)_2]_4$—
$[TBA]_3H_3V_{10}O_{28}$
$K_7HNb_6O_{19}.13H_2O$
$K_8Ta_6O_{19}.17H_2O$
$[(CH_3)_4N^+]_4SiW_{11}O_{39}$—O $(SiCH_2CH_2C(O)OCH_3)_2$
$[(CH_3)_4N^+]_4\ PW_{11}O_{39}$-$(SiCH_2CH_2CH_2Cl)$
$[(CH_3)_4N^+]_4\ PW_{11}O_{39}$-$(SiCH_2CH_2CH_2Cl)$
$[(CH_3)_4N^+]_4\ PW_{11}O_{39}$-$(SiCH{=}CH_2)$
$Cs_4[SiW_{11}O_{39}$-$(SiCH_2CH_2CH_2CN)_2]$
$Cs_4[SiW_{11}O_{39}$-$(SiCH_2CH_2CH_2Cl)_2]$
$Cs_4[SiW_{11}O_{39}$-$(SicH{=}CH_2)_2]$
$[(CH_3)_4N^+]_4SiW_{11}O_{39}O(SiCH_2CH_2CH_2CH_2\ CH_2CH_3)_2$
$[(CH_3)_4N^+]_4\ SiW_{11}O_{39}$—$O(SiCH_2CH_2CH_2Cl)_2$
$[(CH_3)_4N^+]_4\ SiW_{11}O_{39}$—$O(SiCH_2CH_2CH_2CN)_2$
$[(CH_3)_4N^+]SiW_{11}O_{39}$—$O(SiCH{=}CH_2)_2$
$[(CH_2)_4N^+]SiW_{11}O_{39}$—$O(SiC(CH_3)_3)_2$
$[(CH_3)_4N^+]SiW_{11}O_{39}$—$O(SiCH_2CH(CH_3)_2)_2$
$[(CH_3)_4N^+]_3PW_{11}O_{39}O(SiCH_2CH_2COOCH_3)_2$
$K_5\ Mn(II)PW_{11}O_{39}$—nH_2O
$K_8Mn(II)P_2W_{17}O_{61}.nH_2O$
$K_6\ Mn(II)SiW_{11}O_{39}.nH_2O$
$K_5PW_{11}O_{39}(SiMe_2).nH_2O$
$K_3PW_{11}O_{41}(PPh)_2.xH_2O$
$Na_3\ PW_{11}O_{41}(PPh)_2.xH_2O$
$K_5PTiW_{11}O_{40}$
$Cs_5PTiW_{11}O_{39}$
$K_6SiW_{11}O_{39}(SiMe_2).nH_2O$
$K_3PW_{11}O_{41}(PEt)_2.nH_2O$
$KSiW_{11}O_{39}[SiPh(t\text{-}BU)].nH_2O$
$K_6SiW_{11}O_{39}(SiPh_2).nH_2O$
$K_7SiW_9Nb_3O_{40}.nH_2O$
$Cs_7SiW_9Nb_3O_{40}.nH_2O$
$Cs_8Si_2W_{18}Nb_6O_{77}.nH_2O$
$(Me_3NH)_7SiW_9Nb_3O_{40}.nH_2O$
$(CN_3H_6)_7SiW_9Nb_3O_{40}.nH_2O$
$(CN_3H_{68}Si_2W_{18}Nb_6O_{77}.nH_2O$
$Rb_7SiW_9Nb_3O_{40}.nH_2O$
$Rb_8Si_2W_{18}Nb_6O_{77}.nH_2O$
$K_8Si_2W_{18}Nb_6O_{77}.nH_2O$
$K_6P_2Mo_{18}O_{62}.nH_2O$
$(C_5H_5N)_7HSi_2W_{18}Nb_6O_{77}.nH_2O$
$(C_5H_5N)_7SiW_9Nb_3O_{40}.nH_2O$
$(ARGH^+)_8SiW_{18}Nb_6O_{77}.18H_2O$
$(LYSH^+)_7K\ SiW_{18}Nb_6O_{77}.18H_2O$
$(HISH^+)_6K_2\ SiW_{18}Nb_6O_{77}.18H_2O$
$H_8Si_2W_{18}Nb_6O_{77}.nH_2O$ (2 batches)
$[(CH_3)_4N^+]_4SiW_{11}O_{39}$—$O(SiCH_2CH_3)_2$
$[(CH_3)_4N^+]_4SiW_{11}O_{39}$—$O(SiCH_3)_2$
$[(CH_3)_4N^+]_4SiW_{11}O_{39}$—$O(SiC_{16}H_{33})_2$
$Li_7HSi_2W_{18}Nb_6O_{77}$
$Li_9P_2V_3Me_3W_{12}O_{62}$
$Cs_6P_2V_3MeW_{12}O_{62}$
$Cs_{12}P_2V_3W_{12}O_{62}$
$K_4H_2PV_3W_8O_{40}$
$Na_{12}P_4W_{14}O_{58}$
$Na_{14}H_6P_6W_{18}O_{79}$
a-$K_5(NbO_2)SiW_{11}O_{39}$
$K_5(TaO_2)SiW_{11}O_{39}$
$(Me_3NH)_5(NbO_2)SiW_{11}O_{39}$
$(Me_3NH)_5NbSiW_{11}O_{40}$
$(Me_3NH)_5(TaO_2)\ SiW_{11}O_{39}$
$K_4(NbO_2)PW_{11}O_{39}$
$K_7(NbO_2)P_2W_{12}O_{61}$
$(Me_3NH)_7(NbO_2)_3SiW_9O_{37}$
$Cs_7(NbO_2)_3SiW_9O_{37}$
$K_6(NbO_2)_3PW_9O_{37}$
$Na_{10}(H_2W_{12}O_{42})$
$K_4NbPW_{11}O_{40}$
$(Me_3NH)_4NbPW_{11}O_{40}$
$K_4NbSiW_{11}O_{40}$
$K_5TaSiW_{11}O_{40}$
$(Me_3NH)_5TaSiW_{11}O_{40}$
$K_6Nb_3PW_9O_{40}$
$K_7NbP_2W_{17}O_{62}$
$K_7(TiO_{2/2})PW_{10}O_{38}$
$K_7(TaO_2)_3SiW_9O_{37}$
$K_7Ta_3SiW_9O_{40}$
$K_6(TaO_2)_3PW_9O_{37}$
$K_6Ta_3PW_9O_{40}$
$K_8Co_2W_{11}O_{39}$
$H_2(Me_4N)_4(EtSi)_2CoW_{11}O_{40}$
$H_2(Me_4N)_4(iso\text{-}C_4H_9Si)_2CoW_{11}O_{40}$
$K_9(NbO_2)_3P_2W_{15}O_{59}$
$K_9Nb_3P_2W_{15}O_{62}$
$K_{12}(NbO_2)_6P_2W_{12}O_{56}$
$K_{12}Nb_6P_2W_{12}O_{62}$
a_2-$K_{10}P_2W_{17}O_{61}$
$K_6Fe(III)Nb_3P_2W_{15}O_{62}$
$K_7Zn(II)Nb_3P_2W_{15}O_{62}$
$(NH_4)_6[a\text{-}P_2W_{18}O_{62}].nH_2O$
$K_{12}[H_2P_2W_{12}O_{48}].24H_2O$
$K_{12}[H_2P_2W_{12}O_{48}].24H_2O$
$K_2Na_{1.5}H_{4.5}(PtMo_6O_{24}].8H_2O$
$K_6[a_2\text{-}P_2W_{17}MoO_{62}].nH_2O$
$KHP_2V_3W_{15}O_{62}.34H_2O$
$K_6[P_2W_{12}Nb_6O_{62}].24H_2O$
$Na_6[V_{10}O_{28}].18H_2O$
$(Guanidinium)_8H[PV_{14}O_{62}].3H_2O$
$K_8H[PV_{14}O_{62}]$
$Na_7[MnV_{13}O_{38}].18H_2O$
$K_6[BW_{11}O_{39}Ga(OH_2)].13H_2O$
$K_7H[Nb_6O_{19}].13H_2O$
$K_7H[Nb_6O_{19}].13H_2O$
$[MeN/Na/K]_4[Nb_2W_4O_{19}]$
$[Me_4N]_9[P_2W_{15}Nb_3P_{62}]$
$[Me_4N]_{15}[HP_4W_{30}Nb_6O_{123}].16H_2O$
$[Me_4N]_{15}[HP_4W_{30}Nb_6O_{123}].16H_2O$
$[Na/K]_6Nb_4W_2O_{19}]$
$[Me_4N/Na/K]_5[Nb_3W_3O_{19}].6H_2O$
$[Me_4N/Na/K]_5[Nb_3W_3O_{19}].6H_2O$
$[Me_5CpRh)_4V_6O_{19}]$
$K_5[CpTiSiW_{11}O_{39}.12H_2O$
b_2-$K_8[SiW_{11}O_{39}].14H_2O$
a-$K_8SiW_{10}O_{36}].12H_2O$
$Cs_7Na_2[PW_{10}O_{37}].8H_2O$
$Cs_6[P_2W_5O_{23}].7(½)H_2O$
g-$Cs_7[PW_{10}O_{36}].7H_2O$
$K_5[SiNbW_{11}O_{40}].7H_2O$
$K_4[PNbW_{11}O_{40}].12H_2O$
$Na_6[Nb_4W_2O_{19}].13H_2O$
$Na_6[Nb_4W_2O_{19}].20H_2O$
$K_6[Nb_4W_2O_{19}].7H_2O$
$K_4[V_2W_4O_{19}].3.5H_2O$
$Na_5[V_3W_3O_{19}].12H_2O$
$K_6[PV_3W_9O_{40}].14H_2O$
$Na_9[A\text{-}b\text{-}GeW_9O_{34}].8H_2O$

$Na_{10}[A\text{-}a\text{-}GeW_9O_{34}].9H_2O$
$K_7[BY_2W_{10}O_{40}].6H_2O$
$Na_5[CH_3Sn(Nb_6O_{19})].10H_2O$
$Na_5[CH_3Sn(Nb_6O_{19})].10H_2O$
$Na_8[Pt(P(m\text{-}SO_3Ph)_3)_3Cl].3H_2O$
$Na_3[P(m\text{-}SO_2Ph)_3].H_2O$
$(Me_3NH)_{10}(H)\ [Si_2(ZrOH)_3W_{18}O_{68}].10H_2O$
$(Me_3NH)_{10}(H)\ [Si_2(ZrOH)_3W_{18}O_{68}].10H_2O$
$K_7[A\text{-}a\text{-}GeNb_3W_9O_{40}].18H_2O$
$K_7[A\text{-}b\text{-}SiNb_3W_9O_{40}].20H_2O$
$(Me_3NH)_9[A\text{-}a\text{-}HSi_2Nb_6W_{18}O_{78}]$
$(Me_3NH)_9[A\text{-}a\text{-}HGe_2Nb_6W_{18}O_{78}]$
$(Me3NH)_9[A\text{-}a\text{-}HGe_2Nb_6W_{18}O_{78}]$
$K_7(H)[A\text{-}a\text{-}Ge_2Nb_6W_{18}O_{77}].18H_2O$
$K_8[A\text{-}b\text{-}Si_2Nb_6W_{18}O_{77}]$ and
$(Me_3NH)_8[A\text{-}b\text{-}Si_2Nb_6W_{18}O_{77}]$.

5,824,707

METHOD FOR IMPROVING THE WEIGHT GAIN AND FEED CONVERSION EFFICIENCY OF SWINE

Gary B. Saxton, Houston, Tex., assignor to Griffin Corporation, Valdosta, Ga.

Filed Mar. 28, 1997, Ser. No. 828,954
Int. Cl.[6] A61K *31/30*
U.S. Cl. 514—499 **9 Claims**

1. A method of improving weight gain or feed conversion efficiency in swine comprising the step of:

administering orally to said swine a composition consisting essentially of an effective amount of copper citrate and an amount of feed sufficient to produce weight gain in said swine.

5,824,708

VIRUCIDAL SUBSTANCES

Karl-Heinz Disch, Haan; Klaus-Peter Bansemir, Langenfeld; Klaus Hachmann, Hilden, and Friedrich von Rheinbaben, Duesseldorf, all of Germany, assignors to Henkel - Ecolab GmbH & Co. OHG, Duesseldorf, Germany

PCT No. PCT/EP94/03812, § 371 Date Jun. 27, 1996, § 102(e) Date Jun. 27, 1996, PCT Pub. No. WO95/14382, PCT Pub. Date Jun. 1, 1995
PCT Filed Nov. 17, 1994, Ser. No. 649,714
Claims priority, application Germany, Nov. 25, 1993, 43 40 124.4
Int. Cl.[6] A01N *37/12;* **C07C** *229/00*
U.S. Cl. 514—563 **2 Claims**

1. The process of reducing the count of a virus comprising contacting said virus with

(1) the reaction product of

a) N-substituted propylenediamines corresponding to formula I:

$$R^1—NH—CH_2—CH_2—CH_2—NH_2 \quad (I)$$

In which R^1 is a linear alkyl radical containing 12 to 14 carbon atoms, with

b) compounds corresponding to formula Il:

$$R^2—O—CO—CH_2—CH_2—\underset{\displaystyle NH_2}{\underset{|}{CH}}—COOH \quad (II)$$

in which R^2 is an alkyl radical containing 1 to 4 carbon atoms or a hydrogen atom, the molar ratio of a) to b) is 1:1 to 1:2 and the reaction is carried out over a period of 0.5 to 10 hours at 60° C. to 175° C. with elimination of alcohol or water, and optionally,

(2) wherein said reaction product is further reacted with ethylene oxide or propylene oxide, and optionally,

(3) salt formation of the products obtained in (1) or (2) with inorganic or organic acids.

5,824,709

METHOD FOR RECYCLING WASTE PLASTIC MATERIAL CONTAINING STYRENE POLYMER

Motoshi Suka, 12-10, Higashi 2-chome, Kunitachi-shi, Tokyo, Japan

Continuation of Ser. No. 340,618, Nov. 16, 1994, abandoned. This application Jul. 2, 1996, Ser. No. 674,664
Int. Cl.[6] C08J *11/04*
U.S. Cl. 521—47 **8 Claims**

1. A method for recovering a thermoplastic polymer from a waste plastic containing the thermoplastic polymer selected from the group consisting of styrene polymers, ABS resin and polypropylene, which comprises:

dissolving the waste plastic in a dissolvent consisting essentially of solvent to form a solution of the waste plastic at an elevated temperature;

filtering the solution to remove foreign debris from the solution;

heating the filtrate to a temperature of 200°–300° C. under a pressure of 1–75 torrs to remove the solvent by evaporation;

extruding the resulting plastic melt into pellets, whereby the waste plastic is recovered;

condensing the solvent separated by the vacuum-evaporation;

refining said condensed solvent by distillation; and

recycling the solvent for use as a solvent for dissolving the waste polymer.

5,824,710

EXTRUDED, OPEN-CELL FOAM AND PROCESS FOR MAKING

Daniel D. Imeokparia, Pickerington; Creston D. Shmidt, Nashport, and Kyung W. Suh, Granville, all of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US95/00417, § 371 Date Oct. 9, 1996, § 102(e) Date Oct. 9, 1996, PCT Pub. No. WO96/00258, PCT Pub. Date Jan. 4, 1996
PCT Filed Jan. 11, 1995, Ser. No. 722,270
Int. Cl.[6] C08J *9/08*
U.S. Cl. 521—79 **12 Claims**

1. A process for making an extruded, open-cell alkenyl aromatic polymer foam, the foam having a minor dimension in cross-section of greater than 0.25 inch, the foam having 30 percent or more open cell content comprising:

a) heating an alkenyl aromatic polymer material comprising greater than 90 percent polystyrene;

b) incorporating into the melt polymer material an amount of a nucleating agent;

c) incorporating into the melt polymer material at an elevated pressure a blowing agent to form a foamable gel;

d) cooling the foamable gel to a lower temperature; and

e) extruding the foamable gel through a die into a region of reduced pressure to form the foam; the process being characterized in that the nucleating agent is incorporated in an amount sufficient to result in a foam having 30 percent or more open cell content, the foamable gel being cooled to a foaming temperature of from 118° C. to 145° C. wherein the foaming temperature is from 3° C. to 15° C. higher than the highest foaming temperature for a corresponding closed-cell foam.

5,824,711

N,N,N' -TRIMETHYLBIS (AMINOETHYL) ETHER SUBSTITUTED UREA COMPOSTIONS FOR THE PRODUCTION OF POLYURETHANES

Michael John Kimock, and Mark Leo Listemann, both of Kutztown, Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed May 6, 1997, Ser. No. 850,985
Int. Cl.[6] C08J *9/04;* B01J *31/00*
U.S. Cl. 521—129 14 Claims

1. 4,10-Diaza-4,10,10-trimethyl-7-oxa-undecane urea.

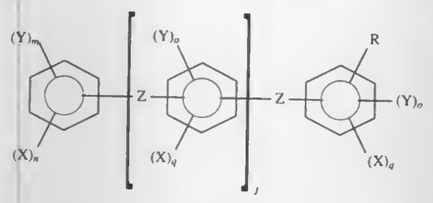
5,824,712

POLYMER POLYOLS CONTAINING HALOGENATED AROMATIC MONOMERS AND POLYURETHANE FOAM MADE THEREFROM

Wayne R. Willkomm; Kenneth J. Hinze, both of Lake Jackson, and Ruben Solis, Richwood, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Feb. 17, 1998, Ser. No. 24,703
Int. Cl.[6] C08G *18/04*
U.S. Cl. 521—135 26 Claims

1. A polyurethane foam containing particles of a polymer of an addition polymerizable monomer having the structure:



wherein
j is a whole number from 0 to 4,
Z is selected from the group consisting of:
a single bond;
a substituted or unsubstituted divalent hydrocarbon radical,
a divalent radical selected from the group consisting of: S, S_2, SO, SO_2, O and CO,
X is a halogen wherein "n" is an integer from 1 to 5 and "q" is an integer from 1 to 4,
R is a substituted or unsubstituted ethylenically unsaturated hydrocarbon monovalent radical having:
(a) up to about 12 carbons;
(b) at least one free radical polymerizable carbon-carbon double bond, and
Y is a monovalent radical selected from the group consisting of:
hydrogen;
mercaptan;
hydroxyl and
a substituted or unsubstituted hydrocarbon monovalent radical having at most about 12 carbons,
wherein "o" is an integer equal to 4 minus "q" and "m" is an integer equal to 5 minus "n" and said polyurethane foam is comprised of the reaction product of a polyol having said particles suspended therein and an organic polyisocyanate, wherein said reaction product is formed in the presence of a blowing agent.

5,824,713

FOAMABLE TWO-COMPONENT MATERIAL BASED ON POLYURETHANE

Franz Peter Schmitz, Vatersletten; Kai Horeis, Munich, and Ramzi Razzak, Mammendorf, all of Germany, assignors to H.B. Fuller Licensing & Financing Inc., St. Paul, Minn.

PCT No. PCT/EP93/03671, § 371 Date Aug. 15, 1995, § 102(e) Date Aug. 15, 1995, PCT Pub. No. WO94/14865, PCT Pub. Date Jul. 7, 1994
PCT Filed Dec. 23, 1993, Ser. No. 464,797
Claims priority, application Germany, Dec. 24, 1992, 92 17 694 U
Int. Cl.[6] C08J *9/00;* G08G *18/08*
U.S. Cl. 521—155 34 Claims

1. A composition prepared by mixing components comprising:
i) a hydroxyl containing component A comprising sufficient water to form freely foamed objects and at least one polymer polyol which is a diol, component A comprising predominantly one or more diols; and
ii) component B comprising an isocyanate compound that has an average isocyanate group functionality of about 2; said composition producing freely foamed objects having a Shore hardness A of about 5 or less and a density of 0.32 g/cm^3 or less; a tensile strength of about 0.14 N/mm^2 or more and an elongation on rupture of 107% or more.

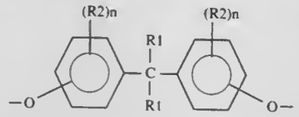
5,824,714

POLYETHER POLYOL FOR PREPARING RIGID POLYURETHANE FOAMS

Thomas Broennum, Louvain-La-Neuve, Belgium; Parminder Singh Sangha, Amsterdam, Netherlands, and Johannes Cornelis Steinmetz, Louvain-La-Neuve, Belgium, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 9, 1996, Ser. No. 762,811
Claims priority, application European Pat. Off., Jul. 12, 1995, 95203399
Int. Cl.[6] C08G *18/14*
U.S. Cl. 521—155 13 Claims

1. A rigid polyurethane foam having a total aromaticity in the range of from 35% to 50%, produced by a process comprising the steps of:
(i) providing a polyol reactant consisting of one or more polyether polyol, the polyether polyols having a weight average aromaticity in the range of from 5% to 35%, a weight average nominal functionality (Fn) in the range of from 2.5 to 4.5 and an average hydroxyl value in the range of from 390 to 650 mg KOH/g, whereby the aromatic carbon atoms are contained in structural moieties of the general formula



wherein both R1 groups independently represent hydrogen or a C1–C3 allyl group;
both R2 groups independently represent a C1–C3 alkyl group; and n is an integer of from 0 to 3;
(ii) reacting the polyol with an aromatic polyisocyanate, whereby the polyol reactant accounts for between 1 and 10% of the total aromaticity of the rigid polyurethane foam; and
(iii) recovering a rigid polyurethane foam having a total aromaticity in the range of from 35% to 50%.

5,824,715

MARKING COMPOSITION AND LASER MARKING METHOD

Shoiti Hayashihara, yono; Masaru Kudo, Omiya, and Masaki Shinmoto, Yono, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP94/01108, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO96/00262, PCT Pub. Date Apr. 1, 1996
PCT Filed Jul. 7, 1994, Ser. No. 592,424
Claims priority, application Japan, Jun. 24, 1994, 6-164809
Int. Cl.[6] C08F *2/46*
U.S. Cl. 522—14 8 Claims

1. A marking composition comprising an ultraviolet ray curing resin, a photo-initiator, a leuco dye with low solubility in toluene and a color developer with low solubility in toluene; said leuco dye with low solubility in toluene being one whose solubility in toluene at 25° C. is 2 w/v % or below, and said color developer with low solubility in toluene being one whose solubility in toluene at 60° C. is 10,000 ppm or below.

5,824,716

PHOTOCURABLE FILM-FORMING ACRYLIC LATICES

Xavier Coqueret, Phalempin; Pierre Rousseau, Domhasle-sur-Meurthe, and Christophe Verge, Beaumontel, all of France, assignors to Elf Atochem S.A., France

PCT No. PCT/FR94/01553, § 371 Date Jul. 19, 1996, § 102(e) Date Jul. 19, 1996, PCT Pub. No. WO95/20016, PCT Pub. Date Jul. 27, 1995
PCT Filed Dec. 29, 1994, Ser. No. 676,218
Claims priority, application France, Jan. 20, 1994, 94 00599
Int. Cl.[6] C08J *3/28;* C08F *2/50;220/18*
U.S. Cl. 522—31 19 Claims

1. A latex composition consisting essentially of (A) water, (B) a photoinitiator in a percentage by weight relative to the wet latex of between 0.01 and 5% and (C) copolymers of α,β-unsaturated compounds and dicyclopentenyloxyethyl methacrylate (DCPOEMA), wherein the latex composition contains DCPOEMA in a percentage by weight relative to the total amount of DCPOEMA copolymers of between 0.01 and 50%, wherein the latex composition is coalesceable by evaporating water therefrom to form a film to be photocrosslinked, and wherein exposure of the coalesed film to ultraviolet radiation photocrosslinks the DCPOEMA copolymers.

5,824,717

PEROXIDE AND RADIATION CURABLE COMPOSITIONS CONTAINING ISOBUTYLENENE COPOLYMERS HAVING ACRYLATE FUNCTIONALITY

Natalie Ann Merrill, Deer Park; Hsien-Chang Wang, Bellaire, and Anthony Jay Dias, Houston, all of Tex., assignors to Exxon Chemical Patents Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 211,899, Oct. 19, 1992, Pat. No. 5,459,174, which is a continuation-in-part of Ser. No. 779,177, Oct. 17, 1991, abandoned, which is a continuation-in-part of Ser. No. 441,575, Nov. 22, 1989, abandoned, Ser. No. 442,028, Nov. 27, 1989, Pat. No. 5,162,445, Ser. No. 631,610, Dec. 20, 1990, abandoned, and Ser. No. 633,645, Dec. 20, 1990, abandoned, each which is a continuation-in-part of Ser. No. 199,665, May 27, 1988, abandoned, Ser. No. 416,503, Oct. 3, 1989, abandoned, and Ser. No. 416,713, Oct. 3, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 476,754
Int. Cl.[6] C08F *8/20*
U.S. Cl. 522—81 5 Claims

1. A peroxide or radiation curable composition comprising:
(i) a copolymer of an isoolefin of 4 to 7 carbon atoms and para-alkylstyrene comonomer;
acrylate functionality nucleophilically grafted randomly onto a portion of the para-alkyl groups of the copolymer;
heat stabilizing free radical scavenger functionality nucleophically grafted randomly onto a second portion of the para-alkyl groups of the copolymer; and
(ii) a filler.

5,824,718

SILANE-CROSSLINKABLE, SUBSTANTIALLY LINEAR ETHYLENE POLYMERS AND THEIR USES

John Penfold, Uetliburg, Switzerland; Morgan M. Hughes, Angleton, Tex.; Stephen Henry Cree, Terneuzen, Netherlands, and Jeffery E. Brann, Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

PCT No. PCT/US95/04901, § 371 Date Oct. 3, 1996, § 102(e) Date Oct. 3, 1996, PCT Pub. No. WO95/29197, PCT Pub. Date Nov. 2, 1995
PCT Filed Apr. 20, 1995, Ser. No. 718,336
Int. Cl.[6] C08J *3/28*
U.S. Cl. 522—120 10 Claims

1. A curable, substantially linear ethylene polymer grafted with a silane crosslinker, the polymer, prior to being grafted with the silane, characterized as having:
(i) a melt flow ratio of $I_{10}/I_{12} \geq 5.63$;
(ii) a molecular weight distribution, M_w/M_n, defined by the equation:

$$M_w/M_n \leq (I_{10}/I_2) - 4.63;$$

(iii) a density between about 0.850 and 0.91 g/cm^3;
(iv) a critical shear rate at onset of surface melt fracture of at least 50 percent greater at the onset of surface melt fracture of a linear olefin polymer having about the same I_2 and M_w/M_n; and
(v) a melt index of between 1 and 200 g/10 min.

5,824,719

POLYMER COMPOSITIONS FOR CONTACT LENSES

Jay F. Kunzler, Canandaigua, and Mahendra P. Nandu, Rochester, both of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Jun. 7, 1995, Ser. No. 482,063
Int. Cl.[6] G02C *7/06;* C08F *32/00*
U.S. Cl. 523—106 37 Claims

1. A hydrogel formed from the hydrated polymerization product of a monomer mixture comprising a hydrophilic monomer and a strengthening monomer, wherein the strengthening monomer consists of 2-hydroxycyclohexyl methacrylate.

5,824,720

FLUORIDE-RELEASING COMPOSITE MATERIALS

Reinhold Nowak, Adelshofen; Erich Wanek, Kaufering, and Bernd Gangnus, Herrsching, all of Germany, assignors to Thera Patent GmbH & Co. KG Gesellschaft für industrielle Schutzrechte, Seefeld, Germany

Filed Dec. 19, 1995, Ser. No. 574,851
Claims priority, application Germany, Dec. 19, 1994, 44 45 266.7
Int. Cl.[6] A61K *6/083;* G08F *20/20;* C08F *2/44*
U.S. Cl. 523—116 25 Claims

1. A polymerizable dental material, comprising:
(a) one or more ethylenically unsaturated polymerizable monomers selected from the group consisting of di- and multifunctional (meth)acrylates;

(b) initiators and optionally activators;

(c) usual fillers, and optionally pigments, thixotropic auxiliaries, plasticizers and other auxiliaries; and

(d) one or more sufficiently water-soluble inorganic complex fluorides of the following formula

$$A_nMF_m$$

wherein,

A is an alkali metal ion or NR_4^+, with R being C_1–C_{18} alkyl, phenyl or substituted phenyl,

M is a metal of the IIIA-VA group or IIB-VB group, with the proviso that M is not silicon or boron,

n is a whole number from 1 to 3, and

m is a whole number from 3 to 6.

5,824,721

WATER SOLUBLE TRIAZOLE DERIVATIVE EMBOSSING INHIBITOR AND THE USE THEREOF

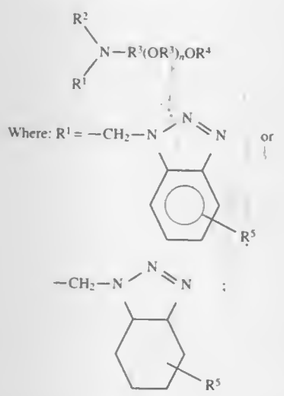
Carl E. Sideman, Lititz, Pa., and Donald M. Snyder, Saline, Mich., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jun. 10, 1996, Ser. No. 658,511

Int. Cl.[6] C08D *249/16*

U.S. Cl. 523—161 **27 Claims**

1. A compound having the formula

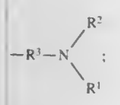


Where: $R^1 = -CH_2-N$ or

R^2=—(C_1–C_4) alkyl, —$(CH_2CH_2O)_mCH_3$, —$(CH_2CH_2O)_mCH_2CH_3$, or —R^1;

R^3=—CH_2CH_2—, —$CH(R^6)CH_2$—, or —$CH_2CH(R^6)$—;

R^4=—(C_1–C_4) alkyl, or



R^5=—H or —(C_1–C_4) alkyl;

R^6=—(C_1–C_4) alkyl;

n=5–45;

m=1–6; and

Each of R^1, R^2, R^3, R^5, and R^6 may be the same or different.

5,824,722

STABILIZER AND RESIN COMPOSITION CONTAINING THE SAME

Akiyoshi Ohnishi; Machiko Mekada, both of Mie; Noriaki Hata; Hiroyuki Suzuki, both of Ibaraki, and Hiroyuki Morikawa, Hyogo, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, and Harima Chemicals, Inc., Hyogo, both of Japan

Filed Feb. 27, 1997, Ser. No. 807,770

Claims priority, application Japan, Feb. 27, 1996, 8-039925; Feb. 27, 1996, 8-039926

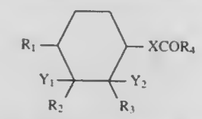
Int. Cl.[6] C08K *5/34;* **C07D** *409/00;* **C09K** *15/22*

U.S. Cl. 524—99 **17 Claims**

1. A stabilizer comprising at least one member selected from the group consisting of compound 1, compound 2 and compound 3, each of which is defined below:

compound 1: a substituted cyclohexene compound of a hindered piperidine type wherein the 1- and 2-positions on a cyclohexene ring are doubly bonded, a carbon atom situated at the 4-position and/or the 5-position of the cyclohexene ring contains a substituent having a C=O group at its alpha-position, at least one carbon atom of the cyclohexene ring located adjacent to said carbon atom having the C=O group has a hydrogen atom as a substituent, and at least one group containing a 2,2,6,6-tetramethyl-4-piperidyl group, which is substituted at its 1-position with a hydrogen atom an alkyl group of 1 to 5 carbon atoms or an acyl group of 1 to 5 carbon atoms, is attached to the 3-, 4-, 5- or 6 -position of the cyclohexene ring;

compound 2: a substituted cyclohexane compound of a hindered piperidine type represented by Formula (I)



(I)

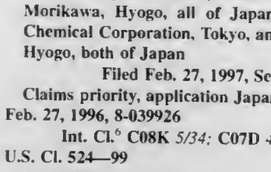
where R_1 is a hydrocarbon group, X is a divalent hydrocarbon group, Y_1 and Y_2 are each a hydrogen atom or a COR_4 group, R_2 and R_3 are each a hydrogen atom or a hydrocarbon group, wherein R_4 is represented by Formula (II)



(II)

where A is —O— or —NR_6— wherein R_6 is a hydrogen atom, or an alkyl or acyl group of 1 to 5 in carbon number, R_5 is a hydrogen atom, or an alkyl or acyl group of 1 to 5 in carbon number, R_2 and R_3 are each a hydrogen atom when Y_1 and Y_2 are each a COR_4 group, R_2 is a hydrogen atom when Y_1 is a COR_4 group, R_3 is a hydrogen atom when Y_2 is a COR_4 group, and at least one of Y_1 and Y_2 is a COR_4 group; and

compound 3: a compound of a hindered piperidine type represented by Formula (III)



(III)

where R is a moiety of a dimer, trimer or tetramer of unsaturated fatty acids of 16 to 22 in carbon number, or a moiety of a hydrogenated product thereof, n is an integer from 2 to 4, A is —O— or —NR_6— wherein R_6 is a hydrogen atom, or an alkyl or acyl group of 1 to 5 in carbon number, and R_5 is a hydrogen atom, or an alkyl or acyl group of 1 to 5 in carbon number.

5,824,723

STAIN RESISTANT COVER COMPOSITION FOR COLORED RUBBER PART TIRE AND PROTECTIVE FILM THEREFOR

Masashi Yano, Saitama, and Yo Uchida, Tokyo, both of Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 686,747

Int. Cl.[6] G08K *5/54;* **C08L** *31/04*

U.S. Cl. 524—262 **7 Claims**

1. A stain resistant cover composition for colored rubber part of a tire comprising water of 100 parts by weight, a vinyl acetate resin emulsion of 15 to 150 parts by weight on a solids content basis, polyvinyl alcohol of 1.0 to 50 parts by weight, a surfactant of 0.5 to 5.0 parts by weight, and a silicone of 0.5 to 5.0 parts by weight.

5,824,724

MICROENCAPSULATABLE SOLVENT ADHESIVE COMPOSITION AND METHOD FOR COUPLING CONDUITS

Mark A. Roesch, Brecksville; David A. Maccarone, Hudson; Gary F. Hillenbrand, Springboro; Morris F. Newsom, Xenia, and Roland M. Lynch, Centerville, all of Ohio, assignors to The Lamson & Sessions Co., Cleveland, Ohio

Continuation-in-part of Ser. No. 741,193, Oct. 29, 1996, abandoned. This application Jan. 20, 1998, Ser. No. 9,106

Int. Cl.[6] C08K *9/10*

U.S. Cl. 524—365 **13 Claims**

1. A polymeric wall surface, having a portion of said surface coated with a plurality of microcapsules that comprise an encapsulated volume of a solvent adhesive composition that comprises (a) 3 to 20 parts by weight of a water-insoluble polymer that is the same as or is chemically similar to the polymeric wall surface, and is selected from the group consisting essentially of polyvinylchloride, chlorinated polyvinylchloride, acrylonitrile-butadiene-styrene, polyacrylates, polystyrene, polycarbonates, and homopolymers and copolymers thereof; and (b) 80 to 97 parts by weight of a mixture of volatile organic solvents, wherein each of said solvents comprises 6 to 40 carbon atoms, and wherein each of said solvents in the mixture of solvents is a solvent for the water-insoluble polymer defined in (a).

5,824,725

METHOD AND COMPOSITION FOR STABILIZING SOIL AND PROCESS FOR MAKING THE SAME

Shawqui M. Lahalih, Dhahran, Saudi Arabia, assignor to King Fahd University of Petroleum And Minerals Research Institute, Dhahran, Saudi Arabia

Division of Ser. No. 415,634, Apr. 3, 1995, Pat. No. 5,670,567. This application Jun. 6, 1997, Ser. No. 870,675

Int. Cl.[6] C08K *3/38*

U.S. Cl. 524—404 **6 Claims**

1. A method for improving the mechanical properties of soil and its resistance to erosion and for conditioning the soil for agricultural purposes, comprising the steps of:

(a) providing a water soluble polymeric composition containing a sulfonated urea-melamine formaldehyde resin, a urea-formaldehyde condensate having a weight average molecular weight (Mw) ranging from 4400 to 10,000 and polydispersity (M_w/M_n) of 2.5 to 10, wherein the ratio of urea-formaldehyde to sulfonated urea-melamine formaldehyde is between 0.2:1 to 2.0:1 and the total solid content of the composition mixture is between 1 and 15%; and

(b) applying the water soluble composition solution on to the surface of the soil.

5,824,726

MULTI-PHASE POLYMERIZATION PROCESS

Joseph M. DeSimone, Chapel Hill, and Timothy Romack, Durham, both of N.C., assignors to University of North Carolina—Chapel Hill, Chapel Hill, N.C.

Continuation of Ser. No. 637,896, Apr. 25, 1996, Pat. No. 5,672,667, which is a continuation of Ser. No. 450,373, May 25, 1995, Pat. No. 5,530,077, which is a division of Ser. No. 409,880, Mar. 24, 1995, Pat. No. 5,527,865. This application Sep. 26, 1997, Ser. No. 938,327

Int. Cl.[6] C08K *3/00*

U.S. Cl. 524—424 **16 Claims**

1. A multi-phase mixture, said multi-phase mixture comprising:

a carbon dioxide phase and a separate aqueous phase; and

a water insoluble polymer; and wherein the ratio of said carbon dioxide phase to said aqueous phase is between about 1:99 and about 99:1 by volume.

5,824,727

FLOORCOVERING MATERIAL

Sten-Åke Blomkvist, Bräkane-Hoby; Jan-Peter Gustavsson, Karlskrona; Anders Konow, and Eskil Lundquist, both of Ronneby, all of Sweden, assignors to Tarkett AG, Frankenthal, Germany

Continuation of Ser. No. 629,195, Apr. 8, 1996, abandoned. This application May 30, 1997, Ser. No. 866,376

Int. Cl.[6] C08L *23/00*

U.S. Cl. 524—52 **17 Claims**

1. A flooring material, consisting essentially of

30–70 parts by weight of a polypropylene copolymer,

10–30 parts by weight of a polypropylene homopolymer,

5–25 parts by weight of a crosslinked ethylene polymer,

10–25 parts by weight of an organic filler,

50–120 parts by weight of an inorganic filler,

0.2–7 parts by weight of a flame retardant, and

0.1–4 parts by weight of an antistatic agent

wherein the organic filler is selected from one or more of starch, cellulose and polyethylene having a melt index below 0.1 g/10 min. (190° C./21.6kg), is phase stable up to a temperature of about 200° C. and is present in the form of discrete particles in the flooring material.

5,824,728

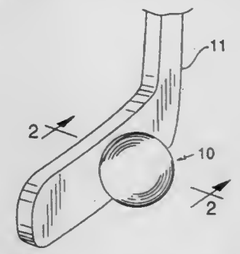
IRON-FERRITE-FILLED POLYMER-BASED COMPOSITE MATERIAL AND METHOD OF MAKING THE SAME

Scot H. Laney, 3545 N.W. 123rd Pl., Portland, Oreg. 97229, assignor to Scot H. Laney, Portland, Oreg.

Filed Jun. 9, 1995, Ser. No. 489,122

Int. Cl.[6] C08K *3/22*

U.S. Cl. 524—435 **6 Claims**



1. A polymer-based composite sports article capable of being used as a puck and consisting essentially of:

a body formed from a first volume of curable rubber-based polymeric component, mixed with a second volume of iron ferrite particles such that the ratio of polymer to iron ferrite particles is in the range of about 1 part polymer to 1–1.5 parts

iron ferrite particles by volume, with the body including a central substantially uncured section and an outer substantially cured section, the body being constructed in a generally spherical shape, and with a size and low-rebound property that accommodates use as a puck for playing hockey.

5,824,729

SILICONE RUBBER COMPOSITION

Takao Matsushita, and Osamu Takuman, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., LTD., Tokyo, Japan

Filed Jan. 30, 1997, Ser. No. 790,782
Claims priority, application Japan, Jan. 30, 1996, 8-037457
Int. Cl.[6] C08K *3/10*
U.S. Cl. 524—437 **18 Claims**

1. A silicone rubber composition comprising:

(A) 100 weight parts organopolysiloxane gum having at least 2 silicon-bonded alkenyl groups in each molecule and the average compositional formula

$$R_aSiO_{(4-a)/2}$$

in which R is selected from substituted and unsubstituted monovalent hydrocarbon groups and a has a value from 1.95 to 2.05,

(B) 10 to 300 weight parts aluminum hydroxide powder,

(C) 0.1 to 30 weight parts of a treating agent selected from the group consisting of silanes and siloxane oligomers having alkenyl and alkoxy or hydroxy substitution, and

(D) 0.1 to 10 weight parts organoperoxide.

5,824,730

FAST PROCESSING WATER BASED BINDER SYSTEM

Manuel Guerra, Jr., Whitesboro, N.Y., assignor to Remet Corporation, Utica, N.Y.

Filed Aug. 13, 1993, Ser. No. 105,921
Int. Cl.[6] C08K *3/34;13/02;* **C08L** *9/08;* **B32B** *18/00*
U.S. Cl. 524—493 **6 Claims**

1. A water based binder for an investment casting slurry, comprising: a mixture of a colloidal silica sol and at least one latex polymer, wherein the latex polymer combines with the colloidal silica sol so as to reduce a processing time between dips in investment casting as compared with a processing time for a binder free of said latex polymer,

wherein the colloidal silica sol has a pH in the range of 8 to 11, and,

wherein the latex polymer is a styrene butadiene latex polymer.

5,824,731

THERMOPLASTIC CARBON BLACK CONCENTRATES CONTAINING RECLAIM CARBON BLACK

Donald R. Rondy, Norton, and Frank M. Moore, Louisville, both of Ohio, assignors to Rondy & Co., Inc., Barberton, Ohio

Filed Oct. 23, 1996, Ser. No. 735,461
Int. Cl.[6] C08K *3/10;* **C09C** *1/48*
U.S. Cl. 524—496 **22 Claims**

1. A carbon black concentrate, comprising a blend of a thermoplastic and a reclaim carbon black, said reclaim carbon black prior to blending being substantially unincorporated into a polymer or rubber and wherein said reclaim carbon black does not include carbon black obtained by destruction of polymers or rubbers, and the amount of said carbon black being from about 20 parts to about 70 parts by weight per 100 total parts by weight of said reclaim carbon black and said thermoplastic.

5,824,732

PROCESS FOR PRODUCING COATING COMPOSITIONS CONTAINING ETHYLENE-ACRYLIC ACID COPOLYMERS WITII POLYAMIDE GRAFTS AS RHEOLOGY MODIFIERS

Michael Jablon, Elizabeth, N.J., assignor to AlliedSignal Inc., Morristown, N.J.

Division of Ser. No. 572,193, Dec. 14, 1995, abandoned, which is a continuation of Ser. No. 441,718, May 15, 1995, abandoned, which is a continuation of Ser. No. 88,461, Jul. 7, 1993, abandoned. This application Jan. 7, 1997, Ser. No. 779,690
Int. Cl.[6] C08L *51/00*
U.S. Cl. 524—504 **20 Claims**

1. A process for producing a paint composition, which comprises the following steps:

(1) dispersing a rheological modifier in a liquid medium to form a gel, wherein said rheological modifier comprises a copolymer comprising at least one -olefin and at least one unsaturated carboxylic acid, said backbone having grafted thereto, by covalent amide linkage, one or more polymeric grafts comprising recurring monomeric units selected from the group consisting of: —NHC(O)RC(O)NHR ^{1}—, —NHRC(O)— and a combination thereof, wherein R is an alkylene group of at least about 2 carbon atoms, and R^1 is R or aryl; and

(2) incorporating the gel into a coating composition.

5,824,733

AQUEOUS COATING PRODUCT AND A PROCESS FOR PRODUCING MULTIPLE LAYER PAINT COATINGS WHOSE PERCEIVED COLOUR VARIES WITH THE ANGLE FROM WHICH THEY ARE VIEWED

Jürgen Döbert, Gevelsberger Str.; Manfred Oppermann, Starenstr.; Michael Prescher, Ilexweg, and Günter Richter, Wilhelm-Brockhaus-Weg, all of Germany, assignors to Wacker-Chemie GmbH, Germany

PCT No. PCT/EP95/01584, § 371 Date Sep. 24, 1996, § 102(e) Date Sep. 24, 1996, PCT Pub. No. WO95/29962, PCT Pub. Date Nov. 9, 1995
PCT Filed Apr. 26, 1995, Ser. No. 737,282
Claims priority, application Germany, Apr. 30, 1994, 44 15 265.5
Int. Cl.[6] C08L *83/00*
U.S. Cl. 524—506 **12 Claims**

1. An aqueous coating composition suitable for use as a basecoat in basecoat/clearcoat paint systems, comprising:

at least one water dilutable binder,

at least one platelet like pigment whose color depends on the viewing angle consisting of oriented, three-dimensionally crosslinked substances of liquid crystalline structure with a chiral phase, and

optionally one or more crosslinking agents, color-imparting absorption pigments, fillers or paint additives.

5,824,734

WATERBORNE COATING COMPOSITIONS

Philip Yung-Chin Yang, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jul. 10, 1996, Ser. No. 678,000
Int. Cl.[6] C08L *39/00*
U.S. Cl. 524—555 **9 Claims**

1. In a waterborne coating composition comprised of an aqueous emulsion containing an acrylic film forming polymer, a stabilizing system for the emulsion which is pH sensitive, and mineral pigment, the improvement which comprises:

an acrylic film forming polymer formed from hydrophobic polymerizable monomers comprised of alkyl esters of acrylic or methacrylic acid having an alkyl ester portion containing between 1 to 12 carbon atoms and a water solubility of less than 2 grams per 100 grams of water,

from about 0.1 to 5% by weight of a secondary or tertiary aminoacrylate monomer aminoacrylate monomer selected from the group consisting of dimethylaminoethyl acrylate, dimethylaminoethyl methacrylate, diethylaminoethyl acrylate, diethylaminoethyl methacrylate, tertiary butylaminoethyl acrylate and tertiary butylaminoethyl methacrylate; and,

from 0.1 to 5% by weight of a crosslinkable monomer selected from the group consisting of acrylamide, methacrylamide and N-methylol acrylamide; and,

said acrylic film forming polymer having less than 3 weight percent of hydrophilic monomer incorporated therein.

5,824,735

MOIRE FLOOR COVERING AND METHOD FOR ITS MANUFACTURE

Gerhard Graab, Mannheim; Klaus Heckel, Gorxheimertal; Alfons Butscher, Birkenau, and Torsten Nahe, Birhenheide, all of Germany, assignors to Firma Carl Freudenberg, Weinheim, Germany

Filed Mar. 4, 1996, Ser. No. 610,200
Claims priority, application Germany, Mar. 2, 1995, 195 07 113.1
Int. Cl.[6] E04F *11/16*
U.S. Cl. 524—575 **8 Claims**

1. A floor covering for use in sports halls, wherein the floor covering consists of rubber and comprises a plurality of base colors, and the floor covering is of the moiré type, which is defined to mean that it has a top side bearing a generally irregular pattern that is multicolored, with the arrangement of the colors being clearly oriented to one direction of the covering and wherein the pattern has directional orientation and exhibits a branching appearance.

5,824,736

FLUOROSILICONE RUBBER COMPOSITION

Hideki Kobayashi, Ichihara, and Wataru Nishiumi, Chiba Prefecture, both of Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Filed Sep. 21, 1993, Ser. No. 124,747
Claims priority, application Japan, Sep. 21, 1992, 4-276666
Int. Cl.[6] C08F *3/36*
U.S. Cl. 524—588 **20 Claims**

1. A fluorosilicone rubber composition, comprising:

(A) 100 weight parts of a 3,3,3-trifluoropropylmethylsiloxane-methylvinylsiloxane copolymer gum having a concentration of methylvinylsiloxane unit in a range of about 0.001 to 5 mole percent,

(B) 30 to 200 weight parts of a dimethylsiloxane-methylvinylsiloxane copolymer gum having a concentration of methylvinylsiloxane unit in a range of about 0.001 to 5 mole percent,

(C) 0.5 to 20 weight parts of a poly(3,3,3-trifluoropropylmethylsiloxane)-polydimethylsiloxane block copolymer,

(D) a reinforcing silica micropowder having a surface area of at least 50 m^2/g, in an amount of 10 to 100 weight parts per 100 weight parts of the total of components (A), (B), and (C), and

(E) a curing agent in a quantity sufficient to cure the composition.

5,824,737

PROCESS FOR THE PREPARATION OF AQUEOUS POLYMER DISPERSIONS, AQUEOUS POLYMER DISPERSIONS PREPARED BY THIS PROCESS AND THE USE OF THESE POLYMER DISPERSIONS

Markus Antonietti, Marburg, Germany, assignor to BASF Lacke +Farbem AG, Muenster-Hiltrup, Germany

PCT No. PCT/EP94/03014, § 371 Date Apr. 8, 1996, § 102(e) Date Apr. 8, 1996, PCT Pub. No. WO95/08578, PCT Pub. Date Mar. 30, 1995
PCT Filed Sep. 8, 1994, Ser. No. 617,811
Claims priority, application Germany, Sep. 21, 1993, 43 32 005.8
Int. Cl.[6] C08K *3/02;* **A61K** *6/00;* **C10M** *105/08*
U.S. Cl. 524—707 **10 Claims**

1. Process for the preparation of aqueous polymer dispersions comprising the steps of

(1) first preparing an emulsion from

(A) an emulsifier or a mixture of emulsifiers wherein the emulsifier is a mixture of

(a1) a compound selected from the group consisting of naturally occurring, zwitterionic phosphatides and mixtures thereof; and

(a2) a compound selected from the group consisting of cholic acid, salts of cholic acid, deoxycholic acid, salts of deoxycholic acid, ricinoleic acid, salts of ricinoleic acid, oleic acid, salts of oleic acid, and mixtures of these compounds;

(B) a water-insoluble agent which forms free radicals or a mixture of water-insoluble agents which form free radicals

(C) a monomer which can be polymerized by free radicals or a mixture of monomers which can be polymerized by free radicals and

(D) water and

(2) secondly polymerizing component (C).

5,824,738

LIGHT STABLE ALIPHATIC THERMOPLASTIC URETHANE ELASTOMERS AND METHOD OF MAKING SAME

William M. Humphrey, Dover, and Victor E. Gerard, Rochester, both of N.H., assignors to Davidson Textron Inc., Dover, N.H.

Filed Oct. 7, 1994, Ser. No. 319,614
Int. Cl.[6] C08L *75/04*
U.S. Cl. 524—715 **26 Claims**

1. An improved light stable polyether/polyol based aliphatic thermoplastic urethane elastomer, said elastomer comprising the product of:

(a) a polyol;

(b) a chain extender;

(c) an organic diisocyanate;

(d) a first hindered amine light stabilizer and a second benzotriazole ultraviolet stabilizing agent;

(e) an antioxidant;

(f) at least one pigment;

(g) a urethane catalyst; and characterized by said first and second ultraviolet stabilizing agents being present in a ratio in a range of approximately 1:1 to 2:1 at a concentration in a range of approximately 0.25% to 2.0% of entire product composition, said antioxidant being present at a total concentration in a range of approximately 0.10% to 1.0% of entire product composition and said pigment being present at a total concentration in a range of approximately 1.0% to 2.0%, whereby said elastomer is light stable following exposure to a Xenon arc artificial weathering with a DE≦3.00 after 2450 kilojoules of output.

5,824,739

SILICONE FOAM CONTROL COMPOSITIONS

Hidetoshi Kondo, and Masahiro Takahashi, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Division of Ser. No. 451,110, May 25, 1995, Pat. No. 5,612,410. This application Oct. 28, 1996, Ser. No. 736,844
Claims priority, application Japan, May 30, 1994, 6-139488
Int. Cl.[6] C08K *3/22*
U.S. Cl. 524—860 25 Claims

1. A silicone foam control composition comprising:

(A) 80 to 99 weight % of an organopolysiloxane represented by the average formula:

$$R^1_aR^2_bQ_cSiO_{(4-a-b-c)/2}$$

wherein R^1 is selected from the group consisting of hydrogen, a hydroxyl group, and a monovalent hydrocarbon group, optionally halogenated, having from 1 to 10 carbon atoms, R^2 denotes a monovalent hydrocarbon group having from 1 to 10 carbon atoms, Q denotes a group having the formula $-R^3Y$ wherein R^3 denotes a divalent hydrocarbon group having from 2 to 18 carbon atoms and Y is a carboxyl-functional monovalent organic group, a is zero or greater than zero, b and c are each positive numbers, with the proviso that the sum of a+b+c has a value of 1.9 to 2.2; and

(B) 1 to 20 weight % of silica having a specific surface area of at least 50 m^2/g.

5,824,740

GOLF BALL

Yoshikazu Yabuki; Yoshinori Sano, both of Sirakawa, and Hiroaki Tanaka, Kobe, all of Japan, assignors to Sumitomo Rubber Industries, Ltd., Hyogo-ken, Japan

Filed Dec. 28, 1995, Ser. No. 580,249
Claims priority, application Japan, Dec. 29, 1994, 6-338789; Dec. 29, 1994, 6-338790
Int. Cl.[6] A63B *37/12*
U.S. Cl. 525—71 19 Claims

1. A golf ball having a core and a cover for covering the core, wherein said cover has a stiffness modulus of 100 to 250 MPa and comprises a heated mixture of an ionomer resin and a glycidyl group-modified styrene-based block copolymer having a JIS-A hardness of 30 to 90 as base resin.

5,824,741

IMPACT-RESISTANT THERMOPLASTIC MOULDING COMPOSITIONS

Burkhard Köhler, Leverkusen; Werner Tischer, Dormagen, and Rolf-Volker Meyer, Leverkusen, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed May 15, 1997, Ser. No. 856,556
Claims priority, application Germany, May 22, 1996, 196 20 587.5
Int. Cl.[6] C08L *9/02;9/06*
U.S. Cl. 525—73 12 Claims

1. Thermoplastic composition comprising:

A) 80 to 99.7 wt. % of a two-phase plastic comprising:

A.1) 0 to 90 parts by weight of a thermoplastic co- or terpolymer of styrene, α-methylstyrene, ring-substituted styrene, methyl methacrylate, acrylonitrile, methacrylonitrile, maleic anhydride, N-substituted maleimide, vinyl acetate or mixtures thereof and

A.2) 10 to 100 parts by weight of a graft product of

A.2.1) 5 to 90 parts by weight of styrene, α-methylstyrene, ring-substituted styrene, methyl methacrylate, acrylonitrile, methacrylonitrile, maleic anhydride, N-substituted maleimide, vinyl acetate or mixtures thereof on

A.2.2) 95 to 100 parts by weight of a rubber copolymer of 70 to 95 wt. % of butadiene and 5 to 30 wt. % of acrylonitrile having an average particle diameter of 100 to 250 μm and

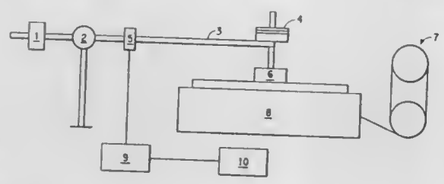
B) 0.3 to 20 wt. % of an acid-functional nitrile rubber.

5,824,742

POLYACETAL RESIN COMPOSITION AND MOLDED ARTICLE THEREOF

Kenichi Shinohara, Yokohama, Japan, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US96/03429, § 371 Date Sep. 10, 1997, § 102(e) Date Sep. 10, 1997, PCT Pub. No. WO96/28510, PCT Pub. Date Sep. 19, 1996
PCT Filed Mar. 13, 1996, Ser. No. 913,265
Claims priority, application Japan, Mar. 13, 1995, 7-52347
Int. Cl.[6] C08L *53/00*
U.S. Cl. 525—88 6 Claims



1. A polyacetal composition comprising:

a) a polyacetal resin;

b) 2–7 parts by weight per 100 parts by weight of said polyacetal resin of a polymer composition based on an olefinic polymer having glycidyl-group containing pendant chains; and

c) 0.5–2.5 parts by weight per 100 parts by weight of said polyacetal resin of a dimethyl siloxane polymer of a plasticity of at least one.

5,824,743

ADHESIVE USABLE IN SOLVENT-FREE FORM

Gerhard Krawczyk, Bremen, and Volker Dreja, Osterholz-Scharmbeck, both of Germany, assignors to Morton International, GmbH, Bremen, Germany

Filed May 14, 1996, Ser. No. 645,670
Claims priority, application Germany, May 20, 1995, 195 18 656.7
Int. Cl.[6] C08G *18/62*
U.S. Cl. 525—127 17 Claims

1. Transparent solvent-free adhesive having a melt viscosity at 100° C. less than 2500 mPa.s and comprising at least one (b) polyurethane containing OH— or NCO-terminals modified by (a) at least one (meth)acrylate- or vinyl-homo- or copolymer which may contain hydroxy functions and which has been obtained by free radical polymerization, wherein the polyurethane (b) is a reaction product of (c_1) a polyetherdiol and/or (c_2) a polyesterdiol with (d_1) a monomeric isocyanate having 1 to 2 NCO-groups and/or (d_2) a polyisocyanate, the weight ratio of (a) to (b) being 30:70 to 60:40.

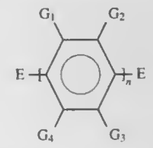
5,824,744

MACROMONOMERS HAVING REACTIVE END GROUPS

Robert R. Gagné , Pasadena; Matthew Louis Marrocco, III, Santa Ana; Mark Steven Trimmer, Pasadena, and Neil H. Hendricks, Brea, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

Division of Ser. No. 331,144, Oct. 27, 1994, abandoned, which is a continuation of Ser. No. 746,917, Aug. 19, 1991, abandoned. This application Jun. 1, 1995, Ser. No. 457,268
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—143 58 Claims

1. A soluble rigid-rod macromonomer of the formula:



wherein each G_1, G_2, G_3, and G_4, on each monomer unit, independently, is H or a solubilizing side group, provided that at least one monomer unit has at least one solubilizing side group, wherein said solubilizing side groups provide said macromonomers with a solubility of at least 0.5% by weight in the solvent system from which they are formed, and wherein said solubilizing side groups G are selected from the group consisting of phenyl, biphenyl, naphthyl, phenanthryl, anthracenyl, benzyl, benzoyl, naphthoyl, phenoxy, phenoxyphenyl, phenoxybenzoyl, alkyl, alkyl ketone, aryl, aryl ketone, aralkyl, alkaryl, alkoxy, aryloxy, alkyl ester, aryl ester, amide, alkyl amide, dialkyl amide, aryl amide, diaryl amide, alkyl aryl amide, amides of cyclic amines such as piperidine, piperazine and morpholine, alkyl ether, aryl ether, alkyl sulfides, aryl sulfides, alkyl sulfones, aryl sulfones, thioether, fluoro, trifluoromethyl, perfluoroalkyl, and pyridyl, where alkyl is a linear or branched hydrocarbon chain having between 1 and 30 carbon atoms, and aryl is any single, multiple or fused ring aromatic or heteroaromatic group having between 3 and 30 carbon atoms, and fluorine-substituted analogs of the aforementioned G groups; E is a reactive end group selected from the group consisting of acetals, acetylenes, acetyls, acid anhydrides, acrylamides, acrylates, aldehydes, alkyl aldehydes, amines, amides, anilines, aryl aldehydes, azides, benzocyclobutenes, biphenylenes, carboxylates, carboxylic anhydrides, cyanates, cyanides, epoxides, esters, ethers, formyls, fulvenes, heteroaryls, hydrazides, hydroxylamines, imides, imines, isocyanates, ketals, ketoalkyls, ketoaryls, ketones, maleimides, nadimides, nitrites, olefins, phenols, phosphates, phosphonates, silanes, silicates, silicones, silyl ethers, styrenes, sulfonamides, sulfones, sulfonic acids and their salts, sulfoxides, tetrahydropyranyl ethers, urethanes, vinyl ethers, thioethers, and vinyls; the macromonomer has an average degree of polymerization, DP_n, greater than 6; and adjacent monomer units are oriented head-to-head, head-to-tail, or randomly.

5,824,745

RESIN COMPOSITION

William F. Brown, P.O. Box 1360, Columbus, Ind. 47202

Filed Feb. 28, 1997, Ser. No. 810,678
Int. Cl.[6] C08F *8/30*
U.S. Cl. 525—178 9 Claims

1. A resin composition for use in fabricating a plastic article of manufacture comprising post-consumer recycled plastic materials which contain polyethylene and/or polyethylene terephthalate, an ethylene-octene copolymer and a polyamide.

5,824,746

GOLF BALLS INCORPORATING FOAMED METALLOCENE CATALYZED POLYMER

Kevin M. Harris, New Bedford, and Murali Rajagopalan, South Dartmouth, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.

Continuation-in-part of Ser. No. 482,514, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 377,553, Jan. 24, 1995, abandoned. This application Jun. 5, 1996, Ser. No. 658,338
U.S. Cl. 525—196 31 Claims

1. A golf ball comprising a cover and a core, the cover having at least one foamed layer, the foamed layer formed of a metallocene catalyzed polymer blend, comprising at least one metallocene catalyzed polymer and at least one ionomer, wherein the metallocene catalyzed polymer is of the formula:



wherein

R_1 is hydrogen, aromatic, heterocyclic, or lower alkyl selected from the group consisting of CH_3, C_2H_5, C_3H_7, and C_4H_9;

R_2 is hydrogen, aromatic, heterocyclic, or lower alkyl selected from the group consisting of CH_3, C_2H_5, C_3H_7, C_4H_9, and C_5H_{11};

R_3 is hydrogen or lower alkyl selected from the group consisting of CH_3, C_2H_5, C_3H_7, C_4H_9, and C_5H_{11};

R_4 is selected from the group consisting of H, CH_3, C_2H_5, C_3H_7, C_4H_9, C_5H_{11}, C_6H_{13}, C_7H_{15}, C_8H_{17}, C_9H_{19}, $C_{10}H_{21}$, and phenyl, in which from 0 to 5 H within R_4 can be replaced by substituents selected from the group consisting of COOH, SO_3H, NH_2, F, Cl, Br, I, OH, SH, silicone, lower alkyl esters and lower alkyl ethers, with the proviso that R_3 and R_4 can be combined to form a bicyclic ring;

R_5 is hydrogen, lower alkyl including C_1–C_5, carbocyclic, aromatic or heterocyclic;

R_6 is hydrogen, lower alkyl including C_1–C_5, carbocyclic, aromatic or heterocyclic; and

wherein x ranges from 99 to 50 weight per cent of the polymer, y ranges from 1 to 50 weight per cent of the polymer and z ranges from 0 to 49 weight per cent of the polymer.

5,824,747

GOLF BALL

Masatoshi Yokota, Shirakawa, Japan, assignor to Sumitomo Rubber Industries, Ltd., Hyogo-Ken, Japan

Filed Sep. 27, 1996, Ser. No. 722,497
Claims priority, application Japan, Sep. 29, 1995, 7-276483
Int. Cl.[6] C08L *33/02*
U.S. Cl. 525—221 5 Claims

1. A golf ball comprising a core and a cover covering the core, wherein the cover has a Shore D hardness of from 60 to 65 and a stiffness modulus of from 2,000 to 2,500 kgf/cm^2 and is formed from a mixture of:

Resin (A): a monovalent or divalent metal salt of a copolymer of ethylene and acrylic acid or methacrylic acid, which has a Shore D hardness of 65 to 70 and a stiffness modulus of 3,000 to 4,500 kgf/cm^2;

Resin (B): a monovalent or divalent metal salt of a copolymer of ethylene and acrylic acid or methacrylic acid, which has a Shore D hardness of 55 to 65 and a stiffness modulus of 1,300 to 3,000 kgf/cm^2; and

Resin (C): a monovalent or divalent metal salt of a terpolymer of ethylene, acrylic acid or methacrylic acid and acrylate or methacrylate, which has a Shore D hardness of 50 to 60 and a stiffness modulus of 700 to 1,300 kgf/cm^2.

5,824,748

COMPOSITE PRESSURE SENSITIVE ADHESIVE MICROSPHERES

Michael R. Kesti, Minneapolis; James E. Garbe, Inver Grove Heights; Joaquin Delgado, Stillwater; Spencer F. Silver, White Bear Lake, and Richard J. Goetz, Woodbury, all of Minn., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Filed Jun. 3, 1996, Ser. No. 657,266

Int. Cl.^{6} C08F *265/04*

U.S. Cl. 525—243 **13 Claims**

1. Composite pressure sensitive adhesive microspheres comprising a mixture of two or more water insoluble polymers that are present wholly within the boundaries of the polymeric microspheres, wherein at least one water insoluble polymer is a solute polymer and at least one water insoluble polymer is a matrix polymer.

5,824,749

FLUORINE-CONTAINING ELASTOMER COMPOSITION

Takebiro Sonoi; Haruyoshi Tatsu, both of Ibaraki, Japan; Lev Solomonovich, deceased, late of Moscow, Russian Federation, by Elena N. German, executrix; Valerii Romanovich Polishchuk, deceased, late of Lod, Israel, by Margarita Polishchuk, executrix, and Satoru Saito, Kitaibaraki, Japan, assignors to Nippon Mektron, Limited, Tokyo, Japan

Continuation-in-part of Ser. No. 550,810, Oct. 31, 1995, Pat. No. 5,672,758. This application Oct. 18, 1996, Ser. No. 749,151

Claims priority, application Japan, Oct. 4, 1994, 6-266247

Int. Cl.^{6} C08F *8/32;8/34*

U.S. Cl. 525—351 **5 Claims**

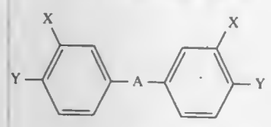
1. A fluorine-containing elastomer composition, which comprises a terpolymer of tetrafluoroethylene, perfluoro(lower alkyl vinyl ether) or perfluoro(lower alkoxy-lower alkyl vinyl ether) and a cross-linkable cyano group-containing (perfluorovinylether) selected from:

$$CF_2=CFO(CF_2)_nCN$$

where n is an integer from 2 to 12, and

$$CF_2=CFO(CF_2)_3OCF(CF_3)CN, \text{ and}$$

a bis(aminothiophenol) compound represented by the following general formula as a cross-linking agent:



wherein A is an alkylidene group having 1 to 6 carbon atoms, a perfluoroalkylidene group having 1 to 10 carbon atoms, a SO_2 group, an O atom, a CO group or a carbon-carbon bond capable of directly bonding two benzene rings and one of X and Y is an amino group, while the other is a mercapto group.

5,824,750

PREPARATION OF POLYMERS CONTAINING OXAZINE GROUPS

Martin Weber, Neustadt; Rolf Mülhaupt; Jörg Kressler, both of Freiburg; Philipp Müller, and Rüdiger Schäfer, both of Gundelfingen, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Dec. 5, 1996, Ser. No. 760,808

Claims priority, application Germany, Feb. 21, 1996, 196 06 198.9

Int. Cl.^{6} C08G *65/48*

U.S. Cl. 525—390 **26 Claims**

1. A process for the preparation of a polymer (A) containing oxazine groups by reacting a polymer (T) containing nitrile groups with a monoaminoalcohol in the presence of a catalyst, wherein the polymer T is reacted in the melt with the monoaminoalcohol in the presence of the catalyst and in the absence of a solvent.

5,824,751

BIODEGRADABLE HIGH MOLECULAR COMPOSITION

Yoji Hori; Yoko Takahashi; Hideyuki Hongo; Akio Yamaguchi, and Toshimitsu Hagiwara, all of Kanagawa, Japan, assignors to Takasago Koryo Kogyo Kabushiki Kaisha (Takasago International Corporation), Tokyo, Japan

Filed Jan. 26, 1996, Ser. No. 592,518

Claims priority, application Japan, Jan. 26, 1995, 7-028900; Nov. 1, 1995, 7-306421

Int. Cl.^{6} C08G *63/08*

U.S. Cl. 525—450 **19 Claims**

1. Biodegradable composition comprising at least either poly(beta-hydroxybutyric acid) or a biodegradable copolymer thereof and a di-block copolymer or tri-block copolymer of poly(beta-hydroxybutyric acid) with other biodegradable polyesters or biodegradable polycarbonates, with the poly(beta-hydroxybutyric acid) unit in said block copolymer having a stereospecifically regular structure, wherein said biodegradable polyesters or said biodegradable polycarbonates have a polymerization degree of from 300 to 5,000.

5,824,752

PROCESS FOR THE PREPARATION OF ADVANCED RESINS

Johannes Petrus JozeF Beerepoot; Johannes Jozias Blom; Feike De Jong; Wilhelmina Johanna Maria Van Der Linden-Lemmers; Willem Sjardijn; Virgilius Christiaan Johannes Nicolaas Van Liempd, all of Amsterdam, and Paulus Egidius Raas, Hague, all of Netherlands, assignors to Shell Oil Company, Houston, Tex.

Filed Apr. 18, 1997, Ser. No. 844,128

Claims priority, application European Pat. Off., Apr. 19, 1996, 96201053

Int. Cl.^{6} C08G *59/42;59/62*

U.S. Cl. 525—523 **9 Claims**

1. A process for the preparation of an advanced epoxy resin by reaction of a compound having on average more than one epoxy group per molecule and a compound having on average at least one hydroxyl group or carboxyl group per molecule in the presence of a catalyst at elevated temperature, the process comprising:

(a) mixing the epoxy compound, the hydroxyl compound or the carboxyl compound and the catalyst; and

(b) transferring the mixture as a feedstream to a surface exposed to an elevated temperature sufficient to produce an advanced epoxy resin which is at least intermittently moving with respect to the feedstream.

5,824,753

PROCESS FOR PRODUCING A STYRENIC POLYMER

Shoji Naganuma, and Norio Tomotsu, both of Ichihara, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

PCT No. PCT/JP96/01205, § 371 Date Dec. 24, 1996, § 102(e) Date Dec. 24, 1996, PCT Pub. No. WO96/34894, PCT Pub. Date Nov. 7, 1996

PCT Filed May 2, 1996, Ser. No. 750,844

Claims priority, application Japan, May 2, 1995, 7-108358

Int. Cl.^{6} C08F *2/38;4/642*

U.S. Cl. 526—82 **3 Claims**

1. A process for producing a styrenic polymer having a syndiotactic configuration; wherein said process comprises a plurality of polymerization stages, at least one of said polymerization stages being a polymerization stage in which hydrogen is introduced, and wherein the polymerization time in a first stage of said plurality of polymerization stages is kept at 20 seconds to 2 hours.

5,824,754

PROCESS FOR THE POLYMERISATION OF ALPHA-OLEFINS USING A COCATALYTIC COMPOSITION

Paul Fiasse, Brussels, and Hervé Collette, Namur, both of Belgium, assignors to Solvay Polyolefins Europe - Belgium (Société Anonyme), Brussels, Belgium

Continuation of Ser. No. 322,381, Oct. 13, 1994, abandoned, which is a continuation of Ser. No. 18,418, Feb. 17, 1993, abandoned, which is a division of Ser. No. 751,936, Aug. 30, 1991, Pat. No. 5,204,305. This application Feb. 23, 1996, Ser. No. 606,499

Claims priority, application Belgium, Aug. 30, 1990, BE-09000839

Int. Cl.^{6} C08F *4/64*

U.S. Cl. 526—141 **1 Claim**

1. A process for the polymerisation of alpha-olefins, comprising first preparing a storage stable cocatalytic composition by contacting a mixture of ethylaluminium halides (A) with an electron-donating compound (ED) selected from the group consisting of carboxylic acid esters, amides and ketones, said mixture of organoaluminium halides (A) having an atomic ratio halogen (X)/aluminium (Al) of greater than 1.005 and less than 1.3, and the halides (A) and the compound (ED) having a mole ratio halides (A)/compound (ED) of greater than about 20, said cocatalytic composition prepared in the absence of polymerisable alpha-olefin and in the absence of catalytic solid containing a titanium halide, and said cocatalytic composition capable of being stored up to 101 days at temperatures up to 60° C. without its catalytic efficacy substantially modified, and subsequently polymerizing alpha-olefins in the presence of a catalytic system comprising a solid containing a titanium trichloride complexed with an electron-donating compound obtained by a process involving an initial reduction of a titanium compound selected from the group consisting of tetrahalide and compounds of the tetra(hydrocarbon radical-oxy)titanium type and mixtures thereof and said cocatalytic composition.

5,824,755

PROCESS FOR PRODUCING FLUOROELASTOMERS

Kenichi Hayashi; Kenzo Hashimura, both of Miyazaki; Michio Kasahara, Oita, and Yukihiro Ikeda, Miyazaki, all of Japan, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/JP94/00480, § 371 Date Nov. 28, 1996, § 102(e) Date Nov. 28, 1996, PCT Pub. No. WO94/22930, PCT Pub. Date Oct. 13, 1994

Continuation of Ser. No. 525,512, Nov. 28, 1995, abandoned. This PCT application Mar. 25, 1994, Ser. No. 805,019

Claims priority, application Japan, Mar. 30, 1993, 5-093907

Int. Cl.^{6} C08F *2/00*

U.S. Cl. 526—206 **16 Claims**

1. A suspension process for producing a fluoroelastomer having copolymerized units of vinylidene fluoride monomer and at least one other copolymerizable fluorinated monomer which comprises

(A) dispersing said monomers in an aqueous medium containing 0.001–3 parts by weight of a suspension stabilizer per 100 parts of the aqueous medium and 0.001–5 parts by weight of an oil soluble organic peroxide polymerization initiator solution per 100 parts of the aqueous medium; and

(B) polymerizing the resultant dispersion at a temperature of 45° C.–70° C.;

wherein said oil soluble organic peroxide polymerization initiator solution consists essentially of 0.1–75 wt. % of an oil soluble organic peroxide in a water-soluble hydrocarbon solvent and said water-soluble hydrocarbon solvent contains no halogen atom and is represented by compounds of the formulas $(C_3)_3COH$, R_2COOR_1, and R_1COR_3, where R_1 and R_3 are methyl or t-butyl groups, and R_2 is hydrogen, a methyl group or a t-butyl group.

5,824,756

H_2O_2-CATALYZED POLYMERIZATIONS FOR LINEAR POLYVINYLPYRIDINES

Eric F. V. Scriven, Greenwood; James R. Stout, Brownsburg; Ramiah Murugan, Indianapolis, and James G. Keay, Carmel, all of Ind., assignors to Reilly Industries, Inc., Indianapolis, Ind.

PCT No. PCT/US94/12150, § 371 Date Aug. 2, 1996, § 102(e) Date Aug. 2, 1996, PCT Pub. No. WO95/11926, PCT Pub. Date May 4, 1995

PCT Filed Oct. 25, 1994, Ser. No. 615,309

Int. Cl.^{6} C08F *2/10;2/06;26/06*

U.S. Cl. 526—212 **43 Claims**

1. A process for producing a linear polyvinylpyridine, comprising:

(a) forming a reaction mass by charging to a reactor an aqueous solvent including at least one organic co-solvent and water in a volumetric ratio of 1:99 to 95:5, respectively, one or more vinylpyridine monomer(s), and hydrogen peroxide;

(b) reacting the reaction mass to polymerize the vinylpyridine monomer(s) to form a reacted mass containing a linear polyvinylpyridine having a molecular weight of up to about 100,000;

(c) distilling the reacted mass after step (b) containing the linear polyvinylpyridine to remove the organic co-solvent and form a distilled product containing the linear polyvinylpyridine; and

(d) reacting the linear polyvinylpyridine after step (c) to prepare a functionalized linear polyvinyloyridine selected from an acid salt form, a quaternary salt form, and an N-oxide form.

5,824,757

DI-(ALKEN-1-YL)-SUBSTITUTED BORINIC ACIDS AND BORINATES AS OXIDATION INHIBITORS FOR CARBON COMPOSITES

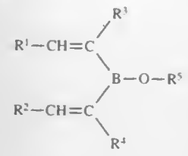
Stephen John Backlund, Fair Oaks, and Robert Earl Olsen, Placerville, both of Calif., assignors to Aerojet-General Corporation, Rancho Cordova, Calif.

Division of Ser. No. 360,567, Jun. 2, 1989, Pat. No. 5,708,105. This application Sep. 18, 1997, Ser. No. 932,698

Int. Cl.[6] C08F *30/06*

U.S. Cl. 526—239 20 Claims

1. A polymer formed by the polymerization of at least one monomer having the formula:



in which R^1, R^2, R^3, R^4 and R^5 are independently selected from the group consisting of H, C_1–C_6 alkyl, C_2–C_6 alkenyl, C_2–C_6 alkynyl, C_3–C_7 cycloalkyl, C_5–C_7 cycloalkenyl, aryl, (C_1–C_6 alkyl)-substituted aryl, (C_2–C_6 alkenyl)-substituted aryl, and (C_2–C_6 alkynyl)-substituted aryl, with the proviso that at least one of R^1, R^2, R^3, R^4 and R^5 is other than H.

5,824,758

COPOLYMER OF CHLOROPRENE AND α-CYANOACRYLATE

Yoshihiro Mashiko; Masao Koga, and Shiro Matsunaga, all of Niigata, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

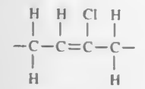
Filed May 7, 1996, Ser. No. 646,148

Claims priority, application Japan, May 9, 1995, 7-110795

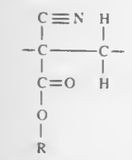
Int. Cl.[6] C07F *236/18*

U.S. Cl. 526—295 8 Claims

1. A copolymer comprising monomer units of the following chemical formulas (1) and (2), wherein the total number of these monomer units is from 10 to 5,000:



(1)



(2)

wherein R in the formula (2) is a $C_{1\text{-}16}$ alkyl group, a $C_{2\text{-}16}$ alkoxyalkyl group, a cyclohexyl group, or a phenyl group.

5,824,759

PROPYLENE RESIN COMPOSITION AND MOLDED ARTICLE THEREOF

Kazuyuki Watanabe; Sakuyoshi Nakagami, and Meiko Saihata, all of Oita, Japan, assignors to Showa Denko K.K., Tokyo, Japan

PCT No. PCT/JP96/00063, § 371 Date Nov. 1, 1996, § 102(e) Date Nov. 1, 1996, PCT Pub. No. WO96/23029, PCT Pub. Date Aug. 1, 1996

PCT Filed Jan. 18, 1996, Ser. No. 716,405

Claims priority, application Japan, Jan. 23, 1995, 7-008509; Feb. 2, 1995, 7-016215; Feb. 2, 1995, 7-016217

Int. Cl.[6] C08F *210/00*

U.S. Cl. 526—348 17 Claims

1. A propylene resin composition obtained by dynamic heat treatment of a blend of

(A) 100 parts by weight of a propylene-α-olefin block copolymer wherein a ratio (η_1/η_2) of melt viscosity η_1 at a shear rate of 10^1 sec^{-1} to melt viscosity η_2 at a shear rate of 10^2 sec^{-1} is 3.5 to 8 as measured by a slit die method and

(B) 0.005 to 2 parts by weight of an organic peroxide, and

having a melt flow rate (measured according to JIS K7210, at a temperature of 230° C. under a load of 2.16 kg) adjusted to 50 to 300 g/10 minutes, a main endothermic peak temperature Tmp of 120° to 150° C. for melting temperature and a main exothermic peak temperature Tcp of 85° to 105° C. for crystallization temperature, as measured with a Differential Scanning Calorimetry, and a Tcp half-value width of 5° C. or above.

5,824,760

THERMAL TRANSFER IMAGE-RECEIVING SHEET AND PROCESS FOR PRODUCING THE SAME

Yoshihiko Tamura, and Mitsuru Tsuchiya, both of Tokyo, Japan, assignors to Dai Nippon Printing Co., Ltd., Japan

Division of Ser. No. 419,468, Apr. 10, 1995, Pat. No. 5,587,352, which is a division of Ser. No. 159,118, Nov. 30, 1993, Pat. No. 5,430,002. This application Jun. 19, 1996, Ser. No. 668,209

Claims priority, application Japan, Nov. 30, 1992, 4-341074; Nov. 30, 1992, 4-341075; Dec. 28, 1992, 4-358504

Int. Cl.[6] C08G *77/08*

U.S. Cl. 528—15 3 Claims

1. A liquid composition for a release layer of a thermal transfer image-receiving sheet, comprising:

a reactive silicone comprising a mixture of a vinyl-modified silicone and a hydrogen-modified silicone, the vinyl-modified silicone and the hydrogen-modified silicone having diphenylsiloxane, present in an amount of 5 to 50 mole %;

a reaction catalyst comprising a platinum-based catalyst;

a reaction retardant comprising a silylated compound of an acetylenic alcohol; and

an organic solvent.

5,824,761

RADIATION CURABLE COMPOSITIONS CONTAINING VINYL ETHER FUNCTIONALITY AND METHODS FOR THEIR PREPARATION

Valerie Joy Bujanowski; Shedric Oneal Glover, both of Midland; Susan Victoria Perz, Essexville; Maris Jazeps Ziemelis, Midland; Gary Rex Homan, Midland, and Michael Ward Skinner, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 443,521, May 18, 1995, Pat. No. 5,629,095. This application Jan. 16, 1997, Ser. No. 786,384

Int. Cl.[6] C08G *77/04;77/08;77/20;* C07F *7/02*

U.S. Cl. 528—25 13 Claims

1. A method of making a vinylether functional siloxane, the method comprising the steps of:

(I) reacting:

(a) a silane having the formula $R_xSi(OR^1)_{4-x}$;

(b) water;

(c) a non-acidic condensation catalyst selected from the group consisting of amine carboxylates, heavy metal carboxylates, isocyanates, silanolates, phenoxides, mercaptides, CaO, BaO, LIOH, BuLi, amines, and ammonium hydroxides;

(d) a vinyl ether compound having the formula $HOR^2OCH{=}CH_2$ wherein R is a monovalent hydrocarbon or halohydrocarbon radical having from 1 to 20 carbon atoms, R^1 is a monovalent alkyl radical having from 1 to 8 carbon atoms, R^2 is a divalent hydrocarbon or halohydrocarbon radical having from 1 to 20 carbon atoms x has a value of from 0 to 3, with the proviso that the molar ratio of water to alkoxy radicals is less than 0.5;

(II) removing alcohol from the mixture of (I);

(III) neutralizing the mixture of (II);

(IV) adding a transesterification catalyst to the mixture of (III); and

(V) removing volatiles from the mixture of (IV).

5,824,762

ORGANOPOLYSILOXANE AND METHOD FOR THE PREPARATION OF THE SAME

Toshio Saruyama, and Makoto Yoshitake, both of Chiba Prefecture, Japan, assignors to Dow Corning Toray Silicone Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 345,155, Nov. 28, 1994, abandoned. This application Dec. 6, 1996, Ser. No. 760,892

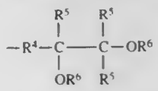
Int. Cl.[6] C08G *77/04*

U.S. Cl. 528—26 5 Claims

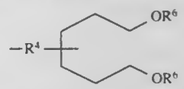
1. A composition comprising an organopolysiloxane having an average unit formula

$$(R^1SiO_{3/2})_a(R^2R^3SiO_{2/2})_b(SiO_{4/2})_c \quad (I)$$

wherein R^1, R^2, and R^3 denote organic groups selected from the group consisting of monovalent hydrocarbon groups, organic groups of the following general formula that contain acryloyl groups or methacryloyl groups



wherein R^4 denotes a divalent organic group, each R^5 independently denotes hydrogen or a monovalent organic group, and each R^6 denotes an acryloyl group or methacryloyl group or hydrogen atom and at least 1 of R^6 is an acryloyl group or methacryloyl group, organic groups with the following general formula that contain the acryloyl group or methacryloyl group



wherein R^4 and R^6 are defined as above, and epoxy-functional organic groups, wherein 5 to 30 mole % of said organic groups of formula (I) are groups that contain acryloyl or methacryloyl groups, 5 to 90 mole % of said organic groups of formula (I) are phenyl groups, 0.5 to 3 mole % of said organic groups are epoxy-functional organic groups and a is a positive number, b is zero or a positive number, c is zero or a positive number, b/a is zero to 2, and c/(a+b+c) is zero to 0.3.

5,824,763

PROCESS FOR THE MANUFACTURE OF NYLON COMPOSITIONS WITH IMPROVED FLOW

Rolando Umali Pagilagan, Parkersburg, W. Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 21, 1996, Ser. No. 700,936

Int. Cl.[6] C08G *73/10;69/28*

U.S. Cl. 528—322 2 Claims

1. A process for preparing a polyamide comprising polymerizing polyamide-forming monomers selected from the group consisting of diacids, diamines, aminocarboxylic acid, lactams and mixtures thereof in the presence of excess of either acid or amine to provide a polyamide having an excess of acid or amine end groups such that the ratio of the end groups in excess to the end groups not in excess is at least 2.0:1.0, wherein the excess acid or amine is a diacid, diamine, monofunctional acid or monofunctional amine, said polyamide having substantially the same molecular weight and a reduced melt viscosity when compared to a polyamide prepared from the same polyamide-forming monomers with a ratio of acid:amine end groups of less than 2.0:1.0.

5,824,764

Patent Not Issued For This Number

5,824,765

PREPARATION OF POLYCONDENSATES OF AMINO ACIDS AND THE BIODEGRADABLE POLYPEPTIDE HYDROLYSATES THEREOF

Jean-Luc Lepage, Francheville, France, assignor to Rhone-Poulenc Chimie, Courbevoie, France

Division of Ser. No. 535,437, Sep. 29, 1995, Pat. No. 5,668,903. This application Aug. 12, 1997, Ser. No. 909,894

Claims priority, application France, Oct. 12, 1994, 9412150

Int. Cl.[6] C08G *69/10*

U.S. Cl. 528—328 4 Claims

1. A process for the preparation of polycondensates of amino acids or of the polypeptide hydrolysates thereof comprising preparing said polycondensates by bulk thermal polycondensation of amino acids in the presence of a polycondensation catalyst, of phosphoric acid, phosphorus pentoxide or polyphosphoric acid optionally followed by hydrolysis, the said polycondensation process being performed in pulverulent medium containing, per mole of amino acid, from 0.005 to 0.25 mole of catalyst uniformly distributed in the said medium, wherein the pulverulent reaction medium undergoing the polycondensation operation and containing the uniformly distributed catalyst is obtained by a process selected from the group consisting of:

a) forming a paste of a mixture of amino acid and said phosphoric acid, polyphosphoric acid or mixtures thereof with water, removing the water by evaporation at atmospheric pressure or under vacuum, followed by grinding of the mass obtained;

b) solubilizing the amino acid and said phosphoric acid, polyphosphoric acid or mixture thereof followed by spray drying of the solution;

c) spray drying a suspension of amino acid in an aqueous solution of phosphoric acid or polyphosphoric acid;

d) vaporizing an aqueous solution of phosphoric acid or polyphosphoric acid or mixtures thereof on a fluidized bed of amino acid; and

e) cogrinding or micronizing phosphorus pentoxide and the amino acid.

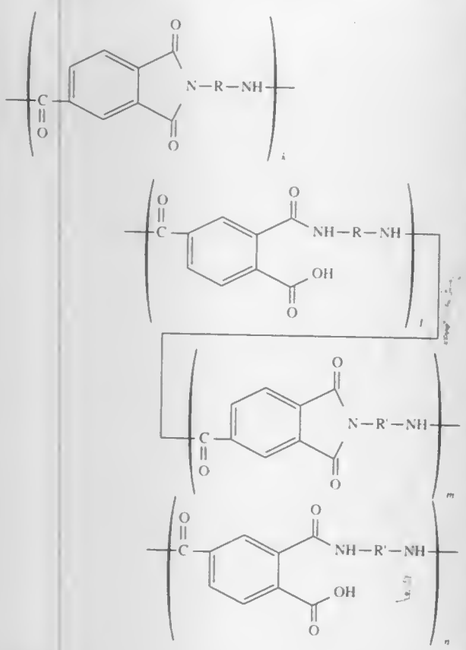
5,824,766
POLYAMIDEAMIC ACID RESIN PREPOLYMERS, HIGH HEAT RESISTANT POLYAMIDEIMIDE FOAMS PREPARED THEREFROM, AND PROCESSES FOR PREPARING THEM

Kil-Yeong Choi; Mi-Hie Yi; Moon-Young Jin, and Young-Taik Hong, all of Daejeon, Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Daejeon, Rep. of Korea

Filed Jan. 16, 1996, Ser. No. 586,972
Claims priority, application Rep. of Korea, Jan. 16, 1995, 1995-795
Int. Cl.[6] C08G *73/10*
U.S. Cl. 528—350 **6 Claims**

1. A process for producing polyamideimide foam which comprises:

a.) preparing a polyamidamic acid resin prepolymer by reacting an aromatic diamine component selected from the group consisting of meta-phenylene diamine, oxydianiline, meta-bisaminophenoxy diphenylsulfone, and para-bisaminophenoxy diphenylsulfone, and an isophorone diamine component, with trimellitic acid anyhdride chloride to form a polyamidamic acid resin prepolymer having the formula

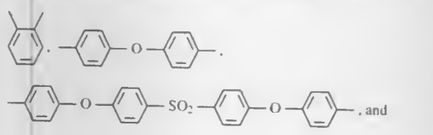


in which

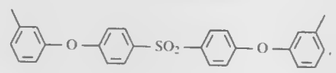
k, l, m, and n are integers having a value of at least 1, respectively, and

$$0.1 < \frac{k+m}{k+l+m+n} < 0.9,$$

R is at least one group selected from the group consisting of

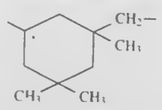


-continued



and

R' is a cis- and trans-conformational mixture of a radical having the formula



b.) pulverizing said polyamidamic acid resin prepolymer,

c.) introducing a layer of said pulverized prepolymer into a closed mold, and

d.) heating said pulverized prepolymer in said closed mold under superatmospheric pressure.

5,824,767
POLY(ARYLENE SULFIDE) COMPOSITIONS HAVING IMPROVED PROCESSABILITY

Balaram B. Gupta, Corpus Christi, Tex.; Andrew B. Auerbach, Livingston, N.J., and Barrie L. Davies, Waxhaw, N.C., assignors to Hoechst Celanese Corporation, Warren, N.J.

Filed Jul. 8, 1996, Ser. No. 677,671
Int. Cl.[6] C08G *75/14;* **C08L** *81/04;* **C08K** *3/22*
U.S. Cl. 528—387 **38 Claims**

1. A process for improving the processability of poly(arylene sulfide) in melt spinning operations which comprises treating the poly(arylene sulfide) with a source of ionic barium and a lubricant prior to melt spinning.

5,824,768
POLYMERIC DYES FOR OPTICAL RECORDING LAYERS AND ELEMENTS

Elizabeth Gertrude Burns; Csaba Andras Kovacs, both of Rochester; Ramanuj Goswami, Webster, and Derek D. Chapman, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 618,489, Mar. 19, 1996. This application Aug. 12, 1997, Ser. No. 909,497
Int. Cl.[6] C08G *73/00*
U.S. Cl. 528—422 **36 Claims**

1. A polymer (a) having, from 775 nm to 790 nm, a real refractive index (N) of >1.8 and an imaginary index (k) from 0.005 to 0.3; and (b) comprises from 75 to 100 mole percent repeating units according to Formula I:

$$+A-Z-A-Z_1+_n \qquad I$$

wherein

A represents a divalent radical selected from urethane, carbonate, urea, ester and amide;

Z represents C_2–C_{18}-alkylene; C_3–C_8-cycloalkylene; C_1– C_4 alkylene bonded to C_3–C_8 cycloalkylene bonded to C_1– C_4 alkylene; C_1–C_4 alkylenearylene bonded to C_1–C_4 alkylene; C_2–C_4 alkoxy bonded to C_2–C_4 alkylene; arylene bonded to C_1–C_4 alkylene bonded to arylene; and C_3–C_8 cycloalkylene bonded to C_1–C_4-alkylene bonded to C_3–C_8 cycloalkylene;

Z_1 represents a divalent dye radical selected from cyanines, formazans, metallized formazans, azos, metallized azos, metallized azo ethers, phthalocyanines, metallized phthalocyanines; and squariliums; and

n represents the number of repeat units needed to build a copolymer chain or a size that corresponds to a polystyrene chain of weight average molecular weight (M_w) of 5,000 to 1,000,000.

5,824,769
POLYETHER, POLYESTER AND POLYETHER ESTER PURIFICATION PROCESS

Hans-Jürgen Weyer, Bobenheim-Roxheim, and Rolf Fischer, Heidelberg, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/03957, § 371 Date Aug. 4, 1997, § 102(e) Date Aug. 4, 1997, PCT Pub. No. WO96/11223, PCT Pub. Date Apr. 18, 1996
PCT Filed Oct. 6, 1995, Ser. No. 809,690
Claims priority, application Germany, Oct. 7, 1994, 44 35 930.6; Feb. 20, 1995, 195 05 705.8
Int. Cl.[6] C08F *6/00*
U.S. Cl. 528—485 **12 Claims**

1. A process for removing heteropoly compounds from heteropoly compound-contaminated polyethers, polyesters or polyether esters, which comprises admixing the polymer or a solution of the polymer with a compound which contains at least one heteroatom which is selected from the group consisting of central atoms of heteropolyacids, is non-protic and is of a polarity that leads to the heteropoly compounds separating out in a separate phase, and separating off the precipitated heteropoly compound phase.

5,824,770
IKAROS POLYPEPTIDES

Katia Georgopoulos, Cambridge, Mass., assignor to The General Hospital Corporation, Boston, Mass.

Division of Ser. No. 238,212, May 2, 1994, abandoned, which is a continuation-in-part of Ser. No. 121,438, Sep. 14, 1993, abandoned, which is a continuation-in-part of Ser. No. 946,233, Sep. 14, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 465,590
Int. Cl.[6] A61K *38/00*
U.S. Cl. 530—300 **114 Claims**

1. A purified peptide having at least 90% amino acid sequence identity with a peptide selected from the group consisting of: one or more of SEQ ID NO: 2–7, or 153; and

wherein said peptide has one or more of the following properties: it stimulates transcription of a DNA sequence under the control any of a δA element, an NFKB element, or an Ikaros binding oligonucleotide consensus sequence; it binds to any of a δA element, an NFKB element, or an Ikaros binding oligonucleotide consensus sequence; it competitively inhibits the binding of a naturally occurring Ikaros isoform to any of a δA element, an NFKB element, or an Ikaros binding oligonucleotide consensus seqeuence; it competitively inhibits Ikaros binding to Ikaros responsive elements; or it inhibits protein-protein interactions of transcriptional complexes formed with naturally occurring Ikaros isoforms.

5,824,771
CYCLIC CRF AGONISTS

Jean E. F. Rivier, La Jolla, Calif., assignor to The Salk Institute for Biological Studies, San Diego, Calif.

Continuation-in-part of Ser. No. 575,148, Dec. 19, 1995, which is a continuation-in-part of Ser. No. 353,928, Dec. 12, 1994, Pat. No. 5,663,292. This application May 30, 1997, Ser. No. 865,772
Int. Cl.[6] C07K *16/695;7/64;* **A61K** *38/12*
U.S. Cl. 530—306 **25 Claims**

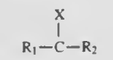
1. A cyclic CRF agonist peptide which binds to CRF receptors CRF-RA and CRF-RB with an affinity greater than that of r/hCRF, which peptide has the formula Y_1-A-D-Xaa-B-Xaa_c-Xaa_a-Xaa_b-Xaa_c-C-NH_2 wherein Y_1 is an acyl group having not more than 15 carbon atoms; A is Ser-Leu-Asp-Leu-Thr or Ser-Ile-Asp-Leu-Ser or Ser-Ile-Asp-Leu-Thr; D-Xaa is D-Phe, D-2Nal or D-Leu; B is a sequence of 17 amino acid residues that is found between Phe in the 12-position and Gln in position-30 of r/hCRF or the corresponding sequence of another peptide of the CRF family selected from the group consisting of residues 13-29 of other mammalian and fish CRFs and fish urotensins and residues 12-28 of sauvagine; Xaa_c represent a pair of amino acid residues, the side chains of which are linked in a cyclizing bond; Xaa_a is a natural α-amino acid residue other than Cys; Xaa_b is a residue of either (a) a D-isomer amino acid from the group consisting of D-isomers of natural α-amino acids other than Cys and unnatural aromatic α-amino acids, or (b) a natural L-isomer α-amino acid; and C is a sequence of the last 8 amino acid residues of the C-terminal portion of said peptide of the CRF family; provided that Nle or Leu may be substituted for Met in B and in C.

5,824,772
FLUORESCENT SOMATOSTATIN

Jean-Pierre Vincent, Cagnes sur Mer; Georges Gaudriault, Nice, both of France, and Alain Beaudet, Mount Royal, Canada, assignors to Advanced Bioconcept, Inc., Montreal, Canada

Continuation-in-part of Ser. No. 416,007, Apr. 4, 1995, Pat. No. 5,693,679. This application Jun. 7, 1995, Ser. No. 475,751
Int. Cl.[6] C07K *15/00*
U.S. Cl. 530—311 **21 Claims**

1. A compound of the formula:



wherein R_1 is a light-emitting moiety;

R_2 is Y-Z-Q, wherein

Z comprises -Phe-Phe-Trp-Lys-Thr- (SEQ ID NO:1) or -Phe-Phe-D-Trp-Lys-Thr-; each of Y and Q is an amino acid sequence such that the number of amino acids in R_2 is between 7 and 28; and CX is C=O, C=S, —CHOH, C=C=O, C=NH, –CH_2, —CHOR, —C=NR, —CHR, —CR_3R_4, wherein each of R, R_4, and R_3, independently, is H or a C_1–C_6 branched or unbranched, substituted or unsubstituted alkyl; and C of X-C is bonded via an —NH— or —S— group to an amino acid of R_2; and wherein said compound, when compared to R_2 alone, retains at least 25% of its binding affinity for the human somatostatin receptor in vivo.

5,824,773

Patent Not Issued For This Number

5,824,774
CHIMERIC ISOPRENOID SYNTHASES AND USES THEREOF

Joseph Chappell, and Kyoungwhan Back, both of Lexington, Ky., assignors to Board of Trustees of the University of Kentucky, Lexington, Ky.

Filed Apr. 12, 1996, Ser. No. 631,341
Int. Cl.[6] C07K *5/00;7/00;17/00*
U.S. Cl. 530—350 **18 Claims**

1. A chimeric isoprenoid synthase polypeptide comprising a domain from a first isoprenoid synthase joined to a domain from a second, different isoprenoid synthase, whereby said chimeric isoprenoid synthase polypeptide catalyzes the production of an isoprenoid reaction product that is not produced in the absence of said domain from said second, different isoprenoid synthase, wherein:

(a) said first isoprenoid synthase catalyzes the production of an isoprenoid reaction product of said first isoprenoid synthase, but does not catalyze the production of an isoprenoid reaction product of said second, different isoprenoid synthase;

(b) said second, different isoprenoid synthase catalyzes the production of an isoprenoid reaction product of said second different isoprenoid synthase, but does not catalyze the production of an isoprenoid reaction product of said first isoprenoid synthase;

(c) said domain from said first isoprenoid synthase occupies a first position in said chimeric isoprenoid synthase polypeptide, said first position in said chimeric isoprenoid synthase polypeptide corresponding to a position in said first isoprenoid synthase occupied by said domain from said first isoprenoid synthase; and

(d) said domain from said second, different isoprenoid synthase occupies a second position in said chimeric isoprenoid synthase polypeptide, said second position in said chimeric isoprenoid synthase polypeptide corresponding to a position in said second, different isoprenoid synthase occupied by said domain from said second, different isoprenoid synthase.

5,824,775

HUMAN NETRIN-1

Candace Swimmer, Winchester; Anne Shyjan, Nahant, both of Mass.; David Leonardo; Yuan Zhang, both of San Francisco, Calif.; Timothy Kennedy, Montreal, Canada; Tito Serafini, San Francisco, and Marc Tessier-Lavigne, San Mateo, both of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Apr. 19, 1996, Ser. No. 635,137

Int. Cl.[6] C07K *1/00;14/00;17/00*

U.S. Cl. 530—350 **1 Claim**

1. An isolated netrin comprising the amino acid sequence of SEQ ID NO:2.

5,824,776

CELL-TARGETED LYTIC PORE-FORMING AGENTS

Hagen Bayley, Grafton, and Barbara J. Walker, Auburn, both of Mass., assignors to Worcester Foundation for Experimental Biology, Shrewsbury, Mass.

Continuation of Ser. No. 364,429, Dec. 27, 1994, which is a continuation of Ser. No. 54,898, Apr. 28, 1993, abandoned. This application Dec. 5, 1996, Ser. No. 759,442

Int. Cl.[6] C07K *14/195;14/315;* **A61K** *38/16*

U.S. Cl. 530—350 **9 Claims**

1. A metal-responsive recombinant staphylococcal alpha-hemolysin polypeptide.

5,824,777

ATTENUATED MEASLES VIRUS VACCINE CONTAINING SPECIFIC NUCLEOTIDE SEQUENCE AND A METHOD FOR ITS ABSOLUTE IDENTIFICATION

Keiko Sasaki; Takayuki Mori, and Satoshi Makino, all of Tokyo, Japan, assignors to The Kitasato Institute, Tokyo, Japan

Division of Ser. No. 348,891, Nov. 25, 1994, Pat. No. 5,654,136, which is a continuation of Ser. No. 848,400, Mar. 10, 1992, abandoned. This application Aug. 4, 1997, Ser. No. 905,817

Claims priority, application Japan, Oct. 14, 1991, 3-293625

Int. Cl.[6] C07K *14/12*

U.S. Cl. 530—350 **7 Claims**

1. Purified and isolated amino acid sequences consisting of SEQ ID NOS:2–7.

5,824,778

CHEMICALLY-MODIFIED G-CSF

Rika Ishikawa, Higashiyamato; Yuji Okada, and Makoto Kakitani, both of Maebashi, all of Japan, assignors to Kirin-Amgen, Inc., Thousand Oaks, Calif.

Continuation of Ser. No. 566,451, Oct. 1, 1990, abandoned. This application Nov. 30, 1992, Ser. No. 983,620

Claims priority, application Japan, Dec. 22, 1988, 324747/88; Jul. 31, 1989, 1-199176

Int. Cl.[6] C07K *14/53*

U.S. Cl. 530—351 **2 Claims**

1. A biologically active G-CSF polypeptide having at least one polyethylene glycol molecule covalently attached to at least one amino acid of the polypeptide, wherein said polyethylene glycol molecule is covalently attached through a carboxyl group of an amino acid of the polypeptide.

5,824,779

PHYTASE-PROTEIN-PIGMENTING CONCENTRATE DERIVED FROM GREEN PLANT JUICE

Richard G. Koegel, Madison; Richard J. Straub, Brooklyn, and Sandra Austin-Phillips, Madison, all of Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Apr. 26, 1996, Ser. No. 638,448

Int. Cl.[6] A61K *35/78;* **C07K** *1/00;* **C12N** *9/14;* **C07H** *21/02*

U.S. Cl. 530—370 **8 Claims**

1. A non-ruminant feed additive consisting essentially of dehydrated plant juice from transgenic alfalfa which express enzymatically-active transgenic phytase.

5,824,780

ACTIVATED HUMAN FACTOR VIII AND METHOD OF PREPARATION

Joseph Edward Curtis, Glendora, and Sam Leland Helgerson, Pasadena, both of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 96,332, Jul. 23, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 470,173

Int. Cl.[6] A61K *35/14*

U.S. Cl. 530—383 **6 Claims**

1. A method of producing an activated and stabilized human Factor VIII protein having a specific activity of at least 100,000 units per mg comprising:

(a) activating human Factor VIII in a solution containing other proteins by contacting said Factor VIII with an activating agent which specifically cleaves the human Factor VIII molecule at amino acid residue position 372 between the A1 and A2 domains, at position 740 between the A2 and B domains, and at position 1689 between the B and A3-C1-C2 domains;

(b) removing said agent, other proteins, and proteolytic fragments from the presence of the activated Factor VIII by adsorbing the activated Factor VIII on a carboxymethyl cationic exchange resin while removing said agent, other proteins, and proteolytic fragments;

(c) maintaining the concentration of the activated Factor VIII at a level of at least 1.0 μM:

(d) eluting the activated Factor VIII from the cation exchange resin using a buffer selected from the group consisting of succinic acid, sodium acetate, potassium acetate, and cacodylic acid; and

(e) adjusting the pH of the activated human Factor VIII to pH 4–6.5.

5,824,781

COMPOSITIONS AND METHODS UTILIZING NITROXIDES IN COMBINATION WITH BIOCOMPATIBLE MACROMOLECULES

Jen-Chang Hsia, 35 Starcrest, Irvine, Calif. 92715

Continuation-in-part of Ser. No. 417,132, Mar. 31, 1995, which is a continuation-in-part of Ser. No. 291,590, Aug. 15, 1994, abandoned, which is a continuation-in-part of Ser. No. 107,543, Aug. 16, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 483,283

Int. Cl.[6] A61K *31/27*

U.S. Cl. 530—385 **6 Claims**

1. A composition comprising

a biocompatible solution of polynitroxide albumin wherein the albumin is labelled with a nitroxide at an average molar ratio of between approximately 17 to 95.

5,824,782

IMMUNOCONJUGATES II

Wolfgang Hölzer, Darmstadt; Ilka von Hoegen, Doffenheim; Wolfgang Strittmatter, Ober-Ramstadt, and Siegfried Matzku, Zwingenberg, all of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

Filed Sep. 15, 1995, Ser. No. 528,523

Claims priority, application European Pat. Off., Sep. 16, 1994, 94114572

Int. Cl.[6] A61K *38/00;* **C07K** *16/00;17/00;17/14*

U.S. Cl. 530—391.1 **13 Claims**

1. An immunoconjugate comprising

a fragment of a monoclonal anti-EGFR antibody, which specifically binds to an antigenic epitope of epidermal growth factor receptor (EGFR) on the surface of a tumor cell, fused to

a chemotactically active ligand portion of the immunoconjugate, comprising IL-8, which has chemotactic activity for effector cells, wherein said antibody fragment and said ligand portion are directly fused or are fused by a linker peptide, with the proviso that the first N-terminal amino acid of IL-8 is or the first and second N-terminal amino acids of IL-8 are deleted and one or two additional amino acids are inserted therefor, whereby the native N-terminus of the IL-8 portion of the immunoconjugate is blocked and the imnmunoconjugate is chemotactically active.

5,824,783

Patent Not Issued For This Number

5,824,784

N-TERMINALLY CHEMICALLY MODIFIED PROTEIN COMPOSITIONS AND METHODS

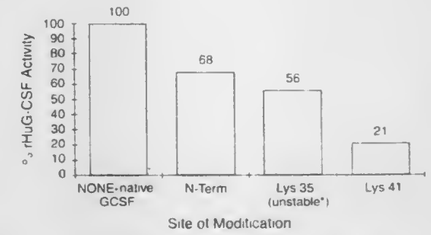
Olaf B. Kinstler, Thousand Oaks; Nancy E. Gabriel; Christine E. Farrar, both of Newbury Park, all of Calif., and Randolph B. DePrince, Raleigh, N.C., assignors to AMGEN Inc., Thousand Oaks, Calif.

Filed Oct. 12, 1994, Ser. No. 321,510

Int. Cl.[6] A61K *38/18;* **C07K** *1/00*

U.S. Cl. 530—399 **12 Claims**

1. A substantially homogenous preparation of N-terminally PEGylated G-CSF or analog thercof, optionally in a pharmaceutically acceptable diluent, carrier or adjuvant, said preparation being essentially free of G-CSF or analog thereof PEGylated at sites other than the N-terminus.



* contains de-Pegylated rHuG-CSF generated during storage

5,824,785

DYES FOR INK JET PRINTING

Kurt Baettig, Praroman, and Gerald Jan, Villars-sur-Glane, both of Switzerland, assignors to Ilford Imaging Switzerland GmbH, Fribourg, Switzerland

PCT No. PCT/GB96/00300, § 371 Date Dec. 16, 1996, § 102(e) Date Dec. 16, 1996, PCT Pub. No. WO96/24636, PCT Pub. Date Aug. 15, 1996

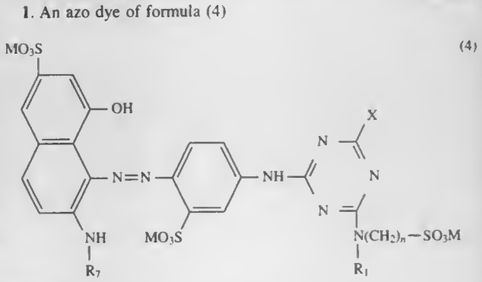
PCT Filed Feb. 5, 1996, Ser. No. 718,360

Claims priority, application United Kingdom, Feb. 7, 1995, 9502341

Int. Cl.[6] C09B *29/08;* **C09D** *11/00*

U.S. Cl. 534—803 **8 Claims**

1. An azo dye of formula (4)



(4)

wherein

R_1 is selected from hydrogen or an aliphatic radical having from 1 to 6 C atoms;

n is 2,3 or 4;

X is NR_3R_4 where

R_3 and R_4 are independently selected from hydrogen, alkyl from 1 to 6 C atoms, C2 to C6 substituted alkyl where the substituents are selected from OH, OCH_3, COOM, SO_3M; aralkyl; unsubstituted aryl or an aryl substituted by COOM or SO_3M;

R_3 and R_4 form a ring without or with inclusion of a hetero atom;

or

X is SR_5 in which R_5 is alkyl from 1 to 6 C atoms, C2 to C6 substituted alkyl where the substituents are selected from OH, OCH_3, COOM, SO_3M;

or

X is OR_6 in which R_6 is hydrogen or an aliphatic radical having from 1 to 6 C atoms;

R_7 is hydrogen, alkyl of 1 to 6 C atoms, C2 to C6 substituted alkyl where the substituents are selected from CN, COOM, OH, $COOCH_3$, $COOCH_2CH_3$, $COCH_3$; unsubstiuted aryl or aryl substituted by CH_3, halogen;

M is hydrogen, a metal atom, an ammonium or ammonium substituted with alkyl, alkoxyalkyl and hydroxyalkyl each having 1 to 12 C atoms.

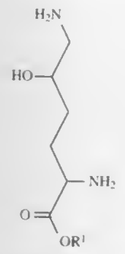
5,824,786

SYNTHESIS OF GALACTOSYLHYDROXYLYSINE

Chaim Manor, Shoreview; Jia Wei, Stillwater, and Gordon D. MacFarlane, Minneapolis, all of Minn., assignors to INCSTAR Corporation, Stillwater, Minn.

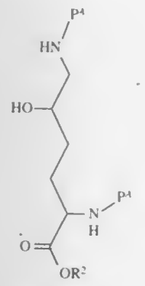
Filed Aug. 30, 1996, Ser. No. 706,215
Int. Cl.[6] C07H *15/04;* A61K *31/70*
U.S. Cl. 536—18.6 **26 Claims**

1. A method of making galactosylhydroxylysine comprising:
(a) reacting a compound of the formula I



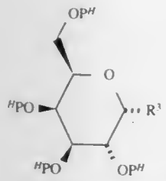
(I)

wherein R^1 is H or $—CH_3$, with a compound that provides an amino-protecting group, p^A, and, if R^1 is H, a compound that provides a carboxyl-protecting group, P^C, to give a compound of the formula II



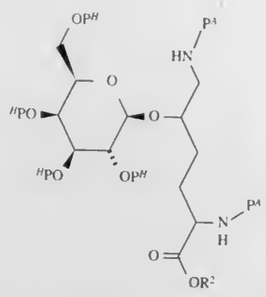
(II)

wherein R^2 is P^C or $—CH_3$;
(b) reacting the compound of the formula II above with a compound of the formula III



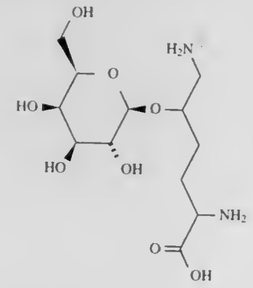
(III)

wherein P^H is a hydroxyl-protecting group and R^3 is selected from Br, Cl, I, or —O-toluene sulfonate; to give a compound of the formula IV



(IV)

(c) reacting the compound of the formula IV with a compound that removes the amino-protecting groups, P^A, and replaces them with H; with a compound that removes the carboxyl-protecting group, P^C, or the original $—CH_3$ group at the same position in the compound of formula I, and replaces it with H; and with a compound that removes the hydroxyl-protecting groups, P^H, and replaces them with H; to give galactosylhydroxylysine (V)



(V)

5,824,787

POLYNUCLEOTIDE SIZING REAGENT

Paul A. Singer, Del Mar, Calif., assignor to Gensura Laboratories, Inc., Del Mar, Calif.

Continuation of Ser. No. 161,901, Dec. 3, 1993, abandoned. This application Feb. 2, 1996, Ser. No. 597,467
Int. Cl.[6] C07H *21/04;* C12N *15/74*
U.S. Cl. 536—22.1 **29 Claims**

1. A nucleic acid multimer template for generating a size marker, wherein the template comprises:
a) about 100 to 1000 nucleotides per nucleotide strand;
b) wherein each nucleotide strand in the template has repeating nucleotide subunits of a defined length for production of defined size fragments;
c) wherein said nucleotide subunits are separated by identical numbers of nucleotides;
d) wherein each nucleotide subunit has a purine and pyrimidine content of about 50% each; and
e) wherein said nucleotide subunits have nucleotides which are substantially non self-annealing.

5,824,788

CLONING OF GENE ENCODING THE GP28.5 PROTEIN OF TOXOPLASMA GONDII; PEPTIDE FRAGMENTS OF SAID PROTEIN AND THEIR APPLICATIONS

Marie-France Cesbron, Marcq-en-Baroeul; Corinne Mercier, Sains du Nord; André Capron, Phalempin; André Tartar, Vitry en Artois, and Pierrette Maes, Wasquehal, all of France, assignors to Institut Pasteur, Paris Cedex; Institut Pasteur de Lille, Lille Cedex, and Institut National de la Sante et de la Recherche Medicale (INSERM), Paris Cedex, all of France

PCT No. PCT/FR93/00575, § 371 Date Jan. 30, 1995, § 102(e) Date Jan. 30, 1995, PCT Pub. No. WO93/25689, PCT Pub. Date Dec. 23, 1993
PCT Filed Jun. 15, 1993, Ser. No. 338,543
Claims priority, application France, Jun. 15, 1992, 92 07206
Int. Cl.[6] C07H *21/02;* C12N *15/09;15/30;* C12P *12/04*
U.S. Cl. 536—23.7 **8 Claims**

1. An isolated nucleic acid fragment encoding a polypeptide comprising at least one epitope of Toxoplasma GP28.5 antigen, wherein the fragment is selected from the group consisting of
(b) a nucleic acid fragment encoding a polypeptide consisting of amino acids 1 to 129 of SEQ ID NO: 2,
(c) a nucleic acid fragment encoding a polypeptide consisting of amino acids 24 to 129 of SEQ ID NO: 2,
(d) a nucleic acid fragment encoding a polypeptide consisting of amino acids 55 to 70 of SEQ ID NO: 2, and
(e) a nucleic acid fragment encoding a polypeptide consisting of amino acids 140 to 160 of SEQ ID NO: 2.

5,824,789

HUMAN GROWTH FACTORS, NUCLEOTIDE SEQUENCE ENCODING GROWTH FACTORS, AND METHOD OF USE THEREOF

David John Van Den Berg, Sunnyvale, Calif., assignor to SyStemix, Inc., Palo Alto, Calif.

Filed Jun. 7, 1995, Ser. No. 485,449
Int. Cl.[6] C12N *15/18;15/63*
U.S. Cl. 536—23.5 **13 Claims**

1. A non-naturally occurring polynucleotide encoding human Wnt-10b or human Wnt-10bΔ, wherein the polynucleotide has at least 90% sequence identity with the nucleotide sequence depicted in SEQ ID NO:1 or SEQ ID NO:3.

5,824,790

MODIFICATION OF STARCH SYNTHESIS IN PLANTS

Peter Lewis Keeling, Ames, Iowa; Mary E. Knight, Crowthorne, England, and Hanping Guan, Ames, Iowa, assignors to Zeneca Limited, London, England

Continuation-in-part of Ser. No. 346,602, Nov. 29, 1994, which is a continuation-in-part of Ser. No. 263,921, Jun. 21, 1994, abandoned. This application Dec. 15, 1995, Ser. No. 572,951
Int. Cl.[6] C12N *15/05;15/29;* C07H *21/04;* A01H *5/00*
U.S. Cl. 536—23.6 **6 Claims**

1. An isolated nucleic acid molecule comprising a nucleotide sequence encoding a polypeptide having soluble starch synthase activity wherein said polypeptide is encoded by a maize gene, said nucleotide sequence being selected from the group consisting of:
(a) a sequence comprising the nucleotide sequence in SEQ ID NO: 1;
(b) a nucleotide sequence encoding the polypeptide having soluble starch synthase activity which is encoded by the nucleotide sequence in SEQ ID NO: 1;
(c) a nucleotide sequence comprising the nucleotide sequence of the maize cDNA clone contained in the deposit in the National Collection of Industrial and Marine Bacteria Limited with Accession Number 40651;
(d) a nucleotide sequence encoding the polypeptide having soluble starch synthase activity which is encoded by the maize cDNA clone contained in the deposit in the National Collection of Industrial and Marine Bacteria Limited with Accession Number 40651;
(e) a nucleotide sequence encoding the polypeptide having soluble starch synthase activity wherein said polypeptide comprises the amino acid sequence consisting of SEQ ID NO: 33, and,
(f) a nucleotide sequence encoding the polypeptide having soluble starch synthase activity wherein said polypeptide comprises the amino acid sequence consisting of SEQ ID NO: 22 and SEQ ID NO: 26.

5,824,791

CLONED PORPHYROMONAS GINGIVALIS GENES AND PROBES FOR THE DETECTION OF PERIODONTAL DISEASE

Ann Progulske-Fox, Melrose, Fla.; Somying Tumwasorn, Bangkok THX; Guylaine Lepine, Fort Erie, Canada; Naiming Han, Gainesville, Fla.; Marilyn Lantz, Indianapolis, Ind., and Joseph M. Patti, Missouri City, Tex., assignors to University of Florida, Gainesville, Fla., and UAB Research Foundation, Birmingham, Ala.

Continuation-in-part of Ser. No. 353,485, Dec. 9, 1994, which is a continuation-in-part of Ser. No. 647,119, Jan. 25, 1991, abandoned, which is a continuation-in-part of Ser. No. 241,640, Sep. 8, 1988, abandoned. This application Dec. 11, 1995, Ser. No. 570,311
Int. Cl.[6] C07H *21/04;19/00;* C12N *1/20*
U.S. Cl. 536—237 **5 Claims**

1. A purified and isolated *Porphyromonas gingivalis* gene encoding a polypeptide, said polypeptide having an amino acid sequence selected from the group consisting of SEQ ID NO.2, SEQ ID NO.4, SEQ ID NO.6, SEQ ID NO.8, SEQ ID NO.10, SEQ ID NO.14, SEQ ID NO.16, SEQ ID NO.18, SEQ ID NO.20, SEQ ID NO.22, SEQ ID NO.26, SEQ ID NO.27, SEQ ID NO.29.

5,824,792

BACILLUS THURINGIENSIS TOXINS ACTIVE AGAINST HYMENOPTERAN PESTS

Jewel M. Payne, Davis, Calif.; M. Keith Kennedy, Racine, Wis.; John Brookes Randall, Racine, Wis.; Henry Meier, Racine, Wis.; Heidi Jane Uick, Racine, Wis.; Luis Foncerrada, San Diego, Calif.; H. Ernest Schnepf, San Diego, Calif.; George E. Schwab, Encinitas, Calif., and Jenny Fu, San Diego, Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation of Ser. No. 158,232, Nov. 24, 1993, Pat. No. 5,596,071, which is a continuation-in-part of Ser. No. 797,645, Nov. 25, 1991, Pat. No. 5,268,297, and Ser. No. 887,980, May 22, 1992, abandoned, which is a continuation-in-part of Ser. No. 703,977, May 22, 1991, Pat. No. 5,260,058. This application Mar. 6, 1996, Ser. No. 611,928
Int. Cl.[6] C12N *15/32;* C07K *14/325*
U.S. Cl. 536—23.71 **16 Claims**

1. An isolated polynucleotide encoding a B.t. toxin wherein said toxin is lethal to a hymenopteran pest wherein the amino acid sequence of said toxin is at least 75% the same as the amino acid sequence shown in SEQ ID NO. 8.

5,824,793

SOLID PHASE SYNTHESIS OF OLIGONUCLEOTIDE N3'-P5' PHOSPHORAMIDATES

Bernard L. Hirschbein, San Francisco; Karen L. Fearon, Union City; Sergei M. Gryaznov; Sarah N. McCurdy, both of San Mateo; Jeffery S. Nelson, and Ronald G. Schultz, both of Fremont, all of Calif., assignors to Lynx Therapeutics, Inc., Hayward, Calif.

Continuation-in-part of Ser. No. 603,566, Feb. 21, 1996, Pat. No. 5,684,143. This application Jun. 14, 1996, Ser. No. 663,918

Int. Cl.[6] C07H *1/00;1/02*

U.S. Cl. 536—25.34 58 Claims

1. A method of synthesizing an oligonucleotide N3'→P5' phosphoramidate, the method comprising the steps of:

(a) providing a first nucleoside attached to a solid phase support, the first nucleoside having a protected 3' amino group;

(b) deprotecting the protected 3' amino group to form a free 3' amino group;

(c) reacting the free 3' amino group with a 3'-protected aminonucleoside-5' -phosphoramidite monomer to form an internucleoside N3'→P5' phosphoramidite linkage; and

(d) oxidizing said linkage.

5,824,794

HUMAN STROMELYSIN-1 PROMOTER

Paula Ann Borden, Palo Alto, and Renu Anand Heller, Stanford, both of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Dec. 23, 1994, Ser. No. 362,706

Int. Cl.[6] C07H *21/04;* C12N *5/16;15/12;15/85*

U.S. Cl. 536—24.1 17 Claims

1. An isolated human stromelysin-1 DNA promoter region comprising a sequence selected from the group consisting of:

(a) SEQ ID NO:1 or a fragment thereof exhibiting promoter activity that can be induced by proinflammatory cytokines, wherein said fragment is at least 1.47 kb;

(b) the complementary strand of (a); and

(c) a nucleotide sequence that hybridizes under high stringency conditions to the −1480 to −480 novel segment of SEQ ID NO:1.

5,824,795

OLIGONUCLEOTIDES FOR THE DETECTION OF SALMONELLA

Michel Y. Popoff, Plaisir, and Muriel Le Guern Fellous, Rueil-Malmaison, both of France, assignors to Institut Pasteur, and Institut National de la Sante et de la Recherche Medicale, both of Paris Cedex, France

Filed Jan. 16, 1996, Ser. No. 586,272

Claims priority, application France, Jan. 16, 1995, 9500410

Int. Cl.[6] C07H *12/04;21/02;* C12Q *1/68*

U.S. Cl. 536—24.3 9 Claims

1. A purified and/or isolated DNA sequence having a length of at most 34 nucleotides and comprising a nucleotide sequence selected from the group consisting of SEQ ID NO:4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 28 and 29.

5,824,796

CROSS-LINKING OLIGONUCLEOTIDES

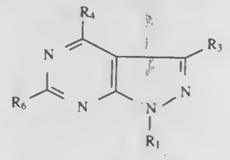
Charles R. Petrie; Rich B. Meyer, both of Woodinville; John C. Tabone, Bothell, all of Wash., and Gerald D. Hurst, Iowa City, Iowa, assignors to EPOCH Pharmaceuticals, Inc., Bothell, Wash.

Continuation of Ser. No. 49,807, Apr. 20, 1993, abandoned, which is a continuation of Ser. No. 353,857, May 18, 1989, abandoned, which is a continuation-in-part of Ser. No. 250,474, Sep. 28, 1988, abandoned. This application Nov. 4, 1994, Ser. No. 334,490

Int. Cl.[6] C07H *19/04;21/00;21/02;21/04*

U.S. Cl. 536—26.7 15 Claims

8. A compound of the formula



where R_1 is H, or a 1-(β-D-ribofuranosyl) or 1-(β-D-2-deoxyribofuranosyl) group which is optionally substitituted on one or more of its hydroxyl functions with a Z group wherein Z independently is methyl or a phosphate, thiophosphate alkylphosphate or alkanephosphonate group, or a reactive precursor of said phosphate, thiophosphate, alkylphosphate or alkanephosphonate group which precursor is suitable for internucleotide bond formation;

R_3 is $(CH_2)_q$—$(Y)_r$—$(CH_2)_m$—A" where A" is a group selected from chloro, bromo, iodo, SO_2R''', $S^+R'''R''''$ and a radical which activates the carbon to which it is attached for nucleophilic substitution, where each of R'" and R"" is independently C_{1-6} alkyl or aryl or R'" and R"" together form a C_{1-6} alkylene bridge, or A" is an intercalator group, a metal ion chelator or a reporter group;

Y is a functional linking group selected from a group consisting of —O—, —S—, —NR'—, —NH—CO—, trifluoroacetamido and phtalimido groups where R' is H or C_{1-6} alkyl, and at least one of the $(CH_2)_m$ and $(CH_2)_q$ groups is directly linked to said —O—, —S—, —NR'—, NH—CO—, trifluoroacetamido and phtalimido groups and the other of said $(CH_2)_m$ and $(CH_2)_q$ groups is linked to the heterocyclic base with a carbon to carbon bond;

each of m and q is independently 0 to 8, inclusive; r is 0 or 1 provided that when A" is a group selected from chloro, bromo, iodo, SO_2R''', $S^+R'''R''''$ and a radical which activates the carbon to which it is attached for nucleophilic substitution, then m is not 0;

each of R_4 and R_6 is independently H, OR, SR, NHOR, NH_2, or $NH(CH_2)_tNH_2$ where R is H or C_{1-6}alkyl and t is an integer from 0 to 12.

5,824,797

GUAR AS A DEPOSITION AND BIOEFFICACY AID

James Lyle Hazen, Plainsboro, N.J., assignor to Rhone-Poulenc Inc., Cranbury, N.J.

Continuation-in-part of Ser. No. 177,051, Jan. 3, 1994, Pat. No. 5,550,224. This application Jun. 26, 1995, Ser. No. 494,481

Int. Cl.[6] C08B *37/00;* C07H *1/00;* A01N *43/04;* A61K *31/715*

U.S. Cl. 536—114 35 Claims

1. A method for improving the deposition characteristics of a dilute aqueous composition during the aerial spraying or discharge thereof, said improvement comprising mixing a deposition aid selected from the group consisting of non-derivatized guar, derivatives of guar, and mixtures thereof into said aqueous composition prior to its spraying or discharge in an amount sufficient that if mixed in water alone said deposition aid and the water would exhibit Newtonian behavior.

5,824,798

GENETICALLY ENGINEERED MODIFICATION OF POTATO TO OBTAIN AMYLOPECTIN-TYPE STARCH

Anneli Tallberg, Lund; Per Hofvander, Falsterbo; Per T. Persson, Kristianstad, and Olle Wikstrom, Kristianstad, all of Sweden, assignors to Amylogene HB, Svalöv, Sweden

Continuation of Ser. No. 70,455, Nov. 24, 1993. This application Jun. 6, 1995, Ser. No. 470,720

Claims priority, application Sweden, Dec. 21, 1990, 9004096

Int. Cl.[6] C07H *1/06;1/08*

U.S. Cl. 536—128 8 Claims

1. A process for producing an amylopectin-type starch comprising:

obtaining a potato tissue which has been transformed by introducing into the genome of the potato tissue a gene construct comprising a promoter and a fragment of the potato gene which codes for the formation of granule-bound starch synthase inserted in the anti-sense direction, wherein said fragment essentially has a nucleotide sequence which is selected from the group consisting of SEQ ID No. 1, SEQ ID No.2 and SEQ ID No. 3;

growing the transformed potato tissue to produce a potato plant containing potato tubers;

producing at least one potato from said potato tubers; and

separating starch from said potato, wherein said starch is an amylopectin-type starch which is essentially free of amylose.

5,824,799

HYBRID PHTHALOCYANINE DERIVATIVES AND THEIR USES

Kenneth F. Buechler, San Diego; Joseph B. Noar, Solana Beach, and Lema Tadesse, San Diego, all of Calif., assignors to Biosite Diagnostics Incorporated, San Diego, Calif.

Continuation-in-part of Ser. No. 274,534, Jul. 12, 1994, and a continuation-in-part of Ser. No. 138,708, Oct. 18, 1993, abandoned, and a continuation-in-part of Ser. No. 126,367, Sep. 24, 1993, abandoned, and a continuation-in-part of Ser. No. 311,098, Sep. 23, 1994, and a continuation-in-part of Ser. No. 409,825, Mar. 23, 1995. This application Mar. 22, 1996, Ser. No. 620,597

Int. Cl.[6] C09B *47/00;47/30;* C07D *487/22*

U.S. Cl. 540—128 22 Claims

1. A water soluble hybrid phthalocyanine derivative.

5,824,800

PROCESS FOR PREPARING A METAL-FREE PHTHALOCYANINE

Shinichi Tamura; Seishi Terasaki; Tadashi Mimura; Teruaki Kobayashi, and Youichi Tei, all of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kanagawa, Japan

Division of Ser. No. 370,384, Jan. 10, 1995, Pat. No. 5,591,555, which is a division of Ser. No. 546,551, Oct. 20, 1995, Pat. No. 5,585,483. This application Jun. 21, 1996, Ser. No. 666,121

Claims priority, application Japan, Jan. 11, 1994, 00030/1994

Int. Cl.[6] C09B *67/50*

U.S. Cl. 540—142 14 Claims

1. A process for preparing metal-free phthalocyanine, comprising the steps of:

a. heating phthalonitrile, an alkali metal or an alkali metal compound, and a hydrogen donor compound in an organic solvent to synthesize a partially hydrogenated alkali metal phthalocyanine ($H_nM_{2-n}PC$);

wherein H stands for a hydrogen atom; M stands for a monovalent alkali metal selected from the group consisting of lithium, potassium, and sodium; n is represented by $0<n<2$; and Pc stands for phthalocyanine; and

b. bringing the partially hydrogenated alkali metal phthalocyanine into contact with a dealkalizing agent.

5,824,801

A PROCESS FOR STEROSPECIFIC SYNTHESIS OF KETO-ENOL TAUTOMERIC MIXTURE OF P NITROBENZYL (1R, 6R, 7R)-7-PHENOXYACETAMIDO-3-OXO-3-CEPHAM-4-(R/S)-CARBOXYLATE-1-OXIDE AND P-NITROBENZYL (1R, 6R, 7R)-7-PHENOXYACTEAMIDO-3-HYDROXY-3-CEPHEM-4-CARBOXYLATE-1-OXIDE

Niranjan Lal Gupta; Ramanathan Sankaran; Sugata Chatterjee, and Tumma Hari Krishna, all of Madhya Pradesh, India, assignors to Lupin Laboratories Ltd., Bombay, India

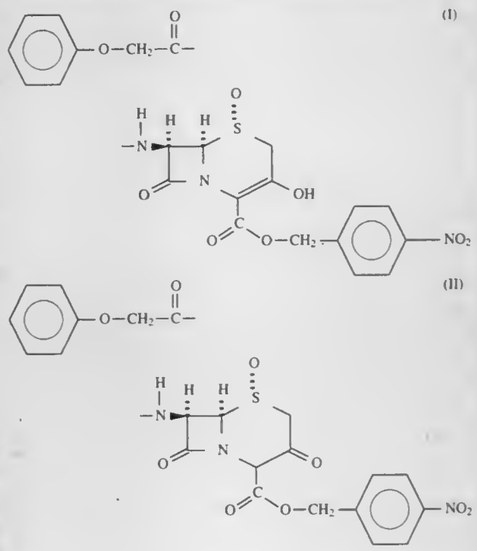
Division of Ser. No. 618,533, Mar. 19, 1996. This application Aug. 11, 1997, Ser. No. 908,016

Claims priority, application India, Jan. 19, 1996, 39/BOM/96

Int. Cl.[6] C07D *501/59*

U.S. Cl. 540—215 12 Claims

1. A process for the stereospecific synthesis of a keto-enol tautomeric mixture of p-nitrobenzyl (1R,6R,7R)-7-phenoxyacetamido-3-hydroxy- 3-cephem-4-carboxylate-1-oxide of formula I and p-nitrobenzyl (1R,6R,7R)-7-phenoxyacetamido-3-oxo-cepham-4-(R/S)-carboxylate-1-oxide of formula II,



(I)

(II)

comprising reacting p-nitrobenzyl 7-phenoxyacetamido-3-exomethylene-cepham-4-carboxylate with ozone in an inert organic solvent at a temperature ranging from −90° C. to about −40° C. to form an ozonide and decomposing the ozonide without using a reducing agent.

5,824,802

1-ALKYL-4-BENZOYL-5-HYDROXYPYRAZOLE COMPOUNDS AND THEIR USE AS HERBICIDES

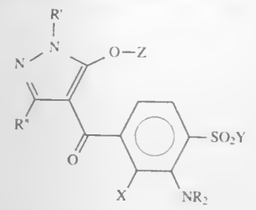
Zoltan L. Benko; James A. Turner, both of Indianapolis; Monte R. Weimer, Pittsboro; Gail M. Garvin, Indianapolis; Johnny L. Jackson; Sharon L. Shinkle, both of Indianapolis, and Jeffery D. Webster, New Palestine, all of Ind., assignors to Dow AgroSciences LLC, Indianapolis, Ind.

Filed Mar. 24, 1998, Ser. No. 47,169

Int. Cl.[6] C07D *231/20;413/10;* **A01N** *43/56;43/84*

U.S. Cl. 544—140 **29 Claims**

1. A benzoylpyrazole compound of the formula:



wherein

X represents F, Cl, Br, C_1–C_4 alkyl, OCH_3, OC_2H_5, CH_2OCH_3, or $CH(CH_3)OCH_3$;

Y represents CH_3, C_2H_5, or $CH(CH_3)_2$;

Z represents H or benzyl (optionally possessing up to three ring substituents selected from F, Cl, Br, CN, CF_3, NO_2, CH_3, C_2H_5, OCH_3, and OC_2H_5);

R' represents C_1–C_4 alkyl, C_3–C_4 alkenyl, or C_3–C_4 alkynyl;

R" represents H, CH_2OCH_3, or C_1–C_3 alkyl; and

each R independently represents H or C_1–C_4 alkyl, C_3–C_4 alkenyl, or C_3–C_4 alkynyl (each optionally possessing up to two substituents selected from Cl, Br, CN, C_1–C_4 alkoxy, and C_1–C_3 fluoroalkoxy and up to three F substituents) or benzyl (optionally possessing up to three ring substituents selected from F, Cl, Br, CN, CF_3, NO_2, CH_3, C_2H_5, OCH_3, and OC_2H_5); with the proviso that both of R do not represent H; or

NR_2 represents a 4- to 7-membered aliphatic nitrogen heterocyclic substituent optionally possessing O as a second ring heteroatom, optionally possessing one double bond, and optionally possessing up to three substituents selected from F, Cl, Br, CN, C_1–C_4 alkyl, C_1–C_3 fluoroalkyl, C_1–C_4 alkoxy, C_1–C_3 fluoroalkoxy, C_1–C_3 alkoxymethyl, and phenyl (optionally possessing up to three ring substituents selected from F, Cl, Br, CN, CF_3, NO_2, CH_3, C_2H_5, OCH_3, and OC_2H_5); or

NR_2 represents a pyrrol-1-yl or pyrazol-1-yl moiety optionally possessing up to two substituents selected from F, Cl, Br, I, CN, CF_3, C_1–C_3 alkyl, and C_1–C_3 alkoxy;

or when Z represents H, an agriculturally acceptable salt or ester thereof.

5,824,803

COMPOUNDS LABELED WITH CYANATE OR THIOCYANATE METAL COMPLEXES FOR DETECTION BY INFRARED SPECTROSCOPY

David W. Conrad, Alexandria, Va., and Charles H. Patterson, Jr., Laurel, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 30, 1997, Ser. No. 940,736

Int. Cl.[6] C07F *231/12:293/04;* **C07D** *231/12*

U.S. Cl. 548—109 **3 Claims**

1. A labeled compound comprising a compound having at least one histidine group bound to an metal complex, the metal complex comprising a transition metal ion and at least one cyanate or thiocyanate ligand and the metal complex having an IR absorption band within the spectral region of 2300 to 1900 cm^{-1}.

5,824,804

METHOD FOR THE PREPARATION OF A N-ALKOXY-(TETRA-OR HEXAHYDRO)-PHTHALIMIDE AND METHOD FOR THE PREPARATION OF A N-ALKOXYAMINE

Joannes M. C. A. Mulders, Geleen, Netherlands; Dominique M. C. Callant, Houthalen, Belgium, and Anna M. C. F. Castelijns, Beek, Netherlands, assignors to DSM N.V., TE Heerlen, Netherlands

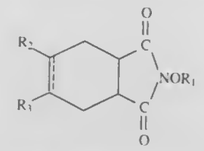
Filed Sep. 12, 1997, Ser. No. 928,126

Claims priority, application Belgium, Mar. 24, 1995, 9500257; WIPO, Mar. 19, 1996, PCT/NL96/00116

Int. Cl.[6] C07D *209/48*

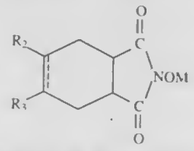
U.S. Cl. 548—514 **6 Claims**

1. A method for the preparation of N-alkoxy-(tetra- or hexahydro)-phthalimide according to formula I



I

R_1 being methyl or ethyl and R_2 and R_3 being each independently of one another hydrogen or alkyl with 1–4 C atoms or R_2 and R_3 together with the C atom to which they are bonded forming a ring with 5 or 6 C atoms, wherein the salt of the corresponding N-hydroxy-(tetrahydro- or hexahydro)-phthalimide according to formula II:



II

with R_2 and R_3 as defined above and M being an alkali metal, is brought into contact with a suitable alkylating agent, characterized in that R_1Cl is used as alkylating agent wherein R_1 has the aforementioned meaning.

5,824,805

BRANCHED HYDRAZONE LINKERS

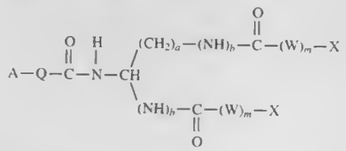
Dalton King, 114 Wakefield St., Hamden, Conn. 06517; Raymond A. Firestone, 900 Ridgeberry Rd., Ridgefield, Conn. 06877, and Pamela Trail, 1419 Silo Rd., Yardley, Pa. 19067

Filed Dec. 19, 1996, Ser. No. 770,614

Int. Cl.[6] C07D *207/40;* **C07C** *243/28*

U.S. Cl. 548—546 **13 Claims**

1. Having the formula



I

wherein

A is a thiol acceptor;

Q is a bridging group;

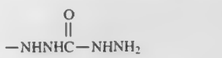
b is an integer of 0 or 1;

W is a spacer moiety;

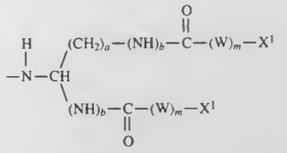
m is an integer of 0 or 1;

a is an integer of 2, 3 or 4; and

X is a moiety of the formula —NH—NH_2 or



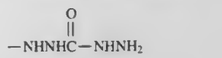
or a moiety of the formula



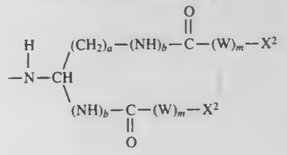
wherein

W, a, b and m are as defined hereinbefore, and

X^1 is a moiety of the formula —NH—NH_2 or



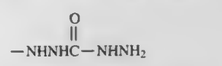
or a moiety of the formula



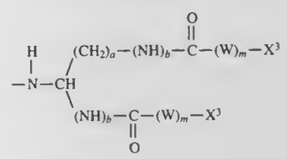
wherein

W, a, b, and m are defined hereinbefore, and

X^2 is a moiety of the formula NH—NH_2 or



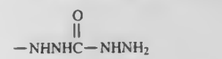
or a moiety of the formula



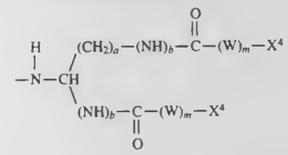
10 wherein

W, a, b, and m are as defined hereinbefore, and

X^3 is a moiety of the formula —NH—NH_2 or



or a moiety of the formula



wherein

W, a, b and m are as defined hereinbefore, and

X^4 is a moiety of the formula —NH—NH_2 or

5,824,806

PROCESSES FOR PREPARING TNAZ

Daniel Stec, III, Hackettstown; Ralph L. Perez, Ogdensburg; Paritosh R. Dave, Bridgewater, all of N.J., and Thomas G. Archibald, Fair Oaks, Calif., assignors to The United States of America as represented by the The Secretary of the Army, Washington, D.C.

Filed May 15, 1995, Ser. No. 440,946

Int. Cl.[6] C07D *203/22*

U.S. Cl. 548—953 **13 Claims**

1. A process for preparation of 1,3,3-trinitroazetldine which comprises the step of reacting a N-terirtiarybutyl,3,3-dinitroazetidine compound in the presence of acetic anhydride and nitrate ions to eliminate the tertiarybutyl substituent while forming a protonated secondary amine nitrate of the azetidine and dehydrating the nitrate to yield the 1,3,3-trinitro azetidine, the N-tertiarybutyl,3,3-dinitroazetidine compound being selected from (1) its quaternary form and (2) the reaction product of its tertiary amine form and protons.

5,824,807

PREPARATIONS OF AZABICYLOBUTANE PRECURSORS AND RELATED COMPOSITIONS

Paritosh R. Dave, Bridgewater, N.J., and Thomas G. Archibald, Fair oaks, Calif., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed May 15, 1995, Ser. No. 441,512

Int. Cl.[6] C07D *205/00*

U.S. Cl. 548—953 **8 Claims**

1. A process to prepare azabicylobutane from an azetidine comprising reacting an aza substituted, 3-substituted azetidine in an aqueous alkali media to eliminate the aza and 3-position substituents and to effect cyclization between the aza nitrogen and 3-carbon positions to form the azabicylobutane.

5,824,808

CYCLIC PHENOL SULFIDE AND PROCESS FOR PRODUCING THE SAME

Takashi Hori; Hitoshi Kumagai; Mitsuharu Hasegawa; Yoko Sato; Hiroshi Munakata, and Yoshihiro Sugawa, all of Saitama, Japan, assignors to Cosmo Research Institute, and Cosmo Oil Co., Ltd., both of Tokyo, Japan

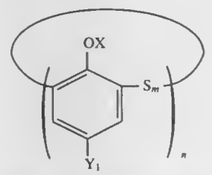
Filed Mar. 11, 1996, Ser. No. 614,969

Claims priority, application Japan, Mar. 10, 1995, 7-078459; Dec. 18, 1995, 7-347503; Mar. 4, 1996, 8-070902

Int. Cl.[6] C07D *331/02;327/00;339/00;* **C08G** *65/38*

U.S. Cl. 549—1 **29 Claims**

1. A cyclic phenol sulfide represented by the following formula (1):



(1)

wherein X represents a hydrocarbon group, or an acyl group;

Y_1 represents a hydrogen atom, a hydrocarbon group, a halogenated hydrocarbon group, $—COR^1$, $—OR^2$, $—COOR^3$, —CN, $—CONH_2$, $—NO_2$, $—NR^4R^5$, a halogen atom, $—SO_4R^6$, or $—SO_3R^7$, in which R^1, R^2, R^3, R^4, R^5, R^6, and R^7 each represents a hydrogen atom or a hydrocarbon group;
n is an integer of 4 or more; and
m is an integer of 1 to 7,
provided that the plural m's of the S_m's are the same or different;
the plural X's are the same or different; and
the plural Y_1's are the same or different.

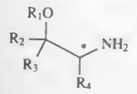
5,824,809

ALPHA-AMINOPHOSPHONATES AND PROCESSES FOR THEIR PREPARATION

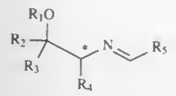
Amos B. Smith, III, Merion, Pa.; Kraig M. Yager, and Carol M. Taylor, both of Princeton, N.J., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Division of Ser. No. 214,368, Mar. 17, 1994, Pat. No. 5,508,463. This application Apr. 15, 1996, Ser. No. 633,952
Int. Cl.[6] C07F *9/06;9/28*
U.S. Cl. 549—218 **10 Claims**

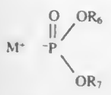
1. A synthetic process comprising the steps of:
contacting a primary amine compound having formula:



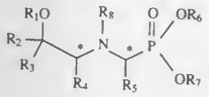
in the form of its R-isomer wherein:
R_1 is alkyl having 1 to about 10 carbon atoms or alkaryl having 7 to about 15 carbon atoms;
R_2 and R_3 are, independently, H, alkyl having 1 to about 10 carbon atoms, aryl having 6 to about 14 carbon atoms, or R_2 and R_3, together, are aryl or cycloalkyl;
R_4 is aryl having 6 to about 14 carbon atoms;
with an aldehyde having formula $R_5C(O)H$ for a time and under reaction conditions effective to form an imine compound having formula:



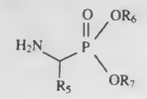
wherein:
R_5 is alkyl having 1 to about 10 carbon atoms; aryl having 6 to about 14 carbon atoms; aralkyl having 7 to about 15 carbon atoms; a naturally occurring amino acid sidechain; benzyloxymethyl; t-butylpropionate; furyl, or $—(CH_2)_n—(CH=CH)_x—X$ wherein n is 1–5, x is 0 or 1, and X is hydrogen, alkyl having from 1 to about 10 carbon atoms, or aryl having 6 to about 14 carbon atoms;
contacting said imine compound with a phosphite compound having formula:



for a time and under reaction conditions effective to form a secondary aminophosphonate compound having formula:



wherein:
M is Li;
R_6 and R_7 are, independently, H, alkyl having 1 to about 5 carbon atoms, aryl having 6 to about 14 carbon atoms, or aralkyl having 7 to about 15 carbon atoms;
R_8 is H, alkanoyl having 2 to about 5 carbon atoms or alkoxycarbonyl having 2 to about 5 carbon atoms; and
said secondary aminophosphonate is in the form of its R,R-isomer with less than about 10% of its R,S-isomer; and
contacting said secondary aminophosphonate compound for a time and under reducing conditions effective to form an α-aminophosphonate compound having formula:



5,824,810

Patent Not Issued For This Number

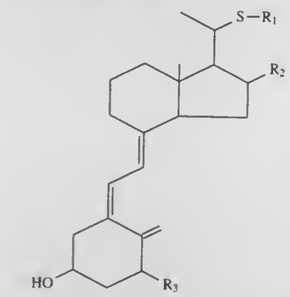
5,824,811

22-THIAVITAMIN D_3 DERIVATIVES

Noboru Kubodera, and Akira Kawase, both of Shizuoka-ken, Japan, assignors to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP95/00699, § 371 Date Oct. 1, 1996, § 102(e) Date Oct. 1, 1996, PCT Pub. No. WO95/27697, PCT Pub. Date Oct. 19, 1995
PCT Filed Apr. 10, 1995, Ser. No. 718,499
Claims priority, application Japan, Apr. 11, 1994, 6-107336
Int. Cl.[6] C07C *401/00;* **C07J** *13/00;5/00*
U.S. Cl. 552—653 **40 Claims**

1. A compound of the general formula (I):



(I)

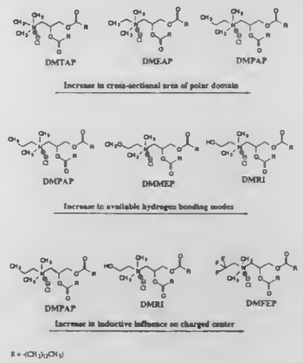
wherein R_1 represents a C1-10 alkyl group which may be substituted by one or more hydroxyl groups provided that the terminal carbon atom of R_1 group is a primary carbon atom or a secondary carbon atom, or R_1 is an unsubstituted alkyl group or an alkyl group substituted by 2 or more hydroxyl groups, R_2 represents a hydrogen atom or a hydroxyl group, and R_3 represents a hydrogen atom or a hydroxyl group.

5,824,812

POLYFUNCTIONAL CATIONIC CYTOFECTINS, FORMULATIONS AND METHODS FOR GENERATING ACTIVE CYTOFECTIN: POLYNUCLEOTIDE TRANSFECTION COMPLEXES

Michael H. Nantz; Michael J. Bennett, both of Davis, Calif.; Rajiv P. Balasubramaniam, Rochester, N.Y.; Alfred M. Aberle, Vallejo, Calif., and Robert W. Malone, Davis, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation-in-part of Ser. No. 534,471, Sep. 27, 1995. This application Sep. 17, 1996, Ser. No. 710,350
Int. Cl.[6] C07C *101/00*
U.S. Cl. 554—110 **40 Claims**



1. A cytofectin composition comprising an amine having bonded to an attached carbon chain at least a pair of same or different lipoyl moieties selected from a group consisting of an alkyl, alkenyl, alkynyl, alkanoyl, alkenoyl, or alkynoyl groups and at least two hydroxylated, ether containing, or acyloxy containing alkyl, alkenyl, or alkynyl groups bonded to said amine or at least one halogen containing moiety selected from a group consisting of a trihalogenated alkyl, alkenyl, or alkynyl group bonded to said amine or a combination of at least one halogen containing moiety selected from a group consisting of a trihalogenated alkyl, alkenyl, or alkynyl group and at least one hydroxylated, ether containing, or acyloxy containing alkyl, alkenyl, or alkynyl group.

5,824,813

LAYERED VANADIUM OXIDE COMPOSITIONS

Jeffrey Robert Douglas DeBord, Hightstown; Robert C. Haushalter, Little York, and Yiping Zhang, Plainsboro, all of N.J., assignors to NEC Research Institute, Inc., Princeton, N.J.; Texas A&M University, College Station, Tex., and Syracuse University, Syracuse, N.Y.

Division of Ser. No. 729,473, Oct. 11, 1996, Pat. No. 5,717,120, which is a division of Ser. No. 490,161, Jun. 14, 1995, Pat. No. 5,659,034. This application Oct. 31, 1997, Ser. No. 961,857
Int. Cl.[6] C07F *15/00;1/08;3/06;15/02*
U.S. Cl. 556—28 **1 Claim**

1. A layered vanadium oxide composition having the formula $(H_3N(CH_2)_3NH_3)[V_4O_{10}]$.

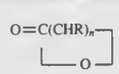
5,824,814

PROCESS FOR STABILISING SILOXANE POLYMERS

Stephen E. Cray, Vale of Glamorgan, and Martin J. Evans, Mid Glamorgan, both of United Kingdom, assignors to Dow Corning Ltd, Barry, United Kingdom

Filed Feb. 3, 1998, Ser. No. 17,589
Claims priority, application United Kingdom, Feb. 4, 1997, 9702234
Int. Cl.[6] C07F *7/08*
U.S. Cl. 556—401 **10 Claims**

1. A method for preparing a viscosity stable amido functional polysiloxane, which amido functional polysiloxane has a group $=NCO(CHR)_nOH$ connected with a silicon atom of a siloxane unit of the polysiloxane wherein R is selected from the group consisting of a hydrogen atom and an alkyl group, and n has a value in the range 2 to 7, which method comprises;
i) preparing a viscosity stable intermediate amino functional polysiloxane having at least one siloxane units according to the general formula $R^2_q(HR^4N\ R^a)_rSiO_{(4-(q'+r'))/2}$, any remaining units of the intermediate being of the general formula $R^2_qSiO_{(4-q)/2}$, by condensation polymerisation, wherein R^2 is selected from the group consisting of a hydroxyl group, a monovalent hydrocarbon group having up to 8 carbon atoms R', a group OR' and a group COR', R^4 is selected from the group consisting of a hydrogen atom, an alkyl group having 1 to 20 carbon atoms, an alkenyl group and an aryl group, R^a represents a divalent hydrocarbon group having 1 to 20 carbon atoms which may have a heteroatom selected from nitrogen, oxygen and sulphur present in the carbon chain, q has the value 0, 1, 2 or 3, q' has the value 0, 1, or 2, and r' has the value 1 or 2;
ii) adding an alcohol of the general formula R^1OH, wherein R^1 is selected from the group consisting of substituted and unsubstituted alkyl groups of from 4 to 30 carbon atoms to a compound selected from the group consisting of (a) the intermediate of step i) above and (b) to organo-silicon compounds used to produce said intermediate by condensation polymerisation, and;
iii) reacting the viscosity stable intermediate polysiloxane resulting from step ii) above with a lactone of the general formula



wherein R and n are as defined above.

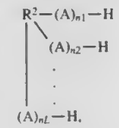
5,824,815

COMPOSITION COMPRISING A NOVEL PHOSPHATIZED ALICYCLIC COMPOUND AND PROCESS FOR THE PREPARATION THEREOF

Takaaki Fujiwa, Obtake; Terumasa Daito, Sakai; Takashi Yamamoto, and Takashi Matsufuji, both of Osaka, all of Japan, assignors to Daicel Chemical Industries, Ltd., Osaka-fu, Japan

Continuation of Ser. No. 486,499, Jun. 7, 1995, abandoned, which is a division of Ser. No. 270,284, Jul. 5, 1994, Pat. No. 5,527,941. This application Sep. 23, 1997, Ser. No. 935,650
Claims priority, application Japan, Jul. 5, 1993, 5-191745; Jul. 5, 1993, 5-191746; Jul. 5, 1993, 5-191747
Int. Cl.[6] C07F *9/09*
U.S. Cl. 558—161 **2 Claims**

1. A composition which comprises a phosphatized alicyclic compound represented by the formula (VII):

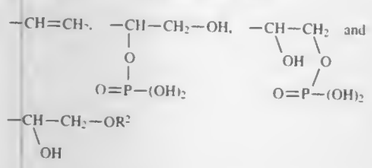


(VII)

wherein R^2 is a residual group of an organic compound having at least one active hydrogen atom; n1 to nL represent an integer 0 to 30, respectively; n1+n2+n3+ . . . +nL is an integer of 1 to 100; L is an integer of 1 to 10 which corresponds to the number of the active hydrogen atom in the organic compound and A represents an oxycyclohexane structure represented by the formula:



X^1 represents the following structural units:



wherein at least one X^1 group is one of the foregoing α-hydroxyphosphate-containing groups, and R^2 is any of hydrogen, an alkyl group, an alkylcarbonyl group and an arylcarbonyl group.

2. A composition which comprises a phosphatized compound selected from the group consisting of a phosphoric acid adduct of propyleneglycol diglycidylether, a phosphoric acid adduct of diethyleneglycol diglycidylether, a phosphoric acid adduct of trimethylolpropane triglycidylether, and a phosphoric acid adduct of pentaerythritol tetraglycidylether.

5,824,816

RECOVERY OF CATALYST SYSTEMS FROM DIARYLCARBONATE-CONTAINING REACTION MIXTURES BY MELT CRYSTALLIZATION

Hans-Josef Buysch; Carsten Hesse, both of Krefeld; Johann Rechner, Kempen, and Hans-Peter Wirges, Krefeld, all of Germany, assignors to Bayer AG, Leverkusen, Germany

Filed Apr. 1, 1997, Ser. No. 825,602

Claims priority, application Germany, Apr. 9, 1996, 196 13 973.2

Int. Cl.[6] C07C *68/00*

U.S. Cl. 558—274 **9 Claims**

1. A method for recovering catalyst systems containing a platinum-group-metal catalyst, a co-catalyst, a quaternary salt, and a base from reaction mixtures for producing diaryl carbonates of formula (I)



(I)

by oxidative carbonylation of the parent aromatic hydroxy compounds of formula (II)



(II)

wherein in the formulae

R signifies substituted or non-substituted C_6–C_{15}-aryl,

and having a diaryl carbonate content of at least 15 and less than 70 wt %, relative to the total weight of the reaction mixtures, wherein

a) the reaction mixture is transferred from the reactor for producing diaryl carbonate into an apparatus suitable for the-melt crystallization,

b) the melt crystallization is initiated in the suitable apparatus by temperature reduction and inoculation,

c) the melt crystallizate, which consists predominantly of diaryl carbonate and the parent aromatic hydroxy compound, is separated from the residual catalyst-containing melt,

d) the melt crystallizate is worked up to pure diaryl carbonate and pure aromatic hydroxy compound and

e) the catalyst-containing residual melt is recycled into the reactor for producing diaryl carbonate or worked up in order to obtain valuable materials.

5,824,817

HERBICIDAL COMPOSITIONS BASED ON 2,6-DICHLORO-3-FLUORO-BENZONITRILE, AND NEW INTERMEDIATES

Reinhard Lantzsch, Wuppertal; Werner Bussmann, Leverkusen; Josef Käsbauer, Wermelskirchen; Markus Dollinger, and Hans-Joachim Santel, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

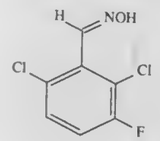
Division of Ser. No. 559,750, Nov. 15, 1995, abandoned. This application Jul. 28, 1997, Ser. No. 901,296

Claims priority, application Germany, Nov. 22, 1994, 4441419.6

Int. Cl.[6] C07C *255/33;47/54*

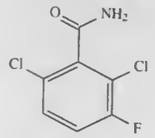
U.S. Cl. 558—425 **5 Claims**

1. A 2,6-dichloro-3-fluoro-phenyl derivative of the formulae



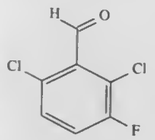
(II)

2,6-dichloro-3-fluoro-benzaldoxime;



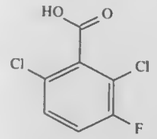
(III)

2,6-dichloro-3-fluoro-benzamide;



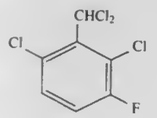
(IV)

2,6-dichloro-3-fluoro-benzaldehyde;



(V)

2,6-dichloro-3-fluoro-benzoic acid; or



(VI)

2,6-dichloro-3-fluoro-benzal chloride.

5,824,818

PROCESS FOR PREPARING LACTATE

Takafumi Abe; Toshiyuki Gotoh; Takako Uchiyama; Hirofumi Higuchi; Yoshikazu Shima, and Kazuto Ikemoto, all of Niigata, Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 366,873, Dec. 30, 1994, abandoned. This application Aug. 15, 1996, Ser. No. 698,478

Claims priority, application Japan, Feb. 21, 1994, 6-022385

Int. Cl.[6] C07C *69/66*

U.S. Cl. 560—179 **17 Claims**

1. A process for preparing a lactate represented by the formula $CH_3CH(OH)COOR$, wherein R is an alkyl group having 1 to 8 carbon atoms, which comprises:

(a) preparing lactonitrile from prussic acid and acetaldehyde;

(b) hydrating the lactonitrile obtained from step (a) to form lactamide,

(c) forming a lactate represented by the formula $CH_3CH(OH)COOR$, wherein R is as defined above, and formamide by reacting the lactamide obtained in step (b) with a formate represented by the formula HCOOR, wherein R is as defined above,

(d) separating and collecting components having a lower boiling point than that of the lactate from a reaction liquid obtained in step (c) by distillation under distillation conditions that a value M is 16 or less, M being defined as a retention time of liquid in the bottom of a distillation column (hours) multiplied by the temperature at the bottom of the distillation column minus 126 (°C.), and optionally recovering the lactate, and

(e) dehydrating formamide separated from the resultant product in step (d) to form prussic acid, recycling the prussic acid to step (a).

5,824,819

METHODS OF PREPARING AN INTERMEDIATE OXIDATION PRODUCT FROM A HYDROCARBON BY UTILIZING AN ACTIVATED INITIATOR

Mark W. Dassel, Indianola, Wash.; Eustathios Vassiliou, Newark, Del.; David C. DeCoster, Buckley, and Ader M. Rostami, Bainbridge Island, both of Wash., assignors to Twenty-First Century Research Corporation, Newark, Del.

Filed May 21, 1997, Ser. No. 861,176

Int. Cl.[6] C07C *51/245;51/16;51/255*

U.S. Cl. 562—529 **46 Claims**

1. A method of preparing an intermediate oxidation product from a hydrocarbon comprising the steps of:

(a) feeding a hydrocarbon and an initiator into a first reaction zone at a first hydrocarbon to initiator ratio by weight;

(b) oxidizing partially at least one of said hydrocarbon and initiator to form a first mixture;

(c) mixing the first mixture with a second mixture comprising the same hydrocarbon and initiator, the hydrocarbon and the initiator of the second mixture being present at a second hydrocarbon to initiator ratio by weight higher than the first hydrocarbon to initiator ratio, wherein the first mixture and the second mixture are mixed at a third ratio of first mixture to second mixture lower than 1; and

(d) further oxidizing said hydrocarbon to a desired degree.

5,824,820

PROCESS FOR THE PREPARATION OF CITRACONIC ANHYDRIDE

Michel Alas, Melle, France, assignor to Rhone-Poulenc Chimie, Courbevoie Cedex, France

Filed Jun. 19, 1996, Ser. No. 668,027

Claims priority, application France, Jun. 21, 1995, 95 07395

Int. Cl.[6] C07C *51/56;45/66;* **C12P** *17/04*

U.S. Cl. 562—895 **5 Claims**

1. A process for the preparation of citraconic anhydride in a reaction medium, continuously or in a batchwise manner, comprising the steps of:

introducing itaconic acid or a starting material comprising it, into the reaction medium wherein the source of itaconic acid is a fermentation broth or a production residue comprising itaconic acid, said process being carried out in the presence of a catalyst, and wherein the catalyst is a salt prepared at the time of use or in situ by reaction of itaconic acid and a base.

5,824,821

PROCESS FOR THE PREPARATION OF IODINATED CONTRAST AGENTS AND INTERMEDIATES THEREFOR

David Redick Lane, Davis, Calif., and Janis Vasilevskis, Berwyn, Pa., assignors to Nycomed Imaging AS, Norway

Filed Feb. 7, 1997, Ser. No. 796,212

Int. Cl.[6] A61K *49/04;* **C07C** *209/68;231/12*

U.S. Cl. 564—153 **9 Claims**

1. A process for the production of a 2,3 -dihydroxylpropylamino compound, said process comprising the reaction steps of:

epoxidizing an N-acyl or N,N-bisacyl substituted allylamino compound to yield an N-acyl or N,N-bisacyl substituted epoxypropylamino compound;

hydrolysing said N-acyl or N,N-bisacyl substituted epoxypropylamino compound to yield an N-acyl or N,N-bisacyl substituted 2,3-dihydroxylpropylamino compound.

5,824,822

PHOSPPHINE-PHOSINITE COMPOUND AND PROCESS FOR PREPARING 4-[(R)-1'-FORMYLETHYL]-AZETIDIN-2-ONE DERIVATIVES USING THE SAME

Takao Saito, Kanagawa; Akifumi Yoshida, Shizuoka; Kazuhiko Matsumura, Kanagawa; Takashi Miura, Kanagawa, and Hidenori Kumobayashi, Kanagawa, all of Japan, assignors to Takasago International Corporation, Tokyo, Japan

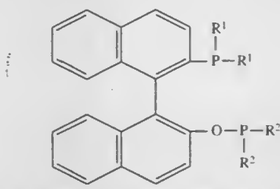
Filed Jul. 9, 1996, Ser. No. 677,226

Claims priority, application Japan, Jul. 27, 1995, 7-210215

Int. Cl.[6] C07F *9/02;* **C07D** *205/00*

U.S. Cl. 568—10 **3 Claims**

1. A phosphine-phosphinite compound represented by formula (I):



(I)

wherein R^1 and R^2, which may be the same or different, each represent a phenyl group; a phenyl group substituted with a lower alkyl group, a lower alkoxy group, a phenyl group, a halogen atom, a halogen-substituted lower alkyl group, a lower alkyl-substituted phenyl group, a tri(lower alkyl)silyl group, a cyclopentyl group, a 3,4-methylenedioxy group, or a 3,4-ethylenedioxy ground; a naphthyl group; a naphthyl group substituted with a lower alkyl group, a lower alkoxy group, or a halogen atom; or a cyclopentyl or cyclohexyl group.

5,824,823

Patent Not Issued For This Number

5,824,824

SULFONIUM SALTS AND CHEMICALLY AMPLIFIED POSITIVE RESIST COMPOSITIONS

Yoichi Osawa; Satoshi Watanabe; Kaysuya Takemura; Shigehiro Nagura, all of Nakakubiki-gun; Akinobu Tanaka, Fujisawa, and Yoshio Kawai, Isehara, all of Japan, assignors to Shin-Etsu Chemical Co., Ltd., and Nippon Telegraph and Telephone Corp., both of Tokyo, Japan

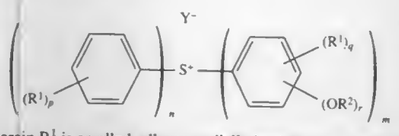
Filed Nov. 1, 1996, Ser. No. 742,323

Claims priority, application Japan, Nov. 2, 1995, 7-309849

Int. Cl.[6] C07C *319/00*

U.S. Cl. 568—49 9 Claims

1. A sulfonium salt having at least one acid labile group attached to a phenyl group in a molecule and an electron withdrawing group-substituted alkyl- or arylsulfonate and represented by the following general formula (1):



(I)

wherein R^1 is an alkyl, alkoxy or dialkylamino group, the groups represented by R^1 may be the same or different,

OR^2 is an acid labile group,

Y is a normal, branched or cyclic substituted alkylsulfonate having 2 to 20 carbon atoms or substituted arylsulfonate wherein the alkyl group of the alkylsulfonate has at least one hydrogen atom attached to a carbon atom at β-position or subsequent position replaced by an electron withdrawing group, and the aryl group of the arylsulfonate has at least one hydrogen atom of its benzene ring replaced by an electron withdrawing group,

letter n is an integer of 0 to 2, m is an integer of 1 to 3, the sum of n and m is equal to 3, r is an integer of 1 to 5, p is an integer of 0 to 5, q is an integer of 0 to 4, the sum of q and r is an integer of 1 to 5.

5,824,825

PHOSPHORIC ACID CATALYST AND ITS USE

Hermanus Lansink-Rotgerink, Glattbach; Harald Hoecker, Sulzbach; Stefan Wieland, Offenbach; Steffen Seebald, Grosskrotzenburg, and Heike Riedemann, Moembris, all of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Germany

Filed Mar. 27, 1997, Ser. No. 825,112

Claims priority, application Germany, Mar. 29, 1996, 196 12 783.1

Int. Cl.[6] C07C *27/00*

U.S. Cl. 568—898 13 Claims

1. A phosphoric acid catalyst comprising a shaped inorganic support having a pore volume, which contains 1 to 50 wt.% of H_3PO_4, with reference to the total weight of catalyst, wherein at least 90% of the support, with reference to the weight of pure support, consists of a member selected from the group consisting of titanium dioxide, zirconium dioxide and mixtures thereof, wherein said pore volume is filled with a solution of phosphoric acid.

5,824,826

PROCESS FOR THE PREPARATION OF 1,1,2,3,3,4-HEXAFLUOROBUTANE

Alagappan Thenappan, Cheektowaga; Michael Van Der Puy, Amherst, and Andrew J. Poss, Kenmore, all of N.Y., assignors to AlliedSignal Inc., Morristown, N.J.

Filed Jun. 27, 1997, Ser. No. 883,931

Int. Cl.[6] C07C *21/18*

U.S. Cl. 570—134 19 Claims

1. A process for preparing 1,1,2,3,3,4-hexafluorobutane comprising the steps of:

telomerizing chlorotrifluoroethylene in the presence of effective amounts of a telogen, a solvent of the formula $C_4Cl_4F_6$ and an initiator under conditions suitable to produce a 1,1,3,4-tetrachlorohexafluorobutane product mixture;

recovering 1,1,3,4-tetrachlorohexafluorobutane from the 1,1,3,4-tetrachlorohexafluorobutane product mixture;

reducing 1,1,3,4-tetrachlorohexafluorobutane with hydrogen in the presence of a reduction catalyst selected from the group consisting of palladium, platinum, ruthenium, rhodium, iridium, and mixtures thereof under conditions suitable to produce a product mixture comprising 1,1,2,3,3,4-hexafluorobutane.

5,824,827

HALOGEN EXCHANGE REACTIONS

Igor Bildinov; Pavel Podsevalov; Tatjana Nazarenko, and Leonid Deev, all of Perm, Russian Federation, assignors to Albemarle Corporation, Richmond, Va.

Filed Nov. 22, 1996, Ser. No. 754,338

Int. Cl.[6] C07C *25/13*

U.S. Cl. 570—147 30 Claims

1. A halogen exchange process which comprises heating an essentially anhydrous agitated mixture formed from ingredients comprising (i) at least one finely-divided essentially anhydrous alkali metal fluoride, (ii) at least one haloaromatic compound having at least one halogen atom of atomic number greater than 9 on an aromatic ring, and (iii) an aminophosphonium catalyst, at one or more reaction temperatures at which at least one said halogen atom of said haloaromatic compound is replaced by a fluorine atom.

5,824,828

PROCESS FOR MANUFACTURE OF TRICHLOROTRIFLUOROETHANES

Velliyur Nott Mallikarjuna Rao, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US94/09532, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO95/12565, PCT Pub. Date May 11, 1995

PCT Filed Sep. 1, 1994, Ser. No. 637,631

Int. Cl.[6] C07C *17/00*

U.S. Cl. 570—168 10 Claims

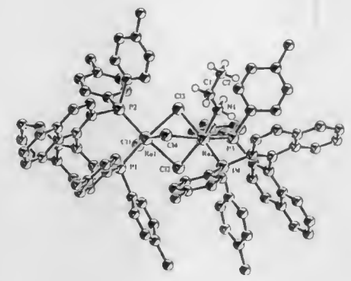
1. A process for producing a reaction product comprising $C_2Cl_3F_3$ substantially free of $CClF_2CClF_2$, comprising the steps of:

(i) contacting a feed mixture consisting essentially of compounds of the formula $C_2Cl_{4-x}F_{2+x}$ wherein x is 0 or 1 wherein the $C_2Cl_4F_2$ content is between about 10 mole percent and 90 mole percent of said $C_2Cl_{4-x}F_{2+x}$ and wherein the mole ratio of the total amount of CCl_2FCCl_2F and CCl_2FCClF_2 to the total amount of CCl_3CClF_2 and CCl_3CF_3 is at least about 1:9, with an isomerization catalyst to produce isomerization product wherein there is less than about 50,000 parts by weight total CCl_2FCCl_2F and CCl_2FCClF_2 per million parts by weight total of CCl_3CClF_2 and CCl_3CF_3;

(ii) contacting the isomerization product with HF in the vapor phase in the presence of a fluorination catalyst comprising trivalent chromium at an elevated temperature below 400° C. selected to provide a fluorination product containing $C_2Cl_2F_4$, $C_2Cl_3F_3$ and between about 10 and 90 percent of the $C_2Cl_4F_2$ from the isomerization product, wherein the ratio of CCl_2FCCl_2F to CCl_3CClF_2 and the ratio of CCl_2FCClF_2 to CCl_3CF_2 are both greater than the ratios thereof in the isomerization product and wherein the molar ratio of $CClF_2CClF_2$ to CCl_2FCClF_2 is less than about 1:9;

(iii) recovering the $C_2Cl_2F_4$ and a first portion of the $C_2Cl_3F_3$ from the fluorination product; and

(iv) recycling $C_2Cl_4F_2$ and a second portion of the $C_2Cl_3F_3$ from the fluorination product to step (i) along with an additional amount of CCl_2FCCl_2F which is at least equal to the amount of $C_2Cl_2F_4$ and $C_2Cl_3F_3$ recovered in step (iii) and is sufficient to provide said feed mixture ratio of $C_2Cl_4F_2$ to $C_2Cl_{4-x}F_{2+x}$.



5,824,829

HYDROCARBON VISCOSITY INHIBITOR AND INHIBITING METHOD

Noriaki Maeda, Kurashiki; Toru Taguchi, Yokkaichi; Seiji Tanizaki, Mie-gun; Nobumitsu Kumazawa, and Yutaka Takeuchi, both of Yokkaichi, all of Japan, assignors to Baker Hughes Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 355,607, Dec. 14, 1994, abandoned. This application May 22, 1997, Ser. No. 861,922

Claims priority, application Japan, Dec. 16, 1993, 5-316697

Int. Cl.[6] C07C *7/20;* C09K *3/00*

U.S. Cl. 585—3 6 Claims

1. A method of inhibiting the viscosity of a hydrocarbon comprising adding a hydrocarbon viscosity inhibitor composition to the hydrocarbon in the absence of adding of dialkylhydroxylamine, where the hydrocarbon viscosity inhibitor composition comprises a sulfonic acid or salt thereof of the formula:

$$R'—SO_3(X)_n$$

where R' is selected from the group consisting of

a straight or branched alkyl group of 4–32 carbon atoms;

an alkyl-substituted benzene nucleus, where the alkyl group is a straight or branched alkyl group of 4–32 carbon atoms; and

an alkyl-substituted naphthalene nucleus, where the alkyl group is a straight or branched alkyl group of 4–32 carbon atoms;

X is selected from the group consisting of hydrogen, alkali metal, and alkali earth metal, primary amine salt, secondary amine salt, tertiary amine salt; where any of the amine salts may be substituted with a straight or branched alkyl group of 1–22 carbon atoms, and further where the straight or branched alkyl group of 1–22 carbon atoms may contain a hydroxy or an alkoxy group; and

n is selected from the group consisting of 1 or ½; and

a polymerization inhibitor selected from the group consisting of an aromatic amine, and a phenol.

5,824,830

RUTHENIUM-PHOSPHINE COMPLEX

Takao Ikariya, Tokyo, Japan, assignor to Takasago International Corporation, Tokyo, Japan

Filed Aug. 12, 1997, Ser. No. 909,938

Claims priority, application Japan, Aug. 15, 1996, 8-232650

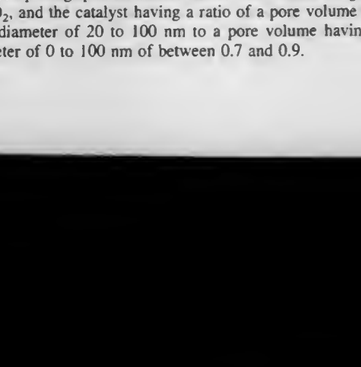
Int. Cl.[6] C07C *5/10*

U.S. Cl. 585—269 2 Claims

1. A ruthenium-phosphine complex represented by formula (1):

$$\{RuCl(R\text{-}BINAP)\}\{Ru(EtNH_2)\ (R\text{-}BINAP)\}(\mu\text{-}Cl)_3 \quad (I)$$

wherein Et represents an ethyl group; and R-BINAP represents a tertiary phosphine represented by formula (II):



(II)

wherein R represents a hydrogen atom or a methyl group.

5,824,831

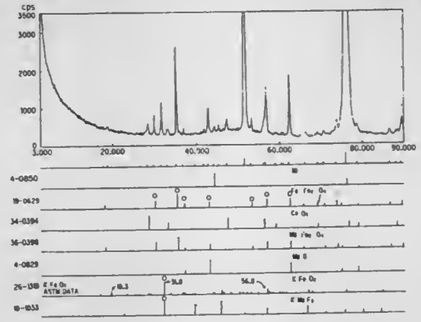
CATALYST FOR DEHYDROGENATION OF ALKYL AROMATIC HYDROCARBON AND PROCESS FOR PRODUCTING VINYL AROMATIC HYDROCARBON USING THE SAME

Yasushi Shiraki, Tokuyama, and Junshi Matsui, Ichihara, both of Japan, assignors to Idemitsu Petrochemical Co., Ltd., Tokyo, Japan

Filed Jul. 8, 1996, Ser. No. 676,451

Int. Cl.[6] C07C *5/333;* B01J *23/78*

U.S. Cl. 585—444 16 Claims



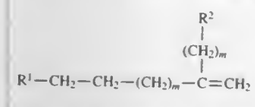
1. A catalyst for dehydrogenation of an alkyl aromatic hydrocarbon, the catalyst being produced by adding potassium oxide to iron oxide and reducing the resultant product with hydrogen, the catalyst comprising potassium ferrite of the formula $K_2Fe_2O_4$ or $KFeO_2$, and the catalyst having a ratio of a pore volume having a pore diameter of 20 to 100 nm to a pore volume having a pore diameter of 0 to 100 nm of between 0.7 and 0.9.

5,824,832
LINEAR ALXYLBENZENE FORMATION USING LOW TEMPERATURE IONIC LIQUID
Fawzy G. Sherif, Stony Point; Lieh-Jiun Shyu, Yorktown Heights, and Carl C. Greco, Garnerville, all of N.Y., assignors to Akzo Nobel NV, Arnhem, Netherlands
Continuation-in-part of Ser. No. 681,338, Jul. 22, 1996, Pat. No. 5,731,101. This application Mar. 27, 1997, Ser. No. 827,127
Int. Cl.[6] C07C *2/64*
U.S. Cl. 585—455 16 Claims

1. A process for linear alkylbenzene formation involving the reaction of a higher alkylating moiety with a benzene compound using, as a catalyst, a low temperature molten ionic liquid composition comprising a mixture of a metal halide and an alkyl-containing amine hydrohalide salt.

5,824,833
DIMERIZATION CATALYST AND PROCESS USING ALKYL ALUMINUM ALKOXIDE
Kaung-Far Lin, Baton Rouge, La., assignor to Amoco Corporation, Chicago, Ill.
Filed Nov. 28, 1994, Ser. No. 345,964
Int. Cl.[6] C07C *2/26*
U.S. Cl. 585—511 6 Claims

1. A process for producing a vinylidene olefin of the formula



where R^1 and R^2 are the same or different and are hydrogen or alkyl and m is an integer of from 0 to 18, comprising heating a vinyl olefin of the formula $R^2—(CH_2)_m—CH=CH_2$ in the presence of a catalyst consisting essentially of an aluminum alkoxide compound of the formula $R^4_nAl(OR^5)_p$ where R^4 and R^5 are the same or different and are alkyl, n is from 0.75 to 2.75, and p is from 0.25 to 2.25, the sum of n and p being 3, at an aluminum vinyl feed molar ratio of 0.02 and above and at a temperature of from about 100° C. to about 250° C., whereby the aforesaid vinyl olefin is dimerized to produce the aforesaid vinylidene olefin and a deep internal olefin dimer.

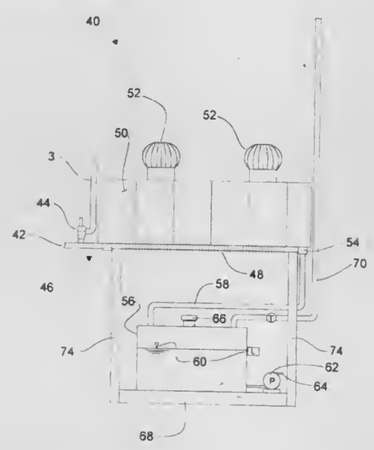
5,824,834
PROCESS FOR THE PRODUCTION OF ACETYLENE AND SYNTHESIS GAS
Michael Bachtler, Neustadt, Germany; Rudolf R. Schnur, Baton Rouge, La.; Peter Pässler, Ludwigshafen, Germany; Olaf Scheidsteger, Mannheim, Germany; Werner Kastenhuber, Mutterstadt, Germany; Gerd Schlindwein, Ludwigshafen, Germany, and Rainer König, Kallstadt, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany
Filed Oct. 19, 1995, Ser. No. 543,879
Int. Cl.[6] C07C *2/78*
U.S. Cl. 585—540 26 Claims

1. A process for the production of acetylene and synthesis gas by partial oxidation of hydrocarbons with oxygen, which process comprises separately preheating gaseous reactants comprising hydrocarbons and oxygen, wherein the atomic ratio of oxygen atoms in the oxygen to carbon atoms in the hydrocarbons is at least 1.05, intimately mixing the separately preheated gaseous reactants in a mixing zone, reacting the intimately mixed gaseous reactants after passing a burner block whereby less than the full acetylene capacity of the burner block is employed, rapidly quenching with aqueous quench medium after reaction, and recirculating the aqueous quench medium in a closed system.

5,824,835
ISOPARAFFIN-OLEFIN ALKYLATION PROCESS
Pradyot A. Agaskar, and Tracy J. Huang, both of Lawrenceville, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.
Filed Feb. 3, 1995, Ser. No. 383,152
Int. Cl.[6] C07C *2/58;* B01J *29/06*
U.S. Cl. 585—722 7 Claims

1. A process for alkylating an olefin with an isoparaffin comprising contacting an olefin-containing feed with an isoparaffin-containing feed with a solid catalyst comprising zeolite Beta having been synthesized in the presence of at least one divalent metal cation and having a Si/Al ratio in the as-synthesized state of less than about 18.

5,824,836
PROCESSING SYSTEM FOR CONDENSING HYDROCARBON EMISSIONS FROM A VAPOR STREAM
James W. Becquet, 113 Pigeon Loop, Lafayette, La. 70508
Filed Jun. 20, 1996, Ser. No. 665,668
Int. Cl.[6] C07C *7/00*
U.S. Cl. 585—800 7 Claims



1. A process for condensing hydrocarbon emissions from a vapor stream and lowering an ambient temperature of the hydrocarbon emissions, the process comprising:
flowing the vapor stream from a dehydrator unit;
directing the vapor stream to a condenser means for condensing the vapor stream into a liquid phase and gas phase, and wherein said condenser means comprises: a series of heat exchange coils adapted so that the vapor stream is directed through said heat exchange coils; a roof member positioned above said heat exchange coils so that a shaded area is provided; and a fan, operatively associated with said roof member, for circulating the air through said roof member;
delivering the liquid phase into a storage tank, said storage tank being positioned within said shaded area;
providing said shaded area above said heat exchange coils so that the ambient temperature of said liquid phase decreases;
rotating said fan by importing a wind through said fan,
venting the air from said roof member into the atmosphere so that the ambient temperature of said liquid phase decreases;
allowing the ambient temperature of said liquid phase in said storage tank to decrease by thermal mass cooling;
discharging the gas phase into the atmosphere;
pumping the liquid phase from the storage tank to a reservoir means for storing the fluid phase with a pump member.

5,824,837
EXPRESSION OF HUMAN INTERLEUKIN-1β IN A TRANSGENIC ANIMAL
Howard Y. Chen, Westfield, N.J.; Kathryn J. Hufmann, Collegeville, Pa.; Leonardus H. T. Van Der Ploeg, Scotch Plains, N.J.; Alan R. Shaw, Doylestown, Pa.; Myrna E. Trumbauer, Yardley, Pa., and Hui Zheng, Edison, N.J., assignors to Merck & Co., Inc., Rahway, N.J.
PCT No. PCT/US94/08111, § 371 Date Apr. 22, 1996, § 102(e) Date Apr. 22, 1996, PCT Pub. No. WO95/03402, PCT Pub. Date Feb. 2, 1995
Continuation-in-part of Ser. No. 96,943, Jul. 22, 1993, abandoned. This PCT application Jul. 19, 1994, Ser. No. 571,983
Int. Cl.[6] A61K *49/00;* C12N *5/18;15/09;15/16*
U.S. Cl. 800—2 3 Claims

1. A transgenic mouse whose somatic and germ cells comprise and express a transgene comprising a murine metallothionein-1 promoter operably linked to a gene encoding human interleukin-1β, wherein said transgene is integrated into the genome of said cells, and wherein expression of said transgene results in chronic inflammation of the kidney and liver of said transgenic mouse.

5,824,838
TRANSGENIC MOUSE MODEL FOR PITUITARY DISORDERS ASSOCIATED WITH LIF OVEREXPRESSION AND/OR GH UNDEREXPRESSION, AND ITS USE FOR TESTING THERAPEUTIC DRUGS FOR THE CONDITIONS
Shlomo Melmed; Sadanori Akita, both of Los Angeles, and Carol Readhead, Pasadena, all of Calif., assignors to Cedars-Sinai Medical Center, Los Angeles, Calif.
Filed May 9, 1996, Ser. No. 647,401
Int. Cl.[6] C12N *5/00;15/00;15/09*
U.S. Cl. 800—2 35 Claims

1. A transgenic mouse, comprising in its germ and pituitary cells nucleic acid comprising a mouse leukemia inhibitory factor (LIF)-encoding gene regulated by a rat growth hormone pituitary specific promoter operatively linked thereto: wherein with respect to the corresponding wild type mouse,
the pituitary gland expresses LIF at a level which is at least 1.5 times;
the circulating levels of growth hormone (GQ) and insulin growth factor-1 (IGF-1) are at least 10% lower; and the mouse's body weight is lower.

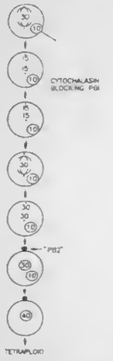
5,824,839
DELIVERY OF GENE PRODUCTS VIA MESANGIAL CELLS
Masanori Kitamura, London, United Kingdom, assignor to The Jikei University School of Medicine, Tokyo, Japan
Continuation of Ser. No. 680,535, Jul. 9, 1996, which is a division of Ser. No. 153,769, Nov. 17, 1993, Pat. No. 5,580,558. This application Apr. 9, 1997, Ser. No. 835,608
Int. Cl.[6] C12N *5/00*
U.S. Cl. 800—2 10 Claims

1. A non-human mammal comprising cultured mesangial cells entrapped in glomeruli of at least one kidney of said mammal, wherein said mesangial cells are syngeneic or allogeneic with respect to said mammal.

5,824,840
DIABETES-INDUCING TRANSGENIC MOUSE
Jeong-Sun Seo; Soonhee Kim, and Jongil Klm, all of Seoul, Rep. of Korea, assignors to Jeongsun Seo, Seoul, Rep. of Korea
Filed Nov. 16, 1995, Ser. No. 558,719
Claims priority, application Rep. of Korea, Nov. 21, 1994, 94-30676
Int. Cl.[6] C12N *5/00;15/00;15/09*
U.S. Cl. 800—2 6 Claims

1. An non-insulin dependent diabetes-inducible transgenic mouse, wherein the germ cells and somatic cells of said mouse comprise recombinant DNA consisting of a 1.8 kb EcoRI-BamHI fragment of a human insulin gene promoter operably linked to a 2.3 kb BamHI-HindIII fragment of human heat shock protein 70 gene, and wherein expression of said human heat shock protein 70 in said mouse results in said mouse exhibiting elevated levels of blood glucose and an enlarged pancreas in response to the administration of sugar.

5,824,841
TETRAPLOID SHELLFISH
Ximing Guo, Glassboro, and Standish K. Allen, Jr., Mauricetown, both of N.J., assignors to Rutgers, The State University of New Jersey, New Brunswick, N.J.
Continuation of Ser. No. 316,279, Sep. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 184,838, Jan. 21, 1994, abandoned. This application Jul. 16, 1997, Ser. No. 895,077
Int. Cl.[6] A01K *61/00;67/00*
U.S. Cl. 800—2 36 Claims



1. A viable tetraploid oyster which can grow and mature under natural conditions that a corresponding normal diploid oyster can naturally habit, wherein said tetraploid oyster can be mated with a diploid oyster to produce a triploid oyster.

5,824,842
METHOD OF ALTERING LIGNIN IN TREES
John MacKay, Raleigh; David O'Malley, Cary; Ross Whetten, and Ronald Sederoff, both of Raleigh, all of N.C., assignors to North Carolina State University, Raleigh, N.C.
Filed Jul. 26, 1996, Ser. No. 687,646
Int. Cl.[6] A01G *1/00;* A01H *1/04;1/00;3/00*
U.S. Cl. 800—200 19 Claims

9. A method of producing a stand of conifer trees having easily extractable lignin, comprising the steps of:
(a) identifying a sexually mature conifer tree heterozygous for a Cad null allele;
(b) crossing said conifer tree of (a) with a conifer tree of the same species and heterozygous for a Cad null allele to produce a plurality of seeds;

(c) germinating a plurality of said seeds to produce a plurality of F1 progeny trees;

(d) assessing said progeny trees for the presence of said Cad null allele and selecting those progeny trees which contain a Cad null allele; and

(e) growing those progeny trees selected in step (d) in a stand; wherein each tree within said stand contains lignin which is more easily extractable compared to lignin in a wild-type tree of the same species.

12. A stand of clonal trees having easily extractable lignin, said stand produced by the method of claim 9.

5,824,843

INBRED CORN LINE LH290

Jon Geadelmann, Roseville, Minn., assignor to Holden's Foundation Seeds, Inc., Williamsburg, Iowa

Filed Oct. 8, 1996, Ser. No. 727,151
Int. Cl.[6] A01H 5/00;4/00; C12N 5/04
U.S. Cl. 800—200 10 Claims

1. Inbred corn seed designated LH290 having ATCC accession No. 97761.

5,824,844

SOYBEAN VARIETY 9363

Leon George Streit, Des Moines, and Dorman John Grace, III, Urbandale, both of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Jan. 14, 1997, Ser. No. 783,117
Int. Cl.[6] A01H 5/00;5/10; C12N 5/04
U.S. Cl. 800—200 14 Claims

1. A soybean seed designated 9363, representative seed of said soybean 9363 having been deposited under ATCC Acession No. 209890.

2. A soybean plant, or its parts, grown from the seed of claim 1, representative seed having been deposited under ATCC Acession No. 209890.

5,824,845

Patent Not Issued For This Number

5,824,846

Patent Not Issued For This Number

5,824,847

Patent Not Issued For This Number

5,824,848

INBRED CORN PLANT F361 AND SEEDS THEREOF

Thomas E. Morgan, Mt. Olive, N.C., assignor to DEKALB Genetics Corporation, Dekalb, Ill.

Filed Feb. 5, 1997, Ser. No. 795,046
Int. Cl.[6] A01H 5/00;4/00;1/00; C12N 5/04
U.S. Cl. 800—200 39 Claims

1. Inbred corn seed of the corn plant designated F361, a sample of said seed having been deposited under ATCC Accession No. 209838.

4. An inbred corn plant produced by growing the seed of an inbred corn plant designated F361, a sample of the seed of said inbred corn plant designated F361 having been deposited under ATCC Accession No. 209838.

5,824,849

INBRED CORN PLANT 171KI3 AND SEEDS THEREOF

Steve K. Johnson, Owatonna, Minn., assignor to DeKalb Genetics Corporation, DeKalb, Ill.

Filed Feb. 5, 1997, Ser. No. 795,403
Int. Cl.[6] A01H 5/00;4/00;1/00; C12N 5/04
U.S. Cl. 800—200 39 Claims

1. Inbred corn seed of the corn plant designated 171K13, a sample of said seed having been deposited under ATCC Accession No. 209837.

4. An inbred corn plant produced by growing the seed of an inbred corn plant designated 171K13, a sample of the seed of said inbred corn plant designated 171K13 having been deposited under ATCC Accession No. 209839.

5,824,850

SOYBEAN CULTIVAR 8816079010574

William K. Rhodes, Queenstown, Md., and Alan K. Walker, Janesville, Wis., assignors to Asgrow Seed Company, Kalamazoo, Mich.

Filed Feb. 7, 1997, Ser. No. 797,746
Int. Cl.[6] A01H 5/00;5/10; C12N 5/04
U.S. Cl. 800—200 10 Claims

1. A soybean seed designated 8816079010574 having ATCC No. 97918.

2. A plant or plants of the soybean cultivar designated 8816079010574 produced by growing the seed of claim 1.

5,824,851

SOYBEAN CULTIVAR 9115369325667

Craig K. Moots, Taylorville, Ill., assignor to Asgrow Seed Company, Kalamazoo, Mich.

Filed Feb. 14, 1997, Ser. No. 800,741
Int. Cl.[6] A01H 5/00;5/10;1/02; C12N 5/04
U.S. Cl. 800—200 10 Claims

1. A soybean seed designated 9115369325667 having ATCC No. 209211.

2. A plant or plants of the soybean cultivar designated 9115369325667 produced by growing the seed of claim 1.

5,824,852

INBRED CORN LINE NP 2013

Thomas R. Francis, London, Canada, assignor to Novartis Finance Corporation, New York, N.Y.

Filed Feb. 18, 1997, Ser. No. 802,021
Int. Cl.[6] A01H 5/00;4/00;1/00; C12N 5/04
U.S. Cl. 800—200 18 Claims

1. An inbred corn line designated NP2013, the seeds of which have been deposited as ATCC Accession No. 209541.

5,824,853

SOYBEAN CULTIVAR 1827082

William H Eby, Adel, Iowa, assignor to Stine Seed Farm, Inc., Adel, Iowa

Filed Apr. 7, 1997, Ser. No. 833,514
Int. Cl.[6] A01H 5/00;5/10;1/02; C12N 5/04
U.S. Cl. 800—200 10 Claims

1. A soybean seed designated 1827082deposited as ATCC Accession Number 209892.

2. A soybean seed designated 1827082 deposited as ATCC Accession Number 209892.

5,824,854

SYNTHETIC CORN HYBRID LP57.1

Richard R. Bergquist, El Paso, Ill., assignor to Optimum Quality Grains, L.L.C., West Des Moines, Iowa

Filed Mar. 31, 1997, Ser. No. 825,626
Int. Cl.[6] A01H 5/00;4/00; C12N 5/04
U.S. Cl. 800—200 12 Claims

1. A synthetic hybrid corn seed designated LP57.1 and having ATCC accession No. 97874.

2. A synthetic hybrid corn plant or its parts produced by the seed of claim 1.

5,824,855

SYNTHETIC CORN HYBRID LP53.1-WX

Richard R. Bergquist, El Paso, Ill., assignor to Optimum Quality Grains, L.L.C., West Des Moines, Iowa

Filed Mar. 31, 1997, Ser. No. 829,158
Int. Cl.[6] A01H 5/00;4/00; C12N 5/04
U.S. Cl. 800—200 17 Claims

1. A synthetic hybrid corn seed designated LP53.1-wx and having ATCC accession No. 97870.

2. A synthetic hybrid corn plant of its parts produced by the seed of claim 1.

5,824,856

PROCESS FOR PRODUCTION OF EXOGENOUS GENE OR ITS PRODUCT IN PLANT CELLS

Masashi Mori; Kazuyuki Mise; Tetsuro Okuno, and Iwao Furusawa, all of Kyoto, Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

Filed Mar. 1, 1991, Ser. No. 663,164
Claims priority, application Japan, Sep. 7, 1990, 2-238234
Int. Cl.[6] C12N 5/00;15/00
U.S. Cl. 800—205 19 Claims

1. A process for production of an exogenous gene or its product in a plant cell which comprises:

inserting into a genome of a plant cDNA's of RNA1 and RNA2 replicase genes from brome mosaic virus, wherein said cDNA's have deletion of the nucleotides corresponding to the 3' terminal portion consisting of the nucleotide sequence extending from the 3' terminus to a site about 200 nucleotides in the 5' direction from said 3' terminus of virus RNA, and a cDNA of a recombinant brome mosaic virus genomic RNA3, wherein a coat protein gene is wholly or partly replaced with said exogenous gene which recombinant RNA3 molecule has an unmodified 3' terminus,

or inoculating said recombinant virus genomic RNA on a plant cell having said cDNA's of RNA1 and RNA2 repilcase genes inserted in said genome.

5,824,857

PLANT PROMOTER

Roger N. Beachy, LaJolla, Calif., and Maitrayee Bhattacharyya, St. Louis, Mo., assignors to Washington University, St. Louis, Mo.

Filed Nov. 8, 1991, Ser. No. 789,738
Int. Cl.[6] C12N 15/82;15/05
U.S. Cl. 800—205 24 Claims

1. An isolated genome-length transcript promoter from rice tungro bacilliform virus.

5,824,858

PLANT LYSOPHOSPHATIDIC ACID ACYLTRANSFERASES

Huw Maelor Davies; Deborah Hawkins, and Janet Nelsen, all of Davis, Calif., assignors to Calgene, Inc., Davis, Calif.

Continuation-in-part of Ser. No. 231,196, Apr. 21, 1994, and a continuation-in-part of Ser. No. 224,625, Apr. 6, 1994, Pat. No. 5,563,058. This application Jun. 6, 1994, Ser. No. 254,404
Int. Cl.[6] A01H 5/00; C12N 5/04;15/82
U.S. Cl. 800—205 13 Claims

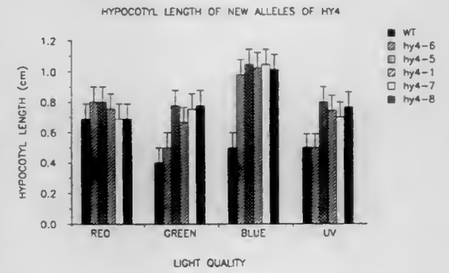
1. A DNA construct comprising a sequence encoding the coconut 1-acylglycerol-3-phosphate acyltransferase amino acid sequence shown in any one of FIGS. 10–13 (SEQ ID NO:18–21), wherein said DNA construct further comprises a DNA sequence not naturally associated with said acyltransferase encoding sequence.

5,824,859

BLUE LIGHT PHOTORECEPTORS AND METHODS OF USING THE SAME

Anthony Robert Cashmore, Penn Valley; Margaret Ahmad, Philadelphia, and Chentao Lin, Upper Darby, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Filed Jul. 8, 1994, Ser. No. 272,255
Int. Cl.[6] A01H 5/00;1/00; C12N 15/00
U.S. Cl. 800—205 34 Claims



1. A substantially pure preparation of a nucleic acid specifying the sequence of a plant HY4 gene, said gene comprising all mutants, derivatives or homologs of SEQ ID #5 which retain the activity of modifying stem length in a plant.

11. A transgenic plant, the cells of said plant comprising a substantially pure preparation of the nucleic acid of SEQ ID NO: 5, or any mutants, derivatives or homologs thereof which retain the activity of modifying stem length in said plant.

5,824,860
RECOMBINANT MATERIALS FOR PRODUCTION OF TOMATO ACC SYNTHASE

Athanasios Theologis, Los Altos, Calif., and Takahido Sato, Tokyo, Japan, assignors to The United States of America as represented by the Department of Agriculture, Washington, D.C.

Continuation of Ser. No. 862,493, Apr. 2, 1992, abandoned, which is a continuation-in-part of Ser. No. 579,896, Sep. 10, 1990, abandoned. This application Jan. 25, 1995, Ser. No. 378,313

Int. Cl.[6] A01H *4/00;* **C12N** *15/82;5/14;15/29*

U.S. Cl. 800—205 **8 Claims**

3. A DNA molecule which comprises an expression system for the production of the ACC synthase LE-ACC2, which expression system comprises a nucleotide sequence encoding said ACC synthase operably linked to control sequences capable of effecting its expression.

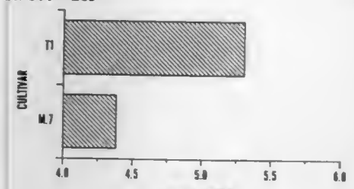
5,824,861
TRANSGENIC POMACEOUS FRUIT WITH FIRE BLIGHT RESISTANCE

Herbert S. Aldwinckle, Geneva, and John L. Norelli, Ithaca, both of N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Continuation of Ser. No. 33,772, Mar. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 954,347, Sep. 30, 1992, abandoned. This application Feb. 8, 1995, Ser. No. 385,590

Int. Cl.[6] A01H *1/04;* **C12N** *5/00;15/00*

U.S. Cl. 800—205 **25 Claims**



1. A method of conferring resistance against fire blight to apple scion cultivars or apple rootstock cultivars comprising:

transforming apple scion cultivars or apple rootstock cultivars with a gene which encodes for a lytic protein.

16. A transgenic apple scion cultivar or a transgenic apple rootstock cultivar transformed with a gene which encodes for a lytic protein that imparts fire blight resistance to the cultivar.

5,824,862
DNA ENCODING ATP-DEPENDENT FRUCTOSE 6-PHOSPHATE 1-PHOSPHOTRANSFERASE ORIGINATING FROM PLANT, RECOMBINANT VECTOR CONTAINING THE SAME AND METHOD FOR CHANGING SUGAR CONTENT IN PLANT CELLS UNDER LOW TEMPERATURE

Toru Hiyoshi; Toshiki Mine, both of Iwata-gun; Keisuke Kasaoka, Tokyo, all of Japan; Robert Huw Tyson, and Anthony Miles John Page, both of Babraham, United Kingdom, assignors to Japan Tobacco Inc., Tokyo, Japan

PCT No. PCT/JP94/01352, § 371 Date Jun. 9, 1995, § 102(e) Date Jun. 9, 1995, PCT Pub. No. WO95/05457, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 16, 1994, Ser. No. 416,870

Claims priority, application Japan, Aug. 19, 1993, 5-226454

Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/54;15/82*

U.S. Cl. 800—205 **37 Claims**

33. A transformed plant which is transformed with a DNA molecule encoding plant ATP dependent fructose 6-phosphate 1-phosphotransferase comprising the conserved amino acid sequences set forth in SEQ ID NOS: 11, 14, 21 and 22.

5,824,863
SEED COAT-SPECIFIC CRYPTIC PROMOTER IN TOBACCO

Brian Miki, Ottawa; V. N. Iyer, Saskatoon, and Pierre Fobert, Ottawa, all of Canada, assignors to Her Majesty the Queen in right of Canada, as represented by Agriculture, and Agri-Food Canada, both of Ottawa, Canada

Filed May 15, 1995, Ser. No. 441,597

Int. Cl.[6] A01H *5/00;* **C12N** *15/82*

U.S. Cl. 800—205 **9 Claims**

1. An isolated DNA sequence having a seed coat-specific cryptic promoter region comprised of either nucleotides 1–467 of SEQ ID NO: 1 or an analogue of said nucleotides 1–467 of SEQ ID NO: 1, wherein said analogue hybridizes under stringent conditions to nucleotides 1-467 of SEQ ID NO: 1.

4. A transgenic plant containing a promoter as claimed in claim 1, operatively linked to a gene encoding a protein.

5,824,864
MAIZE GENE AND PROTEIN FOR INSECT CONTROL

Timothy W. Fox, Des Moines; Carl W. Garnaat, Ankeny, and Terry EuClaire Meyer, Urbandale, all of Iowa, assignors to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed May 25, 1995, Ser. No. 449,986

Int. Cl.[6] C12N *15/00;15/29;15/82;* **A01H** *5/00*

U.S. Cl. 800—205 **27 Claims**

1. An isolated DNA molecule having the nucleotide sequence shown in FIG. 1 (SEQ ID No. 1) or a structural equivalent thereof which hybridizes to SEQ ID No. 1 under high stringency and encodes a polypeptide retaining the insecticidal actiivty of 5C9.

5,824,865
CHIMERIC PLANT GENES BASED ON UPSTREAM REGULATORY ELEMENTS OF HELIANTHININ

Terry Thomas, College Station, Tex.; Georges Freysslnet, Saint Cyr au Mont d'Or, France; Michel Lebrun, Lyon, France, and Molly Bogue, Strasbourg, France, assignors to Rhone Poulenc Agrochimie, Lyon Cedex, France

Division of Ser. No. 243,541, May 16, 1994, which is a continuation of Ser. No. 116,041, Sep. 1, 1993, abandoned, which is a continuation of Ser. No. 682,354, Apr. 8, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 480,346

Int. Cl.[6] C12N *15/29;15/82;5/04;* **A01H** *5/00*

U.S. Cl. 800—205 **39 Claims**

1. A chimeric plant gene comprising at least one regulatory element from a helianthinin gene that directs ABA-responsive gene expression wherein said element is operably linked to the coding sequence of a heterologous gene to effect said expression of a gene product from said coding sequence wherein said regulatory element is from HaG3A.

14. A transgenic plant, or a progeny of said plant, comprising the chimeric plant gene of claim 1.

5,824,866
RI T-DNA PROMOTERS

Jerry L. Slightom, Kalamazoo, Mass., and David A. Tepfer, Paris, France, assignors to Mycogen Plant Science, Inc., San Diego, Calif.

Division of Ser. No. 336,346, Nov. 8, 1994, Pat. No. 5,466,792, which is a division of Ser. No. 8,216, Jan. 25, 1993, Pat. No. 5,366,887, which is a division of Ser. No. 725,368, Apr. 22, 1985, Pat. No. 5,182,200. This application Jun. 2, 1995, Ser. No. 458,831

Int. Cl.[6] A01H *5/00;* **C12N** *5/04;15/31;15/84*

U.S. Cl. 800—205 **4 Claims**

3. A plant, plant cell, plant tissue, or plant seed, each of said plant, cell, tissue, or seed being derived or descended from a genetically modified dicotyledonous plant cell produced by transforming the cell to contain a pRi T_L-DNA promoter and a heterologous foreign structural gene, the promoter and the structural gene being in such a position and orientation with respect to one another that the structural gene is expressible in a plant cell under control of the promoter wherein the promoter/structural gene combination is integrated into a plant chromosome, whereby the combination is flanked by plant DNA, said promoter/structural gene combination being present in said plant, plant cell, plant tissue, or plant seed.

5,824,867
PLANT GLUTAMATE RECEPTORS

Gloria Coruzzi; Igor Oliveira; Hon-Ming Lam, all of New York, and Ming-Hsiun Hsieh, Woodside, all of N.Y., assignors to New York University, New York, N.Y.

Filed Jun. 7, 1995, Ser. No. 481,956

Int. Cl.[6] A01H *5/00;* **C12N** *15/29;15/82;5/04*

U.S. Cl. 800—205 **8 Claims**

1. An isolated DNA molecule having the following sequence:

(a) a DNA sequence encoding a plant-glutamate receptor containing a glutamate binding domain having the amino acid sequence of FIG. 6 (SEQ ID NO:1);

(b) a DNA sequence encoding a plant glutamate receptor containing an amino acid sequence shown in FIG. 7A (Seq. ID. No:8). or FIG. 7B (Seq. ID. No:12);

(c) a DNA sequence encoding a plant glutamate receptor and containing one of the nucleotide sequences shown in FIG. 7C (SEQ ID NOS:13–15):

(d) a DNA sequence that hybridizes under stringent conditions to the complement of the coding sequence of part (a)-or (b) or (c) and encodes a plant protein having glutamate receptor activity; or

(e) a DNA sequence that hybridizes under stringent conditions to the coding sequence of part (a) or (b) or (c), wherein the plant protein encoded by the coding strand of the hybridizing DNA has glutamate receptor activity.

8. A transgenic plant in which the transgene comprises a DNA sequence of claim 1 operatively associated with a regulatory sequence that controls gene expression so that the DNA sequence of claim 1 is expressed by the transgenic plant.

5,824,868
PLANTS HAVING MODIFIED RESPONSE TO ETHYLENE

Elliot M. Meyerowitz; Caren Chang, both of Pasadena, Calif., and Anthony B. Bleecker, Madison, Wis., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 263,480, Jun. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 86,555, Jul. 1, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 484,101

Int. Cl.[6] A01H *5/00;* **C12N** *5/14;15/29;15/82*

U.S. Cl. 800—205 **14 Claims**

1. An antisense expression construct comprising a promoter and an ETR nucleic acid in the antisense orientation, wherein said ETR nucleic acid encodes an ETR protein with at least 50% overall similarity to the ETR protein sequence of *Arabidopsis thaliana* as set forth in SEQ ID NO:3 and at least 60% similarity to the N-terminal 316 amino acids of SEQ ID NO:3, and wherein expression of said construct in a plant cell results in a decreased response to ethylene by said cell.

5,824,869
BIOCIDAL PROTEINS

Willem F. Broekaert, Dilbeek; Bruno P.A. Cammue, Alsemberg, both of Belgium; Rupert W. Osborn, Middlesex; Sarah B. Rees, Berkshire, both of England; Franky R.G. Terras, Amzegem, and Jozef Vanderleyden, Heverlee, both of Belgium, assignors to Zeneca Limited, London, England

Division of Ser. No. 452,078, May 26, 1995, Pat. No. 5,689,043, which is a division of Ser. No. 377,687, Jan. 25, 1995, Pat. No. 5,538,525, which is a continuation of Ser. No. 002,480, Jan. 4, 1993, abandoned. This application Dec. 27, 1996, Ser. No. 777,192

Claims priority, application United Kingdom, Aug. 29, 1991, 9118523; Feb. 13, 1992, 9203038; Jun. 25, 1992, 9213526

Int. Cl.[6] A01H *5/00;* **C12N** *15/82*

U.S. Cl. 800—205 **19 Claims**

1. A plant transformed with a recombinant DNA sequence encoding a protein having an amino acid sequence selected from the group consisting of sequences SEQ ID NO:1 to SEQ ID NO:15, SEQ ID NO:19, SEQ ID NO:49, SEQ ID NO:51, SEQ ID NO:59 and SEQ ID NO:37.

5,824,870
COMMERCIAL PRODUCTION OF APROTININ IN PLANTS

Chris Baszczynski, 7305 Benton Dr., Urbandale, Iowa; Thomas Czapla, 4624 70th Pl., Urbandale, Iowa 50322; Elizabeth Hood, 9265 Lincoln Ave., Clive, Iowa 50325; Terry EuClaire Meyer, 4338 101st St., Urbandale, Iowa 50322; David Peterson, 6219 Willow Crest Dr., Apart. 202, Johnston, Iowa; A. Gururaj Rao, 4734 74st St., Urbandale, Iowa 50322; James C. Register, III, 1710 Maxwell Ave., Ames, Iowa; Derrick Witcher, 4726 93rd St., Urbandale, Iowa 50322, and John A. Howard, 2976 NW. 132nd Ct., West Des Moines, Iowa

Filed Nov. 6, 1995, Ser. No. 554,161

U.S. Cl. 800—205 **13 Claims**

1. An isolated DNA molecule comprising a heterologous nucleotide sequence encoding aprotinin operably linked to a promoter sequence to allow its expression in plants.

7. A transgenic plant stably transformed with a DNA molecule comprising a heterologous nucleotide sequence encoding aprotinin operably linked to a promoter sequence to allow its expression in plants such that the aprotinin expressed in the plant is capable of protease inhibition.

5,824,871

Patent Not Issued For This Number

5,824,872
A CONSTITUTIVE PROMOTER FROM TOBACCO

Brian Miki, 1876 Dorset Dr., Ottawa, Ontario, Canada, K1H 5V1; Jiro Hattori, 763 Halstead St., Ottawa, Ontario, Canada, K1G 1M5; Pierre Fobert, 878 Kingsmere Blvd., Saskatoon, Saskatchewan, Canada, S7J 4J7, and Venkatran N. Iyer, 139 Iona St., Ottawa, Ontario, Canada, K1Y 3M2

Filed Feb. 1, 1996, Ser. No. 593,121

Int. Cl.[6] A01H *5/00;* **C12N** *15/82;15/63;* **C07H** *21/04*

U.S. Cl. 800—205 **5 Claims**

1. An isolated constitutive promoter from tobacco that directs expression in at least ovary, flower, immature embryo, mature

embryo, seed, stem, leaf and root tissues, wherein said promoter comprises the nucleotide sequence of SEQ ID NO:1.

5,824,873

TOMATO RIPENING TOM 41 COMPOSITIONS AND METHODS OF USE

Donald Grierson, Loughborough, United Kingdom; Susan Dale Lawrence, Ithaca, N.Y.; Gloria Andrews Moore, Gainesville, Fla., and Wolfgang Walter Schuch, Crowthorne, United Kingdom, assignors to University of Florida, Gainesville, Fla., and Zeneca Limited, London, United Kingdom

PCT No. PCT/GB94/01611, § 371 Date Apr. 10, 1996, § 102(e) Date Apr. 10, 1996, PCT Pub. No. WO95/04152, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 27, 1994, Ser. No. 596,111

Claims priority, application United Kingdom, Jul. 30, 1993, 9315751

Int. Cl.[6] **A01H** *5/00;5/10;* **C12N** *1/21;5/14;15/29;15/82*

U.S. Cl. 800—205 **16 Claims**

13. A transgenic plant that has incorporated into its genome a transgene that encodes a plant ripening enzyme comprising the amino acid sequence of SEQ ID NO:2.

5,824,874

ANTIFUNGAL POLYPEPTIDE AND PROCESS FOR ITS PRODUCTION

Norbert Ulbrich, Berlin; Rolf Hilgenfeld, Friedrichsdorf; Heinz Hänel, Oberursel; Burkhard Sachse, Kelkheim; Peter Braun, Mainz; Joachim Wink, Rödermark; Peter Eckes, Kelkheim; Jürgen Logemann, and Jozef Schell, both of Köln, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Division of Ser. No. 372,455, Jan. 13, 1995, Pat. No. 5,589,624, which is a division of Ser. No. 945,982, Oct. 30, 1992, Pat. No. 5,421,839. This application Jul. 29, 1996, Ser. No. 681,703

Claims priority, application Germany, Jun. 15, 1990, 40 19 105.2; Mar. 6, 1991, 41 07 140.9; WIPO, Jun. 12, 1991, PCT/EP91/01094

Int. Cl.[6] **A01H** *5/00;* **C12N** *5/04;5/82;15/31*

U.S. Cl. 800—205 **6 Claims**

1. A method for protecting a plant from fungi comprising transforming a slant cell so that it contains and expresses a gene coding for an antifungal polypeptide isolated from *Aspergillus giganteus* and is viable, and growing the plant from the cell; wherein the antifungal polypeptide has an amino acid sequence comprising Ala-Thr-Tyr-Asn-Gly-Lys-Cys-Tyr-Lys-Lys-Asp-Asn-Ile-Cys-Lys-Tyr-Lys-ala-Gln-Ser-Gly-Lys-Thr-Ala-Ile-Cys-Lys-Cys-Tyr-Val-Lys-Lys-Cys-Pro-Arg-Asp-Gly-Ala-Lys-Cys-Glu-Phe-Asp-Ser-Tyr-Lys-Gly-Lys-Tyr-Cys (SEQ ID NO: 1).

5,824,875

1-AMINOCYCLOPROPANE-1-CARBOXYLATE SYNTHASE GENES FROM PELARGONIUM

Rajinder S. Ranu, Fort Collins, Colo., assignor to Colorado State University through its agent Colorado State University Research Foundation, Fort Collins, Colo.

Filed Oct. 1, 1996, Ser. No. 724,194

Int. Cl.[6] **A01H** *5/00;* **C12N** *15/82;15/63;* **C07H** *21/04*

U.S. Cl. 800—205 **25 Claims**

4. An isolated DNA molecule encoding an ACC synthase enzyme of geranium which DNA molecule hybridizes under high stringency conditions with SEQ ID NO:1.

5,824,876

PLANT PARASITIC NEMATODE CONTROL

Sarah Jane Gurr, Oxford; Michael John McPherson, Dewsbury; Howard John Atkinson, Leeds, and Dianna Joy Bowles, North Yorkshire, all of England, assignors to Advanced Technologies (Cambridge) Limited, Cambridge, England

Continuation-in-part of Ser. No. 356,790, Dec. 13, 1994, Pat. No. 5,589,622, which is a continuation-in-part of Ser. No. 988,954, Jun. 28, 1993, abandoned. This application Oct. 8, 1996, Ser. No. 727,770

Int. Cl.[6] **C12N** *15/29;15/82;15/09;* **A01H** *5/00*

U.S. Cl. 800—205 **16 Claims**

1. A method of controlling nematodes, the method comprising the steps of:

a) identifying a gene, the promoter region of said gene being specifically induced within a successfully nematode infected plant by nematode infection of the plant;

b) preparing a construct by combining said promoter region of said gene with a further region, wherein said further region codes for a product disruptive of nematode attack; and

c) transforming plants with said construct to obtain plants which are thus nematode resistant.

15. A nematode resistant transgenic plant incorporating a modified gene derived from a method according to claim 1.

5,824,877

METHOD FOR SOYBEAN TRANSFORMATION AND REGENERATION

Maud A. Hinchee, Manchester, and Dannette Connor-Ward, Olivette, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Division of Ser. No. 388,642, Feb. 14, 1995, Pat. No. 5,569,834, which is a division of Ser. No. 156,611, Nov. 23, 1993, Pat. No. 5,416,011, which is a continuation of Ser. No. 18,347, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 223,147, Jul. 22, 1988, abandoned. This application Oct. 25, 1996, Ser. No. 736,772

Int. Cl.[6] **A01H** *5/00;5/10;4/00;* **C12N** *5/14;15/82*

U.S. Cl. 800—205 **19 Claims**

1. A method for transforming soybean which comprises:

(a) preparing a cotyledon explant from a soybean seedling by:

(i) removing the hypocotyl region by cutting just below the cotyledonary node,

(ii) separating the two cotyledons at the cotyledonary node by tearing the cotyledons apart, and

(iii) removing the epicotyl from the cotyledon to which it remains attached,

(b) inserting a chimeric gene into the explant of part (a) by inoculation and co-cultivation of the explant with a disarmed *Agrobacterium tumefaciens* vector containing said chimeric gene;

(c) selecting transformed explant tissue, and

(d) regenerating a differentiated transformed plant from the transformed explant tissue of part (c).

5,824,878

MICROORGANISM AND INSECTICIDE

Michio Ohba, Fukuoka; Hidenori Iwahana; Ryoichi Sato, both of Tokyo; Nobukazu Suzuki, Ibaraki; Katsutoshi Ogiwara, Ibaraki; Kazunobu Sakanaka, Ibaraki; Hidetaka Hori, Kanagawa; Shouji Asano, and Tadaaki Kawasugi, both of Ibaraki, all of Japan, assignors to Kubota Corporation, Japan

Division of Ser. No. 272,887, Jul. 8, 1994, Pat. No. 5,747,450, which is a continuation of Ser. No. 915,203, Jul. 23, 1992, Pat. No. 5,359,048. This application Jan. 27, 1997, Ser. No. 789,449

Int. Cl.[6] **A01H** *5/00;* **A01N** *63/00;* **C07H** *21/04;* **C12N** *1/21*

U.S. Cl. 800—205 **15 Claims**

1. A biologically pure culture of *Bacillus thuringiensis* having the identifying pesticidal characteristics of *Bacillus thuringiensis* serovar *japonensis* variety Buibui (FERM BP-3465).

5,824,879

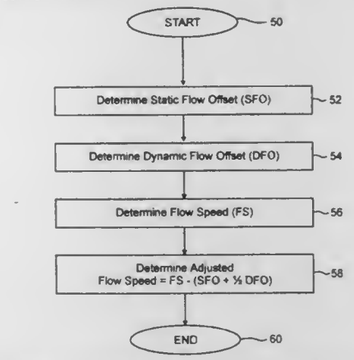
METHOD OF CALIBRATION AN ULTRASONIC FLOW METER

Alvin E. Brown, Santa Cruz, Calif., assignor to Rosemount Inc., Eden Prairie, Minn.

Filed Oct. 4, 1996, Ser. No. 726,095

Int. Cl.[6] **G01F** *25/00*

U.S. Cl. 73—1.34 **9 Claims**



1. A method of calibrating an ultrasonic flow meter, comprising the steps of:

(a) determining a static flow offset;

(b) determining a dynamic flow offset;

(c) determining a flow speed; and

(d) subtracting the static flow offset and one half the dynamic flow offset from the flow speed to form an adjusted flow speed.

5,824,880

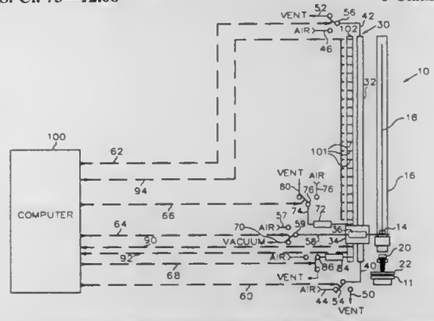
AUTOMATED DROP-WEIGHT IMPACT TESTING

Fred J. Burwell, Bartlesville; Ronald D. Jones, deceased, late of Bartlesville, by Catherine Z. Jones, Joseph B. Cross, executors; Wayne A. Millard, Bartlesville; Dennis C. Sprague, Bartlesville; Herbert R. Pinnick, Jr., Bartlesville, and George L. Dorsey, Bartlesville, all of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 30, 1997, Ser. No. 866,005

Int. Cl.[6] **G01N** *3/00*

U.S. Cl. 73—12.06 **6 Claims**



1. Apparatus for drop-weight testing of a representative sample of a material that fails by cracking or shattering under a single blow delivering sufficient impact stress, said apparatus comprising:

(a) a test fixture comprising:

i) a base plate having a hole;

ii) at least one impact weight in the shape of a dart, and herein designated as a dart, having a lifting pin extending outwardly therefrom;

iii) a drop-tube having a slot, wherein said drop-tube is vertically mounted above said hole in said base plate for slidably receiving said dart, wherein said dart can be raised in said drop-tube by positioning said lifting pin through said slot and using said lifting pin to lift said dart;

(b) a pneumatically powered lift means for lifting said dart, said lift means including a set of pneumatic pistons comprising:

i) a drop piston having a retracted position and an extended position, said extended position being adapted for contacting the underside of said lifting pin;

ii) a lift piston vertically mounted on a stationary frame, said lift piston being of pressure balance construction and having a relatively long stroke compared to said drop piston, wherein said lift piston is adapted for carrying said drop piston;

iii) a home start piston mounted on said stationary frame at a home position, said home start piston having a retracted position and an extended position, said extended position being adapted for contacting said lift piston to prevent upward movement of said lift piston, and said retracted position being adapted for starting operation of said pneumatically powered lift mechanism; and

(iv) a safety piston mounted on said stationary frame at a bottom position, said safety piston having a retracted position and an extended position, said extended position being adapted for stopping said lift piston;

said pneumatically powered lift means further including a set of electropneumatic actuators that are responsive to electronic signals for sequencing operation of said set of pneumatic pistons for contacting said lifting pin, then lifting and releasing said dart in said drop-tube;

(c) wherein said dart is released at a desired height in said drop-tube to free fall through said drop-tube and impact on said sample of material; and

(d) means for generating a first signal representative of the position of said dart in said drop-tube.

5,824,881

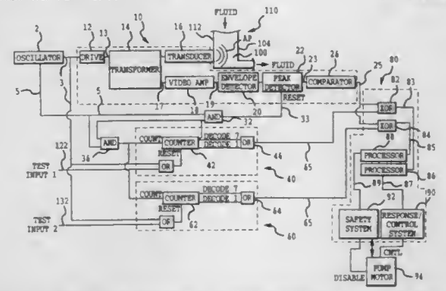
GAS/FLUID DETECTOR FOR CONTAINED FLUID SYSTEMS

David Shouldice, Lakewood, and Coy Vann Toavs, Boulder, both of Colo., assignors to COBE Laboratories, Arvada, Colo.

Filed Sep. 13, 1996, Ser. No. 713,758

Int. Cl.[6] **G01N** *33/48*

U.S. Cl. 73—19.1 **35 Claims**



1. A method for detecting a predetermined condition within a fluid containment region of interest, said predetermined condition being one of the presence or absence of one of a fluid or gas within said fluid containment region of interest, comprising:

directing an energy pulse into the fluid containment region of interest;

detecting energy at the region of interest during each of a first plurality of at least partially non-overlapping time intervals within a predetermined time period associated with the energy pulse;

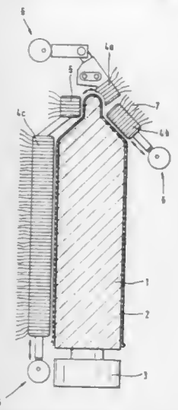
generating a multi-component detection output utilizing said detected energy, wherein each of said components corresponds with a different one of said first plurality of time intervals;

separately employing each of said components of said multi-component detection output to determine whether said predetermined condition exists within said region of interest.

5,824,882
DEVICE FOR CHECKING THE POROSITY OF THIN RUBBER PRODUCTS

Robert Andre Emil Griebel, and Gregory J. Gormley, both of 85 Justice Dr., Newtown, Pa. 18940

PCT No. PCT/DE95/00971. § 371 Date Mar. 26, 1997, § 102(e) Date Mar. 26, 1997, PCT Pub. No. WO96/03635, PCT Pub. Date Feb. 8, 1996
PCT Filed Jul. 20, 1995, Ser. No. 776,826
Claims priority, application Germany, Jul. 23, 1994, 44 26 225.6
Int. Cl.[6] G01N *15/08;27/00;* **G01M** *3/04*
U.S. Cl. 73—38 **9 Claims**



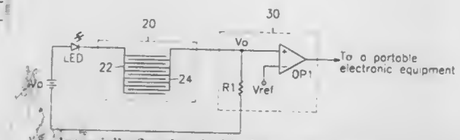
1. Device for checking the porosity of dielectric foils, particularly rubber products, such as condoms or protective gloves, which have a cover holder made of durable, electrically conductive material and over which the rubber product is placed, and a plurality of outer electrodes that are on the side of the skin of the rubber product opposite the cover holder, whereby the cover holder and the outer electrodes are connected to a source of voltage and an electrical gauge via electrical currents, wherein:
the outer electrodes are in the form of points,
the outer electrodes and the cover holder are relatively moveable toward one another so that the skin of the rubber product is gradually scanned by the outer electrodes,
the voltage produced from the source of voltage between the cover holder and the outer electrodes is an alternating current or pulsating direct current,
the gauge measures the flow of current in each electrode and by this measurement corresponds to the electrode in a reference measurement for the state in which there is an absence of material without the application of a rubber product, thereby showing a defect.

5,824,883
BATTERY LEAKAGE SENSING SYSTEM

Byung-Gyu Park, and Kyung-Joon Park, both of Kyunggi-do, Rep. of Korea, assignors to Samsung Display Devices Co., Ltd., Suwon-si, Rep. of Korea

Filed May 22, 1997, Ser. No. 861,626
Claims priority, application Rep. of Korea, Jul. 16, 1996, 1996 28690
Int. Cl.[6] G01R *27/08;* **G08B** *21/00*
U.S. Cl. 73—40 **12 Claims**

1. A battery leakage sensing system, comprising:
a battery pack for receiving a battery;

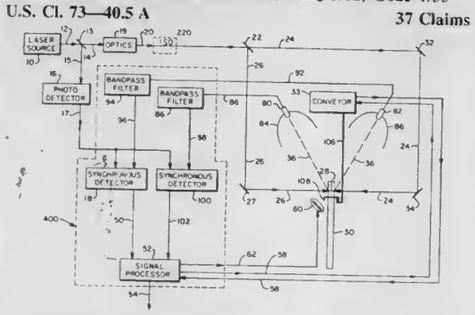


a substantially flat electrical leakage sensor applied over a broad surface area for sensing whether a battery leaks and outputting a result, said sensor being located at a surface of the battery pack susceptible to leakage from a battery when a battery is installed in the battery pack; said leakage sensor comprising a conductive glass mat which enables electricity to be conducted over said surface in event that any leakage occurs; and
a leakage display for displaying the sensed result from the leakage sensor; and
a leakage communicator for receiving the sensed result from the leakage sensor and transmitting the senseed result to an external device.

5,824,884
PHOTO-ACOUSTIC LEAK DETECTOR WITH BASELINE MEASURING

Frederick T. Olender, Somers; Bernard A. Woody, Tolland, and Leon A. Newman, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 835,043, Mar. 27, 1997. This application Apr. 16, 1998, Ser. No. 61,423
Int. Cl.[6] G01M *3/08;* **G01N** *21/00;* **G01J** *5/02;* **G02F** *1/33*
U.S. Cl. 73—40.5 A **37 Claims**

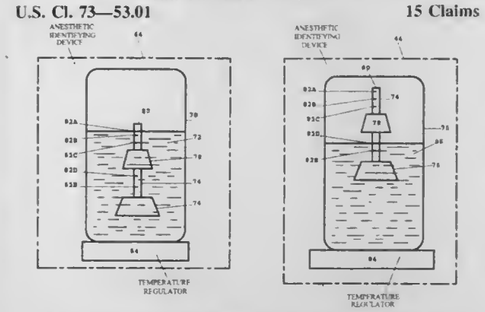


1. A photo-acoustic leak detection system, comprising:
a beam having a wavelength, said beam incident on a component containing a gas which absorbs said wavelength, said gas emitting a first acoustic signal upon absorbing said wavelength;
an airflow source producing airflow which displaces a portion of said gas leaking from said component;
an acoustic sensor which receives said first acoustic signal and a second acoustic signal generated when said airflow source displaces said portion of said gas, said acoustic sensor providing a first sensor signal and a second sensor signal indicative of said first and second acoustic signals, respectively; and
a signal processor which receives said first and second sensor signals, said signal processor using said second sensor signal as a non-leak baseline measurement and providing an output signal indicative of the existence of a leak in said component.

5,824,885
METHOD INTENDED FOR USE IN ANAESTHETIC SYSTEMS FOR IDENTIFYING ANAESTHETICS

Anders Lekholm, Bromma, Sweden, assignor to Siemens Elema AB, Solna, Sweden

Filed Jan. 25, 1996, Ser. No. 591,158
Claims priority, application Sweden, Feb. 14, 1995, 9500530
Int. Cl.[6] G01N *9/12;25/18*
U.S. Cl. 73—53.01 **15 Claims**

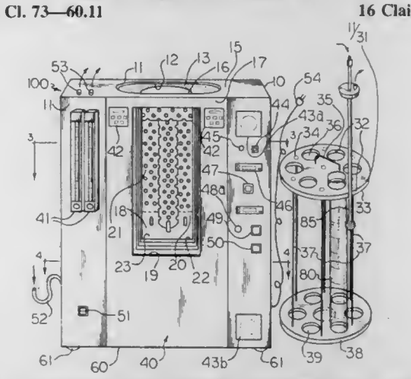


1. A device for use with an anaesthetic system for identifying at least one anaesthetic, said device comprising:
a container fillable with an anaesthetic in liquid form; and measurement means for interacting with said liquid anaesthetic for identifying at least one parameter related to at least one physical property of said liquid anaesthetic selected from the group of physical properties comprising density, thermal conductivity and thermal absorption for identifying said liquid anaesthetic from said at least one parameter.

5,824,886
FOAM TESTER

Theodore W. Selby, Midland; Michael A. Tubbs, Holland; Joseph S. Trombley, Auburn; James R. Cotter, Bay City, and Gregory C. Miiller, Coleman, all of Mich., assignors to Tanas Co., Midland, Mich.

Filed Jan. 13, 1997, Ser. No. 782,822
Int. Cl.[6] G01N *37/00;* **H05B** *3/06*
U.S. Cl. 73—60.11 **16 Claims**

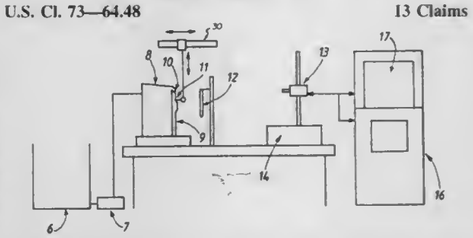


1. A foam tester device comprising an insulated cabinet with a temperature-regulatable volume contained therein; a heater capable of heating a gas for said volume; a feature to circulate heated gas in said volume, which feature includes a plenum below said volume through which said gas can be circulated with respect to said volume by pumping said gas, and which feature further includes a perforate circulation stack mounted above said plenum and interior of said volume to a floor defining a bottom of said volume, through which gas can circulate with respect to said plenum and a portion of said volume exterior to said circulation stack; a top access system such that sample container(s), each capable of holding a liquid sample, is(are) insertable into the volume so that the same can be heated therein; and a feature to observe any sample(s) in the sample container(s) such that observation can be conducted from outside the cabinet during operation of the device, wherein provision is made therein for a sample bubbling gas to provide test foam for the liquid sample(s) in the sample container(s).

5,824,887
METHOD AND DEVICE FOR MEASURING THE SURFACE TENSION OF A LIQUID COMPOSITION IN A CURTAIN

Jean-Marie Baumlin, Chalon sur Saone; Ghislaine Wywial, Demigny, and Nathalie Hautier, Dijon, all of France, assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 21, 1996, Ser. No. 734,166
Claims priority, application France, Nov. 22, 1995, 95 14270
Int. Cl.[6] G01N *13/02*
U.S. Cl. 73—64.48 **13 Claims**



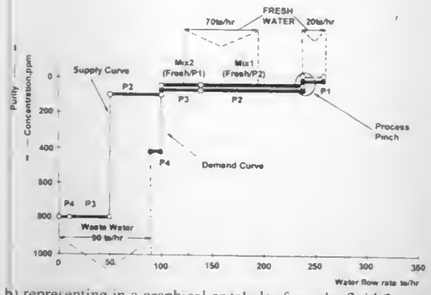
1. Method of measuring the dynamic surface tension of a liquid composition flowing in the form of a substantially vertical curtain, comprising the following steps:
a) introducing into the curtain an obstacle able to disturb the flow plane of the curtain locally by creating a standing wave forming a V which is inverted with respect to the direction of flow and whose apex coincides substantially with the point of introduction of the obstacle into the curtain;
b) illuminating the standing wave by means of at least one source of light radiation;
c) recovering the radiation reflected by the wave so as to form a light image of at least part of the wave, the image defining at least a portion of two Vs which are inverted with respect to the direction of flow, having their axes of symmetry aligned, and offset in the direction of flow;
d) adjusting the position of the radiation source and/or of the obstacle so that the Vs have their corresponding portions substantially parallel; and
e) determining the surface tension of the liquid in the flow from a measurement of the angle θ formed by the straight-line portions defining the two inverted Vs with respect to their axes of symmetry.

5,824,888
FLUID EFFICIENCY

Vikas Raghunath Dhole, Stockport, United Kingdom, assignor to Linnhoff March Limited, Northwich, England

Filed Jan. 11, 1996, Ser. No. 583,945
Claims priority, application United Kingdom, Jan. 11, 1995, 9500522
Int. Cl.[6] G01L *3/26;* **G01B** *17/00*
U.S. Cl. 73—112 **11 Claims**

1. A method of indicating efficiency of use of a fluid in a multi-process unit plant, comprising the steps of:
a) for each process unit;
determining the purity of the required input and output of the fluid;
determining the fluid flow rate of the required input and output of the fluid;



b) representing in a graphical or tabular form the fluid flow rates and purities of all of the inputs and outputs of all of said process units;

c) indicating by said graphical or tabular form said efficiency of use of said fluid; and

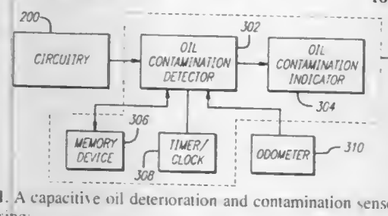
d) deriving from said graphical or tabular form representation connections between said process units to increase said efficiency of use of said fluid between said process units.

5,824,889

CAPACITIVE OIL DETERIORATION AND CONTAMINATION SENSOR

Kyong M. Park, Thousand Oaks, and Marcos A. Nassar, Los Angeles, both of Calif., assignors to Kavlico Corporation, Moorpark, Calif.

Filed Mar. 6, 1997, Ser. No. 812,683
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 **18 Claims**



1. A capacitive oil deterioration and contamination sensor comprising:

a threaded metal housing having an inner end for threading into an oil pan of an automobile or other engine, said inner end including supports attached thereto;

a heat-conducting substrate mounted within said inner end and insulated from said housing, said substrate including an inner surface and an outer surface and a first capacitive plate on said outer surface;

a second capacitive plate mounted to said housing by said supports close to but apart from said first capacitive plate such that at least one fluid including oil freely circulates within a gap between said first and second capacitive plates, said first and second capacitive plates defining an oil deterioration and contamination sensor capacitor;

a total reference capacitor including an external fixed reference capacitor, said oil deterioration and contamination sensor capacitor and said total reference capacitor providing an indication of a dielectric constant of said at least one fluid including oil within said gap;

circuitry for generating said indication of a dielectric constant utilizing capacitances of said oil deterioration and contamination sensor capacitor and said total reference capacitor;

a temperature sensitive resistive element thermally connected to said inner surface of said substrate for providing a temperature adjustment to said indication of a dielectric constant in response to a temperature of said at least one fluid including oil; and

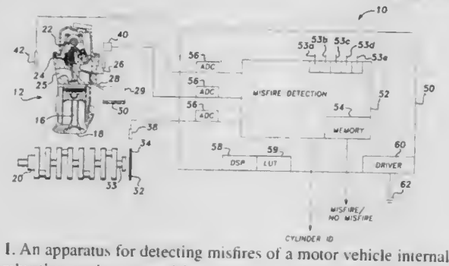
oil contamination detection circuitry adapted to receive and process said indication of a dielectric constant and to generate an indication of oil contamination when a dielectric constant of said at least one fluid including oil exceeds a predetermined value at a rate of dielectric constant change in excess of a maximum ordinary rate of oil dielectric constant change.

5,824,890

REAL TIME MISFIRE DETECTION FOR AUTOMOBILE ENGINES

James La Palm, Garden City, and Piotr Czapski, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Aug. 1, 1996, Ser. No. 691,100
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—117.3 **24 Claims**



1. An apparatus for detecting misfires of a motor vehicle internal combustion engine, comprising:

a speed sensor for generating a crankshaft angular velocity signal a corresponding to sensed engine speed over a plurality of samples per cylinder firing event;

filter means for filtering noise-related events from said signal corresponding to sensed engine speed to thereby produce a filtered output signal corresponding to crankshaft incremental velocity change at a band of frequencies centered around an engine firing frequency;

a pressure sensor for measuring average manifold absolute pressure over a cylinder firing event that, in combination with engine speed, is used to select a programmed misfire threshold change in engine speed value; and

comparison means for comparing said filtered output signal with said threshold change in engine speed value, that determines the presence of engine misfire based upon a detection of multiple drops in engine speed during a cylinder firing event, and that determines which, if any, of the drops correspond to engine misfire conditions.

5,824,891

METHOD AND APPARATUS FOR EFFIVIENTLY PHASE MODULATING A SUBCARRIER SIGNAL FOR AN INDUCTIVELY COUPLED TRANSPONDER

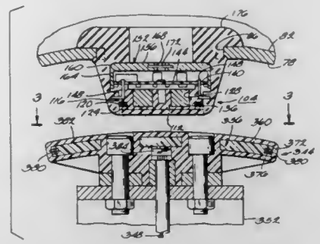
Mark Brian Monson, Madison, Wis., assignor to SSI Technologies, Inc., Janesville, Wis.

Filed Mar. 25, 1997, Ser. No. 823,553
Int. Cl.[6] B60C *23/02*
U.S. Cl. 73—146.5 **33 Claims**

1. An apparatus for conducting short range wireless electronic communication, said apparatus comprising:

a transmitting circuit including a transmitting coil and a driver generating electrical energy in said transmitting coil; and

a receiving circuit spaced from said transmitting circuit and adapted to be positioned adjacent said transmitting coil such that, when said receiving circuit is positioned adjacent said transmitting coil, said receiving circuit is inductively coupled to said transmitting circuit, said receiving circuit including a coil, a capacitor connected in parallel with said coil to form a resonant circuit with said coil, and a quadrature phase shift keyed modulator connected to said resonant circuit.

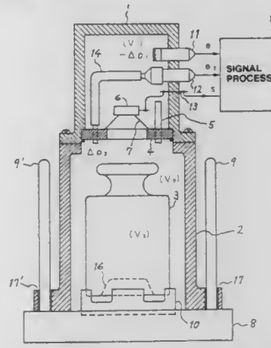


5,824,892

ACOUSTIC DEVICE FOR MEASURING VOLUME DIFFERENCE

Yasushi Ishii, 20-5, Kinuta 8-chome, Setagaya-ku, Tokyo, Japan

Filed Jul. 23, 1997, Ser. No. 899,048
Claims priority, application Japan, Jul. 23, 1996, 8-210448
U.S. Cl. 73—149 **8 Claims**



1. An acoustic device for measuring the small difference between the volume of an object to be measured and the volume of a standard object which is approximately the same as the volume of the object to be measured, comprising:

a reference container;

a measuring container connected to the reference container by way of a separator;

volume changing means for cyclically providing complementary volume variations to the reference container and the measuring container;

pressure equalizing means for equalizing static pressure inside the reference container and static pressure inside the measuring container;

pressure variation detecting means for detecting pressure variations inside the reference container and the measuring container; and

signal processor means for measuring a ratio between the magnitude of the detected pressure variation inside the reference container and the magnitude of the detected pressure variation inside the measuring container, and obtaining a difference in volume between the object to be measured and the standard object from a difference of the measured ratio when the standard object is placed into other measuring container and the measured ratio when the object to be measured is placed into the measuring container.

5,824,893

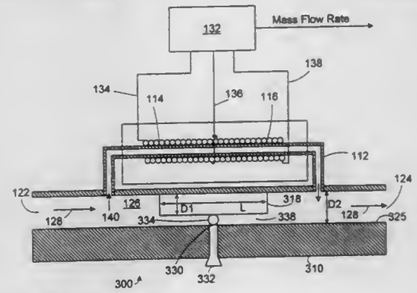
Patent Not Issued For This Number

5,824,894

MASS FLOWMETER AND LAMINAR FLOW ELEMENTS FOR USE THEREIN

Paul D. Lucas, Melrose, Mass.; Frederick J. Luft, Nashua, N.H., and Ting Huang, Andover, Mass., assignors to MKS Instruments, Inc., Andover, Mass.

Filed May 7, 1997, Ser. No. 852,430
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—202.5 **28 Claims**



1. An apparatus comprising:

(A) an input port;

(B) an output port;

(C) means for defining a passageway extending between the input port and the output port, at least a portion of the passageway including an inner surface and being characterized by an inner maximum cross sectional dimension;

(D) a laminar flow element characterized by an outer maximum cross sectional dimension smaller than said inner maximum cross sectional dimension; and

(E) means for mounting said laminar flow element within said portion of said passageway so that said laminar flow element remains substantially stationary relative to said passageway and at least a portion of said laminar flow element contacts at least a portion of said inner surface,

wherein said means for defining a passageway includes a first tube, said apparatus further including a second tube having first and second ends, said second tube first end being coupled to said first tube between said input port and said laminar flow element, said second tube second end being coupled to said first tube between said laminar flow element and said output port, wherein a portion of a fluid flowing from said input port to said output port flows through said second tube, wherein the ratio of the portion of fluid flowing through the second tube to the portion of the fluid flowing through the first tube is a function of the respective inner diameters of said first tube and said second tube, and the outer diameter of said laminar flow element.

5,824,895

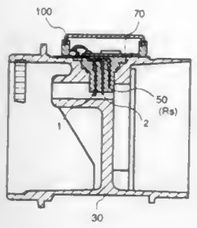
AIR FLOW METER OF A HEATING RESISTOR TYPE

Takayuki Itsuji, and Masao Akamatsu, both of Hitachinaka, Japan, assignors to Hitachi, Ltd. and Hitachi Car Engineering Co., Ltd., Japan

Continuation of Ser. No. 645,099, May 13, 1996, abandoned. This application Sep. 8, 1997, Ser. No. 925,070
Claims priority, application Japan, May 12, 1996, 7-114648
Int. Cl.[6] G01F *1/68*
U.S. Cl. 73—204.17 **5 Claims**

1. An air flow sensor comprising:

an air flow detector circuit having a heating resistor Rh, which air flow detector generates a sensor current Ih according to the



equation

$$Ih^2Rh = (A + B\sqrt{Q})(Th - Ta)$$

wherein

A=f(Ta)

B=g(Ta)

Th=temperature of heating resistor

Ta=intake air temperature; and

an amplifier circuit for amplifying a signal proportional to an output signal from the detector circuit, which output signal is proportional to Ih, said amplifier circuit comprising a first differential amplifier, at least a first resistor Rs having a reference resistance Rso and a temperature coefficient α, and at least a second resistor R having a reference resistance Ro and a temperature coefficient β, resistance valués of said first and second resistors determining an amplification factor of said amplifier circuit;

wherein Rso, Ro, α and β are selected such that

$$h^2(Ta) = \frac{1}{g(Ta)},$$

h(Ta) being a function of temperature dependent resistance of said at least a first resistor Rs and said at least a second resistor R, which function relates an output signal from the detector circuit to an output voltage of the air flow sensor.

5,824,896

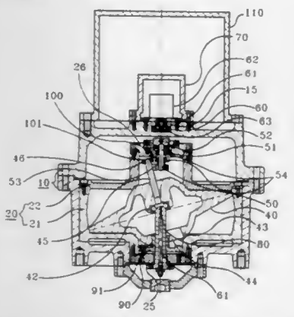
MEASURE DRIVING APPARATUS AND MEASURE SIGNAL GENERATING APPARATUS OF NON-CONTACT SYSTEM, USING WAVE OF INCLINED ROTOR

Kyu-heyng Lee, 201-1310, 2nd Shiyoung Apt., #567, Ssangyong-dong, Cheonan-city chungcheongnam-do, Rep. of Korea

Filed Jul. 16, 1996, Ser. No. 683,813

Int. Cl.[6] G01F *3/32*

U.S. Cl. 73—238 **7 Claims**



1. A driving apparatus for a flow measuring machine that uses wave motion of an inclined rotor to convert a flow of fluid or gas into mechanical rotation and provides the converted mechanical rotation to a signal generating apparatus which measures a rotating displacement, said driving apparatus comprising:

a rotor housing having a cylindrical shape defining a closed given space, said rotor housing having an influx hole and an efflux hole on a side wall thereof;

a diaphragm attached on the side wall of said rotor housing, for isolating said influx hole and said efflux hole;

a rotor having a radial flute positioned about said diaphragm, said rotor being supported within said closed given space of said rotor housing so as to be driven in a conical rocking motion of 360 degrees by the flowing of said fluid, said rotor having a shaft adapted to operatively engage a rotating shaft of the signal generating apparatus; and

a supporting shaft positioned in a central lower portion of said rotor housing, said supporting shaft supporting the center of said rotor.

5,824,897

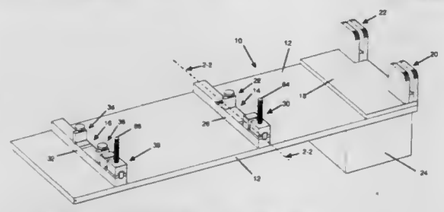
BLADE STATIC BALANCING FIXTURE

Norman L. Beachum, Foristell; Joseph T. Buckel; James Qin, both of Chesterfield, and Charles I. Clark, Florissant, all of Mo., assignors to Avion, Inc., Bridgeton, Mo.

Filed Aug. 15, 1996, Ser. No. 700,736

Int. Cl.[6] G01M *1/12*

U.S. Cl. 73—456 **14 Claims**



1. A blade static balance fixture comprising:

a base;

a rooting pin connected to said base;

a triangular arrangement of only three load cell assemblies carried by said base; and

a first digital position sensor connected to said base;

whereby said three load cell assemblies measure blade weight and said first digital position sensor measures blade position relative to said rooting pins to enable span moments and chord moments to be calculated by blade weight and digital position at only three points determined by said load cell assemblies.

5,824,898

ROTATING MASS BALANCING SYSTEM

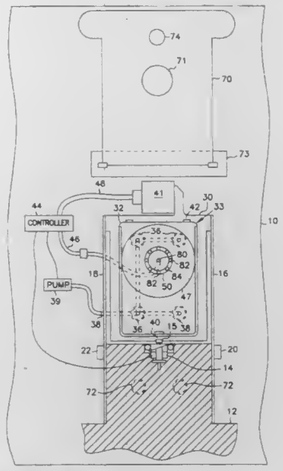
Peter E. Brooks, and Lance A. Gabrielson, both of Rochester, Minn., assignors to Western Digital Corporation, Irvine, Calif.

Filed Jun. 28, 1996, Ser. No. 673,370

Int. Cl.[6] G01M *1/16*

U.S. Cl. 73—469 **8 Claims**

1. A method of centering a disk pack in a disk drive device having a base rotatably supporting the disk pack, the method comprising:



rotating the disk pack; and

while the disk pack is rotating:

sensing imbalance in the rotating disk pack to produce a time-varying signal; and

responsive to the time-varying signal, transferring sufficient momentum to the base to cause a relative shift between the base and the disk pack to balance the disk pack.

5,824,899

VIBRATORY GYROSCOPE

Kazuhiro Ebara; Katsumi Fujimoto, and Shiro Makino, all of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

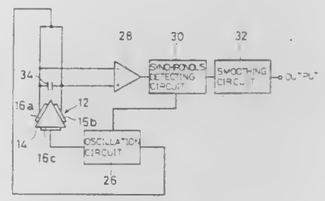
Continuation of Ser. No. 309,657, Sep. 21, 1994, abandoned. This application Feb. 11, 1997, Ser. No. 798,989

Claims priority, application Japan, Sep. 24, 1993, 5-261703; Sep. 27, 1993, 5-264324

Int. Cl.[6] G01C *19/00*

U.S. Cl. 73—504.12 **4 Claims**

10



1. A vibrating gyroscope comprising:

a vibrating body,

first and second detecting means, formed on said vibrating body, for detecting a signal corresponding to a rotational angular velocity, and

a temperature compensating capacitor having one end connected to an output end of said first detecting means and having another end connected to an output end of said second detecting means.

5,824,900

ANGULAR VELOCITY SENSOR

Masashi Konno; Sumio Sugawara, both of Miyagi; Nobuhisa Atoji, Nara; Jiro Terada, Osaka, and Masami Tamura, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

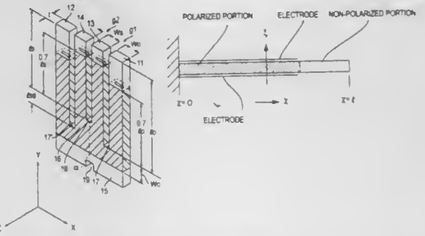
PCT No. PCT/JP96/00926, § 371 Date Apr. 14, 1997, § 102(e) Date Apr. 14, 1997, PCT Pub. No. WO96/31754, PCT Pub. Date Oct. 10, 1996

PCT Filed Apr. 4, 1996, Ser. No. 750,072

Claims priority, application Japan, Apr. 4, 1995, 7-078713; Apr. 4, 1995, 7-078714

Int. Cl.[6] G01P *9/00*

U.S. Cl. 73—504.16 **11 Claims**



1. An angular velocity sensor comprising:

a tuning fork in the shape of a comb with four parallel oscillating arms made of flat ceramic piezoelectric material or crystal material, said four parallel oscillating arms having an outer set of two arms and an inner set of two arms;

a support member integrally formed with said tuning fork,

wherein the width direction of the oscillating arms and support member is directed in an X-axis direction of a three-dimensional system of coordinates,

wherein the longitudinal direction of the oscillating arms is directed in a Y-axis direction of the three-dimensional system of coordinates,

wherein the thickness direction of the entire tuning fork is directed in a Z-axis direction of the three-dimensional system of coordinates,

wherein a portion of the oscillating arms and support member along the Y-axis are partially polarized in the X-direction by an externally applied voltage;

driving electrodes disposed along the Y-axis direction on the face, back and side surfaces of said portion which is partially polarized of the driving side oscillating arms and support member; and

detecting electrodes divided in two sections along the Y-axis direction on the face and back surfaces of said portion which is partially polarized of the detecting side oscillating arms and support member,

wherein said driving electrodes are for having an alternating-current signal applied thereto for generating flexural oscillations in mutually reverse phases in the X-direction of the driving side oscillating arms (hereinafter called X_D mode), which flexural oscillations induce through the support member flexural oscillations in mutually reverse phases in the X-direction of the detecting side oscillating arms (hereinafter called X_S mode), and

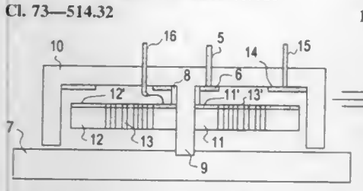
wherein when the tuning fork is subjected to a rotational angular velocity about the Y-axis, a detecting side oscillating arm moves by Corioli's force in one direction and the other detecting side oscillating arm moves by Corioli's force in another direction (hereinafter called Z_S mode) and an electric charge is generated by flexural vibrations in mutually reverse phases in the Z-axis direction generated by Corioli's force that can be detected by the detecting electrodes.

5,824,901

CAPACITIVE SENSOR FOR MEASURING ACCELERATIONS AND INCLINATIONS

Josephus van Seeters, Balgach, Switzerland, assignor to Leica Geosystems AG, Heerbrugg, Switzerland

Continuation-in-part of Ser. No. 285,626, Aug. 4, 1994, abandoned. This application Aug. 26, 1996, Ser. No. 703,430
Claims priority, application Germany, Aug. 9, 1993, 43 26 666.5
Int. Cl.[6] G01P *15/125*
U.S. Cl. 73—514.32 19 Claims



1. A capacitive sensor for measuring accelerations and/or inclinations with respect to a gravitational field, comprising:
a stator part which forms a housing for said capacitive sensor;
a first fixed electrode attached to said stator part;
a displacement part comprising a central surface and an outer-ring segment, said outer-ring segment being positioned opposite said first fixed electrode, said central surface being electrically conducting;
a second fixed electrode surface attached to said stator part, said central surface of said displacement part being positioned opposite said second fixed electrode; and
a movable electrode attached to said outer-ring segment of said displacement part,
wherein said central surface and said outer ring-shaped segment are connected together by resilient elastic webs, said first and second fixed electrodes each comprise a ring-shaped configuration with said second fixed electrode being concentric with and encompassing said first fixed electrode, said movable electrode is formed by said outer ring-shaped segment, said central surface of said displacement part is immovably connected to said housing, and said outer ring-shaped segment is capable of movement with respect to said housing, and
wherein a fixed reference capacitance is formed between said second fixed electrode and said central surface of said displacement part, and a displacement capacitance is formed between said first fixed electrode and said outer ring-shaped segment of said displacement part.

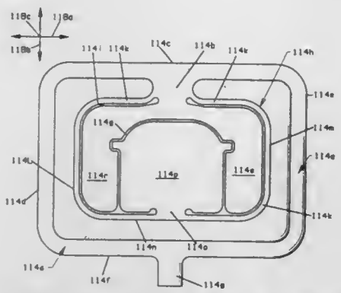
5,824,902

CONDITION RESPONSIVE SENSOR HAVING A SIGNAL CONDITIONING CAPACITOR

David L. Corkum, Attleboro, Mass.; June Park, Providence, R.I., and Keith W. Kawate, Attleboro Falls, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sep. 30, 1996, Ser. No. 723,434
Int. Cl.[6] G01P *15/125*
U.S. Cl. 73—514.32 8 Claims

1. A condition responsive sensor comprising first and second substrates, a first electrically conductive stationary plate defining a first capacitor plate disposed on one of the first and second substrates, a condition responsive, electrically conductive sensor element having a movable second capacitor plate portion sandwiched between the first and second substrates and generally aligned with and spaced from the first capacitor plate, the first capacitor plate and the second capacitor plate portion forming a condition responsive capacitor, signal conditioning means comprising a second stationary plate having first and second portions disposed on one of the first and second substrates, the sensor element having a first and a second spaced apart side portion generally aligned with the first and second portions of the second stationary plate respectively, the first and second portions of the second stationary plate



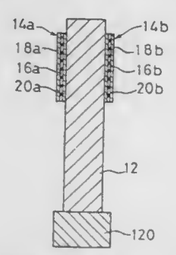
being electrically connected to one another, the second stationary plate and the sensor element forming a signal conditioning capacitor.

5,824,903

PIEZOELECTRIC VIBRATOR AND ACCELERATION SENSOR USING THE SAME

Takeshi Nakamura, and Takayuki Kaneko, both of Nagaokakyo, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Division of Ser. No. 202,017, Feb. 25, 1994. This application Nov. 18, 1996, Ser. No. 747,247
Claims priority, application Japan, Mar. 1, 1993, 5-066231; Mar. 1, 1993, 5-066233; Mar. 19, 1993, 5-085712; Apr. 26, 1993, 5-123421; Apr. 26, 1993, 5-123422; Apr. 28, 1993, 5-125485
Int. Cl.[6] G01P *15/09*
U.S. Cl. 73—514.34 20 Claims



1. An acceleration sensor comprising:
a prism-shaped vibrating body having a longitudinal center portion; and
a plurality of piezoelectric elements arranged peripherally on side faces of said vibrating body, wherein
said vibrating body vibrates in such a manner that longitudinal expansion and contraction take place inversely at opposite sides of the longitudinal center portion of said vibrating body by applying a driving signal to said piezoelectric elements.

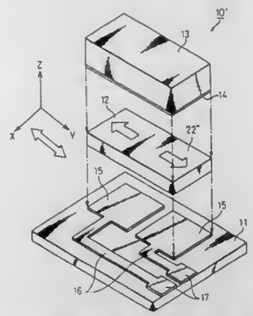
5,824,904

ACCELERATION SENSOR USING A PIEZOELECTRIC ELEMENT

Tohru Kouhei, and Takahiro Imamura, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 403,377, Mar. 15, 1995, abandoned. This application Nov. 15, 1996, Ser. No. 746,745
Claims priority, application Japan, Mar. 15, 1994, 6-043875
Int. Cl.[6] G01P *15/09*
U.S. Cl. 73—514.34 8 Claims

1. An acceleration sensor comprising:
a substrate;
first and second electrodes separately provided on said substrate;



a single piezoelectric element having first and second regions, said first region being provided on said first electrode and polarized in a first direction, and said second region being provided on said second electrode and polarized in a second direction parallel to the first direction;
electrical connection means provided on said single piezoelectric element for electrically connecting said first region and said second region; and
weight means provided on said electrical connection means.

5,824,905

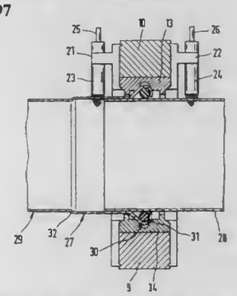
Patent Not Issued For This Number

5,824,906

PRESSING TOOL

Gert Lohmann, Neuss, Germany, assignor to Novopress GmbH Pressen und Presswerkzeuge & Co. KG, Germany

PCT No. PCT/EP94/02734, § 371 Date Feb. 26, 1996, § 102(e) Date Feb. 26, 1996, PCT Pub. No. WO95/06232, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 17, 1994, Ser. No. 602,813
Claims priority, application Germany, Aug. 26, 1993, 9312808 U
Int. Cl.[6] H01R *43/048*
U.S. Cl. 73—597 7 Claims



1. Pressing tool (**1**, **41**) for radially compressing a pipe connection (**27**, **63**) between a pipe end (**28**) and a press fitting (**29**), characterized in that an apparatus is provided for attachment to the pressing tool, said apparatus for ascertaining the insertion depth of the pipe end (**28**) into the press fitting (**29**), said apparatus includes a thickness sensor (**23**, **24**, **74**, **75**) for measuring the material thickness of the pipe connection (**27**, **63**) and an interpretation device for at least the qualitative display of the measured material thickness.

5,824,907

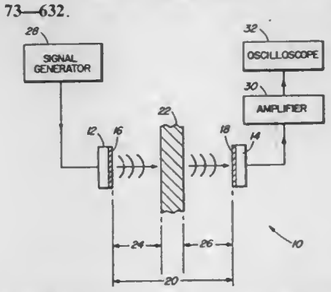
Patent Not Issued For This Number

5,824,908

NON-CONTACT CHARACTERIZATION AND INSPECTION OF MATERIALS USING WIDEBAND AIR COUPLED ULTRASOUND

David W. Schindel, Kingston, Canada, and David A. Hutchins, Warwickshire, United Kingdom, assignors to Queen's University at Kingston, Kingston, Canada

Continuation of Ser. No. 354,561, Dec. 12, 1994, abandoned, which is a division of Ser. No. 269,861, Jun. 30, 1994, Pat. No. 5,573,624. This application Oct. 29, 1996, Ser. No. 740,403
Int. Cl.[6] G01N *29/00*
U.S. Cl. 73—632. 17 Claims



1. A system for the non-contact inspection and detection of a defect in an object comprising:
generating means for stimulating ultrasonic vibrations in the object, said generating means being coupled to the object by a gaseous medium;
receiving means for receiving ultrasonic energy emitted by the object, said receiving means being coupled to the object by a gaseous medium;
means for converting the ultrasonic energy received by the receiving means into an electrical signal;
processing means detecting any alteration in at least a selected portion of the electrical signal which characterizes the presence of the defect; and
wherein said receiving and generating means have wideband frequency responses and are operable at all frequencies between approximately 40 kHz and at least 1.465 MHz.

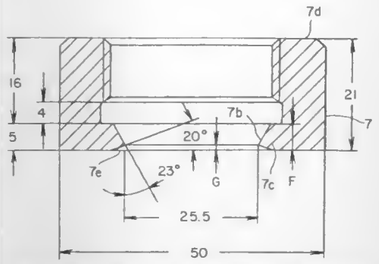
5,824,909

PRESSURE MEASURING SENSOR AND APPARATUS HAVING A SEAL BETWEEN A HOUSING AND A PRESSURE MEASURING CELL

Benno Kathan, and Jörg Schütze, both of Wasserburg, Germany, assignors to IFM Electronic GmbH, Tettnang, Germany

Filed Aug. 2, 1996, Ser. No. 691,590
Claims priority, application Germany, Aug. 4, 1995, 195 28 652.9; Jul. 16, 1996, 196 28 551.8
Int. Cl.[6] G01L *7/00*
U.S. Cl. 73—706 20 Claims

1. A pressure measurement device for measuring the pressure of a pressure medium, comprising:
a flange comprising an elastic sealing rib forming a through opening, the sealing rib comprising a beveled surface; and
a pressure sensor adapted to be joined with the flange, comprising:
a housing having spring-elastic properties, the housing having a portion which is rotationally symmetric with the flange, the housing forming an inner chamber,



a seal disposed adjacent the inner chamber of the housing, the seal being capable of being between the inner chamber of the housing and the pressure medium, and

a pressure measuring cell disposed in the housing, the pressure measuring cell having a main face which is capable of being exposed to the pressure medium, the pressure measuring cell having a deflection when loaded, which deflection leads to a relative movement between the pressure measuring cell and the housing in a region of the seal.

5,824,910

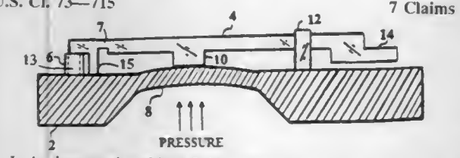
MINIATURE HYDROSTAT FABRICATED USING MULTIPLE MICROELECTROMECHANICAL PROCESSES

Howard R. Last, Columbia, Md.; Lawrence C. Fan, Vienna, Va.; Ralph E. Balestrieri; Donald R. Garvick, both of Silver Spring, Md., and Robert L. Wood, 204 Barons Glenn, Cary, N.C. 27513, assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C., by said Howard R. Last, Lawrence C. Fan, Ralph E. Balestrieri, Donald R. Garvick

Filed Apr. 16, 1997, Ser. No. 840,780

Int. Cl.[6] G01L *7/08*

U.S. Cl. 73—715 **7 Claims**



1. An improved ambient fluid pressure sensor for determining when a predetermined pressure surrounds the sensor, comprising

a. a planar wafer, including a relatively thin section surrounded by a relatively thick section,

b. a housing for the wafer, so arranged that an exposed side of the wafer is exposed to the ambient fluid and a protected side of the wafer is protected from exposure to the fluid, whereby the relatively thin section of the wafer is a diaphragm which is deflected by the pressure of the fluid,

c. a beam extending just above the protected side of the wafer, having a first end of the beam attached to a portion of the relatively thick section of the wafer, a second opposite end of the beam being free to rotate up and down relative to the surface of the wafer about a point near the first end, and an intermediate beam point mechanically arranged so that, when fluid pressure deflects the diaphragm, the diaphragm causes a movement of the intermediate point, thereby causing an even greater movement of the second end of the beam, and

d. a trigger located adjacent to the second end of the beam, whereby, when the second end of the beam is moved by a predetermined amount, the trigger is mechanically actuated.

5,824,911

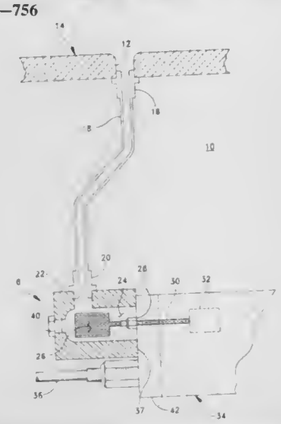
FLUID PRESSURE MEASURING DEVICE INTERFACE

Daniel W. French, Portsmouth, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 10, 1997, Ser. No. 891,366

Int. Cl.[6] G01L *7/00*

U.S. Cl. 73—756 **16 Claims**



1. A fluid medium pressure measuring device interface comprising:

an interface chamber;

a fluid medium conduit, fluidly coupled to said interface chamber, and to an external fluid medium source whose pressure is to be measured;

a deformable pressure transfer container, disposed in said interface chamber and completely surrounded by said fluid medium in said interface chamber;

a liquid disposed in said deformable pressure transfer container;

a fluid pressure measuring device; and

a pressure transfer container fluid conduit, fluidly coupled between said deformable pressure transfer container and said fluid pressure measuring device.

5,824,912

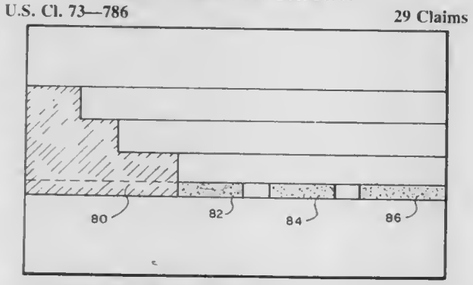
METHOD OF ROOF CONTROL IN AN UNDERGROUND MINE

John C. Stankus, Canonsburg, Pa., and Song Guo, Morgantown, W. Va., assignors to Jennmar Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 659,037, Jun. 3, 1996, abandoned. This application Oct. 29, 1997, Ser. No. 967,220

Int. Cl.[6] G01B *5/30;* **G01M** *5/00*

U.S. Cl. 73—786 **29 Claims**



1. A method of determining stresses in a model mine layout comprising the steps of:

(a) obtaining mechanical properties of a mine site including orthogonal properties of at least one of Young's modulus and Poisson's ratio;

(b) applying said mechanical properties to the model layout of said mine, the model layout of said mine excluding material to be mined from said mine site; and

(c) determining from said applying of said mechanical properties, stresses in the model layout of said mine, wherein said orthogonal properties include a property obtained in a direction alone a main force axis and another property obtained in a direction substantially perpendicular to the main force axis.

5,824,913

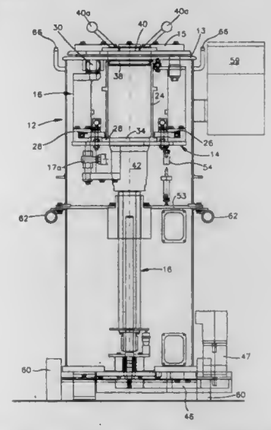
PORTABLE GYRATORY COMPACTOR AND EXTRUDER WITH A SINGLE PIVOT AND TWO GYRATION ACTUATORS

Roger A. Pyle, Clarion, Pa., assignor to Pine Instrument Company, Grove City, Pa.

Filed Jan. 10, 1997, Ser. No. 781,658

Int. Cl.[6] G01N *3/08*

U.S. Cl. 73—818 **30 Claims**



1. A combined gyratory compactor and extruder for compacting a specimen of material within a mold as the mold is gyrated and extruding a compacted specimen of material from the mold, the combined gyratory compactor and extruder comprising:

a frame,

a mold gyration assembly attached to the frame, the mold gyration assembly having a mold base for supporting a mold,

eccentrically driven gyration actuators attached to the frame and to the mold gyration assembly,

a mold configured to be positioned within the mold gyration assembly, and

a compaction ram axially aligned with the mold gyration assembly and driven to travel up into the mold gyration assembly and into a mold in the mold gyration assembly, the mold having a removable cap assembly attachable over an open top of the mold, whereby the compaction ram travels toward the cap assembly when driven into the mold to compact material between an end of the ram and the cap assembly, and whereby the ram is operative to extrude material through the open top of the mold with cap assembly removed.

5,824,914

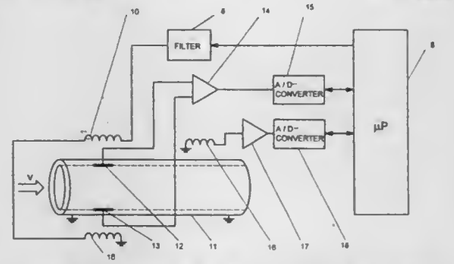
METHOD AND ARRANGEMENT FOR MEASURING THE FLOW VELOCITY OF A LIQUID, PARTICULARLY WATER

Heikki Seppä, Helsinki; Timo Varpula, Vantaa; Arto Sakari Sunila, Rauma, and Janne-Yrjö Antola, Laitila, all of Finland, assignors to Oras Oy, Rauma, Finland

Filed Mar. 7, 1997, Ser. No. 813,692

Int. Cl.[6] G01F *1/58*

U.S. Cl. 73—861.11 **20 Claims**



1. A method for measuring the flow velocity of a liquid, particularly water using magnetic flow measurement, wherein from a sinusoidal signal induced into electrodes, the amplitude of a component of said sinusoidal signal that is in the same phase with the magnetic field is measured.

5,824,915

VOLUMETRIC FLOW METER

Arie Hujzer, and Andre H. Boer, both of Sliedrecht, Netherlands, assignors to Krohne A.G., Switzerland

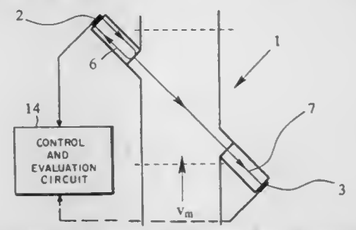
PCT No. PCT/EP96/03670, § 371 Date Jul. 7, 1997, § 102(e) Date Jul. 7, 1997, PCT Pub. No. WO97/08516, PCT Pub. Date Aug. 21, 1996

PCT Filed Aug. 21, 1996, Ser. No. 836,177

Claims priority, application Germany, Aug. 22, 1995, 195 30 807.7

Int. Cl.[6] G01F *01/66*

U.S. Cl. 73—861.27 **3 Claims**



1. A method of determining volume flow according to the transit-time principle, using a volume flow meter with a conduit measurement section carrying the flowing medium, two ultrasonic transducers arranged on opposite ends of the conduit measurement section sending ultrasonic signals into the flowing medium and/or receiving them from the flowing medium and a control and evaluation circuit and wherein the ultrasonic transducers send ultrasonic signals into the flowing medium via ultrasonic waveguides and the control and evaluation circuit measures the transit time of the ultrasonic signals between the ultrasonic transducers and the transit time of the ultrasonic signals in the ultrasonic waveguides to determine the volume flow through the conduit measurement section, the improvement wherein the ultrasonic waveguides are in contact with the flowing medium and are thermally insulating and the control and evaluation circuit determines the volume flow based on the difference between the transit time of the ultrasonic signals between the ultrasonic transducers and the sum of the transit times of the ultrasonic signals in the ultrasonic waveguides.

5,824,916

SYSTEM FOR MEASURING THE VOLUME AND RATE OF FLOW OF A MEDIA

Paul H. Posner, Jr., and Clifford L. Schaefer, II, both of P.O. Box 26521, Benbrook, Tex. 76126

Filed Dec. 26, 1996, Ser. No. 773,385
Int. Cl.[6] G01F *1/30*
U.S. Cl. 73—861.77 19 Claims



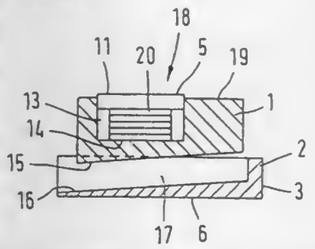
1. A measuring system, comprising:
(a) a channel to enable media to move through said measuring system,
(b) an attaching means for conjoining said measuring system with various distribution apparatuses,
(c) a plurality of pivotably moving rigid surfaces to allow said measuring system to be actuated by said moving media,
(d) a rotatably mounted apparatus with a plurality of circumferential appendages to enable said measuring system to detect said moving media,
(e) a first transducer means to detect vertical displacement of said moving media, and a second transducer means to detect horizontal displacement of said moving media,
(f) an assimilating means for a plurality of data inputs and outputs, wherein said plurality of data inputs are received from said first and second transducer means, respectively,
(g) a display means for displaying a volume and a rate of flow, whereby an operator can select different functions or parameters.

5,824,917

FORCE MEASURING DEVICE

Werner Kluft, Ellerstrasse 43, Aachen, Germany, 52078

PCT No. PCT/EP94/03056, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO95/08102, PCT Pub. Date Mar. 23, 1995
PCT Filed Sep. 13, 1994, Ser. No. 615,312
Claims priority, application Germany, Sep. 14, 1993, P 43 31 104.0; Sep. 15, 1993, P 43 31 405.8
Int. Cl.[6] G01L *1/04*
U.S. Cl. 73—862.636 9 Claims



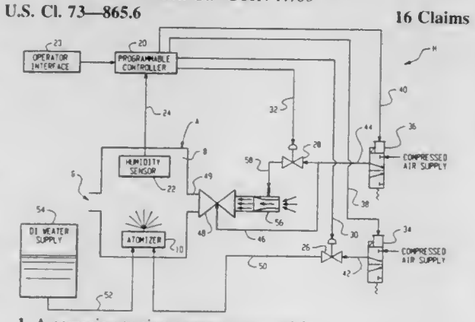
1. A force measuring device comprising a force sensor (**18**) for measuring forces between mutually parallel machine parts (**10,12**), preferably in force bypass, comprising:
two mutually parallel abutment faces (**5,6**), the orthogonal distance of said abutment faces being adjustable, a first measuring wedge (**1**) in which the force sensor is mounted,
a second measuring wedge (**3**) on which the first measuring wedge (**1**) is placed, each measuring wedge (**1,3**) having mutually parallel, mutually confronting slide faces (**15,16**) arranged at an inclination to the abutment faces (**5,6**) for permitting parallel displacement of the first and second abutment faces (**5,6**) with respect to each other, and
an adjustment means (**7,8**) for connecting the measuring wedges (**1,3**) to each other for displacing the first measuring wedge (**1**) relative to the second measuring wedge (**3**) to set the distance between the abutment faces (**5,6**).

5,824,918

RELATIVE HUMIDITY CONTROL SYSTEM FOR CORROSION TEST CHAMBER

Boris Zuk, Parma, Ohio, assignor to The Singleton Corporation, Cleveland, Ohio

Filed Feb. 14, 1997, Ser. No. 800,476
Int. Cl.[6] G01N *17/00*
U.S. Cl. 73—865.6 16 Claims



1. A corrosion testing apparatus comprising:
a test chamber;
a substantially upright fog tower positioned within the test chamber, the fog tower including an outlet positioned proximate a top of the test chamber and an inlet positioned below the outlet;
an atomizer including a nozzle positioned proximate the fog tower inlet;
means for generating corrosive fog within the test chamber by discharging a first atomized operating fluid from the nozzle into the fog tower inlet during a first test cycle; and
means for generating relative humidity within the test chamber by discharging a second atomized operating fluid from the nozzle into the fog tower inlet during a second test cycle occurring prior to or after the first test cycle.

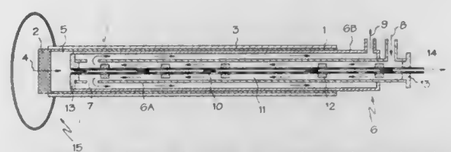
5,824,919

SAMPLE CONDITIONING FLUE GAS PROBE

Neils Richard Stewart Hansen, East Croydon, England, assignor to Telegan Gas Monitoring Limited, England

Filed Jan. 13, 1997, Ser. No. 785,141
Claims priority, application United Kingdom, Jan. 12, 1996, 9600680
Int. Cl.[6] B01D *53/22*
U.S. Cl. 73—863.23 18 Claims

1. A sample conditioning flue gas probe, comprising:
(a) a selectively water-permeable, polymeric drying tube having first and second surfaces; and
(b) a support structure surrounding said drying tube, said support structure comprising concentric inner and outer tubes in fluid communication with each other, whereln said drying tube is positioned within said inner tube; and



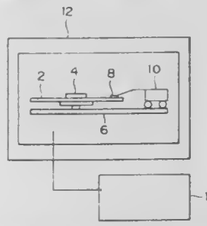
(c) a purge gas inlet and a purge gas outlet, each positioned on one of said inner and outer tubes such that said inlet and outlet are not positioned on the same tube;
wherein said drying tube and support structure are arranged such that a flue gas sample may be flowed through said drying tube, and such that a purge gas stream may be simultaneously flowed through said inlet, through said inner tube along the outer surface of said drying tube, and thereafter through said outlet, thereby allowing water from said flue gas to be transported across the surface of the drying tube into said purge gas without allowing the flue gas and purge gas to contact each other.

5,824,920

APPARATUS FOR EVALUATING MAGNETIC RECORDING MEDIUM

Masaharu Sugimoto; Minoru Takahashi; Hiroaki Wakamatsu, and Hirosi Satou, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 13, 1996, Ser. No. 696,367
Claims priority, application Japan, Oct. 27, 1995, 7-280552
Int. Cl.[6] G11B *5/60*
U.S. Cl. 73—865.8 7 Claims



1. A method of obtaining a limit glide height for flying a head above a rotating recording medium, comprising the steps of:
(a) obtaining an avalanche curve representing a relation between magnitude of an elastic wave being generated from said head and rotation speed of said medium, said avalanche curve being obtained by increasing said rotation speed; and
(b) obtaining said limit glide height defined as a flying height of said head determined by a value of said rotation speed that indicates the start of a flat region in said avalanche curve.

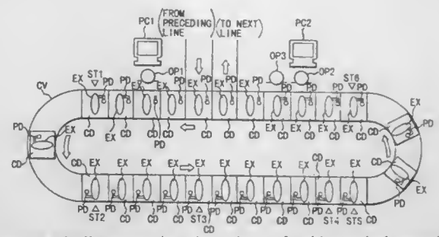
5,824,921

METHOD AND SYSTEM FOR TESTING PERFORMANCE OF REFRIGERATION UNITS

Hiroshi Kanai, Saitama, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Oct. 15, 1997, Ser. No. 950,796
Claims priority, application Japan, Oct. 18, 1996, 8-295939; Oct. 18, 1996, 8-295940
Int. Cl.[6] G01L *25/00*
U.S. Cl. 73—865.8 14 Claims

1. A method for evaluating the performance of an electric appliance, comprising steps of:
providing within an assembly line a quality test line capable of operating said appliance in a simulation mode for measuring at least one physical quantity observable for said appliance in said simulation mode;



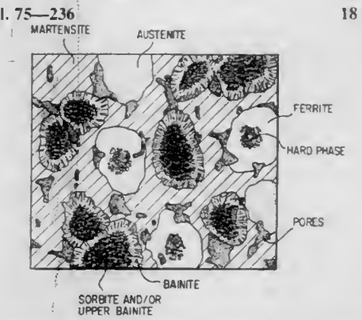
automatically measuring the values of said physical quantity observable for said appliance during said simulation mode a predetermined time after the start up of said simulation mode; and
determining whether a currently measured value of said physical quantity falls within a first reference range having preset upper and lower limits until the number of measurement of said physical quantity reaches a predetermined number, and, after said number of the measurement has reached said predetermined number, whether the currently measured value falls within a second reference range which is calculated from said predetermined number of consecutive measurements that precede said current measurement.

5,824,922

WEAR-RESISTANT SINTERED ALLOY, AND ITS PRODUCTION METHOD

Koichi Aonuma; Yoshimasa Aoki, and Koichiro Hayashi, all of Matsudo, Japan, assignors to Hitachi Powdered Metals Co., Ltd., Matsudo, Japan

Filed Jan. 7, 1997, Ser. No. 779,517
Claims priority, application Japan, Jan. 19, 1996, 8-024888
Int. Cl.[6] C22C *29/02*
U.S. Cl. 75—236 18 Claims



3. A wear-resistant sintered alloy having a general composition consisting essentially of, in weight ratio, 0.736 to 9.65% of nickel, 0.736 to 2.895% of copper, 0.303 to 1.715% of molybdenum, 0.12 to 6.25% of chromium, 0.508 to 2.0% of carbon, and 0.006 to 0.55% of vanadium and/or 0.03 to 1.25% of tungsten with the balance being iron, and inevitable impurities, and having a metallic structure in which there are dispersed (1) a martensite, (2) a bainite having a nucleus of sorbite and/or upper bainite and surrounding said nucleus, (3) an austenite having a high nickel concentration, and (4) a hard phase surrounding with a ferrite having a high chromium concentration and composed mainly of a chromium carbide.

5,824,923
SINTERED FRICTION MATERIAL, COMPOSITE COPPER ALLOY POWDER USED THEREFOR AND MANUFACTURING METHOD THEREOF
Katsuyoshi Kondoh, and Yoshishige Takano, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan
Filed Sep. 28, 1995, Ser. No. 535,458
Claims priority, application Japan, Oct. 19, 1994, 6-253240; Oct. 25, 1994, 6-285856; Jan. 19, 1995, 7-026185; Sep. 7, 1995, 7-256795
Int. Cl.[6] C22C *1/05;9/00;* B22F *3/12*
U.S. Cl. 75—247 39 Claims

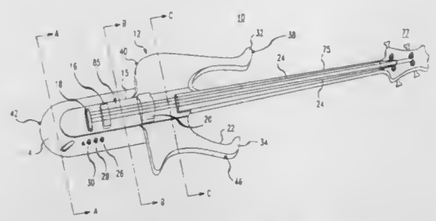


1. A sintered friction material comprising:
a copper alloy base material including copper alloy powder grains, and Cu, Zn, and Ni, wherein a content of said Zn and Ni together is within a range of 5 to 40 wt % of said base material; and
hard particles uniformly dispersed in said copper alloy powder grains of said base material, wherein a content of said hard particles is within a range of 10 to 30 wt % of said friction material.

14. A method of manufacturing the sintered friction material of claim 1, said method comprising the steps of:
preparing a mixed powder including a copper alloy powder and hard particles, wherein said copper alloy powder comprises Cu, Zn and Ni with a total content of said Zn and Ni being within a range of 5 to 40 wt % of said copper alloy powder, and wherein a content of said hard particles included in said mixed powder is within a range of 10 to 30 wt % of said mixed powder;
mixing and pulverizing said mixed powder by at least one of mechanical alloying, mechanical grinding and granulation to form a composite copper alloy powder, whereby said hard particles are pulverized to have a maximum grain diameter of at most 25 μm and an average grain diameter of at most 10 μm, and simultaneously said hard particles are uniformly dispersed in said composite copper alloy powder; and
molding and sintering said composite copper alloy powder.

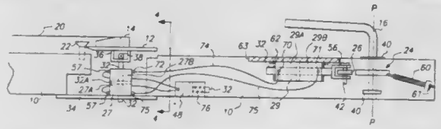
5,824,924
FIVE POSITION BOW PLAYABLE, ELECTRIC BASS GUITAR
Joseph D. Agostino, 1138 Maxum Southard Rd., Howell, N.J. 07731
Filed Apr. 10, 1996, Ser. No. 629,472
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—291 16 Claims

1. In an electric bass guitar of the type having a neck, tuning hardware, an electronic pick-up, a bridge over which strings of the guitar are stretched and a tail piece to which said strings are secured, the improvement comprising:
a) a body including a tail-section on which said tail piece and said bridge are mounted, and a legged-section having upper and lower legs on which said electronic pick-up is mounted;
b) with said legged-section incorporating a rear wall from which said upper and lower legs extend forwardly, and with said tail-section being narrower than said legged-section and extending perpendicularly from said rear wall;



c) with said pick-up being secured on said legged-section a distance at least 4–4½ inches away from said bridge secured on said tail-section;
d) a plurality of holes within said body; and
e) a strap for insertion within said holes to provide different positions to support said body about one's neck while playing said guitar;
f) with said tail-section being of a predetermined length with outwardly tapering walls, and with said bridge being of a height and arc radius to allow clearance between said strings and said tail-section when said guitar is bowed in the space so formed between said pick-up and said bridge.

5,824,925
TREMOLO AND/OR VIBRATO CONTROL SYSTEM, AND METHODS OF CONSTRUCTING AND UTILIZING SAME
John A. Yost, P.O. Box 91, 8888 Jordan Rd., Cleves, Ohio 45002
Filed Dec. 8, 1995, Ser. No. 569,569
Int. Cl.[6] G10D *3/00*
U.S. Cl. 84—313 29 Claims

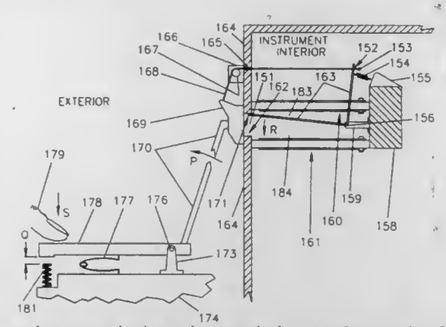


1. A tremolo device for a stringed musical instrument, comprising:
an arm member connected to the instrument;
first fluid means, operatively connected to said arm member, for moving a bridge of the instrument in response to rotation of said arm member so as to change a pitch of a tone generated by the instrument; and
means for rotating said arm member relative to the instrument so that rotation of said arm member in a first direction substantially raises a pitch of a tone generated by the instrument, and rotating said arm member in a second direction substantially lowers the pitch of a tone generated by the instrument.

5,824,926
Patent Not Issued For This Number

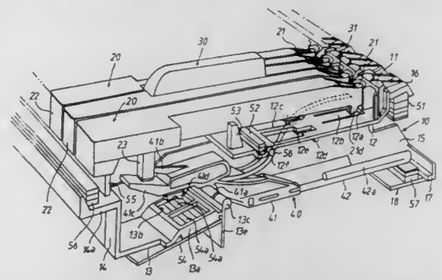
5,824,927
KEYED FREE-REED INSTRUMENTS SCOPE
Thomas Tonon, 35 Birch Ave., Princeton, N.J. 08542
Filed May 24, 1996, Ser. No. 653,133
Int. Cl.[6] G10D *11/00*
U.S. Cl. 84—375 19 Claims

8. Apparatus comprising



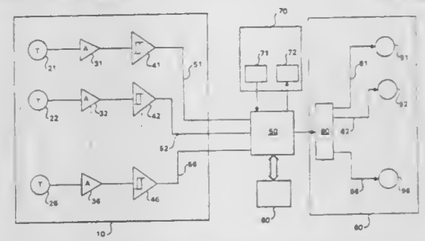
an instrument having a key attached to a selector valve for controlling the vibration of a free reed for producing a predetermined tone;
a chamber of variable geometry associated with said free reed further including means for modifying said chamber to control the vibration of an air mass therein;
a linkage connecting said chamber with said key whereby movement of said key causes a further tone that differs from said predetermined tone and is modified by the controlled vibration of said air mass, being provided by a second free reed that can co-vibrate with the first mentioned free reed;
further including means for allowing said second free reed to vibrate without co-vibration of said first mentioned free reed.

5,824,928
KEYBOARD APPARATUS FOR MUSICAL INSTRUMENT
Shinji Kumano, and Tsuyoshi Sato, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Japan
Filed Mar. 12, 1997, Ser. No. 816,172
Claims priority, application Japan, Mar. 12, 1996, 8-055175
Int. Cl.[6] G10C *3/12*
U.S. Cl. 84—423 R 11 Claims



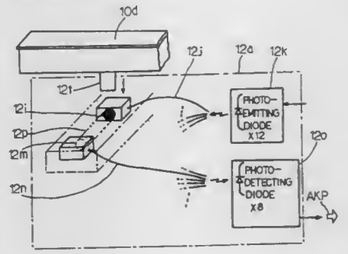
1. A keyboard apparatus including a laterally elongated frame structure made of synthetic resin, a plurality of keys arranged in parallel on said frame structure and pivoted at their proximal ends on a rear end portion of said frame structure to be depressed at their front portions, and a laterally elongated printed circuit board mounted on said frame structure and provided thereon with a plurality of detection switches which are arranged to detect depression of said keys,
wherein said frame structure comprises:
a plurality of laterally spaced vertical reinforcement ribs which are placed in a fore-and-aft direction of said frame structure;
an upper support plate integrally formed with said vertical reinforcement ribs at their upper end surfaces and extended in a lateral direction of said frame structure to be placed under said keys;
a key mounting portion integrally formed on a rear end of said upper support plate to support said keys pivoted thereon at their proximal ends; and
a bottom plate integrally formed with said vertical reinforcement ribs at their front bottom surfaces and placed along a front end portion of said frame structure to support said printed circuit board mounted thereon.

5,824,929
MUSICAL INSTRUMENT SELF-TUNING SYSTEM WITH CALIBRATION LIBRARY
Stephen J. Freeland, Fort Collins; Gerard F. Hallaren, Littleton, and Neil C. Skion, Fort Collins, all of Colo., assignors to Transperformance, LLC, Littleton, Colo.
Filed Jul. 12, 1996, Ser. No. 679,080
Int. Cl.[6] G10D *3/14;* G10G *7/02*
U.S. Cl. 84—454 80 Claims



1. A control system for an automatically tuned stringed instrument, said instrument having a plurality of strings, each string having an actuator connected thereto, comprising:
a memory for storing; and
a processor coupled to said memory and adapted to be coupled to the actuators, said processor including means for addressing said memory to retrieve one of said calibration functions from said memory, means for generating control signals in accordance with the retrieved calibration function, and means for outputting said control signals to said actuators.

5,824,930
KEYBOARD MUSICAL INSTRUMENT HAVING KEY MONITOR EXACTLY DISCRIMINATING KEY MOTION
Tomoyuki Ura, and Tsutomu Sasaki, both of Shizuoka-ken, Japan, assignors to Yamaha Corporation, Japan
Filed Jun. 5, 1996, Ser. No. 658,700
Claims priority, application Japan, Jun. 9, 1995, 7-143752; Oct. 18, 1995, 7-270322
Int. Cl.[6] G10G *3/04*
U.S. Cl. 84—462 11 Claims



1. A keyboard musical instrument for generating sounds, comprising:
a keyboard including a plurality of keys each reciprocally moved between a rest position and an end position;
a sound generating means responsive to a first piece of control information for starting to generate a sound specified by each of said plurality of keys on the way toward said end position

and a second piece of control information for terminating said sound on the way toward said rest position;

a plurality of key sensors respectively monitoring said plurality of keys for generating key position signals respectively representative of motions of associated keys, each of said key position signals continuously varying a value along a trajectory of one of said plurality of keys having a plurality of reference points bounding sections of said trajectory; and

a sound controlling means connected to said plurality of key sensors, and controlling said sound generating means, said sound controlling means including

a discriminating sub-means periodically comparing said value of said each of said plurality of key position signals with respective thresholds of said plurality of reference points for determining one of said sections where said each of said plurality of keys is moved,

a key-state determining sub-means for determining a present key state of said each of said plurality of keys on the basis of said one of said sections and a previous key state which was previously determined by said discriminating sub-means, and

a control information generating sub-means for generating a first piece of control information indicative of a generation of sound for said each of said plurality of keys after said present key state is representative of a ready for tone generation, said control information generating sub-means further generating a second piece of control information indicative of a termination of sound for said each of said plurality of keys when the value of said each of said plurality of key position signals is matched with one of said thresholds after entry into said ready for tone generation.

5,824,931

ELECTRONIC INFORMATION AID

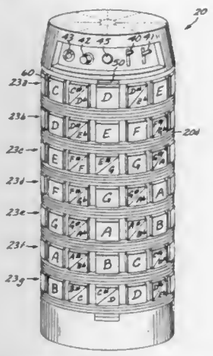
M. G. Papadopoulos, Wellington, New Zealand, assignor to Musacus International Limited, Wellington, New Zealand

Continuation of Ser. No. 481,315, Nov. 7, 1995, abandoned. This application Sep. 8, 1997, Ser. No. 925,023

Claims priority, application New Zealand, Mar. 12, 1993, 247140

Int. Cl.[6] G09B *15/02*

U.S. Cl. 84—474 **15 Claims**



1. An electronic information aid comprising:

a plurality of reference rings each of which is independently movable and maintained in a predetermined spatial relationship, each reference ring having a plurality of segments each of which is identifiable by a predetermined coding system such that when selected segments of the reference rings are aligned in accordance with the predetermined coding system into an array of segments, the aligned segments will represent a predetermined relationship between the segments;

activation means wherein one or more of only the segments in the array of segments are activatable; and

response means wherein a visual or audible response in initiated by the activation of one or more of the segments in the array of segments.

5,824,932

AUTOMATIC PERFORMING APPARATUS WITH SEQUENCE DATA MODIFICATION

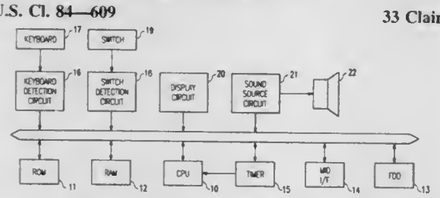
Takuya Nakata, Shizuoka-ken, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Continuation of Ser. No. 542,381, Oct. 12, 1995, abandoned. This application Sep. 24, 1997, Ser. No. 937,054

Claims priority, application Japan, Nov. 30, 1994, 6-297034

Int. Cl.[6] G10H *1/36*

U.S. Cl. 84—609 **33 Claims**



1. An automatic performing apparatus carrying out an automatic performance based on song data representing a melody and style data representing an accompaniment provided in parallel, the automatic performing apparatus comprising:

a memory device that stores information representative of characters of performance contents of at least one of the song data and the style data; and

a correction device that corrects a performance content of at least one of the song data and the style data based upon the information stored in the memory device so as to match the characteristics of the melody and the accompaniment to each other.

5,824,933

METHOD AND APPARATUS FOR SYNCHRONIZING AND SIMULTANEOUSLY PLAYING PREDEFINED MUSICAL SEQUENCES USING VISUAL DISPLAY AND INPUT DEVICE SUCH AS JOYSTICK OR KEYBOARD

Joshua Gabriel, San Francisco, Calif., assignor to Interactive Music Corp., San Francisco, Calif.

Filed Jan. 26, 1996, Ser. No. 592,107

Int. Cl.[6] A63H *5/00;* **G04B** *13/00;* **G10H** *7/00*

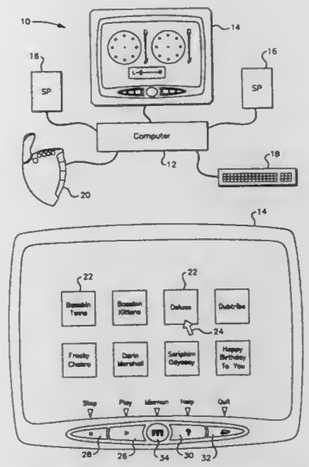
U.S. Cl. 84—609 **48 Claims**

1. A system for playing predefined musical sequences, comprising:

display means having visual icons corresponding to said sequences respectively;

input means for interactively selecting and de-selecting icons;

player means for playing selected sequences corresponding to said selected icons simultaneously, and controlling the display means such that said icons distinguish said selected sequences from de-selected sequences; and



synchronizer means for musically synchronizing said selected sequences.

5,824,934

KARAOKE SYSTEM INCLUDING HOST APPARATUS THAT DOWNLOADS INFORMATION FILE BASED ON LIST OF NECESSARY INFORMATION FILES

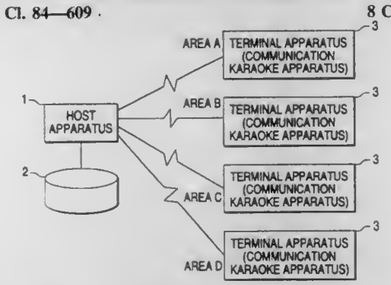
Kanehisa Tsurumi; Youji Semba, both of Hamamatsu, and Yuichi Murai, Tokyo, all of Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Oct. 29, 1996, Ser. No. 740,447

Claims priority, application Japan, Nov. 6, 1995, 7-287607

Int. Cl.[6] G09B *5/00;15/04;* **G10H** *1/26*

U.S. Cl. 84—609 **8 Claims**



3. A method of downloading files to communication karaoke apparatuses, said method comprising the steps of:

storing music-piece files and information files, the music-piece files being used during a karaoke performance to drive musical sound synthesizing means and image synthesizing means, and the information files being used to display information during an intermission in the karaoke performance to drive said musical sound synthesizing means and said image synthesizing means;

storing lists of necessary information files for areas where the communication karaoke apparatuses are located;

establishing communication between a host apparatus and a selected communication karaoke apparatus;

extracting an information file which is to be downloaded based on the list of necessary information files corresponding to said selected communication karaoke apparatus; and

downloading the extracted information file and at least one music-piece file to the selected communication karaoke apparatus.

5,824,935

MUSIC APPARATUS FOR INDEPENDENTLY PRODUCING MULTIPLE CHORUS PARTS THROUGH SINGLE CHANNEL

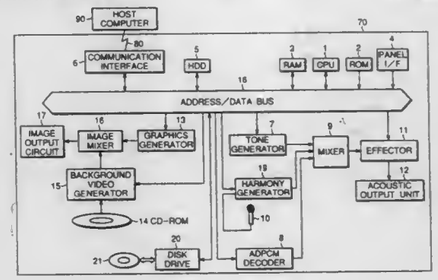
Takahiro Tanaka, Hamamamtsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Jul. 31, 1997, Ser. No. 904,409

Claims priority, application Japan, Aug. 6, 1996, 8-233067

Int. Cl.[6] G10H *1/10;7/00*

U.S. Cl. 84—631 **14 Claims**



1. A music apparatus comprising:

a generator device that has a plurality of channels for concurrently generating various tones, at least one channel being assigned to generate chorus tones belonging to a multiple of melody parts arranged in parallel to each other;

a provider device that provides music messages assigned to the plurality of the channels to generate the various tones, the music messages including a particular music message being assigned to said one channel and being composed of a first music message which contains a note and identifies a melody part to which the note belongs, and a second music message which contains a parameter and identifies a melody part to which the parameter belongs; and

a controller device that controls said one channel of the generator device according to the note and the parameter both belonging to the same melody part so as to generate the chorus tone such that said one channel can generate one chorus tone belonging to one melody part independently from another chorus tone belonging to another melody part.

5,824,936

APPARATUS AND METHOD FOR APPROXIMATING AN EXPONENTIAL DECAY IN A SOUND SYNTHESIZER

Timothy J. DuPuis, and Melita Jaric, both of Austin, Tex., assignors to Crystal Semiconductor Corporation, Fremont, Calif.

Filed Jan. 17, 1997, Ser. No. 785,465

Int. Cl.[6] G10H *1/46;7/00*

U.S. Cl. 84—663 **29 Claims**

1. A method of processing a parameter by applying a linear approximation to an exponential decay function of the parameter in a computing device including:

selecting a constant time interval;

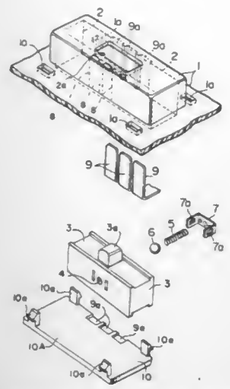
selecting a constant ratio between a value of the parameter at the beginning of the constant time interval and a value of the parameter at the end of the constant time interval;

allocating a numerical register, the numerical register being allocated to include a mantissa exponential amplitude and an exponent for storing a constant decay function value;

determining a constant offset value as a function of the selected constant ratio;

determining a constant decay delta value as a function of the selected constant ratio;

updating an exponential decay function from the value of the parameter at the beginning of the constant time interval to the



value of the parameter at the end of the constant time interval at the selected constant time intervals including:

subtracting the constant decay delta value from the mantissa exponential amplitude of the exponential decay function value to form a parameter sequence that is updated in a linear function;

adding the mantissa exponential amplitude and the constant offset value to form a sum that is a current exponential amplitude value of the exponential decay function value; and

decrementing the exponent of the exponential decay function value when subtracting the constant decay delta value from the mantissa exponential amplitude results in underflow of the mantissa exponential amplitude;

acquiring a plurality of parameter samples; and

applying the determined exponential decay function approximation to the plurality of parameter samples.

5,824,937

SIGNAL ANALYSIS DEVICE HAVING AT LEAST ONE STRETCHED STRING AND ONE PICKUP

Andreas Szalay, Emmelshausen, Germany, assignor to Yamaha Corporation, Japan, and Blue Chip Music GmbH, Germany

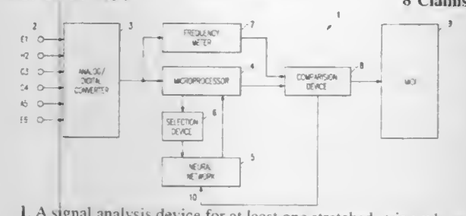
PCT No. PCT/EP94/03917, § 371 Date Apr. 11, 1996, § 102(e) Date Apr. 11, 1996, PCT Pub. No. WO95/16984, PCT Pub. Date Jun. 22, 1995

PCT Filed Nov. 26, 1994, Ser. No. 624,528

Claims priority, application Germany, Dec. 18, 1993, 43 43 411.8

Int. Cl.[6] G10H *3/18*

U.S. Cl. 84—654 **8 Claims**



1. A signal analysis device for at least one stretched string whose oscillatory length can be varied by resting it on at least one fret, comprising:

a pickups and

an evaluation device connected to the pickup, wherein the evaluation device (a) registers pulses or groups of pulses, formed as plucking transients, which run on the string past the pickup in response to excitation of the string by plucking or striking by a player (b) determines at least one propagation time of said pulses or groups of pulses on the string and, (c) on the basis of the propagation time or of differences in propagation times between individual pulses or groups of pulses produces a signal which represents a pitch.

5,824,938

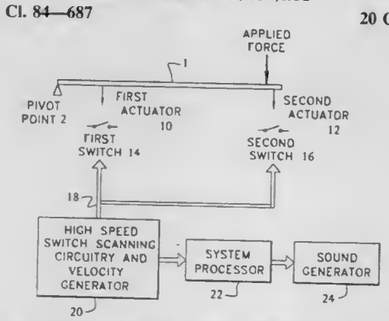
VELOCITY SENSING TRIGGER INTERFACE FOR MUSICAL INSTRUMENT

Thomas M. Costello, Havertown; Gary M. Trapuzzano, Norristown, and Carl V. Bader, Dowingtown, all of Pa., assignors to Ensoniq Corporation, Malvern, Pa.

Filed Oct. 21, 1997, Ser. No. 954,783

Int. Cl.[6] G10H *1/18;1/34;1/32*

U.S. Cl. 84—687 **20 Claims**



1. An electronic instrument which creates trigger signals for triggering a sound generator, comprising:

first and second switches which, upon actuation, generate a trigger signal; and

a pad actuator mounted to rotate in a first direction about a pivot point upon depression by a user, said pad actuator including a first actuator which actuates said first switch and a second actuator which actuates said second switch, said first actuator being closer to said pivot point than said second actuator and mounted such that continued depression of said pad actuator in said first direction after actuation of said first switch by said first actuator causes said first actuator to displace in a second direction opposite said first direction while said second actuator continues to rotate in said first direction about said pivot point until said second switch is actuated by said second actuator.

5,824,939

SYSTEM AND METHOD FOR DECEIVING ENEMY FORCES IN BATTLEFIELD

Doron Handelman, Givatayim, Israel, assignor to Dauphin Biotechnologies Promotion, Ltd., Herzlia, Israel

Filed Sep. 30, 1996, Ser. No. 720,453

Claims priority, application Israel, Dec. 28, 1995, 116597

Int. Cl.[6] F42B *4/18*

U.S. Cl. 89—1.11 **33 Claims**

1. A deception system for deceiving enemy forces comprising:

a launcher; and

pyrotechnic ammunition which is launched from said launcher and exploded at a pre-selected height above ground at a location away from the launcher, the pyrotechnic ammunition including:

a detonation mechanism which is set to detonate at said pre-selected height above ground at said location away from the launcher; and

a pyrotechnic explosive material comprising a blasting material which is used in launching live ammunition, wherein said pyrotechnic explosive material is detonated by said detonation mechanism, and a detonation of said pyrotechnic explosive material is operative to create a muzzle flash



effect which is substantially similar to an actual muzzle flash created in a live fire round from an actual military weapon.

5,824,940

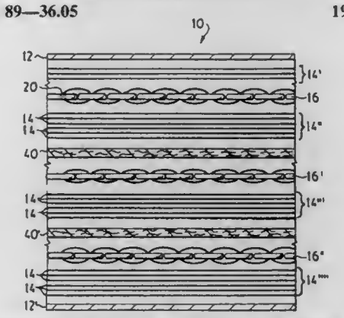
CERAMIC BULLET-PROOF FABRIC

Juan Alexander Chediak, Essex Junction, Vt.; Lincoln Clark Young, Alfred Station, and Daniel Lee Edson, Sinclairville, both of N.Y., assignors to Alfred University, Alfred, N.Y.

Filed Jan. 27, 1997, Ser. No. 790,749

Int. Cl.[6] F41H *5/02;1/02*

U.S. Cl. 89—36.05 **19 Claims**



1. A bullet-proof fabric comprising a first layer of high-strength fabric, a first layer of ceramic material disposed below said first layer of high-strength fabric, and a second layer of high-strength fabric disposed below said first layer of ceramic material, wherein:

(a) each of said first layer high-strength fabric and said second layer of high-strength fabric is comprised of one sheet of high strength fabric, wherein said sheet of high-strength fabric is comprised of at least about 90 weight percent of fiber with a tensile strength of at least about 425,000 pounds per square inch and a density of less than 1.6 grams per cubic centimeter;

(b) said first layer of ceramic material is comprised of a multiplicity of ceramic structures, wherein:

1. each of said ceramic structures is comprised of a first orifice extending through said ceramic structure,

2. a means for fastening said ceramic structure is disposed within said first orifice,

3. said first layer of ceramic material contains from about 16 to about 200 of said ceramic structures for each square foot of surface area of said first layer of ceramic material, and

4. each of said ceramic structures is comprised of at least about 90 weight percent of ceramic material, wherein said ceramic material has a Young's modulus of at least about 10,000,000 pounds per square inch, a porosity of less than 20 volume percent, and a toughness of less than about 6 megaPascals—meters$^{0.5}$.

5,824,941

ARRANGEMENT FOR PROTECTION FROM PROJECTILES

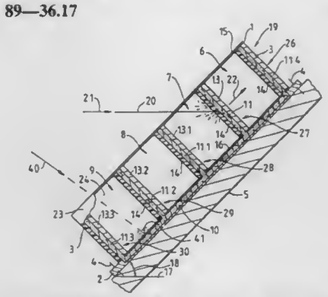
Stefan Knäpper, Lauf, Germany, assignor to Diehl Stiftung & Co., Nuremberg, Germany

Filed Apr. 3, 1989, Ser. No. 332,496

Claims priority, application Germany, Apr. 9, 1988, P 38 11 878.5

Int. Cl.[6] F41H *5/007*

U.S. Cl. 89—36.17 **8 Claims**



1. An arrangement for protection of an armored target from attack by hollow-charge projectiles fired against said target, comprising a composite reactive armoring including a wall of explosives arranged to extend obliquely facing oncoming projectiles, said wall of explosives being positioned behind a wall constituted from an inert material facing towards the oncoming projectiles, said composite reactive armoring including an explosives foil forming said wall of explosives, a steel plate covering one surface of said explosives foil, and said inert material wall forming a plate covering an opposite surface of said explosives foil, said composite armoring forming a plurality of chambers within a box structure such that respectively one said steel plate is positioned opposite one said inert material plate within each respective chamber of said plurality of chambers of said box structure; and the explosives foil in the opposite surface of said each respective chamber have bottom edges thereof interconnected by a transfer foil constituted from an explosive material.

5,824,942

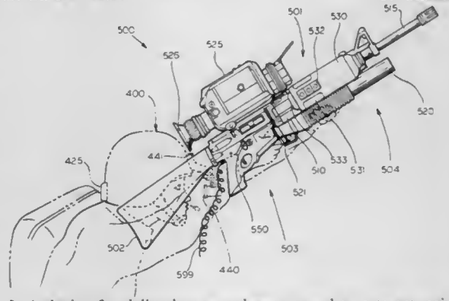
METHOD AND DEVICE FOR FIRE CONTROL OF A HIGH APOGEE TRAJECTORY WEAPON

Gary J. Mladjan, Torrance; Douglas A. Anderson, Long Beach, and Clarence E. Dickson, Hawthorne, all of Calif., assignors to Raytheon Company, El Segundo, Calif.

Filed Jan. 22, 1996, Ser. No. 589,810

Int. Cl.[6] F41G *3/06*

U.S. Cl. 89—41.17 **17 Claims**



1. A device for delivering an ordnance round to a target, said device comprising:

a weapon;

a laser range finder/digital compass assembly, said laser range finder/digital compass assembly being mounted to said

weapon, said laser range finder/digital compass assembly having a laser range finder portion and a digital compass portion;

a first microprocessor, said first microprocessor being in electrical communication with said laser range finder/digital compass assembly; and,

a first video display, said first video display being in electrical communication with said laser range finder/digital compass assembly, said first video display further being in electrical communication with said first microprocessor.

5,824,943

SELF-LOADING RIFLE WITH GAS-PRESSURE LOADING ARRANGEMENT

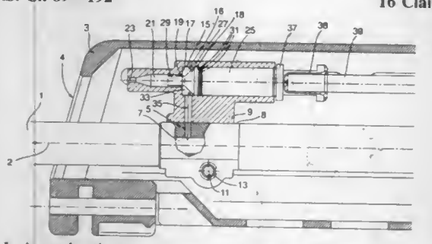
Manfred Guhring, and Helmut Weldle, both of Oberndorf, Germany, assignors to Heckler & Koch GmbH, Germany

Filed Apr. 16, 1997, Ser. No. 838,170

Claims priority, application Germany, Apr. 17, 1996, 196 15 181.3

Int. Cl.[6] F41B *11/00*

U.S. Cl. 89—192 **16 Claims**



I. A combustion gas pressure activated self-loading rifle comprising;

a rifle barrel having a longitudinally extending bore;

a gas cylinder having an inner wall defining a bore, a first end and a second end, and an end wall at least partially closing off the first end;

a gas piston received in the bore of the gas cylinder to form a gas chamber between a first end of the gas piston and the end wall of the gas cylinder, the gas piston being slidable in the gas cylinder between a rest position which establishes a reduced volume of the gas chamber and a end-of-stroke position which establishes an increased volume of the gas chamber, the gas chamber in fluid communication with the bore of the rifle barrel by a gas channel; and

at least one split piston ring member seated on an outer circumferential surface of the gas piston in sliding engagement with the inner wall of the gas cylinder such that said piston ring member scrapes off combustion gas deposits from the inner wall of the gas cylinder.

5,824,944

METALLIC SLUG FOR INDUSTRIAL BALLISTIC TOOL

Jack D. Dippold, Edwardsville; Melvin W. Harris, Warden, both of Ill., and Mark R. Miller, Rapid City, S. Dak., assignors to Olin Corporation, East Alton, Ill.

Filed May 22, 1997, Ser. No. 862,048

Int. Cl.[6] F42B *5/02*

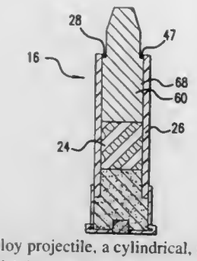
U.S. Cl. 102—439 **6 Claims**

I. A combination of an 8-gauge or larger shotgun shell and an industrial ballistic tool having a rifled portion, comprising:

a metallic base cup having a primer disposed therein;

a cylindrical plastic tube having one end bonded to said metallic cup and an opposing end, the combination of said metallic cup and said plastic tube defining a cavity;

a ballistic charge disposed within said cavity in communication with said primer;



a zinc or zinc alloy projectile, a cylindrical, smooth surface, rear portion of which is encased in said cylindrical plastic tube and in direct contact with said cylindrical plastic tube, having a weight of from about 3 ounces to in excess of 3 ounces that is sufficiently soft to engage rifling extending from said rifled portion and thereby impart said metallic slug with spin stabilization, said zinc or zinc alloy projectile having symmetry about a longitudinal axis and having said cylindrical rear portion with a first substantially constant radial circular cross-sectional area of a diameter effective to engage said rifling, a cylindrical, smooth surface, mid-portion with a second substantially constant radial circular cross-sectional area that is less than said first substantially constant radial circular cross-sectional area and a tapered forward portion with a forwardly decreasing radial circular cross sectional area, a cross-sectional area discontinuity being disposed between said cylindrical rear portion and said cylindrical mid-portion and aligned with an open end of said plastic tube, wherein a center of gravity of said zinc or zinc alloy projectile is rearward of said cross-sectional area discontinuity;

a cushioning material disposed between said rear portion and said ballistic charge; and

a crimp extending from said open end of said plastic tube about said cross-sectional area discontinuity thereby sealing said zinc or zinc alloy projectile in said shotgun shell.

5,824,945

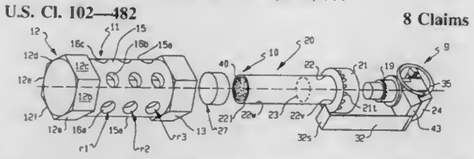
DISTRACTION DEVICE

Stanley J. Barlog; Michael C. Magenot, both of Phoenix, and Wilburn C. Roberts, Mesa, all of Ariz., assignors to Universal Propulsion Company, Inc., Phoenix, Ariz.

Filed Nov. 15, 1996, Ser. No. 751,219

Int. Cl.[6] F42B *27/00;8/00;4/00*

U.S. Cl. 102—482 **8 Claims**



I. A distraction device having an energetic pyrotechnic material charge comprising

a) a body including a central cylinder portion with an exterior side wall and polygonal ends;

b) a charge holder in the device for holding the energetic pyrotechnic charge;

c) means for igniting the energetic pyrotechnic charge; and

d) vent holes in said exterior side wall for venting the gases of combustion which holes are so sized and located in the exterior side wall so that there is a lack of resulting device-propelling forces that would cause the device to be propelled a substantial distance.

5,824,946

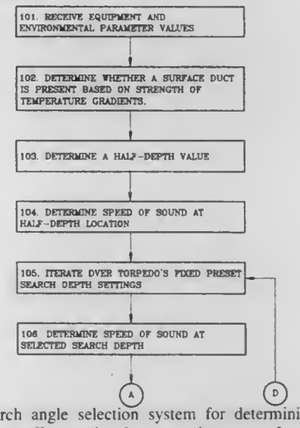
UNDERWATER SEARCH ANGLE SELECTION SYSTEM AND METHOD OF SPECIAL UTILITY WITH SURFACE CONTACTS

David S. Cwalina, Tiverton, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 30, 1997, Ser. No. 885,700

Int. Cl.[6] F42B *19/01*

U.S. Cl. 114—21.3 **6 Claims**



I. A search angle selection system for determining acoustic homing beam offset angles for respective ones of a plurality of fixed search depths at which a torpedo may be selectively controlled to operate, to be used against a surface target depth condition, said system comprising:

environmental parameter determining means for determining values for predetermined environmental parameters;

critical ray generation means for generating, for each of a plurality of search depths, a maximum and minimum aim-point values and corresponding critical rays;

beamsteering angle generation means for processing the critical rays generated by said critical ray generation means to generating beamsteering angles; and

search angle selection means for selecting, for each beamsteering angle generated by said beamsteering angle generation means, one of the torpedo's preselected search angles as the search angle for the associated search depth.

5,824,947

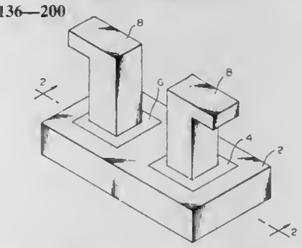
THERMOELECTRIC DEVICE

Chris Macris, P.O. Box 313, North Bend, Wash. 98045

Filed Oct. 16, 1995, Ser. No. 543,447

Int. Cl.[6] A01L *35/00*

U.S. Cl. 136—200 **10 Claims**



I. A thermoelectric device, including at least one heat absorbing interconnection member and at least one thermoelement, wherein the at least one heat absorbing interconnection member is of an electrically conductive material that encapsulates the at least one thermoelement on all of its surfaces with the exception of the face on which a heat rejecting interconnection member is attached.

5,824,948

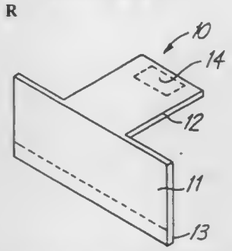
SAFETY SHIELD

Gordon Berg, 293 Moreland Cir., West St. Paul, Minn. 55118

Filed Sep. 20, 1996, Ser. No. 717,461

Int. Cl.[6] H02B *1/14*

U.S. Cl. 174—5 R **7 Claims**



I. An electrical insulation shield or safety shield for securing to an electrical device having a backside and a frontside with lateral sides connecting said frontside to said backside, said electrical insulation shield preventing an accidental shorting of the electrical device if the electrical device is removed or inserted into a junction box during a power on condition wherein the electrical device is located in the junction box with the electrical device having terminals on at least one of the lateral sides with the terminals normally proximate a side of the junction box with sufficient closeness so as to accidentally create a short between the side of the junction box and the electrical device if the electrical device is not pulled straight out of the junction box with the electrical shield comprising:

an electrically insulating material, said insulating material having a first region with an adhesive thereon to secure the first region to a portion of any of the sides except the frontside of said electrical device, said electrically insulating material having a second region with the second region of the electrical insulating material extending over an exposed electrical lead on one of the sides of the electrical device to prevent contact of the exposed electrical connection with the side of said junction box, said electrical insulating material second region shielding the exposed electrical leads on the electrical device from the junction box and a user to enable the electrical insulating material held over said exposed electrical leads and proximate said side of the junction box from making accidental contact between the electrical leads and the junction box as the electrical device is removed or replaced in the junction box.

5,824,949

TUBULAR SHAPED HOUSING COMPRISING A FLEXIBLE BELT-SHAPED WALL, PARTICULARLY FOR A DISPLAY INSTRUMENT OF A MOTOR VEHICLE

Harald Schach, Leonberg, Germany, assignor to Moto Meter GmbH, Leonberg, Germany

PCT No. PCT/DE95/01385, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO96/15008, PCT Pub. Date May 23, 1996

PCT Filed Oct. 10, 1995, Ser. No. 669,507

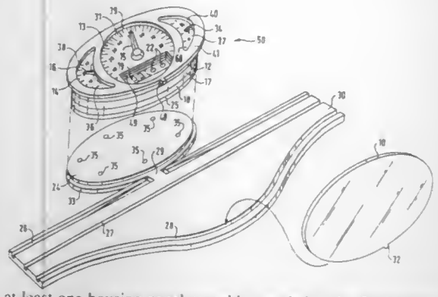
Claims priority, application Germany, Nov. 10, 1994, 44 40 148.5

Int. Cl.[6] H05K *5/00*

U.S. Cl. 174—52.1 **1 Claim**

I. A tubular shaped housing for at least one display instrument, the at least one display instrument having an outer contour, the housing comprising:

a flexible wall which is wrapped around at least a portion of the outer contour of the at least one display instrument so that the flexible wall conforms to the portion of the outer contour of the at least one display instrument with an inner surface of the flexible wall adapting to discontinuities in the portion of the outer contour of the at least one display instrument; and



at least one housing panel movably coupled to the flexible wall; wherein the flexible wall and the housing panel are constructed of a single piece of flexible material so that, when in an unstressed state, the wall and the housing panel lie in a shared plane, and wherein the flexible wall and the housing panel are coupled via a joint such that the housing panel is rotatable relative to the flexible wall about an axis lying in the shared plane.

5,824,950

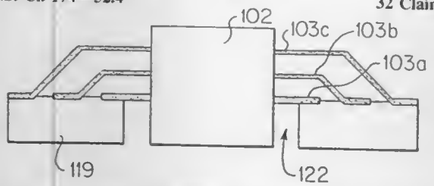
LOW PROFILE SEMICONDUCTOR DIE CARRIER

Joseph M. Mosley; Maria M. Portuondo, both of Boca Raton, Fla., and Drew L. Taylor, Jackson, Wyo., assignors to The Panda Project, Boca Raton, Fla.

Continuation-in-part of Ser. No. 208,586, Mar. 11, 1994. This application Jun. 7, 1995, Ser. No. 482,000

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **32 Claims**



1. A semiconductor die carrier configured to be secured to a printed circuit board having a first side and a second side opposite to the first side, the semiconductor die carrier comprising:

a housing for a semiconductor die, the housing having a top surface, a bottom surface, and a plurality of lateral surfaces coupling the top surface and the bottom surface;

a first row of conductive leads extending from at least one of the lateral surfaces of the housing; and

a second row of conductive leads extending from the at least one lateral surface of the housing, each of the leads of the first and second rows of conductive leads having a proximal end and a distal end having a contact surface, the proximal ends of the leads from the first row of leads being vertically spaced from the proximal ends of the leads from the second row of leads, and the contact surfaces of the leads from the first and second rows of leads in their entirety being substantially coplanar and being configured to be secured to the first side of the printed circuit board such that, when the contact surfaces of the leads are secured to the first side of the printed circuit board, at least a portion of the housing is located below an upper surface of the first side of the printed circuit board.

5,824,951

ELECTRONIC PART COMPRISING A CASING WITH A NARROW GROOVE FORMED IN THE CASING

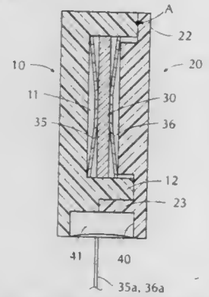
Yasuhiro Tanaka, Matsumoto, Japan, assignor to Murata Manufacturing Co., Ltd., Japan

Filed Jul. 17, 1996, Ser. No. 680,627

Claims priority, application Japan, Jul. 17, 1995, 7-180227

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **24 Claims**



1. An electronic part comprising a casing having a recessed portion therein surrounded by a wall of the casing, an electronic element and terminals housed within the recessed portion of the casing and a lid covering the recessed portion, the lid having a peripheral section which engages with the wall of the casing, wherein:

at least one narrow groove communicating with the recessed portion is formed extending partially but not completely through at least one of the wall of the casing and the peripheral section of the lid; and

the casing and the lid are sealed together with the exception of the narrow groove and portions of the casing and lid adjacent to the narrow groove.

5,824,952

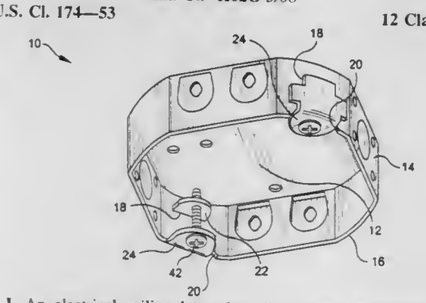
CEILING FAN OUTLET BOX

Mark A. Bordwell, Memphis, and James D. McCutcheon, Athens, both of Tenn., assignors to Thomas & Betts Corporation, Memphis, Tenn.

Filed Jan. 17, 1995, Ser. No. 375,438

Int. Cl.[6] H02G *3/08*

U.S. Cl. 174—53 **12 Claims**



1. An electrical ceiling box adapted to mount and support a ceiling fan, comprising:

a top portion;

a side portion rigidly coupled to said top portion and extending substantially normal thereto, forming a box open at one end and defining an interior cavity, said side portion having an exterior surface;

a pair of first ears rigidly secured to said side portion and extending inwardly into said interior cavity, each of said first ears having a mounting hole formed therethrough;

a pair of second ears rigidly secured to said side portion intermediate said first ears and said top portion and extending inwardly into said interior cavity, each of said second ears having a receiving hole formed therethrough, each of said receiving holes being axially aligned with one of said mounting holes, wherein each of said mounting holes is adapted to threadedly engage a screw for mounting and supporting a ceiling fan thereto, and each of said receiving holes is adapted to allow said screw to extend non-engagingly therethrough, said first and second ears being integrally formed on a pair of ear lugs, each of said ear lugs having one of said first ears and one of said second ears formed thereon, said first and second ears on each of said lugs being spaced a distance from each other and separated by a web thereby supporting said screw at two spaced locations along a length of said screw.

5,824,953

COAXIAL CONNECTOR FOR VACUUM CHAMBER FOR MICROWAVE AND MILLIMETER WAVE MEASUREMENT

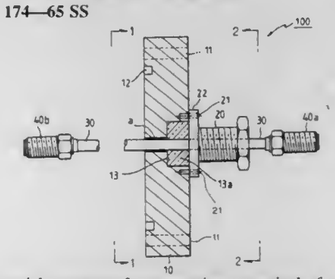
Seok-Kil Han; Kwang-Yong Kang, and Je-Ha Kim, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Sep. 5, 1996, Ser. No. 708,682

Claims priority, application Rep. of Korea, Dec. 26, 1995, 95-56725

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—65 SS **7 Claims**



1. A coaxial connector for connecting a terminal of microwave instrumenting equipment to a vacuum chamber for measurement of a low temperature and high frequency characteristic for a high frequency device, said coaxial connector comprising:

a support plate having a center adapted for attachment to said vacuum chamber;

a support screw for preventing said coaxial connector from rotating when affixing said coaxial connector to said vacuum chamber, said support screw being of a hexagonal shape and centered on one side of said support plate;

a coaxial cable for transmitting a measured signal, said cable being extended to pass through the center of said support plate and said support screw; and

a connector on each end of said coaxial cable for respectively coupling a sample in said vacuum chamber and said microwave instrumenting equipment;

wherein an epoxy sealing groove is provided on said one side of said support plate at a central portion thereof.

5,824,954

SEALED INTERCONNECTION DEVICE

Barton A. Biche, Redwood City; Eric David Nyberg, Belmont, and James Elms Swett, Jr., Fremont, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

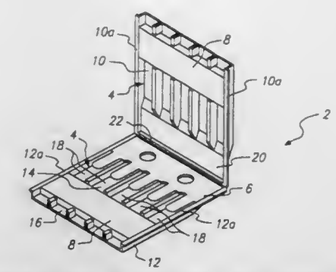
Continuation of Ser. No. 500,379, Jul. 10, 1995, abandoned. This application Jun. 16, 1997, Ser. No. 876,830

Int. Cl.[6] H02G *15/02*

U.S. Cl. 174—74 A **20 Claims**

1. A sealed electrical interconnection device comprising:

a body comprising:



a first section and a second section bonded together to form an enclosure having an open edge;

a passageway for receiving a substrate extending from said open edge;

an electrical element sealed in said enclosure at an end of said passageway opposite said open edge; and

a sealing member sealed in said enclosure at an end of said passageway adjacent said open edge.

5,824,955

CONNECTING STRUCTURE BETWEEN FLAT CABLE AND TERMINALS

Kenichi Saiso, and Ken Tokunaga, both of Miyagi-ken, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jan. 21, 1997, Ser. No. 784,612

Claims priority, application Japan, Jan. 23, 1996, 8-009347

Int. Cl.[6] H01R *4/02*

U.S. Cl. 174—88 R **11 Claims**



1. A connecting structure between a flat cable and terminals wherein a projection projected in a direction toward a conductor in the flat cable is formed on a flat terminal supported by a lead block, and said flat terminal and the conductor in the flat cable are ultrasonically welded through said projection, creating a welded section.

5,824,956

CONNECTION ACCESSORY FOR LOW VOLTAGE POWER CABLES

Béatrice Jeanne Marie Claude Garban, Paris, and Daniel Hubert Marie Dupays, La Bresse, both of France, assignors to Cables Pirelli, France

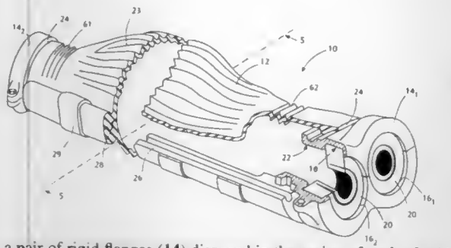
Continuation of Ser. No. 507,806, Jul. 26, 1995. This application Sep. 23, 1997, Ser. No. 935,798

Claims priority, application France, Jul. 29, 1994, 94 09422

Int. Cl.[6] H02G *15/08*

U.S. Cl. 174—93 **8 Claims**

1. Accessory for connecting a plurality of conductors of low voltage power cables at a connection area comprising two lateral areas in which the conductors are sheathed, and an intermediate physical interconnection area, characterized in that said accessory includes:



a pair of rigid flanges (**14**) disposed in the region of each of said lateral areas and each of said flanges provided with at least a housing (**16**) permitting passage of said sheathed conductors;

a tight elastic envelope (**12**) covering the intermediate area and sealingly fixed at its two lateral areas (**24**) to each of the flanges (**14**), said envelope having transverse folds intermediate each of said flanges and said intermediate area.

5,824,957

ELECTRICAL CABLE CONTAINMENT

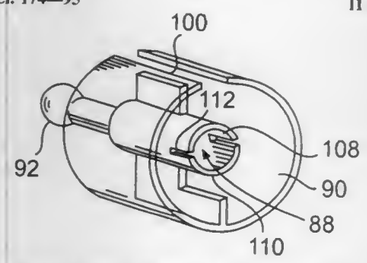
Nicholas Hugo Holshausen, Transvaal, South Africa, assignor to Technology Finance Corporation (Proprietary) Limited, South Africa

Continuation-in-part of Ser. No. 199,301, May 13, 1994, abandoned. This application Jul. 24, 1995, Ser. No. 505,882

Claims priority, application South Africa, Sep. 3, 1991, 91/6975

Int. Cl.[6] H02G *3/04*

U.S. Cl. 174—95 **11 Claims**



1. An electrical cable containment device comprising:

a generally cylindrical elongated flexible member formed of a plurality of short elements, wherein each said element having a generally cylindrical wall;

a ball portion and a socket portion formed on respective opposite ends of each said element, said ball portions on said elements and said socket portions of adjacent elements of said elements being interconnected end-to-end in a chain-like manner; said ball and socket portions lying generally on a longitudinal center line of the device, said ball portion and said socket portion being disposed at substantially 180° relative to each other; and

a mounting bracket disposed in each said element and dividing each said element into containment passages, said mounting bracket being connected to one side of said cylindrical wall and substantially intersecting the center line of the device, each mounting bracket supporting said ball and socket portions, wherein said ball and socket portions are configured to permit said adjacent elements to articulate relative to each other through a predetermined maximum arc in a full 360° circle of movement.

5,824,958

NOISE SUPPRESSING, COIL-TYPE ELECTRICAL CABLE RESISTANT TO HIGH VOLTAGE

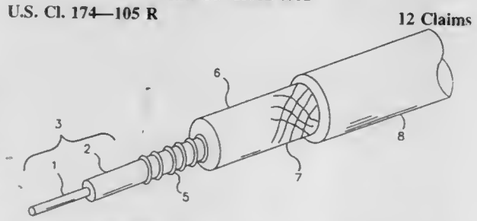
Makoto Higashikozono, and Hiroshi Inoue, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Sep. 25, 1996, Ser. No. 721,317

Claims priority, application Japan, Sep. 28, 1995, 7/250714

Int. Cl.[6] H01B *9/02*

U.S. Cl. 174—105 R **12 Claims**



1. A noise-suppressing, coil-type, high voltage-resistant electrical cable comprising

an elongated core, a resistance wire helically wound around said core in a direction perpendicular to an axis thereof, and an insulation layer on said core and said resistance wire,

said resistance wire having a breaking strength of at least 100 grams force, an elongation to break of at least 15%, a diameter of about 45 to 70 μm, and a resistivity of about 10 to 50 μΩ·cm,

said cable having at least 7,000 turns/meter of said wire wound around said core, and a resistance value of about 2 to about 4 kΩ/m,

said resistance wire comprising nickel alloyed with at least one metal selected from the group consisting of aluminum, silicon, and manganese.

5,824,959

FLEXIBLE ELECTRICAL CABLE AND ASSOCIATED APPARATUS

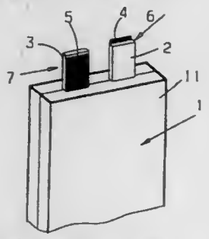
Kresimir Mista, Heusenstamm, and Hans Juergen Hoehne, Hainburg, both of Germany, assignors to Karl Mayer Textilmachinenfabrik GmbH, Obertshausen, Germany

Filed Oct. 25, 1996, Ser. No. 740,240

Claims priority, application Germany, Nov. 2, 1995, 195 40 807.1

Int. Cl.[6] H01B *7/08*

U.S. Cl. 174—117 F **9 Claims**



1. A flexible electrical cable comprising:

at least one elongate conductor including a flat strip having a wide side, the conductor being made of copper and having a maximum thickness of 0.2 mm;

a fiber layer having electrically conductive fibers disposed along and in contact with the conductor, the fiber layer being adjacent to the wide side of the flat strip and lying on only one flat side of the strip; and

an insulating sleeve of plastic encompassing said at least one conductor.

5,824,960

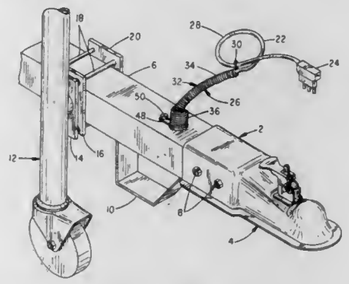
RETRACTABLE TRAILER WIRE HARNESS

Floyd F. Markling, 3538 Caya Largo Ct., Punta Gorda, Fla. 33950

Filed Apr. 2, 1997, Ser. No. 832,054

Int. Cl.[6] H02G *11/00*

U.S. Cl. 174—135 **13 Claims**



1. A conductor support harness comprising:

a) a bushing having a bore; and

b) a spiral wound harness body having a harness bore and mounted to said bushing, wherein said harness body includes first and second loops which radiate from the harness body, wherein the first loop fastens to a trailer frame and the second loop retains a looped length of conductor, whereby the harness body resiliently flexes to displace a terminal end of said conductor to an upright condition when disconnected from a towing vehicle.

5,824,961

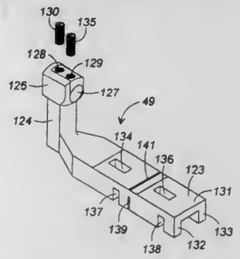
CENTRAL STRENGTH MEMBER ANCHOR FOR OPTICAL FIBER CABLES

Denis Edward Burek, Cumming; Marc Duane Jones, and William H. Small, both of Lithonia, all of Ga., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Apr. 30, 1997, Ser. No. 846,409

Int. Cl.[6] H01B *17/00*

U.S. Cl. 174—135 **23 Claims**



1. An anchor member for use in an enclosure having openings therein for passage of cables into and out of the enclosure and means within the enclosure for gripping cables passing through the openings, the enclosure further having support means for the anchor member, said anchor member comprising:

an elongated base portion having first and second ends;

a first upstanding leg portion at one of said ends, said leg portion having a distal end;

a first receiving member having a bore therethrough for receiving a strength member of a cable at said distal end;

gripping means for releasably anchoring the strength member in said bore for resistance against tensile forces on the cable;

locating means for locating said anchor member in the enclosure; and

means for mounting said anchor member in the enclosure on the support means.

5,824,962

SEALING RUBBER PLUG WITH INTERPOSING BAND UNDER THE INSULATION BARREL OF A WIRE TERMINAL

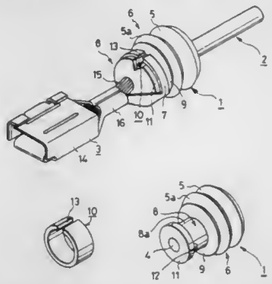
Takatoshi Katsuma, Yokkaichi, Japan, assignor to Sumitomo Wiring Systems, Ltd., Yokkaichi, Japan

Continuation of Ser. No. 523,548, Sep. 5, 1995, abandoned. This application Jun. 18, 1997, Ser. No. 877,893

Claims priority, application Japan, Sep. 8, 1994, 6-242319

Int. Cl.[6] H01B *17/00*

U.S. Cl. 174—135 **16 Claims**



1. A sealing rubber plug-fixing structure in combination with a metal terminal for sealingly connecting a sheathed wire within a housing, comprising:

a sealing rubber plug fitted on an end portion of the sheathed wire, said sealing rubber plug defining a groove between two flanges;

an interposing member interposed between said two flanges; and

said metal terminal including an insulation barrel, said insulation barrel clamping the interposing member and rubber plug to the sheathed wire, wherein each of the two flanges extends away to a radial extent from the sealing rubber plug that is greater than a radial extent that the interposing member extends away from the sealing rubber plug, so that the insulation barrel and interposing member will be retained within the groove.

5,824,963

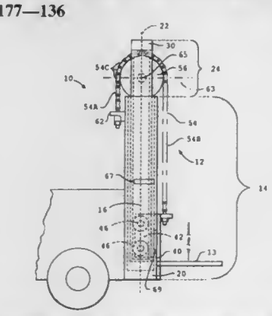
LIFTING DEVICE EMPLOYING A WEIGHT INTEGRATIVE WEIGHING SYSTEM

Robert W. Bruns, Sacramento, and John R. Payne, Fair Oaks, both of Calif., assignors to GageTek Company, Rancho Cordova, Calif.

Filed Mar. 4, 1997, Ser. No. 812,999

Int. Cl.[6] G01G *9/00;19/08;* **B66C** *1/40*

U.S. Cl. 177—136 **22 Claims**

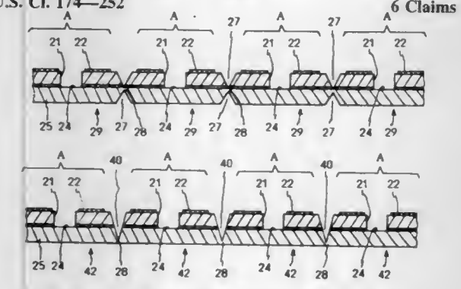


1. A weighing system for a device lifting a load comprising:

a frame;

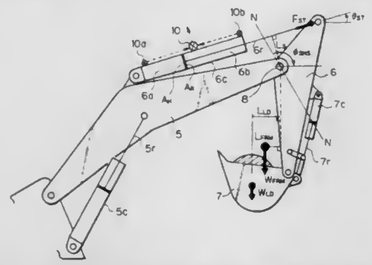
a sprocket-wheel attached to said frame to rotate about an axis;
a carriage operationally coupled to said sprocket-wheel for movement relative to said frame;
a load bearing member adapted to engage said load, said load bearing member connected to said carriage, with said load exerting a force upon said carriage;
a sensing device, coupled between said frame and said carriage, said sensing device adapted to sense said force, a magnitude of which varies in relation to rotational movement of said sprocket-wheel, said sensing device thereby producing a sequence of force measurements corresponding to rotational movement of said sprocket-wheel;
a detector having an output indicating an occurrence of a predetermined amount of rotational movement of said sprocket-wheel; and
processing means, electronically coupled to said sensing means and to said output of said detector, for computing an average of a sequence of force measurements corresponding to said predetermined amount of rotational movement of said sprocket-wheel;
whereby said average represents a weight calculation of said load.

5,824,964
CIRCUIT BOARD FOR A SEMICONDUCTOR DEVICE AND METHOD OF MAKING THE SAME
Yoshiji Kasai; Kaoru Hara, and Misao Aruga, all of Chino, Japan, assignors to Kabushiki Kaisha Eastern, Nagano, Japan
Filed Apr. 11, 1997, Ser. No. 834,480
Claims priority, application Japan, Apr. 18, 1996, 8-096722
Int. Cl.[6] H05K *1/00*
U.S. Cl. 174—252 **6 Claims**



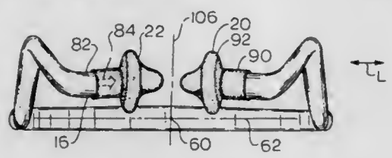
1. A circuit board for a semiconductor device, comprising:
a base board having a first face and a second face, in which a plurality of sets of wire patterns, to which semiconductor chips are respectively connected, are printed on the first face; and
a metal plate for radiating heat, said metal plate being fixed on the second face of said base board,
wherein said base board includes a V-notch being formed along a border between the sets of wire patterns, and said metal plate includes a V-notch being formed to correspond to the V-notch of said base board, the V-notch in the metal plate extending only partially through the metal plate, forming a thin section in the metal plate whereby said circuit board is divided into a plurality of circuit units, which are mutually connected by said thin section.

5,824,965
LOAD TRANSFER AND LOADING DEVICE WITH WEIGHT MEASUREMENT
Satoshi Fujii; Shoji Tozawa, and Tomoaki Ono, all of Hyogo-ken, Japan, assignors to Shin Caterpillar Mitsubishi Ltd., Tokyo, Japan
Continuation of Ser. No. 305,648, Sep. 14, 1994, abandoned. This application Jul. 14, 1997, Ser. No. 892,230
Claims priority, application Japan, Sep. 14, 1993, 5-229020
Int. Cl.[6] G01G *19/08*
U.S. Cl. 177—136 **16 Claims**



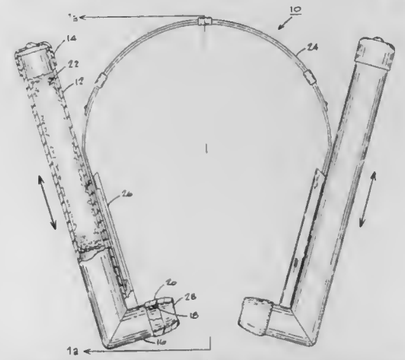
1. A load transfer and loading device equipped with a boom, a stick, and a bucket which are pin-coupled to each other, with the stick pin-coupled between the boom and the bucket, for loading a load into the bucket, and transferring and loading it onto a specified position, said load transfer and loading device comprising a weighing means for calculating the weight of the load in the bucket from a load applied to a pin directly coupling the boom to the stick, a push force applied to the stick, a known sum weight of the stick and the bucket, and a position of said boom and said stick in accordance with a set of specified equations.

5,824,966
ENHANCED BAND EARPLUG
Howard S. Leight, San Diego, Calif., assignor to Bacou USA Safety, Inc., Del.
Filed Oct. 22, 1997, Ser. No. 955,919
Int. Cl.[6] H04R *25/02*
U.S. Cl. 181—130 **8 Claims**



1. A band earplug apparatus, comprising:
a band (**12**) constructed to extend about halfway around a person's head, said band having a middle region (**32**) with a middle (**34**) and with opposite mid-ends forming far points (**50**), and said band having opposite end portions (**44, 46**) with outer pod-holding ends (**14, 16**) that can lie opposite the ears of the person and inner ends (**74**) that merge with said far points;
a pair of pods (**20, 22**) each mounted on one of said band outer pod-holding ends and constructed to seal against the outside of the person's ear canal, with said band urging its outer pod-holding ends together to urge said pods against the outside of the person's ear canals;
said band being substantially symmetrical about an imaginary substantially horizontal centerline (**60**) that passes through said middle and halfway between said outer ends, and said band having a substantially horizontal centerplane (**62**) that extends through said middle and said far points;
each of said end portions having inner and outer end parts (**70, 72**) lying respectively closest and furthest from said middle region, with each of said inner end parts (**70**) joined to one of said middle portion far points at a first downwardly-convex bend (**76**) that results, when said centerplane is horizontal and said band is in a right-side-up orientation, in said inner part extending at an upward-outward incline (C) to said centerplane as seen in a horizontal side view that is perpendicular to said centerline, and with each outer end part joined to the corresponding inner end part at a second upwardly-convex bend (**80**) that results in said outer end part (**72**) extending at a downward-outward incline (D) to said centerplane, to hold said pods away from a horizontal surface on which it is laid in either said right-side-up orientation or an upside-down orientation.

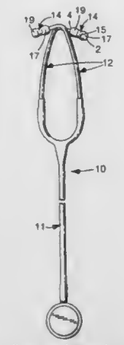
5,824,967
EAR MUFFLER
Jozef J. Zwislocki, Cazenovia, N.Y., assignor to Syracuse University, Syracuse, N.Y.
Continuation-in-part of Ser. No. 744,732, Oct. 29, 1996, abandoned. This application Oct. 28, 1997, Ser. No. 963,123
Int. Cl.[6] H04R *25/02*
U.S. Cl. 181—130 **22 Claims**



1. A passive ear defender of the semiinsert type which is designed to reduce the level of ambient noise in the ear canal, which comprises:
a tube, called muffler tube, open at one end for coupling to the ear canal through a soft sealing cuff and closed at the other end so as to provide appreciable wave reflection sufficient to produce a quarter-wave resonance below a sound frequency of about 2,000 Hz,
said muffler tube having a length of about 4 to 25 centimeters and an inner cross sectional area of at least approximately 1.15 cm^2, which is substantially greater than that of the ear canal.

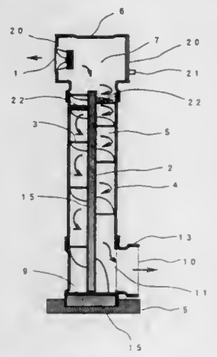
5,824,968
EAR TIPS HAVING A PLURALITY OF EAR CONTACTING SURFACES
Thomas J. Packard, and Mary Jo Rossini, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 630,399, Apr. 10, 1996, abandoned. This application Sep. 3, 1997, Ser. No. 937,249
Int. Cl.[6] A61B *7/02*
U.S. Cl. 181—131 **16 Claims**

1. An ear tip for a stethoscope for delivering sound to a canal of a human ear, the stethoscope having a pair of sound-transmitting members with distal ends, said ear tip comprising:
a central portion having attachment means for releasably attaching the ear tip to a distal end of a sound-transmitting member of the stethoscope;



a first end portion having surfaces defining an outlet, and ear contacting surfaces that are sized and shaped to afford engagement with the ear; and
a second end portion having surfaces defining an outlet, and ear contacting surfaces that are sized and shaped to afford engagement with the ear;
wherein said attachment means affords releasable connection of the ear tip to the sound-transmitting member of the stethoscope in either of: a) a first orientation in which the ear contacting surfaces of the first end portion are positioned relative to the stethoscope to engage the ear, and the ear contacting surfaces of the second end portion are spaced from the ear; or b) a second orientation in which the ear contacting surfaces of the second end portion are positioned relative to the stethoscope to engage the ear, and the ear contacting surfaces of the first end portion are spaced from the ear.

5,824,969
SPEAKER SYSTEM WITH A THREE-DIMENSIONAL SPIRAL SOUND PASSAGE
Masaaki Takenaka, 1-13-9, Higashinakashinjuku, Kashiwa-Shi, Chiba-Ken, Japan
Filed Sep. 11, 1997, Ser. No. 927,948
Claims priority, application Japan, Sep. 30, 1996, 8-293111; Mar. 18, 1997, 9-105095; Jun. 4, 1997, 9-182945
Int. Cl.[6] H05K *5/00*
U.S. Cl. 181—156 **9 Claims**



1. A speaker system comprising:
a speaker unit;
a coaxial dual-tube structure comprising an outer tube and an inner tube; and
a spiral partition plate provided to bridge a gap between said outer tube and said inner tube so as to form a spiral sound passage,

wherein a sound radiated rearwardly from said speaker unit passes through said spiral sound passage before exiting the speaker system.

5,824,970

MARINE ENGINE SILENCER HAVING INTERNAL APERTURED BAFFLE AND WEIR PLATE

Albert Louis Gracia, Freshfields, Dorchester Road, Lytchett Minster, Poole, Dorset, Great Britain, BH16 6JF

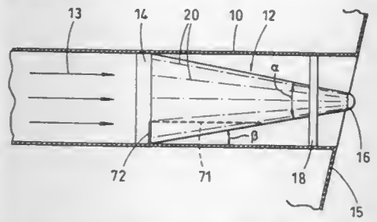
PCT No. PCT/GB95/01712, § 371 Date Jan. 23, 1997, § 102(e) Date Jan. 23, 1997, PCT Pub. No. WO96/02740, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 19, 1995, Ser. No. 776,027

Claims priority, application United Kingdom, Jul. 20, 1994, 9414656

Int. Cl.[6] F01N *7/08*

U.S. Cl. 181—228 **13 Claims**



1. A silencer for a water-cooled exhaust gas system having an exhaust duct for conducting a flow of exhaust gases there along, said system comprising a tubular silencer element located within the exhaust duct, said silencer element comprising a baffle having an inlet and apertured surfaces inclined to the flow of exhaust gas in the duct, wherein the silencer element includes a weir plate, the weir plate extending within the silencer element from said inlet in the direction of said exhaust gas flow.

5,824,971

Patent Not Issued For This Number

5,824,972

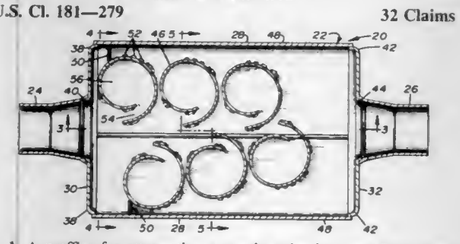
ACOUSTIC MUFFLER

Boyd L. Butler, 1672 E. 10770 S., Sandy, Utah 84092

Filed May 13, 1997, Ser. No. 855,826

Int. Cl.[6] F01N *1/12*

U.S. Cl. 181—279 **32 Claims**



1. A muffler for attenuating acoustic noise in a gas flow, comprising:

a casing;

an inlet in said casing;

an outlet in said casing, whereby gas flows in said casing from said inlet to said outlet;

a plurality of spiral acoustic traps formed by spiral trap walls disposed in said casing, spanning between a pair of opposing top and bottom walls of said casing, and having a central axis substantially perpendicular to the general direction of said gas flow, each spiral having an entrance opening into said gas flow and a back side substantially opposite said entrance, with that of said gas flow which flows across said entrance comprising a main gas flow, and the remaining gas flow which passes on the back side comprising a peripheral gas flow; and

a plurality of vents through said trap wall of each of said acoustic traps, said vents positioned on the back side of said trap such that said peripheral gas flow forms a low pressure zone at said vents, due to a venturi effect created by said peripheral gas flow passing through a narrowed area between said outside of said trap and an adjacent wall, so as to draw gas from the inside of said trap through said vents.

5,824,973

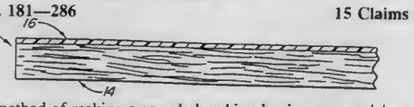
METHOD OF MAKING SOUND ABSORBING LAMINATES AND LAMINATES HAVING MAXIMIZED SOUND ABSORBING CHARACTERISTICS

James Charles Haines, Littleton, and Ralph Michael Fay, Lakewood, both of Colo., assignors to Johns Manville International, Inc., Denver, Colo.

Continuation-in-part of Ser. No. 224,600, Apr. 7, 1994, Pat. No. 5,459,291, which is a continuation-in-part of Ser. No. 953,415, Sep. 29, 1992, abandoned. This application Oct. 16, 1995, Ser. No. 543,766

Int. Cl.[6] E04B *1/82*

U.S. Cl. 181—286 **15 Claims**



1. A method of making a sound absorbing laminate comprising:

a) selecting a porous insulation substrate having low air flow resistance;

b) determining the optimized value of the acoustic resistance ratio for said substrate;

c) selecting a thin, semi-porous facing having an acoustic resistance ratio such that when superimposed upon a face of said substrate, a laminate is formed having an acoustic resistance ratio greater than the acoustic resistance ratio of said substrate and no greater than the optimized value of the acoustic resistance ratio for said substrate; and

d) superimposing said facing on said substrate to form a laminate having good sound absorbing characteristics.

5,824,974

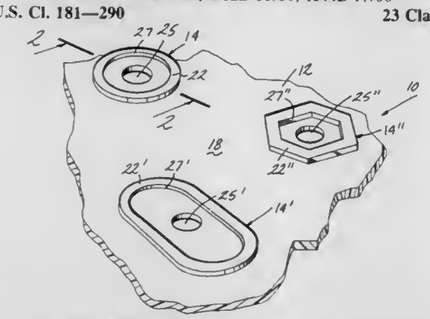
INSULATING LAYER WITH INTEGRAL GROMMETS

Michael T. Campbell, Grand Rapids, Mich., assignor to Cascade Engineering, Inc., Grand Rapids, Mich.

Filed Jul. 24, 1997, Ser. No. 899,983

Int. Cl.[6] E04B *1/82;* **B62D** *33/00;* **A44B** *17/00*

U.S. Cl. 181—290 **23 Claims**



1. An acoustical barrier adapted to be mounted to a barrier wall, the acoustical barrier comprising:

a mass layer of a molded construction and sound dampening characteristics, the mass layer having an inner surface that is adapted to face the barrier wall and an outer surface adapted to face away from the barrier wall;

a grommet integrally molded as a single piece with the mass layer, the grommet having a continuous wall with an upper portion of the wall integrally formed with the inner surface of the mass layer and a lower portion of the wall having a lower edge adapted to contact the barrier wall, an inner surface of the continuous wall defining an opening in the grommet; and

an opening extending through the mass layer between the inner and outer surfaces thereof, the opening in the grommet being in communication with the opening in the mass layer.

5,824,975

SPEED CONTROL APPARATUS FOR COMPENSATING VIBRATION OF ELEVATOR

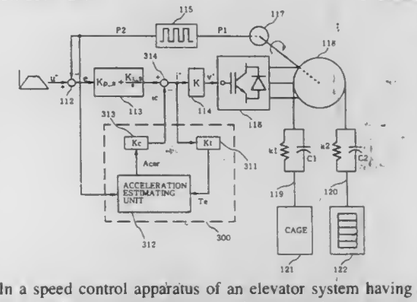
Chan-Ook Hong, Seoul, Rep. of Korea, assignor to LG Industrial Systems Co., Ltd., Seoul, Rep. of Korea

Filed Nov. 15, 1996, Ser. No. 749,642

Claims priority, application Rep. of Korea, Nov. 23, 1995, 43157/1995

Int. Cl.[6] B66B *1/34;* **H02P** *1/00;5/34*

U.S. Cl. 187—292 **3 Claims**



3. In a speed control apparatus of an elevator system having a winding machine, a cage and counterweight, wherein the cage and the counterweighter are vertically moved and respectively connected by connecting cables to the winding machine having a motor and a sheave, comprising:

a pulse generator for outputting a first pulse signal in accordance with a rotation of the winding machine;

a pulse amplifier for receiving the first pulse signal to output a second pulse signal corresponding to a rotating speed of the winding machine;

a first subtractor for subtracting the second pulse signal from an externally inputted speed command signal to calculate a speed error;

a speed controller for receiving the speed error and for outputting a current command signal;

a torque calculator for multiplying the current command signal by a predetermined torque constant to obtain a torque value;

an acceleration estimating unit for receiving the torque value and the second pulse signal to obtain an acceleration value of the cage;

a compensation current generator for multiplying the acceleration value of the cage by a compensating gain to generate a compensation current value;

a second subtractor for subtracting the compensation current value from the current command signal to obtain a new current command signal;

a current controller for converting the new current command signal into a voltage command signal; and

an inverter for operating the winding machine in accordance with the voltage command signal.

5,824,976

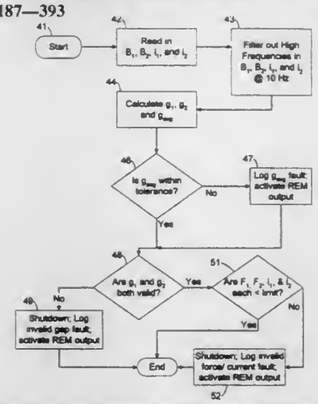
METHOD AND APPARATUS FOR SENSING FAULT CONDITIONS FOR AN ELEVATOR ACTIVE ROLLER GUIDE

Eric K. Jamieson, Farmington, and Daniel S. Williams, Meriden, both of Conn., assignors to Otis Elevator Company, Farmington, Conn.

Filed Mar. 3, 1997, Ser. No. 805,833

Int. Cl.[6] B66B *1/34;7/04*

U.S. Cl. 187—393 **4 Claims**



1. A method of fault-sensing for an elevator active roller guide (ARG) having a current-driven force actuator for positioning an elevator car horizontally within a vertical hoistway, the actuator having a magnet with a coil, the magnet spaced a variable magnitude gap from a reaction bar, the reaction bar connected to a roller on a rail extending along the vertical hoistway, the ARG establishing more or less current in the coil in order to draw the elevator car with more or less force closer to the reaction bar for changing the gap, the ARG including a means for measuring flux density in the gap created by the current, means for signaling the magnitude of current used to drive the actuator, and means for signaling the magnitude of flux density in the gap, the method of fault-sensing comprising the steps of:

a) sensing a signal indicating a new magnitude of current and a signal indicating a new magnitude of flux density;

b) determining from the flux density and the current a magnitude of the gap;

c) comparing the magnitude of the gap to a range defined by a maximum and minimum allowed magnitude of the gap, and providing a signal indicating whether the magnitude of the gap is outside the range; and

d) determining if the magnitude of the force and the magnitude of the current are each less than a respective limit, and providing a signal corresponding to the determination.

5,824,977

SLIDE SWITCH

Tsunesuke Takano; Kouichi Sinzawa, and Yoji Yabata, all of Tokyo, Japan, assignors to Kabushiki Kaisha T an T, Tokyo, Japan

Filed Feb. 12, 1997, Ser. No. 798,908

Claims priority, application Japan, Sep. 4, 1995, 8-111904; Apr. 3, 1996, 8-073256; Jul. 3, 1996, 8-079474; Aug. 5, 1996, 8-137556

Int. Cl.[6] H01H *15/02*

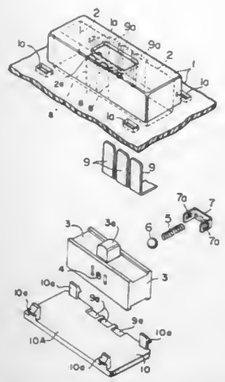
U.S. Cl. 200—16 C **13 Claims**

1. A slide switch comprising:

a base defining a recess having a first inner surface and a second inner surface opposing said first inner surface;

a plurality of stationary contacts attached to said first inner surface;

a plurality of clicking recesses formed in said second inner surface;



a slider movably disposed in said recess, said slider including a through hole extending between said first and second inner surfaces;

a moving contact attached to said slider and coupleable with one or more of said plurality of stationary contacts based on a position of said slider;

a clicking thruster disposed in said through hole facing said second inner surface and being engageable with one of said plurality of clicking recesses based on a position of said slider; and

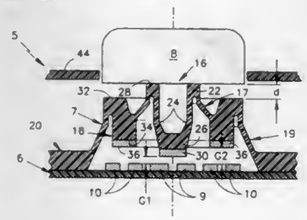
a spring disposed in said through hole and positioned between said moving contact and said clicking thruster, said spring urging said moving contact toward said plurality of stationary contacts and urging said clicking thruster toward said plurality of clicking recesses.

5,824,978

MULTIPLE DETENT MEMBRANE SWITCH

Boris G. Karasik, and Vladimir G. Karasik, both of Walled Lake, Mich., assignors to UT Automotive, Inc., Dearborn, Mich.

Filed Jun. 26, 1997, Ser. No. 882,844
Int. Cl.[6] H01H *13/14*
U.S. Cl. 200—1 B **10 Claims**



1. A membrane switch comprising:

a membrane having a center, intermediate, and outer flexing areas and first and second membrane contacts, said membrane positioned adjacent first and second circuit contacts associated with each of said first and second membrane contacts; and

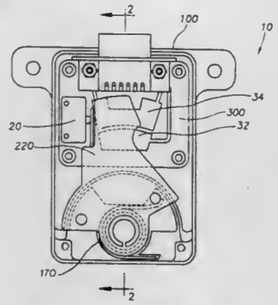
said center, intermediate and outer flexing areas normally biasing said first and second membrane contacts out of contact with said first and second circuit contacts, and a first actuation force on said membrane flexing said intermediate flexing area and causing said first membrane contact to contact said first circuit contact, and a second actuation force flexing said center and outer flexing areas and causing said second membrane contact to contact said second circuit contact.

5,824,979

ACCELERATOR MODULE

Robert Dam, Aurora; Charles E. Marx, Norridge, and Earl J. Genz, Des Plaines, all of Ill., assignors to Illinois Tool Works Inc., Glenview, Ill.

Filed Jun. 18, 1997, Ser. No. 878,313
Int. Cl.[6] H01C *10/36;* **H01H** *19/54*
U.S. Cl. 200—61.88 **21 Claims**



1. Apparatus for actuating an electrical switch and providing a variable electrical resistance value indicative of pivotable movement of a pivotably movable member, comprising:

a housing;

an electrical switch disposed within said housing;

an actuator pivotably disposed within said housing;

a movable member pivotably disposed within said housing;

spring means for biasing said actuator toward an initial position at which said actuator engages said electrical switch and for permitting pivotable movement of said actuator away from said electrical switch and against the biasing force of said spring means in response to movement of said actuator by said movable member;

variable electrical resistance means disposed within said housing;

electrically conductive wiper means mounted upon said actuator and disposed in contact with said variable electrical resistance means disposed within said housing for generating a variable electrical resistance, as a result of the movable disposition of said electrically conductive wiper means along said variable electrical resistance means, as a function of said pivotable movement of said actuator away from said electrical switch and against said biasing force of said spring means in response to pivotable movement of said movable member; and

linkage means for interconnecting said movable member and said actuator in a mechanically advantaged manner such that when said movable member undergoes a predetermined pivotable movement, said actuator undergoes a correspondingly larger predetermined pivotable movement.

5,824,980

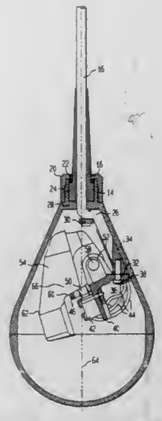
SWITCH-ACTUATING, LIQUID-LEVEL SENSOR

Bengt Sodergard, Vasby, Sweden, assignor to ITT Flygt AB, Solna, Sweden

Continuation of Ser. No. 489,574, Jun. 12, 1995, abandoned, which is a continuation-in-part of Ser. No. 268,890, Jun. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 40,689, Mar. 31, 1993, abandoned. This application Jun. 26, 1996, Ser. No. 669,829
Claims priority, application Sweden, Apr. 28, 1992, 9201303
Int. Cl.[6] H01H *35/18*
U.S. Cl. 200—84 R **6 Claims**

1. A switch actuating, liquid-level sensor, for disposition in a liquid and having a balancing weight which is positioned and retained in one or another attitude solely in dependence on the liquid-level and gravity comprising in combination:

a closed, hollow body having an externally threaded neck;



electrical switching means, mounted within said body, operative for starting and stopping operation of a remote equipment;

a flexible cable coupled to said body through said neck, for (a) suspending said body therefrom and tethering said body therewith, and (b) conducting electrical power to and from said switching means; wherein said cable has a reinforcing sheath with an end thereof nested in said neck, said neck threadedly receives an internally-threaded cap and an annular seal is interposed between said cap and an enlarged portion of said sheath;

said weight between first and second pivotably-effected attitudes within said body; wherein

said weight has an actuator surface which, upon said weight pivotably moving from one of said first and second attitudes to the other thereof, engages and moves said actuator, and upon said weight pivotably moving from said other attitude to said one attitude, disengages and removes from said actuator;

said body has a longitudinal, central axis in-line with said neck, and said weight has a side surface which engages an inner surface of said body, when said weight is in said one attitude, to delimit pivotable movement of such weight;

said weight is irregularly shaped and has a center of gravity which is offset from said axis and located nearer said actuator surface than said side surface; wherein

said sensor has a given total weight, and said balancing weight comprises not less than thirty percent of said total weight, such that said sensor body will assume a substantially horizontal disposition along its longitudinal central axis when disposed buoyantly, in a liquid body;

said body has an inwardly-directed land formed therein;

a bracket is fastened to said land, and said switching means is fastened to said bracket;

said bracket has a pair of apertured lugs, extending therefrom in parallel;

said weight has a bore hole formed therethrough; and

a pivot pin, in penetration of said apertured lugs and said bore hole, pivotably mounts said weight to said bracket.

5,824,981

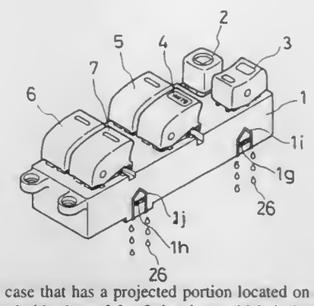
WATERPROOF CASE FOR SWITCH

Hiroshi Suzuki, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan

Filed Mar. 27, 1997, Ser. No. 826,127
Claims priority, application Japan, Mar. 28, 1996, 8-099014
Int. Cl.[6] H01H *9/04*
U.S. Cl. 200—302.1 **4 Claims**

1. A switch having a waterproof case, comprising:

an upper case that has a hole located on a vertically inclined side thereof;



a lower case that has a projected portion located on a vertically inclined side thereof for fitting into said hole located on the side of the upper case; and

a knob supported on said upper case which has a hanging operation lever extending into said upper case for engaging an operation axle of a switch contact portion;

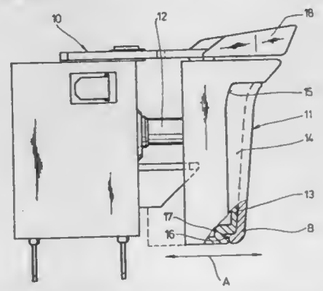
wherein said upper case has a rib arranged thereon which surrounds, and extends below the hole of said upper case and guides liquid to flow along the side of the upper case to drain in a downward direction, and drip from a bottom edge of said vertically inclined side of said upper case.

5,824,982

MANUALLY OPERATED TRIGGER OR SWITCH LEVER FOR ELECTRIC APPLIANCES

Willy Kress, Bisingen, Germany, assignor to Kress-Elektrik GmbH & Co. Elektromotorenfabrik, Bisingen, Germany

Continuation of Ser. No. 368,725, Jan. 4, 1995, Pat. No. 5,579,902, which is a continuation of Ser. No. 246,488, May 19, 1994, abandoned, which is a continuation of Ser. No. 840,908, Feb. 25, 1992, abandoned. This application Jul. 26, 1996, Ser. No. 690,299
Claims priority, application Germany, Feb. 27, 1991, 41 06 119.5
Int. Cl.[6] H01H *3/12*
U.S. Cl. 200—333 **10 Claims**



1. A manually operated displacement element mounted on a hand-held manually operated apparatus that can start up and effect switching processes, the hand-held apparatus having a housing with a hand-held portion, said manually operated displaceable element being moveable with respect to the hand-held portion of the housing by the application of manual pressure on said manually operated displacement element by an operator controlling the apparatus, said manually operated displaceable element comprising:

at least first and second parts, said first part comprising a rigid basic structure having an actuation surface positioned for extended manual pressure applied by the operator in order to actuate the hand-held apparatus by shifting said manually operated displaceable element with respect to the hand-held portion of said housing to thereby shift an actuating member within the housing of the hand-held apparatus, and said second part comprising an elastomeric coating providing a resil-

ient cushion for the operator, said second part covering at least a portion of said actuation surface;

said displaceable element extending from the housing of the manually operated apparatus;

said rigid basic structure has a side surface extending from said actuation surface and toward the housing; and

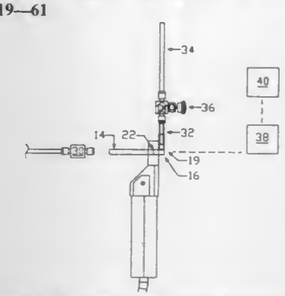
said elastomeric coating covers said actuation surface and leaves a portion of said side surface between said elastomeric coating and the housing free from being covered by said elastomeric coating.

5,824,983

WELD ASSEMBLY PURGE RESTRICTOR

Richard E. Huddleston, Jr., Austin, Tex., assignor to Advanced Micro Devices, Inc.

Filed Feb. 18, 1997, Ser. No. 802,402
Int. Cl.[6] B23K *9/167*
U.S. Cl. 219—61 **30 Claims**



19. A method of creating an orbital weld between conduit sections, comprising:

aligning a first conduit section and a second conduit section in a weld head, the weld head comprising a heat source for welding the conduit sections together, the weld head forming a substantially enclosed chamber about an interface of the first conduit section and the second conduit section, the chamber being configured to substantially contain gas that escapes from the first and second conduit sections, the weld head being capable of distributing shield gas proximate the interface;

transferring heat from the heat source to the conduit sections to create an orbital weld between the first conduit section and the second conduit section to form a conduit;

introducing purge gas into the first conduit section while the orbital weld is created and passing at least a portion of the purge gas from the first conduit section into the second conduit section to reduce or eliminate a presence of contaminants proximate the orbital weld;

connecting a purge restrictor to the second conduit section by a slip-fit engagement without a gasket, the purge restrictor comprising a sealing end and a reducing section, and wherein the slip-fit engagement forms a substantially airtight seal between the second conduit and the purge restrictor; and

flowing at least a portion of the purge gas from the second conduit into a purge restrictor, the purge restrictor comprising a sealing end and a reducing section, the sealing end being connected to the second section, the reducing section having a smaller width than that of the sealing end.

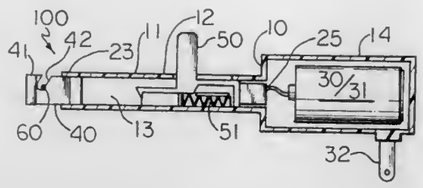
5,824,984

PORTABLE ELECTRIC WIRE CUTTER

John A. Morrow, 1556 Hensley Rd., Fort Mill, S.C. 29715

Filed Mar. 31, 1997, Ser. No. 829,084
Int. Cl.[6] B23K *11/22*
U.S. Cl. 219—68 **15 Claims**

1. A portable electric wire cutter device comprising a housing; a pair of spaced apart electrodes mounted with the housing; a source of electric current, for communication with the electrodes; a wire-guiding member, which can control or guide wire to be in proximity or contact with the electrodes; and a trigger mechanism, which can draw a wire within control of the wire-guiding member to electrical contact with the electrodes and activate a flow of electrical current from the source of electrical current to and from the electrodes, through a length of the wire in the electrical contact with the electrodes such that the wire can be cut by the electrical current.

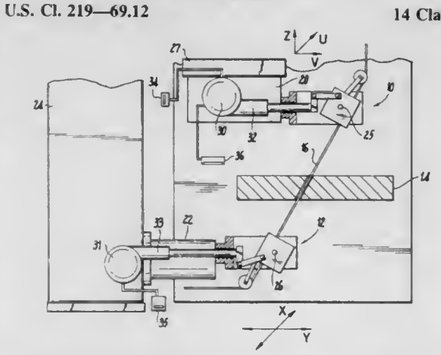


5,824,985

APPARATUS FOR TILTABLY GUIDING ELECTRODES IN ELECTRO EROSION MACHINE

Attilio Lodetti, Losone; Hansjürg Etter, Orselina, and Karl Tobler, Maggia, all of Switzerland, assignors to AGIE SA, Losone, Switzerland

Filed Feb. 16, 1996, Ser. No. 602,898
Claims priority, application Germany, Feb. 27, 1995, 195 06 775.4
Int. Cl.[6] B23H *7/10*
U.S. Cl. 219—69.12 **14 Claims**



1. An electroerosion apparatus having a machining zone, comprising:

an upper tiltable electrode guide assembly tiltable electrode guide assembly for guiding a machining electrode;

wherein the upper tiltable electrode guide assembly is independently tiltable about a first upper tilt axis and a second upper tilt axis, the first upper tilt axis is associated with a first upper tilt drive and the second upper tilt axis is associated with a second upper tilt drive;

wherein the lower tiltable electrode guide assembly is independently tiltable about a first lower tilt axis and a second tilt lower axis, the first lower tilt axis is associated with a first lower tilt drive and the second lower tilt axis is associated with a second lower tilt drive;

wherein each of the upper and lower tilt drives comprises a servo motor; and

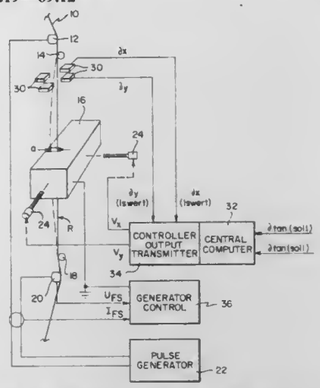
wherein each servo motor is disposed outside the machining zone and is mechanically connected with connecting means to a respective one of the upper tiltable electrode guide assembly and the lower tiltable electrode guide assembly.

5,824,986

METHOD AND APPARATUS FOR WIRE EROSION

René Derighetti, Losone, Switzerland, and Silvano Dresti, Canobbio, Italy, assignors to Agie SA, Losone, Switzerland

Filed Dec. 10, 1996, Ser. No. 762,840
Claims priority, application Germany, Dec. 19, 1995, 195 47 480.5
Int. Cl.[6] B23H *7/06*
U.S. Cl. 219—69.12 **13 Claims**



1. A method for electro-erosive machining with a wire electrode by making adjustments for an excursion of the wire electrode caused by the electro-erosive machining, comprising the steps of

continuously measuring the excursion of the wire electrode; and

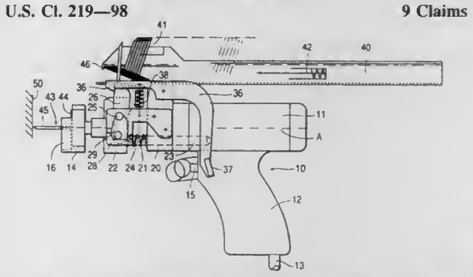
modifying in a closed loop at least one erosion parameter by imposing a transversial force on the wire electrode, such as to maintain the wire excursion (a) of the wire electrode constant during the machining operation.

5,824,987

WELDING STUD FEEDER

Josef Volk, Harthausen, Germany, assignor to HBS Bolzenschweiss-Systeme GmbH & Co. KG, Dachan, Germany

Filed Aug. 19, 1996, Ser. No. 700,063
Claims priority, application Germany, Aug. 17, 1995, 195 30 324.5
Int. Cl.[6] B23K *9/20*
U.S. Cl. 219—98 **9 Claims**



3. A device for feeding a stack of welding studs to a stud welding gun, said welding gun defining a welding axis and including a handle and a welding electrode defining a stud welding location, the device comprising:

a magazine adapted for stationary mounting on said gun and extending substantially parallel to said welding axis, said magazine holding said welding studs in an orientation different from the one said welding studs assume at said welding location, and

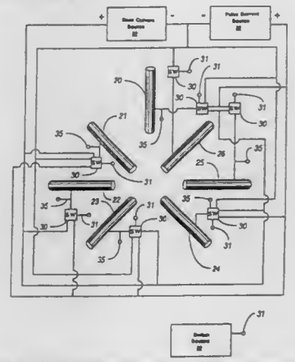
a linkage transferring a next one of said welding studs from said magazine to said welding location along a curved path, said linkage includes a slider supported for reciprocal movement in an operating stroke and a back stroke, and a first spring biasing said slider in said operating stroke, wherein said first spring is adapted to be resiliently loaded by pressing said welding gun against a workpiece.

5,824,988

REACTOR AND METHOD FOR THE TREATMENT OF PARTICULATE MATTER BY ELECTRICAL DISCHARGE

Jozef K. Tylko, 523 SE. 7th St., Minneapolis, Minn. 55414

Continuation of Ser. No. 701,034, Aug. 21, 1996, abandoned, which is a continuation of Ser. No. 488,078, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 248,701, May 24, 1994, abandoned, which is a continuation of Ser. No. 109,606, Aug. 19, 1993, Pat. No. 5,403,991. This application Aug. 1, 1997, Ser. No. 905,195
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.36 **1 Claim**



1. In a reactor for the treatment of particulate matter by electrical discharge within a conditioned treatment zone which comprises:

means for passing particulate matter to be treated through the treatment zone;

means for subjecting the whole of said treatment zone to a sequence of discrete electrical discharges in a time interval considerably less than the transit time of particulate matter through said treatment zone, said discrete electrical discharges subjecting means comprising means for selecting the sequence of discrete electrical discharges, a plurality of spaced electrode structures and means for selectively applying non-sinusoidal pulses between said electrode structure;

means for selectively establishing a base current between said electrode structures; and

means for detecting said base current and means responsive to said base current detecting means for selecting the electrode structures between which said pulses are applied.

5,824,989

METHOD TO CONTROL STARTING AND STOPPING A PLASMA ARC WELDING KEYHOLD

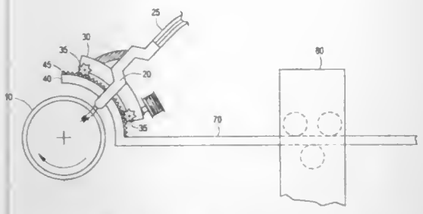
John M. Sanders, Jackson Township, Stark County, and Patrick M. Ryan, Washington Township, Stark County, both of Ohio, assignors to McDermott Technology, Inc., New Orleans, La.

Filed Sep. 19, 1997, Ser. No. 933,780
Int. Cl.[6] B23K *10/00*
U.S. Cl. 219—121.46 **2 Claims**

1. A method of plasma arc keyhole welding a workpiece which eliminates voids in a resulting weld at the start and finish of the weld, the method comprising:

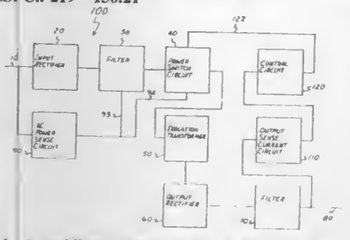
providing a workpiece which can be rotated;

rotating the workpiece at a fixed rate;



positioning a plasma arc welding torch adjacent the workpiece;
starting a keyhole weld with the plasma arc welding torch;
rotating the plasma arc welding torch at the same fixed rate as the workpiece such that the relative rotational motion between the welding torch and the workpiece is zero while starting the keyhole weld;
and stopping the rotation of the plasma torch while continuing the rotating of the workpiece to complete the keyhole weld.

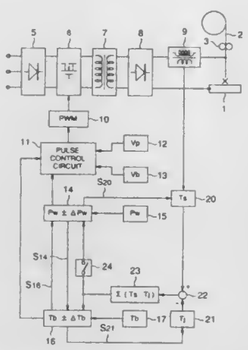
5,824,990
POWER SELECTION AND PROTECTION CIRCUIT FOR INVERTER POWER SUPPLY
Steven J. Geissler, and Michael D. Madsen, both of Appleton, Wis., assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Jan. 11, 1996, Ser. No. 584,679
Int. Cl.[6] B23K *9/10*
U.S. Cl. 219—130.21 **16 Claims**



1. A welding power source of the type that is capable of receiving an AC voltage signal at one of a plurality of voltage levels and automatically determines the one of the plurality of voltage levels and automatically configures itself in a higher voltage mode or a lower voltage mode, using at least one configuration switch, to receive the one of the plurality of voltage levels, the improvement comprising:
the configuration switch is a dual contactor output switch having a first and second contactor, wherein the first contactor is energized when the power source is in the higher voltage mode and the second contactor is energized when the power source is in the lower voltage mode, and further wherein the dual contactors are mechanically interlocked such that only one of the first and second contactors may be energized at any one time.

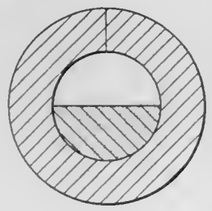
5,824,991
PULSED ARC WELDING METHOD AND APPARATUS
Tsuneo Mita, Hiratsuka; Tsuneo Shinada, Yokosuka, and Hitoshi Matsui, Toyota, all of Japan, assignors to Hitachi Seiko Ltd., Ebina, and Toyota Jidosha Kabushiki Kaishi, Toyota, both of Japan
Filed Nov. 14, 1996, Ser. No. 748,924
Claims priority, application Japan, Nov. 14, 1995, 7-295644
Int. Cl.[6] B23K *9/09*
U.S. Cl. 219—130.51 **13 Claims**

7. A pulsed arc welding apparatus for welding by supplying a pulse current and a base current alternately across a consumable electrode and a base metal, comprising:
short circuit detecting means for detecting a time during which a short circuit produced by melting of said consumable electrode is generated;



comparison means for comparing one of an integrated value and a mean value of a short circuit time detected by the short circuit detecting means with a target value; and
control means for controlling at least one of a supply time of said pulse current and a supply time of said base current in accordance with a result of the comparison by said comparison means.

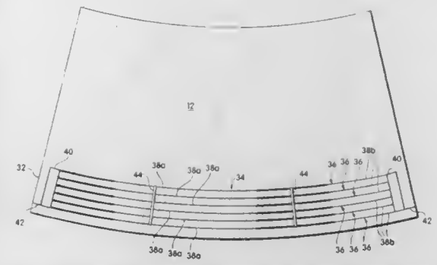
5,824,992
METAL-CORE WELD WIRE WITH REDUCED CORE FILL PERCENTAGE
Sundaram Nagarajan, and Roger A. Daemen, both of Troy, Ohio, assignors to Illinois Tool Works Inc., Glenview, Ill.
Filed Jun. 11, 1996, Ser. No. 665,000
Int. Cl.[6] B23K *35/22*
U.S. Cl. 219—145.22 **19 Claims**



1. A metal-core weld wire for producing weld deposits with improved impact strength properties, the metal-core wire comprising:
a steel sheath with a core;
a core composition disposed in the core of the steel sheath, the core composition between approximately 0.001–9.0% total weight of the metal-core wire,
wherein the core composition includes iron powder in an amount that provides an oxygen content less than approximately 600 ppm in the metal-core wire.

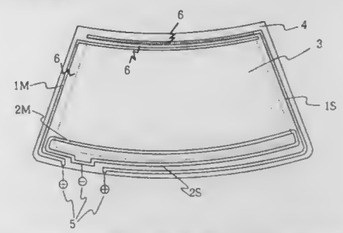
5,824,993
ARRANGEMENT FOR HEATING AN AUTOMOBILE GLAZING UNIT
Michael J. Chrysochoos, Toledo, Ohio, and Adrian G. Vanoostveen, Fairfield Glade, Tenn., assignors to Ford Motor Company, Dearborn, Mich.
Filed May 4, 1995, Ser. No. 435,026
Int. Cl.[6] B60L *1/02*
U.S. Cl. 219—203 **10 Claims**

1. An arrangement comprising
a glazing unit having a lower section



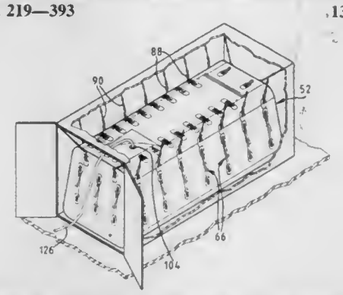
an electrically resistant grid pattern in thermal contact with an area of the lower section of the glazing unit, the grid pattern having a plurality of horizontally spaced resistance heating conductors;
bus bars disposed along and electrically connecting opposite edges of each of the heating conductors with the bus bars being connected to a power source to provide current flow through the bus bars and the heating conductors; and
a set of vertically spaced shorting bars electrically intersecting at least two of the heating conductors at respective points having equal voltage potentials and having an absence of current flow through the vertically spaced shorting bars upon the power source providing current flow through the bus bars and the heating conductors, each vertically spaced shorting bar having an insignificant resistivity as compared to the heating conductors such that insignificant heat is generated upon current flow through each shorting bar as compared to heat generated by each heating conductor.

5,824,994
ELECTRICALLY HEATED TRANSPARENCY WITH MULTIPLE PARALLEL AND LOOPED BUS BAR ELEMENTS
Kazuyoshi Noda; Katsuaki Aikawa, and Toshihiko Saito, all of Aiko-gun, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan
Filed Jun. 13, 1996, Ser. No. 661,319
Claims priority, application Japan, Jun. 15, 1995, 7-149061
Int. Cl.[6] H05B *3/84*
U.S. Cl. 219—203 **9 Claims**



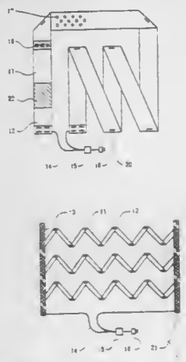
1. An electrically heated transparency which comprises a glass plate, a pair of bus bars provided at upper and lower sides of the glass plate and a transparent electric conductive film disposed on a surface of the glass plate so as to connect the pair of bus bars, wherein the upper side bus bar comprises a plurality of upper bus bar elements respectively extended from current feeding portions to free ends, said free ends being located near opposite positions in an upper side portion of the glass plate; wherein said upper bus bar elements have overlapping substantially parallel connecting portions electrically connecting the upper side bus bar to the transparent electric conductive film, said parallel connecting portions opposing each other with a space therebetween.

5,824,995
APPARATUS FOR USE IN THE TRANSPORTATION OF FLUID MATERIALS OR PARTICULATE MATTER
John Richard Wise, Norfolk, United Kingdom, assignor to Crestbury Limited, Norfolk, United Kingdom
Filed Jul. 31, 1996, Ser. No. 688,766
Int. Cl.[6] H05B *3/00;* **B60L** *1/02;* **B65D** *33/02;81/18*
U.S. Cl. 219—393 **13 Claims**



1. Apparatus for use in the transportation of fluid materials or particulate matter in a container for use with container handling equipment, said apparatus comprising body means removably fittable in such a container for defining a volume for containing a fluid material or particulate matter when fitted in such a container, said body means being provided with adjustable means for selectively varying said volume, wherein said body means comprises a base portion and opposed end walls and opposed side walls extending upwardly from said base portion, wherein said adjusting means is operable for varying the upward extent of at least said side walls, and wherein said adjusting means comprises respective adjustable strap means fitted to at least said side walls.

5,824,996
ELECTROCONDUCTIVE TEXTILE HEATING ELEMENT AND METHOD OF MANUFACTURE
Arkady Kochman, Mt. Prospect, and Arthur Gurevich, Wilmette, both of Ill., assignors to Thermosoft International Corp, Wilmette, Ill.
Filed May 13, 1997, Ser. No. 855,595
Int. Cl.[6] H05B *3/34;* **H01C** *3/06*
U.S. Cl. 219—529 **56 Claims**



1. A heating element comprising:
electrically conductive nonmetallic yarns, including at least carbon fibers, assembled into a soft material of continuous longitudinal shape during textile fabrication; said soft material is cut to a predetermined length and laid out into a predetermined pattern;
a conductive means for introducing an electrical current to said soft material;

an insulating means for insulating said electrically conductive soft material with at least one layer of nonconductive means; and

conditioned local spots for providing diversity and control of electrical resistance in selected areas of said soft material.

5,824,997

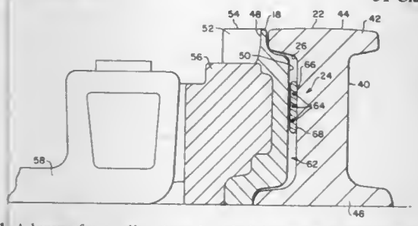
RAILROAD TRACK SWITCH HEATER

David L. Reichle, Littleton, Colo., and William P. Washington, Irving, Tex., assignors to Fastrax Industries, Inc., Englewood, Colo.

Filed Aug. 5, 1996, Ser. No. 691,954

Int. Cl.[6] H05B *3/06*

U.S. Cl. 219—537 **31 Claims**



1. A heater for a railroad track switch including a first stationary rail having a gauge side and a switching rail having an opposite side, said switching rail being moveable into an engaged position relative to said stationary rail wherein a portion of said opposite side of said switching rail closely abuts a portion of said gauge side of said stationary rail, to form a recess defining a gap at an interface between said portions, said heater comprising:

narrow heater element means disposed on said gauge side of said stationary rail including an elongate, rigid housing formed from metal having a substantially flat, conductive heat transfer surface for conductively transferring heat from said heater element means to said stationary rail, said heat transfer surface having a length of at least about 6 feet aligned with a longitudinal axis of said stationary rail and a vertical height of no less than about 0.5 inches, said heater element means further having a narrow thickness, defined relative to an axis transverse to said heat transfer surface, or no more than about 0.4 inches; and

bracket means for engaging said heater element means and securing said heater element means to said gauge side of said stationary rail, said bracket means adapted for removably engaging said stationary rail;

wherein said narrow heater element means is disposed in said gap of said interface between said stationary rail and said switching rail to directly heat said gauge side of said stationary rail via said substantially flat, conductive heat transfer surface for improved heat transfer and reliability.

5,824,998

JOINING OR WELDING OF METAL OBJECTS BY A PULSED MAGNETIC FORCE

Yuri Livshiz, Ariel, and Oren Gafri, Rishon Le-Zion, both of Israel, assignors to Pulsar Welding Ltd., Rishon-le-Zion, Israel

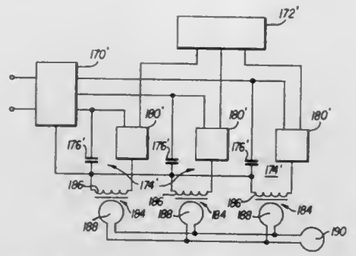
Filed Dec. 20, 1995, Ser. No. 575,321

Int. Cl.[6] H05B *6/06*

U.S. Cl. 219—617 **12 Claims**

1. A method of joining or welding at least a portion of a first metal workpiece to at least a portion of one or more second metal workpieces, comprising:

(a) bringing the two metal workpieces into proximity to one another such that a first surface or a portion thereof in a first of the two workpieces which is to be joined or welded to a second surface or portion thereof in a second of the two workpieces, is opposite said second surface or portion;



(b) forcing at least a portion of the first workpiece which comprises said first surface or said portion, towards the second workpiece by means of a pulsed magnetic force induced by passing a current pulse through a coil, the force being such so as to cause a portion of the first workpiece to impact onto said second workpiece with an initial kinetic energy of the first workpiece prior to impact which is equal to or larger than the combined plastic deformation energy of the first workpiece, and elastic deformation energy of the second workpiece after the impact; whereby the two workpieces become joined or welded to one another.

5,824,999

MICROWAVE LEAKAGE-PREVENTING DEVICE FOR A MICROWAVE OVEN

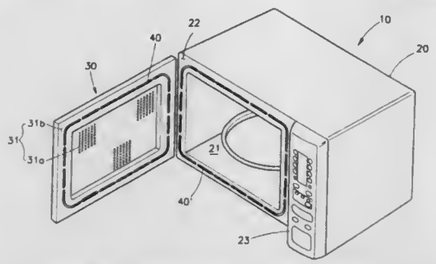
Chul Kim; Yong-Woon Han; Han-Jun Sung, and Seoog-Deok Jang, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Feb. 21, 1997, Ser. No. 804,079

Claims priority, application Rep. of Korea, Feb. 23, 1996, 1996-4368; Feb. 23, 1996, 1996-4369; Feb. 23, 1996, 1996-4370; Oct. 5, 1996, 1996-46080

Int. Cl.[6] H05B *6/76*

U.S. Cl. 219—74.2 **16 Claims**



1. A microwave oven including a cooking chamber to which cooking microwaves are emitted, the cooking chamber having a front panel defining a multi-sided opening, and a door for opening or closing said opening, said door including a shielding panel made of a material through which microwaves cannot pass, said shielding panel having a contact section disposed opposite an opposing portion of said front panel when said door is closed and forming a gap therewith, said gap defining a plane, and a microwave shield extending around all sides of said opening to prevent microwaves from leaking through said gap, said shield comprising a row of spaced-apart slits formed in at least one of said contact section and said opposing portion of said front panel, said slits lying in a closed loop surrounding said opening, each slit being elongated in a direction of said closed loop.

5,825,000

WAVE GUIDE SYSTEM OF A MICROWAVE OVEN

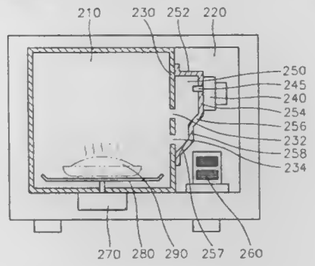
Woo-Keum Jun, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

Filed Aug. 29, 1997, Ser. No. 921,244

Claims priority, application Rep. of Korea, Aug. 31, 1996, 96-37694

Int. Cl.[6] H05B *6/70*

U.S. Cl. 219—746 **8 Claims**



1. A microwave oven comprising:

a cavity in which food to be heated is placed;

a control room in which a magnetron for generating microwaves is provided;

a partition wall for separating the cavity from the control room, said partition wall having first and second microwave feed openings for feeding the microwaves to the food, wherein the first and second microwave feed openings interfere with the microwaves; and

a wave guide provided in the control room and attached to the partition wall where the first and second microwave feed openings are formed, said wave guide having a horizontal upper wall, a side wall to which the magnetron is attached, and a lower wall having a first inclined portion connected to the side wall, for reflecting a first part of the microwaves, a second inclined portion connected to the partition wall, for reflecting a second part of the microwaves, and a vertical portion provided between the first and the second inclined portions,

wherein a central line of the first microwave feed opening horizontally coincides with the border line of the side wall and the first inclined portion, and a central line of the second microwave feed opening horizontally coincides with the border line of the vertical portion and the second inclined portion, and an interference of the first and second parts of the microwaves is occurs in the cavity.

5,825,001

FUNCTION CALCULATOR WITH GRAPHIC CHART FACILITY

Toshiro Oba, and Kawawaki Fumiaki, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 31, 1996, Ser. No. 742,088

Claims priority, application Japan, Dec. 22, 1995, 7-335482

U.S. Cl. 235—85 R **3 Claims**

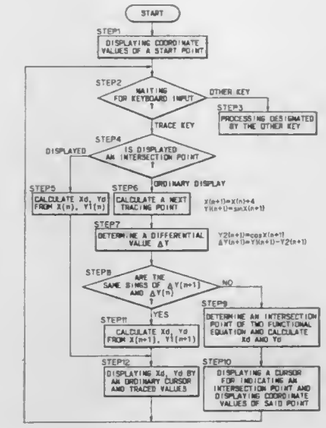
1. A method of tracing an input functional equation on a functional calculator with a graph tracing facility, comprising steps of:

tracing an input functional equation;

determining traced values;

displaying a graph of the functional equation based on the input functional equation and the traced values; and

indicating a traced point by a cursor on the graph and numerically indicating the traced values, wherein a discrete interval of coordinates of each traced point numerically indicated is a finer resolution than a discrete interval of coordinates of each traced point indicated by the cursor.



5,825,002

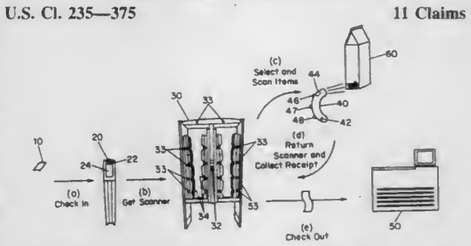
DEVICE AND METHOD FOR SECURE DATA UPDATES IN A SELF-CHECKOUT SYSTEM

Thomas Roslak, Eastport, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Sep. 5, 1996, Ser. No. 706,579

Int. Cl.[6] G06F *17/00;15/00;7/10*

U.S. Cl. 235—375 **11 Claims**



1. A method for updating a customer data file stored in a self-checkout central processing system with a session data record collected with one of a plurality of portable data collecting terminals, each of said terminals having a unique assigned identifier, said method comprising the steps of:

a) returning the portable data collecting terminal to a terminal receiver;

b) communicating the assigned identifier of the portable data collecting terminal to the self-checkout central processing system;

c) entering a customer authorization code on a data entry device coupled to the self-checkout central processing system after step (a);

d) communicating the customer authorization code entered in step (c) to the self-checkout central processing system;

e) confirming that the customer authorization code corresponds to the assigned identifier of the portable data collecting terminal; and

f) updating customer data file with the session data record collected with the portable data collecting terminal if the customer code corresponds to the assigned identifier of the portable data collecting terminal.

5,825,003

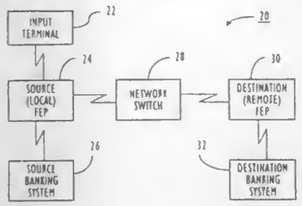
CUSTOMER-DIRECTED, AUTOMATED PROCESS FOR TRANSFERRING FUNDS BETWEEN ACCOUNTS USING A HOLDING ACCOUNT AND LOCAL PROCESSING

Horton Jennings, Chicago; Nigel Pinnell, Highland Park, both of Ill.; Khanh Do, Rancho Palos Verdes, Calif.; Virendrakumar Shah, La Palma, Calif.; Marjorie Profumo, Santa Monica, Calif.; John Downing, Old Windsor, England; Neil Goodhaud, Bracknell, England; Marion Maino, Southold, and Michael H. Thompson, Centereach, both of N.Y., assignors to Citicorp Development Center, Los Angeles, Calif.

Continuation-in-part of Ser. No. 505,886, Jul. 24, 1995, Pat. No. 5,659,165. This application Feb. 4, 1997, Ser. No. 795,355

Int. Cl.[6] G06F *17/60*

U.S. Cl. 235—379 20 Claims



1. A process for transferring funds from a source account at a first financial institution to a destination account at a second financial institution through a communications network, comprising the steps of:

receiving first data input with an input terminal and matching said first data with a record of a source account, the record being stored in a first host system and including an indication of a type of currency maintained in the source account;

receiving second data provided with the input terminal, the second data indicating a recipient account and verifying the validity of the recipient account;

receiving third data provided with the input terminal, the third data corresponding to a requested amount to be transferred from the source account to the destination account, the requested amount being input in a selected format corresponding to the type of currency maintained in one of the source account and the destination account; and

subsequent to receiving authorization to implement the requested transfer, depositing the funds to be transferred into a transfer holding account which is then processed through a clearing system local to said second financial institution and then depositing said funds from said holding account to said destination account in said second financial institution.

5,825,004

Patent Not Issued For This Number

5,825,005

METHOD OF ENCODING IDENTIFICATION CARDS AND VERIFYING SUCH ENCODED IDENTIFICATION CARDS, AND APPARATUS FOR CARRYING OUT SUCH A METHOD

Alfons Behnke, Georg Schudtstr. 3, Bad Homburg v.d.H., 61350, Germany

PCT No. PCT/EP94/00565, § 371 Date Jan. 4, 1996, § 102(e) Date Jan. 4, 1996, PCT Pub. No. WO95/02225, PCT Pub. Date Jan. 19, 1995

PCT Filed Feb. 26, 1994, Ser. No. 569,224

Claims priority, application Germany, Jul. 6, 1993, 43 22 445.5

Int. Cl.[6] G06K *3/00;9/00*

U.S. Cl. 235—380 12 Claims

1. A method of verifying the authenticity of a person using an identification card, comprising the steps of:



scanning and storing a plurality of fingerprints of a person by a fingerprint sensor;

selecting at least one of the fingerprints for use as a key code for storage on the identification card and registration in a storage unit;

selecting at least one of the remaining fingerprints for use as identification code and registration in the storage unit;

upon insertion of the identification card in a terminal, comparing in a first verification phase the key code with the registered fingerprint in the storage unit for initiation of an identification process when a positive match is determined by the terminal; and

reading a fingerprint of the person for comparison in a second verification phase with the registered identification code for authentication of the identification card when a positive match is determined between the fingerprint and the identification code.

5,825,006

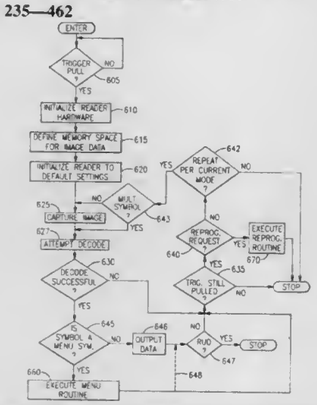
OPTICAL READER HAVING IMPROVED AUTODISCRIMINATION FEATURES

Andrew Longacre, Jr., Skaneateles; Robert M. Hussey; Michael A. Ehrhart, both of Liverpool, and Thomas J. Koziol, Camillus, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.

Continuation-in-part of Ser. No. 516,185, Aug. 18, 1995, abandoned, Ser. No. 504,643, Jul. 20, 1995, Pat. No. 5,773,806, Ser. No. 441,446, May 15, 1995, Pat. No. 5,591,956, and Ser. No. 371,037, Jan. 10, 1995, abandoned, said Ser. No. 516,185 is a continuation-in-part of Ser. No. 205,539, Mar. 4, 1994, Pat. No. 5,463,214. This application Sep. 3, 1996, Ser. No. 697,921

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 52 Claims



1. A method for autodiscriminating and decoding a bar code symbol that may be of any of a plurality of different types using an optical reading apparatus of the type having an image data memory and a parameter table which stores a plurality of parameters that specify the operating mode of said reading apparatus, said plurality of different types of bar code symbols including 1D linear bar code symbols, and 2D matrix bar code symbols, said 2D matrix bar code symbols having finder patterns that may be of any of a plurality of different types, comprising the steps of:

(a) scanning said bar code symbol with said reading apparatus to produce a set of image data therefrom;

(b) storing the set of image data resulting from said scanning step in said image data memory;

(c) sequentially attempting to decode said set of stored image data as a 1D bar code symbol in accordance with a plurality of different 1D decoding programs, and

1.) if one of said attempts to decode said symbol as a 1D symbol is successful, outputting decoded data and then discontinuing said attempt; or

2.) if said attempts to decode said symbol as a 1D symbol are not successful, discontinuing said attempts and proceeding to step (d) hereof;

(d) sequentially attempting to decode said symbol as a 2D symbol in accordance with a plurality of different 2D decoding programs, and

1.) if one of said attempts to decode said symbol as a 2D symbol is successful, outputting decoded data and then discontinuing said attempt; or

2.) if said attempts to decode said symbol as a 2D symbol are not successful, or if none of said types of finder patterns is found, discontinuing said attempts;

(e) wherein step (c) includes the steps of not attempting to decode said symbol in accordance with any one or more 1D decoding programs that are indicated to be disabled by said parameter table; and

(f) wherein step (d) includes the steps of not attempting to decode said symbol in accordance with any one or more 2D decoding programs that are indicated to be disabled by said parameter table.

5,825,007

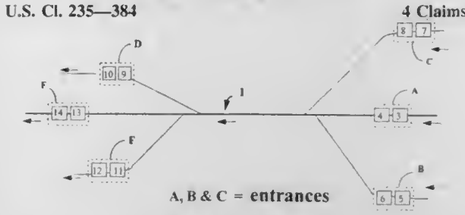
AUTOMATIC NON-COMPUTER NETWORK NO-STOP COLLECTION OF EXPRESSWAY TOLLS BY PREPAID CARDS AND METHOD: PAY ACCORDING TO CATEGORY OF VEHICLE AND THE DISTANCE IT TRAVELS

Mongkol Jesadanont, c/o Dr. Sukanya Jesadanont, Faculty of Pharmaceutical Sciences, Chulalongkorn University, Bangkok 10330 THX

Filed May 6, 1996, Ser. No. 643,635

Int. Cl.[6] G07B *15/02*

U.S. Cl. 235—384 4 Claims



1. An automatic non-computer network system for toll collection from a vehicle moving along an expressway, according to a category said vehicle belongs to and a distance said vehicle travels, using infrared signals as communicating means between devices at toll booths one at an entrance and another at an exit of said expressway and a device in said moving vehicle and as means to calculate toll and differentiate vehicle comprises:

a toll booth at each entrance;

a toll booth at each exit; and

an in-vehicle unit to be installed in said vehicle;

wherein first toll booth which is at each entrance of said expressway has a toll-collecting device comprises first support booth and first main booth located at fixed positions apart relatively on said expressway, and first central processing unit (CPU) installed at a relatively fixed position at said first main booth which connected to all other components of said toll booth for controlling functions of all components both at said support booth and at said main booth where

said first support booth of said entrance has a booth canopy and all its components positioned at fixed positions relatively at said booth canopy, comprising:

first red light bulb;

first green light bulb;

first voice alarm which can be actuated to give an audible signal, together with a blue light bulb connected thereto;

first camera;

first light-emitting diode (LED) which emits an infrared beam of switch on tailing-up type, where said infrared beam can detect the passage of all vehicles of any different heights equal to or greater than 0.50 meter passing through said first support booth;

second LED, which emits an infrared beam of switch on tailing-down type, positioned relatively rearward to said first LED emitting said infrared beam of switch on tailing-up type from the point said vehicle entering said first support booth, where said infrared beam can detect the passage of all vehicles of any different heights equal to or greater than 0.50 meter passing through said first support booth;

said first main booth of said entrance has a booth canopy and all its components positioned at fixed positions relatively at said booth canopy, comprising:

first comparator;

first infrared signal receiver connected thereto said first comparator to receive an infrared signal of a modulation frequency identifying said vehicle transmitted from a transmitter of said in-vehicle unit installed in said vehicle;

first transmitter, transmitting an infrared beam of a predetermined modulation frequency identifying each particular entrance out at an inclination angle towards said first support booth at all time by command from said first CPU;

third LED emitting an infrared beam of switch on tailing-up type, where said infrared beam can detect the passage of all vehicles of any different heights equal to or greater than 0.50 meter passing through said first main booth;

fourth LED emitting an infrared beam of switch on tailing-up type, where said infrared beam can detect the passage of all vehicles of any heights equal to or greater than 2.0 meters passing through said first main booth but not those of heights less than 2.0 meters;

fifth LED emitting an infrared beam of switch on tailing-up type, where said infrared beam can detect the passage of all vehicles of any heights equal to or greater than 2.80 meters but not those of heights less than 2.80 meters passing through said first main booth;

sixth LED, emitting an infrared beam of switch on tailing-down type, positioned relatively rearward to said three LEDs emitting said infrared beam of switch on tailing-up type from the point said vehicle entering said first main booth, where said infrared beam can detect the passage of all vehicles of any different heights equal to or greater than 0.50 meter passing through said first main booth;

second voice alarm, which can be actuated to give a siren audible signal, with an orange light bulb connected thereto; and

second camera.

5,825,008

APPARATUS AND METHOD FOR SETTING RADIAL BAR CODE DISC SENSOR GAIN IN A PHTOGRAPHIC CAMERA

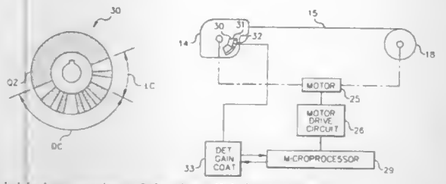
John Robert Siemer, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 8, 1996, Ser. No. 613,398

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 9 Claims

1. A method of setting gain of a radial bar code opto-sensor in a photographic camera, the radial bar code being on a rotatable data disk mounted in a film cassette inserted into the camera and comprising an extended reference segment and a data segment, the data segment having a fixed number of variable width bar code data elements, the method comprising the steps of:



initiating rotation of the data disk in the camera;

activating the opto-sensor at a first gain setting to generate an output signal representing transitions between the bar code data elements in the data segment;

counting the number of transitions detected in the data segment; and,

if the transition count is other than a count corresponding to the fixed number of bar code data elements, adjusting the opto-sensor gain one or more times to other gain settings and counting the transitions at each gain setting until the transition count corresponds to the fixed number of bar code data elements.

5,825,009

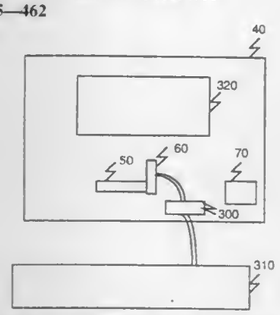
WIRELESS BAR CODE SCANNING SYSTEM

William M. Schmid, Auburn, and James R. Behrens, Macedon, both of N.Y., assignors to PSC, Inc., Webster, N.Y.

Filed Mar. 11, 1997, Ser. No. 815,116

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—462 **15 Claims**



1. A bar code scanning and decoding apparatus, comprising:

a bar code scanner, which includes,

scanning means for scanning a bar code symbol; and

transmitting means for transmitting a signal corresponding to the scanned bar code symbol via over-the-air transmission; and

a computer located separate from the bar code scanner, the computer including,

a keyboard;

a keyboard buffer connected to the keyboard for holding digital representations of data from the keyboard;

receiving means for receiving the signal sent from the bar code scanner; and

means for placing a digital representation of data from the keyboard in the keyboard buffer in accordance with the received signal.

5,825,010

BAR CODE SCANNER POSITIONING

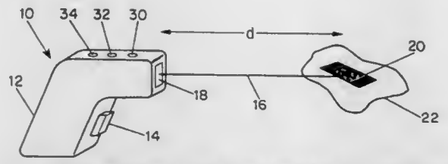
Hal Charych, East Setauket; Stephen Osterweil, Plainview, and Sundeep Kumar, East Setauket, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Nov. 21, 1994, Ser. No. 342,738

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **21 Claims**

1. A bar code reader for reading bar code symbols, each symbol including a plurality of encoded data characters, the reader having:



a scan head including a light beam generator for generating a scanning light beam to be directed toward a symbol to be read;

a light detector for receiving reflected light from the symbol to produce electrical signals corresponding to data represented by the symbol; and

a dynamically varying relative position information indicator responsive to the electrical signals and arranged in use to dynamically provide a varying indication to a user during decoding of the relative suitability of a current position of the reader with respect to the symbol for optimal reading of the symbol.

5,825,011

HANDLE LIKE READING UNIT FOR USE IN CODE READING APPARATUS AND HAVING PLURAL LIGHT REFLECTORS AND DIRECT LIGHT SHIELDING PLATE

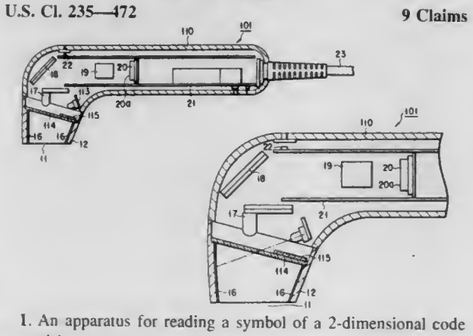
Masashi Suzuki, Mishima, and Takashi Itoh, Fuji, both of Japan, assignors to Kabushiki Kaisha TEC, Shizuoka, Japan

Filed Dec. 20, 1995, Ser. No. 575,895

Claims priority, application Japan, Dec. 26, 1994, 6-321898; Jan. 9, 1995, 7-000981; May 15, 1995, 7-115859

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **9 Claims**



1. An apparatus for reading a symbol of a 2-dimensional code comprising:

a light source for providing an illumination light;

an opening portion for guiding the illumination light to the symbol of the 2-dimensional code on an object;

a diffusion device for reflecting the illumination light from said light source at least one time, thereby making an intensity of the illumination light uniform, said diffusion device being provided on at least two portions of an inner wall of said opening portion, and including an uneven surface for diffusing and scattering the illumination light; and

a prevention device, having a diffusion plate member which is mounted together with a transparent member arranged at a predetermined position, said diffusion plate member being arranged in a direct line between said light source and said opening portion for preventing light emitted from said light source from directly reaching said opening portion and for thereby preventing the light emitted from said light source from directly shining on the symbol being read, and wherein said diffusion plate member is arranged in registration with only a portion of said transparent member and said opening portion.

5,825,012

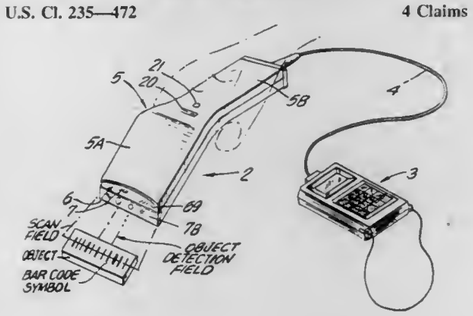
HAND-SUPPORTABLE LASER SCANNING BAR CODE SYMBOL READER WITH BAR CODE SYMBOL DETECTION ACTIVATED SYMBOL DECODER

George Rockstein, Audubon; David Wilz, Sr., Sewell; Robert Blake, Woodbury-Hts., and C. Harry Knowles, Moorestown, all of N.J., assignors to Metrologic Instruments, Inc, Blackwood, N.J.

Continuation of Ser. No. 293,493, Aug. 19, 1994, Pat. No. 5,525,789, which is a continuation of Ser. No. 761,123, Jan. 17, 1991, Pat. No. 5,340,971, which is a continuation-in-part of Ser. No. 583,421, Sep. 17, 1990, Pat. No. 5,260,553. This application May 30, 1996, Ser. No. 655,479

Int. Cl.[6] G06K *07/10*

U.S. Cl. 235—472 **4 Claims**



1. A hand-supportable laser scanning bar code symbol reader which comprises:

a hand-supportable housing having a light transmission aperture through which visible light can exit and enter into said hand-supportable housing;

scan data producing means in said hand-supportable housing, for producing scan data from an object located in at least a portion of a scan field definable external to said hand-supportable housing, said scan data producing means including

laser beam generation means for generating a visible laser beam,

laser beam scanning means for directing said visible laser beam through said light transmission aperture and into said scan field, and scanning said visible laser beam across said scan field and a bar code symbol on said object, and

light intensity detection means for detecting the intensity of laser light reflected off said bar code symbol, and automatically producing scan data indicative of said detected light intensity;

a bar code symbol detector in said hand-supportable housing, for processing produced scan data so as to detect the presence of the bar code symbol on said object and automatically generate a control activation signal indicative of the detection of said bar code symbol in said scan field;

an activatable symbol decoder in said hand-supportable housing, for processing, when activated, produced scan data so as to decode said detected bar code symbol on said object, and automatically produce symbol character data representative of said decoded bar code symbol for use by a host system in operable communication with said hand-supportable laser scanning bar code symbol reader; and

a system controller in said hand-supportable housing, for automatically activating said activatable symbol decoder in response to the generation of said control activation signal from said bar code symbol detector.

5,825,013

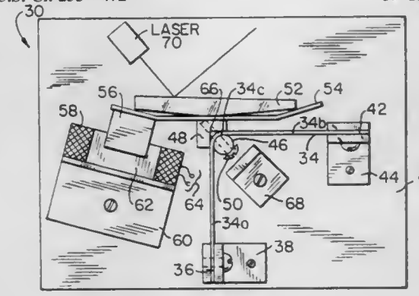
ELECTROMAGNETICALLY ACTIVATED SCANNER WITH SUSPENDED SCANNER COMPONENT

Paul Dvorkis, Stony Brook; Howard Shepard, Great Neck; Simon Bard; Joseph Katz, both of Stony Brook, and Edward Barkan, Setauket, all of N.Y., assignors to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation of Ser. No. 589,761, Jan. 22, 1996, abandoned, which is a division of Ser. No. 467,124, Jun. 6, 1995, Pat. No. 5,581,070, which is a continuation of Ser. No. 108,521, Jul. 19, 1993, abandoned, which is a division of Ser. No. 868,401, Apr. 14, 1992, Pat. No. 5,280,165, which is a division of Ser. No. 520,464, May 8, 1990, Pat. No. 5,168,149, which is a continuation-in-part of Ser. No. 428,770, Oct. 30, 1989, Pat. No. 5,099,110. This application Jun. 30, 1997, Ser. No. 885,513

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—472 **39 Claims**



1. In an apparatus for reading bar code symbols by scanning a light beam directed toward the symbols in a scan plane located exteriorly of the apparatus, and by collecting reflected light returning from the symbols, an arrangement comprising:

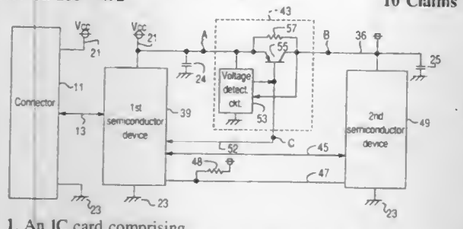
a) a support;

b) a scanner assembly including a holder;

c) a flexural assembly including at least first and second independently flexible parts lying in first and second respective planes and a third non-flexing part extending between said first and second flexible parts, said first and second planes intersecting at an axis, said flexural assembly supportably mounting the scanner assembly for oscillating movement generally about said axis, said first flexible part having opposite ends respectively operatively connected to a first support area of the support and a first holder region of the holder, said second flexible part having opposite ends respectively operatively connected to a second support area of the support and a second holder region of the holder, said first and second support areas being spaced apart from each other, said first and second holder regions being spaced apart from each other, and said first plane of said first flexible part which lies between said opposite ends of said first flexible part being in a non-intersecting, spaced-apart relationship with said second plane of said second flexible part which lies between said opposite ends of said second flexible part; and

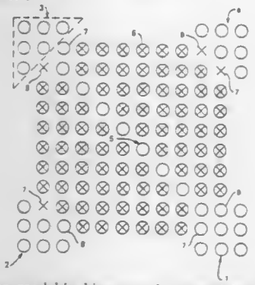
d) an electromagnetic drive for imparting a force to the scanner assembly, thereby resulting in movement of the scanner assembly in an oscillating manner, and thereby causing the light beam directed toward the indicia to scan over the symbols in a one-dimensional linear scan pattern between scan end positions in the scan plane.

5,825,014
IC CARD
Yoshikado Sanemitsu, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 19, 1996, Ser. No. 715,817
Claims priority, application Japan, May 28, 1996, 8-133764
Int. Cl.[6] G06K 19/06
U.S. Cl. 235—492 10 Claims



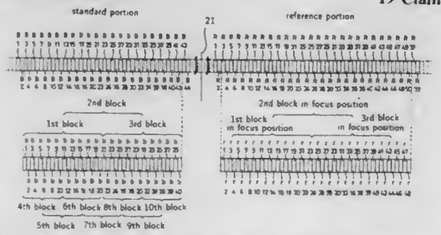
1. An IC card comprising
a connector for connecting said IC card to an information processing apparatus;
a first semiconductor circuit connected to said connector;
a second semiconductor circuit connected to said first semiconductor circuit through signal lines;
a power supply line for supplying a power voltage to said first and second semiconductor circuits which is supplied from said information processing apparatus through said connector when said IC card is connected to said information processing apparatus; and
switching means, connected between said second semiconductor circuit and said power supply line, which couples said second semiconductor circuit to said power supply line to apply the power voltage to said second semiconductor circuit when said switching means is turned on.

5,825,015
MACHINE READABLE BINARY CODES
John Paul Chan, Beverley, United Kingdom, assignor to Electronic Automation Limited, Hull, United Kingdom
PCT No. PCT/GB95/00936, § 371 Date Oct. 18, 1996, § 102(e) Date Oct. 18, 1996, PCT Pub. No. WO95/30206, PCT Pub. Date Nov. 9, 1995
PCT Filed Apr. 25, 1995, Ser. No. 722,083
Claims priority, application United Kingdom, Apr. 29, 1994, 9408626
Int. Cl.[6] G06K 19/06
U.S. Cl. 235—494 9 Claims



1. A machine readable binary code comprising a two dimensional matrix of data cells, said matrix having a plurality of sides, said binary code being arranged so that:
a sub-array of data cells is provided in the region of the point of intersection of each pair of adjacent sides;
each of which sub-arrays comprises a first group of data cells and a second group of data cells;
the configuration of which first group of data cells is the same for each sub-array;
each of which first groups of data cells comprises a distinctive pattern of "on" data cells which is recognisable by a reading device as denoting the presence of a corner;
the configuration of which second group of data cells is different for each sub-array;
each of which second groups of data cells is located between the corresponding said first group and the rest of the matrix and is recognizable by a reading device as uniquely identifying each corner of the matrix from the other corners.

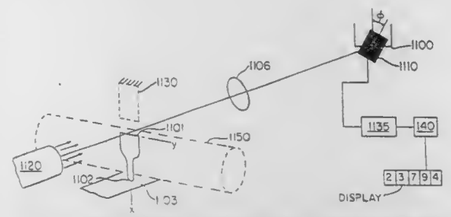
5,825,016
FOCUS DETECTION DEVICE AND ACCOMPANYING OPTICAL EQUIPMENT
Junko Nagahata, Osaka; Hiroshi Ueda, Habikino; Akio Kinba, Suita; Tsuyoshi Kisbimoto, Hannan, and Tatsuo Nakashima, Matsubara, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Mar. 6, 1996, Ser. No. 611,697
Claims priority, application Japan, Mar. 7, 1995, 7-047299
Int. Cl.[6] G01B 9/06
U.S. Cl. 250—201.8 19 Claims



1. A focus detection device, including an optical system which forms first and second images, and a sensor having photodetector elements which detect said first and second images, for detecting a focus condition of an objective lens based on a relative position between said first and second images, said device comprising:
a first focus detector which divides said first image into plural areas and detects a first relative distance between said first and second images;
a second focus detector which divides one of said areas into smaller areas and uses said smaller areas to detect a second relative distance between said first and second images; and
a calculator which calculates a final relative distance based on one of said first and second relative distances.

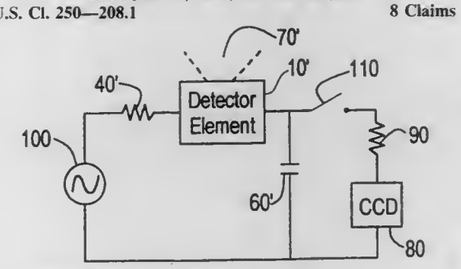
5,825,017
METHOD AND APPARATUS FOR DETERMINING DIMENSIONS
Timothy R. Pryor, Windsor, Canada, assignor to Sensor Adaptive Machines Inc., Windsor, Canada
Division of Ser. No. 71,012, Jun. 2, 1993, which is a continuation-in-part of Ser. No. 884,331, May 18, 1992, abandoned, and Ser. No. 770,728, Oct. 4, 1991, abandoned, which is a continuation of Ser. No. 577,086, Aug. 28, 1990, abandoned, which is a continuation of Ser. No. 346,284, May 1, 1989, abandoned, which is a continuation of Ser. No. 230,675, Aug. 9, 1988, abandoned, which is a continuation of Ser. No. 104,518, Sep. 28, 1987, abandoned, which is a continuation of Ser. No. 799,548, Nov. 18, 1985, abandoned, which is a continuation of Ser. No. 413,618, Sep. 1, 1982, abandoned, which is a division of Ser. No. 134,465, Mar. 27, 1980, Pat. No. 4,403,860, and a continuation-in-part of Ser. No. 848,937, Mar. 10, 1992, abandoned, which is a continuation of Ser. No. 509,295, Apr. 16, 1990, Pat. No. 5,112,131, which is a continuation of Ser. No. 42,527, Apr. 27, 1987, Pat. No. 5,012,574, which is a continuation of Ser. No. 767,374, Aug. 20, 1985, abandoned, which is a continuation of Ser. No. 560,259, Dec. 12, 1983, Pat. No. 4,559,684, which is a continuation of Ser. No. 238,702, Feb. 21, 1981, abandoned. This application Jun. 5, 1995, Ser. No. 463,098
Int. Cl.[6] G01B 11/00; B27G 23/00
U.S. Cl. 250—208.1 2 Claims

2. Apparatus for setting a tool in a correct position for work, comprising:



means for illuminating a working portion of a tool with light;
a detector array;
means for forming an image of said working portion on said detector array;
means for determining from the position of said image on said array the location of said working portion of said tool;
means for providing from said determination a signal indicative of a correct position of said tool; and
means responsive to said signal for setting said tool in said correct position.

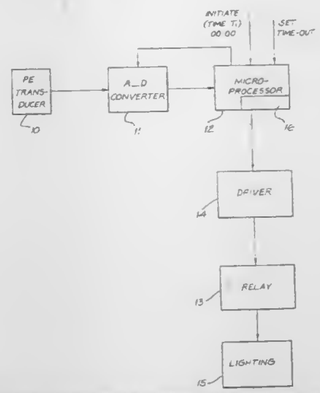
5,825,018
OPTICAL LOCK-IN DETECTION TECHNIQUE FOR COHERENT DETECTION APPLICATIONS
Charles A. DiMarzio, Cambridge, and Scott C. Lindberg, Brighton, both of Mass., assignors to Northeastern University, Boston, Mass.
Filed Jan. 11, 1996, Ser. No. 583,851
U.S. Cl. 250—208.1 8 Claims



1. An optical detector comprising:
a detector element responsive to an optical signal;
a modulation source in communication with and modulating said detector element with a modulating signal, wherein said detector element provides a DC output signal when a frequency of said optical signal is substantially equal to a frequency of said modulating signal, said detector element providing an AC output signal when said frequency of said optical signal is not substantially equal to said modulating frequency;
a Charge Coupled Device (CCD); and
a switch element, said switch element periodically supplying said output signal of said detector element to said CCD.

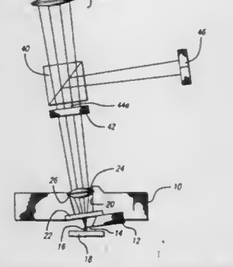
5,825,019
TIMING DEVICE CAPABLE OF SYNCHRONIZING INITIATION TIME
Peter C. Birrell, Darlinghurst, Australia, assignor to H.P.M. Industries Pty Limited, Australia
Filed Oct. 10, 1996, Ser. No. 728,840
Int. Cl.[6] H01J 40/14
U.S. Cl. 250—214 AL 11 Claims

1. An electronic timing device for use in connection with a light level sensor and which comprises means for providing a clock function and for setting an initiation time T_1 upon initial implementation of the device, means for entering and storing a signal time T_2 for generating a time-out signal, where $T_2=T_1+t_1$ and t_1 is



a predetermined time interval, means for generating the time-out signal at the signal time T_2 on expiration of the predetermined time interval t_1 following the initiation time T_1 in successive 24-hour periods of time, means for entering and storing an event time T_3 for a periodically occurring event responsive to a predetermined light level being detected by the light level sensor, and means for synchronizing the initiation time T_1 with respect to the entered event time T_3 upon detection of the predetermined light level.

5,825,020
ATOMIC FORCE MICROSCOPE FOR GENERATING A SMALL INCIDENT BEAM SPOT
Paul K. Hansma, Goleta; Tilman E. Schaffer, Santa Barbara, and Jason P. Cleveland, Ventura, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.
Filed Sep. 6, 1996, Ser. No. 709,349
Int. Cl.[6] G01B 5/28; H01J 3/14
U.S. Cl. 250—216 23 Claims



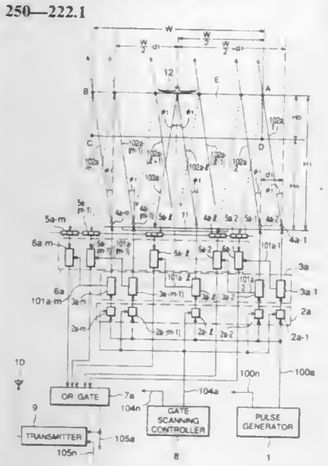
1. In an atomic force microscope including at least one cantilever mounted therein and an optical detector, the improvement, for generating a small incident beam spot, comprising:
an optical system including a light source and means for producing an incident beam, and at least one lens for focusing said incident beam; and
means for directing said focused incident beam onto said cantilever to reflect therefrom to said detector;
said optical system having a numerical aperture sufficient with the wavelength of light from said light source whereby said focused beam forms a spot on said cantilever having a size of 8 μm or less in at least one dimension.

5,825,021

APPARATUS FOR DETECTING THAT A FLYING OBJECT HAS PASSED A MONITORING SPACE

Toshimi Uemura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 26, 1997, Ser. No. 806,476
Claims priority, application Japan, Feb. 28, 1996, 8-040222
Int. Cl.[6] G01S *13/06*
U.S. Cl. 250—222.1 15 Claims



1. An apparatus for detecting that a flying object has passed a monitoring space, comprising:

plural light emitting device groups including plural light emitting devices which are arranged in the direction perpendicular to the center line of a runway and whose light emitting angles are different from one another;

a first controller for controlling said plural light emitting device groups so that light emitting devices having the same light emitting angle as each other included, respectively, in said plural light emitting device groups may emit light at the same time and light emitting devices having different light emitting angles from one another included, respectively, in said plural light emitting device groups may emit light one after another;

plural light receiving device groups including plural light receiving devices which are arranged, respectively, so as to correspond to said plural light emitting devices included, respectively, in said plural light emitting device groups and which receive the reflected lights by reflection of the lights emitted from said plural light emitting devices on a flying object passing a monitoring space set in advance;

a second controller for controlling said plural light receiving device groups so that light receiving devices which receive the reflected lights corresponding to the lights emitted from the light emitting devices having the same light emitting angle as each other may be operated at the same time and light receiving devices which receive the reflected lights corresponding to the lights emitted from the light emitting devices having different light emitting angles from one another may be operated one after another; and

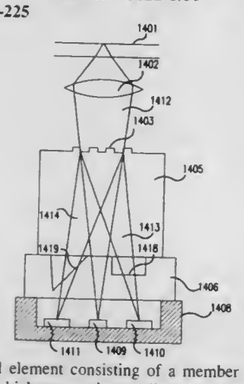
a detector for outputting a passing detection signal which shows that said flying object has passed said monitoring space when at least one of said plural light receiving devices has received the reflected light.

5,825,022

POLARIZER, INCLUDING THIN POLARIZING FILM, OPTICAL ELEMENT WITH POLARIZER, OPTICAL HEAD WITH POLARIZER AND METHODS AND APPARATUS FOR FORMING SAME

Taro Takekoshi; Masatoshi Yonekubo; Takashi Takeda, and Toshio Arimura, all of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 204,351, Mar. 11, 1994, abandoned.
This application Apr. 30, 1996, Ser. No. 637,033
Claims priority, application Japan, Jul. 14, 1992, 4-186885; Mar. 17, 1993, 5-057431; Mar. 23, 1993, 5-064348
Int. Cl.[6] G02B *5/30*
U.S. Cl. 250—225 23 Claims



1. An optical element consisting of a member having a single piece through which converging or diverging forward and returning light beams pass that is configured such that the optical length of said forward light beam is different from that of said returning light beam, said one-piece member including a transparent substrate having at least one inclined plane in a portion of said substrate and a thin polarizing film disposed on said at least one inclined plane;

said forward optical beam and said returning optical beam pass through said member formed in a single piece; and

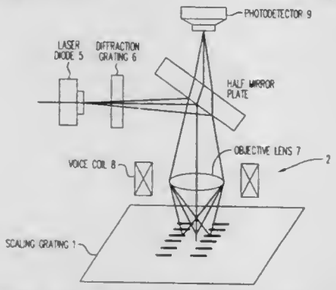
a refracting power associated with a region through which a forward optical beam passes is different from a refracting power associated with a region through which the returning optical beam passes.

5,825,023

AUTO FOCUS LASER ENCODER HAVING THREE LIGHT BEAMS AND A REFLECTIVE GRATING

Lilong Cai, Sai Kung, and Jihua Zhang, Clear Water Bay, both of Hong Kong, assignors to The Hong Kong University of Science & Technology, Hong Kong

Filed Mar. 26, 1997, Ser. No. 824,759
Int. Cl.[6] H01J *3/14*
U.S. Cl. 250—237 G 16 Claims



1. Apparatus for sensing the position and/or movement of an object, comprising; a laser source for generating laser light, means

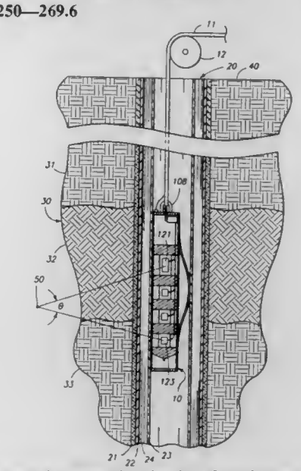
for dividing said laser light into three beams, a reflective grating adapted to be mounted on a said object the position and/or movement of which is to be measured, means for focussing said beams onto said grating, and means for detecting said beams reflected from said grating and for detecting any change in intensity of said reflected beams consequent upon movement of said grating.

5,825,024

MULTIDETECTOR PULSED-NEUTRON THROUGH-TUBING CASED-HOLE DENSITY MEASUREMENT SONDE

Ahmed Badruzzaman, Anaheim, Calif., assignor to Chevron U.S.A. Inc., San Francisco, Calif.

Filed Mar. 13, 1997, Ser. No. 816,413
Int. Cl.[6] G01V *5/10*
U.S. Cl. 250—269.6 30 Claims



1. Apparatus for measuring density of a subterranean formation from within a wellbore, comprising:

a non-chemical energy source configured to be activated in a pulsed manner so as to generate within said formation gamma rays below 700 thousand electron volts (KeV);

at least three detectors configured to detect said gamma rays and generate electrical signal in response thereto, said energy source and said detectors being essentially axially aligned;

shielding, said shielding disposed between said energy source and said detectors and between each of said detectors, said shielding configured to shield said detectors from gamma rays not generated within said formation as a result of said energy source being pulsed; and

a signal processor said signal processor configured to process said electrical signals to produce a measurement of said density of said formation.

5,825,025

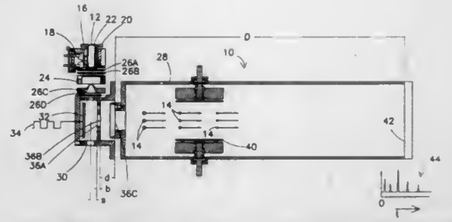
MINIATURIZED TIME-OF-FLIGHT MASS SPECTROMETER

Eric L. Kerley, Knoxville, Tenn., assignor to Comstock, Inc., Oak Ridge, Tenn.

Filed Nov. 8, 1996, Ser. No. 745,372
Int. Cl.[6] B01D *59/44;* H01J *49/00*
U.S. Cl. 250—287 10 Claims

1. A miniaturized time-of-flight mass spectrometer for analyzing a sample to determine a composition thereof, said miniaturized time-of-flight mass spectrometer comprising:

an ionizer for receiving the sample and within which the sample is ionized, said ionizer including an input lens having at least one electrode for collimating ions freed from the sample into an ion beam; and



a time-of-flight mass spectrometer oriented with respect to said ionizer at a ninety degree (90°) angle, said time-of-flight mass spectrometer including a flight tube, a repeller pulsed to push the ions through said flight tube toward a detector in a flight path oriented with respect to said ionizer at a ninety degree (90°) angle, a first grid spaced a distance s from said ion beam, a second grid spaced a distance b from said first grid, a third grid spaced a distance d from said second grid, and a detector spaced a distance D from said third grid, a time of flight T being determined by a time of flight equation:

$$T=\frac{\sqrt{2\cdot mass\cdot s}}{\sqrt{q\cdot E_s}}+\frac{\sqrt{2\cdot mass}\cdot b}{2\sqrt{q\cdot s\cdot E_s}}+$$

$$\frac{\sqrt{2\cdot mass}}{q\cdot E_d}\left(\sqrt{q\cdot s\cdot E_s}-\sqrt{q\cdot d\cdot E_d}\right)+$$

$$\frac{\sqrt{2\cdot mass}\cdot D}{2\sqrt{q\cdot s\cdot E_s+q\cdot d\cdot E_d}}.$$

wherein a second order correction is accomplished through a second order differential of said time of flight equation in order to determine said distance D, said second order differential being represented by a distance equation:

$$D=\frac{2(s\cdot E_s+d\cdot E_d)^{3/2}}{E_s^{3/2}\sqrt{s}}-\frac{b(s\cdot E_s+d\cdot E_d)^{3/2}}{(s\cdot E_s)^{3/2}}+$$

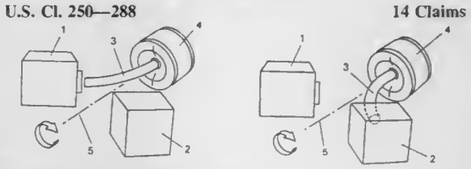
$$\frac{2\cdot s\cdot E_s}{E_d}-\frac{2(s\cdot E_s+d\cdot E_d)^{3/2}}{\sqrt{s\cdot E_s}\cdot E_d}.$$

5,825,026

INTRODUCTION OF IONS FROM ION SOURCES INTO MASS SPECTROMETERS

Gökhan Baykut, Bremen, Germany, assignor to Bruker-Franzen Analytik, GmbH, Bremen, Germany

Filed Jul. 17, 1997, Ser. No. 896,207
Claims priority, application Germany, Jul. 19, 1996, 196 29 134.8
Int. Cl.[6] H01J *49/00*
U.S. Cl. 250—288 14 Claims



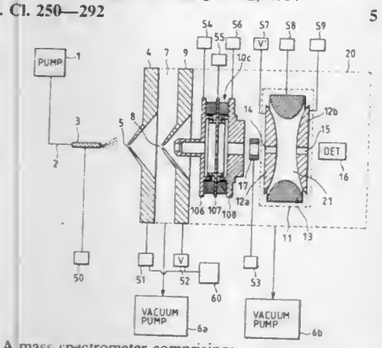
1. Mass spectrometer comprising

(a) a set of ion sources

(b) a set of, at least one, mass spectrometric analyzers

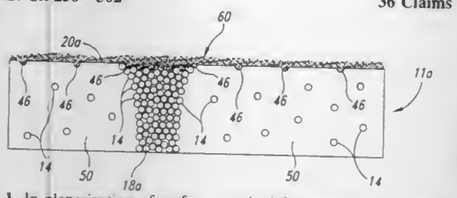
(c) an rf multipole ion guide movable in such a way, that ions from a selected ion source can be transferred into a selected mass spectrometric analyzer.

5,825,027
MASS SPECTROMETER
Yasuaki Takada, Kokubunji; Minoru Sakairi, Tokorozawa; Takayuki Nabeshima; Yukiko Hirabayashi, both of Kokubunji, and Hideaki Koizumi, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Mar. 31, 1997, Ser. No. 831,486
Claims priority, application Japan, Apr. 3, 1996, 8-081186
Int. Cl.[6] H01J *49/42;49/04*
U.S. Cl. 250—292 5 Claims



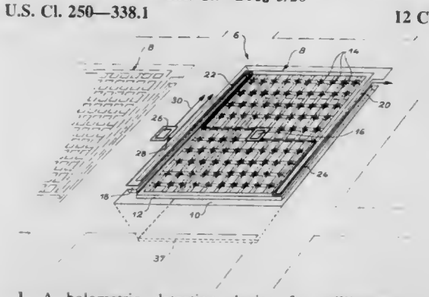
1. A mass spectrometer comprising:
ionization means for ionizing sample compounds to be analyzed mass spectro-scopically in an atmospheric pressure,
sample solution supply means for supplying a solution containing the sample compounds to the ionization means,
means for feeding the ions formed by the ionization means through an aperture disposed in an electrode into a vacuum region, and
ion trap type mass spectroscopic means for mass spectroscopically analyzing ions entered through the aperture into the vacuum region,
characterized by further comprising:
ion decelerating electric field forming means disposed between the electrode disposed with the aperture and electrode disposed with an ion entrance opening for feeding the ions into the ion trap type mass spectroscopic means for forming an electric field for decelerating the ions.

5,825,028
QUALITY CONTROL METHOD FOR DETECTING DEFECTIVE POLISHING PADS USED IN PLANARIZATION OF SEMICONDUCTOR WAFERS
Guy F. Hudson, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 576,781, Dec. 21, 1995, Pat. No. 5,650,619. This application Apr. 10, 1997, Ser. No. 833,917
Int. Cl.[6] G01T *1/161*
U.S. Cl. 250—302 36 Claims



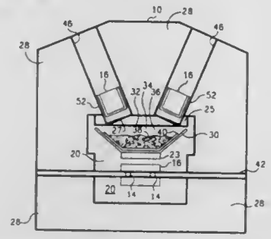
1. In planarization of wafer, a method for evaluating structural characteristics of a planarizing surface of a polishing pad having filler material distributed in a continuous phase material, comprising:
staining the planarizing surface of the pad with an indicating compound that contrasts the filler material from the continuous phase material;
denoting a distribution of stain across the planarizing surface of the polishing pad.

5,825,029
BOLOMETRIC DETECTION DEVICE FOR MILLIMETER AND SUB-MILLIMETER WAVES AND A METHOD FOR MANUFACTURING THIS DEVICE
Patrick Agnese, Voreppe, and Jean-Michel Sajer, Audenge, both of France, assignors to Commissariat a L'Energie Atomique, Paris, France
Filed Jun. 11, 1996, Ser. No. 660,598
Claims priority, application France, Jun. 15, 1995, 95 07151
Int. Cl.[6] G01J *5/20*
U.S. Cl. 250—338.1 12 Claims



1. A bolometric detection device for millimeter or sub-millimeter waves, the device including at least one bolometer formed on a support transparent to the waves to be detected, the device being characterized in that each bolometer includes:
a reflecting resonant cavity,
a grid thermally insulated from the support and positioned above the cavity,
an assembly of periodic patterns of electrical conductors which are formed on the grid and whose electrical impedance is matched to that of vacuum, and
a main thermometer integral with the grid.

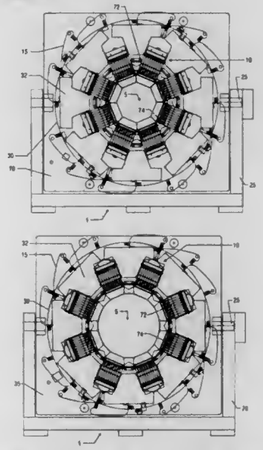
5,825,030
SHAPING NEUTRON ENERGIES TO ACHIEVE SENSITIVITY AND UNIFORMITY OF BULK MATERIAL ANALYSIS
Michael J. Hurwitz; Raymond J. Proctor, and Siaka Yusuf, all of San Diego, Calif., assignors to Gamma-Metrics, San Diego, Calif.
Filed Mar. 20, 1997, Ser. No. 822,075
Int. Cl.[6] G01N *23/222*
U.S. Cl. 250—358.1 23 Claims



1. A bulk material analyzer in which bulk material is received in an activation region between at least one neutron source and at least one gamma-ray detector, comprising
a container having surfaces defining the activation region; and
at least one neutron source disposed within the container on one side of the activation region for emitting neutrons that enter the activation region for bombarding bulk material within the activation region to cause gamma-rays to be emitted from said bombarded bulk material;
at least one gamma-ray detector disposed within the container on another side of the activation region opposite from the one side of the activation region for detecting gamma-rays emitted from said bombarded bulk material;

a neutron moderator disposed between the at least one neutron source and the activation region for reducing the velocity of said emitted neutrons such that the neutrons entering the activation region include thermal neutrons and faster neutrons; and
a neutron absorber disposed close to the one side of the activation region for reducing the proportion of thermal neutrons that enter the activation region from the one side of the activation region.

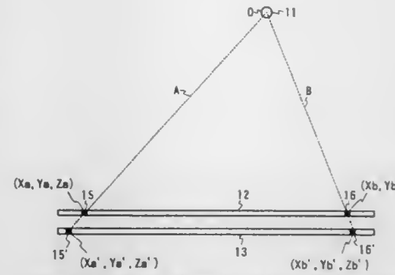
5,825,031
TOMOGRAPHIC PET CAMERA WITH ADJUSTABLE DIAMETER DETECTOR RING
Wai-Hoi Wong, and Jorge Uribe, both of Houston, Tex., assignors to Board of Regents The University of Texas System, Austin, Tex.
Filed Oct. 11, 1996, Ser. No. 730,036
Int. Cl.[6] G01T *1/164*
U.S. Cl. 250—363.03 17 Claims



1. A PET camera for imaging an object, the camera comprising:
a plurality of position sensitive radiation detectors capable of radial translation with respect to a central axis, said plurality of position sensitive radiation detectors arranged in arcuate relation to each other and adapted to surround said object to be imaged.

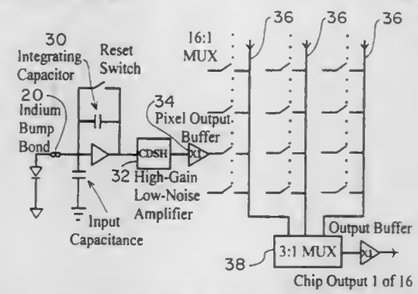
5,825,032
RADIOGRAPHIC APPARATUS AND IMAGE PROCESSING METHOD
Hideki Nonaka; Yutaka Endo, both of Utsunomiya; Noriyuki Kaifu, Hachioji; Isao Kobayashi, Atsugi; Toshio Kameshima, Sagamihara, and Takashi Ogura, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 16, 1997, Ser. No. 783,864
Claims priority, application Japan, Jan. 19, 1996, 8-026115
Int. Cl.[6] G03B *42/02*
U.S. Cl. 250—370.09 19 Claims

1. A radiographic apparatus comprising:
first and second radiation detection units for converting information of a radiation image into an electrical signal, said first and second radiation detection units being arranged one after the other along a radiation incidence direction; and
an image information combining unit for forming a combined image by combining two pieces of radiation image information respectively obtained by said first and second radiation detection units, said information combining unit forming the combined image on the basis of a coordinate difference between the two pieces of radiation image information



obtained by position information of a specific image in at least one of the two pieces of image information.

5,825,033
SIGNAL PROCESSING METHOD FOR GAMMA-RAY SEMICONDUCTOR SENSOR
Harrison H. Barrett; Daniel G. Marks; H. Bradford Barber, and Joshua D. Eskin, all of Tucson, Ariz., assignors to The Arizona Board of Regents on Behalf of the University of Arizona, Tucson, Ariz.
Filed Oct. 31, 1996, Ser. No. 742,252
Int. Cl.[6] G01T *1/24*
U.S. Cl. 250—370.1 17 Claims



1. A method of estimating spatial and energy parameters of gamma rays interacting with a semiconductor detector, wherein a slab of semiconductor material is positioned in a field of view of an aperture imaging system to receive gamma rays from a gamma-ray emitting source, said semiconductor material being capable of absorbing incident gamma rays; wherein said slab of semiconductor material is subjected to an electric field between an electrode attached to a side of the slab exposed to radiation and a plurality of electrodes attached to another side of the slab, whereby the slab is partitioned into a corresponding plurality of sensor-cell pixels individually capable of producing an electric current pulse when a gamma ray is absorbed within a pixel; wherein a monolithic multiplexer is coupled to said plurality of electrodes for the readout of electric pulses generated in each of said pixels as a result of gamma-ray absorption events; and wherein the current-pulse output of each pixel is integrated during each step of operation of said monolithic multiplexer by accumulation in a corresponding capacitor means that is discharged at predetermined times producing a voltage signal through a single-output channel of the multiplexer and that is then reset for charging during a next step of operation; said method comprising the following steps:
(a) comparing said voltage signal for each pixel to a corresponding predetermined threshold signal and identifying all pixels having an above-threshold voltage signal;
(b) identifying clusters of adjacent pixels having above-threshold voltage signals and selecting a pixel within each cluster as a central pixel for the cluster;
(c) summing all voltage signals of adjacent pixels within a predetermined range of said central pixel to produce a cumulative voltage signal for the cluster and assigning said cumulative voltage signal to the central pixel of the cluster; and

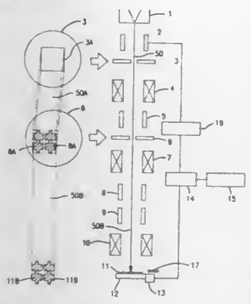
(d) processing the cumulative voltage signal generated in step (c) for each cluster as an output signal associated with a spatial coordinate of said corresponding central pixel for constructing an image of the gamma-ray emitting source.

5,825,034

METHOD OF COMPENSATION FOR ELECTRON BEAM DOSE

Takao Tamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 25, 1997, Ser. No. 917,293
Claims priority, application Japan, Aug. 23, 1996, 8-222239
Int. Cl.[6] H01J *37/304*
U.S. Cl. 250—397 **16 Claims**



1. A compensation device for compensating an electron beam dose to an object, said device being provided in an electron beam dose system utilizing an electron dose mask, said compensation device comprising:

a detector for detecting a current of an electron beam to which said object is exposed;

a memory for previously storing informations about relationships between an opening area and an optimum dose;

a computer being electrically connected to said detector for fetching a detected current of said electron beam from said detector and calculating an actual opening area of said electron dose mask on the basis of said fetched current of said electron beam, and said computer being also connected to said memory for fetching said informations about said relationships between said opening area and said optimum dose to decide an optimum dose on the basis of said calculated actual opening area of said electron dose mask; and

a controller being electrically connected to said computer for fetching said decided optimum dose and controlling a dose time of said electron beam dose in accordance with said fetched optimum dose.

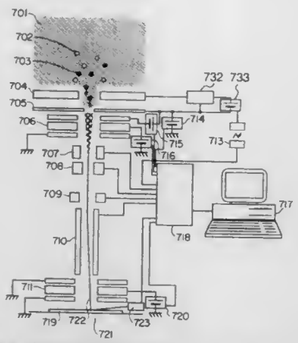
5,825,035

PROCESSING METHOD AND APPARATUS USING FOCUSED ION BEAM GENERATING MEANS

Michinobu Mizumura; Yuuichi Hamamura; Junzou Azuma, all of Yokohama; Akira Shimase; Takashi Kamimura, both of Yokosuka; Fumikazu Itoh, Fujisawa; Kaoru Umemura, Musashino; Yoshimi Kawanami, and Yuuichi Madokoro, both of Kokubunji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 595,993, Feb. 9, 1996, Pat. No. 5,583,344, which is a continuation of Ser. No. 207,860, Mar. 9, 1994, Pat. No. 5,504,340. This application Nov. 8, 1996, Ser. No. 745,657
Claims priority, application Japan, Mar. 10, 1993, 5-048949; Jun. 2, 1993, 5-131689; Dec. 18, 1993, 5-334602
Int. Cl.[6] H01J *37/317*
U.S. Cl. 250—423 R **16 Claims**

1. A focused ion beam processing method of processing a sample using a focused ion beam, comprising the steps of:



generating a plasma by resonating a microwave in a magnetic field in a plasma ion source; and

extracting an ion beam from the generated plasma through an ion extraction electrode into a sample chamber in which a sample is disposed;

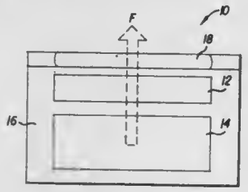
wherein the output and stoppage of the ion beam extracted from the generated plasma into the sample chamber is conducted by control of a voltage applied between a reference electrode disposed in a discharge space of the generated plasma and the ion extraction electrode.

5,825,036

ELECTROMAGNETIC WAVE RADIATION METHOD AND DEVICE

Eizo Ishikawa, 311-24,6 Chome Hinode, Itaco-cho Ibaragi Prefecture, Japan

Filed Jun. 27, 1996, Ser. No. 671,334
Claims priority, application Japan, Jan. 29, 1996, 8-045276
Int. Cl.[6] H01J *37/00*
U.S. Cl. 250—492.1 **17 Claims**



1. A weak electromagnetic wave radiating method, comprising the steps of:

applying a weak magnetic field having a 50×10^{-5} to $5{,}000\times10^{-3}$ gauss to a weak electromagnetic wave radiating material, to radiate a weak electromagnetic wave having a wavelength of 10 to 1×10^{-6} μm; and

applying the radiated weak electromagnetic wave to a subject, to activate energy of the subject.

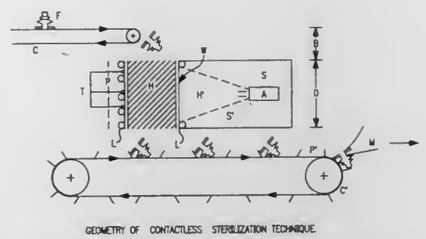
5,825,037

COMPACT, SELFSHIELDED ELECTRON BEAM PROCESSING TECHNIQUE FOR THREE DIMENSIONAL PRODUCTS

Samuel V. Nablo, Lexington, Mass., assignor to Electron Processing Systems, Inc., N. Billerica, Mass.

Filed May 30, 1996, Ser. No. 658,882
Int. Cl.[6] H01J *37/30*
U.S. Cl. 250—492.3 **13 Claims**

1. Method of irradiating a product with electrons, comprising the following steps:



GEOMETRY OF CONTACTLESS STERILIZATION TECHNIQUE

directing high-energy electrons into a treatment zone at atmospheric pressure lined with high atomic number material so that a high anisotropy of electron direction results in the treatment zone, and

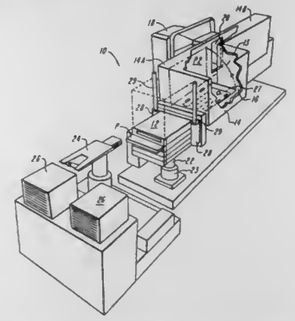
orienting said treatment zone so that said product can be passed through it in free-fall without any direct or occluding contact with said product, which contact would otherwise prevent electrons from reaching all surfaces of said product.

5,825,038

LARGE AREA UNIFORM ION BEAM FORMATION

Julian G. Blake, Beverly Farms; Kenneth H. Purser, Lexington; Adam A. Brailove, Gloucester, all of Mass.; Peter H. Rose, Conway, N.H., and Barbara J. Hughey, Lexington, Mass., assignors to Eaton Corporation, Cleveland, Ohio

Filed Nov. 26, 1996, Ser. No. 756,656
Int. Cl.[6] H01J *37/317*
U.S. Cl. 250—492.21 **55 Claims**



1. A ribbon beam generating ion implantation apparatus for treating a workpiece, the apparatus comprising:

an ion chamber for containing a plasma formed of ionized matter, the chamber having an opening,

a plasma electrode adapted for engaging the opening in the chamber and for shaping a stream of ions exiting the chamber, the plasma electrode having an elongated slot,

a diffuser that homogenizes the path of the stream of ions exiting the chamber such that a diffused ion stream is formed, the diffused ion stream having a substantially uniform current density along at least one axis, and

an electrode assembly for directing the diffused ion stream to treat the workpiece,

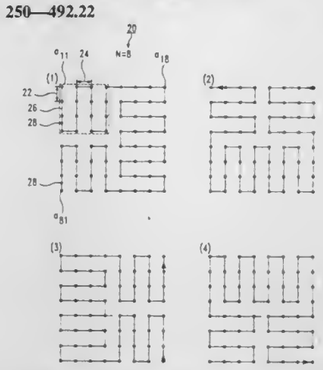
wherein the diffused ion stream treating the workpiece is in the shape of a ribbon beam.

5,825,039

DIGITALLY STEPPED DEFLECTION RASTER SYSTEM AND METHOD OF USE THEREOF

John George Hartley, Fishkill, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 27, 1996, Ser. No. 756,360
Int. Cl.[6] H01J *37/304*
U.S. Cl. 250—492.22 **22 Claims**



1. A digitally stepped deflection raster system for scanning a beam over an area of interest on a workpiece having predetermined horizontal and vertical dimensions in response to external data and to corresponding horizontal and vertical scanning signals corresponding to said external data, said system comprising:

(a) a system controller;

(b) beam generation means connected to said system controller;

(c) beam deflection means connected to said system controller;

(d) signal processing means responsive to said external data and to said corresponding horizontal and vertical scanning signals for reordering said external data to form a set of reordered data and for generating a set of non-continuous segmented signals; and

(e) means responsive to said segmented signals for arranging said non-continuous segmented signals into a set of segmented signals that span said area of interest and for passing said set of segmented signals to said system controller, whereby said beam scans said area of interest in a non-continuous segmented manner, in which said beam is scanned over a scanning range in at least two discontinuous segments.

5,825,040

BRIGHT BEAM METHOD FOR SUPER-RESOLUTION IN E-BEAM LITHOGRAPHY

Christie R. K. Marrian, Marbury, and Martin C. Peckerar, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

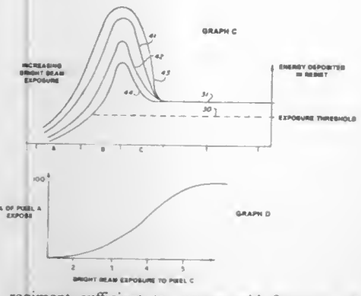
Filed Dec. 23, 1996, Ser. No. 774,063
Int. Cl.[6] H01J *37/302*
U.S. Cl. 250—492.22 **9 Claims**

1. A method of using an e-beam to expose a pattern onto an e-beam sensitive resist film, said method having the following steps:

(a) dividing said pattern into a plurality of pixel elements, wherein a first one of said pixel elements corresponds to a boundary of said pattern and a second one of said pixel elements is located adjacent to said first one of said pixel elements;

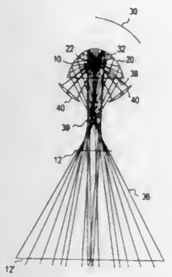
(b) positioning said e-beam at said second pixel element; and

(c) delivering a selected dose of electron beam radiation to said second pixel element in accordance with a predetermined



regiment sufficient to expose said first one of said pixel elements.

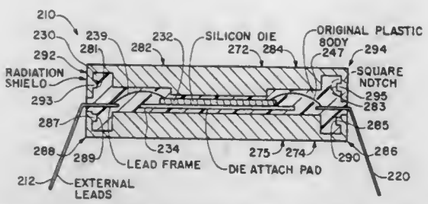
5,825,041
SYSTEM FOR OPTICAL CURING
Ronald E. Belek, Coventry, and Robert Burger, Branford, both of Conn., assignors to Loctite Corporation, Hartford, Conn.
Filed Mar. 14, 1997, Ser. No. 815,005
Int. Cl.[6] F21V *7/12*
U.S. Cl. 250—504 **20 Claims**



1. An apparatus for directing electromagnetic radiation onto a substrate comprising:
an electromagnetic radiation source for emitting electromagnetic radiation onto said substrate spaced therefrom;
a primary curved reflective surface defining an expanse and having a central axis extending from said expanse, said source being positioned along said central axis adjacent said primary curved reflective surface, said primary curved reflective surface being capable of reflecting a first portion of said electromagnetic radiation emanating from said source onto said substrate; and
at least one secondary reflecting member positioned substantially adjacent to said radiation source, said secondary reflecting member being positioned so as to redirect a second portion of said electromagnetic radiation emanating from said source onto said primary reflective surface so as to converge upon said central axis beyond said secondary reflector towards said substrate.

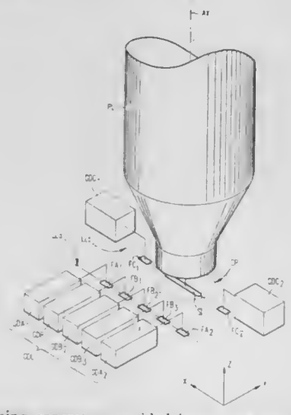
5,825,042
RADIATION SHIELDING OF PLASTIC INTEGRATED CIRCUITS
David J. Strobel, Poway, and David R. Czajkowski, La Jolla, both of Calif., assignors to Space Electronics, Inc., San Diego, Calif.
Continuation-in-part of Ser. No. 77,731, Jun. 18, 1993, abandoned. This application Jan. 13, 1995, Ser. No. 372,235
Int. Cl.[6] G21F *1/08*
U.S. Cl. 250—515.1 **24 Claims**

1. A method of making a shielded integrated circuit, comprising:



using a plastic integrated circuit having a plastic body with internal elements;
visualizing the location of the internal elements;
cutting away selectively certain portions of the plastic body while avoiding contacting the internal elements to create a plurality of cutout portions;
providing complementary shaped shielding members dimensioned suitably to fit within said cutout portions; and
affixing the complementary shaped shielding members within said cutout portions to shield the integrated circuit from radiation.

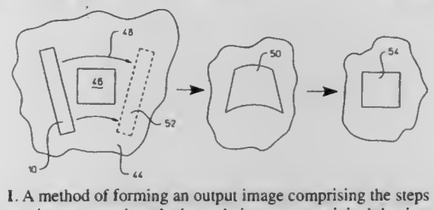
5,825,043
FOCUSING AND TILTING ADJUSTMENT SYSTEM FOR LITHOGRAPHY ALIGNER, MANUFACTURING APPARATUS OR INSPECTION APPARATUS
Kyoichi Suwa, Tokyo, Japan, assignor to Nikon Precision Inc., Belmont, Calif.
Filed Oct. 7, 1996, Ser. No. 727,695
Int. Cl.[6] G01J *1/20*; G01N *21/86*
U.S. Cl. 250—548 **23 Claims**



21. A focusing apparatus provided in an apparatus having an objective optical system to control focusing between a surface of a workpiece and the objective optical system, said focusing apparatus comprising:
(a) a first detection system having a detection area at a first position located outside a field of said objective optical system, said first detection system detecting a position of the surface of the workpiece in the focusing direction;
(b) a second detection system having a detection area at a second position located outside the field of said objective optical system and spaced apart from said first position, said second detection system detecting the position of the surface of the workpiece in the focusing direction;
(c) a third detection system having a detection area at a third position located outside the field of said objective optical system and spaced apart from each of said first and second positions, said third detection system detecting the position of the surface of the workpiece in the focusing direction;
(d) a calculator coupled to said first and second detection systems, and calculating a deviation between the first focus position detected by said first detection system and a target

focus position and for storing the second focus position detected by said second detection system at the time of detection made by said first detection system; and
(e) a controller coupled to said calculator and to said third detection system, and controlling focusing of the objective optical system on the surface of the workpiece on the basis of the calculated deviation, the stored second focus position and the third focus position detected by said third detection system when the area on the workpiece corresponding to the detection area of said first detection system is positioned in the field of said objective optical system by relative movement of the workpiece and the objective optical system.

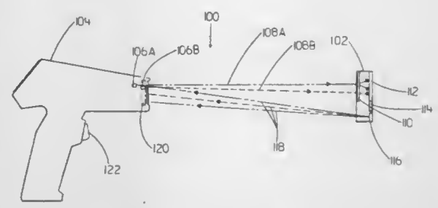
5,825,044
FREEHAND IMAGE SCANNING DEVICE WHICH COMPENSATES FOR NON-LINEAR COLOR MOVEMENT
Ross R. Allen, Belmont; David Beard, Palo Alto; Mark T. Smith, San Mateo, and Barclay J. Tullis, Palo Alto, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.
Division of Ser. No. 696,713, Aug. 14, 1996, Pat. No. 5,644,139, which is a division of Ser. No. 396,826, Mar. 2, 1995, Pat. No. 5,578,813. This application Feb. 25, 1997, Ser. No. 805,963
Int. Cl.[6] G06K *7/015*
U.S. Cl. 250—557 **20 Claims**



1. A method of forming an output image comprising the steps of:
moving a scanning device relative to an original having an image, said scanning device having an imaging means for detecting said image, moving said scanning device defining a scan path;
capturing a sequence of color image data formed as said imaging means moves along said scan path;
forming navigation information representative of travel of said scanning device along said scan path, said travel including curvilinear and rotational movement; and
forming an output image from said color image data, including removing image distortion artifacts arising from said curvilinear and rotational movement of said scanning device along said scan path, said removing image distortion artifacts being based upon said navigation information.

5,825,045
EXTENDED RANGE HIGHLY SELECTIVE LOW POWER CONSUMING DATA TAG AND INFORMATION DISPLAY SYSTEM
Steven E. Koenck; Phillip Miller, and George E. Hanson, all of Cedar Rapids, Iowa, assignors to Norand Corporation, Cedar Rapids, Iowa
Continuation of Ser. No. 503,569, Jul. 18, 1995, abandoned, which is a division of Ser. No. 184,636, Jan. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 836,024, Feb. 13, 1992, abandoned. This application Jul. 28, 1997, Ser. No. 901,389
Int. Cl.[6] G06K *7/10*
U.S. Cl. 250—566 **17 Claims**

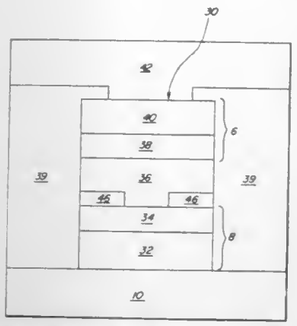
1. A data capture system capable of gathering data via activation of radio frequency tags, comprising:
(a) a radio frequency data tag, comprising



(i) a computer memory device capable of storing a data element,
(ii) a radio frequency transmitter capable of communicating the data element as a radio frequency signal,
(iii) a sensing device having a photosensitive surface, the photosensitive surface being located on said radio frequency data tag so as to be capable of sensing impingement of a light beam, said sensing device being capable of outputting an activation signal upon sensing impingement of a light beam on the photosensitive surface, and
(iv) a computerized processor capable of receiving the activation signal from said sensing device and capable of communication with said radio frequency transmitter and said computer memory device; and
(b) a data collection terminal, comprising
(i) a radio frequency receiver, attached to an antenna, capable of receiving the radio frequency signal transmitted from said radio frequency data tag,
(ii) a terminal computer memory device capable of storing a digital representation of the radio frequency signal received by said radio frequency receiver, and
(iii) a light beam generator capable of projecting a light beam of a size suitable for impinging only upon the photosensitive surface of a desired radio frequency data tag and not upon the photosensitive surface of an adjacent undesired radio frequency data tag;
wherein said radio frequency data tag is activated by the light beam and wherein said radio frequency data tag, upon activation by the light beam, transmits a data element via a different communications media, the radio frequency signal.

5,825,046
COMPOSITE MEMORY MATERIAL COMPRISING A MIXTURE OF PHASE-CHANGE MEMORY MATERIAL AND DIELECTRIC MATERIAL
Wolodymyr Czubatyj, Warren; Stanford R. Ovshinsky, Bloomfield Hills; David A. Strand, Bloomfield Township; Patrick Klersy, Lake Orion; Sergey Kostylev, Bloomfield Hills, and Boil Pashmakov, Troy, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.
Filed Oct. 28, 1996, Ser. No. 739,080
Int. Cl.[6] H01L *47/00*
U.S. Cl. 257—2 **14 Claims**

1. An electrically operated, directly overwritable single-cell memory element comprising:
a volume of memory material defining a single-cell memory element comprising a heterogeneous mixture of active phase-change material and inactive dielectric material; and
a pair of spacedly disposed contacts for supplying an electrical signal to said volume of memory material, said contacts



providing terminals for reading information stored in and writing information to said memory element.

5,825,047

OPTICAL SEMICONDUCTOR DEVICE

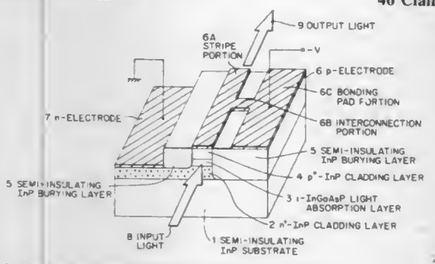
Akira Ajisawa; Tomoji Terakado; Masayuki Yamaguchi, and Keiro Komatsu, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 983,276, Nov. 30, 1992, abandoned, which is a continuation of Ser. No. 634,891, Dec. 27, 1990, abandoned. This application Sep. 16, 1994, Ser. No. 307,036

Claims priority, application Japan, Dec. 27, 1989, 1-340101; Mar. 13, 1990, 2-62981

Int. Cl.[6] H01L *21/20;21/205*

U.S. Cl. 257—12 **46 Claims**



1. An optical semiconductor device, comprising:

a stripe-mesa structure provided on a semi-insulating substrate, said stripe-mesa structure including a first cladding layer of a first conduction type, an undoped light absorption layer, a second cladding layer of a second conduction type, and a cap layer of said second conduction type;

semi-insulating burying layers for burying said stripe-mesa structure on both sides thereof; and

means for detecting photocurrent generated by light absorbed into said undoped light absorption layer, wherein

(a) said detecting means includes no more than two electrodes, a first one of said electrodes being connected to said cap layer, and the second one of said electrodes being connected to said first cladding layer exposed on said semi-insulating substrate,

(b) said first electrode includes a stripe-portion positioned on said cap layer, a bonding pad portion provided exclusively on one of the sides of said stripe-mesa structure, and an interconnection portion connecting said stripe-portion to said bonding pad portion, and

(c) said second electrode is provided exclusively on the other of the sides of said stripe-mesa structure;

whereby said optical semiconductor device has a response bandwidth of greater than 26 GHz.

5,825,048

SEMICONDUCTOR FUNCTIONAL DEVICE AND ELECTRONIC CIRCUIT PROVIDED WITH THE SAME

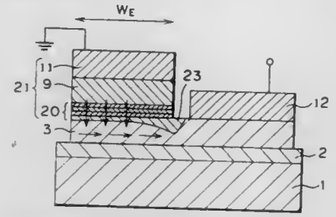
Kunihiro Arai, Isehara, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 667,722

Claims priority, application Japan, Jun. 21, 1995, 7-154675

Int. Cl.[6] H01L *29/06*

U.S. Cl. 257—25 **21 Claims**



1. A semiconductor functional device comprising:

a semi-insulating semiconductor substrate;

an undoped semiconductor barrier layer provided on said substrate;

a resonant tunneling structure provided on a main surface of said substrate, said resonant tunneling structure having:

a part of an n-type collector layer provided on said barrier layer;

an epitaxial multilayer structure provided on said part of said n-type collector, said epitaxial multilayer including a double barrier structure constituted of a plurality of barrier layers and at least one well layer inserted between any adjacent two of said plurality of barrier layers, and

an n-type emitter layer provided on said epitaxial multilayer structure;

an emitter electrode provided on said emitter layer; and

a collector electrode provided on the remaining part of said collector layer;

wherein for a given width of said emitter electrode, a thickness and an impurity concentration of said collector layer are selected such that said collector layer is pinched off, when a potential difference between said emitter layer and said collector layer established while electrons travel from said emitter electrode toward said collector electrode through said emitter layer, said epitaxial multilayer structure and said collector layer is equal to a valley voltage of I–V characteristics of said resonant tunneling structure.

5,825,049

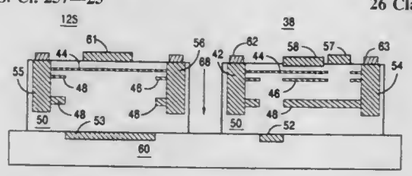
RESONANT TUNNELING DEVICE WITH TWO-DIMENSIONAL QUANTUM WELL EMITTER AND BASE LAYERS

Jerry A. Simmons, Sandia Park, N. Mex.; Marc E. Sherwin, Rockville, Md.; Timothy J. Drummond, Tijeras, N. Mex., and Mark V. Weckwerth, Pleasanton, Calif., assignors to Sandia Corporation, Albuquerque, N. Mex.

Filed Oct. 9, 1996, Ser. No. 728,003

Int. Cl.[6] H01L *29/06;31/0328;31/072;31/109*

U.S. Cl. 257—25 **26 Claims**



1. A double electron layer tunneling semiconductor device for two dimensional to two dimensional electron tunneling, said device comprising:

a) an emitter contact;

b) a collector contact;

c) a two dimensional quantum well emitter layer electrically contacting the emitter contact;

d) a two dimensional quantum well resonant tunneling layer;

e) a collector layer disposed opposite the resonant tunneling layer from the emitter layer, said collector layer electrically contacting the collector contact;

f) a first tunneling barrier layer disposed between the emitter layer and the resonant tunneling layer;

g) a second tunneling barrier layer disposed between the resonant tunneling layer and the collector layer;

h) a voltage drop layer between the resonant tunneling layer and the collector;

i) means for effectively preventing electrical contact between the emitter layer and the collector contact;

j) means for effectively preventing electrical contact between the collector and the emitter contact;

wherein the emitter layer, the resonant tunneling layer, the collector, the first and second barrier layers and the voltage drop layer permit resonant tunneling from the emitter to the resonant tunneling layer to the collector given a predetermined resonant voltage bias applied between the emitter contact and the collector contact.

5,825,050

THIN FILM TRANSISTOR HAVING TAPERED ACTIVE LAYER FORMED BY CONTROLLING DEFECT DENSITY AND PROCESS OF FABRICATION THEREOF

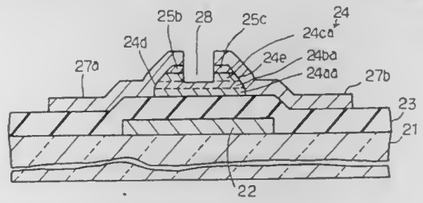
Katsunori Hirakawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 21, 1996, Ser. No. 651,149

Claims priority, application Japan, May 25, 1995, 7-149739

Int. Cl.[6] H01L *29/04*

U.S. Cl. 257—57 **13 Claims**



1. A thin film transistor comprising:

a gate electrode formed on an insulating layer;

a gate insulating layer covering said gate electrode;

a multiple-layer semiconductor structure having a central portion and shoulder portions downwardly declining from said central portion, and having at least a lower semiconductor layer formed on said gate insulating layer and an upper semiconductor layer formed over said lower semiconductor layer larger in defect density than said lower semiconductor layer, but otherwise identical to said lower semiconductor layer;

heavily doped semiconductor strips respectively held in contact with said shoulder portions; and

source and drain electrodes respectively held in contact with said heavily doped semiconductor strips.

5,825,051

OPTOELECTRONIC COMPONENT WITH CENTRAL HOLLOW

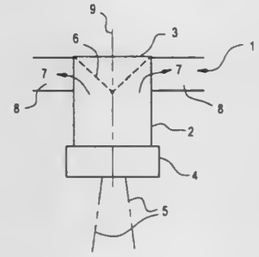
Karl-Heinz Bauer, Bad Neustadt, and Ulrich Brueggemann, Heustreu, both of Germany, assignors to Preh-Werke GmbH & Co. KG, Bad Neustadt/Saale, Germany

Filed Sep. 12, 1997, Ser. No. 928,504

Claims priority, application Germany, Oct. 12, 1996, 196 42 168.3

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—82 **4 Claims**



1. An optoelectronic component having luminescent beam-emitting characteristics comprising:

an elongated body having electrical connections, said body being transparent at a body exit thereof;

a luminescent beam generating means in the body for generating light for exiting from said body at said body exit;

wherein the component defines a central hollow at a top of the body, located at the transparent body exit along a longitudinal axis of the body for deflecting the light into a horizontal plane, whereby the central hollow slopingly extends toward all sides of the body.

5,825,052

SEMICONDUCTOR LIGHT EMMITTING DEVICE

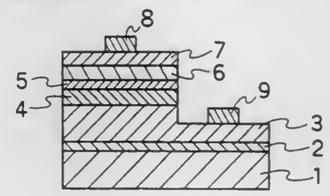
Yukio Shakuda, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Aug. 16, 1995, Ser. No. 515,569

Claims priority, application Japan, Aug. 26, 1994, 6-202476; Aug. 26, 1994, 6-202477

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—94 **8 Claims**



1. A semiconductor light emitting device comprising:

a substrate;

gallium nitride type compound semiconductor layers provided on the substrate, said semiconductor layers including at least an N-type layer and a P-type layer; a

wherein at least a light emitting layer of said gallium nitride compound semiconductor layers is composed of a compound semiconductor in which part of the nitrogen in the gallium nitride type compound semiconductor is replaced with phosphorous and/or arsenic,

wherein the gallium nitride type compound semiconductor layers laminated on said substrate have both N-type and P-type clad layers, and an active layer is composed of a material

which is provided between both the clad layers and which has a band gap energy smaller than that of both the clad layers, said active layer comprising a compound semiconductor in which part of the nitrogen in the gallium nitride type compound semiconductor is replaced with phosphorus and/or arsenic,

wherein said active layer comprises a compound semiconductor in which part of the gallium in the gallium nitride type compound semiconductor is replaced with In.

5,825,053

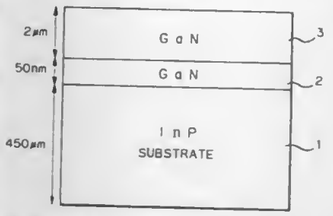
HETEROSTRUCTURE III-V NITRIDE SEMICONDUCTOR DEVICE INCLUDING INP SUBSTRATE

Akitaka Kimura; Haruo Sunakawa; Masaaki Nido, and Atsushi Yamaguchi, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Feb. 13, 1997, Ser. No. 799,828

Claims priority, application Japan, Feb. 14, 1996, 8-049632

U.S. Cl. 257—94 **3 Claims**



1. A heterostructure III–V nitride semiconductor device comprising:

an InP substrate having a surface having a sloped angle of 0° to 16° with respect to a (100) face of said InP substrate; and

at least one GaN layer formed on said InP substrate.

5,825,054

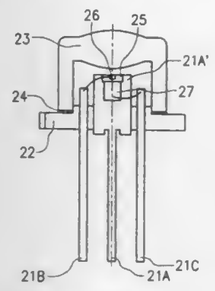
PLASTIC-MOLDED APPARATUS OF A SEMICONDUCTOR LASER

Büng-Jye Lee; Horng-Nign Chen, both of Hsinchu, and Jung-Tsung Hsu, Hsien, all of Taiwan, assignors to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Dec. 29, 1995, Ser. No. 581,246

Int. Cl.[6] H01L *33/00*

U.S. Cl. 257—98 **14 Claims**



1. A plastic-molded apparatus for a semiconductor laser, comprising:

a first lead having a broad end thereof serving as a mounting plate;

a second lead locating at one side of the first lead;

a third lead locating at other side of the first lead, the first lead, the second lead and the third lead being essentially planar;

a submount, disposed on a front end of the mounting plate, having a semiconductor laser chip disposed thereon, electrically connecting to the second lead, and a monitor detector disposed on the mounting plate and adjacent to the submount, electrically connecting to the third lead, for receiving backward light from the semiconductor laser chip;

a plastic-molded header to fix the first lead, the second lead and the third lead; and

a transparent cap, corresponding to the plastic-molded header, for sealing all components on the plastic-molded header; and

at least one heat-dissipation plate, extending from the mounting plate outside of the semiconductor laser apparatus, for conducting heat generated by the semiconductor laser chip to outside of the plastic-molded apparatus.

5,825,055

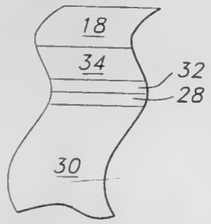
FABRICATING HIGH-DIELECTRIC CONSTANT OXIDES ON SEMICONDUCTORS USING A GE BUFFER LAYER

Scott R. Summerfelt, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 479,986, Aug. 21, 1995, abandoned, which is a division of Ser. No. 223,085, Apr. 4, 1994, Pat. No. 5,473,171, which is a division of Ser. No. 877,287, May 1, 1992, Pat. No. 5,326,721. This application Jan. 3, 1997, Ser. No. 774,713

Int. Cl.[6] H01L *29/161*

U.S. Cl. 257—183 **14 Claims**



1. A structure useful in semiconductor circuitry, comprising:

a semiconductor substrate;

a buffer layer on said semiconductor substrate;

a germanium layer on said buffer layer; and

a high-dielectric constant oxide having a dielectric constant greater than 100 on said germanium layer.

5,825,056

SCANNING SWITCH TRANSISTOR FOR SOLID STATE IMAGING DEVICE

Kazuya Yonemoto, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 20, 1996, Ser. No. 618,566

Claims priority, application Japan, Mar. 22, 1995, 7-063103

Int. Cl.[6] H01L *31/062;31/113*

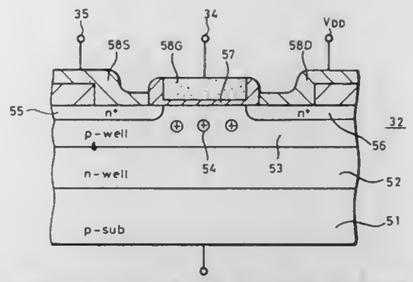
U.S. Cl. 257—290 **16 Claims**

1. A solid-state imaging device comprising:

a plurality of pixels each generating a signal corresponding to an amount of incident light;

a signal detector for detecting a signal obtained from individual ones of said pixels; and

a switch comprised of an insulating gate-type FET (field-effect transistor) having a channel formed between first and second main electrodes, said first main electrode being connected to at least one of said pixels, and said second main electrode being connected to said signal detector, wherein said switch is arranged such that an area of said first main electrode in contact with said channel is larger than an area of said second



main electrode in contact with said channel, and having first and second drain regions located only at opposed sides of a source region.

5,825,057

PROCESS FOR FABRICATING LAYERED SUPERLATTICE MATERIALS AND MAKING ELECTRONIC DEVICES INCLUDING SAME

Hitoshi Watanabe, Tokyo, Japan; Carlos A. Paz De Araujo, Colorado Springs, Colo.; Hiroyuki Yoshimori, Kanagawa, Japan; Michael C. Scott, Colorado Springs, Colo.; Takashi Mihara, Saitama, Japan; Joseph D. Cuchiaro, and Larry D. McMillan, both of Colorado Springs, Colo., assignors to Symetrix Corporation, and Olympus Optical Co., Ltd.

Division of Ser. No. 65,656, May 21, 1993, Pat. No. 5,434,102, which is a continuation-in-part of Ser. No. 981,133, Nov. 24, 1992, Pat. No. 5,423,285, and a continuation-in-part of Ser. No. 965,190, Oct. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 807,439, Dec. 31, 1991, abandoned, which is a continuation-in-part of Ser. No. 660,428, Feb. 25, 1991, abandoned. This application Dec. 5, 1994, Ser. No. 349,692

Int. Cl.[6] H01L *29/76*

U.S. Cl. 257—295 **10 Claims**

1. A ferroelectric device including a layered superlattice material compound comprising A-site metal and a plurality of B-site metals selected from the group consisting of titanium, tantalum and niobium, said compound having a polarizability 2P, of at least about 15 microcoulombs per square centimeter, said compound being in a film having a thickness not greater than about 3500 Å.

5,825,058

SEMICONDUCTOR IC WITH FET AND CAPACITOR HAVING SIDE WALL SPACERS

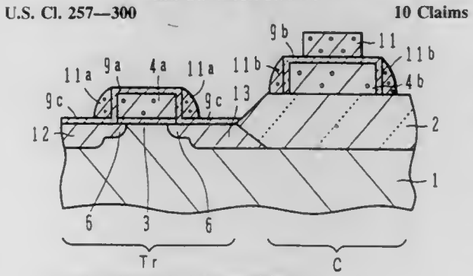
Shigeru Suga, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Division of Ser. No. 654,833, May 29, 1996, Pat. No. 5,698,463. This application Aug. 5, 1997, Ser. No. 906,309

Claims priority, application Japan, May 29, 1995, 7-130793

Int. Cl.[6] H01L *21/8242*

U.S. Cl. 257—300 **10 Claims**



1. A semiconductor device comprising:

a semiconductor substrate with a principal surface;

a field insulating film formed on the principal surface of said semiconductor substrate and defining an active region;

an insulated gate structure formed in the active region and including a gate insulating film and a first conductive layer;

a lower capacitor electrode formed on the field insulating film and including a second conductive layer having substantially same composition and thickness as the first conductive layer;

an insulating film formed on the surfaces of the first and second conductive layers;

conductive side wall regions formed on side walls of the first and second conductive layers; and an upper capacitor electrode formed on said insulating film on the upper surface of the second conductive layer and made of the same material as the conductive material of said conductive side wall regions.

5,825,059

SEMICONDUCTOR DEVICE AND AN INTERCONNECTION STRUCTURE OF SAME

Hideaki Kuroda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

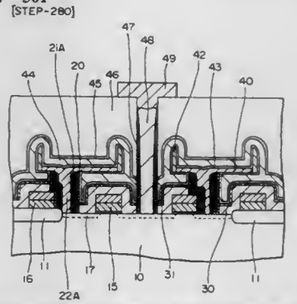
Filed Jan. 30, 1997, Ser. No. 791,271

Claims priority, application Japan, Feb. 2, 1996, 8-040441

Int. Cl.[6] H01L *29/76;27/108;29/94;31/119*

U.S. Cl. 257—301 **8 Claims**

[STEP-280]



1. An interconnection structure of a semiconductor device, comprising:

a conductive layer formed on a base;

an interlayer insulating film formed on said conductive layer, said interlayer insulating film having a connection hole formed therethrough and extending from said conductive layer to a top surface of said interlayer insulating film;

an upper interconnection layer formed on said top surface of said interlayer insulating film;

a connector insulating film formed on an inner wall of said connection hole; and

a non-crystal silicon side wall formed over said connector insulating film.

5,825,060

POLYCRYSTALLINE SILICON RESISTORS FOR INTERGRATED CIRCUITS

Charles R. Spinner, III, Dallas, Tex., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

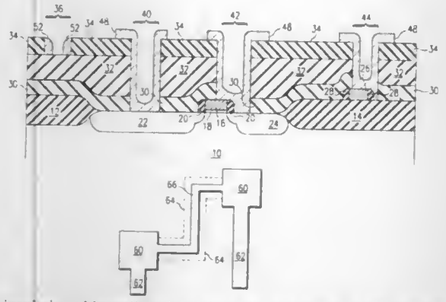
Division of Ser. No. 531,012, May 31, 1990, Pat. No. 5,151,376. This application Apr. 16, 1992, Ser. No. 869,517

Int. Cl.[6] H01L *27/108;29/76*

U.S. Cl. 257—304 **4 Claims**

1. An integrated circuit device resistor structure, comprising:

an insulating layer having an elongate etched out region connecting a first conductive region with a second conductive region, said elongate region having substantially vertical side walls;



insulating side wall regions along the side walls of the elongate region, said insulating side wall regions defining an elongate narrowed region therebetween connecting the conductive regions; and

a polycrystalline silicon region located in the narrowed region, wherein said polycrystalline silicon region forms a resistor connecting the conductive regions.

5,825,061

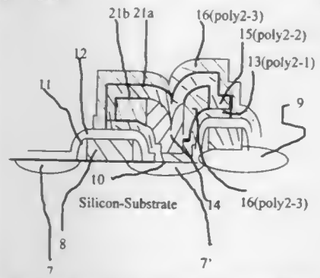
CHANNEL-TYPE STACK CAPACITOR FOR DRAM CELL

Su-Jaw Chang, Hsin-Chu, Taiwan, assignor to Utron Technology Inc., Hsin-Chu, Taiwan

Filed Dec. 6, 1995, Ser. No. 568,245

Int. Cl.[6] H01L *27/108;29/76;29/94;31/119*

U.S. Cl. 257—309 **12 Claims**



1. A storage capacitance for dynamic random access memory (DRAM) cell, having a word line connected to a gate electrode of a MOSFET, a bit line serving as a first diffusion of said MOSFET, a first electrode of said capacitor connected to a reference potential, comprising:

a second electrode of said capacitor connected to a second diffusion of said MOSFET, separated from said first electrode by a dielectric layer, and having a cross-section in the form of at least one shell enclosing a core of a material which can be different from the material for said second electrode,

said core traversing from one said memory cell to another said memory in a direction other than the horizontal and vertical dimensions of a rectangular shaped said memory cell.

5,825,062

SEMICONDUCTOR DEVICE INCLUDING A NONVOLATILE MEMORY

Jun Muramoto, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

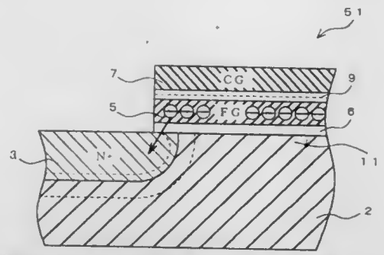
Filed Dec. 10, 1996, Ser. No. 762,769

Claims priority, application Japan, Dec. 12, 1995, 7-322107

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—315 **14 Claims**

1. A semiconductor device including a nonvolatile memory comprising:



a substrate have a source region and a drain region,

a first insulating layer on the substrate, the first insulating layer being between source region and drain region,

a floating gate electrode on the first insulating layer,

a second insulating layer on the floating gate electrode,

a control gate electrode on the floating gate electrode, and

a pull back voltage generator applying predetermined voltages between either of the source region and the control gate electrode or the drain region and the control gate electrode, the pull back voltage generator having a counter circuit counting a number of voltage pulses at each of the predetermined voltages, the predetermined voltages being in low value at initial phase of pull back of electrons and being in high values increased under stepwise bases corresponding to the number of the pulse voltages counted by the counter circuit.

5,825,063

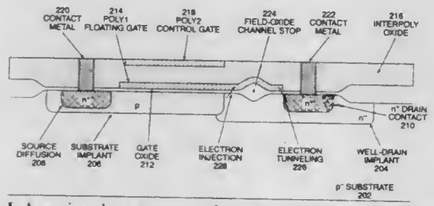
THREE-TERMINAL SILICON SYNAPTIC DEVICE

Christopher J. Diorio, Torrance; Paul E. Hasler, Pasadena; Bradley A. Minch, Pasadena, and Carver A. Mead, Pasadena, all of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 399,966, Mar. 7, 1995, Pat. No. 5,627,392. This application Jul. 26, 1996, Ser. No. 690,198

Int. Cl.[6] H01L *29/788*

U.S. Cl. 257—316 **58 Claims**



1. A semiconductor structure for long term learning comprising:

a p− type region in a semiconductor substrate;

an n− type region disposed in said p− type region, said n− type region including a first n+ doped region surrounded by said n− type region within said p− type region;

a second n+ type region;

a channel disposed between said first n+ type region and said second n+ type region, said channel additionally p doped;

a floating gate disposed over said channel and separated from said channel by a first insulator, a portion of said floating gate also disposed over said n− type region;

an insulating layer disposed over said floating gate;

a conductive region disposed over said insulating layer and capacitively coupled to said floating gate;

a channel stop insulator disposed over said n− type region, said channel stop insulator separating a portion of said floating gate from a portion of said n− type region;

means for selectively applying a first positive potential to said first n+ type region, said first positive potential having a magnitude of greater than zero volts relative to said p− type region, but less than the voltage required to induce avalanche breakdown in a junction formed between said first n+ type region and a transient parasitic p-type channel formed in said n− type region at certain positive voltages;

means for capacitively coupling a second positive potential to said floating gate, said second positive potential having a magnitude of greater than about +2.5 volts relative to said p− type region; and,

means for applying a third potential to said second n+ type region with respect to said p− type region.

5,825,064

SEMICONDUCTOR VOLATILE/NONVOLATILE MEMORY

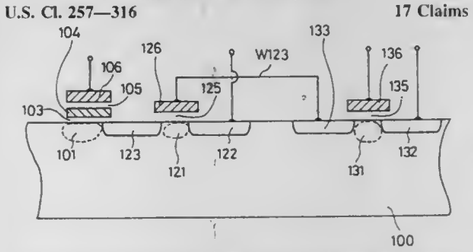
Yutaka Hayashi, Tsukuba; Yoshikazu Kojima, Tokyo; Ryoji Takada, Tokyo, and Masaaki Kamiya, Tokyo, all of Japan, assignors to Agency of Industrial Science and Technology and Seiko Instruments Inc., Japan

Continuation of Ser. No. 492,085, Mar. 12, 1990, abandoned. This application Mar. 3, 1993, Ser. No. 25,822

Claims priority, application Japan, Mar. 10, 1919, 1-58173

Int. Cl.[6] H01L *29/788;29/76*

U.S. Cl. 257—316 **17 Claims**



2. A semiconductor memory call formed on a substrate, comprising:

storage means disposed on the substrate for storing electric charge to memorize nonvolatile information;

injecting means for injecting electric charge into the storage means;

supplying means for supplying electric charge to the injecting means;

volatile control means operable to write volatile information and to temporarily maintain the volatile information, the volatile control means being interposed between the injecting means and the supplying means for controlling flow of electric charge from the supplying means to the injecting means according to the volatile information temporarily written in the volatile control means;

random-access potential setting means for setting a potential of the volatile control means on a random access basis to write volatile information into the volatile control means, the random-access potential setting means including switching means for effecting setting of the potential of the volatile control means on a random access basis; and

nonvolatile control means for controlling the injection of the electric charge from the injecting means to the storage means to thereby write thereinto nonvolatile information which is representative of the corresponding volatile information written in the volatile control means.

5,825,065

LOW VOLTAGE DMOS TRANSISTOR

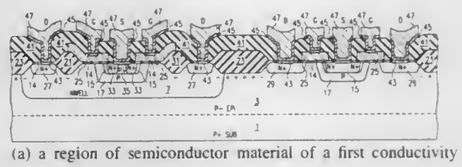
Marco Corsi, Dallas; Louis N. Hutter, Richardson, and John P. Erdeljac, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 14, 1997, Ser. No. 782,875

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—328 **10 Claims**

1. A semiconductor device which comprises:



(a) a region of semiconductor material of a first conductivity type;

(b) a high voltage DMOS transistor disposed in a well of a second conductivity type opposite to said first conductivity type, said well formed in said region; and

(c) a relatively low voltage DMOS transistor disposed in said region and electrically isolated from said high voltage DMOS transistor, said low voltage DMOS transistor including:

(i) spaced apart source and drain regions of said second conductivity type; and

(ii) a back gate region of said first conductivity type disposed in and contacting said region of semiconductor material, said back gate region surrounding said source region and extending between said source and drain regions, said back gate region being electrically coupled to said region of semiconductor material.

5,825,066

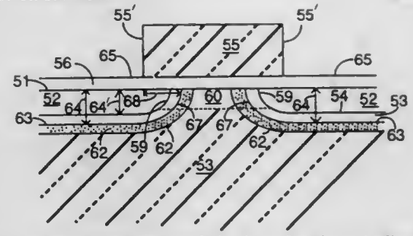
CONTROL OF JUCTION DEPTH AND CHANNEL LENGTH USING GENERATED INTERSTITIAL GRADIENTS TO OPPOSE DOPANT DIFFUSION

Mathew S. Buynoski, Palo Alto, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 647,081, May 8, 1996, abandoned. This application Nov. 26, 1997, Ser. No. 979,876

Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*

U.S. Cl. 257—345 **9 Claims**



1. An intermediate integrated circuit product formed adjacent a surface (**51**) of a silicon substrate (**53**), said intermediate product comprising:

a gate electrode (**55**), said gate electrode being mounted above said silicon substrate surface (**51**); a portion of said silicon substrate surface (**51**) not beneath said gate electrode being a first surface portion (**65**), said gate electrode having an edge (**55'**) which also defines the edge of said first surface portion;

a first implanted dopant region (**52**) in said substrate, said first implanted dopant region having an active dopant concentration peak therein, said first implanted dopant region also having a first leading edge (**54**, **59**) forming a first junction between said first implanted dopant region and said substrate, said first junction having both a first junction portion (**54**) at a first depth (**64'**) below said first surface portion and a second junction portion (**59**) which curves back to intersect said surface of said substrate at a first lateral distance (**58**) measured along said silicon surface from said edge (**55'**) of said first surface portion;

a second crystalline implanted region (**62**) in said substrate, said second crystalline implanted region having an electrically inactive species concentration peak and an implantation damage peak therein, said second crystalline implanted region not being amorphous, said second crystalline implanted region having a trailing edge, said trailing edge (**63**,**67**) forming a boundary between said second crystalline implanted region

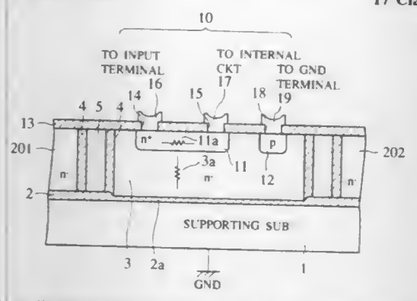
(62) and said substrate (53), said boundary having a first boundary portion (63) at a second depth (64) below said first surface portion and a second boundary portion (67) which curves back to intersect said surface of said substrate at a second lateral distance (68) measured along said silicon surface from said edge (55') of said first surface portion, said second depth (64) being substantially larger than said first depth (64'), and said second lateral distance (68) being larger than said first lateral distance (58).

5,825,067

DIELECTRICALLY ISOLATED IC MERGED WITH SURGE PROTECTION CIRCUIT AND METHOD FOR MANUFACTURING THE SAME

Yoshinori Takeuchi, and Koichi Endo, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 11, 1997, Ser. No. 873,081
Claims priority, application Japan, Jun. 12, 1996, 8-151044
Int. Cl.[6] H01L *21/782;29/74*
U.S. Cl. 257—355 **17 Claims**



1. A dielectrically isolated IC merged with a surge protection circuit comprising:

a) a supporting substrate;

b) a first buried insulator film formed partially on the supporting substrate;

c) a second buried insulator film thinner than the first buried insulator film formed partially on the supporting substrate;

d) a plurality of first semiconductor active layers formed on the first buried insulator film;

e) a second semiconductor active layer formed on the second buried insulator film; and

f) a dielectric isolation region formed between the plurality of first semiconductor active layers themselves and also between the first and second semiconductor active layers,

wherein the surge protection circuit is formed in the second semiconductor active layer.

5,825,068

INTEGRATED CIRCUITS THAT INCLUDE A BARRIER LAYER REDUCING HYDROGEN DIFFUSION INTO A POLYSILICON RESISTOR

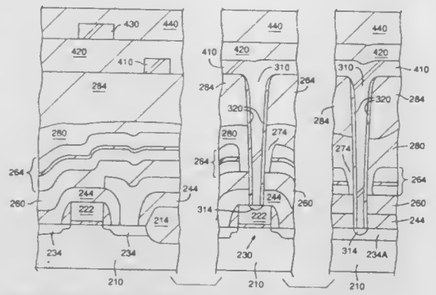
Jeng-Jiun Yang, Sunnyvale, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Mar. 17, 1997, Ser. No. 820,664
Int. Cl.[6] H01L *29/76;23/58*
U.S. Cl. 257—380 **14 Claims**

1. An integrated circuit comprising:

a polysilicon resistor;

a barrier layer for reducing hydrogen diffusion into the polysilicon resistor, the barrier layer comprising at least two polysilicon and/or amorphous silicon layers, each layer separated from an adjacent layer by a non-silicon layer, wherein said barrier layer has a thickness of less than approximately 400 nanometers;



one or more circuit elements under the barrier layer; and

one or more circuit elements over the barrier layer which contact one or more circuit elements under the barrier layer,

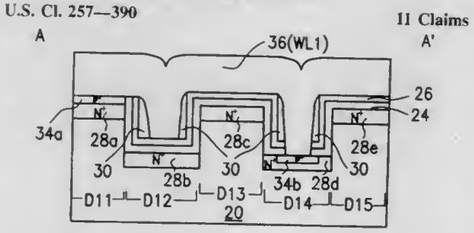
wherein the barrier layer extends laterally throughout the whole integrated circuit except for one or more contact areas in which one or more circuit elements over the barrier layer contact one or more circuit elements under the barrier layer.

5,825,069

HIGH-DENSITY SEMICONDUCTOR READ-ONLY MEMORY DEVICE

Jemmy Wen, and Jih-Wen Chou, both of Hsinchu, Taiwan, assignors to United Microeltronics Corp., Hsinchu, Taiwan

Filed May 5, 1997, Ser. No. 851,545
Claims priority, application Taiwan, Jan. 27, 1997, 86100883
Int. Cl.[6] H01L *21/8246*
U.S. Cl. 257—390 **11 Claims**



1. A ROM device including a plurality of diode memory cells, which comprises:

a semiconductor substrate of a first semiconductor formed with a plurality of substantially parallel-spaced trenches oriented in a first direction;

a plurality of substantially parallel-spaced diffusion regions of a second semi-conductor formed in an alternate manner on the bottom of said trenches and on the top of the solid portions between said trenches, said diffusion regions serving as a plurality of bit lines;

a plurality of doped regions of the first semiconductor formed in a selected number of locations on said diffusion regions that are associated with a first group of the memory cells of said ROM device that are set to a permanently-ON state;

an insulating layer formed over those locations on said diffusion regions that are associated with a second group of the memory cells of said ROM device that are set to a permanently-OFF state; and

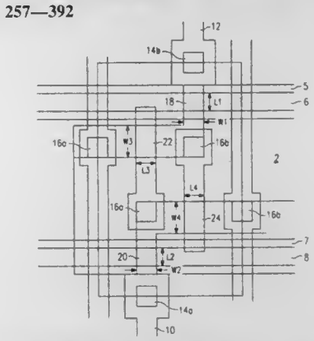
a plurality of substantially parallel-spaced conductive layers serving as a plurality of word lines oriented in a second direction to intercross said bit lines, said word lines coming into electrical contact with all of said doped regions formed in the bit lines associated with the first group of memory cells.

5,825,070

STRUCTURE FOR TRANSISTOR DEVICES IN AN SRAM CELL

Frank Randolph Bryant, Denton, and Tsiu Chiu Chan, Carrollton, both of Tex., assignors to STMicroelectronics, Inc., Carrollton, Tex.

Continuation-in-part of Ser. No. 390,117, Feb. 17, 1995, abandoned, which is a division of Ser. No. 159,462, Nov. 30, 1993, Pat. No. 5,426,065. This application Sep. 12, 1996, Ser. No. 712,808
Int. Cl.[6] H01L *29/76;29/94;31/062*
U.S. Cl. 257—392 **12 Claims**



6. A semiconductor circuit comprising:

a first transistor having a first width and a first gate including a gate oxide layer having a first thickness; and

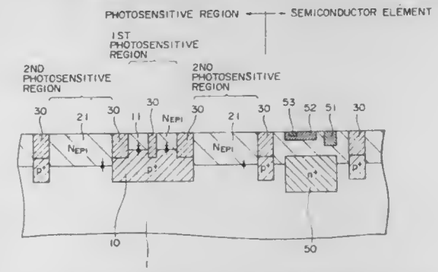
a second transistor having a second width and a second gate including a gate oxide layer having a second thickness, wherein a product of the second width and the second thickness is greater than a product of the first width and the first thickness.

5,825,071

PHOTOSENSITIVE ELEMENT HAVING TWO REGIONS WITH SUPERIOR FREQUENCY CHARACTERISTICS AND CONVERSION CHARACTERISTICS RESPECTIVELY

Shinji Takakura, Kanagawa, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 489,875, Jun. 13, 1995. This application May 27, 1997, Ser. No. 863,587
Claims priority, application Japan, Jun. 30, 1994, 6-171838
Int. Cl.[6] H01L *29/76;29/94*
U.S. Cl. 257—440 **9 Claims**



1. An optical pickup device having a photosensitive element;

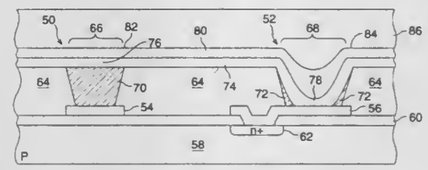
said photosensitive element having first and second photosensitive regions, wherein said first photosensitive region varies structurally from said second photosensitive wherein said first photosensitive region varies structurally from said second photosensitive region and thereby said first photosensitive region has a superior frequency characteristic to said second photosensitive region and said second photosensitive region has a superior conversion characteristic to said first photosensitive region.

5,825,072

CIRCUITS FOR ESD PROTECTION OF METAL TO-METAL ANTIFUSES DURING PROCESSING

Yeochung Yen, San Jose; Wenn-Jei Chen, Sunnyvale; Steve S. Chiang, Saratoga, and Abdul Rahim Forouhi, San Jose, all of Calif., assignors to Actel Corporation, Sunnyvale, Calif.

Division of Ser. No. 277,673, Jul. 19, 1994, Pat. No. 5,519,248, which is a continuation of Ser. No. 87,942, Jul. 7, 1993, Pat. No. 5,369,054. This application Feb. 14, 1996, Ser. No. 599,959
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—530 **6 Claims**



1. An antifuse structure including ESD protection comprising:

a first antifuse structure including:

a first electrode disposed over an insulating layer of an integrated circuit;

an interlayer dielectric layer disposed over said first electrode;

a first cell opening in said interlayer dielectric layer penetrating entirely through said interlayer dielectric layer to provide access to said first electrode;

a conductive material deposited within and filling said first cell opening so that said conductive material is in electrical contact with said first electrode;

an antifuse material layer disposed over and in electrical contact with said conductive material;

a second electrode disposed over and in electrical contact with said antifuse material layer; and

a shorting structure including:

a first ESD electrode in electrical contact with a semiconductor junction adapted to be biased so that said first ESD electrode is selectively in electrical contact or insulated from said first electrode of said first antifuse structure;

said interlayer dielectric layer disposed over said first ESD electrode;

a second cell opening in said interlayer dielectric layer penetrating entirely through said interlayer dielectric layer to provide access to said first ESD electrode;

a conductive material deposited within and at least partially filling said second cell opening so that said conductive material is in electrical contact with said first ESD electrode;

a second ESD electrode disposed over and in electrical contact with said conductive material to form a permanent electrical path from said first ESD electrode to said second ESD electrode, said second ESD electrode in electrical contact with said second electrode.

5,825,073

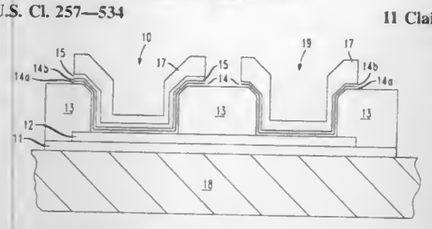
ELECTRONIC COMPONENT FOR AN INTEGRATED CIRCUIT

Joseph Rudolph Radosevich, Orlando, Fla., and Ranbir Singh, Macungie, Pa., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 472,033, Jun. 6, 1995, Pat. No. 5,654,581, which is a division of Ser. No. 353,015, Dec. 9, 1994, Pat. No. 5,576,240. This application May 27, 1997, Ser. No. 863,713

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—534 **11 Claims**



1. An electronic component for an integrated circuit, which comprises:

a) a planar first conductive means for conducting an electric charge;

b) an interlevel dielectric deposited on said planar first conductive means, said interlevel dielectric including first and second windows extending down to said planar first conductive means, each of said first and second windows being at least partially defined by at least one respective side wall oriented transverse to the planar orientation of said planar first conductive means, said planar first conductive means extending between said first and second windows for transferring an electrical charge therebetween;

c) a second conductive means defining a capacitor bottom plate formed in said first window from a layer of first metal and a layer of conductive etch stop in contact with said layer of first metal, said layer of first metal being in electrical contact with said planar first conductive means and extending over said respective side wall of said first window;

d) a third conductive means formed in said second window from a layer of said first metal and a layer of said conductive etch stop in contact with said layer of first metal, said layer of first metal of said third conductive means being in electrical contact with said planar first conductive means and extending over the respective wall of said second window, said second and third conductive means being spaced apart from each other;

e) a layer of capacitor dielectric deposited over said layer of conductive etch stop of said second conductive means;

f) a fourth conductive means formed in said first window from a layer of second metal deposited over said capacitor dielectric of said second conductive means; and

g) a fifth conductive means formed in said second window from a layer of second metal deposited over and in electrical contact with said conductive etch stop of said third conductive means.

5,825,074

METHOD OF MAKING A RESISTOR, METHOD OF MAKING A DIODE, AND SRAM CIRCUITRY AND OTHER INTEGRATED CIRCUITRY

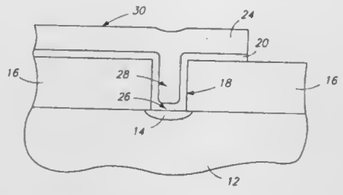
J. Brett Rolfson, and Monte Manning, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 528,124, Sep. 14, 1995, Pat. No. 5,567,644. This application Aug. 1, 1996, Ser. No. 692,043

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—536 **16 Claims**

1. Integrated circuitry comprising:



an opening defining a wall within an electrically insulative layer to a node, the opening having a base; and

an elongated resistor within the opening and in electrical contact with the node, the resistor comprising a plurality of different regions of semiconductive material disposed within the opening, the regions having different conductivities, one of the regions being defined by a first layer having a single-type of dopant impurity therein, the layer comprising a portion laterally proximate the entire length of the wall, and another portion over the entirety of the bottom of the opening, another of the regions being defined by a second layer comprising a portion laterally proximate the one region portion which is laterally proximate the wall, both portions of the first layer having a generally uniform conductivity.

5,825,075

VARIABLE CAPACITANCE DIODE DEVICE AND METHOD OF MANUFACTURING SAME

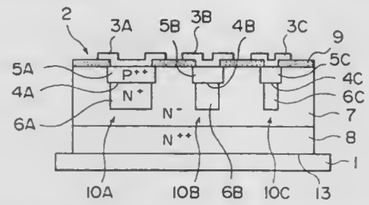
Takeshi Kasahara, Tsurugashima, Japan, assignor to Toko Kabushiki Kaisha, Tokyo-To, Japan

Filed Jun. 20, 1996, Ser. No. 667,853

Claims priority, application Japan, Jun. 23, 1995, 7-180804

Int. Cl.[6] H01L *29/93*

U.S. Cl. 257—596 **3 Claims**



2. A variable capacitance diode device, comprising:

a semiconductor chip;

a plurality of PN junctions formed on the semiconductor chip to obtain a plurality of variable capacitance diodes, each PN junction having an area for the purpose of creating a capacitance, the areas of the formed PN junctions of a plurality of the variable capacitance diodes being different from each other;

a common electrode of the respective variable capacitance diodes formed on one of the principal surfaces of the semiconductor chip; and

a plurality of independent electrodes of the variable capacitance diodes formed on the other of the principal surfaces of the semiconductor chip, being separated for each variable capacitance diode, only one of the independent electrodes of the variable capacitance diodes being selected and connected to one terminal for use together with the common electrode connected to a different terminal.

5,825,076

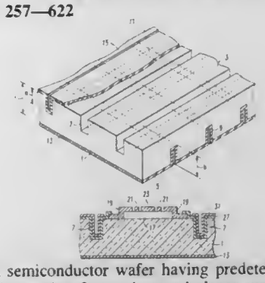
INTEGRATED CIRCUIT NON-ETCH TECHNIQUE FOR FORMING VIAS IN A SEMICONDUCTOR WAFER AND A SEMICONDUCTOR WAFER HAVING VIAS FORMED THEREIN USING NON-ETCH TECHNIQUE

Joseph C. Kotvas, and Saptharishi Sriram, both of Monroeville, Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jul. 25, 1996, Ser. No. 685,884

Int. Cl.[6] H01L *21/463;21/78*

U.S. Cl. 257—622 **20 Claims**



16. A semiconductor wafer having predetermined wafer thickness and opposing first and second planar surfaces comprising:

a plurality of first channels of first predetermined depth formed in the first planar surface of the semiconductor wafer along a first direction; and

a plurality of second channels of second predetermined depth formed in the second planar surface of the semiconductor wafer in a second direction,

said first and second directions being non-parallel and at least one of said first and second predetermined depths of said plurality of first and second channels being greater than half the predetermined wafer thickness such that vias are formed through the semiconductor wafer.

5,825,077

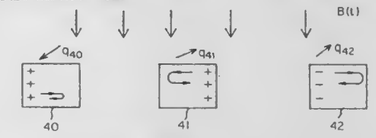
INTERCONNECT DECOUPLING SCHEME

Yong Liu, Santa Clara, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Division of Ser. No. 481,164, Jun. 7, 1995, Pat. No. 5,637,532. This application Mar. 12, 1997, Ser. No. 815,764

Int. Cl.[6] H01L *23/58;29/82;23/48*

U.S. Cl. 257—629 **8 Claims**



1. An apparatus comprising:

a semiconductor chip having thereon at least one semiconductor device comprising layers of a plurality of first conductive lines situated in a common plane; and

means for applying an alternating magnetic field to the semiconductor device in a direction perpendicular to the plane of the first conductive lines, wherein the alternating magnetic field reduces capacitive coupling between neighboring first conductive lines.

5,825,078

HERMETIC PROTECTION FOR INTEGRATED CIRCUITS

Keith Winton Michael, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

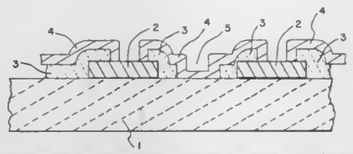
Filed Sep. 23, 1992, Ser. No. 948,570

Int. Cl.[6] H01L *23/58*

U.S. Cl. 257—632 **12 Claims**

1. A hermetically sealed integrated circuit comprising:

a circuit subassembly having bond pads and streets;



a primary passivation layer on the surface of the subassembly which is etched at the bond pads and streets; and

one or more ceramic layers covering the primary passivation layer and the sides of the primary passivation created by etching at the bond pads and streets;

wherein the ceramic layers comprise a ceramic material which is deposited by a process selected from the group consisting of chemical vapor deposition and physical vapor deposition.

5,825,079

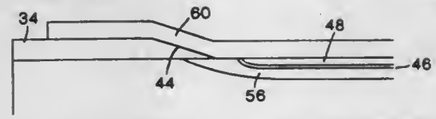
SEMICONDUCTOR DIODES HAVING LOW FORWARD CONDUCTION VOLTAGE DROP AND LOW REVERSE CURRENT LEAKAGE

Richard A. Metzler, Mission Viejo, and Vladimir Rodov, Redondo Beach, both of Calif., assignors to Luminous Intent, Inc., Costa Mesa, Calif.

Filed Jan. 23, 1997, Ser. No. 787,627

Int. Cl.[6] H01L *29/06;31/0352;29/76;29/94*

U.S. Cl. 257—653 **27 Claims**



1. A pn junction having a high reverse voltage breakdown voltage comprising:

a first region of a first conductivity type having a first surface;

a second region of a second conductivity type formed in the first region so that a pn junction is formed between the first and second regions, an edge of the pn junction having a longitudinally graded junction;

an oxide layer disposed over the first region adjacent the edge of the pn junction, the oxide layer being tapered to a minimum thickness adjacent the edge of the pn junction at the first surface; and,

a conductive layer over the second region and extending over the tapered oxide layer.

5,825,080

SEMICONDUCTOR DEVICE PROVIDED WITH SURFACE GROUNDING CONDUCTOR FOR COVERING SURFACES OF ELECTRICALLY INSULATING FILMS

Toshikazu Imaoka, Hirakata, and Nobuaki Imai, Yamatokouriyama, both of Japan, assignors to ATR Optical and Radio Communications Research Laboratories, Kyoto, Japan

Filed Dec. 18, 1996, Ser. No. 769,586

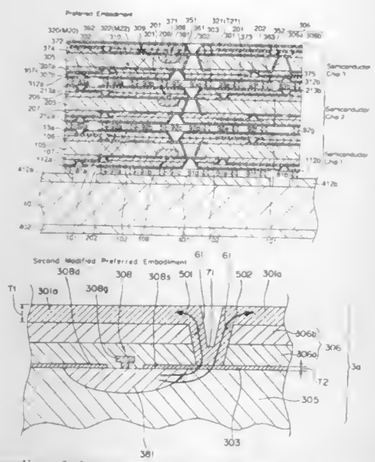
Claims priority, application Japan, Dec. 18, 1995, 7-329057; Mar. 25, 1996, 8-067898

Int. Cl.[6] H01L *23/552*

U.S. Cl. 257—659 **5 Claims**

1. A semiconductor device, comprising:

a semiconductor substrate having two surfaces opposing to each other and having a circuit including a transistor having a



plurality of electrodes, said circuit formed on at least one of said two surfaces;

insulating films respectively formed on said two surfaces of said semiconductor substrate;

connecting electrodes formed on a surface of said insulating film and electrically connected to said circuit;

a surface grounding conductor formed on a surface of each of said insulating films so as to cover the surface of each of said insulating films except for portions where said connecting electrodes are formed;

through holes respectively formed in said insulating films so as to penetrate said insulating films in a direction of thickness thereof;

through hole conductors respectively formed in said through holes: and

an internal grounding conductor formed on the surface on which said circuit is formed,

wherein one electrode out of said plurality of electrodes of said transistor is electrically connected to said surface grounding conductor by way of said internal grounding conductor and said through hole conductor,

wherein each of said through hole conductor and said surface grounding conductor has a thickness greater than a thickness of said internal grounding conductor, and

wherein the thickness of said through hole conductors and said surface grounding conductor efficiently transmits heat from the transistor to outside the semiconductor device.

5,825,081

TAPE CARRIER AND ASSEMBLY STRUCTURE THEREOF

Eiichi Hosomi, Kawasaki; Chiaki Takubo, Tokyo; Hiroshi Tazawa, Ichikawa, and Koji Shibasaki, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 11, 1996, Ser. No. 729,420

Claims priority, application Japan, Nov. 6, 1995, 7-287210

Int. Cl.[6] H01L *23/495*

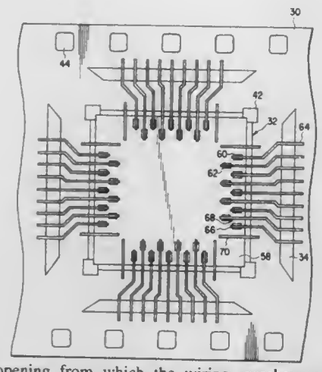
U.S. Cl. 257—668 **18 Claims**

1. A tape carrier comprising:

an insulating resin base material having a square opening;

a plurality of wiring members projecting into said opening from at least two opposite sides of said opening: and

a plurality of dummy wiring members projecting into said opening, the dummy wiring members located on the sides of



the opening from which the wiring members project and located next to each respective wiring member located closest to the corners of said opening; and

wherein each dummy wiring member has a length less than a length of each wiring member and projects into the opening at least as far as the wiring members project into the opening.

5,825,082

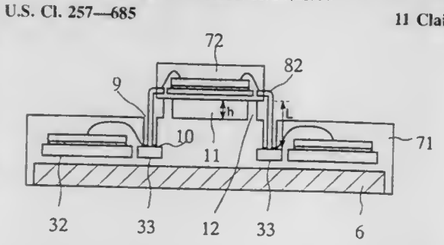
SEMICONDUCTOR DEVICE IN WHICH A FIRST RESIN-ENCAPSULATED PACKAGE IS MOUNTED ON A SECOND RESIN-ENCAPSULATED PACKAGE

Wataru Takahashi, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 288,781, Aug. 12, 1994, Pat. No. 5,648,683. This application Nov. 12, 1996, Ser. No. 746,414

Int. Cl.[6] H01L *25/04;25/10*

U.S. Cl. 257—685 **11 Claims**



1. A multiple-chip package semiconductor device having a plurality of semiconductor chips and external leads, comprising:

said plurality of semiconductor chips divided into first and second groups, said first group comprising at least one power chip generating heat;

the semiconductor chips belonging to said first group mounted and molded on a base frame provided with all the external leads of said multiple-chip package semiconductor device;

the second group mounted and molded on an auxiliary frame with outer leads provided only for electrical connection with said base frame;

a heat radiating plate fixed under the base frame and having an exposed bottom face; and

said auxiliary frame coupled with said base frame in order to form said multiple-chip package semiconductor device in combination.

5,825,083

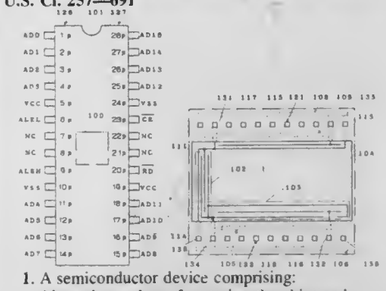
SEMICONDUCTOR DEVICE

Akira Takata; Tetsuo Hikawa; Takashi Sawada, all of Kobe, Japan; Tom Dang-hsing Yiu, 20403 Pierce Rd., Saratoga, Calif. 95070, and Ful-Long Ni, San Jose, Calif., assignors to Mega Chips Corporation, Suita, Japan, and Tom Dang-hsing Yiu, Milpitas, Calif.

Division of Ser. No. 411,982, Mar. 28, 1995, Pat. No. 5,700,975. This application Jul. 21, 1997, Ser. No. 897,414

Claims priority, application Japan, Apr. 28, 1994, 6-091991

U.S. Cl. 257—691 **2 Claims**



1. A semiconductor device comprising:

a chip and a package for storing the chip; and

a plurality of external connection pins, including power supply and ground pins, being provided on two opposite side edges of said package,

said chip including:

an internal circuit having power supply terminals and ground connection terminals on two opposite edges, respectively,

a first pad portion for connecting said internal circuit with said power supply pins, and a second pad portion for connecting said internal circuit with said ground pins,

said first pad portion comprising:

power supply pads being formed on said two opposite edges of said chip to be wired between said power supply terminals of said internal circuit and said power supply pins, and

pad power supply wires being arranged in parallel with each other in the vicinity of said two opposite edges of said internal circuit to be connected to said power supply pads,

said second pad portion comprising:

ground connection pads being formed on said two opposite edges of said chip to be wired between said ground connection terminals of said internal circuit and said ground pins, and

pad ground wires being arranged in parallel with each other in the vicinity of said two opposite edges of said internal circuit to be connected to said ground connection pads,

wherein first of said power supply terminals being formed on one of said edges of said internal circuit and first of said ground connection terminals being formed on the other of said edges are opposed to each other, and

second of said power supply terminals being formed on the other of said edges of said internal circuit and second of said ground connection terminals being formed on said one of said edges are opposed to each other.

5,825,084

SINGLE-CORE TWO-SIDE SUBSTRATE WITH U-STRIP AND CO-PLANAR SIGNAL TRACES, AND POWER AND GROUND PLANES THROUGH SPLIT-WRAP-AROUND (SWA) OR SPLIT-VIA-CONNECTIONS (SVC) FOR PACKAGING IC DEVICES

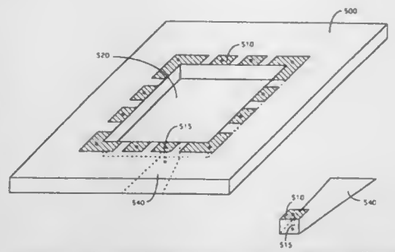
John H. Lau, Palo Alto; Yung Shih Chen, San Jose; Tai-Yu Chou, Pleasanto; Frank H. Wu, Sunnyvale; Kuan Luen Chen, San Jose, and Wei H. Koh, Irvine, all of Calif., assignors to Express Packaging Systems, Inc., Palo Alto, Calif.

Filed Feb. 11, 1997, Ser. No. 795,478

Int. Cl.[6] H01L *23/12;23/50;23/28*

U.S. Cl. 257—700 **22 Claims**

1. A two-side single-layer substrate including a cavity for disposing a semiconductor device for packaging and electrically connecting to said semiconductor device, said substrate comprising:



a plurality of mutually insulated contact segments disposed on a first surface of said substrate configured as a single ring around edges of said cavity wherein said contact segments include power segments and ground segments for connecting to high and low voltage terminals respectively on said semiconductor;

a plurality of mutually insulated contact planes, disposed on a second surface, opposite said first surface of said substrate wherein said contact planes include co-planar power planes and ground planes corresponding to said power and ground segments; and

a plurality of connection means comprising mutually insulated split-wrap-around (SWA) conductive strips wrapping around edges of said cavity for electrically connecting each of said co-planar power and ground contact planes on said second surface to a corresponding mutually insulated power and ground contact segment disposed on said first surface.

5,825,085

POWER SEMICONDUCTOR DEVICE, ARMORING CASE THEREOF AND METHOD FOR MANUFACTURING THE SAME

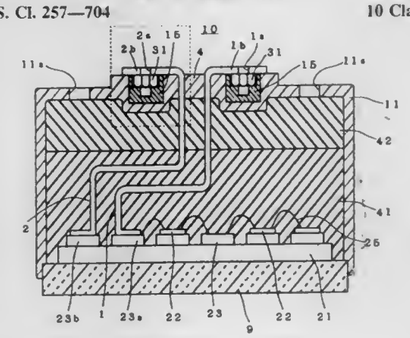
Toshikazu Masumoto, and Hisatoshi Arita, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 615,052

Claims priority, application Japan, Sep. 1, 1995, 7-225159

Int. Cl.[6] H01L *23/12*

U.S. Cl. 257—704 **10 Claims**



1. A power semiconductor device, comprising:

an armoring case,

said armoring case including:

a terminal nut;

a terminal nut cover which covers at least a lower portion of an outer side and a bottom of said terminal nut and which supports said terminal nut so as to prevent said terminal nut from rotating; and

an electrode plate including a terminal portion which is previously bent into a predetermined shape and has a bolt inserting hole for inserting an external bolt so as to be threadingly engaged in said terminal nut, said bolt inserting hole having a central axis conforming to a central axis of a screw hole of said terminal nut.

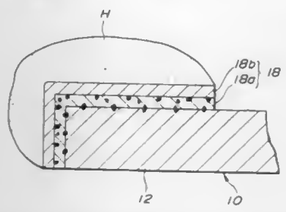
wherein said terminal nut cover and said electrode plate are insert-molded integrally with said armoring case.

5,825,086

CERAMIC LID ASSEMBLY FOR SEMICONDUCTOR PACKAGES

Kazuo Kimura; Haruhiko Murata, and Yukihiro Aoyama, all of Nagoya, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Continuation of Ser. No. 272,577, Jul. 11, 1994, abandoned. This application Jul. 29, 1996, Ser. No. 690,460
Claims priority, application Japan, Aug. 27, 1993, 5-235389
Int. Cl.[6] H01L *23/02*
U.S. Cl. 257—704 **1 Claim**



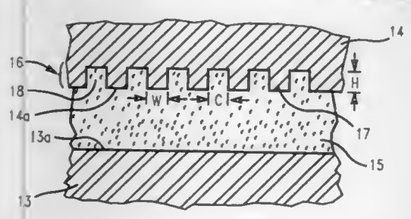
1. A hermetic sealed semiconductor package assembly comprising a lid, wherein said lid comprising:
a ceramic substrate having a peripheral region defining a hermetic sealing area;
a first metallized layer which is a sintered thick-film layer made of a precious metal or precious metal alloy, said layer containing glass frits and formed on said peripheral region of said ceramic substrate;
a second metallized layer which is a sintered thick-film layer made of the same precious metal or precious metal alloy of said first metallized layer but having no glass frit and formed on said first metallized layer; and
a solder layer formed on said second metallized layer; said solder layer having from 0 to 6 voids per square centimeter alone the interface between said solder layer and said second metallized layer,
said lid being bonded to a semiconductor package to form the assembly,
wherein said first metallized layer has a thickness in the range from 5 μm to 25 μm.

5,825,087

INTEGRAL MESH FLAT PLATE COOLING MODULE

Sushumna Iruvanti, Wappingers Falls; Martin Klepeis, Poughkeepsie; Gaetano Paolo Messina, Hopewell Junction, and Raed Sherif, Croton, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 3, 1996, Ser. No. 758,789
U.S. Cl. 257—707 **16 Claims**



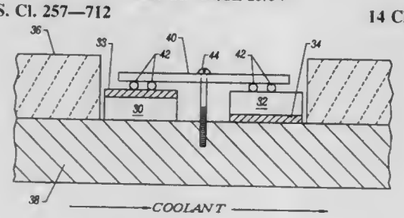
1. An electronic module comprising:
a substrate having at least one integrated circuit chip mounted thereon;
a cooling plate overlying the substrate and the chip and forming a gap above about 1 mil between an upper surface of the chip and an lower surface of the plate;
a thermal paste or thermal adhesive between the upper surface of the chip and the lower surface of the cooling plate;
wherein the cooling plate has a roughened lower surface wherein the roughened surface has a texture of peaks and valleys wherein the peaks are about 1.6 to 6.4 microns which roughened surface penetrates and improves adhesion of the thermal paste and/or thermal conductive adhesive and inhibits the flow of thermal paste from between the upper surface of the chip and the lower surface of the thermal plate.

5,825,088

LOW THERMAL RESISTANCE SEMICONDUCTOR PACKAGE AND MOUNTING STRUCTURE

Howard Dwight Bartlow, Sunnyvale, Calif., assignor to Spectrian, Inc.

Continuation of Ser. No. 694,424, May 1, 1991, abandoned. This application Mar. 24, 1993, Ser. No. 37,508
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—712 **14 Claims**



7. A low cost RF and microwave circuit and package combination having reduced thermal resistance and electrical inductance comprising
two ceramic semiconductor device packages and RF circuits housed therein, said packages having top sides and bottom sides with a smooth and flat surface,
a grounded heat sink having a top surface, said ceramic packages being positioned in spaced alignment on said grounded heat sink with said bottom sides directly abutting said top surface without intervening components thereby facilitating the reduced thermal resistance and electrical inductance, and
means for maintaining said ceramic packages in pressure engagement with said grounded heat sink including a clamp configured to exert pressure on said top sides of said ceramic packages and a fastener extending through said clamp between said packages and engaging said grounded heat sink for low thermal impedance and efficient steady state removal of heat from said package and whereby said ceramic packages are in electrical and thermal contact with said grounded heat sink.

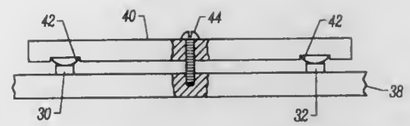
5,825,089

LOW THERMAL RESISTANCE SPRING BIASED RF SEMICONDUCTOR PACKAGE MOUNTING STRUCTURE

Gregory P. Valenti, Mountain View; Howard D. Bartlow, West Linn, and David S. Piazza, Santa Clara, all of Calif., assignors to Spectrian, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 443,799, May 18, 1995, abandoned, which is a continuation-in-part of Ser. No. 37,508, Mar. 24, 1993, which is a continuation of Ser. No. 694,424, May 1, 1991, abandoned. This application Sep. 30, 1996, Ser. No. 722,698
Int. Cl.[6] H01L *23/34*
U.S. Cl. 257—718 **19 Claims**

1. A spring biased clamp for mounting a radio frequency and microwave circuit in a ceramic package on a supporting substrate comprising



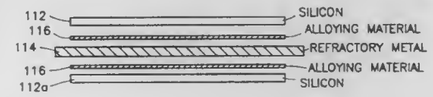
a clamp bar having a top surface and a bottom surface,
at least one groove in said bottom surface for receiving a spring,
a spring positioned in said groove and extending below said bottom surface for engaging a ceramic package, and
fastener means extending through said clamp bar for engaging a supporting substrate and maintaining a ceramic package in pressure engagement with said spring,
said clamp bar and fastener means characterized by low radio frequency impedance when mounting a ceramic package in a larger circuit.

5,825,090

HIGH POWER SEMICONDUCTOR DEVICE AND METHOD OF MAKING SAME

Dante E. Piccone, Glenmoore, Pa., assignor to Silicon Power Corporation, Malvern, Pa.

Continuation-in-part of Ser. No. 280,989, Jul. 27, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,600
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—747 **25 Claims**



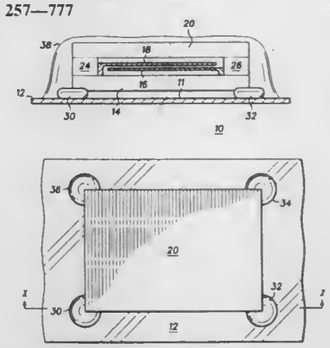
8. A high power semiconductor device comprising:
(a) a disk of refractory metal having flat faces at its opposite sides and
(b) two wafers of a semiconductor material having a coefficient of thermal expansion similar to that of the refractory metal of said disk, said wafers being alloyed to said faces of the refractory metal disk in substantially aligned relationship to each other to form an assembly of said wafers and said disk with alloyed joints between said wafers and said disk, and in which:
(c) the alloyed joints between said wafers and said disk are formed at elevated temperature,
(d) said wafers are of such size and thickness that the tendency of the wafer at one side of said disk to cause bowing of said assembly upon cooling of the assembly following formation of the alloyed joints is counteracted by a substantially equal and opposite tendency of the wafer at the opposite side of said disk to produce a substantially equal and opposite amount of bowing of the assembly, thereby resulting in a substantially flat assembly of said wafers and said disk upon cooling of the assembly following formation of said alloyed joints,
(e) said refractory metal disk has a diameter of at least (38.1 mm) 1½ inches and a thickness of at least (0.127 mm) 5 mils and of such thickness value that if the wafer at one side of said disk were omitted so that a single-wafer assembly was present, the single-wafer assembly would be subject to substantial bowing when the single-wafer assembly cooled following formation of the alloyed joint between the disk and the remaining wafer, and
(f) said refractory metal is tungsten or molybdenum.

5,825,091

SENSOR ASSEMBLY MOUNTED TO A LEADFRAME WITH ADHESIVE DEPOSITS AT SEPARATE LOCATIONS

Victor J. Adams, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 25, 1997, Ser. No. 823,702
Int. Cl.[6] H01L *23/48*
U.S. Cl. 257—777 **20 Claims**



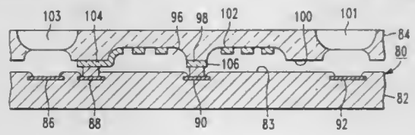
1. A semiconductor device, comprising:
a support structure having a solid surface:
an assembly for mounting to the solid surface of the support structure; and
a plurality of adhesive dots comprising a room temperature vulcanizing (RTV) material deposited at separate locations less than an entire surface area of the assembly where the plurality of adhesive dots bond the assembly to the support structure while maintaining a gap between at least a portion of the assembly and the solid surface of the support structure for stress isolation.

5,825,092

INTEGRATED CIRCUIT WITH AN AIR BRIDGE HAVING A LID

Jose Avelino Delgado, Valkaria, Fla., and Stephen Joseph Gaul, Merrimack, N.H., assignors to Harris Corporation, Palm Bay, Fla.

Filed May 20, 1996, Ser. No. 650,688
Int. Cl.[6] H01L *29/04;23/48;29/80*
U.S. Cl. 257—778 **15 Claims**



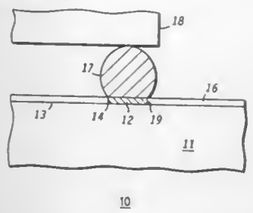
1. An integrated circuit with an air bridge enclosure comprising:
a substrate with an integrated circuit;
a glass wafer with a cavity having an inside surface disposed opposite to and enclosing at least a portion of said integrated circuit;
a metal conductor on the inside surface of said cavity and above said enclosed portion of said integrated circuit; and
metal contacts coupling the metal conductor on the inside surface of the cavity to the integrated circuit.

5,825,093

ATTACHMENT SYSTEM AND METHOD THEREFOR

Yifan Guo, Gilbert; Rao Bonda, Chandler, and Geoff Swan, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 31, 1997, Ser. No. 829,397
Int. Cl.[6] H01L *23/48;23/52;29/40*
U.S. Cl. 257—782 9 Claims



5. An attachment system comprising:

a substrate having a first coefficient of thermal expansion;

an attachment area on the substrate, the attachment area having a first surface, a second surface, and an outer boundary around a periphery of the second surface;

an attachment material on the first surface of the attachment area, the attachment material having a second coefficient of thermal expansion wherein a difference between a value of the first coefficient of thermal expansion and a value of the second coefficient of thermal expansion is at least ten ppm/°C.; and

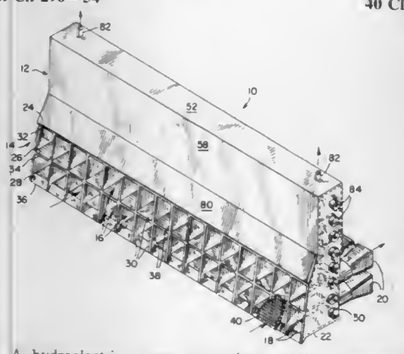
a non-wettable material abutting the outer boundary of the attachment area.

5,825,094

TURBINE ARRAY

Neil E. Hess, York, Pa., assignor to Voith Hydro, Inc., York, Pa.

Filed Nov. 13, 1996, Ser. No. 748,685
Int. Cl.[6] F03B *13/10*
U.S. Cl. 290—54 40 Claims



1. A hydroelectric power generating module configured for placement in a spillway through which water flows, the module comprising:

an upper housing section having a plurality of generators situated therewithin;

a lower base section connected to the upper housing, the lower base section having a plurality of water flow paths extending therethrough from an upstream end to a downstream end, each water flow path comprising a water inlet proximate the upstream end, a draft tube extending from the downstream end toward the water inlet by a predetermined distance, and a distributor disposed intermediate the draft tube and the water inlet, the water inlets being defined by a first plurality of substantially horizontal members interconnected with a second plurality of substantially vertical members to form an array of water tubes having generally parallel axes; and

a plurality of turbines, each turbine having a runner rotatably mounted within an associated one of the water flow paths downstream of an associated one of the distributors, at least one of the runners being mechanically coupled to an associated one of the generators for generating hydroelectric power by rotation of the at least one of the runners when water travels through the associated one of the flow paths.

5,825,095

LEISURE CHAIR STRUCTURE

Walter J. Albecker, III, 838 S. May, Chicago, Ill. 60607

Continuation-in-part of Ser. No. 899,750, Jun. 17, 1992, Pat. No. 5,425,567. This application Mar. 14, 1995, Ser. No. 403,393
Int. Cl.[6] A47C *1/14*
U.S. Cl. 297—377 22 Claims



1. A structure for a leisure chair comprising:

(a) an occupant supporting member having two symmetrical sides, an upper cross member, a lower cross member and a support sheet means, wherein the means is selected from a group consisting of webbing, a plurality of slats, springs, wires, a sheet of fabric, plywood, molded resin, and other products that can comprise a sheet, extending substantially from the upper cross member to the lower cross member, said support sheet being generally taut between the upper and lower cross members and extending in generally the same plane as that defined by the symmetrical sides, said occupant supporting member having a lower portion and an upper portion, said lower portion further being oriented to form an acute angle relative to a horizontal plane such as a floor or ground surface with said lower cross member being adjacent and parallel to said horizontal plane;

(b) a countersupporting member having two symmetrical sides and at least one base cross member, said countersupporting member having a base portion and an armrest portion which are integral and continuous, said base portion of the countersupporting member being oriented at an acute angle opposite the occupant supporting member acute angle such that the countersupporting member intersects with the occupant supporting member at intersection points between the upper portion and lower portion of the occupant supporting member in such a manner that a generally triangular shape is formed with the horizontal plane being a base, the lower portion of the backrest member being one side, and the base portion of the countersupporting member below the occupant supporting member being another side, and wherein the armrest portion of the countersupporting member extends in a generally horizontal manner beyond the intersection points for the provision of armrests for the leisure chair; and

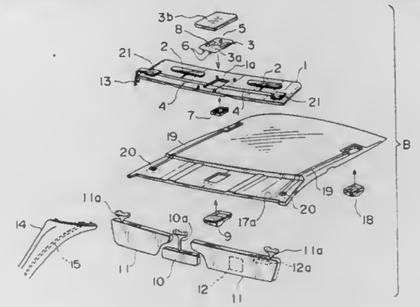
(c) an attachment means interconnecting each side of the countersupporting member to the occupant supporting member at the intersection points.

5,825,096

ROOF MODULE AND STRUCTURE FOR ASSEMBLING THE SAME

Mitsuaki Morimoto; Masataka Nishijima, and Keizo Nishitani, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 769,544
Claims priority, application Japan, Dec. 21, 1995, 7-333184
Int. Cl.[6] B60K *35/00*
U.S. Cl. 307—9.1 5 Claims



1. A structure for assembling a roof module for a motor vehicle comprising:

an assemblage board formed into a shape which conforms to a shape of a front portion of a ceiling of a motor vehicle at a driver's side, said assemblage having inner equipments of said motor vehicle, electric accessories, electric circuits therefore and connectors for providing a connection with an external electric circuit, wherein said electric accessory further includes an antenna for receiving electromagnetic waves from radio stations and motor vehicle navigation systems, and wherein said roof module and an overhead mount are assembled in parallel with each other and are mounted on said ceiling of said motor vehicle;

wherein said overhead mount is attached to said assemblage board for forming a unit together with said inner equipments of said motor vehicle; and

wherein a first connector of a pair of connectors which engage with each other and also act as fixtures is provided on said assemblage board of said roof module, and a second connector of said pair of connectors is mounted on said overhead mount, whereby said assemblage board couples with said overhead mount and circuits installed in said overhead mount connect with said electric circuits mounted on said assemblage board simultaneously with said connectors engaging with each other.

5,825,097

APPARATUS FOR DRIVING ELECTRICAL LOADS PROVIDED AT A CAR

Hiroyuki Saito, and Mitsuru Koni, both of Hitachinaka, Japan, assignors to Hitachi Ltd., and Hitachi Car Engineering Co., Ltd., both of Japan

Continuation of Ser. No. 698,107, Aug. 15, 1996, Pat. No. 5,710,465. This application Oct. 21, 1997, Ser. No. 954,893
Claims priority, application Japan, Aug. 31, 1995, 7-223736
Int. Cl.[6] B60L *1/00*
U.S. Cl. 307—10.1 1 Claim

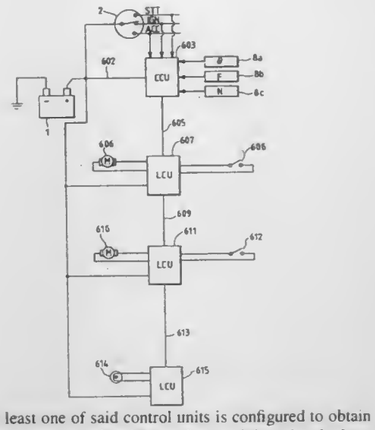
1. A car LAN system for driving electrical loads of a car, comprising:

a plurality of control units distributed and arranged in a car;

electrical loads electrically connected to said plurality of control units;

an operational switch for operating each of said electrical loads; and

a transmission bus for connecting said control units;



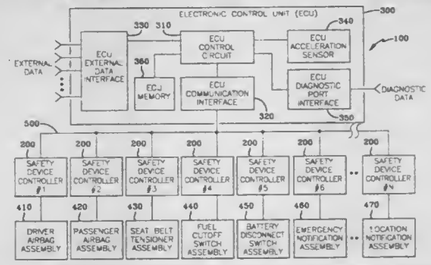
wherein at least one of said control units is configured to obtain information on operational states by receiving signals from detectors operatively installed in said car and from said operational switches, and at least one of said operational switches being configured so that as it is operated from an OFF state to an ON state, data are transmitted among said control units via said transmission bus so as to feed power to an electrical load corresponding to said switch, and one of said control units is configured to send a control signal to control an amount of power to be fed per unit time, determined on the basis of operational states of said car, to a control unit to which said electrical load is connected, and one of said control units has the relation between power to be fed to each electrical load per unit time and operational states of said car stored therein.

5,825,098

VEHICLE SAFETY DEVICE CONTROLLER

Christopher Paul Darby, Styvechale, England, and Harald Snorre Husby, Lakeland, Fla., assignors to Breed Automotive Technologies, Inc., Lakeland, Fla.

Filed Feb. 21, 1997, Ser. No. 804,199
Int. Cl.[6] B60L *1/00*
U.S. Cl. 307—10.1 51 Claims



1. A safety device controller for controlling activation of a safety device in a vehicle safety system comprising:

(a) power means for storing energy on an energy storage capacitor by charging the energy storage capacitor to a predetermined voltage;

(b) communication means for receiving a safety device activation command from a communication bus, the safety device activation command comprising an address part and a command part;

(d) diagnostic means for reading integrity data of the safety device controller;

(e) control means for generating a safety device activation signal in response to the safety device activation command and the integrity data; and

(f) safety device activation means for coupling the energy stored on the energy storage capacitor to a safety device in response to the safety device activation signal, whereby the energy storage capacitor discharges through the safety device causing the safety device to activate.

5,825,099

UNINTERRUPTIBLE POWER SUPPLY CIRCUIT

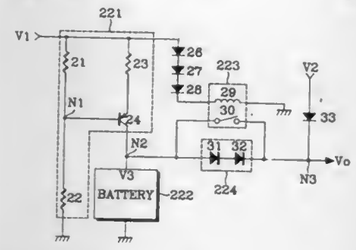
Hun-Cheol Kwon, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 18, 1996, Ser. No. 732,747

Claims priority, application Rep. of Korea, Oct. 18, 1995, 1995-35967

Int. Cl.[6] H02J *3/32*

U.S. Cl. 307—48 **10 Claims**



1. An uninterruptible power supply circuit, comprising:

a first power supply unit for supplying a first power supply voltage;

a second power supply unit for supplying a second power supply voltage which is lower than said first power supply voltage;

a back-up power supply unit for supplying a back-up power supply voltage;

a charge current control unit for receiving said first power supply voltage and for controlling a charge current supplied to said back-up power supply unit according to a capacity of said back-up power supply unit;

a reverse current protection unit connected between said second power supply unit and an output node connected to an output terminal of the uninterruptible power supply circuit;

an overcharge protection unit connected between said back-up power supply unit and said output node, for protecting said back-up power supply unit from being overcharged; and

a relay unit driven by said first power supply voltage and forming a path for dire applying said back-up power supply voltage to said output node when said first power supply voltage is cut off.

5,825,100

INTELLIGENT BATTERY POWER SYSTEM

Man-seob Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Continuation of Ser. No. 233,939, Apr. 28, 1994, abandoned.

This application Aug. 5, 1996, Ser. No. 692,442

Claims priority, application Rep. of Korea, Apr. 28, 1993, 93-7217

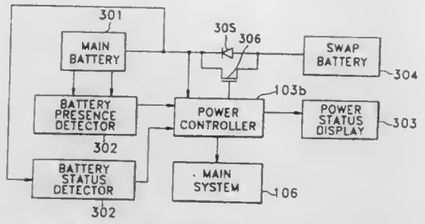
Int. Cl.[6] H02J *9/06*; **G03F** *1/00*

U.S. Cl. 307—66 **12 Claims**

1. A battery power system comprising:

a replaceable main battery having a first power supplying capacity, and a swap battery having a second power supplying capacity smaller than the first power supplying capacity, for supplying power to a main system, wherein the swap battery is built-in in the battery power system;

battery presence detecting means for detecting whether said main battery is detached from said battery power system;



power control means for supplying power from said swap battery to the main system when said battery presence detecting means detects that said main battery is detached from said battery power system, and for interrupting power from said swap battery and supplying power from said main battery to the main system when said battery presence detecting means detects that said main battery is not detached from said battery power system;

an AC adapter, connected to said power control means, for providing power from an AC power line;

a first power line connecting said main battery to said swap battery;

a second power line connecting said first power line to said power control means; and

a power switch connected to said power control means for selecting supply of power to said power control means from said AC adapter and from said second power line, said power control means 1) operating said battery power system in a suspend mode and supplying power from said swap battery to the main system when said main battery detecting means detects that said main battery is detached from said battery power system and when said power switch selects supply of power to said power control means from said second power line, 2) interrupting power from said swap battery and supplying power from said main battery to operate said battery power system in a resume mode when said battery presence detecting means detects that said main battery is not detached from said battery power system and when said power switch selects supply of power to said power control means from said second power line, and 3) operating said battery power system in the resume mode by supplying power to the main system from said AC adapter when said power switch selects supply of power to said power control means from said AC adapter.

5,825,101

ELECTRICAL LINE SYSTEM

Herbert König, München, Germany, assignor to Dr. Fischer Aktiengesellschaft, Liechtenstein, Germany

PCT No. PCT/EP93/03395, § 371 Date Jun. 30, 1995, § 102(e) Date Jun. 30, 1995, PCT Pub. No. WO94/16484, PCT Pub. Date Jul. 21, 1994

PCT Filed Dec. 2, 1993, Ser. No. 492,032

Claims priority, application Germany, Dec. 30, 1992, 42 44 569.8; Jan. 29, 1993, 43 02 558.7; May 4, 1993, 43 14 718.6

Int. Cl.[6] H04B *3/30*

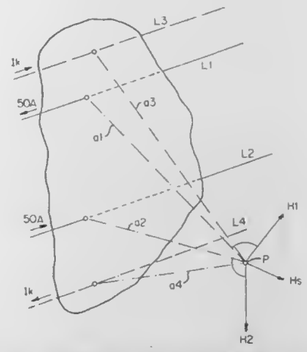
U.S. Cl. 307—91 **40 Claims**

1. An electrical line system comprising:

at least one magnetically compensated line system unit comprising at least two main conductors for transmitting electrical energy and further comprising at least one auxiliary conductor extending parallel to said at least two main conductors;

said at least two main conductors and said at least one auxiliary conductor being phase-synchronized when said at least one auxiliary conductor carries current during operation of said electrical line system;

wherein said at least two main conductors and said at least one auxiliary conductor are arranged in a spatial arrangement relative to a first reference point in a first space extending parallel to said electrical line system, and wherein the currents flowing in said at least two main conductors and said at least



one auxiliary conductor are selected such that a vector sum of the magnetic field components emanating from said at least two main conductors and said at least one auxiliary conductor is substantially equal to zero at said first reference point; and

wherein said spatial arrangement is defined by a distance between said at least two main conductors and said at least one auxiliary conductor relative to said first reference point and by a spatial distribution of said at least two main conductors and said at least one auxiliary conductor relative to said first reference point.

5,825,102

FAIL-SAFE CIRCUIT

Hartmut Babiel, Rottweil, and Konrad Mauch, Dunningen, both of Germany, assignors to Gebr. Schmidt Fabrik fur Feinmechanik, St. Georgen, Germany

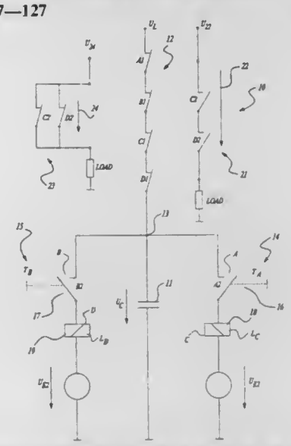
Continuation of Ser. No. 421,052, Apr. 12, 1995, abandoned.

This application Jun. 19, 1997, Ser. No. 878,872

Claims priority, application Germany, Apr. 20, 1994, 44 13 637.4

Int. Cl.[6] H02B *1/24*; **H02H** *4/787*

U.S. Cl. 307—127 **19 Claims**



1. A fail-safe circuit which triggers at least one reaction of a load as a function of a quasi-simultaneity of at least two switching events, comprising a single capacitive storage means for electrical charges, wherein said storage means is connected to actuation coils of at least two actuating switching devices in such a way that in the event of one or both of the switching events the storage means is reverse charged by one or both actuation coils, whereby the switching devices only trigger the reaction of said load if both switching devices are in their working position,comprising:

a first charging path which connects the storage means to a first potential,

a second charging path which connects the storage means to a second potential,

at least a third charging path which connects the storage means to a third potential,

a first switching device which operates as a function of the first switching event and which has a first switching contact in the first charging path and a second switching contact in the second switching path, and

at least a second switching device which operates as a function of the second switching event and which has a first switching contact in the first charging path and a second switching contact in the third switching path, whereby:

a further triggering switching device is located as a third switching device with its actuation coil in the second charging path and has a first switching contact in the first charging path and a second switching contact,

a still further triggering switching device is located as a fourth switching device with its actuation coil in the third charging path and has a first switching contact in the first charging path and a second switching contact,

all of the first switching contacts in the first charging path are interconnected in series to only allow charging of the capacitive storage means to the first potential if all of them are in their neutral position,

the actuation coils of the third and fourth switching devices and the second switching contacts of the first and second switching devices are interconnected in series in their respective second and third charging paths to reverse charge the storage means when the second switching contacts are in their working position, and

the second switching contacts of the third and fourth switching devices are connected between a supply voltage and a load in such a way that the reaction of the load is only triggered in response to the energization of both actuation coils.

5,825,103

VOLTAGE-SUPPRESSED VOLTAGE SOURCE WITH PARTIAL RESONANCE CIRCUIT

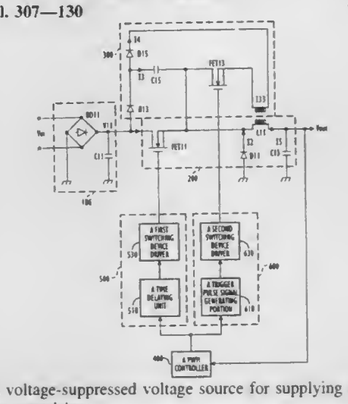
Kyung Geun Lee, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed May 28, 1997, Ser. No. 864,686

Claims priority, application Rep. of Korea, May 31, 1996, 96 19368; Aug. 5, 1996, 96 32670

Int. Cl.[6] H02M *3/335*

U.S. Cl. 307—130 **7 Claims**



1. A voltage-suppressed voltage source for supplying an output voltage comprising:

a DC voltage generating portion for producing an arbitrary DC voltage;

a suppressor circuit having a first switching device which switches between an on state and an off state, and suppressor

circuit receiving said arbitrary DC voltage and transforming said arbitrary DC voltage into said output voltage;

a PWM controller for monitoring said output voltage, and generating a PWM signal based on the voltage level of said output voltage;

a first switching control portion for receiving said PWM signal from said PWM controller and controlling said first switching device by outputting a delayed version of said PWM signal to said first switching device;

a second switching control portion for generating a trigger pulse signal according to said PWM signal from said PWM controller; and

a partial resonance portion having a second switching device controlled according to said trigger pulse signal, and for reducing current flow to said first switching device when said first switching device switches between said on and off states.

5,825,104

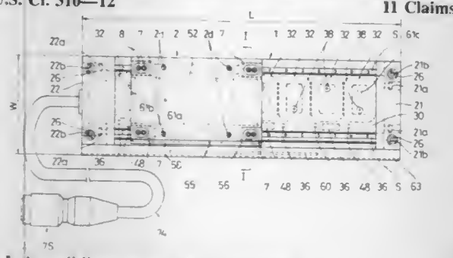
SMALL LINEAR MOTOR TABLE

Takuo Kondo; Shoji Fujisawa, and Norimitsu Kitade, all of Kanagawa, Japan, assignors to Nippon Thompson Co., Ltd., Tokyo, Japan

Filed Feb. 24, 1997, Ser. No. 805,351

Claims priority, application Japan, Mar. 28, 1996, 8-099400

U.S. Cl. 310—12 **11 Claims**



1. A small linear motor table comprising:

a bed and a table incorporated so as to freely and mutually perform relative motion;

a linear electromagnetic actuator that provides a driving force between said bed and said table, wherein at least one of said bed and said table is a magnetic circuit portion of said linear electromagnetic actuator;

a detection device for detecting a relative position of said bed and said table, said detection device comprising a detected portion and a detecting portion; and

a drive substrate and armature coils and drive circuits provided on said drive substrate, wherein said drive substrate comprises at least two sections, plural ones of said armature coils and at least one of said drive circuits together forming a single unit provided on each one of said sections of said drive substrate, and a length of said drive substrate being changed by adding or removing one or more of said sections, wherein

an empty space is provided at a predetermined location on said drive substrate, and wherein said detecting portion comprises an electrical circuit, said electrical circuit being provided in said empty space.

5,825,105

MAGNETIC LEVITATION AND SYSTEMS FOR THE SUPPORT AND CONVEYANCE OF USEFUL PAYLOADS

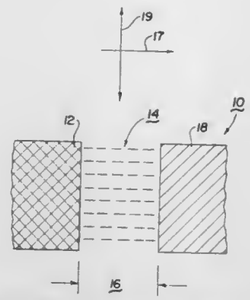
John B. Barber, Westlake Village, Calif., and Duane B. Barber, Ithaca, N.Y., assignors to Modern Transport Systems, Corp., Westlake Village, Calif.

Filed Apr. 7, 1997, Ser. No. 835,220

Int. Cl.[6] H02K *41/00*

U.S. Cl. 310—12 **35 Claims**

1. A magnetic support system for useful payloads comprising:



a first member providing a magnetic field source positioned in a two dimensional plane of orientation;

a second member providing an array of ferromagnetic surfaces spaced opposite from said source so as to cooperatively define an intervening gap through which the magnetic field of said source can interact;

one of said first or second members being secured to a fixed surface and the other of said first or second members being vertically displaceable;

said first member being capable of generating at least one sheet of a horizontally oriented magnetic field in a longitudinal plane normal to said two dimensional plane for effecting an attractive interaction between said source and said array and a vertical force having a force range sufficient to support a payload of contemplated weight; and

a payload support on the displaceable of said first or second members for receipt of a useful payload.

5,825,106

BI-DIRECTIONAL BIPHASE ELECTROMECHANIC TRANSDUCER HAVING MULTIPOLOR MAGNETS

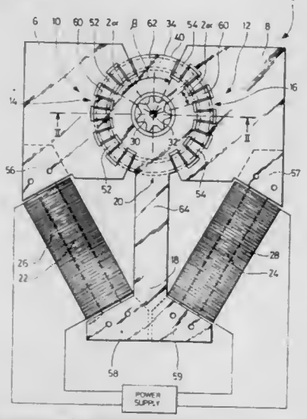
Daho Taghezout, Morges, Switzerland, assignor to Eta SA Fabriques d'Ebauches, Grenchen, Switzerland

Filed Feb. 13, 1997, Ser. No. 800,764

Claims priority, application France, Feb. 15, 1996, 96 01879

Int. Cl.[6] H02K *37/08;16/04*

U.S. Cl. 310—49 R **7 Claims**



1. An electromecanic transducer comprising:

a stator defining statoric magnetic poles which are situated essentially in a same statoric plane;

a rotor defining an axis of rotation of the rotor and comprising a multipolar magnet presenting an even number of magnetic dipoles which are orientated alternately along said axis of rotation and each defining a first central angle, said multipolar magnet defining a rotor plane parallel to said statoric plane;

two coils arranged to be connected to an electric power supply;

said stator comprising a first branch and a second branch which each contain one of the two coils, a first and second of said statoric magnetic poles having respectively a first and a second circular battlement being formed of merlons, said merlons being at least partially superposed to said multipolar magnet, two adjacent merlons of said first or second circular battlement being angularly shifted one with respect to the other by an angle which is twice said first central angle, any merlon of said first circular battlement being angularly shifted with respect to any merlon of said second circular battlement by N+½times said first central angle, N being a positive integer, said first and second branches comprising first and second extremities, said first extremities being respectively connected to said first and second magnetic poles, wherein a third and final magnetic pole of said statoric magnetic poles is arranged around said axis of rotation and has at its periphery, teeth which overlap said first and second circular battlements and which are superposed at least partially to said multipolar magnet, said first and second branches having their said second extremities connected to said third statoric magnetic pole.

5,825,107

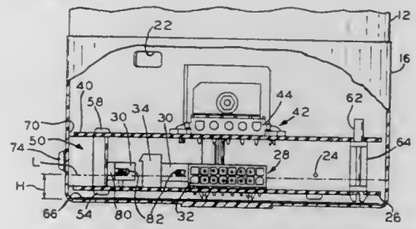
DRIVE PACKAGE FOR A DYNAMOELECTRIC MACHINE

Philip W. Johnson, Bluffton; Jeffrey D. Neumann, and Mark A. Brattoli, both of Fort Wayne, all of Ind., assignors to General Electric Company, Fort Wayne, Ind.

Filed Jun. 13, 1997, Ser. No. 874,993

Int. Cl.[6] H02K *9/22;9/00*

U.S. Cl. 310—64 **27 Claims**



1. A drive package for a dynamoelectric machine comprising:

a printed wire board having circuitry thereon for operating the dynamoelectric machine, the circuitry including heat generating components;

a housing receiving and supporting the printed wire board at a peripheral edge location on the printed wire board at one side of the printed wire board, the printed wire board extending outwardly from the housing in cantilever fashion at a level in the housing;

potting material in the housing and filling the housing to at least about the level of the printed wire board, the potting material being in contact with the printed wire board and providing mechanical support for the printed wire board in the housing away from the peripheral edge portion.

5,825,108

BRUSHLESS ELECTRIC MOTOR, PARTICULARLY FOR DIRECT DRIVING OF A WASHING MACHINE

Pietro De Filippis, Monza, Italy, assignor to Bitron S.p.A., Grugliasco, Italy

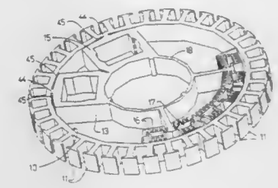
Filed Jan. 11, 1996, Ser. No. 584,563

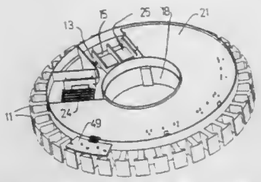
Claims priority, application Italy, Jan. 10, 1995, TO95A0009

Int. Cl.[6] H02K *67/00;11/00*

U.S. Cl. 310—67 R **13 Claims**

1. A permanent magnet brushless electric motor for direct drive of a member, the motor comprising a rotor fixed to and rotatable





with a shaft of the member to be driven and rotating with respect to a crown-like stator provided with coil supporting teeth, said crown-like stator being formed of a lamination stack that has been blanked; wherein the stator crown includes a plurality of receptacles formed within the lamination stack by blanking for seating corresponding electric and electronic components operationally associated with the stator, said components comprising a transformer, an inductance coil, and a plurality of MOSs; said stator crown further includes a molded covering of electrically insulating plastic material that covers said receptacles and said teeth, said electrically insulating plastic material being molded over the stator crown before seating of said components within the receptacles, and at least one tank defined by said covered stator crown and that receives a printed circuit; the permanent magnet rotor includes small pieces which face outer surfaces of magnets of the permanent magnet rotor so as to close respective magnetic circuits; said small pieces being obtained by blanking portions of the lamination stack of said stator crown; said stator crown being force-fitted on a fixed supporting structure through which said shaft extends, said shaft being driven directly by the rotor.

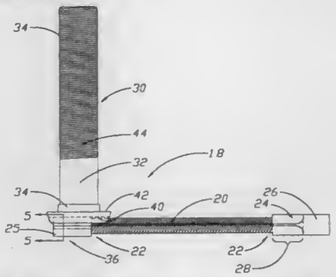
5,825,109

VEHICULAR OIL COOLED ALTERNATOR WITH STATOR COIL TERMINAL ASSEMBLY TERMINAL ASSEMBLY KIT AND METHOD

Allen L. Jeske, Mauston, Wis., assignor to Calumet Armature & Electric Co., Riverdale, Ill.

Filed Nov. 30, 1994, Ser. No. 346,892

U.S. Cl. 310—71 **9 Claims**



1. In an oil cooled alternator having a plurality of commonly connected, relatively inflexible stator coils with distal ends for providing electrical output power from the alternator, the improvement being a terminal assembly for making electrical connection with each of said distal ends, comprising:

a flexible conductor with a pair of ends on opposite sides of an elongate body having a flexibility substantially greater than that of the coils;

a connector with

a first relatively rigid portion secured to one of the pair of ends of the flexible conductor and adapted for welding to a distal end of said coil, and

a second portion connected to the first relatively rigid portion in which the second portion is formed of a bendable material for crimped connection with the one of the pair of ends of the flexible conductor; and

a relatively rigid post assembly having

an elongate body portion extending between two ends, and

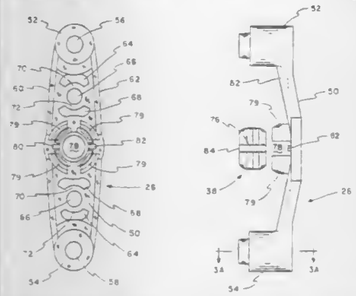
means carried at one of said two ends of the elongate body portion for electrical connection with another one of the pair of ends of the flexible conductor in which the electrical connection means includes a head having a slot at one end of said two ends of the elongate body portion of the post and in which the other one of the pair of ends of the flexible conductor is receivable within the slot for being welded to the head while in the slot.

5,825,110

BRACKET SUPPORT WITH FLOATING BEARING FOR FRACTIONAL HORSEPOWER MOTOR

Alan Page, Monticello, Ind., assignor to A. O. Smith Corporation, Milwaukee, Wis.

Filed Sep. 12, 1996, Ser. No. 712,912
Int. Cl.[6] H02K *5/16;* **F16C** *23/04*
U.S. Cl. 310—90 **8 Claims**



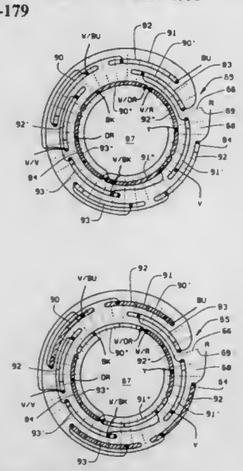
1. A fractional horsepower motor comprising a magnetic core structure with a rotor mounted on said structure, said rotor having an axial turning shaft, a bearing bracket having a socket and being mounted on said magnetic core structure, a bearing mounted in said socket and carried by said bearing bracket for supporting said shaft, said bearing having a somewhat barrel shaped contour and having at least two longitudinal grooves on a periphery of said barrel shape, said socket having at least four upstanding leaves with at least four vertical slot spaces between and separating said leaves, at least two oppositely disposed ones of said slots containing tabs formed in said socket and fitting into said grooves for restraining bearing rotation about an axis of said bearing while enabling said bearing to tip in said socket in order to compensate for a shaft bearing misalignment, and said vertical slot spaces providing openings for inspecting a fitting of said tabs into said grooves and for installation of a pry for removing said bearing from said socket.

5,825,111

SINGLE-PHASE INDUCTION MOTOR 4/6 POLE COMMON WINDING CONNECTION WITH MAGNETIC MOTIVE FORCE SYMMETRICALLY DISTRIBUTED

Renyan W. Fei, St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Nov. 12, 1996, Ser. No. 745,454
Int. Cl.[6] H02K *3/00*
U.S. Cl. 310—179 **27 Claims**



1. An electric motor system comprising:

a pair of line terminals for connection to an external source of power;

a stator core;

a first winding coil group disposed in magnetic coupling relationship with said core, said first winding coil group including four coil sets;

a second winding coil group disposed in magnetic coupling relationship to said core, said second winding coil group including four coil sets;

a third winding coil group disposed in magnetic coupling relationship with said core, said third winding coil group including four coil sets; and

a switch assembly operatively connected to said first, said second, and said third winding coil groups so as to change current flow direction in selected ones of said coil sets to provide a four pole main operation and a four pole auxiliary winding operation in one connection, and a six pole main and a six pole auxiliary winding in another interconnection, said coil sets and connections being arranged so that the main winding and auxiliary winding magnetic motive forces are symmetrically distributed in both four pole and six pole modes of operation.

5,825,112

DOUBLY SALIENT MOTOR WITH STATIONARY PERMANENT MAGNETS

Thomas A. Lipo; Yuefeng Liao, and Feng Liang, all of Madison, Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

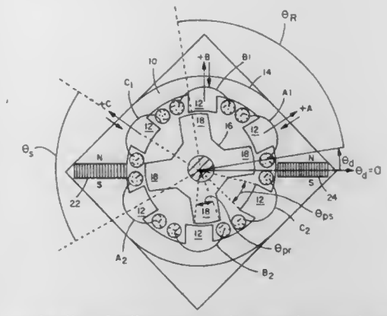
Filed Aug. 6, 1992, Ser. No. 926,765
Int. Cl.[6] H02K *1/00;1/14;1/12*
U.S. Cl. 310—181 **13 Claims**

1. A permanent magnet motor comprising:

a rotor mounted for rotation about a central axis, said rotor further comprising,

a plurality of salient rotor poles spaced at equal angular intervals around said central axis; and

a stator symmetrically formed around said central axis so as to encircle said rotor, said stator further comprising,



a plurality of salient stator poles spaced at equal angular intervals around said central axis, said stator poles being arranged with respect to said rotor poles to provide a constant air-gap reluctance during rotation of said rotor within said stator, and

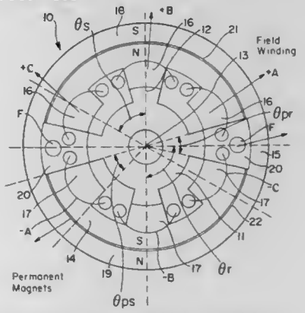
a plurality of permanent magnets shaped in two elongate parallelepipeds parallely spaced and symmetrically positioned within said stator in the plane of said central axis, each of said parallelepipeds being positioned between a pair of said stator poles on diametric sides of said central axis, said magnets being so polarized as magnetize as north magnetic poles the ones of said stator poles lying to one side of the plane containing said magnets and to magnetize as south magnetic poles the ones of said stator poles lying to the side opposite said one side of the plane containing said magnets.

5,825,113

DOUBLY SALIENT PERMANENT MAGNET MACHINE WITH FIELD WEAKENING (OR BOOSTING) CAPABILITY

Thomas A. Lipo, Middleton, and Yue Li, Madison, both of Wis., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Jul. 5, 1995, Ser. No. 498,194
Int. Cl.[6] H02K *21/04*
U.S. Cl. 310—181 **16 Claims**



1. A permanent magnet machine comprising:

a rotor mounted for rotation about a central axis and comprising:

a plurality of salient rotor poles being spaced at equal angular intervals around said central axis and extending radially outward therefrom;

a stator comprising:

a stator yoke, the stator yoke being of a round shape in its cross-section and having first and second similar sections, arranged symmetrically around the central axis,

a first and a second plurality of salient stator poles being spaced at equal angular intervals around the central axis and extending radially inward from the stator yoke, said first section having said first plurality of stator poles, and said second section having said second plurality of stator poles, and

first and second arched permanent magnets embedded in the stator yoke, the first permanent magnet being interposed between the first section of the stator yoke and said first plurality of the stator poles, and the second permanent magnet being interposed between the second section of the stator yoke and said second plurality of the stator poles, said first and second permanent magnets forming a primary flux path through said stator yoke between said first and second sections;

a plurality of armature windings, each being individually coiled about a stator pole of said first plurality of stator poles and a diametrically opposite stator pole of said second plurality of stator poles, and

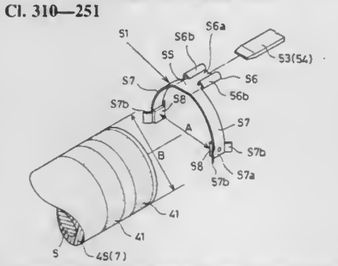
a field winding excited by a constant or slowly varying current permanently coupled with said primary flux path and interposed between said first and second sections and wound along a length of the stator yoke.

5,825,114

BRUSH AND SLIP RING ARRANGEMENT OF AN AC GENERATOR

Takuzo Mukai, Handa, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Nov. 15, 1996, Ser. No. 748,829
Claims priority, application Japan, Nov. 17, 1995, 7-299392
Int. Cl.[6] H02K *13/00*
U.S. Cl. 310—251 **7 Claims**



1. A brush and slip ring arrangement of an AC generator which includes a housing, a stator having a stator coil, a rotor having a field coil and shaft and a voltage regulator, wherein said arrangement comprises:

a slip ring unit carried by said shaft and having a cylindrical insulating member and a pair of carbonaceous slip rings around said cylindrical insulating member;

a pair of brush members, each of said brush members having a semicircular brush body made of springy copper alloy and disposed to surround one of said slip rings, two contact members disposed at opposite ends of said brush body in contact with one of said slip rings and a clamp portion; and

a brush holder fixed to said housing, said brush holder having a pair of connecting terminals each of which engages said clamp portion of one of said brush members and an insulating member insulating said connecting terminals from each other; wherein

each of said contact members is made of wear-resistant conductive metal alloy.

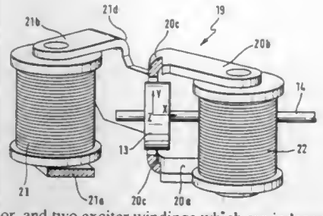
5,825,115

ELECTRIC MOTOR AND INDICATING MECHANISM, IN PARTICULAR FOR INDICATING INSTRUMENTS IN MOTOR VEHICLES

Klaus Kronenberg, Sulzbach; Sabine Vorberg, Aschaffenburg; Markus Keutz, Rossdorf; Andreas Wilhelm, Mühltal; Frank Weiand; Christian Beckhaus, both of Darmstadt; Thomas Vorberg, Aschaffenburg; Peter Schmidt, Bad Homburg, and Jochen Blume, Darmstadt, all of Germany, assignors to VDO Adolf Schindling AG, Frankfurt, Germany

Filed Oct. 17, 1996, Ser. No. 731,627
Claims priority, application Germany, Oct. 20, 1995, 195 39 138.1; Apr. 23, 1996, 196 16 077.4
Int. Cl.[6] H02K *1/12*
U.S. Cl. 310—254 **20 Claims**

1. An electric motor comprising:



a stator, and two exciter windings which are independent of each other and are disposed on the stator, said windings producing magnetic fields;

a rotor shaft, and a permanently magnetized rotor which has at least one pair of poles and which changes its position as function of the magnetic fields, the rotor being arranged fixed axially on the rotor shaft;

wherein said stator has a multi-arm arrangement including a plurality of arms and an opening at a center of the multi-arm arrangement to receive said rotor, said multi-arm arrangement having first and second opposed surfaces extending parallel to a plane of said opening in a region of said opening;

there being first and second pairs of said arms, said arms of each pair of said arms being oppositely arranged around said opening;

the opposite arms of each of the respective pairs are bent with respect to each other to receive an exciter winding, exciter windings of said respective pairs of arms producing magnetic force vectors which are perpendicular to each other;

in said first pair of arms, each arm is bent about a bend line to bring the first surface of one arm of said first pair offset from and in facing relation to the first surface of a second arm of said first pair, the bend line of each of said arms lying in said plane of said opening;

in said second pair of arms, each arm is bent about a first bend line and a second bend line to bring the second surface of one arm of said second pair offset from and in facing relation to the second surface of a second arm of said second pair; and

in each of said arms, of said second pair of arms the first bend line lies in said plane of said opening and is perpendicular to said second bend line.

5,825,116

AC GENERATOR FOR VEHICLE HAVING COMBINED STRUCTURE OF FIELD COIL AND PERMANENT MAGNET

Hiroaki Ishikawa, Nagoya, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Oct. 31, 1996, Ser. No. 740,667
Claims priority, application Japan, Nov. 2, 1995, 7-286057
Int. Cl.[6] H02K *1/122*
U.S. Cl. 310—263 **7 Claims**

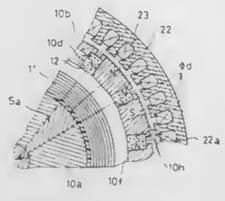
1. An AC generator for a vehicle having a combined structure of a field coil and a permanent magnet, said AC generator comprising:

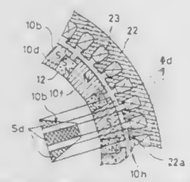
a stator having a stator core with a plurality of teeth formed on a inner periphery thereof and a stator winding disposed between said teeth; and

a rotor rotatably disposed inside said stator, in said rotor having a rotor shaft, a magnetic boss portion on which said field coil is wound, said magnetic boss portion being carried by said rotor shaft and being bounded radially by said rotor shaft and said field coil, a plurality of claw poles extending from opposite sides of said boss portion to face said teeth to provide a magnetic field, and a permanent magnet disposed between said claw poles; wherein

said boss portion has a cross-sectional area Sa per pole perpendicular to the magnetic path of magnetic flux generate by said field coil and said permanent magnet,

each of said claw poles has a peripheral surface, said peripheral surface having portions which are directly opposite said teeth when each said permanent magnet is centered





midway between two successive teeth, and the portions having a total area Sd, and

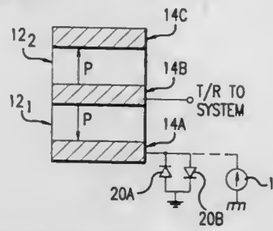
a ratio Sa/Sd is between 70% and 120%.

5,825,117

SECOND HARMONIC IMAGING TRANSDUCERS

William J. Ossmann, Acton, Mass.; Larry Pendergrass, Santa Rosa, Calif., and Martin K. Mason, Andover, Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 26, 1996, Ser. No. 622,483
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—317 **8 Claims**



1. A piezoelectric transducer, being operative at two distinct frequencies, comprising:

a piezoelectric arrangement, having a first and a second electrode, including,

a series of N piezoelectric layers extending from the first to the second electrode, and

a plurality of interleaving electrodes, each of which is located between adjacent piezoelectric layers;

a transceiving line, electrically connected to the piezoelectric arrangement, to at least one of the plurality of interleaving electrodes; and

two diodes, connected in parallel with opposite polarity between the first electrode and ground, being operative to switch between the two distinct frequencies.

5,825,118

VIBRATION ACTUATOR

Mitsuhiro Okazaki, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 30, 1997, Ser. No. 866,325
Claims priority, application Japan, May 30, 1996, 8-136617
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—323 **20 Claims**

1. A vibration actuator, comprising:

a hollow rod-shaped vibration element having an inner surface defined along an axis, said vibration element generating tor-

sional vibration around the axis, having at least one node, and longitudinal vibration in the axial direction, having at least one node;

a fixed member passing through said vibration element, wherein said fixed member is arranged to have a gap with respect to said vibration element;

a relative motion member in compressive contact with an end surface of said vibration element; and

a support member to connect said vibration element to said fixed member,

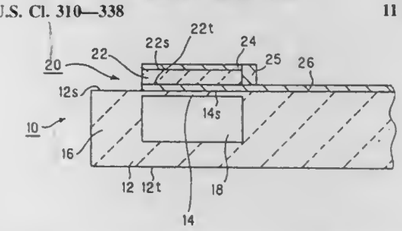
wherein said support member passes through said vibration element and said fixed member, and elastically deforms in the gap.

5,825,119

SENSOR ELEMENT AND PARTICLE SENSOR

Kazuyoshi Shibata, Nagoya; Yukihisa Takeuchi, Nishikamogun, both of Japan; Eric J. Shrader, Belmont, Calif.; Joseph S. Eckerle, Redwood City, Calif., and Ronald E. Pelrine, Menlo Park, Calif., assignors to NGK Insulators, Ltd., Japan

Continuation of Ser. No. 443,464, May 18, 1995, Pat. No. 5,698,931, which is a continuation of Ser. No. 221,014, Apr. 1, 1994, abandoned. This application Apr. 4, 1997, Ser. No. 833,115
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—338 **11 Claims**



1. A sensor element for detecting a solid particle in a fluid, comprising:

a substrate comprising (i) a main body having an opening formed therethrough in a thickness direction thereof, and (ii) a thin-walled vibrating portion covering the opening along an upper surface of said main body; and

a detecting unit formed on an upper surface of said thin-walled vibrating portion remote from the opening formed through said main body, said detecting unit comprising a piezoelectric film, a first electrode coated on at least a portion of the outer surface of said piezoelectric film, and a second electrode coated on at least a portion of the inner surface of said piezoelectric film,

wherein the fluid and the solid particles therein pass through the opening formed through said main body and said detecting unit and said thin-walled vibrating portion have sufficiently low mass such that when the solid particles strike said thin-walled vibrating portion said thin-walled vibrating portion and said detecting unit vibrate, and said piezoelectric film converts the resulting vibration into an electric signal, said detecting unit and said thin-walled vibrating portion being substantially motionless when the fluid and particles therein do not pass through the opening.

5,825,120

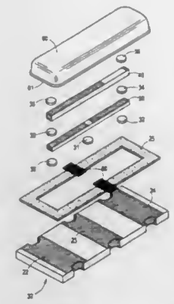
ELECTRONIC COMPONENT

Michinobu Maesaka, Omihachiman; Tetsuo Tatsumi, Itami, and Masato Higuchi, Moriyami, all of Japan, assignors to Murata Manufacturing, Co., Ltd., Kyoto-fu, Japan

Filed May 9, 1997, Ser. No. 853,447
Claims priority, application Japan, May 9, 1996, 8-140860
Int. Cl.[6] H03H *9/17;* **H01L** *41/08*
U.S. Cl. 310—344 **5 Claims**

1. An electronic component comprising:

an insulating substrate having an input electrode, an output electrode, and a ground electrode;



an electronic component device mounted on said insulating substrate; and

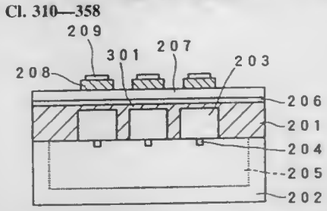
a cap bonded and sealed onto said insulating substrate via an insulating layer such that the cap covers said electronic-component device, wherein a conductive layer connected to said ground electrode is disposed on part of said substrate and positioned at a level higher than said insulating layer, such that said cap is electrically connected to said conductive layer.

5,825,121

THIN FILM PIEZOELECTRIC DEVICE AND INK JET RECORDING HEAD COMPRISING THE SAME

Masato Shimada, Suwa, Japan, assignor to Seiko Epson Corporation, Tokyo, Japan

Filed Jul. 6, 1995, Ser. No. 499,020
Claims priority, application Japan, Jul. 8, 1994, 6-157449
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—358 **9 Claims**



1. A thin film piezoelectric device comprising:

a piezoelectric film which is polycrystalline, and two electrodes by which the piezoelectric film is sandwiched, wherein the size of crystal grains of the piezoelectric film is 0.4 μm to 3 μm and is equal to or less than the thickness of the piezoelectric film, and the piezoelectric film has a thickness of 1 μm to 5 μm.

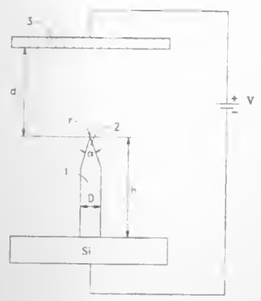
5,825,122

FIELD EMISSION CATHODE AND A DEVICE BASED THEREON

Evgeny Invievich Givargizov, 117421, ul. Obrucheva 20, kv. 12; Viktor Vladimirovich Zhirnov, 121609, Rublevskoe shosse 44, kor. 2, kv. 335; Alla Nikolaevna Stepanova, 119270, 3-ya Frunzenskaya ul. 9, kv. 149, and Lidiya Nikolaevna Obolenskaya, 117279, ul. Profsojznaya 105, kv. 175, all of Moscow, Russian Federation

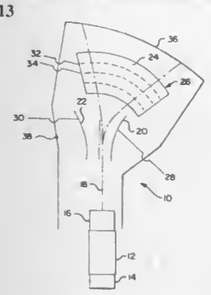
PCT No. PCT/RU95/00154, § 371 Date Mar. 26, 1997, § 102(e) Date Mar. 26, 1997, PCT Pub. No. WO96/03762, PCT Pub. Date Feb. 8, 1996
PCT Filed Jul. 18, 1995, Ser. No. 619,704
Claims priority, application Russian Federation, Jul. 26, 1994, 94027731/07
Int. Cl.[6] H01J *1/30*
U.S. Cl. 313—336 **19 Claims**

1. A matrix field-emission cathode comprising a single-crystalline silicon substrate and an array of silicon tip emitters



located on the silicon substrate, wherein the silicon tip emitters are made of silicon whiskers epitaxially grown on the single-crystalline silicon substrate and each of the emitters also functions as a ballast resistor and has a resistance greater than about 5×10^4 ohm.

5,825,123
METHOD AND APPARATUS FOR DEFLECTING A CHARGED PARTICLE STREAM
Michael W. Retsky, 237 Strobel Rd., Trumbell, Conn. 06611
Filed Mar. 28, 1996, Ser. No. 623,918
Int. Cl.[6] H01J *29/50;29/46*
U.S. Cl. 313—413 **24 Claims**

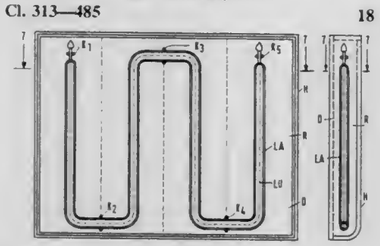


1. Apparatus for deflecting a charged particle stream by injecting the stream between a first pair of symmetrical deflection plates, comprising:
a particle source, the particle source operative to aim the particle stream in a substantially undeflected condition offset from a centerline between the symmetrical deflection plates, the offset position being at a predetermined location based upon stream deflection and stream offset characteristics, wherein the predetermined location comprises an inflection point on a deflection versus offset curve; and
a target disposed substantially orthogonal to the particle stream the particle stream to impact the target.

5,825,124
CATHODE-RAY TUBE HAVING ACTIVATED GREEN AND BLUE PHOSPHORS
Katsutoshi Ohno, Tokyo; Tsuneo Kusunoki, Kanagawa; Kenji Takayanagi, Kanagawa, and Masaru Ihara, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Mar. 21, 1996, Ser. No. 619,293
Claims priority, application Japan, Mar. 23, 1995, 7-064416
Int. Cl.[6] H01J *29/20*
U.S. Cl. 313—467 **4 Claims**

1. A three-dimensional television system, comprising:
a first camera for producing a first image for viewing by a left eye of a viewer;
a second camera for producing a second image for viewing by a right eye of the viewer, wherein the first and second images are vertically compressed and combined into a single transmission image;
a direct viewing cathode-ray/display tube having a vertical scanning frequency of 120 Hz by which a phosphor screen of the display tube receives the transmission signal; and
a phosphor layer for the phosphor screen of the display tube, the phosphor layer comprising a red phosphor of Y_2O_2S:EU, having a decay intensity of at most 0.5% upon elapse of 8 milliseconds after excitation is removed therefrom; a green phosphor having a host material of ZnS:Cu, Al, and having a decay intensity substantially equal to said decay intensity of said red phosphor; and a blue phosphor having a host material of ZnS:Ag, and having a decay intensity substantially equal to said decay intensity of said red phosphor.

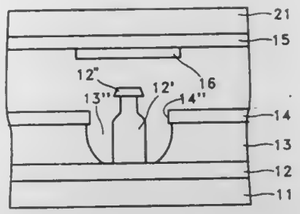
5,825,125
NEON DISCHARGE LAMP
Franciscus A. S. Ligthart; Rolf E. De Man; Christianus J. Roozekrans, and Dick Van Der Voort, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.
Filed Jan. 26, 1996, Ser. No. 592,259
Claims priority, application European Pat. Off., Jan. 30, 1995, 95200225
Int. Cl.[6] H01J *61/16*
U.S. Cl. 313—485 **18 Claims**



1. A lighting unit comprising
a discharge vessel having a wall provided with a luminescent screen comprising a first luminescent layer,
a gas filling in said discharge vessel, said gas filling consisting essentially of neon having a pressure less than 30 mbar at ambient temperature, and
means for providing a constant DC current for exciting said filling in said discharge vessel to emit ultraviolet light which excites the luminescent layer.

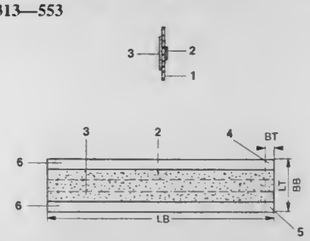
5,825,126
FIELD EMISSION DISPLAY AND FABRICATING METHOD THEREFOR
Jong-min Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Suwon City, Rep. of Korea
Filed Jun. 7, 1995, Ser. No. 487,042
Claims priority, application Rep. of Korea, Mar. 28, 1995, 95-6749
Int. Cl.[6] H01J *1/62;63/04;1/02;1/16*
U.S. Cl. 313—497 **27 Claims**

1. A field emission display comprising:
a rear substrate;
a cathode disposed on said rear substrate having a predetermined thickness;



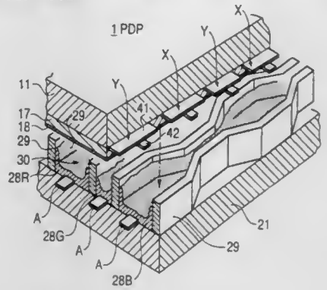
a micro-tip pedestal of a first material disposed on said cathode and having a predetermined height;
a flat micro-tip comprised of a second material selected from diamond or diamond-like carbon disposed on said micro-tip pedestal having a predetermined thickness, the second material having a work function below a predetermined value;
an insulating layer disposed on said cathode and having a hole therein surrounding said micro-tip pedestal, a height of said insulating layer being lower than said micro-tip;
a gate, having an aperture defined around said micro-tip pedestal at a predetermined space from said micro-tip pedestal, disposed on said insulating layer at a height lower than said micro-tip; and
a front substrate having an opposing surface opposed to said rear substrate at a predetermined distance, and having an anode disposed on the opposing surface.

5,825,127
METHOD FOR PRODUCING A CAP BAND FOR DISCHARGE LAMPS
Erolf Weinhardt, Diedorf, Germany, assignor to Patent-Treuhand-Gesellschaft für elektrische Glühlampen mbH, Munich, Germany
PCT No. PCT/DE96/00924, § 371 Date Jan. 8, 1997, § 102(e) Date Jan. 8, 1997, PCT Pub. No. WO97/00532, PCT Pub. Date Jan. 3, 1997
PCT Filed May 28, 1996, Ser. No. 765,769
Claims priority, application Germany, Jun. 16, 1995, 195 21 972.4
Int. Cl.[6] H01J *61/24*
U.S. Cl. 313—553 **19 Claims**



1. A method for producing a cap band for discharge lamps, comprising the steps of
providing a substrate band (1) coated with material to be introduced into the discharge lamp, optionally at least one of: a mercury alloy (2) and a getter material (3).
said method comprising the steps of
severing, transversely to the longitudinal direction (LB) of the substrate band (1), a portion (5) of the substrate band, said portion forming the cap band (4, 60) or a portion (64) of the cap band, which is coated over its entire width (BT) with the material.

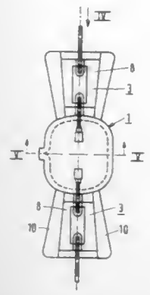
5,825,128
PLASMA DISPLAY PANEL WITH UNDULATING SEPARATOR WALLS
Keiichi Betsui; Shin'ya Fukuta; Tadayoshi Kosaka; Fumihiro Namiki; Osamu Toyoda, and Shigeo Kasahara, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Aug. 9, 1996, Ser. No. 694,760
Claims priority, application Japan, Aug. 9, 1995, 7-202977
Int. Cl.[6] H01J *17/16;17/49*
U.S. Cl. 313—582 **23 Claims**



1. A plasma display panel, comprising:
a matrix of unit display elements arranged on a main surface of a substrate in rows in a first direction and lines in a second direction, generally perpendicular to the first direction;
a plurality of separator walls formed on the main surface of the substrate and extending along the first direction of said rows, adjacent separator walls being spaced apart in the second direction by corresponding channels defining respective discharge spaces, said separator walls having a zig-zag configuration such that each channel, between adjacent separator walls, varies periodically in width in the second direction between first and second widths respectively smaller than and at least as large as a width required for supporting discharges, the discharge spaces being of the second width;
fluorescent materials disposed in said channels, said fluorescent material in a given channel being of a common color; and
a plurality of display electrodes, extending along said second direction in parallel relationship and spaced in the first direction, said display electrodes being arranged so that an electrical discharge is generated in a selected discharge space.

5,825,129
HIGH PRESSURE DISCHARGE LAMP HAVING PIRCH SEALS
Bart Van der Leeuw, Turnhout, Belgium; Joseph E. Canale, Painted Post, and Thomas W. Morris, Bath, both of N.Y., assignors to U.S. Philips Corporation, New York, N.Y.
Filed Nov. 4, 1996, Ser. No. 743,594
Claims priority, application European Pat. Off., May 31, 1996, 96201515
Int. Cl.[6] H01J *61/30;61/36*
U.S. Cl. 313—634 **10 Claims**

1. A high-pressure discharge lamp comprising:
a quartz glass lamp vessel which is closed in a gastight manner, which has a longitudinal axis, and which has pinch seals arranged opposite one another on the axis and each having an end face, which seals bound a discharge space which contains an ionizable filling;
electrodes in the lamp vessel each connected to a current conductor which issues from the end face of a respective pinch seal to the exterior,
which pinch seals have main surfaces facing away from one another and having a maximum dimension transverse to the axis which corresponds to a maximum transverse dimension of the lamp vessel at the area of the discharge space, and side



faces facing away from one another, said main surfaces narrowing in an axial zone adjoining the discharge space,

characterized in that the main surfaces of the pinch seals widen in a direction away from the discharge space up to at least substantially the end face and have raised ridges along their axial edges whose height diminishes towards the end face.

5,825,130

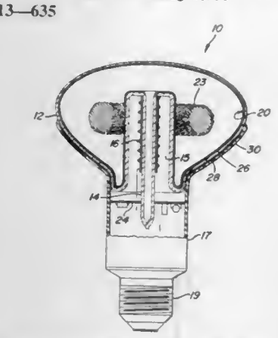
EXTERNAL METALLIZATION CONFIGURATION FOR AN ELECTRODELESS FLUORESCENT LAMP

Louis R. Nerone, Brecksville, and James D. Mieskoski, Seven Hills, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 228,979, Apr. 18, 1994, abandoned. This application Jun. 3, 1996, Ser. No. 656,726

Int. Cl.[6] H01J *65/00*

U.S. Cl. 313—635 **6 Claims**



1. An electrodeless discharge lamp comprising:

a lamp envelope having a fill contained therein, said fill being operable so as to produce a discharge upon coupling of an RF signal thereto;

a member on which said lamp envelope is mounted;

a ballast circuit arrangement receptive of line power and effective so as to produce said RF signal therefrom;

a capacitive filter member disposed on a portion of said lamp envelope and being electrically coupled to said ballast circuit arrangement so as to suppress electromagnetic interference generated upon coupling said RF signal to said discharge;

wherein said capacitive filter member includes a first plate portion formed by a layer of conductive material disposed on a portion of the interior surface of said lamp envelope, a second plate portion disposed on the outside surface of said lamp envelope opposite to said first plate portion, and said lamp envelope disposed between said first and second plate portions;

wherein said second plate portion extends over a portion of said lamp envelope that does not exceed one half of the surface area of said lamp envelope and has a plurality of slots formed therein over portions of said envelope which are effective to reduce eddy current losses occurring at said second plate portion; and,

wherein at least one of said plurality of slots extends across said second plate portion to prevent a closed loop conduction path for eddy currents to occur in said second plate portion.

5,825,131

TILT COMPENSATION CIRCUIT FOR PICTURE TUBES

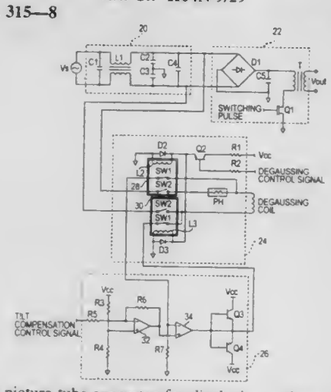
Eun-sup Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Dec. 4, 1995, Ser. No. 566,950

Claims priority, application Rep. of Korea, Dec. 2, 1994, 94-32619

Int. Cl.[6] H04N *9/29*

U.S. Cl. 315—8 **10 Claims**



1. In a picture tube apparatus for displaying an image in which alternating current for driving a picture tube is supplied through an AC line filter to a power supply circuit for voltage conversion, the AC line filter providing a filtered voltage, a degaussing coil for eliminating an electromagnetic field being coupled to the filtered voltage during a predetermined time interval, a tilt compensation circuit for compensating said image, said image having been tilted in a predetermined direction, said tilt compensation circuit comprising:

tilt adjustment circuit means for comparing a voltage level of a feedback signal from said degaussing coil with a predetermined voltage level of a tilt compensation control signal thereby generating a current flow corresponding to a difference therebetween; and

switching circuit means responsive to an electric potential state of a degaussing control signal for selectively switching between one loop incorporating said AC line filter and said degaussing coil so as to perform an electromagnetic field elimination operation and another loop incorporating said tilt adjustment circuit means and said degaussing coil so as to perform a tilt compensation operation.

5,825,132

RF DRIVEN SULFUR LAMP HAVING DRIVING ELECTRODES ARRANGED TO COOL THE LAMP

George Gabor, 820 Skywood Rd., Lafayette, Calif. 94549; Thomas Robert Orr, 2285 Vestal, Castro Valley, Calif. 94546; Charles Maurice Greene, 6450 Regent St., Oakland, Calif. 94618; Douglas Gordon Crawford, 33 Longridge Rd., Orinda, Calif. 94563, and Samuel Maurice Berman, 2832 Union St., San Francisco, Calif. 94123

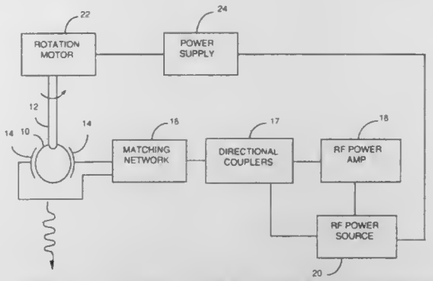
Continuation-in-part of Ser. No. 224,036, Apr. 7, 1994. This application Apr. 7, 1995, Ser. No. 418,343

Int. Cl.[6] H01J *65/04*

U.S. Cl. 315—39 **10 Claims**

1. A discharge lamp to radiate a spectral energy distribution, said discharge lamp comprising:

a light transmissive envelope that defines an interior space, said envelope having a spherical shaped exterior surface, said



interior space contains a fill material of a spectral energy emitting component of sulfur or a sulfur containing substance;

an electro-magnetic excitation signal source;

a pair of electrodes coupled to said electro-magnetic excitation signal source and disposed external to and adjacent said spherical exterior surface of said envelope to direct electromagnetic energy provided by said signal source into said interior space of said envelope to excite said spectral energy emitting component, each of said pair of electrodes includes a respective face having a convex partially spherical shape to complement said spherical exterior shape of said envelope wherein said respective face of each of said pair of electrodes is closely positioned a preselected distance from the exterior surface of said envelope and said respective faces of said pair of electrodes oppose each other through said envelope;

an elongated stem affixed to said envelope; and

a rotational subsystem coupled to said elongated stem of said envelope to rotate said envelope about an axis aligned along said stem.

5,825,133

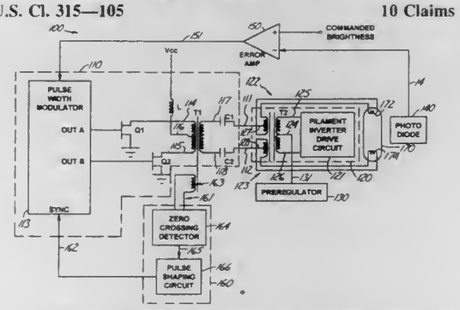
RESONANT INVERTER FOR HOT CATHODE FLUORESCENT LAMPS

David W. Conway, Cedar Rapids, Iowa, assignor to Rockwell International, Costa Mesa, Calif.

Filed Sep. 25, 1996, Ser. No. 719,935

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—105 **10 Claims**



1. A fluorescent lamp drive system for supplying power to a fluorescent lamp comprising:

a filament inverter having a transformer comprised of a primary side and a secondary side, coupled to filaments of the fluorescent lamp, the filament inverter driving the filaments of the fluorescent lamp with a first waveform, the first waveform having a voltage amplitude sufficient to excite the filaments of the fluorescent lamp; and

a resonant inverter coupled to the filaments of the fluorescent lamp via the filament inverter transformer secondary side, the resonant inverter driving the filaments of the fluorescent lamp with a second waveform, the second waveform having a variable amplitude, wherein controlling the luminance of the fluorescent lamp is achieved by controlling the amplitude of the second waveform.

5,825,134

METHOD OF HOLDING FIELD EMISSION CATHODE IN ITS STANDBY STATE

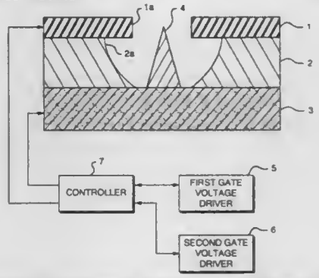
Fuminori Ito, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jun. 6, 1997, Ser. No. 870,972

Claims priority, application Japan, Jun. 10, 1996, 8-147454

Int. Cl.[6] H01J *23/04*

U.S. Cl. 315—169.1 **11 Claims**



1. A method of holding a field emission cathode in a standby state ready for providing emission current when operated with applied one of predetermined operating gate voltages, the field emission cathode having an emitter tip, on a conductive layer, disposed within holes formed through an insulating layer deposited on the conductive layer and a gate layer deposited on the insulating layer, respectively, the method comprising the steps in sequence of;

applying to the gate layer an activation voltage having at least one voltage level that is not less than any one of the voltage levels of the predetermined operating gate voltages to activate the emitter tip until any surface contaminants present on the emitter tip drop to a sufficiently low level; and

applying to the gate layer one of the predetermined operating gate voltages to draw electrons out of the emitter tip to provide field emission current as high as a level corresponding to the applied operating gate voltage.

5,825,135

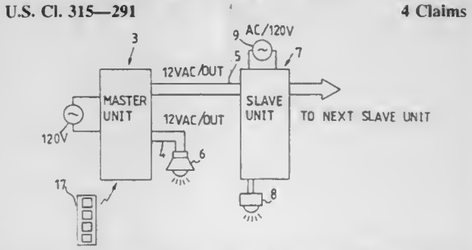
HALOGEN LAMP CONTROL CIRCUIT ASSEMBLY

Chin-Hsiung Chang, No. 947, Lin Shen Rd., Wu Fong Hsiang, Taichung Hsien, Taiwan

Filed Mar. 10, 1997, Ser. No. 814,591

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—291 **4 Claims**



1. A circuit assembly for controlling a plurality of halogen lamps comprising a light intensity regulating remote controller, a master unit controlled by said light intensity regulating remote controller for controlling the intensity of light of a master halogen lamp, a plurality of slave units synchronously controlled by said light intensity regulating remote controller through said master unit to regulate the intensity of light for a respective slave halogen lamp connected thereto,

said master unit comprising an electronic transformer, a direct current power supply rectifier circuit, a microprocessor, an output drive, a zero crossing detector, and a RF receiver module, said direct current power supply rectifier circuit receiving and converting 120 volt AC supply into a low

voltage direct current power and supplying said low voltage direct power to said microprocessor and said RF receiver module, said RF receiver module receiving a light intensity regulating control signal from said light intensity regulating remote controller and outputting a corresponding signal to said microprocessor, said microprocessor receiving said corresponding signal output from said light intensity regulating remote controller and, based thereon, controlling said output drive and thereby controlling said electronic transformer,

said electronic transformer driven by said output drive to supply an alternating current/12 V output signal for controlling operation and light intensity of said master halogen lamp and operation of said plurality slave units, said alternating current/12 V output signal from said electronic transformer is simultaneously transmitted to intermediate slave units of said plurality of slave units, each said intermediate slave unit receiving said alternating current/12 V signal and supplying said alternating current/12 V signal to an adjacent intermediate slave unit, and a last slave unit of said intermediate slave units supplying said alternating current/12 V signal to a final slave unit of said plurality of slave units, each of said slave units respectively driving said respective halogen lamp based on said alternating current/12 V signal.

5,825,136

CIRCUIT ARRANGEMENT FOR OPERATING ELECTRIC LAMPS, AND AN OPERATING METHOD FOR ELECTRONIC LAMPS

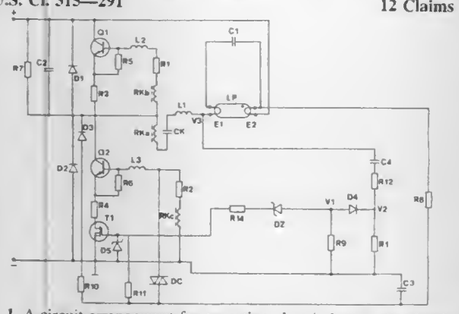
Bernd Rudolph, Munich, Germany, assignor to Patent-Treuhand-Gesellschaft fuer elektrische Gluehlampen mbH, Munich, Germany

Filed Mar. 27, 1997, Ser. No. 828,018

Claims priority, application Germany, Mar. 27, 1996, 196 12 170.1

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—291 **12 Claims**



1. A circuit arrangement for operating electric lamps, the circuit arrangement having the following features:

a self-oscillating inverter with current feedback, having at least two alternately switching transistors (Q1, Q2; Q5, Q6),

a load circuit which is connected to the output of the inverter and designed as a resonant circuit (L1, C1; L32, C30),

terminals for at least one electric lamp (LP; LP1, LP2),

characterized in that the circuit arrangement at a transistor (T1; T2) whose control junction is arranged in the emitter line or in the source line of an inverter transistor (Q2; Q6), it being the case that

the control input of the transistor (T1; T2) is connected via a first current path (R11, R8, E2; R39, R37, TR, E22, R38) to a voltage source, and

the control input of this transistor (T1; T2) is connected via a second current path (R14; R42) to a voltage divider (R9, R12, R13; R40, R41, R51) which is connected via a tap (V3; V4) in the load circuit to a resonant circuit component (C1; C30).

5,825,137

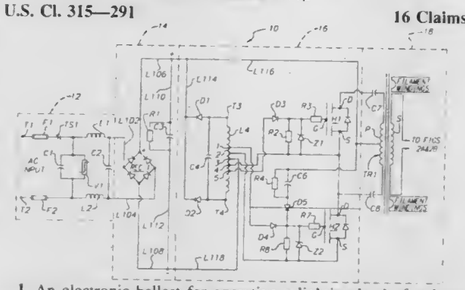
ELECTRONIC BALLASTS FOR PLURAL LAMP FLUORESCENT LIGHTING WITHOUT FEEDBACK CIRCUITRY

Charles H. Titus, 323 Echo Valley La., Newton Square, Pa. 19073

Continuation of Ser. No. 487,802, Jun. 7, 1995, abandoned. This application Jul. 1, 1997, Ser. No. 886,235

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—291 **16 Claims**



1. An electronic ballast for operating a lighting load of at least two fluorescent lamps, said ballast comprising:

(a) a protection and noise filter circuit arranged to be connected to an AC power source;

(b) a rectifier and DC filter circuit coupled to said protection and noise filter circuit to provide DC power;

(c) an inverter circuit coupled to said rectifier and DC filter circuit for receipt of said DC power therefrom, said inverter circuit including a tuned resonant circuit comprising a first capacitor connected in parallel with a tapped inductor to generate a fixed high frequency electrical signal, said inverter circuit requiring no feedback signal from any one of said at least two fluorescent lamps to generate said fixed high frequency electrical signal; and

(d) an output circuit comprising an output transformer coupled to said lamps and arranged for receipt of said fixed high frequency electrical signal from said inverter circuit, said output circuit further comprising a reactor connected to said output transformer and to said lamps, said reactor having a core and a pair of windings wound about said core in a manner which reduces the distributed capacitance at the connection between said reactor, said output transformer and said lamps.

5,825,138

TIMING OF DIFFERENT PHASES IN AN IGNITION CIRCUIT

Claudio Diazzi, Sesto Calende; Mario Tarantola, Bareggio, and Fabrizio Martignoni, Morazzone, all of Italy, assignors to SGS-Thomson Microelectronics, S.r.l., Milan, Italy

Filed Sep. 27, 1996, Ser. No. 721,437

Claims priority, application Italy, Sep. 27, 1995, 95830396.8

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—294 **18 Claims**

1. A lamp-driving circuit, for driving a gas-discharge lamp, comprising:

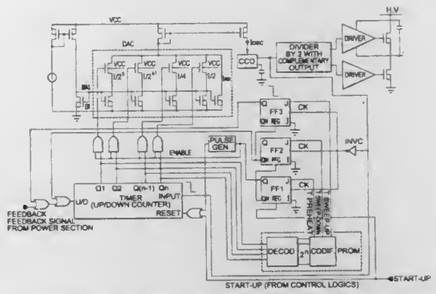
an oscillator operatively connected to drive said lamp;

a timing counter connected to count the number of oscillations of said oscillator;

a control circuit connected to said counter and said oscillator to programmably control the frequency of said oscillations;

memory connected to said control circuit, including means for generating at least first and second timing signals, and including

bistable circuit means connected to said memory and said counter for receiving first and second timing signals and an



output of said oscillator and forcing said oscillator to operate at a set frequency.

5,825,139

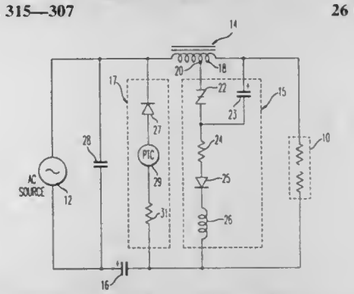
LAMP DRIVEN VOLTAGE TRANSFORMATION AND BALLASTING SYSTEM

Joe Allen Nuckolls, and Lily Li Lin, both of Blacksburg, Va., assignors to Hubbell Incorporated, Orange, Conn.

Filed Nov. 2, 1995, Ser. No. 556,878

Int. Cl.[6] G05F *1/00*

U.S. Cl. 315—307 **26 Claims**



1. A discharge lamp operating circuit comprising:

a source of alternating current (AC) voltage at a predetermined frequency;

a discharge lamp; and

a series resonant circuit connected to said source of alternating current voltage and in series with said lamp, said resonant circuit being tuned to a frequency higher than said predetermined frequency, said lamp intermittently switching at a rate between said predetermined frequency and said tuned frequency to stimulate said series resonant circuit into oscillation and said series resonant circuit maintaining said lamp in operation.

5,825,140

RADIO-FREQUENCY TYPE CHARGED PARTICLE ACCELERATOR

Hiroshi Fujisawa, Kyoto, Japan, assignor to Nissin Electric Co., Ltd., Kyoto-Fu, Japan

Filed Feb. 29, 1996, Ser. No. 610,133

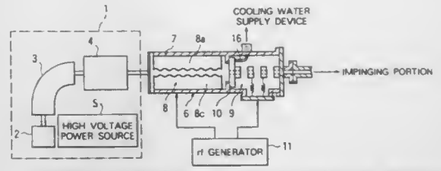
Int. Cl.[6] H01J *37/317;23/00*

U.S. Cl. 315—505 **7 Claims**

1. A radio-frequency charged particle accelerator, comprising:

RFQ accelerating means, including quadrupole electrodes positioned along a traveling path of the charged particle, for bunching and accelerating a charged particle beam by receiving a radio-frequency power from a radio-frequency power source and resonating;

rear stage RF means disposed in a rear stage of the RFQ accelerating means for changing the energy of the charged particle beam accelerated by the RFQ accelerating means by



receiving the radio-frequency power from the radio-frequency power source and resonating;

a single evacuated chamber for containing both said RFQ accelerating means and said rear stage RF accelerating means; and

separating means disposed in said single evacuated chamber for separating said RFQ accelerating means and said rear stage RF means so that the RFQ accelerating means and the rear stage RF means work independently of each other.

5,825,141

MOTOR CONTROL APPARATUS

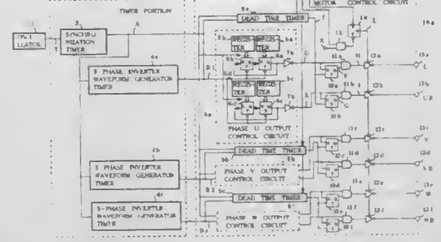
Hideo Matsui; Michiaki Kuroiwa, and Taiki Nishiuchi, all of Tokyo, Japan, assignors to Mitsubishi Electric Engineering Co., Ltd., and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Dec. 30, 1997, Ser. No. 568

Claims priority, application Japan, May 22, 1997, 9-132628

Int. Cl.[6] H02P *6/00; G06F 1/00*

U.S. Cl. 318—254 **3 Claims**



1. A motor control apparatus for controlling a polyphase motor comprising: a central processing unit which executes general control over the process of said motor control apparatus, a timer portion which generates a predetermined pulse from a reference clock signal, a plurality of registers which are provided corresponding to control signals of respective phases and in which data are reloadable by the control of said central processing unit, shift registers which are able to store data having the same number of bits as the number of said plurality of registers, and to which the values of said plurality of registers can be reloaded by said predetermined pulse output from said timer portion, and control signal generator means which generate control signals of respective phases of said polyphase motor based on the output signals of said shift registers.

5,825,142

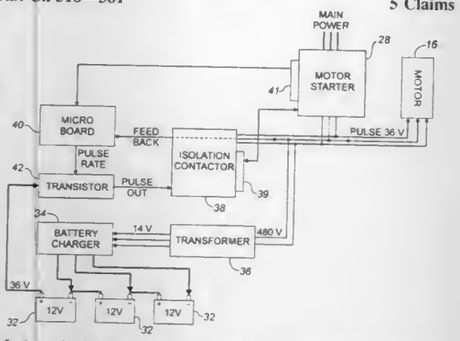
Patent Not Issued For This Number

5,825,143

METHOD AND APPARATUS FOR SLOWING BACK SPIN OF A ROD STRING OF A PROGRESSING CAVITY PUMP POWERED BY AN ELECTRIC MOTOR WHEN POWER IS LOST

Randy Montgomery, Edmonton, Canada, assignor to Lord Electrical Industrial Distributors Ltd, Edmonton, Canada

Filed Oct. 23, 1996, Ser. No. 736,341
Claims priority, application Canada, Oct. 26, 1995, 2161504
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—381 5 Claims



1. A method for slowing back spin of a rod string of a progressing cavity pump powered by an electric motor when power is lost, comprising the steps of:

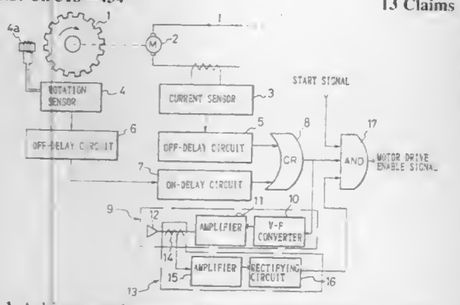
pulsing direct current voltage into the stator windings of the electric motor powering the progressing cavity pump to magnetize a stator of the electric motor thereby reducing the rotational speed of a rotor of the electric motor and consequently the rotational speed of the back spinning rod string of the progressing cavity pump, and varying the frequency of pulsing output of the direct current voltage as the rotational speed of the back spinning rod string increases and decreases.

5,825,144

DRIVE CONTROL APPARATUS FOR A ROTATING MACHINE

Masatoshi Suzuki, Kanagawa-ken; Koichi Futsuhara, and Masayoshi Sakai, both of Saitama-ken, all of Japan, assignors to Kao Corporation, and The Nippon Signal Co., Ltd., both of Tokyo, Japan

PCT No. PCT/JP93/01695, § 371 Date Jul. 17, 1995, § 102(e) Date Jul. 17, 1995, PCT Pub. No. WO95/14326, PCT Pub. Date May 26, 1995
PCT Filed Nov. 18, 1993, Ser. No. 491,991
Int. Cl.[6] H02K *17/32*
U.S. Cl. 318—434 13 Claims



1. A drive control apparatus for a rotating machine incorporating a movable part rotatingly driven by a motor, said apparatus comprising:

a fail-safe current sensor generating an output of logic value "1" when motor current is not flowing to said motor, said fail-safe current sensor generating an output of logic value "0" when the motor current is flowing and producing an output of logic value "0" at a time a fault occurs;

a fail-safe rotation sensor generating an output of logic value "1" when said movable part is rotating, said fail-safe rotation sensor generating an output of logic value "0" when said movable part is stopped and producing an output of logic value "0" at the time a fault occurs;

a fail-safe first logic processing section which senses a danger condition and generates on output valve of "0" when the motor current is flowing and the movable part is stopped, based on a logic operation on the outputs from said current sensor and said rotation sensor, and generates an output of logic value "0" at the time a fault occurs, said fail-safe first logic processing section generating an output of logic value "1" when not sensing a danger condition; and

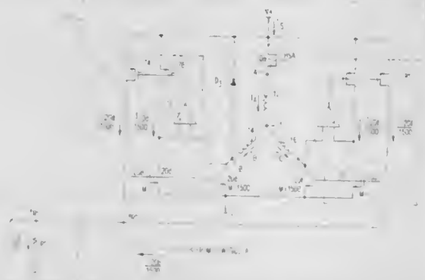
a fail-safe second logic processing section which generates a motor drive enable output of logic value "1" to allow motor current supply to said motor when an output of logic value "1" of said first logic processing section is generated, and which generates a start command output of logic value "1", by switching on a start switch of the rotating machine, both said motor drive enable output and said start command output being inputted together to said fail-safe second logic processing section, and which gives an output of logic value "0" at the time a fault occurs.

5,825,145

QUIET COMMUTATION CIRCUIT FOR AN ELECTRIC MOTOR

Giao M. Pham, Milpitas, and James H. Nguyen, San Jose, both of Calif., assignors to Siliconix incorporated, Santa Clara, Calif.

Filed Dec. 18, 1995, Ser. No. 573,802
Int. Cl.[6] H02P *1/18*
U.S. Cl. 318—439 10 Claims



1. A commutation circuit for an electric motor, the electric motor including a first winding, a first current switch for controlling a first current level through the first winding, a second winding, and a second current switch for controlling a second current level through the second winding, the commutation circuit comprising:

an input node for receiving a commutation signal;

a sequencer having a first input terminal connected to the input node and having first and second output terminals connected to the first and second current switches, respectively, the sequencer for turning off the first current switch and turning on the second current switch in response to the commutation signal;

a control terminal for receiving a control signal, the control signal for establishing a rotational speed for the motor

a current sensor for generating a signal representative of a sum of the first and second current levels; and

a comparator having a first input terminal connected to an output terminal of the current sensor and a second input terminal connected to a reference signal; and

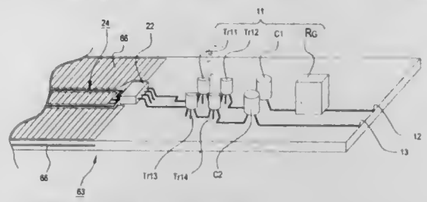
a one-shot having an input terminal connected to an output terminal of the comparator and an output terminal connected to a second input terminal of the sequencer.

5,825,146

MOTOR DRIVE DEVICE

Hiromichi Agata, Anjo; Yoshihiko Minatani, Kariya; Akira Suzuki, Obu, and Yutaka Hotta, Chiryu, all of Japan, assignors to Aisin AW Co., Ltd., Anjo, Japan

Filed May 30, 1997, Ser. No. 865,932
Claims priority, application Japan, May 31, 1996, 8-138547
Int. Cl.[6] H05K *1/18*; H02P *7/29*
U.S. Cl. 318—439 12 Claims



1. A motor drive device comprising:

a substrate;

a control unit packaged over said substrate for generating a pulse width modulation signal;

insulation means packaged over said substrate;

a gate drive circuit packaged over said substrate and connected through said insulation means with said control unit for generating a transistor drive signal in response to the pulse width modulation signal coming from said control unit; and

an inverter including a plurality of transistors for generating a phase current by turning ON/OFF said transistors in response to the transistor drive signal coming from said gate driver circuit,

wherein a wiring pattern and a substrate ground are formed at the side of said substrate closer to said control unit than said insulation means whereas only the wiring pattern is formed at the side of said substrate closer to said gate drive circuit than said insulation means.

5,825,147

CONTROL SYSTEM FOR A VEHICLE HAVING A MOVEABLE VEHICLE BODY MEMBER

Michael A. Porter, Southgate; Richard H. Kruse, Farmington Hills, both of Mich.; Samuel DiCesare, Glencoe; Kerry S. Berland, Chicago, both of Ill.; James M. Helms, Southgate, and George A. Alderton, IV, Royal Oak, both of Mich., assignors to ASC Incorporated, Southgate, Mich.

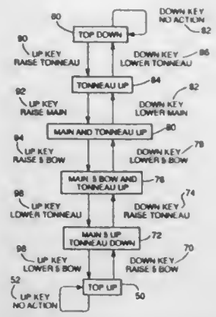
Continuation of Ser. No. 87,194, Jul. 2, 1993, Pat. No. 5,451,849, which is a continuation-in-part of Ser. No. 817,299, Jan. 6, 1992, Pat. No. 5,225,747. This application Sep. 7, 1995, Ser. No. 524,541
Int. Cl.[6] H02P *3/00*
U.S. Cl. 312—466 22 Claims

1. A control system for a vehicle having a moveable vehicle body member, said control system comprising:

motive means connected to said moveable vehicle body member for moving said moveable vehicle body member between at least a first position and a second position;

position sensing means for sensing the position of the moveable vehicle body member substantially throughout its range of motion between the at least first position and the second position; and

control means being responsive to said position sensing means for actuating the movement of said motive means in response to input from said position sensing means, said control means interpreting said sensed position of said moveable vehicle body member and commanding said motive means to move said moveable vehicle body member in accordance with predetermined movements based upon said interpreted sensed position, said control means being further adapted for logging errors whenever said moveable vehicle body member does not move in accordance with said predetermined movements.

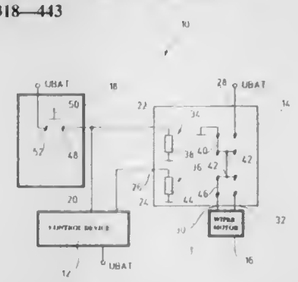


5,825,148

CIRCUIT ARRANGEMENT, PARTICULARLY FOR A WIPER ARRANGEMENT FOR MOTOR VEHICLE WINDSHIELDS

Norbert Hog, Buehl; Rainer Plentka, Achern; Hans Meier, Ottersweier; Guenther Riehl, Buehlertal, and Henry Blitzke, Buehl, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE95/01636, § 371 Date Jan. 10, 1997, § 102(e) Date Jan. 10, 1997, PCT Pub. No. WO96/19366, PCT Pub. Date Jun. 27, 1996
PCT Filed Nov. 23, 1995, Ser. No. 765,868
Claims priority, application Germany, Dec. 19, 1994, 44 45 107.5
Int. Cl.[6] B60S *1/08*
U.S. Cl. 318—443 9 Claims



1. Circuit arrangement for a wiper arrangement for motor vehicle windshields, said circuit arrangement having an electric wiper motor and a step-switching unit for the wiper motor that is actuated via a control device, and wherein; at least one output of the control device that is assigned to a specific wiper speed is connected with at least one input of the step-switching unit that determines this wiper; speed a switching means is parallel-connected to the outputs of the control device to connect a voltage source (U_{Bat}) to the inputs of the step-switching unit that are assigned to the respective outputs of the control device when the switching means is actuated; the step-switching unit has two inputs and first and second switching stages that are actuated via the two inputs; the first switching stage, which is connected with the first input of the step-switching unit, establishes a connection to the

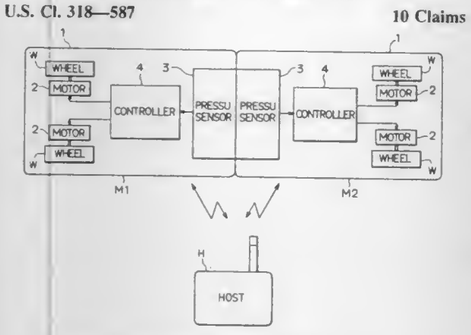
voltage source (U_{bat}); and the second switching stage connects the output of the first switching stage with one of two inputs of the wiper motor.

5,825,149

MOBILE COMMUNICATION DEVICE HAVING A DIRECT COMMUNICATION CAPABILITY

Naoki Matsumoto; Manabu Otsuka, both of Aichi-gun; Koji Ogusu, Obu, and Takaharu Idogaki, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 11, 1996, Ser. No. 712,621
Claims priority, application Japan, Sep. 12, 1995, 7-234362
Int. Cl.[6] G06F *15/50;* **G05D** *1/02*
U.S. Cl. 318—587 **10 Claims**



1. A mobile communication device comprising:
a body;
driving means for generating a driving force to move said body;
detecting means for detecting contact pressure of said body with an external device;
receiving means for receiving information from said external device by determining change of said contact pressure detected by said detecting means; and
transmitting means for transmitting information to said external device by said driving means varying a magnitude of said driving force so as to vary said contact pressure of said body with said external device in accordance with said information.

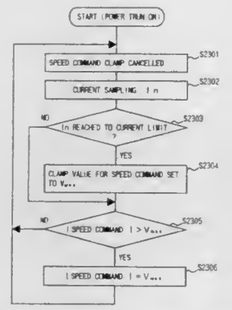
5,825,150

METHOD OF DETECTING, DIAGNOSING AND AUTOMATICALLY CORRECTING ABNORMALITIES IN SERVO CONTROL SYSTEM

Mitsuyasu Kachi, and Kazuhiko Tsutsui, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1996, Ser. No. 588,396
Claims priority, application Japan, Jun. 30, 1995, 7-188005
Int. Cl.[6] H02P *1/54*
U.S. Cl. 318—610 **2 Claims**

1. A method of automatically correcting abnormalities in a servo control system for a servo motor comprising the steps of:
determining whether or not a maximum current for a servo amplifier is being restricted; and



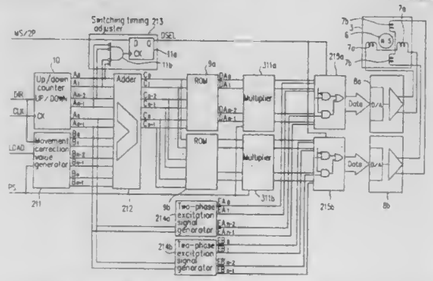
clamping a maximum value of a speed command at a specified value only while said maximum current for said servo amplifier is being restricted.

5,825,151

APPARATUS FOR DRIVING STEPPING MOTOR

Yoshihiro Ikawa, Higashiosaka; Teruyuki Takizawa, Neyagawa, and Ichiro Kawamura, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Sep. 18, 1995, Ser. No. 529,513
Claims priority, application Japan, Sep. 20, 1994, 6-224371
Int. Cl.[6] H02K *29/04*
U.S. Cl. 318—685 **7 Claims**



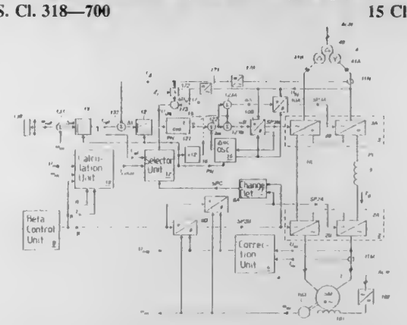
1. A stepping motor driving apparatus having a rotor and a stator in n phases for moving a moving body, where n is an integer equal to or larger than 2, comprising:
a first memory means for storing a first current pattern for rotating the rotor at a first pitch;
a second memory means for storing a second current pattern for rotating the rotor at a second pitch different from the first pitch;
phase shift means for reproducing periodically the first current pattern and the second current pattern from the first memory means and the second memory means, and shifting a phase of the second current pattern by a predetermined phase shift amount from the first current pattern; and
drive means for selectively supplying to the stator the first current pattern and the second current pattern based on a drive switching signal;
wherein the first current pattern and the second current pattern supplied to the stator are switched between one another at a stable point by setting the phase shift amount in accordance with the load of the stepping motor required to move the moving body and the rotating direction of the rotor,
wherein the stable point is represented by an intersection between a characteristic line of the load in a graph showing the stiffness characteristics of the stepping motor and the curves representing stiffness characteristics driven by the first and second current patterns.

5,825,152

LOAD-COMMUTATED SYNCHRONOUS MOTOR DRIVE

Per-Lennart Eriksson, Västerås, Sweden, assignor to ABB Industry OY, Helsinki, Finland

PCT No. PCT/SE95/00807, § 371 Date Mar. 10, 1997, § 102(e) Date Mar. 10, 1997, PCT Pub. No. WO96/01523, PCT Pub. Date Jan. 18, 1996
PCT Filed Jun. 29, 1995, Ser. No. 750,086
Claims priority, application Sweden, Jul. 1, 1994, 9402326
Int. Cl.[6] H02P *1/46;* **H02K** *23/00;* **H02J** *1/00*
U.S. Cl. 318—700 **15 Claims**



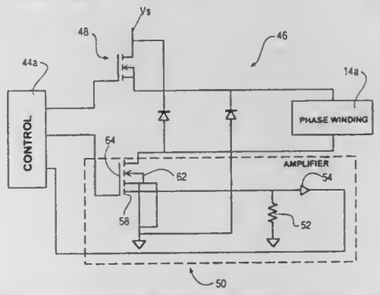
1. A load-commutated synchronous motor drive, comprising
a line-commutated network-side converter with dc terminals, with ac terminals for connection to an alternating voltage network (ACN), and said network side convertor being operative at a natural pulse number and being switchable to operate at a pulse number lower than the natural pulse number rate,
a load-commutated machine-side converter with ac terminals for connection to a synchronous machine, and with dc terminals connected to the dc terminals of the network-side converter via a current-source dc intermediate link, wherein the motor drive comprises control members operative during commutation of the machine-side converter for switching the network-side converter for operation at said lower pulse number.

5,825,153

SWITCHED RELUCTANCE MOTOR DRIVE CONTROL SYSTEM

Paul C. Doyle, Northville, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Dec. 10, 1996, Ser. No. 763,976
Int. Cl.[6] H02P *7/05*
U.S. Cl. 318—701 **2 Claims**



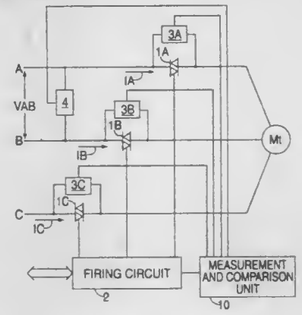
1. A current measuring apparatus for measuring a current flowing through a phase winding of a switched reluctance motor, the apparatus comprising:
control means for controlling the current flowing through the winding;
gate means operatively connected to the control means for switching the current flowing through the winding, the arrangement being such that in a first mode of the gate means, current flow through the phase winding is encouraged and in a second mode of the gate means, current flow through the winding is inhibited;
the gate means further including:
sense means for sensing a fraction of the current when the gate means is in the first mode thereof;
resistive means electrically connected in series with the sense means such that a voltage drop occurs across the resistive means when the gate means is in the first mode;
means for generating a signal which corresponds with the voltage drop, the generating means including an amplifier for amplifying the voltage drop, the signal being fed to the control means so that dependent on the signal, the control means controls the current flowing through the phase winding,
wherein the generating means generates a signal which corresponds to the amplified voltage drop, the arrangement being such that the signal is compared by the control means with pre-determined parameters reflective of a selected current level and the control means triggers the flow of current through the phase windings so that a soft chop duty cycle is established whereby the flow of current essentially equals the soft chop duty cycle times the maximum current.

5,825,154

PHASE CONTROL METHOD OF STOPPING A DRIVE SMOOTHLY

Diethard Runggaldier, Stegaurach, and Johann Seitz, Amberg, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE94/00094, § 371 Date Sep. 25, 1996, § 102(e) Date Sep. 25, 1996, PCT Pub. No. WO95/20839, PCT Pub. Date Aug. 8, 1995
PCT Filed Jan. 31, 1994, Ser. No. 682,531
Int. Cl.[6] H02P *3/18*
U.S. Cl. 318—757 **7 Claims**



1. A phase control method for smoothly stopping a pump drive motor in accordance with a phase angle between a voltage and a current of the pump drive motor, comprising the steps of:
a) determining a change in the phase angle over time, the change in the phase angle at first decreasing in magnitude over time, the phase angle decreasing in magnitude due to an increase in a phase control angle;
b) detecting a turning point at which the change in the phase angle begins to increase in magnitude over time;
c) determining an instantaneous phase angle at the turning point; and
d) regulating the phase control angle when the turning point is detected, wherein the regulating step occurs under a control of a controller having a preset phase angle reference curve as an input parameter.

5,825,155
BATTERY SET STRUCTURE AND CHARGE/DISCHARGE CONTROL APPARATUS FOR LITHIUM-ION BATTERY

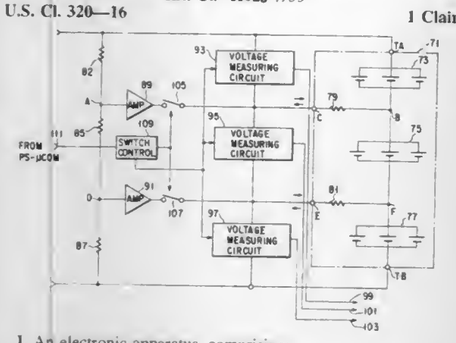
Hironori Ito; Yuichiro Hino; Naoki Tashiro; Masahiko Hagiwara; Keiichi Mitsui, and Akihiko Uchida, all of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 286,193, Aug. 8, 1994, abandoned. This application May 9, 1997, Ser. No. 853,415

Claims priority, application Japan, Sep. 8, 1993, 5-223326; Sep. 13, 1993, 5-227420; Oct. 6, 1993, 5-250590; Oct. 12, 1993, 5-005054 U; Feb. 21, 1994, 6-022489; Feb. 28, 1994, 6-029326; Feb. 28, 1994, 6-029327; Mar. 16, 1994, 6-046022; Mar. 31, 1994, 6-063997; Aug. 9, 1996, 5-197328

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—16 **1 Claim**



1. An electronic apparatus, comprising:

a battery pack having:

m (m is an integer of two or more) battery sets connected in series each having n (n is an integer of two or more) rechargeable battery cells connected in parallel and charge/discharge terminals connected to nodes of the m battery sets;

charge/discharge current limiting resistors, each said charge/discharge current limiting resistor having at least a first and a second terminal, the first terminal connected to the nodes of the m battery sets and the second terminal connected to the charge/discharge terminals; and

power supply terminals;

voltage measuring circuits connected between the power-supply terminals and said charge/discharge terminals for measuring a voltage value of the m battery sets;

a power-supply microprocessor for outputting a voltage check signal of said battery pack;

amplifiers, connected to said charge/discharge terminals, for amplifying the voltage value of an integer multiple of 1/m of a total voltage value of the m battery sets;

switches connected between said amplifiers and terminals; and

a switch control circuit connected to said power-supply microprocessor and said switches and responding to the voltage check signal from said power-supply microprocessor, for turning off said switches when said voltage measuring circuits measure the voltage value of the m battery sets.

5,825,156
SYSTEM FOR MONITORING CHARGING/DISCHARGING CYCLES OF A RECHARGEABLE BATTERY, AND HOST DEVICE INCLUDING A SMART BATTERY

Jean-Noël Patillon, Paris, and Olivier Gerard, Saint-Maur, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

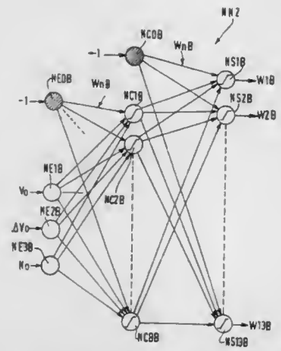
Filed Oct. 25, 1996, Ser. No. 736,758

Claims priority, application France, Oct. 31, 1995, 95 12864

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—21 **31 Claims**

1. A monitoring system for monitoring discharging/charging cycles of a battery coupled to a rechargeable battery having charging periods which alternate with discharging periods depending on discharging/charging cycles, this system comprising:



first adaptive calculation means (NN1) having three ports, said means are arranged for collecting, at the beginning of a discharging period of a discharging/charging cycle of the battery, on the first port, a batch of operating parameters called first parameters (WjA), and for receiving on the second port a predetermined value of a critical discharge voltage threshold (V_{TH}), and for producing on the third port a calculated predictive indication of the instant (t_{TH}) at which the battery will reach this critical threshold (V_{TH}) that corresponds to the end of this discharging period,

said monitoring system also comprising:

second and third adaptive calculation means (NN2, NN3) coupled to the first calculation means, each having four ports and each are arranged for receiving, at an initial instant at the beginning of said discharging period of the battery, a value of the battery voltage called initial voltage (Vo) on the first port, a value of a variation (ΔVo) of this initial voltage after a short lapse of time starting from this initial instant on the second port, and a value of the initial number (No) of discharging/charging cycles of this battery effected before said discharging period on the third port, and which are arranged for producing, from the instant of said discharging period at which the initial values are available, a batch of approximate parameters (WjB) on the fourth port of said second calculator means (NN2), and a batch of corresponding correction parameters (WjC) on the fourth port of said third calculation means (NN3), which are added together to form said first operating parameters (WjA) imposed on the first port of said first calculation means (NN1).

5,825,157
CAMERA USING SOLAR BATTERY

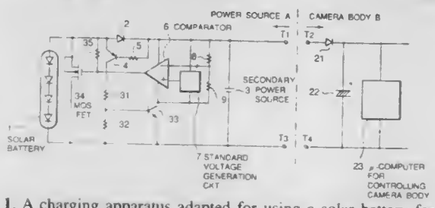
Ryoichi Suzuki, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 667,478, Jun. 2, 1996, abandoned, which is a continuation of Ser. No. 245,423, May 18, 1994, abandoned. This application Mar. 31, 1997, Ser. No. 829,741

Claims priority, application Japan, May 21, 1993, 5-141243

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—30 **18 Claims**



1. A charging apparatus adapted for using a solar battery for a camera comprising:

(A) a chargeable unit charged by the solar battery;

(B) an overcharging prevention device which prevents overcharging to said chargeable unit; and

(C) a detection device which detects an overcharging state and actuates said overcharging prevention device, said detection device not being fed by said chargeable unit at least whenever said chargeable unit is not being charged.

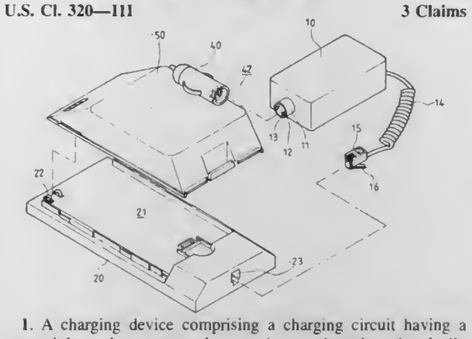
5,825,158
CHARGING DEVICE WITH ROTATABLE POWER INLET

Jung-Kuei Wei, Taoyuan, Taiwan, assignor to Modern Electric Co., Ltd., Taoyuan, Taiwan

Filed Apr. 3, 1997, Ser. No. 834,743

Int. Cl.[6] H01M *10/46*

U.S. Cl. 320—111 **3 Claims**



1. A charging device comprising a charging circuit having a power inlet and a power outlet, an adaptor adapted to electrically connect to a given external power source and having a connection portion for releasable connection with the power inlet of the charging circuit and a battery holder having a connection portion for releasable connection with the power outlet of the charging circuit, the battery holder defining therein at least one battery receptacle for receiving and holding therein a battery to be charged, an electrical connection being established between the battery and the connection portion of the battery holder when the battery is received within the battery receptacle;

wherein the power inlet of the charging circuit comprises a cylindrical projection extending in an axial direction having an axial free end on which two pegs are provided, each having an expanded end, and wherein the connection portion of the adaptor comprises a circular recess sized to receive the cylindrical projection of the power inlet therein and allowing the cylindrical projection of the power inlet to be rotatable relative to the circular recess, the recess having a bottom defined by a plate member having two arc slots formed thereon, substantially concentric with the circular recess, to each receive one of the pegs therein, each of the arc slots having a first end having a first width large enough to allow the expanded end to extend axially therethrough so as to allow the peg to be guided by the arc slots to move toward a second end of the arc slot by rotating the cylindrical projection of the power inlet relative to the circular recess, the second end of the arc slot having second width smaller than the first width sa as to prevent the expanded end from axially moving therethrough and thus retaining the peg within the arc slot.

5,825,159
BATTERY CHARGING METHOD FOR PROPERLY TERMINATING RAPID CHARGE

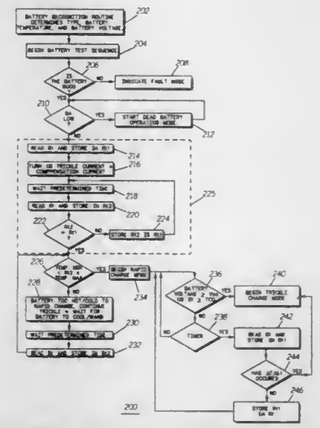
Joseph Patino, Pembroke Pines, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 29, 1997, Ser. No. 939,636

Int. Cl.[6] H02J *7/04;7/06*

U.S. Cl. 320—125 **5 Claims**

1. A method of charging a battery in a charger, comprising the steps of:



determining if the battery is a good battery;

determining if the battery voltage has reached a predetermined battery voltage level;

measuring the battery temperature;

storing the battery temperature as a first battery temperature;

applying trickle charge current to the battery for a predetermined time limit;

re-measuring the battery temperature after the predetermined time limit;

storing the re-measured battery temperature as a second battery temperature;

comparing the first and second stored battery temperatures;

determining if the first stored battery temperature is substantially equal to the second stored battery temperature;

re-storing the second stored battery temperature as the first stored battery temperature when the second stored battery temperature is not substantially equal to the first stored battery temperature;

repeating the steps applying through comparing until the first stored battery temperature is substantially equal to the second stored battery temperature;

rapid charging the battery when the first stored battery temperature is substantially equal to the second stored battery temperature;

performing a ΔT/Δt measurement on the battery; and

terminating the rapid charging if the ΔT/Δt measurement exceeds a predetermined threshold.

5,825,160
POWER CONTROL CIRCUIT IN WIRELESS MOBILE COMMUNICATION SYSTEM

Ji-Hwa Kim, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 4, 1996, Ser. No. 725,891

Claims priority, application Rep. of Korea, Oct. 6, 1995, 1995/34355

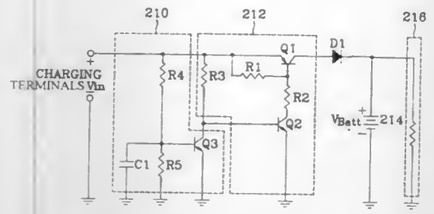
Int. Cl.[6] H01M *10/44;10/46*

U.S. Cl. 320—134 **14 Claims**

1. A power control circuit for a wireless mobile communication system, comprising:

over-voltage detection means for detecting whether a battery is connected to or disconnected from said system, and generating a switching control signal in dependence upon the detection, said over-voltage detection means comprising:

voltage dividing means serially connected between charging terminals, for dividing a voltage supplied through said charging terminals to generate a divided voltage;



a first transistor for generating said switching control signal, said first transistor being turned on or off according to said divided voltage provided from said voltage dividing means; and

charging means connected to a base terminal of said first transistor, for turning off said first transistor while the voltage supplied through said charging terminals is initially provided; and

switching means for responding to said switching control signal provided from said over-voltage detection means by connecting the voltage supplied through said charging terminals to said battery when said switching control signal indicates that said battery is connected to said system, and disconnecting the voltage supplied through said charging terminals when said switching control signal indicates that said battery is disconnected from said system.

5,825,161

BATTERY PACK AND CHARGING DEVICE

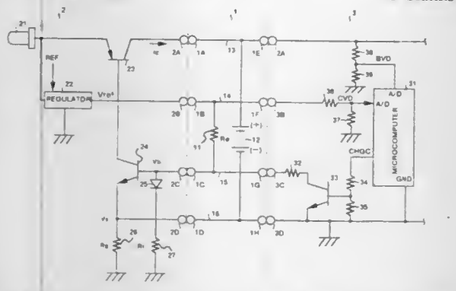
Toshiaki Fujikura, and Hidekazu Nakama, both of Chiba, Japan, assignors to Uniden Corporation, Tokyo, Japan

Filed Dec. 12, 1996, Ser. No. 764,284

Claims priority, application Japan, Oct. 1, 1996, 8-260429

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—162 **8 Claims**



1. A battery pack removably set in a charger supplied by a power from a commercial power source and receiving a reference potential and a charging current from said charger to execute a charging operation, comprising:

a chargeable/dischargeable battery having a specified battery capacity;

a pair of lead wires for charging connected to each other via said battery;

a resistor having a resistance value corresponding to said specified battery capacity; and

a pair of lead wires for charge control connected to each other via said resistor, the lead wires for charging being different from the lead wires for charge control, wherein, in a case where said reference potential is applied from said charger to either one of said pair of lead wires for charge control, a current value of a charging current supplied from said charger is controlled according to a partial potential corresponding to the resistance value of said resistor.

5,825,162

ELECTRIC POWER FLOW CONTROLLER

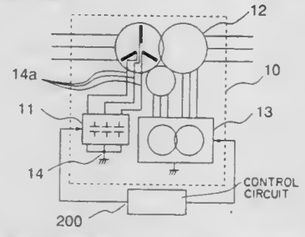
Junzo Kida, Hitachi; Hiroshi Arita, Mito, and Shinichi Kondo, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 21, 1995, Ser. No. 505,533

Claims priority, application Japan, Jul. 25, 1994, 6-172277; Mar. 30, 1995, 7-072755; Jun. 29, 1995, 7-163375

Int. Cl.[6] G05F *1/12;5/00;1/00;* H02J *3/18*

U.S. Cl. 323—210 **69 Claims**



1. An electric power flow controller for controlling a transmission of an electric power system, comprising:

a first winding having at least one Y-connection;

a second winding to be mated with said first winding; and

electric power flow compensating means for compensating an electric power flow state of said electric power system, said compensating means connected in series to the Y-connection of said first winding.

5,825,163

DC-TO-DC CONVERTER WITH LOW SUPPLY VOLTAGE

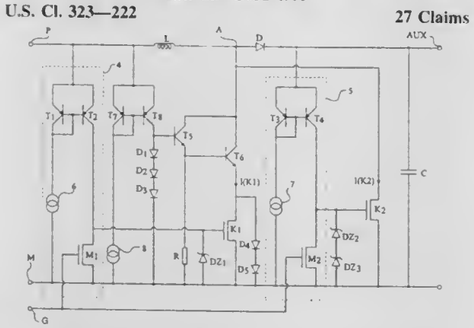
Serge Pontarollo, Saint Martin le Vinoux, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Jan. 24, 1997, Ser. No. 788,793

Claims priority, application France, Jan. 26, 1996, 96 01180

Int. Cl.[6] G05F *1/10*

U.S. Cl. 323—222 **27 Claims**



1. A DC-to-DC converter including:

an inductor and a diode that are connected in series between a positive supply terminal and a positive output terminal;

a storage capacitor connected between said positive output terminal and a negative terminal;

a first switch comprised of a lateral MOS transistor connected between the anode of said diode and said negative terminal;

a second switch comprised of a vertical MOS transistor connected in parallel to said first switch;

a first active load circuit connected between said positive and negative supply terminals and designed to control said first switch;

a second active load circuit connected between said positive output terminal and said negative terminal and designed to control the second switch; and

an oscillator providing a periodic signal for controlling the active loads.

5,825,164

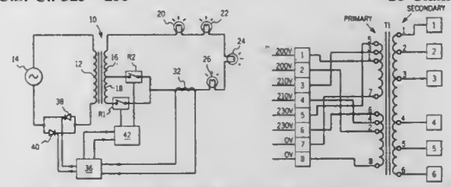
INDUCTANCE CONTROLLER WITH LOAD REGULATOR

Harold Richard Williams, Columbus, Ohio, assignor to ADB-Alnaco, Inc., Columbus, Ohio

Filed Dec. 21, 1995, Ser. No. 576,799

Int. Cl.[6] G05F *1/14*

U.S. Cl. 323—255 **28 Claims**



1. A method for changing the inductance of a multiple-tap transformer in a circuit having a current regulator and the transformer, comprising the steps of:

(a) comparing a first duty cycle of said current regulator with a first duty cycle setpoint and providing a first output signal which is in a first state when said first duty cycle is less than said first duty cycle setpoint and in a second state otherwise;

(b) monitoring said first output signal to produce a first tap change output signal when said first output signal has been in said first state for a first predetermined time interval; and

(c) increasing the primary-to-secondary turns ratio of said transformer responsive to said first tap-change output signal.

5,825,165

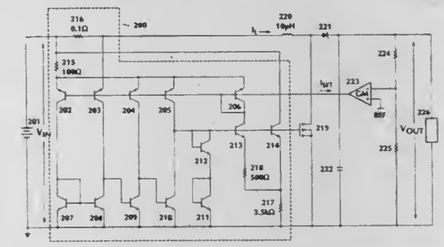
MICROPOWER SWITCH CONTROLLER FOR USE IN A HYSTERETIC CURRENT-MODE SWITCHING REGULATOR

Christopher Kitching, Fort Lauderdale, Fla., and Joseph Vanden Wymelenberg, Mountain View, Calif., assignors to Micro Linear Corporation, San Jose, Calif.

Filed Apr. 3, 1996, Ser. No. 627,115

Int. Cl.[6] G05F *1/56*

U.S. Cl. 323—282 **25 Claims**



1. A power supply circuit for providing a regulated voltage level by drawing power from a power source, the power supply circuit comprising:

a. a switch coupled to charge a magnetic element with energy by drawing an input current from the power source and coupled to discharge the magnetic element into a charge storage device for forming the regulated voltage level across the charge storage device;

b. an error amplifier coupled to compare the regulated voltage level to a reference level; and

c. a control circuit coupled to control the switch according to an output of the error amplifier and according to a level of the input current wherein the control circuit does not draw any quiescent current when the regulated voltage level is higher than the reference level.

5,825,166

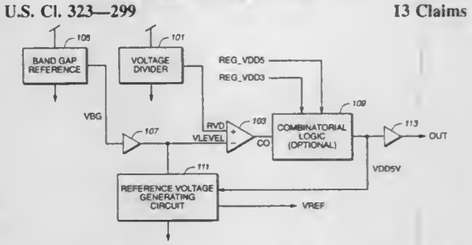
POWER SUPPLY SELF-ADJUSTED CIRCUIT FOR DUAL OR MULTIPLE VOLTAGE INTEGRATED CIRCUITS

Vincent S. Tso, Milpitas, and James B. Ho, San Jose, both of Calif., assignors to Sierra Semiconductor, San Jose, Calif.

Filed Mar. 4, 1996, Ser. No. 615,883

Int. Cl.[6] G08C *19/04*

U.S. Cl. 323—299 **13 Claims**



3. An integrated circuit, comprising: an integrated circuit substrate; a voltage reference for producing at least one known voltage level using an unknown one of a plurality of possible power supply voltages; and

a comparator for comparing a voltage derived from the unknown power supply voltage with said at least one known voltage level to produce an output signal identifying the unknown power supply voltage as a particular one of the possible power supply voltages;

wherein the voltage reference and the comparator are integrated on the integrated circuit substrate.

5,825,167

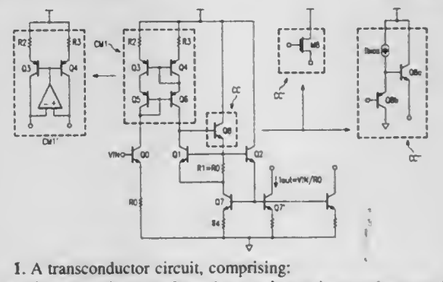
LINEAR TRANSCONDUCTORS

Marc Ryat, Santa Clara, Calif., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 457,465, Jun. 1, 1995, Pat. No. 5,684,393, which is a continuation of Ser. No. 31,647, Mar. 19, 1993, Pat. No. 5,451,859, which is a continuation-in-part of Ser. No. 950,091, Sep. 23, 1992, Pat. No. 5,498,952. This application Jun. 30, 1997, Ser. No. 885,059

Int. Cl.[6] G05F *3/16*

U.S. Cl. 323—312 **11 Claims**



1. A transconductor circuit, comprising:

an input transistor configured to receive an input voltage on the base thereof;

a first resistance coupled to said input transistor, said input transistor generating a first resistance current through said first resistance to thereby produce a collector current on a collector of said input transistor which is approximately equal to said input voltage to said input transistor divided by the resistance value of said first resistance;

an output circuit to generate a current equal to said collector current in said input transistor;

a compensation circuit coupled to said output circuit to produce a first compensation current component which is equal to the base current of said input transistor; and

a second resistance matched to said first resistance and coupled to said compensation circuit, said compensation circuit gener-

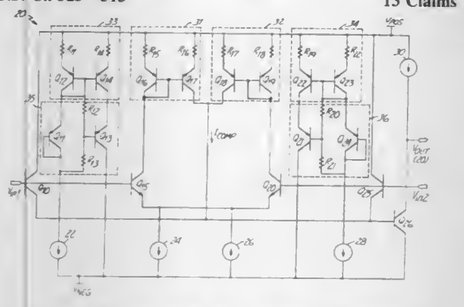
ating, in said second resistance, a second current compensation component corresponding to the base-emitter voltage drop of said input transistor divided by the resistance value of said first reference resistance, to provide a second compensation current, said output circuit combining said current with said first and second compensation currents to generate an output current which very closely approximates the input voltage divided by the resistance value of said first reference resistance.

5,825,168

HIGH PERFORMANCE MAXIMUM AND MINIMUM CIRCUIT

Kurt N. Kimber, Minneapolis, Minn., assignor to VTC, Inc., Bloomington, Minn.

Filed Jun. 13, 1997, Ser. No. 874,762
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—315 **13 Claims**



1. A circuit for producing an output voltage as a function of a first input voltage and a second input voltage, the circuit comprising:

a first emitter-coupled transistor pair for receiving the first and second input voltages;

a compensation circuit coupled to receive the first and the second input voltage signals, the compensation circuit generating a compensation current at least partially based on a relative difference between the first and the second input voltage signals, the compensation circuit being coupled to the first emitter-coupled transistor pair such that the compensation circuit provides the compensation current to the first emitter-coupled transistor pair; and

the output signal representative of either the first or the second input voltage.

5,825,169

DYNAMICALLY BIASED CURRENT GAIN VOLTAGE REGULATOR WITH LOW QUIESCENT POWER CONSUMPTION

Karl D. Selander, and Michael A. Sorna, both of Hopewell Junction, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 4, 1998, Ser. No. 17,719
Int. Cl.[6] G05F *3/16*
U.S. Cl. 323—315 **15 Claims**

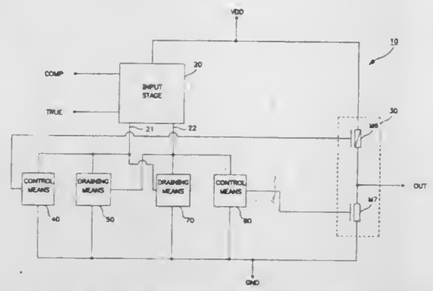
1. A voltage regulator circuit for minimizing the bias current flowing between a first voltage terminal and a second voltage terminal, the circuit comprising:

a first input terminal for receiving a first input signal;

a second input terminal for receiving a second input signal;

an output terminal;

an input stage coupled to said first and said second input terminals and to the first voltage terminal, said input stage deriving:



(a) a first signal corresponding to the magnitude of the first input signal with respect to the second input signal; and

(b) a second signal corresponding to the magnitude of the second input signal with respect to the first input signal;

whereby the relative magnitudes of the first and the second signals indicate the relative magnitudes of the signals applied to said first and second input terminals;

an output stage coupling said output terminal to the first and the second voltage terminals, said output stage including:

a first output stage transistor having a source coupled to one of the voltage terminals, a drain coupled to said output terminal, and a gate; and

a second out stage transistor having a drain coupled to said output terminal, a source coupled to the other voltage terminal, and a gate;

first means for controlling the current flowing through said first output stage transistor and coupled to said input stage to receive the first signal and coupled to said gate of said first output stage transistor to control the current flowing through said first output stage transistor in response to the current flowing through said first current controlling means;

first means for draining current from said first current controlling means and coupled in parallel with said first current controlling means so that current flow through said first draining means reduces current flow through said first current controlling means, said first draining means responsive to the second signal to control current flow through said first draining means to reduce current flow through said first current controlling means;

second means for controlling the current flowing through said second output stage transistor and coupled to said input stage to receive the second signal and coupled to said gate of said second output stage transistor to control the current flowing through said second output stage transistor in response to the current flowing through said second current controlling means; and

second means for draining current from said second current controlling means and coupled in parallel with said second current controlling means so that current flow through said second draining means reduces current flow through said second current controlling means, said second draining means responsive to the first signal to control current flow through said second draining means to reduce current flow through said second current controlling means.

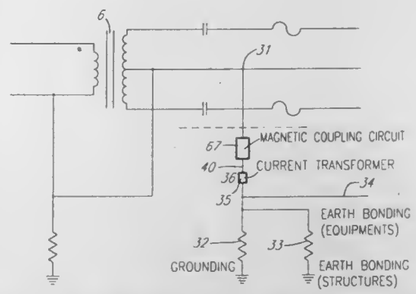
5,825,170

MAGNETICALLY COUPLED ALTERNATING STRAY CURRENT NEUTRALIZING METHOD AND SYSTEM

Michel Montreuil, St-Charles-de-Bellechasse, Canada, assignor to Filtre-Expert, Levis, Canada

Filed Jan. 24, 1997, Ser. No. 788,262
Int. Cl.[6] A01J *3/00;* **H02H** *1/04;3/00;* **H01F** *17/00*
U.S. Cl. 323—355 **21 Claims**

1. A system for neutralizing an alternating stray voltage produced in a ground return circuit and a corresponding alternating stray current flowing through the ground return circuit in the



proximity of an animal susceptible to be affected by the alternating stray voltage and current, comprising:

sensor means for detecting the alternating stray current flowing through the ground return circuit;

current generator means responsive to the detected alternating stray current for generating an alternating compensating current having an amplitude and phase respectively related to the amplitude and phase of the detected alternating stray current; and

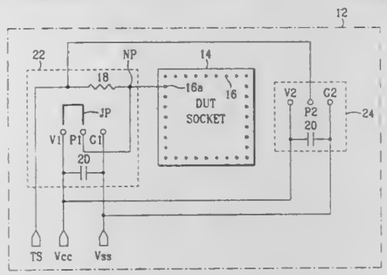
magnetic coupling means for magnetically coupling the alternating compensating current to the ground return circuit so as to induce in said ground return circuit an alternating compensating voltage adding to said alternating stray voltage to substantially cancel the alternating stray voltage and, as a consequence, the alternating stray current.

5,825,171

UNIVERSAL BURN-IN BOARD

Kyung-Mo Shin, Kyungki-do, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 31, 1996, Ser. No. 739,852
Claims priority, application Rep. of Korea, Nov. 9, 1995, 95-40484
Int. Cl.[6] G01R *31/02*
U.S. Cl. 324—73.1 **21 Claims**



1. A universal burn-in board circuit comprising:

a socket having a plurality of connectors where a target semiconductor to be burned-in is inserted;

a plurality of first means each having a first node coupled to one of said plurality of connectors, an isolation resistor coupled between said first node and a test signal input line, a first power node coupled to a power voltage input line, a first ground node coupled to a ground voltage input line, and a first passing node coupled to said first node;

a plurality of second means each having a second power node coupled to said first power node, a second ground node coupled to said first ground node, and a second passing node coupled to said test signal input line; and

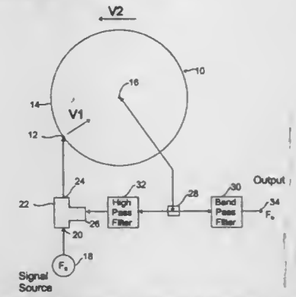
a plurality of selecting means for selectively coupling said first power node or said first ground node to said first passing node of said first means, and for selectively coupling said second power node or said second ground node to said second passing node of said second means, thereby providing at least one selectable burn-in test signal to said target semiconductor device inserted in said socket.

5,825,172

CONTINUOUS UP/DOWN SPECTRUM SCALING OF SIGNALS

Gopalkrishna G. Nadkarni, 2962 Belt Line Rd. #1310, Garland, Tex. 75044

Filed Apr. 11, 1997, Ser. No. 838,855
Int. Cl.[6] G01R *23/175*
U.S. Cl. 324—76.35 **12 Claims**



12. A method of spectrum scaling of signals, comprising the steps of:

coupling signals to a moving medium; and

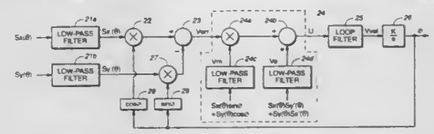
propagating the signals at different velocities in the moving medium with respect to an output of the moving medium to thereby produce a frequency at the output that is different from a corresponding frequency input to the moving medium.

5,825,173

CIRCUIT FOR DETECTING PHASE ANGLE OF THREE-PHASE ALTERNATING CURRENT

Chung-hyuck Lim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 7, 1997, Ser. No. 888,638
Claims priority, application Rep. of Korea, Aug. 19, 1996, 1996-34293
Int. Cl.[6] G01R *25/00*
U.S. Cl. 324—76.77 **3 Claims**



1. A circuit for generating a detection output indicative of the phase angle of a three-phase alternating current provided as an alternating current input signal at two input ports of the circuit, the circuit comprising:

a low pass filter installed at each input port for removing noise and high-frequency signals mixed in the alternating current input signal;

multiplier operably connected to each low pass filter for multiplying the signal output from each low-pass filter by a feedback signal derived from the detection output;

a subtracter for receiving the signals output from said multipliers and calculating an error between the signals output from said multipliers;

a loop filter for receiving and filtering the signal output from said subtracter;

an integrator for receiving and time-integrating the output from said loop filter to thereby output an estimated digital phase angle signal; and

a phase delay compensator installed between said subtracter and said loop filter, for compensating for phase delay of the input signal caused by said low-pass filter at each input port.

5,825,174

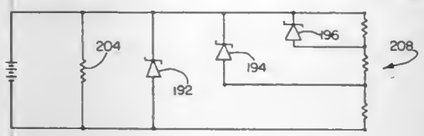
TEMPERATURE RESPONSIVE BATTERY TESTER

Robert Parker, 411 Rolling Hills La., Alamo, Calif. 94507, assignor to Robert Parker, Palm Desert, Calif., and Jack Brass, Toronto, Canada

Division of Ser. No. 307,341, Sep. 16, 1994, Pat. No. 5,610,511, which is a continuation-in-part of Ser. No. 139,363, Oct. 19, 1993, Pat. No. 5,460,902, which is a continuation-in-part of Ser. No. 58,449, May 7, 1993, Pat. No. 5,389,470. This application Dec. 19, 1996, Ser. No. 769,648

Int. Cl.[6] G01R *19/00;* **G01N** *27/416*

U.S. Cl. 324—106 **9 Claims**



1. A device for measuring the voltage of a voltage source comprising a plurality of temperature responsive displays and a circuit including plural heating circuits, each heating circuit for heating one of said plurality of temperature responsive displays when a threshold voltage of the heating circuit is exceeded, and a printed resistor, each heating circuit being connected to a length of said printed resistor such that the voltage of the voltage source at which each heating circuit heats a temperature responsive display is a function of the ratio of the lengths of said printed resistor to which said heating circuits are connected.

5,825,175

MAGNETIC SENSORS

Ahmet Selcuk, Worsley, United Kingdom, assignor to Lem Heme Limited, Lancs, England

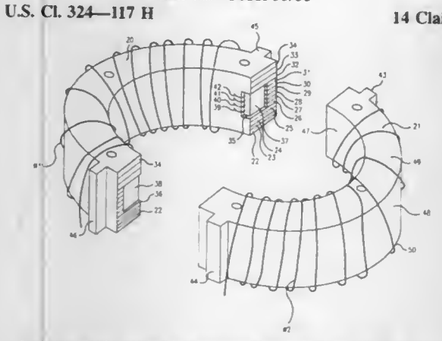
PCT No. PCT/GB95/00081, § 371 Date Sep. 17, 1996, § 102(e) Date Sep. 17, 1996, PCT Pub. No. WO95/20167, PCT Pub. Date Jul. 27, 1995

PCT Filed Jan. 17, 1995, Ser. No. 669,559

Claims priority, application United Kingdom, Jan. 19, 1994, 9400960

Int. Cl.[6] G01R *33/00*

U.S. Cl. 324—117 H **14 Claims**



1. A magnetic sensor arrangement forming part of an electrical measuring device (**10**), the device (**10**) having means for being fitted around an electrical conductor for the measurement of a property associated with the conductor, and wherein the sensor arrangement comprises at least one sensor (**37**, **38**) mounted in a recess (**35**, **36**) formed in one of a pair of arms (**20**, **21**) of a given material, characterized in that each of the arms (**20**, **21**) is separately mounted on a body member for movement towards and away from one another and for movement by at least one of the arms (**20**, **21**) with respect to the body member, said arms (**20**, **21**) forming said means for being fitted around an electrical conductor and each of the arms (**20**, **21**) having an end face that is exposed such that with the arms (**20**, **21**) in a closed position a continuous loop of the material is formed thereby to shield said at least one sensor from one or more sources of interference, and the arrangement further including electrical windings provided completely around each of the arms (**20**, **21**), and wherein said at least one sensor (**37**, **38**) forms part of a control circuit whereby a primary current flowing in the electrical conductor induces a first magnetic flux within the material of the arms (**20**, **21**), and an output from said at least one sensor (**37**, **38**) is used to control a secondary current flowing in the windings.

5,825,176

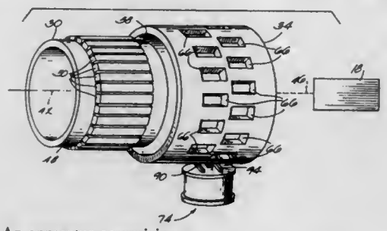
SENSOR MOUNTED ADJACENT AN OUTER MEMBER FOR SENSING THE ROTATIONAL SPEED OF A INNER MEMBER

Brian G. Babin, Sterling Heights, and Scott K. Engel, Novi, both of Mich., assignors to SSI Technologies, Inc., Janesville, Wis.

Continuation-in-part of Ser. No. 605,969, Feb. 23, 1996, abandoned, which is a continuation-in-part of Ser. No. 467,576, Jun. 6, 1995, abandoned. This application Dec. 27, 1996, Ser. No. 774,918

Int. Cl.[6] G01P *3/487;3/488;* **G01D** *5/12*

U.S. Cl. 324—174 **44 Claims**



1. An apparatus comprising:

an inner member mounted for rotation about an axis;

a cylindrical outer member mounted for concentric rotation about said inner member relative to said axis, such that rotation of said cylindrical outer member is independent of rotation of said inner member, said outer member having an inner surface adjacent said inner member and an outer surface; and

a sensor mounted adjacent said outer surface of said cylindrical outer member, said outer cylindrical member being constructed so as to enable the sensor to measure the rotational speed of said inner member.

5,825,177

DEVICE FOR MEASURING THE SPEED OF A RAIL-MOUNTED VEHICLE

Askell Finnestad, Tananager, Norway, and Hakan Lind, Skarholmen, Sweden, assignors to ABB Daimler-Benz Transportation Signal AB, Stockholm, Sweden

PCT No. PCT/SE95/00783, § 371 Date May 12, 1997, § 102(e) Date May 12, 1997, PCT Pub. No. WO96/01431, PCT Pub. Date Jan. 18, 1996

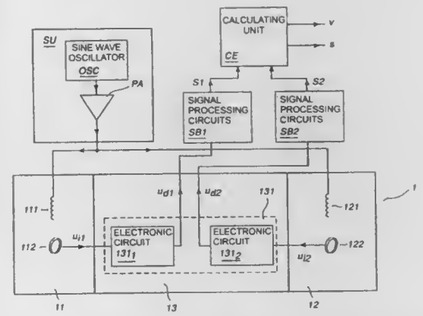
PCT Filed Jun. 26, 1995, Ser. No. 765,629

Claims priority, application Sweden, Jul. 4, 1994, 9402350

Int. Cl.[6] G01P *3/80;3/66;* **B61L** *25/00;* **B61K** *9/10*

U.S. Cl. 324—179 **28 Claims**

1. A rail mounted vehicle speed measuring device comprising:



a first magnetic field generating means and a first magnetic field sensing means positioned at a first measuring location on the vehicle;

a second magnetic field generating means and a second magnetic field sensing means positioned at a second measuring location on the vehicle, spaced a fixed distance from the first location in the direction of vehicle movement;

wherein the magnetic fields generated by the first and second magnetic field generating means are influenced by the rail to produce first and second signal patterns sensed by the first and second sensing means and varying with movement of the vehicle along the rail; and

means for correlating the first and second sensed signal patterns to determine the time displacement between the two sensed signal patterns and the velocity of the vehicle.

5,825,178

SENSING DEVICE FOR DETERMINING AN ANGULAR POSITION OF A STEERING WHEEL ON A STEERING COLUMN IN A VEHICLE

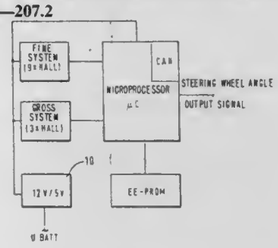
Ulrich Hipp, Sulz, and Manfred Abendroth, Marbach, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jun. 24, 1996, Ser. No. 668,923

Claims priority, application Germany, Sep. 21, 1995, 195 34 995.4

Int. Cl.[6] G01B *7/30;* **B62D** *15/02;* **G01D** *5/249*

U.S. Cl. 324—207.2 **4 Claims**



1. A sensing device for determination of an angular position of a steering wheel on a steering column in a vehicle, said sensing device comprising

means for generating a fine code signal, said fine code signal repeating after a revolution of the steering column, said means for generating a fine code signal including a first coded disk provided with a first code structure, a first plurality of receiving devices and means for reading off said first code structure from the first coded disk to form said fine code signal, wherein said first plurality of receiving devices consists of nine of said receiving devices spaced 40° from each other around an outer periphery of the first coded disk and the first code structure on the first coded disk defines a Gray code;

means for generating a gross code signal including a second coded disk provided with a second code structure and a second plurality of receiving devices including means for reading off said second code structure from the second coded disk to form said gross code signal;

means for rotating the second coded disk geared down at a predetermined gear ratio relative to the first coded disk; and means for combining the fine code signal and the gross code signal to generate an angular position signal characteristic of an angular position of the steering wheel;

wherein at least one of said first and second coded disks is a magnetically coded disk provided with a predetermined sequence of alternating North and South pole magnetic regions to provide said code structure and said receiving devices associated with the magnetically coded disk comprise Hall switching devices located on one side of said magnetically coded disk and wherein the first plurality of receiving devices and the second plurality of receiving devices are arranged in a single plane.

5,825,179

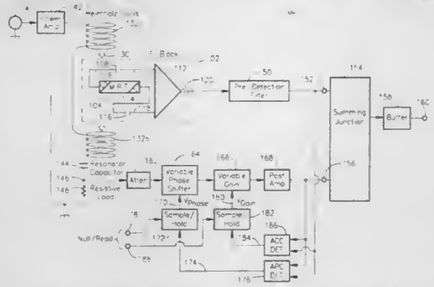
INTERFERENCE SUPPRESSION SUBSYSTEM

Paul Dylan Sherman, Berkeley, and Shiub-Shyan Wang, Saratoga, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 511,137, Aug. 4, 1995, abandoned. This application Jan. 3, 1997, Ser. No. 778,567

Int. Cl.[6] G01R *33/12;* **H01H** *31/02;* **G01N** *27/72*

U.S. Cl. 324—210 **8 Claims**



3. A test system for testing a magneto-resistive head assembly, said test system comprising:

a magneto-resistive head assembly which includes a magneto-resistive sensor element, connection wires, and an output terminal;

a test signal generator having an output terminal at which is provided an alternating test signal having a predetermined frequency;

a magnetic field generator connected to the output terminal of the test signal generator, said magnetic field generator providing an exciting magnetic field for exciting the magneto-resistive head assembly;

a summing junction having an output terminal, having one input terminal coupled to the output terminal of the magneto-resistive head assembly, and having a second input terminal;

a reference signal channel having an input terminal coupled to the test generator output terminal to receive the alternating test signal, wherein said reference signal channel includes a variable phase shifter coupled in series with a variable gain amplifier and having an output terminal at which is provided a reference signal;

said variable phase shifter having a control terminal at which is provided a control signal for controlling the phase shift of a signal passing therethrough;

said variable gain amplifier having a control terminal at which is provided a control signal for controlling the amplitude of a signal passing therethrough;

a phase comparator having one input terminal coupled to the output terminal of the magneto-resistive head assembly and

having a second input terminal coupled to the output terminal of the reference signal channel, said phase comparator having an output terminal at which is provided a phase difference output signal proportional to the phase difference between the output signal of the magneto-resistive head assembly and the reference signal channel;

a phase sample-and-hold circuit having an input terminal coupled to the output terminal of the phase comparator and having an output terminal coupled to control terminal of the variable phase shifter, said phase sample-and-hold circuit including a control terminal at which is provided a signal for controlling sampling of the phase difference output signal of the phase comparator and for controlling the holding of a sampled signal at the output terminal of the phase sample-and-hold circuit, which is connected to the control terminal of the variable phase shifter;

an amplitude comparator having one input terminal coupled to the output terminal of the magneto-resistive head assembly and having a second input terminal coupled to the output terminal of the reference signal channel, said amplitude comparator having an output terminal at which is provided an amplitude difference output signal proportional to the amplitude difference between the output signal of the magneto-resistive head assembly and the reference signal channel;

an amplitude sample-and-hold circuit having an input terminal coupled to the output terminal of the amplitude comparator and having an output terminal coupled to control terminal of the variable gain amplifier, said amplitude sample and hold circuit including a control terminal at which is provided a signal for controlling sampling of the phase difference output signal of the phase comparator and for controlling the holding of a sampled signal at the output terminal of the amplitude sample-and-hold circuit, which is connected to the control terminal of the variable gain amplifier;

wherein said test system is operable in a first null mode in which the magneto-resistive sensor element is disabled and the reference signal provides an output signal which is a replica signal having substantially the same phase as the stray-pickup signal;

wherein, in the first reading mode, the control signal for the variable phase shifter is provided from the output terminal of the phase comparator passing through the phase sample-and-hold circuit and wherein in the first reading mode, the control signal for the variable gain amplifier is provided from the output terminal of the amplitude comparator;

wherein said test system is operated in a second reading mode in which the magneto-resistive sensor element is enabled and the reference signal provides an output signal which is a stored replica signal having substantially the same phase as the stray-pickup signal; and

wherein in the second reading mode the replica signal of the stray-pickup output signal is subtracted from the composite output signal in the summing junction to significantly cancel the stray-pickup component and to provide an output response signal having an improved signal to stray-pickup signal ratio.

5,825,180

MAGNETIC DISK TEST APPARATUS HAVING HEADS MOVEABLE ALONG SUBSTANTIALLY PARALLEL AXES

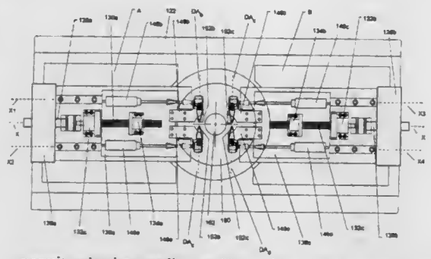
Nahum Guzik, Palo Alto, Calif., assignor to Guzik Technical Enterprises, San Jose, Calif.

Filed Dec. 11, 1996, Ser. No. 764,616
Int. Cl.[6] G01R *33/12;* **B24B** *39/06;49/00*
U.S. Cl. 324—212 **43 Claims**

1. Apparatus for testing and processing a planar magnetic disk said disk further having a magnetic storage medium on a principal surface thereof, comprising:

A. a disk support assembly including a spindle for rotatably supporting said magnetic disk about a spindle axis,

B. a first magnetic head assembly including a first magnetic head and including means for selectively positioning said first magnetic head along a first head axis overlying said disk to



permit selective reading and/or writing information from/to said magnetic storage medium when said spindle rotates in a first direction, and whereby said first magnetic head is at a predetermined angle with respect to said first head axis,

C. a second magnetic head assembly including a second magnetic head, and including means for selectively positioning said second magnetic head along a second head axis overlying said disk to permit selective reading and/or writing information from/to said magnetic storage medium when said spindle rotates in said first direction, and whereby said second magnetic head is at a predetermined angle with respect to said second head axis, wherein said second head axis is substantially parallel to said first head axis,

D. a gliding head assembly including a gliding head, and including means for selectively positioning said gliding head along a third head axis overlying said disk to permit gliding by said gliding head over said magnetic storage medium when said spindle rotates in a second direction, said second direction being opposite said first direction, wherein said third head axis is substantially parallel to said first head axis,

E. a burnishing head assembly including a burnishing head, and including means for selectively positioning said burnishing head along a fourth head axis overlying said disk to permit burnishing of said magnetic storage medium by said burnishing head when said spindle rotates in said second direction, wherein said fourth head axis is substantially parallel to said first head axis,

F. a controller including means for selectively driving each of said first magnetic head, said second magnetic head, said gliding head and said burnishing head across said magnetic storage medium and for selectively rotating said spindle in said first and second directions.

5,825,181

MULTI-IMPACT THERMAL ASPERITY SENSOR HEAD

Mark J. Schaenzer, Eagan; Zine-Eddine Boutaghou, Vadnais Heights; Subrahmanyan Nagarajan, Burnsville, and Ramesh Sundram, Eden Prairie, all of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

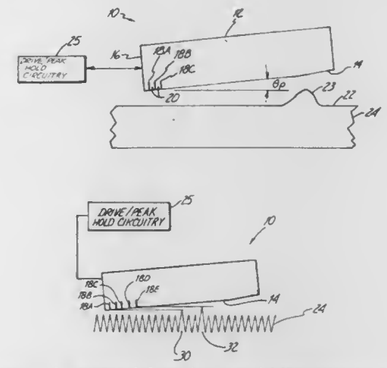
Filed Apr. 1, 1997, Ser. No. 831,070
Int. Cl.[6] G01R *1/00*
U.S. Cl. 324—212 **18 Claims**

1. An asperity sensing head for use in detecting asperities on a surface of a disc as an actuator moves the head relative to the surface while the disc is rotated, the asperity sensing head comprising:

a slider body having a first rail and an air bearing surface;

a first magnetoresistive (MR) sensor carried by the slider body in the first rail and adjacent to the air bearing surface; and

a second MR sensor carried by the slider body in the first rail and adjacent to the air bearing surface, wherein the first MR



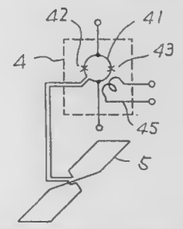
sensor is separated from the second MR sensor by at least about 1 micron.

5,825,182

NONDESTRUCTIVE TESTING SYSTEM USING A SQUID

Satoshi Nakayama; Kazuo Chinone; Akikazu Odawara, and Tatsuaki Ataka, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Oct. 19, 1994, Ser. No. 325,813
Claims priority, application Japan, Oct. 20, 1993, 5-262741
Int. Cl.[6] G01N *27/87;* **G01R** *33/035*
U.S. Cl. 324—241 **16 Claims**



1. A nondestructive testing unit comprising: a plurality of detection coils for detecting a magnetic field; a SQUID having a pair of Josephson junctions directly connected to the detection coils to form a closed-loop circuit consisting of the detection coils and the Josephson junctions; a probe for supporting the detection coils and the SQUID in a coolant; a cryostat for supporting the probe and keeping the coolant constant; a controller for processing a signal transmitted from the SQUID; and a display device for displaying the processing result; wherein at least two detection coils are connected with each other such that equal and opposite currents are output from the detection coils and are canceled when the detection coils are disposed in a uniform magnetic field, and the respective detection coils are disposed in the same plane.

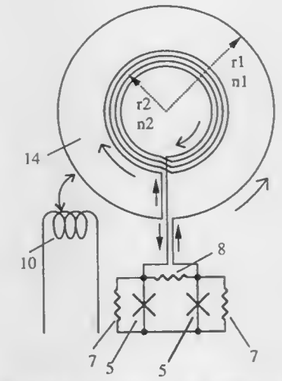
5,825,183

RADIAL DIFFERENTIAL SQUID MAGNETIC FLUX METER

Toshimitsu Morooka; Kazuo Chinone, and Nobuhiro Shimizu, all of Chiba, Japan, assignors to Seiko Instruments Inc., Japan

Filed Apr. 19, 1996, Ser. No. 635,034
Claims priority, application Japan, May 22, 1995, 7-122771
Int. Cl.[6] G01R *33/035;33/02;* **G01N** *27/72*
U.S. Cl. 324—248 **13 Claims**

9. A magnetic flux meter for detecting a magnetic field, comprising: a pair of Josephson junctions; a washer coil coupled to the Josephson junctions to form a superconducting loop therewith; and



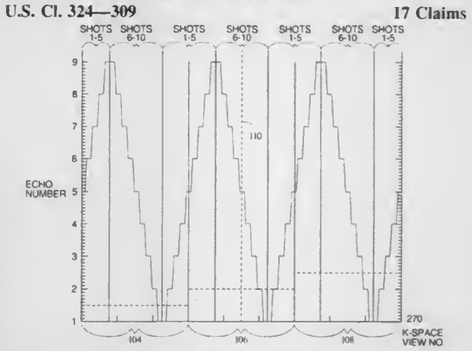
a feedback modulation coil coupled to the washer coil for receiving an output signal of the Josephson junctions; wherein the washer coil comprises a plurality of concentric loops disposed on a planar surface and the washer coil directly detects a magnetic field such that a separate pick-up coil is not needed.

5,825,184

ULTRA-FAST IMAGING TECHNIQUE USING K-SPACE SEGMENTATION WITH MINIMUM PHASE AND AMPLITUDE ERRORS

Rao P. Gullapalli, and Mark J. Loncar, both of Richmond Heights, Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Apr. 26, 1996, Ser. No. 638,204
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—309 **17 Claims**



1. A method of magnetic resonance imaging in which a plurality of imaging sequence repetitions are applied to generate a plurality of data lines which are reconstructed into an image representation, in each of the sequence repetitions, resonance is excited followed by the collection of a plurality of sets of data lines, each set including a plurality of data lines, the method further comprising:

in each of a first fraction of the repetitions, phase-encoding the magnetic resonance such that in each subsequent data line set following excitation, the phase-encoding step of the data lines in k-space is incremented relative to the preceding set;

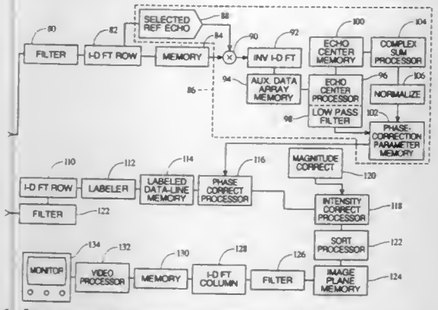
in each of a second fraction of the repetitions, phase-encoding the magnetic resonance such that in each subsequent data line set the phase encoding step of the data lines is decremented in k-space relative to the preceding set; and,

sorting the data lines such that the data lines from within each set are sorted among segments of k-space by position within the set such that all first data lines are grouped in a first segment of k-space, all second data lines within each set are grouped in a second segment of k-space, and so forth.

5,825,185
METHOD FOR MAGNETIC RESONANCE SPIN ECHO SCAN CALIBRATION AND RECONSTRUCTION

Haiying Liu, Minneapolis, Minn.; Francis H. Bearden, Twinsburg, and Gordon D. DeMeester, Wickliffe, both of Ohio, assignors to Picker International, Inc., Highland Heights, Ohio

Filed Nov. 27, 1996, Ser. No. 757,153
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—309 **18 Claims**



1. In a magnetic resonance imaging system which includes a magnet for generating a temporally constant magnetic field through an examination region, a radio frequency pulse controller and transmitter for both exciting and inverting magnetic dipoles in the examination region, the excitation of the magnetic dipoles being cyclic with a repeat time TR, and gradient magnetic field coils and a gradient magnetic field controller for generating at least phase and read magnetic field gradient pulses in orthogonal directions across the examination region such that radio frequency magnetic resonance echoes are generated, a receiver for receiving and demodulating the radio frequency magnetic resonance echoes to produce a series of data lines, and an image processor for reconstructing an image representation from the data lines comprising:

a phase-correction parameter generator which generates a plurality of phase-correction vectors the phase correction generator including:

an echo center position processor for calculating the relative echo center position for each of a plurality of echo positions in the repeat times of the sequence;

a complex sum processor for receiving the echo center positions and calibration data lines from the echo positions and independently computing a complex phase correction vector therefrom in spatial domain for each of the echo positions; and

a correction processor for correcting each imaging data line with a positionally corresponding one of the correction vectors prior to reconstruction of the image representation.

5,825,186
METHOD FOR PRODUCING STIFFNESS-WEIGHTED MR IMAGES

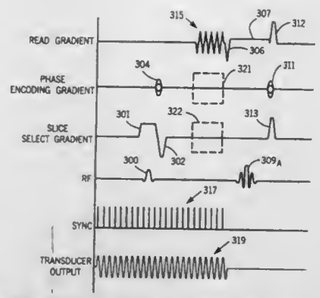
Richard L. Ehman, and Raja Muthupillai, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Continuation-in-part of Ser. No. 719,605, Sep. 25, 1996, which is a division of Ser. No. 325,834, Oct. 19, 1994, Pat. No. 5,592,085. This application Mar. 4, 1997, Ser. No. 810,843
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—309 **10 Claims**

1. A method for producing an image of a subject with an NMR imaging system, the steps comprising:

imparting mechanical motion to spins located in the subject to produce shear waves therein which have wavelengths determined by the mechanical properties of the subject;

conducting a scan of the subject with the NMR imaging system to acquire NMR signals using a pulse sequence in which an



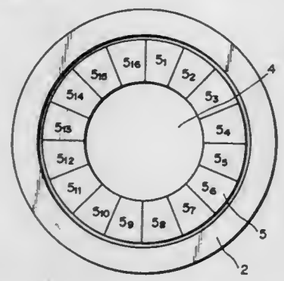
alternating magnetic field gradient is employed to sensitize the acquired NMR signals to the shear wave motion of the spins; and

reconstructing an image from the acquired NMR signals acquired during the scan which indicates the net NMR signal at each of a plurality of pixel locations in the image, and wherein the net NMR signals are modulated by the spatial phase dispersion of the acquired NMR signals caused by the shear waves.

5,825,187
MAGNETIC CIRCUIT SYSTEM WITH OPPOSITE PERMANENT MAGNETS

Ken Ohashi; Yuhito Yoneda; Koji Miyata, and Dai Higuchi, all of Fukui-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Apr. 11, 1997, Ser. No. 843,053
Claims priority, application Japan, Dec. 4, 1996, 8-091049
Int. Cl.[6] G01V *3/00*
U.S. Cl. 324—319 **5 Claims**



1. A magnetic circuit system for an MRI instrument, said magnetic circuit system comprising:

two permanent magnets each having a face surface, wherein said two permanent magnets are positioned at a predetermined distance from each other such that the face surfaces of said two permanent magnets oppose each other;

two shimmed pole pieces each attached to the face surface of one of said two permanent magnets;

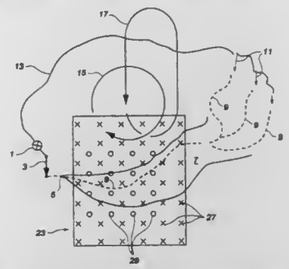
two gradient coils each attached to one of said two shimmed pole pieces; and

two cancellation magnetic plates each attached to one of said two gradient coils so as to form a gap between said two cancellation magnetic plates, wherein each of said two cancellation magnetic plates has a thickness no greater than 0.5 mm, a base area which is in a range of 5% to 75% of a base area of each of said two gradient coils, and a coercive force in a range of 0.1 to 500 Oe, and wherein each of said two cancellation magnetic plates has an annular form and is divided into a plurality of segments pieces which are electrically insulated from one another.

5,825,188
METHOD OF MAPPING AND MONITORING GROUNDWATER AND SUBSURFACE AQUEOUS SYSTEMS

Jerry R. Montgomery, 4738 W. Harmon Rd., West Valley City, Utah 84120, and Thomas A. Phillips, 6706 S. Candle Cove, Salt Lake City, Utah 84121

Filed Nov. 27, 1996, Ser. No. 757,591
Int. Cl.[6] G01V *3/02;3/04;3/00*
U.S. Cl. 324—357 **14 Claims**



1. A geophysical method using electromagnetic energy for mapping, tracking, or monitoring a subsurface aqueous system comprising:

directly introducing an electrical current into said aqueous system to electrically energize said aqueous system;

monitoring at a plurality of locations the primary electric and magnetic fields emanating from said aqueous system to measure magnetic and electric fields produced by said electrical current directly introduced into said aqueous system;

wherein monitoring of said primary magnetic field consists of measuring:

total horizontal magnetic field amplitude;

maximum horizontal magnetic field amplitude;

minimum horizontal magnetic field amplitude;

vertical magnetic field amplitude;

gradient of the magnetic field;

direction of maximum horizontal magnetic field;

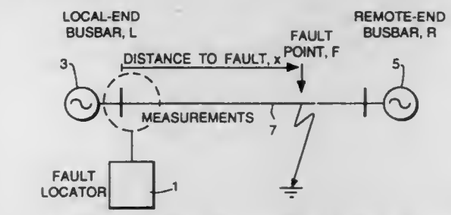
direction of minimum horizontal magnetic field; and

interpreting said measured primary electric fields and primary magnetic fields to determine extent and change in location of said aqueous system.

5,825,189
METHOD OF LOCATING THE POSITION OF A FAULT ON A POWER TRANSMISSION

Allan Thomas Johns, Swindon, United Kingdom, assignor to GEC Alsthom Limited, Warwickshire, United Kingdom

Continuation of Ser. No. 373,371, Jan. 17, 1995, abandoned. This application Aug. 13, 1996, Ser. No. 696,115
Claims priority, application United Kingdom, Jan. 26, 1994, 9401467
Int. Cl.[6] G01R *31/08*
U.S. Cl. 324—525 **5 Claims**



1. A method of locating the position of a fault on a power transmission line between first and second ends of the line and involving measurements taken at the first end of the line only, the method comprising the steps of:

(a) calculating the complex fault impedance at each of a plurality of assumed fault positions along the length of the line, the fault impedance at each assumed position being calculated utilizing:

(i) a measurement before and after fault occurrence of the voltage and current at said first end of the line,

(ii) assumed parameters of the line, taking into account a possible variation of said parameters from a section of the line extending between the first end and the assumed fault position to a section of the line extending between the assumed fault position and the second end, and

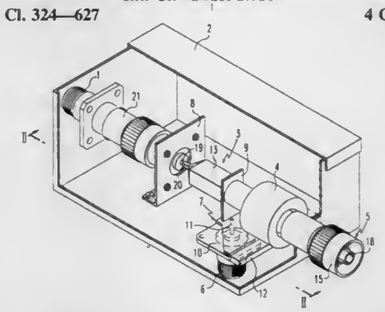
(iii) an assumed source impedance of said second end of the line; and

(b) by analyzing the variation of the complex fault impedance over said plurality of assumed fault positions, selecting as the actual fault position the assumed fault position of said plurality of assumed fault positions for which the argument of the complex fault impedance most closely equals zero.

5,825,190
METHOD AND APPARATUS FOR MEASURING A TRANSFER IMPEDANCE OF SHIELDED DEVICES AND COMMON MODE CURRENTS IN SHIELDINGS

Pieter Cornelis Tobias Van Der Laan, Aalst Waalre; Alexander Petrus Johannes Van Deursen, Nuenen; Franciscus Bernardus Marie Van Horck, Eindhoven, and Bernardus Lambertus Franciscus Paagman, Schijndel, all of Netherlands, assignors to Berg Technology, Inc., Reno, Nev.

Filed Mar. 27, 1996, Ser. No. 622,206
Claims priority, application European Pat. Off., Mar. 31, 1995, 95200825
Int. Cl.[6] G01R *27/28*
U.S. Cl. 324—627 **4 Claims**



1. An apparatus for measuring the transfer impedance (Zt) between at least one inner conductor of a device and its outer conductor in an electrical circuit which includes a power source and a junction point, comprising:

a first connector having an inner conductor to be electrically connected to said power source in order to receive a common mode current (Icm) and to pass said current (Icm) to the junction point such that the power source and a resistor are connected in series to the inner conductor of the first connector and the inner conductor of the first connector is connected at the junction point to the outer conductor of the device and the inner conductor of the device is also connected to the junction point;

a second connector having an inner conductor to be connected to the at least one inner conductor of the device and an outer conductor to be connected to the outer conductor of the device;

impedance means comprising a ferrite surrounding the outer conductor of the second connector arranged to substantially prevent said common mode current (Icm) from flowing from the outer conductor of the device to the outer conductor of said second connector; and

low impedance drain means to be connected to the outer conductor of the device and to a current sensing means in order to

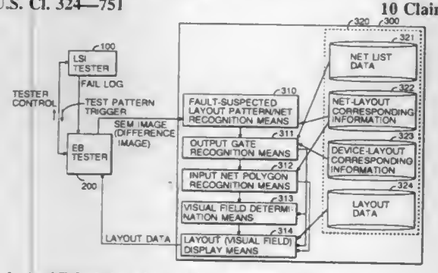
drain the common mode current (Icm) from said outer conductor of said device into said current sensing means and the drain means being made of a first conductive plate having a predetermined shape and said current sensing means comprises a second conductive plate and a third connector, the second plate having a predetermined shape and being electrically connected to said first conductive plate, and the third connector having a contact pin connected to said second plate and an outer conductor electrically connected to said second plate at a location remote from said contact pin, the first plate and the third connector.

5,825,191

IC FAULT LOCATION TRACING APPARATUS AND METHOD

Hironobu Niijima, Ohizumi-machi, and Hiroaki Kobayashi, Kumagaya, both of Japan, assignors to Advantest Corp., Tokyo, Japan

Filed Mar. 18, 1996, Ser. No. 617,316
Claims priority, application Japan, Mar. 16, 1995, 7-84798
Int. Cl.[6] G01R *31/305;31/28*
U.S. Cl. 324—751 **10 Claims**



1. An IC fault location tracing apparatus, comprising:

a semiconductor tester applying test patterns to terminals of an IC device under test, said semiconductor tester monitoring outputs of said IC device and providing an interruption signal to a charged particle beam tester as soon as a terminal of the IC device whose output disagrees with an expected value is found, said semiconductor tester sending file logs to said charged particle beam tester so as to notify an identity of said terminal which indicates said disagreement;

said charged particle beam tester scanning charged particle beam on said IC device when receiving said interruption signal from said semiconductor tester, said charged particle beam tester measuring an amount of secondary electrons generated from each point of said IC device which is radiated by said beam and displaying an electron distribution in said IC device as a potential contrast image by processing said amount of said secondary electrons, said charged particle beam tester displaying an electric potential difference image which indicates potential differences between a good-state and defected state of said IC device; and

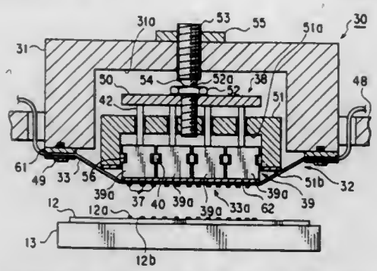
a control device for instructing visual field data to said charged particle beam tester and extracting a potential difference image of said electric potential contrast images from said charged particle beam tester, said control device storing net list data indicating input and output information of each circuit component of said IC device and mask layout data indicating pattern layout information of said IC device, said control device instructing said charged particle beam tester to locate the fault position in said IC device by tracing back the circuit of said IC device by visual field basis.

5,825,192

PROBE CARD DEVICE USED IN PROBING APPARATUS

Junichi Hagihara, Kofu, Japan, assignor to Tokyo Electron Limited, Tokyo, Japan

Filed Jul. 11, 1996, Ser. No. 679,333
Claims priority, application Japan, Jul. 14, 1995, 7-178543; Nov. 30, 1995, 7-312198
Int. Cl.[6] G01R *1/073*
U.S. Cl. 324—757 **10 Claims**



1. A probe card device used in a probing apparatus for testing the electrical characteristics of an object to be tested having a plurality of electrode pads by bringing the electrode pads into contact with contact elements, comprising:

a probe card disposed to face said object, said probe card including a flexible and insulating membrane having a pushing region, a plurality of contact elements mounted in said pushing region of the membrane in a manner to correspond to a plurality of electrode pads of the object, and a wiring formed in said membrane for achieving an electrical contact between a tester of the probing apparatus and said contact elements;

a support member for supporting said probe card; and

a pushing mechanism for pushing the back surface in the pushing region of the membrane included in the probe card toward the object;

wherein said pushing mechanism includes a pushing unit divided into a plurality of blocks to correspond to said pushing region and a support member for supporting each block, said plural blocks of said pushing member being independently movable, and the plural blocks serving to push the object in a manner to follow a surface profile of the object.

5,825,193

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

Yoshiro Nakata, Kyoto; Shin Hashimoto, and Isao Miyanaga, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

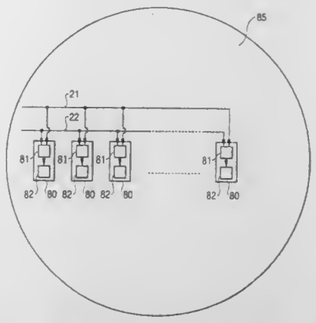
Filed Dec. 18, 1995, Ser. No. 575,735
Claims priority, application Japan, Dec. 19, 1994, 6-314396
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—763 **4 Claims**

3. A semiconductor integrated circuit apparatus having a plurality of semiconductor integrated circuit devices, each of said plurality of semiconductor integrated circuit devices comprising:

a semiconductor integrated circuit formed on a semiconductor substrate,

a reference-voltage input terminal formed on said semiconductor substrate, said reference-voltage input terminal operative for receiving a reference voltage input from outside of said semiconductor substrate;

a burn-in voltage control circuit formed on said semiconductor substrate, said burn-in voltage control circuit operative for receiving said reference voltage which is output from said reference-voltage input terminal, said burn-in voltage control circuit generating a burn-in supply voltage which is input to said semiconductor integrated circuit, said burn-in voltage control circuit maintaining said burn-in supply voltage at said reference voltage level, wherein each of said integrated circuits receive said burn-in supply voltage having the same voltage level.

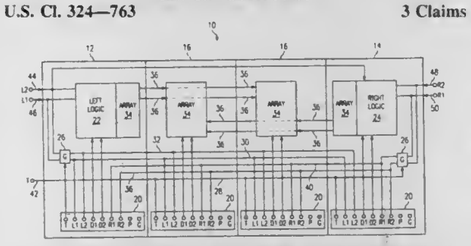


5,825,194

LARGE INTEGRATED CIRCUIT WITH MODULATOR PROBE STRUCTURES

Rohit L. Bhuva, Plano; Bao Tran, Richardson; James L. Conner, Rowlett; Michael Overlaur, Plano, and Tracy S. Paulsen, Rowlett, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 347,021, Nov. 30, 1994, Pat. No. 5,648,730. This application Sep. 20, 1996, Ser. No. 717,035
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—763 **3 Claims**



1. A method of testing an integrated circuit comprised of a plurality of interconnected circuit modules, each module having a circuit section and a dedicated testing pad section coupled to said circuit section, comprising the steps of:

a) connecting test equipment to one of said testing pad sections, wherein said testing pad sections are physically adjacent the circuit sections to which they are coupled;

b) providing signals to said testing pad section to test said respective circuit section; and

c) stepping said test equipment to another said circuit module of said integrated circuit and repeating steps a) and b); and

d) electrically isolating said testing pad section from said circuit section after completion of testing while leaving said testing pad section physically adjacent said circuit section.

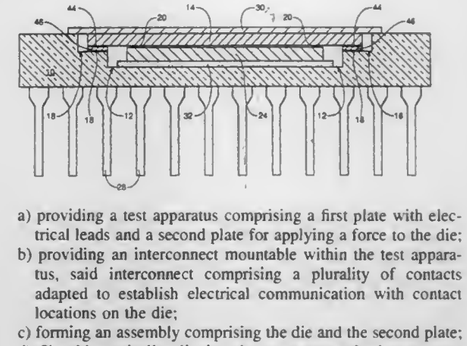
5,825,195

METHOD AND APPARATUS FOR TESTING AN UNPACKAGED SEMICONDUCTOR DIE

David R. Hembree, Boise; Warren M. Farnworth, Nampa, and Alan G. Wood, Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 192,391, Feb. 3, 1994, Pat. No. 5,483,174, which is a continuation of Ser. No. 896,297, Jun. 10, 1992, Pat. No. 5,424,652. This application Oct. 30, 1995, Ser. No. 550,340
Int. Cl.[6] G01R *31/28*
U.S. Cl. 324—765 **18 Claims**

10. A method for testing a semiconductor die, comprising:



a) providing a test apparatus comprising a first plate with electrical leads and a second plate for applying a force to the die;

b) providing an interconnect mountable within the test apparatus, said interconnect comprising a plurality of contacts adapted to establish electrical communication with contact locations on the die;

c) forming an assembly comprising the die and the second plate;

d) flip chin optically aligning the contacts on the interconnect with the contact locations on the die and attaching the assembly to the first plate with the contacts and contact locations in electrical contact;

e) establishing electrical communication between the electrical leads on the test apparatus and the contacts on the interconnect; and

f) applying test signals through the contacts to the contact locations.

12. The method as described in claim **10** further comprising:

a) providing a pad which is electrically conductive in a Z-axis, normal to a plane of the pad, and which provides electrical isolation across the plane of the pad; and

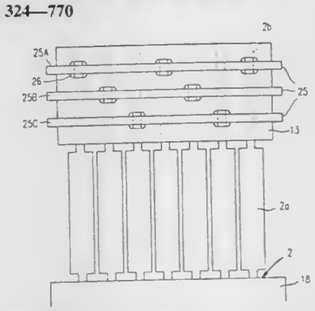
b) forming electrical contact between the die and the contacts on the interconnect.

5,825,196

METHOD FOR DETECTING DEFECTS IN AN ACTIVE MATRIX LIQUID CRYSTAL DISPLAY PANEL

Katsumi Irie, Kashihara; Nobuyuki Kawase, Tenri; Takafumi Hayama, Tenri, and Touko Kasahara, Tenri, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 29, 1996, Ser. No. 739,760
Claims priority, application Japan, Oct. 31, 1995, 7-284157
Int. Cl.[6] G01R *31/00*
U.S. Cl. 324—770 **7 Claims**



1. A method for detecting a defect in a color active matrix liquid crystal panel having signal lines and pixel electrodes grouped by threes to display colors, the method comprising the steps of:

(a) inputting a first data signal having an absolute value greater than 0 volt for displaying an image having a luminance level lower than a maximum luminance level to a first signal line of each group of three signal lines, while inputting a second and a third data signal for displaying a black image to a second signal line and a third signal line, respectively, of each of the group of three signal lines, the second signal line and the third signal line adjoining the first signal line, thereby causing pixels corresponding to the first signal line to display a signal color, and

(b) detecting a defect in the liquid crystal panel by observing a pixel displaying an unintended color while inputting the data signal of step (a).

5,825,197

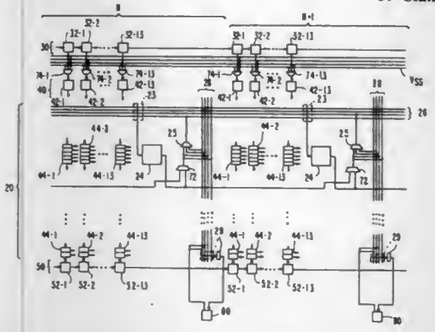
MEANS AND APPARATUS TO MINIMIZE THE EFFECTS OF SILICON PROCESSING DEFECTS IN PROGRAMMABLE LOGIC DEVICES

Christopher F. Lane, Campbell; Srinivas T. Reddy, Santa Clara, and Bonnie I-Keh Wang, Cupertino, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of Ser. No. 545,437, Oct. 19, 1995, Pat. No. 5,592,102. This application Nov. 1, 1996, Ser. No. 742,770

Int. Cl.[6] H03K *19/003;19/173*

U.S. Cl. 326—10 **39 Claims**



1. A programmable logic device, including:

a plurality of programmable logic elements arranged in an array of rows and columns;

a programmable interconnect structure configured to couple selected ones of the plurality of programmable logic elements in the array, the programmable interconnect structure further including:

a set of vertical interconnects associated with each of the columns of the programmable logic elements in the array; and

a first plurality of switches configured to selectively provide output signals from the plurality of programmable logic elements of a first column in the array to the set of vertical interconnects associated with a second column in the array when a defect is found in the array.

5,825,198

SEMICONDUCTOR INTEGRATED CIRCUITS WITH POWER REDUCTION MECHANISM

Takeshi Sakata, Kunitachi; Kiyoo Itoh, Higashikurume, and Masashi Horiguchi, Kawasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 620,686, Mar. 21, 1996, Pat. No. 5,606,265, which is a continuation of Ser. No. 374,990, Jan. 19, 1995, Pat. No. 5,521,527, which is a continuation of Ser. No. 178,020, Jan. 6, 1994, Pat. No. 5,408,144. This application Feb. 10, 1997, Ser. No. 797,051

Claims priority, application Japan, Jan. 7, 1993, 5-000973; Feb. 2, 1993, 5-015236

Int. Cl.[6] H03K *19/017*

U.S. Cl. 326—34 **19 Claims**

8. A semiconductor integrated circuit device comprising:

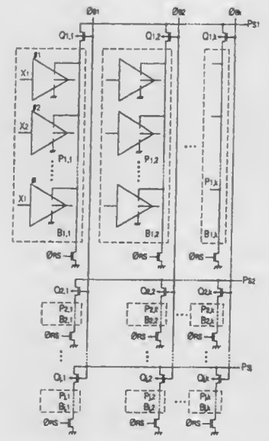
a first electric source line supplied with a first voltage;

a second electric source line supplied with a second voltage;

a circuit block including:

a first electric source node;

a second electric source node connected to said second electric source line; and



a MOS transistor in which a leak current flows between a drain and a source even in a condition that a gate voltage is equal to a source voltage;

a first switching element provided between said first electric source line and said first electric source node of said circuit block; and

a second switching element provided between said second source line and a said first electric source node of said circuit block.

5,825,199

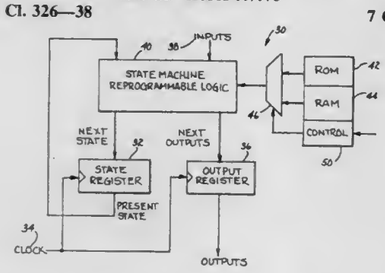
REPROGRAMMABLE STATE MACHINE AND METHOD THEREFOR

Roger Shelton, and Peter Chambers, both of Phoenix, Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 30, 1997, Ser. No. 792,712

Int. Cl.[6] H03K *19/173*

U.S. Cl. 326—38 **7 Claims**



1. A reprogrammable state machine having a finite number of individual states which allows for programming and reprogramming of state transitions and output transitions of each of said finite number of individual states of said reprogrammable state machine comprising, in combination:

state register means having an input coupled to a clock signal for storing and outputting a present state said reprogrammable state machine is operating under;

output register means having an input coupled to said clock signal for storing and outputting a present output for said present state said reprogrammable state machine is operating under;

state machine reprogrammable logic unit having a first input coupled to an output of said state register means, a second input coupled to a device said reprogrammable state machine is to control, a first output coupled to an input of said state register means, and a second output coupled to an input of said output register means wherein said state machine reprogrammable logic unit may be programmed and reprogrammed to generate said state transition from said present state to a next state and for generating said output transition from said present output to a next output for each of said finite number of individual states of said reprogrammable state machine, wherein said state machine reprogrammable logic unit is a sum-of-products programmable logic array; and

memory control means coupled to said state machine reprogrammable logic unit for programming and reprogramming said state machine reprogrammable logic means with said state transition and said output transition for each of said finite number of individual states of said reprogrammable state machine.

5,825,200

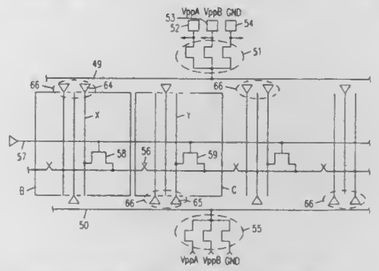
PROGRAMMING ARCHITECTURE FOR A PROGRAMMABLE INTEGRATED CIRCUIT EMPLOYING ANTIFUSES

Paige A. Kolze, San Jose, Calif., assignor to QuickLogic Corporation, Sunnyvale, Calif.

Division of Ser. No. 667,702, Jun. 21, 1996. This application Sep. 17, 1997, Ser. No. 929,655

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—38 **4 Claims**



1. A programmable integrated circuit, comprising:

a plurality of regions, each of the regions having a substantially identical structure, the structure comprising:

a plurality of programming conductors, each of the programming conductors extending substantially parallel to one another in a first dimension;

a plurality of wire segments, each of the wire segments extending substantially parallel to one another in a second dimension perpendicular to the first dimension;

a plurality of programming transistors, each respective programming transistor having one electrode coupled to a corresponding respective one of the programming conductors and having another electrode coupled to a corresponding respective one of the wire segments;

a plurality of antifuses, each respective antifuse being programmable to couple a respective wire segment in the structure to a corresponding respective wire segment in an adjacent one of the substantially identical structures, a wire segment and its corresponding wire segment in the adjacent substantially identical structure being substantially collinear with respect to one another;

a plurality of control conductors, each control conductor extending in the second dimension, each respective one of the control conductors being coupled to gate electrodes of the programming transistors coupled to collinear wire segments;

a first plurality of programming drivers coupled to selected ones of the programming conductors of one of the substantially identical structures B, all of the first plurality of programming drivers being disposed on one side of the control conductors of structure B; and

a second plurality of programming drivers coupled to selected ones of the programming conductors of another of the substantially identical structures C, structure B being adjacent programming drivers being disposed on the opposite side of the control conductors of structure B from the first programming drivers, a programming conductor X in structure B being coupled to one of the first plurality of programming drivers but not being coupled to one of the second plurality of programming drivers, a programming conductor Y in the structure C corresponding with the programming conductor X in structure B being coupled to one of the second plurality of programming drivers but not being coupled to one of the first plurality of programming drivers.

5,825,201

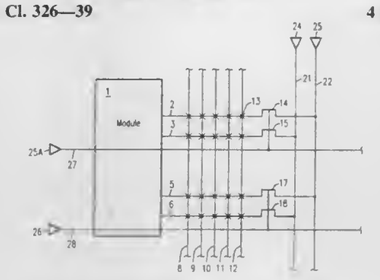
PROGRAMMING ARCHITECTURE FOR A PROGRAMMABLE INTEGRATED CIRCUIT EMPLOYING ANTIFUSES

Paige A. Kolze, San Jose, Calif., assignor to QuickLogic Corporation, Sunnyvale, Calif.

Filed Jun. 21, 1996, Ser. No. 667,702

Int. Cl.[6] H03K *19/177*

U.S. Cl. 326—39 **4 Claims**



1. A programmable integrated circuit, comprising:

a logic module;

a first programming conductor extending in a first dimension from a first programming driver;

a second programming conductor extending in the first dimension from a second programming driver;

a first programming transistor;

a first wire segment extending from the logic module in a second dimension to a first electrode of the first programming transistor, a second electrode of the first programming transistor being coupled to the first programming conductor, the second dimension being perpendicular to the first dimension;

a second programming transistor;

a second wire segment extending from the logic module in the second dimension to a first electrode of the second programming transistor, a second electrode of the second programming transistor being coupled to the second programming conductor;

a third programming transistor;

a third wire segment extending from the logic module in the second dimension to a first electrode of the third programming transistor, a second electrode of the third programming transistor being coupled to the first programming conductor;

a fourth programming transistor;

a fourth wire segment extending from the logic module in the second dimension to a first electrode of the fourth programming transistor, a second electrode of the fourth programming transistor being coupled to the second programming conductor;

a first programming control conductor being coupled to a gate electrode of the first programming transistor and to a gate electrode of the second programming transistor;

a second programming control conductor being coupled to a gate electrode of the third programming transistor and to a gate electrode of the fourth programming transistor;

a plurality of third wire segments extending parallel to one another in the first dimension, each of the third wire segments crossing the first, second, third and fourth wire segments; and

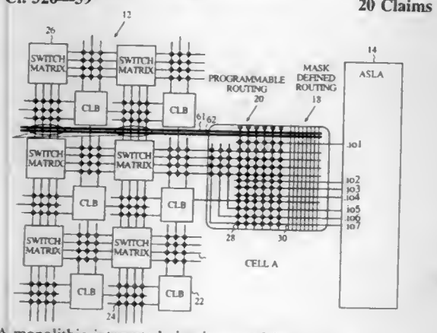
a plurality of antifuses, one of the antifuses being disposed at each location where a third wire segment crosses one of the first, second, third or fourth wire segments wherein the number of programming conductors extending in the first dimension is substantially equal to the number of programming control conductors.

5,825,202

INTEGRATED CIRCUIT WITH FIELD PROGRAMMABLE AND APPLICATION SPECIFIC LOGIC AREAS

Danesh Tavana, Mountain View; Wilson K. Yee, Pleasanton, and Stephen M. Trimberger, San Jose, all of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Sep. 26, 1996, Ser. No. 721,392
Int. Cl.[6] H03K *7/38;19/177*
U.S. Cl. 326—39 **20 Claims**



I. A monolithic integrated circuit comprising:

an array of field programmable gates selectively interconnected by programmable switch matrices, said gates and said switch matrices being selectively programmable after manufacture in accordance with desired gate functions and connection relationships;

an array of mask-defined gates having permanent customized functions and connection relationships;

a plurality of input/output pads providing externally accessible signal connections to said arrays of programmable gates and mask-defined gates; and

a plurality of first interconnections between said arrays of programmable gates and mask-defined gates, said first interconnect ions comprising arrays of programmable and mask-defined interconnections.

5,825,203

VARIABLE LOGIC INTEGRATED CIRCUIT DEVICE HAVING CONNECTIONS THROUGH SWITCH MATRIX AND TOP LAYERS FOR INTER-CELL CONNECTIONS

Mitsugu Kusunoki, Koganei, and Nobuo Tamba, Ome, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

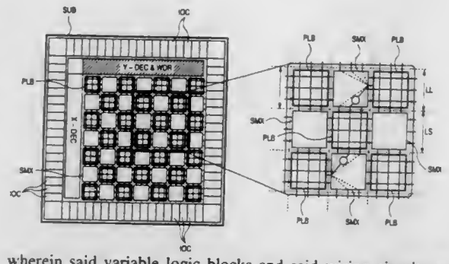
Filed Nov. 12, 1996, Ser. No. 747,339
Claims priority, application Japan, Nov. 28, 1995, 7-308733
Int. Cl.[6] H03K *19/177*
U.S. Cl. 326—41 **25 Claims**

I. A variable logic integrated circuit device, comprising:

a plurality of variable logic blocks of which the logic functions may be variably established;

a plurality of variable wiring circuits of which the wiring connections may be variably established; and

a wiring arrangement located above said variable logic blocks for uses other than connecting with said variable logic blocks;



wherein said variable logic blocks and said wiring circuits are alternately laid out crosswise and lengthwise in a checkerboard pattern on a semiconductor substrate;

wherein said wiring arrangement includes wiring for connecting noncontiguously located variable logic blocks;

wherein said variable wiring circuits include short-distance connecting variable wiring circuits for connecting contiguous variable logic blocks and long-distance connecting variable wiring circuits for connecting noncontiguously located variable logic blocks;

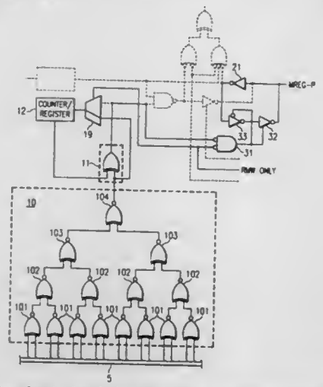
wherein said long-distance connecting variable wiring circuits are located where variable logic blocks would have been located.

5,825,204

APPARATUS AND METHOD FOR A PARTY CHECK LOGIC CIRCUIT IN A DYNAMIC RANDOM ACCESS MEMORY

Masashi Hashimoto, 14-32 Onogawa, Tsukuba Ibaraki, 305, Japan

Filed Mar. 21, 1996, Ser. No. 619,392
Int. Cl.[6] G06F *19/21;11/10*
U.S. Cl. 326—54 **16 Claims**



I. A parity check circuit for use with a sequence of signal groups transmitted on a data bus, said circuit comprising:

a parity signal generating unit coupled to said data bus for generating a parity signal determined by a signal group transmitted by said data bus;

a parity combining unit for combining a most recently generated parity signal with a stored parity signal to provide an updated stored parity signal;

a counter/gate unit for enabling transmission of said updated stored parity signal after transmission of said sequence of signal groups; and

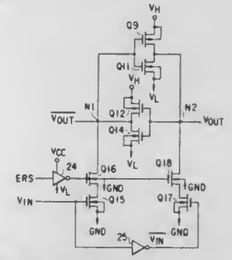
a gate unit responsive to a write signal for transmitting said updated parity stored signal.

5,825,205

LEVEL-SHIFT CIRCUIT FOR DRIVING WORD LINES OF NEGATIVE GATE ERASABLE TYPE FLASH MEMORY

Nobuaki Ohtsuka, Menlo Park, Calif., assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 4, 1995, Ser. No. 511,446
Claims priority, application Japan, Aug. 9, 1994, 6-187268
Int. Cl.[6] H03K *19/0185*
U.S. Cl. 326—81 **48 Claims**



I. A level-shift circuit comprising:

a first inverting circuit operated with a voltage between a potential of a first potential supplying source and a potential of a second potential supplying source used as a power supply voltage;

a second inverting circuit having an input terminal connected to an output of said first inverting circuit and an output terminal connected to an input terminal of said first inverting circuit and operated with a voltage between the potential of the first potential supplying source and the potential of the second potential supplying source used as a power supply voltage;

first and second transistors of a first conductivity type whose current paths are serially connected between the input terminal of said first inverting circuit and a third potential supplying source, a gate of said second transistor being supplied with an input signal whose high level is set at a potential of a fourth potential supplying source and whose low level is set at a potential of the third potential supplying source;

third and fourth transistors of the first conductivity type whose current paths are serially connected between the input terminal of said second inverting circuit and the third potential supplying source;

a control circuit for shifting a low level of a first control signal to the potential of the second potential supplying source and supplying the level-shifted first control signal to gates of said first and third transistors to control the conduction states thereof, wherein the first control signal has substantially the same negative level as the level of the second potential supplying source when the potential of the second potential supplying source is changed to a negative level; and

a logic circuit for supplying a logic signal to the gate of said fourth transistor in response to the input signal to control the conduction state thereof;

wherein an output signal is derived from at least one of the output terminals of said first and second inverting circuits.

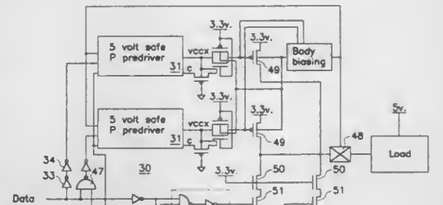
5,825,206

FIVE VOLT SAFE OUTPUT BUFFER CIRCUIT THAT CONTROLS THE SUBSTRATE AND GATES OF THE PULL-UP DEVICES

Naveen Krishnamurthy, Sunnyvale, and Thomas Shewchuk, Rancho Murieta, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Aug. 14, 1996, Ser. No. 696,473
Int. Cl.[6] H03K *19/0175;19/094*
U.S. Cl. 326—81 **15 Claims**

1. An input/output buffer for computer circuitry comprising:



a first P type transistor device responsive to data signals for selectively furnishing voltage from a first source of potential at a buffer input/output terminal,

a first predriver circuit for furnishing data signals from a source to the P type transistor device, the first predriver circuit including means for slowing the application of data signals to the P type transistor device when the buffer input/output terminal is at a high level, the first predriver circuit comprising:

a second P type transistor device,

a second N type transistor device,

circuit means joining source and drain terminals of the second P type transistor device and the second N type transistor device in series between first and second sources of potential,

the circuit means comprising:

means for slowly joining the second N type transistor device to a second means for joining when the input/output buffer is being enabled and a voltage higher than any internal voltage source exists at the buffer output terminal; and

the second means joining the means for slowly joining to a predriver output terminal responsive to an enabling signal

a first N type transistor device responsive to data signals for selectively furnishing voltage from a second source of potential at the buffer output terminal,

a second predriver circuit for furnishing data signals from the source to the N type transistor device, and

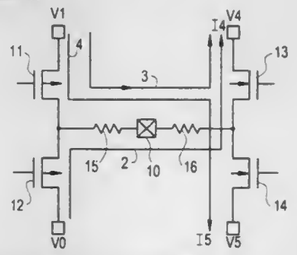
means for slowing the receipt of data signals at the first predriver circuit.

5,825,207

OUTPUT BUFFER CIRCUIT

Junji Ito, Oita, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 19, 1996, Ser. No. 684,588
Claims priority, application Japan, Jul. 21, 1995, 7-185258
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 326—83 **2 Claims**



I. An output buffer circuit comprising:

a first transistor of a first conductivity type, having a first channel terminal connected to a first power supply terminal;

a second transistor of the first conductivity type, having a second channel terminal connected to a second channel terminal of

said first transistor and a first channel terminal connected to a second power supply terminal;

a first resistor having a first terminal connected to a common connecting point of said second channel terminal of said first transistor and said second channel terminal of said second transistors, and a second terminal connected to an output terminal of the output buffer circuit;

a third transistor of a second conductivity type, having a first channel terminal connected to a third power supply terminal;

a fourth transistor of the second conductivity type, having a second channel terminal connected to a second channel terminal of said third transistor and a first channel terminal connected to a fourth power supply terminal; and

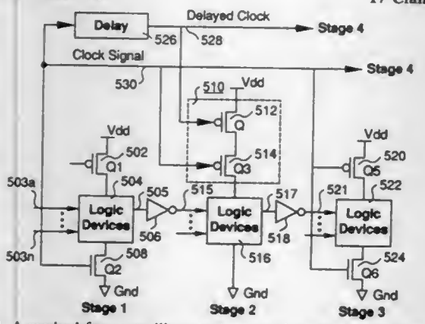
a second resistor having a first terminal connected to a connecting point of said second channel terminal of said third transistor and said second channel terminal of said fourth transistors, and a second terminal connected to the output terminal of the output buffer circuit.

5,825,208

METHOD AND APPARATUS FOR FAST EVALUATION OF DYNAMIC CMOS LOGIC CIRCUITS

Howard Lawrence Levy, and Salim Ahmed Shah, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 20, 1996, Ser. No. 650,691
Int. Cl.[6] H03K *19/01;19/00*
U.S. Cl. 326—98 **17 Claims**



1. A method for controlling precharge and evaluation of a logic block of a dynamic logic circuit, the method comprising:

providing a delayed clock signal to a control terminal of a first transistor coupled to a supply voltage;

providing a clock signal to a control terminal of a second transistor connected in series between the first transistor and the logic block, such that on a voltage level transition of the clock signal, the delayed clock signal transitions to the same voltage level as the clock signal after a time delay but before a subsequent transition of the clock signal;

precharging the voltage block by setting the clock signal and the delayed clock signal to a first voltage level; and

evaluating the logic block by setting the clock signal to a second voltage level.

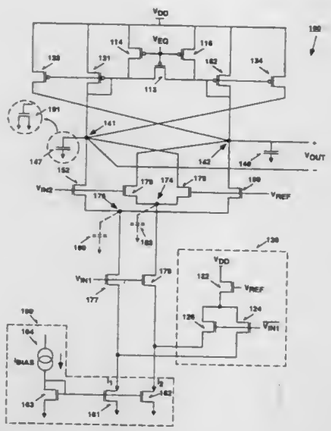
5,825,209

QUADRATURE PHASE DETECTOR

Donald C. Stark, Palo Alto, and Wayne S. Richardson, Cupertino, both of Calif., assignors to Rambus Inc., Mountain View, Calif.

Filed Feb. 27, 1997, Ser. No. 807,642
Int. Cl.[6] H03K *5/26*
U.S. Cl. 327—3 **21 Claims**

1. An apparatus for detecting quadrature phase error, comprising:



a first load;

a second load;

cross-coupled first and second differential circuits, the cross-coupled differential circuits coupled to the first load;

a current source circuit;

a first switching circuit;

a second switching circuit, wherein the first and second switching circuits operate to couple the current source circuit to a selected one of the cross-coupled differential circuits and the second load in accordance with a first input signal and a complement of the first input signal, respectively;

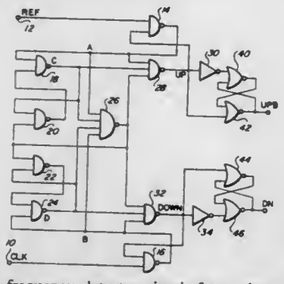
wherein the cross-coupled differential circuits receive a differential second input signal, wherein the first and second input signals have a different signal swing, wherein the cross-coupled first and second differential circuits provide a quadrature phase error signal at a first and second output representing a quadrature phase error between the first and second input signals, wherein the quadrature phase error signal is substantially independent of parasitic capacitance associated with the first and second differential circuits.

5,825,210

SYMMETRICAL PHASE-FREQUENCY DETECTOR

Sung-Hun Oh, Phoenix, Ariz., assignor to VLSI Technology, San Jose, Calif.

Filed Oct. 28, 1996, Ser. No. 738,805
Int. Cl.[6] H03D *13/00*
U.S. Cl. 327—12 **9 Claims**



1. A phase-frequency detector circuit for a phase-locked loop (PLL) circuit having symmetrical phase detection characteristics including in combination:

a source of reference signals;

a source of clock signals;

a logic gate array coupled to receive input signals from said source of reference signals and from said source of clock signals, said logic gate array having an "up" output and a "down" output for connection to a charge pump circuit;

a first RS latch circuit having an output and first and second inputs;

a second RS latch circuit having an output and first and second inputs;

first and second inverters;

a connection from said "up" output of said logic gate array through said first inverter to the first input of said first latch circuit;

a connection from said "up" output of said logic gate array directly to the second input of said first latch circuit;

a connection from said "down" output of said logic gate array through said second inverter to the second input of said second latch circuit;

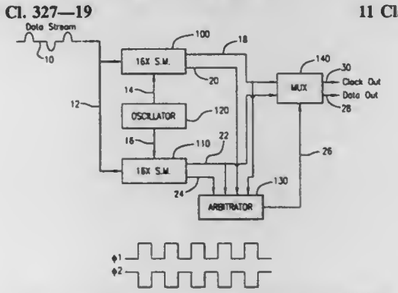
a connection directly from said "down" output of said logic gate array to the first input of said second latch circuit; wherein said first and second RS latch circuits provide the same loads and propagation delays to signals supplied from said "up" and said "down" outputs of said logic gate array.

5,825,211

OVERSAMPLED STATE MACHINE FOR JITTER TOLERANT PULSE DETECTION

Michael D. Smith, Flower Mound, and Michael R. Williamson, Dallas, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 536,023, Sep. 29, 1995, abandoned. This application Oct. 22, 1997, Ser. No. 956,067
Int. Cl.[6] H04L *7/00*
U.S. Cl. 327—19 **11 Claims**



1. An electronic circuit for sampling a transmission line in order to detect the presence of a data stream, said electronic circuit comprising:

a first state machine connected to a transmission line, said first state machine for sampling said transmission line;

a second state machine connected to said transmission line, said second state machine for sampling said transmission line;

an oscillator connected to said first state machine and said second state machine, said oscillator having an oscillator frequency;

an arbitrator receiving a first signal and a second signal from said first state machine and receiving a third and a fourth signal from said second state machine, said arbitrator determining which one of said first state machine and said second state machine determined the presence of a valid pulse on said transmission line first; and

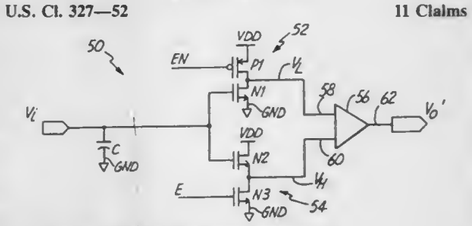
a multiplexer, connected to said first signal, said third signal, and a control signal from said arbitrator, said multiplexer for providing an output data stream and an output clock signal that is synchronous with said output data stream.

5,825,212

HIGH SPEED SINGLE ENDED BIT LINE SENSE AMPLIFIER

Gordon W. Priebe, Champlin, Minn., assignor to LSI Logic Corporation, Milpitas, Calif.

Filed Aug. 15, 1996, Ser. No. 698,343
Int. Cl.[6] G01C *7/06*
U.S. Cl. 327—52 **11 Claims**



1. A single-ended bit line sensor comprising:

a single-ended bit line input;

a sensor output;

a differential amplifier having first and second amplifier inputs and having an amplifier output coupled to the sensor outputs;

a first current source coupled between a first supply terminal and the first amplifier input; and

a pull-down device coupled between the first amplifier input and a second supply terminal and having a control input coupled to the single-ended bit line input;

a second current source coupled between the second amplifier input and the second supply terminal; and

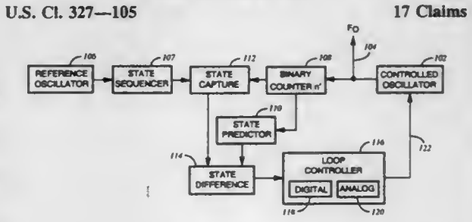
a pull-up device coupled between the first supply terminal and the second amplifier input and having a control input coupled to the single-ended bit line input.

5,825,213

METHOD AND APPARATUS FOR FREQUENCY SYNTHESIS

Raymond Louis Barrett, Jr., Ft. Lauderdale; Barry Herold, Boca Raton, and Grazyna A. Pajunen, Delray Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 16, 1996, Ser. No. 766,953
Int. Cl.[6] H03L *7/18*
U.S. Cl. 327—105 **17 Claims**



1. A method for frequency synthesis comprising the steps of:

sequencing through a sequence of states at a reference frequency;

dividing an output frequency by a counter number to provide a loop divider output signal;

upon occurrence of the loop divider output signal, capturing a current state being one of the sequence of states and providing an expected state;

comparing the current state to the expected state, thereby providing a state difference; and

adjusting the output frequency to a desired output frequency according to the state difference.

5,825,214

INTEGRATED CIRCUIT ARRANGEMENT WITH DIODE CHARACTERISTIC

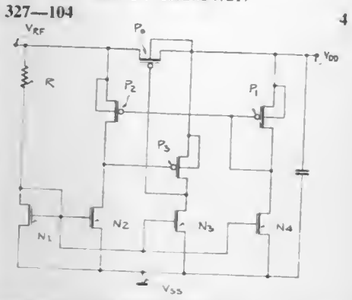
Klaus Klosa, München, Germany, assignor to Temic Telefunken microelectronic GmbH, Heilbronn, Germany

Filed Jul. 24, 1996, Ser. No. 685,848

Claims priority, application Germany, Oct. 12, 1995, 195 37 920.9

Int. Cl.[6] H02M 7/217

U.S. Cl. 327—104 4 Claims



1. An integrated circuit arrangement with a diode characteristic comprising: a first transistor having a source-drain section arranged in a current path between an input and an output of the circuit arrangement and having a gate electrode; a first inverter stage with an output fed back to an input, and with the supply voltage for the first inverter stage being provided by the voltage at the output of the circuit arrangement; a second inverter stage having an input connected to receive an output signal from the first inverter stage and with the supply voltage of the second inverter stage being provided by the voltage at the input of the circuit arrangement; and a third inverter stage having an input connected to receive an output signal from the second inverter stage with the supply voltage for the third inverter stage being provided by the voltage at the output of the circuit arrangement, and with an output signal of the third inverter stage being fed to the gate electrode of the first transistor to regulate the current flow in the current path of the circuit arrangement.

5,825,215

OUTPUT BUFFER CIRCUIT

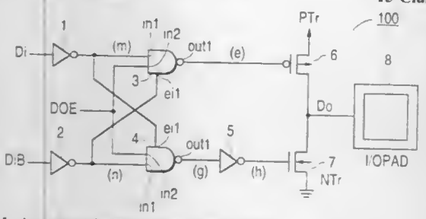
Kenichiro Sugio, and Tetsuya Mitoma, both of Miyazaki, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1997, Ser. No. 808,255

Claims priority, application Japan, Mar. 21, 1996, 8-064040

Int. Cl.[6] H03K 3/01

U.S. Cl. 327—108 15 Claims



1. An output buffer circuit comprising:
a first input terminal receiving a first input signal;
a second input terminal receiving a second input signal;
a control input terminal receiving a control signal;
an output terminal outputting an output signal;
a first gate circuit having a first input node coupled to receive the first input signal, a second input node coupled to receive the control signal, an enable input node coupled to receive the second input signal and an output node, the first gate circuit outputting the signal received by the enable input node when the signals received by the first and second input nodes have predetermined level;
a second gate circuit having a first input node coupled to receive the second input signal, a second input node coupled to receive the control signal, an enable input node coupled to receive the first input signal and a output node, the second gate circuit outputting the signal received by the enable input node when the signal received by the first and second input nodes have the predetermined level;
a first transistor having a first terminal coupled to the output terminal, a second terminal coupled to a first potential source, and a control terminal coupled to receive a signal output from the output node of said first gate circuit;
a second transistor having a first terminal coupled to the output terminal, a second terminal coupled to a second potential source and control terminal coupled to receive a signal output from the output node of said second gate circuit;
a third transistor having a first terminal coupled to the output terminal, a second terminal coupled to the first potential source, and a control terminal; and
a delay circuit coupled between the output node of first gate circuit and the control terminal of said third transistor.

5,825,216

METHOD OF OPERATING A DRIVE CIRCUIT FOR A SOLENOID

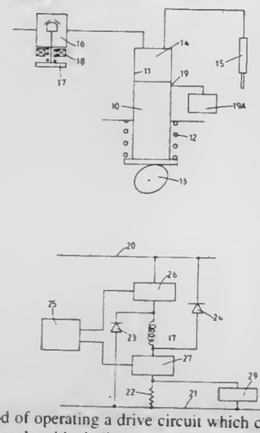
Michael Anthony Archer, Middlesex; Paul Hodgetts, London, both of England; Carl Mannerfelt, and Johan Larsson, both of Gothenburg, Sweden, assignors to Lucas Industries Public Limited Company, Solihull, England, and AB Volvo, Gothenburg, Sweden

Continuation of Ser. No. 491,346, Jun. 30, 1995, abandoned. This application Jan. 24, 1997, Ser. No. 788,785

Claims priority, application United Kingdom, Jul. 7, 1994, 9413684

Int. Cl.[6] H03K 3/00; F02M 39/00

U.S. Cl. 327—110 3 Claims



1. A method of operating a drive circuit which controls the flow of current in a solenoid winding of an electromagnetically operable valve having an armature coupled to a valve member, the armature and valve member being movable from a first position to a second position under the influence of a magnetic field generated by the solenoid winding, the solenoid winding having electrical characteristics such that movement of the armature is completed after the current in the solenoid winding has reached a peak value, the drive circuit including switch means connected in series with the solenoid winding, the method comprising the steps of: closing said switch means to achieve a rapid rise in current flow in the solenoid winding, opening said switch means for a period when the current flowing in the winding attains the peak value to allow the current flow to decay, during part of which period the solenoid winding generates a back EMF which causes the current flowing in the solenoid winding to decay at a rate which is higher than a natural rate of current decay of the solenoid winding, the movement of the armature and the valve member from the first position to the second position being completed while the current is decaying at the natural rate, monitoring the decaying current flow using a sensing circuit capable of sensing a discontinuity in the decaying current flow when the armature and valve member reach the second position and interrupting the period of current decay by reclosing and opening said switch means to achieve a limited increase in the current flowing in the solenoid winding before the armature and valve member reach said second position.

5,825,217

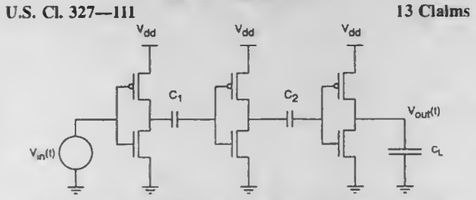
LOW POWER ACCELERATED SWITCHING FOR MOS CIRCUITS

Amir Lehavot, 2346 Sutter apt. #12, Santa Clara, Calif. 95050, assignor to Amir Lehavot, Santa Clara, Calif.

Filed May 21, 1997, Ser. No. 861,173

Int. Cl.[6] H03B 1/00

U.S. Cl. 327—111 13 Claims



1. A design method for metal oxide silicon circuits, comprising:
(a) providing a metal oxide silicon circuit with a capacitive load,
(b) providing a device with a capacitance,
(c) inserting said device in series in between the output of said metal oxide silicon circuit and said capacitive load, whereby said metal oxide silicon circuit will operate faster or will dissipate less power or both compared to other metal oxide silicon circuits of the same size.

5,825,218

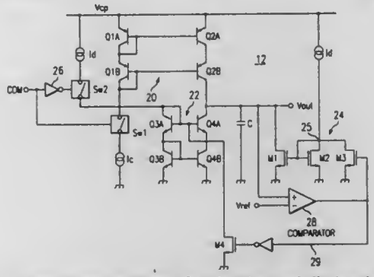
DRIVER CIRCUIT INCLUDING SLEW RATE CONTROL SYSTEM WITH IMPROVED VOLTAGE RAMP GENERATOR

Gianluca Colli, Santa Clara, and Massimiliano Brambilla, San Jose, both of Calif., assignors to STMicroelectronics, Inc., Carrollton, Tex.

Filed Oct. 24, 1996, Ser. No. 736,524

Int. Cl.[6] H03K 3/00

U.S. Cl. 327—112 15 Claims



1. A voltage ramp generator for charging and discharging of a capacitor for slew rate control of a power driving stage comprising:
means for charging to a predetermined maximum voltage;
means for discharging to a predetermined minimum ground voltage;
the means for discharging comprising a first current source arranged for discharging from the maximum voltage down to a predetermined low voltage above the ground voltage and a second current source arranged for discharging from the low voltage down substantially to the ground voltage.

5,825,219

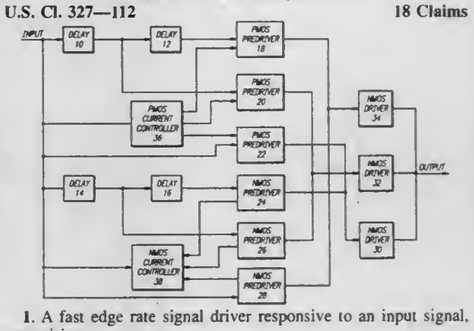
FAST EDGE RATE SIGNAL DRIVER

Cheng-Hsien Tsai, Taipei, Taiwan, assignor to Silicon Integrated SyStem Corp., Hsin Chu, Taiwan

Filed Feb. 21, 1997, Ser. No. 803,964

Int. Cl.[6] H03K 5/12; 17/04

U.S. Cl. 327—112 18 Claims



1. A fast edge rate signal driver responsive to an input signal, comprising:
a delay circuitry arrangement responsive to the input signal, for generating a first set of N delay-incorporating signals including at least N−1 delayed signals and a second set of N delay-incorporating signals including at least N−1 delayed signals, with N an integer at least equal to 3;
N pull-down predrivers for selectively generating N trigger signals, each of the N pull-down predrivers respectively inputting one of the first set of N delay-incorporating signals and selectively generating a corresponding one of N trigger signals;
N output devices, each of the N output devices respectively receiving one of said N trigger signals, each of the N output devices having one output terminal, said output terminals coupled to provide an output terminal of said fast edge rate signal driver;
N pull-up predrivers for selectively generating N trigger signals, each of the N pull-up predrivers respectively inputting one of the second set of N delay-incorporating signals and selectively generating a corresponding one of N trigger signals;
said pull down predrivers selectively sequentially triggering activation of said N output devices in a first order;
said pull-up predrivers selectively sequentially triggering de-activation of said N output devices in a second order;
a PMOS current controller connected to the N pull-down predrivers for further limiting current fluctuation during said generation of said N trigger signals of the N pull-down predrivers; and
an NMOS current controller connected to the N pull-up predrivers for further limiting current fluctuation during said generation of said N trigger signals of the N pull-up predrivers.

5,825,220

AUTO-CLEAR CIRCUIT AND INTEGRATED CIRCUIT INCLUDING AN AUTO-CLEAR CIRCUIT FOR INITIALIZATION BASED ON A POWER SUPPLY VOLTAGE

Masanori Kinugasa, Yokohama; Hiroshi Shigebara, Oita, and Akira Takiba, Kawasaki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

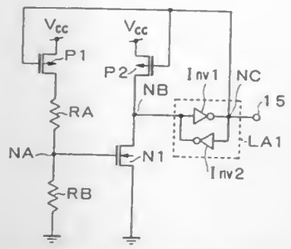
Filed Jan. 2, 1997, Ser. No. 778,743

Claims priority, application Japan, Jan. 16, 1996, 8-004820

Int. Cl.[6] H03K 17/22

U.S. Cl. 327—143 8 Claims

1. An auto-clear circuit comprising:
switch means connected between a power supply voltage terminal and first and second nodes:



potential division means, connected between the first node and a ground terminal, for outputting a first potential obtained by dividing a potential of the first node;

means for allowing charge/discharge, connected between the second node and a ground terminal, for allowing charge or discharge of the second node by an ON-OFF operation on a basis of the first potential output from said potential division means; and

latch means for holding a potential of the second node to output a signal from an output terminal, and supplying the signal to said switch means to control an opening/closing operation,

wherein said switch means comprises a first P-channel transistor having two terminals connected between the power supply voltage terminal and the first node and a gate which receives the signal output from said latch means, and a second P-channel transistor having two terminals connected between the power supply voltage terminal and the second node and a gate which receives the signal output from said latch means,

said potential division means comprises a plurality of resistors serially connected between the first node and a ground terminal, and outputs the first potential from a connection point between said resistors,

said charge/discharge means comprises a first N-channel transistor having two terminals connected between the second node and said ground terminal and a gate which receives the first potential, and

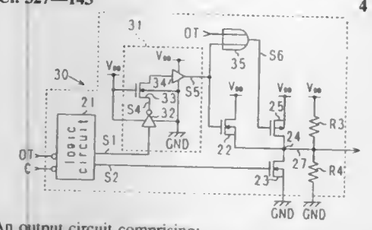
said latch means comprises a first inverter having an input side connected to the second node and an output side connected to said output terminal, and a second inverter having an input side connected to said output terminal and an output side connected to the second node.

5,825,221

OUTPUT CIRCUIT OF SEMICONDUCTOR DEVICE

Hiroshi Takase, Kasugai, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Jan. 24, 1997, Ser. No. 788,697
Claims priority, application Japan, Jan. 29, 1996, 8-013222
Int. Cl.[6] H03K *19/0175*
U.S. Cl. 327—143 **4 Claims**



1. An output circuit comprising:

a first transistor and a second transistor connected in series between a high-potential power supply and a low-potential power supply wherein said second transistor receiving an input signal at an input node;

a third transistor connected in parallel to said first transistor between said high-potential power supply and an output node between said first and second transistors,

wherein said first and second transistors are n-type MOS transistors and said third transistor is a p-type MOS transistor; and

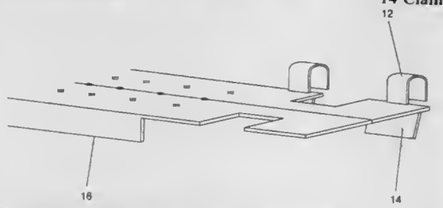
a supply voltage detector connected to said high-potential power supply and to said first and third transistors, for detecting a voltage of said high-potential power supply and supplying a voltage signal to said first and third transistors for enabling one of said first and third transistors based on the detected voltage.

5,825,222

HORIZONTAL SYNCHRONOUS CIRCUITS

Masayuki Omori, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Dec. 3, 1996, Ser. No. 758,948
Claims priority, application Japan, Dec. 4, 1995, 7-315124
Int. Cl.[6] H03L *7/08*
U.S. Cl. 327—156 **14 Claims**



1. A horizontal synchronous circuit comprising;

a horizontal oscillator circuit portion for generating a horizontal oscillation output signal having a predetermined frequency,

an automatic frequency control portion operative to compare in phase the horizontal oscillation output signal obtained from the horizontal oscillator circuit portion with a horizontal synchronizing signal from the outside to produce a comparison output signal and to supply the horizontal oscillator circuit portion with a frequency control signal based on the comparison output signal in order to control a frequency of the horizontal oscillation output signal,

a free-running frequency control portion operative to produce a free-running control signal corresponding to a frequency of the horizontal synchronizing signal from the outside and to supply the horizontal oscillator circuit portion with the free-running control signal in order to control a free-running frequency of the horizontal oscillator circuit portion to be coincident with the frequency of the horizontal synchronizing signal from the outside, and

a negative feedback control portion operative to produce an additional control signal based on the comparison output signal obtained from the automatic frequency control portion and the frequency control signal supplied to the horizontal oscillator circuit portion for controlling the free-running frequency of the horizontal oscillator circuit portion in response to the additional control signal.

5,825,223

TECHNIQUE FOR CONTROLLING THE SLOPE OF A PERIODIC WAVEFORM

Urs H. Mader, Sunnyvale, Calif., assignor to Micro Linear Corporation, San Jose, Calif.

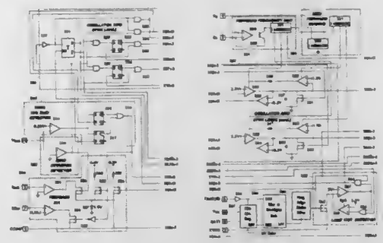
Filed Jul. 30, 1996, Ser. No. 688,375
Int. Cl.[6] H03K *5/123*
U.S. Cl. 327—170 **31 Claims**

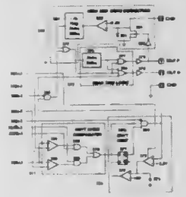
1. A circuit for forming a periodic waveform comprising:

a. means for integrating a current for forming a voltage;

b. a transconductance amplifier for forming the current coupled to the means for integrating the current;

c. means for periodically alternating a direction of the current coupled to the transconductance amplifier;





d. means for controlling a level of the current coupled to the transconductance amplifier; and

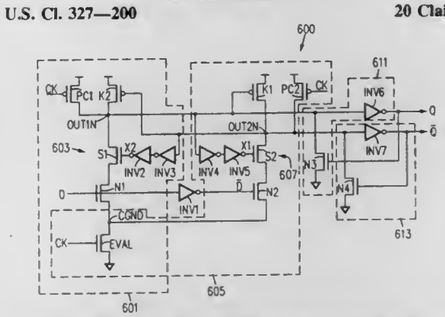
e. means for sensing a level of the voltage wherein the means for controlling controls the level of the current according to the level of the voltage.

5,825,224

EDGE-TRIGGERED DUAL-RAIL DYNAMIC FLIP-FLOP WITH SELF-SHUT-OFF MECHANISM

Edgardo F. Klass, Palo Alto; David W. Poole, Mountain View; Chaim Amir, Sunnyvale, and Raymond A. Heald, Los Altos, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 29, 1996, Ser. No. 688,057
Int. Cl.[6] H03K *3/37*
U.S. Cl. 327—200 **20 Claims**



1. A circuit capable of operating in a first phase and a second phase, said circuit comprising:

a first latch having a first input lead, a second input lead and an output lead, said first latch including a first shutoff circuit, wherein

said first input lead of said first latch is coupled to receive a first signal,

said second input lead of said first latch is coupled to receive a second signal, and

said first latch is operative to output a signal of a first logic level at said output lead of said first latch during said first phase;

a second latch having an input lead and an output lead, said second latch including a second shutoff circuit, wherein

said second latch is operative to output a signal of said first logic level at said output lead of said second latch during said first phase,

said first input lead of said second latch is coupled to receive said first signal, and

said second input lead of said second latch is coupled to receive a complement of said second signal;

a first output latch having an input lead and an output lead, said input lead of said first output latch coupled to said output lead of said first latch; and

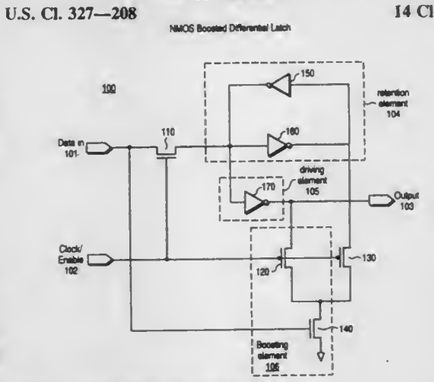
a second output latch having an input lead and an output lead, said input lead of said second output latch coupled to said output lead of said second latch.

5,825,225

BOOSTED DIFFERENTIAL LATCH

Junji Sugisawa, Santa Clara, and Jean Claude Cornet, Marina Del Rey, both of Calif., assignors to Intel Corporation, Santa Clara, Calif.

Filed Feb. 9, 1996, Ser. No. 599,029
Int. Cl.[6] H03K *3/356*
U.S. Cl. 327—208 **14 Claims**



13. A data latch circuit comprising:

means for retaining a retention value when a clocking signal is inactive, the means for retaining coupled with an input signal, the retention value corresponding to an input value of the input signal when the clocking signal is active;

means for driving an output node to an output value, the means for driving coupled to the means for retaining, the output value corresponding to the input value when the clocking signal is active, and to the retention value when the clocking signal is inactive; and

means for boosting the output value, the means for boosting coupled to the means for retaining and the means for driving, the means for boosting pulling the output node to a boost value when the clocking signal is active prior to the driving means driving the output node.

5,825,226

DELAY EQUALIZATION APPARATUS AND METHOD

Frank D. Ferraiolo, Essex Junction; John E. Gersbach, Burlington, and Ilya I. Novof, Essex Junction, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 18, 1995, Ser. No. 529,850
Int. Cl.[6] H03K *5/13;5/00*
U.S. Cl. 327—250 **16 Claims**

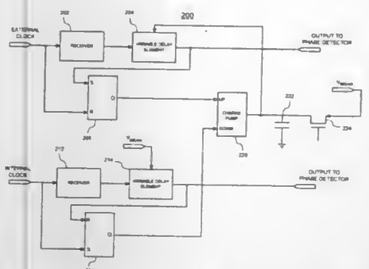
1. A delay equalization circuit comprising:

a first variable delay path receives a first clock signal;

a means for creating a first signal in proportion to the delay of said first variable delay path coupled to said first clock signal and a first output of said first variable delay path;

a second delay path receives a second clock signal;

a means for creating a second signal in proportion to the delay of said second delay path coupled to said second clock signal and a second output of said second delay path;



a means for comparing said first and second signals, said comparing means receiving said first and second signals, said comparing means creating a difference signal proportional to the difference in the delays of said first variable and second delay paths, said difference signal used to control the delay of said first variable delay path; and

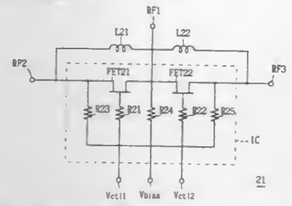
wherein said means for creating said first signal and said means for creating said second signal comprise set/reset latches.

5,825,227

SWITCHING CIRCUIT AT HIGH FREQUENCY WITH LOW INSERTION LOSS

Kazumasa Kohama, Kanagawa, and Kazuto Kitakubo, Tokyo, both of Japan, assignors to Sony Corporation, Japan

Filed Jan. 18, 1996, Ser. No. 588,238
Claims priority, application Japan, Jan. 23, 1995, 7-027309
Int. Cl.[6] H01P *1/22*
U.S. Cl. 327—308 **6 Claims**



1. A switching circuit comprising:

first, second and third input/output terminals,

a first field-effect transistor having drain and source terminals connected to said first and second input/output terminals respectively,

a second field-effect transistor having drain and source terminals connected to said first and third input/output terminals respectively, and

first and second impedance elements connected to gate terminals of said first and second field-effect transistors respectively; and

first and second inductors connecting said first and second input/output terminals to each other and said first and third input/output terminals to each other respectively; and

a third, fourth and fifth impedance elements connected between a bias voltage source and said first, second and third input/output terminals respectively.

5,825,228

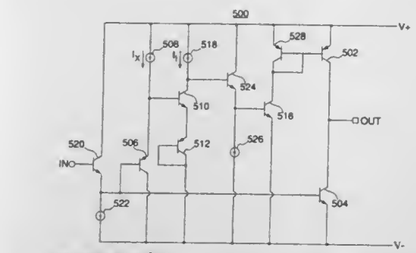
LOW QUIESCENT POWER, HIGH OUTPUT POWER RAIL-TO-RAIL AMPLIFIER OUTPUT STAGES AND METHODS FOR USING SAME

William H. Gross, Sunnyvale, Calif., assignor to Linear Technology Corp., Milpitas, Calif.

Filed Jan. 29, 1996, Ser. No. 592,976
Int. Cl.[6] H03K *17/60*; H03F *3/26*
U.S. Cl. 327—333 **13 Claims**

1. An amplifier output stage comprising:

an input node that receives an input drive signal;



an output node;

a sourcing circuit coupled to a positive voltage supply, to said output node and to said input node, said sourcing circuit providing current to said output node in response to a signal representing said drive signal;

a sinking circuit coupled to a negative voltage supply, to said output node and directly connected to said input node, said sinking circuit removing current from said output node in response to said drive signal;

an isolation circuit coupled between said input node and said sourcing circuit such that substantially no drive signal goes to said sourcing circuit when said drive signal indicates that said output stage is to sink current from said output node, and such that substantially no drive signal passes through said sinking circuit when said drive signal indicates that said output stage is to source current to said output node, said isolation circuit producing said signal representing said drive signal from the drive signal when said drive signal indicates that said output stage is to source current to said output node;

said sourcing circuit comprising a sourcing output transistor coupled to said output node, said sourcing transistor having a base coupled to said input node through said isolation circuit; and

said sinking circuit comprising a sinking output transistor coupled to said output node, said sinking transistor having a base directly coupled to said input node; wherein said sourcing circuit further comprises:

an inversion circuit coupled to said isolation circuit; and

a level shifting circuit coupled to said inversion circuit and to said sourcing output transistor, said level shifting circuit providing increased gain to said signal representing said drive signal.

5,825,229

ELECTRONICALLY TUNABLE VOLTAGE LEVEL SHIFTER AND AMPLIFIER THEREFOR

Nicolò Manaresi; Eleonora Franchi, both of Bologna; Dario Bruno, Palermo; Biagio Giacalone, Trapani, and Vincenzo Matranga, Palermo, all of Italy, assignors to Co. Ri. M.Me—Consorzio Per la Ricera Sulla Microelectronica Nel Mezzogiorno, Catagnia, Italy

Filed Jan. 31, 1996, Ser. No. 594,708
Claims priority, application European Pat. Off., Jan. 31, 1995, 95830025
Int. Cl.[6] H03L *5/00*
U.S. Cl. 327—333 **18 Claims**

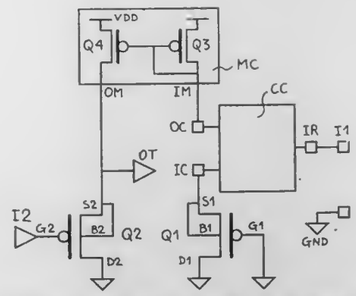
1. A voltage level shifter for shifting a voltage level of a first signal by an amount proportional to a voltage level of a second signal, comprising:

first and second input terminals for respectively receiving the first and second signals;

a first transistor having a control terminal coupled to the first input terminal;

a second transistor having a control terminal coupled to a reference potential;

a current mirror circuit having a first mirror terminal coupled to the first transistor and a second mirror terminal, the current mirror circuit being structured to mirror a current through the second mirror terminal at the first mirror terminal, a common



node coupled to the first transistor and to the first mirror terminal defining an output terminal of the voltage level shifter; and

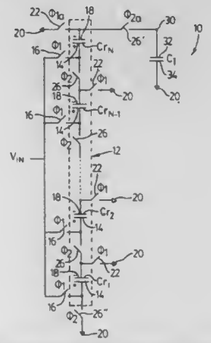
a current conveyor coupled between the second mirror terminal and the second transistor, the current conveyor having an input coupled to the second input terminal to receive the second signal, the current conveyor being structured to couple a current to the second transistor which is substantially equal to the current through the second mirror terminal and to couple the second signal to the second transistor such that an output voltage is generated at the output terminal which is substantially equal to the voltage level of the first signal shifted by an amount proportional to the voltage level of the second signal.

5,825,230

AMPLIFIER-LESS LOW POWER SWITCHED-CAPACITOR TECHNIQUES

Feng Chen, and Bosco Leung, both of Waterloo, Canada, assignors to University of Waterloo, Waterloo, Canada

Continuation of Ser. No. 593,126, Feb. 1, 1996, abandoned. This application Aug. 22, 1997, Ser. No. 916,530
Int. Cl.[6] G06G *7/64*
U.S. Cl. 327—337 **14 Claims**



1. A switched-capacitor gain-boost network comprising:

a plurality of sampling charge storing devices having substantially similar charge storing characteristics, said plurality of sampling charge storing devices being connectable to an output node;

an integrating charge storing device connected to said output node and connectable to said plurality of sampling charge storing devices in parallel; and

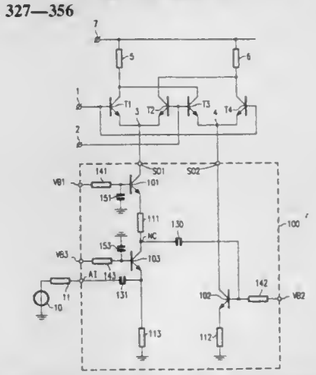
switch means actuable during a sampling period to connect each of said sampling charge storing devices in parallel and between an analog signal input node and a first node and actuable during an integrating period to connect each of said sampling charge storing devices in series and between a low potential node and said output node wherein during said sampling period said switch means is actuated to inhibit injection charge errors from being applied to said integrating charge storage device by said sampling charge storage devices and wherein during said integrating period said switch means is actuated to inhibit voltage add-up from occurring across said sampling charge storage devices.

5,825,231

TRANSFORMER CIRCUIT, DOUBLE-BALANCED MIXER

Gilles Chevallier, Langune Sur Mer, France, and Eduard F. Stikvoort, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 20, 1993, Ser. No. 110,038
Claims priority, application France, Aug. 26, 1992, 92 10280
Int. Cl.[6] H03D *7/14*
U.S. Cl. 327—356 **23 Claims**



1. Transformer circuit for converting an asymmetrical input signal into a pair of substantially symmetrical output signal currents, comprising a first and a second transistor, the emitter of the first transistor being coupled to an asymmetrical input terminal, the collector of the first transistor and the collector of the second transistor being coupled to a first and to a second symmetrical output terminal, respectively, wherein the asymmetrical input terminal is coupled to a node commonly coupled to the emitter of the first transistor and to the base of the second transistor, said node being connected to a point of reference voltage via a bidirectional current path, and wherein the first and the second transistor are connected in common base configuration and in common emitter configuration, respectively.

5,825,232

MOS FOUR-QUADRANT MULTIPLIER INCLUDING THE VOLTAGE-CONTROLLED-THREE-TRANSISTOR V-I CONVERTERS

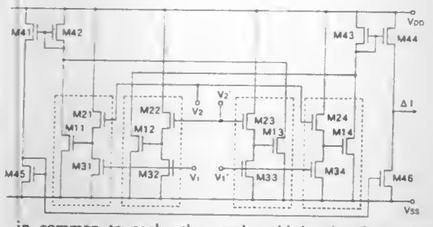
Katsuji Kimura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 488,412, Jun. 7, 1995, abandoned. This application May 16, 1997, Ser. No. 857,819
Claims priority, application Japan, Jun. 13, 1994, 6-130469; Jun. 13, 1994, 6-130470; Jun. 13, 1994, 6-130471; Dec. 6, 1994, 6-301991
Int. Cl.[6] G06F *7/44*
U.S. Cl. 327—356 **10 Claims**

1. A MOS four-quadrant multiplier for outputting a combined differential output current corresponding to a product of first and second differential input voltages, said combined differential output current including a plurality of differential output currents, said MOS four-quadrant multiplier comprising:

first and second two-quadrant multipliers each having a differential output;

each of said first and second two-quadrant multipliers having first and second pairs of transistors having sources connected



in common to each other, and a third pair of transistors connected in cascode to the first pair of transistors as a load on the first pair of transistors;

said second pair of transistors of said first two-quadrant multiplier each having drains which are directly connected in common to a corresponding drain of said second pair of transistors in said second two-quadrant multiplier, said second pair of transistors having gates respectively connected to drains of said first pair of transistors and sources of said third pair of transistors in each of said first and second two-quadrant multipliers, said third pair of transistors of each of said first and second two-quadrant multipliers having gates connected in common to each other at an input voltage node in each of said first and second two-quadrant multipliers, wherein each differential output current of said plurality of differential output currents, which is generated in one of said first and second two-quadrant multipliers, comprises at least a drain current of said second pair of transistors included in said one of said first and second two-quadrant multipliers;

said differential outputs of said first and second two-quadrant multipliers being provided to supply said combined differential output current;

wherein drains of all of said third pairs of transistors of said first and second two-quadrant multipliers are directly connected in common at a first node;

wherein said first differential input voltage is applied between the gates of said first pair of transistors in each of said first and second two-quadrant multipliers; and

wherein said second differential input voltage is applied between the input voltage node of said first two-quadrant multiplier and the input voltage node of said second two-quadrant multiplier.

5,825,233

ELECTRONIC PROXIMITY SWITCHING DEVICE

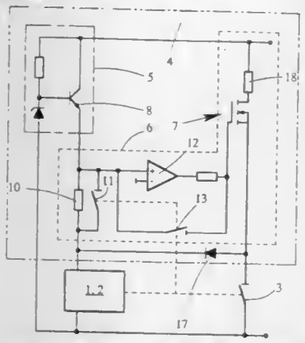
Jean-Luc Lamarche, Mittelhausbergen, France, and Guntram Rundel, Baienfurt, Germany, assignors to i f m electronic gmbh, Essen, Germany

Filed May 17, 1996, Ser. No. 649,267

Claims priority, application Germany, May 18, 1995, 195 17 936.6

Int. Cl.[6] H03K *5/01*

U.S. Cl. 327—365 **21 Claims**



1. An electronic proximity switching device having only two outside conductors, the switching device being connectable through a first of said outside conductors to one pole of a voltage source and through the second of said two outside conductors to a terminal of a consumer, and in which the other terminal of the consumer can be connected to a second pole of the voltage source, comprising:

switching means which can be externally influenced;

an electronic switch which can be controlled by said switching means;

an operating voltage supply circuit for providing an operating voltage required by said switching means; said operating voltage supply circuit including an in-phase regulator having an output and a shunt controller having an input; said switching means being connected to the output of said in-phase regulator; and

said shunt controller including an actuator and the input of said shunt controller being connected to the output of said in-phase regulator; wherein said actuator of said shunt controller is connected in series with the electronic switch; and wherein the switching means is also connected to the connection of said actuator of said shunt controller to said electronic switch.

5,825,234

SWITCH-CONTROL INTEGRATED CIRCUIT

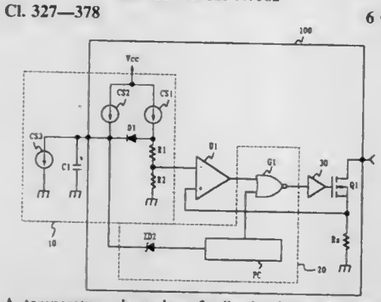
Hwan-Ho Sung, and Sang-Hoon Jeong, both of Seoul, Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1996, Ser. No. 774,603

Claims priority, application Rep. of Korea, Dec. 30, 1995, 1995-68638

Int. Cl.[6] H03K *17/082*

U.S. Cl. 327—378 **6 Claims**



3. A temperature dependent feedback circuit for use in an integrated circuit comprising:

a first current source for providing a first constant current to a first node;

a second current source for providing a second constant current which is less than said first constant current to a second node;

a diode coupled forwardly between said first and second nodes;

an external capacitor coupled to said second node;

an external current sink coupled to said second node; and

a dividing resistor, coupled between said first node and ground, for producing a voltage.

5,825,235

MULTIPLEXER FOR SEMICONDUCTOR MEMORY DEVICE

Jong Hoon Oh, Ichan-shi, Rep. of Korea, assignor to Hyundai Electronic Industries, Co., Ltd., Ichon-shi, Rep. of Korea

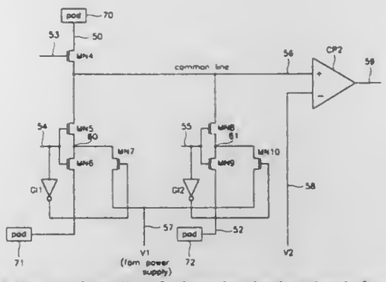
Filed May 15, 1996, Ser. No. 649,763

Claims priority, application Rep. of Korea, May 15, 1995, 95/11883

Int. Cl.[6] H03K *17/62*

U.S. Cl. 327—408 **9 Claims**

1. A multiplexer for a semiconductor memory device, said semiconductor memory device having at least two pads for inputting data signals from the outside, the multiplexer comprising:



a) at least two input lines for inputting the data signals from said at least two pads, respectively;

b) at least two control lines for inputting control signals for switching the data signals from said at least two input lines, respectively; and

c) a least two switching means, each of said at least two switching means transferring the data signal from a corresponding one of said at least two input lines to an output line in response to the control signal from a corresponding one of said at least two control lines, each of said at least two switching means including:

1) a floating node formed to be electrically isolatable from said output line and from said corresponding input line to prevent a loss of the data signal on said output line by selectively receiving a voltage from a voltage source that is at a level higher than a low logic level of the control signal from said corresponding control line;

2) a first NMOS transistor for selectively connecting the floating node to the output line in response to the control signal from the corresponding control line;

3) a second NMOS transistor for selectively connecting the floating node to the corresponding input line in response to the control signal from the corresponding control line; and

4) a third NMOS transistor for selectively transferring the voltage from the voltage source to the floating node in response to the control signal from the corresponding control line; and

5) an inverter having an input connected to the corresponding control line and an output connected to a gate of the third NMOS transistor so as to control application of the voltage from the voltage source to the floating node.

5,825,236

LOW VOLTAGE BIAS CIRCUIT FOR GENERATING SUPPLY-INDEPENDENT BIAS VOLTAGES CURRENTS

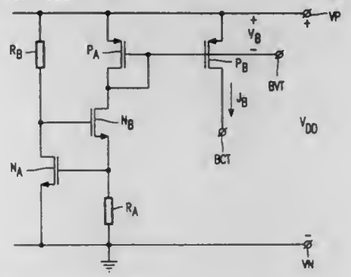
Evert Seevinck, Eersel, Netherlands, and Monuko Du Plessis, Pretoria, South Africa, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 19, 1997, Ser. No. 859,798

Claims priority, application European Pat. Off., May 22, 1996, 96201415

Int. Cl.[6] G05F *1/10*

U.S. Cl. 327—538 **20 Claims**



1. A bias circuit comprising:

a first supply terminal (VP), a second supply terminal (VN), and a bias voltage terminal (BVT);

a first current mirror (CM1) comprising first (N_1) and second (N_2) transistors of a first conductivity type, having a current input terminal (IT1), a current output terminal (OT1) coupled to the bias voltage terminal (BVT), and a common terminal (CT1) coupled to the second supply terminal (VN);

a second current mirror (CM2) comprising third (P_4) and fourth (P_5) transistors of a second conductivity type opposite to the first conductivity type, having a current input terminal (IT2), a current output terminal (OT2) coupled to the current output terminal (OT1) of the first current mirror (CM1) and to the bias voltage terminal (BVT), and a common terminal (CT2) coupled to the first supply terminal (VP);

current providing means (P_1) coupled between the first supply terminal (VP) and the current input terminal (IT1) of the first current mirror (CM1) for providing a current to the input terminal (IT1) of the first current mirror (CM1),

a fifth transistor (N_3) of the first conductivity type having a gate, a source coupled to the second supply terminal (VN), and a drain coupled to the current input terminal (IT2) of the second current mirror (CM2);

resistive means (RS) coupled in parallel to the gate and the source of the fifth transistor (N_3); and

a sixth transistor (P_2) of the second conductivity type, having a gate coupled to the bias voltage terminal (BVT), a source coupled to the first supply terminal (VP), and a drain coupled to the gate of the fifth transistor (N_3).

5,825,237

REFERENCE VOLTAGE GENERATION CIRCUIT

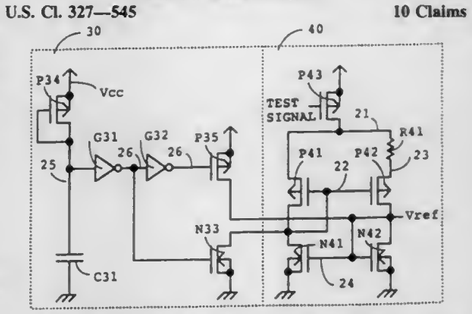
Yukitaka Ogawa, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Oct. 11, 1996, Ser. No. 730,300

Claims priority, application Japan, Oct. 13, 1995, 7-265796

Int. Cl.[6] G05F *1/10;3/02*

U.S. Cl. 327—545 **10 Claims**



1. A reference voltage generation circuit comprising:

a reference voltage circuit for receiving a power source voltage and producing a constant reference voltage, the reference voltage circuit comprising a first complementary insulated gate field effect transistor circuit having at least two starting input terminals; and

a power source start circuit for starting up the reference voltage circuit upon application of the power source voltage, the power source start circuit comprising a second complementary insulated gate field effect transistor circuit including a first starting output terminal having approximately a ground potential level and a second starting output terminal having a voltage level which is approximate to that of the power source voltage at the time of the initial application of the power source voltage;

wherein the first complementary insulated gate field effect transistor circuit comprises a first insulated gate field effect transistor having a first conductivity type, a second insulated gate field effect transistor having a second conductivity type, a third insulated gate field effect transistor having the first

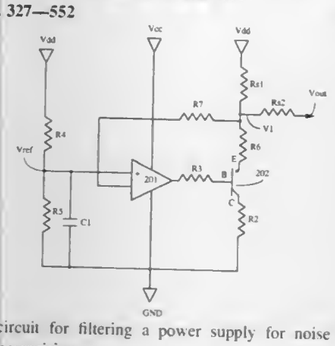
conductivity type and a fourth insulated gate field effect transistor having the second conductivity type, wherein a circuit comprising a connection between a drain terminal of the first insulated gate field effect transistor and a drain terminal of the second insulated gate field effect transistor and another circuit comprising a connection between a drain terminal of the third insulated gate field effect transistor and a drain terminal of the fourth insulated gate field effect transistor are connected in parallel to each other with respect to the power source voltage, and the respective gate electrodes of the first and the third insulated gate field effect transistors are connected to the drain terminal of the first insulated gate field effect transistor to thereby constitute a first starting input terminal and the respective gate electrodes of the second and the fourth insulated gate field effect transistors are connected to the drain terminal of the fourth insulated gate field effect transistor to thereby constitute a second starting input terminal, and wherein one of the first and second starting input terminals serves as an output terminal for outputting the constant reference voltage.

5,825,238

CIRCUIT FOR FILTERING A POWER SUPPLY FOR NOISE SENSITIVE DEVICES

Michael K. Poimboeuf, San Mateo; Jeff DiNapoli, San Carlos, and Gerald L. Brainard, San Jose, all of Calif., assignors to Silicon Graphics, Inc., Mountain View, Calif.

Filed Jan. 27, 1997, Ser. No. 788,369
Int. Cl.[6] H03B *1/00*
U.S. Cl. 327—552 **8 Claims**



1. A circuit for filtering a power supply for noise sensitive devices, comprising:

a transistor having a base, an emitter, and a collector;

a first resistor to couple said emitter to a first power supply;

a second resistor to couple said collector to a ground;

a third resistor coupled to said base;

an operational amplifier having a positive input, a negative input, and an output, said output coupled to said base to control the impedance of said transistor via said third resistor, said negative input coupled to said emitter, said op amp coupled to a second power supply and said ground to receive power;

a fourth resistor coupled between said first power supply and said positive input;

a fifth resistor coupled between said positive input and said ground; and,

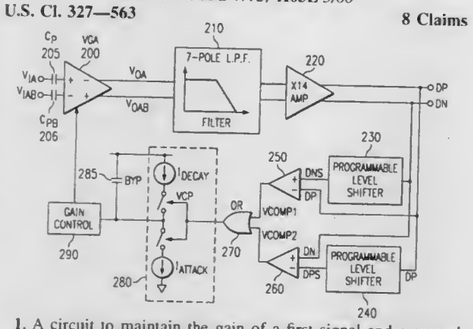
a capacitor coupled between said positive input and said ground such that said op amp controls a shunt current flowing from said first power supply to said ground via said transistor to produce a filtered power output for a noise sensitive device at said emitter.

5,825,239

PEAK DETECTOR FOR AUTOMATIC GAIN CONTROL

Zubir Adal, Santa Ana, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed May 6, 1997, Ser. No. 852,247
Int. Cl.[6] G06G *7/12;* **H03L** *5/00*
U.S. Cl. 327—563 **8 Claims**



1. A circuit to maintain the gain of a first signal and a second signal, comprising:

an amplifying circuit having a gain to amplify the first signal and the second signal, and

a circuit to filter the first signal and the second signal to obtain a first filtered signal and a second filtered signal,

a level shifter circuit to shift the level of the first filtered signal and to shift the level of the second filtered signal to obtain a first leveled signal and a second leveled signal;

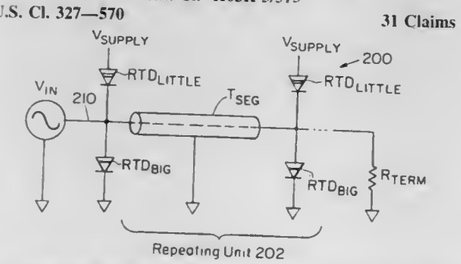
a circuit to correct the gain of the amplifying circuit based on the first leveled signal and the second leveled signal.

5,825,240

RESONANT-TUNNELING TRANSMISSION LINE TECHNOLOGY

Michael W. Geis, Acton; Elliott R. Brown, Billerica, both of Mass.; Stephen J. Eglash, Palo Alto, Calif., and Christopher L. Dennis, Baker City, Oreg., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Continuation of Ser. No. 348,358, Nov. 30, 1994, abandoned. This application Aug. 22, 1997, Ser. No. 916,829
Int. Cl.[6] H03K *3/315*
U.S. Cl. 327—570 **31 Claims**



1. An integrated negative differential resistance device transmission line comprising:

a heterostructure layer;

a signal line for transmitting logic signals along a length of the heterostructure layer;

a supply voltage line and a reference voltage line for providing biasing to the heterostructure layer;

switching device conductive links that extend between the signal line and the reference voltage line and include the heterostructure layer to provide switching devices along the transmission line; and

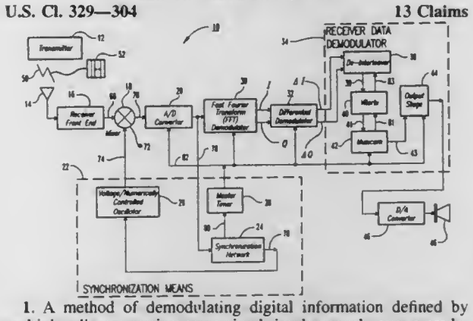
load device conductive links that extend between the signal line and the supply voltage line and include the heterostructure layer to bias the switching devices for bi-stable operation.

5,825,241

DIFFERENTIAL DEMODULATOR

Terrance Ralph Beale, and Roger Alan McDanell, both of Kokomo, Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 11, 1995, Ser. No. 574,095
Int. Cl.[6] H04L *27/14;27/22*
U.S. Cl. 329—304 **13 Claims**



1. A method of demodulating digital information defined by multiple adjacent carriers transmitted simultaneously over a predetermined frequency range, wherein each carrier is phase modulated over time, the method comprising the steps of:

(1) receiving the transmitted digital information;

(2) determining first magnitude and phase values for each of the multiple carriers from the transmitted digital information;

(3) determining second magnitude and phase values of each of the multiple carriers from the transmitted digital information a sample time period after determining the first magnitude and phase values;

(4) processing the first and second phase values of each of the multiple carriers and determining therefrom a differential phase value for each carrier corresponding to a phase value of the carrier during the sample time period; and

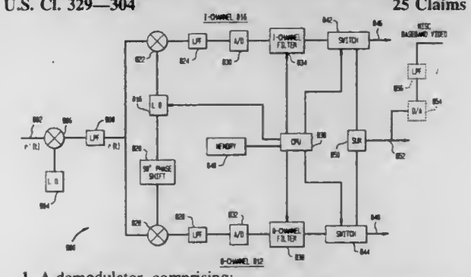
(5) converting the second magnitude and differential phase values for each of the multiple carriers into linear coordinate values and providing the linear coordinate values as demodulated digital information.

5,825,242

MODULATOR/DEMODULATOR USING BASEBAND FILTERING

Richard S. Prodan, Boulder, and Thomas H. Williams, Longmont, both of Colo., assignors to Cable Television Laboratories, Louisville, Colo.

Continuation of Ser. No. 222,800, Apr. 5, 1994, abandoned. This application Dec. 21, 1995, Ser. No. 576,809
Int. Cl.[6] H03D *1/24;* **H04L** *27/38;27/36;* **H03C** *1/52*
U.S. Cl. 329—304 **25 Claims**



1. A demodulator, comprising:

(a) an input for receiving a signal having a particular type of modulation and including in-phase and quadrature modulated signal components;

(b) a circuit configured to variably control a carrier frequency depending on the particular type of modulation of the received signal;

(c) an in-phase channel including a downshifter responsive to the carrier frequency and configured to downshift the in-phase modulated component to form an in-phase baseband signal and a baseband filter for filtering the in-phase baseband signal;

(d) a quadrature channel including a downshifter responsive to the carrier frequency and configured to downshift the quadrature modulated signal component to form a quadrature baseband signal and a baseband filter for filtering the quadrature baseband signal;

(e) a summer for summing the filtered in-phase and quadrature baseband signals; and

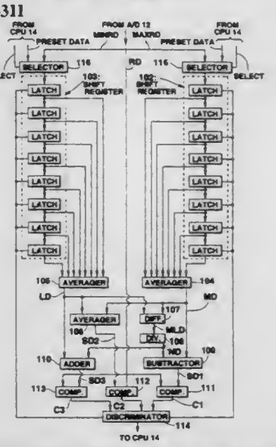
(f) said in-phase and quadrature baseband filters having transfer functions such that said demodulator outputs a baseband signal originally used to form said modulated signal.

5,825,243

APPARATUS AND METHOD FOR DEMODULATING MULTI-LEVEL SIGNAL

Satoshi Sato, and Takeshi Imamura, both of Tokyo, Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Filed Oct. 28, 1996, Ser. No. 738,719
Claims priority, application Japan, Oct. 30, 1995, 7-304992
Int. Cl.[6] H03K *9/02*
U.S. Cl. 329—311 **35 Claims**



4. A multi-level signal demodulation apparatus comprising:

means for converting an input analog signal having a multi-level to a digital signal;

means for discriminating the level of the digital signal by comparing the digital signal with multiple threshold data corresponding to the multi-level of the input analog signal, and outputting a signal corresponding to a demodulated analog signal; and

means for correcting the multiple threshold data based on a previous digital signal discriminated as a first level and a previous digital signal discriminated as a second level when said discriminating means discriminates the level of the digital signal as the first level or the second level.

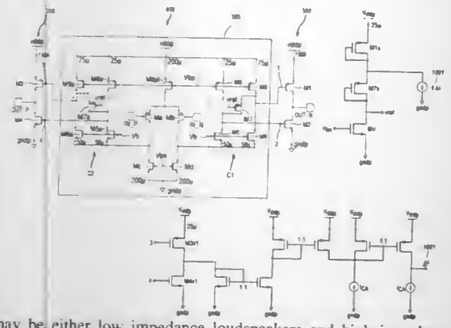
5,825,244

LOW POWER CLASS AB INTEGRATED CIRCUIT AMPLIFIER HAVING IMPROVED LINEARITY WHEN DRIVING HIGH IMPEDANCE LOADS

Shyam S. Somayajula, Austin, Tex., assignor to Crystal Semiconductor, Austin, Tex.

Continuation-in-part of Ser. No. 377,529, Jan. 20, 1990, Pat. No. 5,497,122. This application Mar. 4, 1996, Ser. No. 610,050
U.S. Cl. 330—253 **21 Claims**

19. A method of providing a low power class AB integrated circuit amplifier having an output capable of driving a load which



may be either low impedance loudspeakers and high impedance headphones, comprising:

providing said class AB amplifier, said amplifier having an operating range which includes a region of non-uniform gain;

adjusting the location of said region of non-uniform gain so that said amplifier does not operate over said region of non-uniform gain when driving said headphones and so that said amplifier operates over said region of non-uniform gain when driving said loudspeakers; and

utilizing feedback indicative of an electrical characteristic of said load to control in part said adjusting step.

5,825,245

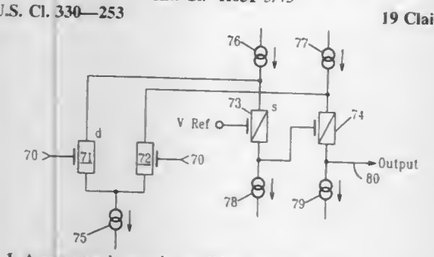
COMPOUND CASCODE AMPLIFIER

Michel S. Michail, South Burlington, Vt., and Wilbur David Pricer, Charlotte, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1997, Ser. No. 855,602

Int. Cl.[6] H03F *3/45*

U.S. Cl. 330—253 **19 Claims**



1. A compound cascode amplifier comprising:

a. first and second FET input transistors, the gates of which are coupled to a differential input;

b. first and second FET cascode transistors, the sources of which are coupled respectively to the drains of the first and second input transistors, the gate of the first cascode transistor is coupled to a reference voltage V Ref, the drain of the first cascode transistor is coupled to the gate of the second cascode transistor, and the drain of the second cascode transistor forms the output of the circuit.

5,825,246

LOW VOLTAGE CLASS AB AMPLIFIER

Vladimir Koifman, Rishon-Lezion; Yachin Afek, Kfar Saba, and Israel Kashat, Netanya, all of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

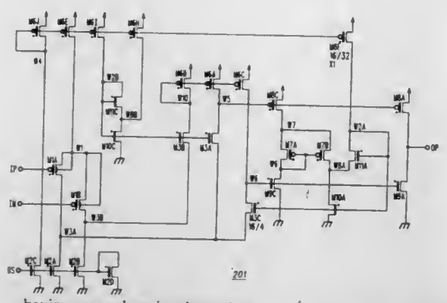
Filed Aug. 19, 1996, Ser. No. 699,255

Int. Cl.[6] H03F *3/30;3/45*

U.S. Cl. 330—255 **11 Claims**

11. An apparatus comprising:

first and second transistors having first main electrodes coupled together to a first node which follows a first input signal and



having second main electrodes coupled to variable current sources which follow a second input signal;

third and fourth transistors coupled to a second node to provide a single output signal, said third and fourth transistors having control electrodes coupled to said second main electrodes of said first and second transistors, respectively; and

a transistor arrangement coupled to said third and fourth transistors for providing a signal depending on a quiescent current through said third and fourth transistors, said signal controlling at least one of said first and second transistors.

5,825,247

ELECTRIC POWER AMPLIFIER AND METHOD FOR ITS OPERATION

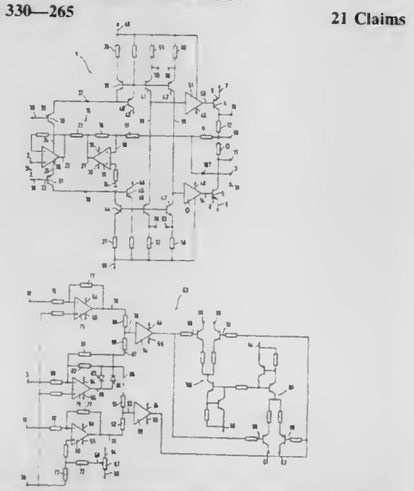
Jochen Herrlinger, Erlangen, Germany, assignor to Mircea Naiu, Erlangen, Germany

Continuation of Ser. No. 505,357, Jan. 24, 1996, abandoned. This application Feb. 28, 1997, Ser. No. 808,053

Claims priority, application Germany, Mar. 2, 1993, 43 06 436.1; Mar. 16, 1993, 43 08 287.4

Int. Cl.[6] H03F *3/30*

U.S. Cl. 330—265 **21 Claims**



1. An improved power amplifier having an input and a plurality of power amplifier circuit elements connected in push-pull arrangement in at least one complementary pair connected to a central node and having a bias voltage source coupled to the elements for generating a transverse idling current flowing through the complementary pair, wherein the improvement comprises:

(a) a regulating, feedback controller circuit for controlling and maintaining the idling current constant, the controller circuit having

(i) a set point input;

(ii) inputs connected to current sensing circuit elements in the amplifier circuit;

(iii) analog, arithmetic computing circuits connected to said inputs for continuously computing the instantaneous difference between a detected transverse idling current and a set value of idling current at the set point input; and

(iv) idling current control signal outputs connected to the bias voltage source, whereby said controller circuit varies said bias voltage in proportion to the instantaneous difference between the detected transverse idling current and the set value of idling current to maintain a constant transverse idling current;

(b) bipolar complementary transistors forming said power amplifier circuit elements and having collectors connected to said central node, one of said inputs to the controller being connected to the central node;

(c) at least one expansion stage complementary pair of transistors connected in a push-pull arrangement in parallel with the previously recited transistors, the additional transistors also connected to the controller circuit for controlling their bias voltage and maintaining their idling current constant; and

(d) an impedance converter circuit comprising a voltage to current converter circuit interposed between the controller circuit and the expansion stage wherein the circuit has feedback of current through the expansion stage transistors.

5,825,248

LOW POWER CONSUMING BALANCED TRANSFORMER LESS AMPLIFIER DEVICE

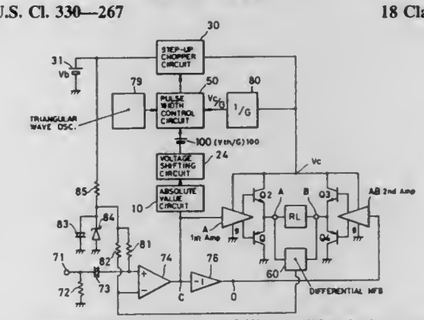
Akio Ozawa, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Oct. 24, 1996, Ser. No. 736,609

Claims priority, application Japan, Oct. 25, 1995, 7-300647; Dec. 1, 1995, 7-338059; Jan. 18, 1996, 8-024562; Apr. 27, 1996, 8-131023

Int. Cl.[6] H03F *3/30*

U.S. Cl. 330—267 **18 Claims**



1. A balanced transformer less (BTL) amplifier device comprising:

first and second amplifiers to which an input signal and a signal obtained by inverting the input signal are supplied respectively, the first and second amplifiers constituting a BTL circuit;

a power voltage supplying circuit for generating an output voltage according to a control signal and supplying the output voltage to the first and second amplifiers as a power voltage;

a load connected to between output terminals of the first and second amplifiers;

a load voltage detecting circuit for detecting voltages at both edges of the load;

a negative feedback circuit for negatively feeding back the output voltage from the load voltage detecting circuit to the input signal side of the BTL circuit;

an absolute value circuit for outputting an absolute value of the output voltage on the input signal side of the BTL circuit; and

a control signal generating circuit for generating the control signal according to a difference between an output voltage from the absolute value circuit and an output voltage from the power voltage supplying circuit.

5,825,249

MULTISTAGE SOURCE FOLLOWER AMPLIFIER HAVING A WIDE BANDWIDTH AND LOW POWER CONSUMPTION

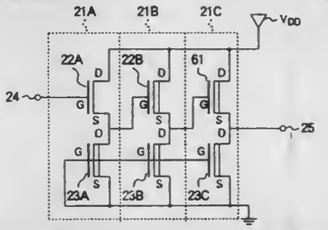
Takashi Nakano, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 13, 1997, Ser. No. 782,071

Claims priority, application Japan, Jan. 12, 1996, 8-021774; Jan. 8, 1997, 9-013123

Int. Cl.[6] H03F *3/16;3/68*

U.S. Cl. 330—277 **10 Claims**



1. A multistage source follower amplifier comprising:

a first source follower amplifier having a first drive transistor and a first load connected to said first drive transistor;

a middle source follower amplifier unit which comprises a middle drive transistor of a buried channel type which is connected to said first drive transistor and a middle load which is connected to said middle drive transistor; and

an output source follower amplifier electrically coupled to said middle source follower amplifier unit and having a third drive transistor of a surface channel type and a third load connected to said third drive transistor;

wherein said multistage source follower amplifier is supplied with a predetermined power voltage and an input signal, and wherein said first drive transistor is a surface channel type transistor when a maximum voltage of said input signal is not less than said predetermined power voltage.

5,825,250

OPERATIONAL AMPLIFIER HAVING AN ADJUSTABLE FREQUENCY COMPENSATION

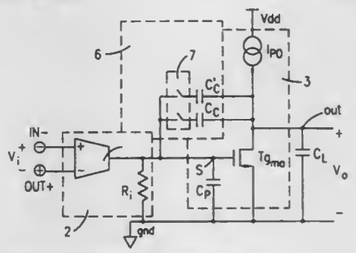
Luciano Tomasini, Acqaui Terme; Rinaldo Castello, Arcore; Giancarlo Clerici, Vimodrone, and Ivan Bietti, Casal Romano, all of Italy, assignors to SGS-Thomson Microelectronics S.r.l., Brianza, Italy

Filed Nov. 27, 1996, Ser. No. 757,384

Claims priority, application European Pat. Off., Nov. 30, 1995, 95830500

Int. Cl.[6] H03F *1/14*

U.S. Cl. 330—292 **22 Claims**



1. An operational amplifier, comprising:

a transconductor stage connected in series with an amplifier stage, said transconductor stage having at least one op-amp input terminal and said amplifier stage having at least one op-amp output terminal;

a compensation block connected in parallel with said amplifier stage;

wherein said compensation block comprises a plurality of compensation capacitors and provides a capacitance which allows variable frequency compensation; and

wherein said plurality of compensation capacitors are selectively switched to provide an overall effective capacitance for frequency compensation; and

wherein said switching is controlled by an external signal; and

wherein said external signal controlling the selection of said compensation capacitors varies with a closed-loop gain value determined by an external feedback network applied between the output and input of the operational amplifier.

5,825,251

AUDIO SIGNAL AMPLIFYING CIRCUIT

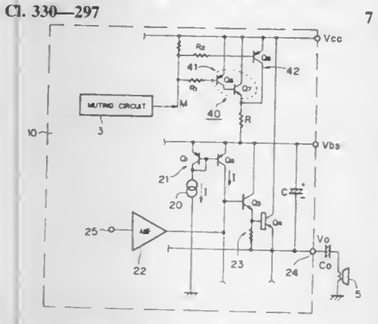
Eiji Nakagawa, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Dec. 3, 1996, Ser. No. 759,952

Claims priority, application Japan, Dec. 5, 1995, 7-344581

Int. Cl.[6] H03F *1/14;* **H04B** *15/00*

U.S. Cl. 330—297 **7 Claims**



1. An audio signal amplifying circuit comprising:

a switch circuit disposed between a first power source line and a second power source line for bootstrapping; and

a capacitor for bootstrapping disposed between said second power source line and a line to which an output terminal is connected,

wherein said switch circuit is controlled from ON to OFF upon receiving a muting signal, said switch circuit is provided with a first switch circuit constituted by Darlington connected transistors having an NPN type transistor as the output stage thereof and a second switch circuit constituted by a PNP type transistor disposed in parallel with said NPN type transistor, the sum of the rated current values of said NPN type transistor in said first switch circuit and the rated current value of said PNP type transistor in said second switch circuit is selected to be equal to or more than the maximum supply current value for said second power source line, and the rated current value of said PNP type transistor in said second switch circuit is selected to be smaller than the rated current values of said transistors in said first switch circuit.

5,825,252

SYNTHESIZED OSCILLATION CIRCUIT

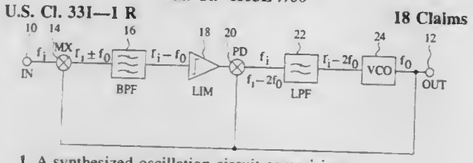
Makoto Shikata, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Feb. 26, 1997, Ser. No. 806,988

Claims priority, application Japan, Mar. 11, 1996, 8-052903

Int. Cl.[6] H03L *7/00*

U.S. Cl. 331—1 R **18 Claims**



1. A synthesized oscillation circuit comprising:

a signal input terminal;

a signal output terminal;

a mixer having an RF terminal, an IF terminal, and an LO terminal, said signal input terminal being connected to said RF terminal of said mixer;

a first filter having input and output terminals, said IF terminal of said mixer being connected to said input terminal of said first filter;

an amplitude limiting amplifier having input and output terminals, said output terminal of said first filter being connected to said input terminal of said amplitude limiting amplifier;

a phase detector having first and second input terminals and an output terminal, said output terminal of said amplitude limiting amplifier being connected to said first input terminal of said phase detector;

a second filter having input and output terminals, said output terminal of said phase detector being connected to said input terminal of said second filter; and

a voltage-controlled oscillator having input and output terminals, said output terminal of said second filter being connected to said input terminal of said voltage-controlled oscillator, said output terminal of said voltage-controlled oscillator being connected to said signal output terminal, said LO terminal of said mixer, and said second input terminal of said phase detector,

wherein said first filter has a filtering characteristic which blocks the sum frequency component of the frequency component of a signal from said signal input terminal to said mixer and the frequency component of a signal from said voltage-controlled oscillator to said mixer but passes the difference component between them, and

wherein said second filter has a filtering characteristic which blocks the sum frequency component of the frequency component of a signal from said amplitude limiting amplifier to said phase detector and the frequency component of a signal from said voltage-controlled oscillator to said phase detector but passes the difference component between them.

5,825,253

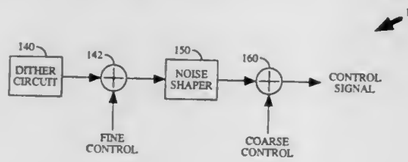
PHASE-LOCKED-LOOP WITH NOISE SHAPER

Lennart Karl-Axel Mathe, and Saed G. Younis, both of San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed Jul. 15, 1997, Ser. No. 893,267

Int. Cl.[6] H03L *7/06;7/18*

U.S. Cl. 331—18 **20 Claims**



1. A circuit for providing an event clock having improved phase noise characteristics comprising:

a divider controller having an input for receiving an input value and an output, said divider controller producing a control signal at said output in response to said input value; and

a variable divider having an divider input for receiving a reference clock, a control input connected to said output of said divider controller, and an output, said variable divider producing said event clock at said output having cycle widths in response to said control signal.

5,825,254

FREQUENCY CONVERTER FOR OUTPUTTING A STABLE FREQUENCY BY FEEDBACK VIA A PHASE LOCKED LOOP

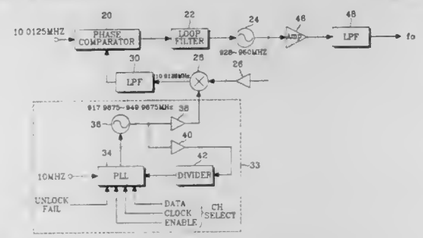
Sang-Bok Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 19, 1997, Ser. No. 816,947

Claims priority, application Rep. of Korea, Mar. 19, 1996, 1996 7418

Int. Cl.[6] H03L *7/00*

U.S. Cl. 331—25 **15 Claims**



9. A frequency converter, comprising:

a local oscillator for generating a local oscillation frequency signal;

a first amplifier for providing a local frequency signal by amplifying said local oscillation frequency signal to a first predetermined level;

a second amplifier for outputting an amplified frequency signal by amplifying said local oscillation frequency signal;

a divider for dividing said amplified frequency signal output from said second amplifier;

a phase locked loop circuit for generating a first direct current (DC) voltage by comparing an output of said divider to an input reference clock frequency signal and filtering a resultant thereof, said first DC voltage being applied as a first control voltage for controlling said local oscillator;

a mixer for mixing said local frequency signal and a feedback frequency signal to generate a mixed frequency signal;

a first filter for outputting a first filtered frequency signal by filtering said mixed frequency signal;

a phase comparator for generating a voltage signal corresponding to a phase difference between an input frequency to said frequency convertor and said first filtered frequency signal output from said first filter;

a second filter for converting said voltage signal output by said phase comparator to a second DC voltage having any noise component eliminated by said second filter; and

a voltage controlled oscillator receiving said second DC voltage as a second control voltage for generating a stable output frequency signal, said stable output frequency signal being provided as said feedback frequency signal to said mixer.

5,825,255

OSCILLATOR STARTING CIRCUIT

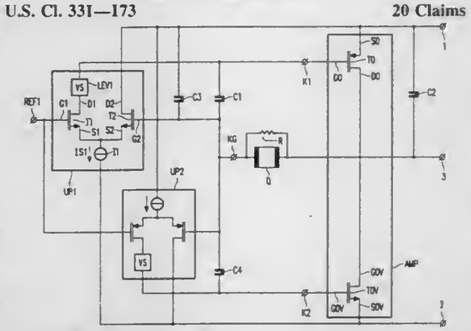
Eise C. Dijkmans, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 29, 1997, Ser. No. 902,048

Claims priority, application European Pat. Off., Aug. 7, 1996, 9620221

Int. Cl.[6] H03B *5/06;5/36*

U.S. Cl. 331—173 **20 Claims**



1. An oscillator comprising:

an amplifier which comprises:

a first and a second supply terminal,

an amplification transistor with

a first main electrode coupled to an output terminal,

a second main electrode coupled to the first supply terminal, and

a control electrode coupled to an input terminal;

a resonator; and

a starting circuit, characterized in that the starting circuit limits the potential at the input terminal through a measurement of the potential at the input terminal (K1).

5,825,256

EMITTER COUPLED MULTIVIBRATOR CIRCUIT

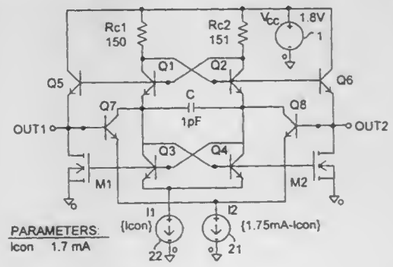
Nicolay Tchamov, Lindforsinkatu 21 A 17, FIN-33720 Tampere, and Petri Jarske, Pirilänkuja 8, FIN-34240 Kämmenniemi, both of Finland

Filed May 9, 1997, Ser. No. 853,934

Claims priority, application Finland, May 8, 1996, 96184

Int. Cl.[6] H03K *3/282*

U.S. Cl. 331—113 R **5 Claims**



1. An oscillator circuit comprising

an operating voltage supply (I),

a first non-linear amplifier component (Q1) comprising a first and a second main electrode and a control electrode,

a second non-linear amplifier component (Q2) comprising a first and a second main electrode and a control electrode, the first main electrode of the second amplifier component (Q2) being connected to control the control electrode of the first amplifier component (Q1), and similarly the first main electrode of the

first amplifier component (Q1) being connected to control the control electrode of the second amplifier component (Q2),

a capacitive component (C) connected between the second main electrode of the first amplifier component (Q1) and the second main electrode of the second amplifier component (Q2),

a first and a second resistor (Rc1,Rc2) via which the first main electrode of the first amplifier component (Q1), and the first main electrode of the second amplifier component (Q2), respectively, are connected to the first potential of the operating voltage supply (1),

a third amplifier component (Q3) whose first main electrode is connected to the second main electrode of the first amplifier component (Q1),

a fourth amplifier component (Q4) whose first main electrode is connected to the second main electrode of the second amplifier component (Q2),

a first adjustable current source (22) whose first terminal is connected to the second main electrodes of the third and the fourth amplifier components (Q3,Q4) and whose second terminal is connected to the second potential of the operating voltage supply (1), the frequency of said oscillator being adjustable by controlling the current Icon of the first current source,

a fifth amplifier component (Q5) whose first main electrode is connected to the first potential of the operating voltage supply, and whose control electrode is connected to the second main electrode or the control electrode of the first amplifier component (Q1),

a sixth amplifier component (Q6) whose first main electrode is connected to the first potential of the operating voltage supply, and whose control electrode is connected to the second main electrode or the control electrode of the second amplifier component (Q2), the control electrodes of the third and the fourth amplifier components (Q3,Q4) being cross-connected to the second main electrodes of the sixth (Q6) and the fifth (Q5) amplifier component, respectively,

means (Q7,Q8,21) for providing a compensating current to flow via the first resistor (Rc1) and the second resistor (Rc2), respectively, so that the current passing through each resistor is essentially constant and independent of the current Icon.

5,825,257

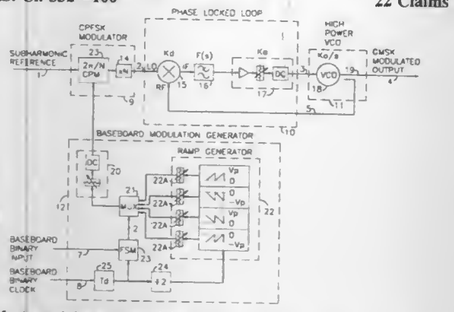
GMSK MODULATOR FORMED OF PLL TO WHICH CONTINUOUS PHASE MODULATED SIGNAL IS APPLIED

David M. Klymyshyn; Surinder Kumar, and Abbas Mohammadi, all of Saskatoon, Canada, assignors to Telecommunications Research Laboratories, Edmonton, Canada

Filed Jun. 17, 1997, Ser. No. 877,772

Int. Cl.[6] H04L *27/12*

U.S. Cl. 332—100 **22 Claims**



1. A modulator, comprising:

a source of a continuous phase modulated signal, in which the continuous phase modulated signal carries a baseband information signal;

a voltage controlled oscillator having an oscillator output and a voltage control port;

a coupler on the oscillator output; and

a phase difference detector having a first input connected to the source of a continuous phase modulated signal, a second input connected to the coupler to form a feedback path and an output connected to supply a voltage error signal to the voltage control port, whereby the voltage controlled oscillator, the coupler and the phase difference detector form a phase locked loop and wherein the voltage error signal has a voltage proportional to an instantaneous phase difference between the continuous phase modulated signal and a signal appearing at the oscillator output.

5,825,258

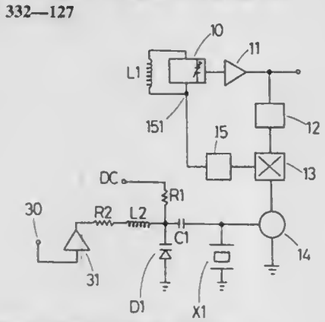
PHASE-LOCKED LOOP CIRCUIT

Ming Chou Wu, No. 1-2, Lane 5, Yuan Te Road, Tan Shui Chen, Taiwan

Filed May 7, 1996, Ser. No. 643,873

Int. Cl.[6] H03L *7/06; H03B 5/32*

U.S. Cl. 332—127 **7 Claims**



1. A phase locked loop circuit comprising:

(a) an oscillator adapted for generating responsive to a predetermined control signal a first signal having a resonant frequency;

(b) a frequency divider electrically coupled to said oscillator for dividing said resonant frequency of said first signal to generate a second signal;

(c) means for generating a predetermined reference frequency signal;

(d) a phase detector electrically coupled to said frequency divider and said means for generating said reference frequency signal for comparing the phase of said second signal with the phase of said predetermined reference frequency signal to generate a third signal;

(e) a low pass filter electrically coupled to said phase detector for filtering said third signal and generating said predetermined control signal for said oscillator; and,

(f) a modulation subcircuit electrically coupled to said means for generating said reference frequency signal including:

(1) an amplifier for generating a fourth signal responsive to a predetermined input modulation signal;

(2) a resonator electrically coupled to said amplifier; and,

(3) a variable capacitance diode means electrically coupled in parallel to said resonator, said variable capacitance diode means having a predetermined electrical sensitivity parameter determined responsive to an input bias signal, said variable capacitance diode means having a Q-value parameter related in predetermined manner to a parametric resonant frequency curve characteristic of said resonator;

whereby frequency deviation and signal distortion during operation of said phased locked loop circuit are minimized.

5,825,259

ELECTROMAGNETIC INTERFERENCE ISOLATOR WITH COMMON MODE CHOKE

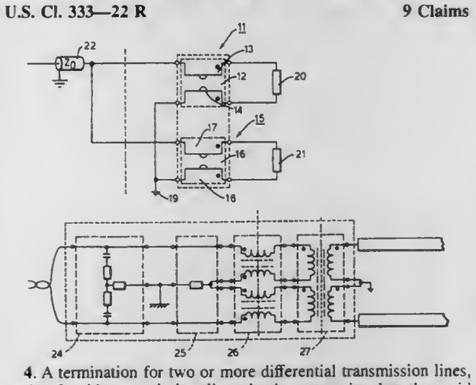
Lewis Freeth Harpham, Wiltshire, United Kingdom, assignor to Madge Networks Limited, Buckinghamshire, United Kingdom

Division of Ser. No. 510,071, Aug. 1, 1995, Pat. No. 5,659,273. This application Mar. 25, 1997, Ser. No. 823,583

Claims priority, application United Kingdom, Aug. 3, 1994, 9415726; Oct. 25, 1994, 9421475

Int. Cl.[6] H01P *1/26;* **H03H** *7/00;* **H04B** *3/30*

U.S. Cl. 333—22 R **9 Claims**



4. A termination for two or more differential transmission lines, each of said transmission lines having two signal paths, said termination having a common mode choke comprising:

a first series connected transformer comprising a core, a primary winding and a secondary winding, said primary winding and said secondary winding being wound around the core; and,

a second series connected transformer comprising a core, a primary winding and a secondary winding, said primary winding and said secondary winding being wound around the core,

wherein, in use, with a respective load applied across an output of said primary winding and said secondary winding of each of said first transformer and said second transformer and an input of each of said secondary windings connected to a ground, said common mode choke appears as a substantially constant impedance to any differential mode component of signals applied to an input of said primary windings of said first transformer and said second transformer whilst attenuating an in-band common mode component.

5,825,260

DIRECTIONAL COUPLER FOR THE HIGH-FREQUENCY RANGE

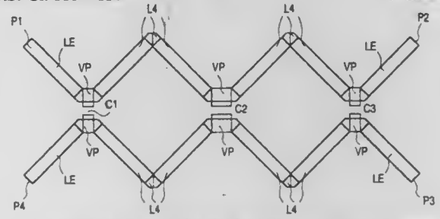
Michael Ludwig, Erbach, and Ralf Rieger, Andelfingen, both of Germany, assignors to Daimler-Benz Aerospace AG, Munich, Germany

Filed Feb. 18, 1997, Ser. No. 801,418

Claims priority, application Germany, Feb. 15, 1996, 196 05 569.5

Int. Cl.[6] H01P *5/18*

U.S. Cl. 333—116 **9 Claims**



1. A directional coupler for the high-frequency range, comprising, in combination:

a through path and a coupling path, each extending between respective ports, and with the through and coupling paths each being symmetrically configured as sections of flat conductors in integrated waveguide technology;

at least three coupling points for coupling waves, which are conducted in the flat conductors, between the through and coupling paths are present in each path in the direction of propagation of an incident TEM mode fed to one port of the through path;

each flat conductor section in each path disposed between two adjacent of the coupling points has an electrical length equal to $\lambda/4$, where λ indicates the wavelength of the wave conducted in the flat conductors; and,

a respective coupling capacitor is connected between associated respective coupling points of the through and coupling paths.

5,825,261

PASSIVE, APERIODIC PHASE SHIFTING AND ATTENUATING DEVICE FOR ELECTRIC SIGNALS

Claude Goutelard, Bretigny sur Orge, France, assignor to Compagnie D'Etudes, de Realisations et D'Installations de Systems (Coris), France

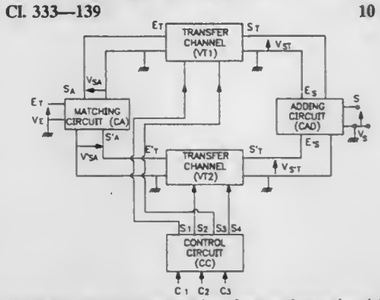
PCT No. PCT/FR96/01267, § 371 Date May 30, 1997, § 102(e) Date May 30, 1997, PCT Pub. No. WO97/06596, PCT Pub. Date Feb. 20, 1997

PCT Filed Aug. 8, 1996, Ser. No. 809,981

Claims priority, application France, Aug. 9, 1995, 95 09659

Int. Cl.[6] H03H *7/20*

U.S. Cl. 333—139 **10 Claims**



1. Wideband device for producing, from an input signal (V_E), an output signal, each spectral component of which is shifted and attenuated from that of the input signal of the same frequency by phase shifting, adjustable from 0 to 360 degrees, and attenuation, adjustable from 1 to arbitrary values, said device including:

an adding circuit (CAD);

a control circuit (CC) for receiving and processing digital control signals (C_1, C_2) indicative of desired phase shift and attenuation and producing first output control signals (S_1, S_2), and second output control signals (S_3, S_4) in response thereto; a matching circuit (CA) which receives said input signal (V_E) and produces two signals (V_{SA}, $V_{S'A}$) in response thereto; two transfer channels (V_{T1}, V_{T2}) which respectively receive said two signals (V_{SA}, $V_{S'A}$) and deliver to said adding circuit (CAD) two transfer signals (V_{ST}, $V_{S'T}$), the spectral components of which are in phase quadrature and of algebraic amplitudes adjusted to obtain, via said adding circuit (CAD), said output signal, each spectral component of which output signal is phase shifted and attenuated by the values of said first output control signals (S_1, S_2), and second output control signals (S_3, S_4) obtained by applying said digital control signals (C_1, C_2) to said control circuit (CC) for processing, characterized in that:

the matching circuit (CA), the adding circuit (CAD) and the two transfer channels (V_{T1}, V_{T2}) are entirely passive circuits and wherein, each transfer channel comprises a cascaded inversion system (SI), phase shifting circuit (CD), and aperiodic attenuator (AA);

said phase shifting circuits (CD) comprising associated transformers, one of the windings of one transformer (TR2) having a center tap and the other winding coupled to a winding of the other transformer (TR1) by cells of "pass all" filters with each cell having two inductors and two capacitors for ensuring phase shifting;

said inversion systems (SI) comprising at least one of electromagnetic relays and associations of electronic switches and receiving said second output control signals (S_3, S_4);

said aperiodic attentuators (AA) comprising networks of switched resistors receiving said first output control signals (S_1, S_2);

a first memory area (M_1), and a second memory area (M_3) having fault absence attenuation values (S'_1, S'_2) stored therein; a correction system, in said control circuit (CC), for storing in said first memory area (M_1) the correspondence between said digital control signals (C_1, C_2) and said first output control signals (S_1, S_2) for said attenuators (AA) and said second output control signals (S_3, S_4) for said inversion systems (SI); and

a sub-band based correction system, in said control circuit (CC), for storing in said second memory area (M_3), the corrections to be made on a sub-band basis and adding (AD_1, AD_2) said corrections to said fault absence attenuation values (S'_1, S'_2) to obtain first output control signal (S_1, S_2) values for input to said attenuators (AA) giving minimal error.

5,825,262

LADDER FILTER WITH PIEZOELECTRIC RESONATORS EACH HAVING A PLURALITY OF LAYERS WITH INTERNAL ELECTRODES

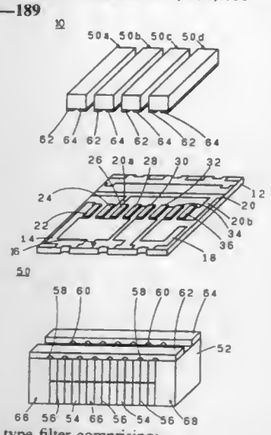
Jiro Inoue; Toshihiko Unami, both of Omihachiman, and Tetsuo Takeshima, Toyama, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Apr. 30, 1997, Ser. No. 846,296

Claims priority, application Japan, Nov. 22, 1996, 8-327708

Int. Cl.[6] H03H *9/15;9/58;9/10*

U.S. Cl. 333—189 **20 Claims**



1. A ladder type filter comprising:

a plurality of piezoelectric resonators connected in series and in parallel in a ladder arrangement, each of said piezoelectric resonators including a base member having a plurality of piezoelectric layers and a plurality of the internal electrodes alternately laminated along a longitudinal direction of the base member, said piezoelectric resonator being arranged to vibrate in a longitudinal direction of said base member by application of an electric field between each adjacent pair of said electrodes; wherein

if a width of each of said piezoelectric resonators is w, a thickness of each of said piezoelectric resonators is t, and the number of laminated layers each including one of said piezoelectric layers and one of said internal electrodes disposed adjacent to a corresponding one of said piezoelectric layers is n, then an inequality $1 \leqq \log_{10}(n^2 wt) \leqq 3$ is satisfied.

5,825,263

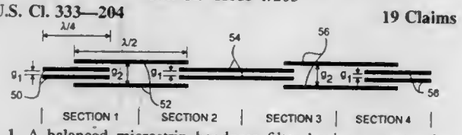
LOW RADIATION BALANCED MICROSTRIP BANDPASS FILTER

Christopher Edgar Falt, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 11, 1996, Ser. No. 730,006

Int. Cl.[6] H01P *1/203*

U.S. Cl. 333—204 **19 Claims**



1. A balanced microstrip bandpass filter having a centre frequency comprising:

a dielectric substrate having a bottom surface and a top surface;

a ground plane on a bottom surface of the substrate;

on the top surface of the substrate, a first pair, a last pair, and M intermediate pairs of parallel microstrip resonant segments where M is an integer ≧1;

each pair comprising two microstrip segments which are parallel, non-colinear, and coextensive with each other;

the pairs being arranged in sequence lengthwise such that each of said M intermediate pairs has an adjacent pair at each of its opposite ends with the spacing between the two microstrip segments in each of the pairs being alternately smaller and larger;

for each smaller spaced pair adjacent a larger spaced pair, a lengthwise portion of the smaller pair being disposed between the adjacent larger spaced pair;

the microstrip segments having lengths, lengthwise portions which collectively determine the frequency response of the filter;

input microstrip means for coupling a differential input signal to a first of said pairs of microstrip segments; and

output microstrip segments for coupling a differential output signal to a last of said pairs of microstrip segments.

5,825,264

STRIPLINE LAMINATE DIELECTRIC FILTER WITH INPUT/OUTPUT PATTERNS OVERLAPPING RESONATOR CONDUCTORS

Kazuhisa Yamazaki; Nobuaki Nakamura; Yuji Matsushita, all of Hamamatsu; Hisao Sato, and Tomohiko Ban, both of Kosai, all of Japan, assignors to FDK Corporation, Tokyo, Japan

Continuation of Ser. No. 428,991, Apr. 26, 1995, abandoned. This application Feb. 12, 1997, Ser. No. 799,087

Claims priority, application Japan, May 18, 1994, 6-127119; Jun. 8, 1994, 6-148756

Int. Cl.[6] H01P *1/203*

U.S. Cl. 333—204 **7 Claims**

1. A laminate dielectric filter comprising:

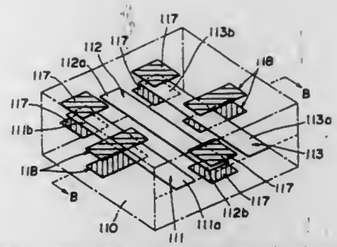
a laminate substrate formed by a plurality of laminated dielectric sheets;

a plurality of parallel and coplanar resonator internal conductors formed inside of said laminate substrate;

an earth pattern formed on an outer periphery of said laminate substrate;

input/output electrodes formed on the outer periphery of said laminate substrate under a non-connection state with said earth pattern; and

two input/output terminal patterns extending into said laminate substrate from each of said input/output electrodes, disposed in such a manner as to extend over opposite sides of one of said resonator internal conductors, and opposing each other with said one of said resonator internal conductors interposed between facing surfaces of said two input/output terminal patterns.



5,825,265

GROUNDED INDUCTANCE CIRCUIT USING A GYRATOR CIRCUIT

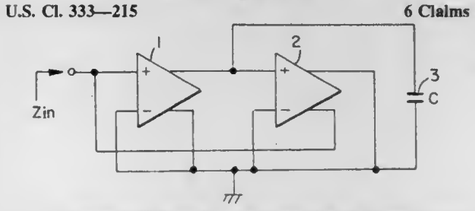
Tomohiro Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 1, 1995, Ser. No. 566,022

Claims priority, application Japan, Dec. 5, 1994, 6-329258

Int. Cl.[6] H03H *11/50*

U.S. Cl. 333—215 **6 Claims**



1. A grounded inductance circuit comprising a gyrator circuit; said gyrator circuit comprising first and second transconductance amplifiers each having two input terminals and two output terminals, wherein

a first input terminal of said first transconductance amplifier is connected with a second output terminal of said second transconductance amplifier;

a first output terminal of said first transconductance amplifier and a first input terminal of said second transconductance amplifier are connected to one end of a capacitor which is grounded at the other end; and

a second input terminal and a second output terminal of said first transconductance amplifier and a second input terminal and a first output terminal of said second transconductance amplifier are AC-grounded, respectively.

5,825,266

HIGH Q RESONATOR UTILIZING PLANAR STUCTURES

James K. Gehrke, Lake in the Wells, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

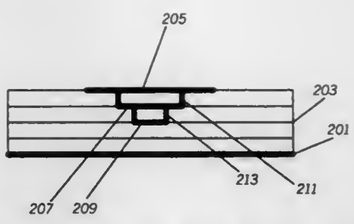
Continuation-in-part of Ser. No. 603,537, Feb. 20, 1996, abandoned, which is a continuation of Ser. No. 301,091, Sep. 6, 1994, abandoned. This application May 28, 1997, Ser. No. 864,664

Int. Cl.[6] H01P *7/08*

U.S. Cl. 333—219 **7 Claims**

1. A high Q multi-layer resonator comprising:

a multi-layer substrate;



a plurality of conductors each having a respective cross-sectional area and each embedded on respective layer of the multi-layer substrate;

at least one via for interconnecting the plurality of conductors through the multi-layer substrate; and

wherein the cross-sectional area of each of the plurality of conductors is successively reduced so as to approximate a semi-elliptical resonator having a substantially equalized current distribution throughout the plurality of conductors.

5,825,267

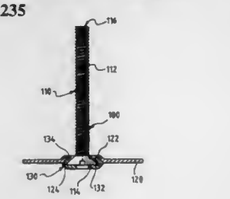
FILTER TUNING ASSMEBLY

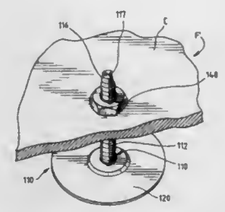
Patrick A. Smith, Northfield Center, Ohio, assignor to Allen Telecom Inc., Solon, Ohio

Filed Jul. 24, 1997, Ser. No. 899,687

Int. Cl.[6] H01P *7/06*

U.S. Cl. 333—235 **6 Claims**





1. An RF filter comprising

an enclosure formed of walls defining an interior resonant cavity;

a tuning assembly mounted on one of said walls;

said tuning assembly comprising an adjustment screw threadedly secured in said one wall and having an inner end in the cavity and an outer free end external of the enclosure, a generally circular tuning plate, and a molded plastic connector fixedly securing said tuning plate to said inner end and permanently preventing relative movement therebetween; and

means at said free end of said adjustment screw for facilitating rotation of said adjustment screw relative to said one wall so that said tuning plate may be moved toward and away from said one wall within said cavity and wherein said means at the free end of the adjustment screw comprises a shaped formation thereat for providing tool purchase to facilitate rotation of the adjustment screw.

5,825,268

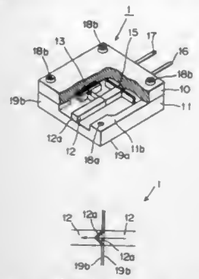
DEVICE WITH A NONRADIATIVE DIELECTRIC WAVEGUIDE

Youhei Ishikawa; Toru Tanizaki, and Hiroshi Nishida, all of Kawanishi, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 520,110, Aug. 28, 1995, abandoned. This application Aug. 27, 1996, Ser. No. 703,806

Claims priority, application Japan, Aug. 30, 1994, 6-205425

U.S. Cl. 333—254 **4 Claims**



1. In combination, a pair of devices, each device having a nonradiative dielectric waveguide comprising:

a pair of conductors which are parallel to each other at a specified spacing;

a dielectric strip which is disposed between the pair of conductors;

a plane mounting surface which is formed on at least one of the conductors; and

an end surface which is defined by an end of the conductors so as to be vertical to a direction in which an electromagnetic wave is propagated in the dielectric strip, an end of the dielectric strip being exposed at said end surface of the device;

said ends of the dielectric strips of the pair of devices being aligned to electromagnetically couple to each other for propagating said electromagnetic wave between the respective devices;

wherein the exposed end of one said dielectric strip has a projection which is protruded from the end surface of the conductors.

5,825,269

ELECTROMAGNETIC SWITCHGEAR

Bardo Koppmann, Kaltenbrunn/Bundesrepublik, Germany, assignor to Siemens Aktiengesellschaft, München, Germany

PCT No. PCT/DE94/01362, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/15574, PCT Pub. Date Jun. 8, 1995

PCT Filed Nov. 18, 1994, Ser. No. 647,975

Claims priority, application Germany, Dec. 3, 1993, 43 41 330.7

Int. Cl.[6] H01H *67/02*

U.S. Cl. 335—132 **4 Claims**

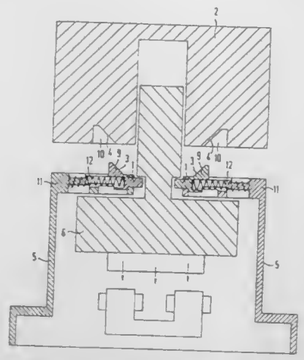
1. An electromagnetic switchgear comprising:

an explosion chamber;

a bottom member; and

a contact bridge support member projecting through an opening in an upper wall of the bottom member into the explosion chamber,

wherein the bottom member includes a locking member for automatically locking the contact bridge support member when the explosion chamber is displaced from the bottom member, the locking member including a projection having a first contour surface, the first contour surface substantially facing a second contour surface of the explosion chamber for flatly engaging the second contour surface of the explosion chamber, the first contour surface and the second contour surface flatly sliding on each other when the explosion chamber is connected to the bottom member so as to cause the locking member to unlock the contact bridge support member when the explosion chamber is connected to the bottom member.



5,825,270

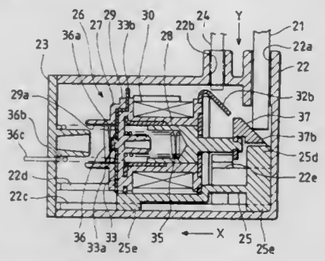
ELECTROMAGNETIC SOLENOID

Masaichi Hattori, and Osamu Shoji, both of Aichi, Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Aichi, Japan

Filed Oct. 22, 1996, Ser. No. 740,137

Int. Cl.[6] H01F *7/00*

U.S. Cl. 335—223 **16 Claims**



1. An electromagnetic solenoid comprising:

a bobbin having an exciting coil and a pair of spring guides;

a plunger coupled to the exciting coil and movable along an axis of the exciting coil;

coil terminals secured to the bobbin and having coil connecting portions connected to ends of the exciting coil; and

a pair of electrically conductive spring members for urging the plunger in a predetermined direction and for connecting the coil terminals to external connecting portions, wherein the pair of electrically conductive spring members are attached to the coil terminals and substantially within the pair of spring guides,

wherein a trip spring is interposed between the plunger and the bobbin.

5,825,271

MAGNET ASSEMBLY

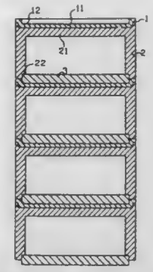
Yu Kuang Hu, No. 152-1, Chiao Chung Erh St., Pan Chiao City, Taipei Hsien, Taiwan

Filed Oct. 8, 1997, Ser. No. 947,154

Int. Cl.[6] H01F *7/20*

U.S. Cl. 335—285 **2 Claims**

1. A magnet assembly, comprising a metal cap, a cylindrical body, and a magnet, wherein said metal cap has a concave portion at an upper side and a convex portion at a lower side, said convex



portion just fitting into a slot. formed at an upper side of said cylindrical body to be secured therein, said cylindrical body having a groove at an inner side of a lower portion thereof for receiving said magnet, which may partly project therefrom, whereby a plurality of magnet assemblies may be piled up in neat stacks and adhered to a metallic board so as to save space and facilitate use.

5,825,272

CHOKE COIL FOR SUPPRESSING COMMON-MODE NOISE AND NORMAL-MODE NOISE

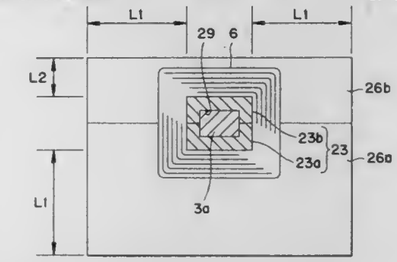
Tatsuyuki Yamada; Kouichi Yamaguchi, both of Fukui-ken, and Takaaki Ooi, Takefu, all of Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jun. 3, 1997, Ser. No. 867,735

Claims priority, application Japan, Jun. 10, 1996, 8-147265

Int. Cl.[6] H01F *27/24*

U.S. Cl. 336—212 **15 Claims**



1. A choke coil comprising:

a pair of windings;

a magnetic bobbin having a cylindrical rod and flanges extending away from said cylindrical rod about which said pair of windings are wound, the height of each of said flanges varying in radial directions wherein the height is measured from said cylindrical rod to the outer peripheral surfaces of said flanges; and

a magnetic core, having one side which is in a hole in said cylindrical rod, for forming a closed magnetic path.

5,825,273

DIFFERENTIAL THERMAL TRIPPING DEVICE WITH BIMETALLIC STRIPS

Patrick Roger, Auxonne, France, assignor to Schneider Electric SA, Boulogne Billancourt, France

Filed Mar. 18, 1997, Ser. No. 819,707

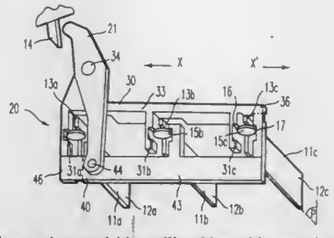
Claims priority, application France, Mar. 20, 1996, 96 03567

Int. Cl.[6] H01H *61/00*

U.S. Cl. 337—49 **4 Claims**

1. Differential thermal tripping device with bimetallic strips for a switching electrical appliance, particularly for a circuit breaker, including tripping assembly with two contact strips mounted free to move in the same direction, and associated with a tripping mechanism and several bimetallic strips with opposite faces that may be applied to either of the contact strips through a single adjustment part so that a concomitant or differentiated deflection of the bimetallic strips will cause a simultaneous or differential displacement of the contact strips, the adjustment part being fixed to the head of the bimetallic strip for each bimetallic strip, in a position that can be adjusted along the displacement direction of the contact strips and which is obtained after increasing the temperature of the bimetallic strips for calibration;

wherein the adjustment part is placed after attachment to slide freely on an inclined and free edge of the bimetallic strip head such that a gap is maintained between said adjustment part and an upper horizontal edge of said contact strip.



5,825,274

FUSIBLE LINK

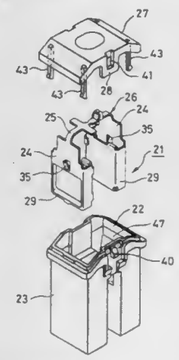
Mitsuhiko Totsuka, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Oct. 16, 1996, Ser. No. 731,557

Claims priority, application Japan, Oct. 17, 1995, 7-268635; Jul. 11, 1996, 8-182145

Int. Cl.[6] H01H *85/04;85/143;85/36*

U.S. Cl. 337—190 **10 Claims**



1. A fusible link, comprising:

a housing having an opening at a first end thereof;

a fuse element including a pair of connecting terminal sections and a fusible body through which said connecting terminal sections are electrically connected to each other, said fuse element inserted into said housing through said opening;

a lid adapted to cover said opening of said housing, said lid having a engaging member which is engaged with a retaining member of said housing; and

a plurality of resilient protruded pieces formed on said lid, said resilient protruded pieces being extended downwardly from an inner surface of said lid to outwardly urge inner surfaces of said connecting terminal sections,

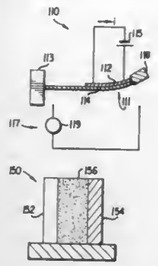
wherein when said fusible body is fused, said resilient protruded pieces outwardly press said connecting terminal sections so that the fused ends of said fuse element are away from each other.

5,825,275

COMPOSITE SHAPE MEMORY MICRO ACTUATOR

Manfred Wuttig, Silver Spring, and Quanmin Su, Greenbelt, both of Md., assignors to University of Maryland, College Park, Md.

Filed Oct. 25, 1996, Ser. No. 735,646
Int. Cl.[6] H01H *37/46;37/48*
U.S. Cl. 337—139 15 Claims



I. A mechanical switch of micro-dimensions comprising a substrate having a face which comprises an actuator portion, said actuator portion comprising a control member which is free to displace between first and second positions, a film of shape memory alloy material deposited in bonded relationship onto the actuator portion of the substrate face, the shape memory alloy material being characterized in contracting in volume by reversibly transforming from martensitic to austenitic crystalline phases responsive to being heated through a phase-change transition temperature, the film being devoid of any portion which is not bonded with the actuator portion to enable said contraction in volume to create a stress in the substrate which causes said displacement of the control member.

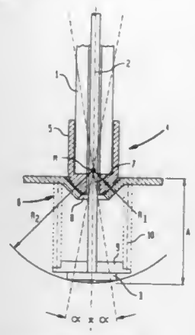
2. The mechanical switch of claim I further comprising one or more compensating films superposed on a second face of the substrate film, said one or more compensating films having substantially the same thermal properties as the SMA film but said one or more compensating films do not exhibit the shape memory effect.

5,825,276

TEMPERATURE SENSOR WITH IMPROVED ADJUSTMENT MOBILITY

Hans-Peter Morbitzer, Langenlebarn, Austria, assignor to Electrovac, Fabrikation Elektrotechnischer Spezialartikel Gesellschaft M.B.H., Klosterneuburg, Austria

Filed Feb. 28, 1996, Ser. No. 607,941
Claims priority, application Austria, Feb. 28, 1995, 361/95
Int. Cl.[6] H01H *37/48*
U.S. Cl. 337—394 6 Claims



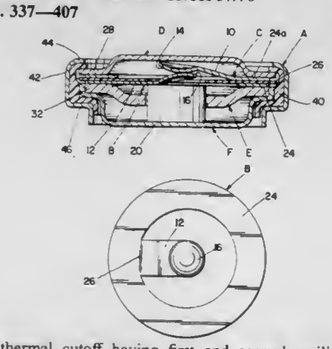
I. A temperature sensor, comprising:
a tube of relatively low thermal expansion;
a rod of relatively high thermal expansion, said rod being arranged in the tube and cooperating with a contact mechanism to control a heat-operated system, with the tube having one end in proximity of the contact mechanism; and
a substantially hemispherical end piece secured to said one end of the tube and so contoured to substantially mate a concave configuration of a receptacle that receives the end piece, said receptacle being arched toward the contact mechanism and traversed by the rod, said tube being spring-biased in direction of the receptacle.

5,825,277

THERMAL PELLET CUTOFF SWITCH

Ralph L. Bishop, Mansfield, and James B. Kalapodis, Akron, both of Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Sep. 27, 1996, Ser. No. 722,612
Int. Cl.[6] H01H *37/76*
U.S. Cl. 337—407 35 Claims



1. A thermal cutoff having first and second resilient switch blades positioned in opposed relationship and carrying first and second contacts, said switch blades having an unstressed condition in which said contacts are separated, said switch blades having a stressed condition in which both of said switch blades are in bending stress and said contacts are in engagement with one another, a dielectric thermal pellet engaging one of said first and second resilient switch blades and holding said switch blades in said stressed condition, said thermal pellet being meltable for permitting said switch blades to return to said unstressed condition by relaxation of the bending stress therein, both of said switchblades being movable in a direction away from said thermal pellet to said stressed condition and being movable in a direction toward said thermal pellet to return to said unstressed condition and separate said contacts, and said one switchblade that is engaged by said thermal pellet being movable a greater distance in a direction toward said thermal pellet than the other of said switch blades when said switch blades return to said unstressed condition and said contacts separate upon melting of said thermal pellet.

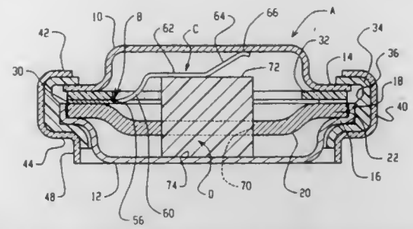
5,825,278

THERMAL PELLET CUTOFF SWITCH

Carl R. Reid; David Lanham; Matt M. Grist, all of London, Ky., and James B. Kalapodis, Akron, Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Sep. 27, 1996, Ser. No. 722,613
Int. Cl.[6] H01H *37/76*
U.S. Cl. 337—407 14 Claims

1. A thermal cutoff having a movable contact carried by a resilient switch blade and a fixed contact for cooperation with said movable contact, said switch blade being movable between contacts-closed and contacts-open positions, a thermal pellet engaging said switch blade and placing said switch blade in said contacts-closed position with said switch blade in bending stress, said switch blade being movable to said contacts-open position by



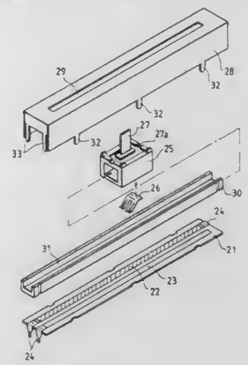
relief of the bending stress therein upon melting of said thermal pellet, said fixed contact being on the opposite side of said movable contact from said thermal pellet and facing toward said thermal pellet, said movable contact facing away from said thermal pellet and being located on the same side of said fixed contact in both of said contacts-closed and contacts-open positions thereof.

5,825,279

SLIDE POTENTIOMETER

Yoshikazu Yagi, Tsuyama, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Japan

Filed May 24, 1996, Ser. No. 653,271
Claims priority, application Japan, May 26, 1995, 7-127854
Int. Cl.[6] H01C *10/38*
U.S. Cl. 338—176 5 Claims



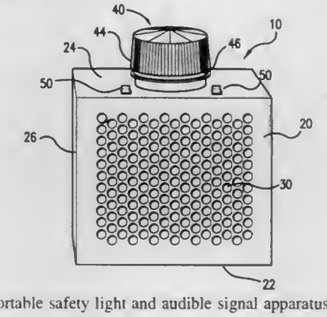
I. A slide potentiometer comprising:
an insulating substrate on which a resistance path and a conductive path are formed, said resistance path and said conductive path being respectively connected to external terminals;
a rail including an upper surface having a substantially straight groove, that extends in a longitudinal direction thereof, wherein said rail is spaced above said insulting substrate to provide a clearance between a lower surface of the rail and the insulating substrate;
a slider including a lower surface, a brush provided on the lower surface, an upper surface, and a projecting lever provided on the upper surface, wherein said slider is slidably disposed on said rail such that said brush, located below said rail on the lower surface of said slider, is forcibly brought into contact with said resistance path and said conductive path formed on said insulating substrate; and
a cover including an internal space for accommodating said slider and at least a portion of said rail therein, an upper surface formed with an elongated hole into which said lever provided on said slider is slidably inserted and a lower end connected to said insulating substrate, wherein said elongated hole has a width narrower than a width of said elongated groove of said rail and is disposed directly above said elongated groove of said rail;
wherein said slider includes a through hole that extends along a longitudinal axis of the slider and said rail is disposed in said through hole.

5,825,280

PORTABLE SAFETY LIGHT AND AUDIBLE SIGNAL APPARATUS

Andrew Vito Merendini, 497 Wild Ave., Staten Island, N.Y. 10314; John A. Oddo, 131 Old Town Rd., Staten Island, N.Y. 10304, and Dennis A. Petosa, 2190 Richmond Rd., Staten Island, N.Y. 10306

Filed Sep. 15, 1995, Ser. No. 529,068
Int. Cl.[6] G08B *27/00*
U.S. Cl. 340—326 18 Claims



1. A portable safety light and audible signal apparatus, comprising:
a) a housing having a bottom portion, a top portion and at least one side portion forming an enclosure therebetween;
b) an audible signal generating means disposed within the housing, the audible signal generating means capable of generating a first distinctive audible signal at a level of 90 to 120 decibels for one to three seconds duration, which is repeated every 10 to 30 seconds;
c) a strobe light located within a receptacle mounted upon the top portion of the housing;
d) at least one switch means secured to the housing, the switch means in electrical communication with the strobe light and the audible signal generating means, for selectively actuating the strobe light and the audible signal generating means;
e) a portable power means located within the enclosure, the portable power means in electrical communication with the switch means; and
f) an internal radio receiver located within the housing, with at least one remote transmitter in radio communication with the internal radio receiver, the transmitter being remotely actuated to generate a distinctive audible signal by the audible signal generating means, to provide additional orientation signaling in an emergency, and to alert others of an emergency condition.

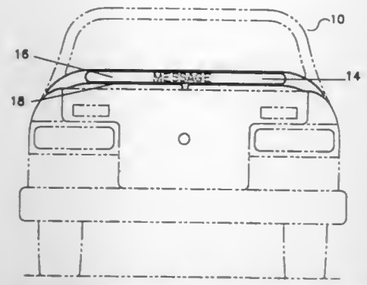
5,825,281

METHOD OF DISPLAYING ADVERTISING MESSAGES

Ronald Kim McCreary, 13490 Mobery Road, Winfield, British Columbia, Canada, V4V 1A2

Filed Jul. 10, 1997, Ser. No. 889,962
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 340—425.5 20 Claims

1. In a vehicle having vehicle brakes triggered by brake triggering means, a method of sequentially displaying advertising messages comprising the steps of:
a) mounting a message display means on an exterior surface of said vehicle,
b) electrically cooperatively connecting said message display means to an onboard processing means mounted on board said vehicle,
c) electrically cooperatively connecting said onboard processing means to said brake triggering means,
d) initiating said brake triggering means by an initiating event and programming said processing means to sequentially retrieve from a memory unit a series of advertising messages stored within said memory unit.



e) causing said processing means to retrieve one complete message from said series of advertising messages upon said initiating event and communicating said one complete message from said series of advertising messages to said message display means for display externally of said vehicle,

f) retrieving each complete message from said series of advertising messages by said processing means is communicated to said message display means so as to sequentially completely replace a message previously communicated to said message display means,

g) programming said processing means to send a sequence of different complete messages selected by said processing means from said series of advertising messages stored within said memory unit in response to repetitions of said initiating event,

h) displaying a different complete message every time said vehicle brakes are triggered.

5,825,282

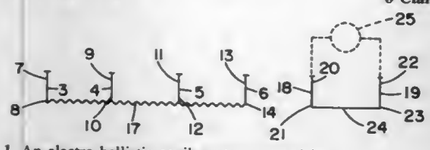
TESTING DEVICE FOR AND METHOD OF TESTING A SQUIB OF AN ELECTRO BALLISTIC SYSTEM

Armand J. Aronne, Massapequa, N.Y., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

Continuation-in-part of Ser. No. 226,718, Apr. 12, 1994, abandoned. This application Nov. 6, 1995, Ser. No. 554,114

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—438 **6 Claims**



1. An electro-ballistic squib system comprising:

a. a propellant and a plurality of spaced detonator wires embedded in the propellant for detonating the propellant, each of the detonator wires having a first end positioned outside the propellant and a spaced opposite second end embedded in the propellant, and a low resistance bridge detonating wire embedded in the propellant for detonating the propellant and being connected across a pair of second ends of the detonator wires;

b. a testing device positioned in spaced relation to the detonator wires, comprising a pair of spaced test wires, each of the test wires having a first end outside the propellant and a spaced opposite second end embedded in the propellant, and a low-resistance bridge test wire embedded in the propellant and electrically connecting the second ends of the test wires;

c. means for applying a low electrical test current to the testing device through test conductors of an electrical conductor device which also includes connections to the detonator wires, to determine if the electro-ballistic system is properly connected, which avoids applying the test current to the detonating wire and possibly glazing the propellant therearound.

5,825,283

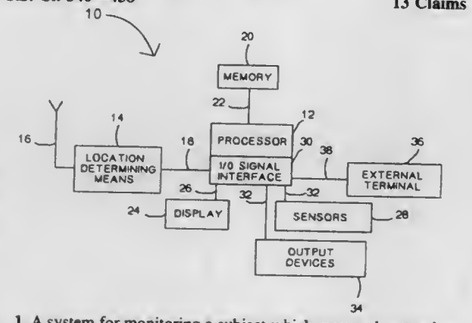
SYSTEM FOR THE SECURITY AND AUDITING OF PERSONS AND PROPERTY

Elie Camhi, 131 Country Ridge Rd., Scarsdale, N.Y. 10583

Filed Jul. 3, 1996, Ser. No. 674,890

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—438 **13 Claims**



1. A system for monitoring a subject which moves about various geographic locations, the system comprising: means for determining the specific geographic location of the subject, a sensor monitoring at least one physiological parameter of the subject, the means for determining location generating a location signal including data representative of the specific geographic location of the subject, the sensor generating a status signal including data representative of the condition of the monitored physiological parameter, a processor, a memory associated with the processor, the memory storing physiological parameter data, the processor being operatively connected to the means for determining location and to the sensor, the processor receiving the location signal and the status signal, the processor accessing the memory and comparing the status signal data with the stored physiological parameter data, the processor determining whether the status signal data lies within a permitted range, the processor generating a signal for initiating corrective action and a signal representative of the specific geographic location of the subject when the status signal data does not lie within the permitted range.

5,825,284

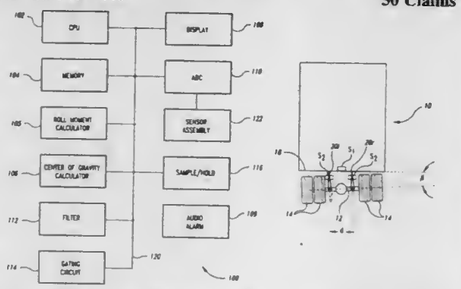
SYSTEM AND METHOD FOR THE DETECTION OF VEHICLE ROLLOVER CONDITIONS

Andrew B. Dunwoody, Richmond, Canada, and Donald S. Stern, San Jose, Calif., assignors to Rollover Operations, LLC, Mercer Island, Wash.

Filed Dec. 10, 1996, Ser. No. 763,006

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—440 **50 Claims**



1. A system for the detection of vehicle roll-over conditions, the system comprising:

a sensor assembly coupled to the vehicle and generating signals indicative of a lateral load transfer of the vehicle and a lateral acceleration of the vehicle;

a roll moment calculator coupled to said sensor assembly to calculate a roll moment based on said signals;

a center of gravity calculator coupled to said sensor assembly to calculate an effective center of gravity of the vehicle based on said roll moment and lateral acceleration of the vehicle;

a roll moment display coupled to said roll moment calculator to provide a visual display indicative of said roll moment; and

a center of gravity display to provide a visual display indicative of said effective center of gravity of the vehicle to provide an indication of the likelihood of the vehicle to roll over.

5,825,285

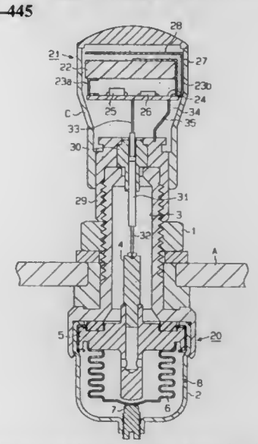
PORTABLE TRANSMITTER FOR TIRE AIR PRESSURE WARNING APPARATUS

Kazunori Sawafuji, Ogaki, Japan, assignor to Pacific Industrial Co., Ltd., Ogaki, Japan

Filed Sep. 7, 1995, Ser. No. 525,978

Int. Cl.[6] B60C *23/00*

U.S. Cl. 340—445 **10 Claims**



1. A tire pressure warning apparatus, adapted to be attached to a wheel of a vehicle, including a sensor for detecting a tire air pressure lower than a predetermined level and a transmitter for outputting a signal in accordance with an instruction from the sensor, said apparatus comprising:

a transmitting substrate disposed in the transmitter;

an antenna electrically connected to said substrate in the transmitter; and

a non-conductive resin for securing said substrate in the transmitter;

said electrical connection of said antenna to said substrate being in the form of a coiled feeder wire.

5,825,286

VEHICULAR DATA COLLECTION AND TRANSMISSION SYSTEM AND METHOD

John J. Coulthard, Scottsdale, Ariz., assignor to SemiSystems, Inc., Scottsdale, Ariz.

Continuation-in-part of Ser. No. 436,167, May 8, 1995, Pat. No. 5,656,993. This application Aug. 5, 1996, Ser. No. 692,117

Int. Cl.[6] B60C *23/00*

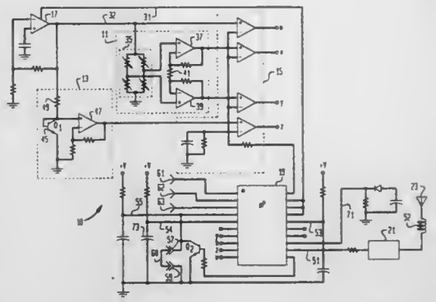
U.S. Cl. 340—447 **36 Claims**

1. A vehicle data collection system comprising:

(a) wheel module means mounted on a vehicle wheel inside a tire mounted on said wheel including;

i. a plurality of sensors each sensing a different vehicle operating parameter to provide an analog data signal representing said parameter;

ii. means for digitizing said data signals;



iii. microprocessing means connected to receive said digitized data signals and to encode such signals for transmission; said microprocessor responsive to the receipt of digitized data signals corresponding to a sensed parameter for;

1. averaging a plurality of successive digitized data signals corresponding to said sensed parameter and storing said average;
2. averaging a second plurality of successive digitized data signals corresponding to said sensed parameter and storing said average;
3. averaging said first and second stored averages;
4. comparing said first and second stored averages to detect any change in said sensed parameter;
5. scheduling transmission of said data at predetermined intervals;
6. reducing said predetermined interval if said change in said sensed parameter is greater than a predetermined percentage change;

iv. a transmitter connected to receive encoded signals from said microprocessor and to transmit said encoded signals;

(b) receiving means in said vehicle positioned remote from said wheel module for receiving said encoded data signals transmitted from said wheel modules;

(c) computer means, connected to said receiving means, for receiving said data signals; and

(d) display means connected to said computer for displaying said data.

5,825,287

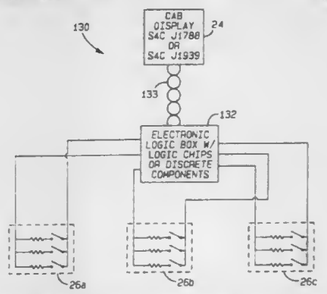
VEHICLE BRAKE MONITORING SYSTEM

Richard F. Zarybnicky, Sr.; Alan C. Lesesky, and Ronald S. Plantan, all of Charlotte, N.C., assignors to Indian Head Industries, Charlotte, N.C.

Filed Feb. 2, 1995, Ser. No. 382,535

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—453 **64 Claims**



1. A vehicle brake condition monitoring system, comprising:

a plurality of brake actuators mounted on a body of a vehicle, each of said brake actuators having a push rod actuatable to apply a brake;

sensors associated with each of said brake actuators to monitor movement of said push rods, and sense a problem condition based upon excessive movement of said push rod;

a control box mounted on a vehicle receiving a signal from said sensors of each of said brake actuators, said control box having signal wires from each of said brake actuators attached at a particular location, such that said control box can identify which brake actuator is sending a particular signal, and said control box being operable in response to said signals to determine which of said brake actuator signals are indicative of a problem condition, said control also being operable to send an output signal indicative of which of said brake actuator signals are evidencing problem conditions;

a display in a cab of said vehicle, and an output leading from said control to said display; and

said control monitoring at least one brake condition other than the movement of said push rod, said other condition being whether a parking brake has been fully released.

5,825,288

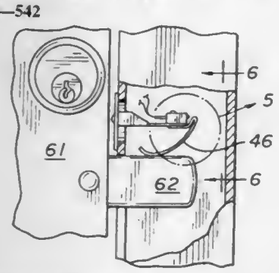
MONITORING DEVICE FOR SWINGING DEADLOCK

Dennis Wojdan, Sparks, Nev., assignor to Securitron Magnalock Corp., Sparks, Nev.

Continuation-in-part of Ser. No. 763,360, Dec. 11, 1996, Pat. No. 5,757,269. This application May 5, 1997, Ser. No. 841,772

Int. Cl.[6] E05B *45/06*

U.S. Cl. 340—542 **6 Claims**



1. A monitor for monitoring the condition of a door closure having a swinging deadlock receivable within a strike slot, said monitor comprising:

(a) a mounting plate mountable on the face of a door jamb adjacent the strike slot;

(b) a bracket having a base and adapted to be positioned to extend from said mounting plate into the strike slot in a mounted condition with an inner end thereof in the strike slot;

(c) an electrical switch on the bracket adjacent the inner end of said bracket, said electrical switch having an actuator which in a first position places the electrical switch in a first electrical condition and in a second position places the electrical switch in a second electrical condition; and

(d) a trigger movably mounted at the inner end of said bracket adjacent said electrical switch, said trigger having a first surface and being biased to normally engage said actuator in a normal at-rest position placing the switch in the first electrical condition, said trigger having a second surface extending into the strike slot engageable by said deadlock when the deadlock is properly locked in said strike slot causing said trigger to pivot placing said first surface out of contact with said actuator, placing said switch in said second condition.

5,825,289

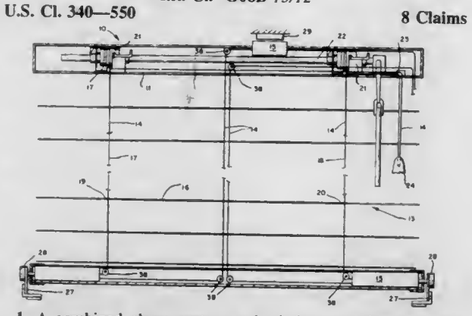
COMBINED ALARM SYSTEM AND WINDOW COVERING ASSEMBLY

Dennis E. Riordan, 2326 Sawtelle Blvd., Los Angeles, Calif. 90064

Continuation-in-part of Ser. No. 920,837, Jul. 28, 1992, which is a continuation-in-part of Ser. No. 831,861, Feb. 5, 1992, Pat. No. 5,274,357. This application Jan. 27, 1994, Ser. No. 188,397

Int. Cl.[6] G08B *13/12*

U.S. Cl. 340—550 **8 Claims**



1. A combined alarm system and window covering assembly comprising:

a. a top housing;

b. a bottom rail having two ends;

c. a covering mechanically coupled to said top housing and said bottom rail;

d. an alarm element extending from said top housing down to said bottom rail and up from said bottom rail to said top housing;

e. a pull cord for raising and lowering said bottom rail, said pull cord being coupled to said top housing; and

f. an enclosure which is fixedly coupled one of said two ends of aid bottom rail;

g. a reed relay switch electrically coupled to said alarm element, said reed relay switch being resiliently coupled to said enclosure and fixedly coupled to said pull cord whereby said reed relay switch resiliently couples said pull cord to said bottom rail.

5,825,290

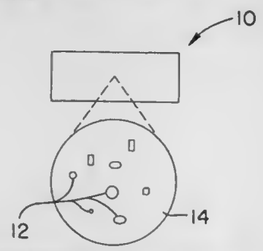
ACTIVE ELEMENT FOR MAGNETOMECHANICAL EAS MARKER INCORPORATING PARTICLES OF BIAS MATERIAL

Ming-Ren Lian, Boca Raton, Fla., and Robert C. O'Handley, Andover, Mass., assignors to Sensormatic Electronics Corporation, Boca Raton, Fla.

Filed Feb. 14, 1997, Ser. No. 800,772

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—572 **32 Claims**



1. A magnetomechanical electronic article surveillance system, comprising:

(a) generating means for generating an electromagnetic field alternating at a selected frequency in an interrogation zone, said generating means including an interrogation coil;

(b) a marker secured to an article appointed for passage through said interrogation zone, said marker including a strip of amorphous magnetostrictive metal alloy with crystalline magnetic particles distributed throughout the bulk of said amorphous alloy strip, said crystalline particles being magnetized to magnetically bias said amorphous metal alloy strip so that said strip magnetomechanically resonates when exposed to said alternating field; and

(c) detecting means for detecting said magnetomechanical resonance of said magnetostrictive alloy strip.

5,825,291

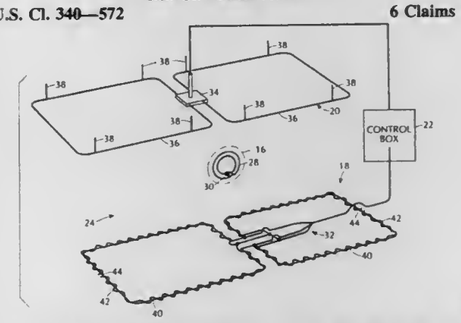
ELECTRONIC ARTICLE SURVEILLANCE SYSTEM

Victor Platt, Ronkonkoma; Christopher Reinard Paul, Bayport; Thomas A. Nicolette, Centerport, and Peter Y. Zhou, Smithtown, all of N.Y., assignors to Sentry Technology Corporation, Hauppauge, N.Y.

Filed Mar. 25, 1997, Ser. No. 827,041

Int. Cl.[6] G08B *13/14*

U.S. Cl. 340—572 **6 Claims**



1. An electronic article surveillance system for producing an alarm signal when an article of merchandise having a responder attached thereto is carried through an exit passageway, said system comprising an interrogation signal generator connected via a first pair of terminals to a transmitter antenna for generating electromagnetic waves in an interrogation zone and a receiver connected via a second pair of terminals to a receiver antenna for receiving electromagnetic waves present in said interrogation zone, said receiver including signal processing circuits for detecting predetermined characteristics in the received waves to generate an alarm, said transmitter antenna extending in a horizontal plane above said passageway and said receiver antenna extending in a horizontal plane below said passageway, each of said antennas being formed of a plurality of loops which extend over different, non-overlapping areas in a common plane and which are electrically connected in parallel to its respective pair of terminals, the loops of said receiver antenna being connected such that currents flow in parallel therein in mutually opposite directions and the loops of said transmitter antenna being connected such that currents flow in parallel; therein in the same direction.

5,825,292

ELECTRONIC ARTICLE SURVEILLANCE MARKERS FOR DIRECT APPLICATION TO OPTICALLY RECORDED MEDIA

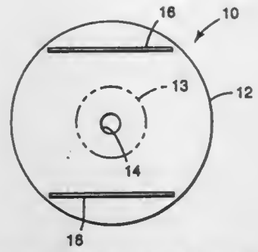
Ching-Long Tsai, Woodbury; Norman L. Koning, Hastings; John G. Fitzgerald, Woodbury; Chester Piotrowski, White Bear Lake, all of Minn., and Rita M. Lunderville, Menomonie, Wis., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 587,721, Jan. 19, 1996, Pat. No. 5,699,047. This application Jul. 3, 1997, Ser. No. 887,862

Int. Cl.[6] G08B *13/187*

U.S. Cl. 340—572 **49 Claims**

1. An Electronic Article Surveillance (EAS) marker for optically recorded media, the marker comprising:



at least one marker element comprising a signal-producing layer;

a support sheet adapted to support the marker elements in fixed positions such that the marker has a mass distribution that is symmetrically disposed about the center of the marker; and

adhesive for attaching the marker to the optically recorded media, wherein the adhesive is chemically non-reactive with the optically recorded media;

wherein when the marker is properly attached to the optically recorded media, the mechanical balance of the optically recorded media is not adversely affected.

5,825,293

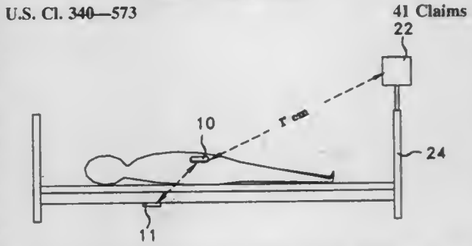
APPARATUS AND METHOD FOR MONITORING BREATHING MAGNETICALLY

Adel A. Ahmed, 160 Ridgeview Clr., Princeton, N.J. 08540, and Hassan Hakki, Hünibach-Strasse 40, 3652 Hilterfingen, Switzerland

Filed Sep. 20, 1996, Ser. No. 717,489

Int. Cl.[6] G08B *21/00*

U.S. Cl. 340—573 **41 Claims**



1. Apparatus for monitoring breathing and for indicating a rate of breathing outside of a predetermined rate limit, including a sensing element adapted to be worn by a wearer so that said sensing element partakes of body motion due to breathing of said wearer and a detector, remote from said sensing element, and being responsive to motion of said sensing element for providing an alarm signal when said motion is outside of said predetermined rate limit, wherein said sensing element contains no internal moving parts or circuitry, contains no battery or other source of electrical power whatsoever, requires no electrical contact with said wearer or with any other object, and requires no constraining or confining clothing, webbing, or the like, wherein

said sensing element comprises permanent magnet means; and

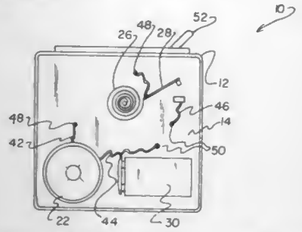
said detector comprises magnetic detector means for monitoring a magnetic field caused by said magnet and for providing said alarm signal when a measured rate of variation of said magnetic field is detected to be outside of said predetermined rate limit, whereby said alarm signal indicates said rate of breathing to be outside of said predetermined rate limit.

5,825,294

THERMOSTATIC HEAT DETECTOR

Huck H. O. Krueger, 803 3rd Ave., Cando, N. Dak. 58324

Filed Jul. 25, 1997, Ser. No. 906,119
Int. Cl.[6] G08B *17/06*
U.S. Cl. 340—594 5 Claims



1. A heat detection and alarm unit comprising, in combination:
a plastic housing having a rectilinear configuration with a front face, a rear face, a top face, a bottom face and a pair of side faces coupled therebetween defining an interior space, the housing having a divider plate coupled between front face and the rear face in parallel therewith, the front face having a plurality of apertures configured in a circular orientation, one of the side faces having a thin elongated window formed therein between the top and bottom face of the housing with linear aligned indicia printed adjacent thereto representative of various temperatures;
a speaker situated within the interior space of the housing and mounted on a first surface of the divider plate adjacent the apertures of the front face, the speaker adapted to emit an audible tone upon the supply of power thereto;
a coiled thermostat having a first end located at the center thereof rotatably coupled to the first surface of the divider plate within the interior space of the housing, the coiled thermostat having a second end with a conductive hammer coupled thereto;
a battery mounted to the first surface of the divider plate within the housing;
an electrical assembly including a first wire connected between a first end of the conductive hammer and the speaker, a second wire connected between the battery and the speaker, and a third wire connected between the battery and a contact mounted on the first surface of the divider plate adjacent the conductive hammer, whereby upon the detection of a predetermined temperature, the hammer engages the contact thereby supplying power to the speaker; and
a thermostat adjustment arm having a first end rotatably coupled to a second surface of the divider plate and further fixedly coupled with respect to the first end of the coiled thermostat, the thermostat adjustment arm having a second end extending through the window for allowing the rotation of the coiled thermostat and adjusting a distance between a second end of the conductive hammer and the contact thereby adjusting the temperature at which power is supplied to the speaker.

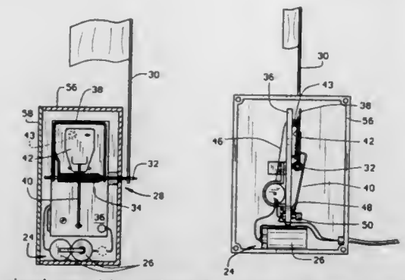
5,825,295

IRRIGATION SIGNALING DEVICE

William Walter Casady, Columbia, and William Eugene Stevens, Portageville, both of Mo., assignors to The Curators of the University of Missouri, Columbia, Mo.

Filed Apr. 8, 1997, Ser. No. 833,618
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—602 13 Claims

6. A device for signaling a predetermined soil moisture condition, the device comprising:
a switching tensiometer that closes a switch when the moisture content of the soil reaches a predetermined level;
a power source, including at least one battery, connected to the switching tensiometer; and



a signal comprising a signal flag operable between a retracted position and an extended signal position, and resiliently biased to its extended signal position; a latch for releasably securing the flag in its retracted position; and a release including an electric motor that releases the latch, the electric motor being electrically connected to the switching tensiometer so that when the predetermined level is reached and the switching tensiometer closes the switch, the power source is connected to the electric motor to cause it to release the latch and allow the signal flag to operate to its extended signal position.

5,825,296

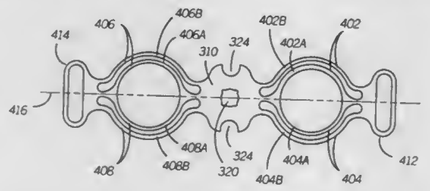
Patent Not Issued For This Number

5,825,297

TAUT ARMATURE RECIPROCATING IMPULSE TRANSDUCER

Charles W. Mooney, Lake Worth; John M. McKee, Hillsboro Beach; Irving Harold Holden, deceased, late of Boca Raton, by Virginia Holden, legal representative, and Gerald Eugene Brinkley, Wellington, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 19, 1996, Ser. No. 684,957
Int. Cl.[6] B06B *1/04*
U.S. Cl. 340—825.46 14 Claims



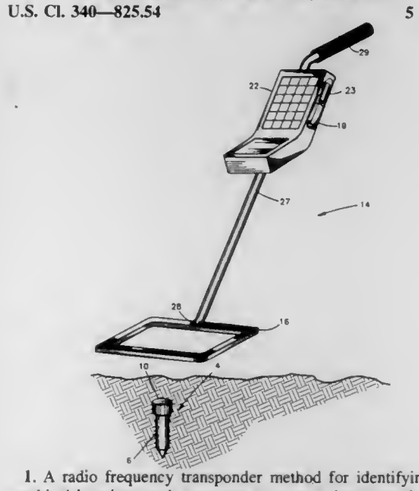
1. A taut armature reciprocating impulse transducer, comprising:
an electromagnetic driver, for effecting an alternating electromagnetic field in response to an input signal;
an armature, including an upper planar suspension member formed by a first pair of non-linear spring members arranged along a first radial axis and a lower planar suspension member formed by a second pair of non-linear spring members arranged along a second radial axis, wherein said upper and lower planar suspension members are coupled to said electromagnetic driver, and said first radial axis of said upper planar suspension member is oriented substantially perpendicular to said second radial axis of said lower planar suspension member; and
a magnetic motional mass suspended between said upper and lower planar suspension members, and coupled to said alternating electromagnetic field for alternately moving said magnetic motional mass in response thereto, a displacement of said magnetic motional mass being transformed through said upper and lower planar suspension members and said electromagnetic driver into motional energy.

5,825,298

RADIO FREQUENCY TRANSPONDER METHOD FOR IDENTIFYING GEOGRAPHICAL LOCATIONS SUCH AS SURVEY TRAVERSE POINTS

Kenneth E. Walter, 8714 W. Bell, Pasco, Wash. 99301

Filed Jan. 16, 1996, Ser. No. 586,344
Int. Cl.[6] G08B *5/22;* G01V *3/08;* E01F *9/011*
U.S. Cl. 340—825.54 5 Claims



1. A radio frequency transponder method for identifying geographical locations such as survey traverse points comprising the steps of:
positioning a transponder at a geographical location to be identified, the transponder having a memory, the memory being coded with data related to identifying the geographical location at which the transponder is positioned, the memory further being such that the data so coded is retrievable by remote scanning,
remotely scanning the geographical location with a transponder activating radio frequency pulse transmitting device, thereby causing the transponder to emit a modulated signal, the signal carrying the geographical location identifying data coded in the memory of the transponder,
receiving the modulated signal and the geographical location identifying data using a receiving device, and
reading the geographical location identifying data using a reader, thereby identifying the geographical location.

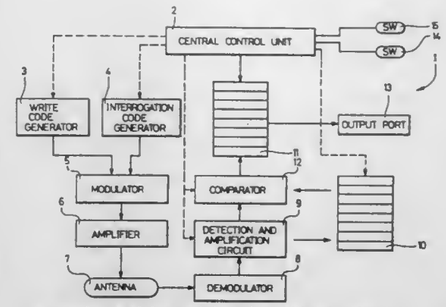
5,825,299

OBJECT IDENTIFICATION SYSTEM

Vincent Fuentes, Peseux, Switzerland; Hans Ulrich Fritsch, Eckental, Germany; Andreas Merz, Ruckersdorf, Germany; Georg Plasberg, Kalchreuth, Germany, and Wolfgang Kraft, Ruckersdorf, Germany, assignors to EM Microelectronic-Marin SA, Marin, Switzerland

Filed Apr. 17, 1996, Ser. No. 633,479
Claims priority, application Germany, Apr. 18, 1995, 295 06 290 U; European Pat. Off., Jun. 20, 1995, 95109501
Int. Cl.[6] H04Q *5/22;7/00;* G08B *13/14*
U.S. Cl. 340—825.54 22 Claims

1. An object identification system comprising:
a transceiver having a first signal detection sensitivity and including means for transmitting a write signal; and
a transponder having a second signal detection sensitivity less than said first sensitivity, the transponder including



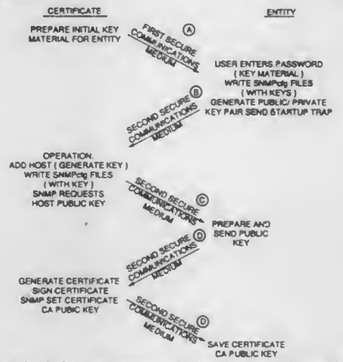
means for receiving and detecting said write signal,
a memory device for storing an identification code of said transponder, said identification code including bits able to have a plurality of logical states,
means for creating an identification signal representative of said identification code such that said identification signal is modulated by the logical state of said bits;
said transceiver further comprising means for receiving and interpreting said identification signal,
said transponder further comprising
a variable code generator, and
means for writing in said memory device, in response to the detection of said write signal, a variable code from said variable code generator such that said variable code constitutes at least a part of said identification code.

5,825,300

METHOD OF PROTECTED DISTRIBUTION OF KEYING AND CERTIFICATE MATERIAL

Erwin W. Bathrick, Brea, Calif.; John W. Garber, Davidsonville, Md.; Cheng-Chi Huang, Irvine, Calif.; Kenneth C. Kung, Cerritos, Calif.; Todd E. Matthews, Santa Ana, Calif.; James E. Zmuda, Lake Forest, Calif., and Regina L. Matthews, Yorba Linda, Calif., assignors to Hughes Aircraft Company, Los Angeles, Calif.

Continuation of Ser. No. 148,716, Nov. 8, 1993, abandoned.
This application Sep. 12, 1995, Ser. No. 527,308
Int. Cl.[6] G07D *7/00*
U.S. Cl. 340—825.33 7 Claims



1. A method for the protected distribution of certificate and keying material between a certifying authority and at least one entity in the certifying authority's domain via a communications medium connecting the certifying authority and entities in its domain, comprising the steps of:
sending keying material, including a password, generated by the certifying authority to the entity via a first secure communications medium, the keying material being provided to the

entity to establish a shared secret to be used to protect data to be transferred between the entity and the certifying authority;

generating and protecting, by the entity, a public and a private key pair using the keying material provided the entity by the certifying authority;

generating and protecting a request for a certificate by use of the keying material, including the password, provided by the certifying authority, and sending via a second secure communications medium, the request for a certificate to the certifying authority;

requesting, by the certifying authority via the second secure communications medium, that the public key and address of the entity be sent to the certifying authority;

protecting and sending the public key and address of the entity to the certifying authority via the second secure communications medium using the keying material, including the password, provided the entity by the certifying authority;

confirming, by the certifying authority from said public key and address received from the entity, the identity of the entity;

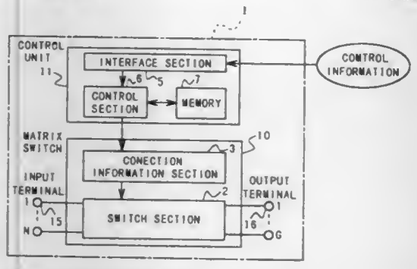
if the identity of the entity has been confirmed by the certifying authority, assembling and issuing the certificate to the entity from the certifying authority via the second secure communications medium and recording the public key of the entity at the certifying authority for public use within the domain of the certifying authority.

5,825,301

CROSS CONNECT APPARATUS WITH ROUTED PATH PROTECTING FUNCTION

Yuuki Yoshifuji, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 13, 1996, Ser. No. 645,390
Claims priority, application Japan, May 11, 1995, 7-112840
Int. Cl.[6] G06F *13/00*; **H04Q** *11/00*
U.S. Cl. 340—826 **12 Claims**



1. A cross connect apparatus comprising:

a switch section including a plurality of switches and having n input terminals and m output terminals connected in a current connection state;

a connection establishing section controlling said current connection state of said switch section in response to connection control information and providing current connection status information;

a connection control section receiving a connection command indicating new connection information corresponding to a requested new connection state and, in response:

storing said new connection information;

reading said current connection status information;

making a determination, based on said current connection status information, whether said requested new connection state is an allowed new connection state; and

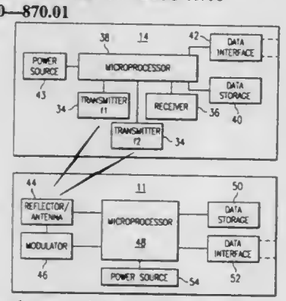
providing said connection control information so that said connection establishing section controls said current connection state to be said allowed new connection state.

5,825,302

SYSTEM AND METHOD FOR TRANSMITTING DATA USING REFLECTED ELECTROMAGNETIC RADIATION

Ronald E. Stafford, Wylie, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 20, 1996, Ser. No. 752,117
Int. Cl.[6] G08C *19/16*
U.S. Cl. 340—870.01 **8 Claims**



1. A system for transmitting data, comprising:

an interrogator for transmitting an interrogation signal;

a plurality of data collectors for collecting data;

a plurality of transponders each coupled to a corresponding data collector and each operable to receive the interrogation signal and to use the energy of the interrogation signal to transmit a response signal containing data from the data collector each of said transponders comprising:

a reflector/antenna operable to alternately receive electromagnetic radiation in the interrogation signal and to selectively receive and reflect electromagnetic information in the response signal,

a modulator connected to the reflector/antenna operable to switch the reflector/antenna from reflecting electromagnetic radiation to receiving electromagnetic radiation,

a processor connected to the reflector/antenna and the modulator operable to control the operation of the modulator and further operable to receive data from the reflector/antenna and to cause data to be encoded in the response signal reflected by the reflector/antenna,

a data storage connected to the processor, and wherein the processor is further operable to transmit data to the data storage and to receive data from the data storage, and

a data interface connected to the processor, and wherein the processor is operable to transmit data to the data interface and to receive data from the data interface; and,

wherein the interrogator is further operable to receive the response signal from the transponders.

5,825,303

SEALED HOUSING AND METHOD OF SEALING FOR APPARATUS IN METER PIT ENCLOSURES

Kenneth R. Bloss, Jr.; Mark M. Lazar, both of New Berlin; Brenda K. Stewart, Milwaukee, and Donald H. Strobel, Brookfield, all of Wis., assignors to Badger Meter, Inc., Milwaukee, Wis.

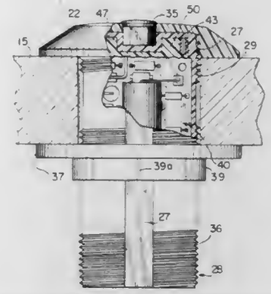
Filed Aug. 30, 1996, Ser. No. 708,010
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—870.02 **15 Claims**

1. A sealed housing for use in a pit enclosure to contain an antenna and associated electronics carried by a substrate, the pit enclosure having a pit lid with a hole therein and the sealed housing comprising:

a tube having a closed upper end and an open lower end, the tube being extendable through the hole in the pit lid;

a cap for attachment to the upper end of the tube for suspending the tube from the pit lid;

a collar around the lower end of the stem for trapping a portion of the pit lid between said collar and the cap;



a guide structure within the tube for locating and supporting the substrate that carries the associated electronics; and

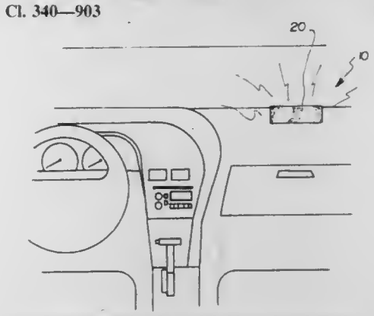
a body of sealant disposed in said tube so as to completely seal the associated electronics and the lower open end of the tube, the sealant forming at least a portion of a bottom end of the sealed housing without the need for additional parts or fasteners.

5,825,304

EMERGENCY VEHICLE PROXIMITY WARNING AND COMMUNICATION SYSTEM

Renzo T. Marin, 25 Semrado Rancho, Santa Margarita, Calif. 92688

Filed Sep. 18, 1996, Ser. No. 716,856
Int. Cl.[6] G08G *1/16*
U.S. Cl. 340—903 **1 Claim**



1. A new and improved emergency vehicle proximity warning and communication system comprising, in combination:

a transmitter housing with a generally rectangular configuration having a top face, a bottom face, and a periphery formed therebetween, wherein the transmitter housing is situated within a grill of an emergency vehicle, wherein the emergency vehicle is equipped with an emergency citizen band radio;

transmitter means situated within the transmitter housing and coupled to a siren of the emergency vehicle, the transmitter means adapted to emit an activation signal a predetermined distance via free space upon the activation of the siren of the vehicle;

a receiver housing having a planar bottom face, a short front face, and a tall rear face, the receiver housing further having a bevelled top face integrally formed between the rear face and the front face and a pair of eyelets integrally formed on opposing side faces in a plane in which the rear face resides, the rear face having an adhesive lining formed thereon, wherein the receiver housing is situated within a vehicle of a user;

receiver means situated within the receiver housing and adapted to actuate upon the receipt of the activation signal via free space;

an emergency citizen band radio receiver situated within the receiver housing, the emergency citizen band radio receiver adapted to receive emergency instructions from a driver of the emergency vehicle upon the supply of power thereto, the emergency citizen band radio receiver housing further adapted to playback a prerecorded warning message upon the supply of power thereto in combination with the lack of receipt of emergency instructions from the driver;

a vehicle radio situated within the vehicle of the user, the vehicle radio connected to a plurality of speakers for emitting radio signals therefrom upon the supply of power thereto, wherein the speakers are further coupled to the emergency citizen band radio receiver for audibly transmitting the emergency instructions and the prerecorded warning message upon the receipt thereof;

switch means situated within the receiver housing and coupled to the receiver means, emergency citizen band radio receiver, and vehicle radio, the switch means adapted to allow the supply of power to the radio and further preclude the supply of power to the emergency citizen band radio receiver upon the lack of actuation of the receiver means and the switch means also adapted to preclude the supply of power to the radio and further allow the supply of power to the emergency citizen band radio receiver upon the actuation of the receiver means; and

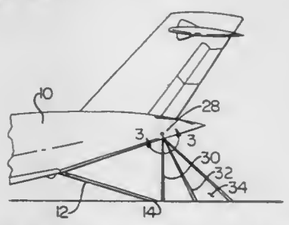
circuitry including a first relay coil and a receiver relay contact coupled between a positive terminal and a negative terminal of a battery, the first relay coil and receiver relay contact are coupled in parallel with the receiver means, the receiver relay contact having an closed orientation only upon the actuation of the receiver means, the circuitry further including a first relay contact connected in series with the switch means, the first relay contact and the switch means also coupled in parallel with the receiver means, the first relay contact having a closed orientation only upon the energization of the first relay coil which is actuated by the closing of the receiver relay contact, the circuitry further including a first switch relay contact connected in series with the radio which closes only when the switch means is not in receipt of power which is afforded by the lack of receipt of the activation signal by the receiver means and a second switch relay contact connected in series with the emergency citizen band radio receiver between the positive and negative terminal of the battery the second switch relay contact adapted to close only upon the receipt of power by the switch means, whereby the radio is only supplied power upon the lack of receipt of the activation signal by the receiver means and the emergency citizen band radio receiver is only supplied power upon the receipt of the activation signal by the receiver means.

5,825,305

CARGO LOADING ALIGNMENT DEVICE

Michael A. Biferno, Arcadia, Calif., assignor to McDonnell Douglas Corporation, Huntington Beach, Calif.

Filed May 4, 1995, Ser. No. 434,624
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—958 **8 Claims**



1. A cargo loading alignment device, for a movable cargo transport having a cargo door opening and loading ramp with a longitudinal centerline, the cargo loading alignment device being integrally mountable near the cargo door opening for visually indicating on a support surface, which supports the movable cargo

transport, a desired alignment of a delivery vehicle for transferring cargo to and from the movable cargo transport, the cargo loading alignment device comprising:

a power source; and

a light source connected to the power source and adapted to be attached to the movable cargo transport, the light source further being adapted for projecting a first planar beam of light generally vertically downwardly onto the support surface, the first planar beam of light forming a line on the support surface that is generally perpendicularly oriented to the longitudinal centerline of the loading ramp and disposed on the support surface at a desired distance from a proximal end of the ramp.

5,825,306

NAVIGATION SYSTEM FOR VEHICLES

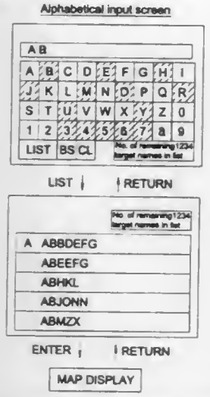
Toyoji Hiyokawa; Mitsuhiro Nimura, and Yasunobu Ito, all of Anjo, Japan, assignors to Aisin AW Co., Ltd., Anjo, Japan

Filed Aug. 22, 1996, Ser. No. 701,704

Claims priority, application Japan, Aug. 25, 1995, 7-217864; Sep. 29, 1995, 7-253368

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—988 **13 Claims**



1. A navigation system for vehicles for providing route guidance to a user to aid in determining an optimal route from the present position or from a starting point of a vehicle by inputting a target name of a destination, comprising:

input means for inputting characters or numerics of the target name sequentially;

memory means for storing at least data of registered places;

searching means for comparing inputted data with the data of the registered places stored in said memory means each time a character or numeric in the target name is inputted by said input means and for searching for target names including the characters or numerics input by the input means and a number of the target names;

list preparing means for preparing a list of registered places based on searching done by the searching means; and

display means for displaying information to the user, wherein a number corresponding to the amount of registered places having target names including the characters or numerics of the target names as searched by said searching means based on the inputted data and on the prepared list is displayed by said display means, and when a number of registered places remaining on the list of registered places prepared by the list preparing means is decreased to a predetermined number the list is displayed by the display means so that the target name can be selected from the displayed list of registered places, the selected target name is set as the destination, and a map of the destination's vicinity is displayed.

5,825,307

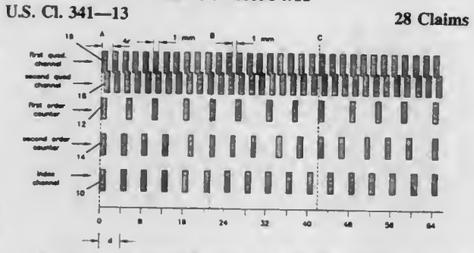
ABSOLUTE LINEAR ENCODER AND METHOD OF PRODUCTION UTILIZING INDEX AND COUNTER CHANNELS

John Titus, Prior Lake, and Paul R. Meyer, St. Paul, both of Minn., assignors to Perception Incorporated, Prior Lake, Minn.

Filed Feb. 5, 1997, Ser. No. 796,102

Int. Cl.[6] H03M *1/22*

U.S. Cl. 341—13 **28 Claims**



1. A method for manufacturing an absolute position encoder, comprising the steps of:

providing a first channel of first markings on the encoder in a first repeated pattern having N−2 spaces of d+2r between first markings followed by a single space of d+4r between first markings;

providing an index channel on the encoder comprising index markings separated by d;

wherein d is a base distance, r is a resolution distance and N is equal to d/2r.

5,825,308

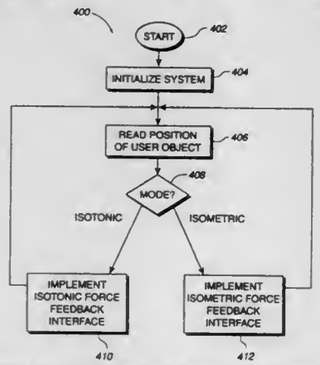
FORCE FEEDBACK INTERFACE HAVING ISOTONIC AND ISOMETRIC FUNCTIONALITY

Louis B. Rosenberg, Pleasanton, Calif., assignor to Immersion Human Interface Corporation, San Jose, Calif.

Filed Nov. 26, 1996, Ser. No. 756,745

Int. Cl.[6] G09G *3/02*

U.S. Cl. 341—20 **64 Claims**



1. An interface device allowing isotonic and isometric interaction with a host computer system from a user, the interface device comprising:

a user manipulatable object physically contacted by a user and movable in physical space in at least two degrees of freedom with respect to a ground;

a sensor operative to detect said movement of said user manipulatable object in physical space in said two degree of freedom with respect to said ground;

an actuator coupled to said user manipulatable object operative to apply an output force in at least one degree of freedom of said user manipulatable object;

a mode selector for selecting an isotonic interaction mode and an isometric interaction mode of said interface device, wherein said isotonic mode provides input to said host computer system based on movement a position of said user manipulatable object in said physical space, and wherein said isometric mode provides input to said host computer system based on an input force applied by said user to said user manipulatable object, said input force being determined based on said movement detected by said sensor in a direction opposing said output force generated by said actuator.

5,825,309

DATA MODULATING METHOD AND MODULATING AND DEMODULATING APPARATUSES

Shinzo Matsui, Yamanashi-ken, and Takeshi Mori, Machida, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 12, 1996, Ser. No. 696,003

Claims priority, application Japan, Aug. 21, 1995, 7-212177

Int. Cl.[6] H04N *1/00*

U.S. Cl. 341—50 **15 Claims**

		ADDEND		SUBTRAHEND
DATA	1	00000000 0		0 0000000000
	2	00000001 0		0 0000000001
	3	00000010 0		0 0000000010
	4	00000011 0	MODULA-	0 0000000011
	5	00000100 0	TION	0 0000000100
	6	00000101 0	⟶	0 0000000101
	7	00000110 0		0 0000000110
	8	00000111 1	⟵	1 0000001000
	9	00001000 1	DEMODU-	1 0000001001
	10	00001001 1	LATION	1 0000001010
	11	00001010 1		1 0000001011
	12	00001011 1		1 0000001100
	13	00001100 1		1 0000001101
	14	00001101 3		3 0000010000
	15	00001110 3		3 0000010001
	16	00001111 3		3 0000010010
	17	00010000 3		3 0000010011

1. The modulating apparatus for converting input data of N bits to data of M bits, where M>(N+1) and M and N are integers, said modulating apparatus comprising:

means for dividing the input data of N bits to input data of an n-number of Pi bits, where n≧2, N=P1+P2+ . . . +Pn, and Pi is an integer; and

a plurality of modulating units, corresponding in number to the divided input data, for converting the divided input data of Pi bits to data of Qi bits, where M=Q1+Q2+ . . . =Qn, Qi is an integer, and Qi≧(Pi+1);

wherein the input data is modulated in a case of recording optically readable code data on a recording medium so that a number of consecutive bits of a predetermined value in the code data is less than a predetermined number of consecutive bits of the predetermined value in a reference mark in order to discriminate the code data from the reference mark, said reference mark serving as a reference for reading the code data and having the predetermined number of consecutive bits of the predetermined value; and

wherein the code data has a number of blocks including at least data dots arranged in accordance with contents of the input data, and a marker, serving as the reference mark, which has a pattern different from that of the data dots and which is arranged in a predetermined positional relationship with respect to the data dots.

5,825,310

SIGNAL ENCODING METHOD

Kyoya Tsutsui, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

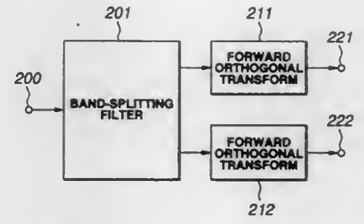
Filed Jan. 22, 1997, Ser. No. 788,897

Claims priority, application Japan, Jan. 30, 1996, 8-014517

Int. Cl.[6] H03M *7/00*

U.S. Cl. 341—51 **9 Claims**

1. A signal encoding method for quantizing and encoding signal components resulting from resolution of an input signal into plural frequency components, comprising:



splitting the signal components of the input signal into plural band units as encoding units;

computing an estimated value of the required number of bits as calculated from one band unit to another; and

adjusting the total number of bits required in encoding the signal components of the input signal based on the estimated value of the required number of bits as computed from one band unit to another.

5,825,311

VECTOR CODING METHOD, ENCODER USING THE SAME AND DECODER THEREFOR

Akitoshi Kataoka, Tokyo, and Jotaro Ikedo, Yokosuka, both of Japan, assignors to Nippon Telegraph and Telephone Corp., Tokyo, Japan

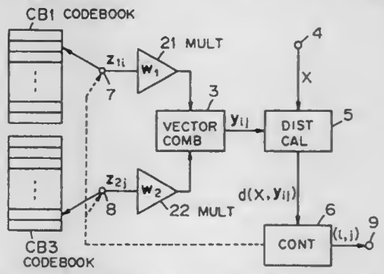
PCT No. PCT/JP95/01989, § 371 Date Apr. 23, 1997, § 102(e) Date Apr. 23, 1997, PCT Pub. No. WO96/11468, PCT Pub. Date Apr. 18, 1996

PCT Filed Sep. 29, 1995, Ser. No. 793,133

Claims priority, application Japan, Oct. 7, 1994, 6-244128

Int. Cl.[6] G01G *9/18*; H03M *7/30*

U.S. Cl. 341—51 **27 Claims**



1. A method of encoding an input vector through the use of M codebooks each having a plurality of labeled representative vectors of the same number of dimensions, said M being an integer equal to or greater than 2, said method comprising the steps of:

(a) selecting said representative vectors one by one from said M codebooks;

(b) multiplying said representative vectors, each selected from one of said M codebooks, by M predetermined weighting coefficient vectors of the same number of dimensions as those of said representative vectors to generate M weighted representative vectors, said M weighting coefficient vectors having at least one maximum component in a different dimension and at least one of the components of each weighting coefficient vector being different from at least one of the other components of said weighting coefficient vector;

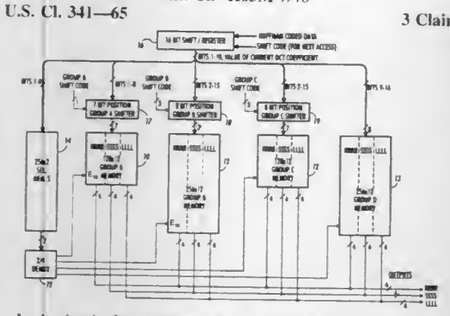
(c) adding all of said M weighted representative vectors to generate a combined representative vector;

(d) calculating the distance between said input vector and said combined representative vector;

(e) repeating steps (a), (b), (c) and (d) to search for and determine said combined representative vector which has the minimum distance between it and said input signal vector; and

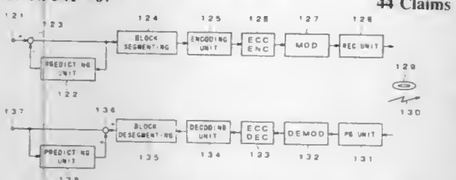
(f) encoding and outputting labels attached to said representative vectors of said codebooks which provided said combined representative vector of said minimum distance.

5,825,312
DX JPEG HUFFMAN DECODER
Remo J. D'Ortenzio, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Nov. 25, 1996, Ser. No. 758,137
Int. Cl.[6] H03M 7/40
U.S. Cl. 341—65 3 Claims



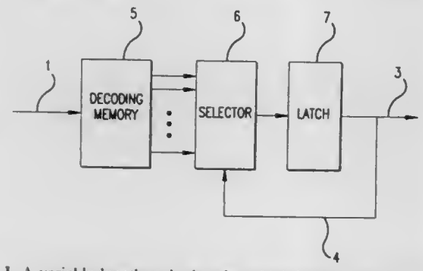
1. A circuit for decoding any one of the 162 possible AC codewords of any Huffman code table constructed in accordance with the JPEG baseline Huffman coding specification comprising:
a plurality of look up tables, each for outputting decoded data in response to an applied input,
means for applying selected subsets of the codeword to serve as addresses to each of the look up tables, the means being adapted to change to different subsets when the input Huffman table is changed, and
a selector, responsive to the codeword, for enabling one of the look up tables to output the appropriate decoded data.

5,825,313
INFORMATION SIGNAL ENCODING APPARATUS, ENCODING METHOD THEREOF, INFORMATION SIGNAL DECODING METHOD, AND INFORMATION SIGNAL RECORD MEDIUM THEREOF
Tetsujiro Kondo; Yasuhiro Fujimori; Kenji Takahashi, and Kunio Kawaguchi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan
Filed Aug. 1, 1996, Ser. No. 691,111
Claims priority, application Japan, Aug. 1, 1995, 7-215150
Int. Cl.[6] H03M 7/40
U.S. Cl. 341—67 44 Claims



1. An information signal encoding apparatus for encoding an input digital information signal such that the amount of data generated decreases, comprising:
means for generating a difference signal representing the difference between sample values of the input digital information signal;
means for block segmenting the difference signal;
first variable-length-code encoding means for quantizing the block segmented difference signal with the number of quantizing bits determined for each block; and
second variable-length-code encoding means for dividing output data of said first variable-length-code encoding means into bit planes, removing data of each block to which 0 bits are assigned to each of the bit planes, the number of bits assigned to the bit planes of each block defining the number of quantizing bits of said first variable-length-code encoding means, and variable-length-code encoding the resultant bit planes.

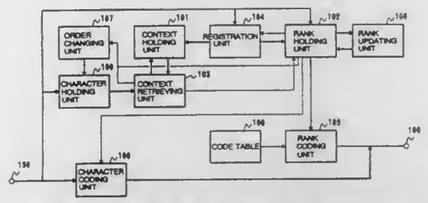
5,825,314
VARIABLE-LENGTH CODE DECODER
Kenichi Kawauchi; Taro Yokose; Yutaka Koshi; Koumei Tomida, and Eiri Hashimoto, all of Nakai-machi, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan
Filed Sep. 23, 1996, Ser. No. 717,946
Claims priority, application Japan, Mar. 11, 1996, 8-053225
Int. Cl.[6] H03M 7/40
U.S. Cl. 341—67 13 Claims



1. A variable-length code decoder which inputs a code data bit string having a predetermined number of code data bits in every decoding cycle and decodes it, comprising:
storing means for storing a decoded symbol on a node in a code tree in the next decoding cycle corresponding to each combination of a value of said code data bit string and a node in the code tree;
reading means for reading said decoded symbol and said node in the code tree in the next decoding cycle from said storing means in accordance with said code data bit string inputted in a current decoding cycle and said node in the code tree in the current decoding cycle; and
providing means for providing said node in the code tree in the next decoding cycle read by said reading means to said reading means
wherein said providing means stores said decoded symbol and said node in the code tree in the next decoding cycle received from said reading means and outputs said decoded symbol.

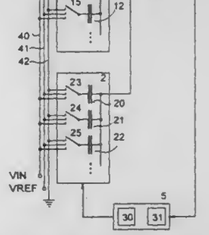
5,825,315
DATA CODING APPARATUS AND DATA DECODING APPARATUS AND METHODS THEREOF
Kimitaka Murashita; Shigeru Yoshida, and Yoshiyuki Okada, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Dec. 2, 1996, Ser. No. 758,891
Claims priority, application Japan, Feb. 13, 1996, 8-025675
Int. Cl.[6] H03M 7/00
U.S. Cl. 341—106 18 Claims

1. A data coding apparatus comprising:
code table storing means for storing a code table in which ranks and codes are made corresponding so that a length of each code becomes larger as the corresponding rank becomes lower;
rank table storing means for storing a rank table in which characters and the ranks are made corresponding;
code outputting means for, when one of the characters to be encoded is input, specifying the rank stored corresponding to



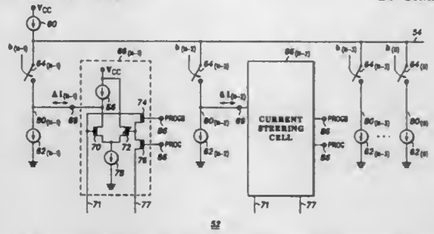
the one character in the rank table and outputting the code stored corresponding to the specified rank in said code table; and
rank updating means for updating the rank table so that the one character encoded by said code outputting means has the corresponding rank with a code length which is shorter by a predetermined number of bits than the code length of the one character before being changed.

5,825,316
METHOD FOR THE SELF-CALIBRATION OF AN A/D OR D/A CONVERTER IN WHICH THE WEIGHTED REFERENCES OF THE AT LEAST ONE MAIN NETWORK ARE PARTIALLY CALIBRATED ONCE PER CALIBRATION CYCLE
Franz Kuttner, St. Ulrich, Austria, assignor to Siemens Aktiengesellschaft, Munich, Germany
Filed Apr. 4, 1996, Ser. No. 627,968
Claims priority, application Germany, Apr. 4, 1995, 195 12 495.2
Int. Cl.[6] H03M 1/10
U.S. Cl. 341—120 10 Claims



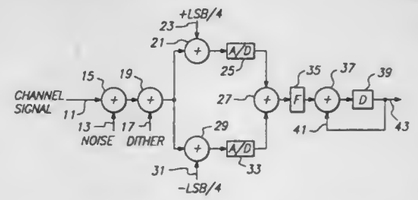
1. A method for self-calibration of an analog/digital converter or of a digital/analog converter having at least one main network with a plurality of weighted reference elements and one correction network being coupled with the main network for error correction and having weighted further reference elements, which comprises:
partitioning the plurality of weighted reference elements into a plurality of subsets of reference elements;
sequentially performing the following steps upon each of the subsets;
selecting a subset not yet having been selected within the step of sequentially performing;
self-calibrating the selected subset of reference elements between two conversions;
ascertaining a single-step correction value associated with the selected subset of reference elements; and
carrying out repeatedly the step of sequentially performing.

5,825,317
DIGITAL-TO-ANALOG CONVERTER AND METHOD OF CALIBRATING
David J. Anderson, Scottsdale; Robert M. Gardner, and Jerald A. Hallmark, both of Gilbert, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 7, 1997, Ser. No. 835,244
Int. Cl.[6] H03M 1/10
U.S. Cl. 341—120 20 Claims



8. A method for calibrating a digital-to-analog converter (DAC), comprising the steps of:
providing a first current as an output from a DAC in response to a data word; and
switching a first delta current in response to the data word to sum with the first current and thereby calibrate the DAC, wherein the first delta current is set by programming a ferroelectric transistor with a first programming voltage that adjusts a threshold voltage value of the ferroelectric transistor operating in the active mode.

5,825,318
DATA AND SERVO SAMPLING IN SYNCHRONOUS DATA DETECTION CHANNEL
Ara Patapoutian, Westboro, Calif.; Kevin D. Fisher, Palo Alto, Calif., and Bruce D. Buch, Westboro, Mass., assignors to Quantum Corporation, Milpitas, Calif.
Filed Dec. 19, 1996, Ser. No. 769,823
Int. Cl.[6] H03M 1/20
U.S. Cl. 341—131 31 Claims



1. An improved analog-to-digital converter circuit for a sampling data detection channel of a disk drive, the disk drive including a rotating disk having data track areas divided by spoke areas, the improved analog-to-digital converter circuit for synchronously sampling user data in the data track areas at a first quantization resolution and for synchronously sampling a servo burst field from at least one of the spoke areas at a second quantization resolution effectively greater than said first quantization resolution and comprising:
an input for receiving an analog signal to be quantized from analog circuitry of the disk drive;
offset signal producing means for providing a predetermined analog offset signal;
combining means including first and second analog summing circuits for combining the analog signal with the offset signal to provide composite signals during a spoke servo sampling interval, the first analog circuit for adding a first predetermined analog offset value to the analog signal to provide a first composite signal, and the second analog circuit for add-

ing a second predetermined analog offset value to the analog signal to provide a second composite signal;

analog-to-digital conversion means including a first analog-to-digital converter connected to sample the first composite signal, and a second analog-to-digital converter connected to sample the second composite signal the first and the second analog-to-digital converters for sampling the composite signals during the servo spoke sampling interval, and for sampling the analog signal during a user data sampling interval, for producing sequences of spoke servo samples and user data samples; and

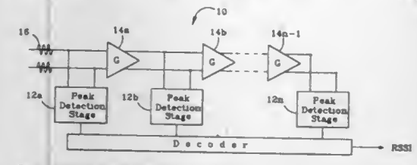
digital averaging means connected to average the spoke servo samples over a predetermined averaging interval to provide servo spoke average samples having increased bit resolution.

5,825,319

HIGH SPEED WIDE BANDWIDTH DIGITAL PEAK DETECTOR

Franklin M. Murden, Greensboro, and Harvey J. Ray, Winston Salem, both of N.C., assignors to Analog Devices, Inc., Norwood, Mass.

Filed Dec. 23, 1996, Ser. No. 772,361
Int. Cl.[6] H03M *1/44*
U.S. Cl. 341—132 **9 Claims**



6. A digital peak detector for detecting peak amplitude levels of an analog voltage signal over a full-scale amplitude range, comprising:

a first peak detection stage that detects peak amplitude levels of an analog voltage signal over a first sub-range of a full-scale amplitude range, switches a value of one or more logic states when said analog voltage signal crosses respective amplitude threshold levels in its sub-range and holds the values of said logic states until it is reset at each successive cycle of a clock signal;

a fixed gain stage that amplifies the analog voltage signal so that signal amplitudes in a second sub-range, which together with said first sub-range spans the full-scale amplitude range, are mapped into the first sub-range;

a second peak detection stage that detects peak amplitude levels of the amplified signal over the first sub-range, switches a value of one or more logic states when said amplified signal crosses the respective amplitude threshold levels in the first sub-range, which is equivalent to switching the logic states when the analog voltage signal crosses respective amplitude threshold levels in the second sub-range, and holds the values of said logic states until it is reset at each successive cycle of the clock signal; and

a decoder that decodes the values of the logic states into a codeword that represents the signal's peak amplitude level in the full-scale amplitude range and outputs the codeword at each successive cycle of the clock signal.

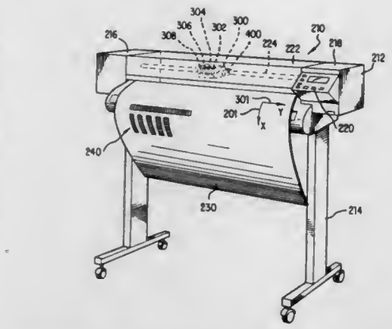
5,825,320

GAIN CONTROL METHOD FOR AUDIO ENCODING DEVICE

Shinji Miyamori, and Masatoshi Ueno, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 720,663, Oct. 2, 1996. This application Mar. 13, 1997, Ser. No. 816,090
Claims priority, application Japan, Mar. 19, 1996, 8-062966
Int. Cl.[6] H03M *1/18*
U.S. Cl. 341—139 **16 Claims**

1. A gain controlling method used in an encoding device for audio signals, comprising the steps of:



detecting an attack portion in which the signal level of waveform elements of the waveform signals rises sharply;

detecting a release portion in which the signal level of the waveform signals decays sharply;

finding a masking level based on a psychoacoustic model using the waveform signals and the detection position information of the attack portion and the release portion;

adaptively selecting a gain control value from plural gain control values using the above masking level;

gain-controlling at least the waveform elements previous to the attack portion and the waveform elements of the release portion, using the selected gain control value;

transforming the gain-controlled waveform signals into plural frequency components; and

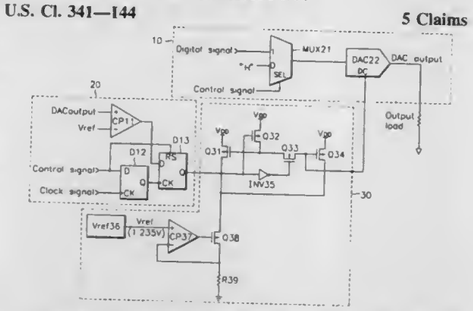
encoding the control information for gain control and said plural frequency components.

5,825,321

APPARATUS FOR DETECTING OUTPUT LOAD

Sung-Uk Park, Inchun Kwangyok-si, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 22, 1996, Ser. No. 700,777
Claims priority, application Rep. of Korea, Aug. 23, 1995, 1995 26154
Int. Cl.[6] H03M *1/66*
U.S. Cl. 341—144 **5 Claims**



1. A digital-to-analog conversion system arranged to detect an output load, comprising:

digital-to-analog converting means for converting a digital signal to analog signal;

load variation sensing means for sensing a load variation based upon an output signal of said digital-to-analog converting means; and

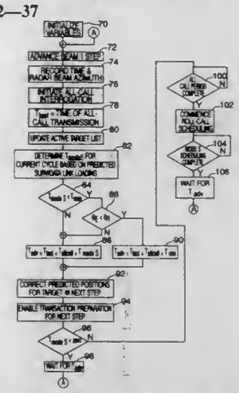
load current varying means for maintaining a constant output voltage from said digital-to-analog converting means.

5,825,322

METHOD AND APPARATUS FOR ROTATING AN ELECTRONICALLY-SCANNED RADAR BEAM EMPLOYING A VARIABLE-DWELL SCANNING PROCESS

Martin Stephen Capozoli, Ellicott City, Md., assignor to Allied-Signal Inc., Morristown, N.J.

Filed May 19, 1993, Ser. No. 64,569
Int. Cl.[6] H01Q *3/34*
U.S. Cl. 342—37 **20 Claims**



2. A method of controlling the scan rate of an electronically-scanned antenna of a radar system to provide a variable-dwell time for the beam of said antenna at selected scan angles, said radar conducting data transactions by transmitting interrogation signals to and receiving response signals from transponders within said beam; comprising:

a. determining a first dwell time required at a first scan angle of said antenna for said radar system to conduct data transactions with transponders located within the beam of said antenna at said first scan angle;

b. advancing the scan angle of said antenna to said first scan angle;

c. determining the dwell time required at a second scan angle succeeding said first scan angle for said radar system to conduct data transactions with transponders located within the beam of said antenna at said second scan angle;

d. advancing the scan angle of said beam to said second scan angle upon the expiration of said first dwell time; and

e. continuing the steps of determining the dwell time required to conduct data transactions at successive values of scan angles and advancing the scan angle of said beam to a next successive value upon the expiration of the dwell time determined for the scan angle last preceding said next successive value until the entire coverage area of said antenna has been scanned.

5,825,323

RADAR SENSOR

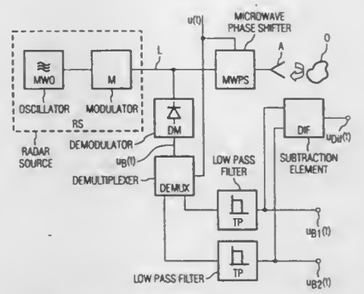
Patric Heide, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/01037, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO96/05518, PCT Pub. Date Feb. 22, 1996
PCT Filed Aug. 7, 1995, Ser. No. 776,688
Claims priority, application Germany, Aug. 17, 1994, P 44 29 118.3
Int. Cl.[6] G01S *13/62*
U.S. Cl. 342—114 **11 Claims**

1. A radar sensor, comprising:

a phase shifter;

a demodulator;



means for producing a transmitted signal connected to said phase shifter and to said demodulator, phase shifter (MWPS) is connected to

an antenna connected to said phase shifter for emission of a transmitted signal and for reception of a reflected signal,

a demultiplexer connected downstream of the demodulator and clocked in a same way as the phase shifter with a changeover signal, and

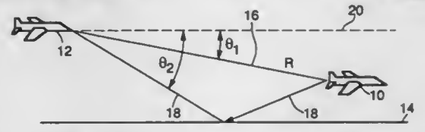
a low-pass filter connected to each output of said demultiplexer on which output signals are available.

5,825,324

PASSIVE RANGING OF A NOISE BEACON USING CORRELATION MONOPULSE PROCESSING ON THE DIRECT AND BOUNCE EMISSIONS

Michael D. Julian, Playa Del Rey, Calif., assignor to Raytheon Company, Los Angeles, Calif.

Filed Jun. 28, 1996, Ser. No. 678,385
Int. Cl.[6] G01S *13/08*
U.S. Cl. 342—118 **8 Claims**



1. A method of passively determining a range to a remote signal emitter elevated a distance above ground level, comprising the steps of:

aligning an antenna, elevated a distance above the ground level, substantially in the direction of the remote signal emitter;

receiving a composite signal including combined direct and bounce path signals from the remote signal emitter with the same antenna; and

calculating the range to the remote signal emitter based upon he combined direct and bounce path signals, including the steps of:

(i) generating sum and difference signal vectors from the received combined direct and bounce path signals, and

(ii) determining angular and path length data associated with the combined direct and bounce path signals received from the remote signal emitter as represented by the sum and difference signal vectors, including the steps of:

(a) determining a difference in lengths of the direct and bounce path signals from the remote signal emitter,

(b) determining a first angle between a reference plane substantially parallel to the ground level and the direct path signal, which includes the steps of:

(A) calculating a correlation between the sum and difference signal vectors,

(B) forming a discriminate vector by dividing the correlation of the sum and difference signal vectors by the auto correlation of the sum signal vector, and

(C) evaluating an angle of the discriminate vector at a first time delay corresponding to a first of the auto correlation peaks.

(c) determining a second angle between the reference plane and the bounce path signal, and

(d) determining a time delay between reception of the direct and bounce path signals by the antenna, which includes the steps of:

(A) calculating an auto correlation of the sum signal vector, and

(B) determining positions of maximum auto correlation peaks representing magnitudes of the time delay away from a zero time delay reference.

5,825,325

INTERSATELLITE COMMUNICATIONS SYSTEMS

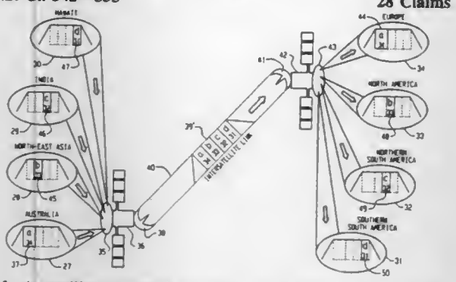
Val O'Donovan; Gary Beauchamp, and Robert Peach, all of Cambridge, Canada, assignors to Com Dev Limited, Canada

Filed Sep. 17, 1996, Ser. No. 715,065

Claims priority, application Canada, Dec. 21, 1995, 2165875

Int. Cl.[6] H04B *7/185*

U.S. Cl. 342—353 **28 Claims**



1. A satellite communications system utilizing a multi-beam bent-pipe architecture including:

a first communications satellite including means for receiving M electromagnetic radiation beams from each of M information sources;

a second communications satellite including means for transmitting N electromagnetic radiation beams to each of N information destinations;

where M and N are natural numbers and the sum of M and N is equal to or greater than 3;

means in said first satellite for transmitting an intersatellite electromagnetic radiation beam to said second satellite;

means in said second satellite for receiving the intersatellite electromagnetic radiation beam from said first satellite;

said intersatellite beam including at least one intersatellite communication channel comprising a plurality of intersatellite subchannels;

each of said M electromagnetic radiation beams including one or more incoming communication channels, at least one of said incoming communication channels in each of said M beams including a plurality of incoming subchannels;

each of said N electromagnetic radiation beams including one or more outgoing communication channels, at least one of said outgoing communication channels in each of said N beams including a plurality of outgoing subchannels;

interbeam switching means in said first satellite for directing the information contents of a plurality of incoming subchannels into respective ones of said plurality of intersatellite subchannels;

interbeam switching means in said second satellite for directing the information contents of said plurality of intersatellite subchannels into respective outgoing subchannels of said N outgoing channels;

whereby information contained in incoming subchannels associated with said M beams received from said M information sources served by said first communications satellite is interbeam-switched and transmitted in outgoing subchannels associated with said N beams transmitted to said N information destinations served by said second satellite.

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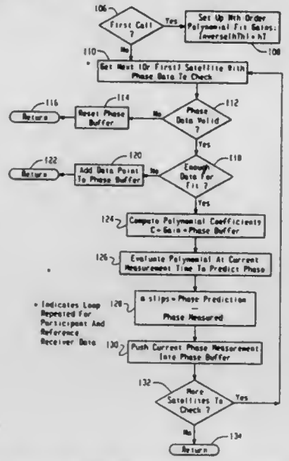
REAL-TIME HIGH-ACCURACY DETERMINATION OF INTEGER AMBIGUITIES IN A KINEMATIC GPS RECEIVER

James Russell Semler, Tustin, and Earl Clare Thorndyke, Jr., Claremont, both of Calif., assignors to Interstate Electronics Corporation, Anaheim, Calif.

Filed Jul. 9, 1996, Ser. No. 679,454

Int. Cl.[6] G01S *5/02;* **H04B** *7/185*

U.S. Cl. 342—357 **23 Claims**



1. A satellite receiver and processor unit, comprising:

(a) a satellite tracker, said satellite tracker tracking satellite signals from a first plurality of satellites, said satellite signals including a satellite code modulated by a carrier signal;

(b) a navigation processor in circuit communication with said tracker, at least one of said tracker and said navigation processor determining for each satellite of said first plurality of satellites the satellite code and phase of the carrier signal; and

(c) a telemetry receiver in circuit communication with said navigation processor, said telemetry receiver receiving a telemetry signal from a reference receiver, the telemetry signal including for each satellite of a second plurality of satellites the satellite code and phase of the associated carrier signal, said first and second pluralities of satellites having associated therewith at least one overlapping subset of satellites;

wherein said navigation processor determines that a cycle slip has occurred during tracking of the carrier signal from at least one satellite of said first plurality of satellites by:

(1) measuring a plurality of actual carrier phase data points for the carrier signal associated with the at least one satellite;

(2) fitting a polynomial to the plurality of actual phase data points for the at least one satellite;

(3) extrapolating a predicted next phase measurement data point from the polynomial;

(4) measuring a next phase data point for the carrier signal associated with the at least one satellite; and

(5) comparing the predicted next phase measurement data point with the measured next phase data point.

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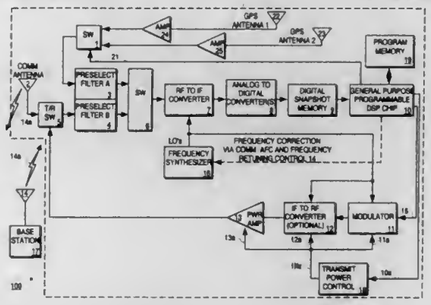
GPS RECEIVERS AND GARMENTS CONTAINING GPS RECEIVERS AND METHODS FOR USING THESE GPS RECEIVERS

Norman F. Krasner, San Carlos, Calif., assignor to SnapTrack, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 612,669, Mar. 8, 1996, and Ser. No. 652,833, May 23, 1996. This application Oct. 7, 1996, Ser. No. 723,220

Int. Cl.[6] G01S *5/02;* **H04B** *7/185*

U.S. Cl. 342—357 **37 Claims**



1. A GPS receiver comprising:

a first GPS antenna coupled to a digital memory, said digital memory storing first digitized signals obtained through said first GPS antenna;

a second GPS antenna coupled to said digital memory, said digital memory storing second digitized signals obtained through said second GPS antenna;

a digital processor coupled to said digital memory, said digital processor processing said first digitized signals after being stored in said digital memory to provide a first position information and processing said second digitized signals after being stored in said digital memory to provide a second position information.

5,825,328

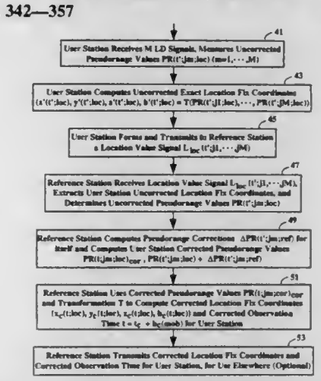
PRECISE INVERSE DIFFERENTIAL CORRECTIONS FOR LOCATION DETERMINATION

John F. Schipper, Palo Alto, and Peter Loomis, Sunnyvale, both of Calif., assignors to Trimble Navigation Limited, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 792,841, Jan. 11, 1997. This application May 29, 1997, Ser. No. 865,480

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **20 Claims**



1. A method for determining location fix coordinates with enhanced accuracy for a mobile user location determination station, the method comprising the steps of:

(1) receiving location determination (LD) signals from a selected constellation of J LD signal sources with known locations at a selected location, and measuring a pseudorange value associated with each of the J LD signals received at approximately a selected signal observation time, where J is an integer satisfying $J \geq 2$;

(2) computing location fix coordinate values for the selected observation time from the pseudorange values measured at the selected location, using an exact, invertible transformation between a set of J pseudorange values and a corresponding set of J location fix coordinates;

(3) forming a location fix signal that includes the J location fix coordinates for the selected location computed using the selected location pseudorange values, the signal observation time, and an indicium that represents the selected constellation of sources of LD signals whose pseudorange values are measured at the selected location, and transmitting the location fix signal to a selected LD signal processing station;

(4) receiving the location fix signal at the selected LD signal processing station, and computing pseudorange values for the selected location at the selected observation time from the information contained in the location fix signal;

(5) receiving LD signals from the selected constellation of LD signal sources at a reference station having a known location at approximately the selected observation time, and measuring a pseudorange value associated with an LD signal received from each of the LD signal sources in the selected constellation at the reference station;

(6) determining a pseudorange correction for each of the J pseudorange values measured at the reference station, based on the known locations of the LD signal sources and the known location of the reference station; and

(7) computing a selected location corrected pseudorange value for the selected location at the selected LD signal processing station as a sum of a selected location pseudorange value, for an LD signal received at the selected location from an LD signal source, plus the reference station pseudorange correction for the LD signal received from the same LD signal source, for each of the J LD signal sources.

5,825,329

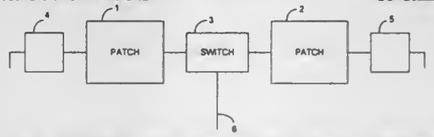
MODULATED BACKSCATTER MICROSTRIP PATCH ANTENNA

Richard L. Veghte, Rio Rancho, and Curtis L. Carrender, Santa Fe, both of N. Mex., assignors to Amtech Corporation, Dallas, Tex.

Continuation of Ser. No. 134,862, Oct. 4, 1993, abandoned, which is a continuation of Ser. No. 395,641, Feb. 28, 1995, abandoned. This application Jul. 23, 1996, Ser. No. 687,089

Int. Cl.[6] H01Q *1/38*

U.S. Cl. 343—700 MS **16 Claims**



1. A microstrip patch antenna for emitting backscatter-modulated signals at a fundamental frequency in response to a received signal from a reader, said antenna comprising:

two one-half wavelength segments, at least one of which has an input line for receiving an external signal;

a switch connecting each of the two one-half wavelength segments together at one end and having a closed position and an open position;

the two segments of the antenna being out-of-phase with each other when the switch is in the closed position, whereby no

significant signal is reflected back to the reader, and the two segments of the antenna acting in concert when the switch is in the open position, thereby producing a backscatter-modulated signal at the fundamental frequency; and

a switching circuit for actuating the switch between the open position and the closed position in response to the external signal.

5,825,330

RADIO ANTENNA

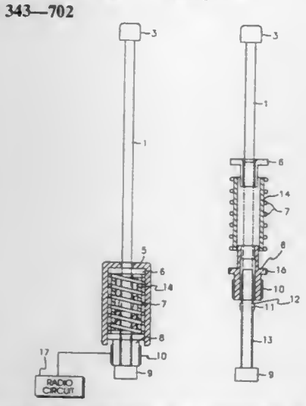
Bo-Gyu Na, and Young-Bae Ji, both of Kyungki-do, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jan. 23, 1996, Ser. No. 590,294

Claims priority, application Rep. of Korea, Jan. 27, 1995, 1995/1628

Int. Cl.[6] H01Q *1/24*

U.S. Cl. 343—702 **26 Claims**



1. An antenna configuration for a communication device, said antenna configuration comprising:

helical antenna means comprising a helical coil having a first terminal portion separated by an intermediate length from a second terminal portion, said first terminal portion being installed within an antenna housing mounted on a main body of said communication device;

first connecting means electrically coupled to said first terminal portion of said helical coil for electrically coupling said helical coil to a circuit of said communication device; and

rod antenna means comprising an electrically conducting rod surrounded by said helical coil and said first connecting means and being extendable from and retractable into said main body of said communication device, an uppermost length of said rod antenna means forming a distal end operating as an exclusive radiating element of said antenna configuration while said rod antenna means forms an electrical short circuit between said first terminal portion to said second terminal portion of said helical coil when said electrically conducting rod is extended from said main body of said communication device, and said distal end being physically surrounded by and electrically separated from said helical coil while said helical coil operates as said exclusive radiating element of said antenna configuration when said electrically conducting rod is retracted into said main body of said communication device and electrically insulated from said helical coil.

5,825,331

RADIATED EMISSION MEASURING METHOD USING GTEM CELL

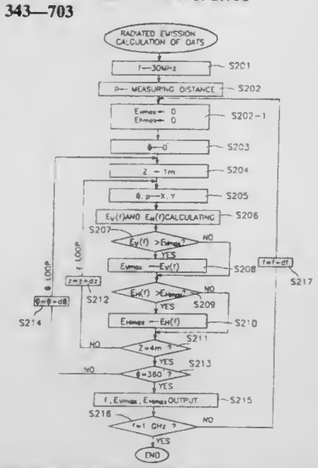
Ae-Kyoung Lee, Daejeong, Rep. of Korea, assignor to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Jun. 21, 1996, Ser. No. 668,142

Claims priority, application Rep. of Korea, Jun. 23, 1995, 1995-17175

Int. Cl.[6] G01R *29/08*

U.S. Cl. 343—703 **3 Claims**



1. A method for measuring radiated emission in order to obtain the correlation between a Giga-hertz Transverse ElectroMagnetic (GTEM) cell and an Open Area Test Site (OATS) which are facilities to measure the radiation emission generated from electronic products, said method for measuring radiated emission of the GTEM cell comprising the steps of:

(a) initializing the coordinate of Device Under Test (DUT) is the form (X-X', Y-Y', Z-Z'), which coincide the coordinates (X, Y, Z) of said GTEM cell with the coordinates (X', Y', Z') of the DUT, when the coordinates of the GTEM cell are set as (X, Y, Z) and the coordinates of the DUT are set as (X', Y', Z') and initializing the first and second measurement variables;

(b) increasing the first measurement variable by 1, and measuring the power of emission in accordance with the first measurement variable, and then comparing the first measurement variable with the second measurement variable initialized in said step (a);

(c) rotating the DUT counterclockwise by 45° and 90° with respect to axis Y according to the result of comparing in said step (b), and returning to said step (b);

(d) repeatedly performing said steps (b) and (c) within a range of predetermined threshold values, and correcting the spatial coordinates of the DUT;

(e) initializing a frequency used for measuring emission electric field strength, measuring the distance from center of low ground of DUT, maximum vertical electric field, maximum horizontal electric field, rotation angle of DUT and height of DUT;

(f) changing from the perpendicular coordinate having X, Y coordinates to the cylindrical coordinate having the rotation angle and height of DUT initialized in step (e), and calculating the maximum vertical/horizontal electric fields for the respective test frequency ranges, referring to changed cylindrical coordinates and GTEM transmission power data measured in said step (b);

(g) comparing the vertical electric field with the maximum vertical electric field calculated in said step (f); and comparing the horizontal electric field with maximum horizontal electric field calculated in said step (f);

(h) storing the vertical electric field as the maximum vertical electric field, and storing the horizontal electric field as the maximum horizontal electric field, if the vertical electric field and horizontal electric field are greater than the maximum vertical electric field and maximum horizontal electric field, respectively, and then repeating said steps (f) and (g) when the height of the DUT is a predetermined value;

(i) repeating the procedure from initializing the step height of the DUT as a predetermined value in said step (e) when the rotation angle of the DUT is set as a predetermined value, if the height of the DUT is the predetermined value in said step (h); and

(j) outputting the maximum vertical electric field and the horizontal electric field stored in said step (h), and outputting the frequency initialized in said step (e) when the frequency is set as predetermined value, if the rotation angle set as predetermined value.

5,825,332

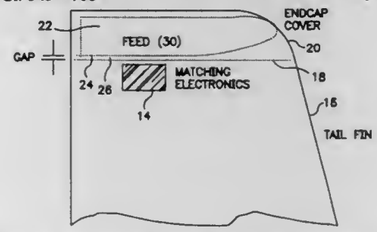
MULTIFUNCTION STRUCTURALLY INTEGRATED VHF-UHF AIRCRAFT ANTENNA SYSTEM

Gerardo I. Camacho, and Donn V. Campbell, both of Poway, Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Sep. 12, 1996, Ser. No. 712,686

Int. Cl.[6] H01Q *1/28;13/10*

U.S. Cl. 343—708 **6 Claims**



1. An aircraft antenna system structurally integrated into an aircraft, for operation over a wide range of frequencies without the need for an active tuner, the antenna system comprising:

an electrically conductive portion of an aircraft structure;

an antenna element positioned and shaped to form a non-conductive notch between the antenna element and the electrically conductive portion of the aircraft structure, wherein the notch is generally uniform in width over part of its length and flares to a larger width over the remainder of its length;

matching electronics, for coupling the antenna system to a transceiver, and for broadband matching the impedance of the antenna system with the impedance of the transceiver to provide efficient transfer of energy to and from the antenna; and

an antenna feed for connection from the matching electronics to opposite sides of the notch at a selected antenna feed point, to excite the antenna for transmission of signals and to conduct received signals from the antenna element and electrically conductive portion of the aircraft structure;

wherein the electrically conductive portion of the aircraft structure functions as a radiating and receiving component of the antenna system, which can be easily impedance matched with transceiver equipment operating over a wide range of frequencies.

5,825,333

OFFSET MULTIBEAM ANTENNA

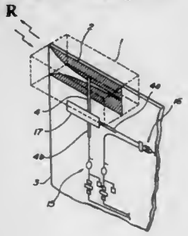
Hiroshi Kudoh, Saitama; Kenichi Tohya, Tokyo, and Masanobu Urabe, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

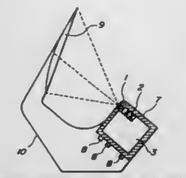
Continuation of Ser. No. 701,002, Aug. 21, 1996, abandoned, which is a continuation of Ser. No. 424,588, Apr. 17, 1995, abandoned, which is a continuation of Ser. No. 26,501, Mar. 4, 1993, abandoned. This application Oct. 29, 1997, Ser. No. 967,228

Claims priority, application Japan, Mar. 5, 1992, 4-097529

Int. Cl.[6] H01Q *19/17*

U.S. Cl. 343—781 R **6 Claims**





3. A light-weight multi-beam antenna device comprising:

a plurality of radar modules capable of transmitting and receiving electromagnetic waves, each radar module comprising

a first integrated circuit board having a transmitter circuit, receiver circuit, circulator and microstrip transmission line formed thereon, said microstrip transmission line being connected to said transmitter circuit, said receiver circuit and said circulator,

a second integrated circuit board affixed to said first integrated circuit board and having formed thereon a primary radiator and a fin-line converter, said fin-line converter providing an electrical connection between said primary radiator and said microstrip transmission line of said first integrated circuit board; and

circuitry connected to said transmitter and receiver circuits for enabling operation of said radar modules in a time division multiplexed fashion.

5,825,334

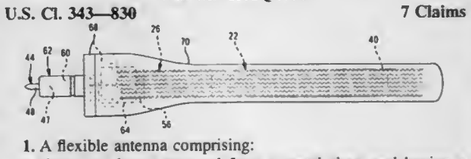
FLEXIBLE ANTENNA AND METHOD OF MANUFACTURING SAME

Stephen Daniel Gherardini, Harrisburg; Scott Keith Micklevicz, Denver; Richard Nicholas Whyne, Mechanicsburg, and John Anthony Woratyla, Camp Hill, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Aug. 9, 1996, Ser. No. 689,418

Int. Cl.[6] H01Q *9/38*

U.S. Cl. 343—830 **7 Claims**



1. A flexible antenna comprising:

a planar conductor stamped from a metal sheet and having a contact section at one end thereof and a plurality of substan-

tially parallel metal strips, each successive strip being connected at one end to an adjacent previous strip and at the other end to the next strip by a metal strap to define a continuous conductor;

a contact lead electrically and mechanically secured to said contact section defining a termination;

dielectric material molded over selected areas of said conductor including over and between said strips and said termination defining selected insulated areas and an insulated termination, at least one of said selected insulated areas defining an insulating pad adapted to receive a ground conductor;

said ground conductor being disposed on said at least one insulating pad; and

a conductive shell disposed over said insulated termination of said planar conductor, said shell being in electrical engagement with said ground conductor, said lead, insulation and shell defining a coaxial connector.

5,825,335

SHEET ANTENNA APPARATUS

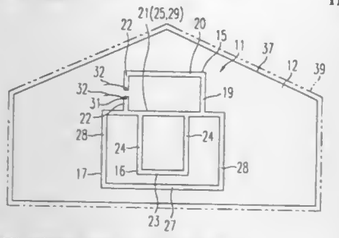
Hiroyuki Arai, Yokohama; Hiroshi Mura, Osaka; Hideo Sakata, Osaka; Takahiro Mizoguchi, Osaka; Kensuke Ishida, Osaka, and Hiroshi Niimi, Osaka, all of Japan, assignors to Kubota Corporation, Osaka, Japan

Filed Oct. 7, 1996, Ser. No. 726,905

Claims priority, application Japan, Oct. 23, 1995, 7-274506; Dec. 15, 1995, 7-327360; Mar. 25, 1996, 8-068307

Int. Cl.[6] H01Q *7/00*

U.S. Cl. 343—866 **11 Claims**



1. A sheet antenna apparatus comprising:

an antenna element formed integrally with a building material, the antenna element comprising,

a main antenna portion having a vertical segment, a pair of upper and lower lateral segments respectively extending laterally from opposite ends of the vertical segment and a pair of feeder segments respectively extending inwardly from terminating ends of the lateral segments, and

a parasitic antenna element including,

an inner loop portion formed within an outer loop portion which together form a double loop and are disposed as adjoining to one of the lateral segments such that said main antenna and said parasitic antenna element cooperate so as to enable reception of vertically polarized electromagnetic waves.

5,825,336

REMOTE OPERATION APPARATUS

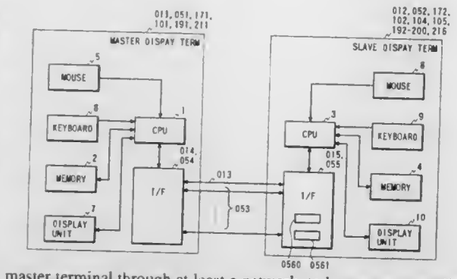
Kenichi Fujita, Tokyo; Takeshi Nagao, Kawaguchi; Toru Kawaguchi, Matsudo; Shigeki Kaneko, and Hiroyuki Hikita, both of Tokyo, all of Japan, assignors to Matsushita Electric Industrial Co.,Ltd. Japan

Filed Jul. 3, 1996, Ser. No. 675,478

Claims priority, application Japan, Jul. 5, 1995, 7-169467

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—2 **6 Claims**



1. A remote operation apparatus comprising a master display terminal and at least a slave display terminal, coupled to said master terminal through at least a network, to be remote controlled by said master display terminal, said master display terminal including:

a video data receiving portion for receiving first video data from said slave display terminal;

a first display portion, having a first display;

a display control portion for operating said first display portion to display a first image in accordance with said first video data with positions of said first image controlled in accordance with first positional data;

a screen parameter data input portion for inputting a request;

a screen parameter data generation portion responsive to said inputted request for generating screen parameter data including said first positional data;

a screen parameter transmission portion for transmitting said screen parameter data to said a slave display terminal;

a first operational data input portion for receiving first operational data input;

an operational data generation portion for generating first operational data in accordance with said first operational data input and converting said first positional data to second positional data; and

an operational data transmission portion for transmitting said first operational data and second positional data to said slave display terminal, said slave display terminal including:

an operational data receiving portion for receiving said first operation data and said second positional data from said operational data transmission portion through said at least network;

a second operational data input portion for inputting second operational data including position data;

a task operation portion including a plurality of tasks and a task detection portion, wherein said task detection portion detects one of said plurality of tasks corresponding to said first operational data and said received second positional data and said task operation portion supplying said first operational data and said second positional data from said operational data receiving portion to the detected one of said plurality of tasks to operate it to generate a first drawing command using said second positional data when said operational data receiving portion receives said first operation data and said second positional data, said task detection portion detects one of said plurality of tasks corresponding to said second operational data and said received position data and said task operation portion supplying said second operational data and position data from said second operational data input portion to the detected one of said plurality of tasks corresponding to said second operational data and said position data to operate it to generate a second drawing commands when said second operational data input portion receives said second operational data and said position data,

a second display portion, having a second display, for generating second video data in accordance with said first and second drawing commands to display a second image on said second display;

a screen parameter receiving portion for receiving said screen parameter data from said screen parameter transmission portion;

a screen data acquisition portion for generating said first video data from said second video data from said second display portion in accordance with said screen parameter data from said screen parameter receiving portion; and

a video data transmission portion for transmitting said first video data from said video data acquisition portion to said video data receiving portion.

5,825,337

COLOR AUTOSTEREOSCOPIC DISPLAY

Susan Wiseman, Cambridge, and Adrian Robert Leigh Travis, South Devon, both of United Kingdom, assignors to ASD (Holdings) Ltd, Bristol, United Kingdom

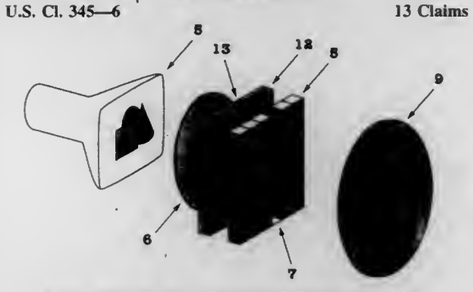
PCT No. PCT/GB94/02548, § 371 Date Jun. 26, 1996, § 102(e) Date Jun. 26, 1996, PCT Pub. No. WO95/14353, PCT Pub. Date May 26, 1995

PCT Filed Nov. 18, 1994, Ser. No. 648,181

Claims priority, application United Kingdom, Nov. 19, 1993, 9323878

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—6 **13 Claims**



1. A polychromatic three dimensional display comprising:

a first image source operating at a first selected rate;

a second image source switching through a repeating cycle at a second selected rate less than the first selected rate to reduce selectively the field of view of the first image source to generate thereby a time multiplexed three dimensional autostereoscopic image; and

a switching colour filter operating at the second rate disposed adjacent to the second image source and comprising a plurality of regions each switchable between different colours to enable colour modulation of the generated image.

5,825,338

INSTRUMENT DISPLAY METHOD AND SYSTEM FOR PASSENGER VEHICLE

Michael E. Salmon, Spartanburg, S.C.; David L. Ehle, Attica, and Jeffrey G. Hovis, Lapeer, both of Mich., assignors to Atoma International Corp., Scarborough, Canada

Continuation of Ser. No. 910,108, Jul. 6, 1992, Pat. No. 5,406,303. This application Apr. 6, 1995, Ser. No. 418,073

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—7 **6 Claims**

1. In combination with an instrument display system for use in a passenger vehicle to provide a visual representation of instrument data to the passenger, the system being of the type having a mask, an electric motor for moving the mask and control means for controlling movement of the mask, the electric motor being responsive to said control means and having a stator assembly and a rotor assembly for rotating relative to the stator assembly, the improvement wherein:

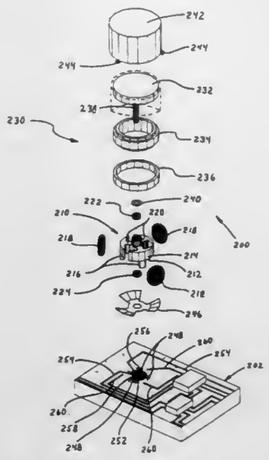
the rotor assembly includes a cylindrical magnet coupled to the mask to move the mask and positioned about the stator assembly for rotating without the stator assembly to enable the mask to convey the instrument data to the passenger; said combination further comprising

a vacuum fluorescent display oriented behind the mask and provided with a plurality of illuminated indicia for projecting an analog gauge image therefrom, the vacuum fluorescent display, mask and motor forming a heads-up projector;

a combiner positioned a spaced apart distance from the heads-up projector to form a projected image in the passenger's field of vision;

means for affixing the projector to a vehicle windshield; and

means for adjustably affixing the combiner relative to the vehicle windshield a spaced apart distance from the heads-up projector.



5,825,339

DISPLAY APPARATUS FOR AUTOMOBILES

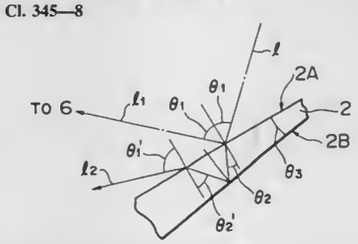
Yoshiyuki Furuya; Kunimitsu Aoki, and Tadashi Iino, all of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo

Filed Nov. 4, 1991, Ser. No. 787,447

Claims priority, application Japan, Nov. 16, 1990, 2-308801

Int. Cl.[6] G09G *3/00*

U.S. Cl. 345—8 **2 Claims**



1. A display apparatus for automobiles comprising:

a displayer for emitting display light; and

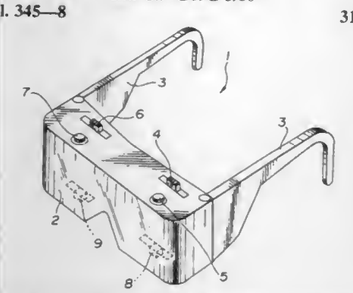
a reflection plate having a first surface on a driver's seat side and a second surface on a side opposite to said driver's seat, said display light diagonally falling on said first surface and being reflected on said first surface to be directed to an eye range, a display image of said displayer being recognized from said driver's seat side within a display range on said first surface, at least a portion of said second surface corresponding to said display range of said first surface being diagonally disposed in relation to said first surface, wherein said display light diagonally falling on said second surface is reflected in a direction other than toward the eye range.

5,825,340

HEAD-MOUNTED IMAGE DISPLAY APPARATUS

Masami Torizuka, Kanagawa; Yoshiro Muraoka, Tokyo, and Renshi Nakamura, Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Continuation of Ser. No. 135,352, Oct. 13, 1993, abandoned.
This application Aug. 21, 1996, Ser. No. 701,192
Claims priority, application Japan, Oct. 28, 1992, 4-289200
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—8 31 Claims



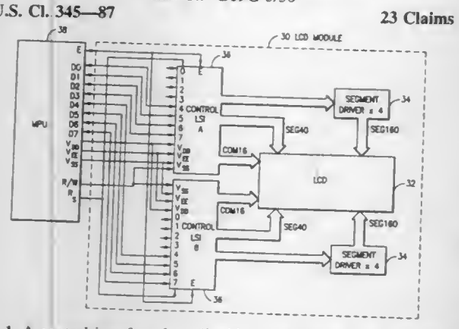
1. A head mounted image display apparatus comprising:
first image display means directing a first image toward a user of the image display apparatus;
second image display means directing a second image toward the user of the image display apparatus;
display blackout means active to control a selected one of said first or second image display means to display a black image surface according to engagement thereof;
display control means operable such that, when said display blackout means is engaged, one of said first and second image display means which does not display said black surface image is active to display a test pattern;
first adjusting means for adjusting an optical condition of said first image display means; and
second adjusting means for adjusting an optical condition of said second display means.

5,825,341

CONTROL INTERFACE FOR LCD DOT MATRIX DISPLAYS AND METHOD OF OPERATING THE SAME

Wojciech Pawlowski, Germantown, Tenn., assignor to International Telecommunication Corp., Memphis, Tenn.

Filed Nov. 7, 1991, Ser. No. 788,829
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—87 23 Claims



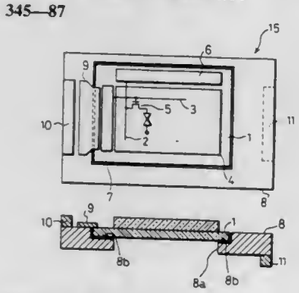
1. A control interface for a liquid crystal display, said interface comprising:
a pair of control devices connected to the liquid crystal display for controlling the same, each said control device having a 4-bit microprocessor mode; and
an 8-bit microprocessor for simultaneously controlling the pair of control devices, said microprocessor having eight data bit outputs, with its four lowest data bits of the microprocessor only being connected to one control device, and with its four highest data bits only being connected to the other control device.

5,825,342

LIQUID CRYSTAL DISPLAY AND PROJECTOR EMPLOYING THE SAME

Yasunobu Akebi, Yamabe-gun; Masumi Kubo, and Toshihiro Yamashita, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 13, 1995, Ser. No. 501,775
Claims priority, application Japan, Jul. 13, 1994, 6-161127
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—87 11 Claims



1. A liquid crystal display comprising:
a liquid crystal panel having a plurality of scanning lines and a plurality of signal lines crossing each other at right angles, and visual angle characteristics that a direction of a visual angle in which contract reaches its maximum does not match with a direction of a normal line;
scanning line driving means for applying a selecting signal to said plurality of scanning lines regularly;
signal line driving means for applying an image signal to said plurality of signal lines in sync with said selecting signal;
image's sides reversing means for reversing an order of said image signal application to said plurality of signal lines by said signal line driving means;
signal input units, for inputting a signal to said liquid crystal display from an external device, said signal input units being formed at two opposing ends of said liquid crystal display; and
mounting means for fixedly mounting said liquid crystal display to another device, said mounting means being formed point symmetry with respect to a center of a viewing portion of said liquid crystal panel and said mounting means being an outermost frame of said liquid crystal display.

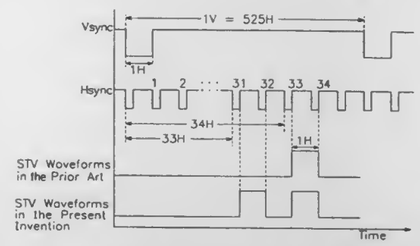
5,825,343

DRIVING DEVICE AND DRIVING METHOD FOR A THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY

Seung-Hwan Moon, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jan. 11, 1996, Ser. No. 584,444
Claims priority, application Rep. of Korea, Jan. 11, 1995, 1995-406
Int. Cl.[6] G09G *3/18*
U.S. Cl. 345—94 8 Claims

1. A method of driving a TFT-LCD, comprising the steps of:
generating a first start signal concurrently with a 31st horizontal synchronous signal;
generating a second start signal concurrently with a 33rd horizontal synchronous signal; and



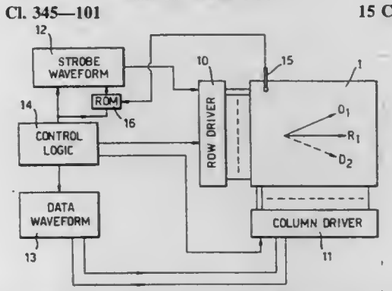
applying a two-pulse gate electrode voltage signal to a gate line of said TFT-LCD by applying said first and second start signals to a gate bus driver IC.

5,825,344

TEMPERATURE COMPENSATION OF FERRO-ELECTRIC LIQUID CRYSTAL DISPLAYS

Jonathan R. Hughes; David Charles Scattergood, and Michael John Towler, all of Malvern, Great Britain, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom

PCT No. PCT/GB95/00417, § 371 Date Sep. 26, 1996, § 102(e) Date Sep. 26, 1996, PCT Pub. No. WO95/24715, PCT Pub. Date Sep. 14, 1995
PCT Filed Feb. 28, 1995, Ser. No. 704,785
Claims priority, application United Kingdom, Mar. 7, 1994, 9404356.9
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—101 15 Claims



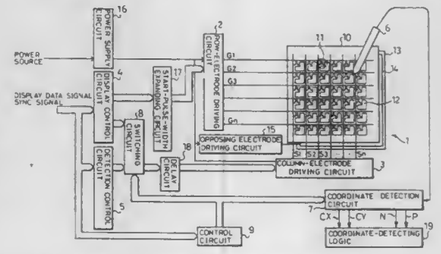
1. A method of temperature compensating a multiplex addressed ferro electric liquid crystal matrix display comprising the steps of:
providing a liquid crystal cell (**1**) with cell walls (**2**, **3**) enclosing a layer (**7**) of ferroelectric liquid crystal material;
providing a first set of electrodes (**5**) on one cell wall (**2**) and a second set of electrodes (**6**) on the other cell wall (**3**), the electrodes (**5**, **6**) forming by their intersections a matrix of addressable elements;
addressing sequentially each electrode individually in the first set of electrodes (**5**), such addressing being either by application of a strobe waveform (**12**) of pulses of positive and negative values, or by application of a blanking pulse followed by a strobe pulse and arranged to maintain a net zero d.c. value,
applying (**13**) one of two data waveforms to each electrode in the second set of electrodes (**6**) synchronised with the strobe waveform, both data waveforms comprising pulses of positive and negative values each pulse lasting a time period of one time slot (ts) with one data waveform the inverse of the other data waveform,
the temperature (**15**) of the liquid crystal material (**7**),
varying the time length of the strobe waveform (**12**, **16**) in accordance with the measured liquid crystal temperature whilst maintaining the same time between application of strobe waveform to successively addressed electrodes in the second set of electrodes and maintaining the same time periods (ts) in the data waveforms,
whereby temperature induced changes in the liquid crystal material (**7**) parameters are compensated.

5,825,345

DISPLAY-INTEGRATED TYPE TABLET DEVICE

Kengo Takahama, Nara; Takao Tagawa, Kashihara, and Kiyohiro Nozaki, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 1, 1996, Ser. No. 690,788
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—104 21 Claims



1. A display-integrated type tablet device comprising:
a pair of transparent substrates that are placed face to face with each other with an electro-optical material being interpolated in between;
a plurality of first electrodes that are disposed on one surface of the transparent substrate in parallel with one another;
a plurality of second electrodes that are disposed in parallel with one another in a manner orthogonal to the first electrodes;
a plurality of switching elements, each being disposed at an intersecting position between the corresponding first and second electrodes and connected to the corresponding first and second electrodes;
a plurality of pixel electrodes that are disposed in a matrix form, each being connected to the corresponding switching elements;
first and second electrode driving means for driving the first and second electrodes;
input means that is electrostatically coupled with the first and second electrodes;
first positional-information detection means which, during a display period in which an image is written to the electro-optical material and a resulting display is made by selectively operating the switching elements by allowing the first and second electrode driving means to drive the first and second electrodes, detects first positional-information that indicates an input position by the input means when the first electrodes are driven; and
second positional-information detection means which, during a period except for the display period, detects second positional-information that indicates an input position by the input means when the second electrodes are driven,
wherein the first electrode driving means, upon driving the first electrodes, outputs scanning signals so that a potential change is exerted in each of the first electrodes so as to detect the first positional-information, and also inputs the scanning signals to the corresponding first electrodes so that a potential change is simultaneously generated in at least two of the first electrodes, the scanning signal being provided with a transfer speed for scanning only the electrode-to-electrode distance corresponding to one of the first electrodes per unit time of a basic clock for driving the first electrode driving means.

5,825,346
METHOD FOR DRIVING ELECTRO-OPTICAL DISPLAY DEVICE

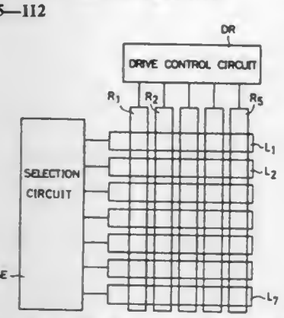
Masanori Fujita, Tokyo, Japan, assignor to Seiko Precision Inc., Japan

Continuation of Ser. No. 887,412, May 20, 1992, abandoned, which is a continuation of Ser. No. 338,467, Apr. 14, 1989, abandoned, which is a continuation of Ser. No. 847,187, Apr. 2, 1986, abandoned. This application Nov. 9, 1992, Ser. No. 973,558

Claims priority, application Japan, Apr. 4, 1985, 60-71621; Nov. 18, 1985, 60-258152

Int. Cl.[6] G09G *3/18*

U.S. Cl. 345—112 **23 Claims**



1. A multiplexed driving method of an optical switching element employing ferroelectric liquid crystal with a negative dielectric anistropy including a plurality of signal electrodes and of common signal electrodes arranged in matrix and a ferroelectric liquid crystal layer disposed between the signal electrodes and the common signal electrodes so as to constitute a plurality of pixels at the respective facing portions of the signal electrodes and the common signal electrodes comprises:

a step of applying a multi polar pulse with a predetermined amplitude and duration on one of the common signal electrodes to select pixels covered thereby for information writing during a first information writing period, applying either a light transmitting signal voltage of first polarity or a light cutoff signal voltage of second polarity on the respective signal electrodes depending on a first set of input signals during the first information writing period, and applying an AC voltage with a predetermined amplitude and frequency on the other common signal electrodes during the first information writing period, whereby either first or second information writing voltages formed in combination with the multi polar pulse and the light transmitting signal voltage and the light cutoff signal voltage and being enough to determine one of the light transmitting and cutoff statuses are applied on the respective first selected pixels, and either first or second status holding voltages formed in combination with the AC voltage and the light transmitting signal voltage and the light cutoff signal voltage and being enough to hold the previously written statuses are applied on the respective first non-selected pixels; and

a step of applying the multi polar pulse with the predetermined amplitude and duration on another one of the common signal electrodes to select pixels covered thereby for information writing during a second information writing period, applying either the light transmitting signal voltage of first polarity or the light cutoff signal voltage of second polarity on the respective signal electrodes depending on a second set of input signals during the second information writing period and applying the AC voltage with the predetermined amplitude and frequency on the common signal electrodes other than the one applied with the multi polar pulse during the second information writing periods, whereby either the first or second information writing voltages formed in combination with the multi polar pulse and the light transmitting signal voltage and the light cutoff signal voltage and being enough to determine one of the light transmitting and cutoff statuses are applied on the respective second selected pixels, and either the first or second status holding voltages formed in combination with the AC voltage and the light transmitting signal voltage and the light cutoff signal voltage and being enough to hold the previously written statuses are applied on the respective second non-selected pixels.

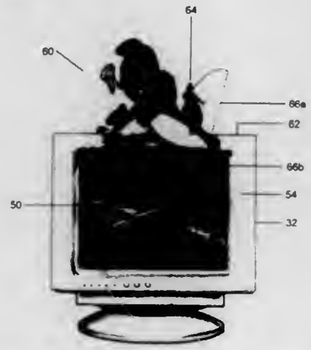
5,825,347
PHYSICAL/ELECTRONIC IMAGE IMAGE DEPICTION APPARATUS AND METHOD

Christopher Alen Prinsen, Minneapolis, Minn., assignor to DS Partners, Inc., Minneapolis, Minn.

Filed Jun. 17, 1996, Ser. No. 668,421

Int. Cl.[6] G09F *7/12*

U.S. Cl. 345—112 **35 Claims**



1. A partially computerized combination for depicting an image in a system having a monitor coupled to a computer, comprising:

a set of one or more physical objects, each physical object positioned on a side of the monitor and representing a different discrete portion of the image, each discrete portion visibly connected to a remaining portion of the image; and

means, implemented by the computer, for displaying the remaining portion of the image as a visual representation on a display of the monitor, at least a portion of the visual representation being a visual extension of one or more of the physical objects, wherein the visual representation, the visual extension, and the set of one or more physical objects jointly define the image.

5,825,348
DESK DRAWER USER INTERFACE

Frank Ludolph, Menlo Park; George Norman, Fremont, and Joel Spiegel, San Jose, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

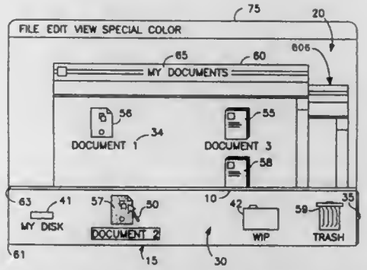
Continuation of Ser. No. 480,969, Jun. 7, 1995, Pat. No. 5,657,049, which is a continuation of Ser. No. 90,470, Jul. 12, 1993, abandoned, which is a continuation of Ser. No. 709,715, Jun. 3, 1991, abandoned. This application Jan. 8, 1997, Ser. No. 780,626

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—115 **10 Claims**

1. In a computer controlled information management system including a display screen containing a first display region which allows the display of a plurality of overlapping windows at a given time, a method comprising:

displaying a second display region covering at least a portion of said first display region and any windows being displayed within said portion of the first display region, said second display region, when present in a mode, being completely viewable within said display screen such that, while said second display region is displayed it is always displayed over



and covering other data including said plurality of windows to the extent said plurality of windows are in said portion of said first display region;

resizing said second display region by positioning a pointer displayed on said display screen on a first region of said second display region;

selectively transferring information from said second display region into one of said plurality of windows.

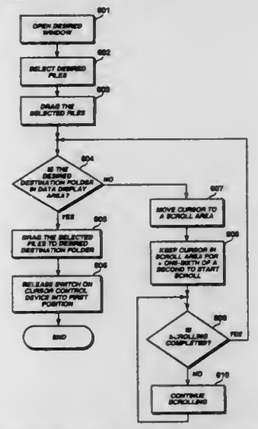
5,825,349
INTELLIGENT SCROLLING

John R. Meier; John Sullivan, both of Cupertino, and Paul Mercer, Palo Alto, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 301,314, Sep. 6, 1994, abandoned, which is a continuation of Ser. No. 965,218, Oct. 23, 1992, abandoned, which is a continuation of Ser. No. 635,228, Dec. 28, 1990, Pat. No. 5,196,838. This application Jun. 6, 1995, Ser. No. 465,918

Int. Cl.[6] G09G *5/34*

U.S. Cl. 345—123 **39 Claims**



1. A file management system for a computer system having a display, a processor and a memory for storing files managed by said file management system, comprising:

a first region displayed on said display having a data display area;

a cursor displayed on said display; and

a first scroll area associated with said first region,

said file management system allowing scrolling of contents displayed in said data display area of said first region in a first direction when said cursor has selected an item which represents a file managed by said file management system and said cursor has been moved with said item to said first scroll area and said cursor is disposed in said first scroll area and wherein said first scroll area scrolls said contents along only said first direction when in a first context,

said file management system allowing said item to be dragged outside of said first region, and

said file management system determining whether to scroll said contents displayed in said first region or to allow said item to be dragged outside of said first region.

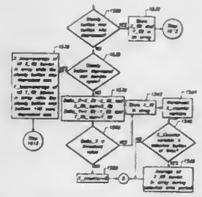
5,825,350
ELECTRONIC POINTING APPARATUS AND METHOD

Charles Whipple Case, Jr., Palo Alto; Torbjorn Hovden, San Jose; Gregory Clark Smith, La Honda; Steven Porter Hotelling, Cupertino, and Michael Kenneth Sahlna, Menlo Park, all of Calif., assignors to Gyration, Inc., and Saratoga, Inc.

Continuation of Ser. No. 614,635, Mar. 13, 1996. This application Aug. 4, 1997, Ser. No. 905,841

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—163 **10 Claims**



1. A method for generating movement data indicative of a direction and a distance a display or a displayed cursor on a computer-controlled display screen is to be moved in response to movement of a pointing apparatus, wherein the pointing apparatus includes a gyroscopic element, the method comprising the steps of:

sampling an output of the gyroscopic element, the output indicating movement of the pointing apparatus;

generating the movement data from the sampled output;

determining whether the movement data indicates that the pointing apparatus has moved at least a first threshold amount;

in response to the movement data indicating that the pointing apparatus has not moved at least the first threshold amount, altering the movement data to indicate that the pointing apparatus has not moved; and

in response to the movement data indicating that the pointing apparatus has moved at least the first threshold amount, determining whether the movement data indicates that the pointing apparatus has moved at least a second threshold amount; and

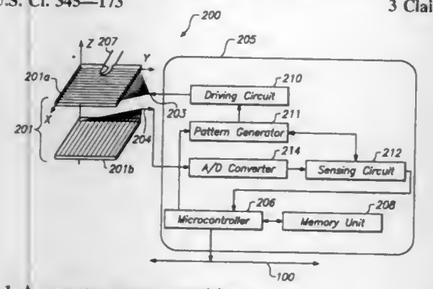
in response to determining that the movement data indicates that the pointing apparatus has not moved at least the second threshold amount, reducing an amount of movement indicated by the movement data.

5,825,351

METHOD AND APPARATUS FOR NOISE FILTERING FOR AN INPUT DEVICE

Tommy H. Tam, Mountain View, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 241,816, May 12, 1994, abandoned. This application Nov. 15, 1995, Ser. No. 559,258
Int. Cl.[6] G09G *5/00;5/08*
U.S. Cl. 345—173 **3 Claims**



1. A computer system comprising:

a CPU for executing instructions and processing data;

a display subsystem coupled to said CPU wherein said display subsystem includes a display screen and a display driving circuit which receives and executes instructions from said CPU for moving a displayed marking on said display screen;

an input subsystem including an input pad for displayed marking movement information input by a user using a conductive stylus moving it against said input pad, said input pad having two conductive layers disposed on said input pad having a constant separation therebetween and said input pad having a pad circuit coupled to said input pad for determining location information of said conductive stylus on said input pad by repeatedly comparing measured capacitively-related values on selected portions of said input pad with reference values related to said selected portions of said input pad, said location information being in electronic and digital format and being representative of said marking movement information;

a noise filter coupled to said input subsystem and said CPU for receiving said location information, and for processing said location information for removing effects of noise picked up by said input subsystem whereby the noise filter is operatively sensitive to the speed of said conductive stylus and the noise filter generates and uses displacement information indicative of how far said conductive stylus had traveled in time for generating processed location information wherein a later piece of said processed location information is a function of an earlier piece of said processed location information and a selected proportion of said displacement information, the selected proportion used depending on the value of said displacement information, the processed location information being subsequently coupled to said display subsystem under the control of said CPU for moving said displayed marking on said display screen;

said two conductive layers being disposed on either side of said input pad, said layers further comprising:

a first array of conductive parallel strips electrically coupled to a driving circuit of said pad circuit for establishing capacitive values for said input pad;

a second array of conductive parallel strips disposed orthogonal to said first array, said second array of conductive strips being electrically coupled to a sensing circuit of said pad circuit for measuring said capacitive values for said input pad; and

wherein said driving circuit and said sensing circuit repeatedly select portions of said input pad for detecting and tracking capacitive aberration caused by said conductive stylus as it moves across said input pad, said capacitive aberration being related to the difference between said established capacitive values and said measured capacitive values;

said input pad being insulated and rigid to touch;

said noise filter generating and using displacement information indicative of how far said conductive stylus had traveled in time for generating said processed location information, said noise filter further generating a later piece of said processed location information by incorporating a proportion of said displacement information into an earlier piece of said processed location information, said noise filter further using a number of values for said proportion of said displacement information, a use of any particular value out of said number of values depending on the value of said displacement information;

wherein said later piece of said processed location information, X_{later} and Y_{later}, are derived according to the following rules:

$X_{later} = X_{earlier} + (\Delta X/2^n)$ and

$Y_{later} = Y_{earlier} + (\Delta Y/2^n)$

where n >0, ΔX is the value of said displacement information in time in the X direction and ΔY is the value of said displacement information in time in the Y direction and where both ΔX and ΔY are less than A, a number equal to or below which indicating said conductive stylus moving across said input pad slowly; and

$X_{later} = X_{earlier} + (\Delta X/2^m)$ and

$Y_{later} = Y_{earlier} + (\Delta Y/2^m)$

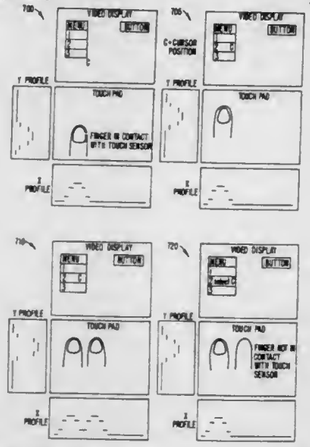
where m $\geqq$0 and n >m, and where ΔX or ΔY is greater than A, a number over which indicating said conductive stylus moving across said input pad quickly.

5,825,352

MULTIPLE FINGERS CONTACT SENSING METHOD FOR EMULATING MOUSE BUTTONS AND MOUSE OPERATIONS ON A TOUCH SENSOR PAD

Stephen J. Bisset, Palo Alto, and Bernard Kasser, Menlo Park, both of Calif., assignors to Logitech, Inc., Fremont, Calif.

Continuation of Ser. No. 582,768, Jan. 4, 1996, abandoned. This application Feb. 28, 1996, Ser. No. 608,116
Int. Cl.[6] G09G *5/00;5/08*
U.S. Cl. 345—173 **31 Claims**



1. A method for detecting the operative coupling of multiple fingers to a touch sensor involving the steps of

scanning the touch sensor to (a) identify a first maxima in a signal corresponding to a first finger, (b) identify a minima following the first maxima, (c) identify a second maxima in a signal corresponding to a second finger following said minima, and

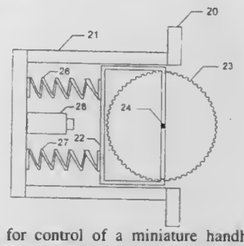
providing an indication of the simultaneous presence of two fingers in response to identification of said first and second maxima.

5,825,353

CONTROL OF MINIATURE PERSONAL DIGITAL ASSISTANT USING MENU AND THUMBWHEEL

Craig Alexander Will, 37675 Fremont Blvd., No. 23, Fremont, Calif. 94536

Filed Apr. 18, 1995, Ser. No. 423,690
Int. Cl.[6] G06F *3/00*
U.S. Cl. 345—184 **20 Claims**



1. A method for control of a miniature handheld computing system, comprising the steps of:

displaying an ordered sequence of items in a menu, in which one of the items from said ordered sequence is designated at any given time as tentatively selected by displaying it in a manner distinct from that of other menu items;

rotating a cylinder and determining the direction and amount of movement of said cylinder;

moving the designation of a menu item in a particular direction and distance within the ordered sequence, depending upon the direction and distance said cylinder was rotated;

repeating the steps of rotating the cylinder, determining the amount of movement, and moving the designation of a menu item until a menu item desired by the user is designated;

actuating a switch to complete the selection of said desired menu item.

identifying a first instruction from a user that either directly or indirectly specifies a pause in the display of the image;

in response to the first instruction, stopping the transfer of display data to the display device;

storing the display data acquired subsequent to the first instruction;

identifying a second instruction from a user that either directly or indirectly specifies resumption of the display of the image;

in response to the second instruction, transferring stored display data, in the order that the stored display data was stored, to the display device;

processing the stored display data, either before or after the stored display data is stored, in a manner that enables the stored display data to be displayed at a second rate that is greater than the first rate;

displaying, at the second rate, an image generated from the processed stored display data transferred to the display device;

subsequent to identification of the second instruction, continuing to store display data so long as there is stored display data that has not yet been transferred to the display device, the amount of stored display data being gradually reduced by display of the stored data at the second rate that is greater than the first rate at which the display data need be stored to enable display of the display data at the first rate;

upon stopping storage of acquired display data, again transferring the display data to the display device as the display data is acquired;

specifying the time at which the step of again transferring is to begin; and

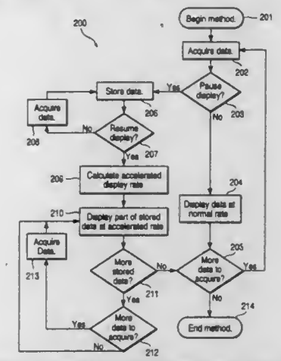
calculating the second rate based upon the specified time, the time at which resumption of the display of the image begins, the amount of stored display data at the time at which resumption of the display of the image begins, and the first rate.

5,825,354

DISPLAY PAUSE WITH ELASTIC PLAYBACK

Subutai Ahmad; Neal A. Bhadkamkar, both of Palo Alto; Steve B. Cousins, Mountain View; Paul A. Freiberger, San Mateo, all of Calif., and Brygg A. Ullmer, Cambridge, Mass., assignors to Interval Research Corporation, Palo Alto, Calif.

Filed Dec. 5, 1996, Ser. No. 761,117
Int. Cl.[6] G06T *13/00*
U.S. Cl. 345—327 **20 Claims**



1. A method for displaying an image over a period of time, the image represented by an ordered set of display data, the method comprising the steps of:

acquiring display data from a data source;

transferring the display data to a display device as the display data is acquired;

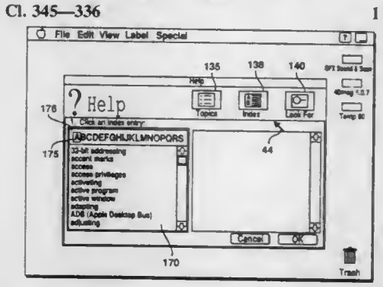
displaying, at a first rate, an image generated from the display data transferred to the display device;

5,825,355

METHOD AND APPARATUS FOR PROVIDING A HELP BASED WINDOW SYSTEM USING MULTIPLE ACCESS METHODS

James Edward Palmer, Redwood City; Patricia J. Coleman, Menlo Park; Jeffrey Alan Herman, Palo Alto; Eli Cochran, Menlo Park, and John Richard Powers, III, Monte Sereno, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 27, 1993, Ser. No. 10,063
Int. Cl.[6] G06F *3/00*
U.S. Cl. 345—336 **1 Claim**



1. In a computer display system having a central processing unit (CPU) coupled to a display such that data is displayed on said display in windows, a method for instructing a user on how to perform operations using said CPU, the method comprising the steps of:

A. generating and displaying an access window on said display;

B. generating and displaying within said access window a first access function, a second access function, and a third access function;

C. performing the following steps upon selection of said first access function by a user

1) displaying a plurality of headings on said display, wherein each heading of said plurality of headings corresponds to a set of operations;
2) displaying a plurality of phrases on said display responsive to said user selecting one of said headings, wherein said selected heading corresponds to a first set of operations, wherein each of said plurality of phrases corresponds to an operation in said first set of operations;
3) displaying at least one presentation window that contains instruction data related to a selected phrase on said display in response to said user selecting one of said displayed phrases, said instruction data indicating how to perform the operation that corresponds to said selected phrase;

D. performing the following steps upon selection of said second access function by said user

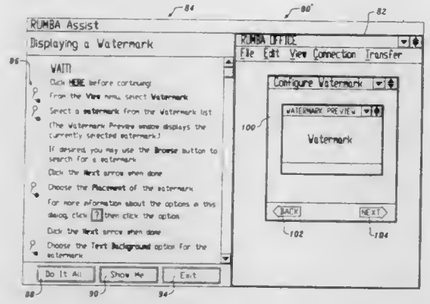
1) displaying a search subwindow on said display;
2) receiving through user input a search word into said search subwindow;
3) receiving though user input a first signal to search for said search word;
4) displaying in said access window a plurality of phrases related to said search word, wherein each of said plurality of phrases corresponds to an operation in a second set of operations;
5) displaying at least one presentation window that contains instruction data related to a selected phrase on said display in response to said user selecting one of said displayed phrases, said instruction data indicating how to perform the operation that corresponds to said selected phrase;

E. performing the following steps upon selection of said third access function by said user

1) displaying an index window on said display, said index window having a scroll bar including:
a plurality of characters displayed along said scroll bar;
a slider which may be selectively positioned over at least a portion of each of said characters using slider positioning means coupled to said CPU;
2) displaying a plurality of headings that correspond to a desired character in response to receiving user input that positions said slider over a portion of said desired character;
3) displaying a plurality of phrases on said display responsive to said user selecting one of said headings, wherein said selected heading corresponds to a third set of operations, wherein each of said plurality of phrases corresponds to an operation in said third set of operations;
4) displaying at least one presentation window that contains instruction data related to a selected phrase on said display in response to said user selecting one of said displayed phrases, said instruction data indicating how to perform the operation that corresponds to said selected phrase.

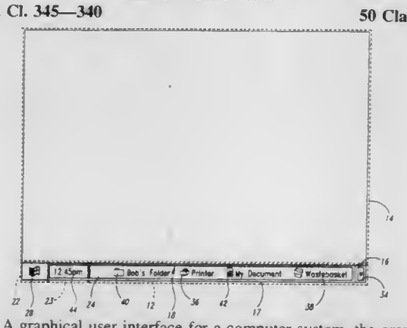
5,825,356
HELP SYSTEM WITH SEMITRANSPARENT WINDOW FOR DISABLING CONTROLS
Dennis M. Habib, Redmond, Wash.; Mindy J. Engelberg, Coarsegold, Calif.; Kathryn A. McNutt, Des Moines, Wash.; Colby E. Kinser, Woodinville, Wash.; Charles E. Lynch, II, North Bend, Wash., and Chauncey L. Williams, Redmond, Wash., assignors to Wall Data Incorporated, Kirkland, Wash.
Filed Mar. 18, 1996, Ser. No. 617,440
Int. Cl.[6] G06F *3/00*
U.S. Cl. 345—338 **4 Claims**

1. A method of operating a computer system to provide help to a user regarding how to complete a desired task in an underlying program comprising the steps of:
determining whether the user has initiated a help program that runs on the computer system;
presenting the user with a list of topics about which help information is available;



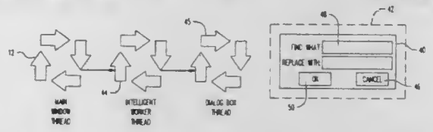
determining whether a user has selected a topic from the list of topics;
recalling a script from a memory of the computer system, the script providing the help program with text that describes a sequence of steps required to complete the desired task in the underlying program as well as an indication of what action will be produced by the computer system where the user completes a step of the sequence of the steps and instructing the help program what controls should be enabled in the underlying program;
generating a command to the underlying program that creates a semitransparent window over the underlying program to disable the controls of the under program, the window having one or more holes disposed over the controls that are to be enabled; and
repetitively monitoring the underlying program for the indication that the user has completed the step and recalling a next script until each step in the sequence of steps has been completed.

5,825,357
CONTINUOUSLY ACCESSIBLE COMPUTER SYSTEM INTERFACE
Mark A. Malamud; Renee Marceau; Joyce A. Grauman, all of Seattle; Royce A. Levien, Bellevue, all of Wash.; Daniel P. Oran, Old Brookville, N.Y.; David A. Bolnick; David A. Barnes, Jr., both of Seattle, Wash., and Russell Scott Johnson, Bothell, Wash., assignors to Microsoft Corporation, Redmond, Wash.
Continuation of Ser. No. 166,566, Dec. 13, 1993, abandoned.
This application Jun. 21, 1996, Ser. No. 667,362
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—340 **50 Claims**



1. A graphical user interface for a computer system, the graphical user interface providing a user continuous convenient access to computer resources associated with a plurality of active applications, the graphical user interface comprising:
a sectioned display space, including: an applications section occupying a substantial majority of the display space and having associated therewith an active application having a window, and a tray section occupying a substantial minority of the display space and having associated therewith an extensible set of active applications;
a tray container for facilitating direct user access via the graphical user interface to computer resources associated with the extensible set of active applications, the tray container including:
docking means responsive to a user initiated command for adding the active application to the extensible set of active applications associated with the tray section, and a docked applications list automatically updated to specify the extensible set of active applications, wherein the docked applications list includes a panel list designating an extensible set of empaneled applications associated with a panel region of the tray section; and
tray display means for facilitating display within the tray section, the tray display means displaying a panel button for enabling a user to select for display in the panel region one of a set of panels, each panel of the set of panels comprising a graphic representations associated with one of the extensible set of empaneled applications.

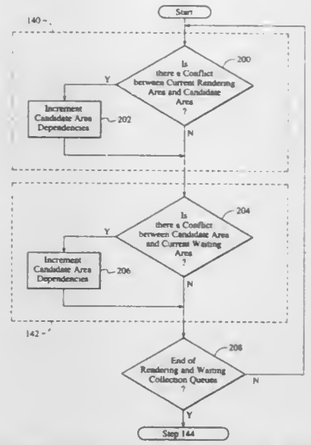
5,825,358
PROCESS AND SYSTEM FOR FORMING MULTIPLE PREEMPTIVE MODELESS DIALOG BOXES
Therese M. Silvent, Phoenix; Valentine W. Golec, Glendale, and James T. Godziela, Phoenix, all of Ariz., assignors to Honeywell, Inc., Minneapolis, Minn.
Filed Oct. 4, 1996, Ser. No. 725,774
Int. Cl.[6] G06F *3/00*
U.S. Cl. 345—340 **23 Claims**



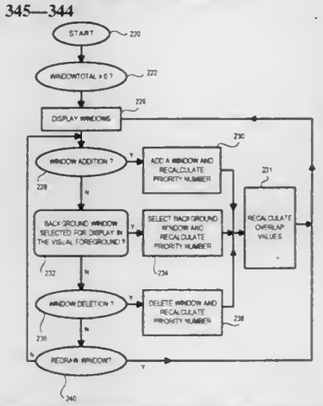
1. A process for managing multiple preemptive modeless dialog boxes which enables an operator to select various functions of an application without having to de-select a previous function of said application, said application having a main window thread which controls said functions, the process comprising the steps of:
creating a preemptive modeless dialog box object which comprises an intelligent worker thread which is in communication with both said main window thread and a dialog box thread;
creating an active preemptive modeless dialog box corresponding to a first function of said application; and
creating at least one subsequent preemptive modeless dialog box corresponding to a second function of said application;
wherein said active preemptive modeless dialog box is terminated by said intelligent worker thread whenever a subsequent preemptive modeless dialog box is created such that said subsequent preemptive modeless dialog box then becomes the active preemptive modeless dialog box.

5,825,359
METHOD AND SYSTEM FOR IMPROVED ARBITRATION OF A DISPLAY SCREEN IN A COMPUTER SYSTEM
Herbert G. Derby, Boulder Creek, and Paul Charlton, Cupertino, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Oct. 5, 1995, Ser. No. 539,671
Int. Cl.[6] G06F *7/00;3/14*
U.S. Cl. 345—344 **29 Claims**

1. A method for arbitrating display output on a display device of a computer system, the method comprising:
(a) comparing a candidate display area with each of a plurality of rendering display areas and each waiting display area in a waiting queue, using only one variable for the number of dependencies for the candidate display area; and
(b) determining whether at least one dependency exists for the candidate display area based on the comparing step, wherein the candidate display area is placed in the waiting queue when at least one dependency exists.



5,825,360
METHOD FOR ARRANGING WINDOWS IN A COMPUTER WORKSPACE
Seth Tobin Odam, Palo Alto; James Riddle Harker, Los Altos; Joseph G. Ansanelli, Palo Alto, all of Calif., and John Linehan Welde, Jr., Pope AFB, N.C., assignors to Apple Computer, Inc., Cupertino, Calif.
Continuation of Ser. No. 418,760, Apr. 7, 1995, abandoned.
This application Sep. 2, 1997, Ser. No. 921,849
Int. Cl.[6] G06F *3/00*
U.S. Cl. 345—344 **23 Claims**



1. A computer implemented method for arranging windows in a workspace on a computer display screen, comprising:
assigning, using a central processing unit, a priority to each of a first plurality of windows in said workspace according a predefined criteria, an active window having the highest priority; and
indenting by an indentation distance value associated with said each of said first plurality of windows from a predefined

reference position in said workspace on said computer display screen said each of said first plurality of windows such that each of said first plurality of windows is indented by a different indentation distance that is determined in accordance with relative priorities of said first plurality of windows, the window having the lowest priority being positioned the closest to said predefined reference position, the window having the highest priority being positioned the furthest from said predefined reference position and in the visual foreground of said workspace on said computer display screen, wherein at least a portion of even one of said first plurality of windows is visible in said computer display screen.

5,825,361

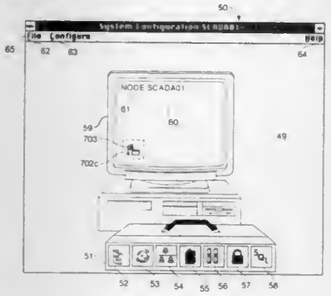
DYNAMIC GRAPHICAL SYSTEM CONFIGURATION UTILITY

Stephen E. Rubin, Needham; Paul J. Vanslette, Blackstone, and Scott Favreau, Milford, all of Mass., assignors to Intellution, Inc., Norwood, Mass.

Continuation of Ser. No. 454,870, May 31, 1995, abandoned, which is a continuation of Ser. No. 968,061, Oct. 28, 1992, abandoned. This application Mar. 29, 1996, Ser. No. 623,742

Int. Cl.[6] G06F *3/14;15/00*

U.S. Cl. 345—349 **23 Claims**



1. A method for enabling a user to configure a computer system that includes at least one computer that can be configured with data processing features and for enabling the user to view graphical representations of the data processing features of the configured computer on a display, comprising the steps of:

displaying, in a first area of the display, a graphical representation of the computer to be configured;

displaying, in a second area of said display, at least one first graphical object, each graphical object representing a different one of said data processing features and enabling the user to select said at least one first graphical object using an input device to configure the computer with the data processing feature represented by the selected one first graphical object;

prompting the user to enter information for configuring an instance of the data processing feature represented by said one first graphical object selected by the user,

responding to the user entering said information by displaying, for each first graphical object selected, a second graphical object, like the first graphical object, within said first area of said display, indicating that said computer has been configured with said instance of said data processing feature, and

enabling said computer system to thereafter use said instance of said data processing feature to process data in accordance with said information.

5,825,362

GRAPHICAL USER INTERFACE WITH KEYBOARD DISPLAY GRAPHICAL

Dale Retter, Scottsdale, Ariz., assignor to DataHand Corporation, Phoenix, Ariz.

Filed May 7, 1997, Ser. No. 852,594

Int. Cl.[6] G06F *3/14:3/023:3/00*

U.S. Cl. 345—357 **14 Claims**



1. A method for controlling the operation of a digital computer system having a memory, a visual display, and a keyboard, said method causing said computer system to perform specific functions in successive repeatable tasks including the steps of:

displaying user schematics of said successive tasks on said visual display in a format which contains in part an unchanging representation of at least a core plurality of keys of said keyboard in the same arrangement used on said keyboard;

indicating, within the unchanging representation of said core plurality of keys, a dynamically changeable function representation of functions to be performed upon operation of a corresponding one of said keys; and changing said changeable representation in a hierarchal sequence and causing said computer system to perform said specific functions in response to successive operations of selected ones of said core plurality of said keys.

5,825,363

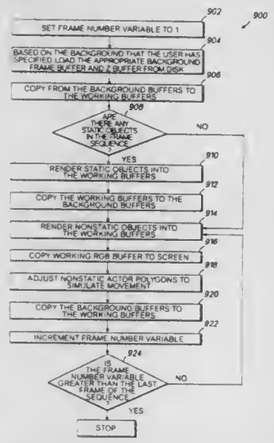
METHOD AND APPARATUS FOR DETERMINING VISIBLE SURFACES

Michael D. Anderson, Bellevue, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed May 24, 1996, Ser. No. 653,380

Int. Cl.[6] G06T *15/40*

U.S. Cl. 345—422 **27 Claims**



1. A method for determining each visible surface of a scene comprising a sequence of frames, each having a plurality of geometric shapes and corresponding to a plurality of pixels, the scene having a background remaining constant for the frame sequence, to support a presentation on a pixel-oriented output device of an image of the scene, comprising the steps of:

(a) initializing a frame number variable, each frame associated with a frame number;

(b) initializing a working frame buffer by copying background data of a background frame buffer to the working frame buffer, the background data defined by values for pixels corresponding to the background, and initializing a working Z buffer by copying background depth data of a background Z buffer to the working Z buffer, the background depth data represented by depth values defining spatial relationships between a view point reference and geometric shapes at the pixels of the background;

(c) responsive to initializing the working frame buffer and the working Z buffer, for a selected frame corresponding to the frame number variable, rendering the geometric shapes into the working frame buffer and the working Z buffer;

(d) incrementing the frame number variable; and

(e) repeating steps (b)–(d) until the frame number variable is greater than the number of frames within the frame sequence.

5,825,364

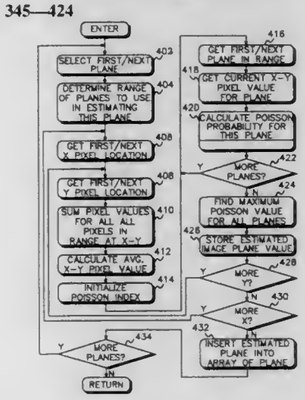
SYSTEM AND METHOD FOR CONSTRUCTING A THREE DIMENSIONAL MODEL FROM TWO DIMENSIONAL IMAGES USING POISSAN PROBABILITY

Ronald D. Redmer, Rochester Hills, Mich., assignor to Electronic Data Systems Corporation, Plano, Tex.

Filed Apr. 18, 1996, Ser. No. 634,480

Int. Cl.[6] G06T *17/00*

U.S. Cl. 345—424 **12 Claims**



1. A computer system for modeling three dimensional characteristics of an object from two dimensional images of slices of the object, said system comprising:

a communication device for capturing each image of each slice;

a memory for storing each said image as a reference plane; and

a processor for creating values for at least one estimate plane between each pair of reference planes, wherein said values are created from statistically estimating values from a predetermined range of planes on either side of said at least one estimated plane, the values being statistically estimated by creating a poisson probability for each plane within said predetermined range.

5,825,365

THREE-DIMENSIONAL GRAPHIC APPARATUS SIMPLIFYING NEIGHBORING ARRANGEMENT

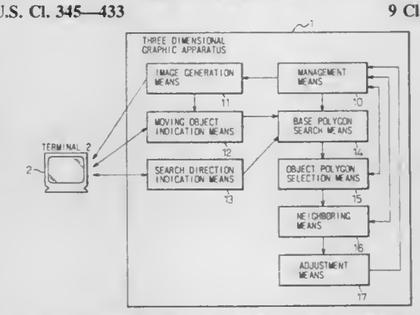
Katsuhiko Hirota, Nagano; Hiroshi Kamada; Kaori Suzuki, both of Kawasaki; Atsuko Tada; Asako Yumoto, both of Kawasaki; Satoshi Kasai, and Kazumi Shibata, both of Shizuoka, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 2, 1996, Ser. No. 595,656

Claims priority, application Japan, Feb. 3, 1995, 7-016765

Int. Cl.[6] G06T *17/40*

U.S. Cl. 345—433 **9 Claims**



1. A three-dimensional graphic apparatus for generating a three-dimensional image by means of computer graphics, comprising:

a moving object indication means for indicating one of matters in a three-dimensional image as an object matter;

a search direction indication means for indicating a search direction of a base polygon, which is a polygon constituting of a base matter coming into contact with said object matter, from a notice point of a line of sight;

a base polygon search means that selects a polygon closest to said notice point as said base polygon from among polygons locating on a straight line extended from said notice point in said search direction;

an object polygon selection means for selecting an object polygon, which is a polygon to be brought into contact, from among polygons constituting said object matter;

a neighboring means for rotating said object matter so that said object polygon will be parallel to said base polygon and for moving said object matter so that said object polygon and said base polygon will lie on the same plane.

5,825,366

METHOD AND APPARATUS FOR SYNTHESIZING IMAGES FOR VIDEO COMMUNICATION SYSTEMS

Takashi Yagi; Kazuho Arita, both of Yokosuka; Shigeru Oikawa, Kashiwa, and Satoshi Ishibashi, Yokohama, all of Japan, assignors to Nippon Telegraph and Telepbone Corporation, Tokyo, Japan

Continuation of Ser. No. 298,549, Aug. 30, 1994, abandoned. This application Apr. 4, 1997, Ser. No. 832,851

Claims priority, application Japan, Sep. 1, 1993, 5-217124; Oct. 7, 1993, 5-251306

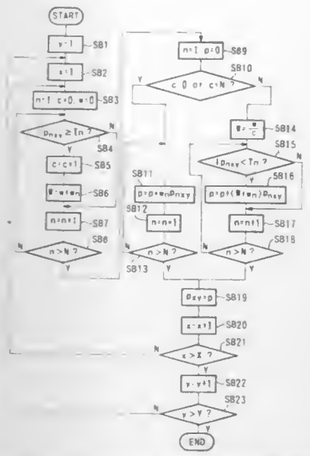
Int. Cl.[6] G06T *11/60*

U.S. Cl. 345—433 **10 Claims**

1. A method of synthesizing an image on a display terminal of a video communication system from N images P_1–P_N corresponding to writings and hand writings generated by multiple users at remote locations to generate a clear and coherent resultant image for group work, said images corresponding to a plurality of regions, the method comprising the steps of:

comparing a luminance I_{p1xy}–I_{pNxy} of each pixel P_{1xy}–P_{Nxy} positioned at same coordinates (x,y) of said N images P_1–P_N with a predetermined threshold T_1–T_N corresponding to each of said images P_1–P_N, N being a natural number greater than 1;

determining a synthesized pixel P_{xy} at said coordinates (x,y) of a synthesized image by synthesizing said pixels P_{1xy}–P_{Nxy} using



a predetermined synthesis ratio for each of said images P_1–P_N when said luminance I_{p1xy}–I_{pNxy} of said pixels P_{1xy}–P_{Nxy} are all greater than the corresponding threshold T_1–T_N;

determining said synthesized pixel P_{xy} at said coordinates (x,y) of said synthesized image by synthesizing pixels having a luminance less than or equal to the corresponding threshold T_1–T_N using an arbitrary synthesis ratio when luminance of at least one of said pixels is less than or equal to the corresponding threshold; and

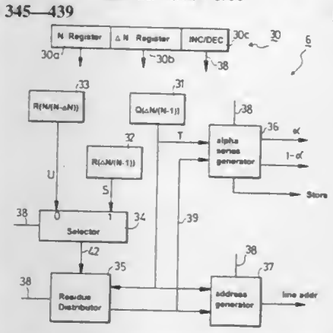
repeating the above steps for each of the regions to be synthesized, to generating the clear and coherent resultant image.

5,825,367

APPARATUS FOR REAL TIME TWO-DIMENSIONAL SCALING OF A DIGITAL IMAGE

Rong-Fuh Shyu, Hsinchu, and Feng-Ling Chang, Taipei Hsien, both of Taiwan, assignors to Winbond Electronics Corp., Hsiochu, Taiwan

Continuation-in-part of Ser. No. 507,755, Jul. 26, 1995, Pat. No. 5,621,870. This application Jul. 23, 1996, Ser. No. 685,341
Int. Cl.[6] G06T *3/00*
U.S. Cl. 345—439 **16 Claims**



1. An apparatus for processing an original digital image to obtain a uniformly scaled desired digital image, the apparatus including a frame memory for storing the original digital image therein, the original digital image having a number (N) of successive original scan lines and a number (N') of successive original pixel data per original scan line, the apparatus further including a vertical scaling unit for scaling the original digital image in a vertical direction to obtain a number (M) of successive desired scan lines, and a horizontal scaling unit for scaling the desired scan lines from the vertical scaling unit in a horizontal direction to obtain a number (M') of successive desired pixel data per scan line, the number (M) being greater than the number (N), the number (M') being greater than the number (N'), wherein:

the vertical scaling unit includes: a line memory connected to the frame memory for storing an (n+1)th one of the original scan lines from the frame memory therein; a line buffer connected to the line memory for storing an (n)th one of the original scan lines therein; a first linear interpolator connected to the line memory and the line buffer; and a vertical scaling controller connected to the frame memory, the line buffer and the first linear interpolator, the vertical scaling controller controlling the storage of the original scan lines in the line memory and the line buffer, the vertical scaling controller further controlling the first linear interpolator to perform a linear interpolation of the (n)th and (n+1)th ones of the original scan lines from the line memory and the line buffer to produce a residual interpolated scan line inserted therebetween when division of (M–N) by (N–1) results in a remainder (S) and when (n) is a minimum number which meets a condition $(n+1)*(S) \geqq (s)*(N)$, wherein (s) ranges from 1 to (S); and

the horizontal scaling unit includes: a dot register connected to the first linear interpolator for storing an (n'+1)th one of the pixel data of one of the scan lines from the first linear interpolator therein; a dot buffer connected to the dot register for storing an (n')th one of the pixel data of said one of the scan lines therein; a second linear interpolator connected to the dot register and the dot buffer; and a horizontal scaling controller connected to the line memory, the line buffer, the dot buffer and the second linear interpolator, the horizontal scaling controller controlling the storage of the pixel data in the dot register and the dot buffer, the horizontal scaling controller further controlling the second linear interpolator to perform a linear interpolation of the (n')th and (n'+1)th ones of the pixel data from the dot register and the dot buffer to produce a residual interpolated pixel data inserted therebetween when division of (M'–N') by (N'–1) results in a remainder (S') and when (n') is a minimum number which meets a condition $(n'+1)*(S') \geqq (s')*(N')$, wherein (s') ranges from 1 to (S');

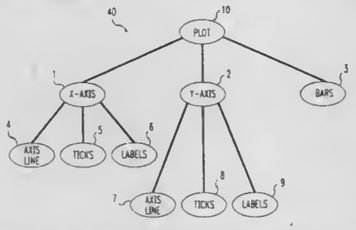
whereby the output of the second linear interpolator can be provided directly to an output device.

5,825,368

METHOD AND APPARATUS FOR RENDERING GRAPHICAL COMPONENTS ON A DISPLAY UTILIZING GEOMETRIC CONSTRAINTS

Allan R. Wilks, Scotch Plains, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 27, 1995, Ser. No. 579,498
Int. Cl.[6] G06T *3/00;3/20;3/40;3/60*
U.S. Cl. 345—440 **5 Claims**



1. A method for rendering graphical components on a computing display device having an absolute coordinate system, wherein said graphical components have intrinsic coordinate systems, said method comprising the steps of:

determining a set of geometric constraints for relating said intrinsic coordinate systems of said graphical components to said absolute coordinate system, said intrinsic coordinate systems having initially unknown transformation parameters and said absolute coordinate system having predetermined transformation parameters, wherein said initially unknown transformation parameters and said predetermined transformation parameters include rotation, reflection, scale and translation parameters;

performing a non-shear coordinate transformation for mapping intrinsic coordinates in said intrinsic coordinate systems to absolute coordinates in said absolute coordinate system, wherein said non-shear coordinate transformation enables said initially unknown transformation parameters of said intrinsic coordinate systems to be calculated at a time of rendering said graphical components;

said step of performing a non-shear coordinate transformation includes the steps of:

determining said rotation and reflection parameters of said intrinsic coordinate systems using said geometric constraints and said predetermined transformation parameters of said absolute coordinate system, said geometric constraints including one or more linear equality constraints for defining relationships between said initially unknown transformation parameters of said intrinsic coordinate system and said predetermined transformation parameters of said absolute coordinate system involved in said geometric constraints, said linear equality constraints allowing independent computation of said rotation and reflection parameters of said intrinsic coordinate systems in advance of said scale and translation parameters of said intrinsic coordinate systems;

defining said scale and translation parameters of said intrinsic coordinate systems using said geometric constraints, said predetermined transformation parameters of said absolute coordinate systems and said rotation and reflection parameters of said intrinsic coordinate systems such that all said linear equality constraints are simultaneously satisfied;

said step of performing said non-shear coordinate transformation further includes the step of:

transforming intrinsic coordinates (x', y') in said intrinsic coordinate systems i for said graphical components denoted by i=1 . . . , N into absolute coordinates (x^0, y^0) in said absolute coordinate system according to the corresponding equations

$$x^0=\sigma_x'\rho_x'x'\cos\theta'-\sigma_y'\rho_y'y'\sin\theta'+\tau_x'$$

and

$$y^0=\sigma_x'\rho_x'x'\sin\theta'+\sigma_y'\rho_y'y'\cos\theta'+\tau_y'$$

where θ corresponds to said rotation parameter, σ_x and σ_y are said scale parameters, ρ_x and ρ_y are said reflection parameters, and τ_x and τ_y are said translation parameters, and said reflection parameters having either a +1 or −1 value, said scale parameters being positive values;

said step of transforming said intrinsic coordinates further includes the step of:

determining said rotation parameter of said intrinsic coordinate systems using said geometric constraints and a predetermined rotation parameter for said display, said geometric constraints including one or more linear equality constraints for defining relationships between said parameters of coordinate systems involved in said geometric constraints, said linear equality constraints allowing computation of said rotation parameter of said intrinsic coordinate systems in advance and independently of said reflection, scale and translation parameters of said intrinsic coordinate systems, wherein said linear equality constraints include rotation equations having forms $\theta'=\alpha$ or $\theta'=\theta'+\Phi$, where j=0, . . . , N denotes a coordinate system other than said intrinsic coordinate system i to which said parameter belongs, a corresponds to a known value and Φ represents either 0 or $\pm TT/2$; and

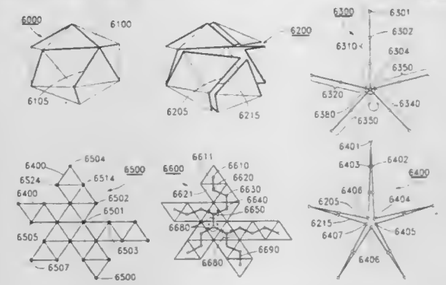
displaying said graphical components on said computing display device.

5,825,369

COMPRESSION OF SIMPLE GEOMETRIC MODELS USING SPANNING TREES

Jarek Jaroslaw Roman Rossignac, Cronton-on-Hudson, and Gabriel Taubin, Hartsdale, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 30, 1996, Ser. No. 688,572
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—440 **38 Claims**



1. A data structure in a computer memory representing a set of points of a n-dimensional space, the data structure comprising:

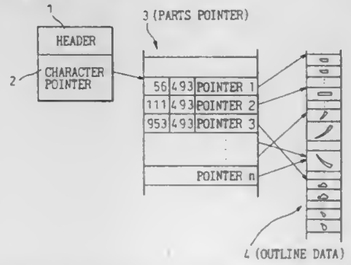
a table of runs describing a rooted tree, the rooted tree having one or more nodes, each node being a regular node, a branching node, or a leaf node, each node of the rooted tree represents a point of the n-dimensional space, the table of runs having one or more records, each record representing a run of the rooted tree, a run having a first node that is a leaf or branching node and a last node that is a leaf or branching node and the run connecting one or more regular nodes between the first node and the last node where the connection between every pair of consecutive nodes in the run is an edge, each record having a length of run field in terms of the number of edges in the run, a leaf field indicating if the run ends at a leaf node, and a last run field indicating if the run represented by the record is the last one with the same first node in the rooted tree, the records given by an order of tree traversal with respect to the root node.

5,825,370

METHOD AND APPARATUS FOR PROCESSING CHARACTERS

Toshikuni Yoshida; Shinichiro Motokado; Tomoko Motokado, all of Kawasaki; Mutsumi Ohtomo, Sapporo, all of Japan, and Antonius Hellmann, Munich, Germany, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 12, 1996, Ser. No. 748,012
Claims priority, application Japan, Nov. 9, 1995, 7-290697
Int. Cl.[6] G06F *15/00*
U.S. Cl. 345—472 **27 Claims**



1. A method of processing an output form of a character when outputting the character in a visible state, comprising:

a first step of combining a plurality of parts so as to form one character;

a second step of outputting the formed character in a designated size; and

said second step including a substep of determining positions of at least two points which are the basis of the positioning of each part, and a substep of determining an outline of said character based on the determined positions.

5,825,371

GRAPHICS CONTROLLER INCLUDING A SUB-MEMORY

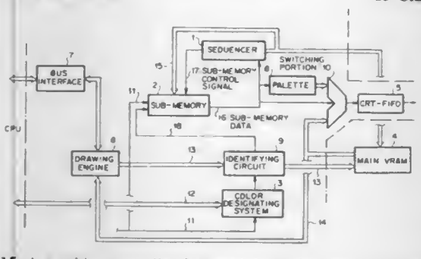
Haruyuki Shirakawa, Niigata, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 22, 1996, Ser. No. 635,597

Claims priority, application Japan, Apr. 20, 1995, 7-094991

Int. Cl.[6] G06F *15/00;* **G06T** *1/00*

U.S. Cl. 345—501 **15 Claims**



15. A graphics controller for supplying color data to an output display device comprising:

a color designating register for storing a first color data,

an identifying circuit, connected to the color designating register, for receiving the first color data,

a VRAM, connected to the identifying circuit, for receiving and storing a second color data that is different from the first color data,

a color input device, connected to the VRAM and to the identifying circuit, providing a plurality of pixel color data,

a sub-memory connected to the identifying circuit,

the sub-memory having a storage capacity corresponding to a resolution of the output display device,

the sub-memory storing one bit per pixel of the output display device, each bit having a first state when a pixel color data matches the first color data, and a second state when the pixel color data does not match the first color data,

wherein the identifying circuit performs a comparison operation, comparing each of the pixel color data supplied by the color input device to the first color data from the color designating register, and

for each comparison, the identifying circuit generates the first bit state when the pixel color data matches the first color data, and generates the second bit state when the pixel color data does not match the first color data, and feeds the first and second bit states to the sub-memory for storage, and

the identifying circuit feeds the pixel color data to the VRAM when the pixel color data does not match the first color data,

a palette, connected to the sub-memory, for receiving the bits and for storing the first color data from the color designating register,

wherein, upon receipt of each bit in the first state from the sub-memory, the palette outputs the first color data in a format usable by the output display device,

a display circuit that serves the output display device,

a switching device connected to the display circuit, the VRAM, the palette, and the sub-memory,

wherein, for each bit in the first state fed from the sub-memory to the palette and to the switching device, the switching device connects the palette to the display circuit for providing the first color data to the display device, and

wherein, for each bit in the second state fed from the sub-memory, the switching device connects the VRAM to the display circuit for providing the pixel color data to the display circuit.

5,825,372

IMAGE PROCESSING SYSTEM INCLUDING A VARIABLE SIZE MEMORY BUS

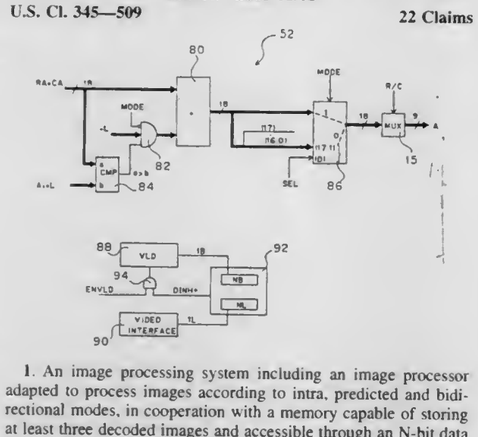
Alain Artieri, Meylan, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Jun. 29, 1994, Ser. No. 267,195

Claims priority, application France, Jun. 30, 1993, 93 08218

Int. Cl.[6] G06F *12/02*

U.S. Cl. 345—509 **22 Claims**



1. An image processing system including an image processor adapted to process images according to intra, predicted and bidirectional modes, in cooperation with a memory capable of storing at least three decoded images and accessible through an N-bit data bus, and adapted to process images only according to intra and predicted modes in cooperation with a half-size memory through an N/2-bit bus, said image processing system comprising:

means for, at each execution by the processor of a write instruction of one N-bit word to the half-size memory, successively writing each N/2-bit sub-word of the N-bit word;

means for, at each execution of a read instruction of an N-bit word from the half-size memory, successively reading in said half-size memory two N/2-bit sub-words, and juxtaposing these subwords on the N-bit bus;

an addressing circuit for providing the half-size memory with two distinct addresses for each address provided by the processor;

an address folding circuit for providing an address within the address boundaries of the half-size memory when an address provided by the addressing means is out of the boundaries; and

means for stopping the processor if an address provided to the half-size memory in write mode corresponds to data which has not yet been read.

5,825,373

RASTER OPERATION LOOKUP AND EXECUTION

Kevin Martin, Fremont, Calif., assignor to Network Computing Devices, Inc., Mountain View, Calif.

Filed Oct. 11, 1996, Ser. No. 731,264

Int. Cl.[6] G06F *13/00*

U.S. Cl. 345—524 **8 Claims**

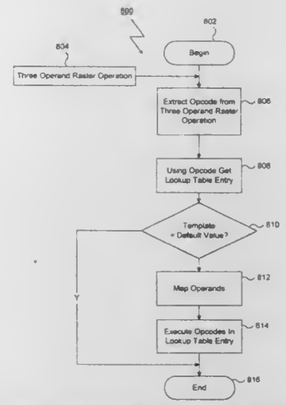
1. A method for emulating three-operand raster operations in a two-operand raster environment, the method including the following steps:

providing a lookup table, the lookup table having a plurality of entries with each entry corresponding to a particular three-operand raster operation that is to be emulated, each lookup table entry including a sequence of zero or more two-operand raster operations;

retrieving the lookup table entry which corresponds to a three-operand raster operation to be emulated;

mapping the operands of the three-operand raster operation to the operands of the zero or more two-operand raster operations; and

executing each of the zero or more two-operand raster operations in the lookup table entry.



5,825,374

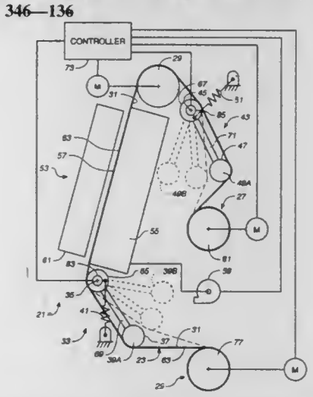
APPARATUS AND METHOD FOR ADVANCING A WEB

David Albertalli, San Jose; Gus Andriancen, Santa Clara, and Sasan Saadat, Hayward, all of Calif., assignors to Raster Graphics, Inc., San Jose, Calif.

Filed Mar. 12, 1997, Ser. No. 815,133

Int. Cl.[6] G01D *15/26;* **B65H** *20/00;23/18;77/00*

U.S. Cl. 346—136 **22 Claims**



1. An apparatus in which a web is intermittently advanced, comprising:

a driven supplying device for supplying a web of material;

a driven take-up device for taking up the web of material;

an intermittently driven drive roller, and a motor for intermittently rotating and stopping the drive roller as the supplying device supplies the web and as the take-up device takes up the web, the drive roller being disposed between the supplying device, and the take-up device, a first surface of the web contacting the drive roller such that intermittent movement of the drive roller intermittently advances the web toward the take-up device;

a first dancer roller arrangement between the drive roller and the supplying device, the first dancer roller arrangement including a first pivot point, a first roller pivotable about the first pivot point between a first and a second position, and a first urging device for urging the first roller toward the first position, the first surface of the web contacting the first roller; and

a second dancer roller arrangement between the drive roller and the take-up device, the second dancer roller arrangement including a second pivot point, a second roller pivotable about the second pivot point between a first and a second position, and a second urging device for urging the second roller toward the first position, the first surface of the web contacting the second roller,

wherein, when the drive roller advances the web, a length of the web between the supplying device and the drive roller decreases and causes the first roller to move toward the second position of the first roller against a force from the first urging device and a length of the web between the drive roller and the take-up device increases such that the second urging device moves the second roller to the first position of the second roller, when the supplying device supplies the web, a length of the web between the supplying device and the drive roller increases such that the first urging device moves the first roller to the first position of the first roller, and, when the take-up devices takes-up the web, a length of the web between the drive roller and the take-up device decreases and causes the second roller to move toward the second position of the second roller against a force from the second urging device.

5,825,375

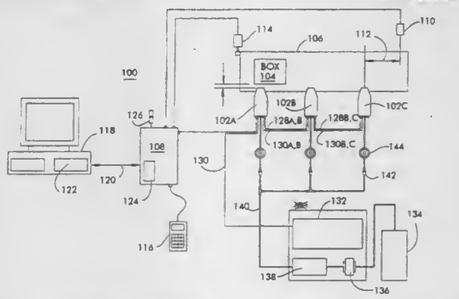
INK JET SYSTEM WITH SERIAL DATA PRINTHEADS

Jimmy L. Droit, St. Peters, Mo.; Ronald J. Johnsen, Cary, N.C.; Mark V. Reinders, St. Louis, and Mark K. Virkus, Ellisville, both of Mo., assignors to Diagraph Corporation, Earth City, Mo.

Continuation of Ser. No. 206,140, Mar. 4, 1994, Pat. No. 5,606,349. This application Sep. 23, 1996, Ser. No. 717,795

Int. Cl.[6] B41J *2/07*

U.S. Cl. 347—4 **13 Claims**



2. A system for printing of messages on articles being fed forward one after another in predetermined path, said system comprising:

an input for entering message data representative of the messages;

a controller interconnected with the terminal for processing the message data received from the terminal and storing the message data for the messages, said controller having a output port for providing output data representative of the messages;

first and second serially connected printheads positioned adjacent said path to print the messages on the articles in response to the output data;

an interconnect connecting the output port of the controller to the first printhead for providing the output data to the first

printhead and connecting the output port to the second printhead for providing to the output data to the second printhead; and

an ink supply line for supplying ink to the first printhead and for supplying ink from the first printhead to the second printhead whereby ink for the second printhead is supplied via the first printhead.

5,825,376

Patent Not Issued For This Number

5,825,377

METHOD AND APPARATUS FOR INK-JET RECORDING WITH INKS HAVING DIFFERENT DENSITIES

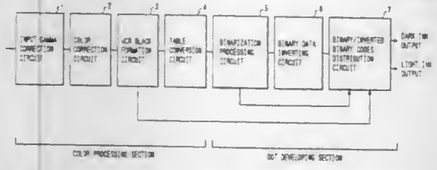
Fumibiro Gotoh, Kawasaki; Hiromitsu Hirabayashi, Yokohama; Toshio Kashino, Chigasaki; Hiroshi Tajika, Yokohama; Yuji Akiyama, Yokohama; Hitoshi Sugimoto, Yokohama; Miyuki Matsubara, Tokyo, and Hidehiko Kanda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 234,958, Apr. 28, 1994, abandoned. This application Jul. 29, 1997, Ser. No. 901,957

Claims priority, application Japan, Apr. 28, 1993, 5-102758; Apr. 28, 1993, 5-102759; May 31, 1993, 5-129149

Int. Cl.[6] B41J *2/205*

U.S. Cl. 347—15 **17 Claims**



1. An ink jet recording apparatus which includes plural ink discharge means for discharging ink onto a recording medium to form an image, said plural ink discharge means discharging plural kinds of ink each with a different density, respectively, comprising:

converting means for converting an input image density signal into either an output image density signal for driving a first ink discharge means for a first ink density or an output image density signal for driving a second ink discharge means for a second ink density, in accordance with an amplitude of said input image density signal at which recording is performed with two kinds of ink each having a different density;

binarizing means for converting the output image density signal outputted from said converting means into binary data;

inverting means for inverting the binary data converted into binary data by said binary means;

distributing means for distributing the binary data inverted by said inverting means and binary data to be inverted by said inverting means into drive data for said first ink discharge means for said first density and drive data for said second ink discharge means for said second density; and

drive control means for correspondingly driving said first and second ink discharge means in accordance with distributed drive data to form an image on the recording medium by discharging corresponding ink.

5,825,378

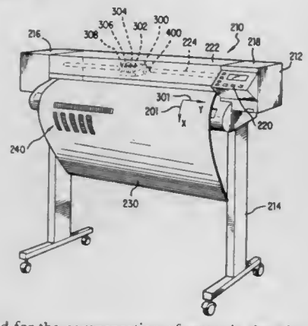
CALIBRATION OF MEDIA ADVANCEMENT TO AVOID BANDING IN A SWATH PRINTER

Robert W. Beauchamp, Carlsbad, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 585,051, Jan. 11, 1996, which is a division of Ser. No. 540,908, Oct. 11, 1995, Pat. No. 5,600,350, which is a continuation of Ser. No. 55,624, Apr. 30, 1993, abandoned. This application Sep. 25, 1996, Ser. No. 719,604

Int. Cl.[6] B41J *29/393*

U.S. Cl. 347—19 **6 Claims**



1. Method for the compensation of errors in the advancement of the printing medium in a plotter machine or similar having a platen and a driving stepping motor, characterized by the following successive operational stages:

a) proceeding with the calibration of each individual plotter machine by determining an error curve correlating the actual positions of advancement of the axis of the driving stepping motor of the platen for the printing medium with the positions which correspond to the actual advancement of the printing medium driven by the platen roller;

b) determining the error curve for each reference point of rotation of the axis of the stepping driving motor, the error curve being the actual difference as compared to the actual advancement of the band of paper corresponding to said point;

c) storing the data corresponding to the error curve as individual error for each reference point of rotation of the axis of the stepping driving motor in memory means available to a central processing unit to control said driving motor;

d) determining and generating by means of an encoder associated to the driving motor the actual successive reference positions of said driving motor and feeding this information to the central processing unit;

e) sending the pulses to the driving motor to determine the individual rotation of the same for each reference point of said driving motor, taking into account the particular error in the advancement of the printing medium for each of said reference points to compensate for the error.

5,825,379

INK JET PRINTER AND PRINTER HEAD HAVING MEANS FOR QUANTIFYING LIQUIDS AND MIXING LIQUIDS OUTSIDE THE PRINTER HEAD

Toshiki Kagami, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Oct. 18, 1994, Ser. No. 324,989

Claims priority, application Japan, Oct. 26, 1993, 5-266774

Int. Cl.[6] B41J *2/015*

U.S. Cl. 347—20 **22 Claims**

1. An ink jet printer head, comprising:

a first liquid;

a discharge port for discharging said first liquid;

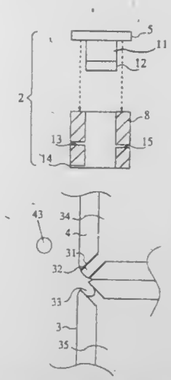
a second liquid;

an outlet for outputting said second liquid; and

quantifying means for measuring said second liquid, said quantifying means including a liquid chamber having a volume to be filled with said second liquid, wherein said quantifying means measure said second liquid by changing the volume of said liquid chamber;

said discharge port and said outlet are positioned to form a predetermined angle; and

said first liquid and said second liquid are mixed after being discharged.



5,825,380

INK-JET RECORDING HEAD CLEANING METHOD AND CLEANING CARTRIDGE THEREFOR

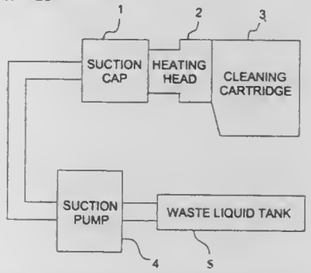
Nobuyuki Ichizawa, and Ken Hashimoto, both of Minami Ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 24, 1996, Ser. No. 685,720

Claims priority, application Japan, Jul. 25, 1995, 7-208551

Int. Cl.[6] B41J *2/165;2/17*

U.S. Cl. 347—28 **21 Claims**



1. An ink-jet recording head cleaning method for cleaning an ink-jet recording head of an ink-jet recording apparatus, the ink-jet recording apparatus having an ink cartridge removably mounted on the ink-jet recording head, the method comprising:

replacing the ink cartridge with a head cleaning cartridge in which a cleaning liquid is held, the head cleaning cartridge thus being mounted on the ink-jet recording head; and

cleaning the ink-jet recording head with the cleaning liquid.

5,825,381

HOME POSITION SENSOR SYSTEM FOR POSITIONING PRINT CARRIAGE AND METHOD THEREOF

Jong-Yang Choo, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 10, 1996, Ser. No. 728,696

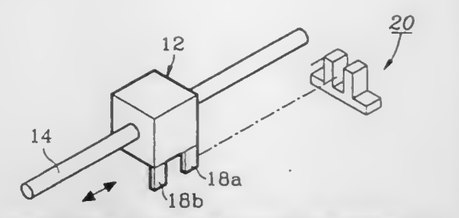
Claims priority, application Rep. of Korea, Oct. 18, 1995, 1995/35969

Int. Cl.[6] B41J *23/00*

U.S. Cl. 347—37 **24 Claims**

1. A printing apparatus, comprising:

a printer frame;



a carriage movably mounted on said printer frame and having a recording head mounted thereon, for printing onto a recording medium, said carriage being movable in a predetermined axis relative to said recording medium;

a first sensing rib and a second sensing rib separately mounted on said carriage along said predetermined axis relative to said recording medium;

a home sensor mounted on said printer frame at one end of said predetermined axis, for sensing whether said carriage passes through a home position representing an initial reference position for enabling said recording head mounted on said carriage to begin printing on said recording medium along said predetermined axis;

a carriage driver for driving said carriage to move along said predetermined axis relative to said recording medium; and

a controller for controlling the movement of said carriage along said predetermined axis to position said carriage at said home position upon initialization for enabling printing on said recording medium, said controller controlling said carriage driver to move said carriage at high speed in a direction toward said home position until detection of a first one of said first sensing rib and said second sensing rib by said home sensor, and then to move said carriage at low speed in the direction toward said home position until detection of a second one of said first sensing rib and said second sensing rib by said home sensor.

5,825,382

EDGE-SHOOTER INK JET PRINT HEAD AND METHOD FOR ITS MANUFACTURE

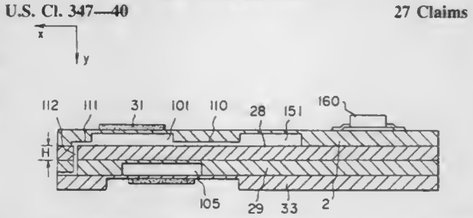
Wolfgang Thiel, Berlin, Germany, assignor to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Continuation-in-part of Ser. No. 101,449, Aug. 2, 1993, Pat. No. 5,592,203. This application Dec. 5, 1994, Ser. No. 350,326

Claims priority, application Germany, Jul. 31, 1992, 42 25 799.8

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—40 **27 Claims**



1. An edge-shooter ink-jet printhead, comprising a head module defining mutually orthogonal directions including an x-direction, a y-direction, and a z-direction and having nozzles formed in an end face thereof for expelling ink in the x-direction, said head module being formed of a plurality of plates stacked one upon another in the y-direction, said plates including

a first ink chamber-carrying part having ink chambers formed therein for receiving ink;

a middle part disposed on said first ink chamber-carrying part;

a second ink chamber-carrying part having ink chambers formed therein for receiving ink and being disposed on said middle part;

a further ink chamber-carrying part having ink chambers formed therein for receiving ink and being disposed between said first ink chamber-carrying part and said middle part;

said nozzles communicating with said ink chambers in said first ink chamber-carrying part, said second ink chamber-carrying part, and said further ink chamber-carrying part through conduits and said nozzles being mutually aligned on said end face in a nozzle row extending in the z-direction;

said nozzle row being formed in said further ink chamber-carrying part;

said ink chambers formed in said first ink chamber-carrying part and in said second ink chamber-carrying part forming groups of ink chambers; said groups of ink chambers being offset relative to one another in the x-direction, the y-direction, and the z-direction for forming ink paths from said suction chambers to respectively associated ones of said nozzles having a substantially uniform length within each of said modules; and

means for supplying ink through said chambers and for expelling ink from said nozzles.

5,825,383

INK JET HEAD COMPACT AND ALLOWING INK TO BE DISCHARGED WITH GREAT FORCE BY USING DEFORMABLE STRUCTURE

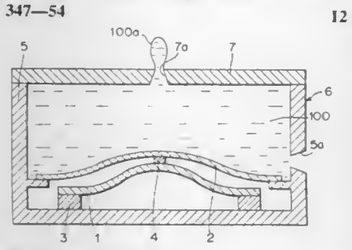
Shingo Abe, Tenri; Tetsuya Inui, Nara; Hirotsugu Matoba, Sakurai; Susumu Hirata, Ikoma; Masaharu Kimura, Daitou; Yorishige Ishii, Yamatotakada; Hajime Horinaka, Kashiba, and Hiroshi Onda, Yamatokooriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 17, 1995, Ser. No. 442,701

Claims priority, application Japan, Dec. 20, 1994, 6-316743

Int. Cl.[6] G01D *15/18*

U.S. Cl. 347—54 **12 Claims**



1. An ink jet head comprising:

a container having an ink discharge opening on a wall thereof, the container defining an ink chamber therein;

a deformable buckling structure fixed to a wall surface inside the container;

a diaphragm disposed in the container spaced from the deformable buckling structure and forming a liquid-tight enclosure with the ink chamber, the diaphragm being deformable toward the ink chamber;

a connection member connecting a part of the deformable buckling structure with a part of the diaphragm, the connection member having a horizontal section smaller than the deformable buckling structure and the diaphragm; and

a compression unit, provided in the container, that accumulates a compressive force in the deformable buckling structure and thereby buckles the deformable buckling structure toward the ink chamber so as to discharge ink in the ink chamber through the ink discharge opening.

5,825,384

IMAGE FORMING APPARATUS INCLUDING MEANS FOR CONTROLLING THE FLIGHT OF TONER OR VISUALIZING PARTICLES IN ACCORDANCE WITH AN IMAGE SIGNAL

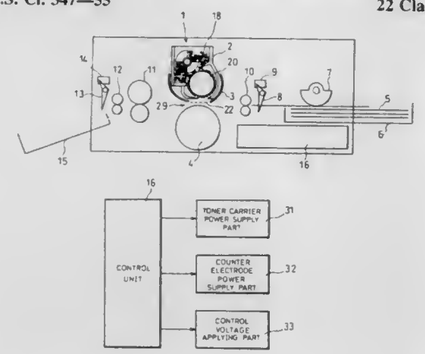
Hirokazu Fujita, Nara, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 18, 1996, Ser. No. 715,514

Claims priority, application Japan, Sep. 22, 1995, 7-244790; Sep. 22, 1995, 7-244803

Int. Cl.[6] B41J *2/06;* **G03G** *15/06;15/08*

U.S. Cl. 347—55 **22 Claims**



1. An image forming apparatus comprising:

a visualizing particle carrier for carrying visualizing particles;

a counter electrode provided vis-à-vis said visualizing particle carrier;

a control electrode provided between said visualizing particle carrier and said counter electrode;

power supply means for applying a flight electric field-use voltage across said visualizing particle carrier and said counter electrode so that an electric field for causing the visualizing particles to fly from said visualizing particle carrier toward said counter electrode is generated;

control voltage applying means for applying a control voltage to said control electrode so that the flight of the visualizing particles is controlled in accordance with an image signal; and

control means for controlling said power supply means and said control voltage applying means, so that during an operational period while the flight electric field-use voltage and control voltage are applied, said visualizing particle carrier, said counter electrode, and said control electrode are first respectively set to have a bias potential, the bias potential being set to have the electric potential of said counter electrode and a polarity of said counter electrode during application of the flight electric field-use voltage.

5,825,385

CONSTRUCTIONS AND MANUFACTURING PROCESSES FOR THERMALLY ACTIVATED PRINT HEADS

Kia Silverbrook, Leichhardt, Australia, assignor to Eastman Kodak Company, Rochester, N.Y.

PCT No. PCT/US96/04855, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO96/32267, PCT Pub. Date Oct. 17, 1996

PCT Filed Apr. 9, 1996, Ser. No. 765,038

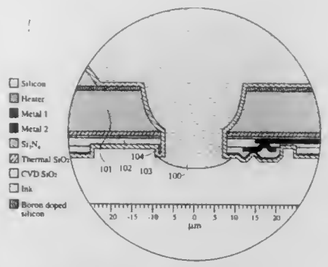
Claims priority, application Australia, Apr. 12, 1995, PN95/2303; Apr. 12, 1995, PN95/2305

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—56 **20 Claims**

1. A drop on demand printing head comprising:

(a) at least one nozzle formed on a substrate and having an associated electrothermal heater, the substrate material in the region of the heater being removed to form said nozzle;



(b) a plurality of drop-emitter nozzles;

(c) a body of ink associated with said nozzles;

(d) a pressurizing device adapted to subject ink in said body of ink to a pressure of at least 2% above ambient pressure, at least during drop selection and separation to form a meniscus with an air/ink interface;

(e) drop selection apparatus operable upon the air/ink interface to select predetermined nozzles and to generate a difference in meniscus position between ink in selected and non-selected nozzles; and

(f) drop separation apparatus adapted to cause ink from selected nozzles to separate as drops from the body of ink, while allowing ink to be retained in non-selected nozzles.

5,825,386

PIEZOELECTRIC INK-JET DEVICE AND PROCESS FOR MANUFACTURING THE SAME

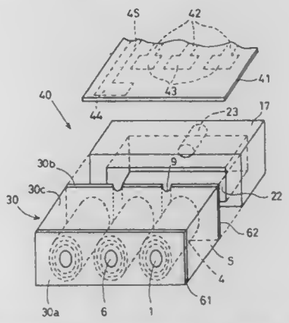
Yumiko Ohashi, Hashima, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Feb. 29, 1996, Ser. No. 609,990

Claims priority, application Japan, Mar. 9, 1995, 7-049547; Mar. 20, 1995, 7-060336

Int. Cl.[6] B41J *2/045*

U.S. Cl. 347—71 **18 Claims**



1. An ink-jet device comprising at least one ink chamber that feeds ink from an ink feed source, at least one actuator that changes the volume of the ink chamber to cause the ink to jet out of the ink chamber, and electrodes to which a voltage is applied from a power source circuit, wherein

said actuator comprises a plurality of piezoelectric ceramic layers and said electrodes; said plurality of piezoelectric ceramic layers and said electrodes are alternately formed layer by layer in a cylindrical or polygonal form so as to provide a hollow portion at the actuator center; and said hollow portion corresponds to said ink chamber.

5,825,387

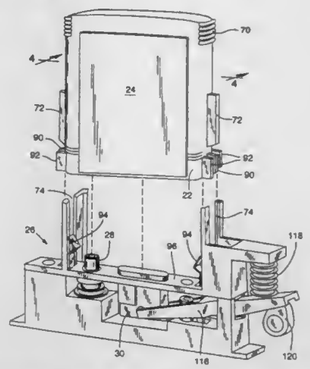
INK SUPPLY FOR AN INK-JET PRINTER

Bruce Cowger; Norman Pawlowski, Jr., and John A. Barinaga, Jr., all of Corvallis, Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 27, 1995, Ser. No. 429,915

Int. Cl.[6] G01D *15/18*

U.S. Cl. 347—86 **25 Claims**



1. A replaceable ink supply for removable insertion into a docked position within a docking bay of an ink jet printer, the docking bay having a pump actuator and a fluid inlet coupled to a trailing tube for supplying ink to a movable print head, the ink supply comprising:

a chassis;

a reservoir coupled to the chassis, the reservoir containing ink;

a fluid outlet carried on the chassis for engaging the fluid inlet when the ink supply is in the docked position;

a linearly reciprocal pump integral with the chassis in fluid communication with the reservoir and the fluid outlet, the pump actuable by the actuator when the ink supply is in the docked position to draw ink from the reservoir in a first linearly reciprocal movement and supply the ink through the fluid outlet to the trailing tube in an opposite linearly reciprocal movement; and

wherein the replaceable ink supply further comprises a valve integral with the chassis and interposed between the pump and the reservoir, the valve allowing the flow of ink from the reservoir into the pump and limiting the flow of ink from the pump into the reservoir.

5,825,388

INK JETTING APPARATUS

Toyonori Sasaki, Anjo, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Dec. 18, 1995, Ser. No. 574,318

Claims priority, application Japan, Dec. 27, 1994, 6-325347

Int. Cl.[6] B41J *21/75*

U.S. Cl. 347—86 **9 Claims**

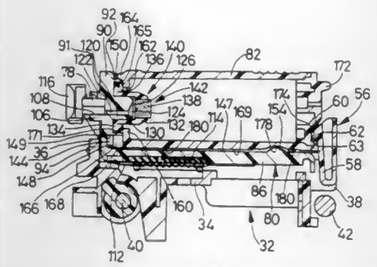
1. An ink jetting apparatus comprising:

an ink container which contains an ink therein and has an ink outlet through which said ink container supplies said ink;

an ink jetting head which jets said ink supplied from said ink container; and

a head holder which supports said ink jetting head and which includes an ink-container holding portion holding the ink container such that the ink container is detachable from the head holder, a connecting device connecting between the ink jetting head and said ink outlet of said ink container, a connecting-device supporting portion supporting said connecting device,

said connecting device of said head holder comprising



a connecting projection which projects from said connecting-device supporting portion of said head holder toward said ink container and has an end face, said connecting projection having an ink passage formed therethrough and opening in said end face,

a mesh filter which is fixed to said end face of said connecting projection,

a tubular support member which detachably fits, at one of axially opposite end portions thereof, on said connecting projection, and

a porous body which is supported by the other end portion of said support member such that said porous body covers said mesh filter fixed to said end face of said connection projection.

5,825,389

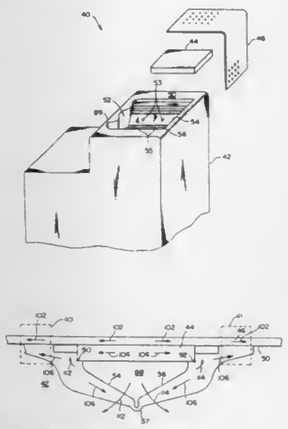
PEN BODY EXHIBITING OPPOSING STRAIN TO COUNTER THERMAL INWARD STRAIN ADJACENT FLEX CIRCUIT

Bruce Cowger, Corvallis, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 17, 1995, Ser. No. 516,270

Int. Cl.[6] B41J *2/175*

U.S. Cl. 347—87 **6 Claims**



1. An inkjet pen apparatus, comprising:

a pen body having a surface and an opening, the opening being adjacent to the surface, the pen body comprising an arm, a portion of the arm serving as a wall within the opening, the arm having a first end, a second end, and an intermediary seat, the first end forming a portion of the pen body surface adjacent to the opening;

a rigid first member mounted within the opening at the seat;

a second member adhering to the pen body surface at the first end of the arm to provide a region of contact between the pen body arm and the second member;

a third member within the opening to which the first member is mounted and to which the second end of the arm is fixed;

wherein the second member further adheres to the first member;

wherein the pen body has a first thermal coefficient of expansion, the first member has a second thermal coefficient of expansion, and the second member has a third thermal coefficient of expansion, the first thermal coefficient of expansion greater than the second thermal coefficient of expansion and the third thermal coefficient of expansion;

wherein during a reduction in temperature, thermal contraction occurs within the arm causing rotation of the arm about the seat, the seat serving as a fulcrum between the first member and the arm;

wherein during the reduction in temperature, thermal contraction occurs within the pen body and the second member at the contact region; and

wherein the rotation of the arm imposes a force countering the thermal contraction of the pen body surface in the contact region so as to reduce a difference in thermal contraction between the pen body and the second member within the contact region due to a difference between the first thermal coefficient of expansion and the third thermal coefficient of expansion.

5,825,390

METHOD OF DRIVING OPTICAL MODULATION DEVICE

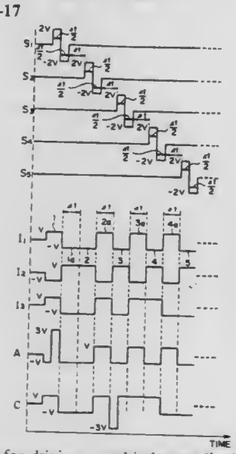
Junichiro Kanbe; Kazuharu Katagiri, both of Yokohama, and Syuzo Kaneko, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 139,162, Dec. 21, 1987, Pat. No. 5,448,383, which is a continuation of Ser. No. 7,408, Jan. 27, 1987, abandoned, which is a continuation of Ser. No. 598,800, Apr. 10, 1984, Pat. No. 4,655,561. This application May 19, 1995, Ser. No. 444,898

Claims priority, application Japan, Apr. 19, 1983, 5-068659; Apr. 19, 1983, 5-068660; Jul. 30, 1983, 5-138707; Jul. 30, 1983, 5-138710; Aug. 4, 1983, 5-142954

Int. Cl.[6] G08G *3/36*

U.S. Cl. 345—17 **28 Claims**



1. A method for driving a multi-element liquid crystal display device having a chiral smectic liquid crystal therein, the chiral smectic liquid crystal having a threshold voltage depending on a voltage pulse width, the method comprising the steps of:

applying at least one selecting electric field pulse having an amplitude and pulse width which exceeds a threshold value of optical response of said chiral smectic liquid crystal to each element during a selecting term;

applying at least one non-selecting electric field pulse having an amplitude and pulse width which is not greater than the threshold value to each element during a non-selecting term, wherein the amplitude of the selecting electric field pulse is two or more times that of the non-selecting electric field pulse;

setting a voltage level of the electric field pulse according to a local environmental temperature; and

determining optical response of the chiral smectic liquid crystal in accordance with the waveforms of at least one said selecting pulse and at least one said non-selecting pulse,

wherein each element placed in a non-selecting term receives at least two types of voltage signal pulses having mutually different pulse widths including a voltage signal pulse having a larger pulse width which is set so as not to exceed the threshold voltage

the chiral smectic liquid crystal is placed in a non-helical alignment structure, and

the multi-element liquid crystal display device is driven in a time-sharing manner such that each element is driven in a combination of operations in the selecting term and the non-selecting term.

5,825,391

METHOD FOR FORMING IMAGES USING A JET INK WHICH IS RUB RESISTANT TO ALCOHOL

Edward Yang, Inverness, Ill., assignor to Videojet Systems International, Inc., Wood Dale, Ill.

Division of Ser. No. 398,095, Mar. 3, 1995, Pat. No. 5,594,044. This application Jul. 31, 1996, Ser. No. 690,697

Int. Cl.[6] G01D *11/00*; B41J *2/01;3/407*

U.S. Cl. 347—106 **20 Claims**

1. A method of forming images having good adhesion and isopropyl alcohol rub resistance on glass, plastic, and metal surfaces using a jet ink composition comprising an organic solvent, a flexible thermoplastic polyurethane resin, a dye, a cellulose nitrate resin, and an adhesion promoter, said method comprising projecting a stream of droplets of said jet ink composition to said surface and controlling the direction of said stream electronically so that said droplets form the desired printed image on said surface.

5,825,392

RECORDING DEVICE HAVING DETACHABLE PRINTING HEAD

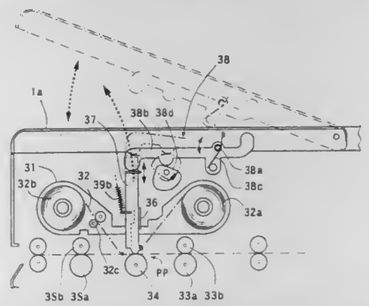
Tatsuo Mochizuki, Yamanashi-ken, Japan, assignor to NISCA Corporation, Yamanishi-Ken, Japan

Filed Nov. 12, 1996, Ser. No. 747,955

Claims priority, application Japan, Nov. 13, 1995, 7-294110

Int. Cl.[6] B41J *29/02*

U.S. Cl. 347—197 **8 Claims**



1. A thermal transfer printer for printing on a recording medium by use of a thermal transfer ink ribbon loaded in a printing position, said thermal transfer printer comprising:

thermal printing head for performing thermal transfer printing at the printing position;

a printer housing having a lid member being openable and closeable and containing said thermal printing head;

a detachable head holder for holding said printing head;

guide means for vertically guiding and placing said head holder in a printing position, said guide means being disposed inside said printer housing so as to permit said head holder to be detached from and attached into said printer housing in the open state of said lid member; and

means for vertically moving said printing head placed in said printing position in time to printing operation.

5,825,393

APPARATUS FOR READING AND IDENTIFYING DATA CARRIERS IN CARD FORM WHICH CAN BE PRINTED UPON

Wofram Kocznar, Innsbruck, and Harald Miesbauer, Scharnstein, both of Austria, assignors to Skidata Computer Gesellschaft m.b.H., Gartenau, Austria

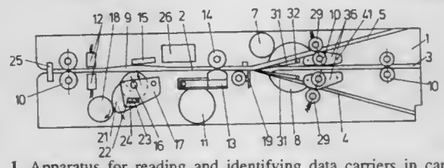
PCT No. PCT/AT94/00150, § 371 Date Apr. 19, 1996, § 102(e) Date Apr. 19, 1996, PCT Pub. No. WO95/11493, PCT Pub. Date Apr. 27, 1995

PCT Filed Oct. 17, 1994, Ser. No. 632,505

Claims priority, application Austria, Oct. 19, 1993, 2098/93

Int. Cl.[6] B41J *2/32*

U.S. Cl. 347—171 **18 Claims**



1. Apparatus for reading and identifying data carriers in card form which can be printed upon and which have a thermosensitive layer, comprising;

a transport mechanism for linear movement of the data carriers in a shallow passage defining a transport path,

a reading-identification means having a thermal printing head for recording visually readable identification of the data carriers, said thermal printing head being arranged so far outside the transport path that data carriers which are not to be thermally printed upon and which pass the thermal printing head do not touch same, and

a pressure roller being disposed opposite the thermal printing head and movably towards the thermal printing head.

5,825,394

THERMAL PRINT HEAD CALIBRATION AND OPERATION METHOD FOR FIXED IMAGING ELEMENTS

J. Mark Gilbert, St. Paul; Randy S. Johnston, Burnsville, and Danny J. Vatland, Chanhassen, all of Minn., assignors to LaserMaster Corporation, Eden Prairie, Minn.

Filed Feb. 20, 1996, Ser. No. 603,548

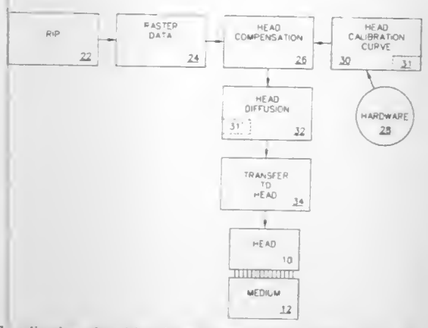
Int. Cl.[6] B41J *2/35*

U.S. Cl. 347—191 **21 Claims**

1. A method of calibrating a linearly oriented thermal print head, for each scan line of a digitized raster image, comprising the steps of:

A. measuring the electrical resistance of a select one of a plurality of imaging elements with a circuit means for measuring and storing in a first memory structure the value of electrical resistance of the select one of the plurality of imaging elements;

B. deriving a drive level for an image to he printed from a first segment of rasterized data, said first segment of rasterized data based upon a present input value of a raster image data set corresponding to the select one of the plurality of imaging elements;



C. adjusting the drive level to an exact desired drive level derived from the thermal print head calibration data set for the select one of a plurality of imaging elements;

D. setting the actual drive level of the select one of a plurality of imaging elements to an integer drive level value closest to the exact desired drive level and storing the remainder difference in a second memory structure so that the remainder difference call be applied to a next selected imaging element; and,

E. proceeding to step "A" above, wherein the select one of a plurality of imaging elements is the next selected imaging element, and wherein for every next selected imaging element the exact desired drive level includes the remainder difference as a carry forward sum from the actual drive level of the select one of the plurality of imaging elements.

5,825,395

THERMAL HEAD

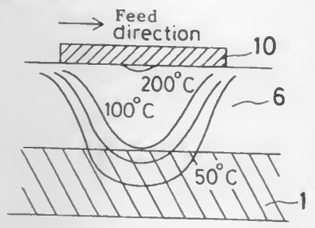
Hiroshi Fukuda, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 542,325, Oct. 12, 1995. This application Jun. 25, 1997, Ser. No. 882,228

Claims priority, application Japan, Oct. 12, 1994, 6/246157

Int. Cl.[6] B41J *2/335*

U.S. Cl. 347—206 **2 Claims**



1. A printing system, comprising:

a thermal head, and thermal color recording paper having a surface with a plurality of different color developing layers disposed thereon, said plurality of different color developing layers corresponding to a plurality of different colors;

said thermal head producing printed dots in a desired color developing layer over said surface of said thermal color recording paper by selectively and directly heating said thermal color recording paper, each of said dots having a respective peak position;

said thermal head comprising an array of a predetermined number of heating elements, each of said heating elements having a length in a feed direction of said thermal color recording paper and being controllable to radiate a selected level of thermal energy, said array being operationally disposed with respect to said thermal color recording paper so that said selected level of thermal energy radiated by said each heating element produces one of said printed dots;

said length of said each heating element having a value such that, at said selected level of thermal energy: adjacent ones of said printed dots have a peak-to-peak density difference of less than 0.1, said surface of said thermal color recording paper is not damaged, and undesired color mixing of said plurality of colors does not occur.

5,825,396

COLOR THERMAL PRINTER WITH DRIVER AND INTERLOCKING DEVICE

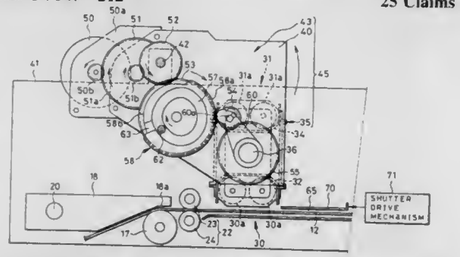
Takeshi Fujishiro, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 24, 1995, Ser. No. 519,094

Claims priority, application Japan, Aug. 25, 1994, 6-200585; Sep. 2, 1994, 6-210085

Int. Cl.[6] B41J *2/315;2/325;* **G01D** *15/16*

U.S. Cl. 347—212 **25 Claims**



1. A color thermal printer for printing a full-color image on a recording sheet of color thermosensitive recording material having at least first to third thermosensitive coloring layers, said color thermal printer comprising:

a thermal head for heating said recording sheet of thermosensitive recording material to develop respective colors in said at least first to third thermosensitive coloring layers in a frame sequential fashion;

a first fixing device disposed in a fixing station, said fixing station disposed downstream from said thermal head, for applying first electromagnetic rays to said recording sheet in said fixing station to optically fix said first coloring layer;

a second fixing device alternately disposed in said fixing station with respect to said first fixing device and proximate to said first fixing device, for applying second electromagnetic rays to said recording sheet in said fixing station to optically fix said second coloring layer;

a control device for activating said first fixing device while said thermal head records to said first coloring layer, and activating said second fixing device while said thermal head records to said second coloring layer;

a pair of transport rollers disposed between said thermal head and said fixing station to nip and transport said recording sheet in a first direction from said thermal head to said fixing station while said thermal head records to each of said coloring layers, and in a second direction reverse to said first direction to reset said recording sheet in a position for starting recording to the next one of said coloring layers;

a shutter plate proximate to said fixing station and mounted insertable into said fixing station in said second direction to shield said first and second electromagnetic rays from said recording sheet;

a shutter drive mechanism for moving said shutter plate into said fixing station;

a driver; and

an interlocking device which transmits power of said driver to said transport rollers to transport said recording sheet at a constant transport speed in said first direction until a rear end of said recording sheet in said first direction reaches said transport rollers, and then disconnects said driver from said transport rollers to connect said driver to said shutter drive mechanism, thereby to insert said shutter plate into said fixing station at the same speed as said constant transport speed while said recording sheet stops with said rear end nipped between said transport rollers.

5,825,397

COLOR THERMAL PRINTER AND OPTICAL FIXING DEVICE THEREFOR

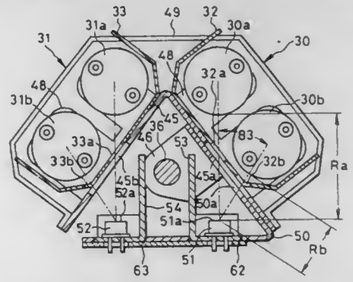
Takeshi Fujishiro, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 11, 1996, Ser. No. 661,732

Claims priority, application Japan, Jun. 19, 1995, 7-152060

Int. Cl.[6] B41J *2/325;11/00;* **G01D** *15/10*

U.S. Cl. 347—212 **20 Claims**



1. An optical fixing device of a color thermal printer for use with a color thermosensitive recording medium having at least three color developing thermosensitive layers, the optical fixing device projecting electromagnetic rays of a wavelength range specific to fixing one of the three color developing thermosensitive layers, the optical fixing device comprising:

a plurality of lamps for radiating the electromagnetic rays, the lamps being spaced from one another;

a reflector for reflecting the electromagnetic rays toward the color thermosensitive recording medium;

a photosensor located behind the reflector for detecting the electromagnetic rays;

a plurality of apertures, formed through the reflector, providing a light path from each of the plurality of lamps to the photosensor, the plurality of apertures having sizes such that the photosensor receives an equal amount of electromagnetic rays from each of the plurality of lamps when power supplied to each of the plurality of lamps is the same; and

a control device for controlling the power supplied to the plurality of lamps in accordance with a photo-electric signal from the photosensor.

5,825,398

IMAGE FORMING APPARATUS USING A SYNCHRONIZED TRANSFER MEDIUM DRIVER

Hideya Furuta, Yokohama; Yoshihiro Sakai, Tokyo; Kazushige Taguchi, Warabi, and Mitsuru Mamizuka, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 5,564, Jan. 19, 1993, Pat. No. 5,631,691. This application Nov. 22, 1996, Ser. No. 754,163

Claims priority, application Japan, Jan. 20, 1992, 4-7624

Int. Cl.[6] B41J *2/47;* **G11B** *7/00;* **H04N** *1/23;* **G03G** *15/01*

U.S. Cl. 347—235 **2 Claims**

1. An image forming apparatus comprising:

synchronizing signal generating means for generating main scanning line synchronizing signals when image data is to be written;

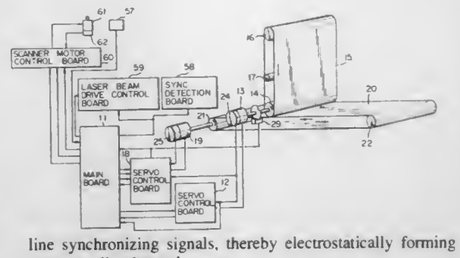
writing means for sequentially writing a plurality of image data, each corresponding to a different color, on a photoconductive element by scanning said photoconductive element in a main scanning direction in synchronism with said main scanning line synchronizing signals, thereby electrostatically forming corresponding latent images;

developing means for sequentially developing the latent images of plural colors formed on said photoconductive element to convert said latent images to corresponding visible images of plural colors;

transfer medium driving means for driving a transfer medium, said transfer medium driving means holding said transfer medium at a predetermined location before driving said transfer medium, and returning said transfer medium to said predetermined location if each of the plural colors has not been transferred to said transferring medium in overlapping relationship in a sub-scanning direction;

transferring means for transferring the visible images of plural colors in overlapping relationship in the sub-scanning direction to said transfer medium being driven by said transfer medium driving means; and

controlling means for starting counting of said main scanning line synchronizing signals every time said writing means starts writing one of the plural colors of the image data, and causing said transfer medium driving means to start driving said transfer medium from said predetermined location upon counting a predetermined number of main scanning line synchronizing signals so that driving said transfer medium is synchronized for each of the plural colors in the sub-scanning direction.



5,825,399

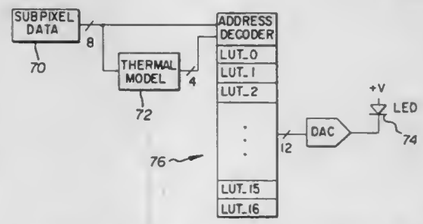
DATA-DEPENDENT THERMAL COMPENSATION FOR AN LED PRINTHEAD

David Mark Orlicki, Rochester; Karen Lynn Herczeg, Webster, and David Michael McVay, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 28, 1996, Ser. No. 608,161

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—237 **8 Claims**



1. Apparatus for effecting junction-level compensation for efficiency loss of an LED as the LED warms due to thermal energy generation from an electrical drive current, said apparatus comprising:

a source of an input data

a heat sink;

an LED having a light emitting junction;

structure attaching the LED to the heat sink, the structure creating a thermal barrier between the light emitting junction and the heat sink;

a plurality of selectable LED temperature-specific look up tables constructed for a plurality of different LED temperatures, the

selected look up table producing an output for driving the LED when the selected look up table is accessed by the input data;

a model of the thermal characteristics of the LED, the heat sink, and the structure attaching the LED to the heat sink, the model being adapted to produce an estimate of the temperature of the LED as a function of the image data; and

an address decoder for selecting one of the plurality of look up tables to process the input data stream in accordance with the estimate produced by the model.

5,825,400

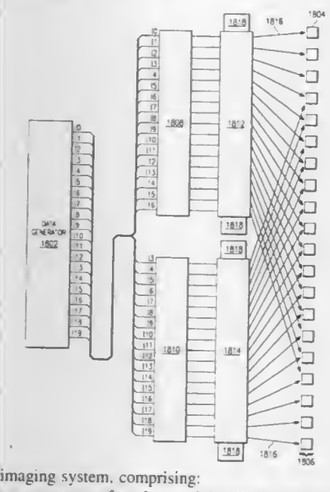
METHOD AND APPARATUS FOR AMELIORATING THE EFFECTS OF MISALIGNMENT BETWEEN TWO OR MORE IMAGING ELEMENTS

James M. Florence, Richardson, Tex., assignor to Texas Instruments, Inc., Dallas, Tex.

Division of Ser. No. 333,187, Nov. 2, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 486,430

Int. Cl.[6] B91J *2/47*

U.S. Cl. 347—239 **12 Claims**



I. An imaging system, comprising:

an image receptor surface for receiving light, said image receptor surface comprised of a row of pixels, each pixel for receiving a quantity of light proportional to an image signal corresponding to each pixel in said row;

at least two physically separate self-luminous imaging elements operable to produce a quantity of light in response to an input signal, each imaging element positioned relative to said row of pixels such that a first of said imaging elements illuminates pixels in a first segment comprised of multiple pixels in said row and a second of said two imaging elements illuminates pixels in a second segment comprised of multiple pixels in said row, said first and said second segments overlapping to form three regions, each of said regions comprised of multiple pixels in said row, a first region within said first segment illuminated solely by said first imaging element, a second region in both said first and said second segments illuminated jointly by said first and said second imaging elements, and a third region within said second segment illuminated solely by said second imaging element, each pixel in said second region located a distance from said first and said third regions; and

said first imaging element contributing less to said quantity of light received by each said pixel in said second region as each said pixel in said second region is located farther from said first region, and said second imaging element contributing less to said quantity of light received by each said pixel in said second region as each said pixel in said second region is located farther from said third region, such that a sum of light illuminating each pixel in said second region from said first and said second imaging elements is proportional to said image signal corresponding to each pixel in said second region.

5,825,401

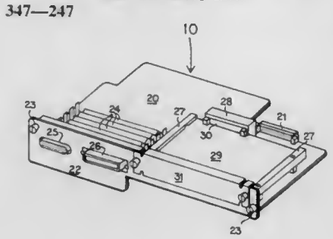
SLIDE IN FORMATTER FOR IMAGE FORMING DEVICES

Don K. Wadley, Boise; John W. Huffman, Meridian, and Paul K. Mui, Boise, all of Id., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 239,655, May 9, 1994, abandoned. This application Feb. 13, 1997, Ser. No. 802,179

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—247 **7 Claims**



1. An image forming device for printing an image on a page of print media which comprises:

a housing having a formatter board receiving slot therein extending from the exterior of the housing to the interior of the housing;

a print engine, for affixing an image representing data to the page of print media, being positioned within the housing;

a slide-in formatter board being slidably received within the formatter board receiving slot;

a removable retainer for holding the slide-in formatter board in the formatter receiving slot;

a formatter for supplying data to the print engine, the formatter being positioned on the slide-in formatter board; and

an electrical connector being connected between the formatter and the print engine for transferring electrical signals therebetween.

5,825,402

METHOD AND APPARATUS FOR READING AND WRITING INDICIA SUCH AS BAR CODES USING A SCANNED LASER BEAM

Jerome Swartz, Old Field, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Filed Mar. 26, 1993, Ser. No. 37,749

Int. Cl.[6] B41J *2/47;* **G01D** *15/14;* **H04N** *1/21;* **G06K** *7/20*

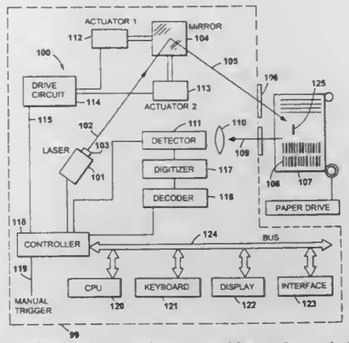
U.S. Cl. 347—251 **19 Claims**

1. A system for reading and writing bar code symbols on a medium, the bar code symbols comprising bar and space elements of varying width along a scan direction, the system comprising:

a light source for producing a light beam;

reading means coupled to said light source for directing said light beam at said medium so as to scan along the scan direction a first bar code symbol disposed on a first portion of said medium, detecting at least a portion of a light of variable intensity reflected off the first bar code symbol, and generating an electrical signal indicative of a detected light intensity;

writing means coupled to said light source for directing said light beam at said medium in a pattern on a second portion of said medium so as to write a second bar code symbol on said medium.



5,825,403

OPTICAL SCANNING SYSTEM AND METHOD FOR SETTING CURVATURE OF FIELD THEREIN

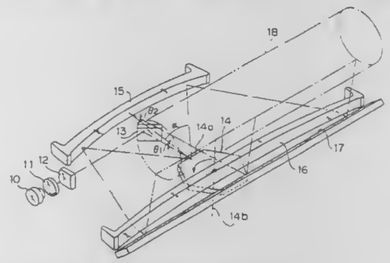
Mitsunori Iima, and Yoshihiro Hama, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1996, Ser. No. 620,304

Claims priority, application Japan, Mar. 24, 1995, 7-091673

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—259 **11 Claims**



1. An optical scanning system, comprising:

a light source;

a deflector that deflects and scans light emitted from said light source in a main scanning direction; and

an optical image forming system that converges light deflected by said deflector onto a surface to be scanned,

wherein said optical image forming system includes a curvature of field in a sub-scanning direction, normal to said main scanning direction, to cancel a change in a beam spot diameter caused by a change in an F-number in said sub-scanning direction, depending on an image height in said main scanning direction.

5,825,404

FLAW RECOVERING APPARATUS FOR OPTICAL RECORDING MEDIUM

Osamu Konno, Iruma, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jun. 5, 1995, Ser. No. 464,127

Claims priority, application Japan, Jun. 9, 1994, 6-127625

Int. Cl.[6] B41J *2/435;* **G01D** *15/24;* **H01S** *1/131;* **G11B** *7/00*

U.S. Cl. 347—262 **24 Claims**

1. A flaw recovering apparatus for recovering a transparent protection layer covering a recording layer of an optical recording medium, the transparent protection layer having a refractive index, the apparatus comprising:

means for applying liquid material to the transparent protection layer, the applied liquid material having a same refractive index as the refractive index of the transparent protection layer, the applied liquid material forming a first layer on the protection layer; and

means for adhering a transparent plate member having flexibility on the formed first layer, the transparent plate member forming a second layer on the first layer.

5,825,405

TRANSFER PRINTING STATION FOR PARALLEL PROCESSING OF TWO RECORDING MEDIUM WEBS

Ernst Puritscher, Unterhaching, and Gerhard Klapettek, Giessen, both of Germany, assignors to Oce Printing Systems GmbH, Poing, Germany

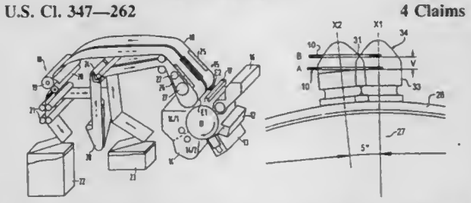
PCT No. PCT/DE95/00952, § 371 Date Jan. 22, 1997, § 102(e) Date Jan. 22, 1997, PCT Pub. No. WO96/03283, PCT Pub. Date Feb. 8, 1996

PCT Filed Jul. 19, 1995, Ser. No. 776,182

Claims priority, application Germany, Jul. 22, 1994, 44 26 124.1

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—262 **4 Claims**



1. A transfer printing station for an electrographic printer or copier device for parallel printing of two recording medium webs having margin perforations that are guided next to one another in close proximity in a region of a transfer printing station and that includes a conveyor means that transports the recording medium webs through the transfer printing station in parallel, comprising:

endless belts arranged in a region of the margin perforations of the recording medium webs,

axially spaced, motor-driven pulleys over which said endless belts are guided,

dog pins arranged on an outside circumferential surface of the endless belts, said dog pins including a cylindrical collar which is adjoined by a tapering head part, whereby, for conveying the recording medium webs, said dog pins engage into the margin perforations of the recording medium up in to a region of said collar in a region of a conveying path between the pulleys,

recording medium positioning devices arranged in a region of the pulleys that guides the recording medium upon engagement and disengagement of the dog pins during the rotation of the pulleys in a region of the head part of the dog pins such that the margin perforations are not deformed, the recording medium positioning devices include:

a guide element that lifts the recording medium in a region of the pulleys from a position with said margin perforations

about said cylindrical collars to a position engaging said tapered head part as the recording medium travels over said pulleys, and

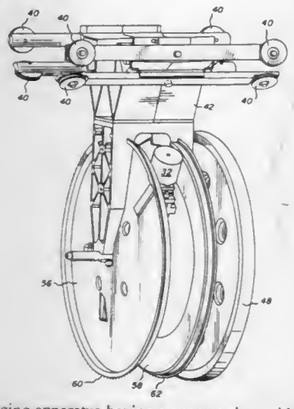
a supporting means that supports the endless belt in a region of the conveying path between the pulleys and that has allocated hold-down elements for the recording medium.

5,825,406

INERTIA AND WINDAGE REDUCTION FOR IMAGING APPARATUS WITH ROTATION WRITE HEAD

David M. Orlick, Rochester, and Karen L. Herczeg, Webster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 24, 1996, Ser. No. 638,910
Int. Cl.[6] B41J *2/47*
U.S. Cl. 347—264 **4 Claims**



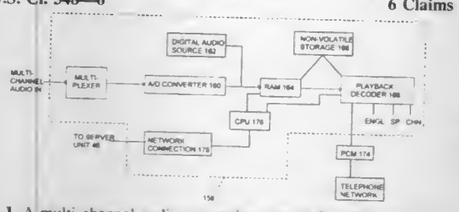
1. An imaging apparatus having a support shoe with an at-least-partially cylindrical inner surface for receiving a recording media, a rotor which is simultaneously rotatable about and linearly translated along a fixed axis, a write head assembly carried by the rotor to write on recording media received on the inner surface of the support shoe; said imaging apparatus further comprising a pair of disks having arcuate outer peripheries, said disks being supported within the support shoe for movement with the rotor along the fixed axis on opposed axial sides of the rotor.

5,825,407

CABLE TELEVISION AUDIO MESSAGING SYSTEMS

Alan B. Cowe, Denville, N.J., and Richard F. Clowes, New York, N.Y., assignors to Albrit Technologies Ltd., Denville, N.J.

Continuation-in-part of Ser. No. 120,476, Sep. 13, 1993, Pat. No. 5,495,283. This application Feb. 26, 1996, Ser. No. 607,121
Int. Cl.[6] H04N *7/16*
U.S. Cl. 348—6 **6 Claims**



1. A multi-channel audio messaging system for cable television for enabling multiple different input audio messages to be supplied to multiple different channels of a cable television system, the cable television system having a headend where multiple external program signals are channelized by means of individual channel modulators having program signal input ports and are exported to a cable network for transmission to a subscriber audience, said audio messaging system being installable at a cable television headend and comprising:

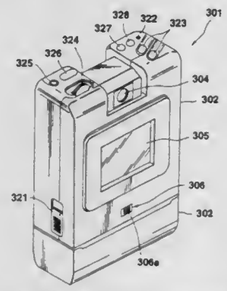
multiple analog audio input message sources multiplexed by an analog audio multiplexer to provide a multiplexed audio input, digital conversion means to digitize the multiplexed audio input and output digitized audio signals, means to switch and control the digitized audio signals and decoder means to read and select from the digitized audio signals to provide different audio messages on desired channels.

5,825,408

PORTABLE COMPACT IMAGING AND DISPLAYING APPARATUS

Masami Yuyama, Oome; Akihiro Tsukamoto, Hamura, and Shigenori Morikawa, Kokubunji, all of Japan, assignors to Casio Computer Co., Ltd., Tokyo, Japan

Division of Ser. No. 210,562, Mar. 18, 1994, Pat. No. 5,612,732. This application Jan. 11, 1996, Ser. No. 587,857
Claims priority, application Japan, Mar. 31, 1993, 5-98967; Apr. 28, 1993, 5-124935; Apr. 28, 1993, 5-124937
Int. Cl.[6] H04M *11/00*
U.S. Cl. 348—14 **2 Claims**



1. A pocket-size imaging and display apparatus including a case, comprising:

a camera section rotatably coupled to the case, the camera section including an imaging plane;

image data generating means for generating image data corresponding to an image taken by said camera section;

a display section coupled to the case for displaying the image data generated by said image data generating means, the display section including a display screen plane, the imaging plane of said camera section and the display screen plane of the display section are positionally changed relative to each other in response to a rotation of said camera section;

means for compressing the image data generated by said image data generating means;

means for modulating the image data compressed by said compressing means; and

a telephone line jack coupled to the case and selectively connected to a telephone line in order to output the image data modulated by said modulating means to the telephone line.

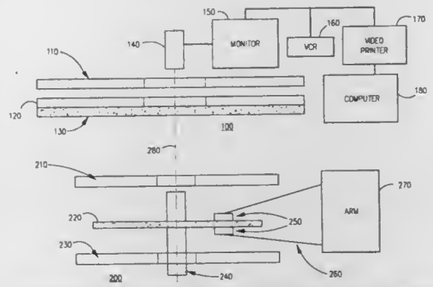
5,825,409

FLEXIBLE DISK MODE OBSERVER

Yiping Ma, and David E. Jones, both of Layton, Utah, assignors to Iomega Corporation, Roy, Utah

Continuation of Ser. No. 555,483, Nov. 8, 1995, abandoned. This application Nov. 24, 1997, Ser. No. 977,181
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—88 **27 Claims**

1. A flexible media mode observation system for observing modes of an optically exposed rotating flexible media, the system comprising:



a transparent sheet having a reference pattern disposed thereon, said transparent sheet being located above said optically exposed rotating flexible media and said reference pattern being aligned with a center of said optically exposed rotating flexible media; and

a camera located above said transparent sheet,

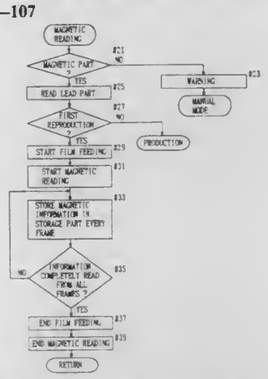
whereby, said camera receives said reference pattern reflected off a surface of said optically exposed rotating flexible media, the received reflected reference pattern indicating the modes of said optically exposed rotating flexible media.

5,825,410

APPARATUS FOR REPRODUCING STILL IMAGES OF A PLURALITY OF FRAMES

Hiroshi Ishibe, Kyoto; Manabu Inoue, Kobe; Hirokazu Yagura, Sakai; Takehiro Katoh, Nara; Tetsuo Yamada, Amagasaki; Kyoko Kakudo, Osaka, and Katsuyuki Nanba, Osakasayama, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Nov. 30, 1992, Ser. No. 983,320
Claims priority, application Japan, Nov. 29, 1991, 3-317125
Int. Cl.[6] H04N *5/253;9/47;3/36;9/11*
U.S. Cl. 348—107 **26 Claims**



1. A still image reproducing apparatus for reproducing still images of a plurality of frames, said apparatus comprising:

still image reproducing means for reproducing said still images;

division means for dividing said still images of said plurality of frames into a plurality of groups each being formed by a still image in consecutive frames; and

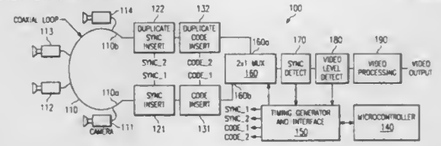
decision means for deciding a display style for reproducing a still image of a frame based on the frame's position in its respective group.

5,825,411

VIDEO SIGNAL ROUTING SYSTEM

Alan Neal Cooper; David William Bauerle, both of Coppell, and Matthew John Fritz, Dallas, all of Tex., assignors to Ultrak, Inc., Carrollton, Tex.

Filed Aug. 26, 1996, Ser. No. 702,912
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—159 **4 Claims**



1. A video signal routing system for video signals comprising:

a video signal carrying line arranged in a loop having a beginning and an end at a signal multiplexer;

a plurality of video cameras electrically connected to said line at points spaced therealong;

a video output line connected to receive video signals from said cameras through said multiplexer for display;

a synchronization signal insertion device in said video signal carrying line adjacent the beginning of the loop between said multiplexer and said cameras;

a code signal insertion device in said video signal carrying line adjacent the beginning of the loop between said multiplexer and said cameras;

a duplicate synchronization signal insertion device in said video signal carrying line adjacent the end of the loop between said multiplexer and said cameras;

a duplicate code signal insertion device in said video signal carrying line adjacent the end of the loop between said multiplexer and said cameras;

a timing generator and interface responsive to control signals derived from said video output line for controlling said synchronization signal insertion device, said code signal insertion device, said duplicate synchronization signal insertion device, and said duplicate code signal insertion device; and

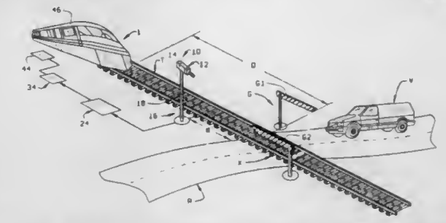
a microcontroller for controlling said timing generator and interface.

5,825,412

VIDEO DETECTION APPARATUS FOR MONITORING A RAILROAD CROSSING

Gregory Hobson, St. Charles, and John R. Wootton, St. Louis, both of Mo., assignors to Esco Electronics Corporation, St. Louis, Mo.

Filed May 20, 1996, Ser. No. 650,164
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—149 **25 Claims**



1. An apparatus for monitoring a railroad crossing site for the presence of an object at the crossing, and for providing an indication thereof to a train approaching the crossing so to prevent harm to both the object in the crossing and the approaching train, comprising:

viewing means for viewing the crossing site and for obtaining an electro-optical image of the crossing site and any object at the crossing site;

comparator means for processing said electro-optical image obtained by the viewing means for establishing the presence of an object at the crossing site;

evaluator means for establishing the size of said object present at the crossing site;

alarm means for providing an alarm signal to a railroad train approaching the crossing site of the presence of an object exceeding a predetermined size at the site, the alarm means providing said alarm signal sufficiently in advance of the train reaching the crossing site that, if appropriate, the train can be brought to a halt prior to reaching the crossing site and striking the object exceeding the predetermined size;

control means for controlling operation of the apparatus for enabling the viewing means from the time the approaching train approaches to within a predetermined distance of the crossing site to a time when the train reaches the crossing site; and, means for relaying said alarm signal from said crossing site to said train, operation of said relay means being controlled by said control means.

5,825,413

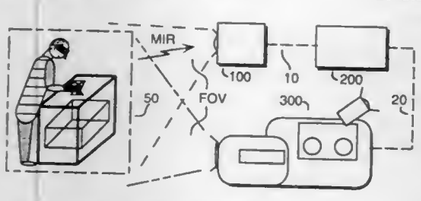
INFRARED SURVEILLANCE SYSTEM WITH CONTROLLED VIDEO RECORDING

Phillip Russell Mullis, Indianapolis, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Nov. 1, 1995, Ser. No. 551,466

Int. Cl.[6] H04N *7/18*

U.S. Cl. 348—155 **21 Claims**



1. A surveillance system, comprising:

an infrared motion detector generating a signal indicative of detected motion;

an infrared signal reflecting surface for directing an incident infrared signal to said infrared motion detector;

a generator generating infrared remote control encoded data responsive to said signal indicative of detected motion;

an infrared emitter coupled to said generator for modulation by said infrared remote control encoded data; and,

a modulated infrared signal from said infrared emitter being directed to said infrared signal reflecting surface for transmission.

5,825,414

METHOD AND APPARATUS FOR MAKING CORRECTIONS IN A VIDEO MONITOR DURING HORIZONTAL SCAN

James R. Webb; Steven J. Lassman, both of Boulder, and Ron C. Simpson, Erie, all of Colo., assignors to Display Laboratories, Inc., Boulder, Colo.

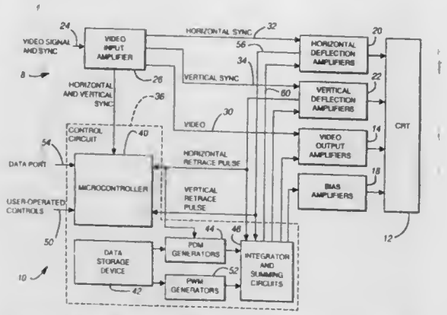
Continuation of Ser. No. 258,393, Jun. 13, 1994, Pat. No. 5,504,521. This application Jan. 16, 1996, Ser. No. 585,926

Int. Cl.[6] H04N *17/00;17/02*

U.S. Cl. 348—180 **17 Claims**

1. A method for generating a correction signal for altering predetermined display parameters for a plurality of segments on a video monitor comprising the steps of:

generating a pulse-width modulated signal for altering said predetermined display parameters during said plurality of segments, said pulse-width modulated signal having pulse-widths that are representative of a desired temporal rate of change of said correction signal during said plurality of segments:



performing an integration on said pulse-width modulated signal to produce an integrated signal that is representative of the integration of said pulse-width modulated signal with respect to time;

generating said correction signal from said integrated signal to alter said predetermined display parameters during said plurality of segments.

5,825,415

ELECTRONIC IMAGE-MOVEMENT CORRECTING DEVICE WITH A VARIABLE CORRECTION STEP FEATURE

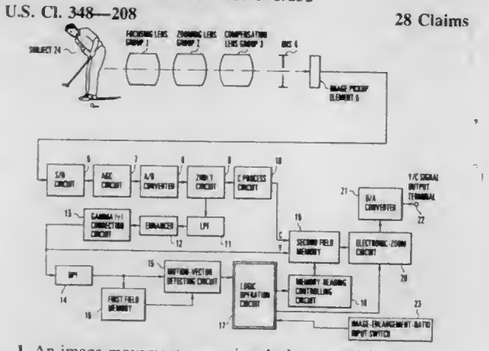
Kitahiro Kaneda, Kanagawa, and Kazuya Inou, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 778,285, Jan. 2, 1997, abandoned, which is a continuation of Ser. No. 352,226, Dec. 8, 1994, abandoned. This application Aug. 1, 1997, Ser. No. 904,455

Claims priority, application Japan, Dec. 17, 1993, 5-344413; Dec. 17, 1993, 5-344414

Int. Cl.[6] H04N *5/232*

U.S. Cl. 348—208 **28 Claims**



1. An image-movement correcting device comprising:

(a) motion-vector detecting means for detecting a motion vector relative to a plurality of pictures;

(b) electronic movement correcting means for electronically correcting an image movement on the basis of an output of said motion-vector detecting means;

(c) image enlarging means for performing enlargement processing on an image signal outputted from said electronic movement correcting means; and

(d) control means for controlling a unit amount of correction for a correction step of said electronic movement correcting means in accordance with an image enlargement ratio of said image enlarging means.

5,825,416

Patent Not Issued For This Number

5,825,417

EXPOSURE CONTROL DEVICE OF A VIDEO CAMERA AND METHOD THEREFOR

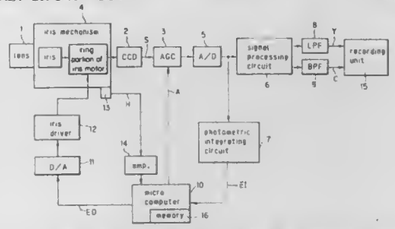
Masanori Yoshida, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 557,896, Nov. 14, 1995, abandoned, which is a continuation of Ser. No. 205,741, Mar. 4, 1994, abandoned. This application Mar. 27, 1997, Ser. No. 825,183

Claims priority, application Japan, Mar. 31, 1993, 5-074258

Int. Cl.[6] H04N *5/238*

U.S. Cl. 348—364 **16 Claims**



1. An exposure control device of a video camera comprising:

an iris mechanism having an iris and a ring portion, wherein said iris is opened/closed in accordance with rotation of said ring portion and a rotational speed of said ring portion is in proportion to an iris control value;

a photograph circuit means for receiving an optical picture image through said iris mechanism and forming a photograph signal corresponding to the optical picture image;

a photometric integrating circuit for determining an iris integrating value based on a brightness element of said photograph signal; and

a microcomputer for determining a photometric value from said iris integrating value and generating a deviation by subtracting said photometric value from a desired value and for outputting said iris control value in accordance with said deviation;

wherein after a photograph button is pushed, said microcomputer counts each field and increases said iris control value with respect to said deviation when said deviation is greater than a predetermined value and outputs said iris control value for each field, and on the other hand, said microcomputer decreases said iris control value with respect to said deviation when said deviation is less than said predetermined value and outputs said iris control value for every few fields, so that a high speed automatic exposure control is achieved.

5,825,418

B-FRAME PROCESSING APPARATUS INCLUDING A MOTION COMPENSATION APPARATUS IN THE UNIT OF A HALF PIXEL FOR AN IMAGE DECODER

Ki Hwan Song, and Chang Pyo Lee, both of Seoul, Rep. of Korea, assignors to Goldstar, Co., Ltd., Seoul, Rep. of Korea

Division of Ser. No. 305,636, Sep. 14, 1994, Pat. No. 5,539,467. This application Apr. 19, 1996, Ser. No. 635,074

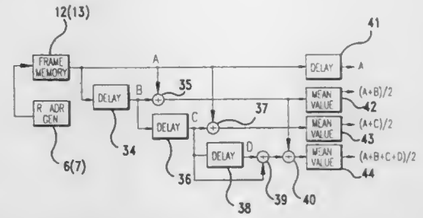
Claims priority, application Rep. of Korea, Sep. 14, 1993, 93-18435; Dec. 30, 1993, 93-31209

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—402 **2 Claims**

1. A motion compensating apparatus in the unit of a half pixel for a B-frame, comprising:

a plurality of frame memories for alternately reading/writing frame image signals with respect to the respective frames in accordance with motion vector information;



a plurality of read/write address generators for generating read/write addresses of said plurality of frame memories;

a plurality of multiplexers for providing the read/write addresses from said plurality of read/write address generators to said plurality of frame memories;

an output order adjusting means for adjusting and providing the frame image signals outputted from said plurality of frame memories corresponding to a display order;

a first delay means for delaying pixel data A, whose position is to be motion compensated for and which are provided from said plurality of frame memories, by much as a 1-sample clock;

a first adder for adding said pixel data A to pixel data B having been delayed by said first delay means;

a second delay means for delaying said pixel data B, which were delayed by said first delay means, by at least 1-sample but no greater than a 16-sample clock;

a second, adder for adding said pixel data A to pixel data C having been delayed by said second delay means;

a third delay means for delaying said pixel data C, which were delayed by said second delay means, by a 1-sample clock;

a third adder for adding the pixel data C to the pixel data D having been delayed by said third delay means;

a fourth adder for adding the pixel data provided from said third adder to the pixel data provided from said first adder;

a fourth delay means for delaying said pixel data A by at least 1-sample but no greater than a 24-sample clock;

a first mean value calculating means for calculating the mean value of the pixel data provided from said first adder;

a second mean value calculating means for calculating the mean value of the pixel data provided from said second adder; and

a third mean value calculating means for calculating the mean value of the pixel data provided from said fourth adder.

5,825,419

CODING DEVICE AND DECODING DEVICE OF DIGITAL IMAGE SIGNAL

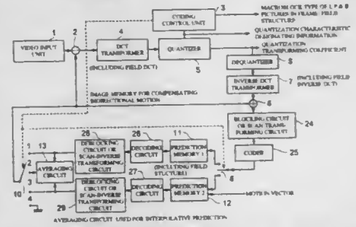
Hidetoshi Mishima; Yoshiko Hatano, and Yoshinori Asamura, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1996, Ser. No. 723,950

Claims priority, application Japan, Sep. 29, 1995, 7-252992

Int. Cl.[6] H04N *7/12;11/02;11/04*

U.S. Cl. 348—402 **19 Claims**



1. A coding device for digital image signal coding a digital image signal by using a bidirectional motion compensating prediction and a DCT (digital cosine transform) transformation, said coding device comprising:

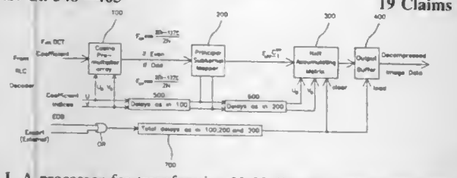
means for inputting a block of decoded transform coefficients, wherein the block of decoded transform coefficients previously encoded a reference image using DCT and bidirectional prediction;
means for blocking the block of decoded transform coefficients from said input means;
means for coding the blocked data;
means for writing the coded data to a prediction memory;
means for reading reference regions for calculating a motion vector for prediction or data of the reference regions for calculating a prediction value from the prediction memory;
means for decoding the read data and;
means for deblocking the decoded data.

5,825,420

PROCESSOR FOR PERFORMING TWO-DIMENSIONAL INVERSE DISCRETE COSINE TRANSFORM

Jar-Ferr Yang, Tainan, and Bor-Long Bai, Taichung, both of Taiwan, assignors to National Science Council, Taipei, Taiwan

Continuation-in-part of Ser. No. 239,186, May 6, 1994, abandoned. This application Oct. 6, 1995, Ser. No. 540,273
Int. Cl.[6] H04N *7/30*
U.S. Cl. 348—403 **19 Claims**



1. A processor for transforming N×N discrete cosine transform (DCT) coefficients F_{uv} inputted from a run-length-code (RLC) decoder into an image data f_{jk} in an integrated circuit through a 2-D inverse discrete cosine transform (IDCT) procedure wherein subscripts u and v of said DCT coefficients F_{uv} are input frequency indices and subscripts j and k of said image data f_{jk} are spatial indices generated by said integrated circuit, which comprises:
a cosine pre-multiplier array for computing cosine-weighted DCT coefficients;
a principal subkernel mapper, including an addition subkernel address generator and a subtraction subkernel address generator, two N/2:1 selector matrices and a sign mutable addition matrix, utilizing said cosine-weighted DCT coefficients by first referring to said indices u and v for parallelly computing a principal N/2×N/2 subkernel-weighted matrix $F_{uv}C^{uv}1$;
an N×N accumulating matrix operating with said principal N/2×N/2 subkernel-weighted matrix $F_{uv}C^{uv}1$ for progressively accumulating said image data f_{jk}; and
an output buffer for loading said image data f_{jk} from said N×N accumulating matrix and transferring said image data f_{jk}.

5,825,421

VIDEO CODING METHOD AND DECODING METHOD AND DEVICES THEREOF

Thiow Keng Tan, Singapore, Singapore, assignor to Matsushita Electronic Industrial Co., Ltd., Osaka, Japan

Filed Dec. 27, 1996, Ser. No. 773,574
Claims priority, application Japan, Dec. 27, 1995, 7-340609
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—409 **12 Claims**

1. A method for encoding a sequence of video image frames comprising the steps of:
dividing a source sequence into a set of group of pictures, each group of pictures comprising a first frame (I-frame) followed by a plurality of pairs of predictively encoded frames (PB-frame pairs), each PB-frame pair having a corresponding P-block;



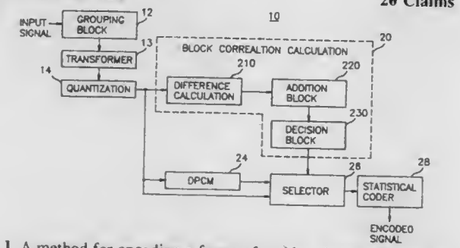
dividing each I-frame or PB-frame pair into a plurality of spatially non-overlapping blocks of pixel data;
encoding the blocks from the I-frame (I-blocks) independently from any other frames in the group of pictures;
predictively encoding the blocks from the second frame of the PB-frame pair (P-blocks), based on the I-blocks in the previous I-frame or the P-blocks in the previous PB-frame pair;
bi-directionally predictively encoding the blocks from the first frame of the PB-frame pair (B-blocks), based on the I-blocks in the previous I-frame or the P-blocks in the previous PB-frame pair and the corresponding P-block in the current PB-frame pair;
deriving a scaled forward motion vector and a scaled backward motion vector for the B-block by scaling the motion vector of the corresponding P-block in the current PB-frame pair;
obtaining a final forward motion vector for the B-block by adding a delta motion vector to the scaled forward motion vector; and
obtaining a final backward motion vector for the B-block by subtracting the delta motion vector from the scaled backward motion vector.

5,825,422

METHOD AND APPARATUS FOR ENCODING A VIDEO SIGNAL BASED ON INTER-BLOCK REDUNDANCIES

Sung-Wook Yoon, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1996, Ser. No. 774,833
Claims priority, application Rep. of Korea, Dec. 29, 1995, 95-64304
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—410 **20 Claims**



1. A method for encoding a frame of a video signal, wherein the frame is divided into non-overlapping blocks of M×N pixels, M and N being positive integers, respectively, comprising the steps of:
(a) arranging the blocks into groups of P×Q blocks, P and Q being positive integers, respectively;
(b) transforming each of the P×Q blocks in a group into a set of M×N transform coefficients to thereby provide P×Q sets of M×N transform coefficients for the group, said transform coefficients in each set representing different frequency components, respectively;
(c) quantizing the sets of transform coefficients into P×Q sets of M×N quantized transform coefficients;
(d) DPCM(differential pulse code modulation) coding the sets of quantized transform coefficients to provide P×Q sets of DPCM coefficients, wherein one set of DPCM coefficients is identical to one of the sets of quantized transform coefficients and each of the DPCM coefficients included in the remaining sets represents a difference between two quantized transform coefficients of an identical frequency component; and

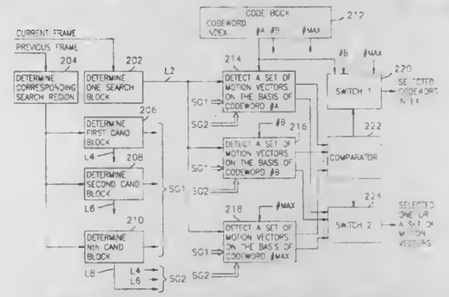
(e) setting the P×Q sets of DPCM coefficients as encoded data for the group of P×Q blocks.

5,825,423

APPARATUS FOR DETECTING MOTION VECTORS USING MOVING OBJECT PATTERNS

Hae-Mook Jung, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 225,216, Apr. 18, 1994, abandoned. This application Nov. 27, 1996, Ser. No. 770,367
Claims priority, application Rep. of Korea, Apr. 9, 1993, 93-5967
Int. Cl.[6] H04N *7/32*
U.S. Cl. 348—413 **4 Claims**



1. An apparatus for detecting a number of sets of motion vectors between a current frame and a reference frame of video signals, wherein the current frame is divided into a plurality of search blocks of an identical size and the reference frame is made to include a corresponding number of search regions, each search region having a plurality of candidate blocks of said identical size, the apparatus comprising:
means for storing a set of codewords, each having a size identical to a search block, wherein each of the codewords is indexed by a codeword number and includes one or more pattern numbers, each pattern number representing a predicted moving object;
a plurality of motion estimation means, each of the motion estimation means, in response to a codeword number, for estimating a set of candidate motion vectors and an average error signal for a given search block, wherein the set of candidate motion vectors and the error signal are obtained from the given search block and the corresponding search regions rearranged in accordance with one or more pattern numbers contained in the codeword number; and
selection means for selecting a set of motion vectors for the given search block from a plurality of sets of candidate motion vectors to generate the set of motion vectors and a corresponding codeword number for the given search block, wherein the set of the motion vectors entails a minimum average error signal.

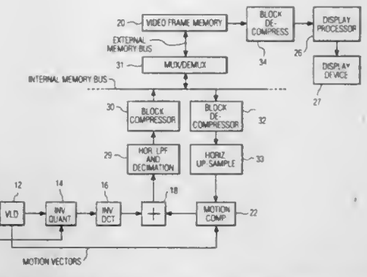
5,825,424

MPEG SYSTEM WHICH DECOMPRESSES AND RECOMPRESSES IMAGE DATA BEFORE STORING IMAGE DATA IN A MEMORY AND IN ACCORDANCE WITH A RESOLUTION OF A DISPLAY DEVICE

Barth Alan Canfield, Fishers, Ind.; Wai-Man Lam, Yorktown Heights, N.Y., and Billy Wesley Beyers, Jr., Greenfield, Ind., assignors to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Jun. 19, 1996, Ser. No. 666,774
Int. Cl.[6] H04N *7/12;11/02;11/04;11/20*
U.S. Cl. 348—416 **22 Claims**

1. In a system for processing an MPEG coded datastream containing high definition image, apparatus comprising:



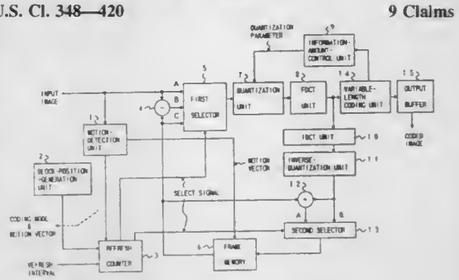
an MPEG decoder for processing said image representative information;
a memory for storing information processed by said MPEG decoder;
a display device with a predetermined image resolution for displaying image information derived from information stored by said memory; and
a data reduction network including a data compressor for compressing said information included in said decoder, for providing data reduced information to said memory; wherein
the amount of data reduction provided by said data reduction network is determined in accordance with said resolution of said display device.

5,825,425

MOVING-PICTURE CODING DEVICE EMPLOYING INTRA-FRAME CODING AND INTER-FRAME CODING

Kimihiko Kazui; Akira Nakagawa, and Eishi Morimatsu, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 21, 1996, Ser. No. 754,618
Claims priority, application Japan, Jun. 10, 1996, 8-147051
Int. Cl.[6] H04N *7/50*
U.S. Cl. 348—420 **9 Claims**

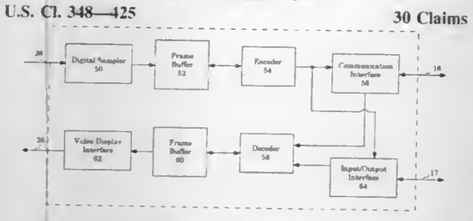


1. A device for coding moving pictures, comprising:
coding means for applying intra-frame coding or inter-frame coding to each of a plurality of blocks dividing each frame of said moving pictures;
a counter provided for each of said blocks, said counter being incremented when said coding means applies said inter-frame coding; and
determination means for resetting said counter and controlling said coding means to carry out a refresh operation when said counter indicates that the predetermined interval has expired and for resetting said counter when said coding means applies said intra-frame coding during one of said predetermined intervals.

5,825,426
VIDEO SUBSAMPLING MODE DECISIONS BASED UPON INTERPOLATION ERROR MEASURES

Larry Wickstrom, Beaverton, and Joseph N. Romriell, Hillsboro, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 325,048, Oct. 18, 1994, abandoned. This application Dec. 19, 1996, Ser. No. 772,014
Int. Cl.[6] H04N 7/24
U.S. Cl. 348—425 30 Claims



1. A method for encoding video data in a video system, comprising the steps of:

determining an indication of interpolation errors for each of a set of available subsampling modes for encoding a target video frame that contains a set of pixel data values corresponding to an image scene wherein each available subsampling mode performs a differing degree of subsampling on the target video frame. said indication of interpolation errors representing a combined effect of at least two types of errors for each available subsampling mode;

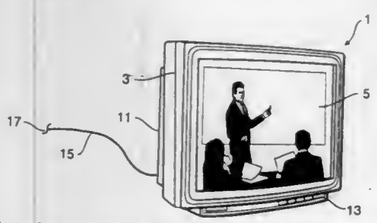
determining a selected subsampling mode from the available subsampling modes such that the selected subsampling mode provides a highest degree of subsampling of the available subsampling modes that have the indication of interpolation errors below a threshold value; and

encoding the target video frame according to the selected subsampling mode.

5,825,427
IMAGE DISPLAY SYSTEM

Kenneth J. MacLeod, 111 Fleurance, Laguna Niguel, Calif. 92677

Filed Aug. 22, 1995, Ser. No. 518,583
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—445 4 Claims



1. An image display system for displaying a video image having an aspect ratio of either 4:3 or 16:9, the image display system comprising:

a video screen having a substantially rectangular configuration forming an aspect ratio of the horizontal dimension of said video screen to the vertical dimension of the said video screen, said aspect ratio being between 1.4:1 and 1.65:1;

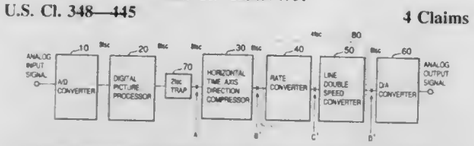
a first image producing means for producing an image originally formatted with an aspect ratio of 4:3 on said video screen having an aspect ratio between 1.4:1 and 1.65:1; and

a second image producing means for producing an image originally formatted with an aspect ratio of 16:9 on said video screen having an aspect ratio between 1.4:1 and 1.65:1.

5,825,428
APPARATUS AND METHOD FOR REDUCING NOISE WHEN CHANGING THE ASPECT RATIOS OF DISPLAYED DIGITAL VIDEO SIGNALS

Hiroaki Saito, Iwai, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 24, 1996, Ser. No. 740,130
Claims priority, application Japan, Oct. 25, 1995, 7-300654
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—445 4 Claims



1. In an apparatus for reducing noise generated in a digital video signal processing system when converting a first video signal to be displayed with a first aspect ratio and having a first horizontal scanning frequency into a second video signal to be displayed with a second aspect ratio wider than said first and having a second horizontal scanning frequency faster than said first, the improvement comprising:

removing means for removing frequency components from an input digital video signal having a chrominance subcarrier frequency, the frequency components being twice the frequency of said chrominance subcarrier frequency of the input digital video signal;

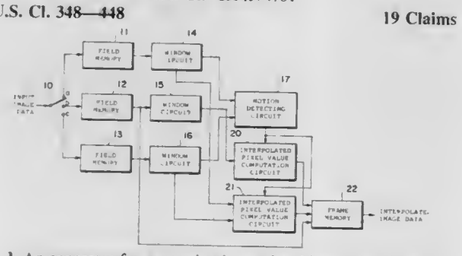
compressing means for compressing the digital video signal from which the frequency components are removed, in a horizontal time axis direction; and

converting means for doubling the horizontal scanning frequency of the compressed video signal.

5,825,429
APPARATUS AND METHOD FOR GENERATING INTERPOLATED IMAGE DATA

Ryuji Shirahata, Asaka, Japan, assignor to Fuji Photo Film Co., Ltd.

Filed Mar. 15, 1996, Ser. No. 616,178
Claims priority, application Japan, Mar. 15, 1995, 7-082109; Apr. 27, 1995, 7-125604
Int. Cl.[6] H04N 7/01
U.S. Cl. 348—448 19 Claims



1. An apparatus for generating interpolated image data in which, when data of consecutive first, second and third field images are given from among a series of image data obtained by interlaced scanning wherein odd field images comprising pixels on odd lines and even field images comprising pixels on even lines repeat in alternating fashion, interpolated image data are generated representing pixels on even lines in a case where the second field is an odd field and pixels on odd lines in a case where the second field is an even field in order to convert said second field image, which is located between the first field image and the third field image, to a frame image, said apparatus comprising:

motion detecting means for detecting whether motion has occurred between images in windows set at corresponding positions on respective ones of the first field image and third field image, wherein said windows are longer vertically than horizontally;

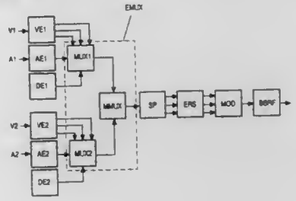
first interpolated image data generating means which, when motion has been detected by said motion detecting means, is for generating image data of a pixel at a position corresponding to pixels in said windows based upon image data of pixels, of the second field, neighboring this pixel from above and below; and

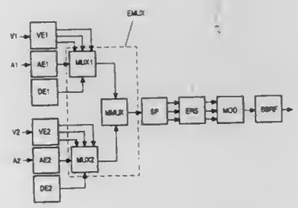
second interpolated image data generating means which, when no motion has been detected by said motion detecting means, is for generating image data of a pixel at a position corresponding to pixels in said windows based upon image data of a corresponding pixel in at least one of said first field image and said third field image.

5,825,430
METHOD, ENCODER AND DECODER FOR THE TRANSMISSION OF DIGITAL SIGNALS WHICH ARE HIERARCHICALLY STRUCTURED INTO A PLURALITY OF PARTS

Dirk Adolph, Ronnenberg, and Carsten Herpel, Hannover, both of Germany, assignors to Deutsche Thomson Brandt GmbH, Villingen-Schwenningen, Germany

Filed Dec. 10, 1996, Ser. No. 763,560
Claims priority, application Germany, Dec. 20, 1995, 195 47 707.3
Int. Cl.[6] H04N 7/12;11/02;11/04
U.S. Cl. 348—487 10 Claims





1. Method for the transmission of digital signals, comprising the following steps:

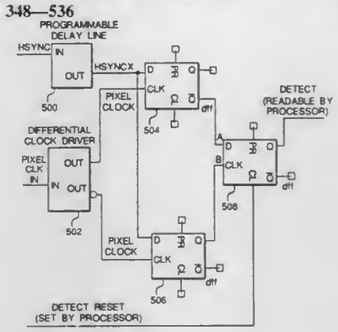
forming at least two data channels each carrying data packets and eventually header data including priority information, the channels including picture data having different levels of error protection, wherein the data packets within a channel have the same level of error protection and wherein a superordinate channel has a higher error protection than a subordinate channel;

transmitting priority information of a subordinate channel in a superordinate channel, that priority information allowing, following erroneous reception of said digital signals, an improved recovery of picture data decoding.

5,825,431
H-SYNC TO PIXEL CLOCK PHASE DETECTION CIRCUIT

John M. Walker, Richardson, Tex., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 18, 1996, Ser. No. 768,693
Int. Cl.[6] H04N 7/54
U.S. Cl. 348—536 1 Claim



1. An H-sync to pixel clock phase detection circuit comprising:

a programmable delay line for delaying an H-sync signal;

a differential clock driver circuit for producing a pixel clock signal and a pixel clock/signal from a pixel clock signal input;

a first D flip-flop having D and CLK inputs and a $\bar{Q}$ output;

a second D flip-flop having D and CLK inputs and a Q output; wherein said delayed H-sync signal from said programmable delay line is applied to said respective D inputs of said first flip-flop and said second flip-flop, wherein said pixel clock signal from said differential clock driver circuit is applied to said CLK input of said first D flip-flop, and wherein said pixel clock/signal from said differential clock driver is applied to said CLK input of said second D flip-flop; and

a third D flip-flop having D and CLK inputs and a Q output; wherein said $\bar{Q}$ output of said first D flip-flop is applied to said D input of said third D flip-flop, wherein said Q output of said second flip-flop is applied to said CLK input of said third D flip-flop; and wherein said Q output of said third D flip-flop is set when the rising edge of H-sync occurs after the rising edge of pixel clock, but before the falling edge of pixel clock.

5,825,432
COMMUNICATION APPARATUS IMAGE PROCESSING APPARATUS, COMMUNICATION METHOD, IMAGE PROCESSING METHOD AND MEDIUM

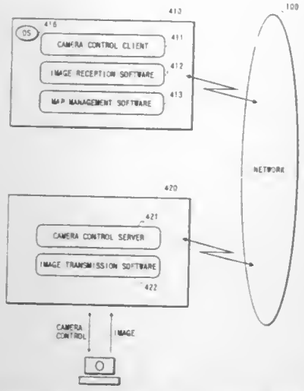
Hiroki Yonezawa, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Japan

Filed Jan. 29, 1997, Ser. No. 789,391
Claims priority, application Japan, Jan. 30, 1996, 8-014201
Int. Cl.[6] H04N 7/18
U.S. Cl. 348—563 20 Claims

1. An image processing apparatus comprising:

supply means for displaying arrangement diagram indicating an arrangement for a plurality of image transmission sources and images from said image transmission sources in a window on a monitor;

control means for controlling a size of said window in accordance with the number of images to be displayed in said window or vice versa; and



control means for controlling the communication with said image transmission sources in accordance with the number of images to be displayed in said window.

5,825,433

VIDEO MIXING APPARATUS

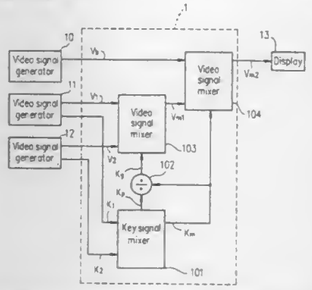
Yoshiki Yamada, Kitano, and Norio Suzuki, Neyagawa, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 7, 1995, Ser. No. 568,672

Claims priority, application Japan, Dec. 7, 1994, 6-331035

Int. Cl.[6] H04N *5/272;5/273*

U.S. Cl. 348—584 **19 Claims**



1. A video mixing apparatus for mixing a first video signal and a second video signal in accordance with a first key signal and a second key signal, the video mixing apparatus comprising:

a key signal mixer for receiving the first and second key signals and generating and outputting a third key signal and a fourth key signal, wherein a level K_1 of the first key signal, a level K_2 of the second key signal, a level K_p of the third key signal, and a level K_m of the fourth key signal satisfy the relationships:

$$K_p=K_2-K_1K_2,$$

and

$$K_m=K_1+K_2-K_1K_2;$$

a key signal division section for receiving the third and fourth key signals and generating and outputting a fifth key signal, wherein a level K_e of the fifth key signal satisfies the relationship:

$$K_e=K_p/K_m;$$

and

a first video signal mixer for receiving the first and second video signals and the fifth key signal and generating and outputting a third video signal by mixing the first and second video signals at a mix ratio which is in accordance with the fifth key signal.

5,825,434

METHOD AND CIRCUITRY FOR PROVIDING A CLEAR PROFILE OF IMAGE DATA DISPLAYED IN AN ELECTRO-OPTIC DEVICE

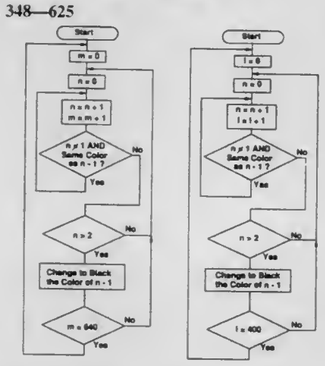
Shunepi Yamazaki, Tokyo; Akira Mase, Aichi; Masaaki Hiroki, and Yasuhiko Takemura, both of Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Atsugi, Japan

Filed Feb. 18, 1992, Ser. No. 836,800

Claims priority, application Japan, Feb. 16, 1991, 3-077315

Int. Cl.[6] H04N *5/14*

U.S. Cl. 348—625 **7 Claims**



1. An electro-optical device comprising:

a plurality of pixels arranged in horizontally extending rows and vertically extending columns in a matrix where said pixels are continuously arranged in each of said rows and have successive addresses along each of said rows; and

means for converting into black color or dark gray image data, original image data of an end one of said addresses of at least a predetermined number of adjacent ones of the continuous pixels in each said row of said matrix in response to said predetermined number of adjacent pixels having the same original color image data.

5,825,435

COLOR CATHODE RAY TUBE AND DISPLAY DEVICE

Leendert Vriens, and René A. Stoffels, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

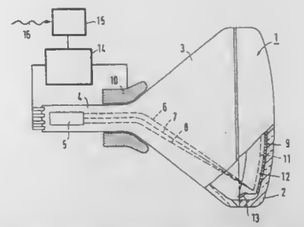
Filed Aug. 31, 1995, Ser. No. 522,035

Claims priority, application European Pat. Off., Sep. 7, 1994, 94202560; Aug. 7, 1995, 95202148

Int. Cl.[6] H01J *29/80;* **H04N** *5/64*

U.S. Cl. 348—841 **12 Claims**

1. A colour cathode ray tube comprising an electron gun for generating at least one electron beam, a colour selection electrode



having rows of apertures, a display screen and means for deflecting the electron beam(s) across the colour selection electrode in a line deflection direction transverse to the rows of apertures, characterized in that the number of apertures per row ranges between 615 to 650.

5,825,436

METHOD OF CONTROLLING VIEWABILITY OF A DISPLAY SCREEN AND A DEVICE THEREFOR BY PLACING AN LCD IN FRONT OF A CRT

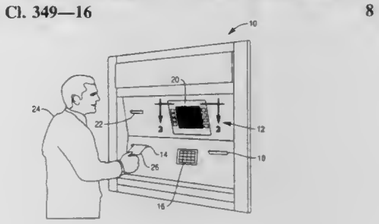
Kenneth R. Knight, Perthshire, Scotland, assignor to NCR Corporation, Dayton, Ohio

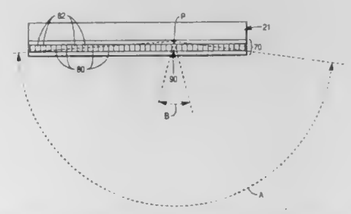
Filed Sep. 10, 1996, Ser. No. 711,521

Claims priority, application United Kingdom, Apr. 19, 1996, 9608175

Int. Cl.[6] G02F *1/133;* **G09G** *5/00;* **H04K** *1/00*

U.S. Cl. 349—16 **8 Claims**





1. A method of controlling viewability of a selectable portion of a display screen of a self-service transaction terminal to prevent a person other than a customer carrying out a transaction at the self-service transaction terminal from viewing the selectable portion of the display screen while the customer is carrying out the transaction, the method comprising the steps of:

(a) locating a liquid crystal display (LCD) panel having energizable segments in a position adjoining the display screen; and

(b) selectively energizing segments of the LCD panel such that the selectable portion of the display screen is viewable by the customer only within a predetermined viewing angle relative to the selectable portion of the display screen and is unviewable by a person outside the predetermined angle relative to the selectable portion of the display screen.

5,825,437

STRUCTURE OF A LIQUID CRYSTAL DISPLAY DEVICE AND A METHOD OF MANUFACTURING SAME

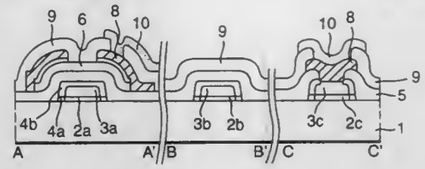
Hyun Sik Seo, Seoul, and In Woo Kim, Kyungki-do, both of Rep. of Korea, assignors to LG Electronics Inc., Seoul, Rep. of Korea

Filed Feb. 13, 1996, Ser. No. 600,529

Claims priority, application Rep. of Korea, Nov. 21, 1995, 1995 42555

Int. Cl.[6] G02F *1/136;1/1343;* **H01L** *29/786*

U.S. Cl. 349—46 **40 Claims**



1. A liquid crystal display apparatus comprising:

a substrate;

a first metal layer over said substrate, said first metal layer including an aluminum alloy having a first metal with a first melting temperature; and

a second metal layer over said first metal layer, said second metal layer including a pure aluminum or an aluminum alloy having a second metal with a second melting temperature lower than said first melting temperature.

5,825,438

LIQUID CRYSTAL DISPLAY HAVING DUPLICATE WIRING AND A PLURALITY OF THIN FILM TRANSISTORS FOR SINGLE PIXEL

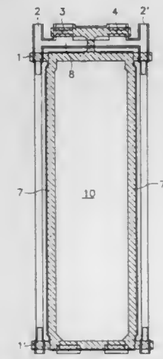
Jun-ho Song, and Dong-gyu Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 14, 1995, Ser. No. 558,708

Claims priority, application Rep. of Korea, Nov. 14, 1994, 1994 29822

Int. Cl.[6] G02F *1/136;1/1333;1/1343*

U.S. Cl. 349—54 **2 Claims**



1. A liquid crystal display, comprising:

a plurality of pixels arranged in a matrix;

a plurality of transistors connected to each of said pixels, each said transistor having a source;

a respective pair of gate lines and a respective pair of data lines encompassing each of said pixels;

a respective pair of first connecting means that connect the pair of gate lines encompassing each said pixel; and

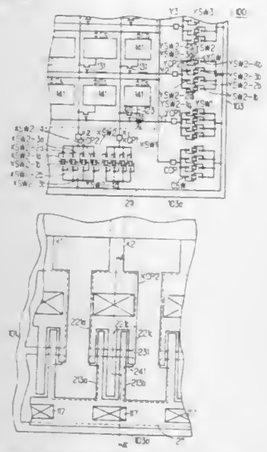
a respective second connecting means that connects the pair of data lines encompassing each said pixel, said second connecting means being formed by extensions of said sources of said transistors.

5,825,439

ARRAY SUBSTRATE FOR DISPLAY

Hidetaka Noriyama, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 22, 1995, Ser. No. 580,098
Claims priority, application Japan, Dec. 22, 1994, 6-320429
Int. Cl.[6] G02F 1/1333;1/1345
U.S. Cl. 349—54 8 Claims



1. An array substrate for a display, comprising:
a display pixel area containing a plurality of signal lines and scan lines wired in a matrix on an insulating substrate, switching elements electrically connected with at least one of said signal lines and one of said scan lines, and pixel electrodes electrically connected to said switching elements;
each of scan line connecting pads connected with each of said scan lines respectively and disposed outside of said display pixel area;
each of signal line connecting pads connected with each of said signal lines respectively and disposed outside of said display pixel area; and
a connecting conductor for electrically connecting said signal lines and said scan lines via non-linear element circuits;
each of said non-linear element circuits having a first electrode and a second electrode;
said first electrode being one of said scan line connecting pads or one of said signal line connecting pads by itself; and
said second electrode being connected with said connecting conductor.

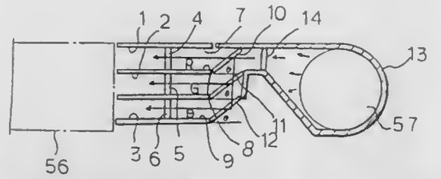
5,825,440

LIQUID CRYSTAL DISPLAY BACKLIGHTING SYSTEM WHICH INCLUDES DICHROIC MIRRORS, OPTICAL LIGHT VALVES, TRANSMISSION TUBES, AND A LIGHT TRANSMISSION PLATE

Si-hwan Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Kyunggi-do, Rep. of Korea

Filed Jun. 1, 1995, Ser. No. 457,622
Claims priority, application Rep. of Korea, Dec. 7, 1994, 94-33169
Int. Cl.[6] G02F 1/1335; G01D 11/28; F21V 7/04
U.S. Cl. 349—61 28 Claims

1. A front panel liquid crystal display (LCD) for displaying color images, comprising:
a liquid crystal unit for transmitting selectively light rays through pixels under the control of video signals;
video signal supplying means for supplying said video signals controlling the pixels of said liquid crystal unit; and



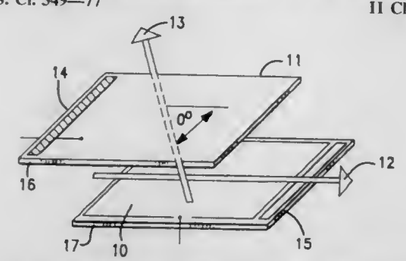
monochromatic light ray supplying means for supplying red, green and blue light rays necessary to present colors under the control of said video signals;
wherein said monochromatic light ray supplying means comprises:
light supplying means for supplying white light;
first, second and third light selection members for separating said white light into three monochromatic light rays comprising said red, green and blue light ray;
first, second and third optical valves for selectively passing said three monochromatic light rays according to said video signals;
first, second and third tubes for transmitting said three monochromatic light rays; and
a light transmission plate for separately transferring said three monochromatic light rays passed by said first, second and third optical valves to the pixels of said liquid crystal unit.

5,825,441

LIQUID CRYSTAL WELDING GLASS SHIELDS HAVING IMPROVED OPTICAL ANGULAR PROPERTIES

Ake Hörnell, Präståkersvägen 29, S-780 40 Mockjärd, and Stephen Palmer, Honefsgatan 3-2, S-784 74 Borlänge, both of Sweden

PCT No. PCT/SE95/00455, § 371 Date Dec. 22, 1995, § 102(e) Date Dec. 22, 1995, PCT Pub. No. WO95/29428, PCT Pub. Date Nov. 2, 1995
PCT Filed Apr. 25, 1995, Ser. No. 569,095
Claims priority, application Sweden, Apr. 26, 1994, 9401423
U.S. Cl. 349—77 11 Claims



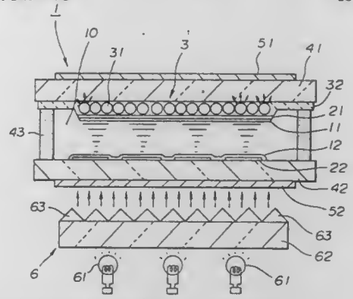
1. A welding glass filter construction that is able to switch rapidly between a high light-absorbing state and a low light-absorbing state, and vice versa, in response to variations in the intensity of welding light comprising two nematic-type liquid-crystal cells disposed between transparent, electrode-loaded plates which can be connected to a voltage source and which are provided with coatings which determine the directions of molecule orientation and which define the molecule alignment direction with mutual angular displacements at their limiting surfaces, therewith causing the liquid crystals to be twisted optically in the absence of voltage between the electrode coatings on the plates, wherein the cells are each mounted between mutually extinguishing polarization filters, and wherein the molecule alignment directions are so turned as to obtain a compensation effect between the respective asymmetrical light absorptions of the cells when a voltage is applied, wherein at least one of the angular displacements of the cells with respect to said molecule alignment directions in the absence of said voltage differs from 90° and is greater than 0° and no greater than 85°.

5,825,442

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD FOR MAKING SAME HAVING A DIFFUSER MADE OF SPHERICAL PARTICLES IN A TRANSPARENT BODY

Kotaro Yoneda, Kanagawa; Yasunori Sato, Kagoshima, and Hisao Hayashi, Kanagawa, all of Japan, assignors to Sony Corporation, Japan

Filed Mar. 27, 1996, Ser. No. 623,391
Claims priority, application Japan, Mar. 31, 1995, 7-074977
Int. Cl.[6] G02F 1/1335
U.S. Cl. 349—95 18 Claims



1. A liquid crystal display device comprising:
a first substrate having a first transparent electrode layer formed on an inner surface thereof;
a second substrate having a second transparent electrode layer formed on an inner surface thereof;
a liquid crystal layer sandwiched between the first and second substrates;
a light source emitting a light;
a collimator for collimating the light of said light source and providing the collimated light to the liquid crystal layer; and
diffusion means for diffusing light transmitted through the liquid crystal layer, said diffusion means comprising a plurality of lenses arranged between the first substrate and the first transparent layer, and said lenses comprising spherical particles dispersed a transparent body.

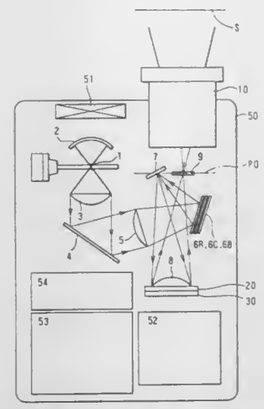
5,825,443

COLOR LIQUID CRYSTAL DISPLAY WITH THREE DICHROIC MIRRORS REFLECTING IN DIFFERENT DIRECTIONS TO THREE PIXELS WHICH REFLECT TO COMMON OPTICS

Eishi Kawasaki, Kuwana; Tsukasa Koumura, Toyota; Shoichi Onda, Toyokawa, and Tadao Ohoka, Aichi-gun, all of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Feb. 19, 1997, Ser. No. 802,277
Claims priority, application Japan, Feb. 20, 1996, 8-032411
Int. Cl.[6] G02F 1/1335
U.S. Cl. 349—95 14 Claims

1. A color liquid crystal display device comprising:
a white light source;
means for dividing the white light into plural light beams, each having a wavelength range different from one another;
means for projecting the plural light beams in respective directions;
means, including liquid crystal, picture element electrodes and driver means for driving the liquid crystal, for modulating the plural light beams according to signals from the driver means;
optical means for converging the plural light beams on the respective picture element electrodes, combining the plural light beams from the respective picture element electrodes into a single position of the optical means and projecting the combined light beams therefrom; and



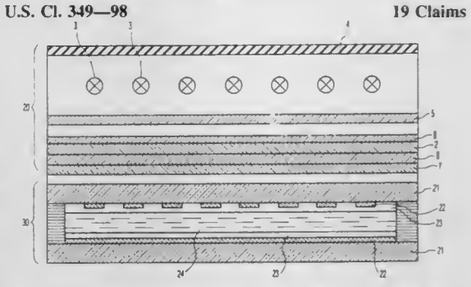
means for displaying a color image of the combined light beam, wherein the picture element electrodes reflect the light beams thereon.

5,825,444

ILLUMINATION SYSTEM USING CHOLESTERIC POLARIZER, LINEAR POLARIZER FOR SUCH ILLUMINATION SYSTEM AND DISPLAY DEVICE COMPRISING SUCH AS ILLUMINATION SYSTEM

Dirk J. Broer; Johannes A. M. M. Van Haaren; Grietje N. Mol, and Frans Leenhouts, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 19, 1996, Ser. No. 752,364
Claims priority, application European Pat. Off., Nov. 22, 1995, 95203209
Int. Cl.[6] G02F 1/1335;1/13
U.S. Cl. 349—98 19 Claims



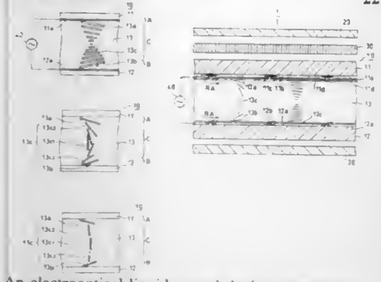
1. An illumination system comprising a fluorescent lamp and a broadband, cholesteric polarizer, characterized in that an illumination system which comprises a fluorescent lamp and a broadband, cholesteric polarizer with a layer of a polymeric material having a cholesteric order, said material being ordered in such a manner that the axis of the molecular helix extends at right angles to the layer, and the pitch the molecular helix increasing from a minimum value at a first surface of the cholesteric layer to a maximum value at the second surface of the layer, characterized in that the polarizer is positioned in the illumination system so that the cholesteric layer faces the radiation source with its first surface and that the value of the product $p_{max}.n_e$ of the maximum value of the pitch in the cholesteric layer p_{max} and of the extraordinary refractive index n_e ranges between 0.61 micron and 0.76 micron.

5,825,445

ELECTROOPTICAL LIQUID CRYSTAL DEVICE

Masumi Okamoto; Masato Shoji; Yasuharu Tanaka; Masahito Ishikawa; Nobuko Fukuoka; Toshihiro Ninomiya; Tsuyoshi Ohyama, all of Kanagawa-ken; Norihiro Yoshida, Tokyo, and Hitoshi Hatoh, Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 4, 1996, Ser. No. 725,897
Claims priority, application Japan, Oct. 6, 1995, 7-259980
Int. Cl.[6] G06F *1/1335*
U.S. Cl. 349—118 **22 Claims**



1. An electrooptical liquid crystal device comprising:

a bend-aligned liquid crystal cell including two substrates and a liquid crystal layer therebetween with molecular twisted alignment at the center of the cell, at least one optically anisotropic element arranged to reduce a viewing angle dependency of the bend-aligned liquid crystal cell, and

at least one polarizer disposed substantially parallel to the bend-aligned liquid crystal cell, to operate as a normally white display mode,

wherein the optically anisotropic element has an elliptic coefficient Z that $7 \leqq Z \leqq 10$, if $Z=(n_x d-n_z d)/n_x d-n_y d$, where $n_x d$, $n_y d$ and $n_z d$ represent the refractive index components in x, y and z directions respectively of the products of the refractive indice of the optically anisotropic element and the thickness (unit: μm) of the optically anisotropic element in a direction of a normal to the substrates when the substrates and the optically anisotropic element are arranged parallel to each other, the symbols $n_x d$ and $n_y d$, which are perpendicular to each other, representing the refractive index components of the optically anisotropic element in a in-plane direction x-y of a plane substantially perpendicular to a thickness direction z of the optically anisotropic element, and the symbol $n_z d$ representing the refractive index components of the optically anisotropic element in the thickness direction z thereof.

5,825,446

Patent Not Issued For This Number

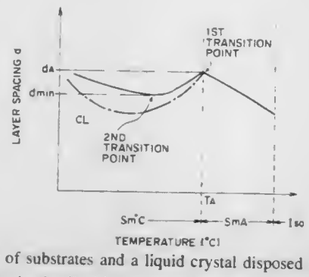
5,825,447

LIQUID CRYSTAL DEVICE WITH A BISTABLE CHIRAL SMECTIC LIQUID CRYSTAL HAVING A PHASE TRANSITION SERIES LACKING A CHOLETERIC PHASE #16

Yukio Hanyu, Isehara; Katsutoshi Nakamura, Hiratsuka, and Nobuhiro Ito, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 283,141, Aug. 1, 1994, abandoned. This application Jun. 19, 1996, Ser. No. 666,916
Claims priority, application Japan, Aug. 3, 1993, 5-212264; Aug. 3, 1993, 5-212265
Int. Cl.[6] G02F *1/1337;1/141;* C09K *19/02;19/52*
U.S. Cl. 349—128 **14 Claims**

1. A liquid crystal device, comprising:



a pair of substrates and a liquid crystal disposed therebetween, wherein the liquid crystal has a phase transition series not showing cholesteric phase and is placed in a bistable chiral smectic phase, and the pair of substrates have been subjected to asymmetrical aligning treatments;

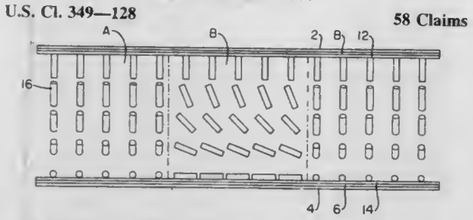
said liquid crystal having a layer spacing-changing characteristic providing a layer spacing d_A at a first transition point where the layer spacing of the liquid crystal begins to decrease upon temperature decrease in the vicinity of a transition temperature from SmA phase to SmC* phase and a layer spacing d_{min} at a second transition point where the layer spacing of the liquid crystal begins to increase upon further temperature decrease from the first transition point, wherein $0.96 \leqq d_{min}/d_A$.

5,825,448

REFLECTIVE OPTICALLY ACTIVE DIFFRACTIVE DEVICE

Philip J. Bos, Hudson; Jianmin Chen, Kent, both of Ohio; David L. Johnson, deceased, late of Kent, Ohio, Rosine M. Johnson, executor; William E. Glenn, Ft. Lauderdale, Fla.; Carvel E. Holton, Blacksburg, Va., and Brett E. Smith, Boynton Beach, Fla., assignors to Kent State University, Kent, Ohio

Continuation-in-part of Ser. No. 445,051, May 19, 1995, Pat. No. 5,638,201. This application Nov. 5, 1996, Ser. No. 743,962
Int. Cl.[6] G02F *1/1337*
U.S. Cl. 349—128 **58 Claims**



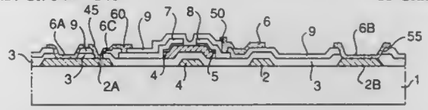
22. A liquid crystalline diffractive light modulating device comprising nematic liquid crystal material disposed between first and second substrates defining cell walls and including means for addressing said liquid crystal material, said first and second substrates being treated to provide a plurality of domains in which the projection of the directors in a first domain are orthogonal to the projection directors in the second domain, wherein light incident on said first and second domains through one said substrate and in phase, is reflected by the other of said substrates and exits said first and second domains with about a half wave relative phase shift, irrespective of the polarization of said incident light.

5,825,449

LIQUID CRYSTAL DISPLAY DEVICE AND METHOD OF MANUFACTURING THE SAME

Woo Sup Shin, Kyungsangbuk-do, Rep. of Korea, assignor to LG Electronics, Inc., Seoul, Rep. of Korea

Division of Ser. No. 616,291, Mar. 15, 1996. This application Jan. 10, 1997, Ser. No. 781,188
Claims priority, application Rep. of Korea, Aug. 19, 1995, 25538/1995
Int. Cl.[6] G02F *1/136;1/1343;1/1345*
U.S. Cl. 349—148 **11 Claims**



2. A wiring structure comprising:

a substrate;

a first conductive layer formed on a portion of said substrate;

a first insulative layer having a first via hole exposing a portion of said first conductive layer;

a second conductive layer formed on a portion of said first insulative layer;

a second insulative layer having a second via hole exposing said exposed portion of the first conductive layer and having a third via hole exposing a portion of the second conductive layer;

a third conductive layer formed on said second insulative layer and electrically connecting said first conductive layer to said second conductive layer through said first, second, and third via holes,

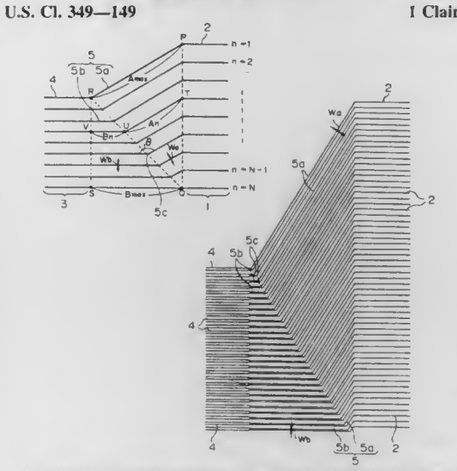
wherein one of said first and second conductive layers is connected to one of a plurality of terminals of a thin film transistor.

5,825,450

LIQUID CRYSTAL DISPLAY DEVICE

Takashi Date, and Manabu Kusano, both of Fukushima-ken, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jun. 24, 1997, Ser. No. 881,786
Int. Cl.[6] G02F *1/1335*
U.S. Cl. 349—149 **1 Claim**



1. A liquid crystal display device provided with a display pattern portion comprising a plurality of transparent electrodes extending mutually in parallel, a terminal portion comprising a plurality of lead patterns extending mutually in parallel with a pattern pitch narrower than that among said transparent electrodes, and connection patterns for connecting said transparent electrodes and said lead patterns,

in which said connection patterns consist of first connection patterns leading obliquely from said transparent electrodes to extend mutually in parallel, said first connection patterns having a common pattern width, and second connection patterns leading straight from said lead patterns to connect with said first connection patterns at a predetermined angle, said second connection patterns having a common pattern width, and said liquid crystal display device has the following relationship:

$$Amax/Bmax=Wa/Wb$$

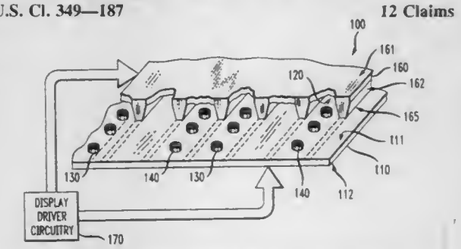
where Amax represents a length of the longest first connection pattern, Wa, a pattern width thereof; Bmax, a length of the longest second connection pattern, and Wb, a pattern width thereof.

5,825,451

METHODS OF MANUFACTURING MULTI-COLOR LIQUID CRYSTAL DISPLAYS USING IN SITU MIXING TECHNIQUES

Yao-Dong Ma, Richardson, and Bao-Gang Wu, Amarillo, both of Tex., assignors to Advanced Display Systems, Inc., Amarillo, Tex.

Filed Oct. 17, 1997, Ser. No. 954,321
Int. Cl.[6] G02F *1/1335;1/13*
U.S. Cl. 349—187 **12 Claims**



1. A method of manufacturing a liquid crystal display (LCD), comprising the steps of:

depositing a twist agent on a first substrate, said twist agent thereby becoming an in situ twist agent;

bringing a second substrate into proximity with said first substrate to form an interstice between said first and second substrates;

introducing a liquid crystal (LC) having an initial pitch into said interstice and proximate said in situ twist agent; and

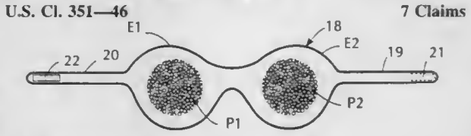
stimulating said LC and said in situ twist agent to cause said LC and said in situ twist agent to mix after said step of introducing, said stimulating causing said in situ twist agent to change said initial pitch of said LC.

5,825,452

LENSLESS SAFETY SUNGLASSES

Donald Spector, 380 Mountain Rd., Union City, N.J. 07080

Continuation-in-part of Ser. No. 685,410, Jul. 24, 1996, Pat. No. 5,631,717. This application Apr. 11, 1997, Ser. No. 837,053
Int. Cl.[6] G02C *7/16*
U.S. Cl. 351—46 **7 Claims**



1. Lensless safety sunglasses comprising:

a flat sheet of flexible synthetic plastic material contoured to define a frame having a pair of eyepieces from which extend

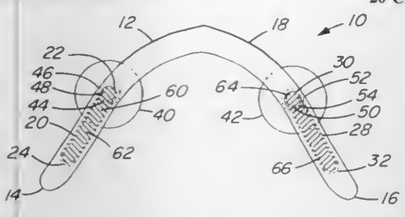
temple straps for securing the frame to the head of a wearer, said eyepieces each having a dense pattern of closely spaced apertures therein to define a light-permeable scrim for reducing the intensity of light passing therethrough.

5,825,453

DOUBLE BAISED EYEGLASS NOSEPIECE

Marc Christopher Baragar, Vancouver, and Michael John Roman, Burnaby, both of Canada, assignors to Xenophon Design Inc., Vancouver, Canada

Filed Jul. 2, 1996, Ser. No. 674,670
Claims priority, application Canada, Jul. 4, 1995, 2153201
Int. Cl.[6] G02C *5/12*
U.S. Cl. 351—137 **20 Claims**



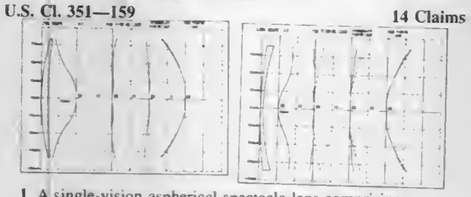
1. An eyeglass nosepiece adapted to receive first and second nosepads, comprising:
a) a first elongated member having a top end and a bottom end, and defining there-between a first path having a substantially parallel longitudinal axis, the first path being adapted to receive the first nosepad for translation there-along,
b) a second elongated member having a top end and a bottom end, and adapted to receive the second nosepad,
c) a bridge having a first end and a second end, the first end of the bridge being connected to first member toward its top end and the second end of the bridge being connected to the second member toward its top end thereby forming a concave-down frame, and
d) a first biasing mechanism engaging the first elongated member and adapted to apply a force directed substantially along the first path to urge the first nosepad along the first path toward one end of the first elongated member.

5,825,454

ASPHERICAL SPECTACLE LENS

Tetsuma Yamakaji; Hua Qi, and Atsuo Minato, all of Tokyo, Japan, assignors to Hoya Corporation, Tokyo, Japan

Filed Jan. 13, 1997, Ser. No. 782,286
Claims priority, application Japan, Jan. 16, 1996, 8-005242; Jan. 16, 1996, 8-005243
Int. Cl.[6] G02C *7/02*
U.S. Cl. 351—159 **14 Claims**



1. A single-vision aspherical spectacle lens comprising:
a pair of first and second refractive surfaces, at least one of which has an aspherical shape,
wherein at least one of the first refractive surface and the second refractive surface is defined by the following equation:

$$X(\rho) = \frac{C\rho^2}{1+\sqrt{1-C^2\rho^2 k}} + \sum_{i=1}^{n} A_{mi}\rho^{mi}$$

where mi designates a real number which is not less than 2; n is an integer which is not less than 1; X is a length of a perpendicular drawn from a point, which is positioned on the aspherical surface and is located at a distance ρ from an optical axis, to a meridional plane, which contacts the aspherical surface at a vertex thereof; C is a curvature of a reference spherical surface at the vertex of the aspherical surface; k is a cone constant; and A_{mi} is an aspherical coefficient of ρ^{mi}.

5,825,455

ASPHERIC PLANO EYEWEAR

Keith Fecteau, Wilbraham, Mass.; James Hall, Lincoln, R.I.; Raoul Desy, Sturbridge; John Salce, Auburn, both of Mass., and David M. Hasenauer, Monrovia, Calif., assignors to Cabot Safety Intermediate Corporation, Southbridge, Mass.
Continuation-in-part of Ser. No. 641,901, May 2, 1996, abandoned. This application Feb. 26, 1997, Ser. No. 806,832
Int. Cl.[6] G02C *7/02;1/13*
U.S. Cl. 351—159 **62 Claims**



1. Eyewear comprising:
a lens having a first surface and a second surface spaced from the first surface, said lens further having a viewing portion;
said first surface comprising a section of a 3-dimensional surface defined by rotating an ellipse about an axis, which axis is not an axis of said ellipse, and which is offset from the major or minor axis of the ellipse;
said second surface having a curvature which, together with said first surface, provides piano optics to at least said viewing portion; and
a support structure for positioning said lens at a location spaced from the eyes of the wearer.

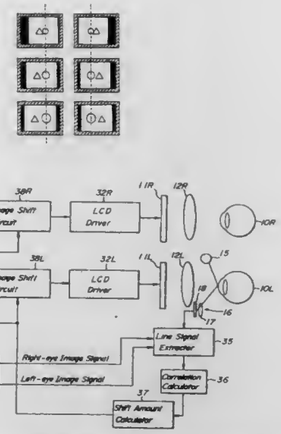
5,825,456

STEREOSCOPIC VIDEO DISPLAY APPARATUS

Seiichiro Tabata, Hino, and Yoichi Iba, Hachioji, both of Japan, assignors to Olympus Optical Company, Ltd., Tokyo, Japan

Filed May 23, 1996, Ser. No. 652,822
Claims priority, application Japan, May 24, 1995, 7-124661
Int. Cl.[6] A61B *3/08*
U.S. Cl. 351—201 **33 Claims**

1. A stereoscopic video display apparatus comprising:
a displaying means for displaying a right-eye image to be exclusively seen by a right eye of a viewer and a left-eye image to be exclusively seen by a left eye of the viewer, said right-eye and left-eye images being derived from a video signal supplied to the stereoscopic video display apparatus from an applied video signal source, said right-eye and left-eye images composing a stereoscopic image to be seen by the viewer; and
an image shifting means for performing a horizontal shift on at least one of said right-eye image and left-eye image displayed on said displaying means;
wherein:



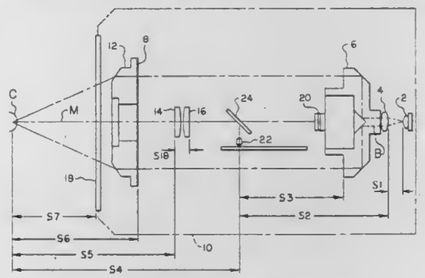
said image shifting means comprises controlling means for controlling the horizontal shift such that a distance of convergence caused by the right-eye image and the left-eye image displayed on the displaying means is maintained substantially constant on a time domain despite a change in the video signal.

5,825,457

KERATOMETRIC ILLUMINATION SYSTEM

David A. Luce, Clarence Center, and Joseph L. Zelvin, Larchmont, both of N.Y., assignors to Leica Inc., Depew, N.Y.

Filed Jun. 2, 1997, Ser. No. 867,622
Int. Cl.[6] A61B *3/10*
U.S. Cl. 351—221 **25 Claims**



1. A keratometric illumination system comprising:
a beam of light;
a conical reflector centered on said beam, said conical reflector dividing said beam into radially expanding rays; and
a frusto-conical reflector redirecting said radially expanding rays as an annulus of light.

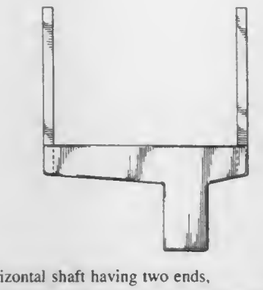
5,825,458

PERSONAL BINOCULAR TRAINER

Clifford Warren Cooper, P.O. Box 5125, Hyattsville, Md. 20782-0125

Filed Mar. 2, 1995, Ser. No. 397,637
Int. Cl.[6] A61B *3/00*
U.S. Cl. 351—203 **3 Claims**

1. A hand held device for testing, exercising and recalibrating the musculature of the human visual system thereby enhancing binocular vision comprising:



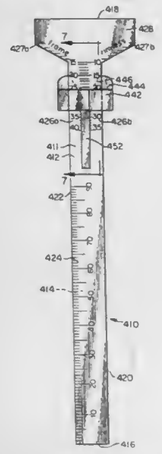
(a) a horizontal shaft having two ends,
(b) a first post affixed to one end of said horizontal shaft,
(c) a second post is affixed to the other end of said horizontal shaft, said first post and said second post are oriented vertically in the same plane, said second post is positioned a linear distance from said first post; and
(d) means for aligning said first post and said second post in the same vertical plane.

5,825,459

OPTICIAN'S RULER WITH SLIDING HEIGHT INDICATOR

Bruce Rubin, 120 Lucerne Blvd., Cherry Hill, N.J. 08003

Filed Jun. 5, 1997, Ser. No. 869,687
Int. Cl.[6] A61B *3/10;3/00*
U.S. Cl. 351—204 **21 Claims**



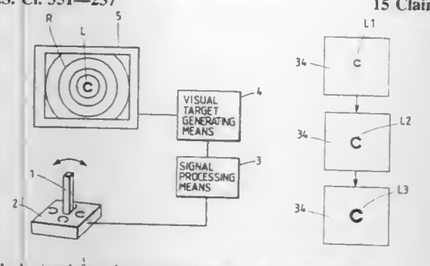
1. An optician's ruler, comprising:
a generally elongated body having at least first and second principal surfaces, a first end, a second end, and a longitudinal axis;
a segment height scale on one of the at least first and second principal surfaces of the body, the segment height scale having indicia at regularly spaced intervals coinciding with standard units of measure, to permit measurement of the height of a segment of a multi-focal lens; and
an indicator device supported by and movable with respect to the body, the indicator device including an indicator for alignment with the segment height scale indicia and a stop member for engaging a pair of eyeglasses.

5,825,460

VISUAL FUNCTION MEASURING APPARATUS

Yoshimi Kohayakawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 26, 1995, Ser. No. 429,158
Claims priority, application Japan, Apr. 30, 1994, 6-113788; Sep. 13, 1994, 6-246880
Int. Cl.[6] A61B 3/02
U.S. Cl. 351—237 15 Claims



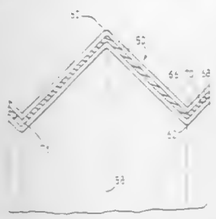
1. A visual function measuring apparatus comprising:
visual target displaying means for presenting visual targets of different sizes successively to an eye to be examined;
response inputting means for inputting the response of an examinee to whom the visual targets have been presented, the examinee's visual function being measured on the basis of the response input; and
control means for controlling said visual target displaying means to change, in succession, the visual targets presented to the examinee from a smaller visual target to a larger visual target, wherein the examinee's visual function is measured on the basis of the response input by the examinee during the changing of the visual targets from the smaller visual target to the larger visual target in succession, and wherein said control means controls said visual target displaying means to change the manner in which the visual targets are presented when the response input by the examinee occurs.

5,825,461

BELLOWS FOR OPTICAL EQUIPMENT

Edward Charles Ruffell, Hampshire, England, assignor to Panavision Europe Limited, Shepperton, England

PCT No. PCT/GB93/02336, § 371 Date May 11, 1995, § 102(e) Date May 11, 1995, PCT Pub. No. WO94/11780, PCT Pub. Date May 26, 1994
PCT Filed Nov. 12, 1993, Ser. No. 433,478
Claims priority, application United Kingdom, Nov. 13, 1992, 9223845
Int. Cl.[6] G03B 17/04
U.S. Cl. 354—187 21 Claims



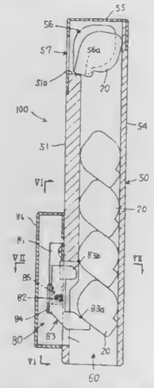
1. Bellows comprising a tubular corrugated concertina structure of adjustable axial length, the concertina structure having pleats with folds between axially adjacent pleats acting as hinges, at least some of said pleats being of laminated construction, a first layer of said construction being of flexible light-inhibiting material and a further layer being of load-bearing material which extends across and stiffens the folds between said pleats, substantially throughout the length thereof.

5,825,462

FILM CARTRIDGE STORAGE APPARATUS

Takahisa Miyamori; Yoshiyuki Yamaji, and Toru Yoshikawa, all of Wakayama, Japan, assignors to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Dec. 8, 1995, Ser. No. 569,790
Claims priority, application Japan, Dec. 13, 1994, 6-309065; Oct. 25, 1995, 7-277795
Int. Cl.[6] G03B 27/00;27/62; G03D 17/00
U.S. Cl. 355—75 18 Claims



1. A film cartridge storage apparatus for storing a plurality of film cartridges and feeding the cartridges individually, which comprises:
a storage case for stacking the plurality of film cartridges in a row;
an inlet section including an inlet opening configured to introduce the film cartridges while maintaining each cartridge in a predetermined posture;
an outlet section provided at a lower portion of the storage case for exiting the film cartridges stored within the cartridge case while maintaining the cartridge in a predetermined posture;
an individual feed mechanism disposed adjacent the outlet section, wherein said individual feed mechanism includes a movable member movable between a first area and a second area, said movable member including a first arm portion and a second arm portion, said first arm portion being adapted to hold a lowermost film cartridge at the first area and also to release and feed the lowermost film cartridge at the second area, said second arm portion being adapted to allow a film cartridge to be dropped toward the first arm portion at the first area and also to prevent the film cartridge from being dropped toward the first arm portion at the second area; and
a cartridge escape mechanism which is formed at least at a portion of a wall member constituting the storage case and which is capable of being elastically deformed to the outside, whereby the cartridge escape mechanism allows the film cartridge contacting the second arm portion to move out of a pivotal locus of the second arm portion when the second arm portion moves from the first area to the second area.

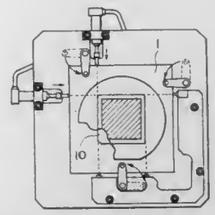
5,825,463

MASK AND MASK SUPPORTING MECHANISM

Shinichi Hara, Saitama-ken; Nobutoshi Mizusawa, Yamato, and Yuji Chiba, Isehara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 401,701, Mar. 10, 1995, abandoned.
This application Jan. 31, 1997, Ser. No. 791,545
Claims priority, application Japan, Mar. 15, 1994, 6-043903
Int. Cl.[6] G03B 27/62
U.S. Cl. 355—75 10 Claims

1. A mask supporting method, comprising the steps of:



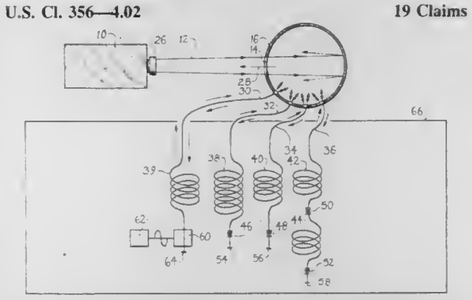
providing a mask having a mask frame with a rectangular outside peripheral shape and a window having a rectangular shape analogous to the outside peripheral shape of the mask frame; and
supporting the mask by supporting an outside periphery of the mask frame at (i) three supporting points and (ii) at least two pressing points substantially opposed to the supporting points, wherein each of the supporting points is disposed at or outwardly of a point of intersection between an extension of a side of the window of the mask frame and the outside periphery of the mask frame.

5,825,464

CALIBRATION SYSTEM AND METHOD FOR LIDAR SYSTEMS

John D. Feichtner, 28437 Christopher's La., Los Altos, Calif. 94022

Filed Jan. 3, 1997, Ser. No. 778,899
Int. Cl.[6] G01C 3/08;25/00
U.S. Cl. 356—4.02 19 Claims



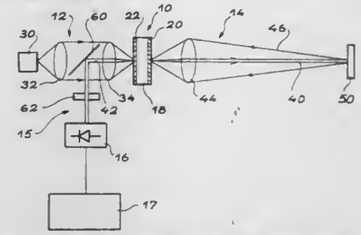
1. A calibration system for a light-emitting apparatus which bases determinations relating to remote objects upon received backscattered light comprising:
an optical line having a first end;
reflective means connected to said line for inducing light reflection at a fixed distance from said first end of said optical line; and
distributing means for diffusing light emitted from said light-emitting apparatus substantially isotropically within a reflective cavity defined by said distributing means, said first end of said optical line being disposed relative to said reflective cavity to receive diffused light and to direct light reflected by said reflective means toward said distributing means for return to said light-emitting apparatus.

5,825,465

AUTODYNE DETECTION LASER VELOCIMETER

Philippe Nerin, Seyssinet-Pariset; Pascal Besesty, Vaulnaseyt Lehaut; Hervé Giraud, St Egreoe, and André Mouttet, Seyssinet Pamiset, all of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Jul. 17, 1997, Ser. No. 896,034
Claims priority, application France, Jul. 23, 1996, 96 09227
Int. Cl.[6] G01P 3/36
U.S. Cl. 356—28.5 17 Claims



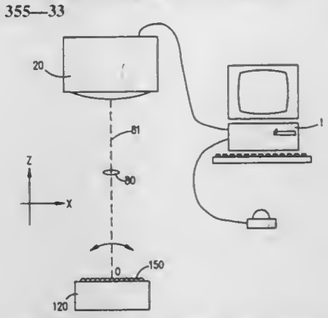
1. Autodyne detection laser velocimeter comprising:
a microlaser (**10**) comprising facing first (**20**) and second (**22**) emission surfaces capable of emitting respectively a first (**40**) and second (**42**) beam from the first and second surfaces (**20**, **22**) respectively, the second emission surface having a lower transmission coefficient than that of the first surface,
pumping means (**12**) capable of supplying a pumping beam to the microlaser,
optical means (**14**) capable of sending the first beam (**40**) to a target (**50**) and of directing the light re-emited by the target (**50**) to the microlaser (**10**),
photoelectric detection means (**16**) for receiving the second beam (**42**) and emitting a detection signal, and
means (**17**) for processing the detection signal to establish a magnitude characteristic of a displacement velocity of the target.

5,825,466

3D PHOTO PRINTER WITH IMAGE DISTORTION CORRECTION

Allen Kwok Wah Lo, Dunwoody, Ga., and Kenneth Quochuy Lao, Westfield, N.J., assignors to Image Technology International, Inc., Norcross, Ga.

Filed Jan. 18, 1996, Ser. No. 588,134
Int. Cl.[6] G03B 27/32;27/46;27/52
U.S. Cl. 355—33 27 Claims



1. A method of producing lenticular pictures from a plurality of 2D images on lenticular print material having lenticules wherein said lenticules having a common longitudinal axis, said method comprising the steps of:
a) sequentially displaying said 2D images on a video monitor for exposure;
b) tilting said print material at different tilting angles to change the projection angles; and

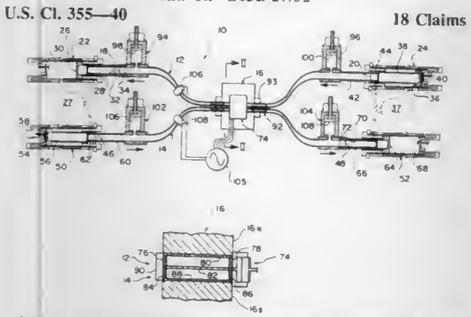
c) projecting each of said displayed 2D images by a projection lens onto said print material at a different projection angle.

5,825,467

ORDER FORM FOR PHOTOGRAPHIIC PRINTS, KEYBOARD, REPRINTING METHOD AND REORDERING METHOD

Toshihiko Narita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jun. 6, 1995, Ser. No. 467,170
Claims priority, application Japan, Oct. 11, 1994, 6-245395
Int. Cl.[6] G03B *27/52*
U.S. Cl. 355—40 **18 Claims**



1. An order form for photographic prints, said order form having writable frames for containing written reprint information,

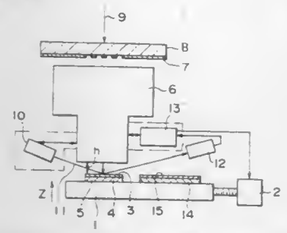
said writable frames having a format which corresponds to the format of index image frames of an index print so that a particular writable frame can be easily located based on the location of a corresponding index image frame.

5,825,468

EXPOSURE SYSTEM FOR LITHOGRAPHY APPARATUS

Toshiyuki Ishimaru, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Jul. 24, 1996, Ser. No. 685,814
Claims priority, application Japan, Jul. 24, 1995, 7-208401
Int. Cl.[6] G03B *27/52;27/42;27/54*
U.S. Cl. 355—55 **16 Claims**



1. An exposure system for a semiconductor device comprising:

a photosensitive material formed on a substrate provided on a stage of a projection exposure system;

an optical system allowing an exposure light after transmitting a pattern of a reticle to be focused on said photosensitive material for forming a latent image having a shape corresponding to the pattern of said reticle on said photosensitive material;

a focusing light source for emitting a focusing light on said latent image formed on said photosensitive material;

a detector for detecting the focusing light reflected from said latent image, said reflected focusing light being characteristic of accuracy of said focusing of said exposure light on said photosensitive material;

a pattern measuring device for measuring the reflected light detected by said detector and judging whether or not said exposure light is focused on said photosensitive material; and

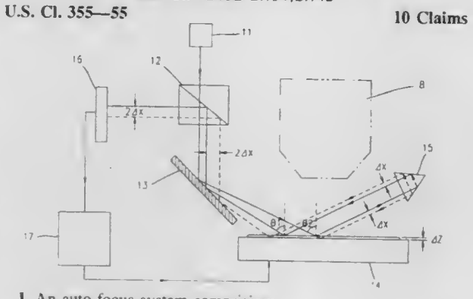
a drive unit for driving said stage so as to adjust a vertical distance between said optical system and said photosensitive material in accordance with the measured result of said pattern measuring device.

5,825,469

AUTO FOCUS SYSTEM USING TWICE REFLECTION

Byung-Ho Nam, Kyungsangbook-Do, and Jae-Keun Jeong, Choongcheongbuk-Do, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Choongcheongbuk-Do, Rep. of Korea

Filed Oct. 17, 1997, Ser. No. 953,410
Claims priority, application Rep. of Korea, Oct. 28, 1996, 49030/1996
Int. Cl.[6] G03B *27/34;27/42*
U.S. Cl. 355—55 **10 Claims**



1. An auto focus system comprising:

a light source;

a beam splitting means for transmitting a first beam emitted from the light source and reflecting a second beam emitted from the light source;

a reflective mirror for reflecting the first beam from the beam splitting means;

a wafer mounted on a wafer stage for receiving and reflecting the first beam reflected by the reflective mirror;

a total reflection means for reversing a direction of the first beam reflected from the wafer;

a detector for detecting the first beam after the first beam is reflected from the total reflection means, the wafer, the reflective mirror, and the beam splitter, and for converting the first beam into an electrical signal; and

a control unit for controlling the wafer stage in accordance with the electrical signal generated from the detector.

5,825,470

EXPOSURE APPARATUS

Tsuneo Miyai, Tokyo, and Yuji Imai, Omiya, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 614,057
Claims priority, application Japan, Mar. 14, 1995, 7-81826; May 26, 1995, 7-152221; Jun. 2, 1995, 7-160061
Int. Cl.[6] G03B *27/58;27/42;* **B65B** *21/02*
U.S. Cl. 355—72 **24 Claims**

1. An exposure apparatus for transferring a pattern formed on a mask onto a photosensitive substrate, comprising:

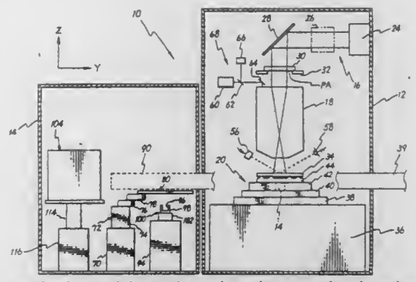
a substrate holding member for holding the photosensitive substrate;

a stage for detachably supporting the substrate holding member;

an attaching/detaching mechanism for attaching and detaching the substrate holding member to and from the stage;

a storing unit for storing the substrate holding member; and

a transport system for receiving and transmitting the substrate holding member from and to each of the attaching/detaching



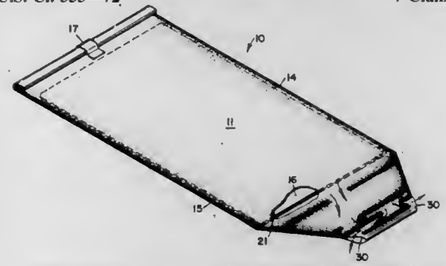
mechanism and the storing unit, and transporting the substrate holding member between the attaching/detaching mechanism and the storing unit.

5,825,471

LIGHT-TIGHT BAG HAVING A TRAPPED AIR EXIT

Leigh Allen Mazion, Roseville, Minn.; Gregory Kent Elliot Hall; Daniel Leio Brothers, Jr., both of Rochester, N.Y., and Shawn Lee Allen, Lino Lakes, Minn., assignors to Imation Corp., Oakdale, Minn.

Filed Jul. 3, 1996, Ser. No. 676,862
Int. Cl.[6] G03B *27/58*
U.S. Cl. 355—72 **7 Claims**



1. A light-tight bag for use with photosensitive material, comprising:

at least one member configured to form an enclosure, the enclosure defining a cavity for receiving photosensitive material;

the enclosure having light-tight sides, an open first end and a second end, the first end providing an entrance to insert the photosensitive material into the cavity;

the open end adapted and configured to be closed in a light-tight manner after insertion of the photosensitive material; and

the second end having a serpentine passageway, thereby creating a light-tight second end and also allowing for entrapped air to exit the cavity.

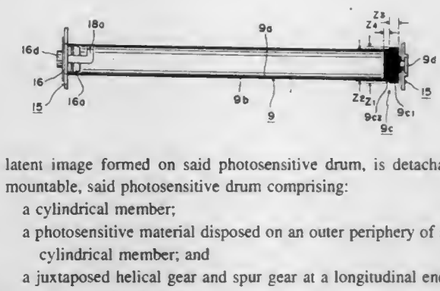
5,825,472

PHOTOSENSITIVE DRUM, PROCESS CARTRIDGE AND IMAGE FORMING APPARATUS

Ryuji Araki; Yoshinori Sugiura, both of Kawasaki; Hideshi Kawaguchi, Yokohama; Hiroaki Miyake, Kawaguchi; Yoshiya Nomura, Tokyo; Kenji Matsuda, Yokohama, and Kouji Miura, Sagamihara, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 235,421, Apr. 28, 1994, abandoned.
This application Jul. 22, 1996, Ser. No. 684,627
Claims priority, application Japan, Apr. 28, 1993, 5-123115
Int. Cl.[6] G03G *15/00*
U.S. Cl. 355—200 **114 Claims**

1. A photosensitive drum usable with an electrophotographic image forming apparatus to which a process cartridge, containing said photosensitive drum and a developing roller for developing a



latent image formed on said photosensitive drum, is detachably mountable, said photosensitive drum comprising:

a cylindrical member;

a photosensitive material disposed on an outer periphery of said cylindrical member; and

a juxtaposed helical gear and spur gear at a longitudinal end of said cylindrical member,

wherein said helical gear has a larger diameter than said spur gear, and said helical gear has a larger width than said spur gear, and

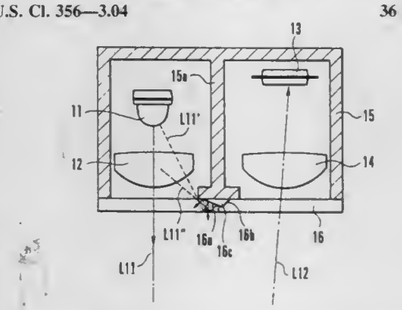
wherein, when said process cartridge is mounted to a main assembly of the image forming apparatus, said helical gear receives a driving force from the main assembly for rotating said photosensitive drum and transmits the driving force received from the main assembly to the developing roller, and said spur gear transmits the driving force received from the main assembly to a transfer roller provided in the main assembly, wherein the transfer roller transfers a toner image formed on said photosensitive drum onto a recording material.

5,825,473

DISTANCE MEASURING DEVICE HAVING PROTECTIVE COVER WITH SELECTIVE LIGHT PROPAGATION PREVENTION

Takanori Kodaira, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,290
Claims priority, application Japan, Sep. 16, 1994, 6-246722
Int. Cl.[6] G01C *3/04*
U.S. Cl. 356—3.04 **36 Claims**



1. A distance measuring device for measuring a distance by receiving, at a light receiving system, a reflected light caused by a light projected from a light projecting system, comprising:

a) a light-transmissive protection cover which overlies front sides of both the light projecting system and the light receiving system; and

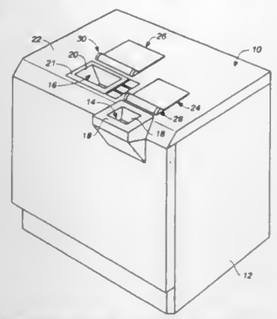
b) a prevention portion disposed at said protection cover for preventing the light projected from the light projecting system into said protection cover from propagating through said protection cover to enter the light receiving system.

5,825,474

HEATED OPTICAL PLATEN COVER FOR A FINGERPRINT IMAGING SYSTEM

Daniel Frederick Maase, Campbell, Calif., assignor to Identix Corporation, Sunnyvale, Calif.

Filed Oct. 27, 1995, Ser. No. 549,152
Int. Cl.[6] G06K *9/00*
U.S. Cl. 356—71 23 Claims



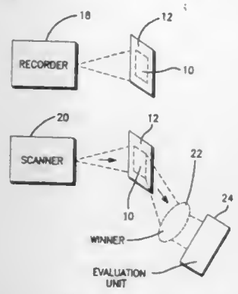
1. An apparatus for imaging a finger, comprising:
an optical platen having a finger receiving surface;
an enclosure supporting the optical platen and containing an opto-electronic system for providing a signal indicative of surface characteristics of a finger placed on the finger receiving surface;
a platen cover coupled to the enclosure and movable between a first position covering the finger receiving surface and a second position exposing the finger receiving surface; and
means for heating the platen cover such that the finger receiving surface is maintained within a selected temperature range when the platen cover is in the first position.

5,825,475

SYSTEM AND METHOD FOR DETERMINING WHICH OF A PLURALITY OF VISUALLY INDISTINGUISHABLE OBJECTS HAVE BEEN MARKED WITH A COVERT INDICATOR

Joseph S. Formosa, Hopedale, Mass., assignor to Van Leer Metallized Products (USA) Limited, Franklin, Mass.

Filed Jul. 29, 1997, Ser. No. 902,035
Int. Cl.[6] G06K *9/74*; G03H *1/00*; B42D *15/00*
U.S. Cl. 356—71 23 Claims



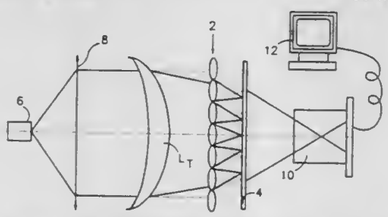
18. A system for identifying a first type of objects from among a plurality of the first and a second type of objects which are generally visually indistinguishable, the system comprising:
means for recording a covert holographic indicator in a portion of a surface of each of first type of objects, said covert holographic indicator being exposed to view but not being visible to the unaided human eye except when illuminated with a coherent reference light with a predetermined wavelength;
means for scanning the surfaces of the first and second objects with a coherent reference light of said predetermined wavelength to reconstruct the recorded said covert holographic indicator; and
means for evaluating whether the scanned surfaces include said covert holographic indicator, the presence of said covert holographic indicator indicating that a one of the objects on which said covert holographic indicator is detected is one of the first type of objects.

5,825,476

APPARATUS FOR MAPPING OPTICAL ELEMENTS

Marc Abitol, Jerusalem; Ariel Blum, Efrat; Alain Halimi, and Elie Meimoun, both of Jerusalem, all of Israel, assignors to Visionix Ltd., Jerusalem, Israel

PCT No. PCT/EP95/02283, § 371 Date Jan. 6, 1997, § 102(e) Date Jan. 6, 1997, PCT Pub. No. WO95/34800, PCT Pub. Date Dec. 21, 1995
PCT Filed Jun. 13, 1995, Ser. No. 737,176
Claims priority, application Israel, Jun. 14, 1994, 110016; Mar. 28, 1995, 113172
Int. Cl.[6] G01M *11/02*
U.S. Cl. 356—124 50 Claims



1. Apparatus for mapping an optical element, the apparatus comprising:
a light source arranged to transmit a light beam toward the optical element,
a beam separator including a plurality of beam separating elements which are operative to separate the light beam into a corresponding plurality of light beam portions including at least first and second light beam portions which may be distinguished from one another;
an optical sensing device operative to generate a light spot map including a plurality of light spots corresponding to said plurality of beam separating elements, each light spot comprising an intersection between a corresponding light beam portion and a plane disposed within the field of view or the optical sensing device; and
an optical element characteristic computation device operative to derive at least one characteristic of each of at least two locations within the optical element from said light spot map and including apparatus for identifying the beam separating element corresponding to an individual spot based at least partly on distinguishing said first and second light beam portion from each other.

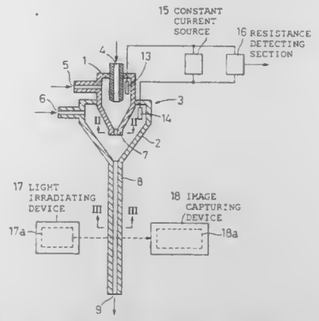
5,825,477

APPARATUS FOR MEASURING PARTICLE MORPHOLOGY AND METHOD THEREOF

Dai Furuie, Kobe, Japan, assignor to TOA Medical Electronics Co., Ltd., Hyogo, Japan

Filed Dec. 20, 1996, Ser. No. 771,415
Claims priority, application Japan, Dec. 22, 1995, 7-335329
Int. Cl.[6] G01N *21/00;5/02*
U.S. Cl. 356—72 13 Claims

1. A particle measuring apparatus, comprising:



a first flow cell for converting a particle containing sample solution into a sample solution flow enveloped in a sheath solution;
a resistance detecting section for detecting an electric resistance of the sample solution when the sample solution flows in the first flow cell;
a second flow cell having a passage, said passage having an elongated cross-section for converting the particle containing sample solution into a flat flow enveloped in the sheath solution;
an image capturing section for capturing an image of the flat flow from a wider side of said passage to obtain a particle image when the sample solution flows in said passage;
an analyzing section for analyzing particles on the basis of the detected electric resistance and the captured particle image; and
an output section for outputting a result obtained from the analyzing section,
the analyzing section including:
a first detecting section for detecting information on a volume of each particle from the detected electric resistance;
a second detecting section for detecting information on a projected area of each particle from the captured particle image;
a first particle size distribution calculating section for calculating a first particle size distribution on the basis of the information on the volume;
a second particle size distribution calculating section for calculating a second particle size distribution on the basis of the information on the projected area;
a depth calculating section for calculating information on a depth dimension of the particle on the basis of the first and second particle size distributions; and
an output control section for causing the output section to output the information on the depth dimension and the captured particle image.

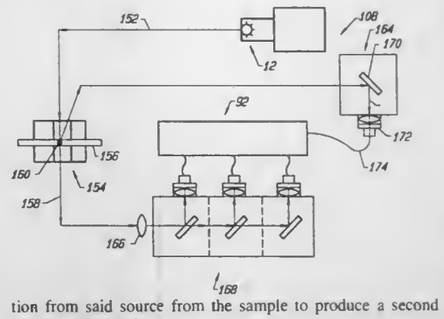
5,825,478

MULTIFUNCTIONAL PHOTOMETER APPARATUS

Steven Wilcox, and Don S. Goldman, both of 9477 Greenback La., Suite 521, Folsom, Calif. 95630

Continuation-in-part of Ser. No. 749,419, Nov. 15, 1996, Pat. No. 5,745,243. This application Nov. 13, 1997, Ser. No. 969,636
Int. Cl.[6] G01N *21/27:21/53*
U.S. Cl. 356—73 10 Claims

4. A optical wavelength reading instrument for measuring electromagnetic radiation properties modified by a sample measure by electromagnetic radiation transmitted through the sample and electromagnetic radiation scattered by the sample;
comprising:
a. a source of electromagnetic radiation;
b. sensing means for transmitting the electromagnetic radiation from said source through the sample to produce a first electromagnetic signal, and for scattering electromagnetic radiation from said source from the sample to produce a second electromagnetic signal;



c. fiber optic conduit means for directing electromagnetic radiation from said source to said sensing means;
d. first detecting means for converting said first electromagnetic signal to an electrical signals at multiple wavelengths, said detecting means including a first beam splitter receiving said first electromagnetic signal and outputting first and second electromagnetic beams, each of said first and second beams possessing all wavelengths of the electromagnetic radiation from said source, a second beam splitter receiving said second beam from said first beam splitter and outputting third and fourth electromagnetic beams, each of said third and fourth beams possessing all wavelengths of the electromagnetic radiation, a first detector having a first wavelength filter, a second detector having a second wavelength filter, a third detector having a third wavelength filter, said first detector receiving said first beam from said beam splitter, said second detector receiving said third beam from said second beam splitter, said fourth beam from said second beam splitter passing to said third detector, said first, second, and third detectors, each producing an output electrical signal;
e. second detecting means for receiving said second electromagnetic signal and producing an output electrical signal, said second detecting means including a fourth detector having a fourth wavelength filter, said fourth detector producing an output electrical signal;
f. analyzing means for receiving said output electrical signals of said first, second, and third detectors and for quantifying the same into data representing a property of the sample, said analyzing means further comprising means for generating a reference signal, selectively, from the output electrical signals of said first, second, and third detectors, said reference signal being compared to said non-reference signals of said first, second, and third detectors, said analyzing means further receiving said output electrical signal from said fourth detector of said second detecting means and quantifying said output electrical signal from said fourth detector into data representing a property of the sample, said reference signal being compared to said output electrical signal from said fourth detector.

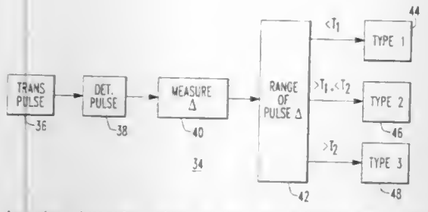
5,825,479

APPARATUS FOR DETECTING FIBERS WITH DIFFERENT DISPERSION CHARACTERISTICS AND METHOD

Leo J. Thompson, Lilburn, and Emmanuel Anemogiannis, Atlanta, both of Ga., assignors to VeriFiber Technologies, Inc., Duluth, Ga.

Filed Jun. 16, 1997, Ser. No. 876,505
Int. Cl.[6] G01N *21/84*
U.S. Cl. 356—73.1 15 Claims

1. A method for distinguishing between fiber types having different dispersion characteristics, the method comprising the steps of:
transmitting through a fiber under test an optical pulse having a predetermined wavelength and a predetermined pulse width;



detecting the pulse width of the optical pulse after passing through the fiber;

measuring the time duration of the detected optical pulse width; and

indicating a dispersion characteristic type of the fiber under test if the measured time duration is within a predetermined range.

5,825,480

OBSERVING APPARATUS

Tetsuo Udagawa, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

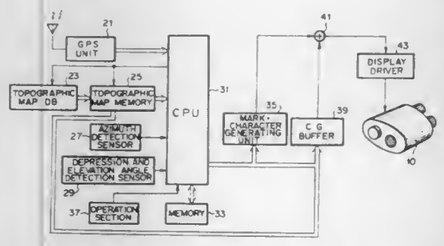
Filed Dec. 11, 1996, Ser. No. 763,782

Claims priority, application Japan, Jan. 30, 1996, 8-037179

Int. Cl.[6] G01B *11/26*

U.S. Cl. 356—138 **7 Claims**





1. An observing apparatus which can display an image of an object to be observed in a desired direction, said apparatus comprising:

a self-position detecting means for detecting a position coordinate thereof;

an azimuth detecting means for detecting a direction of observation by a user;

a distance measuring means for measuring a distance thereof from said object to be observed;

a position coordinate computing means which computes a position coordinate of said object to be observed, based on outputs of said self-position detecting means, azimuth detecting means, and distance measuring means;

a memory which stores digital map information.

a map information readout means for reading out the map information within said memory; and

a display means which displays the map information read out by said map information readout means, while displaying a predetermined mark at a position corresponding to the computed position coordinate in the displayed map information.

5,825,481

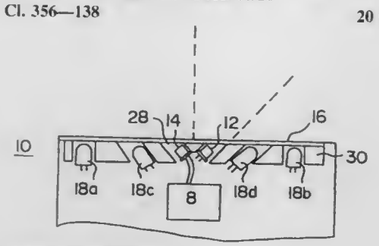
OPTIC POSITION SENSOR

Cornell W. Alofs, and Ronald R. Drenth, both of Petoskey, Mich., assignors to Jervis B. Webb Company, Farmington Hills, Mich.

Filed May 16, 1997, Ser. No. 857,898

Int. Cl.[6] G01B *11/26*

U.S. Cl. 356—138 **20 Claims**



1. An apparatus comprising:

an optic sensor assembly having a total sensing area with a centerline comprising:

a first optic sensor having a first sensing area;

a second optic sensor having a second sensing area; and

wherein said first and said second sensing areas overlap to form the total sensing area; and

means for determining a target's angular position within said total sensing area based on the relative signals received at said first and said second sensors; wherein the centerline of said first sensing area and the centerline of said second sensing area are not parallel.

5,825,482

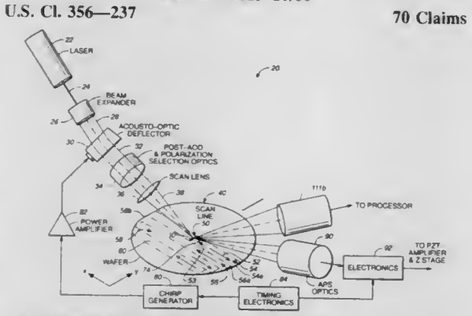
SURFACE INSPECTION SYSTEM WITH MISREGISTRATION ERROR CORRECTION AND ADAPTIVE ILLUMINATION

Mehrdad Nikoonahad, Atherton, and Charles E. Wayman, San Jose, both of Calif., assignors to Kla-Tencor Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 536,862, Sep. 29, 1995. This application Apr. 9, 1997, Ser. No. 827,859

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—237 **70 Claims**



1. A method for correcting misregistration errors in a system for detecting anomalies in a specimen such as a semiconductor wafer, said system illuminating a surface of the specimen at a two-dimensional array of locations in rows and columns; said method comprising the steps of:

generating a two-dimensional array of data samples in rows and columns, each data sample representing light modified by the specimen at a corresponding location in the two-dimensional array of locations of the sample;

defining one-dimensional groups of data samples, and each group of data samples or portion thereof defining a vector;

for at least one vector, providing a reference vector that is an average of selected vectors of data samples; and

processing the at least one vector and the reference vector to correct for misregistration.

5,825,483

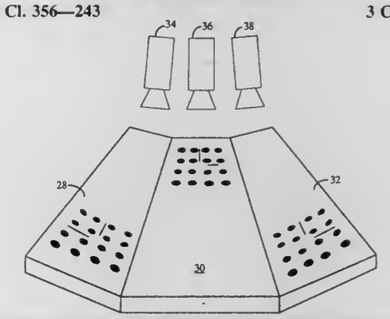
MULTIPLE FIELD OF VIEW CALIBRATION PLATE HAVING A REQULAR ARRAY OF FEATURES FOR USE IN SEMICONDUCTOR MANUFACTURING

David Michael, Newton, and Aaron Wallack, Natick, both of Mass., assignors to Cognex Corporation, Natick, Mass.

Filed Dec. 19, 1995, Ser. No. 574,666

Int. Cl.[6] G01N *21/00*

U.S. Cl. 356—243 **3 Claims**



1. An article of manufacture both for coordinating multiple fields of view of a plurality of cameras so as to facilitate determining the distance between features of a semiconductor wafer each disposed within a different field of view, and for correcting image distortion in each field of view, the article comprising:

a substantially rigid dimensionally-stable substrate having a regular array of features, said features being sized such that a plurality of said features can fit within a field of view, said array being of a spatial extent such that a plurality of fields of view are substantially filled with said features, and said regular array of features being characterized by a distribution density suitable for correcting image distortion within a field of view; and

a plurality of landmarks disposed at a plurality of possible camera positions, said possible camera positions being of known relative position, so as to facilitate determining the distance between features on a semiconductor wafer, each feature disposed within a different field of view.

5,825,484

OPTICAL SPECTRUM MEASURING DEVICE

Takashi Iwasaki, Tokyo, Japan, assignor to Ando Electric Co., Ltd., Tokyo, Japan

Filed Apr. 24, 1997, Ser. No. 839,945

Claims priority, application Japan, Apr. 30, 1996, 8-109604

Int. Cl.[6] G01J *3/00*

U.S. Cl. 356—300 **3 Claims**

1. An optical spectrum measuring device, comprising:

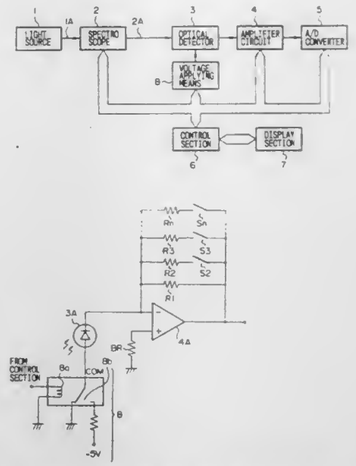
a spectroscope for extracting light of specific wavelength components from output beams from a light source;

an optical detector for receiving the light extracted by said spectroscope and converting the light into electrical signals;

an amplifier circuit for amplifying the output signals from said optical detector;

an analog-to-digital converter for converting the output signals from said amplifier circuit into digital signals;

a control section for determining wavelength-optical intensity characteristics from the optical intensities obtained at said analog-to-digital converter, and controlling the amplification factor of said amplifier circuit so as to compensate for decreases in the optical intensities depending on the specific wavelengths which are passed by said spectroscope; and



voltage applying means for applying an inverted bias voltage to said optical detector under control of said control section in order to prevent saturation of said optical detector.

5,825,485

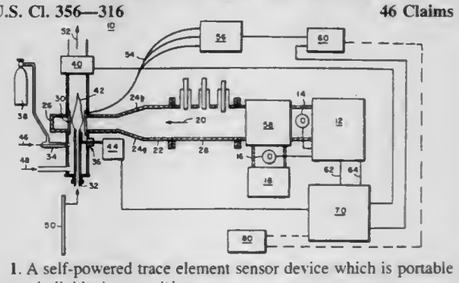
COMPACT TRACE ELEMENT SENSOR WHICH UTILIZES MICROWAVE GENERATED PLASMA AND WHICH IS PORTABLE BY AN INDIVIDUAL

Daniel R. Cohn, 26 Walnut Hill Rd., Chestnut Hill, Mass. 02167; Paul Woskov, 4 Ledgewood Dr., Bedford, Mass. 01730; Charles H. Titus, 323 Echo Valley La., Newtown Sq., Pa. 19073, and Jeffrey E. Surma, 806 Brian La., Kennewick, Wash. 99337

Filed Nov. 3, 1995, Ser. No. 552,677

Int. Cl.[6] G01J *3/30;* H01P *1/00;* G01N *21/69*

U.S. Cl. 356—316 **46 Claims**



1. A self-powered trace element sensor device which is portable by an individual, comprising:

a microwave energy source;

a shorted waveguide including an aperture for the passage of samples to be analyzed, the waveguide configured to be connected to the microwave energy source to generate plasma in the aperture in the waveguide;

means for introducing a solid sample to be analyzed into the aperture in the waveguide, the means for introducing the solid sample configured to be connected to the waveguide;

means for introducing a liquid sample to be analyzed into the aperture in the waveguide, the means for introducing the liquid sample configured to be connected to the waveguide;

means for introducing a gaseous sample to be analyzed into the aperture in the waveguide, the means for introducing the gaseous sample configured to be connected to the waveguide;

a spectrometer configured to be connected to receive light from the plasma; and

a portable power supply configured to be attached to the microwave energy source;

wherein the device is configured to be portable by an individual for use at a plurality of locations and for use with a plurality of analysis applications.

5,825,486

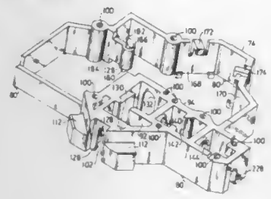
ELECTRO-OPTIC MODULE ESPECIALLY SUITABLE FOR USE IN A SPECTROPHOTOMETER

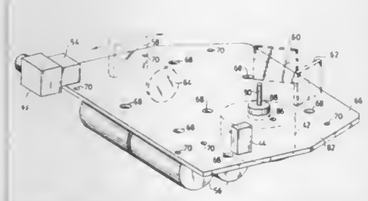
James M. Zavislan; Jay M. Eastman, and Robert J. Hutchison, all of Pittsford, N.Y., assignors to Lucid Technologies Inc., Henrietta, N.Y.

Continuation of Ser. No. 322,244, Oct. 12, 1994, Pat. No. 5,742,389, which is a continuation-in-part of Ser. No. 210,806, Mar. 18, 1994, abandoned. This application Apr. 2, 1997, Ser. No. 831,826

Int. Cl.[6] G01J *3/28*

U.S. Cl. 356—326 5 Claims





1. An electro-optical module comprising a flexible base plate and a self supporting wall assembled to said plate on one side thereof into a unitary structure consisting essentially of said wall and plate and being more rigid than said plate and wall alone, said wall surrounding an area on one side of said plate containing a plurality of electrical and optical components and assembled relationship with at least one of said plate and said wall, whereby to enable said components to be stable when installed in an electro-optical instrument.

5,825,487

PARTICLE SENSOR WITH FEATURES FOR SETTING, ADJUSTING AND TRIMMING THE FLOW RATE OF THE SAMPLED AIR

Raymond J. Felbinger, Mission Viejo, and David L Chandler, Highland, both of Calif., assignors to Venturedyne, Ltd., Milwaukee, Wis.

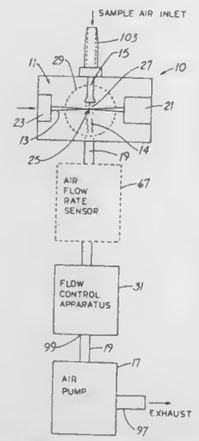
Filed Oct. 10, 1996, Ser. No. 728,209

Int. Cl.[6] G01N *15/14;21/53*

U.S. Cl. 356—338 9 Claims

1. In a particle sensor having (a) a light beam, (b) an air tube flowing a stream of room ambient air across the light beam at a volumetric flow rate, and (c) an air pump providing the stream of air through the tube, across the light beam and along an air flow path, the improvement wherein the particle sensor includes:

a flow-controlling apparatus in series with the flow path for setting the flow rate to a particular value of the volumetric flow rate, such flow-controlling apparatus being downstream of the light beam and including a plurality of conduits, and wherein:



each of the conduits of the plurality of conduits have a passage therethrough;

each conduit has a length and the passage of each conduit is of uniform cross-section area along the conduit length; and

the cross-sectional area of the passage of each conduit differs from the cross-sectional areas of the passages of the other conduits of the plurality of conduits;

and wherein:

the flow-controlling apparatus is between the pump and the sensor.

5,825,488

METHOD AND APPARATUS FOR DETERMINING ANALYTICAL DATA CONCERNING THE INSIDE OF A SCATTERING MATRIX

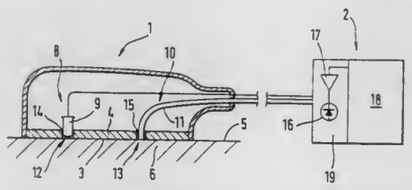
Matthias Kohl, London; Mark Cope, Avon, both of Great Britain; Matthias Essenpreis, Gauting, and Dirk Boecker, Heidelberg, both of Germany, assignors to Boehringer Mannheim GmbH, Mannheim, Germany

Filed Nov. 8, 1996, Ser. No. 745,204

Claims priority, application Germany, Nov. 18, 1995, 195 43 020.4

Int. Cl.[6] G01N *21/47*

U.S. Cl. 356—342 21 Claims



1. A method for determining analytical data regarding a light scattering matrix, said method comprising the steps of:

detecting secondary light by irradiating light into the scattering matrix as primary light at an irradiation site through an interface bounding the scattering matrix, and detecting light emerging out of the scattering matrix through the interface, said emerging light being detected as secondary light at a detection site which is located at a predetermined measuring distance from the irradiation site;

determining a measurement value of a measurable physical property of the secondary light, said measurable physical property varying due to an interaction of the primary light with the scattering matrix;

evaluating the measurement value as a measure of the analytical data to be determined, the analytical data being determined based upon a measurement value of the measurement variable,

wherein at least two of said detecting steps are carried out under different reflection conditions at the interface between the irradiation site and the detection site, and measurement values determined in said at least two detection steps are evaluated in said evaluation step to determine said analytical data.

5,825,489

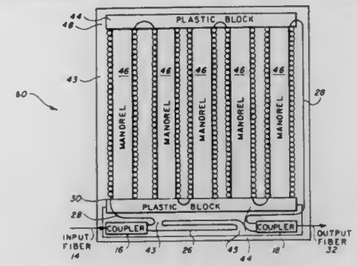
MANDRELL BASED EMBEDDED PLANAR FIBER-OPTIC INTERFEROMETRIC ACOUSTIC SENSOR

Nicholas Lagakos, Silver Spring, Md., and Joseph A. Bucaro, Herndon, Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1994, Ser. No. 202,628

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 20 Claims



1. A fiber-optic interferometric acoustic sensor comprising:

a plurality of mandrels;

an optical fiber of a predetermined length wrapped around each mandrel of said plurality of mandrels so as to form a continuous optical fiber sensing arm;

an optical fiber of a predetermined length forming a reference arm not wrapped around said mandrels;

an input and an output optical coupler coupled to said sensing and reference arms;

a material wherein said input and output couplers, and said reference arm are embedded to form a coupler assembly; and

an encapsulant material having a Young's modulus less than the Young's modulus of each of the plurality of mandrels, and said optical fiber wrapped mandrels and said coupler assembly encapsulated by said encapsulant material.

5,825,490

INTERFEROMETER COMPRISING TRANSLATION ASSEMBLIES FOR MOVING A FIRST OPTICAL MEMBER RELATIVE TO A SECOND OPTICAL MEMBER

Edwin G. Haas, Seaford; Theodore W. Hilgeman, Centerport, and Robert E. Ryan, Levittown, all of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jun. 7, 1995, Ser. No. 473,059

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 3 Claims

1. An interferometer comprising:

a base forming an interior and a plurality of bores spaced around the base;

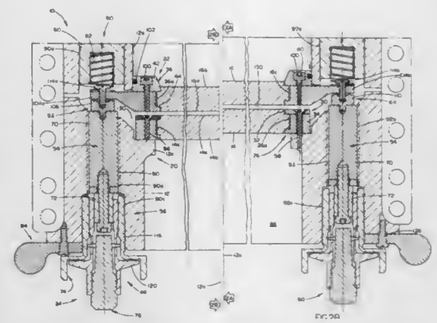
a first optical member located in the interior of the base;

a first retainer assembly connecting the first optical member to the base, and including

i) a first frame, and

ii) means connecting the first frame to the base,

wherein the first optical member is connected to and is supported by the first frame;



a second optical member located in the interior of the base;

a plurality of translation assemblies for moving the second optical member relative to the first optical member to vary the distance between the first and second optical members, each of the translation assemblies being located in a respective one of the bores and including

i) a translation member supported in the respective bore for upward and downward sliding movement, and

ii) a displacement means connected to the translation member to move the translation member upward and downward; and

a second retainer assembly connecting the second optical member to the translation assemblies, and including

i) a second frame, and

ii) means connecting the second frame to the translation assemblies for movement therewith,

wherein the second optical member is connected to and supported by the second frame.

5,825,491

INTERFEROMETER ALIGNMENT SYSTEM UTILIZING A STEP CALIBRATION

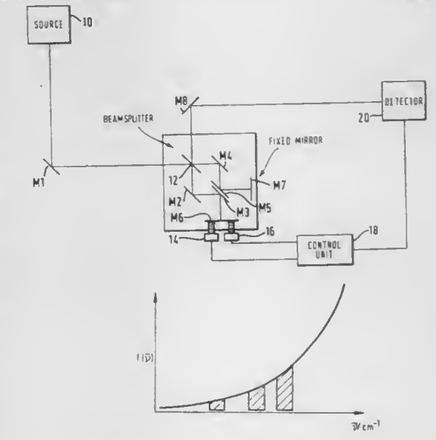
David J. Cutler, NR Amersham, England, assignor to Perkin-Elmer Ltd., Beaconsfield, England

Filed Feb. 29, 1996, Ser. No. 608,654

Claims priority, application European Pat. Off., Mar. 3, 1995, 95301395

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 11 Claims



1. An interferometer comprising:

a beam splitter arranged to split an incoming beam of radiation so that a first portion propagates along a first optical path and a second portion propagates along a second optical path;

means for reflecting said first portion of radiation back towards said beam splitter;

means for reflecting said second portion of radiation back towards said beam splitter, said means adjustable in at least a first orthogonal direction and a second orthogonal direction;

means for varying the optical path difference of said first and second optical paths;

a detector for receiving the combined beams from said beam splitter; and

control means for periodically adjusting said adjustable reflector means, said control means causing said adjustable reflector means to move in steps to a plurality of positions in at least said first orthogonal direction and a plurality of positions in at least said second orthogonal direction, wherein said plurality of positions in at least said first orthogonal direction include at least one position of misalignment of said adjustable reflector means and said plurality of positions in at least said second orthogonal direction include at least one position of misalignment of said adjustable reflector means;

means for causing spectra to be recorded and an adjustment factor to be calculated at each position;

said control means further causing said adjustable reflector means to move to a final stationary position calculated from said adjustment factors.

5,825,492

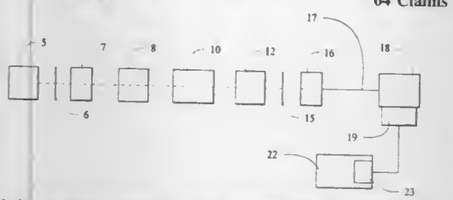
METHOD AND APPARATUS FOR MEASURING RETARDATION AND BIREFRINGENCE

Philip L. Mason, Ottawa, Canada, assignor to Jatom Systems Incorporated, Kanata, Canada

Filed Apr. 26, 1996, Ser. No. 638,218

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **64 Claims**



1. In an optical system comprising a plurality of optical components including a light source, optical elements and a birefringent material capable of inducing retardation between quadrature components of light passing through the material, a method of determining the retardation caused by the birefringent material, comprising the steps of:

(a) providing input light, including multiple wavelengths of light, having a predetermined polarization state to the birefringent material;

(b) passing at least some of the light through a combining means for combining quadrature components of at least some of the light that has passed through at least some of the birefringent material to cause that light to interfere;

(c) detecting and recording information corresponding to intensity and wavelength of at least some of the light passed through the combining means to obtain a modulated spectral signature, wherein the spectral signature comprises differing amplitudes relating to at least a plurality of the multiple wavelengths of light;

(d) demodulating the spectral signature to remove spectral variations attributable to the light source and attenuations attributable to the other optical components in the light path, thus obtaining a spectral interference signature, this being the resultant modulation attributable to the effect of the birefringent material;

(e) using a suitably programmed computer in dependence upon the spectral interference signature to determine the retardation induced by the material.

5,825,493

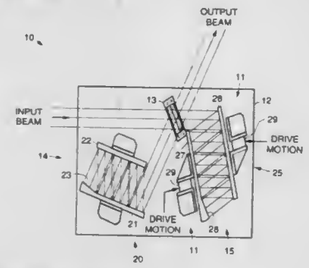
COMPACT HIGH RESOLUTION INTERFEROMETER WITH SHORT STROKE REACTIONLESS DRIVE

Charles L. McGlynn, Brookfield, Conn., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 28, 1996, Ser. No. 671,469

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—346 **11 Claims**



1. An interferometer comprising:

a housing;

a beamsplitter disposed in the housing for reflecting an input beam along a fixed optical path and for transmitting the input beam along a scanned optical path;

nonmoving reflecting means disposed along the fixed optical path that comprises first and second nonmoving mirrors disposed for reflecting the input beam multiple times therebetween, and backreflecting means disposed at a final bounce position of the input beam for returning the optical beam back to the beamsplitter;

a scanning mechanism disposed in the housing and disposed along the scanned optical path that comprises third and fourth mirrors supported by flexible members that are coupled to the housing and backreflecting means disposed at a final bounce position of the input beam to return the optical beam back to the beamsplitter, and wherein the third and fourth mirrors reflect the input beam multiple times therebetween; and

drive means coupled to the third and fourth mirrors of the scanning mechanism for driving the respective mirrors so that the optical path difference of the scanned optical path is either increased or decreased relative to the fixed optical path, the third and fourth mirrors and their respective drive means having balanced masses so that near zero torque is imparted to the housing.

5,825,494

Patent Not Issued For This Number

5,825,495

BRIGHT FIELD ILLUMINATION SYSTEM

Edward D. Huber, Sunnyvale, Calif., assignor to Lockheed Martin Corporation, Sunnyvale, Calif.

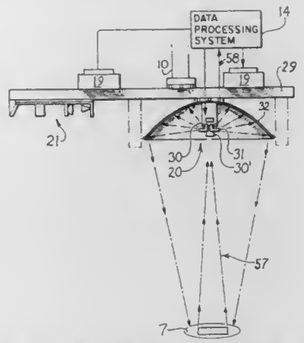
Continuation-in-part of Ser. No. 395,847, Feb. 27, 1995, Pat. No. 5,680,215. This application Jan. 9, 1997, Ser. No. 781,517

Int. Cl.[6] G01B *11/30*

U.S. Cl. 356—371 **20 Claims**

1. A large area bright field illuminator for illuminating an inspected area, the illuminator comprising:

an elliptical reflector having first and second focii;



a lamp located in the vicinity of the first focus; and

a camera located at a reflected image of the second focus and in the vicinity of the first focus, the camera having a lens; wherein

the inspected area is situated approximately midway between the first and second foci, so that specularly reflected return light from the inspected area uniformly fills a viewing area of the lens.

5,825,496

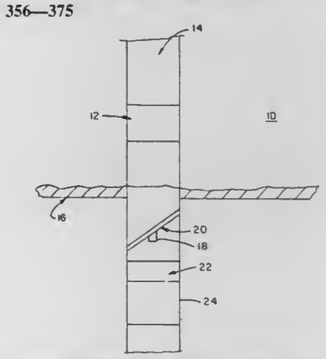
BOREHOLE OPTICAL LATERAL DISPLACEMENT SENSOR

Robert Edwin Lewis, Hobbs, N. Mex., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 29, 1996, Ser. No. 705,470

Int. Cl.[6] G01B *11/14*

U.S. Cl. 356—375 **3 Claims**



1. An optical displacement sensor, comprising:

a) a light source means disposed to be mounted in a borehole below the surface of a geological plane for directing light at a target disposed to be mounted in the borehole above the surface of the geological plane;

b) a black surface on the target for reflecting light from the light source means wherein the black surface reduces light scattering and mirroring;

c) photoelectric transducing means for receiving the reflected light from the target and converting the reflected light into an electric signal;

d) digital imaging means connected to the photoelectric transducing means for generating an image of the target; and

e) an electronic circuit means connected to the digital imaging means for measuring the quantity and direction of any displacement of the target's image wherein the displacement of the target image in the borehole represents lateral displacement of a geological plane.

5,825,497

DEVICE FOR MEASURING HEIGHT OF OBJECT

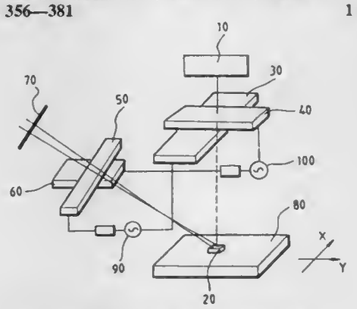
Hyeong-cheol Kim, Seongnam, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Jul. 30, 1997, Ser. No. 903,306

Claims priority, application Rep. of Korea, Oct. 24, 1996, 96-48141

Int. Cl.[6] G01B *11/14*; **G01N** *21/00*; **G02F** *1/33*

U.S. Cl. 356—381 **1 Claim**



1. An object height measuring device comprising:

a light emitter for emitting light;

a base for disposing an object thereon;

a light receiving portion for receiving light emitted from said light emitter after said light has reflected from said object;

an electrical signal source for outputting a modulated signal based on FM-modulating a triangular wave and applying said modulated signal to said first through fourth acousto-optical modules;

a first acousto-optical module installed between said light emitter and said base, for sweeping said light in an X axis direction with respect to said object by refracting said light emitted from said light emitter with a predetermined refractive index which depends on said modulated signal;

a second acousto-optical module installed between said light emitter and said base, for sweeping said light in an Y axis direction with respect to said object by refracting said light emitted from said light emitter with a predetermined refractive index which depends on said modulated signal;

a third acousto-optical module which is synchronized with said modulated signal of said first acousto-optical module wherein the third acousto-optical module focuses the reflected light which was swept across said object by said first acousto-optical module on said light receiving portion;

a fourth acousto-optical module which is synchronized with said modulated signal of said second acousto-optical module wherein the fourth acousto-optical module focuses the reflected light which was swept across said object by said second acousto-optical module on said light receiving portion; and

wherein a change in the height of said object is measured from the variation between the position of said light focused on said light receiving portion and the center of said light receiving portion.

5,825,498

ULTRAVIOLET LIGHT REFLECTANCE METHOD FOR EVALUATING THE SURFACE CHARACTERISTICS OF OPAQUE MATERIALS

Randhir P. S. Thakur, Boise; Michael Nuttall, Meridan; J. Brett Rolfson, and Robert James Burke, both of Boise, all of Id., assignors to Micron Technology, Inc., Boise, Id.

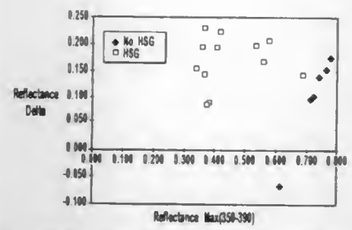
Filed Feb. 5, 1996, Ser. No. 596,469

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—394 **63 Claims**

18. A method for quantitatively evaluating the surface characteristics of a test sample of an opaque material, the method comprising:

measuring a set of reflectances for each of a plurality of control samples of the opaque material across a predetermined spectrum of wavelengths, each control sample having at least one



known surface characteristic, and each set of reflectances for a corresponding control sample being correlated to said at least one known surface characteristic, wherein measuring the set of reflectances for each of the plurality of control samples includes:

measuring the maximum reflectance of each of the plurality of control samples over a first predetermined range of wavelengths;

subtracting from the maximum reflectance a minimum reflectance of each of the plurality of control samples taken over a second predetermined range of wavelengths;

calculating a deviation between the maximum reflectance and the minimum reflectance for each of the plurality of control samples; and

plotting the deviation between the maximum reflectance and the minimum reflectance for each of the plurality of control samples against the maximum reflectance for each of a plurality of control samples as a single data point for the control sample;

measuring a set of reflectances of a test sample of the opaque material having at least one unknown surface characteristic, the set of reflectances of the test sample being measured across the predetermined spectrum of wavelengths; and

comparing the set of reflectances of the test sample to the sets of reflectances of the plurality of control samples in order to determine therefrom a surface characteristic of the test sample, wherein comparing the set of reflectances of the test sample to the sets of reflectances of the plurality of control samples includes:

measuring the maximum reflectance of the test sample over a first predetermined range of wavelengths;

subtracting from the maximum reflectance a minimum reflectance of the test sample taken over a second predetermined range of wavelengths;

calculating a deviation between the maximum reflectance of the test sample and the minimum reflectance of the test sample; plotting the deviation between the maximum reflectance of the test sample and the minimum reflectance of the test sample against the maximum reflectance of the test sample as a single data point for the test sample; and

finding the closest fit between the data point for the test sample and a plurality of data points respectively corresponding to each of the plurality of control samples representing plotted values of deviations of each of the plurality of control samples plotted against maximum reflectances of each of the plurality of control samples.

5,825,499

METHOD FOR CHECKING WAFERS HAVING A LACQUER LAYER FOR FAULTS

Ernst Biedermann, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

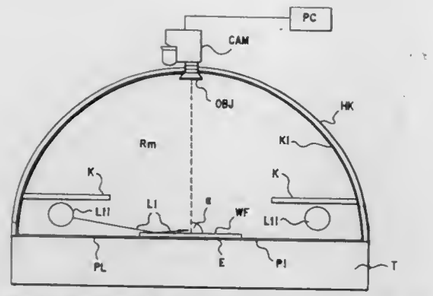
Filed Oct. 25, 1996, Ser. No. 740,253

Claims priority, application Germany, Oct. 25, 1995, 195 39 735.5

Int. Cl.[6] G01B *11/00;* **G01N** *11/00;21/00*

U.S. Cl. 356—394 **10 Claims**

1. A method for automatically checking wafers having a lacquer layer, which comprises:



a) directly illuminating a wafer having a lacquer layer reflecting light;

b) ascertaining a reflectance value of the reflected light by pixels simultaneously for a plurality of points on a surface of the wafer with a picture-taking device disposed at a given angle above the wafer for detecting pictures to be taken by pixels, and buffer-storing the reflectance value with an evaluation device connected to the picture-taking device;

c) comparing the ascertained and buffer-stored reflectance values with reflectance comparison values of a comparison wafer;

d) ascertaining whether the wafer is OK or defective from a result of the comparison between the ascertained and buffer-stored reflectance values and the comparison values, in accordance with at least two predetermined judgment criteria, including:

determining a first judgment criterion as a predetermined minimum amount of agreement between particular ascertained, buffer-stored reflectance values and the comparison values associated with them; and

determining a second judgment criterion as follows:

ascertaining a location of points on the wafer having pixels exceeding the first judgment criterion, in the event that the first judgment criterion shows that the wafer is defective;

ascertaining which of the points form coherent regions on the wafer from the location of the points; and

determining that the wafer is OK in the event that the number of the coherent regions is below a predetermined maximum amount; and

e) separating the wafer having been found defective from wafers having been found defect-free, if a plurality of wafers are being checked.

5,825,500

UNIT FOR TRANSFERRING TO-BE-INSPECTED OBJECT TO INSPECTION POSITION

Shinji Iino, and Noboru Hayakawa, both of Nakakomagun, Japan, assignors to Tokyo Electron Limited, Japan

Filed Nov. 21, 1996, Ser. No. 753,250

Claims priority, application Japan, Nov. 27, 1995, 7-331153

Int. Cl.[6] G01B *11/00*

U.S. Cl. 356—394 **11 Claims**

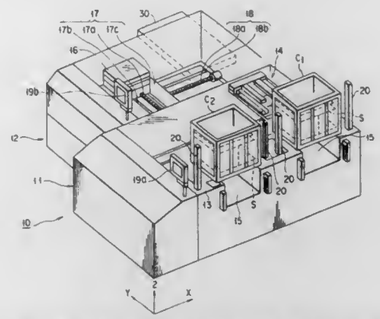
1. A transfer unit for transferring an object to an inspection position, comprising:

at least one transfer member movable between a standby position in which the object is in a standby state, and the inspection position in which the object is inspected, and having a support surface on which the object is mounted;

first fixing means provided at the support surface of the transfer member for fixing the object on the support surface;

detection means provided at the transfer member for detecting the position of the object on the support surface;

a rotatable mount member having a mount surface on which the object is mounted, and capable of transferring the object between the mount surface and the support surface of the transfer member;



second fixing means provided at the mount surface of the mount member for fixing the object on the mount surface; and

control means for calculating an amount of deviation of the object from a reference position on the basis of a detection value of the detection means, with the object fixed on the support surface of the transfer member by means of the first fixing means, the control means also driving the mount member and the transfer member to correct the amount of deviation of the object from the reference position on the basis of the calculation result, with the object held on one of the support surface of the transfer member and the mount surface of the mount member by means of a corresponding one of the first and second fixing means, thereby situating the object in the reference position, wherein the detection means includes a plurality of detectors provided at those peripheral portions of the support surface of the transfer member and are located around an object-mounting portion of the surface, and wherein the detectors are arranged in two lines which intersect each other, and the calculation means calculates an angle defined between each of the two lines and a corresponding edge of the object, and amounts of deviation of the object from the reference position in the directions of the two lines.

5,825,501

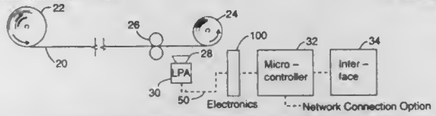
STRUCTURE AND YARN SENSOR FOR FABRIC

David K. Mee, Knoxville; Glenn O. Allgood, Powell; Larry R. Mooney, Knoxville; Michael G. Duncan; John C. Turner, both of Clinton, and Dale A. Treece, Knoxville, all of Tenn., assignors to Lockheed Martin Energy Systems, Inc., Oak Ridge, Tenn.

Filed Mar. 14, 1997, Ser. No. 818,157

Int. Cl.[6] G01N *21/84*

U.S. Cl. 356—429 **45 Claims**



1. A structure and yarn sensor apparatus for use with a fabric made with a plurality of yarns moving in a direction of travel, the fabric having a front side and a back side, the yarns being disposed generally across the width of the fabric, comprising:

(A) a light source directed so that light impinges upon a side of the fabric in a path of light propagation;

(B) a focusing lens disposed in the path of light propagation to focus the light;

(C) an astigmatic lens disposed in the path of light propagation to allow selective imaging of yarn in one dimension to be imaged on an array;

(D) an array comprising photodetectors, the array having a face, the photodetectors being disposed so that the focused light from the focusing lens impinges upon the face of the array of photodetectors to produce a scan, wherein the face is divided into a multiplicity of pixels, the array of photodetectors producing an output signal based on the fabric moving in the direction of travel during the scan;

(E) a timing control means producing a velocity gate signal, clock signals, a read signal, and a scan start signal, wherein the clock signal and the scan start signal are coupled to the array of photodetectors;

(F) a smoothing filter means coupled to the output of the array of photodetectors;

(G) a bias detection means coupled to the output of the array of photodetectors;

(H) a discriminator means having a positive input and a negative input, wherein one input is coupled to the output of the smoothing filter means and the other input is coupled to the output of the bias detection means;

(I) a pick selection and counting means having an input port, a reset port, and clock signal input ports, wherein the input port is coupled to the output of the discriminator port, the reset port is coupled to the scan start signal, and the clock inputs are coupled to the timing control clock signals, and wherein the scan pick selection and counting means determines which picks imaged on the face of the photodetectors during a scan will be used in the density calculation, provides a gated pixels signal during a scan while picks are being counted, provides a pick detected signal during a scan each time an additional pick is counted, and outputs a collected count of picks over multiple scans;

(J) a pixel selection and counting means having a reset port, an input port, clock signal input ports, and a pick detected input port, wherein the reset port is coupled to the scan start signal, the input port is coupled to the gated pixels signal, the clock inputs are coupled to the timing control clock signals, and the pick detected import port is coupled to the pick detected output, and wherein the pixel selection and counting means counts pixels during scans corresponding to the count of picks and outputs a collected count of pixels over multiple scans;

(K) an incremental pick density determination means having inputs coupled to the read signal, the scan pick selection and counting output and the pixel selection and counting output, wherein the pick density calculation means produces an incremental pick density signal based on the pick count and the pixel count, wherein the pick density signal is representative of the density of picks in the fabric object imaged on the face of the array of photodetectors, and wherein the incremental pick density processor means resets scan pick selection and counting and pixel selection and counting means after performing a read.

5,825,502

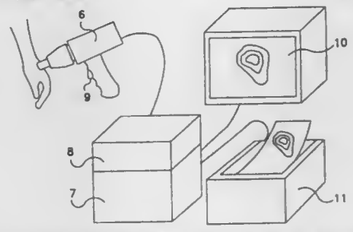
DEVICE FOR CLOSE-UP PHOTOGRAPHY OF SURFACES

Rolf Mayer, Griesbach, Germany, assignor to Teach Screen Software GmbH, Griesbach, Germany

Filed Oct. 9, 1996, Ser. No. 728,524

Int. Cl.[6] H04N *1/04;* **G03B** *27/58;* **G06K** *9/22*

U.S. Cl. 358—296 **12 Claims**



1. Device for close-up photographic or digital recording of an object surface, particularly of a soft surface on a large object, for example human skin, comprising a camera with an objective which is adjusted for infinite object distance, an additional lens system connected to the camera objective, a distance-enforcing structure

connected to the lens system, which ends in the object-side focal-area of the lens system with a vaulted surface and where the curvature of the surface does compensate the image-plane curvature of the optical system, thus enhancing the sharpness of the image obtained in the image-side focal plane of the camera objective, provided the object surface is placed in contact with the vaulted surface of the distance-enforcing structure.

5,825,503

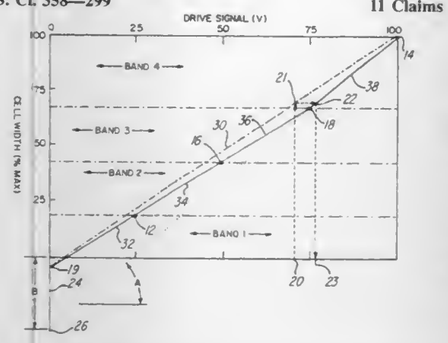
ENGRAVING APPARATUS AND METHOD FOR ADJUSTING A WORN STYLUS USING A MIDTONE CORRECTION

Matthew C. Brewer; David M. Reese, both of Dayton, and Curtis Woods, Centerville, all of Ohio, assignors to Ohio Electronic Engravers, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 125,938, Sep. 23, 1993, Pat. No. 5,440,398, which is a continuation-in-part of Ser. No. 38,679, Mar. 26, 1993, Pat. No. 5,438,422, which is a continuation-in-part of Ser. No. 22,127, Feb. 25, 1993, Pat. No. 5,424,845. This application Feb. 27, 1995, Ser. No. 394,717

Int. Cl.[6] B41C *1/04*

U.S. Cl. 358—299 **11 Claims**



1. A method of using an engraving stylus having a worn cutting edge to engrave printing cells in a gravure printing surface, said method comprising the steps of:

(1) generating at least three test signals, each having different signal levels;

(2) using said test signals to drive said engraving stylus into said gravure printing surface and engrave test cells having at least three different widths;

(3) measuring said test cells to establish measured values for said widths;

(4) using said signal levels and said measured values to establish an inverse relationship correlating said widths with the test signals which caused them;

(5) generating a series of engraving command signals having signal levels indicating desired widths for a series of cells to be engraved into said gravure printing surface;

(6) using said inverse relationship to convert said engraving command signals into drive signals; and

(7) using said drive signals to drive said engraving stylus into engraving contact with said gravure printing surface.

5,825,504

METHOD FOR STABLE ELECTRO (STATO) GRAPHIC REPRODUCTION OF A CONTINUOUS TONE IMAGE

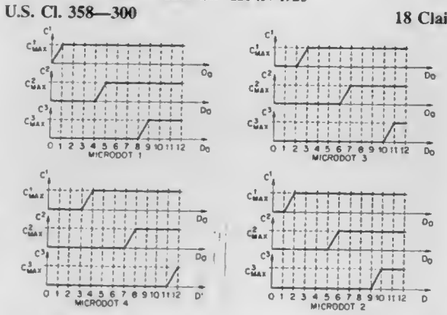
Dirk Broddin, Edegem, and Serge Tavernier, Lint, both of Belgium, assignors to AGFA Gevaert, Mortsel, Belgium

Filed Sep. 30, 1996, Ser. No. 724,065

Claims priority, application European Pat. Off., Oct. 13, 1995, 95202768

Int. Cl.[6] H04N *1/23*

U.S. Cl. 358—300 **18 Claims**



1. A method for reproducing a continuous tone image by image wise application of toner particles to a substrate comprising the following steps:

partitioning a surface of said substrate into a plurality of disjunctive microdots;

applying to at least one microdot at least two types of toner, having substantially the same chromaticity.

5,825,505

IMAGE COMMUNICATION APPARATUS

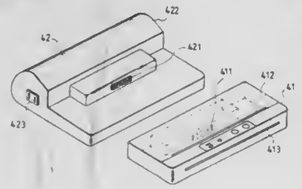
Hisashi Toyoda; Minoru Yokoyama; Toshio Kenmochi; Yosuke Ezumi, all of Yokohama, and Masakatsu Yamada, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

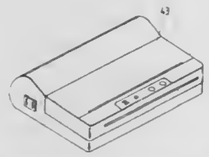
Filed Sep. 28, 1992, Ser. No. 952,946

Claims priority, application Japan, Sep. 30, 1991, 3-278657; Oct. 31, 1991, 3-286435; Oct. 31, 1991, 3-314122; Jan. 9, 1992, 4-002362

Int. Cl.[6] H04N *1/00;1/32;1/024*

U.S. Cl. 358—400 **166 Claims**





1. An image communication apparatus connectable to a detachable external device having a power supply function of providing power from an AC power supply to said image communication apparatus and a communication function for communicating with another apparatus via a communication line, comprising:

reading means for reading an original image;

communicating means for transmitting and receiving image data through the communication line;

recording means for recording the image read by said reading means and the image data received by said communicating means on recording paper;

control means for controlling an operation of said image communication apparatus;

connecting means for connecting the external device via a serial interface so that the external device conducts the power supply function of said image communication apparatus; and

operation means arranged to be actuated manually by an operator,

wherein said control means, responsive to an operation input from said operation means, sends to said external device via said connecting means a control signal for controlling said external device, and

wherein the image data to be transmitted and received by said communicating means passes through said external device to and from the communication line, respectively.

5,825,506

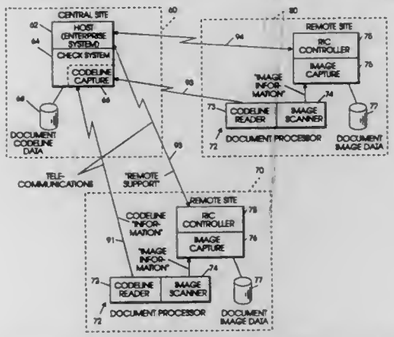
METHOD AND APPARATUS FOR IMAGE PROCESSING AT REMOTE SITES

Gregory M. Bednar, Matthews; Thomas E. Carr, Charlotte; Craig D. Curley, Charlotte; Lynn P. Curley, Charlotte; Dorothy I. Mazina, Charlotte; Paul L. Olson, Charlotte, and Filip J. Yeskel, Charlotte, all of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 216,704, Mar. 23, 1994, Pat. No. 5,506,691. This application Jun. 7, 1995, Ser. No. 478,576

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—402 **1 Claim**



1. A method of obtaining information of two different types from a plurality of sequential documents comprising the steps of:

moving the documents in sequence past a first station for reading information of a first type and a second station for reading information of a second type;

storing information obtained from the first station on a local storage device where the documents have been passed by the first and second stations;

transmitting information of the second type obtained from the second station to a storage device located at a distance, said remote storage device storing said information of the second type but not information of the first type; and

storing said second type of information at the distant location, wherein the step of storing information at the distant location includes storing codeline information obtained from the plurality of documents at a location remote from the first and second stations.

5,825,507

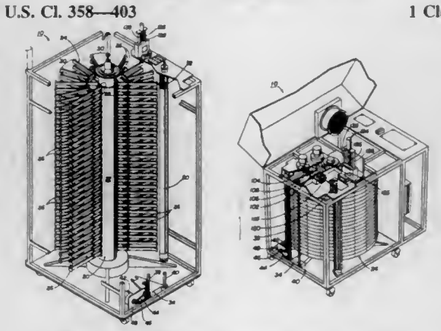
ON-LINE MICROFILM STORAGE AND RETRIEVAL SYSTEM

Nikhil Bhatt, Alpharetta; Tuan Nguyen, Alanta; Lee Smith, Canton; David Tarbill, Cumming, and Manfred Waldecker, Lawrenceville, all of Ga., assignors to Inmet Systems, Inc., Atlanta, Ga.

Filed Nov. 22, 1995, Ser. No. 561,800

Int. Cl.[6] H04N *1/00*

U.S. Cl. 358—403 **1 Claim**



1. A microfilm storage and retrieval system comprising:

a) cartridge handling means for storing and retrieving microfilm cartridges comprising:

i) a rotatable center column assembly including a vertical column;

ii) at least twenty-eight vertically stacked spoked hubs, each having a center ring disposed around the vertical column and from which a plurality of spokes extend, wherein the spokes form:

A) plurality of essentially equally-spaced gaps within each of which one of the microfilm cartridges may be stored, and

B) an additional gap larger than the equally-spaced gaps used to establish a rotational home position for the spoked hubs and to establish a vertical column through which a selected one of the microfilm cartridges may pass through;

iii) and rotation means for rotating a selected one of the vertically stacked spoked hubs so that a selected one of the equally-spaced gaps may be aligned within the vertical column so that the selected one of the microfilm cartridges may pass vertically through;

b) a microfilm handling subsystem comprising:

i) elevator means for transporting the selected one of the microfilm cartridges from the selected one of the equally-spaced gaps through the vertical column and to a display position including

A) an elevator, and

B) electrical lifting means for raising and lowering the elevator through the vertical column;

ii) verification means for verifying that the spoked hub having the selected one of the equally-spaced gaps is the only one of the plurality of vertically-stacked spoked hubs rotated from its home position and for verifying that the elevator is below the selected one of the equally-spaced gaps; and

c) a video image processing subsystem comprising:

i) a projection means for projecting an image from a selected frame of microfilm onto a projection plane;

ii) a scanning array means comprising a linear array of sensors for converting light intensities on the projection plane into proportional electrical voltages,

iii) array moving means for moving the scanning array means through the projection plane, and

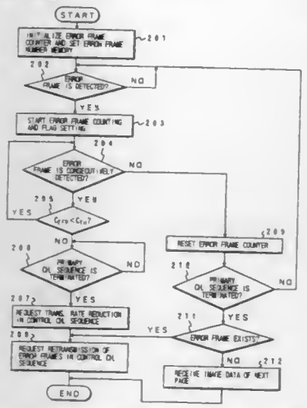
iv) an image enhancement processor means to determine for each of the proportional electrical voltages whether a pixel represented thereby is a foreground or a background pixel;

wherein each subsystem is accessible and controllable as part of a local area computer network.

5,825,508
IMAGE DATA RECEIVING METHOD FOR RECEIVING RETRANSIMITTED IMAGE DATA FRAMES

Hirokazu Mukai, Tokyo, Japan, assignor to NEC Corporaiton, Tokyo, Japan

Filed Aug. 20, 1996, Ser. No. 700,093
Claims priority, application Japan, Aug. 21, 1995, 7-211591
Int. Cl.[6] H04N *1/32*
U.S. Cl. 358—412 10 Claims



1. A method for receiving an image from a source terminal through a connection line, the image comprising a plurality of image data frames, the method comprising the steps of:

a) sequentially receiving the image data frames from the source terminal at a first transmission rate while checking whether an error occurs in each of the image data frames;

b) determining whether the error occurs in consecutive image data frames;

c) determining an impairment level of the connection line by comparing a number of the consecutive image data frames to at least one predetermined value when the error occurs in consecutive image data frames;

d) determining a second transmission rate which is smaller than the first transmission rate according to the impairment level of the connection line when the error occurs in consecutive image data frames; and

e) sequentially receiving image data frames in which the error occurred from the source terminal through the connection line at the second transmission rate when the error occurs in consecutive image data frames.

5,825,509
IMAGE PROCESSING DEVICE WITH ERROR-DIFFUSION QUANTIZATION FUNCTION

Mayumi Nomura, Yokkaichi, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

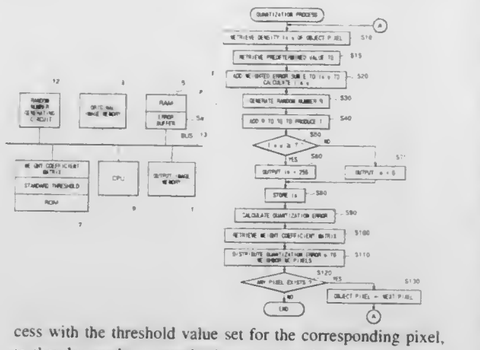
Filed Sep. 28, 1995, Ser. No. 535,336
Claims priority, application Japan, Oct. 7, 1994, 6-244287
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—456 20 Claims

1. An image processing device for quantizing a continuous tone image to produce pseudo-continuous tone image data, the device comprising:

means for randomly setting a threshold value for each pixel of a continuous tone image, the threshold setting means including means for generating a random number for each pixel;

means for adding the random number to a predetermined value to thereby determine the threshold value for the corresponding pixel; and

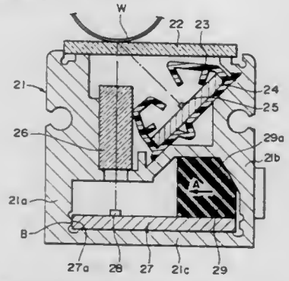
means for subjecting input density data of each pixel of the continuous tone image to an error-diffusion quantization process with the threshold value set for the corresponding pixel, to thereby produce quantized output data for the corresponding pixel.



5,825,510
IMAGE SENSOR AND FACSIMILE APPARATUS INCORPORATING THE SAME

Masaya Imamura, Kyoto, Japan, assignor to Rhom Co., Ltd., Kyoto, Japan

Filed Sep. 29, 1992, Ser. No. 953,105
Claims priority, application Japan, Sep. 30, 1991, 3-250038
Int. Cl.[6] H04N *1/40*
U.S. Cl. 358—471 12 Claims



1. An image sensor for projecting light onto the surface of a document converting the light reflected from said document into an electric signal and thus reading the information of said document, said image sensor comprising:

(a) a frame having an inclined inner surface;

(b) a light emitting device provided within said frame so as to project light onto the surface of said document;

(c) a light receiving device provided within said frame so as to receive the light reflected from said document;

(d) an optical system provided within said frame so as to introduce said light reflected from said document to said light receiving device;

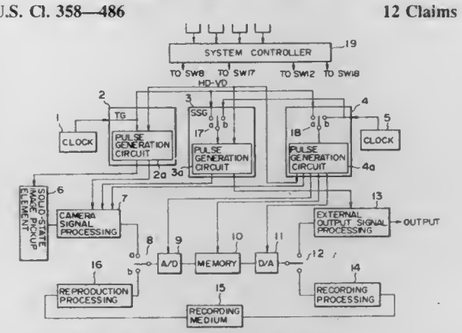
(e) a substrate to which said light receiving device is attached and which is provided within said frame; and,

(f) an elastic member which is attached to the upper surface of said substrate in such a manner that, when said substrate is mounted on said frame, at least a part of the upper surface of said elastic member comes into contact with said frame and at least a part of the side surface of said elastic member comes into contact with said inclined inner surface of said frame so as to push said substrate downward and in the horizontal direction.

5,825,511
IMAGE PICKUP APPARATUS

Masashi Hori, Yokohama; Yuji Sakaegi, Kawasaki; Saburo Nakazato, Yokohama, and Izuru Horiuchi, Machida, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 871,915, Apr. 22, 1992, abandoned.
This application Nov. 3, 1994, Ser. No. 336,230
Claims priority, application Japan, Apr. 26, 1991, 3-096542; Apr. 26, 1991, 3-123048
Int. Cl.[6] H04N *1/04; 1/36*
U.S. Cl. 358—486 12 Claims



1. An image pickup apparatus comprising:

(a) signal processing means having an image pickup means and memory means for storing an output of the image pickup means;

(b) first and second clock pulse generation means for generating a clock pulse;

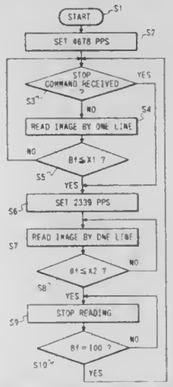
(c) switching means for supplying selectively an output of said first clock pulse generation means or said second clock pulse generation means to said signal processing means; and

(d) control means for controlling the switching of said switching means in accordance with whether said signal processing means operates in a first mode in which said image pickup means and said memory means are driven or a second mode in which said memory means is driven.

5,825,512
IMAGE READING METHOD AND APPARATUS

Hisao Okita, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1995, Ser. No. 381,341
Claims priority, application Japan, Jan. 31, 1994, 6-009064
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—496 14 Claims



1. An image reading method for electrically reading an image of a document sheet by a reader by relatively moving the document sheet and the reader and outputting the image signal to an external unit through a memory, comprising the steps of:

relatively moving the document sheet and the reader at a first speed to read the image of the document sheet when a vacant capacity of the memory is no smaller than a first capacity;

relatively moving the document sheet and the reader at a second speed lower than the first speed to read the image of the document sheet when the vacant capacity of the memory is smaller than the first capacity;

stopping the relatively movement at the second speed of the document sheet and the reader to interrupt the reading of the image of the document sheet when the vacant capacity of the memory is smaller than a second capacity smaller than the first capacity;

relatively moving the document sheet and the reader at a third speed to resume the reading of the image of the document sheet when the vacant capacity of the memory becomes a third capacity, with the third speed being determined in accordance with an image reading condition;

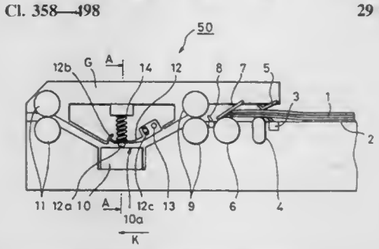
setting the second speed in accordance with the image read condition; and

setting the third speed in accordance with a number of lines already read or the number of remaining lines.

5,825,513
DOCUMENT READING APPARATUS

Kazuhiko Hasegawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 852,716, Mar. 17, 1992, abandoned.
This application Oct. 11, 1994, Ser. No. 320,560
Claims priority, application Japan, Mar. 20, 1991, 3-080478
Int. Cl.[6] H04N *1/04*
U.S. Cl. 358—498 29 Claims



1. A document reading apparatus comprising:

feeding means for feeding documents along a document feed path;

reading means having a reading section for reading the documents being fed by said feeding means;

a sheet member opposed to the reading section, said sheet member extending from a first location, upstream of the reading section, to a second location, downstream of the reading section;

a plurality of spacers for maintaining a predetermined gap between said sheet member and the reading section of said reading means, said spacers being held against the reading section; and

biasing means for biasing said sheet member toward the reading section of said reading means,

said sheet member having an end portion downstream of the reading section, said end portion being movable about a center of movement which is upstream of the reading section.

5,825,514

MASTER HOLOGRAM FOR THE PRODUCTION OF COPY-PROOF HOLOGRAMS

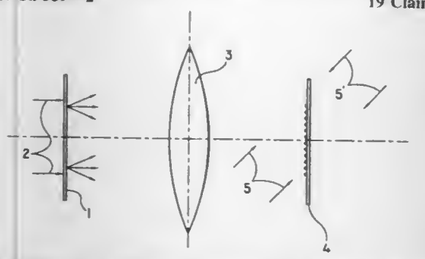
Guenther Dausmann, Erding, and Klaus Gnaedig, Munich, both of Germany, assignors to Bundesdruckerei GmbH, Berlin, Germany

Division of Ser. No. 564,411, Nov. 29, 1995. This application Jan. 23, 1997, Ser. No. 788,056

Claims priority, application Germany, Dec. 2, 1994, 44 43 029.9

Int. Cl.[6] G02B *5/22;* G03H *1/16;1/12;1/22*

U.S. Cl. 359—2 19 Claims



1. A method for authenticity examination of a hologram copy (**6**) of a master hologram, comprising the following steps:

arranging the hologram copy (**6**) in a first position (**11**) of the optical arrangement,

arranging a decoding (reading) hologram (**14**) in a second position of the optical arrangement,

exposing the decoding hologram (**14**) to a first reference (readout) beam (**15**) from an image-forming optical system (**17**),

producing a readout beam (**20**) from the master hologram copy (**6**) by exposing the master hologram copy (**6**) to a second reference beam (**10**), and

passing the readout beam (**20**) onto said decoding hologram (**14**).

5,825,515

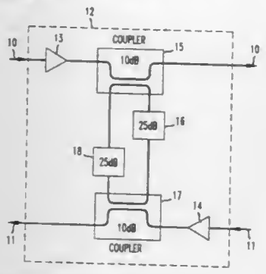
SUPERVISORY APPARATUS FOR OPTICAL TRANSMISSION SYSTEM

Cleo D. Anderson, Colts Neck, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 308,472, Sep. 19, 1994, abandoned, which is a continuation-in-part of Ser. No. 78,499, Jun. 21, 1993, abandoned, which is a continuation of Ser. No. 753,582, Sep. 3, 1991, abandoned. This application May 22, 1996, Ser. No. 651,449

Int. Cl.[6] H04B *10/08*

U.S. Cl. 359—110 11 Claims



1. An optical transmission system comprising:

a first optical fiber extending between first and second terminals for carrying optical signals from the first terminal to the second terminal;

a second optical fiber extending between first and second terminals for carrying optical signals from the second terminal to the first terminal;

at least one optical repeater coupled to the first and second optical fibers between said first and second terminal, said repeater for optically amplifying signals in the first and second optical fibers, said repeater having a permanently connected passive high loss loopback circuit between the first and second optical fibers, the loopback circuit including:

a first optical coupler having an input responsive to optical signals in the first optical fiber and an output producing optical signals related to the optical signals in the first optical fiber;

an attenuator having an input responsive to the optical signals output by the optical coupler for attenuating by a predetermined amount the signals output by the optical coupler, and

a second optical coupler responsive to the attenuated optical signals from the attenuator for returning the attenuated signals to the first terminal via the second optical fiber; and

wherein said first terminal includes a transmitter and receiver, said transmitter for launching an optical signal on the first optical fiber and said receiver for detecting variations in the returned attenuated optical signal on the second optical fiber to identify the existence and location of a fault in the optical transmission system.

5,825,516

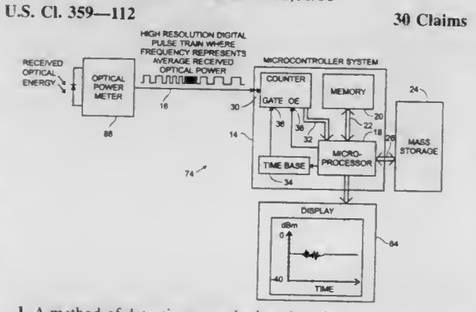
OPTICAL POWER METER FOR DETECTING LOSS FACTORS IN FIBER OPTIC COMMUNICATIONS

Peter J. Walsh, Colorado Springs, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 25, 1996, Ser. No. 686,289

Int. Cl.[6] H04B *10/12;10/06*

U.S. Cl. 359—112 30 Claims



1. A method of detecting perturbations in a fiber optic cable, the method comprising the steps of:

transmitting light through a fiber optic cable from a first location to a second location;

continuously measuring an average baseline power level of the light transmission in the fiber optic cable in an unperturbed state;

measuring an average power level of the light transmission in the fiber optic cable;

comparing the measured average power level to the average baseline power level;

generating a warning if the measured average power level is outside the baseline power level; and

displaying the measured average threshold power level and the average power level over time.

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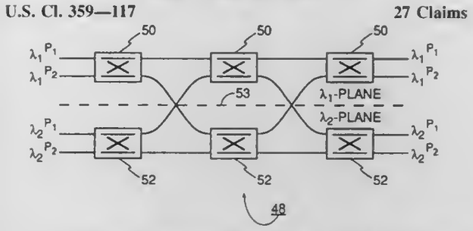
PARAMETRIC WAVELENGTH INTERCHANGING CROSS-CONNECT

Neophytos Andreas Antoniades, Long Island, N.Y.; Krishna Bala, Eatontown, N.J.; Georgios Nicos Ellinas, New York, N.Y., and Sung-Joo Yoo, Long Branch, N.J., assignors to Tellium, Inc., Oceanport, N.J.

Filed Dec. 6, 1995, Ser. No. 568,037

Int. Cl.[6] H04J *14/00*

U.S. Cl. 359—117 27 Claims



1. A wavelength interchanging cross-connect for a wavelength division multiplexing optical network operating with a least two optical signals and at least two corresponding input optical wavelengths, comprising;

two spatial optical switches; and

an optical difference frequency generator connected between respective ports of said two switches, receiving said two optical signals, and interchanging therein said two optical wavelengths between said two optical signals.

5,825,518

OPTICAL TRANSMISSION UNIT

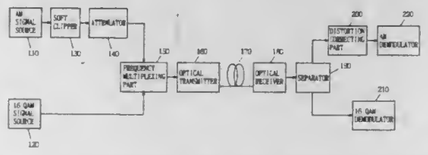
Kazuki Maeda, Neyagawa; Koichi Masuda, and Hiroaki Nakata, both of Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Mar. 8, 1996, Ser. No. 613,226

Claims priority, application Japan, Mar. 9, 1995, 7-050222

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—124 24 Claims



1. An optical transmission unit in which a first frequency multiplexed signal of a plurality of modulation signals from a same modulation system is further multiplexed with a plurality of digital modulation signals, or a second frequency multiplexed signal thereof, of a prescribed modulation system, said optical transmission unit comprising:

a multiplexing means for multiplexing the first frequency multiplexed signal with the plurality of digital modulation signals, or the second frequency multiplexed signal thereof, to obtain an output multiplexed signal;

an optical transmission means for intensity-modulating a laser beam output according to the output multiplexed signal of said multiplexing means to obtain an optical transmission signal; and

an amplitude limitation means for non-linearly loosely limiting a signal amplitude existing prior to said optical transmission means, wherein said amplitude limitation means comprises an amplifier having an output saturation property such that a total sum of degrees of optical modulation of signals being inputted to said optical transmission means is not greater than 1.

5,825,519

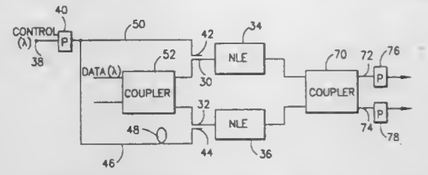
OPTICAL MACH-ZEHNDER TIME DIVISION DEMULTIPLEXER

Paul R. Prucnal, Princeton, N.J., assignor to Princeton University, Princeton, N.J.

Filed Sep. 27, 1996, Ser. No. 722,482

Int. Cl.[6] H04J *14/02;14/08*

U.S. Cl. 359—127 7 Claims



1. An optical demultiplexer comprising:

a first optical path including a first nonlinear optical element (NLE) which responds to a control pulse to induce a π phase shift in an optical data signal propagating therethrough, an NLE responding substantially immediately to a control pulse, but slowly reverting to a non-phase shift state thereafter;

a second optical path including a second NLE;

an optical output coupler coupled to said first optical path and said second optical path and responsive to in-phase data pulses thereon to output a data pulse on one output and further responsive to data pulses that are phase separated by π to output a data pulse on a second output;

input means for coupling a train of optical data pulses of wavelength λ concurrently onto said first optical path and said second optical path;

control means for inducing a first control pulse of wavelength λ onto said first optical path and a second control pulse of wavelength λ onto said second optical path, each control pulse polarized orthogonally from said data pulses, said first control pulse arriving at said first NLE a time t later than said second control pulse arrives at said second NLE, whereby only data pulses arriving concurrently during time t at said first NLE and second NLE experience phase shifts which differ by π and thus are discriminated onto one output of said optical output coupler; and

analyzer means for blocking any polarized control pulses that appear on said one output.

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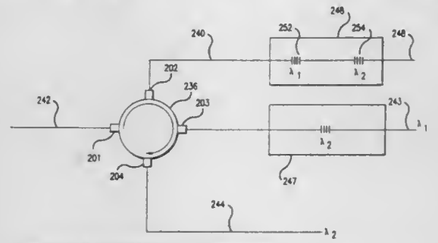
OPTICAL DEMULTIPLEXERS WITH GRATING REFLECTORS

David R. Huber, 1180 Green Holly Dr., Annapolis, Md. 21401

Continuation-in-part of Ser. No. 152,315, Nov. 15, 1993, which is a division of Ser. No. 919,823, Jul. 27, 1992, Pat. No. 5,283,686. This application Aug. 11, 1995, Ser. No. 514,422

Int. Cl.[6] H04J *14/02*

U.S. Cl. 359—130 1 Claim



1. An optical demultiplexer comprising:

an optical circulator having a plurality of ports, a first one of said plurality of ports being configured to be coupled to an optical communication path carrying a first plurality of optical

channels, said first one of said plurality of ports receiving said plurality of optical channels, said plurality of optical channels being circulated from said first one of said plurality of ports to a second one of said plurality of ports:

a plurality of first in-fiber Bragg gratings connected in series and being coupled to said second one of said plurality of ports, said plurality of optical channels being output from said second one of said plurality of ports, each of said plurality of first in-fiber Bragg gratings respectively reflecting a selected first one of said plurality of optical channels back to said second port for output through a third one of said plurality of ports, at least a second one of said plurality of optical channels being different than said first ones of said plurality of optical channels being transmitted through said first plurality of in-fiber Bragg gratings; and

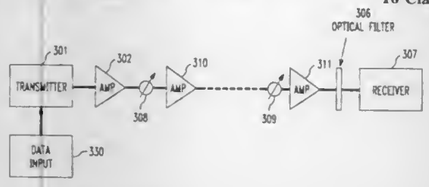
at least a second in-fiber Bragg grating coupled to said third one of said plurality of ports, said at least said second in-fiber Bragg grating reflecting a third one of said plurality of optical channels back to said third one of said plurality of ports for output through a fourth port, and transmitting at least a fourth one of said plurality of optical channels, a number of said in-fiber Bragg gratings respectively coupled to said second and third ones of said plurality of ports decreasing in a direction from said second one of said plurality of ports to said third one of said plurality of ports.

5,825,521

METHOD OF DETERMING INTER-SYMBOL INTERFERENCE IN TRANSMISSION SYSTEM

Kinichiro Ogawa, Lower Macungie Township, and Yong-Kwan Park, Wescosville, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 24, 1995, Ser. No. 685,641
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—161 **16 Claims**



1. A method of determining an inter-symbol interference, ISI, level of a signal received at a location along a communication facility, comprising the steps of:

a) for each of a first plurality of received signals having different Signal-to-Noise, S/N, ratios, determining a minimum bit-error rate, BER, value by varying threshold levels of a decision circuit connected to said location, thereby forming a first group of minimum BER values,

b) after replacing at least one segment of the communication facility with a non-ISI producing attenuator, for each of a second plurality of received signals having different S/N ratios, determining a second minimum BER value by varying threshold levels of the decision circuit, thereby forming a second group of minimum BER values, and

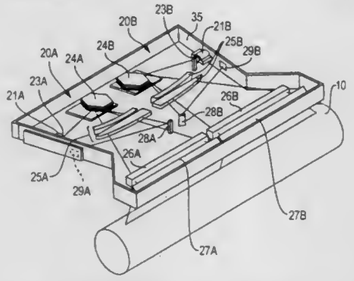
c) determining the ISI level for a predetermined BER value using the first and second groups of minimum BER values obtained in steps a) and b).

5,825,522

CASCADE SCANNING OPTICAL SYSTEM

Masatoshi Takano; Eiji Takasugi; Shinji Kikuchi; Tsutomu Sato; Hiroyuki Saito; Yoshiyuki Araki; Mitsunori Iima; Takashi Sasaki, and Takashi Iizuka, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1997, Ser. No. 921,466
Claims priority, application Japan, Aug. 30, 1996, 8-230246
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—201 **6 Claims**



1. A cascade scanning optical system, comprising:

a first laser scanning optical system that emits a first laser beam to scan a surface of a member to generate a first scanning line; and

a second laser scanning optical system that emits a second laser beam to scan said surface to generate a second scanning line,

wherein said first laser scanning optical system and said second laser scanning optical system are arranged so as to combine said first scanning line with said second scanning line at a point of contact therebetween in a main scanning direction to form a single scanning line,

wherein each of said first scanning optical system and said second laser scanning optical system is designed as a non-telecentric system through which an incident angle of a corresponding one of said first laser beam and said second laser beam relative to said surface varies in accordance with a variation in a position of a scanning spot of said corresponding one of said first laser beam and said second laser beam on said surface in said main scanning direction, and

wherein an incident angle of each of said first laser beam and said second laser beam relative to said surface in the vicinity of said point of contact is predetermined to be larger than an incident angle of the same in the vicinity of a corresponding one of opposite ends of said single scanning line.

5,825,523

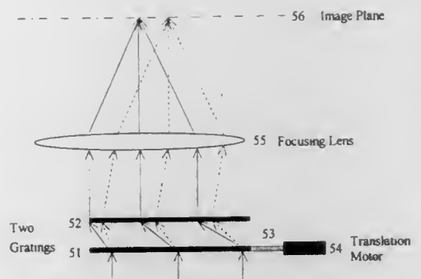
LINEAR BEAM STEERING DEVICE

Yaakov Amitai, 2 Moholiver Street, Rehovot 76304, Israel

Filed Oct. 19, 1995, Ser. No. 545,238
Claims priority, application Israel, Oct. 25, 1994, 111392
Int. Cl.[6] G02B *26/08;5/18*
U.S. Cl. 359—209 **12 Claims**

1. A device for linear beam steering comprising:

a pair of parallel gratings, located at a constant distance from each other, said pair of parallel gratings being different, each of said parallel gratings comprising a plurality of parallel lines, wherein the spacing between the lines gradually increases from one edge of the grating up to a maximum distance between the lines, and wherein the arrangement of lines in a second grating of said parallel gratings is in the same direction as that of a first grating, each of said parallel gratings comprising at least one such spacing sequences, and means for a continuous lateral displacement of one of said parallel gratings respective the other of said parallel gratings thereby resulting in a large angular deviation of an output beam passing through the two parallel gratings, wherein a



grating function, $\phi(x)$, for a first grating G_1, of said two parallel gratings is calculated by the equation:

$$\phi(x)=\phi'(x)+C_0$$

wherein C_0 is a constant and $\phi'(x)$ is given by the implicit equation:

$$x(\phi')=-\left(-\frac{\phi'}{\sqrt{1-\phi'^2}}+\delta\cdot\phi'\right)$$

and wherein a grating function, $\psi(\xi)$, for a second grating, G_2, of said two parallel gratings is calculated by the equation:

$$\psi(\xi)=\frac{\xi}{\delta}+C$$

wherein,

$0\leq x\leq a$ and $0\leq\xi\leq a$ are lateral coordinates of said two parallel gratings G_1 and G_2, respectively;

a is a constant;

δ is the ratio between the linear translation of G_1 and the angular deviation of an output wave;

the distance between G_1 and G_2 is normalized to 1;

C is a constant; and,

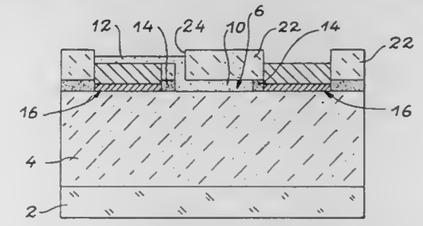
a plurality of said parallel grating pairs are arranged one after another.

5,825,524

TRANSVERSE ELECTRIC MODE ELECTRO-OPTIC CELL FOR A MODULATOR AND PROCESS FOR PRODUCING SUCH A CELL

Ingo Faderl, Clermont-Ferrand, and Serge Valette, Grenoble, both of France, assignors to Commissariat A l'Energie Atomique, Paris, France

Filed Oct. 23, 1995, Ser. No. 553,795
Claims priority, application France, Oct. 25, 1994, 94 12736
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—245 **14 Claims**



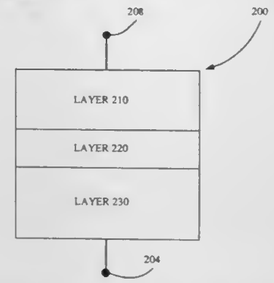
1. Transverse electric mode electro-optic modulator having at least one optical guide (**6**) with an active region (**10**) of a nonlinear material (**12**) having a refractive index which can be modified under the application of an electric field to the material, and control electrodes (**16**) for the application of the electric field located on either side of the guide (**6**), characterized in that it also comprises regions (**14**) made from a confinement material positioned respectively on either side of and against the active region (**10**) and between the control electrodes (**16**), the confinement material having a refractive index below that of the material of the active region and an electrical resistivity below that of the material of the active region.

5,825,525

ELECTRO-OPTIC MODULATOR WITH VOLTAGE TUNABLE QUANTUM WELL WAVEGUIDE CLADDING LAYER

Alex Harwit, Palo Alto, Calif., assignor to Lockheed Missiles & Space Co., Sunnyvale, Calif.

Filed Jan. 12, 1996, Ser. No. 586,195
Int. Cl.[6] G02F *1/03*
U.S. Cl. 359—248 **16 Claims**



1. An electro-optic waveguide modulator comprising:

a first cladding layer having a first refractive index:

a core layer adjacent to the first cladding layer and having a second refractive index that is greater than the first refractive index, the core layer being substantially transparent to light at a selected wavelength: and

a second cladding layer adjacent to the core layer, the second cladding layer having a voltage tunable refractive index and a voltage tunable absorption at the selected wavelength, the voltage tunable refractive index being less than the second refractive index in a first voltage state and being increased to a value closer to the second refractive index in a second voltage state, for shifting light at the selected wavelength between the core and cladding layers in response to an applied electric field.

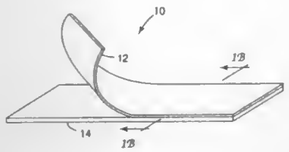
5,825,526

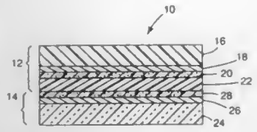
TAPE FOR USE IN MANUFACTURING ELECTROCHROMIC DEVICES

Silvia L. Bommarito, Stillwater; Kejian Chen; Peter F. Cullen, both of Woodbury; L. Charles Hardy, St. Paul, and Paul S. Lugg, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 24, 1996, Ser. No. 639,019
Int. Cl.[6] G02F *1/15;1/155;1/153*
U.S. Cl. 359—265 **28 Claims**

1. A tape comprising an electronically conductive flexible substrate, a release element selected from the group consisting of removable release layers and low surface energy coatings, and an adhesive comprising an ion-intercalating material,





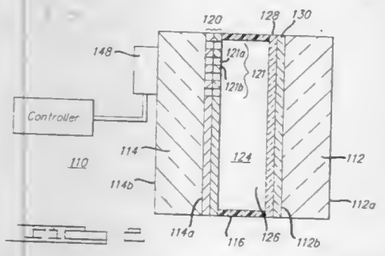
wherein when the adhesive of said tape is laminated to a second electronically conductive substrate comprising a second ion-intercalating material to form an electrochromic device, the device is capable of undergoing a visible change in transmission or reflectance upon application of a voltage.

5,825,527

INFORMATION DISPLAY AREA ON ELECTROCHROMIC MIRRORS HAVING A THIRD SURFACE METAL REFLECTOR

Jeffrey A. Forgette, Jenison, and Scott W. Vander Zwaag, Holland, both of Mich., assignors to Gentex Corporation, Zeeland, Mich.

Filed Apr. 2, 1997, Ser. No. 831,808
Int. Cl.[6] G02F *1/153*
U.S. Cl. 359—267 **20 Claims**



1. An electrochromic variable reflectance mirror for automotive vehicles, comprising:

front and rear spaced elements, each having front and rear surfaces, said rear surface of said front element having a layer of transparent conductive material disposed thereon, and said front surface of said rear element having at least one layer of a conductive reflector/electrode material disposed thereon, where said front and rear spaced elements are sealably bonded together in a spaced-apart relationship to define a chamber therebetween, said chamber containing an electrochromic reversibly variable transmittance medium in contact with said transparent conductive material and said reflector/electrode;

an information display area disposed within said reflector/electrode having areas containing reflector/electrode and areas substantially devoid of reflector/electrode; and

a display that is juxtaposed with said rear surface of said rear element and aligned with said information display area;

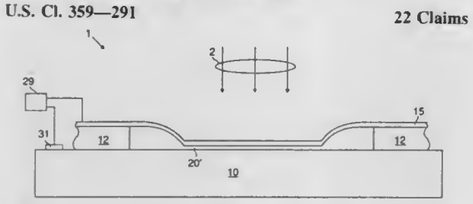
where said reflector/electrode material is effective to reflect light through said medium and said front element when said light reaches said reflector/electrode after passing through said front element and said medium.

5,825,528

PHASE-MISMATCHED FABRY-PEROT CAVITY MICROMECHANICAL MODULATOR

Keith Wayne Goossen, Aberdeen, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 26, 1995, Ser. No. 578,123
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—291 **22 Claims**



13. A method for making a phase-mismatched micromechanical modulator having a substrate and membrane, each characterized by a refractive index, wherein the refractive index of the membrane is greater than the square root of the refractive index of the substrate, comprising the steps of:

providing a substrate;

forming a membrane so that the membrane and substrate have phase-mismatched reflectivities; and

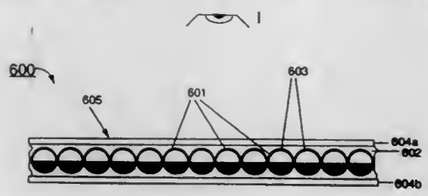
forming supports to support the membrane over the substrate so that an air gap is formed between the membrane and the substrate, wherein the supports are flexible so that the membrane may move from a first position relative to the substrate to a second position upon application of a force.

5,825,529

GYRICON DISPLAY WITH NO ELASTOMER SUBSTRATE

Joseph M. Crowley, Morgan Hill, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 13, 1996, Ser. No. 713,325
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—296 **31 Claims**



25. A twisting-particle display apparatus made without any elastomer substrate or other matrix that would tend to hold the particles in place, the apparatus comprising:

a housing structure including first and second nonintersecting surfaces disposed with a volume therebetween, at least one of the surfaces being optically transmissive; and

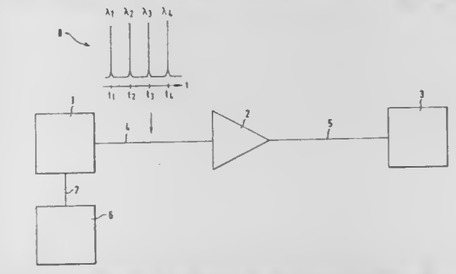
a plurality of optically anisotropic particles disposed in the housing structure in the volume between the two surfaces, the particles being disposed rotatably in a closely packed stable arrangement wherein particles are free to rotate in place but not free to translate substantially so as to disrupt the arrangement, particles tending to keep each other in place in the arrangement through mutual support together with support from the two surfaces.

5,825,530

ARRANGEMENT AND METHOD FOR OPERATING AND TESTING AN OPTICAL DEVICE

Edgar Leckel, Jettingen, and Emmerich Mueller, Aidlingen, both of Germany, assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 565,379, Nov. 30, 1995, abandoned. This application Aug. 16, 1996, Ser. No. 689,973
Claims priority, application European Pat. Off., Dec. 2, 1994, 94119012; Jun. 1, 1996, 96108813
Int. Cl.[6] H01S *3/00*; G01N *21/00*
U.S. Cl. 359—333 **10 Claims**



1. An arrangement generating multiple optical signals with different wavelengths for application to an optical amplifier, comprising:

a single optical source for generating said multiple optical signals for application to said optical amplifier, one after the other, and

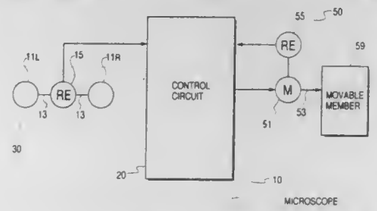
switching means for applying said multiple optical signals of said optical source, one after the other, to said optical amplifier, wherein all of said multiple optical signals are applied by said switching means to said optical amplifier, within a recovery time of said optical amplifier, from a noise level with signal applied to a noise level without signal applied.

5,825,531

ELECTRICAL MOVING APPARATUS FOR MICROSCOPE

Masahiko Otomo, Fujisawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Dec. 8, 1995, Ser. No. 569,394
Claims priority, application Japan, Dec. 14, 1994, 6-310577; Dec. 14, 1994, 6-310578; Dec. 14, 1994, 6-310579; Dec. 14, 1994, 6-310580
Int. Cl.[6] G02B *21/00;21/26*
U.S. Cl. 359—368 **13 Claims**



1. A microscope comprising:

a movable member;

a motor;

a power transmission mechanism provided between said movable member and said motor;

a position detector which generates an output indicating a position of said movable member;

a rotatable operation handle;

a rotation detector which generates an output corresponding to a rotational quantity of said operation handle; and

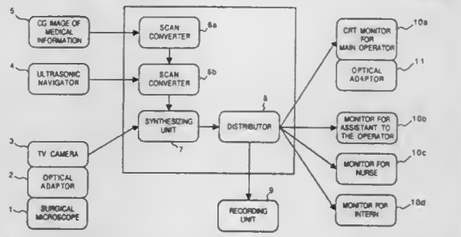
a control circuit, having a comparator for outputting a difference signal of a difference between the output of said rotation detector and the output of said position detector, which controls rotation of said motor based on the difference signal from said comparator.

5,825,532

MICROSCOPIC SYSTEM INTEGRATED WITH WIDE-SCREEN TELEVISION

Ryo Mochizuki; Shinrokuro Nagashima, and Hiroshi Saito, all of Tokyo, Japan, assignors to NHK Engineering Services, Inc., Tokyo, Japan

Continuation of Ser. No. 317,806, Oct. 4, 1994, abandoned. This application Mar. 12, 1996, Ser. No. 614,851
Claims priority, application Japan, Oct. 4, 1993, 5-247740
Int. Cl.[6] G02B *21/00*; A61B *1/04*
U.S. Cl. 359—368 **3 Claims**



1. A high-definition television (HDTV) stereoscopic microscope system for performing an operation while watching an HDTV monitor, comprising:

an optical adaptor to:

input left and right images from a binocular microscope, respectively,

route said the inputted left and right images so that they can be viewed by the left and right eyes of a human being, and

output the left and right images to an HDTV camera;

conversion means for converting medical information relating to a patient into images according to the region to be operated so as to be superimposed on the left and right images from said HDTV camera;

superimposing means for superimposing the converted medical information on the left and right images; and

display means for displaying the left and right images superimposed medical information as a stereoscopic live image on said HDTV monitor.

5,825,533

TANDEM SCANNING CONFOCAL MICROSCOPE

Yasuo Yonezawa, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

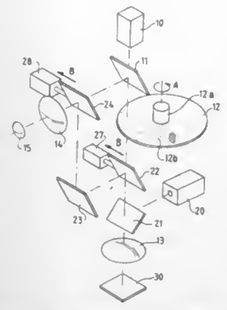
Filed Jun. 4, 1997, Ser. No. 869,165
Claims priority, application Japan, Apr. 6, 1996, 8-141448
Int. Cl.[6] G02B *21/00;21/06*
U.S. Cl. 359—372 **20 Claims**

1. A tandem scanning confocal microscope comprising:

a confocal illumination light source which irradiates confocal light for observation,

a scanning substrate with which a designated scanning action is accomplished using many minute holes,

a main optical system which irradiates light from the confocal illumination light source and causes it to pass through the minute holes in the scanning substrate and illuminate an observation objective, said main optical system, after causing light which is reflected from the observation objective to pass through the minute holes, composing an enlarged image of the observation objective at the observation position,



a normal illumination light source which irradiates light for normal observation, and

a bypass optical system which directly irradiates the light from the normal illumination light source onto the observation objective, said bypass optical system leading the light which is reflected from the observation objective around the scanning substrate to the observation position and composing the enlarged image of the observation objective at the observation position.

5,825,534

STEREOENDOSCOPE HAVING A FOLDED SIGHT LINE

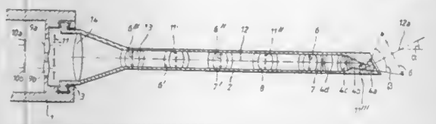
Fritz Strähle, Heubach, Germany, assignor to Carl-Zeiss-Stiftung, Heidenheim, Germany

Continuation-in-part of Ser. No. 510,697, Aug. 3, 1995, Pat. No. 5,612,816, which is a continuation of Ser. No. 100,276, Aug. 2, 1993, abandoned, and Ser. No. 875,634, Apr. 28, 1992, Pat. No. 5,321,447. This application Sep. 7, 1995, Ser. No. 524,536

Claims priority, application Germany, Sep. 8, 1994, 44 31 968.1

Int. Cl.[6] G02B *21/22*

U.S. Cl. 359—376 **11 Claims**



1. A stereoendoscope providing a viewing field to an observer, the stereoendoscope comprising;

an endoscope tube;

a transmitting optic assembly mounted in said endoscope tube and defining a first optical axis;

a front optic assembly having a proximal end adjacent said transmitting optic assembly and a distal end facing away from said transmitting optic assembly;

said front optic assembly defining a second optical axis at said distal end and including a prism mounted between said proximal and distal ends;

said proximal end being aligned with said first optical axis;

said second optical axis at said distal end being aligned so as to define an angle with said first optical axis unequal to 0° or 18°;

said transmitting optic assembly having an end facing away from said front optic assembly;

a viewing system disposed on said first optical axis so as to be adjacent said end of said transmitting optic assembly;

said viewing system having two pupils spaced from each other; and,

said transmitting optic assembly including field optics for imaging said two pupils demagnified into said prism so that a beam guided through said stereoendoscope is vignette free and said viewing field is uncropped by said prism.

5,825,535

PANCRATIC MAGNIFICATION SYSTEM

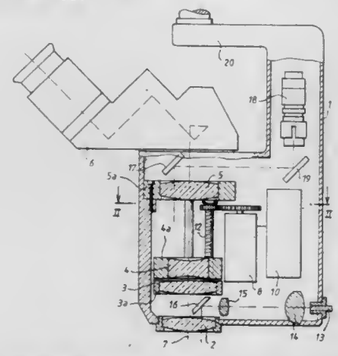
Klaus Biber, Aalen, and Fritz Strahle, Heubach, both of Germany, assignors to Carl Zeiss Stiftung, Heidenheim, Germany

Filed Nov. 13, 1995, Ser. No. 555,962

Claims priority, application Germany, Nov. 12, 1994, 44 40 530.8

Int. Cl.[6] G02B *21/12;21/22;15/14;21/00*

U.S. Cl. 359—380 **11 Claims**



1. A pancratic magnification system for at least two observation beam paths, comprising:

a first optical component and a second optical component that are displaceable along a common optical axis in a defined manner, and

a third optical component that is stationary following said first and second optical components,

wherein a variation of magnification; is effected by means of a defined displacement of said first and second optical components,

wherein focusing on a desired object plane is effected by displacement of only said first optical component, and

wherein said first, second, and third optical components comprise a plurality of individual lenses having the following optical data:

Radius r_i, mm	Thickness or distance d_i, mm	Free diameter d_F, mm	Medium
$r_1 = 92.6627$	$d_1 = 4.000$	45.300	SF56A
$r_2 = 48.8915$	$d_2 = 8.000$	44.000	SSKN8
$r_3 = -299.1397$	d_3 ∈[5.094;41.021]	43.700	air
$r_4 = -184.6478$	$d_4 = 3.000$	30.400	BAK2
$r_5 = 93.9299$	$d_5 = 4.000$	29.700	air
$r_6 = -57.5094$	$d_6 = 4.000$	29.700	SF57
$r_7 = -35.1813$	$d_7 = 3.000$	30.200	SK5
$r_8 = 328.0925$	d_8 ∈[46.596;2.979]	30.900	air
$r_9 = 429.4695$	$d_9 = 5.000$	31.300	SSKN8
$r_{10} = -52.4473$	$d_{10} = 3.000$	31.500	SF56A
$r_{11} = -96.7737$		32.000	

where respective radii of curvature of said individual lenses are denoted by r_i, their respective free diameters d_F are set out; distances between optically effective surfaces of said pancratic magnification system are given by d_i, and said first and second optical components are displaceable within given limits such that respective distances d_3 and d_8 are variable within given intervals.

5,825,536

SURGICAL MICROSCOPE UNIT

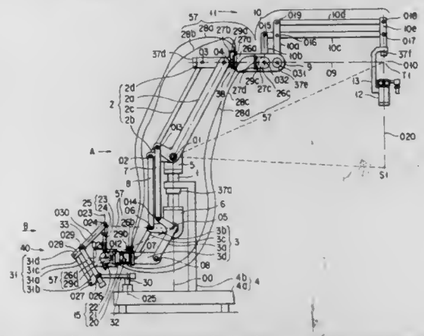
Koji Yasunaga, Hino, and Takashi Fukaya, Sagamihara, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1995, Ser. No. 525,907

Claims priority, application Japan, Sep. 12, 1994, 6-217511; Mar. 31, 1995, 7-075209

Int. Cl.[6] G02B *21/00;* **F16L** *3/00*

U.S. Cl. 359—384 **12 Claims**



1. A surgical microscope unit having a moving mechanism which supports a microscope body and which can move said microscope body three-dimensionally so that said microscope body is capable of tilting around three axes, said moving mechanism comprising:

a support having a vertical axis;

a first parallelogrammic linkage rotatably mounted on said support so as to be rotatable around said vertical axis, said first parallelogrammic linkage having first, second, third and fourth parallel pivot axes intersecting with a plane including said vertical axis, and said first parallelogrammic linkage having first, second, third and fourth arms pivoted together by said first, second, third and fourth pivot axes and rotatably supported on said support at said first pivot axis;

a second parallelogrammic linkage rotatably supported on said support so as to be rotatable around said vertical axis, said second parallelogrammic linkage being arranged opposite said first parallelogrammic linkage with respect to said vertical axis, said second parallelogrammic linkage having first, second, third and fourth parallel pivot axes intersecting a plane including said vertical axis, and said second parallelogrammic linkage having first, second, third and fourth arms pivoted together by said first, second, third and fourth pivot axes of said second parallelogrammic linkage and rotatably supported on said support at said first pivot axis of said second parallelogrammic linkage;

a first interlocking mechanism for interlocking rotation of said first arm of said first parallelogrammic linkage around said first pivot axis of said first parallelogrammic linkage with rotation of said first arm of said second parallelogrammic linkage around said first pivot axis of said second parallelogrammic linkage so that a line formed by connecting said first pivot axis and said second pivot axis adjacent thereto of said first parallelogrammic linkage is always parallel with a line formed by connecting said first pivot axis and said second pivot axis adjacent thereto of said second parallelogrammic linkage;

a second interlocking mechanism for interlocking rotation of said second arm of said first parallelogrammic linkage around said first pivot axis of said first parallelogrammic linkage with rotation of said second arm of said second parallelogrammic linkage around said first pivot axis of said second parallelogrammic linkage so that a line formed by connecting said first pivot axis and said third pivot axis adjacent thereto of said first parallelogrammic linkage is always parallel with a line formed by connecting said first pivot axis and said third pivot axis of said second parallelogrammic linkage, said microscope body being supported by said third arm of said first parallelogrammic linkage including said second pivot axis of said first parallelogrammic linkage which is adjacent to said first pivot axis thereof and said fourth pivot axis thereof which is diagonally disposed; and

a counterweight for reacting an unbalanced force exerting on said first parallelogrammic linkage and said microscope body, said counterweight being provided on said second parallelogrammic linkage.

5,825,537

SPHERICAL BINOCULAR

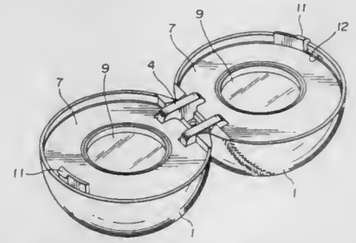
Takasbi Ushiyama, Tokyo, Japan, assignor to Muti Work Corporation, Aichi-ken, Japan

Filed Nov. 20, 1995, Ser. No. 561,047

Claims priority, application Japan, Nov. 22, 1994, 6-015545

Int. Cl.[6] G02B *23/00;7/02*

U.S. Cl. 359—408 **7 Claims**



1. A spherical binocular comprising,

a pair of hemispherical shells each including a front opening edge with a front plate fittedly arranged therein and an outer periphery;

an ocular concave lens arranged at a central portion of each of said outer peripheries;

an objective convex lens arranged at a central portion of each of said front plates; and

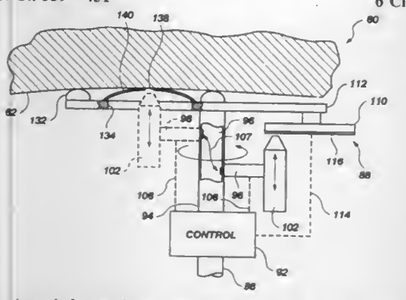
a folding means pivotally connecting said hemispherical shells to each other;

wherein said hemispherical shells provide a rectangular groove formed by cutting a portion thereof extending from said front opening edge to said outer periphery, said folding means being provided in said rectangular groove to provide the spherical shape when said hemispherical shells are closed using the folding means;

said hemispherical shells each being provided at said front opening edge with a holding pawl so as to be outwardly projected therefrom and on an inside of said front opening edge with a holding groove;

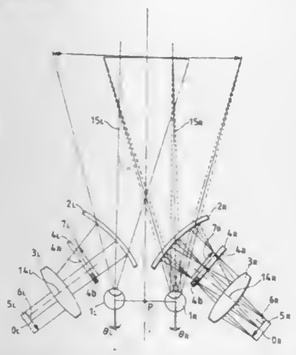
whereby folding of said pivotally connected two hemispherical shells over each other to align said front opening edges with each other permits said holding pawl and holding groove of one of said hemispherical shells to be respectively fittedly engaged with said holding groove and holding pawl of the other of said hemispherical shells for storage or carrying and inward pressure on said holding pawl of each of said hemispherical shells thus folded permits said holding pawl to be released from engagement with said holding groove for use.

5,825,538
PLACEMENT TOOL FOR RETRO-REFLECTIVE CALIBRATION POINTS
Joe L. Walker, Salt Lake City, Utah, assignor to Evans & Sutherland Computer Corp., Salt Lake City, Utah
Division of Ser. No. 685,154, Jul. 23, 1996, Pat. No. 5,638,208.
This application Feb. 18, 1997, Ser. No. 802,326
Int. Cl.[6] G03B 21/56
U.S. Cl. 359—451 6 Claims



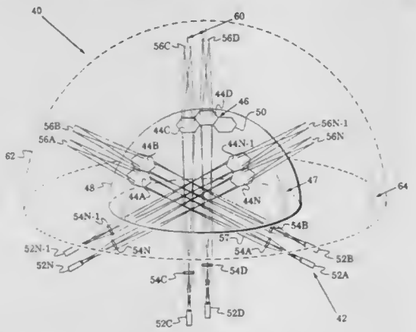
1. A tool for applying retro-reflective dots from a sheet of retro-reflective material to a display screen to identify defined calibration points for spacially aligning images, said tool comprising:
a support platen for said sheet of retro-reflective material;
a punch mechanism for punching dots of material from said sheet of retro-reflective material;
a carrier for said punch mechanism for variously supporting said punch mechanism with respect to said support platen for taking dots from said sheet of retro-reflective material;
a transport mechanism for transporting said punch mechanism to a position remote from said support platen and for activating said punch-mechanism to deposit a dot of material from said sheet of retro-reflective material on said screen at a calibration point; and
a frame affixed to support said support platen, said punch mechanism, said carrier and said transport mechanism.

5,825,539
MULTI-EYE IMAGE DISPLAY APPARATUS
Hiroaki Hoshi, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed May 3, 1995, Ser. No. 434,178
Claims priority, application Japan, May 10, 1994, 6-120488; Apr. 27, 1995, 7-127162
Int. Cl.[6] G20B 27/22; H04N 13/04; G09G 5/02
U.S. Cl. 359—462 15 Claims



1. A multi-eye type image display apparatus comprising:
right-eye image displaying means for emitting light to display an image for the right eye;
left-eye image displaying means for emitting light to display an image for the left eye;
optical means for guiding a light beam from said right-eye image displaying means to the pupil of the right eye of an observer and guiding a light beam from said left-eye image displaying means to the pupil of the left eye of the observer, so that said observer can fuse virtual images of said images with each other; and
adjusting means for adjusting a characteristic of each said virtual image in a region including edges of each of the virtual images for the right and left eyes in an overlapping area where said virtual image for the right eye and said virtual image for the left eye overlap.

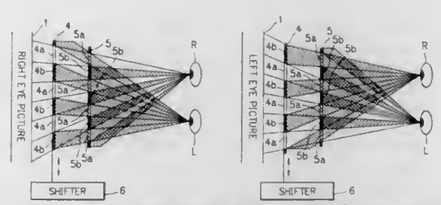
5,825,540
AUTOSTEREOSCOPIC DISPLAY AND METHOD
Ronald S. Gold, Fullerton, and Jerry E. Freeman, Irvine, both of Calif., assignors to Raytheon Company, El Segundo, Calif.
Filed Apr. 22, 1996, Ser. No. 636,198
Int. Cl.[6] G02B 27/22
U.S. Cl. 359—462 37 Claims



1. An autostereoscopic display, comprising:
a projection system configured to form a plurality of real images; and
a plurality of optical field elements arranged in a contiguous relationship, each having a focal length and spaced no further than its focal length from a different one of said real images to process that real image into one of a plurality of exit pupils at which the radiant energy density of that real image is maximized;
wherein said projection system and said optical field elements are arranged to space each of said exit pupils substantially one interpupillary distance (IPD) from at least one other of said exit pupils.

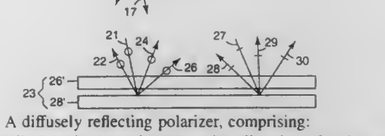
5,825,541
STEREOSCOPIC DISPLAY SYSTEM
Masao Imai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 26, 1996, Ser. No. 686,758
Claims priority, application Japan, Jul. 27, 1995, 7-210190
Int. Cl.[6] G02B 27/22;27/26; H04N 9/47;13/04
U.S. Cl. 359—464 6 Claims

1. A stereoscopic display system comprising:
a display for temporarily alternatively displaying a right eye picture and a left eye picture cooperative with each other to provide binocular parallax information;
a first parallax barrier and a second parallax barrier arranged both in front of the display and disposed either behind the other, the first and second parallax barriers each having a plurality of transparent regions and a plurality of shading



regions alternatively formed therein so as to extend like stripes elongate in a parallel direction to a vertical direction of the right eye and left eye pictures; and
a shifter for shifting one of the first and second parallax barriers in one of rightward and leftward directions of the right eye and left eye pictures in synchronism with a display switching between the right eye and left eye pictures so that the right eye picture is observable by a right eye of an observer and the left eye picture is observable by a left eye of the observer.

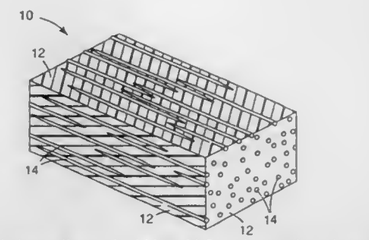
5,825,542
DIFFUSELY REFLECTING MULTILAYER POLARIZERS AND MIRRORS
Sanford Cobb, Jr., St. Mary's Point; Brian D. Cull, Maplewood; Andrew J. Ouderkirk, Woodbury; Michael F. Weber, Shoreview, and David L. Wortman, St. Paul, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 494,980, Jun. 26, 1995, abandoned.
This application Sep. 10, 1997, Ser. No. 927,436
Int. Cl.[6] G02B 5/30
U.S. Cl. 359—487 31 Claims



1. A diffusely reflecting polarizer, comprising:
a diffusing element adapted to alter direction of and to substantially maintain polarization of light incident upon it; and
a reflective polarizing element, wherein the reflective polarizing element reflects light of a first polarization and transmits light of a second polarization;
such that the light of the second polarization is diffusely transmitted by the diffusely reflecting polarizer.

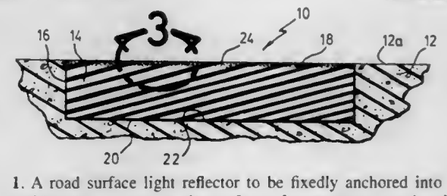
5,825,543
DIFFUSELY REFLECTING POLARIZING ELEMENT INCLUDING A FIRST BIREFRINGENT PHASE AND A SECOND PHASE
Andrew J. Ouderkirk, Woodbury; Lockwood W. Carlson, Stillwater; Arthur L. Kotz, White Bear Lake; Timothy J. Nevitt, Red Wing; Carl A. Stover, St. Paul; Michael F. Weber, Shoreview; Richard C. Allen, Mendota Heights, and Biswaroop Majumdar, Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Feb. 29, 1996, Ser. No. 610,092
Int. Cl.[6] G02B 5/30;27/28
U.S. Cl. 359—494 58 Claims

1. An optical body, comprising:
a first phase having a birefringence of at least about 0.05; and



a second phase, disposed within said first phase, whose index of refraction differs from said first phase by greater than about 0.05 along a first axis and by less than about 0.05 along a second axis orthogonal to said first axis; wherein the diffuse reflectivity of said first and second phases taken together along at least one axis for at least one polarization state of electromagnetic radiation is at least about 30%.

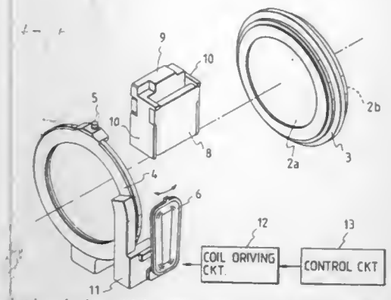
5,825,544
ROAD SURFACE LIGHT REFLECTOR
Réjean Poisson, 766, route 117 est, Lac des Écorces, Québec, Canada, JOW 1H0
Filed Apr. 11, 1997, Ser. No. 837,292
Int. Cl.[6] G02B 5/12
U.S. Cl. 359—551 12 Claims



1. A road surface light reflector to be fixedly anchored into a complementary recess on the surface of a motorway road, said light reflector having a main body destined to be entirely and snugly embedded inside the road recess and defining an upper portion having a substantially flat top exposed surface destined to face upwardly so as to be apparent through the road recess and to be substantially at the same level as the road surface, said light reflector main body being made of a polymeric material having a low thermal expansion coefficient and having a granular, reflective material included into at least a top layer of said light reflector main body, wherein a small fraction of said reflective, granular material becomes exposed on said exposed top surface and thus a light reflective top surface is created to reflect the headlight beams of incoming vehicles on the road while said light reflector does not protrude above the road top surface.

5,825,545
IMAGE STABILIZING DEVICE
Yoshiki Kino, Tokyo; Naoya Kaneda, Chigasaki; Kazuya Matsuda, Yokohama; Youichi Iwasaki, Yokohama; Hiroyuki Wada, Yokohama; Tsuneo Takashima, Kawasaki, and Harunobu Ichinose, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 121,506, Sep. 16, 1993, abandoned.
This application Jun. 14, 1996, Ser. No. 665,079
Claims priority, application Japan, Sep. 21, 1992, 4-274849; Oct. 31, 1992, 4-315833; Jan. 21, 1993, 5-008395
Int. Cl.[6] G02B 27/64
U.S. Cl. 359—557 23 Claims

1. An optical apparatus comprising:
a rotatable optical member, said optical member deflecting by rotation a light beam passing through said optical member; and



a driving device which rotates said optical member, said driving device having a first portion and a second portion which generate a force by an interactive operation with each other, one of said first portion and said second portion being substantially fixed to said optical member said driving device applying the force at a predetermined location of said optical member which is displaced from a center axis of rotation of said optical member, wherein said first portion is provided at a location of said optical member which is substantially the farthest from the center axis of rotation of said optical member.

5,825,546

"MACRO" PHOTOGRAPHIC LENS HAVING LONG FOCAL LENGTH AND VIBRATION COMPENSATION

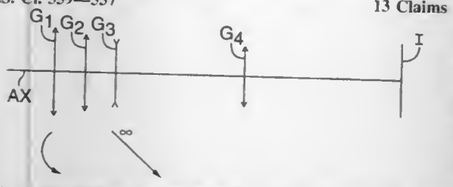
Sei Matsui, Chiba, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Jan. 9, 1997, Ser. No. 781,083

Claims priority, application Japan, Jan. 12, 1996, 8-022017

Int. Cl.[6] G02B *27/64;15/14*

U.S. Cl. 359—557 **13 Claims**



1. A photographic macro telephoto lens, comprising in order from the object side:

(a) a first lens group G_1 with a positive refractive power, a second lens group G_2 with a positive refractive power, a third lens group G_3 with a negative refractive power, and a fourth lens group G_4 with a positive refractive power, at least one of the lens groups being movable along an optical axis for focusing, at least one of the lens groups being stationary in the direction of the optical axis as the macro telephoto lens is being focused, and the stationary lens group comprising at least five lenses including a compound lens;

(b) an antivibration lens element included in the stationary lens group, the antivibration lens element being operable to move transversely relative to the optical axis for compensating for movement of the macro telephoto lens during use of the lens for photography;

(c) the macro telephoto lens being operable to focus from infinity to a reproduction ratio of at least 1/2; and

(d) the macro telephoto lens satisfying the conditional expression

$$0.7<|\Delta Y/\Delta S|<1.3$$

wherein ΔS is the amount of transverse movement of the antivibration lens element and ΔY is the amount of corresponding movement of an image, formed by the macro telephoto lens on an image plane of the macro telephoto lens, due to the transverse movement of the antivibration lens element.

5,825,547

DIFFRACTIVE DEVICE FOR GENERATING ONE OR MORE DIFFRACTING IMAGES INCLUDING A SURFACE RELIEF STRUCTURE AT LEAST PARTLY ARRANGED IN A SERIES OF TRACKS

Robert Arthur Lee, Victoria, Australia, assignor to Commonwealth Scientific and Industrial Research Organisation, Australia

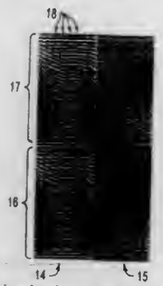
PCT No. PCT/AU94/00441, § 371 Date Feb. 5, 1996, § 102(e) Date Feb. 5, 1996, PCT Pub. No. WO95/04948, PCT Pub. Date Feb. 16, 1995

PCT Filed Aug. 4, 1994, Ser. No. 591,922

Claims priority, application Australia, Aug. 6, 1993, PM0387; Sep. 10, 1993, PM1112; Apr. 7, 1994, PM4867

Int. Cl.[6] G02B *5/18;* **G03H** *1/08;1/26*

U.S. Cl. 359—567 **20 Claims**



1. A diffractive device having a surface relief structure which, when illuminated by a light source, generates one or more diffraction images which are observable from particular ranges of viewing angles around the device, wherein at least part of the surface relief structure is arranged in a series of discrete tracks, each track having a diffracting surface which generates a component of a diffraction image, such that at least one of the diffraction images generated by the diffractive device is formed from image components generated by a plurality of the tracks, and wherein at least some tracks have diffracting grooves, or circular or polygonal, indentations or protrusions on their surfaces, varying continuously in terms of orientation, curvature and/or spacing along the track, the variations in orientation, curvature and/or spacing being a means by which image information is encoded into the tracks.

5,825,548

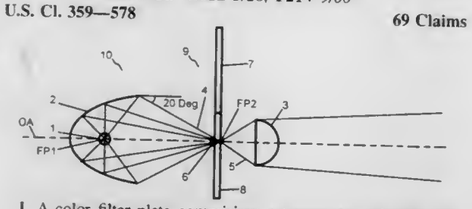
CROSS-FADING COLOR FILTER AND SYSTEM

James M. Bornhorst, Desoto, and Richard W. Hutton, Dallas, both of Tex., assignors to Vari-Lite, Inc., Dallas, Tex.

Filed Sep. 11, 1997, Ser. No. 927,917

Int. Cl.[6] G02B *5/28;* **F21V** *9/00*

U.S. Cl. 359—578 **69 Claims**



1. A color filter plate comprising: a transparent substrate supporting a spatially-modulated, interference filter coating, said coating exhibiting a hue characteristic that varies along a first gradient axis thereof, said coating exhibiting a saturation characteristic that varies along a second gradient axis thereof.

5,825,549

OPTICAL THIN FILM FOR OPTICAL ELEMENT

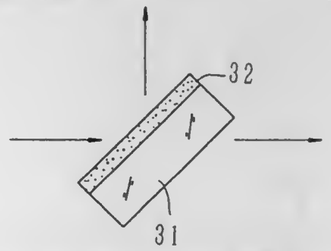
Ken Kawamata, Urawa, and Hiromu Ikeda, Tokyo, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 188,157, Jan. 27, 1994, abandoned. This application Apr. 1, 1997, Ser. No. 831,064

Claims priority, application Japan, Jan. 29, 1993, 5-034183; Feb. 25, 1993, 5-060947; Apr. 16, 1993, 5-113817; May 19, 1993, 5-140186

Int. Cl.[6] G02B *1/10*

U.S. Cl. 359—582 **11 Claims**



2. An optical thin film for an optical element, said thin film being formed on a substrate as an optical part, and comprising: at least one layer containing at least one compound selected from the group consisting of MoO_3 and WO_3 disposed on the substrate by vacuum evaporation coating, and a top surface layer of fluorinated polymer having a water repellant effect.

5,825,550

DEVICE FOR PROTECTING AN OPTICAL COMPONENT FROM LASER BEAM DAMAGE

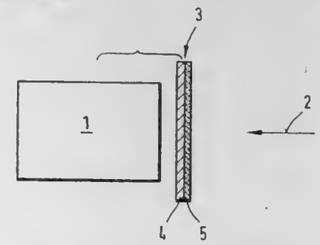
Helmut Neff, Hermannsburg, and Dieter Langhans, Elmshorn, both of Germany, assignors to TZN-Forschungs-und Entwicklungszentrum Unterlüss GmbH, Unterlüss, Germany

Filed Jan. 10, 1997, Ser. No. 782,631

Claims priority, application Germany, Jan. 10, 1996, 196 00 590.6

Int. Cl.[6] G02B *27/00;5/20*

U.S. Cl. 359—614 **10 Claims**



1. A device for protecting an optical component from a laser beam, comprising

(a) a carrier being light-pervious in a predetermined spectral range; said carrier being positionable in an expected path of a laser beam directed to the optical component; and

(b) a metal oxide film applied to said carrier; said film being light-pervious in said spectral range and being oriented so as to intercept a laser beam directed to the optical component; the metal oxide of said metal oxide film being so selected that said metal oxide is reduced to metal upon being heated to a predetermined temperature by the laser beam.

179-297 OG-98-29 - QL3

5,825,551

BEAM SHAPER

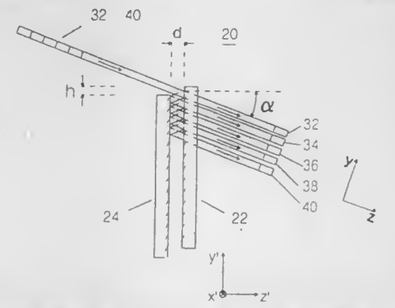
William Andrew Clarkson, Southampton, United Kingdom; Anthony Brian Neilson, Glenhuntly, Australia, and David Colin Hanna, Southampton, United Kingdom, assignors to The University of Southampton, United Kingdom

Filed Nov. 29, 1994, Ser. No. 346,153

Claims priority, application United Kingdom, Nov. 30, 1993, 9324589

Int. Cl.[6] G02B *27/14;5/08*

U.S. Cl. 359—629 **22 Claims**



1. A beam shaping device for a laser device, the laser device having a beam with a first beam quality factor M_x^2 in a first direction and a second beam quality factor M_y^2 in an orthogonal direction, the beam shaping device including a first reflecting surface diverting at least a part of the beam in order to reconfigure at least one of the first and second beam quality factor M_x^2 and M_y^2, wherein one of M_x^2 and M_y^2 is decreased without substantial image rotation.

5,825,552

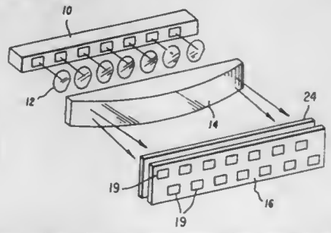
BEAMSPLITTER/STAGGERER FOR MULTI-BEAM LASER PRINTERS

Andrew F. Kurtz, Rochester; John R. Debesis, Penfield, and Sanwal P. Sarraf, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Continuation-in-part of Ser. No. 427,523, Apr. 24, 1995, Pat. No. 5,646,786. This application Jun. 30, 1997, Ser. No. 885,307

Int. Cl.[6] G02B *27/14*

U.S. Cl. 359—629 **4 Claims**



4. A laser printer for exposing image data onto light-sensitive media comprising:

a spatial light modulator having a plurality of rows of pixel elements;

an illumination system which provides a narrow line of laser light comprises of a laser array comprised of a plurality of incoherent emitters positioned to illuminate said modulator;

a beamsplitter/staggerer adapted to split the narrow line of laser light into plural parallel lines of light, and to split each of the parallel lines of light into regions, such that substantially all of the light from the illumination system falls onto the modulator pixel elements;

wherein the beamsplitter/staggerer is comprised of a pattern of reflecting and transmitting areas wherein a shape of the region defined by the beamsplitter/staggerer matches a shape of the modulator pixel elements;

an optical system for directing light from said modulator onto the light-sensitive media; and

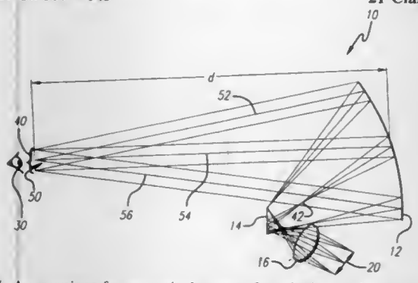
control circuitry coupled to said light modulator to control activation of said modulator pixel elements.

5,825,553

EYEPIECE DESIGN

Chungte W. Chen, Irvine, Calif., assignor to Hughes Aircraft Company now known as Ragtheon Company, Los Angeles, Calif.

Filed Nov. 29, 1993, Ser. No. 159,006
Int. Cl.[6] G02B *17/00;25/00*
U.S. Cl. 359—643 **21 Claims**



1. An eyepiece for an optical system for relaying an image to an associated entrance pupil, said eyepiece comprising:

a refractive element for forming an intermediate image at an intermediate image surface between the refractive element and the entrance pupil;

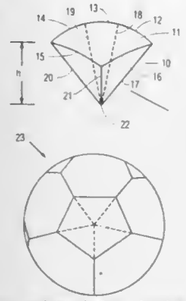
a reflective relay subsystem optically coupled between the entrance pupil and the refractive element, said reflective relay subsystem including a first mirror for relaying the intermediate image to the entrance pupil, and a second mirror for optically coupling the refractive element to the first mirror.

5,825,554

LENSES WITH A VARIABLE REFRACTION INDEX

David Harrison, Strasbourg, France, and Masahiro Fujimoto, Kawasaki, Japan, assignors to Thomson Consumer Electronics, S.A., Courbevoie, France

Filed Dec. 3, 1993, Ser. No. 173,018
Int. Cl.[6] G02B *3/00*
U.S. Cl. 359—652 **9 Claims**



1. A lens having a variable index of refraction and a point of symmetry comprising:

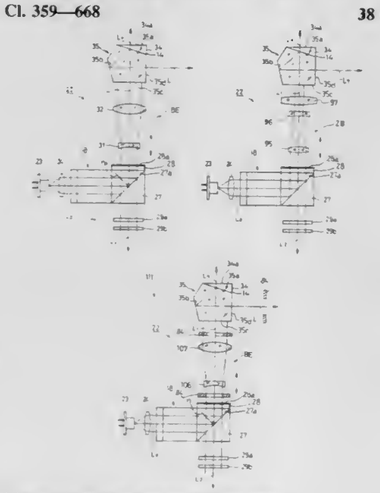
a plurality of substantially identically shaped parts, said parts collectively forming said lens, each of said parts being pyramidal in configuration and having a base and a plurality of sides extending from said base to an apex, and each of said parts having a coefficient of refraction which varies from said base to said apex.

5,825,555

BEAM PROJECTING APPARATUS

Masahiro Oono; Tunehiko Sonoda; Satoru Tachihara, and Koichi Maruyama, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 18, 1995, Ser. No. 529,729
Claims priority, application Japan, Sep. 19, 1994, 6-223248; Sep. 19, 1994, 6-223250; Sep. 19, 1994, 6-223251; Jan. 12, 1995, 7-003368; Mar. 2, 1995, 7-043073
Int. Cl.[6] G02B *13/08;13/12;* **G01C** *1/10*
U.S. Cl. 359—668 **38 Claims**



1. A beam projecting apparatus comprising:

a light source;

reflecting means for reflecting and rotating a bundle of light emitted from said light source to form a reference plane; and

a shape converting optical system provided in an optical path from said light source to said reflecting means to convert said bundle of light from an elliptical sectional shape to a circular sectional shape.

5,825,556

ZOOM LENS

Mark M. Meyers, Hamlin, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 30, 1996, Ser. No. 724,728
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—690 **22 Claims**

1. A zoom lens centered about an optical axis for imaging onto an image plane, said zoom lens comprising:

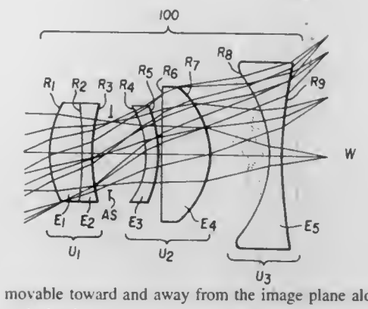
(i) a plurality of lens elements, said lens elements arranged from an object side towards an image side into three lens units which are

a first, positive power lens unit, said first lens unit being movable toward and away from the image plane along the optical axis;

a second, negative power lens unit located between the first lens unit and the image plane, said second lens unit being movable toward and away from the image plane along the optical axis;

a third, positive power lens unit, said third, positive power lens unit being located between the first and second lens units, said third lens unit being movable toward and away from the image plane along the optical axis; and

(ii) said plurality of lens elements providing a zoom ratio greater than 1.5, an F/number in a telephoto position of less than F/5, an F/number in a wide angle position of less than F/3.6, and an overall compactness ratio $L_t/f_t<1.0$, where L_t is the distance from a front vertex of the zoom lens to the image plane in the telephoto position and f_t is a focal length of the zoom lens in the telephoto position.

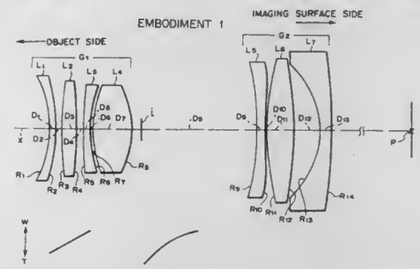


5,825,557

TWO-GROUP ZOOM LENS

Kazunori Ohno, Omiya, Japan, assignor to Fuji Photo Optical Co. Ltd., Omiya, Japan

Filed Nov. 4, 1996, Ser. No. 743,358
Claims priority, application Japan, Nov. 6, 1995, 7-313628
Int. Cl.[6] G02B *15/14*
U.S. Cl. 359—692 **5 Claims**



1. A two-group zoom lens comprising, successively from an object side, a front group (G_1) having a positive refractive power and a rear group (G_2) having a negative refractive power, in which distance between said front group and said rear group is changed so as to alter focal length of said zoom lens as a whole;

wherein said rear group (G_2) consists, successively from the object side, a first lens (L_{B1}) having a negative refractive power, a second lens (L_{B2}) having a positive refractive power, and a negative third lens (L_{B3}) having a concave surface directed onto the object side; and

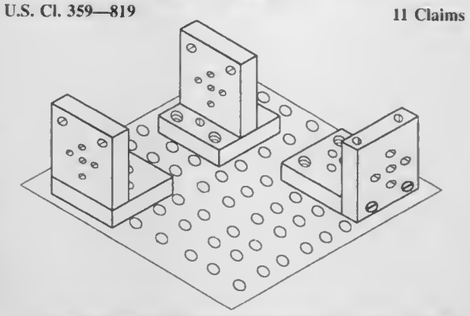
wherein the second lens L_{b2} in the rear group has a radius of curvature of a surface faces the first lens (L_{b1}) of the rear group which differs from a radius of curvature of the image-side surface of the first lens (L_{b1}).

5,825,558

THREE-DIMENSIONAL UNIVERSAL MOUNTING COMPONENT SYSTEM FOR OPTICAL BREADBOARDS

Nestor O. Farmiga, Clifton, N.J., and Kanti Jain, Briarcliff Manor, N.Y., assignors to Anvik Corporation, Hawthorne, N.Y.

Filed Aug. 6, 1996, Ser. No. 708,209
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—819 **11 Claims**



1. A three-dimensional universal mounting component (UMC) system for optical breadboards, having at least one subset of related UMC blocks, each UMC block having a plurality of openings at unit distances matching tapped hole grid configurations for mounting optical elements, and each having capability for mounting to an optical table and to a mating UMC block, characterized by:

each UMC block (**4**) in each subset being a right parallelepiped having opposing first and second parallel planar surfaces (**6**; **6'**) and having first (**5**) and second orthogonal parallel pairs of edge surfaces, with a standard edge thickness, having a plurality of tapped holes (**9**) at standardized intervals, extending from said first planar surface (**6**) to said second planar surface (**6'**) in a configuration appropriate for mounting optical elements, having at least one set of tapped holes (**10**) in at least one edge surface (**5**) extending into the UMC block (**4**), and having at least two oppositely-counter-bored sets (**7**; **8**) of counter-bored through-holes passing through said each UMC block (**4**) from first planar surface (**6**) to said second planar surface (**6'**) for each set of tapped holes (**10**), one set of counter-bored through-holes (**7**) being near the edge opposite said tapped holes (**10**) and on equal centers to said tapped holes (**10**) to provide for an L-configuration assembly, and the other set of counter-bored through-holes (**8**) being centrally located and on equal centers to said tapped holes (**10**) to provide for a T-configuration assembly.

5,825,559

OPTICAL ASSEMBLY HAVING A DUAL PURPOSE FOCUS

Glenn W. Johnson, Webster, and Nelson D. Hozman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

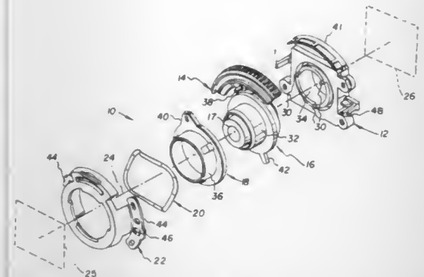
Filed Jun. 27, 1997, Ser. No. 884,400
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—819 **17 Claims**

1. An optical assembly adapted for factory focus during a manufacturing operation and user focus during a user operation, said optical assembly comprising:

a lens assembly having a lens barrel for supporting a lens along an optical axis;

an optical base having an opening aligned with the optical axis;

a plurality of ramps and a corresponding plurality of reference locators circumferentially arranged around the lens assembly and the opening in the optical base in order to slide against one another, said ramps and said reference locators providing an arrangement for focusing the lens assembly;



a retaining element for biasing the lens assembly against the optical base with the ramps and the reference locators likewise biased therebetween against each other;

a factory focus feature associated with the lens assembly and accessible during the manufacturing operation for focusing the lens assembly by producing relative movement of the ramps and the reference locators; and

a focus adjuster assembly accessible during user focus for focusing the lens assembly by producing relative movement of the ramps and the reference locators, the ramps and the reference locators thereby providing the adjustment of the lens position during both factory focus and user focus of the lens.

5,825,560

OPTICAL APPARATUS

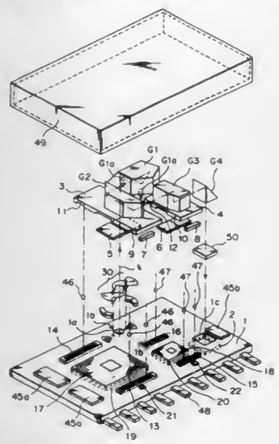
Shigeo Ogura, Tokyo; Toshiya Kurihashi, Kokubunji; Nobuhiro Takeda, Kawasaki; Yoshihiro Uchino, Yokohama; Kenichi Kimura, and Toshikazu Yanai, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Xaisha, Tokyo, Japan

Filed Feb. 26, 1996, Ser. No. 606,845

Claims priority, application Japan, Feb. 28, 1995, 7-065103; Feb. 28, 1995, 7-065109; Feb. 28, 1995, 7-065110

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—822 **34 Claims**



1. An optical apparatus for forming an object image on a solid-state image sensing element through a photographing optical system, comprising a board on which said photographing optical system and said solid-state image sensing element are mounted, wherein a movable optical member included in said photographing optical system and movable relative to said solid-state image sensing element, and position detection means for detecting a moving position of said movable optical member are mounted on said board.

5,825,561

FOCUSING LENS SYSTEM FOR AN OPTICAL HEAD ASSEMBLY

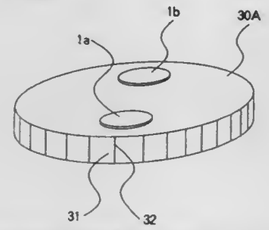
Osamu Ohguri, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 24, 1996, Ser. No. 772,771

Claims priority, application Japan, Dec. 26, 1995, 7-338706

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—822 **11 Claims**



1. A focusing lens system for an optical disk drive comprising:

first and second objective lenses for irradiating an optical beam from a light source to an optical disk, said first and second objective lenses having at least different numerical apertures;

a lens holder for mounting thereon said first and second objective lenses;

switching means for switching said first and second objective lens to select one of said first and second objective lens for passing therethrough an optical beam from the light source, such that at least one of data storage and reproduction is achieved using a single focusing lens system for said first and second objective lenses having said at least different numerical apertures; and

a position detector for detecting a rotational position of said lens holder, wherein said position detector includes a reflective photo-sensor and a reflecting plate.

5,825,562

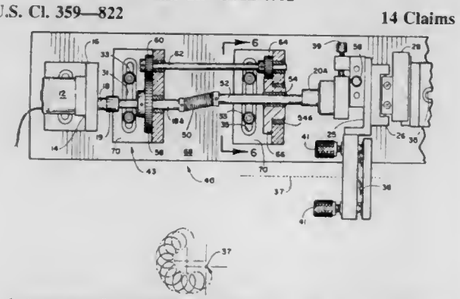
METHOD OF CONTINUOUS MOTION FOR PROLONG USAGE OF OPTICAL ELEMENTS UNDER THE IRRADIATION OF INTENSIVE LASER BEAMS

Ming Lai, Carlsbad; Shui Lai, Encinitas, and Zhiming Ou, Carlsbad, all of Calif., assignors to Novatec Corporation, Carlsbad, Calif.

Filed Aug. 18, 1997, Ser. No. 912,738

Int. Cl.[6] G02B *7/02*

U.S. Cl. 359—822 **14 Claims**



1. Apparatus for prolonging the usage life of an optical element under the irradiation of an intensive laser beam comprising:

said intensive laser beam being fixedly directed in a predetermined direction toward and passing through said optical element; and

means for providing selective relative movement between said optical element and said intensive laser beam such that said intensive laser beam continually passes along a different path through said optical element without changing the axial orientation of said optical element relative to the direction of said intensive laser beam.

5,825,563

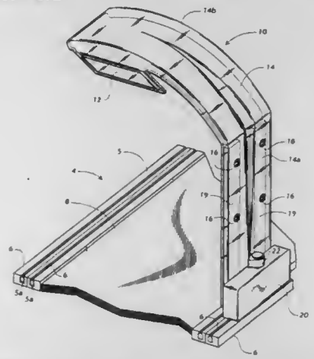
MIRROR AND SUPPORT FOR USE IN A MAGNETIC RESONANCE IMAGING DEVICE

Prem K. Anand, Roswell, Ga., assignor to General Electric Company, Milwaukee, Wis.

Filed Sep. 12, 1995, Ser. No. 527,022

Int. Cl.[6] G02B *7/182;* **A61G** *13/12*

U.S. Cl. 359—872 **6 Claims**



1. A reflecting device for use in a magnetic resonance imaging apparatus, comprising:

a reflective member for directing light from behind a patient down into eyes of the patient;

a support arm, attached to said reflective member, for positioning said reflective surface above the eyes of the patient; and

means for mounting said support arm to a bed of said magnetic resonance imaging apparatus;

wherein said support arm is comprised of a transparent material for minimizing an amount said reflecting device induces claustrophobic feelings in said patient, said mounting means has at least one ridge for being inserted into a channel formed along a longitudinal axis of said bed, and said support arm has at least one ridge for being inserted into a second channel formed along said longitudinal axis of said bed.

5,825,564

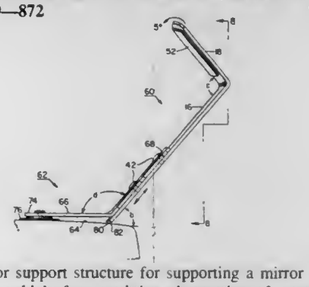
REAR-MOUNTED VEHICLE MIRROR

Kevin P. Mazarac, 220 Monarch Dr., Apt. J-24, Houma, La. 70364

Division of Ser. No. 452,960, May 30, 1995, Pat. No. 5,550,681. This application Jul. 29, 1996, Ser. No. 687,999

Int. Cl.[6] G02B *7/182;* **B60R** *1/08;* **B60D** *1/40*

U.S. Cl. 359—872 **7 Claims**



1. A mirror support structure for supporting a mirror on a rear surface of a vehicle for permitting observation of a trailer hitch element positioned at the lower rear portion of the vehicle by an observer while the observer is seated in the driver's seat of the vehicle, said mirror support structure comprising:

a. a mounting member for removable attachment to a vehicle surface at the rear of a vehicle having a trailer hitch element, wherein the mounting member is positioned above the trailer hitch element and includes a first leg and a second leg, wherein the first and second legs of the mounting member are connected together and define an obtuse included angle therebetween, and wherein the first leg carries a suction cup for engagement with a vehicle outer surface;

b. a support arm extending angularly from the mounting member and disposed at an acute angle relative to the vehicle surface, the support arm slidably carried by the second leg of the mounting member and having an outer end spaced from the mounting member and an inner end in contact with a surface of the vehicle;

c. a mirror mounting surface carried by the support arm and positioned adjacent the outer end of the support arm and facing the trailer hitch element for supporting a convex mirror; and

d. a convex mirror carried on the mirror mounting surface, wherein the convex mirror is disposed to face the trailer hitch element to permit an observer seated in the driver's seat of the vehicle to observe the trailer hitch element to thereby facilitate connection and disconnection of the trailer hitch element of the vehicle with a cooperating trailer hitch element carried by a towed vehicle.

5,825,565

REFLECTOR

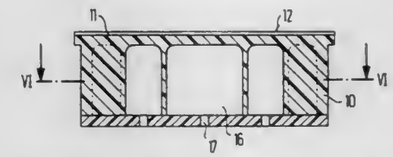
Ulrich Papenburg, Lechbruck; Ernst Blenninger; Peter Goedtke, both of Munich, and Michael Deyerler, Siegertsbrunn, all of Germany, assignors to Industrieanlagen-Betriebsgesellschaft GmbH, Ottobrunn, and Daimler-Benz Aerospace AG, Munich, both of Germany

Division of Ser. No. 300,633, Sep. 2, 1994, Pat. No. 5,565,052, which is a continuation-in-part of Ser. No. 25,145, Mar. 2, 1993, Pat. No. 5,505,805. This application May 24, 1996, Ser. No. 653,334

Claims priority, application Germany, Mar. 5, 1992, 42 07 009.0; Jun. 23, 1992, 42 20 472.0; Sep. 2, 1993, 43 29 551.7

Int. Cl.[6] G02B *5/08;7/182;1/10*

U.S. Cl. 359—883 **12 Claims**



1. A reflector for the reflection of electromagnetic radiation comprising:

a substrate element of porous and at least partly carbidized carbon,

a first coating of at least one of silicon and silicon carbide attached to the substrate element with its surface facing away from the substrate element having been smoothed and subsequently provided with,

a reflecting layer of at least one of silicon, silicon carbide, silicon oxide, silicon nitride, gold, silver, nickel, copper, and alloys of the aforementioned metals,

said substrate element infiltrated with silicon at a temperature in the range of 1300° C.–1600° C. in an oxidation preventing atmosphere or in vacuum so that the porous substrate element is impregnated with liquid silicon and, at the interfaces between the porous material of the substrate and the liquid silicon, a silicon carbide layer is formed, and so that the first coating is joined to the infiltrated substrate element by melting-on or sintering in a high-temperature treatment.

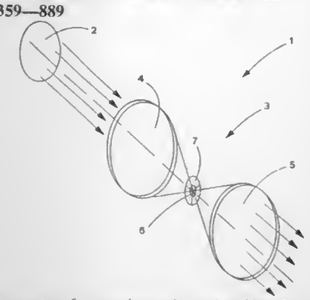
VOL 1215 ISS 3 OCT 20 1998 JMI

5,825,566

METHOD FOR PRODUCING AND/OR CONTROLLING CHROMATIC LUMINOUS BEAMS APPLICABLE ON LIGHT PROJECTORS AND/OR OBSERVING AND MEASURING INSTRUMENTS OR THE LIKE

Antonio Zoggia, Mestrino, Italy, assignor to Ingenia S.r.L., Verona, Italy

Filed Feb. 2, 1996, Ser. No. 595,815
Int. Cl.[6] G02B 5/22; G03B 7/32
U.S. Cl. 359—889 2 Claims



1. An apparatus for continuously and uniformly modifying a color composition of a light beam, consisting essentially of:

lens means for focusing one light beam along an optical axis and for forming an image inversion point along the optical axis;

a filter having a plurality of different colored segments extending outwardly from a common point on the filter, the filter being disposed substantially at the inversion point and across the optical axis; and

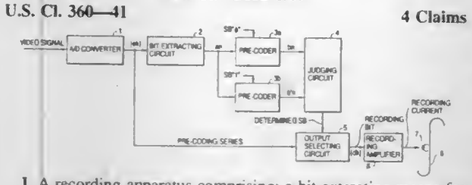
means for moving the filter orthogonally with respect to the optical axis for offsetting the common point of the filter from the optical axis in selected directions and by selected amounts, so that surface areas of each filter segment through which the light beam passes are adjusted to continuously and uniformly modify the color of the light beam.

5,825,567

APPARATUS FOR RECORDING DIGITAL SIGNALS BY CONTROLLING FREQUENCY CHARACTERISTICS OF DIGITAL SIGNALS UTILIZING BIT EXTRACTION AND INTERLEAVED NRZI MOLULATION

Shinji Hamai, Osaka; Masao Okabe, Hannan, and Yasunori Kawakami, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 453,777, May 30, 1995, Pat. No. 5,579,182, which is a continuation of Ser. No. 124,637, Sep. 22, 1993, abandoned. This application Jul. 2, 1996, Ser. No. 674,870
Claims priority, application Japan, Oct. 16, 1992, 4-278954; Dec. 1, 1992, 4-321608; Dec. 1, 1992, 4-321610; Dec. 1, 1992, 4-321611
Int. Cl.[6] G11B 5/09
U.S. Cl. 360—41 4 Claims



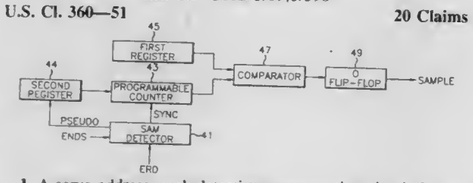
1. A recording apparatus comprising: a bit extracting means for extracting inverted m+1 bits of a first series of bits obtained by an interleaved NRZI modulation of an input data series added to one "0" bit per every m bits (m is an even number which is equal to or greater than 2) and a second series of bits obtained by an interleaved NRZI modulation of the input data series added to one "1" bit per every m bits; a frequency component extracting means for extracting at least two specific frequency components from outputs of the bit extracting means; an output selection means for producing an output bit series depending on a value of the frequency component; and a recording means for recording the output bit series on a recording medium, wherein the frequency component extracting means comprises: a digital filter for extracting at least two specific frequency components from the first series of bits and the second series of bits.

5,825,568

SERVO ADDRESS MARK DETECTION COMPENSATING CIRCUIT

Kwang-Heui Lee, Suwon, Rep. of Korea, assignor to SamSung Electronics Co. Ltd., Suwon, Rep. of Korea

Filed Apr. 18, 1995, Ser. No. 424,862
Claims priority, application Rep. of Korea, May 11, 1994, 1994/10323
Int. Cl.[6] G11B 5/09; 5/596
U.S. Cl. 360—51 20 Claims



1. A servo address mark detection compensating circuit for use in a disk recording apparatus for reading and writing data from and onto a disk recording medium, said circuit comprising:

servo address mark detecting means for generating a synchronizing signal when a servo address mark is detected from a disk recording medium during a window enable interval, and alternatively generating an error detection signal when said servo address mark is not detected from the disk recording medium during said window enable interval;

storage means for storing a first count value representative of a first time interval defined from when detection of said servo address mark is expected to when a burst region begins, and for storing a second count value representative of a second time interval defined from when the detection of said servo address mark is expected to when said window enable interval ends;

counting means for performing a counting operation and maintaining a current count value, said counting means beginning said counting operation from one of an initial value in response to said synchronizing signal, and alternatively from said second count value in response to said error detection signal; and

means for generating a sampling enable signal to enable detection and sampling of said burst region, when said current count value reaches said first count value.

5,825,569

CONSTANT-DENSITY MAGNETIC DISC APPARATUS AND MAGNETIC DISC USED THEREFOR

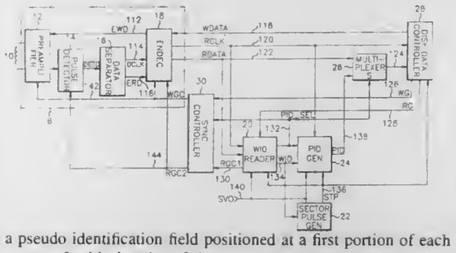
Jin-Seok Kim, and Jae-Deog Joo, both of Incheon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 6, 1996, Ser. No. 597,312
Claims priority, application Rep. of Korea, Feb. 8, 1995, 2270/1995
Int. Cl.[6] G11B 20/12
U.S. Cl. 360—51 13 Claims

1. A magnetic disc used in a constant-density magnetic disc driving apparatus, said magnetic disc comprising:

a servo information area;

a wedge identification field positioned behind said servo information area and storing a wedge identification for identifying a plurality of data sectors located within a corresponding data information area;



a pseudo identification field positioned at a first portion of each one of said plurality of data sectors and representing a time interval required to generate from said wedge identification a pseudo identification that identifies a corresponding one of said plurality of data sectors and transfer said pseudo identification to a controller of said magnetic disc driving apparatus, said pseudo identification field storing a data preamble that provides data synchronization for said corresponding one of said plurality of data sectors; and

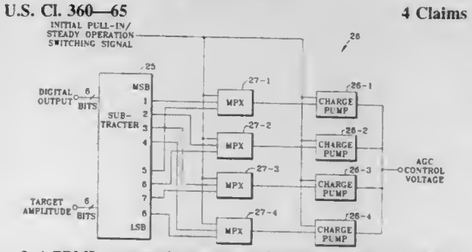
a data field positioned behind said pseudo identification field for storing data, said data field and said pseudo identification field comprising a single one of said plurality of data sectors.

5,825,570

PRML REGENERATING APPARATUS HAVING REDUCED NUMBER OF CHARGE PUMP CIRCUITS

Masahide Kanegae; Masao Kondou; Tomoki Sugaya, and Hiroyuki Tanaka, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 400,720, Mar. 8, 1995. This application Sep. 16, 1996, Ser. No. 714,351
Claims priority, application Japan, Mar. 18, 1994, 6-074435; Mar. 18, 1994, 6-074436; Apr. 27, 1994, 6-112029; May 31, 1994, 6-141233; Jun. 3, 1994, 6-154338
Int. Cl.[6] G11B 5/35
U.S. Cl. 360—65 4 Claims



3. A PRML regenerating apparatus for regenerating a signal read by a head from a storage medium, comprising:

a waveform equalizing circuit for waveform-equalizing the read signal; and

a phase synchronizing circuit for generating a clock which phase-synchronizes with the read signal, said phase synchronizing circuit including:

a voltage control oscillator for generating said clock which phase-synchronizes with the read signal and having a phase corresponding to a voltage to be inputted to said voltage control oscillator;

a phase error detector for generating n-bit phase error signals on the basis of an equalized output from said waveform equalizing circuit;

a charge pump for converting m-bit digital signals to analog electric currents, said charge pump including m-pieces of charge pump circuits, where m<n, for outputting electric currents corresponding to weights of the respective m-bits to said voltage control oscillator; and

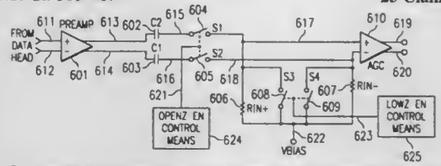
at least one multiplexer for selecting high-order m-bits from said n-bit error signals when in a pull-in operation and low-order m-bits from said n-bit error signals when in a steady operation, and outputting said selected m-bits to said charge pump circuits.

5,825,571

INPUT SWITCHING NETWORK

Randall L. Sandusky, Divide, and Gary J. Asakawa, Colorado Springs, both of Colo., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 493,630, Jun. 22, 1995, abandoned. This application Jul. 3, 1997, Ser. No. 887,684
Int. Cl.[6] G11B 5/02; 5/09; 15/12
U.S. Cl. 360—67 25 Claims



1. A method for improving performance of a storage device read channel comprising the steps of:

opening a first circuit carrying signals from a data head;

closing a second circuit providing a low impedance coupling between a bias voltage source and an amplifier input wherein said step of closing said second circuit is performed following a first time period after said step of opening said first circuit opening said second circuit; and

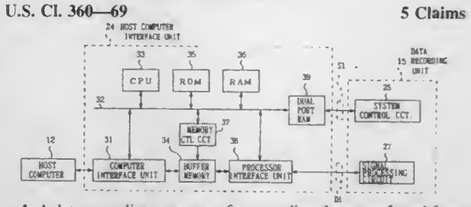
closing said first circuit, wherein the step of closing said first circuit is performed following a second time period after said step of opening said second circuit.

5,825,572

APPARATUS AND METHOD FOR RECORDING DATA ACCORDING TO A MEASURED TRANSFER SPEED

Shinya Morita, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP95/00573, § 371 Date Jun. 21, 1996, § 102(e) Date Jun. 21, 1996, PCT Pub. No. WO95/26552, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 28, 1995, Ser. No. 549,826
Claims priority, application Japan, Mar. 28, 1994, 6-057451; Aug. 1, 1994, 6-180262
Int. Cl.[6] G11B 15/18
U.S. Cl. 360—69 5 Claims



1. A data recording apparatus for recording data transferred from a data supply source on a tape-like recording medium, comprising:

measuring means for measuring a transfer speed of the data transferred from said data supply source;

a memory for temporarily storing the data transferred from said data supply source;

recording means for recording the data read from said memory on said tape-like recording medium;

control means for controlling a reading operation of said memory for reading the data therefrom, a running operation of said recording medium for running said tape-like recording medium, and a recording operation of said recording means for recording the data on said tape-like recording medium, based on said data transfer speed measured by said measuring

means such that said control means starts running said tape-like recording medium when determining that a transfer speed measured by said measuring means is higher than a predetermined speed; and

detecting means for detecting an amount of data remaining in said memory,

wherein said control means controls the reading operation of said memory for reading the data therefrom and the recording operation of said recording means for recording the data, based on a detection result indicated by said detecting means, and wherein:

said control means holds first time information indicative of a time required for said recording means to stably run said tape-like recording medium, and when said control means determines that the transfer speed measured by said measuring means is lower than said predetermined speed, said control means predicts a time at which said memory has run out of an empty region based on said data transfer speed measured by said measuring means and the detection result of said detecting means, and starts running said tape-like recording medium before the time indicated by said first time information form said predicted time.

5,825,573

CORRECTION OF THE TAPE-COUNTING DEVICES OF A RECORDER

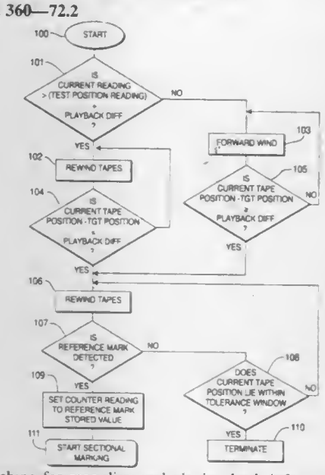
Hermann Link, Donaueschingen; Axel Marzluf, Villingen-Schwenningen, and Philippe Mace, Kappel, all of Germany, assignors to Deutsche Thomson-Brandt GmbH, Villingen-Schwenningen, Germany

Filed Jun. 13, 1996, Ser. No. 663,360

Claims priority, application Germany, Aug. 7, 1995, 195 28 955.2

Int. Cl.[6] G11B *15/18*

U.S. Cl. 360—72.2 **2 Claims**



1. Machine for recording and playing back information with a tape-storage medium comprising:

a tape-counting device for determining locations on said storage medium representing a beginning, an end or a section of a recorded information and labeling said locations as data, said determining and labeling of said locations defining a setting,

means for storing the labeled data in a static memory,

means for evaluation of the labeled data,

means for marking and detection of locations on said tape-storage medium representing a beginning, an end or a section of a recorded information wherein at least one of marks in addition to a reference mark corresponding to the detected locations are recorded onto said tape-storage medium, and

means for selectively winding to a chosen recording section associated with one of said at least one of marks by means of the tape-counting device and said stored labeled data together with one of said detectable marks which is used as the reference wherein, due to the detection of this reference mark, the tape-counting device is set to the data which was determined with the setting of said reference mark, and wherein the mark associated with said chosen recording section is dependent on said data of said reference mark.

5,825,574

AUTOMATIC REVERSIBLE TAPE RECORDER

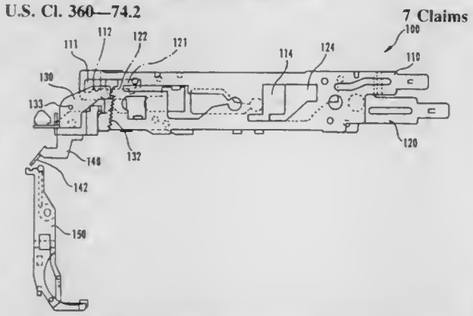
Hyun Seo Park, and Jin Gwan Kim, both of Suwon, Rep. of Korea, assignors to Samsung Electro-Mechanics Co., Ltd., Kyongki-do, Rep. of Korea

Filed Dec. 4, 1996, Ser. No. 760,627

Claims priority, application Rep. of Korea, Aug. 27, 1996, 1996-35703

Int. Cl.[6] G11B *15/48*

U.S. Cl. 360—74.2 **7 Claims**



1. An automatic reversible tape recorder comprising: a head coupling piece **103** installed on a base plate of the tape recorder, for making a magnetic head **104** advance and withdraw; a pair of capstan shafts installed at both sides of said magnetic head, and connected to a capstan motor, for contacting with pinch rollers **106**, said pinch rollers being capable of advancing and withdrawing together with said magnetic head **104**; a reel shaft installed at a center of the tape recorder, for driving a tape; first and second manipulation levers **110** and **120** capable of moving back and forth horizontally in parallel with said head coupling piece **103**; said first and second manipulation levers **110** and **120** being provided with guide slots **114** and **124** at rear portions thereof; a carrying member **109** having a roller **108** on an upper tip thereof; and said head coupling piece **103** making said magnetic head **104** and said pinch roller **106** move up or down during a pivoting of said roller **108** of said carrying member **109** along said guide slots **114** and **124**, the tape recorder further comprising:

said first and second manipulation levers **110** and **120** being capable of moving back and forth horizontally to make said magnetic head ascend or descend, upon completion of displacements of a certain distance;

a locking member **130** for selectively fixing said first and second manipulation levers **110** and **120** upon ascending of said magnetic head due to advancement of said first and second manipulation levers **110** and **120**; and

a tape running direction reversing member **140** installed coaxially with said locking member **130**, for being turned as much as a certain amount of angle upon advancing of said second manipulation lever **120**, so as to push a program lever **150** (which pushes a cam gear).

5,825,575

CONTROLLING VOICE COIL MOTOR OF HARD DISK DRIVE FOR DECENTRALIZING ABRASION OF PARKING ZONE OF DISK

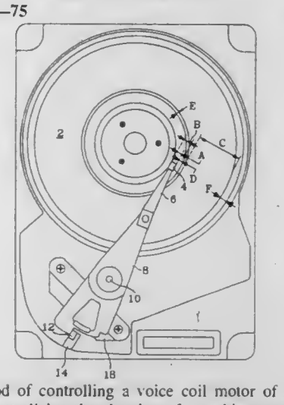
Bong-Jin Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 29, 1996, Ser. No. 705,941

Claims priority, application Rep. of Korea, Aug. 31, 1995, 28391/1995

Int. Cl.[6] G11B *21/02*

U.S. Cl. 360—75 **14 Claims**



1. A method of controlling a voice coil motor of a hard disk drive for decentralizing the abrasion of a parking zone of a disk, said method comprising the steps of:

after power is first supplied to said hard disk drive having a head positioned in a first region within said parking zone, driving a spindle motor in order to rotate said disk and then supplying a first fixed current to a voice coil motor in order to move said head so as to be positioned in said first region therewithin;

supplying to said voice coil motor, a second fixed current in a reverse direction so as to move said head to a second region within said parking zone; and

supplying an unlatching current to said voice coil motor so as to move said head to a data zone after sensing a uniform velocity rotation of said spindle motor.

5,825,576

INFORMATION STORAGE UNIT WITH MAGNETIC INFORMATION DISC

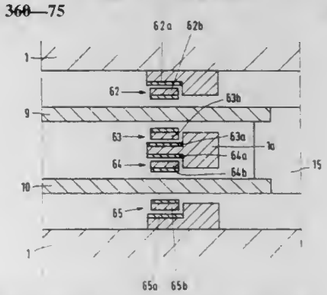
Evert M. H. Kamerbeek, Eindhoven, Netherlands, assignor to U. S. Philips Corporation, New York, N.Y.

Filed Oct. 8, 1996, Ser. No. 728,240

Claims priority, application European Pat. Off., Oct. 10, 1995, 95202718

Int. Cl.[6] G11B *5/86*

U.S. Cl. 360—75 **20 Claims**



1. An information storage unit comprising a frame, a magnetic information disc which is rotatable about an axis of rotation, a magnetic head disposed on a support on a portion thereof which is movable past an information surface of the information disc, which support is movable relative to the information surface in a direction parallel to the axis of rotation and a device for moving the magnetic head from the information disc, viewed in a direction parallel to said axis of rotation, characterized in that the device comprises an electromagnetic actuator comprising a first actuator part, which is stationary relative to the frame, and a second actuator part, which is carried by the movable portion of the support, which actuator parts, when energized, cooperate with one another via an air gap to subject the movable portion of the support to a force oriented parallel to the axis of rotation of the information disc and directed away from the information disc.

5,825,577

MAGNETIC DISK DEVICE FOR DETECTING A FLOATING STATE OF A MAGNETIC HEAD

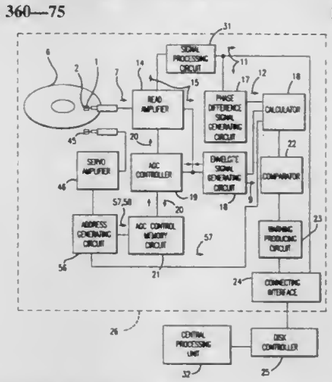
Masami Miyatake, Naka-gun; Nobuyuki Okamoto, Odawara, and Susumu Ebihara, Chigasaki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 286,180, Aug. 5, 1994, abandoned. This application Jan. 2, 1997, Ser. No. 778,125

Claims priority, application Japan, Aug. 18, 1993, 5-204143

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—75 **18 Claims**



1. A magnetic disk device comprising:

a. a magnetic disk storing data and also having measuring data periodically stored thereon;

b. a magnetic head disposed to read data from said disk;

c. a read amplifier coupled to said magnetic head and having a gain control input and providing at its output read data amplified based on said gain control input;

d. a storing device storing gain control information derived from said measuring data and supplying said gain control information to said read amplifier gain control input;

e. a phase locked loop circuit including a first filter having a first critical frequency;

f. a phase comparator having as inputs said read data output by said read amplifier and an output of said phase locked loop circuit and providing as an output a signal representing the phase difference between the phase of said inputs;

g. a second filter that has a higher critical frequency than said first critical frequency, coupled to the output of said phase comparator, outputting a signal corresponding to a phase difference of the read data and the output of the phase locked loop circuit;

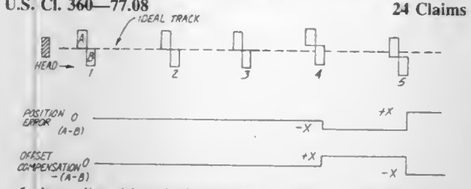
h. a calculator that calculates a variation in the float position of the magnetic head based on the phase difference of the read data and the output of the phase locked loop circuit.

5,825,578

METHOD AND APPARATUS FOR COMPENSATING TRACK POSITION DUE TO WRITTEN-IN RUNOUT ERROR IN A DISC DRIVE

Louis J. Shrinkle, Leucadia, Calif., and Charles M. Sander, Niwot, Colo., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jun. 11, 1996, Ser. No. 661,623
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—77.08 24 Claims



1. In a disc drive device having at least one disc having a plurality of concentric tracks on a surface of the disc where each of the tracks includes at least one data segment adapted to store data and servo position information indicating a track centerline for each data segment, a method for compensating track position errors, comprising:

measuring an offset of the servo position information from an ideal track centerline for one of the tracks of the disc in the disc drive device;

storing the offset into a memory; and

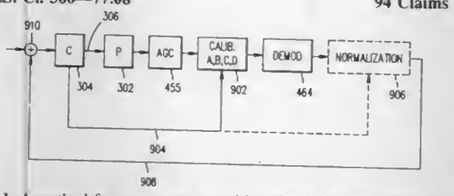
positioning a read/write head in the disc drive device relative to the ideal track centerline and the servo information in dependence on the stored offset, such that the read/write head is positioned over the track centerline in dependence on the offset.

5,825,579

DISK DRIVE SERVO SENSING GAIN NORMALIZATION AND LINEARIZATION

Wayne Leung Cheung, San Jose; Donald L. Clare, Morgan Hill, and Louis Joseph Serrano, San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 4, 1996, Ser. No. 628,217
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—77.08 94 Claims



1. A method for generating a position signal for controlling the position of a transducer with respect to a storage surface, the storage surface including positioning information, comprising the steps of:

sensing the positioning information;

producing at least a first position signal from the positioning information wherein the first position signal includes first and second position signal components; and

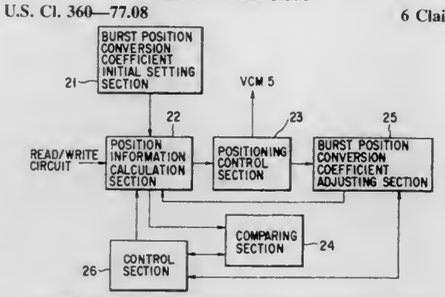
normalizing the first position signal according to a predetermined algorithm to produce a second position signal for use in controlling the transducer position and correcting for discontinuities at stitch points, wherein the second position signal is produced by stitching together the first and second position signal components.

5,825,580

DATA RECORDING/REPRODUCING DEVICE AND BURST POSITION CONVERSION COEFFICIENT SETTING METHOD IN THE SAME

Satoshi Shibata, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 11, 1996, Ser. No. 712,327
Claims priority, application Japan, Feb. 29, 1996, 8-043649
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—77.08 6 Claims



1. A data recording/reproducing device for performing positioning control of at least one head using a plurality pairs of burst data recorded on a disk, comprising:

burst position conversion coefficient initial setting means for initially setting a burst position conversion coefficient;

position information calculating means for calculating position information representing a head position shifted from a track center on the basis of one pair of the plurality pairs of burst data and a burst position conversion coefficient obtained at this time;

positioning control means for positioning the head to an arbitrary position, at which the pair of burst data used for calculation of the position information can be detected, on the basis of the position information calculated by said position information calculating means;

comparing means for comparing first position information indicating a current head position at which said burst position is detectable, with second position information after the head is moved to a predetermined position by said positioning control means on the basis of said first information; and

burst position conversion coefficient adjusting means for adjusting the burst position conversion coefficient on the basis of a comparison result of said comparing means such that the difference between the first position information and the second position information is equal to or smaller than a predetermined value.

5,825,581

MAGNETIC DISK DRIVE WHERE SEEK SPEED DEPENDS ON ATMOSPHERIC PRESSURE AND SEEK DIRECTION

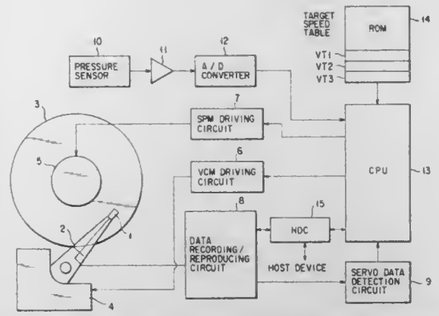
Yasuhiro Morita, and Kotaro Yamamoto, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 27, 1996, Ser. No. 722,775
Claims priority, application Japan, Feb. 21, 1996, 8-033715
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—78.04 7 Claims

5. A magnetic disk drive, which controls the seek and positioning of a magnetic head for recording and reproducing data to a specific position on the magnetic disk, in accordance with the servo data recorded in the magnetic disk, comprising:

measuring means for measuring one of an atmospheric pressure and a height above sea level,

memory means for storing plural types of target speed tables indicating the relationship between the number of remainder tracks from a target track and the target seek speed of the magnetic head at a seek operation, and



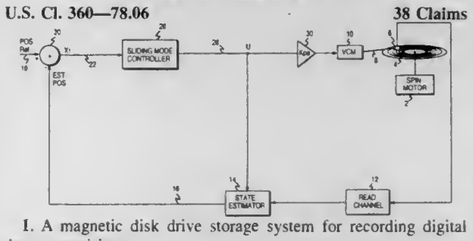
head positioning control means for selecting one of said plural type of the target speed tables stored in the memory means, in accordance with the measured values by the measuring means, setting a target seek speed according to the selected target speed table, and controlling the seek and positioning of the magnetic head to the specific position on the disk at the target speed.

5,825,582

SLIDING MODE CONTROL OF A DISK DRIVE ACTUATOR FOR POSITIONING A READ/WRITE HEAD OVER A SELECTED TRACK DURING SEEKING AND TRACKING OPERATIONS

Louis Supino, and Paul M. Romano, both of Bouder, Colo., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 400,073, Mar. 7, 1995, abandoned.
This application May 10, 1995, Ser. No. 435,416
Int. Cl.[6] G11B 5/596
U.S. Cl. 360—78.06 38 Claims



1. A magnetic disk drive storage system for recording digital data, comprising:

(a) at least one rotating magnetic disk comprising a plurality of concentric data tracks recorded thereon, wherein the data tracks comprise user data and servo data;

(b) a magnetic read/write head positioned over the magnetic disk, for recording the digital data onto the magnetic disk and reading the digital data from the magnetic disk;

(c) an actuator connected to the read/write head, for positioning the read/write head over a selected track;

(d) a motor connected to the actuator and having an input for receiving a motor control signal, the motor for controlling the motion of the actuator;

(e) a phase state generator, responsive to the servo data, for generating at least one phase state signal; and

(f) a sliding mode controller, responsive to the at least one phase state signal, for generating and outputting the motor control signal, wherein the sliding mode controller operates in a seek mode to move the read/write head from a current track to a selected track and in a tracking mode to keep the read/write head substantially aligned over a centerline of the selected track while reading the user data;

wherein:

(a) the magnetic disk drive storage system has at least two phase states;

(b) the sliding mode controller switches between a first and a second structure;

(c) the first structure causes the two phase states to change relative to a phase plane to follow a first phase trajectory;

(d) the second structure causes the two phase states to change relative to the phase plane to follow a second phase trajectory;

(e) the first and second phase trajectories intersect in opposite directions in at least part of the phase plane;

(f) by switching between the first and second structures the sliding mode controller causes the two phase states to change relative to the phase plane to substantially follow a predetermined third phase trajectory; and

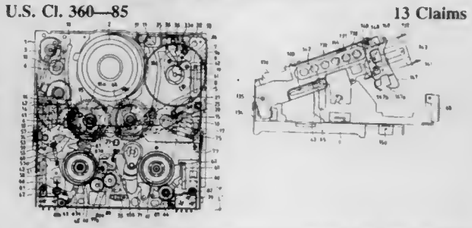
(g) the third phase trajectory is within the part of the phase plane where the first and second phase trajectories intersect.

5,825,583

MAGNETIC RECORDING AND REPRODUCING APPARATUS DECK MECHANISM WITH A SLIDE BASE AND A POWER TRANSMISSION MECHANISM RESPECTIVELY DISPOSED ON OPPOSITE SIDE SURFACES OF A FIXED BASE PLATE

Myung Goo Kang, Seoul; Seong Sik Kang; Sung Hoon Choi, both of Kyungki-do; Mun Chea Joung, Seoul; Byoung Gyu Jang, Kyungki-do; Kye Yeon Ryu; Hyo Chong Yu, both of Seoul, and Sang Jig Lee, Kyungki-do, all of Rep. of Korea, assignors to Goldstar Co., Ltd., Seoul, Rep. of Korea

Continuation of Ser. No. 529,577, Sep. 18, 1995, abandoned, which is a continuation of Ser. No. 75,315, Jun. 11, 1993, abandoned. This application Mar. 10, 1997, Ser. No. 812,918
Claims priority, application Rep. of Korea, Jun. 17, 1992, 10702; Jun. 17, 1992, 10703; Jun. 17, 1992, 10704
Int. Cl.[6] G11B 15/665;15/675
U.S. Cl. 360—85 13 Claims



1. A deck mechanism for a magnetic recording and reproducing apparatus which records video and audio signals on a tape and reproduces them while making the tape come into contact with a rotary head drum and guides the tape along a tape travelling path defined by elements of a tape travelling system, comprising:

a fixed base plate fixedly mounted to a body case of the apparatus, said fixed base plate having an upper side surface and an opposite lower side surface on which various functional elements are arranged;

a slide base slidably resting on the upper side surface of the fixed base plate, to move rectilinearly between a tape cassette-ejecting position and a tape loading-ending position such that a level of the slide base relative to the fixed base plate remains constant as the slide base moves between the tape cassette-ejecting position and the tape loading-ending position, said slide base being in contact with the fixed base plate such that essentially no space exists between a lower side surface of said slide base and said upper side surface of said fixed base plate, said deck mechanism being free of any functional elements located between said lower side surface of said slide base and said upper side surface of said fixed base plate;

a cassette bracket for receiving a tape cassette therein;

pivot means for pivotally attaching said cassette bracket to said slide base;

a power transmission mechanism for transmitting a drive force from a loading motor to a gear portion of a tape loading means which is directly connected to supply and take-up slant post assemblies, said gear portion of said tape loading means being connected with a gear portion of the power transmission mechanism and connected with a rotation shaft of the loading

motor, said power transmission mechanism being located at said opposite lower side surface of the fixed base plate; and

slide base moving means for moving the slide base toward said rotary head drum upon a tape loading, said slide base moving means being directly operated by said gear portion of said tape loading means.

5,825,584

TAPE CASSETTE LOADING DEVICE IN TAPE RECORDER FOR SMOOTHLY INSERTING TAPE CASSETTE INTO HOLDER

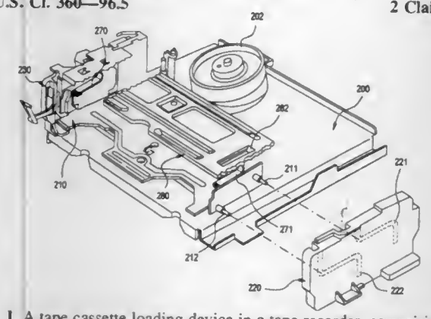
Byung-Sam Son, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Sep. 18, 1996, Ser. No. 714,326

Claims priority, application Rep. of Korea, Nov. 2, 1995, 1995-39451

Int. Cl.[6] G11B *15/00*

U.S. Cl. 360—96.5 **2 Claims**



1. A tape cassette loading device in a tape recorder, comprising:

a deck on which reel tables for seating a tape cassette thereon are installed;

a holder for receiving the tape cassette, said holder having sidewalls;

a guide bracket which guides said holder from a tape cassette inserting position to a seating position;

means for slidably moving said holder along said guide bracket; and

means for elastically biasing the tape cassette toward one side of said holder for stability of the tape cassette within said holder as said holder is moved,

wherein said elastic biasing means includes plate spring members having a portion which is fixed to said sidewall of said holder, and a chassis fixedly installed on said guide bracket and having cam portions in a predetermined shape formed thereon, and wherein said plate spring members are not engaged with said cam portions when said holder is at the tape cassette inserting position, and said plate spring members are engaged with said cam portions to press down on an upper surface of the tape cassette when said holder is moved to the seating position by said moving means.

5,825,585

LATERALLY CONSTRAINED AND DAMPED MOUNT FOR A HARD DISK DRIVE

Shabab Hatam-Tabrizi, Los Altos, Calif., assignor to Maxtor Corporation, San Jose, Calif.

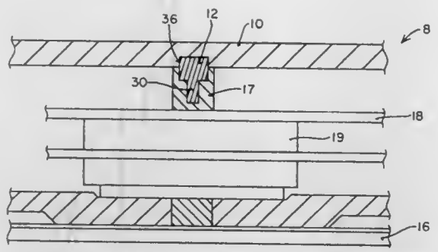
Continuation of Ser. No. 148,196, Nov. 3, 1993, abandoned. This application Jan. 30, 1996, Ser. No. 593,683

Int. Cl.[6] G11B *33/14;17/08*

U.S. Cl. 360—97.02 **20 Claims**

1. A hard disk drive assembly comprising: an enclosure having first and second lateral surfaces, said first and second lateral surfaces being substantially parallel to one another;

a spindle shaft supporting a motor for rotating one or more magnetic disks about said spindle shaft, said spindle shaft



having first and second ends, said spindle shaft being fixedly coupled at said first end to said first lateral surface of said enclosure, and said spindle shaft being coupled at said second end to said second lateral surface of said enclosure, said second end of said spindle shaft having an orifice therein; and

a damping mounting member constraining said spindle shaft at said second end, said damping member coupled adjacent said second end of said spindle shaft and compressed against at least a portion of said second lateral surface so as to avoid shearing of said end of said spindle shaft with respect to said second lateral surface in response to external shock.

5,825,586

DISK DRIVE MOTOR HAVING A DRIVE PIN ASSEMBLY WHICH FACILITATES STABILIZED CHUCKING OF A DISK

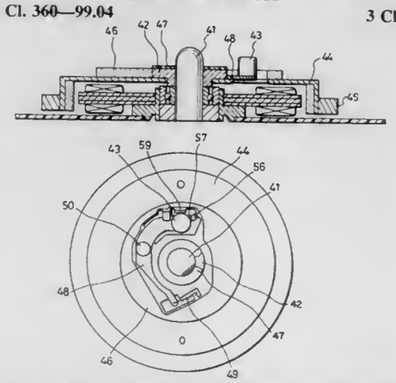
Hiroyoshi Teshima, Saihaku-gun, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka-Fu, Japan

Filed May 6, 1993, Ser. No. 57,486

Claims priority, application Japan, May 8, 1992, 4-030050; May 8, 1992, 4-030051; May 8, 1992, 4-115685; Jan. 26, 1993, 5-001560; Jan. 29, 1993, 5-002143; Jan. 29, 1993, 5-014027

Int. Cl.[6] G11B *17/022*

U.S. Cl. 360—99.04 **3 Claims**



1. A disk drive motor assembly for rotating a record disk having a disk hub that includes a shaft engaging hole and a drive pin engaging hole defined therein, said disk drive motor assembly comprising:

a motor shaft which inserts into said shaft engaging hole provided in said disk hub;

a spindle hub associated with said motor shaft and supporting said disk hub;

a rotor frame attached to said spindle hub;

a disk hub magnet fixed to said rotor frame for magnetically attracting said disk hub thereto; and

a drive pin assembly comprising:

a pillar fixed to said rotor frame,

a rotation lever rotatably attached to said pillar such that said rotation lever is only rotatable about said pillar while being prevented from moving in any radial direction relative to said pillar, said rotation lever having an elastic property so that said rotation lever bends in a first direction relative to said rotor frame during disk chucking, said rotation lever also having a protruding portion, and

a drive pin provided near an end portion of said rotation lever which inserts into said drive pin engaging hole in said disk hub, wherein said rotation lever is biased by said elastic property so that said protruding portion contacts one of said rotor frame or said hub magnet, said contact preventing said rotation lever from moving beyond a predetermined point in a second direction relative to said rotor frame opposite said first direction following insertion of said drive pin into said pin engaging hole, thereby stabilizing chucking of said disk.

5,825,587

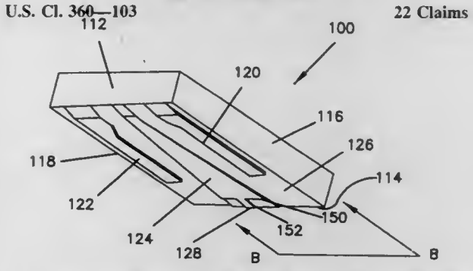
SHALLOW ETCH AIR BEARING SURFACE FEATURES FOR OPTIMIZED TRANSDUCER SPACING

Sanford A. Bolasna, and Laurence S. Samuelson, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 1, 1996, Ser. No. 609,602

Int. Cl.[6] G11B *5/60*

U.S. Cl. 360—103 **22 Claims**



1. A slider for supporting a transducer above a moving recording medium, comprising:

a support structure having support structure side edges, a leading and a trailing edge relative to the motion of the recording medium;

a rail centered on the support structure between the support structure side edges, the rail having rail side edges and an air bearing surface raised above the support structure, the air bearing surface including an intermediate projection located at a trailing end of the rail, wherein the rail comprises a magnetic element mounted at the intermediate projection, and wherein the rail includes relieved trailing edge portions located on opposite sides of the intermediate projection only at the trailing end of the rail, the relieved trailing edge portions being arranged and configured to increase the clearance between the rail side edges and the recording medium thereby preventing collision of the rail with the recording medium when the slider rolls.

5,825,588

ROLL INSENSITIVE AIR BEARING SLIDER

Sanford Anthony Bolasna, San Jose, Calif., and Sridhar Gopalakrishna, Sunnyvale, Calif., assignors to International Business Mabcines Corporation, Armonk, N.Y.

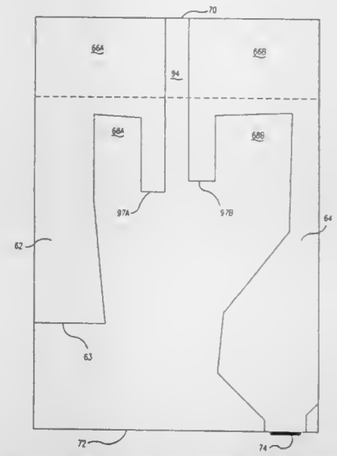
Continuation-in-part of Ser. No. 759,816, Dec. 4, 1996, Pat. No. 5,650,893. This application Apr. 24, 1997, Ser. No. 845,268

Int. Cl.[6] G11B *5/60;21/21*

U.S. Cl. 360—103 **21 Claims**

1. An air bearing slider for supporting a transducer, comprising:

a slider body having a leading edge and a trailing edge, first and second side edges, and an air bearing surface;



a first U-shaped rail on said air bearing surface defining a first negative pressure pocket, said first U-shaped rail including a first cross rail extending along a first portion of said leading edge, and a first side rail and a first subrail extending from said first cross rail in the direction of said trailing edge;

a second U-shaped rail on said air bearing surface defining a second negative pressure pocket, said second U-shaped rail including a second cross rail extending along a second portion of said leading edge, and a second side rail and a second subrail extending from said second cross rail in the direction of said trailing edge, wherein the length of said first subrail and said second subrail are unequal; and

a channel extending from said leading edge toward said trailing edge, said channel defined by said first subrail and said second subrail.

5,825,589

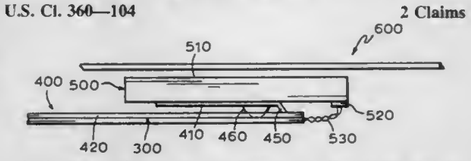
LOW STIFFNESS APPARATUS FOR SUPPORTING A READ/WRITE TRANSDUCER HEAD SLIDER

Amanullah Khan, Holden, Mass., assignor to Quantum Corporation, Milpitas, Calif.

Continuation of Ser. No. 686,729, Apr. 17, 1991, abandoned. This application Mar. 3, 1993, Ser. No. 25,902

Int. Cl.[6] G11B *5/48*

U.S. Cl. 360—104 **2 Claims**



1. A unitary flexure for attachment to a load beam and for supporting a transducer head slider, said flexure comprising:

a generally planar generally elongated first member having a load beam attachment end, a free end, and an elongated opeining formed therein, said opening having opposed, spaced, generally parallel long edges;

a second member configured to receive the transducer bead slider, said second member disposed within the dimensions of said opening;

a bight portion being disposed to provide a one step double bend, said one step double bend disposed such that the bend axes are substantially perpendicular to the longitudinal axis of said second member, said bight portion interconnecting a first end of said second member to an edge of said opening adjacent said free end of said first member resulting in said second member being spaced from said first member, and said

second member lying in a plane substantially parallel to the plane of the first member;

a dimple disposed on a longitudinal centerline of said second member in proximate relation to said bight portion and distal relative to the center of said second member, said dimple protruding toward said first member to allow said dimple to pivot against a load beam attached to the unitary flexure; and

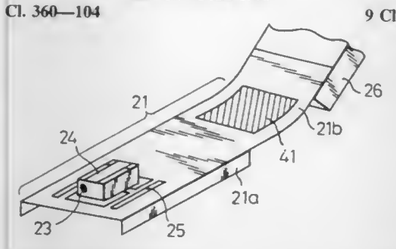
a transducer head slider mounted on said unitary flexure to extend over said free end of said flexure along said longitudinal axis of said second member, wherein such positioning of the transducer head slider allows said actuator arm to be connected by wire to the top of said transducer head slider to prevent the wire from crashing onto a disc.

5,825,590

MAGNETIC HEAD SUSPENSION MECHANISM WITH A THIN FILM THEREON FOR CREATING A BENT PORTION OF A VIBRATION ABSORBING PORTION

Takeshi Ohwe, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jan. 11, 1996, Ser. No. 585,023
Claims priority, application Japan, Apr. 18, 1995, 7-092346
Int. Cl.[6] G11B *5/48*
U.S. Cl. 360—104 **9 Claims**



1. A magnetic head suspension mechanism used in a magnetic disk apparatus comprising a rotating magnetic recording medium and means for accessing an electromagnetic transducer head to said recording medium to write or read any information with respect to said recording medium, said head suspension mechanism comprising:

a load beam made of a metal strip and having at least a part thereof defining an elastic portion, which is originally substantially flat, and at least another part thereof defining a rigid portion for holding an electromagnetic head via a gimbal, said rigid portion having at least one rib at an edge thereof; and

a thin film formed on said elastic portion of the load beam, said thin film being expandable or shrinkable due to an internal stress of said film itself, and whereby said internal stress of said thin film causes said originally substantially flat elastic portion to bend.

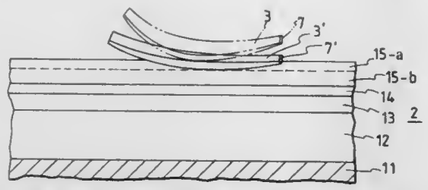
5,825,591

FRICTIONALLY SLIDING HEAD MAGNET DISK APPARATUS

Takao Nakamura; Nobuya Sekiyama; Keiko Nakano; Kenji Furusawa; Hiroyuki Kataoka, all of Yokohama; Takaaki Shirakura, Chigasaki, and Shinya Matsuoka, Odawara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 279,204, Jul. 22, 1994, abandoned.
This application Dec. 18, 1996, Ser. No. 768,958
Claims priority, application Japan, Jul. 23, 1993, 5-182283
Int. Cl.[6] G11B *5/48;21/16*
U.S. Cl. 360—104 **18 Claims**

1. A frictionally sliding head magnetic disk apparatus having a magnetic head and a magnetic disk, wherein the magnetic head is in continuous contact with the disk during read/write operation, the apparatus comprising:



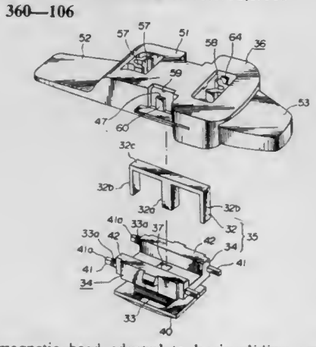
a lubricant layer being a top surface of the magnetic disk wherein said lubricant layer is liquefied by frictional heat induced during a frictionally sliding motion of the magnetic head in continuous contact, during read/write operations, with said surface of said magnetic disk and to solidify when the magnetic head stops on the surface thereof, and said lubricant layer having stronger adhesive force for said magnetic disk than that for said magnetic head.

5,825,592

MAGNETIC HEAD WITH BOBBIN ATTACHED TO A SLIDABLE CONTACT BODY

Tomoyuki Takahashi, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 448,528, Jun. 14, 1995, abandoned.
This application Mar. 10, 1997, Ser. No. 814,158
Claims priority, application Japan, Oct. 25, 1993, 5-288681; Feb. 10, 1994, 6-016844
Int. Cl.[6] G11B *11/10;5/02;5/105*
U.S. Cl. 360—106 **6 Claims**



1. A magnetic head adapted to be in sliding contact with a magneto-optical recording medium, the magnetic head comprising:

a magnetic assembly including a core and a bobbin on which a coil is attached;

a slidable contact body where an attachment hole is formed for attaching the magnetic assembly to the slidable contact body, wherein an engagement portion is formed at either one of the magnetic assembly and the slidable contact body, and a portion to be engaged is formed at the other one of the magnetic assembly and the slidable contact body, wherein the engagement portion and the portion to be engaged are engaged with each other by elastic deformation of at least one of the engagement portion and the portion to be engaged relative to the other of said engagement portion and said portion to be engaged so that the magnetic assembly is attached to the slidable contact body; and

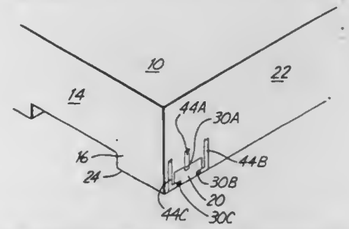
an elastically displaceable power supply terminal provided within the attachment hole of the slidable contact body so that the bobbin attached within the attachment hole comes into contact with the terminal to carry out power supply to the coil and the power supply terminal, wherein the elastically displaceable power supply terminal comprises an attachment portion attached to the slidable contact body, and a bending portion projected into the attachment hole of the slidable contact body and adapted to elastically come into contact with the bobbin attached within the attachment hole, the attachment portion and the bending portion being integrally formed.

5,825,593

ELECTRIC FIELD MODULATED MR SENSOR

Gregory S. Mowry, Burnsville, Minn., assignor to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Feb. 18, 1994, Ser. No. 198,848
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **20 Claims**



19. An apparatus for sensing a movement in a magnetic field, the apparatus comprising:

a giant magnetoresistive element;

first, second, and third electrical contacts spatially positioned on the giant magnetoresistive element and along the first track such that a first current path in the giant magnetoresistive element is formed having a first variable resistance between the first and second electrical contacts and a second current path in the giant magnetoresistive element is formed having a second variable resistance between the first and third electrical contacts; and

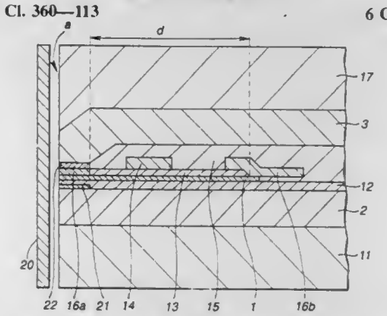
wherein the magnetic field pass the first, second and third electrical contacts at different times causing a change in the first variable resistance in the first current path when the field becomes positioned substantially underneath the first current path, and wherein the magnetic field causes a change in the second variable resistance in the second current path when the field becomes positioned substantially underneath the second current path.

5,825,594

MAGNETO-RESISTANCE EFFECT-TYPE MAGNETIC HEAD

Koji Fukumoto, Miyagi; Yutaka Soda, Kanagawa; Norio Saito, and Takuji Shibata, both of Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Nov. 6, 1996, Ser. No. 744,639
Claims priority, application Japan, Nov. 7, 1995, 7-288397
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **6 Claims**



1. A magneto-resistance effect-type magnetic head for reproducing signals from a magnetic recording medium, comprising:

a magneto-resistance effect element comprising a permalloy layer;

upper and lower magnetic layers comprising permalloy layers between which said magneto-resistance effect element is interposed; and

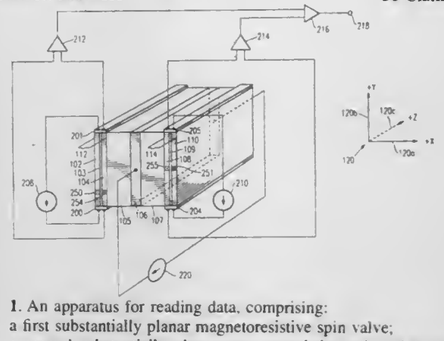
a low-permeability magnetic layer comprising a permalloy layer provided on at least one of surfaces of said upper and lower magnetic layers which surfaces are opposed to said magneto-resistance effect element, said low-permeability magnetic layer having a magnetic permeability not more than half of a magnetic permeability of said upper of lower magnetic layer.

5,825,595

SPIN VALVE SENSOR WITH TWO SPUN VALUES SEPARATED BY AN INSULATED CURRENT CONDUCTOR

Hardayal Singh Gill, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 13, 1997, Ser. No. 855,255
Int. Cl.[6] G11B *5/39*
U.S. Cl. 360—113 **30 Claims**



1. An apparatus for reading data, comprising:

a first substantially planar magnetoresistive spin valve;

a second substantially planar magnetoresistive spin valve oriented in a substantially parallel plane to the first spin valve;

a conductive bias layer interposed between the first and second spin valves;

a first insulating layer contactingly interposed between the first spin valve and the conductive bias layer; and

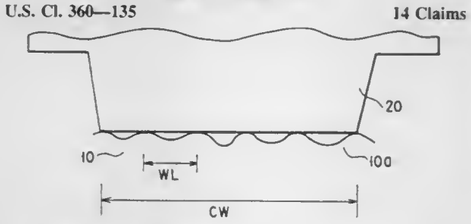
a second insulating layer contactingly interposed between the second spin valve and the conductive bias layer.

5,825,596

HARD DISK DRIVE

Takashi Hikosaka, Tokyo; Tsutomu Tanaka, Yokohama, and Kazushi Tanimoto, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Feb. 10, 1997, Ser. No. 797,127
Claims priority, application Japan, Feb. 13, 1996, 8-025324; Aug. 9, 1996, 8-211151
Int. Cl.[6] G11B *5/82*
U.S. Cl. 360—135 **14 Claims**



1. A hard disk drive comprising:

a magnetic disk used as a magnetic recording medium; and

a magnetic head for applying a magnetic field to the disk so as to perform recording and for detecting a magnetic field from the disk so as to perform reproducing;

wherein during the recording and reproducing, the head is moved relative to the disk so as to define a track, said track comprising a series of a number of recording bits on the disk,

wherein the head is brought into contact with the disk at least during the recording and reproducing, with a head contact width in a width direction of the disk,

wherein the disk has a surface texture which presents a substantially single peak amplitude value when the surface texture is factorized into frequency compositions by means of Fourier transform, and

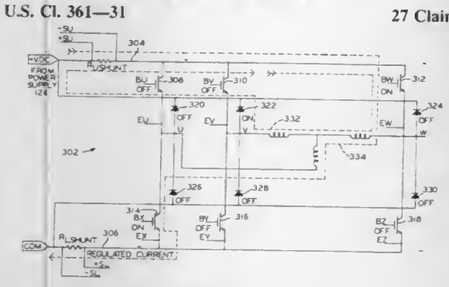
wherein a wave length for providing the peak amplitude value is ten times a recording bit length of each recording bit or more and equal to or less than the head contact width, said head contact width being two or more times larger than the wave length and said peak amplitude value is in a range of 0.5–5.0 nm.

5,825,597

SYSTEM AND METHOD FOR DETECTION AND CONTROL OF CIRCULATING CURRENTS IN A MOTOR

Glen C. Young, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sep. 25, 1996, Ser. No. 719,732
Int. Cl.[6] H02H *5/04*
U.S. Cl. 361—31 **27 Claims**



I. A motor system comprising:

a stationary assembly including windings;

a rotatable assembly in magnetic coupling relation to the stationary assembly;

a power supply link for providing power to the windings, said power supply link comprising an inverter bridge having upper and lower rails supplied by a power supply and having power switches responsive to a motor control signal for selectively connecting the rails to the windings in alternating on and off intervals to produce an electromagnetic field for rotating the rotatable assembly, said power switches each having a conducting state and a nonconducting state;

a current sensing circuit for sensing current in each of the rails of the power supply link during both the on and off intervals of the power provided to the windings, said inverter bridge connecting the windings to the upper and lower rails such that current circulating in the power supply link and windings during the off intervals of the power provided to the windings is routed through the current sensing circuit;

a current regulation circuit for generating an overcurrent signal as a function of the current sensed in either one of the rails exceeding a maximum current level; and

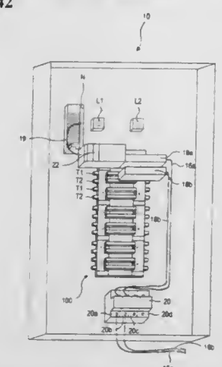
a control circuit responsive to the overcurrent signal for causing each of the power switches to become nonconducting thereby to prevent excessive current from circulating in the motor system.

5,825,598

ARCING FAULT DETECTION SYSTEM INSTALLED IN A PANELBOARD

James W. Dickens, Lexington, Ky., and Stanley J. Brooks, Rockvale, Tenn., assignors to Square D Company, Palatine, Ill.

Filed Feb. 11, 1997, Ser. No. 799,095
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—42 **25 Claims**



I. An integrated protection system for an electrical distribution system including a panelboard for receiving and distributing power from a utility source, said panelboard receiving said power through at least one line bus and a neutral bus, said panelboard distributing said power from said at least one line bus and said neutral bus to a plurality of branch circuits each having line and neutral conductors for delivering said power to a load, each of said line conductors being electrically connected to one of said at least one line buses, each of said neutral conductors being electrically connected to said neutral bus, said panelboard including a framework having a plurality of positions for attaching circuit protection devices to a selected number of branch circuits, said integrated protection system comprising:

multiple arcing fault detectors mounted within the panelboard enclosure with each detector coupled to a different branch circuit for detecting the occurrence of an arcing fault in that branch circuit; each arcing fault detector sensing the rate of change of the current or voltage in the line conductor of the branch circuit associated with that detector, and

at least one line interrupter attached to a corresponding at least one of the positions in said framework for disconnecting the load from the power source in any of the selected branch circuits in which an arcing fault has been detected.

5,825,599

GROUND FAULT CIRCUIT INTERRUPTER SYSTEM WITH UNCOMMITTED CONTACTS

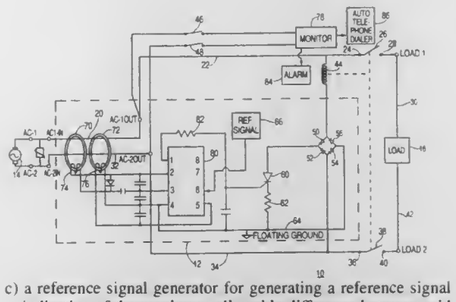
Saul Rosenbaum, East Meadow, N.Y., assignor to Leviton Manufacturing Co., Inc., Little Neck, N.Y.

Filed May 5, 1997, Ser. No. 851,518
Int. Cl.[6] H02H *3/16*
U.S. Cl. 361—45 **3 Claims**

I. A ground fault circuit interrupter device with remote sensing ability comprising:

a) a ground fault circuit interrupter (GFCI) means including line and load side phase and neutral terminals and a relay switch for controlling current flow between an AC source and a electrical circuit to be protected in accordance with the detection of an interrupt condition;

b) said GFCI means comprising first means for detecting a first current flowing from said AC source to said electrical circuit, second means for detecting a second current flowing from said electrical circuit to said AC source and an integrated circuit device to provide an output signal proportional to any difference between said first current and said second current and including comparing means to receive said output signal;



c) a reference signal generator for generating a reference signal indicative of the maximum allowable difference between said first and second currents, said reference signal generator coupled to said integrated circuit device to provide said reference signal thereto;

d) said comparing means of said integrated circuit device comparing said output signal with said reference signal and providing an interrupt signal if said output signal exceeds said reference signal;

e) said relay switch includes a relay coil, a selectively movable phase contact having a line and a load end and a selectively movable neutral contact having a line and a load end;

f) said line and load ends of said selectively movable phase contact are electrically connected to said load side phase terminal of said GFCI means and to a phase terminal of said electrical circuit, respectively;

g) said line and load ends of said selectively movable neutral contact are electrically connected between a load side neutral terminal of said GFCI means and a neutral terminal of said electrical circuit, respectively;

h) said relay coil is electrically coupled between said line ends of said selectively movable phase and selectively movable neutral contacts for moving said contacts in response to the receipt of said interrupt condition; and

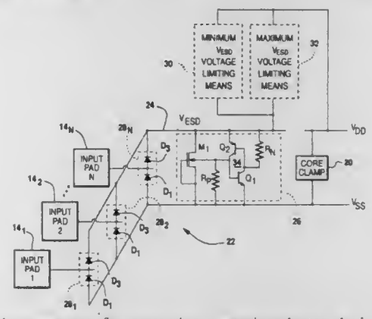
i) two electrical contacts electrically connected to said GFCI means such that a signal present at said electrical contacts may be continuously monitored to determine a state of current flow through said GFCI means phase and neutral contacts.

5,825,600

FAST TURN-ON SILICON CONTROLLED RECTIFIER (SCR) FOR ELECTROSTATIC DISCHARGE (ESD) PROTECTION

Jeffrey Watt, Mountain View, Calif., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Apr. 25, 1997, Ser. No. 845,302
Int. Cl.[6] H02H *3/22*
U.S. Cl. 361—56 **21 Claims**



I. An apparatus for protecting a semiconductor device from excessive charge, the device including an interface pad selected from the group including an input pad, an output pad, and an input/output pad, comprising:

an SCR circuit configured to transfer charge from an electrostatic discharge (ESD) bus to a negative bus of a power supply;

a field effect transistor (FET) coupled to said SCR circuit;

a first impedance element connected between the ESD bus and a common node;

a second impedance element connected between the common node and said SCR circuit; and

a first diode for coupling said interface pad to said ESD bus, said first diode having an anode and a cathode, wherein said interface pad is connected to said anode;

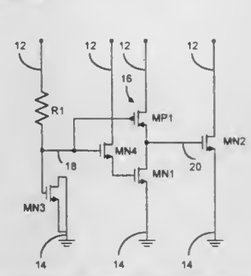
said FET being further coupled to said common node and configured to activate transfer of charge by said SCR circuit when a voltage on the ESD bus reaches a predetermined threshold level.

5,825,601

POWER SUPPLY ESD PROTECTION CIRCUIT

Timothy V. Statz, Minneapolis, Minn.; Dongwook Drew Suh, Freemont, Calif., and Kevin Spielberger, Eden Prairie, Minn., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 16, 1997, Ser. No. 876,925
Int. Cl.[6] H02H *3/22*
U.S. Cl. 361—56 **15 Claims**



I. An electrostatic discharge (ESD) protection circuit comprising:

first and second supply terminals;

a current source;

a shunt transistor coupled between the first and second supply terminals and having a control terminal;

an inverter comprising an input coupled to the current source, an output coupled to the control terminal of the shunt transistor, and pull-up and pull-down transistors coupled between the first and second supply terminals, the pull-up and pull-down transistors having control terminals which are coupled to the input; and

a voltage level shifting device coupled between the input and the control terminal of one of the pull-up and pull-down transistors.

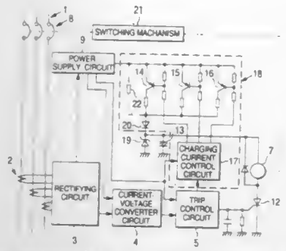
5,825,602

OVERCURRENT TRIP DEVICE

Hiroaki Tosaka; Koji Nomura; Katsunori Kuboyama; Tatsunori Takahashi, and Fumiyuki Ikeda, all of Saitama, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Mar. 25, 1997, Ser. No. 823,730
Claims priority, application Japan, Mar. 26, 1996, 8-095998
Int. Cl.[6] H02H *3/00*
U.S. Cl. 361—94 **12 Claims**

I. An overcurrent trip device that monitors a magnitude of a current flow through an electric circuit at all times and drives a trip



means after a predetermined delay time has elapsed upon judgment of an overcurrent, said device comprising:

electric charge storage means for driving the trip means and storing power to hold the operation of the trip means for a predetermined time; and

charging current generating means for outputting a charge current to the electric charge storage means so that said electric charge storage means completes storage of electric charges between occurrence of the overcurrent and the elapse of the delay time, wherein said charging current generating means includes a plurality of transistors coupled to the electric charge storage means and connected to conduct the charge current in parallel.

5,825,603

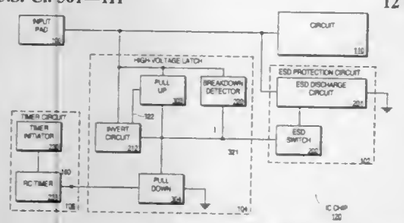
METHOD AND APPARATUS FOR PROVIDING ELECTROSTATIC DISCHARGE PROTECTION FOR HIGH VOLTAGE INPUTS

Krishna Parat, and Timothy J. Maloney, both of Palo Alto, Calif., assignors to Intel Corporaiton, Santa Clara, Calif.

Continuation of Ser. No. 576,079, Dec. 21, 1995, abandoned. This application Sep. 2, 1997, Ser. No. 921,809

Int. Cl.[6] H02H *3/22*

U.S. Cl. 361—111 **12 Claims**



1. An arrangement for preventing damage to a circuit of an integrated circuit due to the occurrence of voltage introduced externally to the integrated circuit, comprising:

a latch coupled to an input pad of the integrated circuit, the latch asserting a first signal for a first predetermined period of time in response to sensing the occurrence of the voltage at the input pad, wherein the first predetermined period of time is longer than a period of time required for an anticipated electrostatic discharge (ESD) event;

a transient protection circuit coupled to the input pad that couples the input pad to ground in response to the latch asserting the first signal such that current associated with the voltage is shunted to ground; and

a timer circuit coupled to the latch for preventing the latch from asserting the first signal in response to a voltage supply output (VCC) rising to an acceptable voltage level that indicates that power has been applied to the integrated circuit for a second predetermined period of time.

5,825,604

DEMAGNETIZATION CIRCUIT

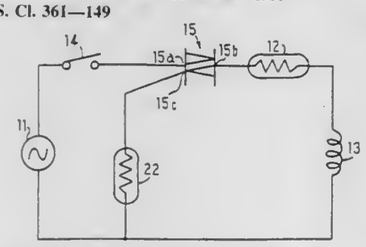
Yutaka Ikeda, Youkaichi, and Takayo Katsuki, Shiga-ken, both of Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 665,581, Jun. 18, 1996, abandoned, which is a continuation of Ser. No. 518,243, Aug. 23, 1995, abandoned. This application Nov. 4, 1997, Ser. No. 964,163

Claims priority, application Japan, Aug. 24, 1994, 6-199792; Sep. 5, 1994, 6-211368; Sep. 5, 1994, 6-211369

Int. Cl.[6] H01F *13/00*

U.S. Cl. 361—149 **13 Claims**



1. A demagnetization circuit comprising:

a series connection of a TRIAC having a pair of main electrodes and a gate electrode, a first positive characteristic thermistor, and a demagnetization coil, connected in series across an AC supply which provides an AC supply current, for supplying a demagnetizing current to said demagnetization coil; and

a second positive characteristic thermistor connected between the gate electrode of the TRIAC and a connection point of the AC supply and the demagnetization coil for supplying a control current to said gate electrode, said second positive characteristic thermistor having a predetermined resistance characteristic for providing a predetermined control current to said gate electrode, so that said TRIAC is maintained turned off within a predetermined time interval of a zero-crossing of said AC supply current and so that said demagnetizing current is set to zero during said time interval.

5,825,605

ELECTROSTATIC SHOCK PREVENTION DEVICE FOR USE IN VEHICLES

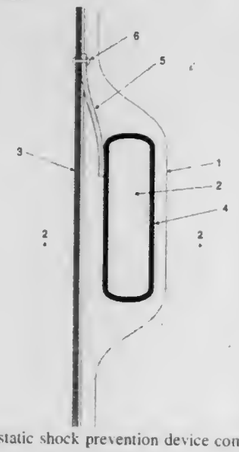
Colin A. Sutherland, 17 Leetom Crescent, Nepean, Ontario, K2J 1E3, Canada

Filed Jul. 11, 1997, Ser. No. 910,461

Claims priority, application Canada, Sep. 27, 1996, 2186644

Int. Cl.[6] H05F *03/02*

U.S. Cl. 361—216 **6 Claims**



1. An electrostatic shock prevention device comprising:

a. means for providing an electrically conductive surface within and/or around each door handle or finger recess associated with each passenger door of a vehicle, wherein the electrically conducting surface comprises a conductive plastic strip within and/or around the finger recess of the door handle, and

b. means for providing an electrically conductive path between said means for providing an electrically conductive surface within and/or around each door handle or finger recess and the metallic frame of the vehicle.

5,825,606

COMMUNICATIONS SET WITH ELECTROSTATIC PROTECTION

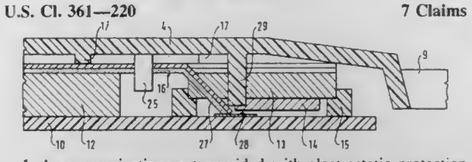
Jean-Christophe Villain, Paris, and Alain Bezieres, St. Cenere, both of France, assignors to Alcatel Mobile Phones, Paris, France

Filed Jul. 17, 1996, Ser. No. 682,358

Claims priority, application France, Jul. 18, 1995, 95 08670

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—220 **7 Claims**



1. A communications set provided with electrostatic protection comprising a flat body made of an insulating material, the electrostatic protection consisting of a protective sheet incorporated in the set between the shell and the elements to be protected, the protective sheet comprising a conductive layer and an insulating layer, and being cut to an appropriate shape, wherein said insulating layer is a sheet of foam made of a plastics material and organized to fit the shape of a space left empty to receive it inside the set.

5,825,607

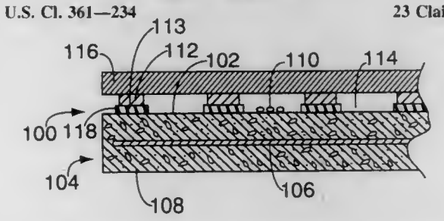
INSULATED WAFER SPACING MASK FOR A SUBSTRATE SUPPORT CHUCK AND METHOD OF FABRICATING SAME

Vincent E. Burkhart, San Jose, Calif., assignor to Applied Materials, Inc., Santa Clara, Calif.

Filed May 8, 1996, Ser. No. 639,843

Int. Cl.[6] H02N *13/00*

U.S. Cl. 361—234 **23 Claims**



1. Apparatus for supporting a workpiece in a spaced-apart relation to a support surface of a workpiece support chuck, comprising:

a plurality of individual insulating regions deposited on said support surface of said workpiece support chuck; and

a spacing mask, deposited upon said insulating regions, for supporting said workpiece in a spaced-apart relation to said support surface.

5,825,608

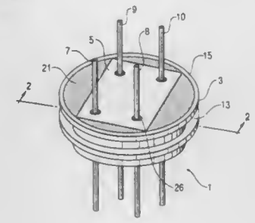
FEED-THROUGH FILTER CAPACITOR ASSEMBLY

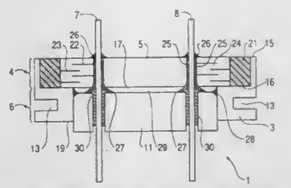
Frank A. Duva, Carlsbad, and Mansoor Azodi-Kazerooni, Canyon Country, both of Calif., assignors to Novacap, Inc., Valencia, Calif.

Filed Oct. 18, 1996, Ser. No. 734,027

Int. Cl.[6] H01G *4/35*; **H01B** *17/28*

U.S. Cl. 361—302 **8 Claims**





1. A feed-through filter capacitor assembly comprising:

a conductive bushing, said bushing having a first end surface and a perimetric wall surrounding said first end surface to define a cup, said bushing further having a pass-through portion adjacent said cup, said pass-through portion having an internal surface defining a passageway extending from said first end surface, within said cup, to a second end surface opposite said first end surface, said bushing being mountable to seal a feed-through hole of a conductive housing member such that said pass-through portion extends through said hole and said cup remains to one side thereof;

a filter capacitor body mounted within said cup on said first end surface to extend over said passageway, said capacitor having first and second sets of spaced capacitor plates, one of said sets of plates being provided in electrical contact with said conductive bushing;

at least one conductor extending through said filter capacitor body and passageway and being provided in electrical contact with said second set of capacitor plates; and

an electrically insulative spacer mounted in said passageway and serving to insulate the at least one conductor from said conductive bushing;

wherein said filter capacitor body is secured within said cup, and its sides are substantially encapsulated, by a polymer resin; and

wherein said cup is circular in shape and said capacitor body comprises four sidewalls, and said polymer resin substantially fills the space within the cup between the capacitor body and the perimetric wall.

5,825,609

COMPOUND ELECTRODE STACK CAPACITOR

Panayotis Constantinou Andricacos, Croton-on-Hudson; David Edward Kotecki, Hopewell Juction, and Katherine Lynn Saenger, Ossining, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

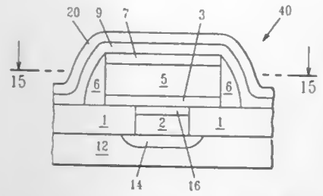
Filed Apr. 23, 1996, Ser. No. 636,457

Int. Cl.[6] H01G *4/06*

U.S. Cl. 361—321.4 **47 Claims**

32. An electrical device comprising:

a substrate;



a first conductive region formed in said substrate from a first conductive material;

a first dielectric layer formed above said substrate, said first dielectric layer having a first opening above some portions of said first conductive region, said first opening being filled with a second conductive material to form a conductive plug;

a wholly or partially conductive compound stack electrode directly above and in electrical contact with a top of the conductive plug;

a layer of a second dielectric material formed on exposed surfaces of said compound stack electrode;

a plate electrode of a third conductive material, directly on said second dielectric material, said plate electrode being electrically isolated from the stack electrode;

wherein said compound stack electrode comprises a patterned multilayer stack having a total thickness, said patterned multilayer stack having a noble metal top layer with a top layer thickness, said top layer thickness being less than 50% of said total thickness, a sidewall of said multilayer stack is coated with a conductive material.

5,825,610

Patent Not Issued For This Number

5,825,611

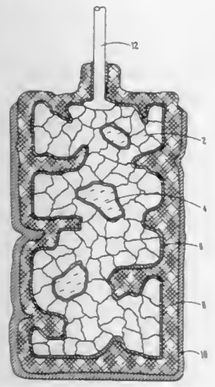
DOPED SINTERED TANTALUM PELLETS WITH NITROGEN IN A CAPACITOR

Yuri L. Pozdeev, Beer-Sheva, Israel, assignor to Vishay Sprague, Inc., Sanford, Me.

Filed Jan. 29, 1997, Ser. No. 790,293

Int. Cl.[6] H01G *4/06*

U.S. Cl. 361—524 **5 Claims**



1. A tantalum capacitor comprising:

a porous core comprising tantalum, nitrogen, and manganese;

a tantalum pentoxide dielectric film on said porous core;

a layer comprising a conductive polymer on said dielectric film and;

a layer comprising carbon, graphite and silver on said conductive polymer;

wherein said dielectric film is substantially free of nitride precipitate.

5,825,612

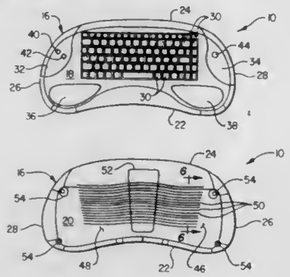
LAP-SUPPORTABLE REMOTE INFRARED COMPUTER KEYBOARD

Mark S. Aubuchon; Jeffrey T. Lininger, both of Spring, and Meera K. Manahan, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Mar. 31, 1997, Ser. No. 829,165

Int. Cl.[6] G06F *1/16*

U.S. Cl. 361—680 **34 Claims**



1. Keyboard apparatus supportable on a seated user's lap, comprising:

a body portion having top and bottom sides, opposite front and rear sides spaced apart in a first direction, and opposite first and second ends spaced apart in a second direction transverse to said first direction;

a series of manually depressible keys supported on said top side;

a pair of generally parallel recesses formed in said bottom side, extending in said first direction and spaced apart in said second direction, said recesses having top side surfaces and being configured to receive top side portions of a seated user's thighs; and

series of mutually spaced parallel ribs longitudinally extending in said second direction along said top surfaces of said recesses in contiguous relationships therewith, said series of parallel ribs being operative to frictionally inhibit front-to-rear shifting of said keyboard apparatus along upper side portions of a user's thighs received in said recesses.

6. Keyboard apparatus supportable on a seated user's lap, comprising:

a body portion having a center, top and bottom sides, opposite front and rear sides spaced apart in a first direction, and first and second end portions spaced apart in a second direction transverse to said first direction;

a series of manually depressible keys supported on said top side, said first and second end portions being positioned outwardly of said series of manually depressible keys in said second direction;

a pointing device carried on said first end portion; and

a selection device carried on said second end portion.

5,825,613

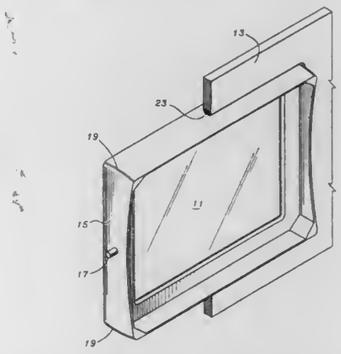
TILTING DISPLAY WITH CABINET SEAL

Thomas J. Holden, Warrington, Pa., assignor to Strongarm Designs, Inc., Horsham, Pa.

Filed Jul. 17, 1997, Ser. No. 896,136

Int. Cl.[6] G06F *1/16;* **H05K** *5/00*

U.S. Cl. 361—681 **15 Claims**



1. A tilt frame display screen, comprising:

a sealed enclosure having a front wall with a cutout therein;

a bezel mounted within said cutout rotatable about an axis, said bezel having arcuately formed top and bottom surfaces with a radius of curvature taken from the axis of rotation;

seal means mounted to said front wall which completely fills all spaces between said bezel and said front wall when said bezel is tilted throughout a limited range of rotation defined by the edges of said top and bottom surfaces; and

a display screen mounted within said bezel.

5,825,614

COMPACT PERSONAL COMPUTER WITH LCD MONITOR

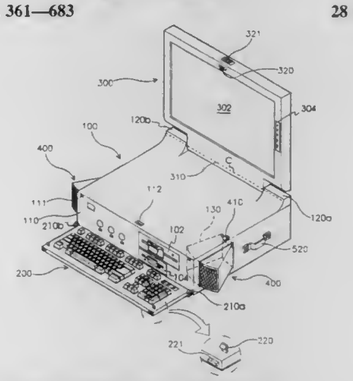
Tae-Sang Kim, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 19, 1996, Ser. No. 710,539

Claims priority, application Rep. of Korea, Jan. 17, 1996, 1996-0818; Apr. 23, 1996, 1996-12333

Int. Cl.[6] G06F *1/16*

U.S. Cl. 361—683 **28 Claims**



1. A portable computer system, comprising:

a keyboard;

a cover containing a flat screen providing a variable video display;

a pair of speakers; and

a computer functionally responsive to manipulation of said keyboard, operationally driving said speakers to broadcast audio sounds and operationally driving said flat screen to provide said video display, said computer comprising:

a housing forming a main body with a top panel, a front panel, and opposite side panels each perforated by different receiving apertures,

a first hinge installed at a rear end of said top panel for pivotally mounting said cover on said rear end with said cover being pivotable between an open position exposing said flat screen for exhibition of said variable video display and a closed position with said cover disposed across said top panel,

a second hinge installed between said keyboard and said front panel for pivotally mounting said keyboard with said keyboard being pivotable between an open position exposing said keyboard for use and a closed position with said keyboard covering said front panel of said main body, and

a plurality of third hinges installed in juxtaposition to corresponding ones of said receiving apertures on each of said side panels for pivotally mounting corresponding ones of said pair of speakers with said speakers being pivotable between an open position when the speakers are deployed to extend outwardly from said corresponding ones of said receiving apertures for use and a closed position with said speakers recessed inwardly into said corresponding ones of said receiving apertures with said speakers being positioned substantially flush against corresponding said side panels of said main body;

said keyboard, said cover, said pair of speakers and said main body forming a monolithic parallelepiped shape while said cover, said keyboard and said pair of speakers are in said corresponding closed positions.

5,825,615

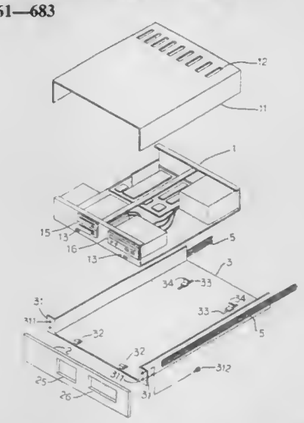
STRUCTURE OF DRAWER TYPE COMPUTER HOUSING MOUNTING SYSTEM

Takeyoshi Ohara, 2-1, 102, 2978-6, Sugeda-Cho, Kanagawa Ku, Yokohama City, Japan

Filed Sep. 17, 1997, Ser. No. 932,631

Int. Cl.[6] G06F *1/16;* **H05K** *5/02*

U.S. Cl. 361—683 **1 Claim**



1. An improved structure of drawer type computer housing mounting system comprising:

a computer housing carrier having two retainer blocks bilaterally raised from a bottom wall near a front side, two longitudinal sliding slots bilaterally disposed at its bottom wall near a rear side, two sliding stoppers slidably mounted in said sliding slots and fixed at the desired position, and two front mounting flanges bilaterally disposed a front side thereof;

two sliding rails fixedly fastened to two opposite sides of said computer housing carrier for enabling it to be moved in and out of a desk;

a computer housing carried on said computer housing carrier and stopped in place by said sliding stoppers, said computer housing comprising a plurality of air vents at a top cover shell thereof and a plurality of retaining holes at a bottom wall thereof respectively forced into engagement with the retainer blocks of said computer housing carrier; and

a face panel fixedly fastened to the front mounting flanges of said computer housing carrier and having openings adapted for receiving disk drivers and a CD-ROM player being mounted in holes in a front side of said computer housing.

5,825,616

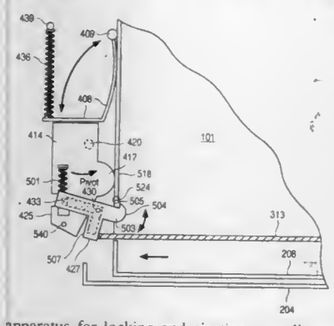
MEDIA MODULE LOCKING AND EJECTING MECHANISM

Bryan E. Howell; John P. Busch; Kenneth R. Haven, and Tim O. Lau, all of Austin, Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Jan. 21, 1997, Ser. No. 784,568

Int. Cl.[6] G06F *1/16;* **G11B** *33/02;* **H05K** *7/10;* **H01R** *13/62*

U.S. Cl. 361—684 **43 Claims**



1. An apparatus for locking and ejecting a media module in a media bay comprising:

a locking device engaging the media module to lock the media module in a locked position in the media bay, the locking device physically coupled to the media bay;

a rod engaging the locking device to disengage the locking device from the media module;

a rotating body mounted on a pivot, the pivot physically coupled to the media bay; and

a first spring, the first spring physically coupled to the media bay, the first spring positioned to generate a force against the rotating body, the force against the rotating body rotating the rotating body on disengagement of the locking device from the media module, the rotation of the rotating body ejecting the media module from the locked position.

29. A computer system comprising:

a processor;

a media bay, the media bay receiving a media module, the media module including a first electrical connector physically and electrically coupled to the media module;

a second electrical connector physically coupled to the media bay and electrically coupled to the processor, when the media module is in the locked position, the first electrical connector is attached to the second electrical connector so that the media module is electrically coupled to the processor;

a locking device physically coupled to the media bay, the locking device engaging the media module to lock the media module in a locked position in the media bay;

a rod engaging the locking device to disengage the locking device from the media module;

a rotating body mounted on a pivot, the pivot physically coupled to the media bay; and

a first spring, the first spring physically coupled to the media bay, the first spring positioned to generate a force against the rotating body, the force against the rotating body rotates the rotating body on disengagement of the locking device from the media module, the rotation of the rotating body ejecting the media module from the locked position.

5,825,617

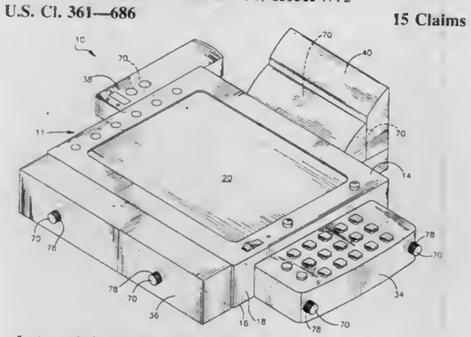
WORKSLATE COMPUTER HAVING MODULAR DEVICE DOCKING STATIONS ON HORIZONTAL AND VERTICAL SIDE PORTIONS

Gary Kochis, Uniontown; Donald Embree, North Canton, both of Ohio; Robert F. Meyerson, Captiva Island, Fla., and Calvin E. Lewis, Cuyahoga Falls, Ohio, assignors to Teletransactions, Inc., Akron, Ohio

Continuation-in-part of Ser. No. 269,190, Jun. 30, 1994, Pat. No. 5,579,487, which is a continuation-in-part of Ser. No. 956,112, Oct. 2, 1992, abandoned. This application Aug. 17, 1995, Ser. No. 516,152

Int. Cl.[6] G06F *1/16;* **H05K** *7/12*

U.S. Cl. 361—686 **15 Claims**



1. A workslate computer comprising:

a) electronic circuitry including a microprocessor;

b) a rectangular visual display screen having a horizontal extent and a substantially orthogonal vertical extent, the horizontal extent being greater than the vertical extent, the display screen being electrically coupled to the microprocessor;

c) a selected one modular device from a set of modular devices;

d) a housing including a top face and a bottom face separated by a side wall and defining an interior region, the side wall including spaced apart, substantially parallel first and second horizontal side wall portions and spaced apart, substantially parallel first and second vertical side wall portions, the first and second horizontal side wall portions of the side wall being substantially parallel to the horizontal extent of the visual display screen and substantially orthogonal to the first and second vertical side wall portions, the first and second vertical side wall portions being substantially parallel to the vertical extent of the visual display screen, the housing supporting the electronic circuitry and the visual display screen, at least one of the first and second horizontal side wall portions including a first modular device docking station support adapted to be releasably engaged by the selected modular device and at least one of the first and second vertical side wall portions including a second modular device docking station support adapted to be releasably engaged by the selected modular device;

e) the selected modular device releasably engaging a selected one of the first and second modular device docking station supports to provide an ergonomically correct weight balance of the workslate computer and an ergonomically correct positioning of the selected modular device for a given position of use of the workslate computer by a user; and

f) interface circuitry electrically supported by the housing and coupling the selected modular device to the microprocessor.

5,825,618

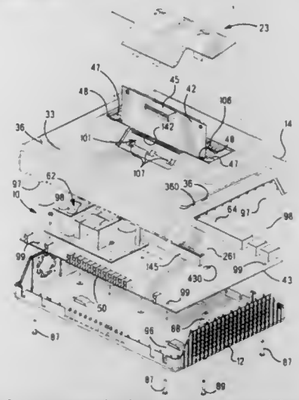
HUB FOR A COMMUNICATIONS NETWORK

William John Schnoor, Hummelstown; Bret Allen Matz, Mechanicsburg; Keith James McKechnie, Harrisburg, and Richard Charles Downs, Elizabethtown, all of Pa., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Feb. 29, 1996, Ser. No. 608,737

Int. Cl.[6] H05K *5/00*

U.S. Cl. 361—686 **13 Claims**



1. A hub for a communications network comprising:

a base hub containing a motherboard,

multiple communication ports and operating circuitry of a communications network on the motherboard, the communications ports facing an exterior of the base hub for connection to cables leading to work station sites,

the base hub being adapted for a blind mating connection to the operating circuitry by being provided with, an expansion port opening through the exterior of the base hub, a card edge connector facing toward said opening, and interconnection board receiving card guides,

the card edge connector being connected to the operating circuitry, and

the card guides extending from said opening to the card edge connector to guide an interconnection board during blind mating connection of the interconnection board with the card edge connector and the operating circuitry wherein the card guides extend along a first axis of blind mating, and further comprising, guide tracks on the exterior of the hub, the guide tracks extending toward the expansion port opening along a second axis.

5,825,619

Patent Not Issued For This Number

5,825,620

ENHANCED AIR COOLING SYSTEM WITH ATTACHED COOLING UNIT

Gregory Martin Chrysler, and Richard Chao-Fan Chu, both of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 18, 1996, Ser. No. 769,607

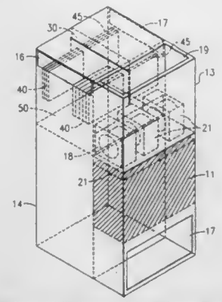
Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—695 **5 Claims**

1. An electrical system adaptable to receive an attachable cooling unit, said system comprising:

a two-sided planar circuit board;

a plurality of circuit cards plugged into a first side and a second side of said planar circuit board;



a cabinet enclosing said planar circuit board and said plurality of circuit cards, said cabinet having an air inlet port and an air exhaust port;

a removable air-moving device disposed within said cabinet in an air flow path which includes sequentially: said air inlet port, said printed circuit cards on said first side of said planar circuit board, said air-moving device, said printed circuit cards on said second side of said planar circuit board and said air exhaust port; and

opening means in said cabinet for providing access to the interior of said cabinet at a point along said air flow path downstream of said air moving device and upstream of said printed circuit cards on said second side of said planar circuit board.

5,825,621

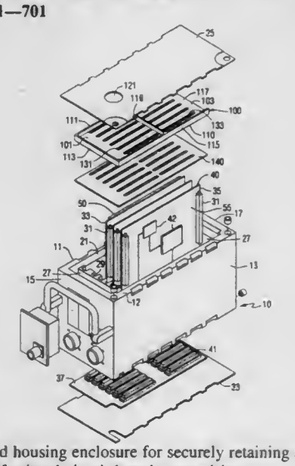
CLOSED LOOP COOLING HOUSING FOR PRINTED CIRCUIT CARD-MOUNTED, SEALED HEAT EXCHANGER

Carl J. Giannatto, Melbourne, and Kevin C. Cornish, Palm Bay, both of Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 873,677, Jun. 12, 1997. This application Aug. 22, 1997, Ser. No. 916,470

Int. Cl.[6] H05K *7/20*

U.S. Cl. 361—701 **7 Claims**



1. A sealed housing enclosure for securely retaining and cooling a plurality of printed circuit boards comprising:

a chassis having a cavity between sidewalls that contain a plurality of card-guide slots, and receive and guide edges of said printed circuit boards for insertion into electrical connectors at a first portion of said chassis, so that said printed circuit boards are retained in said chassis;

an internal cooling fluid supply/exhaust plenum at a second portion of said chassis spaced apart from said first portion

thereof by said cavity therebetween, and including an internal cooling fluid supply chamber, to which an internal cooling fluid for cooling circuit components of said printed circuit boards is supplied, said internal cooling fluid supply chamber having a plurality of internal cooling fluid supply slots, and an internal cooling fluid exhaust chamber adjacent to said internal cooling fluid supply chamber and from which said internal cooling fluid having cooled said circuit components of said printed circuit boards is removed, said internal cooling fluid exhaust chamber having a plurality of internal cooling fluid removal slots adjacent to said plurality of internal cooling fluid supply slots;

a plurality of first thermally conductive heat exchangers, a respective first thermally conductive heat exchanger of said plurality of first thermally conductive heat exchangers being in thermally conductive engagement with a first side of a respective printed circuit board of said plurality of circuit boards, so as to draw heat away from and thereby cool said circuit components mounted to a second side of said respective printed circuit board, and includes an internal cooling fluid inlet port at a first side of said first thermally conductive heat exchanger, and being joined in sealing engagement with a respective internal cooling fluid supply slot of said plurality of internal cooling fluid supply slots of said internal cooling fluid supply chamber of said internal cooling fluid supply/exhaust plenum, and through which said internal cooling fluid is introduced from said internal cooling fluid supply/exhaust plenum, and an internal cooling fluid outlet port adjacent to said internal cooling fluid inlet port at said first side of said first thermally conductive heat exchanger, and joined in sealing engagement with a respective internal cooling fluid removal slot of said plurality of internal cooling fluid removal slots of said internal cooling fluid exhaust chamber of said internal cooling fluid supply/exhaust plenum, and through which said internal cooling fluid is exhausted from said first thermally conductive heat exchanger into said internal cooling fluid supply/exhaust plenum;

a plurality of second thermally conductive heat exchangers mounted externally of said chassis and over which an external cooling fluid external of said housing passes; and

a sealed, internal cooling fluid recirculation structure coupled with said internal cooling fluid supply/exhaust plenum, and containing third thermally conductive heat exchangers that are convectively coupled with said internal cooling fluid and are conductively coupled to said second thermally conductive heat exchangers supported externally of said chassis, said sealed, internal cooling fluid recirculation structure recirculating said internal cooling fluid through said internal cooling fluid supply/exhaust plenum, and thereby through said internal cooling fluid flow chambers of said first thermally conductive heat exchangers of said printed circuit cards, so that said internal cooling fluid is cooled by said second thermally conductive heat exchangers supported externally of said chassis.

5,825,622

HEAT SINK ASSEMBLY WITH ADJUSTABLE MOUNTING CLIP

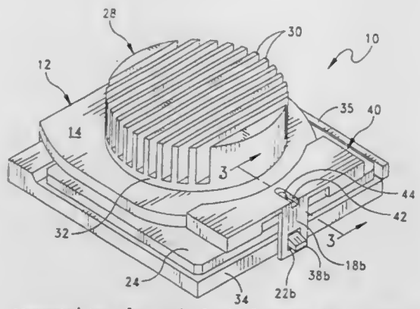
William B. Rife, Greenville, and Rodney H. Pare, West Warwick, both of R.I., assignors to Chip Coolers, Inc., Warwick, R.I.

Filed May 17, 1997, Ser. No. 818,361
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **18 Claims**

1. A heat sink assembly for removing heat from an electronic device package installed in a socket having protrusions emanating therefrom and defining a socket length, comprising:

a planar member with a first end and a second end opposing said first end;

a fixed leg downwardly depending from and connected to said first end of said planar member; fixed leg attachment means



connected to a free end of said fixed leg for securing said fixed leg to at least one protrusion emanating from said socket;

a movable leg adjustably connected to said second end of said planar member; movable leg attachment means connected to a free end of said movable leg for securing said movable leg to at least one protrusion emanating from said socket which is not secured to by said fixed leg attachment means;

adjustment means connected to said movable leg for adjustably receiving and connecting to said second end of said top member;

a heat sink member having a flat bottom surface adapted to be received into contact with said electronic device package;

mount means connected to said planar member and said heat sink member for maintaining said heat sink member in thermal heat transfer communication with said electronic device package; and

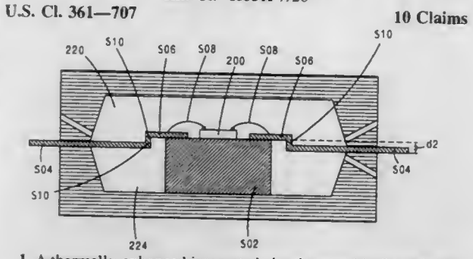
whereby said adjustment means permits said movable leg to be located at varying distances relative to said fixed leg to accommodate sockets of varying lengths while maintaining said heat sink member in communication with said electronic device package.

5,825,623

PACKAGING ASSEMBLIES FOR ENCAPSULATED INTEGRATED CIRCUIT DEVICES

Sang S. Lee, Sunnyvale, and Che-Yuan Chen, San Jose, both of Calif., assignors to VLSI Technology, Inc., Sane Jose, Calif.

Filed Dec. 8, 1995, Ser. No. 569,772
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—707 **10 Claims**



1. A thermally-enhanced integrated circuit assembly for reducing pinhole formation, said integrated circuit assembly is placed in a mold having a first cavity half and a second cavity half for encapsulation, comprising:

an integrated circuit die;

a thermally conductive heat sink having a first heat sink surface coupled to a first side of said die; and

a conductive lead frame having a plurality of inwardly-extending fingers, said plurality of inwardly-extending fingers being offset from said lead frame such that inward ends of said inwardly extending fingers form a horizontal first plane parallel to and separated from a horizontal second plane by an offset distance, said horizontal second plane representing a plane formed by said conductive lead frame, said plurality of inwardly extending fingers being electrically coupled to bonding pads disposed on a second side of said die opposite said first side and attached to the outer periphery of said thermally conductive heat sink at said first heat sink surface,

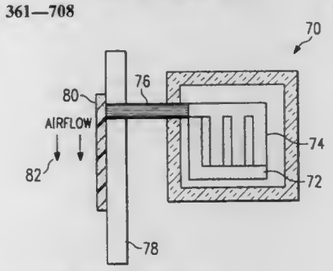
wherein said integrated circuit assembly including said thermally conductive heat sink and said conductive lead frame is clamped between a first cavity half and a second cavity half of a mold having an exhaust vent, said offset distance between said horizontal first plane and said horizontal second plane shifts a first portion of said thermally conductive heat sink vertically away from said second cavity half and into said first cavity half and said thermally conductive heat sink protrudes into said second cavity half.

5,825,624

HIGH HEAT DENSITY TRANSFER DEVICE

Judson V. Arnold, Bedford; James R. Peoples, Burleson, and Elbert L. McKague, Fort Worth, all of Tex., assignors to Lockhead Fort Worth Company, Fort Worth, Tex.

Division of Ser. No. 704,394, Aug. 27, 1996, which is a division of Ser. No. 326,650, Oct. 20, 1994, Pat. No. 5,566,752.
This application Feb. 5, 1997, Ser. No. 795,081
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—708 **9 Claims**



1. An electronic device, comprising:

a diamond substrate to which the electronic device is coupled; and

a heat transfer device for dissipating and removing heat energy from the electronic device and delivering the heat energy to a heat sink, the heat transfer device comprising:

an interconnect point for connecting to the diamond substrate for receiving the heat energy from the diamond substrate; and

a fiber fused to the diamond substrate at the interconnect point for receiving the heat energy from the diamond substrate and conducting the heat energy to the heat sink.

5,825,625

HEAT CONDUCTIVE SUBSTRATE MOUNTED IN PC BOARD FOR TRANSFERRING HEAT FROM IC TO HEAT SINK

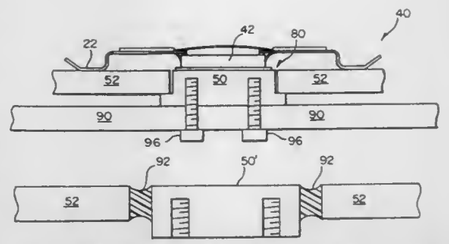
Dennis R. Esterberg, Philomath; Mark A. Smith, Corvallis; Paul A. Rubens, Salem, and Tracy A. Lang, Corvallis, all of Oreg., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 650,407, May 20, 1996, abandoned. This application Oct. 9, 1996, Ser. No. 728,394
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—719 **7 Claims**

1. An apparatus for conducting heat away from an integrated circuit, the integrated circuit defining a underlying surface area and an overlying surface area, the apparatus comprising:

a PC board defining a through-opening over a thickness of the PC board, the PC board having a first surface and a second surface;

a heat conductive substrate, a first portion of which is mounted within the through-opening, a second portion of which is



mounted with a quantity of solder to the first surface of the PC board adjacent to the through-opening to define a contact area extending outward from the through-opening for a first length, said first length being less than the PC board thickness to minimize thermal communication between the heat conductive substrate and the PC board, the heat conductive substrate having a first surface with an area at least as large as the integrated circuit underlying area, wherein the first surface of the heat conductive substrate is co-planar with the second surface of the PC board;

a first heat sink removably mounted into thermal contact with the substrate;

a second heat sink having a plurality of legs, the second heat sink positioned on an opposing side of the PC board than the first heat sink and the second heat sink mounted to the overlying surface area of the integrated circuit;

a plurality of mounting screws, the first heat sink attached to the second heat sink with the plurality of mounting screws extending through the PC board into the plurality of legs of the second heat sink; and

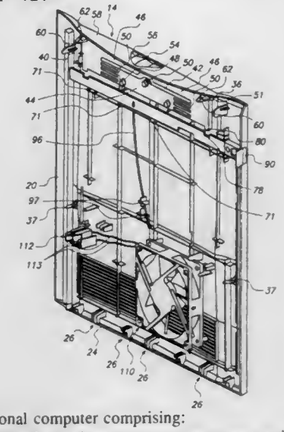
wherein the integrated circuit is fixed into thermal contact with the beat conductive substrate first surface at the integrated circuit's underlying surface area.

5,825,626

PERSONAL COMPUTER HAVING LOCKABLE ACCESS PANEL

Troy K. Hulick, Saratoga, and Wayman Lee, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 7, 1997, Ser. No. 779,665
Int. Cl.[6] H05K *5/03;* **G06F** *1/16*
U.S. Cl. 361—724 **12 Claims**



1. A personal computer comprising:

a housing storing at least a power component and an accessory card supporting component;

an access panel mounted to the housing for swinging movement between open and closed positions, said access panel providing access to the components when in an open state;

a manually releasable latch for holding the access panel in the closed position; and

a locking mechanism for preventing the access panel from being opened, wherein the locking mechanism comprises a locking element movable between a locking position and an unlocking position, the locking element being movable to its locking position such that a portion of the locking element moves out of the computer to an exposed state for receiving an auxiliary locking member which prevents the locking element from moving back to its unlocking position;

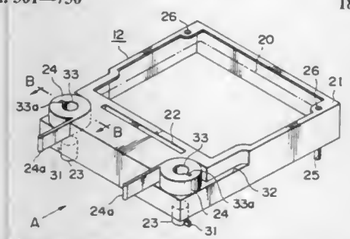
wherein the latch is movable in a path of travel, the locking element having an abutment surface the abutment surface being situated in and out of the path of travel when the locking element is in its locking and unlocking positions, respectively.

5,825,627

MULTISTAGE-COUPLED MODULES HAVING ELECTRONIC PARTS

Tetsuya Tamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 10, 1997, Ser. No. 966,561
Claims priority, application Japan, Nov. 11, 1996, 8-298988
Int. Cl.[6] H05K *7/00*
U.S. Cl. 361—730 **18 Claims**



1. An electronic module comprising a module housing and an electronic part mounted by said module housing, said module housing having a first surface and a second surface opposed to each other, said first surface mounting thereon a depression element at a first location, said second surface mounting thereon a protrusion element at a second location corresponding to said first location, said depression element and said protrusion element having corresponding configurations for allowing two of said module housings to be coupled with each other, wherein one of said depression element and said protrusion element has a helical groove, the other of said depression element and said protrusion element has a lock pin having a configuration corresponding to a configuration of a cross-section of said helical groove, and one of said depression element and protrusion element is pivotally mounted by said module housing, and wherein said depression element is cylindrical and has a handle for rotation.

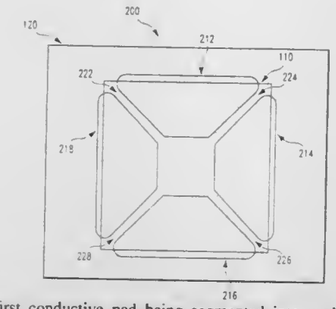
5,825,628

ELECTRONIC PACKAGE WITH ENHANCED PAD DESIGN

Francesco Garbelli, Arcore, and Stefano Oggioni, Vimercate, both of Italy, assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/GB96/02420, § 371 Date Jun. 3, 1997, § 102(e) Date Jun. 3, 1997, PCT Pub. No. WO97/13275, PCT Pub. Date Apr. 10, 1997
PCT Filed Oct. 3, 1996, Ser. No. 849,578
Int. Cl.[6] H01L *25/00;* **H05K** *1/18*
U.S. Cl. 361—763 **10 Claims**

1. An electronic package including a substrate (**120**) and at least one device (**110**), said at least one device (**110**) being attached to said substrate (**120**) by means of a first conductive pad provided on a first surface of said substrate (**120**),



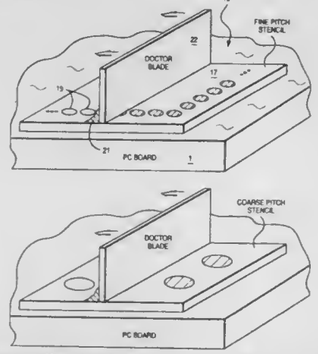
said first conductive pad being segmented into a plurality of parts (**212–218**), wherein each of said plurality of parts being not in contact with any other of said plurality of parts.

5,825,629

PRINT CIRCUIT BOARD PRODUCT WITH STENCIL CONTROLLED FINE PITCH SOLDER FORMATION FOR FINE AND COARSE PITCH COMPONENT ATTACHMENT

Karl Grant Hoebener, Georgetown; Eric Max Hubacher, and Julian Peter Partridge, both of Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y., and Motorola, Inc., Shaumburg, Ill.

Continuation of Ser. No. 453,028, May 30, 1995, abandoned, which is a division of Ser. No. 298,983, Aug. 31, 1994, Pat. No. 5,492,266. This application Sep. 9, 1996, Ser. No. 709,674
Int. Cl.[6] H05K *1/03;1/09;1/11;7/02*
U.S. Cl. 361—777 **1 Claim**



1. An intermediate level printed circuit board product, comprising:

a dielectric structure core;

a conductive interconnect layer with fine and course pitch contacts configured to connect surface mounted components of corresponding contact pitch on at least one surface of the dielectric structure core;

solder reflowed onto conductive layer fine pitch contacts as defined by openings in a first stencil, the reflowed solder characterized in having an origin composition of solder paste screen deposited into fine pitch openings in the first stencil and further characterized in having a shape constrained by a reflow performed at an elevated temperature in the presence of the first stencil;

solder paste screen deposited on conductive layer coarse pitch contacts as defined by coarse pitch openings in a second stencil, having a pattern different than the first stencil, during a solder paste screen deposition following removal of the first stencil, wherein the fine pitch contacts formed using the first stencil are finer by a factor of two or more than the coarse pitch contacts defined by the solder paste deposited using the second stencil;

first components affixed to select conductive layer fine pitch contacts using flux deposited on the reflowed solder; and

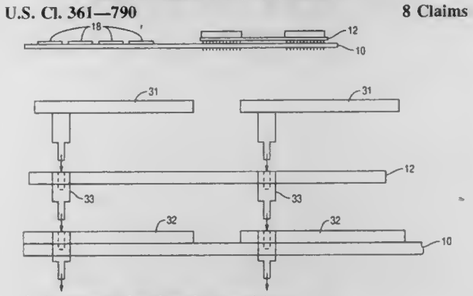
second components affixed to select conductive layer coarse pitch contacts using the screen deposited solder paste as defined by the second stencil.

5,825,630

ELECTRONIC CIRCUIT BOARD INCLUDING A SECOND CIRCUIT BOARD ATTACHED THERE TO TO PROVIDE AN AREA OF INCREASED CIRCUIT DENSITY

Billy K. Taylor, Columbia, and Richard I. Mellitz, Irmo, both of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Nov. 7, 1996, Ser. No. 744,964
Int. Cl.[6] H05K *1/14;7/06;* **H01R** *23/72*
U.S. Cl. 361—790 **8 Claims**



1. A computer baseboard, comprising:

a first circuit board having a surface onto which electrical components are mounted, and an area to which a second circuit board is connected in a parallel arrangement with said first circuit board;

said second circuit board having a first surface onto which electrical components are mounted, and a second surface physically and electrically connected to said area on said first circuit board;

said second circuit board being constructed of materials with better electrical characteristics than the materials used in the construction of said first circuit board and wherein said second circuit board has more substrate layers than said first circuit board;

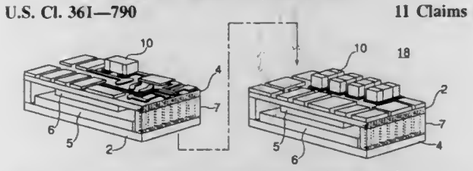
whereby said second circuit board and said connected area on said first circuit board together provide support for electrical components having higher pin counts and densities than said first circuit board individually.

5,825,631

METHOD FOR CONNECTING TWO SUBSTRATES IN A THICK FILM HYBRID CIRCUIT

Dave Prchal, Hopkins, Minn., assignor to Starkey Laboratories, Eden Praire, Minn.

Filed Apr. 16, 1997, Ser. No. 839,880
Int. Cl.[6] H05F *1/11;* **H01R** *9/09*
U.S. Cl. 361—790 **11 Claims**



1. An electronic device formed from a plurality of interconnected hybrid electronic circuits, comprising:

a first substrate;

a plurality of first electronic components disposed on a first side and on a second side of the first substrate forming a first hybrid circuit, the first electronic components on the first side of the first substrate being less than a first predetermined height;

a first set of interconnect points disposed on the first side of the first substrate and electrically connected with the first hybrid circuit;

a second substrate;

a plurality of second electronic components disposed on at least a first side of the second substrate forming a second hybrid circuit, the second electronic components on the first side of the second substrate being less than a second predetermined height;

a second set of interconnect points disposed on the first side of the second substrate and electrically connected with the second hybrid circuit;

a ceramic block disposed between the first sides of the first and second substrates, a thickness of the ceramic block being greater than a sum of the first and second predetermined heights, the ceramic block covering less than a total area of the first sides of the first and second substrates, so that the first sides are substantially free to accommodate the first and second electronic components;

a plurality of passages being disposed through the ceramic block, the passages being aligned with the first and second sets of interconnection points; and

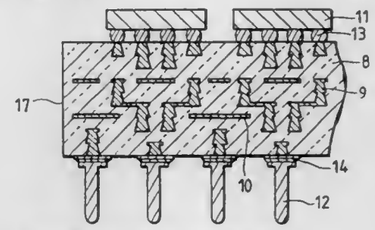
conductive material disposed in the plurality of passages, whereby a plurality of conductive paths are formed between the first and second set of interconnection points, whereby the interconnected first and second hybrid circuits form the electronic device.

5,825,632

CIRCUIT SUBSTRATE AND ELECTRONICS COMPUTER, USING SINTERED GLASS CERAMICS

Hirayoshi Tanei; Shoichi Iwanaga; Masahide Okamoto, all of Yokohama; Masato Nakamura, Fujisawa; Kousaku Morita, Zama; Shousaku Ishihara, Chigasaki; Fumiyuki Kobayashi, Sagamihara; Fumikazu Tagami; Norio Sengoku, both of Hadaoo, and Tsuyoshi Fujita, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 8, 1995, Ser. No. 512,705
Claims priority, application Japan, Aug. 19, 1994, 6-195806
Int. Cl.[6] H05K *1/11;1/03;1/16*
U.S. Cl. 361—795 **18 Claims**



1. An electronic circuit module comprising:

a multilayered circuit substrate with circuit substrates containing amorphous glass with a softening point in a range of 850° to 1100° C., so as to facilitate removal of binder from green sheets used in forming the multilayered circuit substrate, and Cu wiring formed on said circuit substrates, wherein said amorphous glass contains 82 to 90% by weight of SiO_2, 5 to 18% by weight of B_2O_3 and 0 to 6% by weight of R_2O, where R represents an alkali metal; and

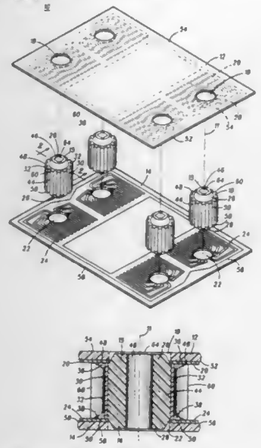
LSIs and I/O pins mounted on the multilayered circuit substrate and connected to the Cu wiring.

5,825,633

MULTI-BOARD ELECTRONIC ASSEMBLY INCLUDING SPACER FOR MULTIPLE ELECTRICAL INTERCONNECTIONS

C. Gregory Bujalski, Geneva; Jeffrey M. Petsinger, Wayne, and Daniel T. Rooney, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 5, 1996, Ser. No. 740,940
Int. Cl.[6] H05K *1/11*
U.S. Cl. 361—804 19 Claims



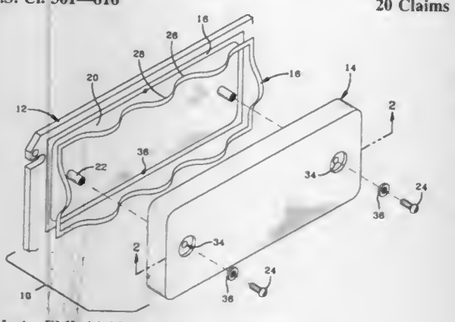
1. A multi-board electronic assembly comprising:
a first substrate that includes a first receptacle and a first circuit trace;
a second substrate that includes a second receptacle and a second circuit trace; and
a spacer having a longitudinal axis, a first end received in the first receptacle, a second end received in the second receptacle, a midsection having at least a ridge and a longitudinal channel, said spacer being formed generally of a nonconductive body and including a metallic strip generally recessed relative to the ridge and disposed within the channel to form a conductive path to connect the first circuit trace and the second circuit trace.

5,825,634

CIRCUIT BOARD HAVING AN EMI SHIELDED AREA

Joseph W. Moorehead, Jr., Westerville, Ohio, assignor to BFGoodrich Avionics Systems, Inc., Richfield, Ohio

Filed Dec. 22, 1995, Ser. No. 577,024
Int. Cl.[6] H05K *9/00*
U.S. Cl. 361—816 20 Claims



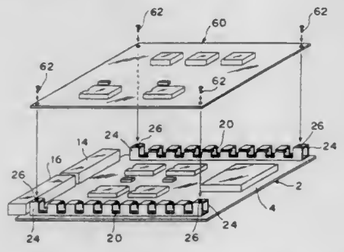
1. An EMI shielded assembly, comprising:
a circuit board having at least one electrical contact distributed around the perimeter of an area within which EMI shielding is desired;
an EMI shielding cover encircling said area over said contact and covering said area; and,
a ring-like EMI shielding gasket encircling said area and compressed between said contact and said cover, said gasket in an uncompressed state having low portions alternated with high portions spaced around said gasket, said high portions being spaced away from said at least one electrical contact above said low portions, and said high portions being displaceable toward said low portions upon compression of said gasket.

5,825,635

WARP PREVENTION AND CABLE HOLDING STRUCTURE FOR PRINTED CIRCUIT BOARD

Takahide Mukoyama; Fujio Ozawa; Takashi Inoue; Katsunori Suzuki; Yasutaka Tsuruoka; Mieko Hirao, and Kozo Mori, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 17, 1995, Ser. No. 544,160
Claims priority, application Japan, Mar. 16, 1995, 7-057151
Int. Cl.[6] H02B *1/20*
U.S. Cl. 361—826 5 Claims



1. A warp prevention structure for a printed circuit board comprising:
a first warp prevention fitting mounted on said printed circuit board in the vicinity of an upper edge thereof so as to extend along said upper edge; and
a second warp prevention fitting mounted on said printed circuit board in the vicinity of a lower edge thereof so as to extend along said lower edge;
each of said first and second warp prevention fittings being integrally formed with a plurality of cable holders arranged at equal intervals; and
wherein each of said cable holders has a height greater than a height of each of components mounted on said printed circuit board.

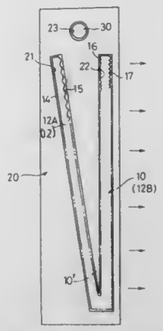
5,825,636

PLANAR LUMINESCENT DEVICE AND PLANAR LUMINESCENT ELEMENT

Michio Kuroki, Tokyo; Tokio Mizukami, and Yoshiyuki Nakaya, both of Kanagawa-ken, all of Japan, assignors to International Manufacturing and Engineering Services Co., Ltd., Kanagawa-Ken, Japan

Filed Feb. 23, 1996, Ser. No. 606,211
Claims priority, application Japan, Mar. 1, 1995, 7-042122
Int. Cl.[6] F21V *13/04*
U.S. Cl. 362—309 10 Claims

1. A planar luminescent device comprising:
a synthetic resin sheet having at least one fold and a plurality of sheet sections foldable along said fold;
a sheet holder adapted to hold said sheet sections of the sheet folded along said fold in a predetermined accordion-like folded position;



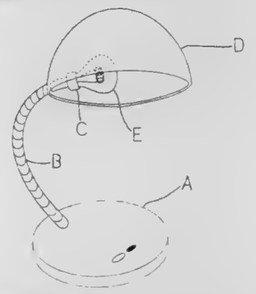
a reflective layer and a light emitting layer respectively provided on the sheet sections defining opposite ends of the sheet folded and held by the sheet holder; and
a light source operable to emit light rays and so positioned relative to said sheet that said emitted light rays are directed toward said reflective layer.

5,825,637

ADJUSTABLE DESK LAMP

Meiric Chen, 73-31 Chiun Lin S. Rd. Hsin Chuang City, Taipei Hsien, Taiwan

Filed Nov. 26, 1997, Ser. No. 979,816
Int. Cl.[6] F21V *17/00*
U.S. Cl. 362—417 4 Claims



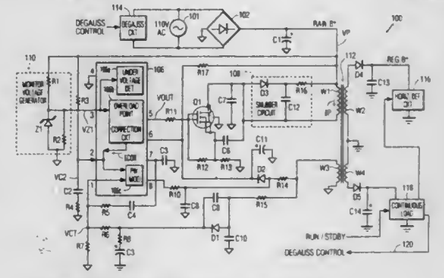
1. A desk lamp comprising:
a stand having a top rod;
a pad mounted on the top rod of said stand, said pad having an outer thread raised from a top side thereof;
a supporting base mounted on said pad, said supporting base comprising two mounting holes at two opposite lateral sides thereof, and a bottom screw hole threaded onto the outer thread of said pad;
two support arms bilaterally connected to said supporting base, said support arms having a respective bottom end respectively fastened to the mounting holes on said supporting base, and a respective top end;
two coupling members respectively mounted on said support arms, said coupling members having a respective bottom coupling hole which receives the top ends of said support arms respectively, and a respective axial hole;
two lamp shade holder frames respectively fastened to said coupling members at an inner side, each of said lamp shade holder frames comprising a transverse screw hole at a bottom side connected to the axial hole on one coupling member by a screw, an upward mounting slot at a top side, and a transverse screw hole perpendicularly disposed in communication with said upward mounting slot;
a lamp shade mounted on the upward mounting slots of said lamp shade holder frames, said lamp shade having two mounting holes at two opposite sides respectively connected to the transverse screw holes on said lamp shade holder frames by a respective screw;
a lamp holder holding a bulb, said lamp holder having two mounting holes at two opposite sides;
two connecting rods respectively connected between said lamp shade holder frames and said lamp holder, each of said connecting rods having one end fastened to the transverse screw hole on one lamp shade holder frame and an opposite end fastened to one mounting hole on said lamp holder; and
a reflector fastened to said lamp holder and adapted to reflect light from said bulb onto the inside of said lamp shade.

5,825,638

SWITCHED-MODE POWER SUPPLY CONTROL CIRCUIT

Bruce Wayne Shutts, Westfield, Ind., assignor to Thomson Consumer Electronics, Inc., Indianapolis, Ind.

Filed Sep. 13, 1996, Ser. No. 713,380
Int. Cl.[6] H02M *3/335*
U.S. Cl. 363—21 12 Claims



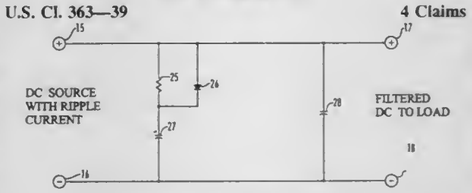
1. A switch mode power supply, comprising:
a source of an input supply voltage;
a switch responsive to a first control signal having a controllable duty cycle and coupled to said source of input supply voltage for generating an output supply voltage, in accordance with said duty cycle of said first control signal;
a duty cycle modulator responsive to a second control signal for generating said first control signal and for controlling said duty cycle of said first control signal in accordance therewith, said modulator being responsive to a signal that is indicative of said input supply voltage for decreasing said duty cycle when said input supply voltage increases; and
a limiter coupled to said modulator for limiting the decrease in duty cycle, for a given increase in said input supply voltage, when said input supply voltage exceeds a first magnitude.

5,825,639

DC BUS CAPACITOR ARRANGEMENT

Robert G. Wagoner, Waukesha, Wis., assignor to MagneTek, Inc., Nashville, Tenn.

Filed Oct. 16, 1997, Ser. No. 951,549
Int. Cl.[6] H02M *1/12*
U.S. Cl. 363—39 4 Claims



1. A dc bus capacitor arrangement for power converters comprising:

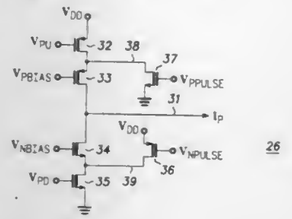
at least one film capacitor connected across a dc bus, the film capacitor carrying substantially all of a ripple current;
a resistor series connected to at least one electrolytic capacitor, the series combination of the resistor and the electrolytic capacitor connected across the dc bus;
a diode having an anode connected to a positive side of the dc bus, the diode having a cathode connected between the resistor and the electrolytic capacitor such that the ripple current on the electrolytic capacitor is substantially reduced.

5,825,640

CHARGE PUMP CIRCUIT AND METHOD

John H. Quigley, Phoenix, and David A. Newman, Tempe, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 30, 1997, Ser. No. 885,970
Int. Cl.[6] H02M *3/18;* **H03L** *7/06*
U.S. Cl. 363—60 **23 Claims**



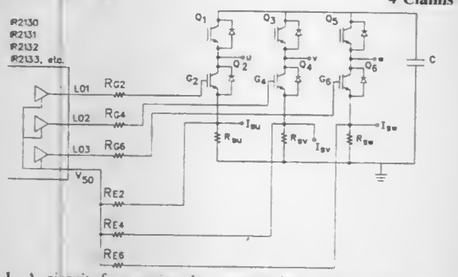
1. A charge pump, comprising:
a first current conduction path responsive to a first input pulse for supplying a pump current to an output of the charge pump; and
a charge circuit coupled to a first node of the first current conduction path where the charge circuit is disabled during a first transition of the first input pulse and enabled during a second transition of the first input pulse to alter a charge on the first node.

5,825,641

CIRCUIT FOR SENSING INDIVIDUAL LEG CURRENT IN A MOTOR CONTROLLER USING RESISTIVE SHUNTS

Vijay Mangtani, Playa Del Ray, Calif., assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Jan. 26, 1998, Ser. No. 13,239
Int. Cl.[6] H02M *7/5387*
U.S. Cl. 363—98 **4 Claims**



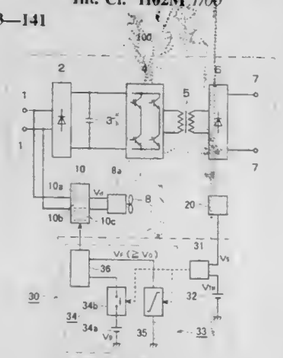
1. A circuit for sensing leg current in a three-phase motor controller circuit, said motor controller circuit including three high side transistors connected in series, respectively, with three low side transistors, each of said series connected high side and low side transistors comprising one leg of the three-phase motor controller circuit, each of said high side and low side transistors having an emitter and a gate, the gates of each of said three low side transistors being driven by a single control integrated circuit chip, said control integrated circuit chip including a common V_{SO} pin, said circuit for sensing leg current comprising:
three shunt resistors disposed, respectively, between the emitters of each of said three low side transistors and ground; and
three emitter return resistors disposed, respectively, between the emitters of each of said low side transistors and the common V_{SO} pin of said control integrated circuit chip;
wherein the voltage across each of said three shunt resistors corresponds, respectively, to the current flowing through each of the legs of said three-phase motor controller circuit.

5,825,642

POWER SUPPLY APPARATUS

Hideo Ishii, Minoo; Haruo Moriguchi, Itami, both of Japan; Nathaniel S. Hansen, Hanover, and Michael R. Dumont, Lebanon, both of N.H., assignors to Sansha Electric Manufacuring Co. Limited, Osaka, Japan, and Thermal Dynamics Corporation, West Lebanon, N.H.

Filed May 27, 1997, Ser. No. 863,137
Claims priority, application Japan, Nov. 8, 1996, 8-313063
Int. Cl.[6] H02M *1/00*
U.S. Cl. 363—141 **11 Claims**



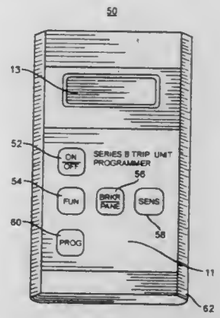
1. A power supply apparatus comprising a housing, a component which generates heat when operating, said component being disposed in said housing, and a fan disposed in said housing for cooling said heat-generating component, wherein said power supply apparatus further comprises:
a driving unit for driving said fan;
a temperature detector for providing a temperature representative signal representing the temperature in said housing;
means for calculating the difference between the value of said temperature representative signal and a predetermined reference value; and
control signal generating means for generating a control signal causing said driving unit to apply to said fan a driving voltage for setting the rotation speed of said fan to zero during a time period when said difference indicates that the value of said temperature representative signal is smaller than said reference value, and generating a control signal causing said driving unit to apply to said fan a driving voltage which causes said fan to rotate at a substantially maximum rotation speed for only a predetermined time period in an initial portion of the time period when said difference indicates that the value of said temperature representative signal is equal to or greater than said reference value and then causes said fan to rotate at a rotation speed which is determined in accordance with said difference.

5,825,643

PROGRAMMING DEVICE FOR A CIRCUIT BREAKER

Robert F. Dvorak, Mt. Vernon, and Jerry R. Baack, Cedar Rapids, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed Aug. 25, 1993, Ser. No. 112,018
Int. Cl.[6] G05B *11/01;* **H02H** *3/08*
U.S. Cl. 364—140 **49 Claims**



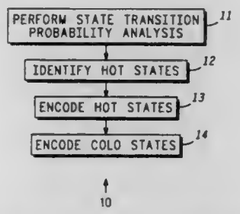
1. A programming device for programming a circuit breaker trip unit, comprising:
a keypad;
a display;
a local power source for providing power to the programming device;
interface means for coupling data sent to and from the trip unit with the programming device;
a control circuit, which interprets signals received from the keypad, for controlling the display and transmitting data to the trip unit, the data functions to program the trip unit with circuit breaker tripping characteristics which are provided to the control circuit from the keypad; and
verifying means for verifying that the trip unit was programmed with the circuit breaker tripping characteristics.

5,825,644

METHOD FOR ENCODING A STATE MACHINE

Gary K. Yeap, Gilbert, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 4, 1996, Ser. No. 610,299
Int. Cl.[6] G06F *3/00*
U.S. Cl. 364—141 **17 Claims**



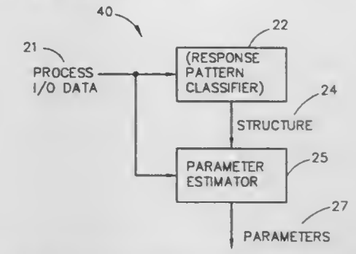
7. A method for encoding a state machine, comprising the steps of:
performing a transition probability analysis on the state machine;
identifying a first hot state and a second hot state from the transition probability analysis;
generating an initial encoding by performing at least the steps of encoding the first hot state and encoding the second hot state to minimize a Hamming distance for a transition between the first hot state and the second hot state;
performing a local encoding exploration on the initial encoding of the first hot state and the second hot state to generate a first encoding; and
generating a circuit implementation from the first encoding.

5,825,645

TWO-LEVEL SYSTEM IDENTIFIER APPARATUS WITH OPTIMIZATION

Ahmet Ferit Konar, Circle Pines, and Tariq Samad, Minneapolis, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Continuation of Ser. No. 110,626, Aug. 23, 1993, abandoned, which is a continuation of Ser. No. 643,595, Jan. 22, 1991, abandoned. This application May 15, 1995, Ser. No. 441,238
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—148 **16 Claims**



1. An two level system identifier apparatus for identifying both the structure and estimating uncontrollable and unmeasured parameters of a controlled system comprising:
structure identifier means for determining the structure of a function which describes the mathematical relationship of the inputs to a system and the outputs from said system,
communication means for transferring the determined function structure and generating the function, the relationship and parameters, including uncontrollable and unmeasured parameters, of which describes said mathematical relationship in terms of said parameters,
parameter estimator means for receiving said function from said communication means and for estimating said parameters' value.

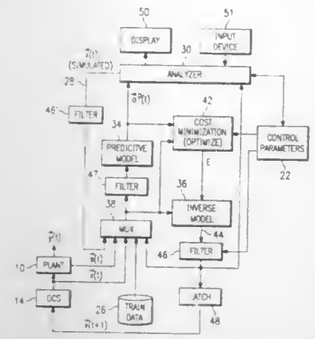
5,825,646

METHOD AND APPARATUS FOR DETERMINING THE SENSITIVITY OF INPUTS TO A NEURAL NETWORK ON OUTPUT PARAMETERS

James David Keeler; Eric J. Hartman, and Kadir Liano, all of Austin, Tex., assignors to Pavilion Technologies, Inc., Austin, Tex.

Continuation of Ser. No. 56,197, Apr. 30, 1993, abandoned, which is a continuation-in-part of Ser. No. 25,184, Mar. 2, 1993, abandoned. This application Jun. 3, 1996, Ser. No. 656,702
Int. Cl.[6] G05B *13/02*
U.S. Cl. 364—164 **20 Claims**

12. A method for generating control inputs with a distributed control system that generates control inputs for a plant, comprising the steps of:
providing a control model that contains a representation of a plant;
inputting a desired input value that defines desired operating parameters for the plant;
inputting the control inputs generated by the distributed control system to the control model;
predicting control input values that will allow the plant to operate at the desired input value by processing the desired input value and current control inputs from the distributed



control system to generate an error and minimizing the error with the control model, the predicted control inputs operable to be input to the distributed control system in order for the distributed control system generate new control inputs;

storing sensitivity modifiers for defining the effect of each of the input variables on the plant output; and

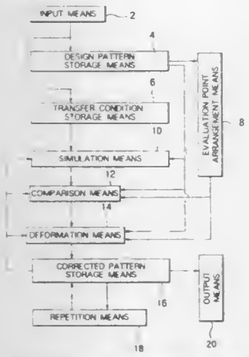
modifying the value of the predicted control input values prior to input to the distributed control system in accordance with a predetermined function of the stored sensitivity modifiers.

5,825,647

CORRECTION METHOD AND CORRECTION APPARATUS OF MASK PATTERN

Keisuke Tsudaka, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 12, 1996, Ser. No. 614,313
Claims priority, application Japan, Mar. 13, 1995, 7-053053
Int. Cl.[6] G06F *19/00;15/00*
U.S. Cl. 364—167.03 **12 Claims**



1. A method for correcting a mask pattern in which the mask pattern of a photomask to be used in a photolithographic step is deformed so that a transfer image near a desired design pattern is obtained, comprising the steps of:

arranging a plurality of evaluation points along an outer periphery of the desired design pattern;

simulating the transfer image to be obtained where exposure is carried out under predetermined transfer conditions by using a photomask of the design pattern based on the evaluation points;

comparing a difference between the simulated transfer image and the design pattern for every evaluation point; and

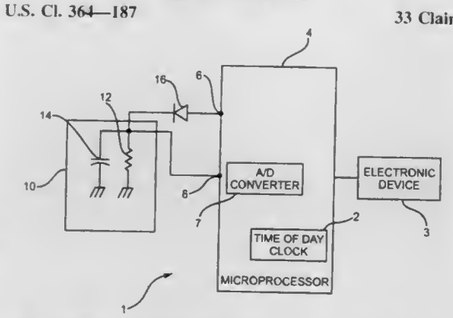
deforming the design pattern according to the difference compared for every evaluation point so that the difference becomes smaller.

5,825,648

BACKUP SYSTEM FOR A TIME OF DAY CLOCK IN AN ELECTRONIC DEVICE

Mark J. Karnowski, Huntington Beach, Calif., assignor to Casio PhoneMate, Inc., Torrance, Calif.

Filed Mar. 26, 1996, Ser. No. 622,656
Int. Cl.[6] G05B *9/02*
U.S. Cl. 364—187 **33 Claims**



31. A method of providing a backup system for a time of day clock in an electronic device, comprising the steps of:

charging a resistor-capacitor circuit with an electrical charge;

measuring a first discharge time of the resistor-capacitor circuit without the use of an accelerated discharge means prior to power interruption;

measuring a second discharge time of the resistor-capacitor circuit using an accelerated discharge means prior to power interruption;

permitting an interruption in a supply of power;

permitting the resistor-capacitor circuit to discharge without the use of the accelerated discharge means during the power interruption;

permitting a resumption of the supply of power;

substantially immediately after resumption of the supply of power, allowing the resistor-capacitor circuit to continue to discharge with the accelerated discharge means enabled;

measuring the time required to substantially completely discharge the resistor-capacitor circuit from the point of resumption of the supply of power;

calculating the length of time of the power interruption by utilizing the time required to substantially completely discharge the resistor-capacitor circuit; and

adding the calculated length of time of the power interruption to the time of the time of day clock.

5,825,649

KERNEL SUBSTITUTION METHOD IN MULTI-PROCESSOR SYSTEM AND MULTI-PROCESSOR SYSTEM HAVING KERNEL SUBSTITUTION FUNCTION

Masahiko Yoshimura, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 18, 1995, Ser. No. 443,773
Claims priority, application Japan, May 19, 1994, 6-105647
Int. Cl.[6] G05B *9/02*
U.S. Cl. 364—187 **21 Claims**

1. A multi-processor system comprising:

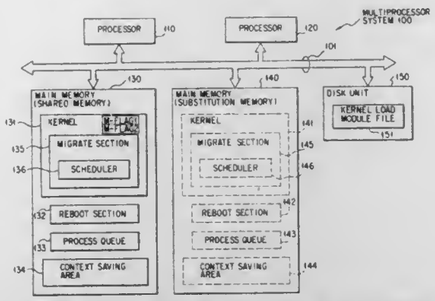
a plurality of processors initially operating based on a first kernel;

one or more processes allocated to any of the processors among said plurality of processors;

a second kernel;

migrating means for allocating all processes allocated to a first processor of said plurality of processors to another processor;

rebooting means for rebooting said first processor having a process allocation changed by said migrating means based on said second kernel; and



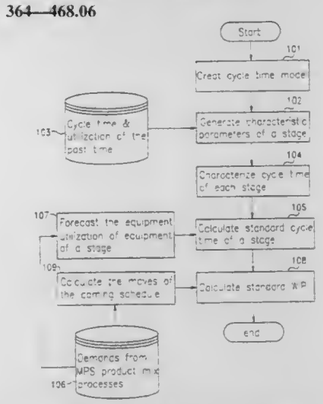
means for causing said migrating means and said rebooting means to operate for all of said processors operating based on said first kernel.

5,825,650

METHOD FOR DETERMINING STANDARD CYCLE TIME OF A STAGE DYNAMICALLY

Tza-Huei Wang, Pa Teh, Taiwan, assignor to Taiwan Semiconductor Manufacturing Co., Ltd., Hsinchu, Taiwan

Filed Mar. 11, 1997, Ser. No. 815,304
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.06 **8 Claims**



1. A method of controlling an inventory of a stage in a semiconductor foundry, said method comprising:

generating a set of characteristic parameters (a, b) by using prior cycle times (T) having associated therewith an equipment utilization (u), wherein said prior cycle times are associated with said associated equipment utilization in accordance with a cycle time model given by $T=a+b[u/(1-u)]$;

characterizing a cycle time of said stage by using said set of characteristic parameters:

determining a demanded product quantity to be manufactured during a future product run according to a master production schedule (MPS); forecasting a future equipment utilization of said future product run by said MPS;

determining said future product run by using said cycle time model and said set of characteristic parameters according to said future equipment utilization calculated from said demanded product quantity;

calculating a future standard cycle time of said stage using said cycle time model by applying said future product run equipment utilization and said characteristic parameters to said cycle time model;

calculating a standard work in process (WIP) of said stage;

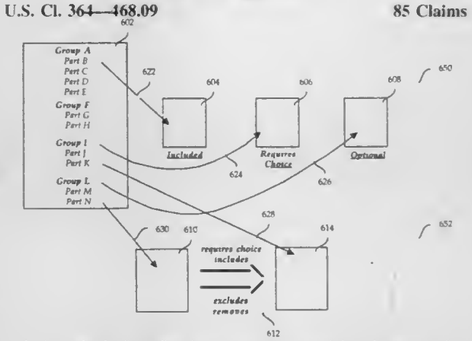
using said standard WIP to control said inventory for said stage to keep said inventory in said stage in a predetermined range.

5,825,651

METHOD AND APPARATUS FOR MAINTAINING AND CONFIGURING SYSTEMS

Neeraj Gupta; Venky Veeraraghavan, and Ajay Agarwal, all of Austin, Tex., assignors to Trilogy Development Group, Inc., Austin, Tex.

Filed Sep. 3, 1996, Ser. No. 707,187
Int. Cl.[6] G06F *1/00*
U.S. Cl. 364—468.09 **85 Claims**



1. A method of configuring a system comprising the steps of:

generating a definition for said system, said definition containing one or more elements and being conveyed graphically using a set of product relationships, said product relationships identifying classifications for said one or more elements, said product relationships comprising an includes classification;

generating a set of part relationships between said one or more elements, said set of part relationships being conveyed graphically; and

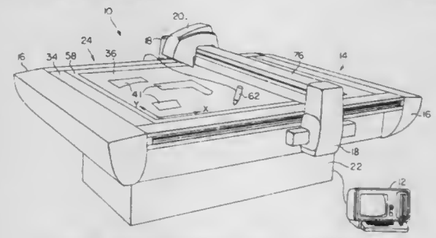
configuring said system using said definition and said set of product relationships and said part relationships.

5,825,652

SAMPLE GARMENT MAKING SYSTEM

Claude LeBlond, Broad Brook; Kevin M. Williams, Cromwell; Alex Zusmanovich, South Windsor; Allan Buckle, Cromwell, and Darryl Colburn Stein, Andover, all of Conn., assignors to Gerber Garment Technology, Inc., Tolland, Conn.

Filed Sep. 8, 1995, Ser. No. 525,123
Int. Cl.[6] G06F *19/00;* **G06G** *7/66*
U.S. Cl. 364—470.03 **37 Claims**



33. A sample garment making system comprising:

a controller for creating a marker based on data representing individual pattern pieces defining corresponding parts of the sample garment, and data representing selected portions of the sheet material on which the pattern pieces are to be arranged and the corresponding garment parts are to be cut; and

an apparatus controlled by command signals received from the controller for performing at least one work operation on the sheet material including:

a table comprising:

a porous, air-permeable core, said core defining a vacuum plenum, the plenum having a sheet material support surface for supporting the sheet material during a work operation and an opposite surface;

a digitizer disposed adjacent to the opposite surface, the digitizer being in electromagnetic communication with the support surface through the plenum and in communication with the central processor to provide the processor with data defining the sheet material;

a beam mounted on the table and extending across the support surface, each end of the beam being supported on the table by a rigid, structural box, the beam and the support surface being moveable relative to one another in a first coordinate direction;

a carriage axially surrounding an associated portion of the beam and mounted for movement along the beam in a second coordinate direction, wherein the rigid boxes and the carriage reduce at least the deflection of the beam caused by movement of the carriage along the beam in the second coordinate direction;

a toolhead carried by the carriage including:

at least one tool support for supporting a tool relative to the support surface;

a piston-cylinder assembly for moving the tool into and out of working engagement with the support surface;

means for rotatably mounting the tool on the piston; and

drive means for slidably receiving the means for mounting and for rotating said means and the tool relative to the support surface.

5,825,653

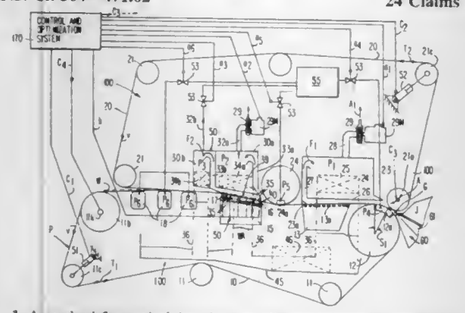
METHOD FOR OVERALL REGULATION OF A FORMER OF A PAPER MACHINE OR EQUIVALENT

Jyrki Huovila, Muurame; Jari Hämäläinen, Palokka; Petri Nyberg, and Pekka Pakarinen, both of Jyväskylä, all of Finland, assignors to Valmet Corporation, Helsinki, Finland

Filed Mar. 14, 1997, Ser. No. 818,837

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—471.02 **24 Claims**



1. A method for optimizing the overall regulation of a former of a paper or board machine in which a pulp suspension flow is drained to produce paper, comprising the steps of:

(a) forming a physical fluid flow model of the drainage and flow state of the pulp suspension flow in the former;

(b) solving the flow model to obtain a simulated flow state based on data on the geometry of the former and initial and boundary conditions related to the former;

(c) obtaining a target flow state based on quality requirements of the paper;

(d) determining a difference between the simulated flow state obtained as the solution of the flow model and the target flow state, the difference constituting a cost function;

(e) optimizing the cost function and then determining optimal regulation values and set values for regulation devices and actuators which affect the drainage and flow state of the pulp suspension flow in the former in view of the cost function; and

(f) providing the optimal regulation values and set values to the regulation devices and actuators of the former such that the regulation devices and actuators operate at the optimal regulation values and set values to thereby realize the optimization of the cost function.

5,825,654

METHOD FOR LIMITING AXIAL ACCELERATIONS WITHOUT CONTOURING ERRORS

Wolfgang Speth, Grossbottwar, and Wilhelm Westermeyer, Nürnberg, both of Germany, assignors to Siemens Aktiengesellschaft, München, Germany

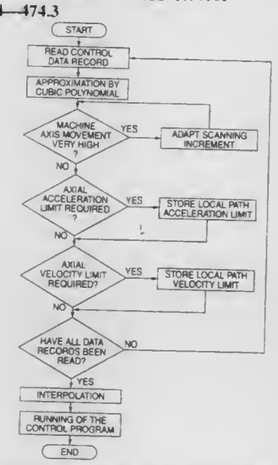
PCT No. PCT/DE95/01280, § 371 Date Jun. 27, 1997, § 102(e) Date Jun. 27, 1997, PCT Pub. No. WO96/10221, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 15, 1995, Ser. No. 809,662

Claims priority, application Germany, Sep. 29, 1994, 44 34 923.8

Int. Cl.[6] G05B *19/4103*

U.S. Cl. 364—474.3 **3 Claims**



1. A method for controlling a velocity of an electric drive, comprising the steps of:

determining approximate velocity characteristics of machine axes;

deriving at least one of a local path velocity limit and a local path acceleration limit for each of a plurality of control data records using global machine axis velocity limits and machine axis acceleration limits;

continuously adapting a scanning variable approximation increment to movements of the machine axes by coarsely scanning regions of low machine axis loading and by finely scanning critical regions of machine axis loading;

maintaining a feed rate on a path being traversed at a substantially constant predetermined value within the derived local path velocity and local path acceleration limits.

5,825,655

NORMAL OPERATING CONDITION RESTORATION DEVICE

Hitoshi Nakagawa; Toshiaki Kondo; Tetsuya Ogawa, and Takayuki Furukoshi, all of Osaka, Japan, assignors to Komatsu Ltd., Tokyo, Japan

PCT No. PCT/JP95/01521, § 371 Date Jan. 22, 1997, § 102(e) Date Jan. 22, 1997, PCT Pub. No. WO96/04109, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 31, 1995, Ser. No. 765,453

Claims priority, application Japan, Aug. 2, 1994, 6-181563

Int. Cl.[6] G06F *19/00*; B25J *9/22*

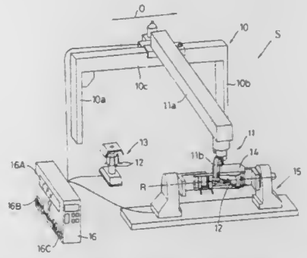
U.S. Cl. 364—474.17 **5 Claims**

1. A normal operating condition restoration device, comprising:

(a) taught point memory means for storing successive taught points that constitute a work line on which a tool travels in relation to a workpiece and storing taught points for retraction which are among said taught points included in the work line and to which the tool can be retracted from the workpiece;

(b) tool abnormality detecting means for detecting abnormal conditions which have occurred in the tool traveling on the work line relative to the workpiece wherein the work line is a path along which the tool travels, in relation to the workpiece, from a point on the workpiece in which the tool begins work on the workpiece to another point on the workpiece in which tool abnormality is detected by the tool abnormality detecting means;

(c) controlling means for performing control such that upon detection of occurrence of abnormal conditions in the tool by the tool abnormality detecting means, the tool is shifted from an abnormality occurring point to the nearest taught point for retraction, following back a path on the work line which the tool has already passed, according to point information stored in the taught point memory means so that the abnormal tool is retracted from the workpiece, and such that a new tool or repaired tool is then brought to the abnormality occurring point by way of said path on the work line to be installed thereat.



5,825,656

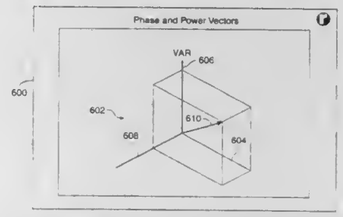
APPARATUS AND METHOD FOR POWER DISTURBANCE ANALYSIS BY DISPLAY OF POWER QUALITY INFORMATION

Robert E. Moore, San Jose; Frederic W. Nitz, Boulder Creek, and Michael A. Gipe, Saratoga, all of Calif., assignors to Reliable Power Meters, Inc., Los Gatos, Calif.

Division of Ser. No. 245,779, May 19, 1994, abandoned. This application Aug. 21, 1996, Ser. No. 700,935

Int. Cl.[6] G01R *19/06*; G06T *15/00*

U.S. Cl. 364—483 **1 Claim**



1. A method of displaying power quality information comprising the steps of:

sampling a plurality of electrical inputs to obtain a plurality of sequences of samples, wherein said plurality of electrical inputs comprises a voltage input and a current input;

deriving a total harmonic distortion signal from said plurality of sequences of samples;

deriving a total power signal from said plurality of sequences of samples;

deriving a reactive power signal from said plurality of sequences of samples;

displaying a three axes power quality graph, wherein total power is a first axis of said graph, reactive power is a second axis of said graph, and total harmonic distortion is a third axis of said graph; and

displaying a vector superimposed on said graph, wherein said vector has coordinates along said first, second, and third axes corresponding to parameters of said total harmonic distortion signal, total power signal, and reactive power signal at a selected time.

5,825,657

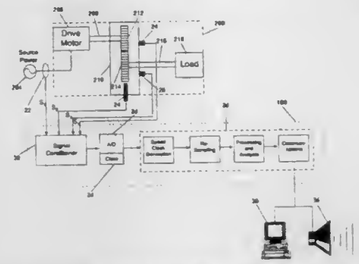
DYNAMIC, NON-UNIFORM CLOCK FOR RESAMPLING AND PROCESSING MACHINE SIGNALS

Walter C. Hernandez, Potomac, Md., assignor to Monitoring Technology Corporation, Fairfax, Va.

Filed Feb. 23, 1996, Ser. No. 606,431

Int. Cl.[6] G01M *7/00*; G01R *29/02*

U.S. Cl. 364—486 **24 Claims**



1. A method for capturing and analyzing machine signals having at least one quasi-periodic signal component, comprising the steps of:

a) placing at least one sensor on a machine;

b) obtaining initial machine signal data from said at least one sensor;

c) conditioning said initial machine signal data to remove aliasing components and produce conditioned signal data;

d) digitizing said conditioned signal data to produce uniformly sampled data;

e) processing said uniformly sampled data to produce modified machine signal data having a non-uniform sampling rate proportional in frequency to said quasi-periodic signal component, the rate of change of which is less than a cutoff value; and

f) analyzing said modified machine signal data for the purpose of determining the operating condition and performance of the machine.

5,825,658

METHOD AND A SYSTEM FOR SPECIFYING AND AUTOMATICALLY ANALYZING MULTIPLE CLOCK TIMING CONSTRAINTS IN A VLSI CIRCUIT

Arnold Ginetti, Antibes, France; Athanasius W. Spyrou, San Jose, Calif.; Jean-Michel Fernandez, Antibes, and Francois Silve, Le Cannet, both of France, assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 14, 1995, Ser. No. 528,660

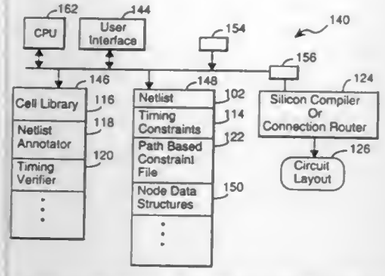
Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **7 Claims**

1. A method of specifying and analyzing multiple timing constraints in an integrated circuit, the steps of the method comprising:

(A) receiving and storing in a computer memory a netlist denoting a list of components in said integrated circuit and a set of nodes interconnecting said components; each said component of said integrated circuit having at least one input port and at least one output port, said set of nodes including a set of circuit input nodes and circuit output nodes for said integrated circuit;

(B) receiving and storing in said computer memory a plurality of system level timing constraints, said system level timing



constraints representing maximum delay times for signals to propagate from input nodes to output nodes of said integrated circuit;

(C) receiving and storing in said computer memory data at least one clock timing constraint and a plurality multi-cycle timing constraints, said clock timing constraint and said multi-cycle timing constraints specifying clock based timing constraints for the transmission of data between sequential data elements in which at least a subset of said clock based timing constraints concern timing constraints for duration longer than a single clock period;

(D) receiving and storing in said computer memory a plurality of constraint based timing path specifications, each indicating signal paths through said integrated circuit to which specified ones of said multi-cycle timing constraints are applicable and signal paths to which said specified ones of said multi-cycle timing constraints are not applicable; and

(E) verifying satisfaction of said timing constraints by said integrated circuit.

5,825,659

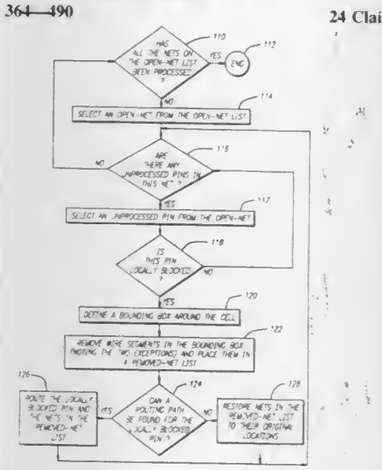
METHOD FOR LOCAL RIP-UP AND REROUTE OF SIGNAL PATHS IN AN IC DESIGN

Lieu T. Nguyen, San Jose, and Kwok Ming Yue, Fremont, both of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Filed Jun. 16, 1995, Ser. No. 491,433

Int. Cl.[6] H01L *23/50*

U.S. Cl. 364—490 **24 Claims**



1. A method for determining a routing path to complete an open net in an integrated circuit design, said open net being completed by connecting pins of two or more cells of the net with wire segments extending along the determined routing path, said integrated circuit design being laid out on at least one layer that is evenly divided by arrays of grid points disposed on said layer, comprising the steps of:

a) selecting a pin from a cell of an open net;

b) determining if said pin is locally blocked; and

c) if said pin is locally blocked,

i) generating a bounding box along grid points circumscribing said cell and spaced therefrom a predetermined distance,

ii) removing existing wire segments within said bounding box, and

iii) finding a routing path from said pin to one or more designated pins within said net.

5,825,660

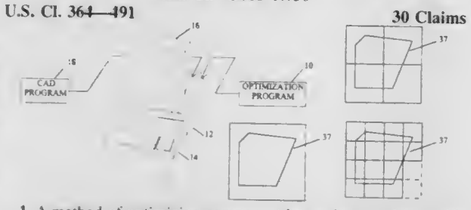
METHOD OF OPTIMIZING COMPONENT LAYOUT USING A HIERARCHICAL SERIES OF MODELS

Jonathan Cagan; Ashish Kolli, both of Pittsburgh, Pa.; Simon Szykman, Gaithersburg, Md., and Robin Rutenbar, Pittsburgh, Pa., assignors to Carnegie Mellon University, Pittsburgh, Pa.

Filed Sep. 7, 1995, Ser. No. 524,091

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—491 **30 Claims**



1. A method of optimizing component layout in accordance with predetermined constraints, comprising:

generating a plurality of models for each said component of said layout, said plurality of models being arranged in a hierarchy from a simple approximation of said component shape to a more accurate approximation of said component shape;

selecting a starting layout for the said components;

performing an iterative type of optimization routine wherein each iteration includes moving at least one said component and evaluating the resulting layout for satisfaction of said predetermined constraints using a model for each said component selected from said plurality of models according to the level of approximation desired; and

ending the optimization routine when said predetermined constraint is met.

5,825,661

METHOD AND APPARATUS FOR AUTOMATIC POST-LAYOUT OPTIMIZATION OF AN INTEGRATED CIRCUIT

Anthony DeGroff Drumm, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 1, 1996, Ser. No. 641,390

Int. Cl.[6] G06F *17/00;17/50*

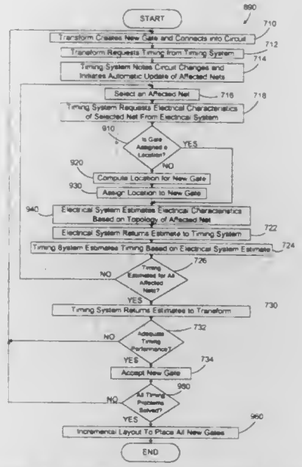
U.S. Cl. 364—491 **5 Claims**

3. A method for designing an integrated circuit in a manner that automatically generates post-layout optimization circuitry, when necessary, after the layout of functional circuitry on the integrated circuit is complete, to compensate for at least one timing problem in the integrated circuit, the method comprising the steps of:

(A) synthesizing a logic design for an integrated circuit using an integrated circuit design tool executing on a computer system, the integrated circuit design tool having a plurality of software modules;

(B) providing a set of timing constraints that must be met for the integrated circuit to operate correctly;

(C) generating a physical design for the integrated circuit, the step of generating the physical design including the steps of:



(1) laying out at least one circuit element to implement the logic design;

(2) estimating the timing for at least one signal coupled to the at least one circuit element based on estimated path lengths as determined by the layout;

(3) determining whether the estimated timing violates the timing constraints;

(4) routing a plurality of nets to interconnect the at least one circuit element;

(5) calculating the timing for at least one of the nets based on the physical characteristics of the net as determined by the routing;

(6) determining whether the calculated timing violates the timing constraints;

(7) if the calculated timing violates the timing constraints, synthesizing the post-layout optimization circuitry by performing the steps of:

(7A) automatically generating a new circuit element that is an addition to the at least one circuit element that implements the logic design;

(7B) inserting the new circuit element into the integrated circuit in an assigned location that is anticipated to improve the calculated timing without determining an allowable physical location on the integrated circuit for the new circuit element;

(7C) recalculating the timing for at least one of the nets based on the topology of the net as determined by the insertion of the new circuit element at the assigned location;

(7D) determining whether the recalculated timing violates the timing constraints;

(7E) accepting the new circuit element if the recalculated timing is closer to the timing constraints than the calculated timing, and discarding the new circuit element if the recalculated timing is not closer to the timing constraints than the calculated timing;

(7F) repeating steps 7A–7E until one of the following occurs:

the recalculated timing is within the timing constraints;

the recalculated timing is the closest to the timing constraints as possible while still violating the timing constraints after a predetermined number of repetitions of steps 7A–7E;

(7G) determining an allowable location for each accepted new circuit element using the corresponding assigned location as an initial target.

5,825,662

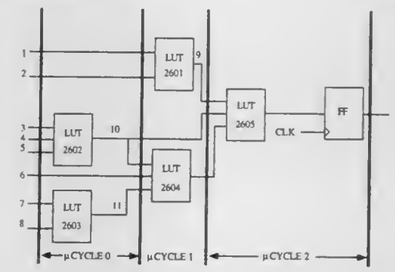
COMPUTER-IMPLEMENTED METHOD OF OPTIMIZING A TIME MULTIPLEXED PROGRAMMABLE LOGIC DEVICE

Stephen M. Trimberger, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Continuation of Ser. No. 516,910, Aug. 18, 1995, Pat. No. 5,701,441. This application Jul. 9, 1997, Ser. No. 890,712

Int. Cl.[6] H03K *19/177*

U.S. Cl. 364—491 **3 Claims**



1. A computer-implemented method of optimizing a design in a time multiplexed programmable logic device having a plurality of physical look-up tables (LUTs) and physical flip-flops, wherein said design includes a plurality of design LUTs and design flip-flops, wherein said design is implemented in a plurality of configurations in a predetermined order, said method comprising:

scheduling each design flip-flop no earlier than the latest of all the design LUTs and design flip-flops it drives;

scheduling each design flip-flop no earlier than the design LUT that drives it; and

scheduling each design LUT before every design LUT it drives, wherein each physical LUT and physical flip-flop of said programmable logic device is used in predetermined configurations based on said design and method.

5,825,663

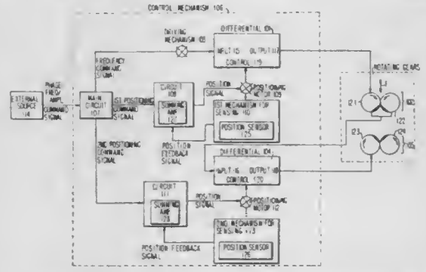
VIBRATION CONTROL SYSTEM

Valentin G. Barba, Scotrun, Pa.; David J. C. Crook, Randolph, N.J., and Eugene E. Shube, Elmont, N.Y., assignors to GEC-Marconi Aerospace Inc., Whippany, N.J.

Filed Nov. 4, 1996, Ser. No. 740,822

Int. Cl.[6] G01H *17/00;* **G01M** *7/00*

U.S. Cl. 364—508 **21 Claims**



1. A method for varying the amplitude of a substantially linear vibratory output force, said output force being generated by a device having a first pair of counter-rotating eccentric masses which are mechanically linked so that they generate a first periodic force which always acts along a line which is fixed in a plane perpendicular to an axis of rotation of said first pair and having a second pair of counter-rotating eccentric masses which are mechanically linked so that they generate a second periodic force which always acts along said line, said first periodic force and said

second periodic force algebraically combining to produce said vibratory output force acting along said line, said method comprising the steps of:

controlling the phase of rotation of said first pair of counter-rotating eccentric masses relative to the phase of said vibratory output force to advance said phase of said first pair relative to said phase of said vibratory output force by a specific amount; and

simultaneously controlling the phase of rotation of said second pair of counter-rotating eccentric masses relative to said phase of said vibratory output force to retard said phase of said second pair relative to said phase of said vibratory output force by said specific amount.

5,825,664

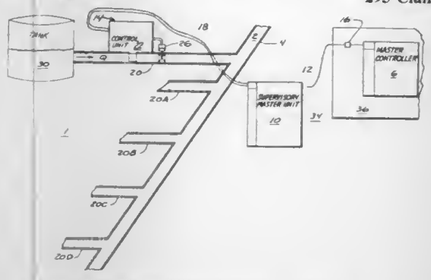
FIELD-MOUNTED CONTROL UNIT

Jogesh Warrior, Chanhassen; Vincent C. Jacobson, Minnetonka; Kelly M. Orth, Apple Valley; Craig R. Tielens, and Jane Barbara Lanctot, both of Minneapolis, all of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Division of Ser. No. 420,434, Apr. 10, 1996, Pat. No. 5,485,400, which is a continuation of Ser. No. 264,785, Jun. 23, 1994, abandoned, which is a division of Ser. No. 86,167, Jul. 1, 1993, Pat. No. 5,333,114, which is a continuation of Ser. No. 2,257, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 785,168, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 416,180, Oct. 2, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 472,994

Int. Cl.[6] G05B *19/00*

U.S. Cl. 364—550 **293 Claims**



1. A smart field-mounted control unit for coupling to a two wire DC current process control circuit which carries a loop current, the two wire circuit electrically connected in series with a power source, a remote device and the control unit, the control unit comprising:

a housing;

input circuitry in the housing adapted to be operably coupled to the two wire circuit, the input circuitry adapted to receive power from the power source through the two wire circuit which wholly powers the control unit and adapted to receive a process signal from the two wire circuit;

a process variable sensor which provides a sensed process variable; and

control circuitry in the housing operably coupled to the input circuitry, the process variable sensor, and the two wire circuit whereby the control unit is adapted to be electrically connected in series with the two wire circuit and the control circuitry provides a command output for the two wire circuit as a function of the sensed process variable and a previous value of the command output.

5,825,665

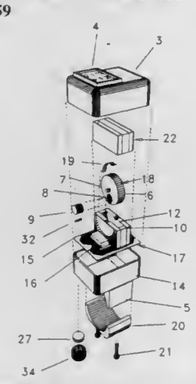
BICYCLE INCLINOMETER

Daniel P. Swift, 1918 Curtis, Laramie, Wyo. 82070; Thomas R. LaCroix, 244 E. Faller Rd., Grand Jct, Colo. 81503; William E. Bullock, P.O. Box 1328, Glenwood Springs, Colo. 81602, and Dennis L. Frobish, 202 Lannom Cir., Tullahoma, Tenn. 37388

Filed Jul. 8, 1997, Ser. No. 889,696

Int. Cl.[6] G01C *9/06*

U.S. Cl. 364—559 **17 Claims**



1. A device assembly for detecting slopes and displaying slope values, said assembly comprising;

a. a cylindrical chamber of sufficient size to contain a disk and with recesses in the side walls of size and shape to receive an axle about which said disk may rotate inside said cylindrical chamber;

b. a weight embedded or mounted at the outside edge of said disk causing said disk to maintain position as said cylindrical chamber rotates in a direction perpendicular to said axle;

c. a series of electrical conductors or coils mounted at one or more intervals around all or a portion of the curved surface of said cylindrical chamber;

d. a magnet embedded or mounted at the outside edge of said disk, said magnet being in position to induce a current into said conductors or coils as said magnet passes by said conductors or coils;

e. a microprocessor mounted in a case, housing said cylindrical chamber and said disk;

f. a circuit means to carry inducted current from each said electrical conductor or coil to said microprocessor;

g. a detecting means to determine which of said circuits is conducting electricity;

h. said microprocessor has stored slope values associated with each said circuit and programming means to retrieve said stored values based on which said circuit is conducting electricity;

i. said microprocessor has programming means to send slope values to display means.

5,825,666

OPTICAL COORDINATE MEASURING MACHINES AND OPTICAL TOUCH PROBES

Daniel Freifeld, 32 Clapboard Hill Rd., Westport, Conn. 06880

Filed Jun. 7, 1995, Ser. No. 482,978

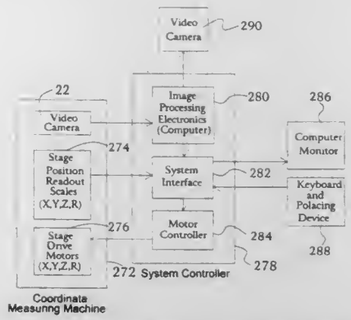
Int. Cl.[6] G01B *11/03;5/004;5/20;* **B23Q** *3/155*

U.S. Cl. 364—560 **60 Claims**

1. A coordinate measuring machine comprising:

A) a video based coordinate measuring system comprising:

a) a video camera producing a video signal having a first optical axis and a focal plane where an image of a part to be measured is focused, said camera being mounted to move with respect to said part to be measured and generating an image in the form of a plurality of pixels; and



b) a video monitor responsive to said video signal connected to said video camera for displaying an image of said part being on said focal plane; and,

B) a touch probe mounted on support structure which allows it to be imaged by said video camera in said focal plane, said touch probe being adapted for mounting to said video camera and comprising:

a) a contact tip;

b) a target mounted to said contact tip in the field of view of said video camera, said video signal including an image of said target, said target being adapted to be imaged on said focal plane, the image of said target changing position in said focal plane in response to movement of said touch probe relative to said video camera from a central pixel having a first set of x and v coordinates; and

c) an electronic circuit for analyzing said video signal to determine changes in the coordinates of the position of said target relative to said video camera.

5,825,667

PARACHUTE RELEASE DEVICE

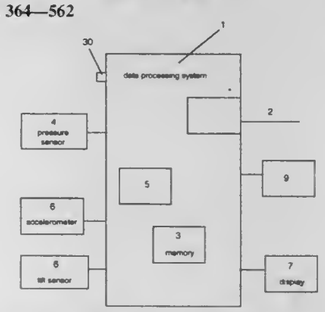
Eric Van Den Broek, Sterrebeek, Belgium, assignor to Airtech GmbH, Wunnenberg, Germany

Filed Jan. 16, 1997, Ser. No. 784,773

Claims priority, application European Pat. Off., Jan. 17, 1996, 96870002

Int. Cl.[6] G01B *7/00*

U.S. Cl. 364—562 **14 Claims**



1. A parachute release device provided to be mounted on a parachute, which parachute is provided to be attached to an object, said device comprising:

a data processing system having a release signal output and a memory provided for storing an opening height value, indicating a height at which said parachute should be opened, said data processing system being provided for generating a release signal for opening said parachute;

height determining means connected to said data processing system and provided for determining an initial height value indicating a further height at which a jump is started; and

time determination means provided for counting a jump duration time as from a start of said jump;

characterised in that said device further comprises acceleration determining means connected to said data processing system and provided for determining an acceleration parameter indicating an acceleration of said object to which said parachute is attached, said data processing system being provided for calculating from said acceleration parameter and said jump duration time an instant speed and an instant height value, and for generating said release signal when said instant height value reaches said opening height value.

5,825,668

MONITORING METHOD AND APPARATUS OF SURFACE AREA OF SEMICONDUCTOR WAFER

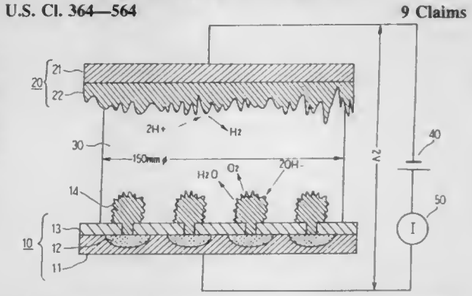
Shuji Nakao, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 30, 1997, Ser. No. 792,818

Claims priority, application Japan, Aug. 27, 1996, 8-225537

Int. Cl.[6] G01B *13/22;* **C25D** *11/32*

U.S. Cl. 364—564 **9 Claims**



8. A monitoring apparatus for a surface area of a semiconductor wafer comprising:

a chemical solution bath to hold an electrolytic solution;

a reference electrode submerged in aid electrolytic solution inside said chemical solution bath;

a support member for supporting a semiconductor wafer to be measured, which is submerged in the electrolytic solution;

a voltage applying means for applying a voltage between said reference electrode and said semiconductor wafer to be measured to generate a current, which are submerged in the electrolytic solution; and

a control means for determining the surface area of said semiconductor wafer to be measured from the current between said reference electrode and said semiconductor wafer to be measured.

5,825,669

METHOD OF UPDATING AUTOMATIC CALIBRATION TO PROVIDE A PERCEIVED PERFECT THROUGH CONNECTION

William W. Oldfield, Redwood City, and Edward Daw, Hollister, both of Calif., assignors to Wiltron Company, Morgan Hill, Calif.

Filed Dec. 17, 1996, Ser. No. 767,716

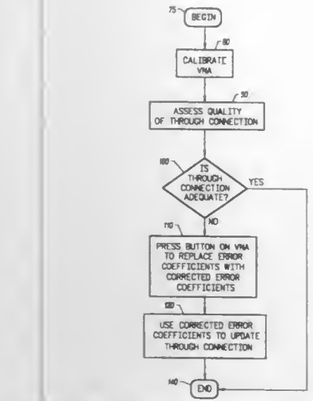
Int. Cl.[6] G01R *27/00*

U.S. Cl. 364—521.01 **5 Claims**

1. A method of updating initial calibration parameters for a VNA comprising the steps of:

coupling first calibration components to test ports of the VNA, the first calibration components including a first through connection;

measuring first scattering parameters after coupling each of the first calibration components to the test ports of the VNA;



comparing the first measured scattering parameters with second scattering parameters previously measured and stored to determine the initial calibration values which can be utilized to correct errors introduced by the VNA;

connecting a second through connection to the test ports of the VNA;

measuring third scattering parameters for the second through connection; and

recalculating the initial calibration parameters utilizing the third measured scattering parameters for the second through connection to provide updated calibration parameters.

5,825,670

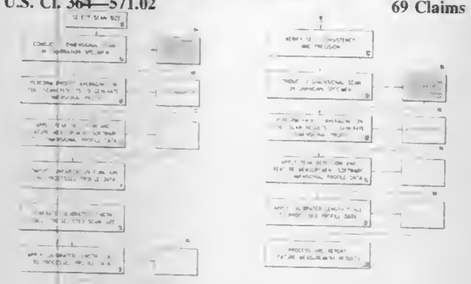
HIGH PRECISON CALIBRATION AND FEATURE MEASUREMENT SYSTEM FOR A SCANNING PROBE MICROSCOPE

Donald A. Chernoff, and Jason D. Lohr, both of Indianapolis, Ind., assignors to Advanced Surface Microscopy, Indianapolis, Ind.

Continuation-in-part of Ser. No. 610,726, Mar. 4, 1996, Pat. No. 5,644,512. This application Mar. 5, 1997, Ser. No. 811,603

Int. Cl.[6] H02N *2/02;* **G01B** *5/28*

U.S. Cl. 364—571.02 **69 Claims**



1. A method for high precision calibration by removing artifacts due to nonlinear motion in a scanning probe microscope, comprising the steps of:

a) scanning a calibration specimen in order to create a calibration data array;

b) mapping the calibration data array into a one-dimensional calibration profile;

c) creating a calibrated length scale by comparing the calibration profile to a known topography of the calibration specimen;

d) scanning a measurement specimen in order to create a measurement data array;

e) applying the calibrated length scale to the measurement data array in order to correct nonlinearities in the measurement data array in at least one direction; and

f) displaying the corrected measurement data array to a user.

5,825,671

SIGNAL-SOURCE CHARACTERIZATION SYSTEM

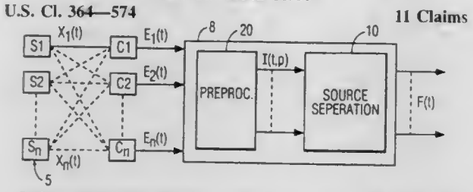
Yannick Deville, Villecresnes, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 27, 1995, Ser. No. 394,976

Claims priority, application France, Mar. 16, 1994, 94 03078

Int. Cl.[6] H04B *15/00*

U.S. Cl. 364—574 **11 Claims**



1. A source characterization system for determining a characteristic variable of a source signal from a primary source on the basis of a plurality of input signals, the source characterization system comprising:

a plurality of inputs for receiving said plurality of input signals, respectively, each of said plurality of input signals being a different mixture of the source signal and a plurality of other source signals from other respective primary sources;

a pre-processing circuit coupled to said plurality of inputs for determining a characteristic variable of each of said plurality of input signals so as to form a plurality of characteristic variables for the plurality of input signals, respectively; and

a separation circuit for determining the characteristic variable of the source signal on the basis of the plurality of characteristic variables determined for the plurality of input signals.

5,825,672

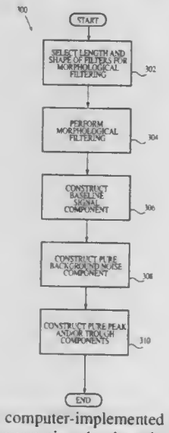
METHOD AND APPARATUS FOR AUTOMATICALLY DETECTING PATTERNS IN DIGITAL POINT-ORDERED SIGNALS

David M. Brudnoy, Albany, N.Y., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 25, 1996, Ser. No. 736,751

Int. Cl.[6] A61B *5/0402;* **G06F** *17/00*

U.S. Cl. 364—574 **22 Claims**



11. An automated, computer-implemented method for detecting a physical feature of a test piece by detecting a pattern in a signal representing data from inspection of the test piece, comprising the steps of:

measuring a physical parameter of the test piece;

generating a digital point-ordered signal representative of the measured physical parameter;

generating a morphologically filtered signal from the digital point-ordered signal;

generating a baseline signal from the morphologically filtered signal, the baseline signal comprising a coarse resolution behavior of the digital point-ordered signal relative to the background noise signal and the peaks/troughs signal;

generating a background noise signal from the baseline signal and the digital point-ordered signal, the background noise signal comprising fine resolution behavior of the digital point-ordered signal relative to the baseline signal and the peaks/troughs signal;

generating a peaks/troughs signal from the baseline signal, the background noise signal and the digital point-ordered signal the peaks/troughs signal comprising intermediate resolution behavior of the digital point-ordered signal relative to the baseline signal and the background noise signal;

locating peaks/troughs from the peaks/troughs signal; and

outputting peaks/troughs information indicating the physical feature of the test piece.

5,825,673

DEVICE, METHOD, AND SOFTWARE PRODUCTS FOR EXTRACTING CIRCUIT-SIMULATION PARAMETERS

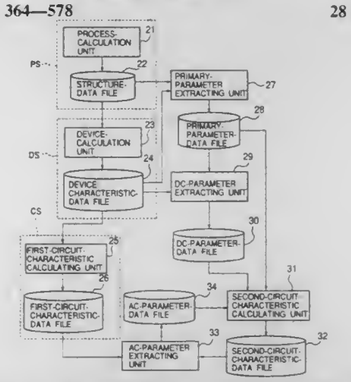
Hirofumi Watanabe, Miki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 26, 1996, Ser. No. 756,572

Claims priority, application Japan, Nov. 28, 1995, 7-309327

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—578 **28 Claims**



1. A device for conducting circuit simulations comprising:

a process simulator that simulates the formation process of circuit component devices and determines device structure characteristics of said circuit component devices;

a device simulator that simulates the operation of said circuit component devices and determines device operating characteristics of said circuit component devices based on said device structure characteristics;

a first circuit simulator that simulates the operation of said circuit component devices operating as a sample circuit and determines first dynamic characteristics of said sample circuit based on said device operating characteristics;

a second circuit simulator that simulates the operation of said circuit component devices operating as said sample circuit and determines second dynamic characteristics of said sample circuit based on first parameters and second parameters; and

a parameter extracting unit that extracts said first parameters based on said device structure characteristics and said device operating characteristics, and that determines said second parameters based on a comparison of said first dynamic characteristics and said second dynamic characteristics;

wherein said second circuit simulator performs said simulation based on said first parameters and said second parameters.

5,825,674

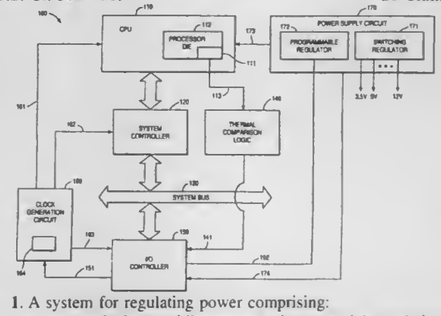
POWER CONTROL FOR MOBILE ELECTRONICS USING NO-OPERATION INSTRUCTIONS

Robert T. Jackson, San Jose, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 537,146, Sep. 29, 1995. This application Nov. 28, 1995, Ser. No. 563,493

Int. Cl.[6] H02J *3/16*

U.S. Cl. 364—707 **20 Claims**



1. A system for regulating power comprising:

a power supply for providing an operating potential coupled to a processor, the power supply having an adjustable operating potential adjusted in response to a first control signal;

a signal generator for providing a clock signal coupled to the processor, the clock signal having an adjustable frequency that is adjusted in response to a second control signal; and

a control circuit for responding to bits associated with a set of no-operation (NOP) instructions, execution of a first NOP instruction causing the control circuit to generate the first control signal and the second control signal.

5,825,675

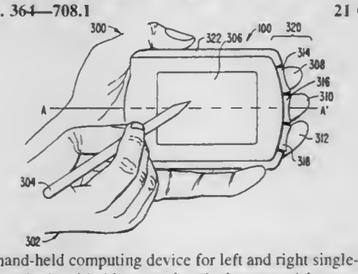
APPARATUS AND CONFIGURATION METHOD FOR A SMALL, HAND-HELD COMPUTING DEVICE

Roy Want, Mountain View, and Jennifer P. Collins, Hermosa Beach, both of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 99,686, Jul. 29, 1993, abandoned. This application May 22, 1995, Ser. No. 446,389

Int. Cl.[6] G06F *1/00*

U.S. Cl. 364—708.1 **21 Claims**



1. A hand-held computing device for left and right single-handed operation, the hand-held computing device comprising:

a substantially rectangular elongated housing having a top surface and an axis, wherein the axis is parallel with the elongated dimension of the top surface and centered within the housing;

a display screen coupled to the top surface of the housing;

a first side of the housing oriented substantially perpendicular to the axis;

one or more input means coupled to the first side and arranged symmetrically with respect to the axis, wherein the input means comprises first and second buttons on the first side arranged symmetrically with respect to the axis;

top and bottom sides of the housing, wherein the top and bottom sides are adjacent to the first side and opposite each other;

control signal means for indicating first and second modes of operation;

processing means coupled to the buttons and the control signal for selectively performing first and second functions, wherein, in the first mode, the processing means performs the first function when the first button is activated and performs the second function when the second button is activated, and wherein, in the second mode, the processing means performs the first function when the second button is activated and performs the second function when the first button is activated; and

wherein the hand-held computing device is grasped by a hand so that the thumb of the hand contacts the top side and the little finger of the hand contacts the bottom side.

5,825,676

ORTHOGONAL CONVERTING APPARATUS

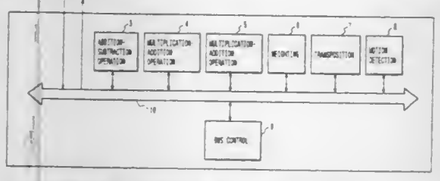
Shingo Nozawa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,886

Claims priority, application Japan, Sep. 30, 1994, 6-237901; Sep. 30, 1994, 6-237902; Sep. 30, 1994, 6-237903

Int. Cl.[6] G06F *17/14*

U.S. Cl. 364—725.02 **10 Claims**



1. An orthogonal converting apparatus comprising:

addition-subtraction operation means for calculating the addition and difference between two signal trains each consisting of n signals (n≧1);

two multiplication-addition operation means each for calculating multiplication-addition of the n signals;

transposition means for permutating (2n×2n) signals arranged in the horizontal and vertical directions; and

control means for controlling an operation of each of said means so as to execute one of the following different processes:

a first encoding process for executing a dimensional orthogonal converting process on the (2n×2n) input signals;

a first decoding process corresponding to said first encoding process;

a second encoding process for dividing the (2n×2n) input signals into (n×2n) signals each corresponding to an addition of adjacent lines and, likewise (n×2n) signals each corresponding to a subtraction of adjacent lines and performing the 2-dimensional orthogonal converting process; and

a second decoding process corresponding to said second encoding process.

5,825,677

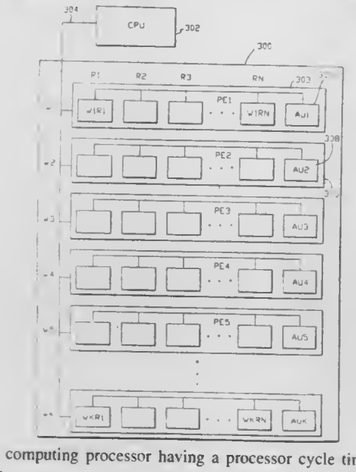
NUMERICALLY INTENSIVE COMPUTER ACCELERATOR

Ramesh Chandra Agarwal, Yorktown Heights, N.Y.; Randall Dean Groves, Austin, Tex.; Fred Gehrung Gustavson, Briarcliff Manor, N.Y.; Mark Alan Johnson, Austin, and Brett Olsson, Round Rock, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 217,533, Mar. 24, 1994, abandoned. This application Mar. 20, 1996, Ser. No. 619,456

Int. Cl.[5] G06F *17/16*

U.S. Cl. 364—736.03 **16 Claims**



1. A computing processor having a processor cycle time comprising:

K RISC processing elements wherein K>1;

each of said K RISC processing elements comprising:

means for storing N words where N>1; and

an arithmetic unit;

an Ith vector is provided by a group of K words of said K RISC processing elements, each of said Ith vectors has K storage locations, said Ith vector has vector length K wherein 1≦I≦N thereby, providing N vectors of K elements;

said K RISC processing elements providing means for performing at a predetermined cycle time a vector operation on at least one of said N vectors and storing the results of said operation in one of said N vectors, wherein said vector operation is performed by said K arithmetic units substantially simultaneously for all of said K elements of said at least one of said N vectors;

means for performing another vector operation in said K RISC processing elements in the next cycle time after said predetermined cycle time.

5,825,678

METHOD AND APPARATUS FOR DETERMINING FLOATING POINT DATA CLASS

Ronald M. Smith, Wrappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1995, Ser. No. 414,858

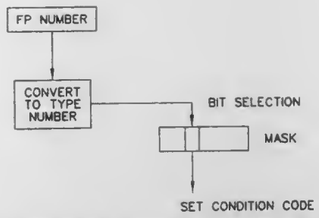
Int. Cl.[6] G06F *7/38;7/00;15/00;* **H03M** *7/00*

U.S. Cl. 364—748 **12 Claims**

1. An apparatus for determining floating point data class, comprising:

a floating point processor for interpreting a machine instruction to determine whether the data class of a floating point number is an identified data class;

means for retrieving the floating point number from memory;



means for determining whether the data class of the floating point number is the identified data class by examination of condition of the fields of the floating point number; and

means for setting a condition code in a program status word based upon the determination of whether the data class is the identified data class.

5,825,679

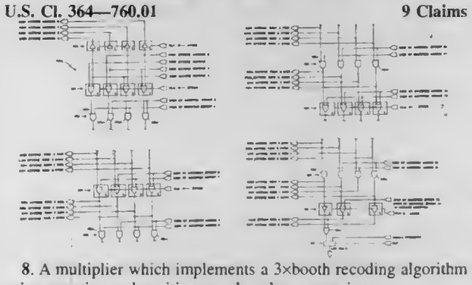
FAST SIGN EXTEND FOR MULTIPLIER ARRAY SUMS AND CARRYS

Gilbert M. Wolrich, Framingham, and Andrew S. Olesin, Princeton, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Sep. 11, 1995, Ser. No. 526,257

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—760.01 **9 Claims**



8. A multiplier which implements a 3×booth recoding algorithm using negative and positive recode values comprises:

a booth recode multiplier array means comprised of a plurality of rows of carry save adders; and

logic for sign extending leading bits in each of the rows, comprising:

a plurality of pairs of latches, each of the pairs of latches incorporates an OR logic function for the sum vectors leading bits and an AND logic function for the carry vectors leading bits;

a network of OR gates coupled to said latches incorporating an OR logic function fed by a previous sign extend value and sign of a corresponding recode value; and

a network of AND gates coupled to said latches incorporating an AND logic function fed by a previous sign extend value and sign of a corresponding recode value.

5,825,680

METHOD AND APPARATUS FOR PERFORMING FAST DIVISION

William R. Wheeler, Southboro, and Matthew J. Adiletta, Worcester, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

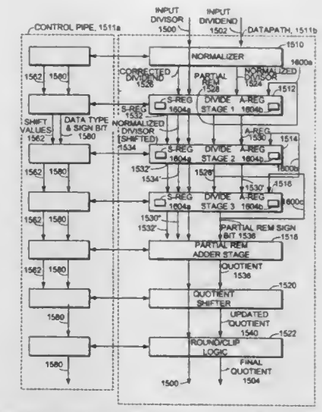
Filed Jun. 21, 1996, Ser. No. 669,266

Int. Cl.[6] G06F *7/52;7/38*

U.S. Cl. 364—761 **21 Claims**

1. A circuit for performing a process on a data stream comprising:

a plurality of pipeline stages, each one of said pipeline stages operating on a portion of said data stream to produce an output from each of said stages to be fed as an input to a succeeding one of said stages;



with at least one of said pipeline stages further comprising:

means for recirculating an output from said one pipeline stage to an input of said one pipeline stage for a predetermined number of times before the output of said one pipeline stage is provided as an input to a succeeding one of said pipeline stages, said predetermined number of times representing a clock period comprising a plurality of assertions of a clock signal.

5,825,681

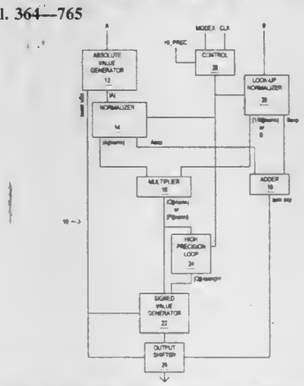
DIVIDER/MULTIPLIER CIRCUIT HAVING HIGH PRECISION MODE

Andrew D. Daniel, San Jose, and Thomas Alexander, Santa Clara, both of Calif., assignors to Alliance Semiconductor Corporation, San Jose, Calif.

Filed Jan. 24, 1996, Ser. No. 590,656

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—765 **20 Claims**



1. A divider circuit for receiving a numerator value and a denominator value and generating therefrom a quotient value, comprising:

a first normalizing circuit for receiving the numerator value and generating a normalized numerator value and a numerator exponent value;

an inverse generating circuit for receiving the denominator value and generating a normalized denominator inverse value and a denominator exponent value;

a multiplier circuit for multiplying the normalized numerator value by the normalized denominator inverse value to generate a multiplier output value;

a first adder circuit for adding the numerator exponent value and the denominator exponent value to generate a quotient exponefit value;

a denormalizing circuit for receiving the multiplier output value and modifying it by the quotient exponent value to generate the quotient value.

5,825,682

CACHE MEMORY CAPABLE OF USING FAULTY TAG MEMORY

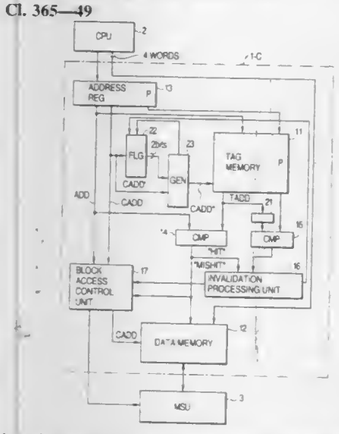
Takahiro Fukui, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 16, 1997, Ser. No. 895,206

Claims priority, application Japan, Jul. 16, 1996, 8-185932

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 **6 Claims**



1. A cache memory connected between a data processing unit and a main storage unit, comprising:

a data memory for storing a part of data of said main storage unit;

a tag memory for storing addresses of said part of data of said main storage unit;

a flag register for storing flag bits for showing whether or not regions of said bag memory are faulty, said flag register being accessed by a part of a first cache address generated from said data processing unit;

a cache address generating circuit, connected between said flag register and said tag memory, for combining said part of said first cache address with outputs of said flag register to generate a second cache address for accessing said tag memory;

a first comparator, connected to said tag memory, for comparing said first cache address with an address read from said tag memory;

a data memory accessing means, connected to said first comparator, for accessing said data memory by said first cache address in accordance with whether or not said first cache address coincides with said address read from said tag memory;

a determining means, connected to said tag memory, for determining whether said regions of said tag memory are faulty, so that one of said flag bits accessed by said second cache address is adjusted in accordance with whether or not a corresponding one of said regions of said tag memory is faulty.

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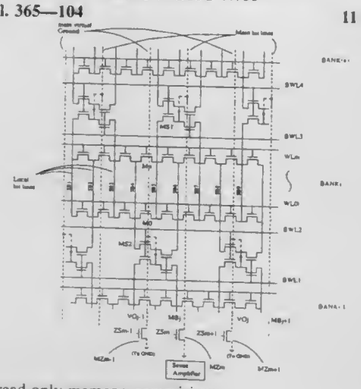
FOLDED READ-ONLY MEMORY

Ling-Yueh Chang, Hsin-Chu, Taiwan, assignor to Utron Technology Inc., Hsin-Chu, Taiwan

Filed Oct. 29, 1997, Ser. No. 959,892

Int. Cl.[6] G11C *17/00*

U.S. Cl. 365—104 **11 Claims**



1. A read-only memory, comprising:

a plurality of main bit lines;

a plurality of main virtual ground lines;

a plurality of banks of memory cells arranged in a matrix;

a first plurality of bank selection switches connected second alternate columns of local bits lines of said matrix and interleaved between said first alternate columns, to select together only one of said banks to be activated;

each one of said memory cells comprising a MOSFET connected between two adjacent columns of said local bit lines and having a low threshold to be conductive when accessed by not doping the substrate of said MOSFET and a high threshold voltage to be non-conductive when accessed by heavily doping the substrate of said MOSFET,

the gates of said memory cells on a same row being connected together to one of a plurality word lines,

only one of said memory cells being accessed when one of said word lines and two adjacent local bit lines are activated,

one of said two adjacent local bit lines being selected through one of said first plurality of bank selection switches to one of said main bit lines, and the other of said two adjacent local bit lines being selected through one of said second plurality of bank selection switches to one of said virtual ground lines,

wherein the layout of one bank of memory cells has a mirror layout of an adjacent bank so that said first plurality of bank selection switches of one bank and the first plurality of selection switches of an second bank are grouped together.

5,825,684

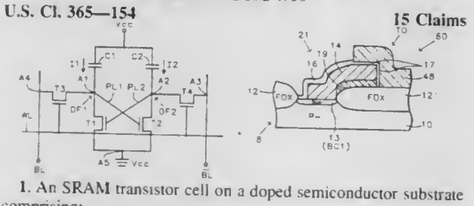
SRAM CELL STRUCTURE

Hsiao-Lun Bob Lee, Sunnyvale, Calif., assignor to Chartered Semiconductor Manufactuing, Ltd., Singapore, Singapore

Division of Ser. No. 663,579, Jun. 13, 1996, Pat. No. 5,700,707. This application Sep. 15, 1997, Ser. No. 929,952

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—154 **15 Claims**



1. An SRAM transistor cell on a doped semiconductor substrate comprising:

a first access transistor and a second access transistor, each having a source region, a drain region and a control gate electrode,

a first storage transistor and a second storage transistor each having a source region, a drain region and a control gate electrode,

a first node and a second node,

a first load capacitor having a first lower plate, a first upper plate and a first tunnel oxide layer, said lower plate connected to said first node and said first upper plate connected to said power supply connection,

said first tunnel oxide layer covering at least a portion of said first lower plate and said first upper plate being formed above said first tunnel oxide layer,

a second load capacitor having a second lower plate, a second upper plate and a second tunnel oxide layer, said second upper plate connected to said second node and said second lower plate connected to said power supply connection,

said second tunnel oxide layer covering at least a portion of said second lower plate and said second upper plate being formed above said second tunnel oxide layer,

a bit line and a bit line bar,

first and second interconnection lines,

said first storage transistor having the drain region thereof connected to said first node,

said second storage transistor having the drain region thereof connected to said second node,

said first and second storage transistors having the source regions thereof connected together,

said first node cross connected via said first interconnection line to the control gate electrode of said second transistor,

said second node cross connected via said second interconnection line to the control gate electrode of said first transistor,

said control gate electrodes of said first and second access transistors being connected to a wordline,

said drain region of said first access transistor being connected to said first node,

said drain region of said second access transistor being connected to said second node,

said source region of said first access transistor being connected to said bit line, and

said source region of said second access transistor being connected to said bit line bar.

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5,825,685

HIGH-SPEED, LOW-CURRENT MAGNETORESISTIVE MEMORY DEVICE

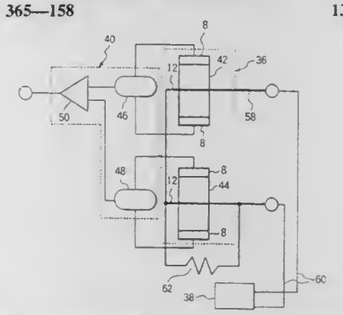
Haruki Yamane; Yoshinori Maeno, and Masanobu Kobayashi, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Division of Ser. No. 745,479, Nov. 12, 1996, Pat. No. 5,745,406. This application Nov. 26, 1997, Ser. No. 979,791

Claims priority, application Japan, Nov. 12, 1995, 7-294003

Int. Cl.[6] G11C *11/00; 11/56*

U.S. Cl. 365—158 **13 Claims**



1. A magnetoresistive memory device for storing ternary information, comprising:

at least one memory cell having a first memory element and a second memory element, each of these memory elements separately having at least two ferromagnetic layers that collectively exhibit one electrical resistance when magnetized in a parallel state and a different electrical resistance when magnetized in an antiparallel state, and each of these memory elements separately having a writing electrode for the passage of a current generating a magnetic field capable of switching said ferromagnetic layers between said parallel state and said antiparallel state;

a write access circuit coupled to said memory cell, for supplying current to each said writing electrode in said memory cell, responsive to said ternary information, thereby storing a first ternary value in said memory cell by setting the ferromagnetic layers in said first memory element to said parallel state and the ferromagnetic layers in said second memory element to said antiparallel state, storing a second ternary value in said memory cell by setting the ferromagnetic layers in said first memory element to said antiparallel state and the ferromagnetic layers in said second memory element to said parallel state, and storing a third ternary value in said memory cell by setting the ferromagnetic layers in both said first memory element and said second memory element to identical states among said parallel state and said antiparallel state; and

a read access circuit coupled to said memory cell, for comparing the electrical resistance of the ferromagnetic layers in said first memory element with the electrical resistance of the ferromagnetic layers in said second memory element, thereby reading the ternary value stored in said memory cell.

5,825,686

MULTI-VALUE READ-ONLY MEMORY CELL HAVING AN IMPROVED SIGNAL-TO-NOISE RATIO

Doris Schmitt-Landsiedel, Ottobrunn; Roland Thewes, Puchheim; Michael Bollu, München, and Paul-Werner von Basse, Wolfratshausen, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

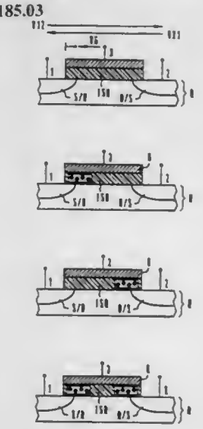
PCT No. PCT/DE96/00168, § 371 Date Aug. 11, 1997, § 102(e) Date Aug. 11, 1997, PCT Pub. No. WO96/25741, PCT Pub. Date Aug. 22, 1996

PCT Filed Feb. 5, 1996, Ser. No. 875,955

Claims priority, application Germany, Feb. 16, 1995, 195 05 293.5

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—185.03 **3 Claims**



1. Multi-value read-only memory cell, having symmetrical construction for storing one of a first state and a second state and having asymmetrical construction for storing at least a third state, comprising:

a MOS field-effect transistor having a source/drain region situated in a semiconductor body and having a drain/source region situated in the semiconductor body;

in order to store the first state, a first cell connection connected directly to the source/drain region of the MOS field-effect transistor and a second cell connection connected directly to the drain/source region of the MOS field-effect transistor;

in order to store the second state, the first cell connection connected via a first component to the source/drain region of the MOS field-effect transistor, and the second cell connection connected via a second component to the drain/source region of the MOS field-effect transistor;

in order to store the third state, the first cell connection connected via the first component to the source/drain region of the MOS field-effect transistor, and the second cell connection connected directly to the drain/source region of the MOS field-effect transistor;

in order to store a fourth state, the first cell connection connected directly to the source/drain region of the MOS field-effect transistor, and the second cell connection connected via the second component to the drain/source region of the MOS field-effect transistor;

a third cell connection connected to a gate electrode of the MOS field-effect transistor, the gate electrode being electrically insulated from the semiconductor body by an insulation layer (ISO); and

the first component being a first diode and the second component being a second diode.

5,825,687

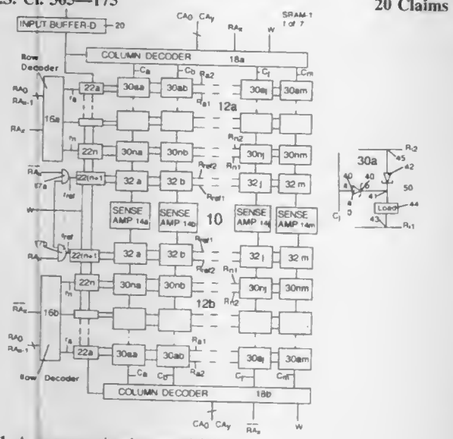
LOW VOLTAGE MEMORY CELL, CIRCUIT ARRAY FORMED THEREBY AND METHOD OF OPERATION THEREFOR

Ronald Loh-Hwa Yin, 547 Sullivan Dr., MountainView, Calif. 94041

Filed Dec. 4, 1996, Ser. No. 760,584

Int. Cl.[6] G11C *11/36*

U.S. Cl. 365—175 **20 Claims**



1. A memory circuit comprising:

a plurality of first lines;

a plurality of second lines;

a plurality of third lines with each of said third lines having an associated second line;

said plurality of first lines and plurality of second lines defining a matrix;

a plurality of memory cells arranged in said matrix, with each memory cell having a data node, a first voltage node, and a second voltage node; a tunnel diode connecting the data node to the first voltage node, and a load connecting the data node to the second voltage node; said tunnel diode having a first impedance characteristic, and said load having a second impedance characteristic, with said first and second impedance characteristics intersecting one another at said data node, forming two points of stability along said first and second impedance characteristics;

a plurality of avalanche diodes, each avalanche diode connecting the data node of a memory cell to its associated first line;

said first voltage node of said memory cells in the same row are connected to the same associated second line, and wherein said second voltage node of said memory cells in the same row are connected to said associated third line;

first decoder means for decoding a first address signal and for selecting one of said plurality of first lines, in response thereto;

second decoder means for decoding a second address signal and for generating one of a plurality of output signals in response thereto, each of said plurality of output signals having a corresponding second line and a corresponding third line;

a plurality of voltage control means each for receiving one of said plurality of output signals, and for applying a control signal to said corresponding second and third lines, in response to a data read signal, a data write to one state signal or a data write to another state signal; and

a plurality of sense amplifier means, each for differentially sensing a select first line from a reference line.

5,825,688

NON-VOLATILE SEMICONDUCTOR STORAGE APPARATUS

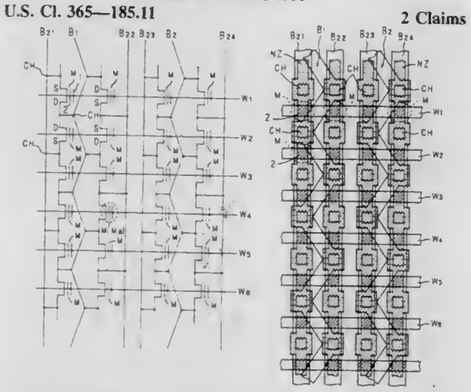
Hiroshi Ueki, Itami, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 731,388, Oct. 15, 1996, Pat. No. 5,671,177, which is a continuation of Ser. No. 460,681, Jun. 2, 1995, abandoned. This application Jun. 16, 1997, Ser. No. 876,709

Claims priority, application Japan, Jul. 26, 1994, 6-174516

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—185.11 **2 Claims**



1. A non-volatile semiconductor storage apparatus, comprising:

an array of memory cell transistors arranged in row and column directions;

a first layer having first bit lines connected to drains of said memory cell transistors and extending in the column direction in zigzag form between paired columns of memory cell transistors;

a second layer having second bit lines connected to sources of said memory cell transistors and extending in the column direction;

word lines connected to control gates of said memory cell transistors and extending in the row direction; and

a word line decoder selectively for keeping said word lines at a relatively high potential, an intermediate potential and a ground potential.

5,825,689

NONVOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING DATA DETECTING CIRCUIT FOR MEMORY CELLS BLOCK

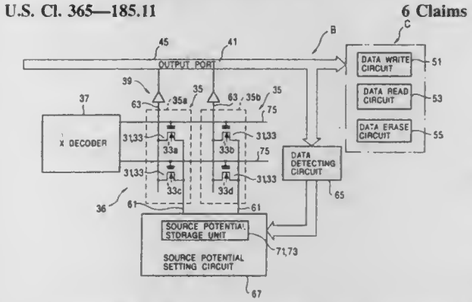
Shinichi Wakita, Kumamoto, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 5, 1997, Ser. No. 924,691

Claims priority, application Japan, Sep. 5, 1996, 8-235641

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.11 **6 Claims**



1. A nonvolatile semiconductor memory device including a plurality of semiconductor storage elements each having a source, a drain, and a floating gate and a control gate formed between said source and said drain, and capable of electrically writing data and simultaneously erasing written data, comprising:

a memory cell array in which memory cells constituted by said semiconductor storage elements are divided into a plurality of memory cell blocks each having a common source line and a common digit line;

a peripheral circuit for addressing said memory cells and outputting data from said memory cells;

a data detecting circuit for detecting, for each memory cell block, the presence/absence of a semiconductor storage element in which a threshold voltage of a transistor constituting said memory cell is a ground potential or less; and

a source potential setting circuit capable of changing a source potential setting condition of each memory cell block in accordance with a detection result from said data detecting circuit.

5,825,690

SEMICONDUCTOR NON-VOLATILE STORAGE DEVICE HAVING VERIFICATION POTENTIAL APPLYING DEVICE FOR RE-WRITING TO INSUFFICIENTLY WRITTEN MEMORY CELLS

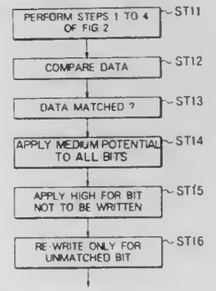
Kenji Saitoh, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 16, 1996, Ser. No. 586,084

Claims priority, application Japan, Jan. 13, 1995, 7-020947

Int. Cl.[6] G11C *16/06*

U.S. Cl. 365—185.22 **5 Claims**



1. A semiconductor non-volatile storage device comprising:

a memory cell array including a plurality of memory cells arranged in matrix form, each of said memory cells having a charge accumulation layer and a control gate stacked on a semiconductor substrate for enabling electrical updating by increasing and decreasing of charge in said charge accumulation layer; and

means for applying an equal level of verification potential to all bit lines of said memory cells and applying a predetermined verification potential to a selected control gate for simultaneously performing re-writing only to insufficiently written memory cells.

5,825,691

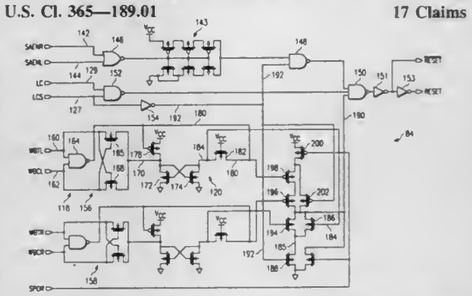
CIRCUIT AND METHOD FOR TERMINATING A WRITE TO A MEMORY CELL

David C. McClure, Carrollton, Tex., assignor to STMicroelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 588,737, Jan. 19, 1996, abandoned. This application May 19, 1997, Ser. No. 858,788

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—189.01 **17 Claims**



1. A circuit for generating a write termination signal, comprising:

a start write sensing circuit for sensing the start of a write;

a write termination signal generation circuit for generating a signal to terminate the write; and

a timer circuit coupled to the start write sensing circuit and coupled to the write termination signal generation circuit, the timer circuit including a memory cell replicate having a pair of transistors of the same sizing and in the same circuit configuration as a memory cell in an array of memory cells; and

a switching circuit coupled to the timer circuit.

5,825,692

MEMORY SYSTEM AND METHOD FOR SIMULTANEOUSLY READING AND WRITING DATA

Robert Baumgartner, Worth, and Hans-Detlef Gröger, Kirchheim, both of Germany, assignors to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

PCT No. PCT/DE95/01294, § 371 Date Mar. 20, 1997, § 102(e) Date Mar. 20, 1997, PCT Pub. No. WO96/09627, PCT Pub. Date Mar. 28, 1996

PCT Filed Sep. 20, 1995, Ser. No. 809,390

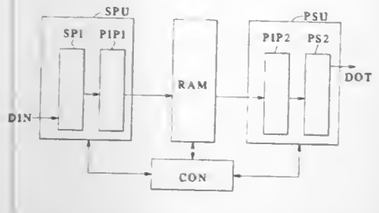
Claims priority, application Germany, Sep. 23, 1994, 44 34 107.5

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.04 **6 Claims**

1. Memory system for simultaneously reading and writing data, comprising:

a memory whereby data can be word-sequentially written and word-sequentially read, and a memory control device coupled to the memory and having first and second addressing devices;



the memory control device having a register that can be set to a defined value, which is followed by a subtractor that subtracts a predetermined amount from a value of the register;

the register having an output coupled to inputs of a first incrementable and loadable counter for writing a read address thereinto and to inputs of the subtractor;

the subtractor having an output coupled to inputs of a second incrementable and loadable counter for writing a write address thereinto and to inputs of the register;

the first and second incrementable and loadable counters being incrementable independently of one another with a respective control line;

a controllable device coupled to the first and second incrementable and loadable counters, for determining which of the contents of the first and second incrementable counters is to be used as memory addressing;

and whereby the incrementing ensues such that, when writing and reading, data in the memory is only overwritten when the data has been read out at least once.

5,825,693

WRITE CONTROL CIRCUIT FOR SEMICONDUCTOR MEMORY

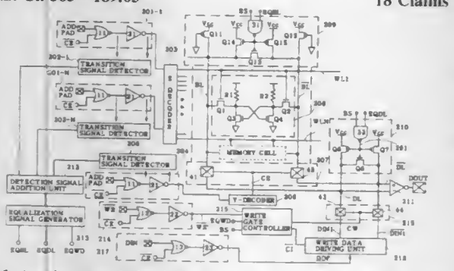
Sang-Hyun Lee, Kyungki-Do, and Kyung-Duk Kim, Seoul, both of Rep. of Korea, assignors to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Jul. 31, 1997, Ser. No. 903,876

Claims priority, application Rep. of Korea, Aug. 3, 1996, 1996/32474

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—189.05 **18 Claims**



1. A write control circuit that reads and writes data in a selected memory cell among memory cell arrays via data lines and bit lines based on a combination of addresses, the write control circuit comprising:

detection signal addition means for adding output signals from address input buffer means and for outputting a pulse signal;

equalization signal generator means for generating an equalization signal based on the pulse signal;

write gate control means for logically combining a write control signal from a control signal input buffer and the equalization signal and for outputting a write gate control signal and a data driving control signal;

write data driving means for receiving data from a data input buffer based on the data driving control signal and for outputting the data; and

write gate means for transmitting the data output from the write data driving means to the data lines based on the write gate control signal.

5,825,694

SEMICONDUCTOR MEMORY DEVICE CAPABLE OF PREVENTING MALFUNCTION DUE TO DISCONNECTION OF COLUMN SELECT LINE OR WORD SELECT LINE

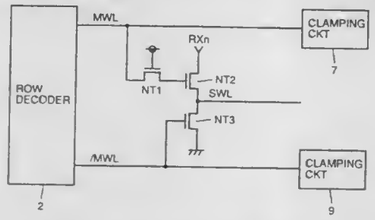
Hiromi Okimoto; Masanori Hayashikoshi, and Youichi Tobita, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 26, 1997, Ser. No. 807,007

Claims priority, application Japan, Mar. 1, 1996, 8-045255; Jul. 26, 1996, 8-198204

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.06 **7 Claims**



1. A semiconductor memory device comprising:

a plurality of word line pairs for transmitting complementary signals;

a row decoder for selecting said word line pairs;

a plurality of first clamping means each connected to one word line of each of said word line pairs; and

a plurality of second clamping means each connected to the other word line of each of said word line pairs, wherein

said first and second clamping means clamp corresponding said word lines at a constant potential in response to an input control signal, respectively.

5,825,695

SEMICONDUCTOR DEVICE FOR REFERENCE VOLTAGE

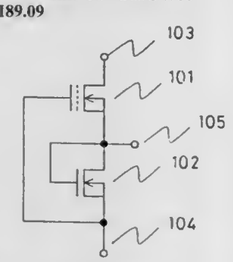
Masanao Hamaguchi, Chiba, Japan, assignor to Seiko Instruments Inc., Japan

Filed Apr. 4, 1996, Ser. No. 626,158

Claims priority, application Japan, Apr. 5, 1995, 7-080586; Feb. 2, 1996, 8-017837

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.09 **4 Claims**



1. A semiconductor device comprising:

a first depletion mode MOS field effect transistor comprising a first substrate having formed thereon a first gate electrode, a first source region and a first drain region, wherein the first drain region is connected to a first power terminal, the first source region is connected to the first substrate and the first gate electrode is connected to a second power terminal; a second MOS field effect transistor having a channel region with the same conductivity type as a channel region of the first depletion mode MOS transistor and comprising a second substrate having formed thereon a second gate electrode, a second source region and a second drain region, wherein the second gate electrode is connected to the second drain region and the second source region is connected to the second substrate and the second power terminal; wherein the first and second transistors are connected in series.

5,825,696

SEMICONDUCTOR MEMORY DEVICE INCLUDING AN SOI SUBSTRATE

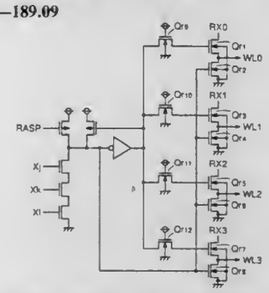
Hideto Hidaka; Katsuhiro Suma, and Takahiro Tsuruda, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 353,276, Dec. 5, 1994, abandoned. This application Jun. 16, 1997, Ser. No. 876,755

Claims priority, application Japan, Dec. 3, 1993, 5-304162; Sep. 1, 1994, 6-208393; Oct. 25, 1994, 6-260355

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—189.09 **9 Claims**



1. A semiconductor memory device comprising a plurality of first N channel MOS semiconductor elements receiving a power supply potential, a plurality of second N channel MOS semiconductor elements receiving a boosted potential higher than the power supply potential, and a plurality of channel MOS semiconductor elements, wherein said plurality of first and second N channel MOS semiconductor elements and said plurality of P channel MOS semiconductor elements are formed on an SOI substrate,

each of said plurality of first and second N channel MOS semiconductor elements and said plurality of P channel MOS semiconductor elements including a source region, a drain region, and a body region located between said source region and said drain region,

wherein the body region of each of said plurality of second N channel MOS semiconductor elements is constantly electrically fixed to increase the source/drain breakdown voltage of said each of said plurality of second N channel MOS semiconductor elements and

the body region of at least one of said plurality of P channel MOS semiconductor elements is continuously electrically floating.

5,825,697

CIRCUIT AND METHOD FOR ENABLING A FUNCTION IN A MULTIPLE MEMORY DEVICE MODULE

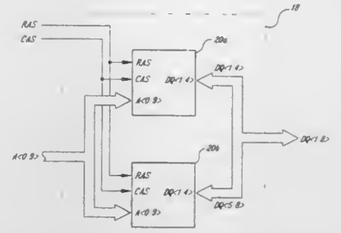
Gary R. Gilliam; Kevin G. Duesman, and Leland R. Nevill, all of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Dec. 22, 1995, Ser. No. 577,840

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **57 Claims**

1. A memory device module comprising:



a plurality of integrated memory circuits fabricated on respective semiconductor dies that are separate from each other each of the integrated memory circuits receiving a plurality of input signals including at least one address strobe signal, addresses, and other input signals from external circuitry;

a plurality of enabling circuits each corresponding to one of the integrated memory circuits, each enabling circuit operatively coupled to its respective integrated memory circuit for receiving at least some of the input signals, each enabling circuit being uniquely responsive to a corresponding set of the input signals by outputting an enabling signal, each enabling circuit's corresponding set of the input signals including at least one of the other input signals; and

a plurality of function circuits each operatively coupled to a corresponding one of the enabling circuits, each function circuit being enabled by receiving the enabling signal from its respective enabling circuit, whereby the respective function circuit of one of the integrated memory circuits can be enabled without the respective function circuits of the other integrated memory circuits being enabled.

5,825,698

REDUNDANCY DECODING CIRCUIT FOR A SEMICONDUCTOR MEMORY DEVICE

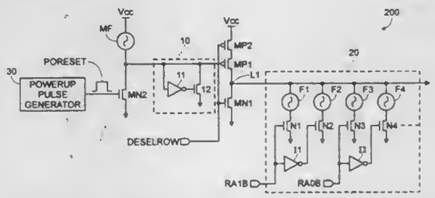
Chang-Rae Kim; Jong-Young Kim, and Hee-Choul Park, all of Seoul, Rep. of Korea, assignors to Samsung Electronics, Co., Ltd., Suwon, Rep. of Korea

Filed Oct. 30, 1997, Ser. No. 961,052

Claims priority, application Rep. of Korea, Oct. 30, 1996, 96-50270

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **6 Claims**



1. A redundancy decoding circuit, comprising:

a comparator for decoding and outputting a redundant address, wherein the comparator includes internal fuses coupled to an output terminal thereof, and further wherein the internal fuses are configured to be selectively cut in order to determine the redundant address;

a driving unit configured to supply a driving current to the output terminal of the comparator in response to a switching control signal;

a pulse generator configured to generate a power up pulse having a predetermined width responsive to power up of the redundancy decoding circuit;

a switching control signal generator configured to generate the switching control signal at a predetermined voltage level, wherein the switching control signal generator includes a

master fuse and a switching element, the master fuse being coupled between a power supply terminal and a first terminal of the switching element and a second terminal of the switching element being coupled to a ground potential terminal, and wherein a control terminal of the switching element is configured to receive the power up pulse generated by the pulse generator whereby the switching control signal is generated at the predetermined voltage level even when the master fuse is incompletely cut.

5,825,699

SEMICONDUCTOR MEMORY DEVICE FIXING DEFECTIVE MEMORY CELL SELECTION LINE REPLACED WITH SPARE MEMORY CELL SELECTION LINE IN NON-SELECTED STATE

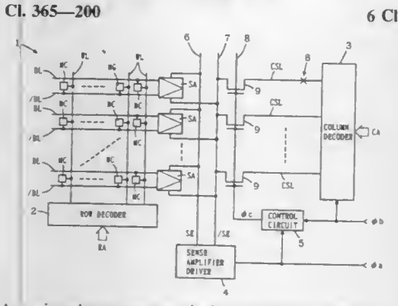
Shinji Tanaka, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 27, 1997, Ser. No. 917,927

Claims priority, application Japan, Jan. 31, 1997, 9-019081

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—200 **6 Claims**



1. A semiconductor memory device comprising a memory array including a plurality of memory cells and a plurality of memory cell selection lines being provided in correspondence to said plurality of memory cells respectively for fixing a defective memory cell selection line being replaced with a spare memory cell selection line in a non-selected state, said semiconductor memory device further comprising:

memory cell selection means being connected with first end portions of said plurality of memory cell selection lines for selecting one of said plurality of memory cell selection lines excluding said defective memory cell selection line in accordance with an address signal, bringing selected said memory cell selection line to a first potential while maintaining remaining said memory cell selection lines at a second potential, and activating a memory cell corresponding to said selected memory cell selection line;

first and second power supply lines receiving said first and second potentials respectively;

a sense amplifier being connected with said first and second power supply lines for amplifying a data signal being read from said memory cell being activated by said memory cell selection means; and

connection means being provided in correspondence to each said memory cell selection line and connected between a second end portion of corresponding said memory cell selection line and said second power supply line to be brought into a conducting state in a prescribed period other than a period for bringing said memory cell selection line being selected by said memory cell selection means to said first potential.

5,825,700

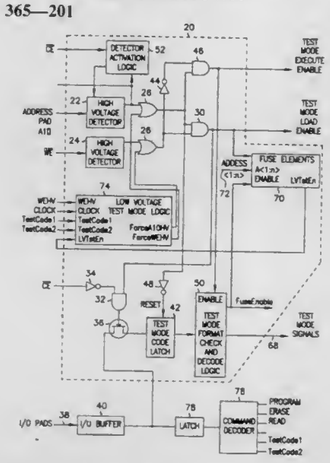
LOW VOLTAGE TEST MODE OPERATION ENABLE SCHEME WITH HARDWARE SAFEGUARD

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 592,228, Jan. 26, 1996. This application Mar. 11, 1997, Ser. No. 814,220

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—201 **14 Claims**



1. A data system operable in a normal mode of operation and a test mode of operation, comprising:

a non-volatile data storage unit for storing a data bit; and

test mode circuitry, coupled to the non-volatile data storage unit, for receiving test mode codes and for initiating the test mode of operation in the data system in response thereto, wherein the test mode circuitry is disabled by a first state of the data bit.

5,825,701

MEMORY CELL ARRANGEMENT OF MEMORY CELLS ARRANGED IN THE FORM OF A MATRIX

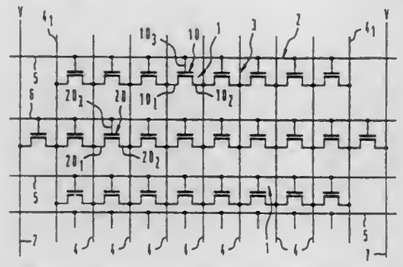
Paul-Werner Von Basse, Wolfratshausen; Roland Thewes, Puchheim; Doris Schmitt-Landsiedel, Ottobrunn, and Michael Bollu, Munich, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 16, 1996, Ser. No. 682,022

Claims priority, application Germany, Sep. 13, 1995, 195 33 951.7

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **12 Claims**



1. A memory cell arrangement of memory cells arranged in rows and columns in the form of a matrix, each memory cell having an MOS transistor having a source terminal, drain terminal and gate terminal, comprising:

a plurality of adjacent bitlines and a plurality of selection lines;

each column of said columns arranged between two adjacent bitlines of said plurality of bitlines, and an allocated selection line of said plurality of selection lines respectively running along each row of said rows;

each transistor of a column or row of said columns or rows connected to respectively two adjacent bitlines of said plurality of bitlines via its source terminal and drain terminal, and each transistor of a row or column of said rows or columns connected to a respective allocated selection line via its gate terminal; and

at least one further MOS transistor connected respectively between two adjacent bitlines of said plurality of bitlines and between at least one respective bitline and a respective electric potential, said at least one further MOS transistor respectively having a source terminal, a drain terminal and a gate terminal, said at least one further MOS transistor being connected, via its source terminal and drain terminal, to the two respective adjacent bitlines, or to the respective bitline and the respective potential, gate terminals of further MOS transistors being connected to a common pre-charging line for alternative charging of the bitlines to the respective potential V.

5,825,702

SYNCHRONOUS STORAGE DEVICE AND METHOD OF READING OUT DATA FROM THE SAME

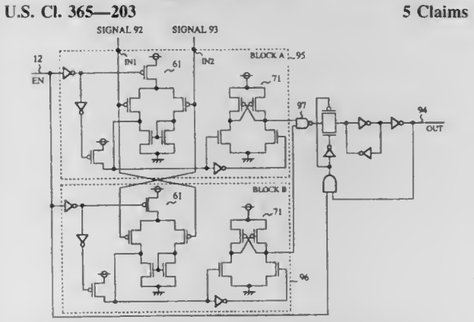
Kazuyuki Noda, Tokyo, Japan, assignor to Mitsubishi Electric Engineering Company Limited, and Mitsubishi Denki Kabushiki Kaisha, both of Tokyo, Japan

Filed Jan. 23, 1998, Ser. No. 12,408

Claims priority, application Japan, Sep. 11, 1997, 9-247241

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—203 **5 Claims**



1. A synchronous storage device comprising:

a plurality of memory cells each for storing one-bit data;

word lines connected to a pass transistor for selecting these memory cells;

a bit line pair, connected to said memory cell, used for transferring data;

an address decoder for decoding an address signal and selecting said word lines;

a precharge circuit for precharging said bit line pair in synchronization with a clock signal supplied thereto from an external source;

a column selector for selecting a column line to conduct a read or write operation out of column lines of said memory cell;

a sense amplifier for amplifying a potential of the bit line pair; and

a write driver for driving the bit line pair to write the data in the memory cells,

said synchronous storage device further comprising:

a reference-voltage line applied with a potential where said bit line pair is activated; and

a precharge-time-width reducing means for compulsively changing the clock signal input to said precharge circuit from "H" level to "L" level when a potential of said reference-voltage line becomes equal to that of said bit line pair which is preliminarily discharged to zero while these potentials comparing with each other.

5,825,703

SEMICONDUCTOR MEMORY DEVICE HAVING P-CHANNEL FIELD EFFECT TRANSISTOR TO DRIVE WORD LINE

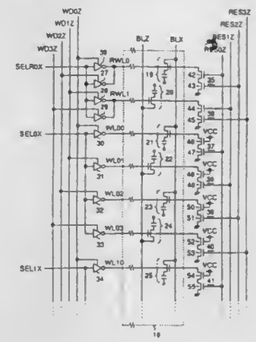
Hiroyoshi Tomita, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 622,297, Mar. 25, 1996, abandoned. This application Oct. 24, 1997, Ser. No. 959,529

Claims priority, application Japan, Aug. 17, 1995, 7-209389

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—204 **14 Claims**



1. A semiconductor memory device comprising:

a plurality of memory cells coupled to word lines having a first end and a second end opposite to the first end;

a word line driving circuit having at least one p-channel field effect transistor which is located in a vicinity of the first end of the word lines and which drives a corresponding one of the word lines in response to a word line selection signal, said at least one p-channel field effect transistor is not responsive to a level of the word line; and

a word line resetting circuit having at least one n-channel field effect transistor which is located in a vicinity of the second end of the word lines and which resets a corresponding one of the word lines in response to a word line reset signal.

5,825,704

HIGH PERFORMANCE EMBEDDED SEMICONDUCTOR MEMORY DEVICES WITH MULTIPLE DIMENSION FIRST-LEVEL BIT LINES

Jeng-Jye Shau, 991 Amarillo Ave., Palo Alto, Calif. 94303

Continuation-in-part of Ser. No. 653,620, May 24, 1996. This application Feb. 25, 1997, Ser. No. 805,290

Int. Cl.[6] G11C *11/406*

U.S. Cl. 365—222 **7 Claims**

1. A semiconductor memory device provided for operation with a plurality of cell-refreshing sense-amplifiers (SAs) comprising:

a memory cell array having a plurality of first-direction first-level bit lines disposed in a parallel manner along a first direction;

said memory cell array further includes a plurality of word lines intersected with said first-direction first-level bit lines;

said memory cell array further includes a plurality of memory cells wherein each of said plurality of memory cells being coupled between one of said first-direction first level bit lines and one of said word lines for storing data therein;

a plurality of different-direction first level bit lines disposed along a plurality of different directions with at least one of said different directions being different from said first direc-



tion, wherein each of said first direction first level bit lines connected to one of said cell-refreshing sense amplifiers (SAs) directly or via said different-direction first level bit-lines;

a decoder for generating an activating signal for activating one of said word lines wherein said decoder further includes a plurality of drain select lines each being provided for receiving one of a plurality of mutual exclusively drain select signals;

said decoder further includes a plurality of gate select lines each being provided for receiving one of a plurality of mutual exclusively gate select signals;

said decoder further includes a plurality of transistors wherein each transistor includes a drain which being connected correspondingly to one of said plurality of drain select input lines for receiving one of said mutually exclusive drain select signals therefrom;

each of said transistors further includes a gate which being connected correspondingly to one of said plurality of gate select input lines for receiving one of said mutually exclusive gate select signals therefrom; and

each of said plurality of transistors further includes a source which is connected to an output signal line for providing said activating signal which being contingent upon said mutually exclusive drain select signals and said mutually exclusive gate select signals.

5,825,705

SEMICONDUCTOR MEMORY DEVICE HAVING SELF-REFRESHING FUNCTION

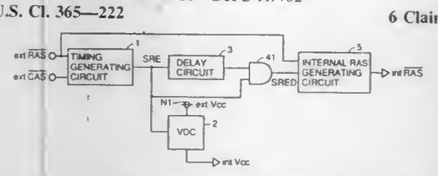
Masaki Tsukude, and Kazutami Arimoto, both of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 607,497, Feb. 27, 1996, Pat. No. 5,633,831, which is a division of Ser. No. 382,557, Feb. 2, 1995, Pat. No. 5,568,440. This application Apr. 17, 1997, Ser. No. 839,834

Claims priority, application Japan, Feb. 3, 1994, 6-11900; Mar. 15, 1994, 6-44369

Int. Cl.[6] G11C *11/402*

U.S. Cl. 365—222 **6 Claims**



1. A semiconductor memory device capable of carrying out a self-refreshing operation, comprising:

a self-refresh enable signal generating circuit for generating a self-refresh enable signal, the self-refresh enable signal designating said self-refreshing operation in response to an externally applied control signal;

internal operation voltage applying means for applying an internal power supply voltage and an internal ground voltage, and for reducing a voltage difference between the internal power supply voltage and the internal ground voltage in response to said self-refresh enable signal.

5,825,706

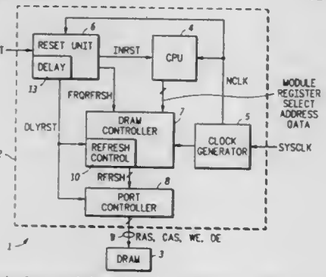
CIRCUIT AND METHOD FOR RETAINING DATA IN DRAM IN A PORTABLE ELECTRONIC DEVICE

Ralph Snowden, Lakeway, Tex.; Wendy Reed, Sutin, Tex.; Glen James Zoerner, Austin, Tex.; Wai-Kin Steven Kwan, Kowloon, Hong Kong; On Ki Andrew Chu, Hong Kong, Hong Kong, and Hing Leung Yiu, Hong Kong, Hong Kong, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1997, Ser. No. 958,645

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—222 **12 Claims**



1. A circuit for retaining data in a Dynamic Random Access Memory (DRAM) during reset, the circuit comprising:

a reset controller having:

a reset input coupled to receive an external reset signal,

a first output to provide an internal reset signal thereat in response to receipt of the external reset signal, and

a second output to provide a delayed reset signal thereat in response to receipt of the external reset signal but delayed with respect to the internal reset signal;

a Central Processing Unit (CPU) having:

an input coupled to the first output of the reset controller;

a DRAM controller having:

a first input coupled to the second output of the reset controller,

a second input coupled to an output of the CPU, and

an output couplable to the DRAM to provide a periodic refresh signal to the DRAM to prevent data stored therein being lost;

wherein the delayed reset signal is generated only when the external reset signal has ended, such that the CPU is reset when the internal reset signal is received from the reset controller, but the DRAM controller continues to generate the refresh signal to refresh the DRAM until the delayed reset signal is received, whereupon the DRAM controller is reset and can then be reconfigured by the CPU to enable it to start to generate the refresh signal again.

5,825,707

SEMICONDUCTOR DEVICE AND SRAM HAVING PLURAL POWER SUPPLY VOLTAGES

Yasumitsu Nozawa, Yokohama; Kenichi Nakamura, Sumida-ku; Takayuki Otani, Hachioji, and Makoto Segawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Jul. 10, 1997, Ser. No. 882,393

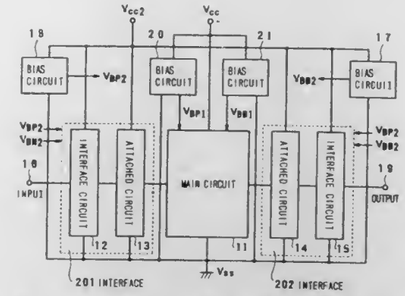
Claims priority, application Japan, Jul. 11, 1996, 8-182451; May 28, 1997, 9-138741

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—226 **12 Claims**

1. A semiconductor device, comprising:

a first circuit formed in a first well and a second well of a semiconductor substrate, supplied with a first supply voltage



and a second supply voltage higher than the first supply voltage, in which a first bias voltage is applied to the first well and a second bias voltage is applied to the second well;

a second circuit formed in a third well and a fourth well of a semiconductor substrate, supplied with the first supply voltage and a third supply voltage higher than the first supply voltage but different from the second supply voltage, in which a third bias voltage is applied to the third well and a fourth bias voltage is applied to the fourth well;

a first bias circuit supplied with the first and second supply voltages, for generating and outputting the first bias voltage;

a second bias circuit supplied with the first and second supply voltages, for generating and outputting the second bias voltage;

a third bias circuit supplied with the first and third supply voltages, for generating and outputting the third bias voltage; and

a fourth bias circuit supplied with the first and third supply voltages, for generating and outputting the fourth bias voltage.

5,825,708

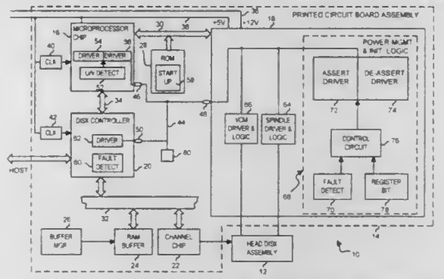
CONTROL SYSTEM FOR ALLOWING MULTIPLE CHIPS OF A DISK DRIVE TO SAFELY ASSERT AND DE-ASSERT A RESET SIGNAL ON A RESET LINE

George Jeffrey Bennett, Murietta, Calif., assignor to Western Digital Corporation, Irvine, Calif.

Filed Nov. 18, 1997, Ser. No. 972,405

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—226 **25 Claims**



1. A power driver chip for use in a disk drive, the disk drive including a reset line, an integrated circuit having a first reset pin coupled to the reset line and first means coupled to the first reset pin for switchably asserting a reset signal to a first level on the reset line, the power driver chip comprising:

a second pin adapted to be coupled to the reset line;

second means coupled to the second reset pin for switchably asserting the reset signal to a second level on the reset line;

third means coupled to the second reset pin for switchably de-asserting the reset signal to a third level on the reset line; and

control means coupled between the reset line and the third means, the control means including means for producing a level discrimination signal representing whether the first means is asserting the reset signal; and arbitration means responsive to the level discrimination signal for inhibiting the third means from de-asserting the reset signal while the first means is asserting the reset signal;

whereby the control means prevents the power driver chip from de-asserting the reset signal while the integrated circuit is asserting the reset signal.

5,825,709

SEMICONDUCTOR MEMORY DEVICE

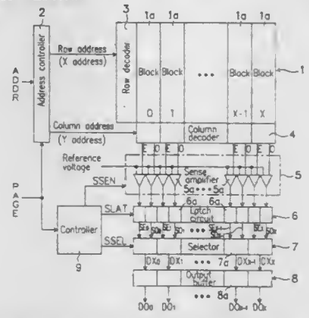
Masakazu Kobayashi, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 14, 1997, Ser. No. 783,032

Claims priority, application Japan, Jan. 19, 1996, 8-007868

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.03 **5 Claims**



1. A semiconductor memory device comprising:

a memory cell array including a plurality of bit blocks each including a plurality of bit line groups each including a plurality of bit lines;

a row decoder for designating a row over the plurality of bit blocks based on a row address so that data stored in memory cells on the designated row is read out to bit lines corresponding to the memory cells;

a column decoder for alternately designating a plurality of the bit lines corresponding to the memory cells on the designated row, each belonging to a different one of the bit line groups for each of the bit blocks based on a column address while the row decoder maintains the designation of the row over the plurality of bit blocks based on the row address;

a plurality of sense amplifiers each provided for one of the plurality of bit line groups for sensing and amplifying data on the designated bit lines;

a plurality of latch circuits each provided for one of the plurality of sense amplifiers for latching outputs of the plurality of sense amplifiers; and

a selector for alternately selecting one of outputs of the plurality of latch circuits corresponding to different bit line groups, thereby rapidly outputting the data;

a controller for alternately operating one of the plurality of sense amplifiers corresponding to different bit line groups.

5,825,710

SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE

Terry Jeng, Saratoga, Calif.; Chuan-Yu Wu, Keelung, Taiwan, and Jason Hou, Fremont, Calif., assignors to Powerchip Semiconductor Corp., Hsin-Chu, Taiwan

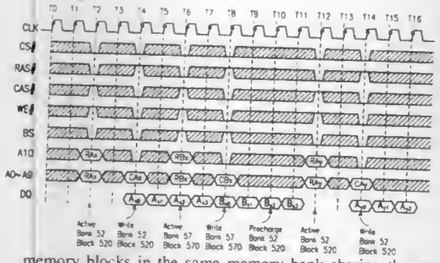
Filed Feb. 26, 1997, Ser. No. 806,828

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.03 **5 Claims**

1. A semiconductor memory device, comprising:

memory banks for interleaving data access, each said memory bank including a plurality of memory blocks therein, said



memory blocks in the same memory bank sharing the same master peripheral circuit of said memory bank, access to said memory blocks in the same memory bank being cooperative; and

a control means for generating a dedicated precharge signal to each said memory block in each said memory bank responsive to a precharge signal for each said memory bank, each said dedicated precharge signal independently driving the corresponding memory block to be precharged regardless of access operations executed by other memory blocks in the same memory bank, said dedicated precharge signal for precharging the corresponding memory block and a succeeding dedicated precharge signal for precharging a different memory block being partially overlapped.

5,825,711

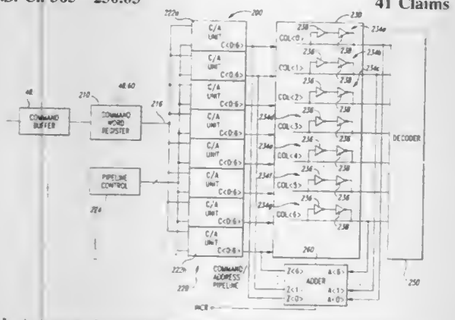
METHOD AND SYSTEM FOR STORING AND PROCESSING MULTIPLE MEMORY ADDRESSES

Troy A. Manning, Meridian, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Jun. 13, 1997, Ser. No. 874,973

Int. Cl.[6] G11C *8/00;7/00*

U.S. Cl. 365—230.03 **41 Claims**



1. A system for storing and processing memory address, comprising:

a plurality of address storage units each of which stores a respective memory address, the address storage units each receiving and storing a memory address responsive to an input enable signal and applying its stored address to an M-bit bus responsive to an output enable signal, each of the bits of the M-bit bus being coupled to corresponding bits of all of the address storage units;

a memory address processing circuit having an input bus which is adapted to receive a memory address;

M address bus circuits each of which is coupled to a respective bit of the M-bit bus, the bus circuits coupling the memory address from an enabled address storage unit to the memory address processing circuit; and

a control circuit selectively applying the input enable signal and the output enable signal to each of the address storage units.

5,825,712

SEMICONDUCTOR INTEGRATED CIRCUIT

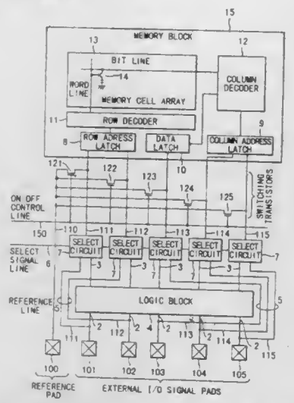
Tomoki Higashi, Yokohama, and Hiroyuki Noji, Chigasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Aug. 18, 1997, Ser. No. 912,755

Claims priority, application Japan, Aug. 19, 1996, 8-217399

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.03 **16 Claims**



1. A semiconductor device integrated circuit in which at least a memory block and a logic block are formed on a chip, comprising:

the logic block having a plurality of input lines each connected to corresponding one of external I/O pads and a plurality of output lines each of which outputs control signals controlling operation of the memory block;

a plurality of select circuits each of which is connected to corresponding one of the external I/O pads at one end, for selecting either one of the output lines of the logic block or one of lines bypassing the logic block by receiving a select signal input from a select signal line;

bus lines each connected to corresponding one of output terminals of the select circuits at one end and connected to corresponding one of input terminals of the memory block at the other end;

a reference line arranged near the bus lines;

a reference pad located near the external I/O pads and connected to the reference line;

a plurality of switching transistors connecting at least one of the bus lines with the reference line; and

an ON/OFF control line for controlling ON/Off of the switching transistors.

5,825,713

DUAL PORT MEMORY DEVICE AND A METHOD THEREFOR

Chul-kyu Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 8, 1996, Ser. No. 598,317

Claims priority, application Rep. of Korea, Feb. 8, 1995, 1995/2271

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.05 **11 Claims**

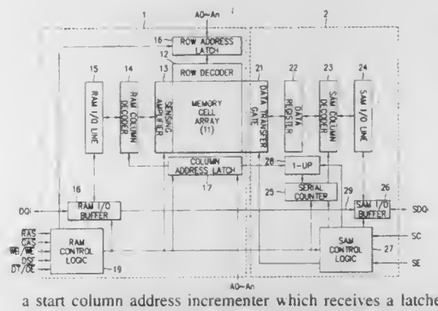
1. A memory device, comprising:

a memory cell array;

a RAM port which performs random access memory operations between said memory cell array and external devices; and

a SAM port which performs serial access memory operations between said memory cell array and said external devices, said SAM port including:

a SAM control circuit which receives a serial clock and forms first and second internal clocks therefrom;



a start column address incrementer which receives a latched column address and increments said latched column address by an offset address to form an incremented start column address;

a serial counter which receives said incremented start column address as an initial column address and generates a plurality of column addresses therefrom in response to said first internal clock;

a SAM data register which stores a row of data from said memory cell array and outputs certain of said row data in response to said plurality of column addresses; and

a SAM data buffer which receives said certain row data from said SAM data register and serially outputs said certain row data to said external devices in response to said second internal clock.

5,825,714

SEMICONDUCTOR MEMORY DEVICE HAVING NOISE KILLER CIRCUIT

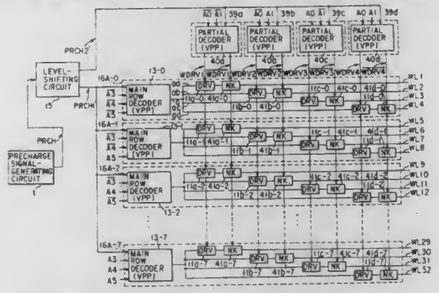
Fumihiro Kohno, Kawasaki, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 27, 1995, Ser. No. 379,290

Claims priority, application Japan, Jan. 31, 1994, 6-008921; Jan. 23, 1995, 7-008471

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—230.06 **70 Claims**



1. A dynamic random access memory device comprising:

an array of dynamic random access memory cells connected to word lines;

an array of word-line driving circuits including P-channel insulated-gate FETs and N-channel insulated-gate FETs; and

an array of word-line noise killer circuits, arranged between and connected to said array of memory cells and said array of word-line driving circuits, said word-line noise killer circuits including insulated-gate FETs, wherein each of the insulated-gate FETs included in said word-line noise killer circuits has a gate extending at right angles to gates of the P-channel insulated-gate FETs and N-channel insulated-gate FETs of said word-line driving circuits.

5,825,715

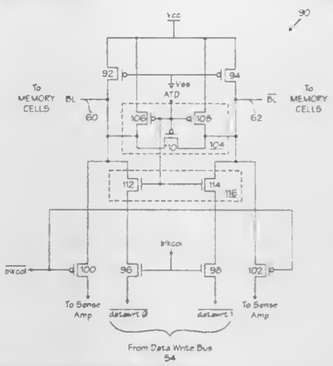
METHOD AND APPARATUS FOR PREVENTING WRITE OPERATIONS IN A MEMORY DEVICE

Stefan-Cristian Rezeanu, Colorado Springs, Colo., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed May 13, 1997, Ser. No. 855,040

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—233.5 **15 Claims**



1. A method comprising the steps of:

generating an address transition detection (ATD) pulse in response to an address transition at a memory device; and

preventing a memory write to an undesired memory location within said memory device and equalizing bitlines associated with said memory location in response to said ATD pulse.

5,825,716

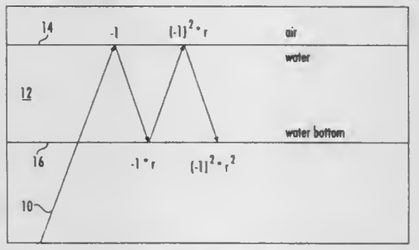
METHOD OF REVERBERATION REMOVAL FROM SEISMIC DATA AND REMOVAL OF DUAL SENSOR COUPLING ERRORS

Joel G. Starr, Richmond, Tex., assignor to PGS Tensor Inc., Houston, Tex.

Division of Ser. No. 599,717, Feb. 12, 1996. This application May 7, 1997, Ser. No. 852,808

Int. Cl.[6] G01N *1/36*; G06F *15/21*

U.S. Cl. 367—24 **15 Claims**



1. A method for eliminating the effects of receiver coupling from seismic data taken in a survey, wherein there exists a reverberation response period, the method comprising:

describing a first cross-equalization filter as a function of the reverberation period;

describing a second cross-equalization filter as a function of the seismic data;

deriving an inverse coupling filter as a function of the first cross-equalization filter and the second equalization filter; and

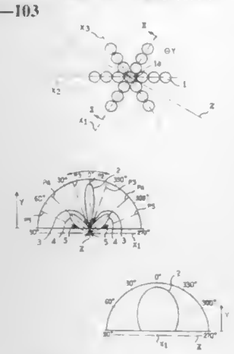
applying the coupling filter to the seismic data.

5,825,717

METHOD OF MEASURING AN ANGLE IN THREE DIMENSIONS, BY SCANNING AN ULTRASOUND BEAM

Pierre Bonnefoy, Cagnes sur Mer, France, assignor to Imra Europa SA, Valbonne, France

Filed Apr. 28, 1997, Ser. No. 848,581
Claims priority, application France, Apr. 29, 1996, 96 05367
Int. Cl.[6] G01S *15/06*
U.S. Cl. 367—103 18 Claims



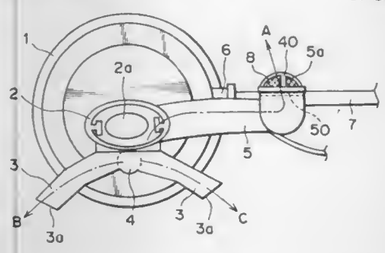
1. A method of measuring an angle in three dimensions relative to a reference direction, wherein:
a transducer array emitter is placed in a known position relative to the reference direction;
the transducers of the array are excited so as to emit ultrasound waves in air mainly in a firing direction;
by applying phase offsets between the excitation signals for the transducers of the array, the firing direction is varied, thereby causing it to scan a given observation zone, while simultaneously the echo received in the vicinity of the emitter is measured; and the angle is determined from the known position of the emitter relative to the reference position, and from the firing direction at the moment when the echo amplitude is at a maximum.

5,825,718

UNDERWATER COMMUNICATION APPARATUS AND UNDERWATER MICROPHONE, AND CLOSED-TYPE SOUND CONVERTER

Masataka Ueki; Shouzou Kimura, and Masaharu Ueki, all of Jouetsu, Japan, assignors to UETAX Corporation, Nigata-ken, Japan

Filed Aug. 18, 1997, Ser. No. 912,721
Claims priority, application Japan, Aug. 30, 1996, 8-230709
Int. Cl.[6] H04B *11/00*
U.S. Cl. 367—132 17 Claims



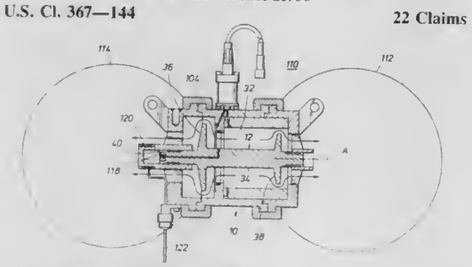
1. An underwater communication apparatus comprising an underwater microphone including an acoustic space member connected at one end to a site adjacent a breathing port of an aqualung mouthpiece to define an acoustic space communicating with an interior space of the mouthpiece, and a sound signal-electric converter device disposed in the interior of the acoustic space member at a position spaced from said breathing port, said sound signal-electric converter device being operable to convert a sound signal into an electric signal; and
a closed-type sound converter for transmitting a sound wave underwater on the basis of an output of the sound signal-electric signal converter device of the underwater microphone.

5,825,719

DUAL-PORT AIR GUN HAVING A SINGLE SHUTTLE

Earnest R. Harrison, Jr., Plano, Tex., assignor to Input/Output, Inc., Stafford, Tex.

Filed Oct. 16, 1997, Ser. No. 951,258
Int. Cl.[6] H04R *23/00*
U.S. Cl. 367—144 22 Claims



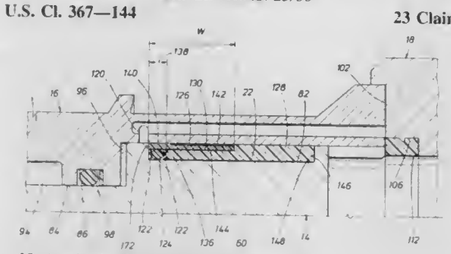
1. A seismic air gun comprising:
a body defining a pressurized air inlet and a main chamber having two ports at opposite ends of the main chamber;
a shuttle mounted in the body and responsive to pressurized air to move between an open position and a closed position;
a return device in the body responsive to pressurized air to move the shuttle to the closed position; and
a firing chamber adjacent the main chamber, into which pressurized air is selectively injected to move the shuttle to the open position releasing pressurized air through the two ports and into a surrounding environment.

5,825,720

COMBINATION SEAL AND WEAR FOR AN AIR GUN

Earnest R. Harrison, Houston, and David M. McCall, Richmond, both of Tex., assignors to Input/Output, Inc., Strafford, Tex.

Filed Oct. 22, 1997, Ser. No. 955,827
Int. Cl.[6] H04R *23/00*
U.S. Cl. 367—144 23 Claims



11. A seismic air gun device comprising:
a main body member having a seal groove formed in the main body member;
a shuttle member mounted in sealing engagement with the main body member, a portion of the shuttle member being adjacent the seal groove;
a support ring seated in the seal groove, the support ring having a receiving recess formed in the support ring adjacent the shuttle member;

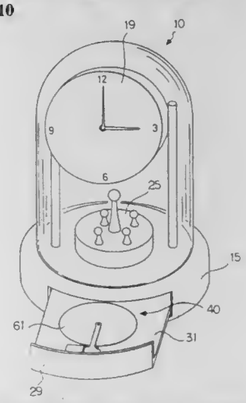
an elastic ring seated in the seal groove adjacent the support ring; and
a wear ring seated in the receiving recess, the wear ring including an end portion overlapping and compressing the elastic ring.

5,825,721

TIMEPIECE WITH MUSIC BOX

Shinji Miyane, Tokyo, Japan, assignor to Rhythm Watch Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1997, Ser. No. 825,076
Claims priority, application Japan, Mar. 27, 1997, 8-071571
Int. Cl.[6] G04B *47/00;* G10F *1/06*
U.S. Cl. 368—10 3 Claims



1. A timepiece with a disc music box comprising:
a slide plate to which the disc music box is fixed, and
means for slidably supporting the slide plate in parallel to a direction of a plane of a disc and the slide plate to enable pulling of the disc music box out of the timepiece.

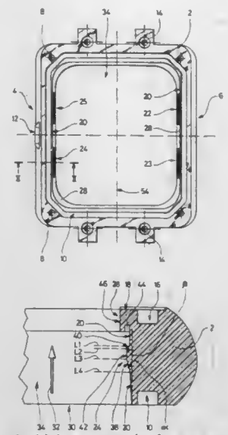
5,825,722

TIMEPIECE COMPRISING A CASE WHEREIN A CLOCKWORK MOVEMENT IS HOUSED

Clément Meyrat, Le Landeron, and Jean-Christophe Rothen, Bienne, both of Switzerland, assignors to SMH Management Services AG, Biel, Switzerland

Filed Oct. 11, 1996, Ser. No. 729,532
Claims priority, application France, Oct. 27, 1995, 95 12728
Int. Cl.[6] G04B *37/00*
U.S. Cl. 368—276 10 Claims

1. A timepiece comprising a case and a movement comprising a rim on at least a portion of its periphery, the case comprising a caseband having an opening for inserting said movement and an internal wall, this internal wall defining a direction for inserting said movement and a housing for this movement, and wherein the caseband is able to be deformed elastically and said internal wall has a first protruding part and a second protruding part between which at least partially said rim of said movement is placed, these first and second protruding parts positioning said movement in said insertion direction, said first protruding part having, in a first region superposed onto said rim and situated on the side of the opening with respect to a raised region of this first protruding part, a profile, in a cross-section plane parallel to said insertion direction, the tangent of which at any point has an angular deflection in relation to the insertion direction which is less than 90 degrees.

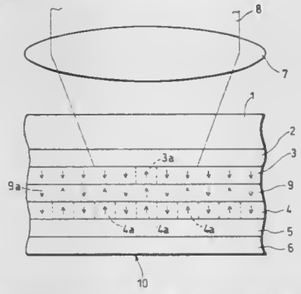


5,825,723

MAGNETO-OPTICAL RECORDING MEDIUM HAVING A REPRODUCING LAYER WITH DIFFERENT MAGNETIZATION DIRECTIONS IN DIFFERENT TEMPERATURE RANGES

Junji Hirokane, Nara; Junichiro Nakayama, Shiki-gun, and Akira Takahashi, Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 24, 1996, Ser. No. 685,534
Claims priority, application Japan, Sep. 12, 1995, 7-234139
Int. Cl.[6] G11B *11/00*
U.S. Cl. 369—13 17 Claims



1. A magneto-optical recording medium formed on a substrate, comprising:
a recording layer composed of a magnetic thin film with perpendicular magnetization, on which information is recorded in the perpendicular magnetization direction, said recording layer for generating a leakage magnetic flux;
a reproducing layer composed of a magnetic thin film with perpendicular magnetization, to which information about a magnetic domain of said recording layer is transferred, said reproducing layer being formed so that when an external magnetic field is applied to the reproducing layer in reproducing information, magnetization direction of the reproducing layer is arranged in the direction of the external magnetic field in a first temperature range including room temperature, and the magnetization direction is arranged in the direction of the leakage magnetic flux in a second temperature range which includes the highest temperature in the first temperature range by projecting a light beam thereto, and the magnetization direction is again arranged in the direction of the external

magnetic field in a third temperature range which includes the highest temperature in the second temperature range; and

an intermediate layer composed of a non-magnetic film, said intermediate layer being formed between said recording layer and said reproducing layer, said intermediate layer for intercepting a magnetic exchange coupling force exerted between said recording layer and said reproducing layer.

5,825,724

MAGNETO-OPTICAL RECORDING METHOD USING LASER BEAM INTENSITY SETTING BASED ON PLAYBACK SIGNAL

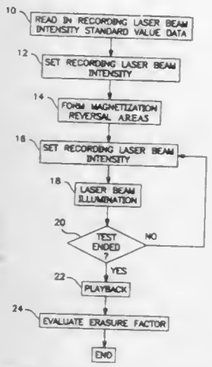
Hiroyuki Matsumoto, Tokyo, and Koichiro Ishii, Zushi, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Nov. 5, 1996, Ser. No. 744,858

Claims priority, application Japan, Nov. 7, 1995, 7-288308; Nov. 7, 1995, 7-288309

Int. Cl.[6] G11B *11/00*

U.S. Cl. 369—13 **8 Claims**



1. A method of optical recording, comprising the steps of:

forming magnetization reversal areas in a test recording region of an overwriteable optical recording medium;

illuminating the magnetization reversal areas with a laser beam;

playing back the test pattern in the test recording region as a playback signal; and

setting only a low level recording laser beam intensity by finding an erasure factor from the playback signal.

5,825,725

METHOD AND APPARATUS FOR REVERSIBLE OPTICAL DATA STORAGE

George W. Rayfield, and Kuo-Chung Hsu, both of Eugene, Oreg., assignors to The State of Oregon acting by and through the State Board of Higher Education on behalf of the University of Oregon, Eugene, Oreg.

Filed May 6, 1997, Ser. No. 851,773

Int. Cl.[6] G11B *13/00*

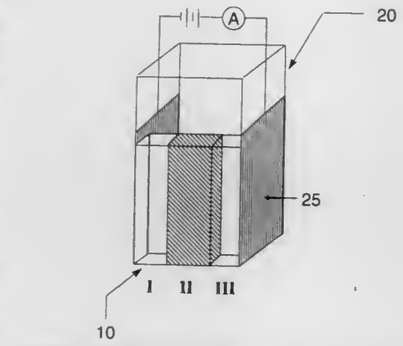
U.S. Cl. 369—14 **23 Claims**

1. A method of storing and retrieving optical data comprising the steps:

(a) providing a film comprising an agent selected from the group consisting of bacteriorhodopsin and bacteriorhodopsin mutants in a conductive polymeric matrix;

(b) converting the retinal component in said film from a purple membrane state that absorbs light centered at approximately 568 nm to a blue membrane state that absorbs light centered at approximately 605 nm by the application of DC voltage to said film;

(c) exposing said film to red light in a predetermined pattern to selectively convert portions of said film to the P500 state so as to record optical data therein;



(d) storing said recorded optical data in said film by causing the retinal component of said bacteriorhodopsin in said film to go to a purple membrane state that absorbs light centered at approximately 568 nm by reversing the polarity of the DC voltage applied in step (b); and

(e) retrieving said fixed optical data by exposing said film of step (d) to red light and optically detecting said optical data.

5,825,726

MULTI-SESSION DISC AND A HIGH-SPEED ACCESS METHOD THERETO

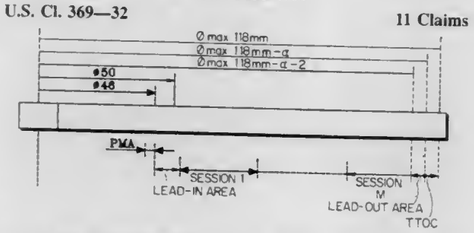
In-Wook Hwang, and Jeong-Ho Park, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Sep. 30, 1996, Ser. No. 723,566

Claims priority, application Rep. of Korea, Sep. 30, 1995, 33231/1995

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **11 Claims**



1. A disc recorded during a record mode operation with information according to a multi-session mode, comprising:

a PMA area located at an inner circumferential area of the disc;

a session area located at an circumferential area of the disc outside of said PMA area, said session area having a plurality of sessions recorded therein, wherein each of said plurality of sessions includes a lead-in area, a program area and a lead-out area, positions of which are set during the record mode operation, wherein information relating to positions of said plurality of sessions is recorded in said PMA area; and

a total table of contents (TOC) area located between the lead-out area of an outermost recorded session of said plurality of sessions and the outermost circumferential area of the disc, wherein said position information recorded in the respective lead-in areas of said plurality of sessions is recorded in said total TOC area.

5,825,727

APPARATUS AND METHOD FOR SELECTING MULTI-ANGLE OF DIGITAL VIDEO DISC

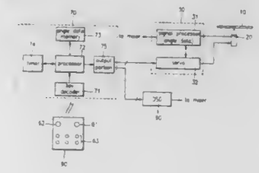
Seog Yeon Han, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed May 30, 1997, Ser. No. 866,301

Claims priority, application Rep. of Korea, Jun. 29, 1996, 1996/26109

Int. Cl.[6] G11B *17/22;3/90*

U.S. Cl. 369—32 **12 Claims**



7. A method for selecting a multi-angle of a DVD which plays a digital signal formatted in a disc through an optical pickup, comprising the steps of:

displaying an OSD screen which provides a menu screen;

setting a user's desired angle block which includes a plurality of angles and time periods; and

storing the set angle block and time periods.

5,825,728

OPTICAL DISK AND OPTICAL DISK DRIVE DEVICE

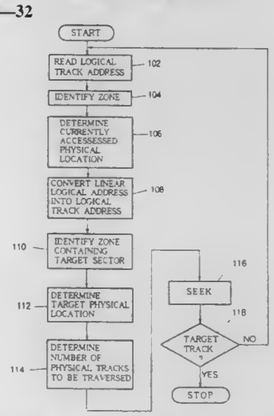
Kyosuke Yoshimoto, Nagaokakyo; M. C. Rao, Kurashiki-shi; Hiroyuki Ohata, Nagaokakyo; Kazuhiko Nakane, Nagaokakyo; Teruo Furukawa, Nagaokakyo; Junichi Kondo, and Masafumi Ototake, both of Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 718,263, Sep. 20, 1996, Pat. No. 5,717,683, which is a division of Ser. No. 128,193, Sep. 29, 1993, Pat. No. 5,592,452. This application Aug. 20, 1997, Ser. No. 914,782

Claims priority, application Japan, Oct. 5, 1992, 4-265893; Oct. 12, 1992, 4-272673; Dec. 4, 1992, 4-325319; Sep. 24, 1993, 5-238354

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—32 **3 Claims**



1. An optical disk drive device for use with an optical disk; said optical disk including.

a recording region;

a plurality of physical tracks formed in said recording region, each physical track corresponding to a single revolution of said optical disk;

said recording region being divided into a plurality of annular zones centered at a center of said optical disk, an annular recording density of said optical disk being higher in zones further form said center of said optical disk such that a linear recording density of said optical disk is substantially constant throughout said recording region;

an integer number of sectors formed in each of said physical tracks, each sector including a header field with a track address field;

one or more of said sectors being formed into one of a plurality of logical tracks by setting a track address in said track address field of each sector to indicate membership in one of said logical tracks, said logical tracks being divided into revolution groups such that a number of said revolution groups equals a number of said zones, thus, each revolution group corresponds to one of said zones, and boundaries between neighboring revolution groups coinciding with boundaries of corresponding zones;

the number of logical tracks and adjacent annular zones differing by a constant number;

each logical track is composed of 2^n sectors, with n being an integer;

said optical disk drive device determines which one of said zones contains a target sector based on a product of said constant number and the number of said zones.

5,825,729

INFORMATION RECORDING AND/OR REPRODUCING METHOD AND APPARATUS IN WHICH A SERVO PROCESS OF A LIGHT BEAM IS INTERRUPTED BETWEEN INPUT/OUTPUT CONTROL OF DATA AT PREDETERMINED PERIODS

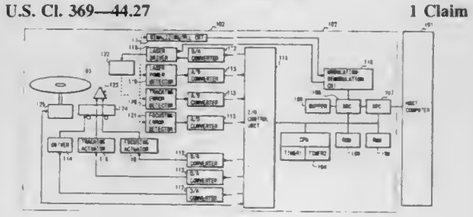
Yutaka Ogasawara, Yokohama; Hirotake Ando, Tokyo; Akira Miyashita, Tokorozawa, and Nobuyuki Tonegawa, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1994, Ser. No. 357,291

Claims priority, application Japan, Dec. 15, 1993, 5-315173; Dec. 28, 1993, 5-337496; Sep. 12, 1994, 6-217408

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—44.27 **1 Claim**



1. An information recording and/or reproducing apparatus for recording data onto and/or reproducing data from a recording medium by irradiating a light beam emitted from a light source onto a desired track of the recording medium through an optical system in a read/write mode, the light beam being held on the same track in a wait mode, said apparatus comprising:

a single processor for executing an input/output control of the data for said apparatus and a servo process of the light beam such that the servo process of the light beam interrupts the input/output control at a predetermined period; and

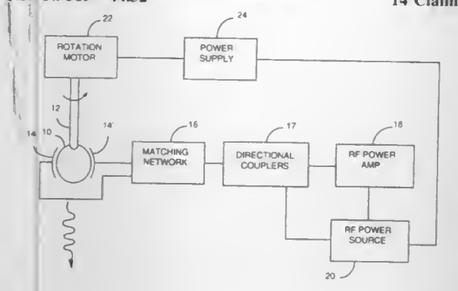
an actuator for moving the light beam on the basis of the servo process of said processor,

wherein the predetermined period in the wait mode is longer than that in the read/write mode.

5,825,730
MASTERING MACHINE HAVING NON-REPETITIVE RUNOUT COMPENSATION

Jun Nishida, Yokohama; Nobutaka Kikuiri, Tokyo, and Yuuichi Tachikawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 8, 1996, Ser. No. 612,576
Claims priority, application Japan, Mar. 10, 1995, 7-050247; Nov. 6, 1995, 7-286910; Mar. 8, 1996, 8-051138
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—44.32 14 Claims

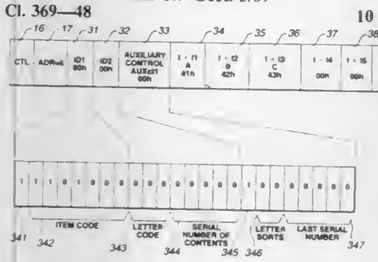


1. A mastering machine comprising:
a turntable having an upper surface on which a master disk to be recorded is placed and a side surface;
a motor for rotating said turntable;
a detector having a first detector portion disposed on the side surface of said rotating turntable for detecting a rotation runout of said turntable in a radial direction thereof at the side surface and outputting a first detected signal indicating the rotation runout of said turntable and a second detector portion for detecting a rotation angle of said turntable to output a second detected signal indicating the rotation angle;
a calculator for calculating a reference repetitive runout based upon the first detected signal and a non-repetitive runout based upon the reference repetitive runout and the first detected signal;
a projecting unit for projecting an exposure beam to record information on said master disk placed on said turntable; and
a compensation unit for adjusting a projection position of the exposure beam projected to said master disk on the basis of the non-repetitive runout obtained by said calculator.

5,825,731
DISC RECORDING MEDIUM HAVING SUBSIDIARY DATA IN WHICH IS STORED AN IDENTIFIER

Teppei Yokota, Chiba, Japan, assignor to Sony Corporation, Japan

Filed Nov. 27, 1996, Ser. No. 753,675
Claims priority, application Japan, Dec. 7, 1995, 7-318956
Int. Cl.[6] G11B 5/09
U.S. Cl. 369—48 10 Claims

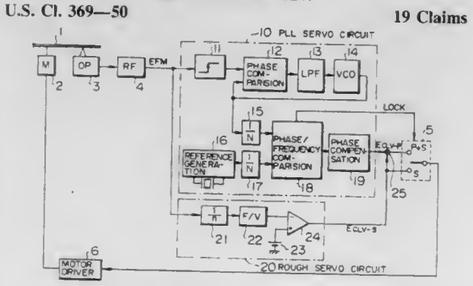


1. A disc reproducing apparatus for reproducing from a disc main data, management data for managing the main data, and subsidiary data ancillary to the main data, comprising:
readout means for reading out the main data, the management data, and the subsidiary data from the disc;
outputting means for digitally outputting the main data and the subsidiary data;
detection means for detecting a flag specifying one of inhibition and permission of digitally outputting the subsidiary data read out by the readout means; and
control means for controlling one of the inhibition and permission of digitally outputting the subsidiary data by the outputting means in accordance with the flag detected by the detection means, so as to prevent copying of the subsidiary data to another medium.

5,825,732
ROTATION CONTROL CIRCUIT BASED ON THE MEAN VALUE OF RUN LENGTH CODE GENERATION PATTERNS REPRODUCING APPARATUS EQUIPPED WITH THE ROTATION CONTROL CIRCUIT

Yuji Arataki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 30, 1995, Ser. No. 565,059
Claims priority, application Japan, Dec. 7, 1994, 6-330382
Int. Cl.[6] G11B 19/247
U.S. Cl. 369—50 19 Claims



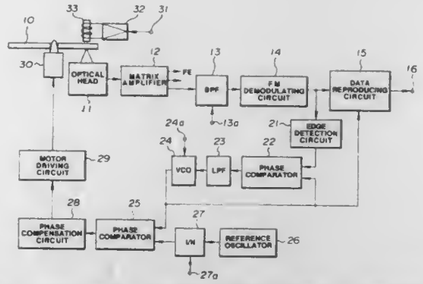
1. A reproducing apparatus comprising:
rotating means for rotating a disc-type recording medium;
data extracting means for extracting a run length limited code recorded on said disc-type recording medium;
reference inversion value generating means for generating a reference inversion value representative of an inversion probability pattern of the run length limited code recorded on said disc-type recording medium;
average inversion value detecting means for detecting the average inversion value of the run length limited code extracted from said data extracting means;
comparison means for comparing the reference inversion value from said reference inversion value generating means with the average inversion value from said average inversion value detecting means; and
control means for controlling said rotating means in accordance with the comparison result of said comparison means.

5,825,733
OPTICAL DISC RECORDING APPARATUS FOR RECORDING DATA AT A DISC ROTATIONAL SPEED SELECTED FROM A RANGE OF DISC ROTATIONAL SPEEDS

Hiroshi Ogawa, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 26,272, Mar. 4, 1993, abandoned, which is a continuation of Ser. No. 734,936, Jul. 24, 1991, abandoned. This application Sep. 30, 1997, Ser. No. 938,476
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—50 7 Claims

1. A recording apparatus for recording data on an optical recordable disc which is formed with a pre-groove wobbled in a radial direction thereof by a wobbling signal generated by address data



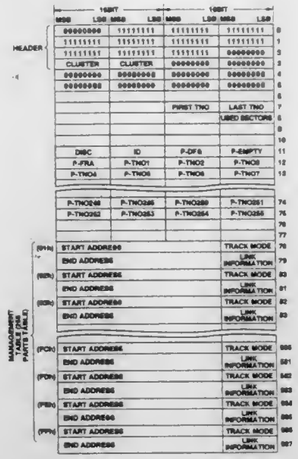
and a carrier signal, said carrier signal having a predetermined frequency, said recording apparatus comprising:
a spindle motor for rotationally driving the disc at a constant linear velocity in a range from 1.2 m/sec to 1.4 m/sec;
a head device for recording information data on the disc along the pre-groove and for reading out an information signal from the disc, said head device being configured for scanning the pre-groove of the disc;
a decoder coupled to receive an output signal from the head device which is obtained by scanning the pre-groove and configured for extracting the carrier signal from the output signal received from said head device;
a clock generator for generating a reference clock signal by variably dividing a fundamental clock signal according to an external control signal, where the external control signal is defined by a desired recording capacity and a desired error rate for recording the information data on the disc; and
a controller coupled to the clock generator and to the decoder, and having a phase comparator for comparing the reference clock signal with a detected clock signal generated from a decoder output signal from said decoder, said controller configured for controlling said spindle motor at the constant linear velocity in accordance with a phase comparator output signal from said phase comparator,
wherein the linear velocity of said spindle motor is variably adjusted by said controller in accordance with the external control signal when information data is recorded on the disc along the pre-groove.

5,825,734
RECORDING MEDIUM MANAGEMENT METHOD

Tatsuya Igarashi, Kanagawa, and Katsuyuki Teranishi, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 374,727, Mar. 20, 1995. This application May 12, 1997, Ser. No. 854,839
Claims priority, application Japan, Jun. 14, 1993, 5-141819; Oct. 28, 1993, 270099
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—58 4 Claims

1. A method of setting a recording area for the purpose of recording digital data onto a recording medium, comprising the steps of:
detecting an empty area of the recording medium from data of a first table;
recording, into the first table, data indicating that the empty area is caused to serve as tracks for digital data; and
preparing a second table indicating use state of data of the recording medium at the leading portion of the empty area caused to serve as the tracks for digital data,
wherein the first table carries out management of recording state of the digital data by first data recording units, and the second table carries out management of recording state of the digital data by second data recording units,
wherein the second data recording units are smaller than the first data recording units, and

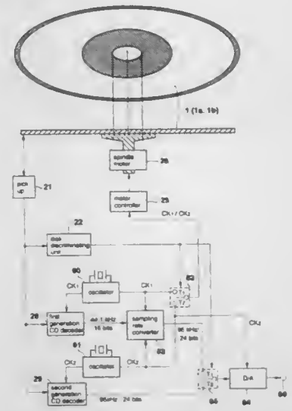


wherein the second table is bitmap, the bit map including information indicating that the second data recording unit has been already used.

5,825,735
REPRODUCING APPARATUS WITH DAMPLING RATE CONVERTOR FOR RECORDING MEDIUM HAVING DIFFERENT RESPECTIVE SAMPLING RATES

Ayataka Nishio, and Yasuhiro Ogura, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 693,440, Aug. 7, 1996, Pat. No. 5,748,594. This application Sep. 22, 1997, Ser. No. 935,321
Claims priority, application Japan, Aug. 9, 1995, 7/222748; Aug. 9, 1995, 7/222750
Int. Cl.[6] G11B 3/90
U.S. Cl. 369—58 2 Claims



1. A reproducing apparatus for reproducing a first digital signal consisting of first multi-bit data words sampled at a first sampling frequency from a first recording medium and a second digital signal consisting of a second multi-bit data words sampled at second sampling frequency higher than the first sampling frequency from a second recording medium, comprising:
reproducing means for reproducing the digital signal from one of the first recording medium and the second recording medium;

discrimination means for discriminating the first recording medium and the second recording medium;

first decoding means for decoding the digital data from the first recording medium;

second decoding means for decoding the digital data from the second recording medium;

first clock generating means for generating a first clock signal based upon a rotating drive signal for the first recording medium;

second clock generating means for generating a second clock based upon a rotating drive signal for the second recording medium;

switching means for switching the first and second clock signals in accordance with a result of the discrimination means;

rotating means for rotating the recording medium in accordance with the clock signal output from the switching means;

sampling rate converting means for converting a bit number and a sampling frequency of the digital signal from the first decoding means; and

second switching means for switching the output signal from the sampling rate converting means and the digital signal from the second decoding means.

5,825,736

OPTICAL DISK APPARATUS

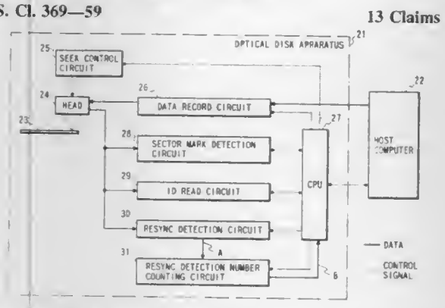
Isao Kimura, Tokyo; Shinichi Tanaka, Kamakura, and Hiroyuki Oshikiri, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

Filed Feb. 5, 1997, Ser. No. 795,794

Claims priority, application Japan, Feb. 7, 1996, 8-020994; Jun. 19, 1996, 8-157975; Jul. 19, 1996, 8-190446; Dec. 18, 1996, 8-338043

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **13 Claims**



1. An optical disk apparatus comprising:

a data recording circuit for recording user data in a data portion of a sector on an optical disk, said optical disk having a plurality of tracks formed in a concentric circular shape or spiral shape on the surface thereof and being possible of data write based on a sector unit, each track being segmented into a plurality of sectors;

a detection circuit for detecting a resynchro pattern recorded together with user data from a regenerative signal obtained from the data portion of sector before recording the user data in the sector;

a count circuit for counting a number of resynchro patterns detected; and

an overwrite preventive circuit for stopping recording data on the sector when a count value of said count circuit is not less than a predetermined value.

5,825,737

OPTICAL DISK PLAYER HAVING AN APPARATUS FOR ACCURATELY LOADING/UNLOADING A DISK

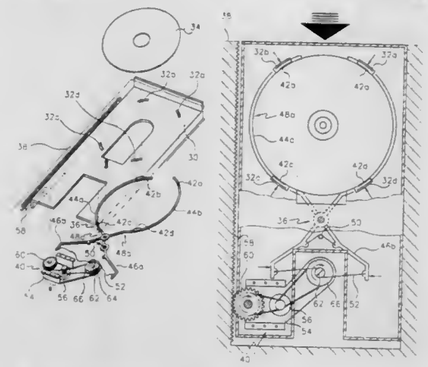
Jun-Hyun Park, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 27, 1995, Ser. No. 578,895

Claims priority, application Rep. of Korea, Dec. 30, 1994, 1994-39369

Int. Cl.[6] G11B *17/04*

U.S. Cl. 369—77.1 **6 Claims**



1. An optical disk player comprising:

a tray having arc-shaped guiding slots at a predetermined position on said tray;

a disk supporting means fixed at a bottom of said tray which is to be spread left and right during a forward transfer of said tray and is to be converged internally during a backward transfer of said tray, said disk supporting means including a disk supporting member, in which said disk supporting member includes arc-shaped disk guiding portions, operating portions and a torsion spring provided inside said operating portions, said disk guiding portions being provided with protrusively formed protrusions on a surface of said disk guiding portions to be inserted into said guiding slots, said operating portions being extended from the rear part of said disk guiding portion and then being bent at a predetermined angle, said disk guiding portions and said operating portions being cross-coupled to each other by screw holes formed in the connection between said disk guiding portions and said operating portions and said torsion spring being coupled to said operating portions;

a loading means fixedly installed at the bottom of said tray for supplying power needed to transfer said tray forward and backward and for supplying power needed for said disk supporting means to be spread or supported depending on the forward and backward transfer of said tray, said loading means including a transporting gear, a loading motor for supplying power to said transporting gear, a first transmission gear or a belt as a transmission means for transmitting power from said loading motor to said transporting gear, a second transmission gear or a belt as a transmission means for transmitting power from said loading motor to said disk supporting means, and a supporting link operating means for controlling the extending and supporting operations of said disk supporting means, in which said supporting link operating means includes a supporting link operating pulley, a wire inserting boss integrally formed thereon, and a wire inserted into a cut groove of said wire inserting boss; and

a player main body having a rack gear on a surface adjacent to said tray, in which said rack gear is meshed with said transporting gear during transference of said tray.

5,825,738

DISC APPARATUS

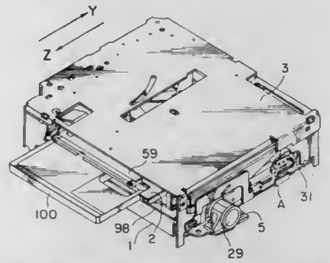
Eiichi Ookawa, Iwate-ken; Hiroto Nishida, Ishikawa-ken; Takashi Suzuki, Tokyo; Hitoshi Watanabe, Morioka, and Toshiaki Sasaki, Chofu, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 671,591, Jun. 28, 1996, which is a division of Ser. No. 301,992, Sep. 9, 1994, Pat. No. 5,590,109. This application May 19, 1997, Ser. No. 859,226

Claims priority, application Japan, Sep. 17, 1993, 5-231185; Sep. 17, 1993, 5-231216; Sep. 17, 1993, 5-231217

Int. Cl.[6] G11B *33/02*

U.S. Cl. 369—77.2 **3 Claims**



1. A disc apparatus comprising a stationary chassis; first and second rack members each having a tooth part and provided on said stationary chassis so as to be movable in a direction of movement of a loader; a guide pin provided on said first rack member, a guide hole formed in said second rack member and having opposite ends, said guide pin passing through said guide hole and being coupled at one end to said loader; spring retainers provided respectively on said first and second rack members, a spring bridging between said spring retainers for urging said guide pin toward one of said opposite ends of said guide hole; and a gear adapted to be rotated, and meshed with the tooth part of said second rack member, for moving said second rack in the direction in which said loader is moved, and adapted to be left away from the tooth part of the second rack and to be meshed with the tooth part of said first rack member when said gear has come to one end of the tooth part of the second rack member, for moving said first rack member, relative to said second rack member, in the direction in which the loader is moved.

5,825,739

RECORDING METHOD AND APPARATUS FOR RECORDING MEDIUM

Yuji Saito, and Takayuki Kaneko, both of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

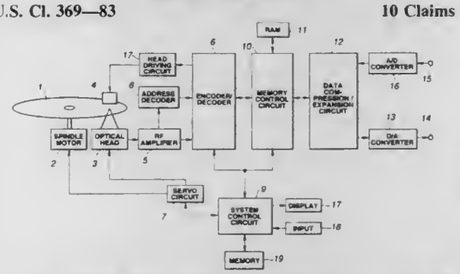
PCT No. PCT/JP96/03049, § 371 Date Jun. 9, 1997, § 102(e) Date Jun. 9, 1997, PCT Pub. No. WO97/15052, PCT Pub. Date Apr. 24, 1997

PCT Filed Oct. 21, 1996, Ser. No. 849,784

Claims priority, application Japan, Oct. 20, 1995, 7-273147

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—83 **10 Claims**



1. A recording and/or reproducing apparatus for a recording medium comprising:

head means for recording on and/or reading out data from a recording medium having a data recording area for data recording/reproduction and a management data recording area for recording management data for management of the data recorded in said data recording area;

first storage means for storing data read out from the recording medium by said head means during reproduction from said recording medium, said first storage means during recording on said recording medium temporarily storing recording data supplied to said head means and storing the management data read out from the recording medium;

second storage means for storing the management data read out from said recording medium; and

control means for controlling said head means based on the management data stored in said first storage means for effecting recording on or reproduction from said recording medium; wherein

said control means during recording the data on said recording medium causing data stored on said first storage means to be temporarily accumulated and to be subsequently supplied to said head means for performing a recording operation; said control means during reproduction of data from said recording medium causing data read out by said head means to be temporarily stored in said first storage means, said control means performing an editing operation on data recorded in said data storage area of the recording medium based on the management data stored in said first storage means for updating the management data stored in said first storage means, said control means during cancellation of the editing operation causing the management data stored in said second storage means to be transferred to said first storage means.

5,825,740

DEVICE FOR SCANNING INFORMATION TRACKS ON A RECORD CARRIER

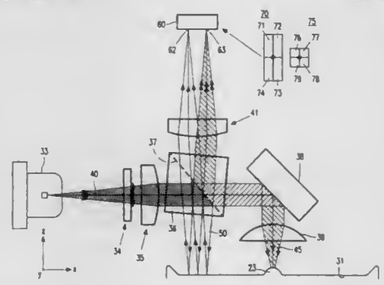
Josephus A. H. M. Kahlman, and Gerard E. Van Rosmalen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 3, 1997, Ser. No. 888,143

Claims priority, application European Pat. Off., Jul. 3, 1996, 96201816.4; Oct. 30, 1996, 96203030.0

Int. Cl.[6] G11B *7/00*

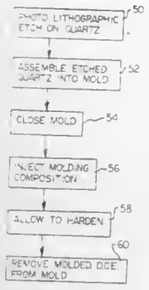
U.S. Cl. 369—97 **10 Claims**



1. A device for electromagnetically scanning information tracks in scanning paths on a record carrier, which information tracks are arranged mainly parallel to each other and at a predetermined angle with respect to a transport direction of the record carrier, the device comprising: a scanning unit for scanning; and

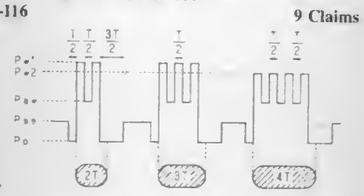
a control system for controlling an angle of the scanning paths with respect to the transport direction, dependent on a tilt signal, wherein the device includes angle-measuring means for generating the tilt signal dependent on a tracking error signal which is indicative of a difference between a scanning path and the relevant information track.

5,825,741
OPTICAL DISC PLAYER WITH MOLDED DIFFRACTIVE OPTICAL ELEMENTS
William H. Welch; Robert D. Te Kolste, and Michael R. Feldman, all of Charlotte, N.C., assignors to Digital Optics Corporation, Charlotte, N.C.
Division of Ser. No. 381,169, Jan. 31, 1995, Pat. No. 5,728,324.
This application Jul. 10, 1996, Ser. No. 677,521
Int. Cl.[6] G11B *7/00*; B29D *11/00*
U.S. Cl. 369—112 18 Claims



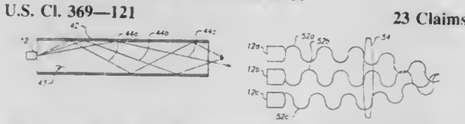
11. An optical disc player comprising:
a laser;
a lens receiving emissions from said laser, said lens being formed by injection molding having a first surface and a second surface wherein the first surface and the second surface each have a diffraction pattern having multiple discrete levels molded thereon using a non-metallic, photolithographically generated master element;
an optical disc support to position an optical disc to reflect laser emissions from said lens; and
a sensor to receive the reflected emissions.

5,825,742
INFORMATION RECORDING METHOD OF OPTICAL RECORDING MEDIUM
Tsutomu Tanaka; Tomonori Ikeya, and Akihiro Itakura, all of Kanagawa, Japan, assignors to Fujitsu Limited, Kawasaki, Japan
Filed Feb. 11, 1997, Ser. No. 798,643
Claims priority, application Japan, Oct. 18, 1996, 8-276674
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—116 9 Claims



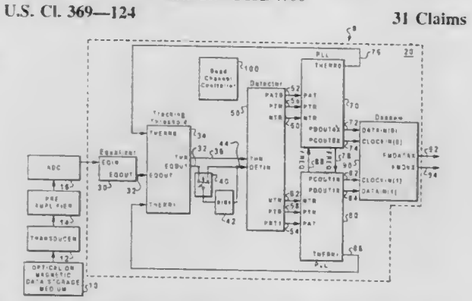
1. An information recording method of an optical recording medium for recording binary information from a series of recording marks and spaces between the recording marks, comprising the steps of:
determining the length of the recording mark and the space depending on the information to be recorded so that one of the binary information corresponds to one of a front edge and a rear edge of the recording mark; and
irradiating the optical recording medium with a light beam by pulse emission of the light beam, in accordance with the length of the recording mark and the space,
wherein the light beam is emitted at least in five power values including a bottom power value which is the lowest edge of the pulse when forming the recording marks and the spaces between the marks such that when forming the recording mark, the light beam is emitted at least in three power values including the bottom power value, and when forming the space, the light beam is emitted in at least two power values including the bottom power value.

5,825,743
ILLUMINATING MULTIPLE DATA TRACKS OF AN OPTICAL DISK WITH A LASER SOURCE OF REDUCED COHERENCE
Amir Alon, Sunnyvale, Calif., and Shlomo Shapira, Petach-Tikva, Israel, assignors to ZEN Research N.V., Curacao, Netherlands Antilles
Continuation-in-part of Ser. No. 393,802, Feb. 24, 1995, Pat. No. 5,535,189, which is a division of Ser. No. 43,254, Apr. 6, 1993, Pat. No. 5,426,623. This application Jul. 8, 1996, Ser. No. 676,554
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—121 23 Claims



10. Apparatus for illuminating multiple adjacent data tracks of an optical disk, the apparatus comprising:
a first laser diode generating a first laser beam;
circuitry for providing a first operating current to the first laser diode;
at least a second laser diode generating a second laser beam; and
an optical component for combining the first and second laser beams.

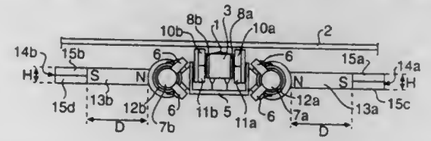
5,825,744
CONFIGURABLE READ DETECTION CHANNEL AND METHOD FOR DECODING DATA STORED WITHIN A DATA STORAGE MEDIUM
Robert Allen Hutchins; Glen Alan Jaquette, and Alan Robert Clark, all of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 13, 1996, Ser. No. 647,490
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—124 31 Claims



1. A configurable read detection channel for decoding an input data stream containing data bits encoded in one of a plurality of diverse data formats, said configurable read detection channel comprising:
a tracking threshold circuit for generating a variable threshold signal in response to an amplitude parameter of said input data stream;
a configurable data detection circuit, wherein said configurable data detection circuit has a plurality of diverse configurations that each correspond to one of said plurality of diverse data formats, wherein said configurable data detection circuit identifies data bits within said input data stream in response to said variable threshold signal; and

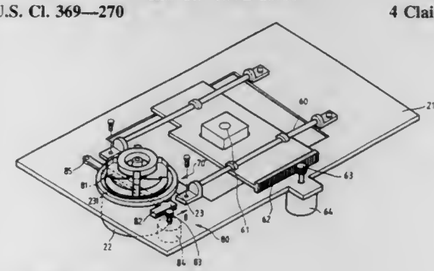
automatic configuration means for selecting a particular one of said plurality of diverse configurations of said configurable data detection circuit in response to a detection of a data format of said input data stream, wherein data bits encoded in a plurality of diverse data formats can be decoded utilizing a single configurable read detection channel.

5,825,745
DATA STORAGE-PLAYBACK APPARATUS AND OPTICAL DISK APPARATUS
Koichi Nagai, Kanagawa-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Nov. 3, 1995, Ser. No. 553,053
Claims priority, application Japan, Nov. 10, 1994, 6-276262
Int. Cl.[6] G11B *21/02*; *17/30*
U.S. Cl. 369—219 16 Claims



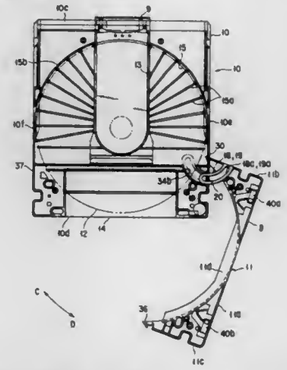
1. A data storage-playback apparatus comprising:
head means for at least one of storing data on a data storage medium and reading data from the data storage medium;
guide rail means for guiding said head means in a predetermined direction along the data storage medium, said guide rail means being composed of magnetic substance;
a coil receiving said guide rail means therethrough, said coil being fixed to said head means;
yoke means for providing a magnetic path extending along said guide rail means; and
permanent magnet means for providing a magnetic field passing through said magnetic path provided by said yoke means, said permanent magnet means having
a magnetic direction aligned toward a surface of said coil,
a length in the magnetic direction, and
a height in a direction perpendicular to both the magnetic direction and a length direction of said guide rail means, the height of said permanent magnet means being less than the length of said permanent magnet means in the length direction of said guide rail means.

5,825,746
DISK DRIVE HAVING ECCENTRICITY CORRECTION DEVICE
Jong-Wan Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea
Filed Oct. 10, 1996, Ser. No. 731,134
Claims priority, application Rep. of Korea, Nov. 20, 1995, 95-42359; Nov. 20, 1995, 95-42361
Int. Cl.[6] G11B *23/00*
U.S. Cl. 369—270 4 Claims



1. A disk drive comprising:
a base frame;
a spindle motor supported by said base frame and having a shaft;
a turntable, attached to the shaft of said spindle motor, for loading a disk thereon, said turntable defining a center of rotation;
a clamp for securing the disk onto said turntable;
a disk moving portion for supporting the disk by being inserted into a center hole of the disk, and moving the disk by a predetermined distance in a horizontal direction with respect to the disk from the center of rotation of said turntable;
means for moving said disk moving portion by a predetermined distance;
wherein said moving means comprises a lever hinged on said base frame at one end thereof by a hinge and means installed at another end of said lever, for pivoting said lever around said hinge, and wherein said lever moves said disk moving portion horizontally; and
wherein said pivoting means comprises a rack formed at the other end of said lever opposite said hinge of said lever, a pinion engaged with said rack, and a motor for rotating said pinion.

5,825,747
DISC CARTRIDGE HAVING LID MEMBER WITH GUIDE PORTIONS
Satoshi Tanaka, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 29, 1996, Ser. No. 741,219
Claims priority, application Japan, Oct. 30, 1995, 7-281682
Int. Cl.[6] G11B *23/03*
U.S. Cl. 369—291 15 Claims

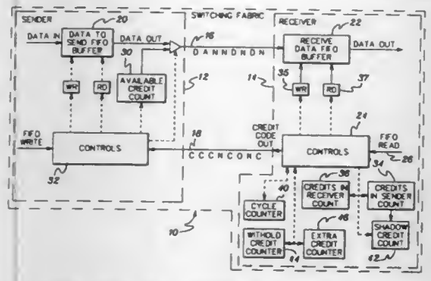


11. A disc cartridge comprising:
a cartridge body for containing a disc-like recording medium rotatable mounted therein, the cartridge body including an opening for exposing a part of a surface of the recording medium, and a disc inlet/outlet port for taking the recording medium in and out of the cartridge body;
a shutter slidably mounted on the cartridge body for opening and closing the opening;
a lid member mounted on the cartridge body to be movable between a closed position and an open position with respect to the inlet/outlet port; and
guide means for guiding the opening and closing of the lid member, the guide means including:
a pair of guide members extending from the lid member into the cartridge body and positioned so as to face both surfaces of the recording medium, with the recording medium located between the pair of guide members when the lid member is in the closed position,
the guide means having guide holes formed therein and extending along a path of movement of the lid member, and
a pair of guide convex portions provided on the cartridge body and slidably engaged in each of the guide holes, so as to slide within the guide holes when the lid member is moved between the closed and opened positions.

5,825,748
CREDIT-BASED FLOW CONTROL CHECKING AND CORRECTION SYSTEM

Kathy Sue Barkey, Kingston; Carl Alfred Bender, Highland; Derrick LeRoy Garmire, Kingston, all of N.Y.; Harold Edgar Roman, Danville, N.H., and Daniel Gerard Smyth, Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 8, 1997, Ser. No. 833,636
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—236 **10 Claims**



1. A credit-based data communications system employing a specified number of credits, said system comprising:

a sender having an available credit counter;

a receiver having a receive data buffer;

a data link coupling the sender to the receiver for transmission of data segments from the sender to the receive data buffer of the receiver;

means for sending a credit to the available credit counter of the sender upon consumption of a data segment at the receiver, a credit manifesting a portion of memory space in said receive data buffer reserved to store a data segment from the sender;

means for automatically periodically checking non-intrusive to data flow on the data link the number of credits in the system to ascertain whether credit loss or credit gain has occurred from said specified number of credits.

5,825,749
MULTIPLEX DATA COMMUNICATION SYSTEM

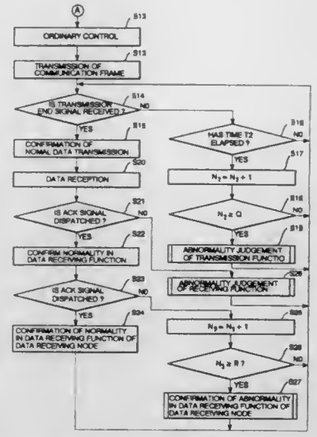
Koji Terayama; Seiji Hirano, both of Hiroshiima; Toshiaki Kawanishi, Akishima; Toshifumi Ikeda, Hiroshima, and Hiroaki Sakamoto, Aki-gun, all of Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 1, 1996, Ser. No. 625,316
Claims priority, application Japan, Mar. 31, 1995, 7-074303; Mar. 31, 1995, 7-074304
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—244 **16 Claims**

1. A multiplex data communication system including a plurality of communication nodes interconnected by means of a transmission path, said communication nodes controlling electronic equipment units connected thereto, respectively, each one of said communication nodes comprising:

a data transmitting/receiving circuit to receive data transmitted from at least another one of said communication nodes through said transmission path and to transmit data relating to said each communication node through said transmission path, said data transmitting/receiving circuit providing a reception signal representative of normal reception of said data from said at least another communication node and a transmission signal representative of normal transmission of said data relating to said each communication node; and

a data operating circuit to control an electronic equipment unit associated with said each communication node based on said data received from said at least another communication node and to generate said data relating to said each communication node which is transmitted by said data transmitting/receiving

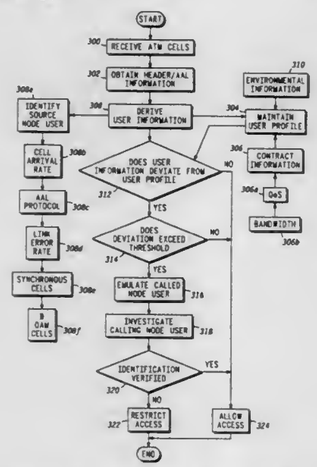


circuit, said data operation circuit making a decision of normality of a data communication function of said each communication node based on at least one of said reception signal and said transmission signal.

5,825,750
METHOD AND APPARATUS FOR MAINTAINING SECURITY IN A PACKETIZED DATA COMMUNICATIONS NETWORK

Horace C. Thompson, Scottsdale, Ariz., assignor to Motorola, Schaumburg, Ill.

Filed Mar. 29, 1996, Ser. No. 625,508
Int. Cl.[6] H04J *1/16*
U.S. Cl. 370—244 **28 Claims**



1. A method for use in securing a packetized data communications network against invalid transmissions, said packetized data communications network including a plurality of user nodes, and an asynchronous portion wherein signals are communicated in data packets, said method comprising the steps of:

maintaining a user profile for at least a selected one of said plurality of user nodes, said user profile including profile information regarding network use for said selected one of said plurality of user nodes;

monitoring the transmission of said data packets in said asynchronous portion of said packetized data communications network to identify a deviation from said user profile;

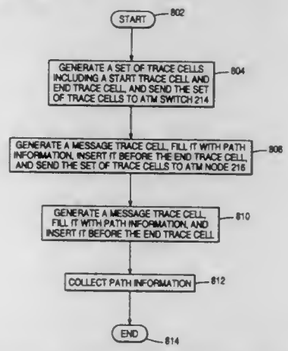
analyzing said deviation from said user profile including the step of emulating signaling protocols of said packetized data communications network so as to allow for investigation of said selected one of said plurality of user nodes free from establishment of a communication link between said packetized data communications network and said selected one of said plurality of user nodes; and

controlling use of said packetized data communications network in response to said step of analyzing.

5,825,751
METHOD AND APPARATUS FOR TRACING FRAMES TRANSMITTED THROUGH A NETWORK PATH

Karen A. Papierniak, St. Paul, and Michael D. Ellestad, Brooklyn Park, both of Minn., assignors to NCR Corporation, Dayton, Ohio

Filed Sep. 10, 1996, Ser. No. 711,613
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—248 **10 Claims**



1. A method for recording path information in an ATM network, said network including a plurality of network nodes having a start network node and an end network node, said method comprising the steps of:

(a) at said start network node, generating a start and an end trace cells;

(b) sending said start and end trace cells from said start network node to said end network node;

(c) for a pair of adjacent network nodes, inserting a message trace cell between said start and end trace cells; and

(d) recording virtual path information between said pair of adjacent network nodes into said inserted message trace cell, wherein a message trace cell is used to record virtual path information for each pair of adjacent network nodes.

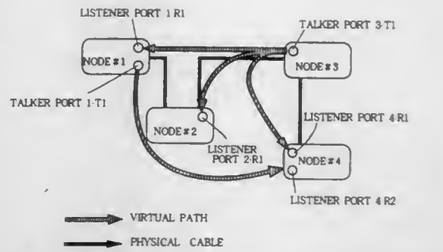
5,825,752
LOCAL AREA NETWORK TRANSFERRING DATA USING ISOCHRONOUS AND ASYNCHRONOUS CHANNELS

Junichi Fujimori, and Tatsutoshi Abe, both of Hamamatsu, Japan, assignors to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 25, 1996, Ser. No. 719,511
Claims priority, application Japan, Sep. 26, 1995, 7-270738
Int. Cl.[6] H04Q *11/04;* **H04M** *3/42*
U.S. Cl. 370—260 **16 Claims**

1. A network system comprising:

a plurality of nodes communicable with one another to exchange information and to transfer data; and a bus provided for connection to the nodes and for configuration of logical paths



to logically link one node to another node so as to secure transfer of the data, wherein

each node has at least one port which is allocated for accessing the bus and which is classified into four types of an isochronous talker, an isochronous listener, a multicast talker and a multicast listener,

each node binding an isochronous channel number and a communication band to the isochronous talker when the same is allocated for isochronously transmitting the data labeled by the bound isochronous channel number to the bus through the bound communication band,

each node binding an isochronous channel number to the isochronous listener when the same is allocated so that the isochronous listener can exclusively receive data transmitted from another isochronous talker allocated to another node if the transmitted data is labeled by the same isochronous channel number as that bound to the isochronous listener,

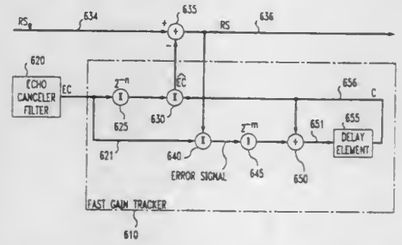
each node binding a multicast channel number to the multicast talker when the same is allocated for asynchronously broadcasting data labeled by the bound multicast channel number to the bus, and otherwise

each node binding a multicast channel number to the multicast listener when the same is allocated so that the multicast listener can exclusively receive data transmitted from another multicast talker allocated to another node if the transmitted data is labeled by the same multicast channel number as that bound to the multicast listener.

5,825,753
ECHO CANCELER GAIN TRACKER FOR CELLULAR MODEMS

William Lewis Betts, St. Petersburg, and Edward Sigmund Zuranski, Largo, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Sep. 29, 1995, Ser. No. 536,917
Int. Cl.[6] H04J *3/00*
U.S. Cl. 370—289 **13 Claims**



1. Data communications equipment apparatus comprising:

a filter for echo canceling that provides an echo estimate signal;

an amplifier comprising an infinite impulse response filter, said amplifier configured to adjust the magnitude of the echo estimate signal as a function of an amount of correlation between the echo estimate signal and an echo-canceled signal

to provide an adjusted echo estimate signal, said amplifier including first multiplication means for multiplying said echo estimate signal with said echo-canceled signal; and

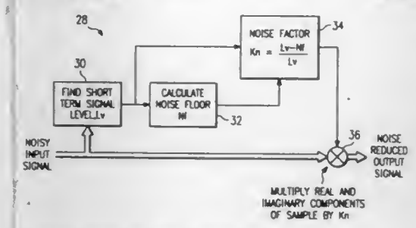
a means for combining a received signal with the adjusted echo estimate signal to provide said echo-canceled signal, while the data communications apparatus is operating in a data transfer mode.

5,825,754

FILTER AND PROCESS FOR REDUCING NOISE IN AUDIO SIGNALS

Errol R. Williams, Round Rock, Tex., assignor to VTEL Corporation, Austin, Tex.

Filed Dec. 28, 1995, Ser. No. 580,176
Int. Cl.[6] H04B *3/20;* **H04M** *9/08*
U.S. Cl. 370—290 **18 Claims**



1. A noise reduction filter, comprising:

a signal analysis block, the signal analysis block operating to receive an input audio signal and to determine a short term signal level;

a noise floor block coupled to the signal analysis block, the noise floor block operating to receive the short term signal level from the signal analysis block and to determine a noise floor level based upon the value of the short term signal level;

a noise factor block coupled to the signal analysis block and to the noise floor block, the noise factor block operating to receive the short term signal level and the noise floor level and operating to calculate a noise factor; and

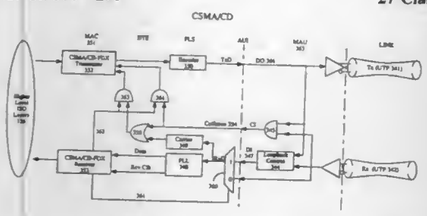
a multiplier node coupled to the noise factor block and receiving the input audio signal, the multiplier node operating to multiply the input audio signal by the noise factor and to provide a noise reduced output signal as an output of the noise reduction filter.

5,825,755

METHOD AND APPARATUS FOR SWITCHING BETWEEN FULL-DUPLEX AND HALF-DUPLEX CSMA/CD SYSTEMS

Geoffrey O. Thompson, Palo Alto, and Paul Woodruff, Sunnyvale, both of Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 288,963, Aug. 10, 1994, Pat. No. 5,726,976. This application Jan. 19, 1995, Ser. No. 376,125
Int. Cl.[6] H04L *12/413*
U.S. Cl. 370—296 **27 Claims**



1. A method for a first node coupled to a network for switching between a half-duplex and a full-duplex transmission of frames of data in said network, comprising:

a) transmitting said frames of data from said first node in full-duplex mode on said network; and

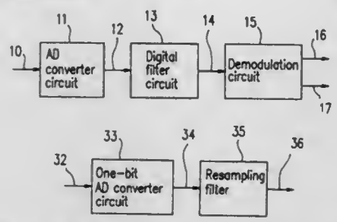
b) switching to transmitting said frames of data from said first node in half-duplex mode on said network if a collision transmitted from a second node coupled to said network is detected by said first node.

5,825,756

RECEIVER FOR FM DATA MULTIPLEX BROADCASTING

Shinji Hattori, Higashiosaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 10, 1996, Ser. No. 677,476
Claims priority, application Japan, Sep. 6, 1995, 7-229469
Int. Cl.[6] H04B *7/204*
U.S. Cl. 370—319 **22 Claims**



1. A receiver for FM data multiplex broadcasting comprising:

an analog/digital converter for receiving an analog FM demodulation signal and for converting the analog FM demodulation signal into a digital FM demodulation signal;

a digital filter for processing the digital FM demodulation signal so as to isolate a digital multiplex signal; and

a demodulator for demodulating said digital multiplex signal,

said analog/digital converter comprising

a noise shaping type one-bit analog/digital converter for receiving the analog FM demodulation signal and for converting the analog FM demodulation signal into digital signals based on a sampling frequency, and

a resampling filter for selecting the digital FM demodulation signal from the digital signals based on one nth of the sampling frequency.

5,825,757

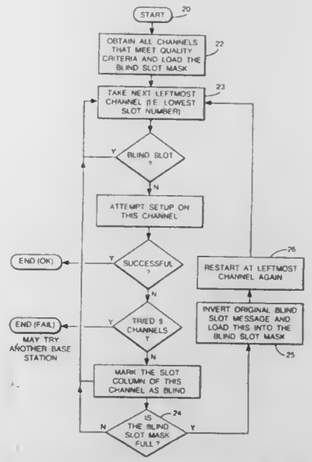
METHODS AND APPARATUS FOR EXCLUDING COMMUNICATION CHANNELS IN A RADIO TELEPHONE

Nguyen Quan Tat, and Robert Stanley Saunders, both of Surrey, England, assignors to Nokia Mobile Phones Limited, Salo, Finland

Filed Jan. 11, 1996, Ser. No. 584,109
Claims priority, application United Kingdom, Jan. 10, 1995, 9500799
Int. Cl.[6] H04B *7/212*
U.S. Cl. 370—330 **15 Claims**

1. A portable radio telephone for communication with base stations in a digital cellular radio telephone system employing transmission by a plurality of carrier frequencies in frames each consisting of a predetermined number of time slots, wherein the portable radio telephone comprises processing means operative to select for the radio telephone a communication channel, that is a combination of a carrier frequency and a time slot, by excluding from selection any communication channel associated with a time slot where an attempt at communication to a base station during the associated time slot has failed,

wherein the portable radio telephone comprises storage means for storing a blind slot mask representative of the time slots in each frame which are excluded, the remaining time slots being available for the communication attempt, and wherein if



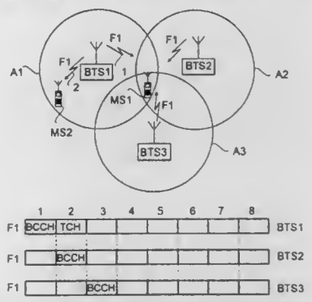
all the time slots in the blind slot mask are excluded the processing means constructs a new blind slot mask in which those excluded time slots are rendered available for possible selection of a channel.

5,825,758

METHOD AND APPARATUS FOR IMPROVING THE DETECTABILITY OF A BROADCAST CONTROL CHANNEL IN A MOBILE COMMUNICATION SYSTEM

Eero Heikkinen, and Risto Uola, both of Oulu, Finland, assignors to Nokia Telecommunications Oy, Espoo, Finland

PCT No. PCT/FI95/00285, § 371 Date Jan. 25, 1996, § 102(e) Date Jan. 25, 1996, PCT Pub. No. WO95/33313, PCT Pub. Date Dec. 7, 1995
PCT Filed May 24, 1995, Ser. No. 591,499
Claims priority, application Finland, May 26, 1994, 942462
Int. Cl.[6] H04J *4/00;* **H04B** *7/26*
U.S. Cl. 370—330 **7 Claims**



1. A method for improving the detectability of a broadcast control channel of each of a plurality of a base stations in a radio system in which the transmitting and receiving frequency resources of respective transceiver units have been divided on the TDMA/FDMA principle into a plurality of channels, the base stations each comprising equipment for establishing a radio connection to radio units in respective radio coverage areas of the respective base stations, and a transmitter for transmitting a broadcast control channel, at least two of the base stations being arranged to transmit the broadcast control channel by utilizing a same predetermined frequency channel comprising:

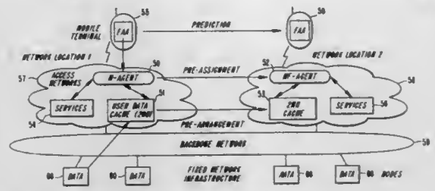
adjusting the transmission power used by each respective transmitter for transmitting on said predetermined frequency channel by each of said at least two base stations so as to be lower in those time slots in which the broadcast control channel is not transmitted by the transmitter of the respective base station than said transmission power is in that or those time slots in which the broadcast control channel is transmitted by the transmitter of the respective base station.

5,825,759

DISTRIBUTING NETWORK SERVICES AND RESOURCES IN A MOBILE COMMUNICATIONS NETWORK

George Liu, Kista, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation-in-part of Ser. No. 329,608, Oct. 26, 1994, Pat. No. 5,572,221. This application Jul. 24, 1995, Ser. No. 506,119
Int. Cl.[6] H04Q *7/38;* **H04L** *12/28*
U.S. Cl. 370—331 **37 Claims**



35. A communication network comprising:

a plurality of servers, the servers being positioned in respective geographical areas and organized in a distributed file system;

a mobile terminal having means for communicating with the server nearest the mobile terminal, wherein the communicating means accesses application files and data files stored in the servers; and

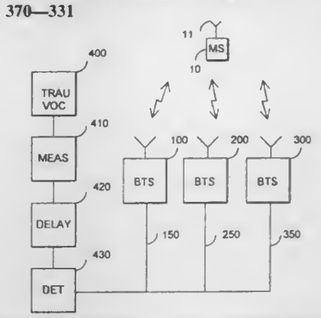
a mobile distributed system platform having means for controlling the distributed file system of the servers and means for predicting a next location of a mobile terminal, wherein the controlling means distributes location sensitive information among the servers based on a next location predicted by the predicting means.

5,825,760

TRANSMISSION METHOD AND A CELLULAR RADIO SYSTEM

Mikko Siira, Tokyo, Japan, assignor to Nokia Telecommunications Oy, Espoo, Finland

Filed Dec. 30, 1996, Ser. No. 774,780
Int. Cl.[6] H04Q *7/00;* **H04J** *3/06*
U.S. Cl. 370—331 **25 Claims**



1. A transmission method used in a cellular radio system comprising base stations and at least one vocoder, wherein a signal consisting of data packets is transmitted between each base station and the vocoder, and wherein each base station transmits a signal to the vocoder substantially simultaneously, and wherein the

vocoder receives the substantially simultaneously transmitted signals at different moments of reception, the method comprising the steps of

measuring the delay difference between the different moments of reception of the signals received by the vocoder, and

delaying the signals to be transmitted to the base stations, if required, in such a way that the base stations receive substantially simultaneously the signals transmitted by the vocoder.

5,825,761

RADIO COMMUNICATION EQUIPMENT WITH TRANSMISSION RATE REGULATING FUNCTION

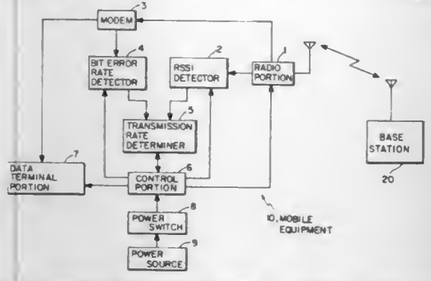
Masahiko Tanaka, and Kenji Okita, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 24, 1996, Ser. No. 685,664

Claims priority, application Japan, Jul. 26, 1995, 7-190308

Int. Cl.[6] H04J *3/22*

U.S. Cl. 370—333 **15 Claims**



1. A communication equipment with a transmission rate regulating function, comprising:

detection means for detecting an electric field level of a received radio signal transmitted from a remote station;

first assigning means for assigning an initial transmission rate for a control signal to be transmitted from the remote station, based on the electric field level detected by said detection means; and

determination means for detecting a bit error rate of the control signal transmitted from the remote station and determining an optimal transmission rate by regulating the assigned initial transmission rate according to the detected bit error rate.

5,825,762

APPARATUS AND METHODS FOR PROVIDING WIRELESS COMMUNICATION TO A SECTORIZED COVERAGE AREA

Ralph A. Kamin, Jr., and Graham Haddock, both of Bedford, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 24, 1996, Ser. No. 718,838

Int. Cl.[6] H04B *7/216*

U.S. Cl. 370—335 **11 Claims**

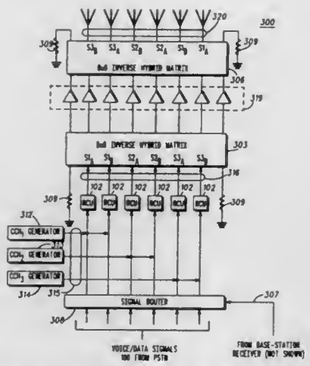
1. A method of providing wireless communication to a sectorized coverage area in a wireless communication system, the method comprising the steps of:

generating control signals specific to each sector of the sectorized coverage area;

routing at least one traffic signal to appropriate radio channel units based on a routing signal which includes information regarding the sector to which a traffic signal intended for a mobile receiving station on a stationary receiving station should be routed;

transforming, via a matrix, the control signals and the at least one traffic signal into at least a first and a second transformed signals;

amplifying the first and second transformed signals; and



transforming the amplified first and second transformed signals into the control signals and the at least one traffic signal representing those input into the matrix for transmission to either the mobile receiving station or the stationary receiving station within the sectorized coverage area.

5,825,763

MOBILE COMMUNICATION APPARATUS

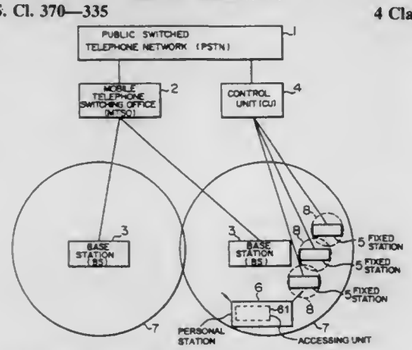
Osamu Kato, and Masaki Hayashi, both of Yokohama, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 254,588, Jun. 6, 1994, Pat. No. 5,655,216. This application Nov. 25, 1996, Ser. No. 753,241

Claims priority, application Japan, Jun. 10, 1993, 5-163895; Jun. 15, 1993, 5-167292; Jun. 15, 1993, 5-167293

Int. Cl.[6] H04B *7/216*

U.S. Cl. 370—335 **4 Claims**



1. A mobile communication system comprising:

a public switched telephone network:

a cellular automobile telephone system covering a service area which is divided into a plurality of zones, said cellular automobile telephone system comprising:

a mobile telephone switching office coupled to said public switched telephone network: and

a plurality of base stations which are located in said plurality of zones and are coupled to said mobile telephone switching office;

a micro cellular system covering a coverage area which is divided into a plurality of areas all of which are located within one of said zones, said micro cellular system comprising:

a control unit coupled to said public switched telephone network; and

a plurality of fixed stations which are located in said plurality of areas and are coupled to said control unit; and

a personal station comprising means for accessing both said cellular automobile telephone system through one of said plurality of base stations and said micro cellular system through one of said plurality of fixed stations; wherein;

said means for accessing connects said personal station to said cellular automobile telephone system and said micro cellular system by using a code-division multiplex access mode; and

separate frequency bands are provided for use in said cellular automobile telephone system and said micro cellular system, respectively.

5,825,764

TDMA BASE STATION ARRANGEMENT

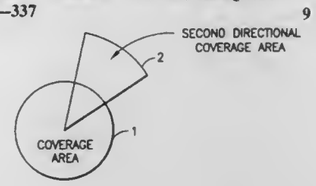
Colin Rudolph, Carlingford, Australia, assignor to Alcatel NV, Netherlands

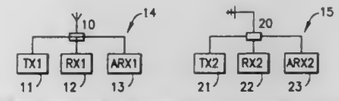
Filed Apr. 12, 1996, Ser. No. 631,776

Claims priority, application Australia, Apr. 13, 1995, PN 2401

Int. Cl.[6] H04B *7/212;7/26;* **H04Q** *7/36*

U.S. Cl. 370—337 **9 Claims**





1. A TDMA base station arrangement to enable mobile transceivers to maintain communication with a base station outside the range defined by the limit of relative time adjustment of the transmissions between the mobile transceivers and the base station, the arrangement including first and second substantially co-located base transceivers operating on respective first and second up-link and down-link frequencies,

the first base transceiver including a first transmitter and a first receiver and a first auxiliary receiver, the time frames of the first auxiliary receiver being in synchronism with the time frames of the first receiver, the first auxiliary receiver being tuned to the second up-link frequency so as to allow receipt of access bursts from an idle mobile transceiver operating on said second up-link frequency, and

the second base transceiver including a second transmitter and a second receiver and a second auxiliary receiver, the time frames of the second auxiliary receiver being in synchronism with the time frames of the second receiver, the second auxiliary receiver being tuned to the first up-link frequency so as to allow receipt of access bursts from an idle mobile transceiver operating on said first up-link frequency.

5,825,765

COMMUNICATION NETWORK BASD ON ATM FOR GENERAL PURPOSE COMPUTERS

Onat Menzilcioglu; Eric C. Cooper; Robert D. Sansom, and Francois J. Bitz, all of Pittsburgh, Pa., assignors to FORE Systems, Inc., Warrendale, Pa.

Filed Mar. 31, 1992, Ser. No. 861,272

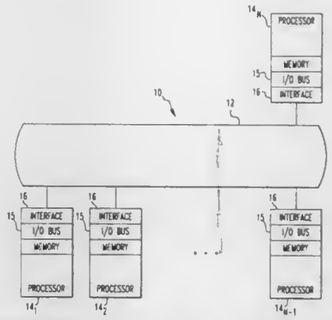
Int. Cl.[6] H04J *3/24*

U.S. Cl. 370—394 **33 Claims**

1. A communication network comprising:

an ATM network in which an ATM cell of header and a payload travels; and

at least two general purpose computers, each computer having a processor, a memory in communication with the processor, an input/output bus in communication with the processor, memory and the ATM network, and an interface in communication with the ATM network and the input/output bus, said interface of each computer changing the size of a cell but maintaining the presence of the header and payload of the cell as the cell passes between the ATM network and the processor, said computers communicating with each other through the ATM network by way of the cell and executing instructions for applications other than communications between the other computers.



5,825,766

BROADBAND SWITCHING NETWORKS

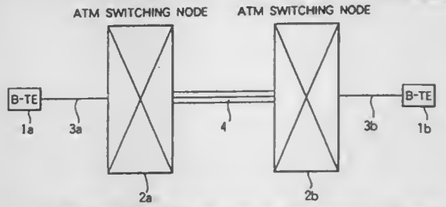
Hiroshi Kobayashi, Tokyo; Yoshiharu Hidaka, Kanagawa-ken; Kazuo Aida, Tokyo; Takashi Ikeda, Kanagawa-ken; Motomitsu Yano, and Kouichirou Kamura, both of Saitama-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 25, 1991, Ser. No. 736,282

Claims priority, application Japan, Jul. 27, 1990, 2-199948

Int. Cl.[6] H04L *12/56*

U.S. Cl. 370—395 **32 Claims**



1. A broadband switching network having a plurality of broadband switch nodes and a plurality of broadband switch inter-node transmission lines for connecting said plurality of broadband switch nodes, information being transmitted by cells of fixed length, each of which comprises a header and an information field, each of said broadband switch nodes comprising:

a plurality of broadband input and output ports for transmitting and receiving said cells to and from other broadband switch nodes using said broadband inter-node transmission lines; and

a plurality of user interfaces to allow said cells to be transmitted and received from end users; and

switching means for demultiplexing said cells entering the node from either said other broadband switch nodes or said end users, and multiplexing said cells for transmission to said other broadband switch nodes or said end users according to said header field of each of said cells; and

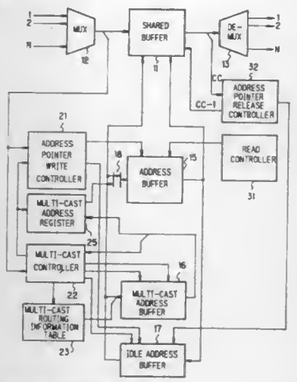
wherein said information composed of said plurality of cells is transmitted and received to and from said end users via all of, in the alternative, a constant bit rate transmission service, a variable bit rate transmission service, and a combination of said constant bit rate and variable bit rate transmission services.

5,825,767

ATM SWITCH WITH INPUT AND OUTPUT PORTS

Nobuyuki Mizukoshi, and Ruixue Fan, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Dec. 4, 1996, Ser. No. 760,374
Claims priority, application Japan, Dec. 6, 1995, 7-318338
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—395 **16 Claims**



1. An ATM switch comprising:

a plurality of input ports for receiving input cells;

a plurality of output ports for outputting output cells;

a shared buffer having a plurality of addresses and capable of processing multi-cast cells, each of said multi-cast cells to be outputted to a plurality of output ports;

a multi-cast cell address buffer for storing, upon arrival of a multi-cast cell, an address pointers indicative of an address in said shared buffer in which to store said multi-cast cell, together with multi-casting routing data; and

a plurality of address buffers provided for said respective output ports,

wherein said address pointer is stored in at least one of said address buffers during a free time and contents of each of said address buffers are used to access said shared buffer, said free time being a time other than a time for cell input or output operation.

5,825,768

INTERFACE FOR AN ASYMMETRIC DIGITAL SUBSCRIBER LINE TRANSCEIVER

James W. Kimbrow, Georgetown, and Raymond P. Voith, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1996, Ser. No. 723,437
Int. Cl.[6] H04J *1/06*
U.S. Cl. 370—341 **25 Claims**

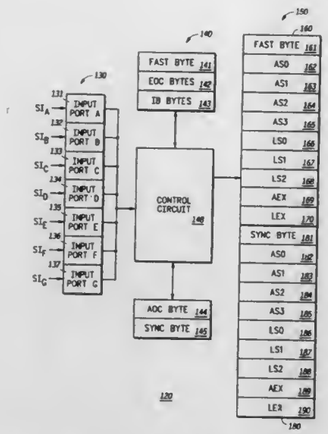
1. An interface for a transceiver of a communications system, the interface comprising:

a plurality of input ports, each of the input ports for receiving a serial data stream, and for providing parallel data corresponding to the serial data stream;

a frame memory, organized as a plurality of channels, the frame memory for receiving the parallel data;

a control circuit, coupled to the plurality of input ports and to the frame memory, the control circuit for assigning bytes of the parallel data to the plurality of channels; and

a routing table, coupled to the control circuit, which contains addresses, the addresses being used by the control circuit to arbitrarily selectively assign the bytes of the parallel data



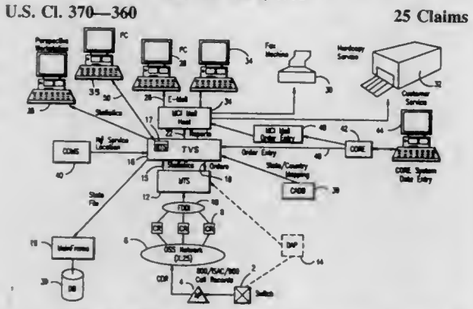
from any one or more of the plurality of input ports to any one or more channels of the plurality of channels.

5,825,769

SYSTEM AND METHOD THEREFOR OF VIEWING IN REAL TIME CALL TRAFFIC OF A TELECOMMUNICATIONS NETWORK

Dan O'Reilly, and Matthew J. Brazier, both of Colorado Springs, Colo., assignors to MCI Corporation, Washington, D.C.

Continuation-in-part of Ser. No. 405,988, Mar. 17, 1995, Pat. No. 5,610,915. This application Jan. 17, 1996, Ser. No. 587,381
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—360 **25 Claims**



1. System for subscribers of a telecommunications network to monitor in substantially real time the operation of said network, comprising:

processor means for determining the call details of special service calls routed through said network;

a traffic statistics apparatus including database means into which records of the call details determined from calls of various subscribers routed through said network are stored;

computer means provided to each of said various subscribers; and

transceiver means adapted to the computer means of said each subscriber for communicating with said traffic statistics apparatus;

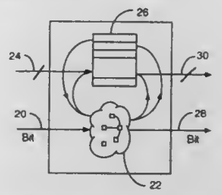
said computer means displaying to said each subscriber the operation of said network as it relates to any special service number of said each subscriber in substantial real time once said computer means is communicatively connected to said traffic statistics apparatus via said transceiver means.

5,825,770

MULTIPLE ALGORITHM PROCESSING ON A PLURALITY OF DIGITAL SIGNAL STREAMS VIA CONTEXT SWITCHING

Alan Charles Coady, Ottawa; John Frank Pillar, Nepean, and Jonathan David Loewen, Kanata, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jun. 6, 1996, Ser. No. 659,395
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—378 **18 Claims**



1. In a telecommunications system in which a plurality of synchronously time division multiplexed digital signal streams are processed to convert between two levels of a digital signal hierarchy according to an algorithm which comprises more than one state, a method of performing the algorithm on the plurality of digital signal streams, comprising steps of:

(1) executing the algorithm, one or more states at a time, on each digital signal stream one bit at a time in a time multiplexing manner;

(2) storing a context for each digital signal stream, which context indicates the next state of execution of the algorithm for the digital signal stream;

(3) switching the contexts of the plurality of digital signal streams; and

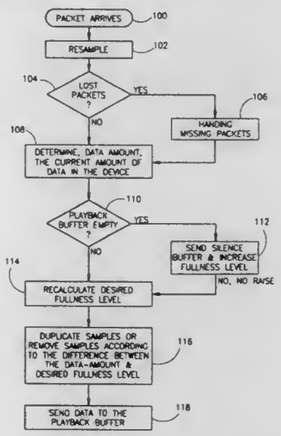
(4) repeating steps (1) to (3) for each digital signal stream.

5,825,771

AUDIO TRANSCEIVER

Alon Cohen, Rishon LeZion, and Lior Haramaty, Ramat Gan, both of Israel, assignors to VocalTec Ltd., Herzlia, Israel

Filed Nov. 10, 1994, Ser. No. 337,616
Int. Cl.[6] H04J *3/24*
U.S. Cl. 370—394 **30 Claims**



1. An audio transceiver between an audio device of a personal computer and a packet data network, the audio transceiver comprising:

means for receiving a stream of sequence stamped audio packets from said packet data network;

fullness setting means for transferring at least a silence frame to a playback buffer of said audio device whenever said playback buffer is empty in order to fill said playback buffer to an adjustable fullness level; and

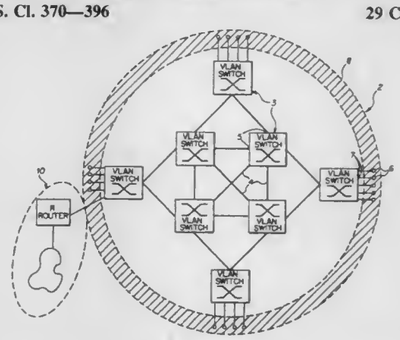
fullness adjusting means for controlling the fullness level of the playback buffer, said fullness adjusting means operating to duplicate or remove at least one frame until a difference between a current fullness level and the desired fullness level is substantially zero.

5,825,772

DISTRIBUTED CONNECTION-ORIENTED SERVICES FOR SWITCHED COMMUNICATIONS NETWORKS

Kurt Dobbins, Bedford; Thomas A. Grant, Derry; David J. Ruffen, Salem; Laura Kane, Merrimack; Theodore Len, Amherst; Philip Andlauer, Londonderry; David H. Bahi, Manchester; Kevin Yohe, Amherst; Brendan Fee, Nashua; Chris Oliver, Rochester; David L. Cullerot, Manchester, and Michael Skubisz, Durbam, all of N.H., assignors to Cabletron Systems, Inc., Rochester, N.H.

Continuation-in-part of Ser. No. 559,738, Nov. 15, 1995, Pat. No. 5,684,800. This application Apr. 2, 1996, Ser. No. 626,596
Int. Cl.[6] H04L *12/56;12/44*
U.S. Cl. 370—396 **29 Claims**



1. A method of forwarding data packets in a switched communications network, the network including a plurality of end systems and switches connected by links, the switches having access ports connected to end systems and network ports connected to other switches, and each end system having a unique physical address, the method comprising the steps of:

each one of the switches maintaining a directory of local mappings for access ports or end systems attached to the access ports of the one switch and remote mappings of end systems or access ports attached to other switches;

when a first packet is received on an access port of a first switch, the first switch accessing its directory to find a mapping according to a destination address in the first packet;

when a mapping is not found at the first switch in the director, forwarding a resolve message from the first switch to other switches, the forwarded resolve message being a request for a resolution from another switch according to the destination address in the first packet; and

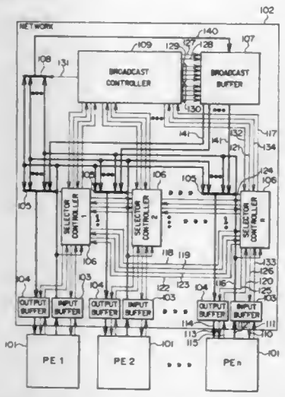
the first switch waiting for a response to its forwarded resolve message prior to forwarding the first packet.

5,825,773

SWITCHING SYSTEM FOR TRANSFERRING BROADCAST PACKET HELD IN BROADCAST BUFFER RECEIVED FROM INPUT PORT TO OUTPUT PORTS ACCORDING TO THE STATE OF EACH OUTPUT PORT

Shin'ichi Shutoh, Kokubunji; Junji Nakagoshi; Naoki Hamanaka, both of Tokyo; Hiroyuki Chiba, Hachioji; Tatsuo Higuchi, Fuchu; Shigeo Takeuchi, Hanno; Yasuhiro Ogata, Akishima, and Taturu Toba, Kunitachi, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed Mar. 18, 1992, Ser. No. 853,242
Claims priority, application Japan, Mar. 20, 1991, 3-056471
Int. Cl.[6] G06F *13/00*
U.S. Cl. 370—398 23 Claims



3. A switch circuit having a plurality of input ports and a plurality of output ports, comprising:

(1) a broadcast buffer, connected and provided in common to said input ports, for receiving and holding at least one broadcast packet inputted from one of said input ports; and

(2) a first transfer controller connected to said output ports and said broadcast buffer, for controlling transfer of said broadcast packet held in said broadcast buffer to each of said output ports, based on a state of said each output port, said transfer of said broadcast packet held in said broadcast buffer to said each output port is performed when permitted according to the state of said each output port, and said transfer is performed independently of a state of output ports other than said each output port.

5,825,774

PACKET CHARACTERIZATION USING CODE VECTORS

David C. Ready, Sudbury; Stephen L. Van Seters, Stow, and John A. Flanders, Ashland, all of Mass., assignors to 3Com Corporation, Santa Clara, Calif.

Filed Jul. 12, 1995, Ser. No. 501,484
Int. Cl.[6] H04L *12/46*
U.S. Cl. 370—401 6 Claims

1. An internetworking device having a plurality of states and comprising:

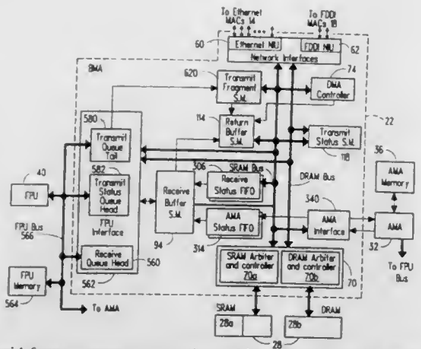
at least one ethernet MAC;

at least one FDDI MAC;

a frame processor; and

a code vector generator in electrical communication with said frame processor, said at least one FDDI MAC, and said at least one ethernet MAC,

said code vector generator generating in hardware a code vector in response to a data packet arriving at one of said at least one ethernet MAC and at least one FDDI MAC and in response to a present state of said internetworking device,



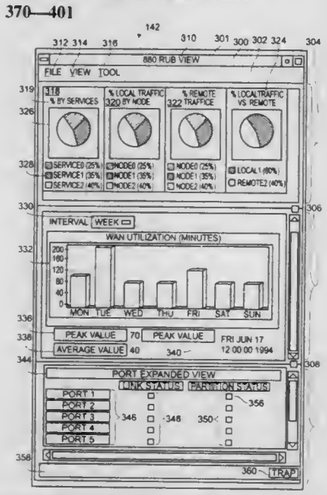
said frame processor executing predetermined code in response to said code vector generated by said code vector generator to transmit said data packet from said internetworking device.

5,825,775

METHOD AND APPARATUS FOR MANAGING AN INTEGRATED ROUTER/HUB

Jeffrey A. Chin, Belmont; Leon Y.K. Leong, Monte Sereno, and Frank S. Lee, Santa Clara, all of Calif., assignors to Bay Networks, Inc., Santa Clara, Calif.

Continuation of Ser. No. 339,472, Nov. 14, 1994, abandoned.
This application Mar. 27, 1997, Ser. No. 825,410
Int. Cl.[6] H04C *12/66*
U.S. Cl. 370—401 17 Claims



1. A network management station for use in a network system that includes a plurality of local area networks, wherein a first network of the plurality of local area networks includes the network management station and an integrated router/hub, the network management station comprising:

a memory containing a network management application, the network management application comprising a series of instructions;

a processor coupled to the memory, the processor executing the series of instructions;

a display device coupled to the processor;

a user input device coupled to the processor, the processor generating a display on the display device based on the series of instructions and user input on said user input device;

wherein the network management application causes the network management station to retrieve a first set of values and a second set of values from said integrated router/hub in response to a single command generated by a user;

wherein said display illustrates a plurality of statistics, including at least one statistic generated based on said first set of values and at least one statistic generated based on said second set of values;

wherein the first set of values relate to a first set of messages communicated between a plurality of stations in said first network through said integrated router/hub; and

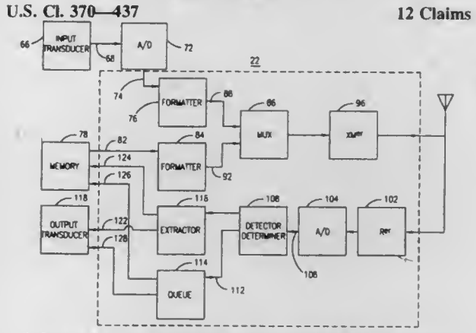
wherein the second set of values relate to a second set of messages communicated between said first network and a second network of the plurality of local area networks through said integrated router/hub.

5,825,776

CIRCUITRY AND METHOD FOR TRANSMITTING VOICE AND DATA SIGNALS UPON A WIRELESS COMMUNICATION CHANNEL

Billy G. Moon, Apex, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Feb. 27, 1996, Ser. No. 607,802
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—437 12 Claims



1. In a radio communication station operable at least selectively to transmit a data signal upon a radio channel and a voice signal upon the radio channel to a remote station, an improvement of transmitter circuitry for transmitting the voice signal at a selected throughput rate on the radio channel, said voice transmitter circuitry comprising:

a formatter coupled to receive the voice signal and to receive the data signal, said formatter for formatting the voice signal into formatted voice signal portions pursuant to a first format and for formatting the data signal pursuant to a second format, the second format by which the data signal is formatted including numerical identifiers identifying formatted data signal portions;

a multiplexer coupled to receive the voice signal and the data signal once formatter by said formatter, said multiplexer for multiplexing the data signal and the voice signal together to form a multiplexed signal, said multiplexer immediately inserting formatted voice signal portions into the multiplexed signal when received thereat;

a radio transmitter coupled to receive the multiplexed signal formed by said multiplexer, said transmitter for transmitting the multiplexed signal, of which the voice signal forms a portion, upon the data channel at the selected throughput rate; and

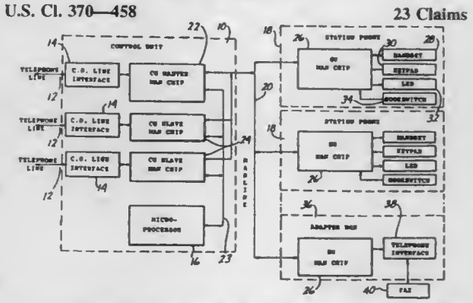
a radio receiver tunable to receive acknowledgment signals generated by the remote station, the acknowledgment signals indicating reception at the remote station of the formatted data signal portions.

5,825,777

HOME AND SMALL BUSINESS PHONE SYSTEM FOR OPERATION ON A SINGLE INTERNAL TWISTED PAIR LINE AND METHODOLOGY FOR OPERATING THE SAME

James A. Komarek, Newport Beach; Jack L. Minney, Irvine; Stephen P. Nordine, Santa Ana; Harold F. Lewis, Villa Park; Richard Wada, Santa Ana, and John F. Stockman, Costa Mesa, all of Calif., assignors to Creative Integrated Systems, Inc., Santa Ana, Calif.

Division of Ser. No. 435,282, May 5, 1995, Pat. No. 5,548,592.
This application Jun. 21, 1996, Ser. No. 669,250
Int. Cl.[6] H04J *3/02*
U.S. Cl. 370—458 23 Claims



1. A telephone communication system for communication between a plurality of exterior telephone lines and a single common in house two-wire line comprising:

a control unit for coupling to said plurality of exterior telephone lines and for controlling telecommunication between said plurality of exterior telephone lines and said common two-wire line; and

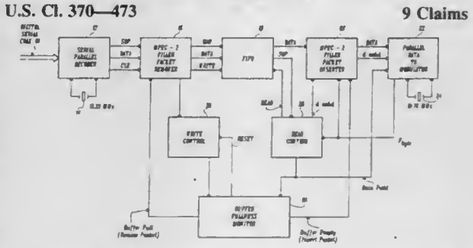
a plurality of station units each separately coupled to said common two-wire line, each of said station units for selectively telecommunicating with an arbitrarily selected one of said exterior telephone lines under the control of said control unit, said control unit communicating with said plurality of station units in a time frame subdivided into a plurality of time slots, a specified portion of each time slot being reserved for control-communication between said control unit and each one of said plurality of station units, all control-communication between each one of said station units and said control unit occurring within said specified portion of each time slot within each time frame.

5,825,778

VSB MODULATOR INPUT INTERFRACE USING SIMPLE STANDARD

Raymond C. Hauge, Fox River Grove, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 4, 1996, Ser. No. 725,870
Int. Cl.[6] H04R *11/04*
U.S. Cl. 370—473 9 Claims



1. A method of converting a packetized input transport data stream comprising data symbols transmitted at a nominal bit rate,

to optimize a packetized output transport data stream of the data symbols with a bit rate that does not exceed the nominal bit rate comprising:

supplying the packetized input transport data stream, in parallel form to a buffer;

monitoring the fullness of the buffer;

adding filler packets to the input transport data stream to assure an input bit rate in excess of the nominal bit rate; and

removing the added filler packets, as required, in response to the buffer fullness monitor to optimize an output bit rate that does not exceed the nominal bit rate.

5,825,779

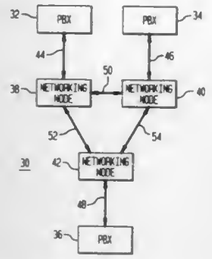
PBX NETWORKING WITH QUALITY OF SERVICE CONTROL

Zigmunds Andis Putnins, Ridgewood, N.J.; Richard Koepper, Tomkins Cove, N.Y., and Adoor V. Balasubramania, Wayne, N.J., assignors to Timeplex, Inc., Woodcliff lake, N.J.

Filed Oct. 7, 1996, Ser. No. 726,042

Int. Cl.[6] H04J *3/18*

U.S. Cl. 370—477 **10 Claims**



1. A networking node for connecting a local telephone switch to at least two remote nodes through respective internodal transmission links, where each of said internodal transmission links is a serial digital multiplex transmission facility comprising a plurality of channels capable of carrying either voice or data messages, said networking node comprising:

means for establishing at least two levels of compression in channels of said internodal transmission links;

means for detecting which of said remote nodes is the destination node for each voice message originating through said local telephone switch; and

means for selecting a predetermined one of said compression levels for voice messages directed to a predetermined one of said remote nodes as destination node, where selection is based upon the identity of said predetermined one of said remote nodes.

5,825,780

METHOD, SYSTEM AND APPARATUS FOR TELECOMMUNICATIONS CONTROL

Joseph Michael Christie, San Bruno, Calif., assignor to Sprint Communications Co. L.P., Kansas City, Mo.

Continuation of Ser. No. 238,605, May 5, 1994, abandoned. This application Dec. 7, 1995, Ser. No. 568,551

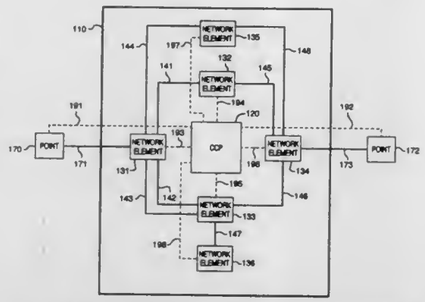
Int. Cl.[6] H04J *3/12*

U.S. Cl. 370—522 **115 Claims**

1. A method for processing telecommunications signaling that comprises:

receiving a telecommunications signaling message from a telecommunications user into a signaling processor that is located externally to any network elements that are switches;

processing the telecommunications signaling message in the signaling processor to select at least one characteristic for a communications path for the telecommunications user;



generating a new telecommunications signaling message in the signaling processor that is based at least in part on the at least one selected characteristic; and

transmitting the new telecommunications signaling message to one of the network elements on the communications path wherein the one network element has not received and did not generate the telecommunications signaling message received into the signaling processor.

5,825,781

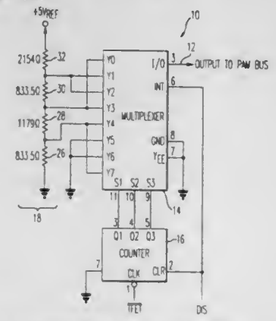
PULSE AMPLITUDE MODULATED TONE GENERATOR

Winston M. Gadsby, Herndon, and Jeffery M. Davis, Manassas, both of Va., assignors to Hubbell, Inc., Orange, Conn.

Filed Dec. 20, 1995, Ser. No. 580,023

Int. Cl.[6] H04J *3/02*

U.S. Cl. 370—525 **9 Claims**



1. A circuit for generating a tone comprising:

a counter circuit having an input for receiving a clock signal and a plurality of outputs, said counter circuit being operable to generate sequential binary values at said plurality of outputs in response to said clock signal;

a multiplexer having a plurality of inputs, a plurality of select lines connected to said plurality of outputs of said counter circuit, and at least one output, said plurality of select lines being operable to select at least one of said plurality of inputs corresponding to one of said binary values for generating an output signal at said at least one output of said multiplexer; and

a resistor divider circuit comprising a voltage source, a ground reference and a plurality of resistors connected in series with each other between said voltage source and said ground reference to provide a plurality of nodes located between respective ones of said plurality of resistors and having different voltages, different ones of said plurality of inputs of said multiplexer being connected to different ones of said plurality of nodes, said output signal having a different one of a plurality of voltage levels depending on which of said plurality of inputs of said multiplexer is selected by said counter circuit.

5,825,782

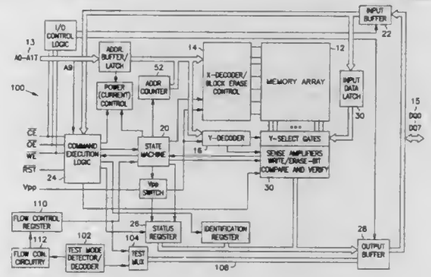
NON-VOLATILE MEMORY SYSTEM INCLUDING APPARATUS FOR TESTING MEMORY ELEMENTS BY WRITING AND VERIFYING DATA PATTERNS

Frankie F. Roohparvar, Cupertino, Calif., assignor to Micron Technology, Inc., Santa Clara, Calif.

Filed Jan. 22, 1996, Ser. No. 589,754

Int. Cl.[6] G11C *29/00;7/00*

U.S. Cl. 371—21.1 **20 Claims**



1. A memory system comprising:

an array of memory cells;

a controller operable to control execution of a memory erase operation which includes a plurality of memory erase sub-operations, the memory erase sub-operations including a regular memory pre-programming operation which accesses a first memory cell in the array, programs the first memory cell with data indicative of a logic value of zero, verifies the data programmed into the first memory cell, and performs an erase step on the memory cells; and

a test pattern data control circuit including a flow controller operable to alter execution of the memory erase operation during a test mode to bypass the erase step and execute the pre-programming operation using a test pattern input by a user.

5,825,783

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH LARGE-SCALE MEMORY AND CONTROLLER EMBEDDED ON ONE SEMICONDUCTOR CHIP AND METHOD OF TESTING THE DEVICE

Tomomi Momohara, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Tokyo, Japan

Filed Nov. 27, 1996, Ser. No. 757,287

Claims priority, application Japan, Nov. 29, 1995, 7-310619

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—21.1 **20 Claims**

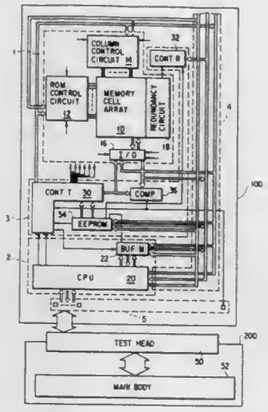
1. A semiconductor integrated circuit device comprising:

a semiconductor chip;

a main memory provided on the chip;

a controller provided on said chip for controlling at least inputting data from the outside of said chip to said main memory, and outputting data from said main memory to the outside of said chip; and

a self-test circuit provided on said chip and having a memory into which a self-test sequence is written, said self-test circuit



testing said main memory in accordance with the self-test sequence written in the memory.

5,825,784

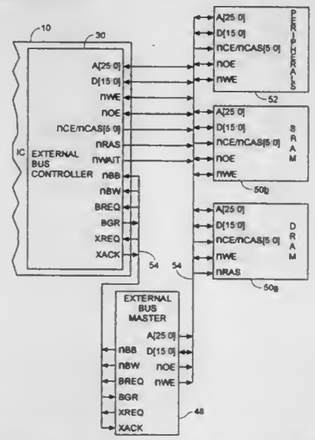
TESTING AND DIAGNOSTIC MECHANISM

Dieter Spaderna, Portland, Oreg., and Raed Sabha, Vancouver, Wash., assignors to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 620,269, Mar. 22, 1996. This application Sep. 17, 1997, Ser. No. 932,151

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.1 **6 Claims**



1. An integrated circuit mechanism for selectively accessing and controlling an integrated circuit having a RISC CPU and internal components controlled by the CPU including internal memory, internal SRAM and DRAM controllers, and an external interface including a bus for connection to external devices including external SRAM/DRAM memory, the integrated circuit mechanism system comprising:

an external bus master operatively connected via the external interface bus to the integrated circuit, such that said external bus master is operatively connected to internal components of the integrated circuit including the internal SRAM and DRAM controllers;

an internal bus controller in the integrated circuit including a memory map register for tracking transfer addresses, includ-

ing addresses of transfers to and from external devices and external SRAM/DRAM memory;

request and grant mechanisms in the integrated circuit responsive to said external bus master for requesting the CPU to selectively enter an idle mode and grant control of the integrated circuit to said external bus master such that, when the external interface of the integrated circuit is granted to said external bus master, the external bus master has control of:

a) internal memory including read/write access to internal memory;

b) external devices including external SRAM/DRAM memory which are operatively connected to the integrated circuit via the external interface bus; and

c) the internal SRAM and DRAM controllers; and

said external bus master, when in control of the integrated circuit, having access to the internal SRAM and DRAM controllers for selectively controlling external SRAM/DRAM memory without the need for a separate SRAM/DRAM controller which is external to the integrated circuit.

5,825,785

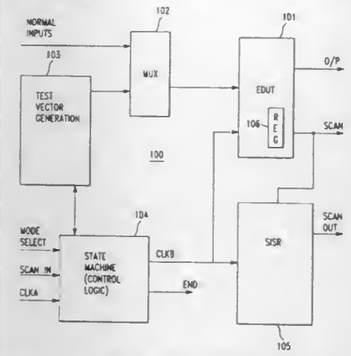
SERIAL INPUT SHIFT REGISTER BUILT-IN SELF TEST CIRCUIT FOR EMBEDDED CIRCUITS

Robert L. Barry, Essex Junction; John D. Chickanosky, South Burlington; Steven F. Oakland, Colchester, and Michael R. Ouellette, Westford, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 24, 1996, Ser. No. 653,572

Int. Cl.[6] G01R *31/28*

U.S. Cl. 371—22.4 **16 Claims**



1. In an integrated circuit chip a method of using a built-in self test circuit for testing an embedded macro circuit on said chip having parallel outputs, said method comprising the steps of:

(a) initializing said chip into a test mode of operation;

(b) generating a test vector in said built-in self test circuit,

(c) applying said test vector to inputs of said embedded macro circuit causing said embedded macro circuit to generate a response on the parallel outputs;

(d) loading said response into a scan register;

(e) serially shifting said response from said scan register into a serial input shift register (SISR); and

(f) repeating steps (b) through (e) such that each subsequent response is serially compressed with a previous response in said SISR resulting in a signature of said each response in said SISR.

5,825,786

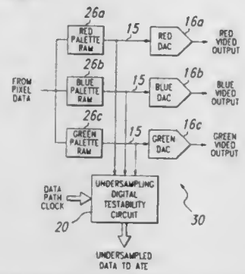
UNDERSAMPLING DIGITAL TESTABILITY CIRCUIT

Mark Burns, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 22, 1993, Ser. No. 96,149

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—167.1 **5 Claims**



1. A method of testing data transfers, comprising the steps of:

transferring a multiple word data string through at least one circuit element and along a bus to a circuit output;

capturing a first word of the multiple word data string as it travels along the bus;

analyzing the first word's accuracy and communicating a pass or fail indication to a test user;

waiting for the multiple word data string transferring through at least one circuit element to repeat at least one time; and

repeating the steps of capturing a word of the multiple word data string, analyzing the word's accuracy, and communicating a pass or fail indication until all the words in the multiple word data string have been tested, whereby each repeating step analyzing a subsequent word's accuracy in the multiple word data string and whereby testing of each word of the multiple word data string is accomplished at a fraction of the frequency of the multiple word data string.

5,825,787

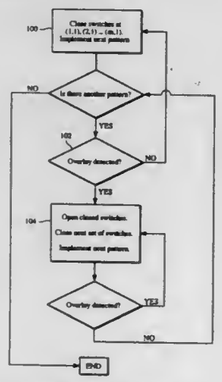
SYSTEM AND METHOD FOR ACCESSING A TEST VECTOR MEMORY

Mihai G. Statovici, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Nov. 25, 1997, Ser. No. 978,163

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—27.1 **7 Claims**



1. An electronic circuit tester comprising:

a plurality of conductors for providing an electrical connection to an electronic device to be tested;

a vector storage unit storing one or more vector signals;

a signal comparator for applying an electrical signal to one of said conductors in response to a vector signal received from said vector storage unit and for receiving an electrical signal on one of said conductors and comparing it to a vector signal received from said vector storage unit; and

a plurality of signal lines selectively connecting said comparator means to one of said conductors.

5,825,788

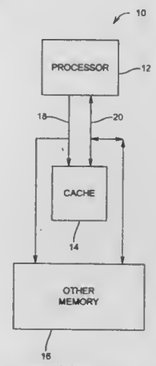
DATA ORDERING FOR CACHE DATA TRANSFER

Joseph Thomas Pawlowski, Boise, Id., assignor to Micron Technology Inc., Biose, Id.

Filed May 20, 1996, Ser. No. 650,470

Int. Cl.[6] G11C *29/00*

U.S. Cl. 371—40.11 **10 Claims**



5. A cache memory, comprising:

a cache memory array having a plurality of cache lines, wherein each cache line includes a tag word and N data words;

a processor-cache interface, wherein the processor-cache interface includes an M-word wide bus, where M is less than N; and

a routing circuit connected to the memory array and the processor-cache interface, wherein the routing circuit includes a plurality of selector circuits and selection control logic connected to the plurality of selector circuits, wherein the selection control logic controls the transfer of groups of M cache line data words from the cache memory array through the plurality of selector circuits to the processor-cache interface, wherein the groups of M cache line data words are transferred in order according to the likelihood that the transferred data words will be needed, wherein the groups of M cache line data words include a first group of cache line data words, wherein the first group of cache line data word is transferred before all other groups of cache line data words and wherein the first group of cache line data words includes the words most likely to be needed by a processor.

5,825,789

PROCESS FOR PRODUCING A RESONATOR IN A SEMICONDUCTOR LASER DEVICE

Yoshiaki Watanabe; Satoshi Miyaguchi, both of Tsurugashima; Hiroshi Amano, and Isamu Akasaki, both of Nagoya, all of Japan, assignors to Pioneer Electric Corporation, Tokyo, Japan

Filed Dec. 22, 1995, Ser. No. 577,620

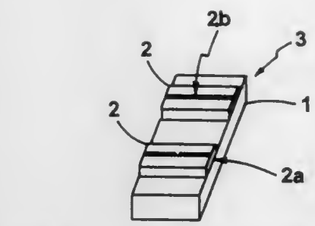
Claims priority, application Japan, Dec. 22, 1994, 6-320132

Int. Cl.[6] H01S *3/10;3/083*

U.S. Cl. 372—21 **6 Claims**

1. A method for preparing an optical resonator in a semiconductor laser device comprising the steps of:

embedding in an uncured resin a semiconductor laser structure having end-surfaces to be a resonator formed on a substrate and curing said resin to protect the structure;



lapping and polishing said end-surfaces and parts of said cured resin thereon;

forming thin films on the polished end-surfaces; and

removing said cured resin.

5,825,790

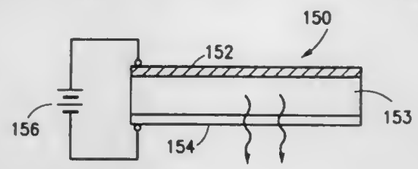
OPTICAL SOURCES HAVING A STRONGLY SCATTERING GAIN MEDIUM PROVIDING LASER-LIKE ACTION

Nabil M. Lawandy, Providence, R.I., assignor to Brown University Research Foundation, Providence, R.I.

Division of Ser. No. 401,356, Mar. 9, 1995, Pat. No. 5,625,456, which is a division of Ser. No. 210,710, Mar. 18, 1994, Pat. No. 5,448,582. This application Nov. 12, 1996, Ser. No. 745,494

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—23 **13 Claims**



1. An object, comprising:

a substrate; and

coupled to said substrate, a wavelength encoded region comprising a plurality of electromagnetic radiation emitter and amplification portions each of which is optically coupled to a scattering portion for increasing a residence time of the electromagnetic radiation within the region, said wavelength encoded region emitting,

when energized by incident light, a plurality of wavelengths that identify said object.

5,825,791

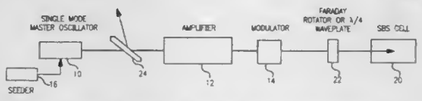
VARIABLE COHERENCE LENGTH HIGH BRIGHTNESS LASER ARCHITECTURE

Hagop Injeyan, Glendale; Lawrence J. Lembo, Torrance; Randall J. St. Pierre, Santa Monica, and Marcy M. Valley, Los Angeles, all of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Aug. 28, 1995, Ser. No. 520,349

Int. Cl.[6] H01S *3/10*

U.S. Cl. 372—26 **8 Claims**



1. A laser source having a broad bandwidth, comprising:

a master oscillator providing a single-mode laser beam at a nominal frequency;

a resonant electro-optical modulator positioned to receive the laser beam; and

a source of radio-frequency (rf) modulation voltage coupled to the modulator;

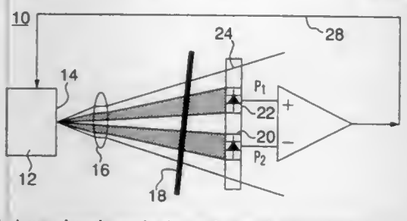
wherein the modulator produces an output beam having sidebands spaced on each side of the nominal frequency, and having a lower coherence length than the single-mode laser beam.

5,825,792

WAVELENGTH MONITORING AND CONTROL ASSEMBLY FOR WDM OPTICAL TRANSMISSION SYSTEMS

Bernard Villeneuve, Aylmer, and Hyung B. Kim, Kanata, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Jul. 11, 1996, Ser. No. 680,284
Int. Cl.[6] H01S *3/13*
U.S. Cl. 372—32 **19 Claims**



1. A wavelength monitoring and control assembly for an optical system comprising a laser emission source for generating a divergent beam, the assembly comprising:

first and second photodetectors spaced apart by a specific separation, and located at a specific distance from the emission source;

a narrow bandpass wavelength selective transmission filter element of Fabry-Perot structure located between the source and the photodetectors, the filter element being tilted at an angle θ relative to the optical axis of the emission source to provide an angular dependence of the wavelength transmission of the filter, for illuminating the photodetectors with two different parts of the divergent beam, incident at the filter at different angles, and transmitted by the filter, whereby a change in wavelength from the source is converted to a difference in transmission detected by the photodetectors; and

a control loop for feedback of a difference signal generated by the first and second photodetectors in response to a change in wavelength of the emission source to control means of the emission source to provide wavelength stabilization of the source.

5,825,793

LASER AND LASER APPLIED UNITS

Tsuyoshi Miyai; Satoshi Makio, both of Saitama; Yasunori Furukawa, Ibaragi, and Masayoshi Sato, Saitama, all of Japan, assignors to Hitachi Metals, Ltd., Tokyo, Japan

Filed May 30, 1996, Ser. No. 656,875
Claims priority, application Japan, Jun. 5, 1995, 7-137608; Apr. 4, 1996, 8-082785
Int. Cl.[6] H01S *3/00;3/13;3/10;3/04*
U.S. Cl. 372—33 **19 Claims**

1. A laser comprising:

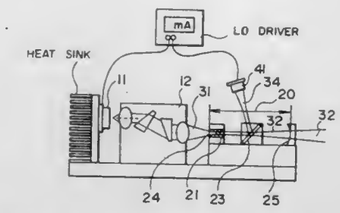
an excitation element;

a resonator including:

a wavelength variable laser crystal containing a fluoride, the laser crystal being excited by said excitation element to produce a laser beam; and

an optical part to receive the laser beam, reflect a sample beam, control the wavelength of the laser beam and output the laser beam;

a detector to quantitize the sample beam; and



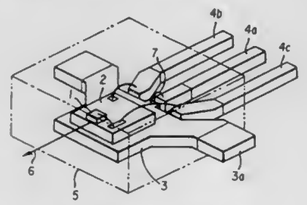
a stabilization unit connected to the detector to stabilize the laser beam output by the resonator based on the quantitization by the detector.

5,825,794

SEMICONDUCTOR LASER DEVICE

Shinji Ogino, Kanagawa; Shoji Kitamura, Kanagawa; Yoichi Shindo, Kanagawa; Naokazu Sakamoto, and Koji Nemoto, both of Saitama, all of Japan, assignors to Fuji Electric Co., Ltd., Japan

Filed Dec. 27, 1996, Ser. No. 779,170
Claims priority, application Japan, Dec. 28, 1995, 7-342017
Int. Cl.[6] H01S *3/043*
U.S. Cl. 372—36 **5 Claims**



1. A semiconductor laser device comprising:

a laser diode chip having two terminals;

a photo diode having two terminals;

a metallic main plate mounting said laser diode chip and said photo diode, said main plate being an electric common electrode plate for a first terminal of said laser diode chip and a first terminal of said photo diode, and having at least a fixing end portion;

first, second and third metallic posts electrically respectively connected to said main plate, a second terminal of said laser diode chip and a second terminal of said photo diode, respectively, wherein said first, second and third posts being spaced apart from said main plate; and

a resin case in which said laser diode chip and said photo diode and the space between said main plate and said posts are sealed.

5,825,795

GAS LASER OSCILLATOR APPARATUS

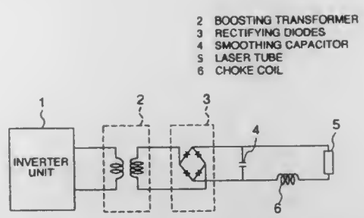
Takayuki Yamashita, Toyonaka; Hiroyuki Hayashikawa, Osaka, and Satoshi Eguchi, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP96/01161, § 371 Date Dec. 23, 1996, § 102(e) Date Dec. 23, 1996, PCT Pub. No. WO96/34437, PCT Pub. Date Oct. 31, 1996
PCT Filed Apr. 26, 1996, Ser. No. 765,148
Claims priority, application Japan, Apr. 28, 1995, 7-105504
Int. Cl.[6] H01S *3/097*
U.S. Cl. 372—38 **3 Claims**

1. A gas laser oscillator apparatus comprising:

an inverter unit for generating a high frequency voltage;

a boosting transformer for boosting said high frequency voltage to produce a boosted high frequency voltage;



a rectifying circuit for rectifying the boosted high frequency voltage to produce a rectified high frequency voltage;

a smoothing capacitor for smoothing the rectified high frequency voltage to produce a smoothed voltage;

a gas laser medium for being discharged and excited by the smoothed voltage to generate a laser beam in a pulse form; and

a choke coil connected in series with the gas laser medium;

wherein said smoothing capacitor has a smoothing capacitor capacitance C determined by

$$f > 1/2\pi\sqrt{LC}$$

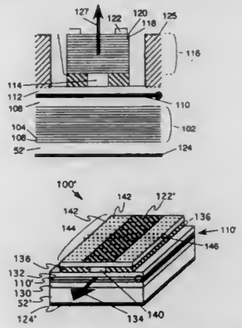
wherein f is an operating frequency of the laser beam in the pulse form and L is an inductance of said choke coil.

5,825,796

EXTENDED WAVELENGTH STRAINED LAYER LASERS HAVING STRAIN COMPENSATED LAYERS

Jack L. Jewell, Boulder, Colo., and Henryk Temkin, Ransom Canyon, Tex., assignors to Picolight Incorporated, Boulder, Colo.

Filed Sep. 25, 1996, Ser. No. 721,589
Int. Cl.[6] H01S *3/19;* **H01L** *29/06;33/00;31/0328*
U.S. Cl. 372—45 **73 Claims**



1. A light emitting device having at least a substrate and an active region, said light emitting device comprising:

said substrate having a substrate lattice constant between 5.63 Å and 5.67 Å;

a first strained layer having a lattice constant smaller than said substrate lattice constant and being disposed between said substrate and said active region;

said active region comprising one pseudomorphic light emitting active layer disposed above said substrate, said active layer comprising In, Ga and As, said active layer comprises at least two strained layers, and a third layer disposed between said two strained layers, said active layer having a thickness equal to or less than 80 Å; and

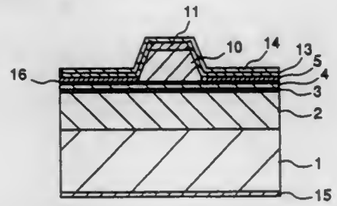
wherein said light emitting device has an emission wavelength of at least 1.3 μm.

5,825,797

SEMICONDUCTOR LASER DEVICE

Yutaka Nagai, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 20, 1996, Ser. No. 772,671
Claims priority, application Japan, Apr. 10, 1996, 8-088556
Int. Cl.[6] H01S *3/19*
U.S. Cl. 372—46 **7 Claims**



1. A semiconductor laser device comprising:

a semiconductor substrate of a first conductivity type and having a surface;

a lower cladding layer of the first conductivity type, an active layer, and a planar first upper cladding layer of a second conductivity type successively disposed on the surface of the semiconductor substrate of the first conductivity type;

a first insulating film disposed on and contacting the first upper cladding layer of the second conductivity type and having a stripe-shaped opening;

a ridge-striped second upper cladding layer of the second conductivity type grown on the first upper cladding layer in the stripe-shaped opening of the first insulating film; and

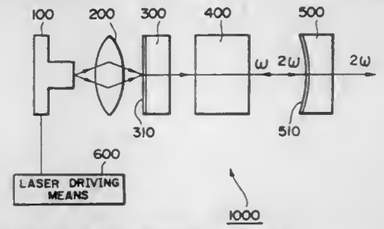
a second insulating film disposed on side surfaces of the ridge-striped second upper cladding layer of the second conductivity type and on the first insulating film, a region of the active layer opposite the ridge-striped second upper cladding layer of the second conductivity type serving as a laser resonator having facets, portions of the active layer adjacent the facets including window regions, each window region having a higher band gap energy than a region of the active layer between and remote from the facets.

5,825,798

LASER OSCILLATING APPARATUS AND METHOD OF DRIVING LASER BEAM SOURCE

Masayuki Momiuchi; Hiroshi Koizumi; Masahiro Ohishi; Yoshiaki Goto, and Fumio Ohtomo, all of Tokyo, Japan, assignors to Kabushiki Kaisha Topcon, Tokyo, Japan

Filed May 20, 1996, Ser. No. 650,730
Claims priority, application Japan, May 19, 1995, 7-145486
Int. Cl.[6] H01S *3/091;3/094*
U.S. Cl. 372—75 **12 Claims**



1. A laser oscillating apparatus comprising:

an optical resonator comprising at least a laser crystal and an output mirror;

a laser beam source for pumping said optical resonator, said laser beam source having associated therewith a fluorescence lifetime τ_{FL}; and

pulse driving means for driving said laser beam source, said pulse driving means producing a series of pulses with a period T, each of said pulses having a pulse width of τ;

wherein the fluorescence lifetime τ_{FL}, the period T, and the pulse width τ are related such that $\tau_{FL}>T-\tau$.

5,825,799

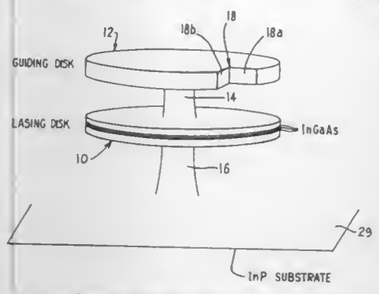
MICROCAVITY SEMICONDUCTOR LASER

Seng-Tiong Ho, Wheeling, Ill.; Daniel Yen Chu, Milpitas, Calif.; Jian-Ping Zhang, and Shengli Wu, both of Evanston, Ill., assignors to Northwestern University, Evanston, Ill.

Filed May 25, 1995, Ser. No. 450,284

Int. Cl.[6] H01S *3/05*

U.S. Cl. 372—92 **31 Claims**



1. Laser comprising a first micromember having a lasing microcavity with a substantially circular cross-sectional periphery and a second waveguiding micromember spaced from said first micromember in a different plane and optically coupled to said first micromember, said second waveguiding micromember including a light output coupling for providing light output from said laser.

5,825,800

Patent Not Issued For This Number

5,825,801

LASER APPARATUS

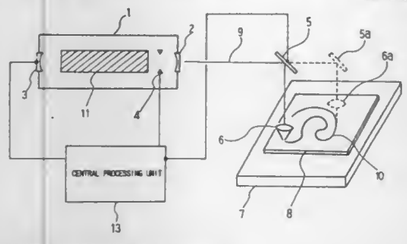
Satoshi Nishida, and Shigeto Takeshima, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 24, 1997, Ser. No. 806,543

Claims priority, application Japan, Aug. 21, 1996, 8-219946

Int. Cl.[6] H01S *3/08*; **G02B** *5/08*; **B23K** *26/00*

U.S. Cl. 372—99 **29 Claims**



1. A laser apparatus comprising:

an output mirror for reflecting a portion of a laser beam and transmitting therethrough a remaining portion thereof;

a full reflection mirror located at a position opposite to said output mirror for completely reflecting a laser beam and having a variable curvature;

a laser medium provided between said output mirror and said full reflection mirror which produces induced emission of radiation;

an aperture means for determining a beam mode of a laser beam generated between said output mirror and said full reflection mirror and having a variable aperture diameter; and

a converging means for converging an outgoing laser beam from said output mirror and changing a distance from said output mirror according to a machining path; wherein said curvature of said full reflection mirror is varied and also said diameter of said aperture means is varied.

5,825,802

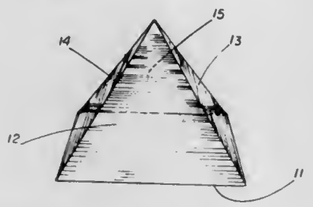
OPTICAL ELEMENTS FOR LASERS

Robin K. Elkins, 4018 N. 30th Ave., Hollywood, Fla. 33020, and Martin Bottomley Grier, P.O. Box 195, Alto, N. Mex. 88312

Continuation of Ser. No. 796,826, Nov. 25, 1991, abandoned. This application Aug. 23, 1993, Ser. No. 110,493

Int. Cl.[6] H01S *3/08*

U.S. Cl. 372—100 **9 Claims**



1. A laser apparatus comprising a solid regular pyramid made of laser material, having a square base and four triangular faces of equal size and shape meeting at the apex and a laser beam directed perpendicularly to said base and characterized as having substantially 0° reflection.

5,825,803

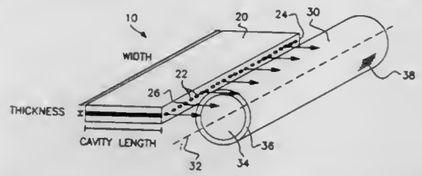
MULTIPLE EMITTER LASER DIODE ASSEMBLY WITH GRADED-INDEX FIBER MICROLENS

Bruno Labranche, Sainte-Foy; Kevin Snell, St-Rédempteur, and André Parent, des Érables, all of Canada, assignors to Institut National d'Optique, Sainte-Foy, Canada

Filed Dec. 14, 1995, Ser. No. 572,089

Int. Cl.[6] H01S *3/08*

U.S. Cl. 372—101 **10 Claims**



1. A multiple emitter laser diode assembly for producing a laser beam, the assembly comprising

a laser diode bar for emitting the beam, the laser diode bar comprising a plurality of emitters aligned with respect to each other in a same plane of emission, each emitter having an optical axis;

a diffraction-limited, aberration-free, graded-index elongated fiber microlens transversely set at a given distance in front of the laser diode bar for controlling the divergence of the beam, the microlens having a circular cross-section with an axis of symmetry substantially intersecting the optical axis of each emitter; and

a mounting means for positioning the microlens with respect to the laser diode bar.

5,825,804

TEMPERATURE DISTRIBUTION MEASURING APPARATUS USING AN OPTICAL FIBER

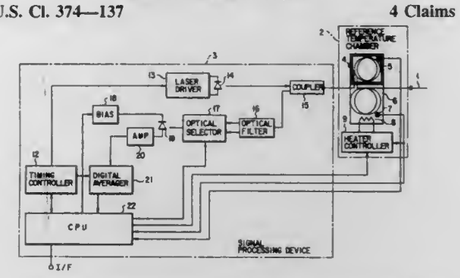
Yukio Sai, Tokorozawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 528,594, Sep. 15, 1995, Pat. No. 5,639,162, which is a continuation of Ser. No. 177,324, Jan. 4, 1994, abandoned. This application Mar. 10, 1997, Ser. No. 813,980

Claims priority, application Japan, Jan. 6, 1993, 5-000643; Jan. 6, 1993, 5-000646

Int. Cl.[6] G01K *11/32;3/06*

U.S. Cl. 374—137 **4 Claims**



1. An apparatus for measuring a temperature distribution along an optical fiber comprising:

light source means for projecting a light pulse into the optical fiber;

optical filter means for receiving a Raman spectrum of backscattered light from the optical fiber and extracting an anti-Stokes component and a Stokes component of the Raman spectrum in the backscattered light;

means for performing a deconvolution a number of times on the Stokes component and the anti-Stokes component using an inverse matrix of the projected light pulse to obtain an impulse response of the anti-Stokes component and an impulse response of the Stokes component, the inverse matrix being obtained by an iteration method with an optimum number of iterations;

means for obtaining a temperature distribution according to a ratio between the impulse responses of the anti-Stokes and the Stokes components;

control means for causing said temperature distribution obtaining means to obtain a temperature distribution which includes an obtained temperature in a portion of the optical fiber as long as or shorter than a half of a pulse width of the light pulse, the portion having a known temperature, and for determining the obtained temperature by performing a deconvolution a number of times such that an error between the known temperature, and the obtained temperature is minimum; and

wherein the number of times that the deconvolution is performed by the performing means is equal to the number of times the deconvolution is performed by the control means.

4. A method of measuring a temperature distribution along an optical fiber, comprising the steps of:

heating a portion of the optical fiber to a predetermined temperature, the portion having a predetermined length;

projecting a first light pulse into the optical fiber, the first light pulse having a pulse width, one half of which is longer than the predetermined length of said portion;

receiving a first Raman spectrum in a first backscattered light from the optical fiber in response to said first light pulse and extracting a first anti-Stokes component and a first Stokes component of the first Raman spectrum in the first backscattered light;

performing a deconvolution a number of times on the first Stokes component and the first anti-Stokes component using an inverse matrix of the projected first light pulse to obtain a first temperature signal based on a result of the deconvolution, the number of times of performing the deconvolution being determined such that an error between the first temperature signal and the predetermined temperature is minimized;

projecting a second light pulse into the optical fiber, with said optical fiber placed in an area where a temperature distribution is to be measured;

receiving a second Raman spectrum in a second backscattered light from the optical fiber in response to said second light pulse and extracting a second anti-Stokes component and a second Stokes component of the second Raman spectrum in the second backscattered light; and

performing a deconvolution a number of times on the second Stokes component and the second anti-Stokes component using an inverse matrix of the projected second light pulse to obtain a second temperature signal based on a result of the deconvolution on the second Stokes and anti-Stokes components, the number of times of performing the deconvolution on the second Stokes and anti-Stokes components being equal to the number of times of performing the deconvolution on the first Stokes and anti-Stokes components, the second temperature signal corresponding to the temperature distribution along the optical fiber.

5,825,805

SPREAD SPECTRUM COMMUNICATION SYSTEM

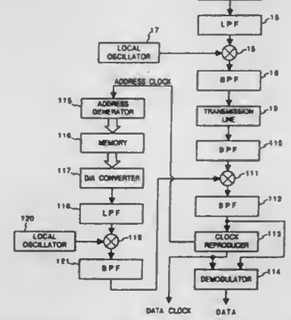
Ichiro Kato, Kawasaki, Japan, assignor to Canon, Tokyo, Japan

Continuation of Ser. No. 967,153, Oct. 27, 1992. This application May 26, 1994, Ser. No. 249,685

Claims priority, application Japan, Oct. 29, 1991, 3-309694; Oct. 29, 1991, 3-309695

Int. Cl.[6] H04B *1/66;* **H04K** *1/00;* **H04L** *22/32*

U.S. Cl. 375—200 **53 Claims**



1. A spread-spectrum signal transmitting apparatus comprising:

storing means for storing, as digital data, a signal having a waveform that is determined from a prescribed spread-spectrum code sequence;

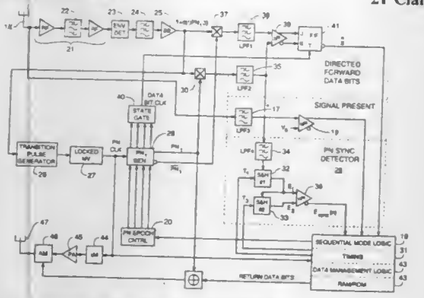
signal generating means for generating, based upon transmission data and data stored in said storing means, the signal having the determined waveform; and

transmitting means for transmitting the signal generated by said signal generating means through a transmission line.

5,825,806
MODULATED SPREAD SPECTRUM IN RF IDENTIFICATION SYSTEMS METHOD

John R. Tuttle, Corrales, N. Mex.; Eugene P. Hoyt, Colorado Springs, Colo., and James C. Springett, La Crescenta, Calif., assignors to Micron Technology, Inc., Boise, Id.

Continuation of Ser. No. 32,384, Mar. 17, 1993, Pat. No. 5,539,775. This application Nov. 30, 1994, Ser. No. 348,274
Int. Cl.[6] H04B *1/69*
U.S. Cl. 375—200 21 Claims



1. A communication system, comprising:

signal conditioning and transmitting circuitry to produce and transmit a twice modulated data signal; and

a receiver system that is remote from the signal conditioning and transmitting circuitry and that comprises:

receiving and processing circuitry to receive the transmitted twice modulated data signal and to produce therefrom a recovered modulated data signal including a carrier component and a data signal component;

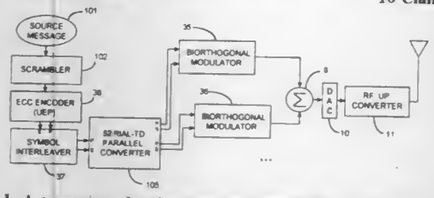
synthesizing and synchronizing circuitry to receive the recovered modulated data signal and produce a synthesized signal synchronized with the carrier component; and

processing and comparing circuitry to receive the recovered modulated data signal and the synthesized signal, and to produce a signal indicative of the data signal component responsive to signals including the recovered modulated data signal and the synthesized signal.

5,825,807
SYSTEM AND METHOD FOR MULTIPLEXING A SPREAD SPECTRUM COMMUNICATION SYSTEM

Derek D. Kumar, 2313 Blackthorn Dr., Champaign, Ill. 61821

Filed Nov. 6, 1995, Ser. No. 554,364
Int. Cl.[6] H04B *1/69;* H04J *11/00*
U.S. Cl. 375—200 16 Claims



1. A transmitter for simultaneously transmitting a plurality of orthogonal signals for reception by at least one receiver, the transmitter comprising:

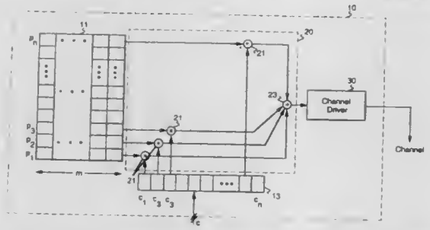
first and second biorthogonal modulators, each of said biorthogonal modulators including a multiplexor for outputting one of a possible plurality M of orthogonal signals at a particular polarity;

means for forming a composite signal from the outputs of said first and second biorthogonal modulators so that a plurality of orthogonal biorthogonally modulated signals are simultaneously transmitted as the composite signal; and an unequal error protection encoder for error encoding selection bits with additional redundancy compared to polarity bits.

5,825,808
RANDOM PARITY CODING SYSTEM

John Erik Hershey, Ballston Lake, and Jerome Johnson Tiemann, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1996, Ser. No. 628,047
Int. Cl.[6] H04L *1/00;* H03M *13/00;* H04B *1/69*
U.S. Cl. 375—200 8 Claims



1. A digital communication transmitter for communicating a digital message word $c=(c_1,c_2,c_3, \ldots c_n)$ through a high noise channel comprising:

a) projector memory for storing m pseudorandom projector words each being n bits long;

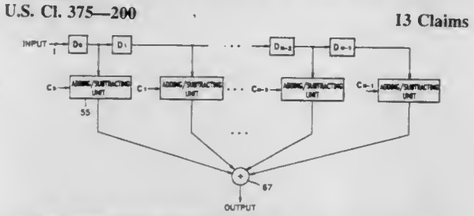
b) a modulo-2 dot product device for receiving said message word and the projector words and performing a modulo-2 dot product of each projector word with said message word to create dot product bits;

c) a channel driver coupled to the modulo-2 dot product for passing the dot product bits through said channel.

5,825,809
DIGITAL FILTER HAVING AN ENERGY LEVEL DETECTOR FOR SELECTING A COEFFICIENT

Bok-tae Sim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Dec. 5, 1996, Ser. No. 760,988
Claims priority, application Rep. of Korea, Jan. 20, 1996, 1996-1204
U.S. Cl. 375—200 13 Claims



1. An input signal energy detecting device for detecting an energy level of sample data of an input signal when an energy level of the input signal varies at most once within a filter window, comprising:

a first storing unit for storing first and second energy levels of the input signal;

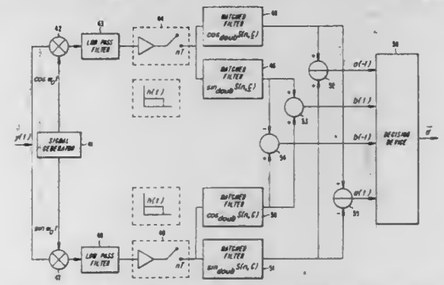
an energy detecting unit for updating said second energy level with said first energy level and updating said first energy level with a current energy level of the input signal, and generating a detected edge location value within the filter window at which an energy level variation of the input signal occurs, when said current energy level of the input signal is different from said first energy level; and

an energy level selector for comparing a location value of one of the sample data of the input signal with said detected edge location value, and selecting one of said first and second energy levels so as to output said selected value as an energy level for said sample data.

5,825,810
MSK SPREAD-SPECTRUM RECEIVER WHICH ALLOWS CDMA OPERATIONS

Jimmy K. Omura, Cupertino; Paul T. Yang, Sunnyvale, both of Calif.; Gurgen H. Khachatrian, Yerevan, Argentina; Karen M. Nikogossian, Yerevan, Argentina; Karen S. Hovakimian, Yerevan, Argentina, and Armen L. Vartapetian, Yerevan, Argentina, assignors to Cylink Corporation, Sunnyvale, Calif.

Continuation of Ser. No. 324,478, Oct. 17, 1994, Pat. No. 5,592,506. This application Nov. 29, 1996, Ser. No. 770,224
Int. Cl.[6] H04B *15/00*
U.S. Cl. 375—200 18 Claims



1. A method for demodulating a received-spread-spectrum signal using a minimum-shift-keyed (MSK) receiver, comprising the steps of:

generating an in-phase-component signal from the received-spread-spectrum signal;

generating a quadrature-phase-component signal from the received-spread-spectrum signal;

processing the in-phase-component signal using $\sin_{doub}S(n,C)$ to generate a first processed signal;

processing the quadrature-phase-component signal using $\sin_{doub}S(n,C)$ to generate a second processed signal;

processing the in-phase-component signal using $\cos_{doub}S(n,C)$ to generate a third processed signal;

processing the quadrature-phase-component signal using $\cos_{doub}S(n,C)$ to generate a fourth processed signal;

combining the second processed signal with the third processed signal to generate a first combined signal;

combining an inverse of the first processed signal with the fourth processed signal to generate a second combined signal;

determining an angle from the first combined signal and the second combined signal; and

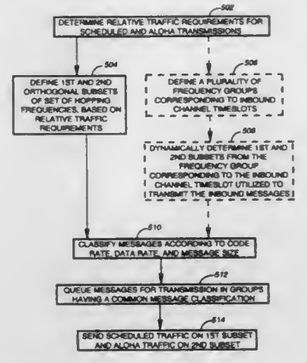
deciding from the angle an estimate of data from the received-spread-spectrum signal.

5,825,811
METHOD AND APPARATUS FOR FACILITATING INBOUND CHANNEL ACCESS

Slim Souissi, Fort Worth, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jan. 16, 1997, Ser. No. 786,380
Int. Cl.[6] H04B *1/713;* H04J *3/16*
U.S. Cl. 375—202 15 Claims

1. A method in a two-way messaging system utilizing a frequency-hopped spread-spectrum modulation technique on a set of hopping frequencies, the method for facilitating inbound channel access, the method comprising the steps of:



defining first and second subsets of the set of hopping frequencies, the first and second subsets being orthogonal to one another;

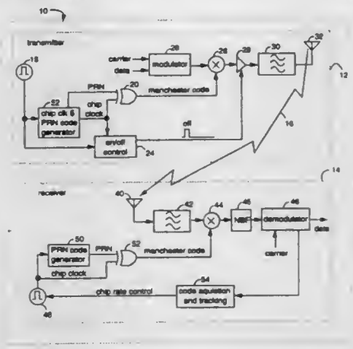
communicating scheduled transmissions on the first subset; and

communicating ALOHA transmissions on the second subset.

5,825,812
SUPPRESSED SIDE LOBE DIRECT-SEQUENCE-SPREAD-SPECTRUM RADIO COMMUNICATION METHOD AND DEVICE

Daniel Babitch, San Jose, Calif., assignor to Wireless Logic, Inc., San Jose, Calif.

Filed Jun. 6, 1996, Ser. No. 656,980
Int. Cl.[6] H04B *15/00;* H04K *1/00;* H04L *27/30*
U.S. Cl. 375—206 10 Claims



1. A direct sequence spread spectrum (DSSS) radio transmitter, comprising:

a biphase shift keyed (BPSK) modulator having a pair of inputs for a carrier frequency and a data-to-be-communicated;

a mixer having a first and second mixing input and an output connected to a radio frequency power output stage and transmitting antenna, wherein said second mixing input is connected to receive an output of the BPSK modulator;

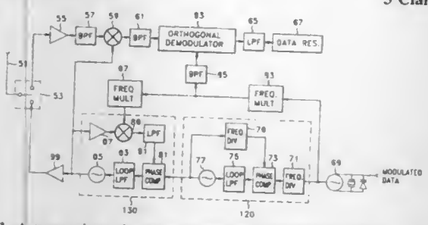
a chip clock generator and pseudorandom number (PRN) code generator connected to provide a PRN DSSS spreading code to said first input of the mixer;

a logic gate with a controllable high-impedance output connected to said second input of the mixer and to control the application of said PRN DSSS spreading code in said mixer and that provides for spectral side lobe nulling of a transmitted signal amplified from an output of said mixer.

5,825,813
TRANSCEIVER SIGNAL PROCESSOR FOR DIGITAL CORDLESS COMMUNICATION APPARATUS

Bo-gyu Na, Yongin-gun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 13, 1995, Ser. No. 402,506
Claims priority, application Rep. of Korea, Mar. 15, 1994, 94-5106
Int. Cl.[6] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—219 **3 Claims**



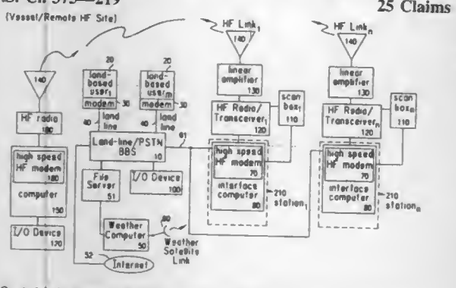
1. A transceiver signal processor for a digital cordless communication apparatus having a transmitter for converting an electrical signal into a radio wave and transmitting said radio wave via an antenna, and a receiver for converting a radio wave received from said antenna into a received electrical signal and processing the received signal, in a communication system using a time-division method by which a frequency channel is divided into constant time intervals for alternating transmission and reception modes of operation, said processor comprising:

a frequency synthesizer including a first phase-locked loop (PLL) for channel conversion by which the loop frequency of said first PLL is kept constant by setting an offset corresponding to a received second intermediate frequency to 0 Hz, and a second PLL for high-speed switching between transmit and receive frequencies, by setting the output frequency of said first PLL as a reference signal for said second PLL.

5,825,814
HIGH SPEED, HIGH AND MEDIUM FREQUENCY COMMUNICATION SYSTEM

Peter Mead Detwiler, Gladstone, N.J.; Andrew Burton White, Thomasboro, Ill., and Kelly James Hulse, Fort Lauderdale, Fla., assignors to PinOak Digital Corporation, Gladstone, N.J.

Filed Apr. 19, 1996, Ser. No. 639,856
Int. Cl.[6] H04B *1/38;7/00;* **H04Q** *7/00;* **H01Q** *3/24*
U.S. Cl. 375—219 **25 Claims**



8. A high speed, digital communication system, comprising:

a land-line bulletin board system; and

a communication link coupled to the bulletin board system, the land-line bulletin board system and the communication link forming a central communication facility, the communication link having

(a) a modem employing one of an HF high speed modulation technique and an MF high speed modulation technique,

(b) an interface device coupled between the bulletin board system and the modem,

(c) a transceiver coupled to the modem,

(d) an antenna coupled to the transceiver,

(e) a multifrequency antenna tuning system for tuning the antenna to a tuning frequency in a specified frequency set, the tuning system including:

(1) a selector switch coupled to the transceiver and to the antenna, the selector switch including at least one first relay and at least one second relay,

(2) at least one pretuned manual antenna tuner coupled to the selector switch, and

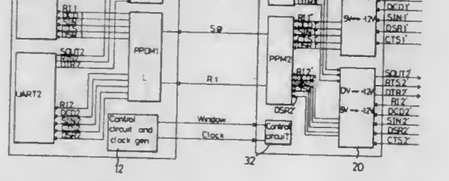
(3) a digital switch coupled to the transceiver and to the selector switch, the digital switch detecting a change in the tuning frequency of the transceiver and triggering a predetermined one of the at least one first relay in the selector switch to connect the antenna to the pretuned manual antenna tuner corresponding to the tuning frequency of the transceiver and triggering a predetermined one of the at least one second relay in the selector switch to connect the pretuned manual antenna tuner to the transceiver, and

(f) a scan box coupled to the modem and to the transceiver, the scan box providing electromechanical scanning of the transceiver within the specified frequency set.

5,825,815
DUAL UART DEVICE WITH A REDUCED PACKAGE PIN NUMBER

Hsi-jung Tsai, Hsinchu Hsien, and Sheng-hung Wang, Taipei Hsien, both of Taiwan, assignors to Winbond Electronics Corp., Hsinchu, Taiwan

Filed Sep. 11, 1996, Ser. No. 712,442
Int. Cl.[6] H04B *1/38;* **H04L** *5/16*
U.S. Cl. 375—220 **8 Claims**



1. A circuit arrangement between an input/output (I/O) integrated circuit (IC) and an I/O coupler IC for communicating with an external apparatus, comprising:

a first universal asynchronous receiver-transmitter (UART) and a second UART provided within the I/O IC, each of the UART having a plurality of parallel output terminals and parallel input terminals;

a first pulse position modulation (PPM) circuit connected to the parallel output terminals of the first UART and the second UART and having an output pin for transmitting a sequential signal;

a first pulse position demodulation (PPDM) circuit connected to the parallel input terminals of the first UART and the second UART and having two input pins;

a second PPDM circuit provided within the I/O coupler IC and connected to the output pin of the first PPM circuit for receiving the sequential signal from the first PPM with two sets of output terminals;

a second PPM circuit provided within the I/O coupler IC and connected to the input pins of the first PPDM circuit with two sets of input terminals;

two voltage converters each respectively connected with a set of input terminals of the second PPM circuit and a set of output terminals of the second PPDM circuit and having a set of input parallel pins and a set of output parallel pins respectively connected to the external apparatus;

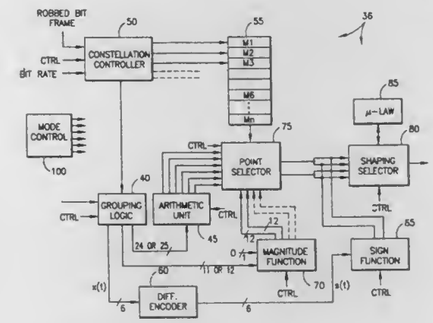
a control circuit/clock generator provided within the I/O IC and having two output pins; and

a control circuit provided within the I/O coupler IC and having two input pins connected to the output pins of the control circuit/clock generator for synchronizing the signals between the I/O IC and the I/O coupler IC.

5,825,816
SPECTRAL AND POWER SHAPING MAPPER FOR HIGH DATA RATE SIGNALLING

Paul Dana Cole, Fairfield; Yuri Goldstein, and Yuri Okunev, both of Southbury, all of Conn., assignors to General DataComm, Inc., Middlebury, Conn.

Continuation-in-part of Ser. No. 807,955, Mar. 4, 1997, Ser. No. 801,066, Feb. 14, 1997, and Ser. No. 838,367, Apr. 8, 1997. This application May 5, 1997, Ser. No. 851,597
Int. Cl.[6] H04B *1/38*
U.S. Cl. 375—222 **17 Claims**



1. A PAM mapper, comprising:

a) memory means for storing indications of at least one PAM constellation; and

b) code generation means coupled to said memory means, said code generation means including

(i) grouping logic means for taking a group of incoming bits, for dividing said group of incoming bits into a first subgroup of bits, a second subgroup of bits, and a third subgroup of bits,

(ii) means for receiving said second subgroup of bits, for appending at least one bit to said second subgroup of bits, and generating therefrom at least two magnitude manipulation vectors;

(iii) means for receiving said third subgroup of bits and generating at least one integer value therefrom,

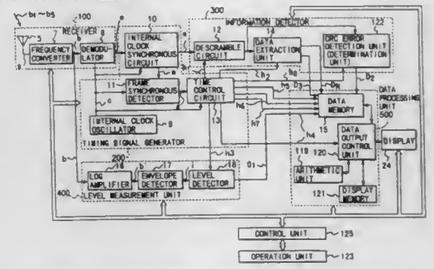
(iv) point selector means for receiving said at least two magnitude manipulation vectors and said at least one integer value, and for selecting at least two sequences of at least one indication of a constellation point each from said at least one PAM constellation, and

(v) a shaping selector means for receiving said at least two sequences and for receiving at least one sign vector which is a function of said first subgroup of bits, said shaping selector means for selecting for output one combination from at least two combinations of said sequences and sign vector.

5,825,817
RADIO WAVE MEASURING APPARATUS FOR DIGITAL COMMUNICATION SYSTEM

Takanori Tanaka, Atsugi; Yasuhiko Shimura, Hadano, and Hirokazu Yanagawa, Hiratsuka, all of Japan, assignors to Anritsu Corporation, Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 504,736
Claims priority, application Japan, Jul. 22, 1994, 6-170858; Sep. 19, 1994, 6-222313
Int. Cl.[6] H04J *3/00*
U.S. Cl. 375—228 **27 Claims**



1. A radio wave measuring apparatus for measuring field intensities of radio waves to be measured including a plurality of burst waveform signals modulated by digital data signals, which are sequentially transmitted time-divisionally from a plurality of base stations and contain transmission source base station information, comprising:

a receiver having a digital data signal demodulator for receiving the radio waves and demodulating the digital data signals;

a timing signal generator for generating timing signals for extracting the transmission source base station information in synchronism with the burst waveform signals, in accordance with the radio waves received by said receiver;

an information detector for receiving the digital data signals output from said digital data signal demodulator and the timing signals output from said timing signal generator and detecting received information containing the transmission source base station information of the burst waveform signals;

a level measurement unit for detecting field intensities of the burst waveform signals contained in the radio waves received by said receiver; and

a data processing unit for outputting the field intensities of the burst waveform signals detected by said level measurement unit and the transmission source base station information detected by said information detector in a one-to-one correspondence with each other, on the basis of the timing signals from said timing signal generator.

5,825,818
APPARATUS AND METHOD OF RECOVERING A TIMING SIGNAL IN A TRANSMISSION APPARATUS BY ADJUSTING TAP COEFFICIENTS

Takashi Kaku, and Ryoji Okita, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

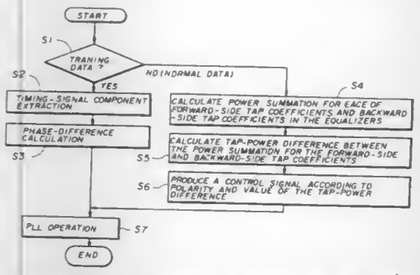
Filed Apr. 8, 1996, Ser. No. 629,382
Claims priority, application Japan, Jun. 8, 1995, 7-141672
Int. Cl.[6] H04L *7/02;25/03;27/227;27/01*
U.S. Cl. 375—232 **8 Claims**

8. A method of recovering a timing signal from a received signal in a transmission apparatus comprising the steps of:

(a) processing a received signal with a first signal, said received signal having being processed with a timing signal at a transmission site;

(b) equalizing a processed signal provided in step (a) and adjusting tap coefficients in an equalizer so as to eliminate distortion in said processed signal;

(c) detecting a distribution of the tap coefficients adjusted in said equalizer including a step of calculating tap-power difference



between a power summation of forward-side tap coefficients and a power summation of backward-side tap coefficients; and

(d) controlling a phase of said first signal according to said distribution of the tap coefficients provided in step (c);

wherein said phase of the first signal is controlled so as to be synchronized with a timing signal component in said received signal.

5,825,819

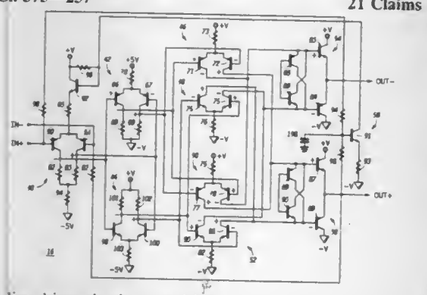
ASYMMETRICAL DIGITAL SUBSCRIBER LINE (ADSL) LINE DRIVER CIRCUIT

Onis Cogburn, Del Valle, Tex., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 23, 1996, Ser. No. 636,359

Int. Cl.[6] H04B *3/00*

U.S. Cl. 375—257 **21 Claims**



1. A line driver circuit, comprising:

a first differential amplifier having a first input terminal for receiving a first input signal, a second input terminal for receiving a second input signal, a first output terminal, and a second output terminal;

a second differential amplifier having a first input terminal coupled to the second output terminal of the first differential amplifier, a second input terminal coupled to the first output terminal of the first differential amplifier, a first output terminal, and a second output terminal;

a third differential amplifier having a first input terminal coupled to the second output terminal of the first differential amplifier, and a second input terminal coupled to the first output terminal of the first differential amplifier, a first output terminal, and a second output terminal;

a first differential pair having a first input terminal coupled to second output terminal of the second differential amplifier, a second input terminal coupled to the first output terminal of the second differential amplifier, a first output terminal, and a second output terminal;

a second differential pair having a first input terminal coupled to the second output terminal of the third differential amplifier, a second input terminal coupled to the first output terminal of the third differential amplifier, a first output terminal, and a second output terminal;

a third differential pair having a first input terminal coupled to the second output terminal of the second differential amplifier, a second input terminal coupled to the first output terminal of the second differential amplifier, a first output terminal, and a second output terminal;

a fourth differential pair having a first input terminal coupled to the second output terminal of the third differential amplifier, a second input terminal coupled to the first output terminal of the third differential amplifier, a first output terminal, and a second output terminal;

a first driver portion having a first input terminal coupled to both the second output terminal of the first differential pair and the second output terminal of the third differential pair, and a second input terminal coupled to both the second output terminal of the second differential pair and the second output terminal of the fourth differential pair, and an output terminal for providing a first output signal; and

a second driver portion having a first input terminal coupled to both the first output terminal of the first differential pair and the first output terminal of the third differential pair, and a second input terminal coupled to both the first output terminal of the second differential pair and the first output terminal of the fourth differential pair, and an output terminal for providing a second output signal.

5,825,820

WAVEFORM SHAPING METHOD AND EQUIPMENT

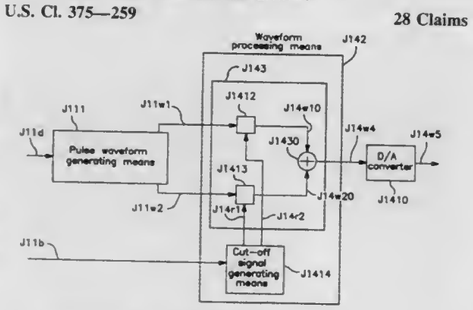
Yoshio Urabe, Ibaraki; Shouichi Koga, Fukuoka-ken; Hitoshi Takai, Osaka; Koji Kai, Iizuka, and Hidetoshi Yamasaki, Amagasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 23, 1994, Ser. No. 264,616

Claims priority, application Japan, Jun. 25, 1993, 5-154776; Sep. 8, 1993, 5-223292; Feb. 7, 1994, 6-013760

Int. Cl.[6] H04L *27/00*

U.S. Cl. 375—259 **28 Claims**



1. A waveform shaping equipment comprising:

pulse waveform generating means for receiving a data string, and generating and providing a first waveform which is a first half of a bandlimited pulse waveform corresponding to each one of symbols for the data string and a second waveform which is a second half of the band-limited pulse waveform, and

waveform processing means for adding the first waveform and the second waveform to generate a third waveform as a shaped waveform, with the first waveform being provided at the start of the data string to be transmitted, the second waveform being provided at the end of the data string to be transmitted, wherein the first and second waveforms define one symbol time.

5,825,821

HITLESS SWITCH DEVICE AND METHOD OF SWITCHING BETWEEN DIFFERENT PATHS

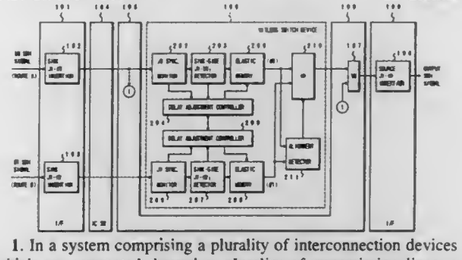
Keiichi Okuyama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 11, 1996, Ser. No. 613,850

Claims priority, application Japan, Mar. 10, 1995, 7-050754

Int. Cl.[6] H04K *1/10;* **H04L** *27/28*

U.S. Cl. 375—260 **12 Claims**



1. In a system comprising a plurality of interconnection devices which are connected through a plurality of transmission lines, a method for switching a first path formed in a first transmission line to a second path formed in a second transmission line, comprising the steps of:

at a first interconnection device which is in an active state:

receiving an input digital signal;

inserting sink-side identification data into a predetermined field of a frame of the input digital signal to produce a digital signal including the sink-side identification data;

branching the digital signal including the sink-side identification data into first and second digital signals each including the sink-side identification data; and

transferring the first and second digital signals to a second interconnecting device through the first and second paths, respectively;

at the second interconnection device:

receiving the first and second digital signals from the first interconnection device through the first and second paths, respectively;

checking whether the sink-side identification data is included in the first and second digital signals;

adjusting a phase difference between the first and second digital signals based on data of the predetermined field of a frame of each of the first and second digital signals such that the first and second digital signals coincide in phase with each other; and

switching from the first path to the second path when the first and second digital signals coincide in phase with each other.

5,825,822

Patent Not Issued For This Number

5,825,823

PCM CHANNEL DIAGNOSIS

Yuri Goldstein, and Yuri Okunev, both of Southbury, Conn., assignors to General DataComm, Inc., Middlebury, Conn.

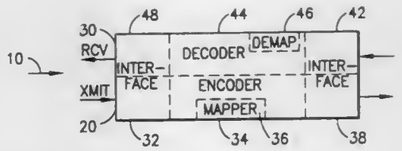
Filed Jun. 6, 1997, Ser. No. 870,684

Int. Cl.[6] H04L *25/49*

U.S. Cl. 375—286 **19 Claims**

1. A method of probing the state of a telecommunications channel, comprising:

a) generating at a transmitter a two-level or three-level probing signal, said two-level or three-level probing signal having a first μ-law level over a first frame and a second μ-law level over a second frame;



b) detecting at a receiver the two-level or three-level probing signal; and

c) determining at the receiver the presence and order of RB-signaling and PAD attenuation, and the amount of PAD attenuation by comparing indications of transforms of the detected probing signals to a plurality of threshold values.

5,825,824

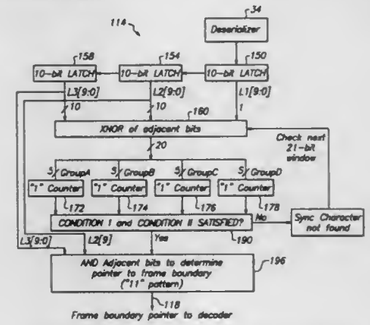
DC-BALANCED AND TRANSITION-CONTROLLED ENCODING METHOD AND APPARATUS

Kyeongho Lee, Mapo-Gu, and Deog-Kyon Jeong, HyoJaChon, both of Rep. of Korea, assignors to Silicon Image, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 539,816, Oct. 5, 1995. This application Mar. 27, 1996, Ser. No. 622,810

Int. Cl.[6] H04L *25/34;* **H04J** *3/24;* **H03M** *5/00*

U.S. Cl. 375—292 **17 Claims**



1. A method for producing a DC-balanced sequence of characters from an input sequence of 8 bit data blocks, said method including the steps of:

selectively complementing bits in said 8 bit data blocks in accordance with a number of logical signals of predefined type in each said 8 bit data block in order to produce selectively complemented data blocks;

determining a cumulative disparity in the number of logical values of different type included within ones of said selectively complemented data blocks previously encoded into ones of said characters;

determining a current disparity in a candidate character associated with a current one of said selectively complemented data blocks being encoded; and

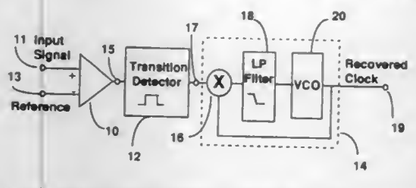
assigning said candidate character to said current one of said selectively complemented data blocks if said current disparity is of a polarity opposite to a first polarity of said cumulative disparity, and assigning the complement of said candidate character to said current one of said selectively complemented data blocks if said current disparity is of said first polarity.

5,825,825

METHOD OF PROCESSING MULTI-LEVEL SIGNALS FOR SIMPLE CLOCK RECOVERY

Michael Altmann, Sacramento, Calif., and Bernard Guay, Montreal, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 17, 1996, Ser. No. 715,218
Int. Cl.[6] H04L 25/49
U.S. Cl. 375—293 8 Claims



1. A circuit for clock recovery from an M-ary signal, where M is the number of levels taken by said M-ary signal, comprising:

a comparator for receiving said M-ary signal and one predetermined reference level and providing a two-level signal, said two-level signal assuming a first level whenever an amplitude of said M-ary signal is higher than said reference level and assuming a second level whenever the amplitude of said M-ary signal is lower than said reference level, such that said two-level signal comprises information on less than all transitions in said M-ary signal;

a transition detector for receiving said two-level signal and providing a pseudo-clock signal; and

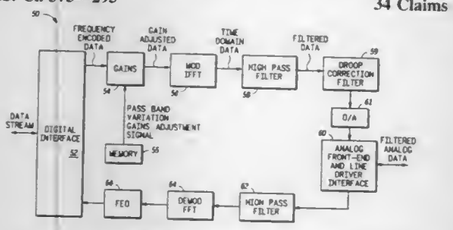
a phase locked loop circuit for generating a recovered clock signal synchronized with said pseudo-clock signal.

5,825,826

METHOD AND APPARATUS FOR FREQUENCY DOMAIN RIPPLE COMPENSATION FOR A COMMUNICATIONS TRANSMITTER

Michael R. May, and Carlos A. Greaves, both of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 30, 1996, Ser. No. 724,097
Int. Cl.[6] H04L 27/04;27/12;27/20
U.S. Cl. 375—295 34 Claims



1. A transmitter for providing a filtered data stream, comprising:

an interface circuit for receiving a data stream and for generating a frequency encoded data stream; and

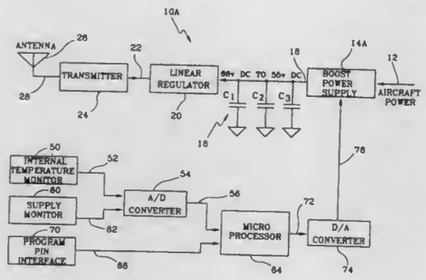
a gain circuit coupled to the interface circuit for receiving the frequency encoded data stream, the gain circuit scaling the frequency encoded data stream by a scale factor to create an adjusted data stream, wherein the scale factor generates a desired passband variation in the filtered data stream.

5,825,827

DYNAMICALLY COMPENSATED LINEAR REGULATOR FOR PULSED TRANSMITTERS

James R. Troxel, Glendale, and Paul W. Schwerman, Phoenix, both of Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 21, 1995, Ser. No. 560,259
Int. Cl.[6] H04K 1/02
U.S. Cl. 375—296 15 Claims



1. In a pulsed transmitter system having a power source, a capacitance bank connected to the power source, a linear regulator connected to the capacitance bank and a transmitter connected to the linear regulator, the improvement comprising;

a temperature sensor positioned to sense the temperature of the capacitance bank and produce an output signal indicative thereof;

a processor to receive the signal from the temperature sensor and produce a modification signal in accordance with the temperature; and

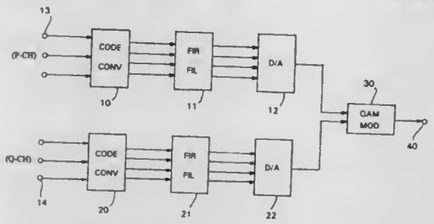
a circuit connected to the power source to receive the modification signal and to alter the output of the power source in accordance with the temperature sensed.

5,825,828

METHOD AND APPARATUS FOR MULTI-LEVEL QUADRATURE AMPLITUDE MODULATION

Eisaku Sasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 11, 1996, Ser. No. 678,100
Claims priority, application Japan, Jul. 12, 1995, 7-175981
Int. Cl.[6] H04L 27/36
U.S. Cl. 375—298 6 Claims



1. A method for modulating input data of different input bit members for each orthongonal channel by a plurality of multi-level quadrature amplitude modulations, comprising the steps of:

converting said input data into output data having the same bit number based on a prescribed conversion rule for each orthogonal channel;

filtering said converted output data by a digital filter;

converting an output of said digital filter into an analog signal by a D/A converter; and

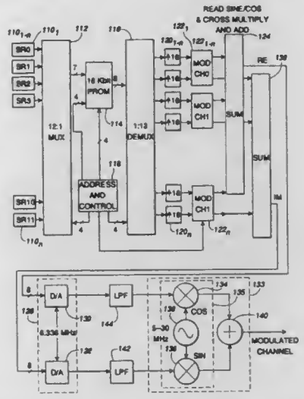
modulating said analog signal by a quadrature modulator.

5,825,829

MODULATOR FOR A BROADBAND COMMUNICATIONS SYSTEM

Ramin Borazjani, and Kevin Lee Miller, both of Lawrenceville, Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Filed Jun. 30, 1995, Ser. No. 497,458
Int. Cl.[6] H04L 27/20; H04J 1/00; H04H 1/08
U.S. Cl. 375—308 39 Claims



5. In a bidirectional communications system comprising a plurality of customer interface unite (CIU), each defining a destination for incoming data and an origin for outgoing data and including a multi-channel modulator for generating modulated signals within discrete increment channels of a frequency band of the bidirectional communications system by modulating assigned carriers for a plurality of upstream channels with a outgoing data, the multi-channel modulator comprising;

filter, responsive to in-phase (I) signal components and quadrature (Q) signal components of the outgoing data, for filtering the I signal components and the Q signal components to generate filtered I and Q signal components;

a plurality of channel modulators, each of the channel modulators responsive to the filtered I and Q signal components for modulating a selected one of the assigned carriers for the plurality of upstream channels with the outgoing data to produce a complex modulated signal having a real signal component and an imaginary signal component;

an adder module, responsive to the complex modulated signal generated by each of the channel modulators, for summing the real signal component of each channel modulator to produce a real resultant signal and for summing the imaginary signal component of each channel modulator to produce an imaginary resultant signal;

a digital-to-analog converter (DAC) module for converting the real resultant signal and the imaginary resultant signal to analog signals; and

a transmitter, responsive to the analog signals, for transmitting the modulated signals within the discrete increment channels.

5,825,830

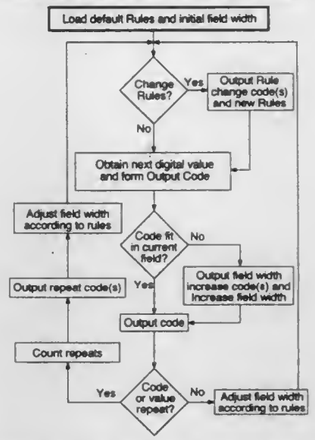
METHOD AND APPARATUS FOR THE COMPRESSION OF AUDIO, VIDEO OR OTHER DATA

David A. Kopf, Rte. 3, Box 347, Pittsboro, N.C. 27312

Filed Aug. 17, 1995, Ser. No. 516,383
Int. Cl.[6] H04B 1/66
U.S. Cl. 375—340 20 Claims

14. A circuit, comprising processing means for compressing a sequential stream of digital input values by converting input data into input values and then into binary, digital channel codes in a plurality of fields, so that in the absence of any explicit additional channel codes or rules which specify the field width to be used for

General Variable-bit-field DAX Encoder



the next channel code, the field width comprising the number of binary digits in the channel code depends exclusively and implicitly on both the preceding input value and the field width of the channel code for the preceding input value.

5,825,831

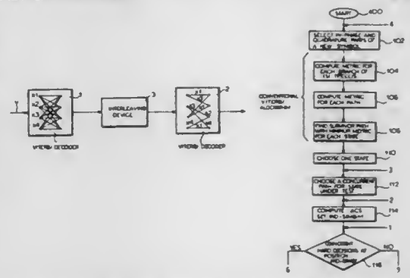
Patent Not Issued For This Number

5,825,832

METHOD AND DEVICE FOR THE RECEPTION OF SIGNALS AFFECTED BY INTER-SYMBOL INTERFACE

Valter Benedetto, Fiano, Italy, assignor to Cselt- Centro Studi E Laboretori Telecomunicazioni S.P.A., Torino, Italy

Filed Dec. 26, 1995, Ser. No. 578,032
Claims priority, application Italy, Feb. 17, 1995, TO95A0114
Int. Cl.[6] H03D 1/00; H04L 27/06
U.S. Cl. 375—341 8 Claims



5. A device for the reception of digital signals which have undergone a coded modulation representable by means of a trellis diagram and are transmitted on a channel with memory, so that a received digital signal is affected by inter-symbol interference, comprising:

a first Viterbi decoder which receives said digital signal and generates, starting from it, a respective soft output (S_{pk}, S_{qk}) including, for each symbol, a pair of components comprising a decision on a transmitted symbol ($\hat{U}_{pk}$, $\hat{U}_{qk}$) and a reliability parameter (L_{pk}, L_{qk}), said first Viterbi decoder taking into account the memory effect of such channel, and a second Viterbi decoder fed with said soft output, said second Viterbi

decoder taking into account said coded modulation, said first Viterbi decoding step including the following operations:

determining the reliability parameter of the most recent received symbol;

searching a path with a best metric within a trellis of the first Viterbi decoding step;

for any other path of said trellis which leads to a state under examination and for any position within a decision interval, comparing respective hard decisions and proceeding in such a way that:

i) if the hard decisions on the two paths coincide, new reliabilities of the symbol belonging to the survivor path are defined, and

ii) if the hard decisions on the two paths do not coincide, the reliability parameters related to a direction along which the two decisions do not coincide are updated; and

obtaining a best survivor path and identifying the hard decision and the respective reliability parameter value associated with it.

5,825,833

DIGITAL AND ANALOG RECEPTION APPARATUS

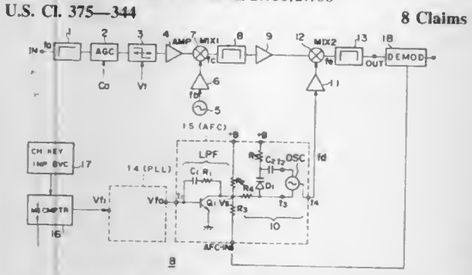
Yoichi Sakaue, Kanagawa, Japan, assignor to Mitsumi Electric Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,183

Claims priority, application Japan, Jan. 31, 1995, 7-034436

Int. Cl.[6] H04L *27/00;27/06*

U.S. Cl. 375—344 **8 Claims**



1. A digital and analog reception apparatus, comprising:

an input terminal for receiving a reception signal, being either of an analog signal and a digital signal, having an input frequency;

a first local oscillator for supplying a first local oscillation signal having a first local frequency;

a first mixer for obtaining a first intermediate frequency as a first beat signal having the frequency difference between the input frequency of the reception signal received at said input terminal and the first local frequency of the first local oscillation signal supplied from said first local oscillator, by mixing these signals;

an automatic frequency controller (AFC) having a low-pass filter unit (LPF), a second local oscillator connected to the output side of said low-pass filter unit (LPF) for supplying a second local oscillation signal having a second local frequency, and an AFC signal input for receiving an AFC signal for controlling said second local oscillator;

a phase-locked loop (PLL) connected to said automatic frequency controller;

control means for controlling an output from said phase-locked loop (PLL) in accordance with an analog/digital distinction of the reception signal, thereby selecting either one of the operations of an input of the AFC signal into said AFC signal input and an activation of said low-pass filter unit (LPF);

a second mixer for obtaining a second intermediate frequency as a second beat signal having the frequency difference between the second local frequency of the second local oscillation signal supplied from said second local oscillator and the first intermediate frequency of the first beat signal supplied from said first mixer, by mixing these signals; and

an output terminal for extracting an output from said second mixer.

5,825,834

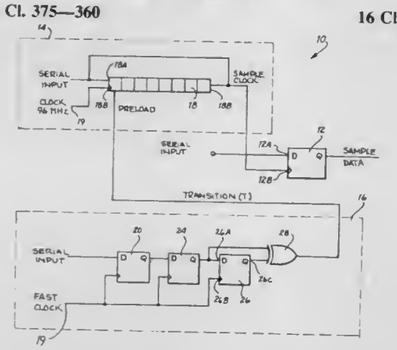
FAST RESPONSE SYSTEM IMPLEMENTING A SAMPLING CLOCK FOR EXTRACTING STABLE CLOCK INFORMATION FROM A SERIAL DATA STREAM WITH DEFINED JITTER CHARACERISTICS AND METHOD THEREFOR

Peter Chambers, Scottsdale, and David Ross Evoy, Tempe, both of Ariz., assignors to VLSI Technlogy, Inc., San Jose, Calif.

Filed Oct. 13, 1995, Ser. No. 542,856

Int. Cl.[6] H04L *7/033*

U.S. Cl. 375—360 **16 Claims**



12. A method for providing a fast response system for extracting stable clock information from a serial data stream with defined jitter characteristics comprising the steps of:

providing flip flop means for receiving said serial data stream and for outputting said stable clock information; and

sending a sampling clock signal which reflects a center area of each bit period in said serial data stream when a transition occurs in said serial data stream;

said step of sending said sampling clock signal further comprising the steps of:

providing state machine means coupled to said flip flop means for sending said signal which reflects said center area of each of said bit periods in said serial data stream when said transition occurs in said serial data stream; and

providing sampling circuit means coupled to said state machine means for producing a pulse signal which is sent to said state machine means to signal said state machine means when said transition occurs in said serial data stream;

wherein said serial data stream has a nominal bit rate of 12 Mbits/second; and

wherein said step of providing said state machine means further comprises the step of providing an eight bit shift register having an output coupled to said flip flop means and to an input of said eight bit shift register, said eight bit shift register further being coupled to a fast clock that is set at eight times said bit rate of said serial data stream, said eight bit data shift register being parallel loaded with a pattern of 0 0 1 1 1 1 0 0 to produce a square wave sampling clock, said eight bit shift register being reset with said pattern of 0 0 1 1 1 1 0 0 when said transition in said serial data stream is detected.

5,825,835

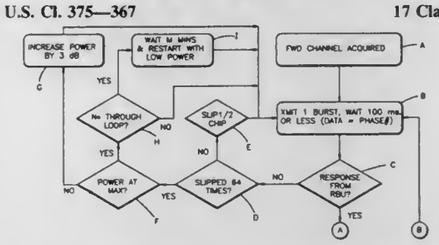
MULTI-USER ACQUISITION PROCEDURE FORMULTIPOINT-TO-POINT SYNCHRONOUS CDMA SYSTEMS

Samuel C. Kingston; Thomas R. Giallorenzi, both of Salt Lake; Robert William Steagall, North Salt Lake, all of Utah, and David Matolak, Herndon, Va., assignors to L-3 Communications Corporation, New York, N.Y.

Filed Feb. 23, 1996, Ser. No. 606,285

Int. Cl.[6] H04L *7/00*

U.S. Cl. 375—367 **17 Claims**



11. A synchronous CDMA communications system using orthogonal pn spreading codes, said synchronous CDMA communications system comprising at least one subscriber unit (SU) and at least one radio base unit (RBU), said synchronous CDMA communications system further comprising apparatus for synchronizing transmission from the SU to the RBU, said apparatus being comprised of:

means in said SU for transmitting individual ones of a plurality of bursts to the RBU, each burst being transmitted with a different pn spreading code timing alignment;

means in said RBU for receiving individual ones of the plurality of bursts and for determining a power estimate of each received burst; and

means, responsive to a determined power estimate of one of the bursts exceeding a threshold, for sending a message from the RBU to the SU, the message indicating that the SU is to use for subsequent transmissions the pn spreading code timing alignment that was employed when transmitting the one of the bursts.

5,825,836

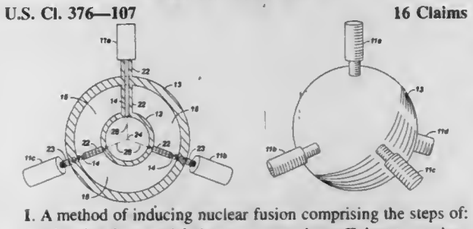
TETRAHEDRAL COLLIDING BEAM NUCLEAR FUSION

D. Lloyd Jarmusch, P.O. Box 677, Kilauea, Hi. 96754

Filed Feb. 19, 1997, Ser. No. 802,666

Int. Cl.[6] G21B *1/02*

U.S. Cl. 376—107 **16 Claims**



1. A method of inducing nuclear fusion comprising the steps of:

accelerating four particle beams to energies sufficient to produce fusion upon collision, and

colliding said four particle beams simultaneously, at fusion producing relative energies of approach, at a single collision reaction zone, in high vacuum, and

colliding said four particle beams at predetermined energies, currents and current densities, such that the force vector of any particle beam impacting the collision reaction zone is substantially equal in magnitude and opposite in direction to the sum of the force vectors of all other particle beams impacting the collision reaction zone, and

colliding said four particle beams so that for each half of space defined by any plane that contains the center of said collision reaction zone at least one of said particle beams does not lie in said plane and approaches the collision reaction zone from that half of space, and at least one other of said four particle beams also does not lie in said plane, and approaches the collision reaction zone from the other half of space defined by said plane,

whereby said four particle beams collide at angles such that the Coulomb repulsion of the impacting particle beams forms a trap or funnel-like Coulomb field matrix that tends to guide the particles to the center of said collision reaction zone, and whereby the kinetic energy of said particles tends to force said particles to fuse.

5,825,837

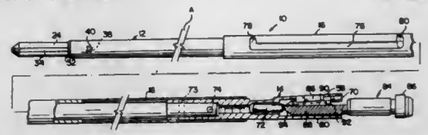
EXTRACTION TOOL FOR PARTIAL LENGTH FUEL RODS IN NUCLEAR FUEL ASSEMBLIES

William C. Peters, Wilmington; Harold B. King, Wrightsville Beach, and David G. Smith, Leland, all of N.C., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 11, 1996, Ser. No. 613,663

Int. Cl.[6] G21C *19/105*

U.S. Cl. 376—261 **10 Claims**



1. An extraction tool for removing a fuel rod from a fuel bundle assembly, wherein the fuel rod has an upper end plug, the tool comprising:

an extension rod having a pair of gripper jaws mounted at one end thereof, said gripper jaws shaped and sized to engage the upper end plug; and

a locking tube slidably received over said extension rod and engageable with said gripper jaws to lock said gripper jaws to the upper end plug, wherein said extension rod and said locking tube include cooperable, engageable elements which permit the extension rod and locking tube to be rotated together, and further wherein said cooperable engageable elements include a slot in said locking tube and at least one pin on said extension rod projecting into said slot.

5,825,838

REACTOR FLOODING SYSTEM FOR A RETAINING MOLTEN CORE MATERIALS IN A REACTOR VESSEL BY THE IMPROVED EXTERNAL VESSEL COOLING CAPABILITY

Park Jae-Hong, and Lee Jong-In, both of Daejeon-Si, Rep. of Korea, assignors to Korea Institute Of Nuclear Safety, Daejeon-Si, Rep. of Korea

Filed Mar. 27, 1996, Ser. No. 622,785

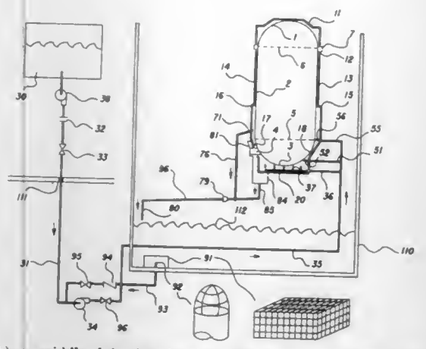
Claims priority, application Rep. of Korea, Aug. 8, 1995, 1995 24373

Int. Cl.[6] G21C *9/00*

U.S. Cl. 376—299 **15 Claims**

1. A device for flooding a spherical lower head of a reactor vessel, for draining hot water heated from outside of the lower head into either a cavity floor or suction of a liquid eductor, and for assisting to retain molten core material in the reactor vessel by external vessel cooling, the device comprising:

a) a lowest injection header, which has injection nozzles, located at an annulus gap between the spherical lower head of the reactor vessel and a thermal insulator for injecting subcooled water onto a bottom of the reactor vessel and for flooding the lower head;



b) a middle injection header, which has injection nozzles, located at the annulus gap below shear keys of the lower head and the thermal insulator for injecting the subcooled water onto a middle of the lower head and for flooding the lower head;

c) a top injection header, which has injection nozzles, located at the annulus gap between an equator level of the lower head and the thermal insulator for injecting the subcooled water onto a lower side of a reactor cylindrical wall and for flooding the lower head;

d) an upper discharge loop, in which suction holes are installed at a discharge suction header, located above the lower head equator level, for draining hot water heated from outside of the lower head into one of the cavity floor and the liquid eductor; and

e) a lower discharge loop, which has water leakage collectors, located outside of the thermal insulator opening at the shear keys of the lower head for draining the hot water heated from the outside of the lower head into one of the cavity floor and the liquid eductor.

5,825,839

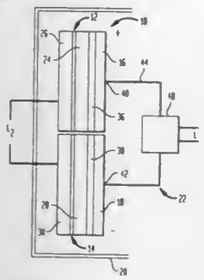
METHOD AND APPARATUS FOR CONVERTING RADIOACTIVE MATERIALS TO ELECTRICAL ENERGY

Paul T. Baskis, 723 Galaxy St., Rantoul, Ill. 61866

Filed Mar. 5, 1996, Ser. No. 610,891

Int. Cl.[6] G21H *1/00*

U.S. Cl. 376—320 **12 Claims**



7. A battery comprising:

radioactive material emitting alpha particles and beta particles therefrom;

a grid defining a first medium positioned proximate the radioactive material, the alpha particles being captured in the first medium and positively charging the first medium; and,

a container encasing the radioactive material and the grid, and being insulated from the radioactive material and the grid, the container having an inside surface plated with a conductor defining a second medium,

the beta particles passing through the grid and being captured in the second medium and negatively charging the second medium,

the container being filled with water of a sufficient density to ensure the alpha particles are captured in the grid and the beta particles are captured in the container,

an electrical potential being generated between the first and second mediums;

a first lead and a second lead each having a first and second end, the first end of the first lead being connected to the first medium and the first lead of the second lead being connected to the second medium, the electrical potential being between the second ends of the two leads;

an electrical load connected between the first and second leads for permitting the beta particles captured by the container to travel from the second medium, through the second lead, the load and the first lead and to the first medium, the alpha particles in the first medium capturing electrons from the water and from the second medium to produce helium, the electrons captured from the water being replaced by the beta particles from the second medium; and

a conduit passing through the container for transporting the helium produced to a cryogenic system adapted for liquefying the helium.

5,825,840

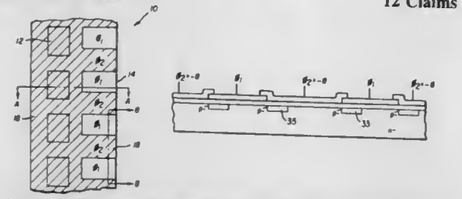
INTERLINE SENSOR EMPLOYING PHOTOCAPACITOR GATE

Constantine N. Anagnostopoulos, Mendon, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1996, Ser. No. 636,434

Int. Cl.[6] G11C *19/28*; **H01L** *27/148*;*29/768*

U.S. Cl. 377—60 **12 Claims**



1. An interline sensor constructed to operate in a uniphase mode comprising:

at least one vertical shift register arranged as a two phase vertical shift register, the vertical shift register having means for applying a first potential level and a second potential level;

a plurality of photodetectors adjacent the vertical shift register;

a barrier region between each photodetector and the vertical shift register;

single phase means for allowing the transfer of charge from the photodetectors to the vertical shift register in a uniphase mode by holding one of the two phases at a D.C. potential while fluctuating the other phase between a voltage that is sufficiently above and below that D.C. potential to facilitate transfer of charge from one phase to the next; and

at least one horizontal shift register operatively coupled to receive charge from the vertical shift register.

5,825,841

CORRECTION FOR RING-LIKE IMAGE ARTEFACTS

Jan Timmer, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 16, 1997, Ser. No. 895,252

Claims priority, application European Pat. Off., Jul. 30, 1996, 96202151

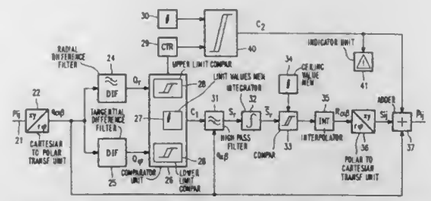
Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—4 **20 Claims**

1. An image processing method, which comprises:

choosing a center in the image,

calculating, in one or more points of the image, a variation of brightness values of the image in the radial direction relative to the center,



calculating, in one or more points of the image, a variation of brightness values of the image in the tangential direction relative to the center, and

deriving corrected brightness values from brightness values of the image and a deviation between the variation in the radial direction and the variation in the tangential direction, said deviation essentially not representing image information.

5,825,842

X-RAY COMPUTED TOMOGRAPHIC IMAGING DEVICE AND X-RAY COMPUTED TOMOGRAPHIC METHOD

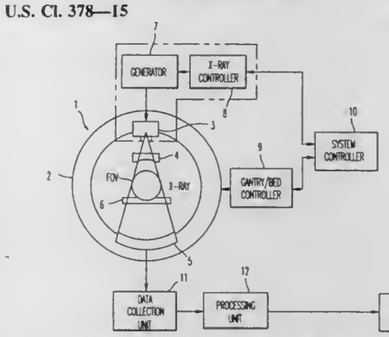
Katsuyuki Taguchi, Otawara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jul. 5, 1996, Ser. No. 675,832

Claims priority, application Japan, Jul. 5, 1995, 7-169963

Int. Cl.[6] A61B *6/03*

U.S. Cl. 378—15 **83 Claims**



1. A computed tomography system, comprising:

an x-ray source;

a detector array having a plurality of detection elements and disposed to receive x-rays emitted from said xray source; and

a projection data circuit connected to said detector array;

a multi-row interpolation circuit connected to said projection data circuit; and

a backprojection circuit connected to said multi-row interpolation circuit.

5,825,843

MEDICAL INSPECTION SYSTEM AND METHOD FOR LOCATING POSITION OF PATIENT'S TABLE

Shigeo Kobayashi, Chiba, Japan, assignor to Sony Corporation, Japan

Continuation of Ser. No. 299,259, Sep. 1, 1994, abandoned. This application Apr. 29, 1996, Ser. No. 638,850

Claims priority, application Japan, Sep. 2, 1993, 5-242027

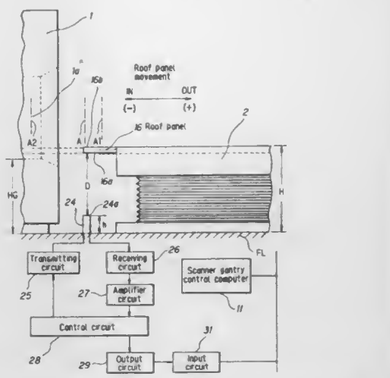
Int. Cl.[6] A61B *6/04*

U.S. Cl. 378—20 **15 Claims**

1. A medical inspection system comprising:

a medical inspection apparatus for medical inspection of a patient, said inspection apparatus including a gantry;

a patient table for supporting the patient thereon and for moving the patient into said medical inspection apparatus gantry; and



a position detector for detecting the movement of said patient table toward said medical inspection apparatus gantry and for issuing a signal indicative of a predetermined portion of said patient table being at a predetermined position located outside of said medical inspection apparatus gantry, and wherein said position sensor senses the height of the patient table.

5,825,844

OPTICAL ARRANGEMENT AND ILLUMINATION METHOD

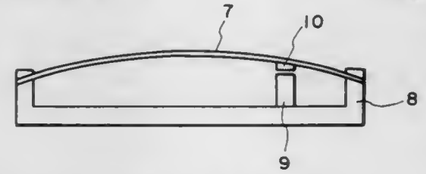
Akira Miyake, Utsunomiya, and Yutaka Watanabe, Takaneza-wamachi, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1996, Ser. No. 620,604

Claims priority, application Japan, Mar. 24, 1995, 7-066012

Int. Cl.[6] G21K *5/00*

U.S. Cl. 378—34 **17 Claims**



12. An illumination method, comprising:

reflecting an X-ray beam using a mirror element;

applying vibrations of a predetermined excitation frequency to the mirror element to produce elastic vibrations to cause deformation of the surface of the mirror element; and

irradiating an object to be illuminated with the reflected X-ray beam.

5,825,845

PROTON BEAM DIGITAL IMAGING SYSTEM

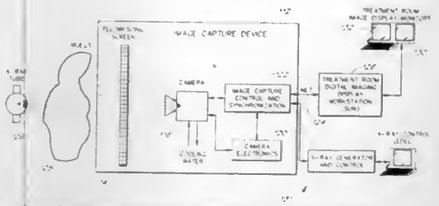
Mark S. Blair, Madison, Wis.; David A. Lesyna, Redlands, Calif.; Pengyue James Lin, Riverside, Calif.; Jagadish P. Samantarai, Moreno Valley, Calif., and Berry B. Yeldell, Yorba Linda, Calif., assignors to Loma Linda University Medical Center, Loma Linda, Calif.

Filed Oct. 28, 1996, Ser. No. 739,512

Int. Cl.[6] A61N *5/10*

U.S. Cl. 378—62 **36 Claims**

1. An imaging system for a proton beam therapy system having a proton source, a beam delivery system with a nozzle that is mounted on a gantry so that said proton beam can be delivered to the patient from a plurality of angles, wherein said proton beam therapy system receives a master prescription image of a region of a patient that is to be treated, said imaging system comprising:



an imaging beam source mounted on said beam delivery system wherein said imaging beam source is movable between a first position, wherein said imaging source can project an imaging beam along a treatment beam path towards a first side of said patient, and a second position wherein said imaging source is removed from said beam path to thereby allow said proton beam to travel along said treatment path;

an imaging beam receiver attached to said gantry so that said receiver is centered about said beam path throughout a plurality of angles of orientation of the gantry wherein said receiver receives said imaging beam after it has passed through a region of the patient that is positioned in said beam path;

an image capture device proximate to said receiver, wherein said image capture device directly receives a non-intensified signal from said receiver and produces a patient orientation image of the region of the patient's body that is positioned in said beam path; and

a controller which receives both said master prescription image and said patient orientation image, wherein said controller is configured so that one or more rigid structures can be designated on said master prescription image so as to define the relative position of an isocenter to be treated in the patient's body with respect to said one or more rigid structures and wherein said controller is also configured so that said one or more rigid structures can be designated on said patient orientation image so that said controller can determine the relative location of the center of said beam line with respect to said one or more rigid structures and wherein said controller using said relative position of said target isocenter and said beam line center with respect to said one or more rigid structures determine the relative movement between the patient and the gantry required so that the position of the center of the beam line with respect to the one or more rigid structures corresponds to the position of the target isocenter with respect to said one or more rigid structures.

5,825,846

NOISE REDUCTION IN AN IMAGE

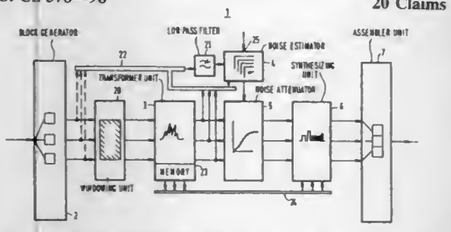
Til Aach, and Dietmar W. Kunz, both of Aachen, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 20, 1996, Ser. No. 770,363

Claims priority, application European Pat. Off., Dec. 21, 1995, 95203590

Int. Cl.[6] H05G *1/64*

U.S. Cl. 378—98 **20 Claims**



1. Method of processing an image comprising deriving spectral coefficients from the image, estimating a noise level of the image, deriving reduced spectral coefficients from said spectral coefficients and the estimated noise level, and synthesizing a processed image from said reduced spectral coefficients, characterized in that the noise level of the image is estimated mainly from the image, and not from any other image.

5,825,847

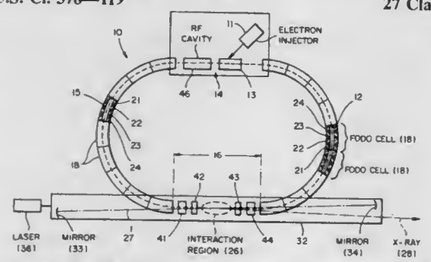
COMPTON BACKSCATTERED COLLIMATED X-RAY SOURCE

Ronald D. Ruth, Woodside, and Zhirong Huang, Stanford, both of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Palo Alto, Calif.

Filed Aug. 13, 1997, Ser. No. 910,816

Int. Cl.[6] H01J *35/14*

U.S. Cl. 378—119 **27 Claims**



1. A Compton backscatter x-ray source in which electrons interact with photons in an interaction region to generate x-rays comprising:

means for providing an intense focused photon pulse to said interaction region at a predetermined frequency; and

a compact electron storage ring for storing and guiding bunched electrons around said ring and directing said bunched electrons to said interaction region at said predetermined frequency, said compact storage ring including means at the entrance to said interaction region for focusing said bunched electrons so that the electron bunch is substantially the same size as focused laser pulses, whereby to provide enhanced interaction between the electron bunch and the laser pulses to effectively cool said bunched electrons and to enhance the x-ray flux.

5,825,848

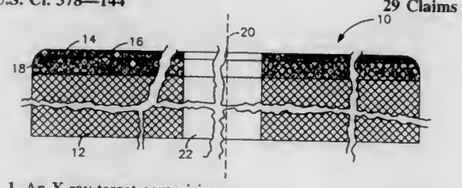
X-RAY TARGET HAVING BIG Z PARTICLES IMBEDDED IN A MATRIX

Gary Fredric Virshup, and Glyn Jeremy Reynolds, both of Cupetino, Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Sep. 13, 1996, Ser. No. 713,550

Int. Cl.[6] H01J *35/08*

U.S. Cl. 378—144 **29 Claims**



1. An X-ray target comprising:

a matrix structure; and

a high Z material, said high Z material being imbedded inside said matrix structure.

5,825,849

LOOP-BACK TEST SYSTEM USING A SUPPRESSED RINGING CONNECTION

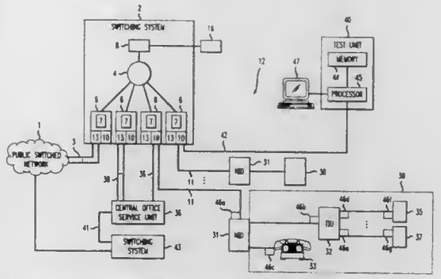
Stuart Mandel Garland, Morton Grove, and David B. Smith, Hinsdale, both of Ill., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Aug. 31, 1995, Ser. No. 522,215

Int. Cl.[6] H04M *1/24;3/08;3/22*

U.S. Cl. 379—5 **27 Claims**

1. A test apparatus for use in a public switched network, comprising:



a switching system having a switch fabric for switching voice and data;

a plurality of local loops connected to said switching system, said switching system selectively routing calls to said plurality of local loops;

a test unit, connected to said switching system, for determining if a problem exists in a one of said plurality of local loops;

means, connected to said switching system, for establishing a suppressed ringing connection through said switch fabric to one of said plurality of local loops;

means, responsive to said switching system establishing a connection from said test unit to said means for establishing a suppressed ringing connection, for interconnecting said test unit to a selected one of said plurality of local loops;

means, located in said test unit for transmitting a test signal to said selected one of said plurality of local loops via said means for establishing a suppressed ringing connection; and

means, located in said test unit, for determining if a problem exists in said local loop based on a response signal returned from said selected one of said plurality of local loops in response to said test signal.

5,825,850

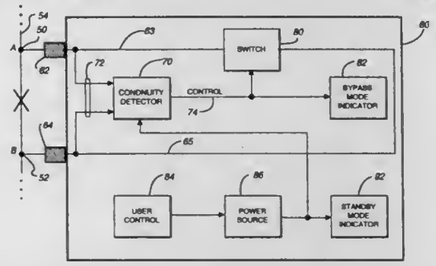
AUTOMATIC BYPASS SWITCH FOR SIGNAL CONDUCTOR

Pavel Bren, and William V. Mallette, both of Rochester, N.Y., assignors to Time Warner Entertainment Co. L.P., Stamford, Conn.

Filed Oct. 2, 1996, Ser. No. 724,911

Int. Cl.[6] H04M *3/42;* **H01H** *31/02*

U.S. Cl. 379—26 **15 Claims**



7. Apparatus for passing a signal between a first point and a second point on an electrical conductor when an electrical discontinuity exists thereon between said first and second points, said apparatus comprising:

a first input terminal connected to said first point on the conductor;

a second input terminal connected to said second point on the conductor;

a continuity detector connected between said first and second input terminals for detecting a continuous electrical connection between said first and second points along the conductor, said continuity detector supplying a bypass control signal indicating when a discontinuity is detected between said first and second points along the conductor;

a switch connected to said first and second input terminals and responsive to said bypass control signal for providing an electrical connection between said first and second input terminals;

a bypass mode indicator for indicating when said switch provides said electrical connection between said first and second input terminals; and

a user switch for selectively supplying a power signal for said continuity detector, said switch, and said bypass mode indicator.

5,825,851

METHOD AND APPARATUS FOR AUTOMATICALLY TRANSFERRING A CALLER TO A SELECTED EXTENSION

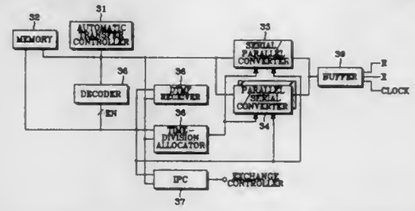
Cheol-Hee Han, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 17, 1996, Ser. No. 668,071

Claims priority, application Rep. of Korea, Jun. 17, 1995, 16185/1995; Nov. 27, 1995, 43980/1995

Int. Cl.[6] H04M *1/64;3/42;1/00;* **H04L** *12/50;* **H04Q** *11/00*

U.S. Cl. 379—67 **3 Claims**



1. An automatic transferring apparatus for an exchange which automatically transfers an office line incoming call to an extension line, said apparatus comprising:

a serial to parallel converter, connected to a switching circuit, for converting received serial vocal data into parallel data;

a memory for directly storing without further conversion said parallel-converted vocal data as a vocal guide message;

a DTMF receiver, connected to said switching circuit, for converting a DTMF signal from the office line into digital data;

a parallel to serial converter for directly converting said parallel vocal data output from said memory into serial vocal data, and for outputting it to said switching circuit;

a time-division allocator for allocating time slot assignments of said serial to parallel converter and said parallel to serial converter;

an interprocessor communication unit IPC, connected to an exchange controller, for receiving a command for automatic transfer; and

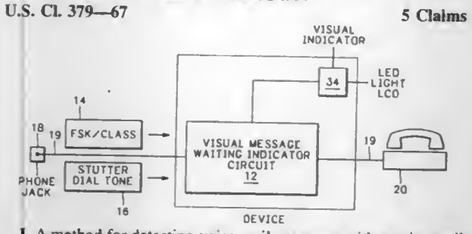
an automatic transfer controller for controlling said memory in a recording mode to thereby store said parallel-converted vocal data as a vocal guide message, said controller outputting said vocal guide message by controlling said memory in an automatic transfer mode, and said controller outputting a received DTMF signal from the office line to said exchange controller as an extension number, said exchange controller connecting the office line incoming call to an extension line corresponding to the extension number.

5,825,852

MULTISENSING CIRCUITRY FOR CLASS SIGNALS AND STUTTER DIAL TONE IN VISUAL MESSAGE WAITING INDICATOR

Paul F. DePond, San Mateo; Gaylan Larson; Greg Neal, both of San Jose, and David Yewell, Los Altos Hills, all of Calif., assignors to Notify Corporation, San Jose, Calif.

Filed Jul. 24, 1996, Ser. No. 685,750
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **5 Claims**



1. A method for detecting voice mail messages with a voice mail message waiting indicator coupled to a telephone line receiving the voice mail messages from a central location, comprising:

enabling the voice mail message waiting indicator to electronically monitor the telephone line for a stutter dial tone that identifies voice mail message status by simulating an off-hook condition in the telephone line and electronically detecting the stutter dial tone while the telephone line is in the simulated off-hook condition;

enabling the voice mail message waiting indicator to also electronically monitor the telephone line for a CLASS signal that identifies voice mail message status while the telephone line is in an on-hook condition, the CLASS signal automatically detected on the telephone line without acknowledging activation of the voice massage waiting indicator to the central office;

activating a visual indicator when the voice message waiting indicator detects one of the stutter dial tone and the CLASS signal, the visual indicator visually identifying both stutter dial tone identified voice mail messages and also CLASS signal identified voice mail messages without subscribing or acknowledging subscription to an additional visual voice mail waiting indicator service with suppressed ringing; and

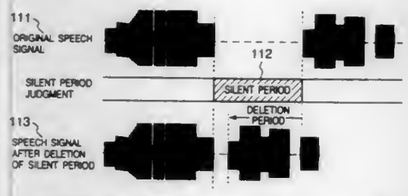
monitoring the telephone line for a triggering event that identifies initiation of a telephone call.

5,825,853

COMMUNICATION DEVICE

Noboru Kojima, Yokohama; Toshiro Kamiuchi, Tokyo; Juichi Morikawa, Tottori, and Yoshito Nejime, Koganei, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 707,506
Claims priority, application Japan, Sep. 7, 1995, 7-230331; Sep. 19, 1995, 7-240056
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **3 Claims**



1. A communication device connected to a communication line, comprising:

response message generation means for sending a preset response message to a speech message dispatcher when a call incomes;

record/reproduction means, after said response message generation means sends said response message to the dispatcher, for recording and reproducing a speech message received from the dispatcher;

input means for inputting user's instruction on reproduction, wherein said record/reproduction means, when instructed by the user through said input means to perform search-reproduction operation, performs its reproducing operation over only respective head parts of all recorded speech messages,

silent-period detection/deletion means for detecting a silent period in the speech message and shortening or removing said silent period; and

speech rate conversion means for performing its speech rate conversion over the speech message, wherein, when reproduced by said record/reproduction means, said speech message is processed by at least one of said silent-period detection/deletion means and said speech-rate conversion means, and wherein said speech-rate conversion means includes speech pitch detection means for extracting a periodic signal waveform from a speech signal as a speech pitch; and

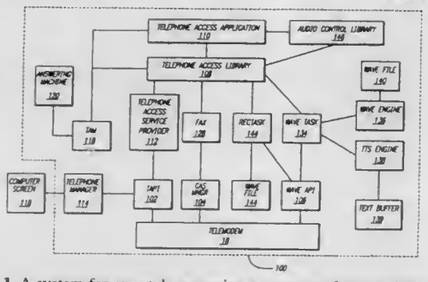
speech pitch number processing means for intermittently removing from original speech data the periodic signal waveform extracted by said speech pitch detection means and for intermittently inserting the periodic signal waveform into the original speech data.

5,825,854

TELEPHONE ACCESS SYSTEM FOR ACCESSING A COMPUTER THROUGH A TELEPHONE HANDSET

James A Larson; Scott Boss; Murali Veeramoney, all of Beaverton; Mike Rosenweig, Portland; Roger Hurwitz, Hillsboro; Scott Colville, Beaverton, all of Oreg., and T. V. Raman, Ithaca, N.Y., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 594,333, Jan. 30, 1996, abandoned, which is a continuation of Ser. No. 385,193, Feb. 6, 1995, abandoned, which is a continuation of Ser. No. 135,018, Oct. 12, 1993, abandoned. This application Jan. 24, 1997, Ser. No. 787,319
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **20 Claims**



1. A system for remotely accessing a computer from a telephone handset that has an input device and an output device, comprising:

a computer to contain electronic mail, a file manager, a voice message, a database and a facsimile;

access means for providing the telephone handset input device access to one of a plurality of audio dialogs through a single phone number, said audio dialogs to access said electronic mail, said file manager, said voice message, said database and said facsimile;

speech means for generating audio messages to be transmitted from the computer to the output device of the telephone handset;

input means for retrieving messages from said electronic mail, retrieving messages from said voice message, retrieving data from said database, or reviewing, saving, and deleting files with said file manager by selecting one of said plurality of audio dialogs and providing responses to queries from said selected audio dialog through the telephone handset input device; and

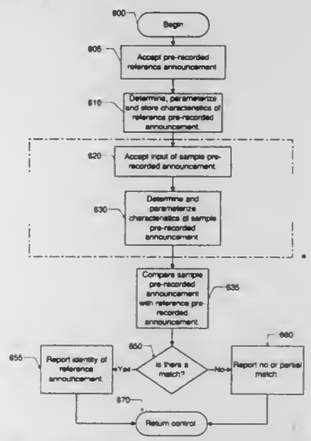
graphic means for selecting one of said audio dialogs through a computer keyboard.

5,825,855

METHOD OF RECOGNIZING PRE-RECORDED ANNOUNCEMENTS

Shaun Astarabadi, Irvine, Calif., assignor to Toshiba America Information Systems, Inc., Irvine, Calif.

Filed Jan. 30, 1997, Ser. No. 790,200
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—67 **37 Claims**



1. A method of recognizing a specific pre-recorded announcement using silence gaps in an end user's computer, the method comprising the steps of:

in a learning phase using the computer to do the following steps:

(a) accepting as input for training a signal representing a reference pre-recorded announcement having at least one silence period to be received;

(b) determining characteristics of a starting point (SP) for a transition from silence to speech in the reference pre-recorded announcement;

(c) determining characteristics of a first voicing segment of the reference pre-recorded announcement;

(d) determining a silence gap length (SGL) for a period of silence following the first voicing segment of the reference pre-recorded announcement;

(e) determining characteristics of a second voicing segment of the reference pre-recorded announcement;

(f) characterizing an end of speech (EOS) of the reference pre-recorded announcement;

(g) storing the characteristics of the SP for the transition from silence to speech in the reference pre-recorded announcement;

(h) storing the characteristics of the first voicing segment of the reference pre-recorded announcement;

(i) storing the SGL for the period of silence following the first voicing segment of the reference pre-recorded announcement;

(j) storing the characteristics of the second voicing segment of the reference pre-recorded announcement;

(k) storing the characteristics of the FOS of the reference pre-recorded announcement;

in a recognition phase using the computer to do the following steps:

(a) accepting as input from the second device for recognition a signal representing a sample prerecorded announcement;

(b) recognizing the SP for the transition from silence to speech in the sample pre-recorded announcement;

(c) determining characteristics of a first voicing segment of the sample pre-recorded announcement;

(d) comparing the characteristics of the first voicing segment of the sample pre-recorded announcement with the stored characteristics of the first voicing segment of the reference pre-recorded announcement;

(e) testing if the characteristics of the first voicing segment of the sample pre-recorded announcement match the stored characteristics of the first voicing segment of the reference pre-recorded announcement, and if so then: comparing the characteristics of the SGL for the period of silence following the first voicing segment of the sample pre-recorded announcement with the stored characteristics of the SGL for the period of silence following first voicing segment of the reference pre-recorded announcement;

(f) testing if the characteristics of the SGL for the period of silence following the first voicing segment of the sample prerecorded announcement match the stored characteristics of the SGL for the period of silence following first voicing segment of the reference pre-recorded announcement, and if so then comparing the characteristics of the second voicing segment of the sample pre-recorded announcement from with the stored characteristics of the second voicing segment of the reference pre-recorded announcement;

(g) testing if the characteristics of the second voicing segment of the sample pre-recorded announcement match the stored characteristics of the second voicing segment of the reference pre-recorded announcement, and if so then recognizing the EOS of the sample announcement; and

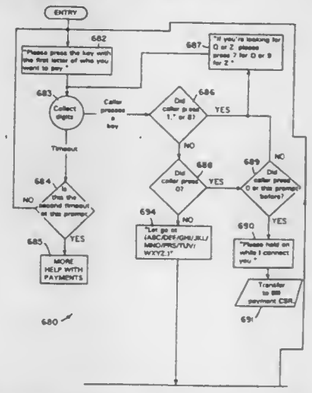
(h) recognizing a match between the sample pre-recorded announcement and the reference pre-recorded announcement.

5,825,856

INTERACTIVE VOICE RESPONSE SYSTEM FOR BANKING BY TELEPHONE

Donna Porter, Tuckahoe, and Lawrence D. Weiss, Skaneateles, both of N.Y., assignors to Citibank, N.A., New York, N.Y.

Continuation of Ser. No. 322,619, Oct. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 220,863, Mar. 31, 1994, abandoned. This application Mar. 20, 1996, Ser. No. 618,723
Int. Cl.[6] H04M *1/64*
U.S. Cl. 379—93.12 **57 Claims**



1. An interactive voice response system that allows a user to conduct financial transactions, including bill payment, by telephone, comprising:

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a first host network connected to at least one financial institution, said financial institution maintaining an account for the user;

means for determining whether the user should be transferred to a second host network comprising:

means for prompting the user to enter a user identifier; means for collecting the user identifier; means for identifying the user based on the user identifier and means for prompting the user to enter a personal identification code, means for collecting the personal identification code, and means for verifying the personal identification code is correct for the user; and means for transferring the user to the second host network when the determination is that the user should be transferred;

means for allowing the user to exchange information concerning the account, including account balance information and fund transfer information, with the first host network by telephone;

means for providing voice prompts that supply information to the user, and request data from the user; said means for providing voice prompts including means for providing voice prompts that present the user with a sequential listing of available transaction options;

means for allowing the user to select any of the plurality of available transaction options by providing an input into the system in response to one of said voice prompts;

wherein one of the available transaction options is bill payment and the system further includes means for allowing the user to select a payee, the means for allowing the user to select a payee including means for providing voice prompts that present the user with a sequential listing of one or more payees from a list of potential payees; and

means for allowing the user to select any payee from the sequential listing of one or more payees by providing an input into the system in response to one of said voice prompts that present the user with a sequential listing of one or more payees from the list of potential payees.

5,825,857

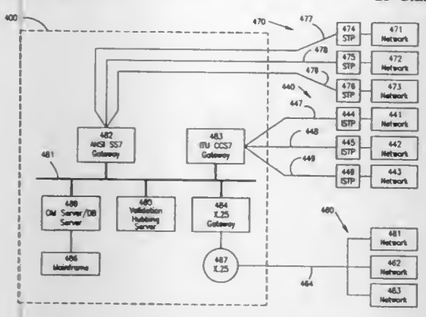
METHOD AND SYSTEM FOR CALLING CARD VALIDATION HUBBING

Luis Reto; Don Turner, both of Plano, Tex.; Timothy Darland, Cedar Rapids, Iowa; Anis Khalil, Plano, Tex.; Cory Lenger, East Moline, Ill., and Amyn Merchant, Plano, Tex., assignors to MCI Communications Corporation, Washington, D.C.

Filed Sep. 13, 1995, Ser. No. 527,560

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—114 **25 Claims**



1. In a telecommunications network using different network protocols and including a gateway for each protocol, a validation server, an operational maintenance server and a processor, a method for automated charge card validation between a card issuer network and a card acceptor network at a central validation hub system, comprising the steps of:

a) receiving an authorization request having a card acceptor network protocol from said card acceptor network at said validation hub system, said authorization request including a calling card number to be validated;

b) translating said card acceptor network protocol authorization request to a card issuer network protocol authorization request in said validation hub system;

c) forwarding said protocol translated authorization request from said validation hub system to said card issuer network;

d) receiving a card issuer network protocol request response from said card issuer network at said validation hub system;

e) translating said card issuer network protocol request response to a card acceptor network protocol request response in said validation hub system; and

f) forwarding said card acceptor network protocol request response from said validation hub system to said card acceptor network.

5,825,858

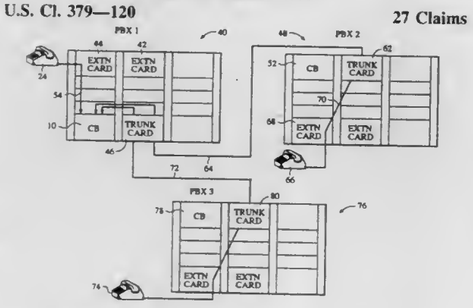
COLLABORATIVE CONFERENCE BRIDGES

Shmuel Shaffer, Palo Alto, and Neufito Fernandes, Cupertino, both of Calif., assignors to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Filed May 1, 1996, Ser. No. 646,754

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—120 **27 Claims**



1. A method of executing a conference call session between parties using at least two nodes having conference-bridging capability, said method comprising steps of:

at a first node, receiving location information indicative of location of each of said parties of said conference call, said first node having a first party of said conference call session as a subscriber;

establishing communication between said first node and at least one second node having conference-bridging capability;

establishing collaboration between said first and second nodes to select which of said first and second nodes is to provide a bridge to connect second and third parties of said conference call session with said first party, including exchanging signal messages between said first and second nodes and including accessing a database of information relevant to preferences in selecting between said first and second nodes; and

in response to said collaboration, bridging said parties into said conference call session, with said bridging occurring at said selected node of said first and second nodes.

5,825,859

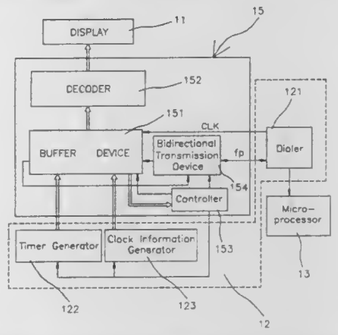
DISPLAY CONTROL DEVICE ALLOWING INFORMATION TRANSMISSION TO BOTH DISPLAY AND DIALER

Chi-Yung Wu, and Rong-Tyan Wu, both of Hsinchu, Taiwan, assignors to Holtek Micro Electronics, Inc., Taiwan

Continuation-in-part of Ser. No. 359,714, Dec. 20, 1994, abandoned, which is a continuation of Ser. No. 214,079, Mar. 16, 1994, abandoned, which is a continuation of Ser. No. 929,864, Aug. 17, 1992, abandoned. This application Jul. 27, 1995, Ser. No. 508,139

Int. Cl.[6] H04M *15/00;1/00*

U.S. Cl. 379—131 **9 Claims**



1. A display control device adapted to be used in a communication apparatus and electrically connection between a data generator including a timer generator, a clock information generator and a dialer, and a display of said communication apparatus for driving said display to show information outputted from said data generator and transmitting said information to said dialer control device comprising:

a buffer device for receiving said information from said data generator and storing therein said information;

a decoder electrically connected to said buffer device for decoding said information stored in said buffer device and outputting said decoded information to said display to be shown;

a bidirectional transmission device electrically connected between said buffer device and said dialer for transmitting a part of said information outputted from said dialer to said buffer device therethrough, and transmitting said information from said buffer device to said dialer when necessary; and

a controller electrically connected to said bidirectional transmission device and said buffer device for controlling a transmission device to said dialer.

5,825,860

LOAD SHARING GROUP OF SERVICE CONTROL POINTS CONNECTED TO A MEDIATION POINT FOR TRAFFIC MANAGEMENT CONTROL

Omayma El-Sayed Mobarram, Ontario, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Mar. 12, 1997, Ser. No. 815,260

Int. Cl.[6] H04M *15/00*

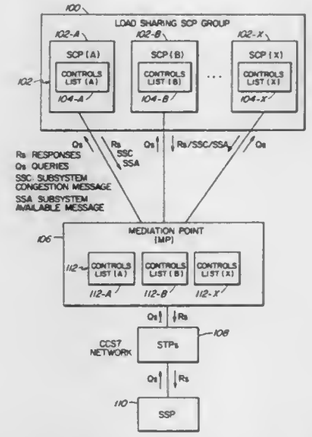
U.S. Cl. 379—133 **16 Claims**

1. In an intelligent telecommunications network having a plurality of service control points (SCPs) forming a load sharing group, a method for managing traffic consisting of queries to the load sharing group, comprising the steps of:

maintaining respective controls lists for the plurality of SCPs, each controls list identifies controls which are active at the corresponding SCP;

sending a query intended for the load sharing group to a mediation point (MP); and

selecting, by the MP which has access to the respective controls lists, a particular SCP of the plurality of SCPs for which the



controls list of the particular SCP does not identify a control relating to the query as being active; and

sending, from the MP, the query to the particular SCP.

5,825,861

TELECOMMUNICATIONS NETWORKS

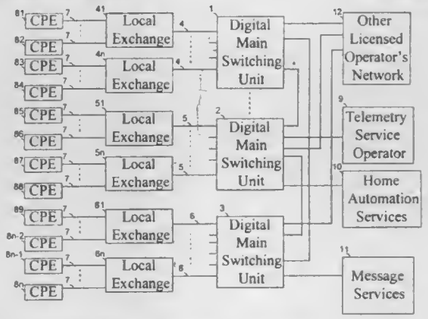
Michael D. Hoy, Suffolk, England, assignor to British Telecommunications plc, London, Great Britain

Filed Jun. 28, 1996, Ser. No. 672,667

Claims priority, application United Kingdom, Mar. 5, 1996, 9604675

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—134 **30 Claims**



1. A telecommunication network comprising:

a plurality of switching units interconnected to provide telephony service to customers connected by respective customer lines to at least some of said switching units;

at least one service platform connected to the network;

some of said customer lines being connected to receive non time critical calls from said at least one service platform;

each of said switching units being allocated a volumetric limit for non time critical calls generated by said at least one service platform, each said switching unit including means responsive to receipt of a non time critical call to determine if said call causes the volumetric limit to be exceeded, and if the volumetric limit is exceeded, to transmit a congestion indication to the at least one service platform which generated the call;

each of said at least one service platforms including means responsive to receipt of a congestion indication to commence a time out determined by multiplying a respective random number (RN) by a weighing factor (W) determine from a

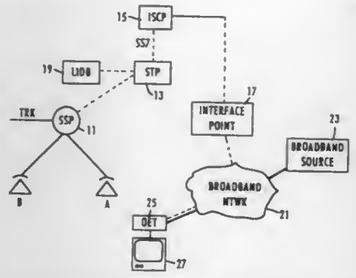
current gapping rate (GR) to produce a value of intercall delay (ICD) which determines a respective period during which the respective service platform offers no non time critical calls to the respective switching unit which generated the congestion indication.

5,825,862

METHOD OF ALTERING THE DESTINATION TELEPHONE NUMBER OF AN INCOMING CALL

Eric A. Voit, Baltimore; Larry W. Sours, Crofton; Lance S. Liptak, Laytonsville, all of Md., and Kenneth E. DePaul, Wake Forest, N.C., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Nov. 30, 1995, Ser. No. 563,399
Int. Cl.[6] H04M *1/56;15/06*
U.S. Cl. 379—142 **46 Claims**



1. A method of processing an incoming narrowband call from a narrowband network to narrowband equipment of a customer receiving services through a broadband network, the method comprising the steps of:

displaying broadband information from said broadband network on broadband premises equipment of said customer connected to said broadband network;

detecting the incoming narrowband call on a call-by-call basis for the narrowband equipment of said customer, and a calling number corresponding to the incoming narrowband call, in a switch of the narrowband network;

sending a query containing the calling number to a services control point;

in response to the query containing the calling number, initiating a data transaction to send data associated with said incoming narrowband call from the services control point to the broadband network;

forwarding said data associated with said incoming narrowband call through an element of the broadband network to the broadband premises equipment of said customer; and

in response to said data associated with said incoming narrowband call, sending a message from the broadband premises equipment of said customer to the services control point indicating instructions for the routing of said incoming narrowband call in accordance with said message.

5,825,863

PREPAID LIMITED USAGE CALLING CARD

Jay S. Walker, Ridgefield, Conn., assignor to Walker Asset Management Limited Partnership, Stamford, Conn.

Filed Jun. 17, 1996, Ser. No. 570,443
Int. Cl.[6] H04M *17/00;15/00*
U.S. Cl. 379—144 **21 Claims**

1. A prepaid calling-card system, comprising:

a switching network connected between a calling telephone station and a called telephone station having a called number;

a call processor connected to said switching network; and

a memory connected to said call processor, said memory storing at least one authorized number, and

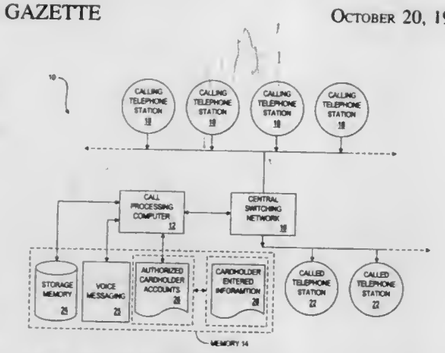
an account associated with said at least one authorized number including a prepaid account balance;

said call processor operative to receive said called number originating from said calling telephone station,

compare said called number against said at least one authorized number and determine if said called number matches said at least one authorized number,

control said switching network, if said called number comprises said at least one authorized number, to complete a call by connecting said calling telephone station to said called telephone station, and

decrement said prepaid account balance based upon said call.

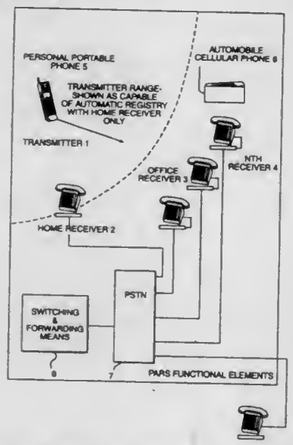


5,825,864

PERSONAL AUTOMATIC REGISTRATION SYSTEM WITH CALL FORWARDING

Thomas F. McGraw, Fairfax; Jeffrey A. Mitulla, Burke, both of Va., and Richard S. Woll, Glen Burnie, Md., assignors to Scientific and Commercial Systems Corporation, Alexandria, Va.

Continuation of Ser. No. 354,827, Dec. 8, 1994, abandoned. This application Jul. 3, 1997, Ser. No. 888,364
Int. Cl.[6] H04Q *7/38*
U.S. Cl. 379—210 **62 Claims**



1. A system to facilitate, through use of a land line public switched telephone network (PSTN), communication with an individual through automatic registration of an associated object which moves with said individual, said system comprising:

a. the object comprising one-way transmitter means for generating an identification signal, wherein the transmitter means continually transmits said identification signal at periodic intervals;

b. a plurality of controllable receiver means for receiving said identification signal, said receiver means being physically independent of said transmitter means, wherein said receiver means is capable of receiving an identification signal from a plurality of said transmitter means;

c. switching and forwarding means further comprising means for cooperating with the PSTN through a PSTN connection to forward the communication to any location accessible through the PSTN having associated therewith one of said plurality of controllable receiver means; and

d. communication means independent of said one-way transmitter means and cooperating with said receiver means for communicating in a wireline mode with any location within the PSTN;

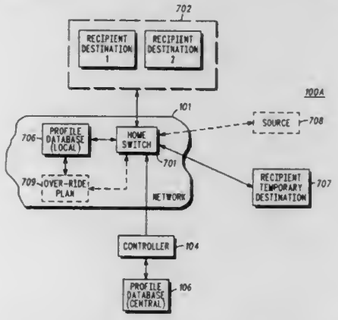
wherein said receiver means cooperates with said communication means and said switching and forwarding means through the PSTN connection.

5,825,865

TEMPORARY MESSAGE ROUTING AND DESTINATION SELECTION

Lewis B. Oberlander, Buffalo Grove, and David E. Morgan, Lisle, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 4, 1991, Ser. No. 771,685
Int. Cl.[6] H04M *3/54*
U.S. Cl. 379—211 **20 Claims**



1. A method for use with a communication system, which communication system includes an information profile for at least one user, which information profile includes at least some user preferences regarding a plurality of different user destinations for the user, such that the communication system will automatically select a destination from amongst a plurality of candidate destinations for a message intended for the user as a function, at least in part, of the information profile, the method comprising the steps of:

A) accessing the communication system via a communication link using a communication device;

B) transmitting from the communication device via the communication link a temporary over-ride instruction to the communication system to temporarily over-ride at least one element in the information profile while retaining the at least one element from the communication system, such that the temporary over-ride instruction can later be automatically replaced by the at least one element.

5,825,866

PRIVATE ELECTRONIC EXCHANGE APPARATUS HAVING A PLURALITY OF EXTENSION TERMINALS AND OFFICE LINE TERMINALS

Shuji Fujitsuka, and Shinichi Honbou, both of Tokyo, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 5,337, Jan. 19, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 485,255
Claims priority, application Japan, Jan. 21, 1992, 4-8370
Int. Cl.[6] H04M *3/42;1/64;3/00*
U.S. Cl. 379—211 **14 Claims**

EXTENSION NUMBER	PHYSICAL PORT NUMBER	LOGICAL PORT NUMBER
1000	00	00
1001	01	01
1002	02	02
⋮	⋮	⋮

701

1. An electronic exchange apparatus comprising:

a plurality of extension circuits having terminals to which a plurality of extension terminals are connected;

a memory table including a memory area for registering a plurality of physical port numbers which correspond to said plurality of extension circuits, a plurality of logical port numbers which correspond to said plurality of physical port numbers, and a plurality of extension numbers which correspond to said plurality of extension circuits;

a control circuit for retrieving one of the extension numbers of a destination of an incoming signal from said memory table to process the incoming signal;

a change request detecting means for detecting a change request signal supplied from one of said plurality of extension terminals to request a change in contents registered in said memory table; and

memory table changing means for changing a relationship between one of said physical port numbers and one of said logical port numbers registered in said memory table, based on the change request signal detected by said change request detecting means and on information supplied from one of said extension terminals and indicating the memory table contents to be changed.

5,825,867

ENHANCED CALL WAITING

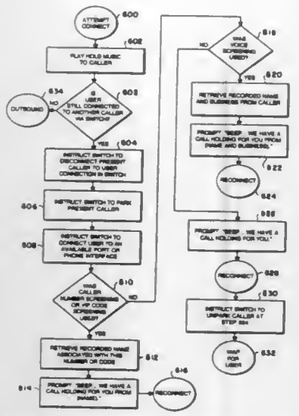
Frederick A. Epler; Robert M. Fuller, both of Issaquah; Daniel R. Kranzler, Bellevue, and John T. Blanchard, Seattle, all of Wash., assignors to Aspect Telecommunications Corporation, San Jose, Calif.

Continuation-in-part of Ser. No. 480,242, Feb. 15, 1990, Pat. No. 5,375,161, which is a continuation-in-part of Ser. No. 439,601, Nov. 21, 1989, abandoned, which is a continuation-in-part of Ser. No. 841,931, Mar. 20, 1986, Pat. No. 4,893,335, which is a continuation-in-part of Ser. No. 650,821, Sep. 14, 1984, abandoned. This application Mar. 18, 1994, Ser. No. 210,347
Int. Cl.[6] H04M *3/42;1/57;3/50;3/58*
U.S. Cl. 379—215 **27 Claims**

1. A method of providing telecommunication services to a user when the user is engaged in a first telephone call with a first party over a voice channel while a second party attempts to place a second telephone call to the user, the method comprising the steps of:

(a) after the second party places the second telephone call, receiving identification information relating to the second party; and

(b) transmitting the received identification information to the user via said voice channel while the user remains engaged



with the first telephone call so that the user hears at least the received identification information while the first party continues to hear the user, but without transmitting the received identification information to the first party over said voice channel.

5,825,868

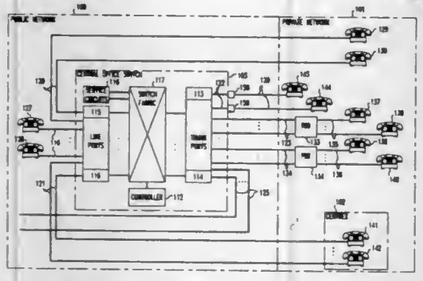
ARRANGEMENT FOR PROVIDING PRIVATE-NETWORK LINE FEATURES ON CENTRAL-OFFICE-TO-PBX TRUNKS

William Diamond, Morristown, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 4, 1996, Ser. No. 657,511

Int. Cl.[6] H04M *3/42*

U.S. Cl. 379—243 **14 Claims**



8. A public telephone network central office switching system comprising:

a plurality of trunk ports each for serving another switching system connected to the trunk port by a telephone trunk;

a plurality of line ports each for serving terminal equipment connected to the line port by a telephone line;

means for providing telephone line features on telephone lines connected to the line ports, including providing Centrex features on at least some of the telephone lines; and

means for causing the feature-providing means to treat at least one of the trunk ports, which serves another switching system that is a private branch exchange of a private telephone network, as a line port so as to provide the Centrex features on the at least one telephone trunk connected to the at least one of the trunk ports.

5,825,869

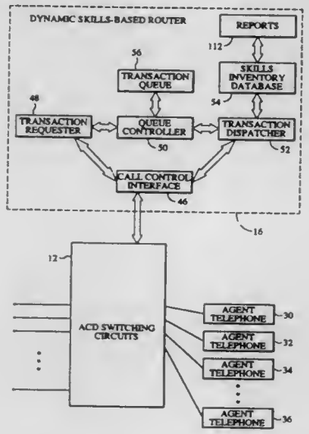
CALL MANAGEMENT METHOD AND SYSTEM FOR SKILL-BASED ROUTING

Nancy Sinling Brooks, Markham; Paul Douglas Fryer, Toronto; Gary Stanley Kaufman, Thornhill, all of Canada; Stephen Phillip Berkson, Los Gatos, Calif.; Charles R. Herel, Pleasanton, Calif., and Laura M. Brooks, Sunnyvale, Calif., assignors to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Continuation-in-part of Ser. No. 427,546, Apr. 24, 1995, abandoned. This application Apr. 23, 1996, Ser. No. 636,610

Int. Cl.[6] H04M *3/00*

U.S. Cl. 379—265 **19 Claims**



1. A call-management method of distributing calls of a common pool of calls to a plurality of individuals comprising steps of:

assigning and storing first data indicative of proficiencies of at least one call-handling capability of each of said individuals with respect to processing various types of calls from said common pool, including assigning proficiency indicators to each said individual, each proficiency indicator being related to a different call-handling capability within a defined set of call-handing capabilities;

assigning and storing second data indicative of call-management preferences for particular individuals to process particular types of calls from said common pool, including assigning preference indicators to said individuals based upon said preferences, each said individual thereby being associated with individualized first and second data that are indicative of said proficiencies and said preferences with respect to said each individual;

assigning said plurality of individuals to handling said calls of said common pool of calls;

for each call that is to be distributed from said common pool, associating said call with an identification of at least one call-handling capability advantageous to processing said call;

in response to said identification of said at least one call-handling capability advantageous to processing said call, correlating at least one of said first data and said second data of said plurality of individuals with said identification as a basis for routing decisions regarding to which individual said call should be routed; and

routing said call in accordance with said routing decisions.

5,825,870

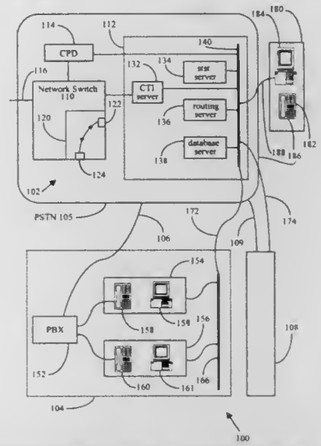
METHODS AND APPARATUS FOR IMPLEMENTING A NETWORK CALL CENTER

Alec Miloslavsky, San Carlos, Calif., assignor to Genesys Telecommunications Laboratories, San Francisco, Calif.

Continuation-in-part of Ser. No. 628,837, Apr. 5, 1996. This application Jul. 9, 1996, Ser. No. 677,204

Int. Cl.[6] H04M *3/58*

U.S. Cl. 379—265 **15 Claims**



1. A method for establishing two or more remote call centers from a network call center, comprising steps of:

(a) assigning a first set of internal connection points in a first switching apparatus at the network call center to a first set of agents associated with a first remote call center, said connection points characterized in that an agent calling one of the connection points becomes connected at the called internal connection point until the agent intentionally disconnects;

(b) assigning a second set of internal connection points to a second set of agents associated with a second remote call center; and

(c) receiving first calls at the network call center meant for the first remote call center and second calls meant for the second call center, and connecting first calls to agents connected at internal connection points assigned to the first call center and second calls to agents connected at internal connection points assigned to the second call center.

5,825,871

INFORMATION STORAGE DEVICE FOR STORIG PERSONAL IDENTIFICATION INFORMATION

Andrew R. Mark, New York, N.Y., assignor to Smart Tone Authentication, Inc., New York, N.Y.

Division of Ser. No. 286,825, Aug. 5, 1994, Pat. No. 5,583,933. This application Jun. 7, 1996, Ser. No. 639,023

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—355 **29 Claims**

1. A portable information storage device for storing and outputting personal identification information, the storage device comprising:

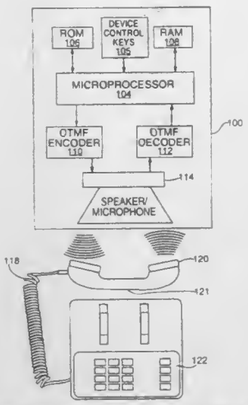
memory storing personal identification information and memory access control information, the memory access control information including a first set of tone characteristics; and

a controller controlling access to, and the output of, the stored personal identification information, the controller including:

i) an input device;

ii) an output device outputting tones comprising the stored personal identification information; and

iii) a microprocessor electrically coupled to the input device, the output device and the memory, the microprocessor



controlling the storing and output of the personal identification information stored in the memory,

wherein the microprocessor causes the output device to output tones comprising the stored personal identification information in response to the input device receiving a first series of tones having characteristics substantially matching the first set of tone characteristics stored in the memory.

5,825,872

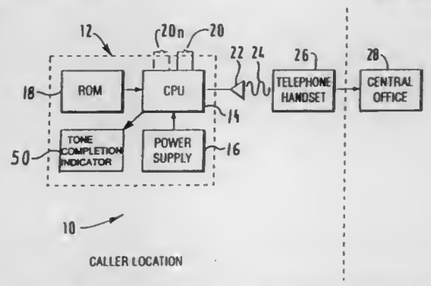
PORTABLE AUTOMATED DIALER WITH TONE COMPLETION INDICATOR

Alex Masbinsky, New York, N.Y., assignor to Anip, Inc., Carson City, Nev.

Continuation-in-part of Ser. No. 369,376, Jan. 6, 1995, Pat. No. 5,694,464. This application Aug. 13, 1996, Ser. No. 696,041

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—355 **10 Claims**



1. Automated access system for use with a central station of a telephone network, comprising:

a control station having a pre-determined access telephone number;

a portable dialer for transmitting acoustic signals through the handset of a caller telephone station connected to said central station,

said signals including a first series of signals for dialing said pre-determined access telephone number to route and connect a call to said control station,

said signals including a second series of signals which represent a dialer ID number and which are transmitted through said handset and through said central station to said control station,

said second series of signals being transmitted after said call is connected to said control station;

said portable dialer comprising a tone completion indicator operating in at least a first and second state such that said tone completion indicator changes from said first state to said

second state after said portable dialer transmits a last signal of at least one of said first and second series of signals;

said control station including a CPU associated with a router and a programmed database which includes instructions associated with dialer ID numbers;

said control station being configured to receive said second series of signals and in response thereto to route the call to provide a specified service as a function of the instructions associated with the dialer ID number represented by said second series of signals received from said portable dialer, wherein said control station detects an ANI of the calling telephone station and thereafter terminates said call, and wherein said instructions direct the control station to place a second call to a second telephone station having a predetermined telephone number to detect if the second call is answered, and if it is, to place a third call based upon the ANI of the calling telephone station to connect the second telephone station with the calling telephone station.

5,825,873

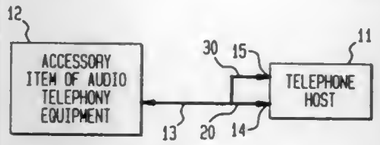
INTERFACE FOR PROVIDING CALL CONTROL FOR A HEADSET ATTACHED TO A TELEPHONE PROVIDING CALL CONTROL FOR A HEADSET ATTACHED TO A TELEPHONE

Michael Glen Duncan, Austin; Geoffrey Findley, Pflugerville; Ronald Albert Kubena, Round Rock, and Douglas F. Moellering, Pflugerville, all of Tex., assignors to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Continuation of Ser. No. 579,492, Dec. 27, 1995. This application Jul. 18, 1997, Ser. No. 896,570

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—419 **18 Claims**



1. A telephone system comprising:

a host telephone;

an accessory item; and

an interface which couples the host telephone to the accessory item, the interface including

first connector which connects the interface to the host telephone, the first connector transmitting four signals between the host telephone and the accessory item, the four signals comprising a transmit audio signal, a transmit return signal, a receive audio signal and a receive return signal, and

second connector which connects the interface to the host telephone, the second connector transmitting one or more additional signals between the host telephone and the accessory item via at least one additional communication link.

5,825,874

MOBILE TELEPHONE HOLDER

Morris R. Humphreys, Saginaw, and Ari H. Leman, Euless, both of Tex., assignors to Nokia Mobile Phones Limited, Espoo, Finland

Filed Aug. 9, 1996, Ser. No. 689,331

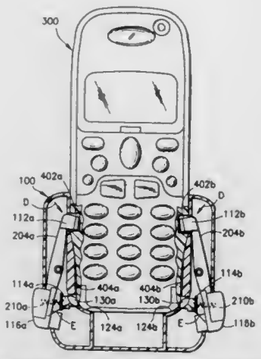
Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—446 **20 Claims**

1. A portable telephone holder comprising:

a frame having a stationary seat for receiving a portion of a portable telephone; and

a mechanism mounted to the frame for clamping the telephone in the seat and for pushing, at least partially, the telephone out



of the seat without moving the seat, wherein the mechanism comprises a pusher section connected to a user actuated push button section by a spring section, wherein the user actuated push button section is adapted to be depressed by a user in a direction into a push button hole in the frame for pushing the telephone out of the seat.

5,825,875

PROCESS FOR LOADING A PROTECTED STORAGE ZONE OF AN INFORMATION PROCESSING DEVICE, AND ASSOCIATED DEVICE

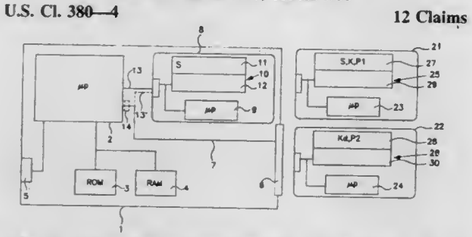
Michel Ugon, Maurepas, France, assignor to CP8 Transac, France

Filed Oct. 11, 1995, Ser. No. 540,787

Claims priority, application France, Oct. 11, 1994, 94 12100

Int. Cl.[6] H04L *9/10*; H04K *1/00*

U.S. Cl. 380—4 **12 Claims**



9. An information processing system for performing secure operations which require holding rights held by a first portable object, said system having an information processing device,

the information processing device comprising device processing means and device memory means for performing general nonsecure operations, reader means for cooperating with a portable object, and incorporating a security module which comprises module processing means and module memory means for performing specific secure operations, said module memory means being nonvolatile and read-write accessible to module processing means but at least write-protected from outside the module,

said first portable object comprising first object processing means and first object memory means for performing specific secure operations, said first object memory means being nonvolatile and read-write accessible to first object processing means but at least write-protected from outside the first portable object, said rights being stored in said first object memory means,

said device processing means comprising:

means for triggering and controlling a communication between said module and said first portable object through said reader means;

means for copying said rights from said first object memory means to said module memory means under the control of said module processing means;

means for stopping communication between first portable object and information processing device;

means for performing said secure operations within a predetermined limit of use which require possessing said rights, by deriving said rights from said module in lieu of the first portable object; and

means for inhibiting operation of said module under the control of said module processing means when said predetermined limit of use has been reached.

5,825,876

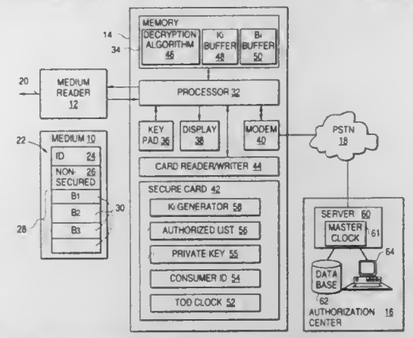
TIME BASED AVAILABILITY TO CONTENT OF A STORAGE MEDIUM

Mendel Lazear Peterson, Jr., Richardson, Tex., assignor to Northern Telecom, Richardson, Tex.

Continuation-in-part of Ser. No. 566,664, Dec. 4, 1995. This application Feb. 12, 1996, Ser. No. 600,173

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **68 Claims**



60. An apparatus for controlling access by a user to contents of a storage medium, comprising:

a medium reader for reading the contents of the storage medium;

logic circuitry connected to the medium reader for controlling the medium reader; and

a local secure clock connected to receive time information and an access code from an external source and connected to the logic circuitry to provide time information thereto,

wherein the local secure clock does not update its time information according to the received time information unless a valid access code is received with the time information from the external source.

5,825,877

SUPPORT FOR PORTABLE TRUSTED SOFTWARE

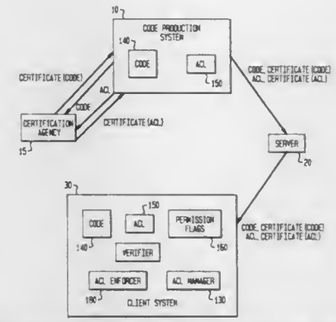
Asit Dan, West Harrison; Rajiv Ramaswami, Ossining, and Dinkar Sitaram, Yorktown Heights, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 11, 1996, Ser. No. 661,517

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **20 Claims**

1. A method for distributing program code comprising the steps of providing to a recipient system a trusted third party certification, the trusted third party certification including a computer readable description of resources and permissions required for verified nonharmful operation of the code, wherein the description of resources required includes data describing both a quantity of at least one resource to be used by the code and a maximum rate of consumption of at least one resource by the code.



5,825,878

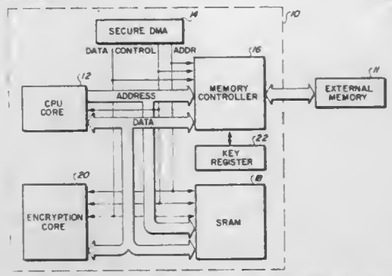
SECURE MEMORY MANAGEMENT UNIT FOR MICROPROCESSOR

Richard Takahashi, Phoenix, Ariz., and Daniel N. Heer, Newton, N.H., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Sep. 20, 1996, Ser. No. 717,106

Int. Cl.[6] H04L *9/00*

U.S. Cl. 380—4 **7 Claims**



1. A secure embedded memory management unit for encrypted data and instruction transfer from an external memory including in combination:

a microprocessor core;

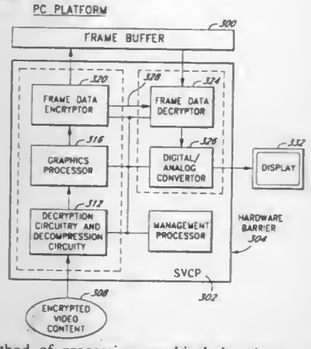
an internal memory;

an interface bus;

a secure direct memory access controller internally coupled with and physically embedded with said microprocessor core and said internal memory in the same integrated circuit (IC) chip, said controller coupled with said interface bus for input/output (I/O) transfer of page blocks of encrypted data and instructions to and from an external memory; and

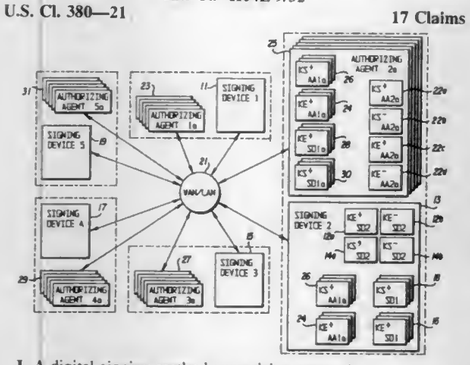
encryption/decryption logic in said IC chip internally coupled with and physically embedded with said microprocessor core, said internal memory and said direct memory access controller and operating to encrypt data and instructions supplied thereto from said internal memory and transferring said encrypted data and instructions to said direct memory access controller for transfer from said controller and through said interface thereof to an external memory; and said encryption/decryption logic operating to decrypt data and instructions supplied to said interface of said direct memory access controller from said external memory and through said controller to said encryption/decryption logic for supplying said decrypted data and instructions to said internal memory for use by said microprocessor core.

5,825,879
SYSTEM AND METHOD FOR COPY-PROTECTING DISTRIBUTED VIDEO CONTENT
Derek L. Davis, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.
Filed Sep. 30, 1996, Ser. No. 723,830
Int. Cl.[6] H04L 9/00; H04N 7/167
U.S. Cl. 380—5 13 Claims



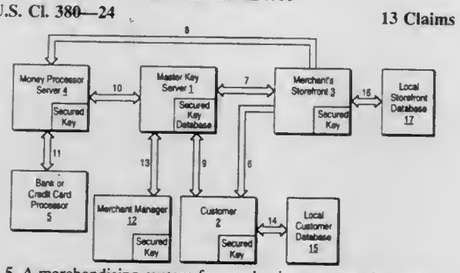
1. A method of processing graphical data in a secure video content processor, said method comprising the steps of:
decrypting received encrypted video content to generate decrypted video content;
processing decrypted video content to generate a digital image frame;
encrypting the digital image frame and transmitting the encrypted digital image frame to a memory device located outside of the secure video content processor;
retrieving the digital image frame from said memory device and decrypting the digital image frame; and
converting the digital image frame into an analog representation of the digital image frame and transmitting the analog representation to a display device.

5,825,880
MULTI-STEP DIGITAL SIGNATURE METHOD AND SYSTEM
Frank W. Sudia, 110 E. 84th St. Apt. 4B, New York, N.Y. 10028; Peter C. Freund, 139 E. 79th St., 8th Fl., New York, N.Y. 10021, and Stuart T.F. Huang, 2939 Van Ness St., N.W., #907, Washington, D.C. 20008
Continuation of Ser. No. 462,430, Jun. 5, 1995, abandoned, which is a continuation-in-part of Ser. No. 272,203, Jul. 8, 1994, abandoned, and Ser. No. 181,859, Jan. 13, 1994, abandoned. This application Jun. 4, 1997, Ser. No. 869,253
Int. Cl.[6] H04L 9/32
U.S. Cl. 380—21 17 Claims



1. A digital signing method comprising steps of:
generating shares of a private signature key;
storing shares in separate electronic signing devices;
certifying multiple authorizing agents for signing devices; and
for each of a plurality of signing devices, affixing a partial signature to an electronic message in response to authorization from a minimum number of authorizing agents;
wherein a plurality of partial signatures constitutes a digital signature.

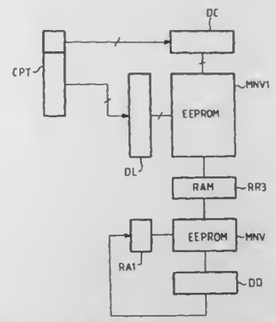
5,825,881
PUBLIC NETWORK MERCHANDISING SYSTEM
Bryan Colvin, Sr., San Jose, Calif., assignor to Allsoft Distributing Inc., San Jose, Calif.
Filed Jun. 28, 1996, Ser. No. 671,734
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—24 13 Claims



5. A merchandising system for conducting a transaction over an electronic network, comprising:
a network;
a merchant computer system coupled to the network;
a money processing entity computer system coupled to the network; and
a customer computer system coupled to the network having hardware and software for sending to the merchant computer system, over the network, a merchant transaction data packet that contains information required by the merchant to process the transaction, and hardware and software for sending to the money processing entity computer system, over the network, a money processor transaction data packet that contains information required by the money processing entity to process the transaction, wherein the money processor transaction data packet includes confidential information that is not included in the merchant transaction data packet;
wherein the network is public;
wherein the customer computer system, the merchant computer system, and the money processing entity computer system communicate in encrypted form;
wherein the customer computer system, the merchant computer system, and the money processing entity computer system communicate through a master key server, wherein the master key server performs decryption services.

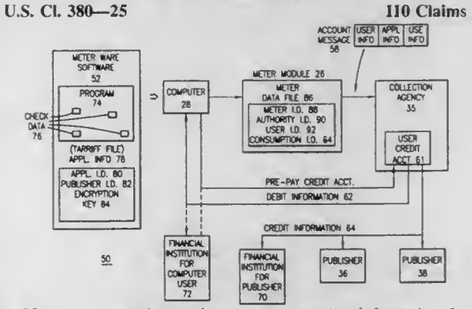
5,825,882
ENCRYPTION AND AUTHENTICATION METHOD AND CIRCUIT FOR SYNCHRONOUS SMART CARD
Jacek Kowalski, Trets; Michel Martin, Marsielle; Jacques Stern, Paris, and Antoine Joux, Thorigne-Fouillard, all of France, assignors to Gemplus Card International, Gemenos, France
PCT No. PCT/FR93/01140, § 371 Date Jul. 31, 1995, § 102(e) Date Jul. 31, 1995, PCT Pub. No. WO94/11829, PCT Pub. Date May 26, 1994
PCT Filed Nov. 19, 1993, Ser. No. 446,644
Claims priority, application France, Nov. 19, 1992, 92 13913
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—25 27 Claims

12. A chip card comprising:



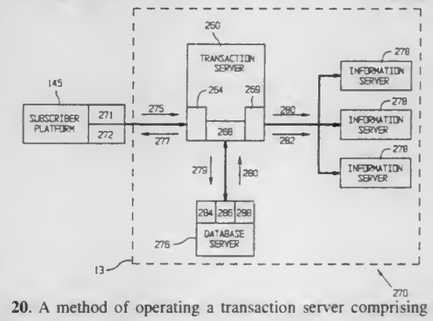
an encryption circuit, the encryption circuit providing the chip card with security against fraud, the encryption circuit further including
a secret data memory, the secret data memory serving as an encryption key,
an address register, the address register containing an address of a word of the secret data memory,
a data register, the data register receiving and temporarily storing the word read at the address contained in the address register,
means for placing, in the address register, at least a part of the word stored in the data register, thereby enabling the secret data memory to serve as the encryption key, and
means for carrying out successive readings of the secret data memory at addresses successively contained in the address register.

5,825,883
METHOD AND APPARATUS THAT ACCOUNTS FOR USAGE OF DIGITAL APPLICATIONS
William Charles Archibald; Terence Paul Spielman, and Jason Spielman, all of Austin, Tex., assignors to Interval Systems, Inc., Austin, Tex.
Filed Oct. 31, 1995, Ser. No. 551,124
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—25 110 Claims



93. A computer that retrieves use accounting information for digital applications, the computer comprising:
a central processing unit;
non-volatile memory operably coupled to the central processing unit; and
volatile memory operably coupled to the central processing unit;
wherein the non-volatile memory includes:
determination storage means for storing program instructions that cause the central processing unit to detect when a digital application is activated;
first retrieve storage means for storing program instructions that cause the central processing unit to retrieve a digital application identification code and a publisher identification code after activation of the digital application has been detected;
second retrieve storage means for storing program instructions that cause the central processing unit to retrieve usage information from a meter data file affiliated with the computer;
generation storage means for storing program instructions that cause the central processing unit to generate an accounting message from the usage information, the digital application identification code and the publisher identification code when activation has been authenticated; and
sending storage means for storing program instructions that cause the central processing unit to send the accounting message to an authority identified in the accounting message.

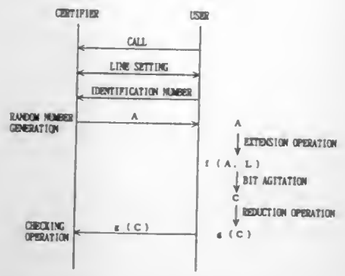
5,825,884
METHOD AND APPARATUS FOR OPERATING A TRANSACTIONAL SERVER IN A PROPRIETARY DATABASE ENVIRONMENT
Joel Walter Zdepski, Mountain View, and Howard Geza Page, Burlingame, both of Calif., assignors to Thomson Consumer Electronics, Indianapolis, Ind.
Filed Jul. 1, 1996, Ser. No. 674,268
Int. Cl.[6] H04L 9/32
U.S. Cl. 380—25 49 Claims



20. A method of operating a transaction server comprising the steps:
receiving an information request having an identification and requested data wherein the information request includes an encoded message;
decrypting a key with a transaction server private key;
retrieving subscriber information corresponding to the identification; and
transferring the subscriber information and the requested data to an application processor which provides the requested data to a subscriber based on the subscriber information.

5,825,885
BIT AGITATOR
Atsuko Miyaji, Kawachinagano; Motoji Omori, Osaka, and Makoto Tatebayashi, Takarazuka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Division of Ser. No. 511,851, Aug. 7, 1995. This application Jan. 14, 1997, Ser. No. 783,107
Claims priority, application Japan, Aug. 8, 1994, 6-185958
Int. Cl.[6] H04L 9/00
U.S. Cl. 380—25 19 Claims

1. A personal certification system utilizing a bit agitator for bit-agitating an n-digit decimal input value A ($0 \leqq A \leqq 10^n - 1$) thereby generating an m-digit decimal output value B ($0 \leqq B \leqq 10^m - 1$), said system comprising:
a certification unit including input value generation means for generating said input value A and presenting said input value A to said bit agitator, and checking means for checking whether or not said output value B, being generated from said input value A by said bit agitator, is corrects;



wherein said bit agitator comprises,

extension means for converting said input value A to an extended value f(A,L) by substituting said input value A and a previously prepared extension fixed value L in an extension function f;

bit agitation means for obtaining a value C by bit-agitating said extended value f(A,L) being obtained by said extension means with a bit agitation key; and

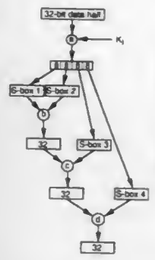
reduction means for obtaining said m-digit decimal output value B by substituting said value C in a reduction function g.

5,825,886

CONSTRUCTION SYMMETRIC CIPHERS USING THE CAST DESIGN PROCEDURE

Carlisle Michael Adams; Michael James Wiener, both of Ottawa, and Roland Thomas Lockhart, Kanata, all of Canada, assignors to Entrust Technologies Ltd., Ottawa, Canada

Filed Dec. 5, 1996, Ser. No. 761,763
Claims priority, application Canada, Dec. 8, 1995, 2164768
Int. Cl.[6] H04L *9/28;9/06*
U.S. Cl. 380—28 **15 Claims**



1. In a data encryption method of cryptographically transforming plaintext into ciphertext in data blocks of a predetermined bitlength comprising a plurality of consecutive transformation rounds of half of each data block, each consecutive transformation round comprising steps of:

combining the half data block with a first masking key of predetermined length using a first binary operation to generate a first modified half data block;

combining the first modified half data block with a second masking key of predetermined length using a second and different binary operation to generate a second modified half data block;

processing the second modified half data block by a plurality of (m×n) mutually different substitution boxes to generate a third modified half data block, m and n being positive integers; and

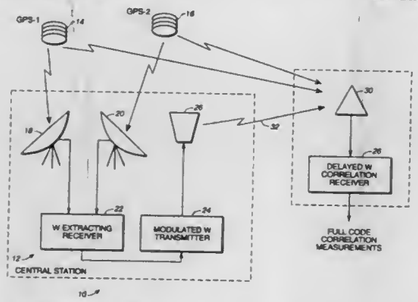
XORing the third modified half data block with the remaining half of the data block to generate a transformed half data block of a transformation round.

5,825,887

TRANSMITTING AND RECEIVING APPARATUS FOR FULL CODE CORRELATION OPERATION UNDER ENCRYPTION FOR SATELLITE POSITIONING SYSTEM

Gary R. Lennen, Cupertino, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Dec. 28, 1995, Ser. No. 580,353
Int. Cl.[6] G01S *5/02;* **H04L** *9/00*
U.S. Cl. 380—34 **26 Claims**



1. A transmitting and receiving apparatus for full code correlation operation under encryption for a Satellite Positioning System (SATPS); wherein a Y code replaces a known P-code when the anti spoofing (AS) is ON; and wherein said Y-code is the modulo-two sum of an unknown W-code and said known P-code; said apparatus comprising:

a CENTRAL STATION further comprising:

a W EXTRACTING RECEIVER further comprising:

at least one HIGH GAIN ANTENNA (HGA) for receiving the satellite signals from at least one SATPS satellite;

at least one DOWNCONVERTER AND SAMPLER for frequency translating, amplifying and digitally sampling the incoming L1 signals, wherein a first DOWNCONVERTER AND SAMPLER **1** is connected to a first HGA (1), wherein a second DOWNCONVERTER AND SAMPLER is connected to a second HGA (**2**), wherein an i-th DOWNCONVERTER AND SAMPLER is connected to an i-th HGA(i); and wherein an N-th DOWNCONVERTER AND SAMPLER is connected to an N-th HGA (N); i being an integer less or equal to N, N being a number of satellites being observed;

at least one DIGITAL CHANNEL PROCESSOR for further processing the digitally sampled satellite L1 signals, wherein a first DIGITAL CHANNEL PROCESSOR **1** is connected to a first DOWNCONVERTER AND SAMPLER **1**, wherein a second DIGITAL CHANNEL PROCESSOR **2** is connected to a second DOWNCONVERTER AND SAMPLER **2**, wherein an i-th DIGITAL CHANNEL PROCESSOR is connected to an i-th DOWNCONVERTER AND SAMPLER; and wherein an N-th DIGITAL CHANNEL PROCESSOR is connected to an N-th DOWNCONVERTER AND SAMPLER;

a MASTER OSCILLATOR **1** block for providing the frequency source for the reference system;

a FREQUENCY SYNTHESIZER **1** block connected to said MASTER OSCILLATOR **1** block, wherein said FREQUENCY SYNTHESIZER **1** block uses said MASTER OSCILLATOR **1** block output signal for synthesizing local oscillator and clock signals; and

a MICROPROCESSOR SYSTEM **1** (μP SYSTEM **1**) connected to each said DIGITAL CHANNEL PROCESSOR for providing a CONTROL signal for each said DIGITAL CHANNEL PROCESSOR; and

a MODULATED W TRANSMITTER connected to said W EXTRACTING RECEIVER for resynchronizing, delaying, and combining the extracted W code for each said satellite being observed; and for transmitting said combined, delayed and resynchronized W code;

a DELAYED W CORRELATION RECEIVER: (a) for receiving the real time encrypted L1 and L2 satellite code signals; (b) for storing the observed samples of received encrypted satellite L1 and L2 satellite signals; (c) for receiving said extracted resynchronized, delayed and combined W bit information transmitted by said CENTRAL STATION; (d) and for correlating its own observed encrypted L1 and L2 signals with the corresponding portions of said extracted resynchronized, delayed and combined W bit information; and

a COMMUNICATION LINK connecting said DELAYED W CORRELATION RECEIVER and said CENTRAL STATION;

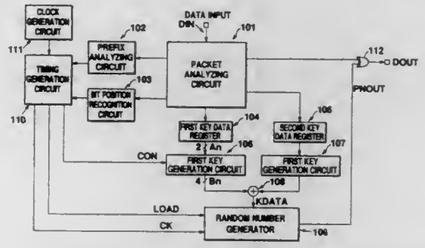
wherein said DELAYED W CORRELATION RECEIVER can perform full correlation on L1 and L2 encrypted signals without requiring secret encryption keys.

5,825,888

DESCRAMBLING DEVICE

Kazuhiro Kimura; Shigeaki Hayashibe; Toshiyuki Ozawa; Tatsuo Hiramatsu, and Yoshikazu Tomida, all of Moriguchi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 11, 1996, Ser. No. 712,123
Claims priority, application Japan, Sep. 11, 1995, 7-232631
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **15 Claims**



1. A descrambling device for use in a receiver for FM multichannel broadcasting in which a data packet constituting a given number of digital data is scrambled and multiplexed for general FM broadcasting, comprising:

a key data holding circuit for holding key data extracted from a predetermined part of a received data;

a scrambling key generation circuit for generating a scrambling key based on the key data;

a random number generator for generating a random number using the scrambling key as an initial value;

a logical circuit for descrambling the received scrambled data based on the random number; and

a timing generation circuit for outputting a timing signal in response to a receiving timing of data within the received data packet; wherein

the timing signal controls the timing of the generation of the scrambling key in the scrambling key generation circuit.

5,825,889

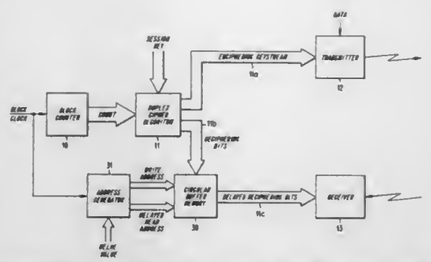
USE OF DUPLEX CIPHER ALGORITHMS FOR SATELLITE CHANNELS WITH DELAY

Paul W. Dent, Pittsboro, N.C., assignor to Ericsson Inc., Research Triangle Park, N.C.

Filed Oct. 15, 1996, Ser. No. 731,465
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **17 Claims**

1. A method of communicating cipher-protected information between a first transmitter-receiver station and a second transmitter-receiver station using a network of control stations, comprising the steps of:

establishing enciphered communication between said network of control stations and said first station and separately between said network of control stations and said second station;



communicating a session key from said network of control stations to said first station and separately to said second station;

establishing propagation delays between said control station network and said first station and separately between said control station network and said second station;

processing said propagation delays to determine a direct propagation delay for communication between said first and second stations without involving said control station network and communicating said direct propagation delay from said control station network to said first station and separately to said second station; and

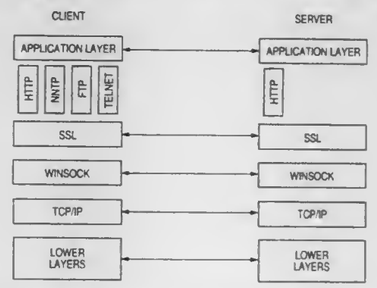
communicating a channel assignment from said control station network to said first station and separately to said second station and commanding said first station and said second station to begin communicating with each other by enciphering and deciphering signals using said session key and said direct propagation delay value.

5,825,890

SECURE SOCKET LAYER APPLICATION PROGRAM APPARATUS AND METHOD

Taher Elgamal, Palo Alto, and Kipp E.B. Hickman, Los Altos, both of Calif., assignors to Netscape Communications Corporation, Mountain View, Calif.

Continuation of Ser. No. 519,585, Aug. 25, 1995, Pat. No. 5,657,390. This application Jul. 1, 1997, Ser. No. 889,879
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **27 Claims**



1. A socket application interface computer program product that interfaces application program code executing in an application layer to transport protocol layer services code, comprising:

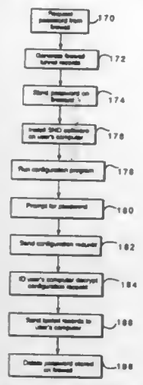
application program interface code that encrypts information received from the application program code; and

means for providing the encrypted information to the transport protocol layer services code.

5,825,891
KEY MANAGEMENT FOR NETWORK COMMUNICATION

Roger H. Levesque, Tewksbury; Jeffrey A. Kraemer, Northboro, and Ashok P. Nadkarni, Shrewbury, all of Mass., assignors to Raptor Systems, Inc., Waltham, Mass.

Continuation of Ser. No. 586,231, Jan. 16, 1996, abandoned. This application Oct. 29, 1997, Ser. No. 959,919
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **9 Claims**

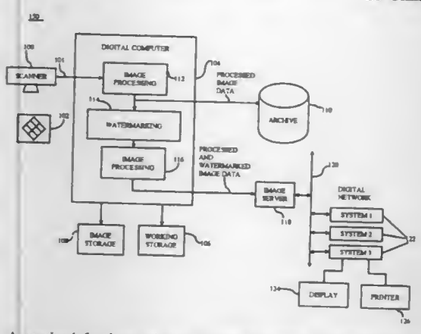


1. A method for enabling computers to communicate using encrypted network packets, comprising:
sending a configuration request over a network from a first computer to a second computer;
providing a temporary configuration password to the first computer;
encrypting, in accordance with the temporary configuration password, tunnel record information that includes a secret tunnel encryption key assigned to a tunnel between the first computer and the second computer; and
sending the tunnel record information over the network from the second computer to the first computer.

5,825,892
PROTECTING IMAGES WITH AN IMAGE WATERMARK

Gordon Wesley Braudaway, Yorktown Heights, and Frederick Cole Mintzer, Shrub Oak, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 28, 1996, Ser. No. 738,930
Int. Cl.[6] H04L *9/00;* **G06K** *9/36*
U.S. Cl. 380—51 **28 Claims**

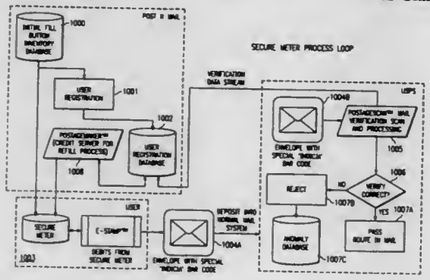


1. A method for imparting a watermark onto a digitized image comprising the steps of:
providing said digitized image comprised of a plurality of pixels, wherein each of said pixels includes brightness data that represents a brightness of at least one color; and
multiplying said brightness data associated with at least one of said pixels by a predetermined brightness multiplying factor, said brightness multiplying factor, "mf", is selected from the group consisting of (0.9<="mf"1<1), and (1<"mf"<=1).

5,825,893
SYSTEM AND METHOD FOR REGISTGRATION USING INDICIA

Salim G. Kara, Houston, Tex., assignor to E-Stamp Corporation, Houston, Tex.

Division of Ser. No. 480,305, Jun. 7, 1995, Pat. No. 5,666,284, which is a continuation-in-part of Ser. No. 263,751, Jun. 22, 1994, Pat. No. 5,606,507, which is a continuation-in-part of Ser. No. 176,716, Jan. 3, 1994, Pat. No. 5,510,992. This application Feb. 10, 1997, Ser. No. 797,884
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—51 **42 Claims**

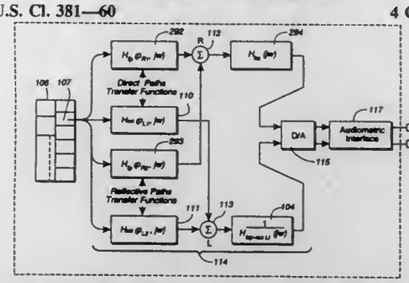


35. A set of computer program products each including a computer readable medium having computer program logic recorded thereon for registration of a software program, said computer program product set comprising:
a first computer readable storage medium having a first computer program stored therein, said first computer program including:
means for accepting user information into an electronic user registration algorithm, said user information being input by a user of said first computer program;
means for identifying other information available at said first processor-based system to be included in a printed registration form, said other information including unique information identifying a memory device to be registered to provide secure storage of a monetary equivalent value;
means for outputting said printed registration form including at least a portion of said user information and said other information, said printed registration form including at least a portion of said user information in a machine-readable format, wherein said machine-readable format is not directly readable by human viewing;
a second computer readable storage medium having a second computer program stored therein, said second computer program including:
means for accepting information included within said printed registration form; and
means for integrating at least a portion of said accepted information in a registered user database.

5,825,894
SPATIALIZATION FOR HEARING EVALUATION

Adnan Shennib, Fremont, Calif., assignor to Decibel Instruments, Inc., Fremont, Calif.

Division of Ser. No. 292,073, Aug. 17, 1994. This application Dec. 20, 1995, Ser. No. 580,051
Int. Cl.[6] H04S *5/00;* **H04R** *29/00*
U.S. Cl. 381—60 **4 Claims**

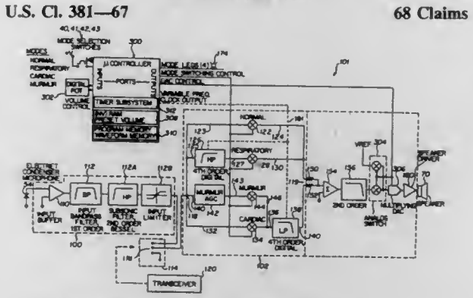


1. A method for selecting and presenting binaural acoustic stimuli in spatialized mode for hearing diagnostics and rehabilitation, comprising the steps of:
synthesizing audio signals, including primary audio signals comprising pure tones and speech, and secondary audio signals comprising background noise and other competing sources, wherein said synthesized audio signals are presented according to individualized transfer functions that include a hearing aid faceplate, and any of an individual's effects of body, head, and ear on incoming signals;
controlling spatialization parameters of said audio signals, including any of the position of each source in space in terms of any of distance, azimuth, and altitude; and acoustic boundary parameters including room size, reflection properties, reverberation, atmospheric absorption, and spreading loss roll-off;
presenting such spatialized stimuli to an individual; and
performing any of hearing diagnostics, hearing aid prescription, hearing aid simulation, and hearing aid fitting with an audiometric module.

5,825,895
ELECTRONIC STETHOSCOPE

James A. Grasfield, Sharon; David E. Winston, Winchester; John A. Purbrick, Arlington; Peter R. H. Stark, and Daniela Steinhubel, both of Stoneham, all of Mass., assignors to StethTech Corporation, Sharon, Mass.

Continuation-in-part of Ser. No. 505,601, Jul. 21, 1995. This application Jul. 19, 1996, Ser. No. 685,451
Int. Cl.[6] A61B *7/04*
U.S. Cl. 381—67 **68 Claims**

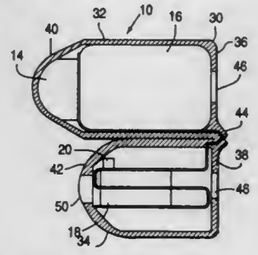


1. An electronic stethoscope, comprising:
a first transducer for converting acoustic signals into electronic signals;
a processing section, having an input coupled to an output of the first transducer, for processing the electronic signals to provide selected electronic signals representative of only selected ones of the acoustic signals; and
a second transducer, coupled to an output of the processing section, for converting the selected electronic signals into acoustic signals;
wherein the processing section operates in a murmur enhancement mode, in which the electronic signals from the output of the first transducer are processed by an automatic gain control circuit and a lowpass filter;
wherein the automatic gain control circuit has a time constant in the range of approximately 5 to 100 milliseconds.

5,825,896
HINGED HEARING AID

Marvin Allan Leedom, Princeton, N.J., assignor to David Sarnoff Research Center Inc., Princeton, N.J.

Filed Jun. 26, 1996, Ser. No. 673,676
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—69 **15 Claims**

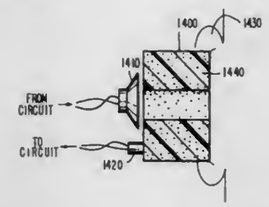


1. An in the ear hearing aid comprising:
a boot of flexible material which is adapted to be completely inserted into the ear canal and having first and second bollow portions;
a speaker and a battery in the first boot portion;
a microphone and electronic components in the second boot portion; and
a strip of a flexible material extending between and hingedly connecting the first and second boot portions so that one boot portion can pivot with respect to the other bootportion.

5,825,897
NOISE CANCELLATION APPARATUS

Douglas Andrea, Old Brookville, and Martin Topf, Brooklyn, both of N.Y., assignors to Andrea Electronics Corporation, Long Island City, N.Y.

Division of Ser. No. 485,047, Jun. 7, 1995, which is a continuation-in-part of Ser. No. 339,126, Nov. 14, 1994, Pat. No. 5,673,325, which is a continuation-in-part of Ser. No. 968,180, Oct. 29, 1992, Pat. No. 5,381,473. This application Aug. 18, 1997, Ser. No. 912,459
Int. Cl.[6] G10K *11/16*
U.S. Cl. 381—71.6 **5 Claims**



1. A method for independently calibrating an open loop active noise reduction apparatus including a housing comprising a

speaker to produce an acoustic anti-noise signal in the housing, a microphone to detect an external noise signal, an acoustical waveguide having zero phase shift over a desired bandwidth to isolate and direct the acoustic anti-noise signal from the microphone, and an amplitude adjustment means to calibrate the acoustic anti-noise signal to create a quiet zone in the housing for operation with an independent electrical assembly, wherein the apparatus is calibrated separately from the electrical assembly, the method comprising the steps of:

producing the external noise signal having a gain and phase response detected by the microphone in the housing;

inputting an external noise signal received by the microphone through acoustic-electra processing means in the electrical assembly to produce an electrical anti-noise signal;

transmitting to the speaker the electrical anti-noise signal having an equal gain and opposite phase response to the external noise signal detected by the microphone; and

balancing the gain and phase response of the electrical anti-noise signal by the amplitude adjustment means located in the noise reduction apparatus to match the gain and phase response of the external noise signal to yield a theoretical zero in the quiet zone.

5,825,898

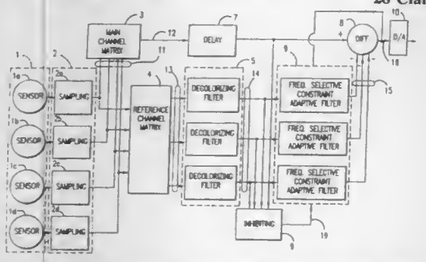
SYSTEM AND METHOD FOR ADAPTIVE INTERFERENCE CANCELLING

Joseph Marash, Haifa, Israel, assignor to Lamar Signal Processing Ltd., Haifa, Israel

Filed Jun. 27, 1996, Ser. No. 672,899

Int. Cl.[6] H04R *3/00*

U.S. Cl. 381—92 **28 Claims**



1. An adaptive system for processing digital input data representing signals containing a source signal from a signal source on-axis relative to an array of sensors as well as interference signals from interference sources located off-axis from the signal source and for producing digital output data representing the source signal with reduced interference signals relative to the source signal, comprising:

a main channel matrix unit for generating a main channel from the digital input data, the main channel representing signals received in the direction of the signal source and having a source signal component and an interference signal component;

a reference channel matrix unit for generating at least one refefence channel from the digital input data, each reference channel representing signals received in directions other than that of the signal source;

at least one adaptive filter having adaptive filter weights, connected to receive signals from the reference channel matrix unit, for generating a cancelling signal approximating the interference signal component of the main channel;

a difference unit, connected to receive signals from the main channel matrix unit and said at least one adaptive filter, for generating the digital output data by subtracting the cancelling signal from the main channel;

said at least one adaptive filter also being connected to receive the digital output data and including weight updating means for finding new filter weight values of said at least one adaptive filter such that the difference between the main channel and the cancelling signal is minimized; and

weight constraining means for truncating said new filter weight values to predetermined threshold values when each of the new filter weight values exceeds the corresponding threshold value.

5,825,899

AUDIO DATA PROCESSING APPARATUS

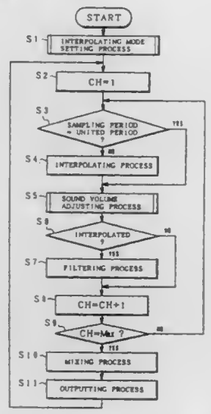
Syoji Yamaguchi, Kawasaki; Ayumi Naito, and Tomoharu Miyadai, both of Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Mar. 7, 1996, Ser. No. 612,160

Claims priority, application Japan, Mar. 20, 1995, 7-061320; Dec. 19, 1995, 7-330105

Int. Cl.[6] H04B *15/00*

U.S. Cl. 381—94.4 **26 Claims**



1. An audio data processing apparatus for inputting one or a plurality of audio data and, after that, performing data processes and outputting the processed data, comprising:

a plurality of input channels for inputting the audio data; and

a data processing circuit to which said plurality of input channels are inputted and connected in parallel and which individually time-divisionally performs necessary data processes to the audio data of each of said input channels at every period Tu that is decided by a standardized predetermined united sampling frequency and, after that, mixes the processed data and generates mixed data,

wherein in the case where said united sampling frequency and sound source sampling frequencies of said audio data are different, said data processing circuit arithmetically operates interpolation data synchronously with said united sampling frequency and converts into the audio data of said united sampling frequency,

wherein said data processing circuit executes the arithmetic operation of said interpolation data on the basis of a linear approximation,

wherein for the arithmetic operation of said interpolation data based on the linearly approximation, said data processing circuit includes:

a data holding unit for holding at least three continuous sample data S(n), S(n−1), and S(n−2) at every said sampling period;

a delay period number setting unit for setting the number (Nd) of delay periods until a past period to calculate the interpolation data in the case where "1" is added to a quotient obtained by dividing said sound source sampling period Ts by said united sampling period Tu and a resultant addition value reaches the united sampling period Tu;

a counter which is cleared at every said sound source sampling period Ts and counts a predetermined fundamental clock and generates a count value cnt;

a first time position operating unit for subtracting said count value cnt and said sound source sampling period Ts from a value (Tu*Nd) obtained by multiplying said delay period number Nd to said united sampling period Tu each time said fundamental clock is obtained, thereby calculating a first time position CT1 which is used for the arithmetic operation of said interpolation data;

a second time position operating unit for subtracting said count value cnt from a value obtained by multiplying said delay period number Nd to said united sampling period Tu each time said fundamental clock is obtained, thereby calculating a second time position CT2 which is used for said arithmetic operation of said interpolation data;

a change-over selecting unit for comparing a difference ΔT between the value (Tu*Nd) obtained by multiplying said delay period number Nd to said united sampling period Tu and said sound source sampling period Ts with said count value cnt, in the case where said count value cnt is equal to or less than said difference ΔT, selecting said first time position CT1 as an interpolation time position C and selecting the one-preceding data S(n−1) and the two-preceding data S(n−2) as new data A and old data B, and in the case where said count value cnt exceeds said difference ΔT, selecting said second time position CT2 as an interpolation time position CT and selecting the present data S(n) and the one-preceding data S(n−1) as new data A and old data B; and

an interpolation operating unit for arithmetically operating interpolation data X based on the linear approximation on the basis of said new and old data A and B selected by said change-over selecting unit and said interpolation time position C each time a period reaches said united sampling period Tu.

5,825,900

LOUDSPEAKER HOUSING FOR VIDEO DISPLAY APPLIANCE

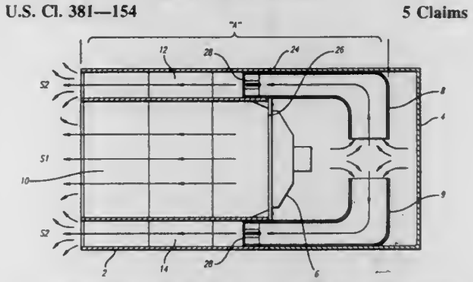
Chang Wook Jeon, Kyoungsangbuk-Do, Rep. of Korea, assignor to LG Electronics Inc., Rep. of Korea

Filed Nov. 25, 1997, Ser. No. 978,401

Claims priority, application Rep. of Korea, Nov. 27, 1996, 1996-58266

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—154 **5 Claims**



1. A loudspeaker housing for a video display appliance comprising:

a front housing and a rear housing, wherein

the front housing has a main channel and at least two subsidiary channels for guiding sounds produced forwardly and rearwardly from a loudspeaker, the main channel being coupled to the loudspeaker;

the rear housing has at least two ducts for collecting the sounds produced rearwardly from the loudspeaker and guiding the sounds to the subsidiary channels of the front housing; and

each first end of the ducts is coupled to the respective subsidiary channel of the front housing, and each second end of the ducts is positioned within the rear housing and faces a second end of the other duct.

5,825,901

ROTARY LOW-FREQUENCY SOUND REPRODUCING APPARATUS AND METHOD

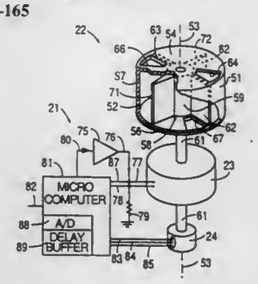
Bradner L. Hisey, 19325 Athos Pl., Saratoga, Calif. 95070

PCT No. PCT/US93/01824, § 371 Date Aug. 18, 1995, § 102(e) Date Aug. 18, 1995, PCT Pub. No. WO94/19914, PCT Pub. Date Sep. 1, 1994

PCT Filed Feb. 26, 1993, Ser. No. 505,334

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—165 **45 Claims**



1. A rotary acoustic transducer apparatus for producing sound in response to an applied electrical signal, comprising:

a rotary acoustic radiator assembly comprising:

a generally cylindrical chamber with a cylindrical sidewall and end walls having an axis,

a shaft,

bearings mounting said shaft in said cylindrical means for rotation about said axis,

a cylindrical hub secured to said shaft and extending between said end walls,

movable vanes secured to said shaft,

said shaft, said hub, and said movable vanes forming a rotor assembly,

stationary vanes mounted in said chamber between said movable vanes and extending between said cylindrical sidewall and said hub and between said end walls,

said cylindrical chamber having ports opening through the walls of said cylindrical chamber to direct air flow into and out of the cylinder in response to movement of the movable vanes,

a torque motor coupled to the shaft for applying rotational reciprocating movement to the rotor assembly,

a position encoder for ascertaining the position of said rotor assembly, and

a microcomputer operatively coupled to said torque motor and to said position encoder for generating a drive signal to drive said torque motor from said applied electrical signal and from corrections to said applied electrical signal derived by said microcomputer.

5,825,902

SPHERICAL PIEZOELECTRIC SPEAKER

Satoru Fujishima, Mukou, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Oct. 1, 1996, Ser. No. 725,000

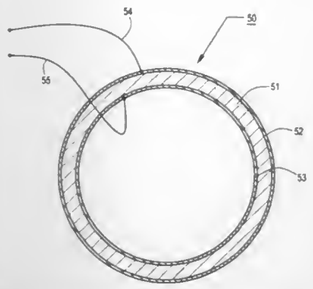
Claims priority, application Japan, Oct. 6, 1995, 7-296327; Jun. 28, 1996, 8-169890

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—190 **19 Claims**

1. A spherical piezoelectric speaker, comprising:

a spherical piezoelectric ceramic body which is hollow inside, the spherical piezoelectric ceramic body including two sub-



stantially semispherical piezoelectric ceramic bodies being joined to each other so as to form a substantially complete spherical body adapted to propagate sound waves in all directions, said spherical piezoelectric ceramic body having a continuous outer surface which is interrupted only by two holes each having a diameter substantially equal to a width of a respective lead terminal disposed in each of the two holes; and

a driving device for generating sound by oscillating said piezoelectric ceramic body.

5,825,903

SPEAKER GRILLE

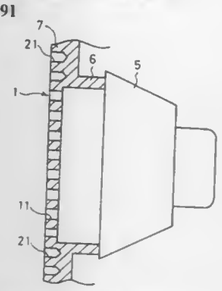
Tomio Shiota, Takatsuki; Naohiro Shikata, and Kaoru Shimizu, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial, Co., Ltd., Japan

Continuation of Ser. No. 694,424, Aug. 12, 1996. This application Sep. 4, 1997, Ser. No. 923,551

Claims priority, application Japan, Nov. 29, 1995, 7-310481; Feb. 19, 1996, 8-30282

Int. Cl.[6] H04R *25/00*

U.S. Cl. 381—391 **4 Claims**



1. A speaker grille comprising a layer of material having a first side and a second, opposite side, said layer including through holes defining speaker sound emanating apertures extending completely through said layer, and a plurality of dummy bores formed in said layer, each extending through the first side and terminating before passing through the second side thereby defining a bottom, the dummy bores being disposed in the vicinity of the through holes, and the bottoms of said dummy bores defining respective slanted planes.

5,825,904

Patent Not Issued For This Number

5,825,905

MUSICAL SCORE RECOGNITION APPARATUS WITH VISUAL SCANNING AND CORRECTION

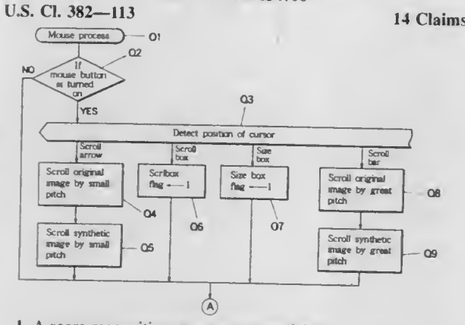
Takeshi Kikuchi, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Sep. 28, 1994, Ser. No. 314,341

Claims priority, application Japan, Oct. 20, 1993, 5-2623519; Nov. 25, 1993, 5-295423; Feb. 15, 1994, 6-018159

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—113 **14 Claims**



1. A score recognition apparatus comprising:

a score reader to form an original image data of a score;

a processor for analyzing the original image data to recognize therefrom score elements to provide a corresponding score data;

a processor for synthesizing synthetic image data of the score based upon the score data, the synthetic image data having portions corresponding to portions of the original image data in both horizontal and vertical positions;

a display screen for displaying an original image and a synthetic image in response to display data;

a user interface for receiving an operation command to control a screen operation of a displayed image; and

a processor responsive to the operation command for processing the original image data and the synthetic image data to provide display data to the display screen such that the display screen displays corresponding portions of the synthetic image data and the original image data together for visual comparison of the corresponding portions, the portion of the synthetic image data corresponding in both horizontal and vertical positions to the portion of the original image data,

wherein the user interface is capable of receiving an operation command to initiate a scrolling screen operation in the horizontal direction to concurrently horizontally scroll the displayed original image and the synthetic image within a pair of parallel display areas defined on the display screen, and

the user interface is capable of receiving an operation command to initiate a scrolling screen operation in the vertical direction to concurrently vertically scroll the displayed original image and the synthetic image within a pair of parallel display areas defined on the display screen.

5,825,906

SIGNATURE RECOGNITION SYSTEM

Kenzo Obata, Okazaki; Yoshiki Uchikawa, Nagoya; Takeshi Furuhashi, Nagoya, and Xuhua Yang, Nagoya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 455,908, May 31, 1995, abandoned. This application Mar. 3, 1997, Ser. No. 807,980

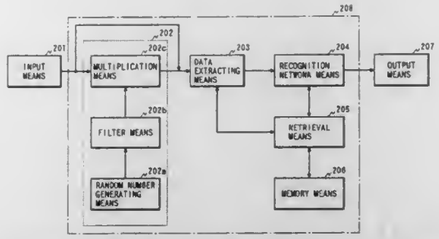
Claims priority, application Japan, Nov. 30, 1994, 6-296552

Int. Cl.[6] G06K *9/00;* **G06G** *7/00*

U.S. Cl. 382—119 **25 Claims**

1. A signature recognition apparatus comprising:

input means for inputting a genuine signature and an unknown signature and generating signals representing said genuine and said unknown signatures;



a characteristic data generating means for sampling said signals generated by said input means and generating a plurality of characteristic data each representing a a characteristic portion of said genuine and said unknown signatures, each characteristic data having fluctuations obtained on the basis of said signals sampled;

a plurality of independent fluctuation absorbing means each receiving one of said plurality of characteristic data and creating fuzzified data, each of said fuzzified data corresponding to one of said plurality of characteristic data of said genuine and said unknown signatures using membership functions;

a plurality of independent switching means, each associated with one of said plurality of independent fluctuation absorbing means, each of said plurality of independent switching means passing or blocking each of said fuzzified data in accordance with a given ON-and-OFF pattern representing one of an on and an off condition of each of said plurality of switching means;

evaluating means for comparing said fuzzified data corresponding to said genuine signature passing through said plurality of independent switching means with an ideal value, thereby obtaining an evaluation value of a combination of ON-and-OFF patterns presently used to control said plurality of switching means;

retrieval means for finding an optimum combination of ON-and-OFF patterns having a best evaluation value by repeating a predetermined operation, said predetermined operation comprising the steps of setting a plurality of combinations of ON-and-OFF patterns, deleting some of said plurality of combinations of ON-and-OFF patterns having lower evaluation values, selecting other of said plurality of combinations of ON-and-OFF patterns having higher evaluation values, creating new combinations of ON-and-OFF patterns by combining said selected other of said plurality of combinations using a genetic algorithm, and replacing said deleted combinations with said newly created combinations of ON-and-OFF patterns; and

recognition means for judging whether said unknown signature is genuine on the basis of said fuzzified data corresponding to said unknown signature and passing through said plurality of independent switching means controlled by said optimum combination of ON-and-OFF patterns found by said retrieval means.

5,825,907

NEURAL NETWORK SYSTEM FOR CLASSIFYING FINGERPRINTS

Anthony Peter Russo, Bloomfield, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

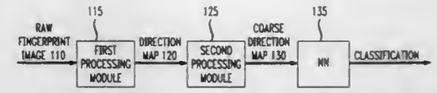
Continuation of Ser. No. 364,914, Dec. 28, 1994, abandoned. This application Jul. 11, 1997, Ser. No. 893,668

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—124 **10 Claims**

1. A system for classifying an unknown fingerprint image having a plurality of pixels, comprising,

means for generating a pixel direction map from ridge directions found in the unknown fingerprint image;



means for generating a coarse direction map by dividing said pixel direction map into regions and determining for each of the regions a coarse direction as a most frequent pixel direction within the region; and

a neural network classifier having an input layer of neurons connected to receive said coarse direction map and connected to a hidden layer of neurons, wherein square regions of said input layer of neurons are arranged in a plurality or rings and connected to said hidden layer of neurons, said neural network classifier further includes an output layer of neurons that represent a plurality of fingerprint classifications.

5,825,908

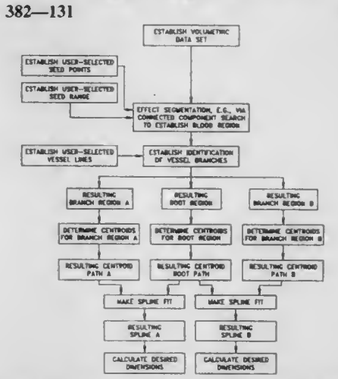
ANATOMICAL VISUALIZATION AND MEASUREMENT SYSTEM

Steven D. Pieper, Thetford, Vt.; Michael A. McKenna, Cambridge, and David T. Chen, Somerville, both of Mass., assignors to Medical Media Systems, West Lebanon, N.H.

Filed Dec. 29, 1995, Ser. No. 581,055

Int. Cl.[6] G06T *7/60*

U.S. Cl. 382—131 **3 Claims**



3. A method for determining a length dimension of an anatomical structure using an appropriate set of 2-D slice images obtained by scanning said anatomical structure, said method comprising the steps of:

(1) assembling said set of scanned 2-D slice images into a 3-D database;

(2) extracting an anatomical feature from the information contained in said 3-D database, said anatomical feature comprising the centerline of said anatomical structure, and generating a cumulative sum table derived from said centerline;

(3) specifying a length measurement to be made with respect to said cumulative sum table based on said extracted anatomical feature; and

(4) calculating the length measurement so specified.

5,825,909

AUTOMATED METHOD AND SYSTEM FOR IMAGE SEGMENTATION IN DIGITAL RADIOGRAPHIC IMAGES

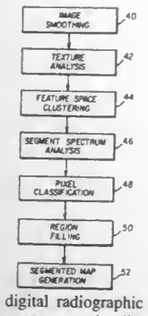
Ben Kwei Jang, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,648

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—132 **37 Claims**

1. A method for segmenting a digital radiographic image into a plurality of regions in a spatial domain, said method comprising the steps of:



(a) smoothing the digital radiographic image at a plurality of scales to thereby generate a plurality of smoothed images;
(b) computing two or more texture measures for each pixel from each smoothed image at each scale;
(c) at each scale, clustering the texture measures in a feature space;
(d) determining the most stable number of clusters in the feature space;
(e) classifying each pixel in the spatial domain based on the determined number of clusters; and
(f) generating a segmented map for further image processing.

5,825,910

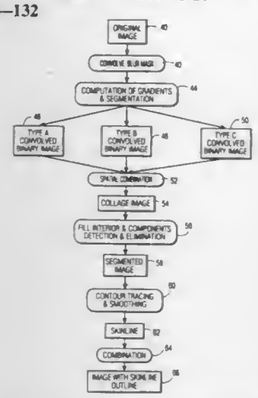
AUTOMATIC SEGMENTATION AND SKINLINE DETECTION IN DIGITAL MAMMOGRAMS

Shohreh Vafai, Roswell, Ga., assignor to Philips Electronics North America Corp., New York, N.Y.

Continuation of Ser. No. 175,805, Dec. 30, 1993, abandoned. This application Oct. 2, 1996, Ser. No. 728,677

Int. Cl.[6] G06T *5/20*

U.S. Cl. 382—132 **13 Claims**



1. A method of producing a computer-enhanced mammogram comprising:

irradiating a breast of a subject being examined with X-ray radiation in a predetermined viewing direction;

receiving the X-ray radiation exiting the breast and its external surround from said viewing direction within a two-dimensional field;

producing digital signals as a function of the X-ray radiation received, which digital signals correspond to an input two-dimensional array of digital pixels;

in response to said signals, storing said input two-dimensional array of digital pixels in a digital memory means accessible to a computer;

with said computer, processing the stored two-dimensional array of digital pixels to produce an output two-dimensional array of digital pixels in which one or more features of said input array is marked or enhanced, including detecting which pixels in said input array correspond to a skinline that forms a boundary between the breast and its external surround, and setting the values of pixels in the output array corresponding to the detected skinline to values that mark the detected skinline; and

displaying the output array of digital pixels as an image on a display means;

wherein the skinline of said breast as viewed from said viewing direction is dividable to include at least first and second contour sections and said detecting said skinline includes a step of performing a coarse segmentation between the breast and its external surround as a function of a spatial derivative computed only in a predetermined derivative direction at pixels at least in the vicinity of the skinline, said predetermined derivative direction being a first fixed direction in the vicinity of the skinline in the first contour section, and a second fixed direction, different from said first direction, in the vicinity of the skinline in the second contour section, at least one of said first and second fixed directions making a substantial angle with respect to a normal to a chest wall of the subject.

5,825,911

DEVICE FOR ASCERTAINING THE AUTHENTICITY OF AN ARTICLE AND IMAGE FORMING APPARATUS USED FOR PREVENTING BANK BILLS, SECURITIES AND THE LIKE FROM BEING, FORGED

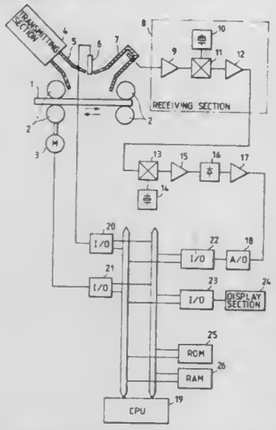
Hidefumi Nishigai, and Masao Hattori, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Dec. 6, 1995, Ser. No. 568,297

Claims priority, application Japan, Dec. 9, 1994, 6-306605; Dec. 9, 1994, 6-306606

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—135 **17 Claims**



1. A device for ascertaining the authenticity of an article, comprising:

a light source for emitting a beam of light to an article to be inspected;

electromagnetic wave generating means for emitting electromagnetic waves to the article;

electromagnetic wave receiving means for receiving the electromagnetic waves which are emitted from said electromagnetic wave generating means and reflected on and dispersed by or transmitted through the article, to output a signal corresponding to a receiving level of the received electromagnetic waves;

lighting control means for selectively turning on and off said light source; and

judging means for judging the authenticity of the article according to (i) a comparison of the receiving level outputted from said electromagnetic wave receiving means when said light source set by said lighting control means is in a state where said light source is turned on to a first predetermined level, and (ii) a comparison of the receiving level outputted from said electromagnetic wave receiving means when said light source set by said lighting control means is in a state where said light source is turned off to a second predetermined level.

5,825,912

ELECTRON BEAM TESTER

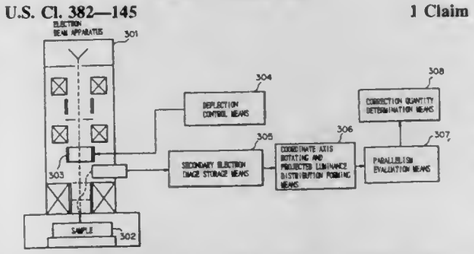
Kazuo Okubo; Hironori Teguri, and Akio Ito, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 431,847, May 1, 1995, abandoned, which is a division of Ser. No. 357,983, Dec. 19, 1994, Pat. No. 5,600,734, which is a continuation of Ser. No. 955,804, Oct. 2, 1992, abandoned. This application Jan. 10, 1997, Ser. No. 783,304

Claims priority, application Japan, Dec. 16, 1901, 3-332286; Oct. 4, 1991, 3-258140; Feb. 3, 1992, 4-17465; Jul. 17, 1992, 4-191031; Jul. 17, 1992, 4-191171

Int. Cl.[6] G21K *1/00*

U.S. Cl. 382—145 **1 Claim**



1. An electron beam tester for scanning a sample with an electron beam emitted from an electron beam unit, to form a secondary electron image, and correcting deformation of the secondary electron image, said electron beam tester comprising:

deflection control means connected to the electron beam unit for linearly transforming, according to linear transformation parameters, an electron beam scanning position into dive signals to be sent to first and second deflectors each having different deflecting directions;

secondary electron image storage means connected to the electron beam unit for storing the secondary electron image;

coordinate axis rotating and projected luminance distribution forming means connected to the secondary electron image storage means for obtaining projected luminance B(X) which accumulated the luminance of the secondary electron image along straight lines extending in parallel with the rotating axis Y obtained when rotating an X-Y coordinate system, and the axis Y being rotated either by changing the linear transformation parameters or by shifting picture rows in parallel to the axis X of the X-Y coordinate in the fixed axis X;

parallelism evaluation means connected to the coordinate axis rotating and projected luminance distribution forming means for obtaining a parallelism evaluation value (d) between a line direction of wiring patterns and the axis Y based on the projected luminance B(X); and

correction quantity determination means connected to the parallelism evaluation means for finding a rotation angle (As) which becomes a maximum parallelism value to the rotation of the axis Y, and the rotation angle (As) being used as a correction quantity for correcting deformation of the secondary electron image.

5,825,913

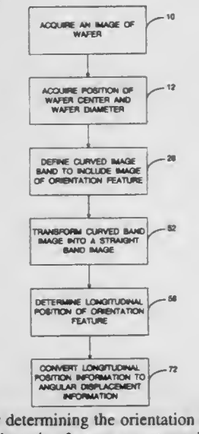
SYSTEM FOR FINDING THE ORIENTATION OF A WAFER

Fariborz Rostami, Menlo Park; James Harald Clark, Woodside, both of Calif.; David J. Michael, Newton, and David J. Wilson, West Medford, both of Mass., assignors to Cognex Corporation, Natick, Mass.

Filed Jul. 18, 1995, Ser. No. 503,574

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—151 **31 Claims**



1. Apparatus for determining the orientation of a semiconductor wafer having an orientation feature, a center point, a perimeter, and a principal radius extending from the center point to the perimeter, the apparatus comprising:

means for acquiring an image of at least a portion of said wafer including an image of at least a portion of said orientation feature;

means for acquiring knowledge of the position of said center point, and of the radial distance of a point on said orientation feature from said center point;

means for using said knowledge to define a curved image-partitioning band having a curved inner boundary, a curved outer boundary, and a curved angular displacement scale, such that said image of at least a portion of said orientation feature is disposed between said inner and outer boundaries to provide a curved band image;

polar-to-cartesian coordinate conversion means for transforming said curved band into a straight band image including a longitudinal position scale;

means for determining knowledge of the longitudinal position along said longitudinal position scale of said image of at least a portion of said orientation feature; and

means for converting said knowledge of said longitudinal position into knowledge of the corresponding angular displacement along said curved angular displacement scale, so as to provide knowledge of the orientation of said semiconductor wafer.

5,825,914

COMPONENT DETECTION METHOD

Yasutaka Tsuboi, Yamanashi; Junichi Hada, Katano, and Masamichi Morimoto, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

Filed Jul. 11, 1996, Ser. No. 678,658

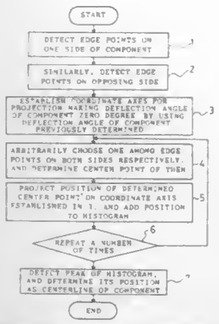
Claims priority, application Japan, Jul. 12, 1995, 7-175798

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—151 **3 Claims**

1. A component detection method for determining the center of said component, comprising the steps of:

(a) determining edge points of opposing sides of said component,



(b) determining two-dimensional coordinate axes which are established to make a deflection angle of said component zero,

(c) protecting the center position of two edge points arbitrarily selected from each side to the coordinate axis orthogonal to the opposing side in the two-dimensional coordinate axes, and creating a histogram on said coordinate axis by protecting and adding the positions of center repeatedly obtained onto said coordinate axis,

(d) detecting the peak position of the histogram obtained from the result of processing of said step (c), and determining a line passing through the peak position and parallel to said opposing sides as the centerline of said component,

(e) repeating steps (a), (b), (c) and (d) for another pair of opposing sides of said component and determining another line passing through a peak position and parallel to said other opposing sides as another centerline of said component, and

(f) determining the center of said component as an intersection of the centerlines.

5,825,915

OBJECT DETECTING APPARATUS IN WHICH THE POSITION OF A PLANAR OBJECT IS ESTIMATED BY USING HOUGH TRANSFORM

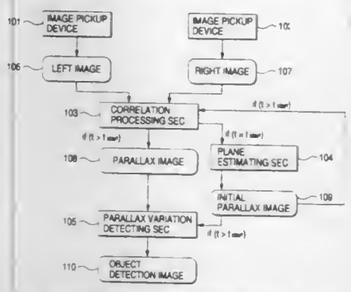
Yasuyuki Michimoto, Sagamihara; Katsumasa Onda, and Masato Nishizawa, both of Yokohama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 30, 1996, Ser. No. 704,895

Claims priority, application Japan, Sep. 12, 1995, 7-234019; Nov. 30, 1995, 7-312677

Int. Cl.[6] G06T *17/00*

U.S. Cl. 382—154 **6 Claims**



1. A plane estimating method comprising the steps of:

receiving a plurality of images that are produced by a plurality of image pickup means disposed at a predetermined interval;

calculating three-dimensional data S(X, Y); $1 \leqq X \leqq M$, $1 \leqq Y \leqq N$ for each of rectangular segments obtained by dividing the received images into a plurality of M parts in a horizontal direction and into a plurality of N parts in a vertical direction through correlation between the received images;

determining a plane passage straight line L(Y) by performing Hough transform on M three-dimensional data corresponding to rectangular segments belonging to a horizontal area GL(Y) of the received images;

performing the determining step on all horizontal areas GL(Y), $1 \leqq Y \leqq N$, to thereby determine N plane passage straight lines L(Y), $1 \leqq Y \leqq N$; and

estimating a position of a planar object in a three-dimensional space based on the N plane passage straight lines L(Y), $1 \leqq Y \leqq N$.

5,825,916

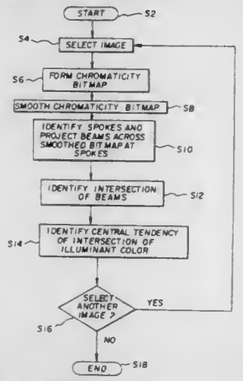
ILLUMINANT COLOR DETECTION

Michel Denber, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 17, 1996, Ser. No. 766,135

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—162 **6 Claims**



1. A method for determining the color of an illuminant of a scene, comprising the steps of:

a) forming a color digital image of the scene;

b) forming a chromaticity bitmap of the digital image;

c) smoothing the chromaticity bitmap;

d) identifying a plurality of spokes in the smoothed chromaticity bitmap and projecting a plurality of beams across the smoothed chromaticity bitmap, each beam encompassing one of the spokes;

e) identifying the intersection of the beams; and

f) determining the central tendency of the intersection to determine the color of the illuminant.

5,825,917

REGION-BASED IMAGE PROCESSING METHOD, IMAGE PROCESSING APPARATUS AND IMAGE COMMUNICATION APPARATUS

Nobuya Suzuki, Kitasoma-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Sep. 26, 1995, Ser. No. 533,945

Claims priority, application Japan, Sep. 30, 1994, 6-237169; Jun. 13, 1995, 7-146507; Jul. 11, 1995, 7-174717; Jul. 12, 1995, 7-199024

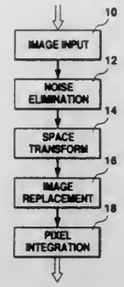
Int. Cl.[6] G06K *9/00;9/34*

U.S. Cl. 382—164 **29 Claims**

1. A method of processing images on a region basis, said method comprising:

a step for dividing a uniform color space into a plurality of regions, a representative color being imparted to each of the regions;

a step for imparting a representative color to each portion of the image;



a judgment step for judging, based on region identifying information of the representative color of each portion of the image, whether or not representative colors of each portion of the image are arranged in a same region or adjacent regions in the uniform color space; and

a step of integrating the portions of the image when the representative colors thereof are judged as being arranged in a same or adjacent regions in the uniform color space and the portions are adjacent in the image; wherein:

region identifying information is imparted to each representative color so as to represent positional relationship between the divided regions.

5,825,918

METHOD AND APPARATUS FOR GENERATING AND REPRODUCING OF COMPRESSED COLORED VIDEO SCENES

Peter Hoffmann, Dresden, and Gerald Knabe, Korschenbroich, both of Germany, assignors to Q-Team Dr. Knabe Gesellschaft für Informations-und Qualifikations-systeme mbH, Korschenbroich, Germany

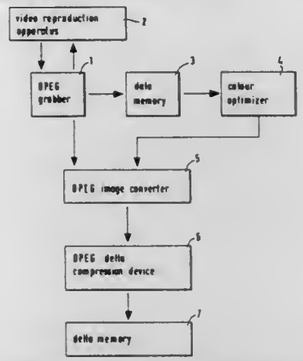
PCT No. PCT/EP95/00590, § 371 Date Nov. 5, 1996, § 102(e) Date Nov. 5, 1996, PCT Pub. No. WO95/22869, PCT Pub. Date Aug. 24, 1995

PCT Filed Feb. 17, 1995, Ser. No. 693,123

Claims priority, application Germany, Feb. 18, 1994, 44 05 217.0; Jun. 21, 1994, 44 21 657.2

Int. Cl.[6] G06K *9/00;9/36*

U.S. Cl. 382—166 **13 Claims**



1. A method for generating a compressed coloured video scene from a coloured original video scene having a total colour impression and a colour plurality, comprising the steps of:

a) entering of colour values of pixels of individual images of said original video scene into a three-dimensional colour space having dimensions being represented by colours;

b1) providing a first division of said three-dimensional colour space into a plurality of first colour rectangular parallel epipeds such that each colour parallel epiped contains the same number of pixels, and determining for each first colour parallel epiped a mean first colour value, reproducing in total said total colour impression of said original video scene;

b2) providing a second division of said three-dimensional colour space into a plurality of second colour parallel epipeds such that each second colour parallel epiped contains the same number of colours used in said video scene, and determining for each second colour parallel epiped a mean second colour value, reproducing in total said colour plurality of said original video scene;

c1) replacing said mean first and second colour value obtained in steps b1) and b2) having a smallest distance in said colour space by their mean value; and

c2) repeating the step (c1) until a first desired number of mean colour values is obtained.

5,825,919

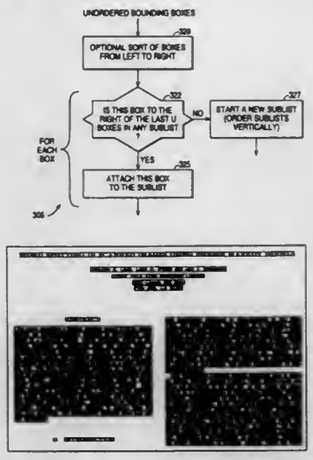
TECHNIQUE FOR GENERATING BOUNDING BOXES FOR WORD SPOTTING IN BITMAP IMAGES

Dan S. Bloomberg, Palo Alto; Lynn D. Wilcox, Portola Valley, and Francine R. Chen, Menlo Park, all of Calif., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 992,357, Dec. 17, 1992, abandoned. This application Sep. 20, 1994, Ser. No. 489,545

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—177 **24 Claims**



1. A method of boxing words in a scanned input image containing words, the method comprising the steps of:

constructing bounding boxes of connected components, the connected components assumed to be characters forming the words, in the input image;

arranging the bounding boxes into ordered sublists to define text lines, said arranging step further comprising the steps of

sorting the bounding boxes from left to right, and

adding a bounding box into a particular one of the ordered sublists if the bounding box is vertically separated by no more than a predetermined degree of vertical separation from at least one of the last U bounding boxes already added into the particular sublist, where U is a predetermined integer greater than one;

computing a histogram of spacings between adjacent bounding boxes among the bounding boxes of connected components;

determining locations of first and second histogram peaks, assumed to represent intercharacter space and interword space respectively; and

determining word bounding boxes based at least in part on the histogram peak locations.

5,825,920

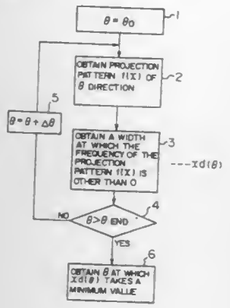
METHOD AND UNIT FOR BINARY PROCESSING IN IMAGE PROCESSING UNIT AND METHOD AND UNIT FOR RECOGNIZING CHARACTERS

Tadaaki Kitamura, Hitachi; Masao Takatoo, Katsuta, and Norio Tanaka, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 646,388, Jan. 28, 1991, Pat. No. 5,243,668. This application Dec. 22, 1992, Ser. No. 995,760

Int. Cl.[6] G06K *9/34*

U.S. Cl. 382—178 **5 Claims**



1. A character recognition unit: comprising a frame memory circuit changing an image picked-up signal which is obtained by horizontally and vertically scanning a character string to be recognized into binary data, changing the binary data into picture elements and storing the picture elements;

address designation means for designating an address of said frame memory, scanning the picture elements stored in said frame memory from said address in a predetermined direction and reading the stored pictures;

projection pattern extraction means for extracting a projection pattern comprised of a number of picture elements expressing said character string of picture elements read out by said address designation means;

projection width extraction means for obtaining a projection width, said projection width comprised of at least one of a number of scanning lines and a width of scanning lines, when a projection value of said projection pattern is not "0"; distortion angle detection means for gradually changing direction of said scanning lines to obtain a scanning direction as a distortion angle when said projection width becomes a minimum;

means for separating each picture element from said character string;

correction means for correcting only one of horizontal direction component and vertical direction component of each of at least one of the character data and dictionary data corresponding to each character;

recognition means for recognizing characters by comparing at least one of the corrected character data and corrected dictionary data with at least one of the non-corrected dictionary data and the non-corrected character data; and

means for obtaining a distortion angle of said character string such that there are three scanning directions of θ_1, θ_2, and θ_3, projection widths obtained in said respective directions are $xd(\theta_1)$, $xd(\theta_2)$, and $xd(\theta_3)$, which are applied to an expression of $xd(\theta)=a\theta+b\theta+c$, and a value of θ which takes a minimum value in said quadratic curve is selected as said distortion angle.

5,825,921

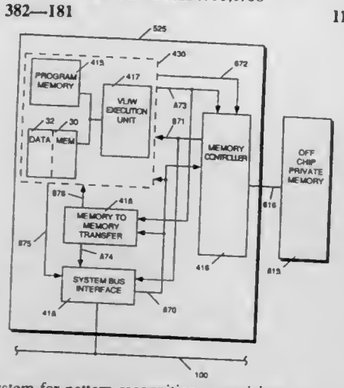
MEMORY TRANSFER APPARATUS AND METHOD USEFUL WITHIN A PATTERN RECOGNITION SYSTEM

Carole Dulong, Saratoga, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 34,678, Mar. 19, 1993. This application Oct. 23, 1995, Ser. No. 520,260

Int. Cl.[6] G06K *9/00;9/68*

U.S. Cl. 382—181 **11 Claims**



1. A system for pattern recognition comprising:

general purpose host computer system means comprising: a host bus means for providing communication within said general purpose host computer system means; central processor means for executing host instructions, said central processor means coupled to said host bus means; and host memory means for storing host information, said host memory means coupled to said host bus means; and

programmable multiprocessing means for executing pattern recognition instructions to compare an unknown pattern against a plurality of reference patterns to generate comparison results, said programmable multiprocessing comprises first and second arithmetic pipelines for executing arithmetic instructions, first and second pointer pipelines for executing pointer instructions, said first pointer pipeline supplying reference pointers to said first arithmetic pipeline and said second pointer pipeline supplying reference pointers to said second arithmetic pipeline, and a control pipeline for controlling instruction flow of said arithmetic and pointer instructions;

internal memory means for storing said unknown pattern and selected reference patterns of said plurality of reference patterns and for storing comparison results;

private memory means coupled to said programmable multiprocessing means for storing a library of said plurality of reference patterns; and

memory transfer means for transferring pattern information and said comparison results between said private memory means and said internal memory means during execution of said pattern recognition instructions by said programmable multiprocessing means.

5,825,922

METHODS AND APPARATUS FOR CENTROID BASED OBJECT SEGMENTATION IN OBJECT RECOGNITION-TYPE IMAGE PROCESSING SYSTEM

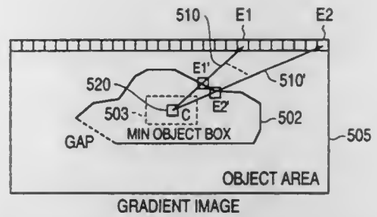
William A. Pearson, Orlando; Richard W. Benton, Altamonte Springs, and John D. Lofgren, Orlando, all of Fla., assignors to Martin Marietta Corporation, Orlando, Fla.

Continuation of Ser. No. 150,829, Nov. 12, 1993, Pat. No. 5,604,822. This application Aug. 28, 1996, Ser. No. 704,810

Int. Cl.[6] G06K *9/48*

U.S. Cl. 382—199 **4 Claims**

1. A method of determining whether an image pixel of an input image having a plurality of image pixels including edge pixels corresponds to part of an object using a set of masks, each mask



GRADIENT IMAGE

including a matrix of bits, wherein each image pixel of the plurality of image pixels has a gradient value and one of the image pixels of the plurality of image pixels corresponds to a centroid of the object, the method, performed in a signal processing system, comprising the steps of:

dividing the input image into four quadrants using the centroid, each of the quadrants having a corresponding set of masks;

identifying the edge pixels in the input image, each identifies edge pixel having a gradient value greater than a threshold gradient value; and

comparing each one of the sets of masks for each quadrant with a matrix of the image pixels within the same quadrant to identify image pixels in the matrix that correspond to part of the object.

5,825,923

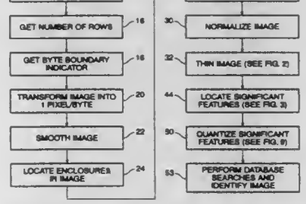
METHOD FOR PERFORMING CHARACTER RECOGNITION ON A PIXEL MATRIX

Archie L. Thompson, San Jose, and Richard A. Van Saun, Menlo Park, both of Calif., assignors to Faxtrieve, Inc., Mountain View, Calif.

Filed Sep. 5, 1996, Ser. No. 706,577

Int. Cl.[6] G06K *9/42;9/44;9/62;9/80*

U.S. Cl. 382—204 **24 Claims**



1. A method for recognizing ciphers, said method comprising the steps of:

inputting a digital representation of a cipher, along with a bits-to-pixel ratio of said digital representation, the number of pixels per row of said digital representation, the number of rows in said digital representation, and an indicator which represents a block boundary condition of said digital representation;

transforming said digital representation so that each individual pixel of image information is represented by an addressable data block;

smoothing said transformation;

locating enclosures in said smoothed transformation, said enclosures defining spatial boundaries;

sizing said smoothed transformation, resulting in selected erased enclosures;

restoring all erased enclosures in said sized transformation;

normalizing said enclosure-restored transformation so that stray marks are erased, to form a normalized image;

thinning said normalized image;

storing said thinned image in a sparse space matrix;

locating significant features in said thinned image;

quantizing location of said significant features; and

performing database searches using said quantized values as search keys to identify ciphers associated with said search keys.

5,825,924

METHOD AND APPARATUS FOR IMAGE PROCESSING

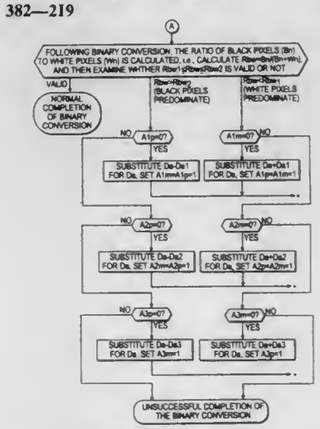
Tetsuji Kobayashi, Yokosuka, Japan, assignor to Nippon Telegraph and Telephone Corporation, Tokyo, Japan

Continuation of Ser. No. 238,855, May 6, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 757,960

Claims priority, application Japan, May 7, 1993, 5-107075

Int. Cl.[6] G06K *9/68*

U.S. Cl. 382—219 **10 Claims**



1. An image processing apparatus having stored registered images, comprising:

means for determining whether a ratio of a total number of black pixels to a total number of black pixels and white pixels in an original test image is within a first predetermined range;

binary converting and fixing means for converting the original test image into a binary test image and for fixing said binary test image for comparison, said binary converting and fixing means reconverting and refixing until said original test image has said ratio within the first predetermined range;

memory means for storing said binary test image having said ratio within said first predetermined range and a binary converted one of said stored registered images, said one of said stored registered images being converted and fixed in the same manner as said test image;

means for aligning said binary test image with said binary registered image to compare said two binary images; and

means for comparing said two binary images to determine whether said binary test image is the same as said binary registered image, said binary test image having said ratio within said first predetermined range being used for comparison with said binary registered image by said comparing means.

5,825,925

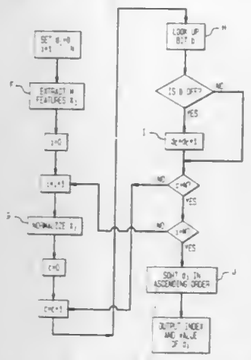
IMAGE CLASSIFIER UTILIZING CLASS DISTRIBUTION MAPS FOR CHARACTER RECOGNITION

Henry Spalding Baird, Maplewood, and Tin Kam Ho, Scotch Plains, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 335,212, Nov. 4, 1994, abandoned, which is a continuation of Ser. No. 138,579, Oct. 15, 1993, abandoned. This application Nov. 6, 1996, Ser. No. 744,291

Int. Cl.[6] G06K 9/66

U.S. Cl. 382—225 1 Claim



1. A method of character recognition, comprising the steps of:

receiving an input image that is to be assigned to one of a plurality of image classes;

extracting a respective numerical value of each of plural features of the input image, wherein at least one of said features is defined according to a rule that relates to the shapes of images of at least one said image class;

recording the input-image feature values;

providing a tabulation of those feature values that occur in a training set, wherein: (i) said training set comprises, for each image class, a plurality of training images that are known to belong to that class; and (ii) said tabulation associates each tabulated feature value with a corresponding class;

comparing the input-image feature values to at least some of the tabulated training-image feature values; and

based on a result of said comparing step, assigning the input image to one of the image classes;

CHARACTERIZED IN THAT

the step of providing a tabulation comprises providing a respective class distribution map for each image class;

each said class distribution map contains, for each of the plural features, a record of each numerical value of said feature that was exhibited by at least one training image of the pertinent class;

the comparing step comprises evaluating a respective class distance between each of the class distribution maps and a test map that tabulates the respective input-image feature values;

in the assigning step, the input image is assigned to that class having the least distant class distribution map as determined in the comparing step;

each class distance is evaluated by counting non-matched features;

a feature is counted as non-matched if and only if the numerical value of said feature as evaluated on the input image fails to match any of the numerical values of said feature tabulated in the pertinent class distribution map; and

in the counting of non-matched features, every feature is given equal weight.

5,825,926

CHARACTER STRING RETRIEVAL METHOD AND CHARACTER STRING RETRIEVAL APPARATUS

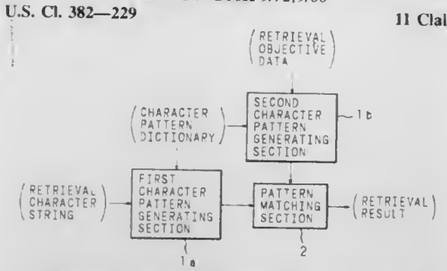
Hiroshi Tanaka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Apr. 12, 1995, Ser. No. 422,717

Claims priority, application Japan, Aug. 16, 1994, 6-192638

Int. Cl.[6] G06K 9/72;9/00

U.S. Cl. 382—229 11 Claims



1. A character string retrieval method for retrieving at least one of a matching character string and a similar character string, from a retrieval objective character group, to a retrieval character string, the retrieval character string and the retrieval objective character group each having a character code portion and a character pattern portion, comprising the steps of:

converting the character code portion in the retrieval objective character group and the character code portion in the retrieval character string into character patterns;

performing a pattern matching using the character patterns converted by said converting step and the character pattern portions of the retrieval objective character group and the retrieval character string; and

retrieving the at least one of the matching character string and the similar character string from the retrieval objective character group based on a result of said performing step.

5,825,927

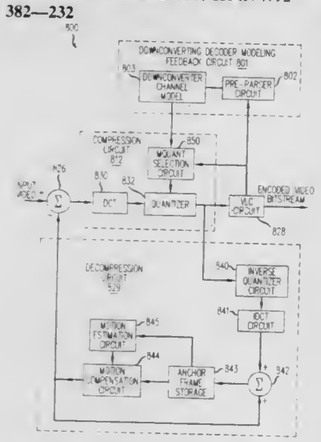
METHODS AND APPARATUS FOR ENCODING VIDEO DATA IN A MANNER THAT IS WELL SUITED FOR DECODING BY REGULAR OR DOWNCONVERTING DECODERS

Jill Boyce, Manalapan, N.J., and Larry Pearlstein, Newtown, Pa., assignors to Hitachi America, Ltd., Tarrytown, N.J.

Filed Jan. 16, 1996, Ser. No. 587,207

Int. Cl.[6] G06K 9/36; H04N 7/12

U.S. Cl. 382—232 10 Claims



1. An encoder, comprising:

a data compression and encoding circuit for receiving, compressing, and encoding video signals;

a first decoder modeling circuit coupled to the data compression and encoding circuit for providing feedback thereto; and

a downsampling decoder modeling circuit that performs a downsampling operation coupled to the data compression and encoding circuit for providing feedback thereto.

5,825,928

DECODING APPARATUS FOR ERROR CONCEALMENT CONSIDERING MOTION DIRECTIONS OF MOVING IMAGES

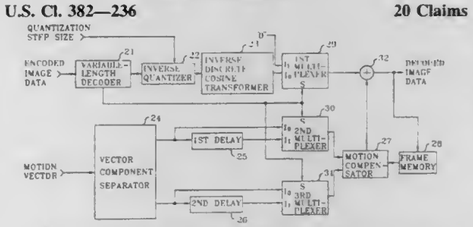
Pil-ho Yu, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Nov. 30, 1995, Ser. No. 565,128

Claims priority, application Rep. of Korea, Nov. 30, 1994, 32218/1994

Int. Cl.[6] G06K 9/36

U.S. Cl. 382—236 20 Claims



1. A motion image decoding apparatus which receives encoded image data of an image having a plurality of pictures, wherein the encoded image data has first, second and third data regions having predetermined sizes and which receives a motion vector for each of the data regions, comprising:

decoding means for decoding the encoded image data and generating an error indication signal if an error is generated in image data of the first data region;

vector component generation means for generating and outputting first and second vector components, wherein said first and second vector components are generated from the motion vector corresponding to the first data region if said error indication signal indicates no error, and said first vector component is generated from the motion vector corresponding to the second data region which is located on a line preceding a line containing the first data region and which is in a same picture as the first data region and said second vector component is generated from the motion vector corresponding to the third data region which is located in a column preceding a column containing the first data region and which is in a same picture as that of the first data region, if said error indication signal indicates an error;

motion compensation means for compensating said image data of the first data region according to said first and second vector components output from said vector component generation means;

selection output means for outputting the decoded image data of the first data region decoded by said decoding means when said error indication signal indicates no error and outputting null data with respect to the first data region when said error indication signal indicates an error; and

adding means for adding the data output from said selection output means and decoded image data output from said motion compensation means.

5,825,929

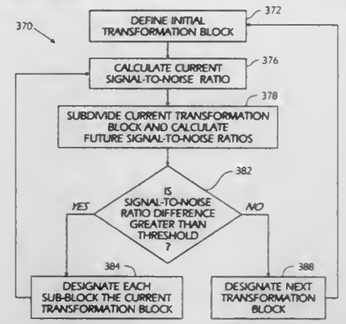
TRANSFORMATION BLOCK OPTIMIZATION METHOD

Wei-ge Chen, Redmond, and Ming-Chieh Lee, Bellevue, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 4, 1996, Ser. No. 659,309

Int. Cl.[6] G06K 9/36

U.S. Cl. 382—236 17 Claims



1. In a method of encoding in a compressed format video information within a video image frame sequence having first and second video image frames, a method of defining a transformation image frame component having video information in the first video image frame for transformation to the second video image frame, comprising:

defining the image frame component in the first video image frame and determining a signal-to-noise ratio for the video information within the image frame component;

tentatively subdividing the image frame component into plural image frame subcomponents and determining a signal-to-noise ratio for the video information within the image frame subcomponents; and

adopting the image frame subcomponents as image frame components whenever the signal-to-noise ratio for the image frame subcomponents is greater than the signal-to-noise ratio for the image frame component by more than a predetermined threshold.

5,825,930

MOTION ESTIMATING METHOD

Dong-seek Park, Daegu, Rep. of Korea; John Villasenor, and Feng Chen, both of Los Angeles, Calif., assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea, and The Regents of the University of California, Oakland, Calif.

Filed Mar. 5, 1997, Ser. No. 811,189

Int. Cl.[6] G06K 9/36

U.S. Cl. 382—236 7 Claims

1. A method of compressing data comprising the steps of dividing each picture frame into a predetermined number of macroblocks, selecting a candidate macroblock from each of the similar macroblocks in a previous frame, and encoding a motion vector and a difference between a current macroblock and said candidate macroblock, said method further including a motion estimating method, which comprises the steps of:

(a) obtaining a motion vector (x_o, y_o) which minimizes a predetermined error function;

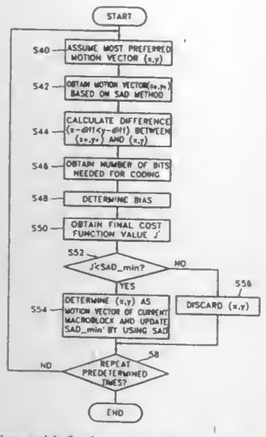
(b) assuming a preferred motion vector (x, y);

(c) calculating a difference (x-diff, y-diff) between (x_o, y_o) and (x, y);

(d) obtaining a bit number corresponding to a number of bits needed to encode said x-diff and y-diff;

(e) determining a bias based on a bias model according to said bit number;

(f) obtaining a final cost function value by means of the difference between a cost function value and a bias;



(g) comparing said final cost function value with a predetermined allowance limit;

(h) setting said assumed motion vector (x, y) as a motion vector for a current macroblock and updating said allowance limit by using said cost function value, if said cost function value is smaller than said limit value in said step (g); and

(i) discarding said assumed motion vector (x, y) if said cost function value is not smaller than said limit value in said step (g).

5,825,931

IMAGE ENCODING DEVICE

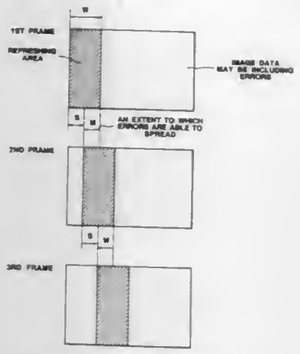
Mitsuru Owada, Yokohama, and Yushi Kaneko, Kawasaki, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 609,001, Feb. 29, 1996, abandoned, which is a continuation of Ser. No. 87,070, Jul. 7, 1993, abandoned. This application Nov. 3, 1997, Ser. No. 962,649

Claims priority, application Japan, Jul. 14, 1992, 4-187073

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—236 **22 Claims**



1. An image encoding device, comprising:

input means for inputting an image signal of each pixel;

encoding means for encoding the image signal to compress an amount of information thereof, said encoding means encoding pixels in a first area of a present picture by using only pixels in the present picture, said encoding means being able to encode by motion compensation pixels in a second area of the present picture by using pixels in another picture; and

changing means for changing the position of the first area at intervals such that the positions of the first areas of adjacent pictures are mutually overlapped, wherein a width of the overlapped area between the first areas of the adjacent pictures is larger than a maximum extent corresponding to the maximum motion vector which can be compensated by the motion compensation in the direction of changing the position of the first area, or equal to the maximum extent.

5,825,932

METHOD OF ESTABLISHING HALFTONE DOT THRESHOLDS, APPARATUS FOR GENERATING BINARY DATA, AND IMAGE FILM/PLATE-MAKING SYSTEM

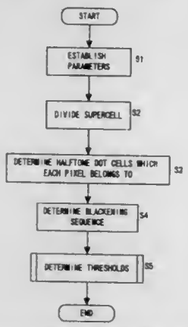
Yoshiaki Inoue, Kanagawa-ken, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa-Ken, Japan

Filed May 22, 1996, Ser. No. 651,609

Claims priority, application Japan, May 23, 1995, 7-123922

Int. Cl.[6] H04N *1/405*

U.S. Cl. 382—237 **10 Claims**



1. A method of establishing halftone dot thresholds by establishing a supercell on a pixel grid determined by an output resolution, dividing the supercell into halftone dot cells, and assigning a threshold to each of pixels in the halftone dot cells, comprising the steps of:

dividing the supercell into halftone dot cells each with a highlight point at center and halftone dot cells each with a shadow point at center, with said halftone dot cells each with a highlight point at center having vertexes aligned with the centers of said halftone dot cells each with a shadow point at center; and

alternately determining thresholds assigned to respective pixels in the halftone dot cells each with a highlight point at center and thresholds assigned to respective pixels in the halftone dot cells each with a shadow point at center.

5,825,933

PARALLEL PROPAGATING EMBEDDED BINARY SEQUENCE FOR PARAMETERIZING TWO DIMENSIONAL IMAGE DOMAIN CODE PATTERNS IN TWO DIMENSIONAL ADDRESS SPACE

David L. Hecht, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

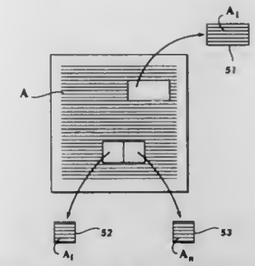
Filed Dec. 20, 1996, Ser. No. 770,279

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—243 **3 Claims**

1. A process for constructing a machine readable two dimensional image domain address space comprising

registering a two dimensional code pattern with a two dimensional lattice of generally uniformly spaced centers to identify at least one set of parallel, transversely spaced apart lines within said code pattern:



encoding respective unique numeric sequences on respective ones of said lines of said code pattern so that said sequence propagate across said code pattern in parallel with each other, said sequences being phased relative to each other to cause the relative phase difference between neighboring ones of said sequences to incrementally increase transversely of said code pattern;

whereby said unique numeric sequences parameterize one dimension of said code pattern and the relative phase difference between said sequences parameterize a second dimension of said code pattern.

5,825,934

ADAPTIVE IMAGE CODING METHOD AND APPARATUS

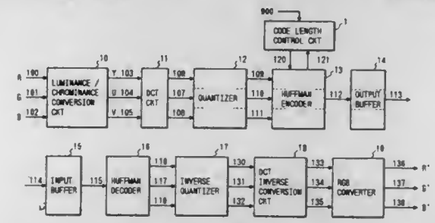
Hidefumi Ohsawa, Kawaguchi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 872,142, Apr. 22, 1992, abandoned. This application Oct. 17, 1994, Ser. No. 324,458

Claims priority, application Japan, Apr. 23, 1991, 3-092291

Int. Cl.[6] G06R *9/36*

U.S. Cl. 382—246 **9 Claims**



1. An image processing apparatus comprising:

inputting means for inputting image data representing an input image;

dividing means for dividing the image data into plural blocks of data and outputting the divided blocks, each block representing a block image of predetermined size, and the input image consisting of the block images in combination;

converting means for converting target block data included in the plural blocks of data into plural frequency component data;

block encoding means for separating the plural frequency component data, using a separating method, into first frequency component data used for encoding and second frequency component data not used for encoding, for generating encoded data by using the first frequency component data and an end-of-block code without the second frequency component data, and for outputting the encoded data; and

holding means for holding information representing a first data amount corresponding to a total amount of encoded data previously produced by said block encoding means,

wherein the separating method uses a predetermined target amount and the information held by said holding means independently of a total amount of the target block data included in each of the plural blocks of data.

5,825,935

SUBBAND CODING METHOD WITH WAVELET TRANSFORM FOR HIGH EFFICIENCY VIDEO SIGNAL COMPRESSION

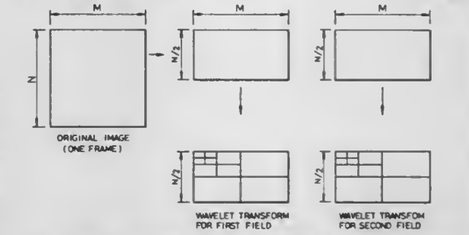
Sho Murakoshi, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 28, 1995, Ser. No. 576,982

Claims priority, application Japan, Dec. 28, 1994, 6-328708

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—248 **3 Claims**



1. A subband coding method for dividing a digital video signal into a plurality of frequency bands in vertical and horizontal directions in a spatial frequency region comprising the steps of:

executing two-dimensional multilayer (n-layer) wavelet transform on each processing unit of said digital video signal,

extracting data from said plurality of frequency bands in proportion to a number of data in each frequency band,

rearranging extracted data into a plurality of data blocks each consisting of 2"×2" pieces of data, and

scanning the extracted data in said data blocks by scanning from data extracted from a layer consisting of lowest frequency bands to data extracted from a layer consisting of higbest frequency bands and by horizontally scanning data extracted from an LH band consisting of high frequency components in a vertical direction and low frequency components in a horizontal direction, then vertically scanning data extracted from an HL band consisting of low frequency components in said vertical direction and high frequency components in said horizontal direction, and then scanning data extracted from an HH band consisting of high frequency components in said vertical and horizontal directions to generate a data train and accomplish run-length coding.

5,825,936

IMAGE ANALYZING DEVICE USING ADAPTIVE CRITERIA

Laurence P. Clarke, Temple Terrace; Wei Qian, Wesley Chapel, and Maria Kallergi, Tampa, all of Fla., assignors to University of South Florida, Tampa, Fla.

Continuation of Ser. No. 310,708, Sep. 22, 1994, abandoned. This application Oct. 15, 1996, Ser. No. 730,574

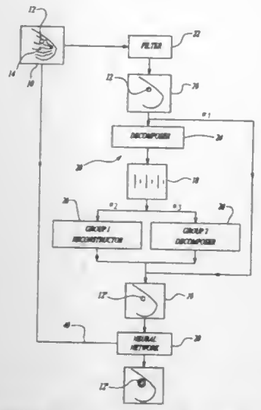
Int. Cl.[6] G06K *9/40;9/00*

U.S. Cl. 382—261 **7 Claims**

1. An imaging analyzing device for analyzing a digital image having at least one suspicious target area, normal parenchymal tissue and image background noise, the image analyzing device comprising:

first stage filter means for producing a first enhanced image, said first stage filter means including an adaptive multi-stage two dimensional using localized metrics as an adaptive criteria for filter type selection filter for filtering out background noise and selectively smoothing different tissues on a pixel by pixel basis in a manner to selectively enhance the suspicious target areas with the digital image; and

second stage filter means for producing a second stage enhanced image with selective enhancement of suspicious target areas including a decomposer means for multiresolution wavelet transform, for decomposing said first enhanced image into subimages and a reconstructor means for reconstructing selected subimages relating to possible suspicious target area



and background tissues, summing the image representing the reconstructed sub-images representing the suspicious target areas with said first stage enhanced image, substracting the image representing the reconstructed sub-images representing the background tissues, including the use of appropriate weighting factors.

5,825,937

SPATIAL-FILTERING UNIT FOR PERFORMING ADAPTIVE EDGE-ENHANCEMENT PROCESS

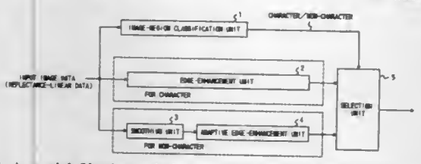
Satoshi Ohuchi, Hachioji, and Sadao Takahashi, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Japan

Continuation of Ser. No. 616,775, Mar. 15, 1996, abandoned, which is a continuation of Ser. No. 310,078, Sep. 22, 1994, abandoned. This application Mar. 27, 1997, Ser. No. 826,003

Claims priority, application Japan, Sep. 27, 1993, 5-239559

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—261 **12 Claims**



1. A spatial-filtering unit for spatially-filtering image data representing tone levels of an image, said spatial-filtering unit comprising:

first filtering means for performing on the image data in the form of a reflectance-linear signal a smoothing process by which tone oscillations formed by the tone levels are suppressed, the first filtering means having an output providing smoothed image data, the reflectance-linear signal representing tone levels linear to reflectance of light reflected by an original image;

second filtering means for performing on the smoothed image data which has previously undergone said smoothing process an adaptive edge-enhancement process which enhances sharpness of edges constituting parts having steep tone gradients in the image, said adaptive edge-enhancement process depending on a combination of a resolution of input image data and a coefficient of said second filtering means so that said second filtering means may selectively enhance portions of said image having steep tone gradients on a half-tone background; and

data-form converting means connected between said first filtering means and said second filtering means for converting a first signal in the image data in the form of the reflectance-linear signal to a density linear signal prior to said adaptive edge-enhancement process, said density linear signal representing tone levels linear to densities of the original image.

5,825,938

SYSTEM AND METHOD FOR ENHANCING THE SHARPNESS OF A COLOUR IMAGE

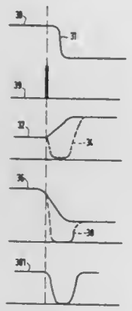
Alphonsius A. J. De Lange, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 12, 1995, Ser. No. 527,237

Claims priority, application European Pat. Off., Sep. 12, 1994, 94202604

Int. Cl.[6] G06K *9/00;9/48;9/56;9/40*

U.S. Cl. 382—263 **10 Claims**



1. An image display system, comprising:

an image display device which is arranged to receive an image signal representing saturation levels of color components of an input color image and to display an output color image which is the same as the input color image in a general sense; and

edge location signaling means for signaling a location in the input color image where an edge is situated between two regions having a different image characteristic, said edge location signaling means being coupled to the image display device;

the image display device being arranged to produce locally, in a vicinity of said edge location, saturation levels of color components of the output color image which are different from the saturation levels of said color components of the input color image in said vicinity;

characterized in that the image display device is arranged to produce locally, in the vicinity of said edge location and at both sides thereof, saturation levels of said color components of the output color image which are reduced below the saturation levels of said color components in the input color image, regardless of the color of said color components in the input color image.

5,825,939

PIXEL MODULATION CIRCUIT AND RECORDING APPARATUS USING THE SAME

Somei Kawasaki, Urawa; Masami Iseki, Yokohama, and Hironari Ebata, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 4, 1996, Ser. No. 628,001

Claims priority, application Japan, Apr. 7, 1995, 7-082497; Mar. 27, 1996, 8-072198

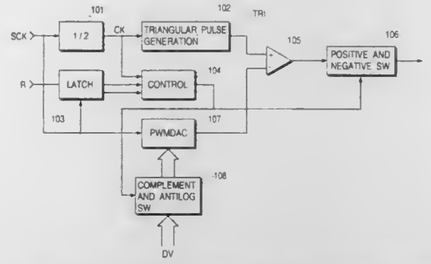
Int. Cl.[6] G06K *9/38*

U.S. Cl. 382—270 **24 Claims**

1. A pixel modulation circuit for outputting a pulse signal having a pulse width corresponding to pixel data representing a gradation level of each pixel, comprising:

a first triangular pulse generating circuit for generating a periodic triangular pulse signal;

a complement and antilog output circuit capable of outputting a level signal corresponding to both antilog and complement values of pixel data; and



a comparison circuit for comparing the triangular pulse signal with the level signal.

5,825,940

IMAGE PROCESSING METHOD AND APPARATUS FOR BINARY-CODING MULTIVALUE IMAGE DATA

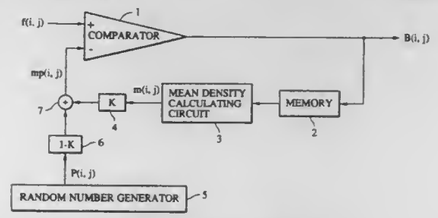
Shigeo Yamagata, and Hiroshi Tanioka, both of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1996, Ser. No. 587,657

Claims priority, application Japan, Jan. 23, 1995, 7-008181; Jan. 23, 1995, 7-008182; Jan. 23, 1995, 7-008186

Int. Cl.[6] G06K *9/40;9/38*

U.S. Cl. 382—276 **19 Claims**



1. An image processing apparatus comprising:

input means for inputting multivalue image data;

calculating means for calculating a mean density in a predetermined region;

random number generating means for generating random number data;

synthesizing means for, at a predetermined ratio, synthesizing the mean density obtained from said calculating means and the random number data obtained from said random number generating means; and

binary-coding means for binary-coding the multivalue image data in such a manner that the value obtained from said synthesizing means is used as a threshold,

wherein said synthesizing means changes the ratio of synthesizing the mean density and the random number data in accordance with a level of the multivalue image data input by said input means.

5,825,941

AESTHETIC IMAGING SYSTEM

Ray A. Linford, Kirkland, and Perin Blanchard, Woodinville, both of Wash., assignors to Mirror Software Corporation, Kirkland, Wash.

Continuation-in-part of Ser. No. 406,201, Mar. 17, 1995, Pat. No. 5,687,259. This application Mar. 18, 1996, Ser. No. 617,439

Int. Cl.[6] G06K *9/32;9/00*

U.S. Cl. 382—294 **6 Claims**

1. In an aesthetic imaging system for use in imaging patients for cosmetic surgery, a method of manipulating a digital image of a patient comprised of a plurality of pixels, the aesthetic imaging system including a processor, a memory, a monitor, and cursor control means for moving a cursor displayed on the monitor, the method comprising:

(a) allowing a user to select a manipulation area in a digital image by encircling the manipulation area using the cursor control means;

(b) defining a warping area that encompasses the manipulation area selected by the user;

(c) storing a copy of the warping area in memory as an original area;

(d) allowing the user to identify a stretch point that is contained within the manipulation area using the cursor control means;

(e) allowing the user to move the stretch point from an initial position through a plurality of intermediate positions to a final position within the warping area using the cursor control means, the movement of the stretch point defining a stretch direction from the initial position to the final position;

(f) repeatedly mapping the original area that is stored in memory to the warping area to reflect the movement of the stretch point within the warping area from the initial position to the final position, the mapping generally compressing an area of the image in the stretch direction and generally expanding an area of the image away from the stretch direction; and

(g) displaying the portion of the warping area that is within the manipulation area selected by the user to reflect the stretching of the image caused by movement of the stretch point.

5,825,942

IMAGE PROCESSOR PROVIDING IMPROVED READABILITY OF CHARACTERS

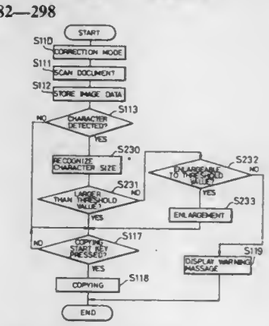
Masao Miyaza, Osaka, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 275,960, Jul. 15, 1994, Pat. No. 5,566,252. This application Jul. 10, 1996, Ser. No. 677,863

Claims priority, application Japan, Jul. 16, 1993, 5-177104; Aug. 27, 1993, 5-212972; Sep. 22, 1993, 5-236771; Dec. 17, 1993, 5-318752

Int. Cl.[6] G06K *9/32*

U.S. Cl. 382—298 **9 Claims**



1. An image processor comprising:

input means for reading a document;

character detecting means for detecting a character from the document read;

size recognizing means for recognizing a character size from the character detected by said detecting means;

size judging means for judging whether a size of the character recognized by said size recognizing means is smaller than a predetermined readable size;

enlarging means for enlarging the document so that the character is enlarged to the predetermined readable size when said size judging means judges that the size of the character is smaller than the predetermined size; and

output means for visualizing and outputting the document enlarged by said enlarging means.

5,825,943

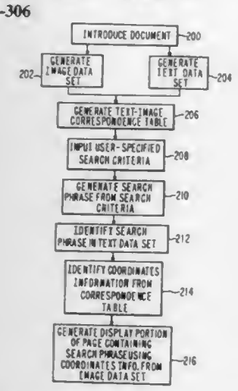
SELECTIVE DOCUMENT RETRIEVAL METHOD AND SYSTEM

Jonathan DeVito; Harry Garland, both of Los Gatos; Ken Hunter, San Francisco; Gerald A. May, Saratoga, and Michael G. Roberts, Mtn. View, all of Calif., assignors to Canon Inc., Tokyo, Japan

Continuation of Ser. No. 060,429, May 7, 1993, abandoned. This application Sep. 29, 1995, Ser. No. 537,314

Int. Cl.[6] G06K *9/78*

U.S. Cl. 382—306 **29 Claims**



1. A method implemented on a digital computer for storing and selectively retrieving information contained in a set of documents originally located external to said computer, wherein said document set includes at least one page, said method comprising:

A. generating a bit-mapped image data set representative of information contained in the document set;

B. storing the image data set in a first memory storage device associated with said computer;

C. generating a text data set representative of a text portion of the information contained in the document set;

D. storing the text data set in a second memory storage device associated with said computer;

E. generating a text-image correspondence table including information representative of correlations between each phrase within the stored text data set and two-dimensional coordinates of a corresponding location within the stored image data set;

F. identifying a search phrase, corresponding to user-specified search criteria, in the stored text data set;

G. identifying two-dimensional coordinates corresponding to the search phrase from the text-image correspondence table; and

H. generating a display of at least that image data, from within the stored image data set and by using said identified two-dimensional coordinates, corresponding to said search phrase.

5,825,944

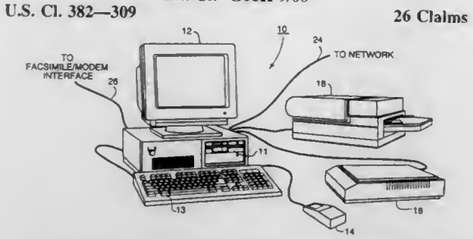
BLOCK SELECTION REVIEW AND EDITING SYSTEM

Shin-Ywan Wang, Tustin, Calif., assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 361,240, Dec. 21, 1994, abandoned. This application Apr. 10, 1997, Ser. No. 834,856

Int. Cl.[6] G06K *9/00*

U.S. Cl. 382—309 **26 Claims**



1. In a block selection system which analyzes a bitmap image representing a page of a document and which produces a hierarchical tree structure corresponding to a block template comprising plural blocks which represent areas of the document page , wherein the hierarchical tree structure includes a plurality of nodes, each of which corresponds to a block in the block template and contains document feature data defining features of document data represented by the block, a method for editing the hierarchical tree structure, the method comprising the steps of:

downloading a hierarchical tree structure from memory;

generating and displaying a block template from the hierarchical tree structure, the block template comprising plural blocks which are displayed at substantially the same positions in the block template as corresponding document data in the document page;

selecting a block to be edited from the displayed block template;

editing a feature of the selected block;

updating document feature data in the node corresponding to the selected block in accordance with an editing operation of a feature of the selected block; and

automatically determining whether non-updated document feature data in the corresponding node should be updated based on the feature edited in the editing step, wherein, in the case that a non-updated document feature data should be updated, the non-updated document feature data is automatically updated so as to conform with the edited feature of the selected block of image data.

5,825,945

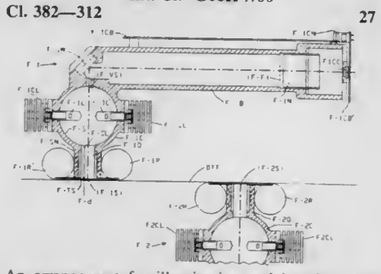
DOCUMENT IMAGING WITH ILLUMINATION FROM LAMBERTIAN SURFACES

Paul Stolis, Canton; John D. Vala, Plymouth; Clive E. Catchpole, Birmingham; Johan P. Bakker, West Bloomfield; Gary B. Copenhaver, Canton; David J. Concannon, Farmington Hills; Robert T. Rourke, and David J. Valice, both of Troy, all of Mich., assignors to Unisys Corp, Blue Bell, Pa.

Filed May 15, 1992, Ser. No. 883,513

Int. Cl.[6] G06K *7/00*

U.S. Cl. 382—312 **27 Claims**



1. An arrangement for illuminating and imaging checks in a check-processing system wherein a large number of checks are rapidly, continuously transported past one or more imaging stations, each station having a prescribed source means comprising a Lambertian integrating cylinder which projects a highly-uniform, yet highly diffuse illumination-beam.

5,825,946

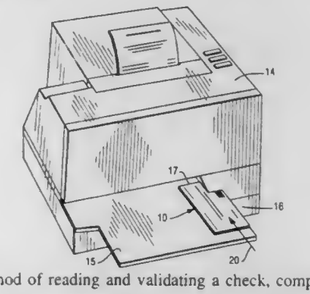
CHECK-READING MACHINE

James R. Del Signore, II, Trumansberg; Andrew B. Nye, III, Lansing; John G. Mitchell, Ovid, and Kathleen Maginnity, Interlaken, all of N.Y., assignors to NCR Corporation, Dayton, Ohio

Filed Jan. 3, 1996, Ser. No. 582,564

Int. Cl.[6] G06K *9/20*

U.S. Cl. 382—320 **6 Claims**



1. A method of reading and validating a check, comprising the steps of:

a) feeding a check having magnetizable ink characters disposed on a front surface of the check along an edge thereof into a check-reading machine;

b) moving the check forward into the check-reading machine, using half-step drive pulsing for stepping a stepper motor drive unit;

c) magnetizing the magnetizable ink characters as the check moves past a magnetizing unit in said machine;

d) changing phase of the stepper motor to wave-drive pulsing, while simultaneously reversing drive direction of the stepper motor to discharge said check from said check-reading machine; and then

e) reading the magnetized characters on the surface of the check, as the check is discharged from the machine at a constant speed, causing the magnetized ink characters to be read with great accuracy.

5,825,947

OPTICAL REPRODUCING SYSTEM FOR MULTIMEDIA INFORMATION RECORDED WITH CODE DATA HAVING FUNCTION FOR CORRECTING IMAGE READING DISTORTION

Hiroshi Sasaki, Hachioji, and Takao Tsuruoka, Machida, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 12, 1996, Ser. No. 679,227

Claims priority, application Japan, Sep. 1, 1995, 7-225272

Int. Cl.[6] G06K *9/20;9/46*

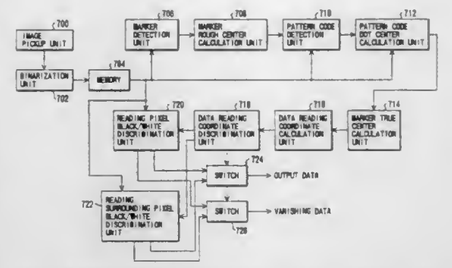
U.S. Cl. 382—321 **5 Claims**

1. An information reproducing apparatus comprising:

image pickup means for optically reading, from an information recording medium which comprises a portion that records multimedia information including at least one of audio information, video information, and digital code data in the form of an optically readable code pattern, the code pattern;

conversion means for converting the code pattern read by said image pickup means into code data as an image;

data reading coordinate calculation means for calculating a data reading coordinate position indicating a reading position of data in a block at an accuracy higher than a resolution of the image upon extraction of the block as a predetermined unit of



data from the code data by processing the code data converted by said conversion means;

data determining means for determining data by performing reading using at least one of a pixel value of the data reading coordinate position and a plurality of pixel values around the data reading coordinate position based on the data reading coordinate position calculated by said data reading coordinate calculation means; and

accuracy discriminating means for discriminating a degree of accuracy of the data determined by the data determining means based on the data reading coordinate position calculated by said data reading coordinate calculation means.

5,825,948

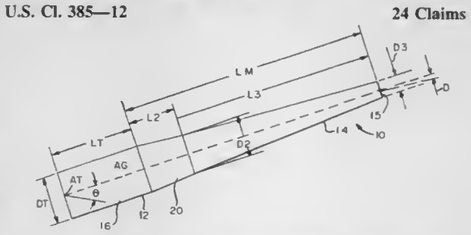
FIBER OPTIC SENSOR FOR SPATIALLY SEPARATED ELEMENTS IN A SYSTEM

James S. Sirkis, 14430 Turbridge Ct., Burtonsville, Md. 20866; Yaowen Li, 6100 Breezewood Dr., #202, Greenbelt, Md. 20770, and Christopher J. LaVigna, 3759 Carrisa La., Olney, Md. 20832

Filed Jul. 8, 1997, Ser. No. 889,738

Int. Cl.[6] F41G *1/54*

U.S. Cl. 385—12 **24 Claims**



1. A fiber optic sensor for a tapered gun barrel having a muzzle and a trunnion comprising:

a single-mode I/O optical fiber secured to said trunnion;

a light source supplying light to said single-mode fiber, said single-mode fiber being used as an input/output fiber;

at least one dual-mode optical fiber secured to the muzzle cascaded in a longitudinal direction with said I/O fiber, said dual-mode fiber being used as a sensing fiber;

splicing means for connecting and aligning said single-mode fiber with said at least one dual-mode fiber; and

reflective means attached to an end of said at least one dual-mode fiber at an end of said muzzle, wherein said dual-mode fiber has a propagation constant inversely proportional to the taper of the muzzle.

5,825,949

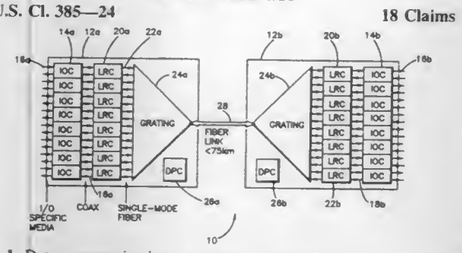
OPTICAL WAVELENGTH DIVISION MULTIPLEXER FOR COUPLING TO DATA SOURCES AND SINKS, WHEREIN AT LEAST TWO DATA SOURCES AND SINKS OPERATE WITH DIFFERENT COMMUNICATION PROTOCOLS

Michael M. Choy, Taiwan, China; Paul Eliot Green, Jr., Mt. Kisco, N.Y.; William Eric Hall, Clinton; Frank James Janniello, Stamford, both of Conn.; Jeff Kenneth Kravitz, Yorktown Heights, N.Y.; Karen Liu, Montclair, N.J.; Rajiv Ramaswami, Ossining, N.Y., and Franklin Fuk-Kay Tong, Stamford, Conn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 785,081, Jan. 21, 1997, abandoned, which is a continuation of Ser. No. 468,377, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 193,969, Feb. 9, 1994, Pat. No. 5,487,120. This application Apr. 3, 1997, Ser. No. 832,093

Int. Cl.[6] G02B 6/28

U.S. Cl. 385—24 18 Claims



1. Data communications apparatus, comprising:

a wavelength division multiplexer (WDM) unit comprising means for receiving a plurality of inputs from a plurality of data communications devices, at least two of the data communications devices operating with different communication protocols;

said WDM unit further comprising means for converting each of the received inputs into an optical signal having a wavelength that differs from wavelengths of others of the converted received inputs; and

means for wavelength division multiplexing the optical signals and for transmitting a wavelength division multiplexed signal over an optical conductor to a remote site;

wherein a plurality of the optical signals are transmitted over the optical conductor within a band of wavelengths having a width that is less than ten nanometers.

5,825,950

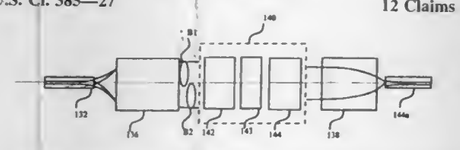
OPTICAL ISOLATOR

Yihao Cheng, Kanata, Canada, assignor to JDS Fitel Inc., Nepean, Canada

Filed May 13, 1996, Ser. No. 647,596

Int. Cl.[6] G02B 6/26

U.S. Cl. 385—27 12 Claims



1. An optical isolator for passing light in a forward direction with greater intensity than reverse directed light, comprising: an isolating means having at least two birefringent crystals, and a non-reciprocal rotating element disposed between the two crystals, the isolating means being disposed between two substantially collimating lenses; an output optical fibre coupled to one of the two lenses and an input optical fibre having a portion having a core with a diameter less than a another portion wherein the core is expanded and the diameter is greater, optically coupled to the other of the two collimating lenses for substantially preventing back reflecting light incident thereupon, at a high incident angle relative to an optical axis of the expanded core fibre from efficiently coupling thereto.

5,825,951

OPTICAL TRANSMITTER-RECEIVER MODULE

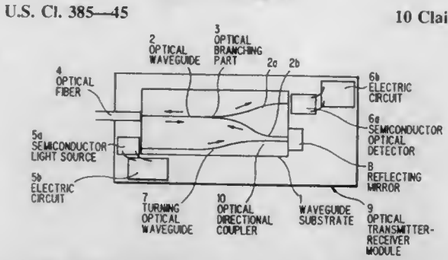
Naoki Kitamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Dec. 30, 1996, Ser. No. 775,183

Claims priority, application Japan, Dec. 30, 1995, 7-353483

Int. Cl.[6] G02B 6/28

U.S. Cl. 385—45 10 Claims



1. An optical transmitter-receiver module, in which an optical waveguide with an optical dividing function is formed from a first end to a second end of a waveguide substrate, and the non-branched side of said optical waveguide is optically connected to an optical fiber at said first end of said waveguide substrate, and two optical waveguides on the branched side of said optical waveguide are optically connected to an optical transmitter and an optical receiver, respectively,

wherein a first optical waveguide of said two optical waveguides is optically connected to said optical receiver at said second end of said waveguide substrate, and a second optical waveguide of said two optical waveguides comprises a turning optical waveguide which is turned back from said second end to said first end of said waveguide substrate, and said turning optical waveguide is optically connected to said optical transmitter at said first end of said waveguide substrate; and

wherein another optical waveguide which composes an optical multiplexer-demultiplexer with said non-branched side of said optical waveguide is formed, and said another optical waveguide is optically connected to another optical fiber.

5,825,952

OPTICAL CIRCUIT ELEMENT AND AN INTEGRATED TYPE OPTICAL CIRCUIT DEVICE

Hidenori Kawanishi, Nara, and Atsushi Shimonaka, Yamatokoriyama, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

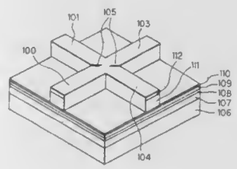
Filed Nov. 1, 1996, Ser. No. 742,494

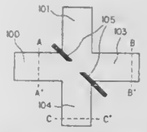
Claims priority, application Japan, Nov. 6, 1995, 7-287176

Int. Cl.[6] G02B 6/421

U.S. Cl. 385—47 21 Claims

1. An optical circuit element comprising a beam splitter which is formed with a plurality of grooves in optical waveguides to split light guided through the optical waveguides, said plurality of grooves forming a plurality of reflection portions and at least one transmission portion, wherein beams reflected by the plurality of reflection portions are combined together in a single respective waveguide of the optical waveguides to create a combined beam.





5,825,953

POLARIZED LIGHT VARIABLE LENS HOLDER

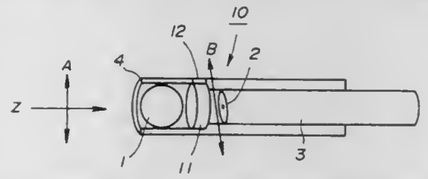
Yoshihiko Kaito, Sapporo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Oct. 10, 1996, Ser. No. 728,859

Claims priority, application Japan, Apr. 26, 1996, 8-106578

Int. Cl.[6] G02B 6/36

U.S. Cl. 385—79 15 Claims



1. A polarized light variable lens holder having a first end and a second end, comprising:

a lens at the first end;

a ferrule including a polarization plane conserving fiber at the second end;

a λ/2 plate between said lens and said ferrule; and

a first hole formed at a position of said polarized light variable lens holder which corresponds to said λ/2 plate so that said λ/2 plate may be rotated in a direction perpendicular to an optical axis by a force applied through said hole.

5,825,954

SUBMERSIBLE FIBER OPTICS LENS ASSEMBLY

Dennis C. Dunn, Thousand Oaks, and Richard L. Swain, Simi Valley, both of Calif., assignors to American Products, Inc., Moorpark, Calif.

Filed Oct. 18, 1996, Ser. No. 731,796

Int. Cl.[6] G02B 6/36

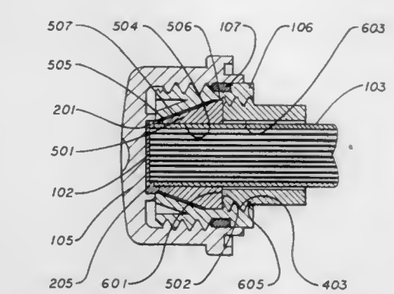
U.S. Cl. 385—79 16 Claims

10. A submersible fiber optic light assembly, comprising:

a fiber optic cable with an end, wherein the fiber optic cable includes a plurality of fiber optic strands encased in a jacket;

a lens body having an inner surface defining a chamber within the lens body, the chamber having an opening for the insertion of the fiber optic cable;

a grommet including a first end portion, a second end portion, and a bore for receiving the jacket of the fiber optic cable upon assembly, wherein the first end portion of the grommet



is configured to be axially received within the chamber against the lens body's inner surface upon assembly; and

a compression nut including an end portion and a cylindrical outer surface having threads, the compression nut defining a bore for receiving the fiber optic cable upon assembly;

wherein the lens body's inner surface includes inner threads for conformingly receiving the compression nut's outer threads so as to abut the compression nut's end portion into the grommet and thus compress the grommet between the compression nut's end portion and the lens body's inner surface to form a water tight seal between the lens body's inner surface and the fiber optic cable, and thus a water tight cavity within the chamber that contains the end of the fiber optic cable; and

wherein the lens body includes threads for engaging the compression nut's threads upon assembly so as to abut the compression nut's end portion against the grommet's second end portion when the assembly is assembled with the fiber optic cable, and thus axially compress the grommet between the compression nut's end and the lens body's inner surface, forming a water tight seal between the lens body's inner surface and the fiber optic cable jacket and forming a water tight cavity within the chamber; and

wherein the lens body includes a lens plate that is optically linked to the cavity such that light from the cavity may be emitted from the lens body through the lens plate.

5,825,955

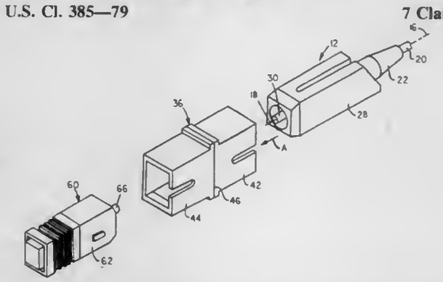
FIBER OPTIC DIVERSION CONNECTOR

Scot A. Ernst, Downers Grove; Igor Grois, Northbrook; Aleksandr Kats, Skokie; Ilya Makhlin, Wheeling, and Michael J. Pescetto, Plainfield, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Feb. 5, 1997, Ser. No. 795,578

Int. Cl.[6] G02B 6/38

U.S. Cl. 385—79 7 Claims



1. A diversion connector for mating with an optical fiber of an associated fiber optic transmission means, the fiber extending along an optic axis, comprising:

a body having an end face for mating with the associated fiber optic transmission means, the end face of the body traversing said optic axis;

a fiber section mounted in the body and including a front fiber end and a rear fiber end, the front fiber end being adapted for

mating with an end of the optical fiber of the associated fiber optic transmission means, and the rear fiber end being at an angle to the optic axis to prevent light energy transmitted by said optical fiber from being reflected back toward the fiber and to protect an operator's eyes from the transmitted light energy; and

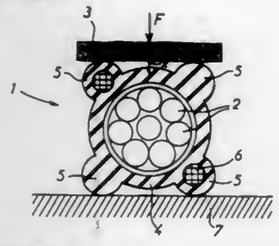
seal means for hermetically sealing the rear fiber end of said fiber section, wherein said seal means forms a substantially spherical lens.

5,825,956

FIBRE-OPTIC CABLE HAVING ENHANCED CRUSHING STRENGTH

Bernard Michel Missout, Ivry sur Seine; Herve Heude, Lyons, and Pierre Laroche, Baudille de la Tour, all of France, assignors to Cables Pirelli, France

Filed Mar. 19, 1997, Ser. No. 822,574
Claims priority, application France, Feb. 29, 1996, 96 02545
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—102 **5 Claims**



1. An optical fiber cable having improved crushing strength, said cable comprising:

a tubular plastic sheath having a length and having a wall of a predetermined inner diameter which encircles a plurality of optical fibers;

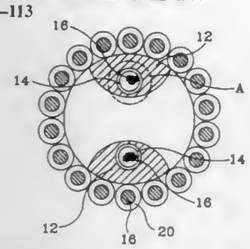
said wall having a radial thickness at four portions of the wall spaced substantially equally from each other in the circumferential direction of the wall which is greater than the thickness of the wall intermediate said portions to provide two pairs of ribs extending outwardly from said wall and lengthwise of said sheath, one pair of said ribs being diametrically opposed with respect to each other and the other pair of said ribs being diametrically opposed with respect to each other.

5,825,957

STRUCTURE OF OPTICAL FIBER COMPOSITE OVERHEAD GROUND WIRE APPLYING LOOSE TUBE AND ITS FABRICATING METHOD

Pil-Soo Song, Gumi, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 27, 1996, Ser. No. 757,426
Claims priority, application Rep. of Korea, Nov. 27, 1995, 1995-43968
Int. Cl.[6] G02B *6/44*
U.S. Cl. 385—113 **26 Claims**



1. A composite overhead ground wire optical fiber cable, loose, tube type, comprising:

a first jelly applied to a circumference of an optical fiber, for protecting said optical fiber against water;

a plastic material coating a circumference of said first jelly, for protecting said optical fiber against external shock;

a loose tube permitting one or more optical fibers to be inserted there-into, with an inside of said loose tube containing said jelly-protected, plastic-protected optical fiber and packed with a silicon-like jelly;

an aluminum rod providing a groove, with said groove permitting said loose tube to be inserted there-into, being of oval shape, and defining an inside thereof in a spiral configuration;

a second jelly paved between said loose tube and said groove, said second jelly fixing said loose tube and protecting said loose tube against water;

a plurality of steel wires externally provided on a circumference of said aluminum rod, said plurality of steel wires protecting said cable against tension stress and providing conductibility of 20 to 40%; and

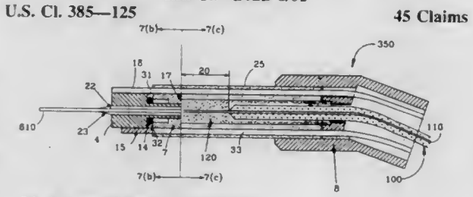
an aluminum material coating said steel wires, said aluminum material protecting said steel wires against oxidation and corrosion.

5,825,958

FIBER OPTIC DELIVERY SYSTEM FOR INFRARED LASERS

William A. Gollihar, Perris; Larry G. DeShazer, Newport Beach, and Scott Bradley, Laguna Niguel, all of Calif., assignors to Pharos Optics, Inc., Tustin, Calif.

Filed Oct. 11, 1996, Ser. No. 729,425
Int. Cl.[6] G02B *6/02*
U.S. Cl. 385—125 **45 Claims**



14. An optical device comprising:

a casing;

an optical fiber provided within said casing;

a first ferrule fixing a first end portion of said optical fiber to a first end portion of said casing;

said casing having a second end portion which extends beyond a second end portion of said optical fiber when the second end portion of said casing and optical fiber are decoupled from each other; and

a second ferrule fixing said second end portion of said optical fiber to said second end portion of said casing, thereby creating a tensile strain on said optical fiber when said optical fiber and casing are in a straight-line configuration and a changing level of strain on said optical fiber as said optical fiber and casing are bent.

5,825,959

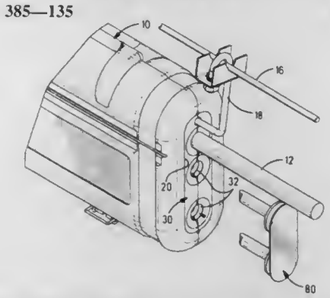
Patent Not Issued For This Number

5,825,960

FIBER OPTIC MANAGEMENT SYSTEM

Mervyn Woodward, Winston-Salem, and Danny Gray Dollyhigh, Germantown, both of N.C., assignors to The Whitaker Corporation, Wilmington, Del.

Filed Apr. 30, 1996, Ser. No. 641,247
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—135 **19 Claims**



1. A fiber optic management tray, comprising:

a first fiber optic receiving area having a substantially circular raceway formed by walls with a channel therebetween to receive a first optical fiber,

a second fiber optic receiving area to receive a second optical fiber,

a fiber optic splice connector disposed between the first and the second fiber optic receiving areas to receive the first optical fiber from one side and the second optical fiber from another side, whereby each of the first and the second fiber optic receiving areas can be loaded with their respective optical fibers without disturbing the other of the first or second fiber optic receiving areas.

5,825,961

FIBER OPTIC CLOSURE WITH CABLE ADAPTER SPOOL

Timothy A. Wilkins, and Donald J. Smith, both of Burbank, Calif., assignors to PSI Telecommunications, Inc., Burbank, Calif.

Division of Ser. No. 536,567, Sep. 29, 1995, abandoned, which is a continuation-in-part of Ser. No. 407,210, Mar. 20, 1995, Pat. No. 5,568,584. This application Oct. 31, 1996, Ser. No. 740,608
Int. Cl.[6] G02B *6/00*
U.S. Cl. 385—135 **13 Claims**

1. A splice closure assembly adapted for enclosing an optical fiber cable splice, which cable includes an optical fiber cable sheath, a strength member, and a plurality of optical fibers, the splice closure assembly comprising:

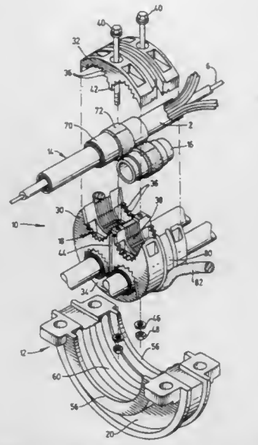
two end plate assemblies, at least one of which has an opening of a first diameter therein;

a closure base and a closure cover attached to said end plate assemblies;

an adapter spool secured within said opening in said end plate assembly, said adapter spool having an outer diameter matching said first diameter and having a cable entrance port having a second diameter for receiving the optical fiber cable therein;

said adapter spool further comprising:

means for contracting said outer diameter of said adapter spool to secure the optical fiber cable within said cable entrance port;



means for restraining the optical fiber cable sheath within the closure by applying radial force to the cable within said cable entrance port; and

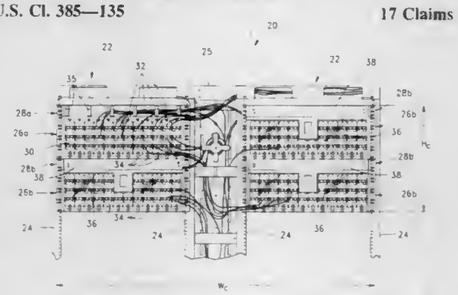
means for distributing said radial force to the optical fiber cable.

5,825,962

OPTICAL FIBER SPLICE HOUSING

Mark D. Walters, Azle; Kevin L. Morgan, Paradise, and Robert W. Dennis, Haltom City, all of Tex., assignors to Siecor Corporation, Hickory, N.C.

Filed Dec. 31, 1996, Ser. No. 775,678
Int. Cl.[6] G02B *6/36*
U.S. Cl. 385—135 **17 Claims**



1. An optical fiber splice housing for mounting adjacent to an optical fiber raceway unit of a type including a raceway member being adapted for mounting in a distribution frame and having a front side defining a raceway height and a raceway width, a plurality of cable management brackets mounted to the front side, and a rear side opposite the front side, said splice housing comprising:

(a) a cabinet having a front end defining a cabinet height and a cabinet width, and a rear end defining a rear-facing opening;

said front end of said cabinet being adapted for connection to a distribution frame adjacent the rear side of said raceway unit;

said cabinet height being not greater that the raceway height of said raceway member; said cabinet width being not greater than said raceway width of said raceway member; and

(b) a splice tray shelf for removably mounting at least one optical fiber splice tray within said cabinet;

whereby said splice housing can be connected to said distribution frame adjacent the rear side of said raceway unit without using additional vertical space in said frame and whereby a

splice tray mounted on said splice tray shelf is accessible through the rear-facing opening of said cabinet.

5,825,963

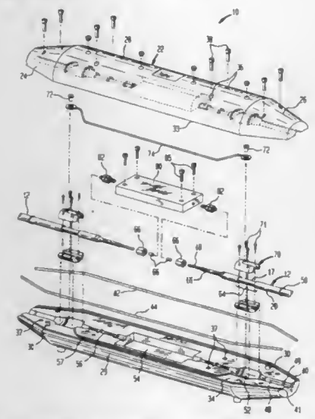
SUB-SURFACE FIBER OPTIC SPLICE HOUSING AND METHOD OF SPLICING FIBER OPTIC CABLE

Mark Edward Burgett, High Point, N.C., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 522,896, Sep. 1, 1995, Pat. No. 5,684,911. This application May 9, 1997, Ser. No. 853,543

Int. Cl.[6] G02B *6/255*

U.S. Cl. 385—135 **9 Claims**



1. A splice housing device for connecting at least one first fiber optic element to a second fiber optic element, wherein each said first fiber optic element is surrounded by a casing that includes a conductive sheathing, said device comprising:

a housing having a first end and an opposite second end, wherein said housing includes a first section and a second section that join together along a common seam;

an optical coupling chamber defined within said housing between said first end and said second end;

a first sheathing coupling chamber defined within said housing between said optical coupling chamber and said first end;

at least one first conduit defined within said housing, wherein each said first conduit extends from said first end to said optical coupling chamber through said first sheathing coupling chamber and one said first fiber optic element passes through each said first conduit and extends into said optical coupling chamber;

a second conduit defined within said housing, wherein said second conduit extends from said second end to said optical coupling chamber and said second optic element passes through said second conduit and extends into said optical coupling chamber;

an optical coupler contained within said internal chamber for optically coupling each said first fiber optic element to said second fiber optic element; and

a conductive element extending within said housing from said first sheathing coupling chamber to a connection point proximate said second end of said housing;

an electrical coupler for coupling the conductive sheathing surrounding each said first fiber optic element to said conductive element within said sheathing coupling chamber; and

an electrical connector extending through said housing to a point external of said housing, said electrical connector being electrically coupled to said conductive element at said connection point, thereby completing an electrical pathway from the conductive sheathing surrounding each said first fiber optic element to said point external of said housing.

5,825,964

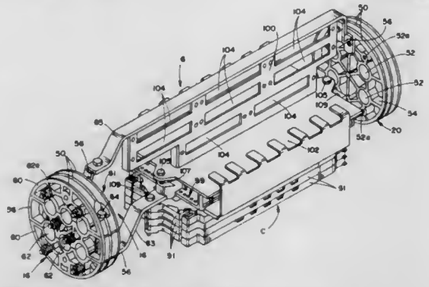
OPTICAL FIBER SPLICE CASE WITH CROSS CONNECT FEATURE

Erwin H. Goetter, Chesterland; Daniel J. Levac, Bellville, both of Ohio, and Gary R. Krout, Tampa, Fla., assignors to Preformed Line Products Company, Mayfield Village, Ohio

Continuation of Ser. No. 493,925, Jun. 23, 1995, Pat. No. 5,644,671. This application Jun. 3, 1997, Ser. No. 884,907

Int. Cl.[6] G02B *6/00*

U.S. Cl. 385—135 **25 Claims**



18. An optical fiber cross connect apparatus for use in the storage space of an optical fiber splice case, the cross connect apparatus comprising:

a tray support assembly including a stacked arrangement of a substantially planar base member and a plurality of substantially planar fiber splice trays, each of said plurality of substantially planar fiber splice trays being adapted for holding a plurality of fiber splice connections therein, the tray support assembly defining a relative parallel arrangement between said plurality of substantially planar fiber splice trays and said substantially planar base member;

a fiber connect panel transversely extending from the base member, the fiber connect panel defining a plurality of connector board mounting apertures, each of the plurality of connector board mounting apertures being adapted to engage at least one optical fiber connector mounting board;

a plurality of optical fiber connector mounting boards, each being disposed in a one of said plurality of connector board mounting apertures;

a plurality of sets of optical fiber connection couplings, each set being releasably attached to a one of said plurality of optical fiber connector mounting boards, each of said optical fiber connection couplings being adapted for connecting ends of at least two fiber splices; and,

a pair of elongate tie rod members for connecting the optical fiber cross connect apparatus within the storage space of an optical fiber splice case, each of said pair of elongate tie rod members being connected to a one of said fiber connect panel and said tray support assembly for supporting said optical fiber cross connect apparatus within said storage space of the optical fiber splice case.

5,825,965

EDITING APPARATUS

Sojiro Kizu, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan.

Division of Ser. No. 259,119, Jun. 10, 1994, Pat. No. 5,621,536, which is a continuation of Ser. No. 980,588, Nov. 23, 1992, abandoned. This application Nov. 21, 1996, Ser. No. 753,210

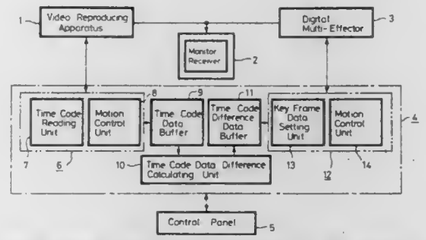
Claims priority, application Japan, Nov. 25, 1991, 3-309102

Int. Cl.[6] H04N *5/93*

U.S. Cl. 386—52 **14 Claims**

1. A method for processing a source video data, comprising the steps of:

marking a plurality of edit points on the source video data and producing edit point data;



storing the edit point data corresponding to the marked edit points;

reproducing the source video data only for a duration specified by the stored edit point data;

performing special effect processing on the reproduced video data according to special effect parameters automatically calculated according to the edit point data so as to continuously transform over time a visual effect status of the reproduced video data from a first visual effect status into a second visual effect status; and

controlling the special effect processing so that a duration from the first visual effect status to the second visual effect status corresponds to a duration of an edit section specified by the marked edit points.

5,825,966

Patent Not Issued For This Number

5,825,967

VIDEO PROCESSING SYSTEM WITH RANDOW ACCESS FRAME STORE FOR VIDEO EDITING

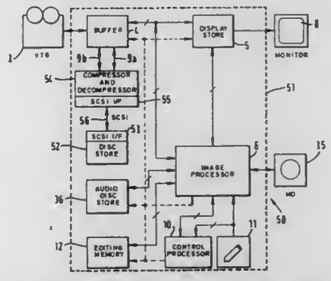
Ian Malcolm Stewart, Ashmore Green, and Timothy John Beckwith, Calcot, both of England, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 162,445, Dec. 3, 1993, Pat. No. 5,649,046. This application Feb. 24, 1997, Ser. No. 804,893

Claims priority, application United Kingdom, Dec. 7, 1992, 9225575; Aug. 10, 1993, 9316626

Int. Cl.[6] H04N *5/93; 7/30*

U.S. Cl. 386—52 **19 Claims**



1. A video processing system in which digital video data stored in a bulk store and representing one or more initial video clips each comprising a plurality of video frames is readable from the bulk store to a random access frame store for frame selection and modification by a processor to produce for display video data representing a new video clip comprising one or more new frames, the processor during said selection and modification producing set-up data which identifies video frame locations and defines the manner in which video data for the new video clip is created by this process from video data representing one or more selected frames in the one or more initial video clips, with the video data representing the clip for display being produced by said processor operating on the video data from the random access frame store representing said selected frames in accordance with said set-up data and the system being arranged such that the set-up data is store in association with at least the initial video data necessary to produce the new video clip, thereby requiring the video data representing each selected initial frame of the initial video clips to be stored once only in the bulk store.

5,825,968

APPARATUS FOR CONTROLLING A RECORD OPERATION BASED ON A COPY INHIBITING SIGNAL

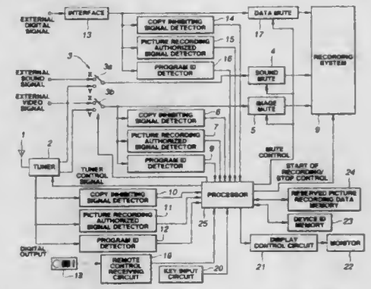
Tetsuo Nishigaki, and Takashi Tsujimura, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1996, Ser. No. 773,627

Claims priority, application Japan, Dec. 28, 1995, 7-344165

Int. Cl.[6] H04N *5/76*

U.S. Cl. 386—94 **9 Claims**



1. An apparatus for controlling a recording operation of a data signal on a recording medium, said data signal including a copy inhibiting signal for selectively inhibiting said recording operation on said recording medium, said apparatus comprising:

first detecting means for detecting a transmitted program identification for said recording operation;

second detecting means for detecting said copy inhibiting signal from said data signal;

storage means for storing reservation data identifying when said recording operation is to be carried out, said reservation data including a program identification such that said recording operation is carried out if said program identification matches said transmitted program identification;

control means for providing a first control signal to inhibit said recording operation if said copy inhibiting signal is detected, and for providing a second control signal to said storage means to delete said reservation data; and

display means for displaying a status of said recording operation.

5,825,969

INFORMATION MANAGEMENT APPARATUS FOR INHIBITING REPRODUCTION IN A VIDEO CASSETTE RECORDER

Hiroaki Ono, Fujisawa; Kiyoshi Kano, Yokohama; Hideo Nishijima, Katsuta; Takao Arai, Yokohama; Takaharu Noguchi, Yokohama; Nobutaka Amada, Yokohama; Hiroo Okamoto, Yokohama; Hitoaki Owashi, Yokohama; Keizo Nishimura, Yokohama; Nobuyuki Kaku, Oiso-machi, and Shinya Fujimori, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

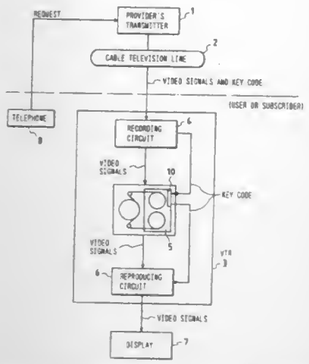
Continuation of Ser. No. 391,554, Feb. 21, 1995, abandoned. This application Sep. 12, 1997, Ser. No. 928,628

Claims priority, application Japan, Feb. 18, 1994, 6-020865; Feb. 18, 1994, 6-020868; Mar. 4, 1994, 6-034402; Oct. 28, 1994, 6-265612

Int. Cl.[6] H04N *5/92; G11B 15/087*

U.S. Cl. 386—94 **17 Claims**

1. An information management apparatus having a transmitter which transmits information including main information and con-



trol information to a receiver which receives said main and control information, said main information being a video program, said receiver comprising:

recording means for recording said main information received from said transmitter along a length of a recording medium, said recording medium being a tape, and recording said control information received from said transmitter along a length of said recording medium except at the beginning and end points of said recording medium;

main information reproducing means for reproducing said main information recorded on said recording medium;

reproduction management means for reproducing said control information recorded on said recording medium and managing operation of said main information reproducing means such that said main information reproducing means reproduces said main information based on said control information, said control information including allowable condition information representing conditions under which reproduction of said main information is allowable and execution process information for indicating a number of executed reproducing cycles; and

reproduction disabling means, included in said reproduction management means, for disabling said main information reproducing means based on a comparison between said allowable condition information and execution process information, said reproduction disabling means including reproduction start refusing means for refusing a reproduction of said main information based on said comparison.

5,825,970

QUANTIZATION NUMBER SELECTING APPARATUS FOR DVCR AND METHOD THEREFOR

Seung Il Kim, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Dec. 6, 1995, Ser. No. 568,279

Claims priority, application Rep. of Korea, Dec. 20, 1994, 35304/1994; Jan. 12, 1995, 441/1995

Int. Cl.[6] H04N *5/917;7/26*

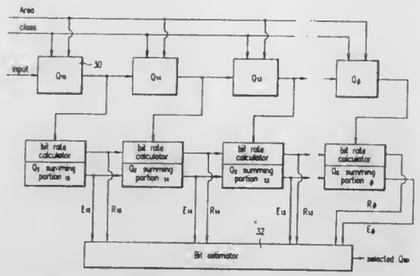
U.S. Cl. 386—109 **6 Claims**

I. A quantization number selecting apparatus of a DVCR comprising:

a plurality of quantizers serially connected and having each quantization number, for receiving a video segment composed of a plurality of macro-blocks and sequentially performing quantization according to each area number and class number;

a plurality of bit-rate calculators for calculating each bit rate by the respective outputs of said plurality of quantizers;

a plurality of quantization error summing portions serially connected for calculating quantization errors by the outputs of said plurality of quantizers and sequentially summing the same; and



a bit estimator for selecting a quantization number by which each macro-block can be compressed into an adaptive length by the respective outputs of said bit-rate calculators and quantization error summing portions.

5,825,971

MAGNETIC HEAD REPLACEMENT STRUCTURE IN HELICAL SCAN MAGNETIC RECORDING AND REPRODUCING APPARATUS AND METHOD THEREOF

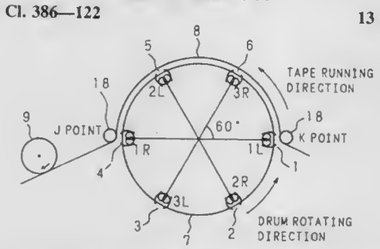
Tohru Inoue; Tatsuo Yamasaki; Junichi Nose; Hideki Kaneko, and Ken Onishi, all of Nagaokakyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 627,325, Apr. 4, 1996, abandoned, which is a continuation of Ser. No. 103,044, Jul. 28, 1993, abandoned. This application May 23, 1997, Ser. No. 862,421

Claims priority, application Japan, Jul. 30, 1992, 4-203769; Aug. 5, 1992, 4-208928; Sep. 3, 1992, 4-235758; Jan. 27, 1993, 5-011439

Int. Cl.[6] H04N *5/91*

U.S. Cl. 386—122 **13 Claims**



I. A method for helical scan magnetic recording and reproduction, comprising:

(a) rotatably disposing a rotary drum in contact with a recording medium, said rotary drum having a number N of magnetic heads arranged on a periphery thereof, each of said N magnetic heads being equally spaced apart and having no offset with respect to one another in an axial direction of said rotary drum;

(b) dividing a signal for one field of image information into m channels, where m is an integer equal to or greater than 3;

(c) digitally recording said signal for one field of image information by recording said divided signal in said number N of recording operations both in a continuous recording mode and an intermittent recording mode, where said number N is an integer not smaller than 3 but not greater than m, wherein an amount of data equal to said one field divided by said number N is recorded in a single recording operation, said single recording operation being when one of said N magnetic heads scans said recording medium to record one track;

in said continuous recording mode,

(d) continuously feeding said recording medium such that a first track is recorded while said recording medium is being fed,

in said intermittent recording mode,

(e) recording said first track on said recording medium by a first of said magnetic heads such that said first track is recorded while feeding of said recording medium is being stopped;

(f) intermittently feeding said recording medium such that said recording medium is fed by an amount corresponding to a width of said first track after recording of said first track; and

(g) recording a second track adjacent to said first track by a second of said magnetic heads such that said second track is recorded while feeding of said recording medium is being stopped;

(h) intermittently feeding said recording medium such that said recording medium is fed by an amount corresponding to a width of said second track after recording of said second track; and

(i) recording a third track adjacent to said second track by a third of said magnetic heads such that said third track is recorded while feeding of said recording medium is being stopped.

5,825,972

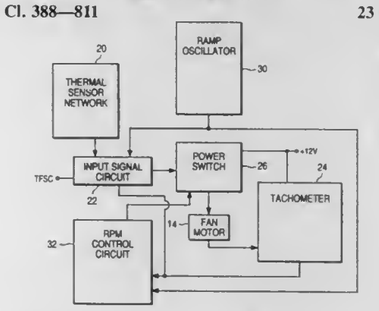
DIRECT CURRENT FAN MOTOR SPEED CONTROLLER

Alan E. Brown, Georgetown, Tex., assignor to Dell USA, L.P., Round Rock, Tex.

Continuation-in-part of Ser. No. 390,198, Feb. 17, 1995, abandoned. This application Jun. 13, 1997, Ser. No. 874,348

Int. Cl.[6] G02P *7/00*

U.S. Cl. 388—811 **23 Claims**



I. A revolutions per minute (RPM) control circuit for a direct current (DC) motor comprising:

a blanking and reset circuit responsive to a ramp signal for generating a reset pulse at a reset output;

a latch circuit conductively coupled to the reset output, the latch circuit responsive to the reset pulse, and responsive to a tachometer pulse, for generating a latch pulse at a latch circuit output;

an integration node conductively coupled to the latch circuit output, and responsive to the latch pulse, for generating an integral signal of the latch pulse; and

a power switch driver circuit conductively coupled to the integration node, and responsive to the ramp signal and the integral signal, for generating an RPM control pulse.

5,825,973

STATIONARY CERAMIC GLASS ELECTRIC BASEBOARD HEATER

Michael C. Lehoe, P.O. Box 5781, Hauppauge, N.Y. 11788, and James S. Lehoe, P.O. Box 314, Nesconset, N.Y. 11767

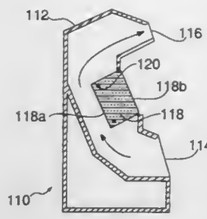
Continuation-in-part of Ser. No. 370,690, Jan. 10, 1995, Pat. No. 5,606,639. This application Feb. 21, 1997, Ser. No. 803,597

Int. Cl.[6] F24D *19/04*

U.S. Cl. 392—353 **15 Claims**

I. An electric baseboard heater comprising;

a) a housing having a lower air inlet and an upper air outlet;



b) a ceramic glass block mounted in said housing between said lower air inlet and said upper air outlet; and

c) an electric heating element insert molded in said ceramic glass block, wherein

said ceramic glass block is located in said housing such that air entering said lower air inlet passes by said ceramic glass block and out of said upper air outlet.

5,825,974

ELECTRIC FAN HEATER WITH SWITCHABLE SERIES/PARALLEL HEATING ELEMENTS

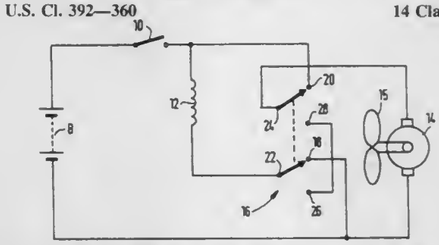
Duncan N. Hutton, and Richard Hingley, both of St. Leonards on Sea, England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 28, 1994, Ser. No. 366,148

Claims priority, application United Kingdom, Dec. 31, 1993, 9326586

Int. Cl.[6] F24H *3/02*

U.S. Cl. 392—360 **14 Claims**



I. A heating apparatus comprising: a plurality of electrical heating elements, a fan driven by an electric motor and with the fan arranged to drive air past the electrical heating elements, and switching means arranged to provide:

a first heating mode in which a first heating element is connected in parallel with the motor and a second heating element is connected in series with the motor, the heating elements being in series with each other, and

a second heating mode in which the first and second heating elements are both connected in parallel with the motor.

5,825,975

MULTIFUNCTIONAL DEVICE FOR SPRAYING AND FUMIGATING A VAPORIZABLE FLUID

Yves E. Privas, Pompano Beach, Fla., assignor to Conceptair Anstalt, Vaduz, Liechtenstein

PCT No. PCT/EP94/01880, § 371 Date Jun. 10, 1996, § 102(e) Date Jun. 10, 1996, PCT Pub. No. WO94/29032, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 9, 1994, Ser. No. 564,054

Claims priority, application France, Jun. 15, 1993, 93 07176

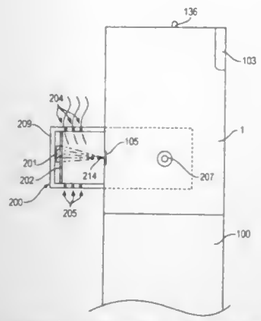
Int. Cl.[6] A01G *13/06;* **A61H** *33/12;* **G04C** *23/00*

U.S. Cl. 392—404 **16 Claims**

I. A multifunctional apparatus for spraying and fumigating a vaporizable fluid, the apparatus comprising:

an actuator head (**1**);

a tank (**100**) containing said fluid;



a pump (**6**) mounted on the tank, said pump having an outlet nozzle (**11**),

wherein said actuator head (**1**) includes electromechanical actuator means (**12,13**) for actuating said pump and an electronic control and power supply circuit (**101**) including a microprocessor (**139**) for controlling said electromechanical actuator means (**12,13**); and

a heater element (**201, 202, 402**) disposed facing the outlet nozzle (**11**) of said pump to receive said fluid sprayed by said pump and to vaporize it, said heater element having a temperature greater than the vaporization temperature of said fluid, said heater element being in communication with the atmosphere to exhaust said vaporized fluid,

wherein the apparatus further includes means for detecting an operation of said heater element and for transmitting a signal to said microprocessor indicating operation of said heater element, said microprocessor (**139**) being programmed to control actuation of said pump automatically at predetermined time intervals when it receives said signal indicating that said heater element is operating.

5,825,976

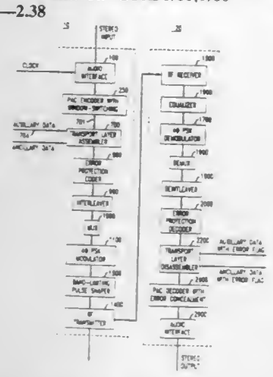
DEVICE AND METHOD FOR EFFICIENT UTILIZATION OF ALLOCATED TRANSMISSION MEDIUM BANDWIDTH

Sean Matthew Dorward, Somerville; Nuggehally Sampath Jayant, Gillette; James David Johnston, Warren; Schuyler Reynier Quackenbush, Westfield, and Kenneth Lane Thompson, Watchung, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 552,152, Nov. 2, 1995, abandoned, which is a continuation of Ser. No. 167,711, Dec. 15, 1993, abandoned. This application Apr. 18, 1996, Ser. No. 634,538

Int. Cl.[6] **G10L** *3/00;9/00*

U.S. Cl. 395—2.38 **24 Claims**



11. A method comprising the steps of:

(a) receiving a first digital signal representing a signal capable of being perceived by a human;

(b) encoding said first digital signal into a sequence of encoded blocks using a perceptual encoding method;

(c) representing each encoded block in said sequence of encoded blocks by a number of bits, NU_i, less than or equal to a predetermined number N_i, wherein N_i is a maximum number of bits for encoding the i^{th} encoded block;

(d) receiving a second signal;

(e) for each said encoded block, generating an N_i-bit output block comprising said encoded block and a portion of said second signal comprising no more than NA_i bits, wherein NA_i represents the difference between N_i and NU_i; and

(f) combining said N_i-bit output block with a transport header to form a transmittable block, the content of said transport header being separate from the content of said N_i-bit output block, and said transport header containing a first set of pointers identifying particular bits from said number of bits, NU_i, of a first one of said encoded blocks and a second set of pointers identifying particular bits from said number of bits, NU_i, of a second one of said encoded blocks.

5,825,977

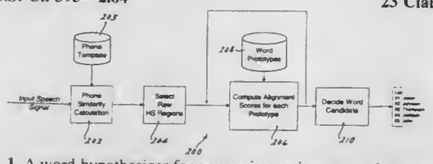
WORD HYPOTHESIZER BASED ON RELIABLY DETECTED PHONEME SIMILARITY REGIONS

Philippe R. Morin, 3449 Richland Dr., Apt. 8, Santa Barbara, Calif. 93105, and Ted H. Applebaum, 84 Lassen Dr., Santa Barbara, Calif. 93111

Filed Sep. 8, 1995, Ser. No. 526,718

Int. Cl.[6] **G10L** *5/06;9/00*

U.S. Cl. 395—2.64 **23 Claims**



1. A word hypothesizer for processing an input speech utterance in a speech recognition system comprising:

a phoneme model database for storing phoneme model speech data corresponding to a plurality of phonemes;

a phoneme similarity module coupled to said phoneme model database and receptive of said input speech utterance for producing phoneme similarity data indicative of the correlation between said input speech utterance and said phoneme model speech data with respect to time;

a word prototype database for storing word prototype data corresponding to a plurality of predetermined words, the word prototype data representing said predetermined words as a plurality of targets each target corresponding to a different phoneme, wherein each of said plurality of targets represents the occurrence of at least one phoneme similarity peak as compared with a predefined speech database;

a prototype comparator coupled to said word prototype database and to said phoneme similarity module for correlating said phoneme similarity data and said word prototype data to select at least one of said predetermined words as a word hypothesis for said input speech utterance.

5,825,978

METHOD AND APPARATUS FOR SPEECH RECOGNITION USING OPTIMIZED PARTIAL MIXTURE TYING OF HMM STATE FUNCTIONS

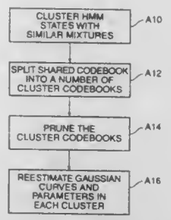
Vassilios Digalakis, Palo Alto, and Hy Murveit, Portola Valley, both of Calif., assignors to SRI International, Menlo Park, Calif.

Filed Jul. 18, 1994, Ser. No. 276,742

Int. Cl.[6] **G10L** *9/00*

U.S. Cl. 395—2.65 **17 Claims**

1. In a speech recognition system using a method for recognizing human speech, the method being of the type comprising the steps of:



selecting a model to represent a selected subunit of speech, the model having associated with it a plurality of states and each state having associated with it a probability function, the probability function having undetermined parameters, the probability functions being represented by a mixture of simple probability functions, the simple probability functions being stored in a master codebook;

extracting features from a set of speech training data;

using the features to determine parameters for the probability functions in the model,

an,

improvement comprising the steps of:

identifying states that are mostly represented by a related set of simple probability functions;

clustering said states that are mostly represented by a related set of simple probability functions into a plurality of clusters;

splitting up the master codebook into a plurality of cluster codebooks, one cluster codebook associated with each one of said clusters;

pruning the cluster codebooks to reduce the number of entries in each said codebook by retaining the simple probability functions that are most used by the states in the cluster and deleting remaining functions; and

re-estimating the simple probability functions in each cluster codebook to better fit the states in that cluster and re-estimating the parameters for each state in the cluster.

5,825,979

DIGITAL AUDIO.SIGNAL CODING AND/OR DECIDING METHOD

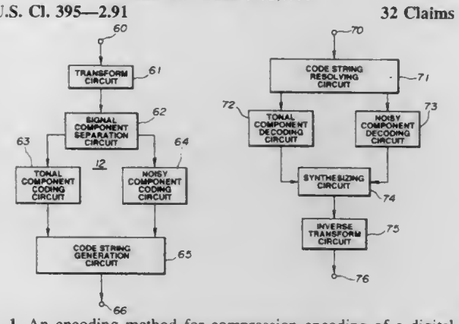
Kyoya Tsutsui; Yoshiaki Oikawa, and Osamu Shimoyoshi, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 21, 1995, Ser. No. 576,495

Claims priority, application Japan, Dec. 28, 1994, 6-328383

Int. Cl.[6] **G10L** *3/02;9/00*

U.S. Cl. 395—2.91 **32 Claims**



1. An encoding method for compression encoding of a digital signal, comprising the steps of:

transforming the digital signals into spectral components;

blocking said spectral components into encoding blocks each having at least two spectral components;

for at least one of said encoding blocks, separating said blocked spectral components into first spectral components made up of specified samples and second spectral components excluding said first spectral component;

normalizing and, with a quantization precision, quantizing at least said first spectral components, for at least one encoding block from which said first spectral components are derived;

encoding the normalized and quantized first spectral components;

determining a number of bits with which to encode information indicating the quantization precision; and

encoding, in the determined number of bits, the information indicating the quantization precision.

5,825,980

ROBOT HAND STRUCTURE, AND METHOD OF SELECTING HAND STRUCTURE

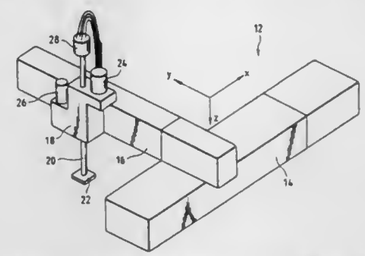
Shojiro Danmoto, Ushiku; Fumio Kanno, Tsuchiura; Takao Komiya, and Sumiyoshi Ito, both of Usbiku, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 809,258, Dec. 18, 1991, abandoned, which is a continuation-in-part of Ser. No. 527,816, May 24, 1990, abandoned. This application Sep. 20, 1993, Ser. No. 123,268

Claims priority, application Japan, May 26, 1989, 1-131402; May 26, 1989, 1-131403; May 8, 1990, 2-116959; May 8, 1990, 2-116960; May 8, 1990, 2-116961; May 8, 1990, 2-116962; May 8, 1990, 2-116963; May 8, 1990, 2-116964

Int. Cl.[6] **G06F** *15/46;* **G05B** *19/42*

U.S. Cl. 395—80 **12 Claims**



1. A robot for picking up a workpiece in a first location and conveying the workpiece to a second location by changing its position and posture, said robot having a central axis and comprising:

a finger module for picking up the workpiece;

a reversing module operably engaged to said finger module for changing a position of said finger module about an axis transverse to a central axis of said finger module; and

means for determining whether said reversing module needs to be mounted on said robot or not, said determining means making the determination on the basis of at least a storing vector extending from a predetermined origin position of the workpiece in the first location, along which the workpiece is to be moved when the workpiece is conveyed to the second location, and a storing vector extending from the origin position of the workpiece in the second location, along which the workpiece conveyed to the second location is to be moved.

5,825,981

ROBOT SYSTEM AND ROBOT CONTROL DEVICE

Tomoo Matsuda, Fujisawa, Japan, assignor to Komatsu Ltd., Japan

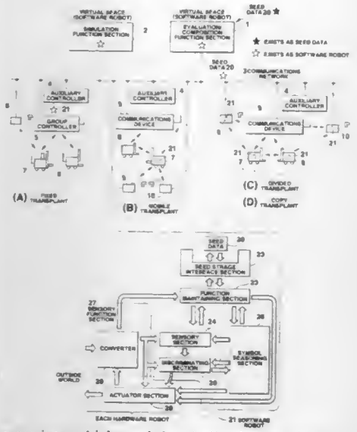
Filed Mar. 11, 1997, Ser. No. 814,856

Claims priority, application Japan, Mar. 11, 1996, 8-053138

Int. Cl.[6] **G06F** *9/00;15/00;11/00*

U.S. Cl. 395—83 **4 Claims**

1. A robot system for carrying out a prescribed task by operating a plurality of hardware robots, comprising:



a computer into which seed data indicating an objective task is input;

a software robot, whereby the plurality of hardware robots are operated in accordance with the objective task, by means of inputting the seed data to at least one hardware robot; and

a communications network whereby the computer and the plurality of hardware robots are connected such that communication is possible therebetween,

wherein, by communicating with the hardware robots via the communications network, the computer comprises:

selecting means for selecting a plurality of hardware robots which are capable of implementing cooperatively the objective task indicated by the input seed data and which are not engaged in any task based on other seed data;

software robot generating means for creating a software robot comprising the selected plurality of hardware robots, by inputting the seed data to at least one hardware robot of the selected plurality of hardware robots; and

withdrawing means for withdrawing the seed data from the hardware robot(s) to which the seed data has been input, when the plurality of hardware robots have been operated by the generated software robot and have completed the objective task.

5,825,982

HEAD CURSOR CONTROL INTERFACE FOR AN AUTOMATED ENDOSCOPE SYSTEM FOR OPTIMAL POSITIONING

James Wright, 319 Santa Cruz Blvd., Santa Barbara, Calif. 93109; Hamid Wasti, 2316 Wailea Pl., Sacramento, Calif. 95833, and Darrin R. Uecker, 1430 De La Vina, #A, Santa Barbara, Calif. 93101

Filed Sep. 15, 1995, Ser. No. 529,095

Int. Cl.[6] A61B *1/04;5/00*

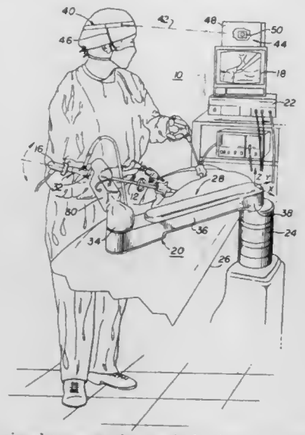
U.S. Cl. 395—94 **22 Claims**

1. An interface for controlling a surgical robot in response to a movement of an operator's head, wherein the surgical robot moves a surgical instrument that provides a video image to a monitor, comprising:

a transmitter that is mounted to the operator's head, said transmitter for transmitting a pointer signal to a pointer signal spatial location, said pointer signal spatial location moves in response to a movement of the operator's head;

a detector for detecting said pointer signal spatial location; and,

a controller that is coupled to said detector, said controller for correlating said pointer signal spatial location to a robot spatial location of the surgical robot and for generating an output signal to move the surgical robot to the robot spatial location.



5,825,983

TACTILE FEEDBACK DEVICE FOR REMOTE CONTROL ROBOT USING REPULSIVE FORCE OF MAGNET

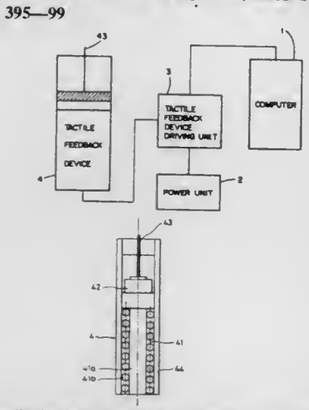
Jong-Oh Park; Choog Won Lee; In Seok Ahn, and Hyo Sik Kang, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea

Filed Jul. 11, 1996, Ser. No. 678,714

Claims priority, application Rep. of Korea, Mar. 22, 1996, 1996/7926

Int. Cl.[6] H01F *7/08;* **B25J** *11/00;* **A63B** *21/00*

U.S. Cl. 395—99 **10 Claims**



1. A tactile feedback device for a remote control robot using a repulsive force of a magnet, comprising:

a computer for receiving a tactile information and for outputting a tactile feedback signal in accordance with the tactile information;

a driving unit for converting a tactile feedback signal outputted from the computer into a current; and

a tactile feedback device for transferring a predetermined pressure to an operator in cooperation with a repulsive force between an electromagnet and a permanent magnet when the electromagnet is driven in accordance with the current applied thereto from the driving unit.

5,825,984

IMAGE FORMATION SYSTEM

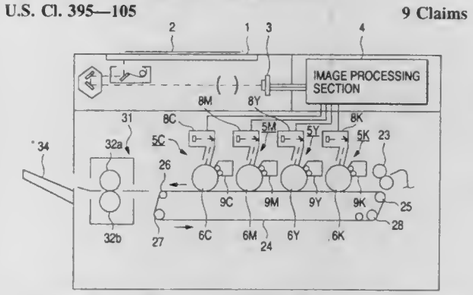
Hirotaka Mori, and Ryo Ando, both of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Nov. 18, 1996, Ser. No. 749,961

Claims priority, application Japan, Nov. 20, 1995, 7-301382

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—105 **9 Claims**



1. An image formation system for forming a plurality of images different in color on a transfer material, comprising:

an endless support on which the transfer material is supported;

means for rotationally driving said endless support;

color shift detection patterns formed on said endless support for detecting cyclic rotation change occurring in said image formation system;

means for sampling the color shift detection patterns at a plurality of sampling frequencies; and

means for performing predetermined control operation according to a sampling result from said sampling means.

5,825,985

THERMAL PRINTER AND THERMAL PRINTER HEAD DRIVING SYSTEM

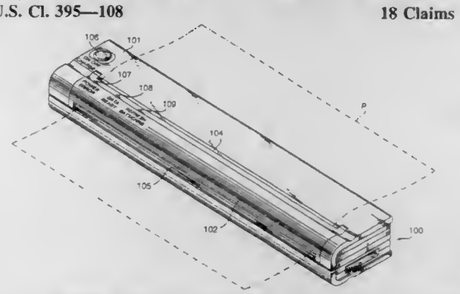
Tamotsu Asai, Kagoshima-ken; Minoru Suzuki, Tokyo; Kiyoshi Negishi, Tokyo; Katsumi Kawamura, Tokyo; Mikio Horie, Tokyo; Hiroshi Orita, Tokyo, and Katsuyoshi Suzuki, Tokyo, all of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 7, 1995, Ser. No. 473,920

Claims priority, application Japan, Jun. 8, 1994, 6-150305

Int. Cl.[6] B41B *15/00;* **B41J** *15/00;* **G06F** *15/00;* **H04N** *1/21*

U.S. Cl. 395—108 **18 Claims**



1. A thermal printer for forming an image on a sheet, said thermal printer comprising:

a thermal head having a plurality of linearly arranged thermal elements;

means for driving said plurality of thermal elements to form a line image;

means for determining a total number of said plurality of thermal elements to be energized to form said line image;

means for calculating a difference between a first number of said plurality of thermal elements to be energized to form said line image, and a second number of said plurality of thermal elements that were energized to form a previous line image; and

means for controlling said driving means to drive said plurality of thermal elements for a period of time, said period of time being a function of said difference between said first number and said second number calculated by said calculating means.

5,825,986

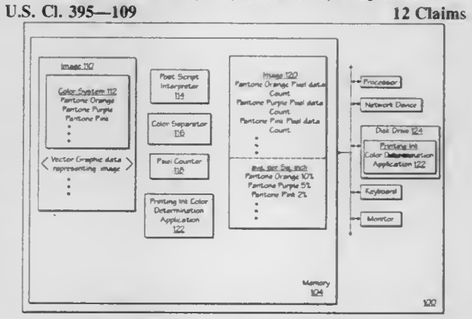
METHOD FOR DETERMINING INK REQUIREMENTS

Gary J. Ferguson, Mountain View, Calif., assignor to CKS Partners, Cupertino, Calif.

Filed Jun. 26, 1996, Ser. No. 669,751

Int. Cl.[6] H04N *1/21;1/46;* **B41B** *15/00;* **B41J** *15/00*

U.S. Cl. 395—109 **12 Claims**



1. A computer-implemented method for determining ink coverage requirements of separate printing ink colors in an image prior to printing the image, the method comprising the steps of:

selecting a first color from a plurality of colors included in the image, wherein the image is represented in vector graphics;

filtering the first color from the plurality of colors included in the image;

rasterizing the first color into a first set of pixel data representing the first color;

counting the first set of pixel data to determine an ink requirement for the first color; and

preserving a Named Color for each color of said plurality of colors during the step of rasterizing and the step of counting the respective set of pixel data, wherein results of said counting are identified as said Named Color corresponding to the respective color selected from the plurality of colors.

5,825,987

CHARACTER OUTPUT DEVICE

Kei Asada, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 18, 1996, Ser. No. 683,731

Claims priority, application Japan, Jul. 19, 1995, 7-183129

Int. Cl.[6] G06K *15/00*

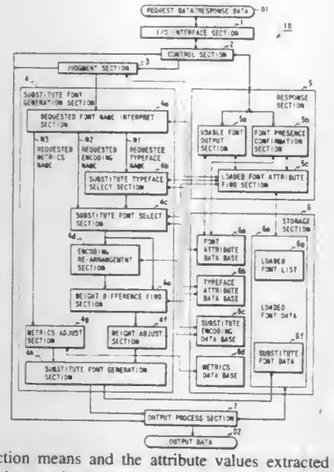
U.S. Cl. 395—110 **16 Claims**

1. A character output device, responsive to a request for use of a font, for selecting a desired font out of a plurality of fonts available and loaded on board a printer for rendering and outputting a character using the selected font, said character output device comprising:

first extraction means for extracting attribute values of a plurality of font attributes based on a font identifier of the font requested for use;

second extraction means for extracting attribute values of the plurality of font attributes of loaded fonts based on a font identifier of the fonts loaded on board the printer;

calculation means for calculating correlation distances between the font requested for use and the loaded fonts based on differences between the attribute values extracted by said first



extraction means and the attribute values extracted by said second extraction means for the respective font attributes;

substitute font selection means for selecting a substitute font with a predetermined priority from the plurality of loaded fonts based on the correlation distances respectively calculated by said calculation means; and

character output means for outputting a character based on the font requested for use when the font requested for use is present in the loaded fonts and for outputting a character based on the substitute font selected by said selection means when the font requested for use is not present in the loaded fonts.

5,825,988

APPARATUS FOR PRINTING DIGITAL IMAGE DATA

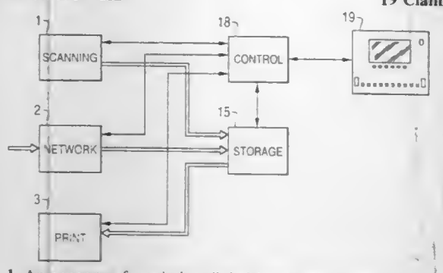
René Francois Albert Collard, Gennep, and Peter Johannes Hendrikus Teeuwen, Maasbree, both of Netherlands, assignors to Oce-Nederland, B.V., Ma Venlo, Netherlands

Continuation of Ser. No. 455,982, May 31, 1995, abandoned. This application May 5, 1997, Ser. No. 851,344

Claims priority, application Netherlands, Jun. 7, 1994, 9400918; European Pat. Off., Dec. 22, 1994, 94203730

Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—112 **19 Claims**



1. An apparatus for printing digital image data, comprising:

an operator interface;

a memory device;

at least one inputting unit, connected to said memory device, for receiving, from an external source, data files to be printed and for storing the data files in the memory device;

a printing unit for printing data files; and

a control unit, connected to said operator interface, said inputting unit, and said printing unit, for prohibiting the printing of all data files stored by said inputting unit into said memory device until, relative to at least one of said data files in said memory device, said control unit has received a go-ahead print command designating said at least one of said data files from an operator via said operator interface, and for controlling said printing unit to print a data file only if the data file is designated by the go-ahead print command received from said operator via said operator interface.

5,825,989

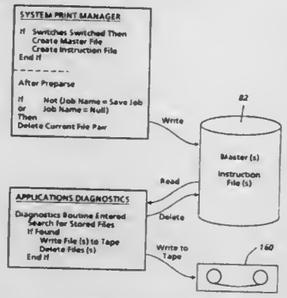
SYSTEM FOR DIAGNOSING A SOURCE OF MALFUNCTION RESULTING FROM THE EXECUTION OF A PRINT JOB IN A NETWORK PRINTING SYSTEM

Atashi C. Sonty, Pittsfnrd; John R. Hill, Jr., Rochester, and Thomas B. Zell, Victor, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 75,694, Jun. 11, 1993, abandoned, which is a continuation-in-part of Ser. No. 898,761, Jun. 12, 1992, Pat. No. 5,493,634. This application May 7, 1996, Ser. No. 646,008

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—113 **6 Claims**



1. In a network printing system for decomposing a plurality of jobs, each of which plurality of jobs normally includes a job name, a diagnostic system for diagnosing one or more special jobs, each of which special job is characterized by a special or null job name, each job with the special or null name causing the printing system to malfunction, comprising:

a capturing subsystem, communicating with said network, for receiving each of the plurality of jobs;

a storage device for storing each of the plurality of jobs in the storage device in anticipation of decomposition thereof;

an interpretation subsystem, communicating with said storage device, for parsing at least a header portion of a copy of each of the plurality of jobs, said parsing being performed to an extent necessary for obtaining the job name of each job copy;

a system manager, communicating with said interpretation subsystem, for examining the job name of each job, wherein when the examined job name for one of the plurality of jobs does not correspond with the special or null job name, a copy of the one of the plurality of jobs is parsed in full, with said interpretation subsystem, and the one of the plurality of jobs is deleted from said storage device without performing a diagnostic routine thereon; and

a diagnostic subsystem, communicating with said system manager, said diagnostic subsystem performing the diagnostic routine on the one of the plurality of jobs, when the examined job name of the one of the plurality of jobs corresponds with the special or null job name, so as to determine what it is about the one of the plurality of jobs that causes the printing system to malfunction.

5,825,990

ERROR REPORTING METHOD FOR FACSIMILE SYSTEM

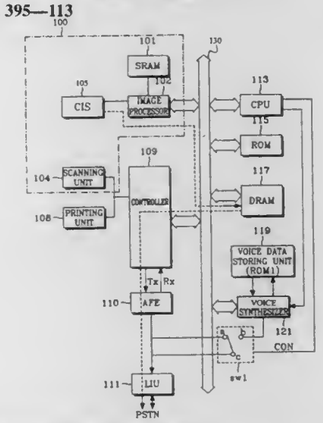
Man-Yeong Heo, and Byung-Sun Ahn, both of Suwon, Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 18, 1996, Ser. No. 751,702

Claims priority, application Rep. of Korea, Nov. 16, 1995, 1995-41670

Int. Cl.[6] H04N *1/32*

U.S. Cl. 395—113 **16 Claims**



1. A facsimile system, comprising:

a memory for storing a plurality of voice messages each representing a different type of malfunction of said facsimile system;

control means for determining different types of malfunction occurring during operation of said facsimile system;

a voice message generator for generating a voice message corresponding to a specific type of malfunction determined;

communication means for transmitting and receiving facsimile data to and from a telephone line for subsequent printing onto a printable medium; and

switch means connected to said telephone line, and operable in one of an error message transmission mode for permitting automatic transmission of said voice message to a transmitting facsimile system via said telephone line to inform said transmitting facsimile system of said specific type of malfunction in dependence upon determination by said control means of an occurrence of said specific type of malfunction, and operable in a facsimile data reception mode for permitting reception of facsimile data from said transmitting facsimile system in dependence upon reception of said facsimile data from said transmitting facsimile system and determination by said control means of one of an absence of malfunction by said facsimile system and an occurrence of said specific type of malfunction by said facsimile system.

5,825,991

SYSTEM FOR BALANCING CPU DEMANDS IN A HIGH-VOLUME PRINT SERVER

David Plakosh, Rochester; Michael A. Wiegand, Webster, and Norman E. Wright, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 30, 1995, Ser. No. 550,312

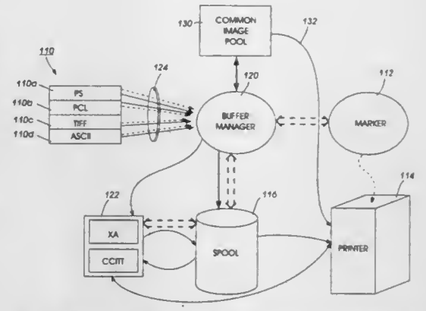
Int. Cl.[6] G06T *11/00*

U.S. Cl. 395—115 **13 Claims**

1. An apparatus for processing image data for submission to printing hardware, comprising:

a decomposition facility, for outputting decomposed data relating to images to be printed;

a buffer for retaining decomposed data output by the decomposition facility;



a CPU facility for providing CPU cycles of operation to the decomposition facility; and

control means for detecting an amount of data in the buffer over time, and apportioning a predetermined number of CPU cycles over time to the decomposition facility, without necessarily idling the decomposition facility completely, in response to the amount of data in the buffer being of a predetermined relationship to a first predetermined nonzero threshold.

5,825,992

FACSIMILE DEVICE

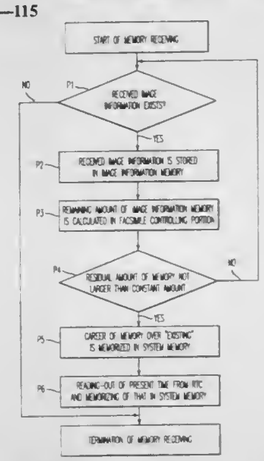
Kazuhiro Satoh, Hiratsuka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Jun. 10, 1996, Ser. No. 658,441

Claims priority, application Japan, Jun. 9, 1995, 7-143210

Int. Cl.[6] H04N *1/32*

U.S. Cl. 395—115 **3 Claims**



1. A facsimile device capable of operating in a memory receiving mode or a direct receiving mode, comprising:

an image information memory for storing image information;

wherein said facsimile device receives transmitted image information in one of memory receiving mode or direct receiving mode;

remaining amount detecting means for detecting a remaining amount of the image information memory available for data storage;

remaining amount absence detecting means for detecting an absence of the memory remaining amount of said image information memory on the basis of the detected information;

information keeping means for storing information detected by remaining amount detecting means and said remaining amount absence detecting means; and

receipt controlling means for controlling memory receipt or direct receipt of said transmitted image information based on the stored information.

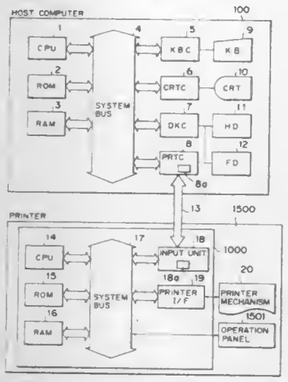
5,825,993

INFORMATION PROCESSING APPARATUS AND OUTPUT APPARATUS

Akihiro Shimura, Tokyo; Satoshi Nagata, Tama; Yoshifumi Okamoto, Yokohama; Tetsuya Morita, Kawasaki; Shunya Mitsuhashi, Tokyo; Nobuhiko Sato, Kawasaki; Takanori Nishijima, and Masaki Unishi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 694,839, Aug. 9, 1996, abandoned, which is a continuation of Ser. No. 76,832, Jun. 15, 1993, abandoned. This application Aug. 25, 1997, Ser. No. 917,100
Claims priority, application Japan, Jun. 19, 1992, 4-186359
Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—115 **172 Claims**



1. An information processing apparatus which outputs data to a printer, having a memory, connected to said apparatus through a bi-directional interface, said apparatus comprising:

acquiring means for acquiring a memory capacity, of the memory of the printer, available for a printing process;

comparing means for comparing the memory capacity acquired by said acquiring means with a capacity of data to be outputted to the printer;

determination means for determining a memory size, of the memory of the printer, required to execute a drawing process based on the data from said apparatus, in accordance with a comparison result made by said comparing means; and

instruction means for instructing the printer to reserve a memory space having the memory size determined by said determination means.

5,825,994

IMAGE PROCESSING METHOD AND APPARATUS

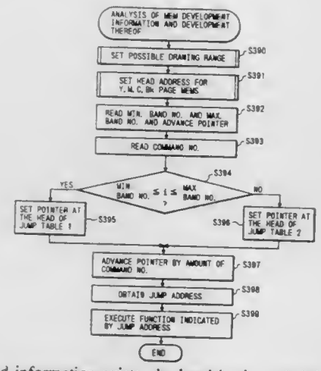
Shuichi Kumada, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1992, Ser. No. 911,664
Claims priority, application Japan, Jul. 9, 1991, 3-168307; Jul. 9, 1991, 3-168308; Jul. 9, 1991, 3-168319; Jun. 25, 1992, 4-167718
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—116 **23 Claims**

1. An image processing method for receiving a coded record information in units of pages for use with a recording head, comprising the steps of:

analyzing the received coded record information to derive a minimum band number and a maximum band number of a band in which an object image represented by the coded



record information exists, the band having a height which is an integer multiple of a height of the record head;

storing the minimum band number and the maximum band number derived in the analyzing step for each object image;

comparing the minimum band number and the maximum band number stored in the storing step with a current band number to obtain a comparison result; and

determining, in response to the comparison result obtained in said comparing step, whether the object image is to be developed into dot data in the band.

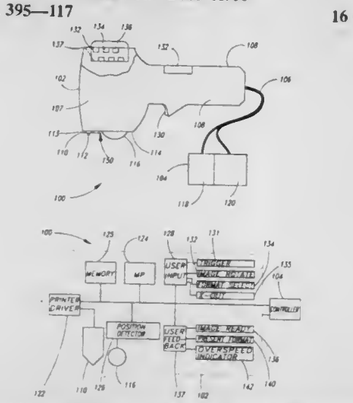
5,825,995

PRINTER WITH MOTION DETECTION

Christopher A. Wiklof; Thomas A. Sweet, both of Everett, and Jay Michael Miazga, Marysville, all of Wash., assignors to Intermec Technologies, Inc., Everett, Wash.

Filed Mar. 11, 1996, Ser. No. 613,325
Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—117 **16 Claims**



1. A mobile printer for printing an image in a printing field of a target object, the image being represented by bits of data, comprising:

a housing movable relative to the target object sequentially over portions of the printing field;

a printing member supported by the housing for printing in the printing field, the printing member having a maximum print area for a predetermined position of the housing relative to the target object substantially less than the entire area of the image to be printed;

an orientation selector for selecting one of a plurality of orientations in which the image is to be printed;

a position detector for detecting the position of the housing relative to the target object;

a memory containing the bits of data representing the image;

a printing member driver connected to receive information from the position detector, connected to control the printing member and connected to retrieve the bits of data from the memory, the printer member driver selectively activating the printing member to sequentially print portions of the image corresponding to the detected relative position of the housing as the housing is moved relative to the target object over the printing field, in response to the retrieved bits of data and in response to the selected one of the orientations; and

a user activated trigger connected to a consent switch with the position detector such that the printer prints only upon actuation of the trigger and a change in the detected position.

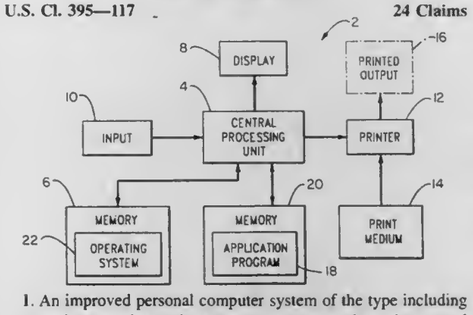
5,825,996

PRINT-TO-EDGE DESKTOP PRINTING

William N. Davis, and Ira Mirochnick, both of Northbrook, Ill., assignors to Monotype Typography, Inc., Elk Grove Village, Ill.

Filed Nov. 8, 1996, Ser. No. 744,884
Int. Cl.[6] G06K *15/00*

U.S. Cl. 395—117 **24 Claims**



1. An improved personal computer system of the type including a central processing unit, a memory connected to the central processing unit, an operating system program stored in the memory, a display responsive to control by the central processing unit, input means for providing input to the personal computer system, and a printer responsive to control by the central processing unit, wherein the improvement comprises:

a two-sided substrate loaded in the printer and having an outer periphery and a continuous perforated line spaced inwardly of said outer periphery such that said perforated line defines corresponding primary printable areas on both sides of said substrate inwardly of said perforated line and such that said perforated line defines corresponding secondary printable areas on both sides of said substrate outwardly of said perforated line, wherein said substrate has instructional indicia disposed thereon outwardly of said perforated line, said instructional indicia for guiding input of instructions to the personal computer system and the loading of said substrate in the printer; and

an application program loaded in the memory, wherein said application program is compatible with the operating system program and wherein said application program includes:

means, responsive to input from a user using the input means in accordance with said indicia, for providing an output having a first portion to be printed on one side of said substrate in said primary printable area thereof and having a second portion to be printed on the other side of said substrate in said primary printable area thereof;

means, responsive to input from the user using the input means in accordance with said indicia, for actuating the printer at a first time (a) to print one of (1) said first portion of said output on said one side of said substrate such that part of said first portion is printed continuously across at least part of said perforated line and in said secondary printable area of said one side and the remainder of said first portion is printed within said primary printable area of said one side and (2) said second portion of said output within at least said primary printable area of said other side of said substrate, and (b) to output said substrate from the printer; and

means, responsive to input from the user using the input means in accordance with said indicia, for actuating the printer at a second time to print the other of (1) said first portion of said output on said one side of said substrate such that part of said first portion is printed continuously across at least part of said perforated line and in said secondary printable area of said one side and the remainder of said first portion is printed within said primary printable area of said one side and (2) said second portion of said output within at least said primary printable area of said other side of said substrate, after said substrate has been output from the printer and reloaded in changed orientation in the printer.

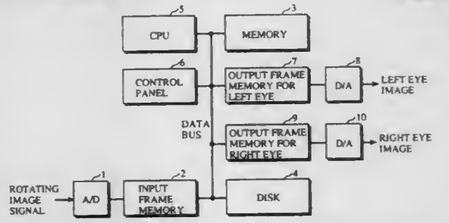
5,825,997

APPARATUS FOR PRODUCING A THREE DIMENSIONAL IMAGE FROM A TWO DIMENSIONAL IMAGE

Teruhiro Yamada, Hirakata; Takahisa Ando, Kadoma, and Tetsuya Enomoto, Hirakata, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Nov. 21, 1995, Ser. No. 561,422
Claims priority, application Japan, Dec. 28, 1994, 6-327691
Int. Cl.[6] H04N *13/00*

U.S. Cl. 395—119 **5 Claims**



1. A three-dimensional image producing apparatus comprising:

(a) storing device for storing all rotating image data of one rotation of a subject which is composed of two-dimensional image data for each predetermined angle of rotation of the subject;

(b) a first frame memory independent of said storing device;

(c) a second frame memory independent of said storing device;

(d) means for selecting for a given time period a set of reference image data and image data delayed from the reference image data out of the rotating image data of one rotation of the subject which are stored in said storing device, for successively reading out a selected set of the image data, and for transmitting the reference image data which is read out to said first frame memory and the delayed image data which is read out to said second frame memory; and

(e) outputting means for outputting one of the reference image data transmitted to said first frame memory and the delayed image data transmitted to said second frame memory as a left eye image signal and the other image data as a right eye image signal.

5,825,998

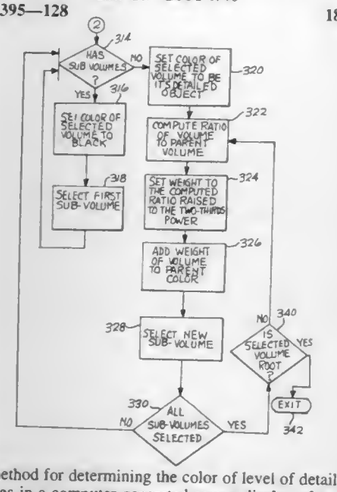
METHOD FOR CONTROLLING THE LEVEL OF DETAIL DISPLAYED IN A COMPUTER GENERATED SCREEN DISPLAY OF A COMPLEX STRUCTURE

Eric L. Brechner, Redmond, Wash., assignor to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 329,355, Oct. 26, 1994, abandoned. This application Jul. 9, 1996, Ser. No. 677,297

Int. Cl.[6] G06T *9/40*

U.S. Cl. 395—128 **18 Claims**



17. A method for determining the color of level of detail bounding volumes in a computer generated screen display of a complex structure, wherein said structure is modeled as a root volume bounding all of the parts of said structure, with the individual parts comprising sub-objects bounded in sub-volumes, said method comprising the steps of:

a) calculating the ratio of each sub-volume within a parent volume to said parent volume;

b) weighting the color of each sub-volume by said ratio raised to a predetermined power; and

c) adding all of the sub-volume weighted colors within a parent volume to determine the screen displayed color thereof.

5,825,999

MINIMUM CHARACTER REGION DETERMINING APPARATUS AND METHOD, CHARACTER STRING GENERATING APPARATUS FOR GENERATING A CHARACTER STRING ACCORDING TO THE MINIMUM CHARACTER REGION DETERMINING METHOD

Jiro Uzaki, Yokosuka, and Masanori Kono, Yokohama, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Dec. 22, 1994, Ser. No. 362,348

Claims priority, application Japan, Dec. 28, 1993, 5-353227

Int. Cl.[6] G06F *5/00*

U.S. Cl. 395—167 **13 Claims**

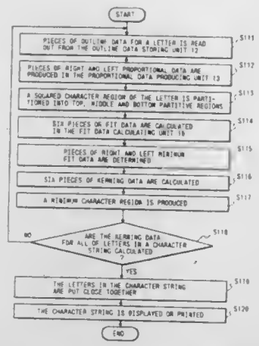
1. A minimum character region determining method, comprising the steps of:

preparing a letter of a character string, the letter being placed in a rectangular character region;

producing a right proportional data value indicating a right proportional position spaced apart from the letter toward a right direction and a left proportional data value indicating a left proportional position spaced apart from the letter toward a left direction;

horizontally partitioning the rectangular character region of the letter into a plurality of partitive regions by one or more boundary lines to horizontally partition the letter into a plurality of portions of the letter;

detecting one or more starting points of one or more line segments of the letter and one more ending points of the line segments for each of the partitive regions;



detecting one or more intersection points between the letter and each boundary line for each of the partitive regions;

determining one point placed on most right side among the starting and ending points of the line segments and the intersection points as a right fit point for each of the partitive regions;

determining one point end placed on the most left side among the starting and ending points of the line segments and the intersection points as the left fit point for each of the partitive regions;

producing a right fit data value indicating a right fit position of the right fit point for each of the partitive regions;

producing a left fit data value indicating a left fit position of the left fit point for each of the partitive regions;

determining a right minimum fit data value denoting one right fit position placed on the most right side among the right fit positions, one partitive region relating to the right minimum fit data value being called a right minimum partitive region;

determining a left minimum fit data value denoting one left fit position placed on the most left side among the left fit positions, one partitive region relating to the left minimum fit data value being called a left minimum partitive region;

setting the right proportional data value to a right kerning data value defined in the right minimum partitive region;

setting the left proportional data value to a left kerning data value defined in the left minimum partitive region;

setting a prescribed right value between the right minimum fit data value and one right fit data value for each of the partitive regions other than the right minimum partitive region to another right kerning data value;

setting a prescribed left value between the left minimum fit data value and one left fit data value defined for each of the partitive regions other than the left minimum partitive region to another kerning data value;

determining a minimum character region for the letter of which a right side is limited by a plurality of right kerning positions indicated by the right kerning data values for all of the partitive regions and a left side is limited by the left kerning positions denoted by the left kerning data in all of the partitive regions; and

outputting or displaying the minimum character region on a printer or a display.

5,826,000

SYSTEM AND METHOD FOR AUTOMATIC CONFIGURATION OF HOME NETWORK COMPUTERS

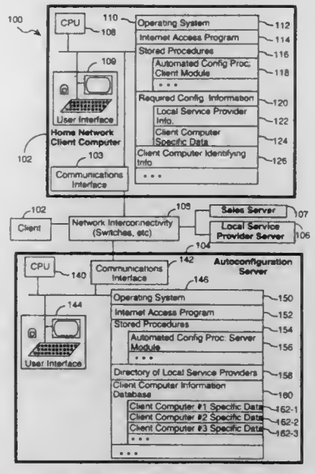
Graham Hamilton, Palo Alto, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Feb. 29, 1996, Ser. No. 613,432

Int. Cl.[6] G06F *9/24;15/16*

U.S. Cl. 395—182.02 **12 Claims**

1. A method for automatic configuration of home network client computers comprising the steps of:



a) receiving requests from said home network client computers for autoconfiguration, said requests each providing client computer identifying information;

b) using said client computer identifying information in said request to determine

i) local service provider information, selected from information in a predefined directory of local service providers; and

ii) client computer specific data corresponding to said client computer identifying information, selected from a database of client computer information; wherein at least a portion of the client computer specific data for each one of the home network client computers includes data selected from the group consisting of computer model information for the one computer, data identifying an internal hardware or software configuration of the one computer, and data identifying a designated end user or recipient of the one computer; and

c) providing instructions for downloading said local service provider information, and said client computer specific data to a respective home network client computer.

5,826,001

RECONSTRUCTING DATA BLOCKS IN A RAID ARRAY DATA STORAGE SYSTEM HAVING STORAGE DEVICE METADATA AND RAID SET METADATA

Clark E. Lubbers, Colorado Springs; Stephen J. Sicola, Monument; Ronald H. McLean, Elbert; James Perry Jackson, Colorado Springs, and Robert A. Ellis, Woodland Park, all of Colo., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Oct. 13, 1995, Ser. No. 542,670

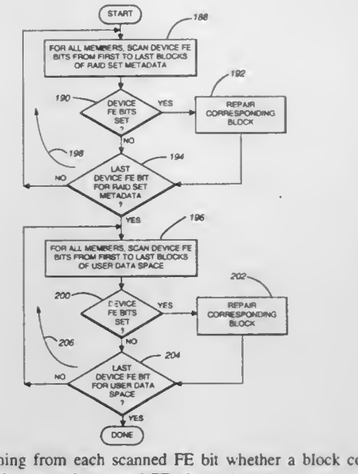
Int. Cl.[6] G06F *11/00;11/10;11/20*

U.S. Cl. 395—182.04 **10 Claims**

1. A method for reconstructing a data block in a RAID array, the RAID array having a plurality of data storage devices for storing user data blocks and metadata blocks, the metadata blocks including device metadata blocks associated with data blocks recorded on each storage device and RAIDset metadata blocks associated with RAID protected data blocks recorded across the storage devices of the RAID array, the RAID protected data blocks including the user data blocks and the RAIDset metadata blocks, said method comprising the steps of:

scanning forced error (FE) bits that each correspond to one of the RAIDset metadata blocks;

after scanning the FE bits that each correspond to one of the RAIDset metadata blocks, scanning other FE bits that each correspond to one of the user data blocks;



determining from each scanned FE bit whether a block corresponding to each scanned FE bit needs to be reconstructed; and

reconstructing all RAIDset metadata blocks determined to need reconstructing before reconstructing any user data block that is determined to need reconstructing.

5,826,002

PARITY STORAGE UNIT, IN A DISK ARRAY SYSTEM FOR GENERATING UPDATED PARITY DATA FROM RECEIVED DATA RECORDS

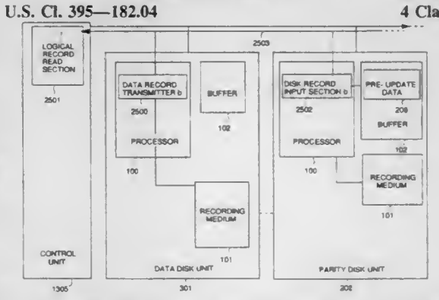
Akira Yamamoto, Sagamihara; Toshihiko Tamiya, Hadano; Hisashi Takamatsu; Akira Kurano, both of Odawara, and Hirofumi Inomata, Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 931,923, Aug. 18, 1992. This application Oct. 29, 1996, Ser. No. 739,441

Claims priority, application Japan, Aug. 20, 1991, 3-207808

Int. Cl.[6] G06F *1/00*

U.S. Cl. 395—182.04 **4 Claims**



1. A storage unit used as a parity storage unit for a disk array system that includes a data storage unit, different from said parity storage unit, for storing data used by a host processor to which the disk array system is connected, and a control unit for controlling data transfer between said host processor and said data storage unit; data records of said data storage unit containing data that is updated with update data received from said host processor; and said parity storage unit storing parity data for recovering data stored in the data storage unit, the storage unit comprising:

a recording medium for storing said parity data as at least one parity record;

means for receiving pre-update data of said data record and said update data;

means for generating update parity data from said update data, said pre-update data of said data record, and the parity data read out from said recording medium; and

means for writing the generated updated parity data to said recording medium.

5,826,003

INPUT/OUTPUT CONTROLLER PROVIDING PREVENTIVE MAINTENANCE INFORMATION REGARDING A SPARE I/O UNIT

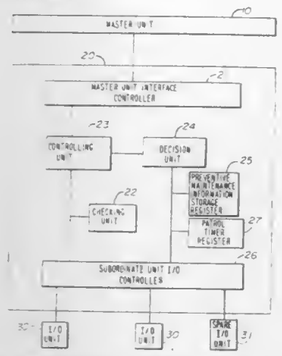
Tatsuo Matoba, and Keiichi Yorimitsu, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 373,475, Jan. 17, 1995, Pat. No. 5,491,816. This application Sep. 15, 1995, Ser. No. 530,724

Claims priority, application Japan, Sep. 20, 1990, 2-251053

Int. Cl.[6] G06F *11/08*

U.S. Cl. 395—182.05 **67 Claims**



15. An array storage system coupled to a master unit issuing an operation command, said array storage system comprising:

storage devices comprising:

a first storage device storing an error detection code,

a second storage device being a spare storage device, and

data storage devices, each data storage device storing data and parity;

an operation controller controlling a read operation on said storage devices, said operation controller controlling said data storage devices and said first storage device if said data storage devices and said first storage device are normal and without one of a hard error, a read error, and both the hard error and the read error, and controlling the first storage device, the second storage device and remaining of said data storage devices which are normal if one of a hard error, a read error, and both are found in one of the storage devices, said operation controller comprising:

a subordinate unit I/O controller connected to said storage devices,

a master unit interface controller, operatively connected to said master unit and said subordinate unit I/O controller, receiving said operation command issued from said master unit and forwarding said operation command to said storage devices,

checking means for checking a normality of data in said storage devices, based on a signal obtained by reading data and the error detection code concurrently from said storage devices,

controlling means for controlling at least one of said storage devices based on said operation command input from said master interface controller via said subordinate unit I/O controller, said controlling means controlling said data storage devices only, if a normality of data is found in all said data storage devices by said checking means and controlling remaining normal data storage devices and said second storage device if an abnormality is found in any of said data storage devices by said checking means, and controlling, via said subordinate unit I/O controller, one of said selected data storage devices and said second storage device, on the basis of said operation command input from said master unit via said master unit interface controller,

decision means for deciding whether at least one of said data storage devices and said second storage device operate normally if said controlling means is not processing said operation command input from said master unit via said master unit interface controller, and

an information storage register temporarily storing information regarding an abnormality if an abnormality of said data storage devices and said second storage device is found by said decision means; and

power supply means for supplying power to each of said data storage devices, said first storage device, and said second storage device, and for maintaining each of said storage devices in ready status.

5,826,004

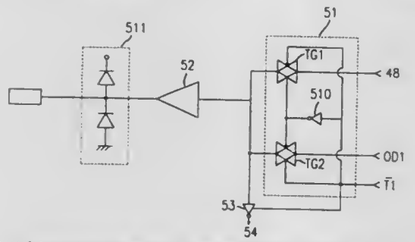
INPUT/OUTPUT DEVICE WITH SELF-TEST CAPABILITY IN AN INTEGRATED CIRCUIT

Jeong Hwan Bae, Kyungki-Do, Rep. of Korea, assignor to LG Semicon Co., Ltd., Cheongju, Rep. of Korea

Filed Dec. 19, 1995, Ser. No. 574,478

Int. Cl.[6] G01R *31/3185*; G06F *12/00*

U.S. Cl. 395—183.01 **15 Claims**



1. An input/output device in an integrated circuit having a core logic and a plurality of input pins, input/output pins, and output pins, comprising:

a plurality of input buffer units for buffering an input data signal provided through each input pin or a test data signal to output it to the core logic, and for outputting an inverted second test data signal according to inputting of a first test signal;

a plurality of output buffer units for selecting and buffering a data signal provided from the core logic or the test data signal to output it to each output pin, and inverting and outputting the inverted second test data signal according to inputting of the first test signal; and

at least one input/output buffer units for selecting and buffering one of (1) the data signal provided from the core logic or the test data signal to output it to each input/output pin and (2) the input data signal inputted through each input/output pin or the test data signal to output it to the core logic, and for inverting and outputting the inverted second test data signal according to the first test signal.

5,826,005

SYSTEM AND METHOD FOR DIAGNOSING COMPUTER PROGRAM FAULTS THROUGH THE PROVISION OF PROGRAM PROBE POINTS AND REFERENCEABLE DIAGNOSTIC PROGRAM PROBES

Billy J. Fuller, Colorado Springs, Colo., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

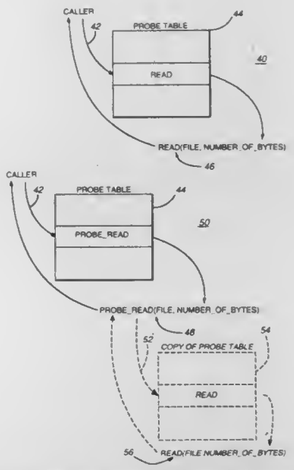
Filed Mar. 22, 1996, Ser. No. 620,490

Int. Cl.[6] G06F *11/00*

U.S. Cl. 385—183.14 **28 Claims**

1. A computer implemented method for diagnosing computer program behavior comprising the steps of:

providing at least one probe point in a first computer program;



providing at least one probe in a second diagnosing computer program for insertion into said at least one probe point;

providing for advising said second computer program of said at least one probe point by operation of said first computer program; and

providing for inserting said at least one probe in said at least one probe point by operation of said second computer program and as a result of said advising step, such that operation of said first computer program is modified by said insertion of said at least one probe into said at least one probe point.

5,826,006

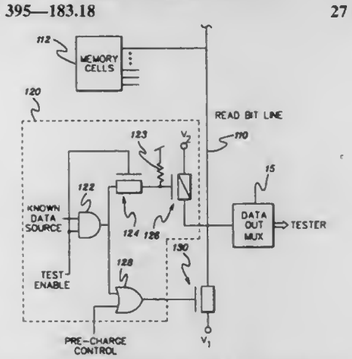
METHOD AND APPARATUS FOR TESTING THE DATA OUTPUT SYSTEM OF A MEMORY SYSTEM

Toshiharu Saitob, South Burlington, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 30, 1996, Ser. No. 724,572

Int. Cl.[6] F06F *11/227*

U.S. Cl. 395—183.18 **27 Claims**



1. A method for verifying proper operation of a data output system of a memory array having a plurality of memory cells arranged therein, the plurality of memory cells using at least one bit line to transmit signals therefrom, the signals transmitted by the at least one bit line being coupled through the data output system during operation of the memory array, the method comprising:

applying, independent of the plurality of memory cells using the at least one bit line, a known signal to the at least one bit line thereby resulting in an actual output signal at an output of the data output system, wherein the known signal includes a first stable component and a second stable component; and

comparing the actual output signal to an expected output signal to verify proper operation of the data output system.

5,826,007

MEMORY DATA PROTECTION CIRCUITS

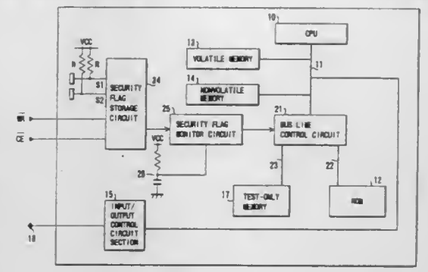
Kinya Sakaki, Tokyo, and Kimio Mori, Kawasaki, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 21, 1997, Ser. No. 785,297

Claims priority, application Japan, Jan. 22, 1996, 8-008499

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.18 **6 Claims**



5. A memory data protection circuit provided in a one-chip microcomputer having a CPU, a ROM, a volatile memory, and a nonvolatile memory formed on a single chip, said memory data protection circuit comprising:

a first bus line connected to said CPU, said volatile memory, said nonvolatile memory, and an input/output control circuit;

a second bus line connected to a ROM storing a system program;

a third bus line connected to a test-only memory storing a memory test program;

a security flag storage circuit to which a security flag consisting of a plurality of bits is inputted, into which said security flag is written on receipt of a control signal so that the logic level of said security flag may change in one direction, and which stores the security flag in a state where the flag cannot be rewritten once the flag has been written;

a power-on reset circuit that outputs a power-on reset signal when the power supply for the one-chip microcomputer has been turned on;

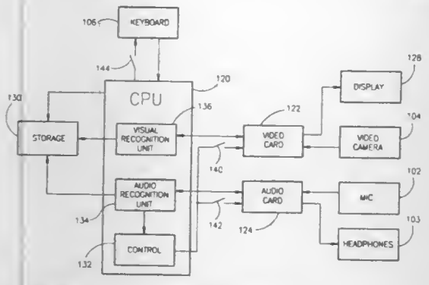
a security flag monitor circuit that reads the security flag stored in said security flag storage circuit when receiving said power-on reset signal and recognizes the contents of the flag; and

a bus line control circuit which controls the connection of said first bus line with said CPU according to the recognition result of said security flag monitor circuit and which, when said security flag indicates the test mode before shipment, disconnects said CPU completely from said first bus line and controls said input/output control circuit section so that access to all of the memories may be controlled directly from the input/output terminal to enable a shift to the test mode and which controls the connection so that a shift to the test mode may be impossible, when said security flag indicates the normal operation mode after shipment, and which controls the connection so that a shift to the test mode may be possible with said ROM being disconnected from said second bus line, when said security flag indicates the test mode after shipment.

5,826,008
SYSTEM AND METHOD FOR FAILURE REPORTING AND COLLECTION

Zigmund Bluvband, Rishon LeZion, Israel, assignor to A.L.D. Advanced Logistics Developments Ltd., Israel

Filed Feb. 1, 1996, Ser. No. 595,548
Claims priority, application Israel, Feb. 1, 1995, 112513
Int. Cl.[6] G06F *11/32*
U.S. Cl. 395—185.1 **13 Claims**

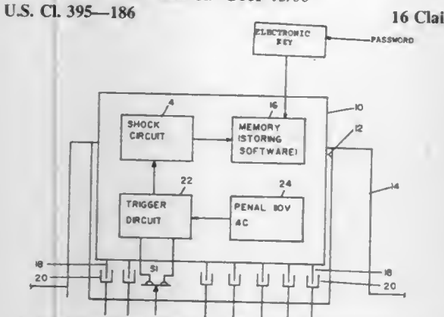


1. A failure reporting system, comprising:
a microphone input device for inputting failure data and control data;
a video camera input device for inputting failure data;
a keyboard input device for inputting failure data and control data;
an electronic data processor;
a communication link for establishing communication between all said input devices and said electronic data processor;
said electronic data processor including:
an audio recognition unit for recognizing and processing the failure data and control data inputted by said microphone input device;
a visual recognition unit for recognizing and processing the failure data inputted by said video camera input device;
a storage unit for storing the data processed by said audio recognition unit and said video recognition unit;
and a control unit for selectively activating said input devices in response to the processed control data.

5,826,009
PROTECTION OF SOFTWARE FROM PHYSICAL AND ELECTRONIC INTERROGATION BY SEALING AND CHECKING PASSWORD

Genquan Feng, P.O. Box 1796, New York, N.Y. 10185-0016

Continuation-in-part of Ser. No. 551,297, Jul. 12, 1990, abandoned, and Ser. No. 938,859, Sep. 1, 1992, abandoned, and Ser. No. 276,674, Jul. 19, 1994. This application Jul. 25, 1995, Ser. No. 506,642
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—186 **16 Claims**

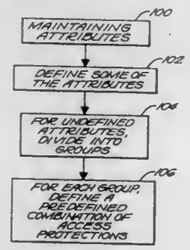


1. A soft-ware protection (i.e. protection from to be interrogated) system for a dedicated computer comprising:
(a) a software-auto-destroying board (SAD board) mounted in an expansion slot of the computer;
(b) a memory for storing the software to be protected on the SAD board;
(c) a sealed detector, for detecting any unallowable electronical and physical interrogating (i.e. any physical and electronic interrogation which is not set up by those who designed the software protection system) externally upon the main information parts (including BIOS chip) of the computer, the detector itself, and the memory storing the software, and for generating a destruction signal in response to such detection;
(d) means responsive to the destruction signal, for destroying the function of the memory which storing the software, so that the software stored in the memory is destroyed.
(e) means for blocking the ways of controlling the computer to perform work other than that which is set up within the software stored in the memory;
(f) means for sealing all the main information parts (including the BIOS chip) of the computer, the memory which storing the software, the detector mentioned above, and all vacant slots;
(g) means for converting monitor-signals of the computer to video-signals, and inputting them into a video-printer to print out the outputs; and
(h) means for, using an electronic key, starting execution of the software stored in the memory to be working, when a password input by a user is compatible with the electronic key.

5,826,010
PREDEFINED ACCESS RIGHTS FOR UNDEFINED ATTRIBUTES IN A NAMING SERVICE

Brett Joseph, Northboro, and Kathleen McConnell, Groton, both of Mass., assignors to Banyan Systems, Inc., Westboro, Mass.

Filed Feb. 12, 1996, Ser. No. 600,413
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—186 **18 Claims**

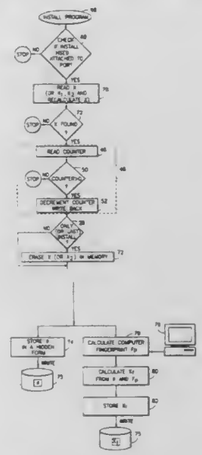


1. A network including a server with a naming service for maintaining names of objects and including storage for maintaining attributes for association with objects in the network, wherein some of the attributes are undefined in that the undefined attributes are not associated with any object and others are defined and associated with objects, a number of the undefined attributes being divided into predetermined groups, each of which has a different predefined combination of access protections for different categories of users and different types of access, such that when a new attribute is to be defined with a certain desired combination of access protections, that new attribute can be associated with one of the undefined attributes in the particular group having the desired combination of access protections.

5,826,011
METHOD OF METERING AND PROTECTING COMPUTER SOFTWARE

Wayne W. Chou, Ridgefield; Joseph M. Kulinets, and Laszlo Elteto, both of Stamford, all of Conn., assignors to Rainbow Technologies, Inc., Irvine, Calif.

Continuation-in-part of Ser. No. 578,830, Dec. 26, 1995, abandoned. This application Apr. 23, 1996, Ser. No. 636,338
Int. Cl.[6] G06F *13/00;* **G11B** *23/28;* **H04K** *1/00*
U.S. Cl. 395—186 **6 Claims**



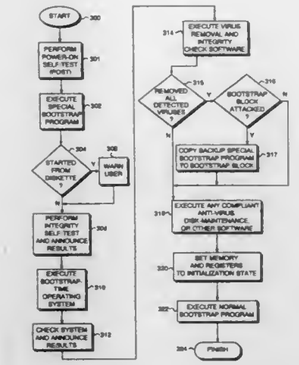
1. A method of protecting computer software on installation using an installation media containing an installation program and software to be installed and an installation hardware security electrical device (HSED) which must accompany the installation media supplied to the user comprising the steps of:
preparing an installation media with an installation program and the software to be installed,
preparing an install HSED with predetermined secret installation data,
providing the installation media along with the related HSED to the user,
installing the install HSED in a computer port of the user's computer in which the program is to be installed,
running the installation program from the installation media on the user's computer which checks for the presence of the install HSED,
retrieving the secret installation data from the HSED, and
entering the software to be installed from the installation media onto the hard drive of the user's computer if the proper install HSED is present; and
changing the secret installation data from the HSED on the installation of the software onto the hard drive of the user's computer to limit the number of future installations of the same program using the same HSED.

5,826,012
BOOT-TIME ANTI-VIRUS AND MAINTENANCE FACILITY

Jonathan D. Lettvin, 194 Waltham St., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 426,943, Apr. 21, 1995, Pat. No. 5,559,960. This application Sep. 17, 1996, Ser. No. 714,938
Int. Cl.[6] G06F *11/34*
U.S. Cl. 395—186 **20 Claims**

15. A method of operating a computer to avoid virus infection, the method comprising:
(a) providing a writable storage medium selectably actuable by a user;
(b) storing, on the storage medium, anti-virus software configured to cause the computer to detect and remove from a component thereof at least one virus; and

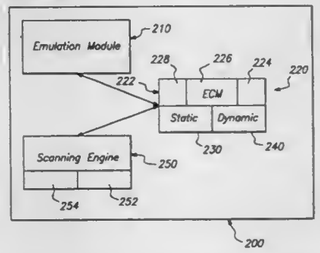


(c) for causing the computer to execute the anti-virus software upon startup of the computer but before the computer executes an ultimate operating system.

5,826,013
POLYMORPHIC VIRUS DETECTION MODULE

Carey S. Nachenberg, Northridge, Calif., assignor to Symantec Corporation, Cupertino, Calif.

Continuation-in-part of Ser. No. 535,340, Sep. 28, 1995, Pat. No. 5,696,822. This application Jan. 8, 1997, Ser. No. 780,985
Int. Cl.[6] H04L *9/00;* **G06F** *3/00;* **H04K** *3/00*
U.S. Cl. 395—186 **7 Claims**



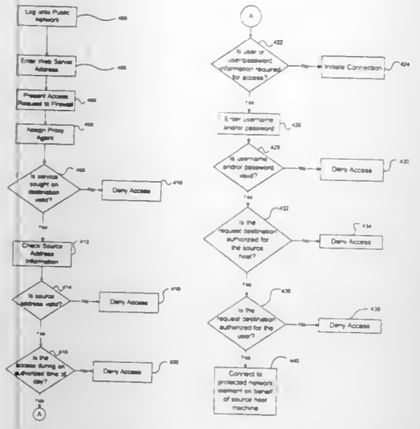
1. A computer-implemented method for detecting computer viruses in a computer file, the method comprising:
determining whether an instruction is a register-indirect memory write, which writes to a memory address specified by the contents of a register;
determining whether the register is uninitialized if the instruction is a register-indirect memory write; and
excluding from consideration those viruses that cannot perform register-indirect memory writes if the register is uninitialized.

5,826,014
FIREWALL SYSTEM FOR PROTECTING NETWORK ELEMENTS CONNECTED TO A PUBLIC NETWORK

Christopher D. Coley, Morgan Hill, and Ralph E. Weslnger, Jr., Livermore, both of Calif., assignors to Network Engineering Software, San Jose, Calif.

Filed Feb. 6, 1996, Ser. No. 595,957
Int. Cl.[6] G06F *12/14*
U.S. Cl. 395—187.01 **36 Claims**

1. A firewall system for protecting a network element from access over a network to which the network element is attached, the firewall system comprising:
a firewall box comprising a stand alone computing platform;



a first connection connecting the firewall box to the network element; and

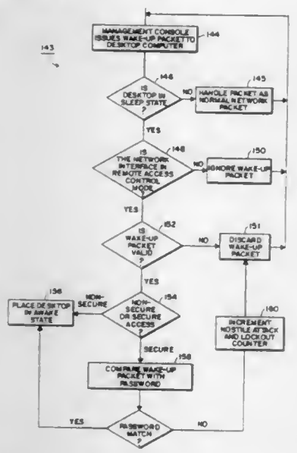
at least one proxy agent running on the firewall box for verifying that an access request packet received over the first connection is authorized to access the network element, the at least one proxy agent initiating a connection to the network element on behalf of the access request if the access request is authorized, wherein the at least one proxy agent verifies that a time period during which an incoming access request is received is valid.

5,826,015

METHOD AND APPARATUS FOR SECURE REMOTE PROGRAMMING OF FIRMWARE AND CONFIGURATIONS OF A COMPUTER OVER A NETWORK

Thomas J. Schmidt, Milford, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Feb. 20, 1997, Ser. No. 804,096
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—187.01 **12 Claims**



1. A method for securely writing data over a network to a device in a system, comprising the steps of:

generating a signal to wake up the system;

determining whether the signal was generated in response to the system having received a wake-up packet from over the network; and

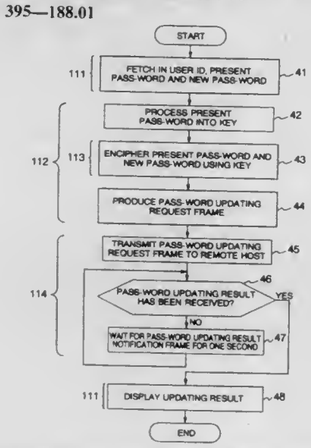
configuring the system to allow data to be written to the device if the signal was generated in response to the wake-up packet, otherwise prohibiting data from being written to the device.

5,826,016

PASS-WORD MANAGING SYSTEM AND PASS-WORD MANAGING METHOD

Toshiya Ito, Zama; Kosuke Takano; Hiromichi Ito, both of Yokohama, and Mitsuru Mori, Atsugi, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Software Engineering, Yokohama, both of Japan

Filed May 24, 1996, Ser. No. 653,394
Claims priority, application Japan, May 26, 1995, 7-128372
Int. Cl.[6] H04K *1/00*
U.S. Cl. 395—188.01 **6 Claims**



1. In a pass-word managing system including a remote host and at least one or more local hosts connected to said remote host through a network, a pass-word managing method comprising the steps of:

registering, in a pass-word table in said remote host, with respect to each of a plurality of authorized users, a user ID for identifying one of said authorized users of interest and a corresponding present pass-word for authenticating said authorized user of interest;

enciphering the present pass-word and a new pass-word input by a user, with said present pass-word utilized as an enciphering key;

transmitting a pass-word updating request including a user ID of said user, the enciphered present pass-word and the enciphered new pass-word to said remote host through said network from said local host;

deciphering said pass-word updating request, with said present pass-word utilized as a deciphering key; and

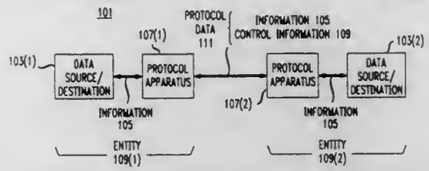
updating, a present pass-word registered in said pass-word table with the new pass-word included in said pass-word updating request only when the present pass-word included in said pass-word updating request matches the present pass-word registered in said pass-word table and the user ID included in said pass-word updating request matches a user ID registered in said pass-word table corresponding to the present pass-word registered in said pass-word table.

5,826,017

APPARATUS AND METHOD FOR COMMUNICATING DATA BETWEEN ELEMENTS OF A DISTRIBUTED SYSTEM USING A GENERAL PROTOCOL

Gerard Johan Holzmann, Murray Hill, N.J., assignor to Lucent Technologies, Murray Hill, N.J.

Filed Feb. 10, 1992, Ser. No. 830,291
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—200.6 **46 Claims**



1. A method of communicating in a distributed system comprising the steps of:

in a first entity of the distributed system, receiving a first general protocol message which includes a protocol description which describes a specific protocol, the specific protocol described by the protocol description being initially unknown to the first entity, the protocol description being in a protocol description language which is independent of any particular hardware or software implementation of the first entity; and

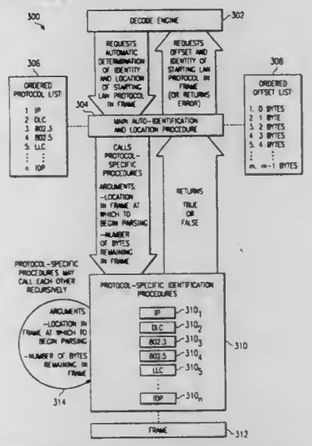
responding to the first general protocol message by employing first protocol description interpretation means to execute the protocol description included in the first general message which enables the first entity to communicate with a second entity of the distributed system using the specific protocol.

5,826,018

METHOD AND APPPARATUS FOR AUTOMATICALLY DETERMINING THE STARTING LOCATION AND STARTING PROTOCOL OF LAN DATA IN A WAN LINK FRAME

Robert L. Vixie, Colorado Springs, Colo., and Pankaj K. Shah, Nashua, N.H., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 2, 1996, Ser. No. 626,446
Int. Cl.[6] G06F *13/42*; H04L *29/06*
U.S. Cl. 395—200.6 **7 Claims**



7. Apparatus for determining the starting location and starting protocol of LAN data in a WAN link data frame captured from a WAN link, comprising:

storage means for storing an offset list and a LAN protocol list;

a plurality of protocol-specific identification means, each for determining, responsive to a given offset, whether said WAN link data frame contains a header produced by a certain LAN protocol beginning at said offset, and each of said plural protocol-specific identification means corresponding to at least one of the LAN protocols referenced in said LAN protocol list;

main auto-identification and location means for stepping through said offset list and said LAN protocol list and, for each offset in said offset list, activating the protocol-specific identification means corresponding to each entry in said LAN protocol list until a LAN protocol is recognized in said WAN link data frame, and

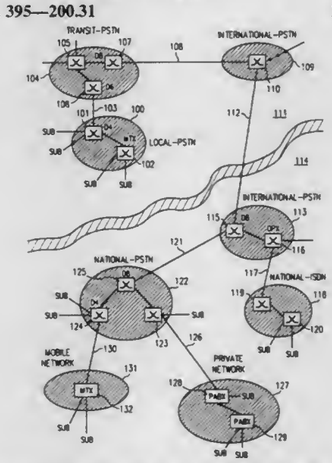
reporting means for indicating, if a LAN protocol was recognized, which LAN protocol was recognized and the offset in the WAN link data frame at which its header begins and, if a LAN protocol was not recognized, that no LAN protocol was found in the WAN link data frame.

5,826,019

MODULAR APPLICATION SOFTWARE AND DATA PROVIDING MOBILITY IN TELECOMMUNICATION NETWORKS

Mikael Ronstrom, Hägersten, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 221,925, Apr. 1, 1994, abandoned.
This application Jan. 29, 1996, Ser. No. 590,679
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.31 **18 Claims**



1. A method for managing data used by application software having a plurality of application modules executable on switching and management systems located throughout a heterogeneous telecommunications network, comprising:

storing portions of the data used by said application software in data managers used for operational, accounting and maintenance, at a plurality of data storage locations within said operational, accounting and maintenance functions distributed within the telecommunications network in a separate module and which is independent of the application modules, each being supported by a data manager;

executing an application module to define the data used by said application software required during execution of said application software;

requesting the data manager supporting the application module to search the data managers at the data storage locations for the required data;

searching the data managers for the required data to identify the data manager in which the required data is stored; and

retrieving the required data from the identified data manager and writing the retrieved data from the identified data manager to the application module for use during continued execution of said application software.

5,826,020

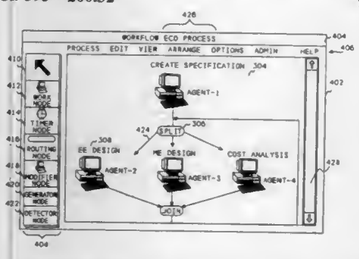
WORKFLOW REAL TIME INTERVENTION

Jim Randell, Clifton, United Kingdom, assignor to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 315,469, Sep. 30, 1994, abandoned. This application Sep. 18, 1996, Ser. No. 715,886

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.32 **9 Claims**



1. A method for altering processing of a workflow method used for distributing and controlling work in a computer system, said work being defined by a workflow procedure having at least one node, said method for altering processing comprising the steps of:

(a) storing all workflow procedures in an information service;

(b) for each time a procedure is to be performed, retrieving said procedure from said information service into a coordination service and defining an instance for said procedure, said instance comprising said plurality of nodes with connections defined therebetween, wherein said connections define an order in which said nodes are processed, and an information packet comprising initial data for said instance;

(c) selecting a node of said instance to be performed;

(d) when said node selected in step (c) is marked as being suspended, continuing with step (g);

(e) performing work defined for said node selected in step (c);

(f) selecting a next node connected to said node processed in steps (d) through (e) and repeating steps (d) through (e) for said selected next node;

(g) repeating step (f) until all nodes of said procedure have been performed;

(h) when performing steps (c) through (f), accepting input of a single command from a user of said method, wherein said single command causes said method to suspend processing of said instance by marking all of said nodes within said instance, that have not started processing, as suspended; and

(i) when performing steps (c) through (f), accepting input from a user of said method to resume processing of said instance by removing said suspended marking all of said nodes within said instance that are marked as suspended.

5,826,021

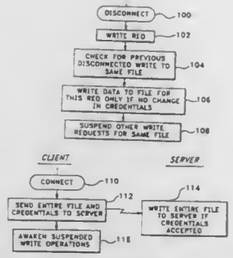
DISCONNECTED WRITE AUTHORIZATION IN A CLIENT/SERVER COMPUTING SYSTEM

Robert N. Mastors, and Michael J. Stillwell, both of Colorado Springs, Colo., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Sep. 17, 1996, Ser. No. 715,183

Int. Cl.[6] G06F *12/14*

U.S. Cl. 395—200.33 **20 Claims**



6. In a client/server computing system having an optimized log file system for replaying client disconnect write operations to a server when the server becomes available to the client, a method for preventing data in unauthorized disconnect write operations to a target file at the client from being copied to the server when the server becomes available, said method comprising the steps of:

in response to a write request for a target file, said write request containing data and request credentials, detecting at the client whether or not the target file has already been written;

if said detecting step detects the target file has not already been written, placing the request credentials from the write request in a credentials table as stored credentials indexed by target file identifier and writing data from the write request to the target file;

if said detecting step detects the target file has already been written, matching the request credentials against the stored credentials;

if the request credentials are the same as the stored credentials, writing data from the write request to the target file; and

if the request credentials are not the same as the stored credentials, suspending the write request at the client.

5,826,022

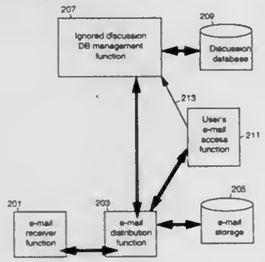
METHOD AND APPARATUS FOR RECEIVING ELECTRONIC MAIL

Jakob Nielsen, Atherton, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Apr. 5, 1996, Ser. No. 628,441

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—200.36 **20 Claims**



6. An apparatus for receiving electronic-mail messages comprising:

(a) a computer having a central processing unit (CPU), a random access memory (RAM) coupled to said CPU, a communications mechanism for receiving a message, and a message storage mechanism; and

(b) a message management mechanism within said computer comprising:

an ignored discussion database configured to store information relating to a recipient selected discussion;

a database management mechanism configured to manage said ignored discussion database;

a message classification mechanism configured to determine whether said message is associated with said recipient selected discussion; and

a message save mechanism configured to save said message using said storage mechanism if said message is not associated with said recipient selected discussion.

5,826,023

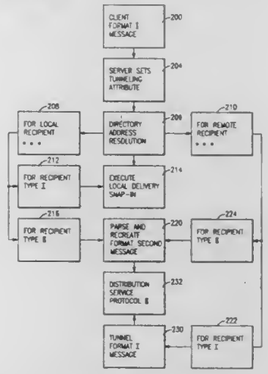
COMMUNICATIONS TUNNELING

Mary Susan Hall, Vestal, N.Y., and George James Romano, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 3, 1996, Ser. No. 657,140

Int. Cl.[6] G06F *13/38;15/17*

U.S. Cl. 395—200.36 **9 Claims**



1. Method for communicating a first message in a first format through a network transport requiring messages in a second format, comprising the steps of:

at the application level of a sending node,

generating said first message in said first format, said first format selectively comprising complex data;

maintaining a directory of e-mail addresses including tunneling attributes configuring selective destination client and system E-mail addresses for tunneling, said attributes specifying the transport formats for destination addresses capable of accepting tunneled messages;

responsive to an application request to send said first message to a first destination client:

searching said directory of e-mail addresses for a first tunneling attribute including a first transport format for said first destination client; and

responsive to said first tunneling attribute, encapsulating said first message without conversion within a second message of said first transport format;

communicating said second message to said first destination client at a receiving node; and

at said receiving node, de-encapsulating said second message to recover therefrom said first message.

5,826,024

MULTIMEDIA INFORMATION DISTRIBUTING SYSTEM

Mamoru Higashimura, Tokyo; Masao Kato, Yokohama; Mitsuo Tamura; Akira Inagaki, both of Tokyo, and Tsutomu Uenoyama, Kawasaki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sep. 2, 1997, Ser. No. 921,598

Claims priority, application Japan, Sep. 2, 1996, 8-231566; Jul. 8, 1997, 9-182015

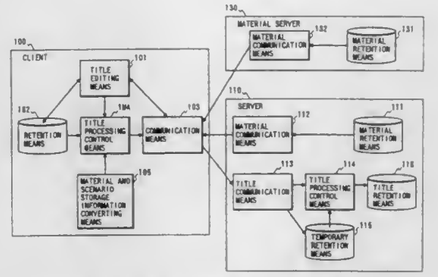
Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—200.44 **5 Claims**

4. A multimedia information distributing system comprising a client for creating a title composed of a material and a scenario showing a reproducing procedure for said material and a server for registering said title, with said client and said server being in communicable relation to each other,

said client including:

title editing means for creating said title and further for creating material and scenario storage information showing a storage condition of said material and said scenario necessary for the creation of said title;



retention means for retaining said material, said scenario of said title created by said title editing means, and said material and scenario storage information;

communication means for carrying out transmission and reception of said material and further for conducting transmission of said scenario, said material and scenario storage information and a title registration instruction for permitting registration of said title with said server;

material and scenario storage information converting means for making at least one of mapping and conversion between client recognition information being said material and scenario storage information recognizable on the client side and server recognition information being said material and scenario storage information recognizable on the server side; and

title processing control means for controlling said title editing means, said retention means, said communication means and said material and scenario storage information converting means and further for creating said title registration instruction,

said server including:

title communication means for receiving said material and scenario constituting said title, said material and scenario storage information, and said title registration instruction;

temporary retention means for temporarily retaining said material and said scenario received by said title communication means;

title retention means for registering said title in units of said scenario retained in said temporary retention means and a kind of said material;

material examining means for checking whether or not said material constituting said title specified by said client is already retained in said title retention means;

title processing control means for controlling said title communication means, said temporary retention means, said title retention means and said material examining means; and

means for, when said title specified by said client is registered with said title retention means, creating information about the relation between the name of said material, constituting said title, before the registration and the name of said material after the registration.

5,826,025

SYSTEM FOR ANNOTATION OVERLAY PROXY CONFIGURED TO RETRIEVE ASSOCIATED OVERLAYS ASSOCIATED WITH A DOCUMENT REQUEST FROM ANNOTATION DIRECTORY CREATED FROM LIST OF OVERLAY GROUPS

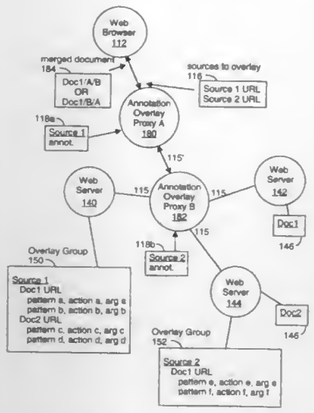
Wayne C. Gramlich, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Sep. 8, 1995, Ser. No. 525,980

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—200.47 **24 Claims**

1. In a computer network incorporating a plurality of servers used to store documents, each said document having a unique document identifier, and a client computer having a browser configured to request and receive said documents over said network, a



system for providing annotation overlays for a requested document, said system comprising:

at least one stored overlay group associated with one of said servers, said overlay group encapsulating annotation overlays regarding at least one of said documents, each said stored overlay group having a unique source identifier;

an annotation overlay proxy configured to form a merged document by merging said requested document from a first server with associated annotation overlays regarding said requested document from specified overlay groups and to relay said merged document to a receiver selected from another proxy or said browser; and

an annotation directory associated with said annotation overlay proxy, wherein said annotation directory stores said annotation overlays from said specified overlay groups, and wherein said annotation overlay proxy is configured, in response to a document request issued by said browser, to retrieve a set of associated annotation overlays related to said requested document from said annotation directory prior to merging said set of associated annotations and said requested document;

wherein said annotation directory is created by said annotation overlay proxy, which, upon receiving a list of said specified overlay groups identified by their unique source identifiers, is configured to retrieve all of said annotation overlays from said specified overlay groups and store said retrieved annotation overlays in an electronic memory coupled to said annotation overlay proxy, said stored annotation overlays forming said annotation directory.

5,826,026

INTERNET MESSAGE COMMUNICATOR WITH DIRECT OUTPUT TO A HARD COPY DEVICE

Amir Friedman, Hod Hasharon, Israel, assignor to Connect-One, Ltd., Hod Hasharon, Israel

Filed Nov. 9, 1995, Ser. No. 555,617

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.47 **19 Claims**

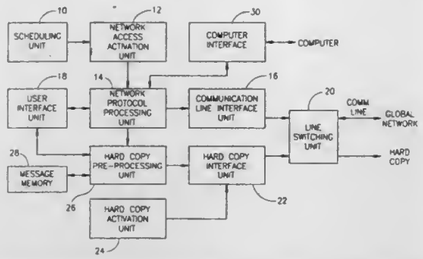
1. A global network communicator for providing access solely to a global network comprising:

a global network application specific user interface;

a network access activation unit for initiating communication between the communicator and the global network and for initiating downloading of an incoming message from the global network;

a scheduling unit for automatically activating the network access activation unit at predetermined times;

a polling apparatus, operating in cooperation with the scheduling unit, for automatically polling the network to determine the presence of an incoming message for a user;



a network protocol processing unit operative for communication with the global network, for formatting data to a protocol employed by the global network and for translating received data from the global network to a format useful ultimately by a user in hard copy form; and

a hard copy processing unit for automatically downloading an incoming message and outputting the incoming message via a hard copy interface port to a hard copy output device.

5,826,027

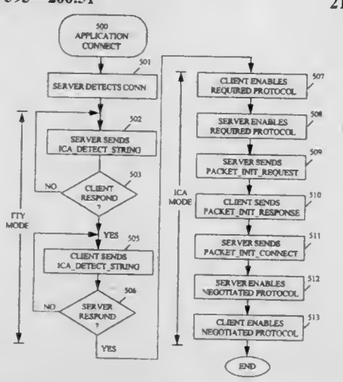
METHOD FOR SUPPORTING AN EXTENSIBLE AND DYNAMICALLY BINDABLE PROTOCOL STACK IN A DISTRUBITED PROCESS SYSTEM

Bradley J. Pedersen, Coral Springs, and Werner Kurt Perry, Ft. Lauderdale, both of Fla., assignors to Citrix Systems, Inc., Fort Lauderdale, Fla.

Filed Oct. 11, 1995, Ser. No. 540,891

Int. Cl.[6] G06F *13/14*

U.S. Cl. 395—200.51 **21 Claims**



1. A method for providing an extensible and dynamically bindable protocol stack in an application server based on an information exchange between the application server and one of a plurality of client workstations, both the application server and the client workstations initialized with a prescribed set of enabled protocols and associated protocol parameters providing a common transport mechanism, the method comprising:

(a) the application server transmitting a request protocol message to one of a plurality client workstations;

(b) the client workstation responding to the request protocol message with a plurality of client protocol packets specifying one or more additional protocols and associated protocol parameters that are desired by the client workstation for a client workstation application;

(c) the application server responding to each protocol packet transmitted by the client workstation with a server protocol packet counter-specifying one or more associated protocol parameters; and

(d) the application server and the client workstation each enabling the additional protocols with the negotiated protocol parameters in preparation for running the client workstation application.

5,826,028

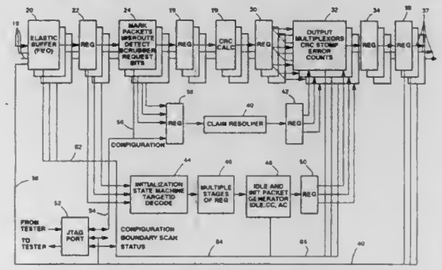
INITIALIZATION OF SWITCHING NETWORKS FOR USE WITH A SCALABLE COHERENT INTERFACE

Donald Bruce Bennett, and Steven Allen Murphy, both of Apple Valley, Minn., assignors to Lockheed Martin Corporation, Bethesda, Md.

Filed May 13, 1996, Ser. No. 648,749

Int. Cl.[6] H04L *12/00*

U.S. Cl. 395—200.52 **1 Claim**



1. A method of extending the SCI standard initialization protocol for a switching network which implements the following initialization states:

(a) OPERATIONAL,

(b) TERMINATE,

(c) ABORT,

(d) STOP,

(e) RESETL,

(f) RESETH,

(g) FLUSH_RESETH, comprising:

(a) transitioning said switching network from its OPERATIONAL state upon detection at any switch of said network of either an ABORT, a STOP, a RESETL or a RESETH packet on any enabled input port to its TERMINATE state,

(b) terminating the transmission of current packets through said network while in the TERMINATE state, and

(c) transitioning in priority order said switching network from the TERMINATE state upon the detection at any switch of said network on any enabled input port of

(i) an ABORT packet to an ABORT state, or

(ii) a STOP packet to a STOP state, or

(iii) either a RESETL or a RESETH packet to a RESETL state, and

(d) each time the switch enters an ABORT state broadcast, a single ABORT followed by a plurality of sync packets to all output ports of said switch, and each time the switch enters a STOP, a RESETL or a RESETH state broadcast, a respective STOP, RESETL or RESETH packet to all output ports of said switch along with a plurality of sync packets and then repeat until transitioning out of the respective state, and

(e) if in an ABORT state, transitioning in priority order said network from said ABORT state upon the detection of:

(i) a STOP packet on any enabled input port to said STOP state, or

(ii) either a RESETL or a RESETH packet on any enabled input port to said RESETL state, or

(f) if in said STOP state, transitioning said network from said STOP state upon the detection of

(i) either a RESETL or a RESETH packet on any enabled input port to said RESETL state, or

(g) if in said RESETL state, transitioning said network from said RESETL state upon detection of a RESETH packet on each enabled input port to said RESETH state, or

(h) if in said RESETH state, transitioning said network from said RESETH state upon the detection of idles on each enabled, non-recirculation input port to a FLUSH-RESETH state, and

(i) while in said FLUSH-RESETH state broadcasting idles to all output ports of said switch and transitioning from said FLUSH-RESETH state upon detection of idles on all enabled input ports of said network to said OPERATIONAL state.

5,826,029

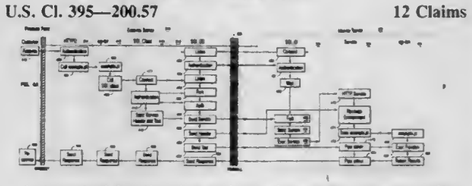
SECURED GATEWAY INTERFACE

Robert Cecil Gore, Jr., Pflugerville, and John Frederick Haugh, II, Austin, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 31, 1995, Ser. No. 551,260

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.57 **12 Claims**



1. A method for directing an internal computer system to allow an external computer system to initiate a transaction request using internal resources without violating a security firewall between the internal computer system and the external computer system, comprising the steps of:

authenticating a connection initiated by the internal computer system between the internal computer system and the external computer system, thereby establishing an authenticated connection;

calling by the external computer system a transaction request received by the external computer system;

in response to calling the transaction request, creating by the external computer system an original process environment containing process environment variables, and creating a string comprising the transaction request and the process environment variables for executing the transaction request;

transmitting by the external computer system the string to the internal computer system through the authenticated connection;

verifying by the internal computer system the transaction request;

recreating by the internal computer system the original process environment; and

executing by the internal computer system the transaction request, thereby generating an output.

5,826,030

TELECOMMUNICATION SWITCH HAVING A UNIVERSAL API WITH A SINGLE CALL PROCESSING MESSAGE INCLUDING USER-DEFINABLE DATA AND RESPONSE MESSAGE EACH HAVING A GENERIC FORMAT

Mark P. Hebert, Kingston, Mass., assignor to Excel Switching Corporation, Hyannis, Mass.

Filed Nov. 30, 1995, Ser. No. 566,414

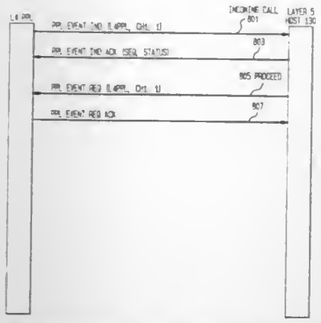
Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.58 **28 Claims**

1. A telecommunications system, comprising:

a host device;

a programmable telecommunication switch, connected in communicating relationship with and responsive to said host device, for performing call processing functions related to communication paths established between various ones of a plurality of channels; and



a universal application program interface (API) comprising:

a single call control processing message having a generic format and comprising an event request message and an event indication message, said event request message for transferring call control processing commands and data from said host device to said telecommunication switch, including user-definable commands and data, and said event indication message for transferring call control processing status and data from said telecommunication switch to said host device; and

a single response message having a generic format and comprising an event request response message and an event indication acknowledge message, said event request response message for transferring a response by said telecommunication switch to said event request message received from said host device, and said event indication acknowledge message for transferring response by said host device to said event indication message received from said telecommunication switch.

5,826,031

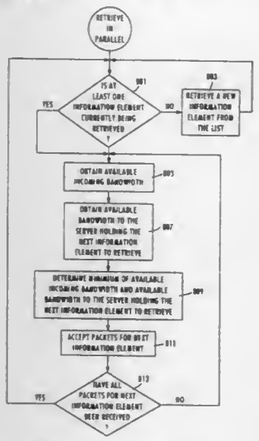
METHOD AND SYSTEM FOR PRIORITIZED DOWNLOADING OF EMBEDDED WEB OBJECTS

Jakob Nielsen, Atherton, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jun. 10, 1996, Ser. No. 664,048

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—200.63 **15 Claims**



1. A method executed in a computer network to facilitate acting on information elements, the computer network including at least a client computer and a server computer, the method comprising the steps of:

sorting a list of information elements so that the list is ranked from a first information element with a highest priority to a last information element with a lowest priority;

retrieving from the server computer to the client computer, the information elements in ranked order, and

displaying retrieved information elements in the order received,

wherein the step of retrieving the information elements further comprises the steps of:

determining whether at least one information element is currently being retrieved;

when the determination indicates that at least one information element is currently being retrieved, performing the following steps to facilitate retrieval of a next information element;

obtaining an indication of an available rate of incoming bandwidth to the client computer;

obtaining an indication of an available rate of outgoing bandwidth to the server computer;

determining a minimum rate of the available incoming bandwidth and the available outgoing bandwidth; and

accepting data associated with the next information element at a rate corresponding to a selected increment over the minimum rate.

5,826,032

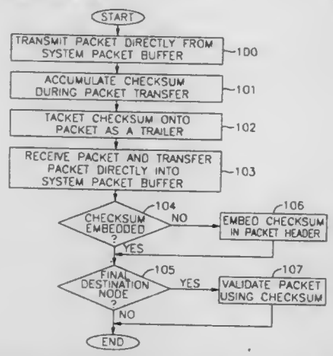
METHOD AND NETWORK INTERFACE LOGIC FOR PROVIDING EMBEDDED CHECKSUMS

Gregory G. Finn, Mar Vista; Steven M. Hotz, Playa del Rey, and Craig M. Rogers, Los Angeles, all of Calif., assignors to University of Southern California, Los Angeles, Calif.

Filed Feb. 12, 1996, Ser. No. 600,231

Int. Cl.[6] G06F *11/08*

U.S. Cl. 395—200.66 **18 Claims**



1. A method using a computer for providing an embedded checksum in a packet transferred over a packet network, the packet network comprising a plurality of interconnected, directly-attached computers operative to provide data fidelity between any neighboring pair of such computers at least as robust as such data fidelity between any non-neighboring pair of such computers, each computer comprising packet storage means and network interface means, comprising the steps of:

(a) sending such a packet directly onto the packet network from the packet storage means of a source computer using its network interface means;

(b) receiving the packet from the packet network and transferring the packet directly into the packet storage means of a sibling computer using its network interface means; and

(c) associating such an embedded checksum with the packet at the sibling computer with the embedded checksum being calculated by at least one of the source computer or the sibling computer based on substantially the entire packet for validating error-free receipt.

5,826,033

PARALLEL COMPUTER APPARATUS AND METHOD FOR PERFORMING ALL-TO-ALL COMMUNICATIONS AMONG PROCESSING ELEMENTS

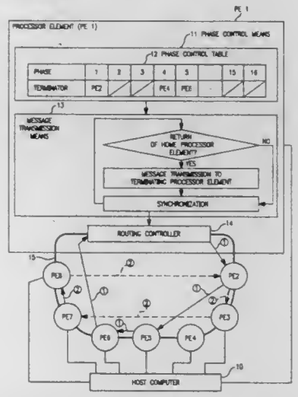
Kenichi Hayashi, and Takeshi Horie, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 27, 1992, Ser. No. 982,579

Claims priority, application Japan, Nov. 26, 1991, 3-310605

Int. Cl.[6] H04L *12/407*

U.S. Cl. 395—200.68 **7 Claims**



1. A parallel computer having a n-dimensional torus network comprising $a_1 \times a_2 \times \ldots \times a_n$ processors forming a greater than 4×4 network which performs all-to-all communications among the processors through the torus network, each processor comprising:

a phase control device having a phase control table including data indicating destination processors for a number of transmission phases, the number of transmission phases determined based on a structure of the torus network and a number of processors, each transmission phase describing a different communication path between said processors, the phase control table being prepared in advance and registering data indicating the destination processor for each of the transmission phases and being set in the phase control device of each processor;

message sending means for sending a message to one of the destination processors designated by the data stored in the phase control table, said transmission phases being determined by grouping the processors into a first and second group, each group including a neighboring $a_n/2$ processors of a_n processors such that an end processor in the first group is a first processor, a second processor is selected from among the remaining processors in the first group, and a third and a fourth processor are selected from the second group and are separated apart by $a_n/2$ from the first and second processors, thereby transmitting the message via said communication paths as a four point cycle determined by said transmission phases; and

wherein during a communications process, each of said processors forming said n-dimensional torus network selects phases one by one from said phase control table in said phase control device contained in that processor,

if a processor is a current source processor, the message is sent to a destination processor corresponding to said selected phase, and then said processors are synchronized until control is transferred to the next phase, and each said processor determines whether all phases in said phase control table have been selected, if said processor determines that all phases have not been selected, the process of and those after selecting phases one by one from said phase control table are repeated, and if said processor determines that all phases have been selected, the entire process terminates.

5,826,034

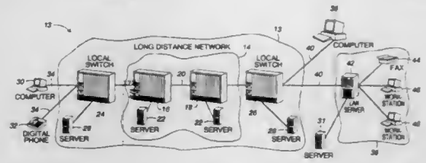
SYSTEM AND METHOD FOR TRANSMISSION OF COMMUNICATION SIGNALS THROUGH DIFFERENT MEDIA

Nandakishore A. Albal, Largo, Fla., assignor to Paradyne Croporation, Largo, Fla.

Filed Aug. 9, 1996, Ser. No. 695,033

Int. Cl.[6] G06F *5/00*

U.S. Cl. 395—200.69 **37 Claims**



1. A payload delivery system for providing guaranteed end-to-end delivery of a payload from a sender to a recipient, said payload being delivered via one or more communication networks, said system comprising:

means for generating a payload in a first media;

means for defining payload delivery parameters by said sender;

means for converting said payload to an alternative media at different locations as necessary for completion of delivery over one of said communication networks; and

means for automatically notifying said sender upon receipt of said payload by said recipient.

5,826,035

IMAGE DISPLAY APPARATUS

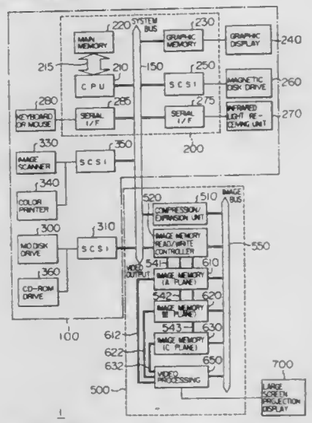
Nagaharu Hamada, Hitachi; Toshiro Kamiuchi, Tokyo; Ikuo Hikawa; Takashi Nakasugi, both of Yokohama; Takashi Azuma, Chigasaki, and Chiharu Takayama, Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 459,835, Jun. 2, 1995, Pat. No. 5,657,248. This application May 12, 1997, Ser. No. 854,837

Claims priority, application Japan, Jun. 10, 1994, 6-128719

Int. Cl.[6] G01R *13/00*

U.S. Cl. 395—200.77 **13 Claims**



1. An image display apparatus comprising:

a computer including an input/output bus, a communicating apparatus, connected to said input/output bus, for transmitting and receiving data and a command to/from another apparatus connected via a communication line, and a command processing apparatus for interpreting and executing the command received by said communicating apparatus;

a decoding apparatus, connected to said input/output bus, for decoding compressed data received by said communicating apparatus into original image data;

an image memory for recording the decoding images from said decoding apparatus and many as at least two display planes;

a video processing apparatus for reading out said decoded images from said image memory and converting said images into a display signal;

a display apparatus for displaying an output of said video processing apparatus as a color image;

an image data dedicated bus to which said decoding apparatus, said image memory, and said video processing apparatus are connected; and

a signal line to connect said image memory and said video processing apparatus,

wherein said command received by said communicating apparatus is transferred to said command processing apparatus through said input/output bus, said command processing apparatus interprets said command and controls the operations of said communicating apparatus, said decoding apparatus, and said video processing apparatus,

further, said compressed data received by said communicating apparatus is transferred to said decoding apparatus to said input/output bus, said decoding apparatus records the decoded image data into said image memory through said image data dedicated bus, said decoded image data from said image memory is transferred to said video processing apparatus through said dedicated signal line and is video processed by said video processing apparatus, and, after, the video processed image data is displayed by said display apparatus.

5,826,036

INFORMATION PROCESSING APPARATUS

Kanji Nakagawa, and Norihiro Kumagai, both of Kyoto, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 22, 1997, Ser. No. 861,760

Claims priority, application Japan, May 23, 1996, 8-128518

Int. Cl.[6] H03M *7/00*

U.S. Cl. 395—200.77 **13 Claims**

If you wish more details of PC-A4, please feel free to call me (62 characters)

@IfYouWishMoreDetailsOf^PC-A4^,PleaseFeelFreeToCallMe (54 characters)

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮	⑯	⑰	⑱
Character	@	T	h	e	□	t	i	m	e	□	h	a	s	□	c	o	m	e (18 characters)
Code	40	54	68	65	20	74	69	6d	65	20	68	61	73	20	63	6f	6d	65

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Character	@	T	h	e	T	i	m	e	H	a	s	C	o	m	e (15 characters)
Code	40	54	68	65	54	49	6d	65	48	61	73	43	6f	6d	65

	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮
Character	@	t	h	E	t	i	m	E	h	o	S	c	o	m	E (15 characters)
Code	40	74	68	45	74	49	6d	45	48	61	53	63	6f	6d	45

1. An information processing apparatus, comprising:

a first input section for receiving a first string including a plurality of words and a border-indicating character indicating a border between two adjacent words in the first string;

a first extraction section for extracting the plurality of words from the first string, based on the border-indicating character;

a first conversion section for converting a leading character of each of the plurality of words into a different type of character; and

a first output section for outputting a second string including the plurality of words with the converted leading characters substituted for the respective leading characters.

5,826,037

METHOD FOR DETERMINING THE POSITION OF A NETWORK SUBSCRIBER IN A NETWORK

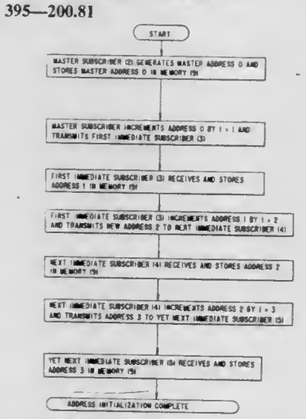
Andreas Stiegler, Karlsbad; Patrick Heck, Durmersheim, and Herbert Hetzel, Weingarten, all of Germany, assignors to Becker GmbH, Karlsbad, Germany

Filed Feb. 2, 1996, Ser. No. 595,833

Claims priority, application Germany, Feb. 2, 1995, 195 03 206.3

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.81 **9 Claims**



1. In a method for determining the position of a network subscriber in a network having a ring structure with a plurality of network subscribers being connected to one another and including one network subscriber being used as a master, the improvement which comprises:

generating a number representing a physical positional designation of a subscriber in the master at an onset of network operation and storing the number internally in memory in the master; and

assigning an individual physical positional designation to each network subscriber by having each network subscriber, beginning with the master, cause the network subscriber immediately following it in the ring structure to store a number in memory each representing one subscriber's physical positional designation and being raised by a number over the subscriber's physical positional designation of the network subscriber preceding it, such that the master is enabled, based on information concerning the ring structure of the network, to supply each of the subscribers with selected data whose content is dependent on the individual position of each subscriber.

5,826,038

COMMUNICATION NETWORK CONFIGURATION DETECTING METHOD USING FRAME TRANSMISSION

Seiji Nakazumi, Kanagawa, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 1, 1995, Ser. No. 522,969

Claims priority, application Japan, Sep. 1, 1994, 6-208306

Int. Cl.[6] G06F *13/38*

U.S. Cl. 395—200.81 **4 Claims**

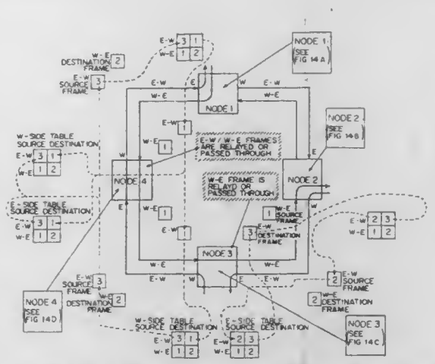
1. A method for detecting a network configuration of a communication network including a plurality of nodes connected in a ring form, comprising the steps of:

storing a node identifier indicating a node in the communication network at a specific position of an identifier storing area of a frame and transmitting said frame along the communication network;

receiving said frame from an adjacent node and performing one of a process of storing a node identifier in said identifier storing area of said frame and again transmitting said frame and a process of abandoning said frame according to contents of said frame; and

recognizing an arrangement of the plurality of nodes on the communication network on the basis of contents of said identifier storing area of said frame,

wherein when said frame received from the adjacent node does not include an identifier indicating a certain node and an identifier stored in the specific position of the identifier storing area of said frame is larger than said identifier indicating said certain node, said frame is abandoned.



5,826,039

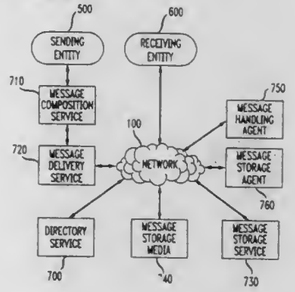
UNIVERSAL CONNECTION POINT FOR RESOURCES AND COMMUNICATION UNRELATED TO A PHYSICAL ENDPOINT

Mark Alan Jones, New Providence, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 29, 1995, Ser. No. 580,670

Int. Cl.[6] G06F *13/38;15/17*

U.S. Cl. 395—200.36 **47 Claims**



1. A communications system comprising:

means for providing a network presence for an entity, wherein said network presence is identified by a handle unrelated to a physical endpoint, said handle being unique relative to handles for other entities at any point in time, said handle having associated attributes; and

means for resolving a declarative query specifying at least one attribute to generate a set of handles including at least said handle of said entity, said declarative query provided to identify entities.

5,826,040

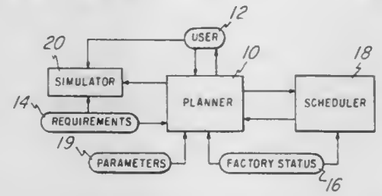
METHOD AND SYSTEM FOR PRODUCTION PLANNING

Hugh E. Fargher, Allen, and Richard A. Smith, Garland, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 483,602, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 857,018, Mar. 24, 1992, Pat. No. 5,586,021. This application Dec. 13, 1995, Ser. No. 573,210

Int. Cl.[6] G06F *19/00*

U.S. Cl. 395—208 **19 Claims**



1. A computer implemented method for planning a production schedule within a factory comprising the steps of:

determining said capacity model for said factory, said step of determining said capacity model comprising the steps of:

determining a plurality of contiguous time intervals;

partitioning said factory into a plurality of resource groups; and

determining a processing capacity for each of said resource groups for each of said contiguous time intervals;

for each job to be planned, dividing said job into a plurality of processing segments;

representing each of said processing segments with a corresponding fuzzy set;

inserting and removing said fuzzy set within said capacity model until said job is planned; predicting a completion date and a confidence level for each of said jobs and scheduling each of said jobs based on said completion date and said confidence level.

5,826,041

METHOD AND SYSTEM FOR BUFFERING NETWORK PACKETS THAT ARE TRANSFERRED BETWEEN A V86 MODE NETWORK DRIVER AND A PROTECTED MODE COMPUTER PROGRAM

Aaron William Ogus, Kirkland, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 144,280, Oct. 28, 1993, abandoned. This application Nov. 12, 1996, Ser. No. 747,186

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—250 **21 Claims**

1. A method for receiving packets in a computer system having a processor executing in a plurality of modes and having a network driver receiving the packets, the method comprising the steps of:

receiving a first message from the network driver indicating that the network driver has started receiving a first packet, wherein the network driver is executed by the processor while in a first of the plurality of modes;

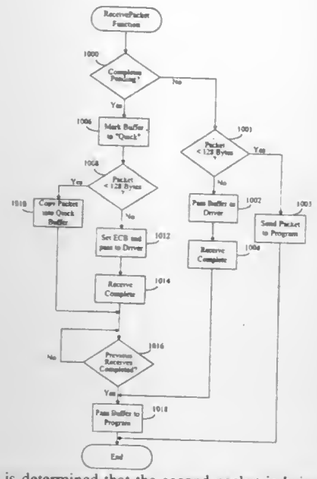
determining whether a second packet other than the first packet is being received;

when it is determined that the second packet is not being received,

passing a reference to a portion of a circular buffer to the network driver to enable the network driver to store the first packet into the portion of the circular buffer;

receiving a second message from the network driver indicating that the network driver has completed receiving the first packet;

passing the reference to the portion of the circular buffer to a recipient program, wherein the recipient program is executed by the processor while in a second of the plurality of modes; and



when it is determined that the second packet is being received, passing the reference to the portion of the circular buffer to the network driver to enable the network driver to store the first packet into the portion of the circular buffer;

receiving the second message from the network driver indicating that the network driver has completed receiving the first packet;

waiting until receiving a third message from the network driver indicating that the second packet has been received completely, said waiting performed to maintain an ordering of the first packet and the second packet so that the first packet is not sent to the recipient program before the second packet; and

passing the reference to the portion of the circular buffer to the recipient program after receiving the third message indicating that the second packet has been received completely.

5,826,042

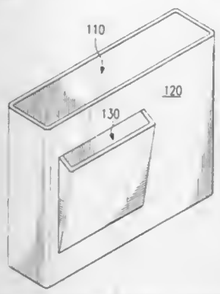
PORTABLE COMPUTER DOCKING STATION WITH MODULE CONNECTION REPLICATOR

Michael Kirkendoll, Houston, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Filed Aug. 2, 1996, Ser. No. 692,838

Int. Cl.[6] G06F *1/16;13/00;* **H05K** *7/10*

U.S. Cl. 395—281 **30 Claims**



1. A portable computer docking system, comprising:

a portable computer including

at least one module connector dimensioned to detachably receive, and make electrical contact to, modules having a module connector format, and

interface connectors connected to provide external data communications; and

a docking station including therein

a first docking location dimensioned to receive said portable computer, and at least one additional docking location dimensioned to receive one of said modules, and

first docking connectors including data connectors positioned to make electrical connection with said interface connectors when said computer is in said first docking location, and connected to provide data communication between said computer and the exterior of said docking station; and

additional docking connectors positioned to form electrical connections to a module in said additional docking location, and connected to provide a data connection between said computer and said module through said data connectors and said additional docking connectors.

5,826,043

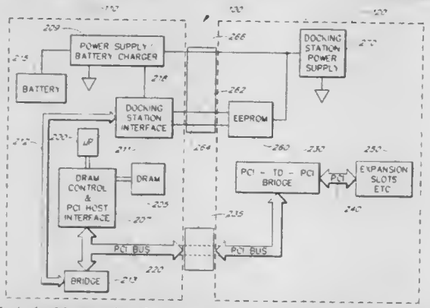
DOCKING STATION WITH SERIALLY ACCESSED MEMORY THAT IS POWERED BY A PORTABLE COMPUTER FOR IDENTIFYING THE DOCKING STATION

Michael G. Smith, Tustin, and L. Randall Mote, Jr., Laguna Hills, both of Calif., assignors to AST Research, Inc., Irvine, Calif.

Continuation of Ser. No. 484,996, Jun. 7, 1995, abandoned. This application Feb. 3, 1997, Ser. No. 794,670

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—281 **6 Claims**



1. A docking station for connection to a portable computer, said docking station comprising:

an internal bus;

a plurality of expansion slots connected to said internal bus;

a connector which establishes communication between said internal bus and said portable computer; and

a memory internal to said docking station and in electrical a communication with said portable computer, said memory operating independently of said internal bus of said docking station and communicating with said portable computer without using said internal bus, said memory internal to said docking station receiving power from said portable computer when said portable computer is connected to said docking station irrespective of whether sower is applied to said docking station.

5,826,044

DISPLAY CONTROL SYSTEM HAVING A PCMCIA INTERFACE

Hiroki Zenda, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 2, 1995, Ser. No. 458,690

Claims priority, application Japan, Jun. 6, 1994, 6-124109; Feb. 27, 1995, 7-038630

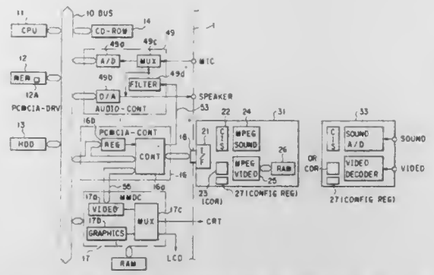
Int. Cl.[6] C06F *13/00*

U.S. Cl. 395—282 **21 Claims**

1. A portable computer comprising:

a card connection port;

a card controller for controlling transfer of data to and from a card connected to said card connection port;



a display controller for processing moving-picture data to display moving pictures;

a moving-picture bus connecting said card controller to said display controller;

a system bus connecting said card controller to said display controller;

means for determining a type of the card connected to said card connection port, generating a first instruction designating an ordinary card interface mode when the card is of a first type unable to process high-quality moving-picture data, and generating a second instruction designating a special card-interface mode when the card is of a second type able to process high-quality moving-picture data; and

a switching control circuit for connecting said card connection port to said system bus in response to the first instruction, and connecting said card connection port to said moving-picture bus in response the second instruction.

5,826,045

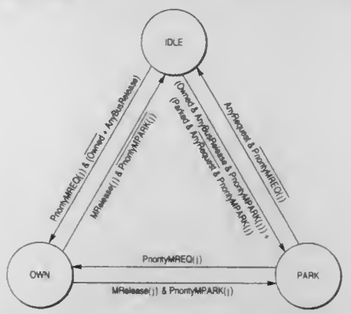
ARBITRATION PARKING APPARATUS AND METHOD FOR A SPLIT TRANSACTION BUS IN A MULTIPROCESSOR COMPUTER SYSTEM

Byron L. Reams, Lexington, S.C., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 11, 1995, Ser. No. 570,452

Int. Cl.[6] G06F *13/36*

U.S. Cl. 395—287 **13 Claims**



1. In a computer system comprising a plurality of processor and memory agents and a split transaction bus, a method of arbitration parking, comprising the steps of:

determining if there is an outstanding request on the split transaction bus;

determining if there is a requesting agent;

parking one of said plurality of memory agents if there is an outstanding request and there is not a requesting agent; and

parking one of said plurality of processor agents if there is not an outstanding request and there is not a requesting agent;

wherein said memory agents do not generally request bus ownership except to fulfill an outstanding request.

5,826,046

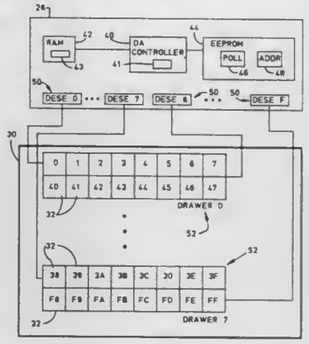
METHOD AND APPARATUS FOR POLLING AND SELECTING ANY PAIRED DEVICE IN ANY DRAWER

Tram Thi Mai Nguyen; Thao Bich Bui, and Christina Hien Tran, all of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,518

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—309 **13 Claims**



1. A device adapter that provides an interface between a plurality of disk drive devices each having an I/O controller and a controller of a disk drive subsystem in a computer system, the device adapter comprising:

a device adapter controller that receives requests for disk drive device status information from the disk drive subsystem controller and receives interrupt signals from the disk drive devices that require servicing from the disk drive subsystem controller;

a plurality of device electronic switch elements that provide an interface between the device adapter controller and the disk drive device I/O controllers;

a device address table containing data that represents a physical address for each disk drive device; and

a polling information table containing data that represents the disk drive device status information for the disk drive devices listed in the device address table;

wherein the device adapter controller receives the disk drive device status information from the disk drive devices and dynamically changes the device address table and polling information table data for a disk drive device in response to disk drive device status information that indicates the disk drive device has failed;

wherein the device adapter maintains the device address table and polling information table according to an arrangement of the disk drive devices into a drawer of devices that includes disk drive devices connected to predetermined ones of the device electronic switch elements; and

wherein the device adapter maintains the device address table and polling information table according to a mirror pairing of disk drive devices in which write data received from the disk drive subsystem controller is recorded into a mirror primary disk drive device and is recorded into a mirror paired disk drive device.

5,826,047

METHOD AND APPARATUS FOR EXTERNAL VIEWING OF AN INTERNAL BUS

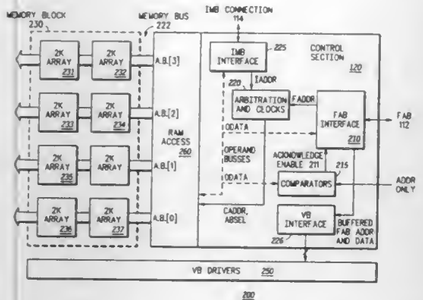
John Philip Dunn; Theo C. Freund, and Tony Tong-Khay Cheng, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 26, 1996, Ser. No. 703,252

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—309 **24 Claims**

1. A method for viewing an internal bus access on an external bus coupled to an integrated circuit (IC), the method comprising the steps of:



(a) writing at least one comparator address to a register location within a control section of the integrated circuit;

(b) instructing a central processing unit (CPU) within the integrated circuit (IC) to begin a bus access using a fast access bus (FAB) within the integrate circuit (IC), the bus access using an access address;

(c) comparing the access address from step (b) to the at least one comparator address to see if the access address is a selected address;

(d) asserting a control signal when the access address is a selected address in step (c);

(e) preventing the bus access from occurring on the fast access bus (FAB) when the control signal in step (d) is asserted; and

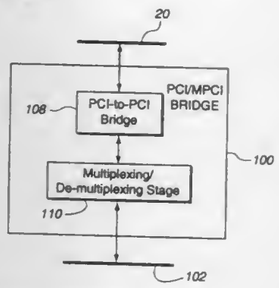
(f) performing the bus access of step (b) using the inter-module bus (IMB) instead of the fast access bus (FAB) in response to the assertion of the control signal in step (d).

5,826,048

PCI BUS WITH REDUCED NUMBER OF SIGNALS

Morgan James Dempsey, and Rajeev Jayavant, both of Phoenix, Ariz., assignors to VLSI Technology, Inc., San Jose, Calif.

Filed Jan. 31, 1997, Ser. No. 790,303
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—309 **22 Claims**



1. An apparatus comprising:

a CPU;

a PCI bus coupled to said CPU;

a first PCI/MPCI bridge coupled to said PCI bus and configured to be accessed by said CPU via said PCI bus;

a MPCI bus coupled to said first PCI/MPCI bridge; and

an external device coupled to said MPCI bus and configured to be accessed by said first PCI/MPCI bridge via said MPCI bus,

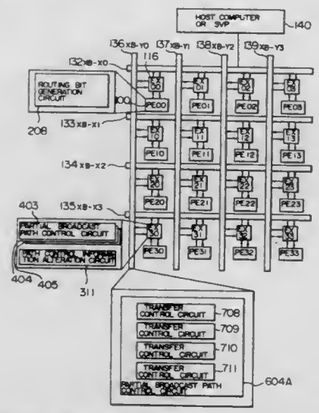
wherein said first PCI/MPCI bridge is further configured to convert an incoming PCI transaction as received via said PCI bus into an incoming MPCI transaction by time-division multiplexing two or more incoming PCI signals within said incoming PCI transaction into a single incoming MPCI signal, and converting an outgoing MPCI transaction as received via said MPCI bus into an outgoing PCI transaction by de-multiplexing at least one outgoing MPCI signal within said outgoing MPCI transaction into two or more outgoing PCI signals, and wherein said incoming PCI transaction includes a plurality of incoming PCI signals and said outgoing PCI transaction includes a plurality of outgoing PCI signals which are selected from a group consisting of control signals, address signals and data signals.

5,826,049

PARTIAL BROADCAST METHOD IN PARALLEL COMPUTER AND A PARALLEL COMPUTER SUITABLE THEREFOR

Yasuhiro Ogata, Akishima; Junji Nakagoshi; Naoki Hamanaka, both of Tokyo; Hiroyuki Chiba, Hachioji; Shinichi Shutoh, Kokubunji; Tatsuo Higuchi, Fuchu; Shigeo Takeuchi, Hanno; Taturu Toba, Kunitachi, and Teruo Tanaka, Hachioji, all of Japan, assignors to Hitachi, Ltd., and Hitachi VLSI Engineering Corporation, both of Tokyo, Japan

Filed Jul. 22, 1992, Ser. No. 916,630
Claims priority, application Japan, Jul. 22, 1991, 3-180743
Int. Cl.[6] G06F *15/163;15/173*
U.S. Cl. 395—311 **17 Claims**



12. A parallel computer including a plurality of processors and a network for connecting said processors, said network including a plurality of partial networks for transferring messages therebetween, said parallel computer comprises:

a plurality of both input and output terminals providing for each of said partial networks, for receiving and transmitting the messages between said partial networks;

circuits included in said partial network and provided for the corresponding input terminals respectively, for holding information indicating said output terminals to which a partial broadcast message received at said input terminal is transferred;

a judgement circuit provided in said partial network, for determining said output terminals to which the partial broadcast message received at said input terminal is transferred in response to the information; and

a switch circuit for switching a broadcast message received at said input terminal to said output terminals, and for switching the partial broadcast message received at said input terminal to said output terminal in accordance with a result from said judgement circuit in order to output the partial broadcast message received at said input terminal from said output terminals determined by said judgement circuit.

5,826,050

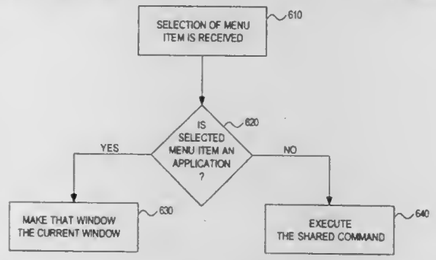
Patent Not Issued For This Number

5,826,051

METHOD AND APPARATUS FOR SIMPLIFYING ACTIVE WINDOW SELECTION, APPLICATION ACTIVATION, AND SHARED COMMAND EXECUTION IN A MULTI-APPLICATION ENVIRONMENT

Daniel R. Porter, Portland; Dale W. Boss, Beaverton; David L. Anderson, Portland; Anthony C. Salvador, Hillsboro, and Rune A. Skarbo, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1995, Ser. No. 578,988
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—345 **20 Claims**



1. A method of simplifying active window selection and shared command execution in a computer system, wherein a plurality of applications can be executed concurrently in the computer system, the method comprising the steps of:

(a) generating a menu associated with a first application of the plurality of applications which is executing in a currently active window of a plurality of windows being displayed, wherein the menu identifies a subset of the plurality of applications whose corresponding windows can be made currently active, and wherein each application of the subset of applications is installed but at least one is currently not executing in the computer system;

(b) displaying an identifier of the menu in the currently active window to allow user selection of the menu:

(c) receiving a selection identifying one of the subset of applications of the menu; and

(d) making a window corresponding to the identified one of the subset of applications a currently active window.

5,826,052

METHOD AND APPARATUS FOR CONCURRENT ACCESS TO MULTIPLE PHYSICAL CACHES

David R. Stiles, Los Gatos, and Teresa A. Roth, Redwood City, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 236,714, Apr. 29, 1994, abandoned, and Ser. No. 340,176, Nov. 15, 1994. This application Mar. 13, 1995, Ser. No. 405,268
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—381 **15 Claims**

1. A computer system comprising:

a microprocessor comprising:

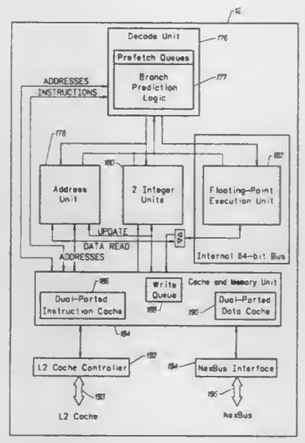
a processor address bus;

a processor data bus;

a decoder unit coupled to said processor address bus and to said processor data bus;

an address preparation unit coupled to said processor address bus and to said processor data bus;

an integer execution unit coupled to said processor address bus and to said processor data bus;



a memory control system coupled to said processor address bus and to said processor data bus, said memory control system including

a first level cache,

a pipeline having a first plurality of interconnected stages, a first one of said first plurality of interconnected stages coupled to said first level cache;

a second level cache; and

a dedicated cache bus coupling said second level cache to a second one of said first plurality of interconnected stages, wherein said first and second ones of said first plurality of interconnected stages are configured to concurrently access said first and second level caches, respectively;

a main memory; and

a system bus coupling said microprocessor to said main memory.

5,826,053

SPECULATIVE INSTRUCTION QUEUE AND METHOD THEREFOR PARTICULARLY SUITABLE FOR VARIABLE BYTE-LENGTH INSTRUCTIONS

David B. Witt, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 145,902, Oct. 29, 1993, abandoned. This application Sep. 23, 1994, Ser. No. 311,286
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—386 **90 Claims**

1. A speculative instruction queue for a processor of the type having a variable byte-length instruction format, comprising:

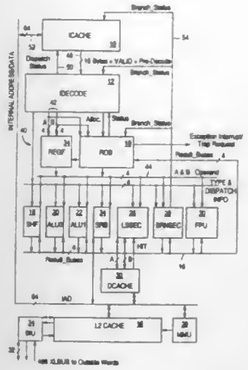
an array configured as a FIFO having a plurality of byte positions for storing a plurality of instruction bytes;

first means for shifting said array by an amount corresponding to one or more instruction boundaries of instruction bytes stored therewithin;

second means for indicating which of said plurality of byte positions within said array is next available for loading additional instruction bytes;

third means for loading a plurality of instruction bytes into said array starting at said next available byte position, said plurality of instruction bytes being stored in speculative execution order;

fourth means for simultaneously presenting said plurality of instruction bytes stored within said array to an instruction decoder; and



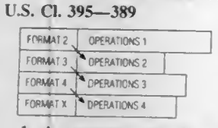
means for indicating to said instruction decoder which of said byte positions hold valid instruction bytes appropriate for decoding.

5,826,054

COMPRESSED INSTRUCTION FORMAT FOR USE IN A VLIW PROCESSOR

Eino Jacobs, Palo Alto, and Michael Ang, Santa Clara, both of Calif., assignors to Philips Electronics North America Corporation, N.Y., N.Y.

Filed May 15, 1996, Ser. No. 649,733
Int. Cl.[6] G06F *12/04;9/22;* **H03M** *7/30*
U.S. Cl. 395—389 **20 Claims**



1. A computer storage medium comprising a stored VLIW instruction, which instruction comprises a plurality of operations for commencing execution in a same machine cycle on distinct functional units of a VLIW processor, each non-null operation being compressed according to a compression scheme which assigns a compressed operation length to that operation, the compressed operation length being chosen from a plurality of finite lengths, which finite lengths include at least two non-zero lengths, which of the finite lengths is chosen being dependent upon at least one feature of the operation.

5,826,055

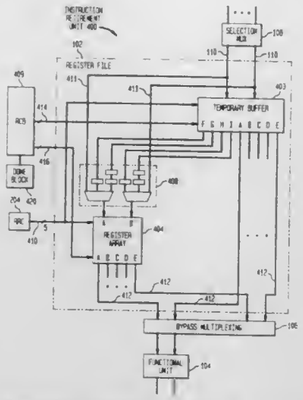
SYSTEM AND METHOD FOR RETIRING INSTRUCTIONS IN A SUPERSCALAR MICROPROCESSOR

Johannes Wang, Redwood City; Sanjiv Garg, Freemont, and Trevor Deosaran, Sunnyvale, all of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Continuation of Ser. No. 877,451, May 1, 1992, abandoned, and a continuation-in-part of Ser. No. 716,728, Sep. 23, 1996, which is a division of Ser. No. 397,016, Mar. 1, 1995, Pat. No. 5,560,032, which is a continuation of Ser. No. 817,809, Jan. 8, 1992, abandoned, which is a continuation of Ser. No. 727,058, Jul. 8, 1991, abandoned. This application Jun. 7, 1995, Ser. No. 481,146
Int. Cl.[6] G06F *9/38*
U.S. Cl. 395—394 **52 Claims**

1. A superscalar processor that executes a group of instructions out of a program order, the superscalar processor comprising:

means for assigning tags to instructions;



an index-addressable temporary buffer for storing results of executed instructions, wherein at least part of a tag assigned to an instruction indicates a location in said index-addressable temporary buffer where an execution result for the instruction is to be stored;

a register array for storing results of instructions that are retirable;

means for determining whether an executed instruction is retirable, wherein an executed instruction is retirable if there are no unexecuted instructions appearing earlier in program order relative to said executed instruction; and

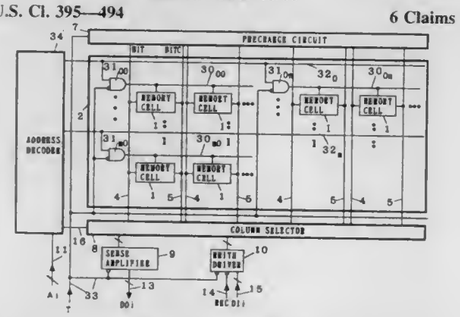
means, coupled to said temporary buffer and said register array, for retiring approximately simultaneously a group of retirable instructions by transferring execution results of said group of retirable instructions from said index-addressable temporary buffer to said register array, wherein said execution results of said group of retirable instructions are retrieved from said index-addressable temporary buffer based on at least part of each tag assigned to an instruction in said group of retirable instructions.

5,826,056

SYNCHRONOUS MEMORY DEVICE AND METHOD OF READING DATA FROM SAME

Kazuyuki Noda, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, and Mitsubishi Electric Engineering Co., Ltd., both of Tokyo, Japan

Filed Dec. 19, 1996, Ser. No. 769,781
Claims priority, application Japan, Jul. 23, 1996, 8-193395
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—494 **6 Claims**



1. A synchronous memory device comprising:

an address decoder for decoding an address signal prior to a predetermined change in at least one clock;

a plurality of main word lines selectively activated in accordance with a result of decoding of the address signal by said address decoder;

a plurality of sub-word lines corresponding to said plurality of main word lines and connected to a plurality of memory cells for controlling reading of data from said plurality of memory cells; and

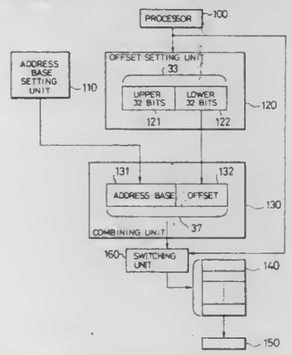
a plurality of drivers corresponding respectively to said plurality of sub-word lines for activating corresponding ones of said plurality of sub-word lines in response to said predetermined change in said at least one clock when a corresponding one of said plurality of main word lines is active.

5,826,057

METHOD FOR MANAGING VIRTUAL ADDRESS SPACE AT IMPROVED SPACE UTILIZATION EFFICIENCY

Toshio Okamoto; Hideo Segawa, both of Tokyo; Mitsuo Saito, and Osamu Wakamori, both of Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 15, 1993, Ser. No. 5,371
Claims priority, application Japan, Jan. 16. 1992, 4-005993; Jan. 16, 1992, 4-005994; Jan. 16, 1992, 4-026039
Int. Cl.[6] G06F *12/08*
U.S. Cl. 395—500 **19 Claims**



1. A method of managing virtual address space, comprising the steps of:

(a) allocating a plurality of first type programs designed to be allocated to a plurality of first type address spaces to a second type address space having a size larger than that of each first type address space, collectively in a single virtual memory scheme, without any overlap in virtual addresses, each of the first type programs being distinct from second type programs designed to be allocated to the second type address space;

(b) registering an address base for one of the first type programs to be executed, the address base specifying appropriate upper bits of the virtual addresses according to the single virtual memory scheme for a region of the second type address space to which said one of the first type programs is allocated at the step (a); and

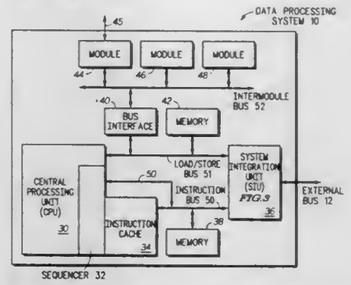
(c) calculating effective addresses according to the single virtual memory scheme to be used during an execution of said one of the first type programs by setting the address base for said one of the first type programs registered at the step (b) as upper bits of the effective addresses while setting lower bits of the virtual addresses according to the single virtual memory scheme for a region of the second type address space to which said one of the first type programs is allocated as lower bits of the effective addresses.

5,826,058

METHOD AND APPARATUS FOR PROVIDING AN EXTERNAL INDICATION OF INTERNAL CYCLES IN A DATA PROCESSING SYSTEM

Jay A. Hartvigsen; Chinh H. Le, and Wallace B. Harwood, III, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 2, 1995, Ser. No. 458,390
Int. Cl.[6] G06F *9/455;3/00*
U.S. Cl. 395—500 **22 Claims**



1. A method for operating a data processing system, the data processing system having an internal bus, having an external bus, and having an internal cache, the external bus providing information external to the data processing system, the method comprising the steps of:

performing a first internal bus cycle which is provided to the external bus during normal operation;

providing the first internal bus cycle on the external bus;

providing a cycle type signal on the external bus, the cycle type signal denoting a first type associated with the first internal bus cycle;

performing a second internal bus cycle which is not provided to the external bus during normal operation;

providing the second internal bus cycle on the external bus during an external bus show cycle; and

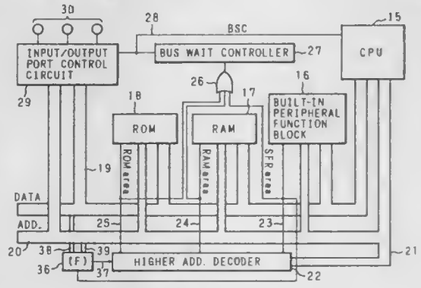
providing the cycle type signal on the external bus during the external bus show cycle, the cycle type signal denoting a second type associated with the second internal bus cycle.

5,826,059

MICROCOMPUTER FOR EMULATION

Daijiro Harada; Katsunobu Hongo, and Masato Koura, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Chiyoda-ku, Japan

Filed Dec. 18, 1995, Ser. No. 574,142
Claims priority, application Japan, Jul. 17, 1995, 7-180146
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **12 Claims**



1. A microcomputer for emulation, comprising:

a built-in RAM;

virtual RAM address decoding means for receiving an address and for decoding said address with respect to a plurality of virtual RAM capacities to generate a corresponding plurality of output signals, wherein said plurality of virtual RAM capacities are within a range in which the installed capacity of said built-in RAM is made a maximum value; and

RAM address space specifying means for specifying any one of a plurality of virtual RAM address spaces by specifying one of said corresponding plurality of output signals;

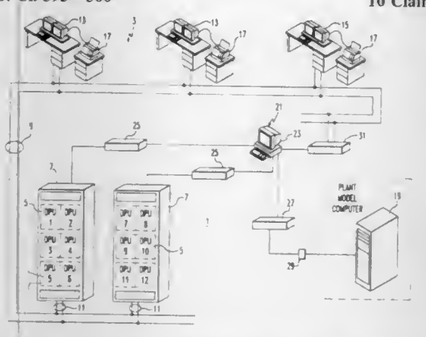
whereby an arbitrary virtual RAM address space is generated having a capacity corresponding to a virtual RAM capacity of a microcomputer to be emulated.

5,826,060

STIMULATED SIMULATOR FOR A DISTRIBUTED PROCESS CONTROL SYSTEM

Linda L. Santoline, South Park; Louis W. Gaussa, Jr., Penn Township; Robert A. Shemony, Westmoreland; Deborah D. Broderick, Apollo, and Thuy T. Tran, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Apr. 4, 1996, Ser. No. 628,586
Int. Cl.[6] G06F *15/46*
U.S. Cl. 395—500 **10 Claims**



1. A simulator for simulating operation of a process controlled by a distributed process control system, said simulator comprising:

modeling means for modeling said process in response to control signals and for providing sensor signals representative of sensor values of process parameters resulting from modeling of said process in response to said control signals;

a plurality of distributed processing units (DPUs) having input/output (I/O) means for receiving and storing said sensor signals and outputting said control signals, and digital processing means for converting said sensor signals to parameter values and for generating said control signals using actual process control software in response to said parameter values and to operator signals;

an operator console for generation of said operator signals by an operator;

communication means providing communication between said plurality of DPUs and between said plurality of said DPUs and said operator console; and

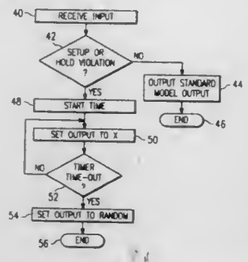
stimulation means connected to each of said DPUs and to said modeling means for transmitting said sensor signals from said modeling means to said I/O means of said DPUs and for transmitting said control signals from said DPUs to said modeling means.

5,826,061

SYSTEM AND METHOD FOR MODELING METASTABLE STATE MACHINE BEHAVIOR

Patrick K. Walp, Sonoma, Calif., assignor to DSC Communications Corporation, Plano, Tex.

Filed Jun. 10, 1996, Ser. No. 660,911
Int. Cl.[6] G06F *17/50*
U.S. Cl. 395—500 **20 Claims**



1. A method for simulating the behavior of a state machine, the method comprising the steps of:

outputting a transitional value when the state machine exhibits metastable behavior; and

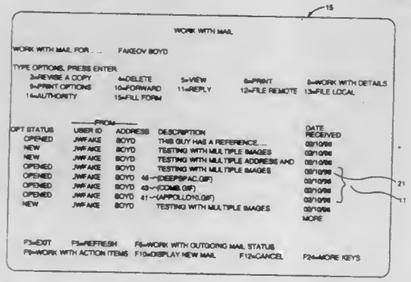
outputting a randomly-determined value after outputting the transitional value for a predetermined length of time, the randomly determined value having a single state.

5,826,062

METHOD AND APPARATUS FOR CONVERTING AND DISPLAYING A MULTIMEDIA DOCUMENT AT A CLIENT

John Wesley Fake, Jr., Endicott, and Stephen Scott Gruber, Vestal, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1996, Ser. No. 660,691
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—500 **8 Claims**



1. A method for operating a client workstation to convert and display at said client workstation a multimedia mail message, said mail message containing textual material and non-text embedded material, said method comprising the steps of:

a. converting said mail message into a text portion and at least one non-text;

b. storing each said non-text portion in a non-text file;

c. presenting at a user mail box references to said mail message and to said non-text file; and

d. responsive to a user request to view said mail message, displaying a converted message including

(i) said text portion in clear text, and

(ii) references to said non-text files;

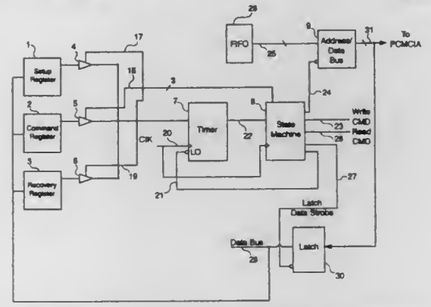
whereby said at least one non-text portion is removed from the display of said message thereby enhancing readability of said converted message.

5,826,063

APPARATUS AND METHOD FOR PROGRAMMING THE SETUP, COMMAND AND RECOVERY TIME PERIODS WITHIN A TRANSACTION CYCLE

Bryan Michael Richter, Fremont, and Stephen Arthur Smith, Palo Alto, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation of Ser. No. 149,102, Nov. 8, 1993, abandoned. This application Jul. 9, 1996, Ser. No. 680,558
Int. Cl.[6] G06F *9/18*
U.S. Cl. 395—550 **9 Claims**



1. An integrated circuit for providing a programmable transaction-cycle timing in a computer system, wherein a setup time period, a command time period, and a recovery time period together make up a single programmable transaction cycle, the integrated circuit comprising:

a setup register for storing setup time period data;

a command register for storing command time period data;

a recovery register for storing recovery time period data;

a register program input coupled to the setup, command, and recovery registers for respectively programming a setup time period data value into the setup register representing a setup time period for each transaction cycle, a command time period data value into the command register representing a command time period for each transaction cycle and a recovery time period data value into the recovery register representing a recovery time period for each transaction cycle;

a counter coupled to the setup, command, and recovery registers for sequentially counting the setup time period, the command time period and the recovery time period, and generating respective output signals when each respective time period has been counted; and

state machine logic, coupled to the counter, for receiving the respective output signals and for outputting a command to begin each transaction cycle and for outputting commands to begin each respective setup, command, and recovery time periods within each transaction cycle upon receipt of an output signal from the counter for a respective previous time period, and for signalling a computer system at the beginning of each command time period that a command may be executed.

5,826,064

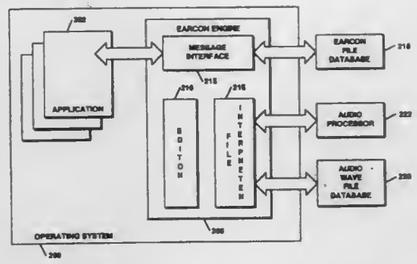
USER-CONFIGURABLE EARCON EVENT ENGINE

Keith Preston Loring, Coral Springs, Fla., and William Shaouy, Marietta, Ga., assignors to International Business Machines Corp., Armonk, N.Y.

Filed Jul. 29, 1996, Ser. No. 681,776
Int. Cl.[6] G06F *9/44;15/177*
U.S. Cl. 395—500 **18 Claims**

1. A computer program product for use with a computer system, the computer system capable of executing one or more tasks thereon and having an audio processor for generating sounds, the computer program product comprising:

a computer usable medium having embodied in the medium program code means for causing the audio processor to generate sound in response to execution of a task on the computer system, the program code means comprising:



program code means, responsive to a reference to an earcon file generated by the task, for accessing the earcon file, the referenced earcon file comprising an audio waveform identifier and audio parameter data for modifying the identified audio waveform; and

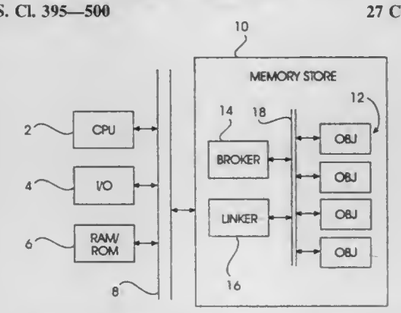
program code means responsive to the selected earcon file for causing the audio processor to generate sound.

5,826,065

SOFTWARE ARCHITECTURE FOR STOCHASTIC SIMULATION OF NON-HOMOGENEOUS SYSTEMS

William Dinan Hinsberg, III, and Frances Anne Houle, both of Fremont, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 13, 1997, Ser. No. 782,164
Int. Cl.[6] G06F *9/455*
U.S. Cl. 395—500 **27 Claims**



1. A computer system for performing object-oriented stochastic simulations, the system comprising:

a central processing unit (CPU);

a user interface, which includes means for supporting user selection of a simulation parameter at run time;

a memory store for storing data and program code, coupled to the CPU to facilitate execution of program code stored therein, the memory store storing:

(i) a set of simulation objects;

(ii) an object request broker including means, operable responsive to the user selecting a simulation parameter, for brokering the selection of one of the simulation objects which corresponds with the selected simulation parameter, and for configuring an object-oriented stochastic simulator including the corresponding object;

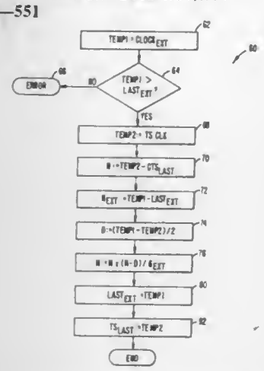
(iii) means for operating the user interface and the object request broker until a user-selected object-oriented stochastic simulator has been configured; and

(iv) means for performing a stochastic simulation using the user-selected object-oriented stochastic simulator.

5,826,066
METHOD FOR KEEPING ACCURATE TIME IN A COMPUTER SYSTEM

Robert L. Jardine, Cupertino, and Hossein Moiin, San Francisco, both of Calif., assignors to Tandem Computers Incorporated, Cupertino, Calif.

Filed Aug. 8, 1996, Ser. No. 694,073
Int. Cl.[6] G06F *1/04;1/14*
U.S. Cl. 395—551 **14 Claims**



1. A method for maintaining the accuracy of a processor clock value according to an external clock value, the method including the steps of:

creating a rate variable that is proportional to a ratio of a change of the processor clock value over a time period to a change of the external clock value over the time period;

developing an updated rate variable from a ratio of a first difference between a present processor clock value and a last processor clock value and a second difference between a present external clock value and a last external clock value multiplied by the rate variable;

saving the present external clock value as the last external clock value;

saving the present processor clock value as the last processor clock values

saving the updated rate variable as the rate variable; and

periodically incrementing the processor clock value with a time value that is proportional to a passage of time since last incrementing the processor clock value modified by the rate variable.

5,826,067
METHOD AND APPARATUS FOR PREVENTING LOGIC GLITCHES IN A 2/N CLOCKING SCHEME

Matthew A. Fisch, and Chakrapani Pathikonda, both of Beaverton, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 6, 1996, Ser. No. 709,262
Int. Cl.[6] G06F *1/04*
U.S. Cl. 395—558 **19 Claims**

1. An integrated circuit comprising:

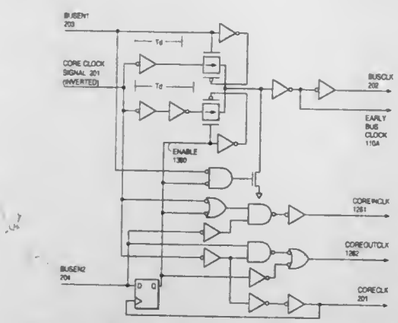
a core clock logic domain operable in response to a core clock signal;

a first logic domain operable in response to a first bus clock signal;

a latch coupled to the core clock domain;

a gate coupled to the latch and the first logic domain to transfer information between the latch and the first logic domain, the gate having first and second gate inputs;

a second logic domain coupled to the gate operable in response to a second bus clock signal, wherein the frequency of both the first and second bus clock signals is 2/N times the frequency of the core clock signal, wherein the second bus clock signal is aligned with the core clock signal and every other



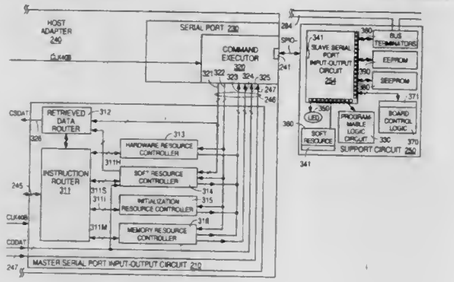
phase of the first bus clock signal is misaligned with the core clock signal, the second logic domain generating a first gate input signal; and

the gate transferring information to the core clock domain in response to the first gate input signal being asserted on the first gate input and a second gate input signal being asserted on the second gate input for preventing a glitch that occurs when the first bus clock signal is misaligned with the core clock signal.

5,826,068
INTEGRATED CIRCUIT WITH A SERIAL PORT HAVING ONLY ONE PIN

Stillman F. Gates, Los Gatos, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Division of Ser. No. 337,691, Nov. 9, 1994, abandoned. This application Jun. 7, 1995, Ser. No. 482,529
Int. Cl.[6] G06F *13/40;1/04*
U.S. Cl. 395—559 **30 Claims**



1. An integrated circuit comprising;

a clock terminal;

a first module coupled to said clock terminal wherein said first module receives a clock signal from said clock terminal and generates a buffered clock signal, said buffered clock signal and said clock signal having a common frequency;

a second module having a clock input line coupled to said first module wherein said buffered clock signal is supplied to said clock input line of said second module; and

a serial port having a clock input line coupled to said first module wherein said buffered clock signal is supplied to said clock input line of said serial port and further wherein said serial port further comprises:

a plurality of storage elements wherein each storage element is serially coupled to another storage element in said plurality of storage elements; and

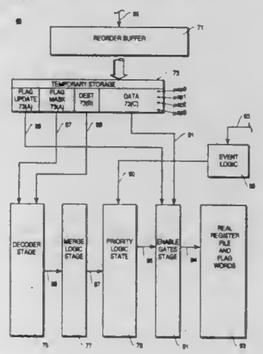
a bidirectional pin coupled to at least one storage element in said plurality of storage elements wherein said bidirectional pin is the only pin in said serial port, and said bidirectional pin is used to transfer information serially from and to said integrated circuit;

wherein said serial port waits for a predetermined time period after transmission of a signal on said bidirectional pin to become sensitive to a signal received on said bidirectional pin.

5,826,069
HAVING WRITE MERGE AND DATA OVERRIDE CAPABILITY FOR A SUPERSCALAR PROCESSING DEVICE

Wesley D. McCullough, Aloha, and Rohit A. Vidwans, Beaverton, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Sep. 27, 1993, Ser. No. 127,782
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—561 **56 Claims**



1. An apparatus for storing execution results into a register file, said register file containing a plurality of registers, said apparatus comprising:

means for receiving results corresponding to a set of operations, said results targeting multiple registers and different register parts of a same register of said register file;

means for data merging results of individual operations targeting differing parts of a same register;

means for data prioritizing results of individual operations that target a same register part, said means for data prioritizing coupled to said means for data merging; and

means for writing said results of said set of operations into targeted registers of said register file, said means for writing responsive to said means for data prioritizing;

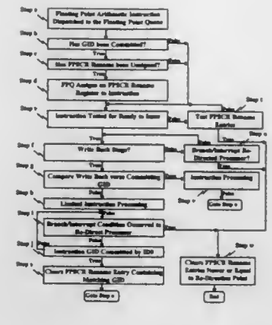
wherein said means for data merging, said means for data prioritizing, and said means for writing operate in combination to write said results into said register file within one half clock cycle.

5,826,070
APPARATUS AND METHOD FOR MAINTAINING STATUS FLAGS AND CONDITION CODES USING A RENAMING TECHNIQUE IN AN OUT OF ORDER FLOATING POINT EXECUTION UNIT

Christopher Hans Olson, Austin; Jeffrey Scott Brooks, Round Rock, and Martin Stanley Schmookler, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 30, 1996, Ser. No. 708,006
Int. Cl.[6] G06F *9/302*
U.S. Cl. 395—563 **10 Claims**

10. An article of manufacturing, comprising:



a computer usable medium having computer readable program code means in an out of order/floating point unit (FPU) comprising a floating point status and control register (FPSCR); a floating point queue (FPQ) and a fpscr rename mechanism, the computer readable program code means in said article of manufacture comprising:

(a) computer readable program code means for receiving in the floating point queue in order/speculative instructions and issuing out of order and speculative instructions containing a group identifier tag (GID) and a target identifier tag (TID), the group identifier tag indicating a set of instructions bounded at each end by an interruptible or branch instruction; the target identifier tag indicative of the identity of a targeted architected facility and the program order of the instructions;

(b) computer readable program code means for loading the FPSCR with status and control bits for each instruction, the FPSCR being updated when an instruction is executed and committed;

(c) computer readable program code means for assigning in the FPSCR renaming mechanism a floating point status and control register rename for selected floating point status and control bits during instruction dispatch from and an Instruction Fetch Unit (IFU) to the floating point queue (FPQ) when an arithmetic instruction is dispatched and the instruction has a group identifier which has not been committed by an Instruction Dispatch Unit (IDU) and does not already have a FPSCR rename assigned as determined by the FPQ; the FPSCR rename mechanism utilizing the target identifier tag (TID) upon the presence of selected bits in the FPSCR;

(d) computer readable program code means for updating the bits in the FPSCR rename as a new arithmetic instruction enters the write-back stage in the floating point unit;

(e) computer readable program code means for merging the resulting FPSCR updates of all instructions in a given group identifier into one FPSCR rename; and

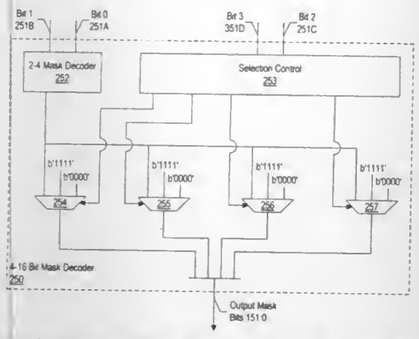
(f) computer readable program code means for clearing a floating point status and control register rename register upon (i) the group identifier assigned to the rename being committed by the IDU and (ii) all renames being cleared where the renames are newer or equal to an interrupt or branch redirection point.

5,826,071
PARALLEL MASK DECODER AND METHOD FOR GENERATING SAID MASK

Rammohan Narayan, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 31, 1995, Ser. No. 522,505
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—568 **6 Claims**

1. A method of generating a mask from a value comprising:



generating a submask from a first plurality of bits of said value; and

selecting into each of a plurality of regions of said mask one of the group consisting of said submask, binary ones and binary zeros, according to the remaining bits of said value.

5,826,072

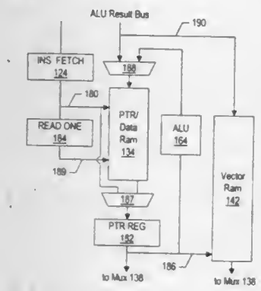
PIPELINED DIGITAL SIGNAL PROCESSOR AND SIGNAL PROCESSING SYSTEM EMPLOYING SAME

David J. Knapp, and Horace C. Ho, both of Austin, Tex., assignors to Oasis Design, Inc.

Filed Nov. 13, 1995, Ser. No. 558,636

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—567 **12 Claims**



1. A digital signal processor comprising:

a memory configured to store a plurality of data operands, said memory including a read address port for receiving a read address, a write address port for receiving a write address, and a write data port for receiving a first data operand for storage in a location identified by said write address; and

a register coupled to receive said read address concurrent with said memory receiving said read address upon said read address port, wherein said read address is provided from a first instruction, and wherein said register is further coupled to provide said read address as said write address upon said write address port, and wherein said first data operand comprises a result of executing a second instruction, whereby a destination for said result of said second instruction is located by said first instruction.

5,826,073

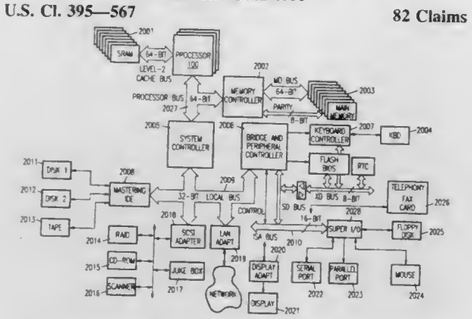
SELF-MODIFYING CODE HANDLING SYSTEM

Amos Ben-Meir, Cupertino, and John G. Favor, San Jose, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 26, 1996, Ser. No. 592,150

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—567 **82 Claims**



1. A network server computer system incorporating a superscalar processor including a self modifying code handling system, the network server computer system comprising:

a superscalar processor having operation entries for representing operations in stages from instruction fetch to result commitment, a store pipe for committing store operands to target addresses in memory, and a self-modifying code handling system comprising:

a plurality of first tag stores respectively associated with a first group of the operation entries, the first tag stores representing first addresses in memory of instructions corresponding to the associated operation entries;

first comparison logic coupled to the first tag stores and to the store pipe, the first comparison logic supplying a self-modifying code indication in response to a match between the target address for a store operation being committed by the store pipe and any of the first addresses represented in the first tag stores; and

control logic coupled to the first comparison logic and to the operation entries, the control logic flushing uncommitted ones of the operation entries in response to the self-modifying code indication;

a memory coupled to the superscalar processor via a processor bus;

a local bus and an input/output bus;

first and second bridges, respectively coupling the processor bus to the local bus and the local bus to the input/output bus; and

a local area network (LAN) adapter coupled to one of the local bus and the input/output bus.

5,826,074

EXTENSTION OF 32-BIT ARCHITECTURE FOR 64-BIT ADDRESSING WITH SHARED SUPER-PAGE REGISTER

James S. Blomgren, San Jose, Calif., assignor to S3 Incorporated, Santa Clara, Calif.

Filed Nov. 22, 1996, Ser. No. 755,547

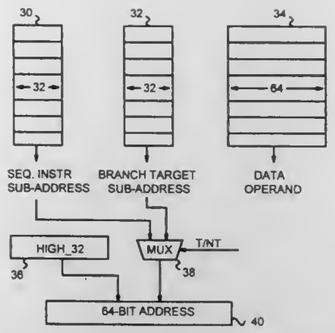
Int. Cl.[6] G06F *9/32;9/42*

U.S. Cl. 395—581 **20 Claims**

1. A sixty-four-bit processor for generating 64-bit addresses of instructions and 64-bit operands, the processor comprising:

an operand pipeline for executing algebraic instructions on the 64-bit operands and generating 64-bit results, the operand pipeline generating 64-bit addresses of operands;

a branching pipeline for processing conditional branch instructions, the branching pipeline outputting a 64-bit target address when a conditional branch instruction is taken, but the branching pipeline outputting a 64-bit sequential address when the conditional branch instruction is not taken, the branching pipeline including:



target adder means for generating a target sub-address having less than 64 address bits;

pipeline means for successively storing the target sub-address and other target sub-addresses from other branch instructions in a plurality of target sub-address registers;

a shared upper-address-bits register for storing a plurality of most-significant address bits for the target sub-address and for the other target sub-addresses in the plurality of target sub-address registers;

target output means, coupled to the shared upper-address-bits register and the pipeline means, for combining the plurality of most-significant address bits with the target sub-address to output the 64-bit target address when the conditional branch instruction is taken; and

sequential output means for outputting the 64-bit sequential address when the conditional branch instruction is not taken,

whereby the shared upper-address-bits register stores most-significant address bits for the plurality of target sub-addresses in the target sub-address registers.

5,826,075

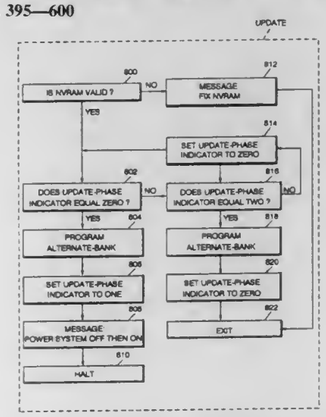
AUTOMATED PROGRAMMABLE FIREWARE STORE FOR A PERSONAL COMPUTER SYSTEM

Richard Bealkowski, Delray Beach, and Ralph Murray Begun, Boca Raton, both of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 777,844, Oct. 16, 1991. This application Nov. 27, 1991, Ser. No. 799,486

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—600 **23 Claims**



1. An apparatus for storing firmware, including:

a plurality of nonvolatile alterable electronic memory devices connected in an electrically mutually parallel circuit arrangement; each said memory device storing firmware for controlling operation of a computer system, each said memory device being reprogrammable while in a said computer system to store either the same said firmware or an updated version thereof, and each said memory device being of a type which is potentially vulnerable to loss of data while the device is being reprogrammed; and control means electrically connected to said memory devices for automatically and selectively controlling the accessibility of said memory devices to be read or written by a said computer system, such that at any instant of time only a single selected one of said memory devices is enabled to be accessed by said computer system at any time, and such that said selected one of said memory devices is adaptively selectable by said control means in response to conditions encountered during startup of a said computer system: whereby, a said memory device first selected during said computer system startup and having invalid firmware can be automatically replaced by another of said memory devices prior to completion of said startup.

5,826,076

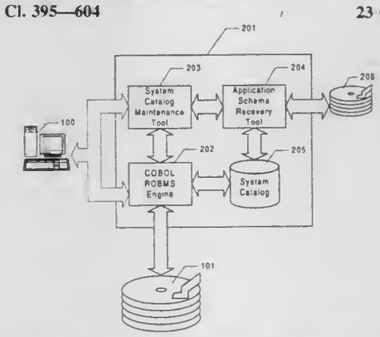
COMPUTER-BASED INFORMATION ACCESS METHOD AND APPARATUS TO PERMIT SQL-BASED MANIPULATION OF PROGRAMMING LANGUAGE-SPECIFIC DATA FILES

John Bradley; Frederick A. Hewett, both of Austin, and Bruce D. Sinclair, Round Rock, all of Tex., assignors to Liant Software Corporation, Framingham, Mass.

Filed May 13, 1994, Ser. No. 242,167

Int. Cl.[6] G06F *17/30*

U.S. Cl. 395—604 **23 Claims**



1. A method of operating a computer system to process SQL requests to access 3GL application data stored in said computer system, by using a relational database representation of said 3GL application data, comprising:

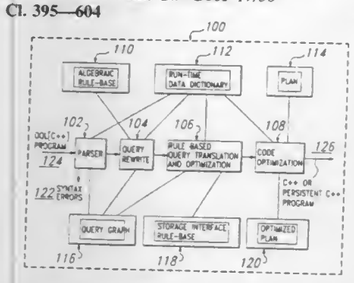
generating an execution plan as a function of a SQL request and as a function of information provided in a predetermined catalog stored in said computer system, said predetermined catalog defining a relational database representation of underlying 3GL application data stored in said computer system; and

processing said SQL request within said computer system to access said 3GL application data, by executing said execution plan as a function of said information in said predetermined catalog and as a function of said underlying 3GL application data.

5,826,077
APPARATUS AND METHOD FOR ADDING AN ASSOCIATIVE QUERY CAPABILITY TO A PROGRAMMING LANGUAGE

Jose Alfredo Blakeley, and Craig W. Thompson, both of Plano, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 639,808, Apr. 29, 1996, abandoned, and Ser. No. 473,622, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 516,369, Apr. 30, 1990. This application Apr. 17, 1997, Ser. No. 837,396
Int. Cl.[6] G06F *17/30*
U.S. Cl. 395—604 **29 Claims**



1. A method for enabling an integration of an object query language for an object-oriented data model with a host language, wherein queries for accessing objects in the object oriented data model are in said object query language, comprising the steps of:

constructing a preprocessor including a grammar coupling the object query language with the host language, wherein said grammar includes query statements to use expressions of the host language in accessing the objects and wherein said query statements access both transient and persistent objects by accessing a data dictionary having pointers to said transient and persistent objects to maintain information corresponding to both said transient and persistent objects;

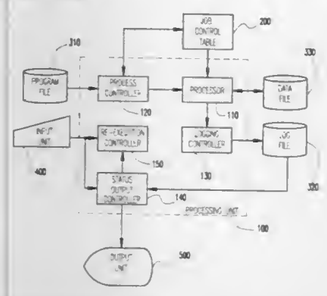
using said preprocessor to preprocess said query statements by parsing, optimizing and translating at least one statement in said object query language into at least one statement of the host language; and

compiling said statement of the host language into executable code.

5,826,078
JOB RE-EXECUTION SYSTEM AND CONTROLLING METHOD THEREOF

Tamio Funaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 12, 1996, Ser. No. 600,127
Claims priority, application Japan, Feb. 20, 1995, 7-055049
Int. Cl.[6] G06F *13/38*
U.S. Cl. 395—670 **10 Claims**



1. A job re-execution system, including a processor for executing a job having at least one process to be executed, comprising:

a first unit for controlling execution of said processor;

a second unit for outputting a processing status of the job; and

a third unit for controlling a re-execution of the job, wherein said first unit includes a process controller for generating a parent process for a job when the job is input, and said second unit includes a log file for storing logging information during execution of processes, said log file storing at least process identification of the parent process,

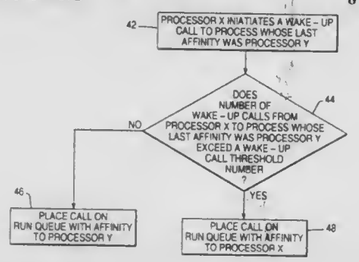
wherein said second unit further includes a display for displaying a status listing of jobs and processes, and a status output controller for outputting the status listing to said display based on the logging information,

wherein said status output controller indicates a process which generates a data file modified by an abnormally-terminated process, said abnormally-terminated process being a process terminated prior to all processes of said at least one process being executed.

5,826,079
METHOD FOR IMPROVING THE EXECUTION EFFICIENCY OF FREQUENTLY COMMUNICATING PROCESSES UTILIZING AFFINITY PROCESS SCHEDULING BY IDENTIFYING AND ASSIGNING THE FREQUENTLY COMMUNICATING PROCESSES TO THE SAME PROCESSOR

Vernon K. Boland, Lexington; Kevin R. Brasche, Irmo, and Kenneth A. Smith, Prosperity, all of S.C., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 5, 1996, Ser. No. 676,045
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—672 **8 Claims**



1. In a computer system including a plurality of processors and employing a sleep/wakeup facility whereby a first process requiring information from a second process is placed into a "sleep" state by said computer system until said second process is able to provide said required information, said first process thereupon being awakened by said computer system so that said first process may continue processing with the required information, a method for assigning processes to processors within said multiprocessor computer system for execution, said method comprising the steps of:

identifying a pair of processes which frequently exchange wakeup requests; and

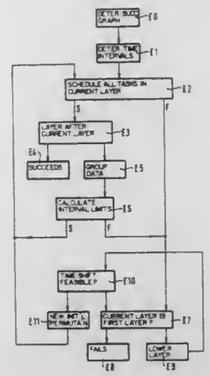
assigning the processes within said pair of processes to the same processor within said multi-processor computer system for execution.

5,826,080
METHOD OF SCHEDULING SUCCESSIVE TASKS

Jozef Dworzecki, Fontenay Le Fleury, France, assignor to Cegelec, Levallois Perret, France

Filed Aug. 2, 1995, Ser. No. 510,343
Claims priority, application France, Aug. 11, 1994, 94 09951
Int. Cl.[6] G06F *13/00;15/00*
U.S. Cl. 395—673 **2 Claims**

1. Method of scheduling successive and repetitive tasks, using a computer, where each task has a respective start time interval and some tasks must satisfy constraints requiring the task's respective execution start time to be within a predetermined time interval relative either to the execution start time of a predecessor task,



execution of which precedes that of the task in question, or to an absolute reference time, said method comprising the steps of:

determining a macrocycle time interval, the duration of which is equal to the lowest common multiple of all said task start time intervals;

reducing the macrocycle time interval to a microcycle, or layer, the duration of which is equal to the highest common denominator of all the task repeat periods;

grouping each of said tasks into a respective layer in accordance with time sequences imposed by said constraints;

and scheduling the tasks of a macrocycle layer by layer, beginning with the first layer in time of the macrocycle, where said scheduling comprises repeating the following steps:

scheduling all tasks in a current layer, where said current layer is a layer immediately following a last scheduled layer;

determining if task scheduling for said current layer is possible given said constraints of said tasks in said current layer;

if said task scheduling is not possible for said current layer, determining if said current layer is said first layer in time;

if no scheduling of the first layer in time satisfies all said constraints applying to the tasks of the first layer, stopping scheduling and providing notification of scheduling failure and;

if the scheduling effected in said current layer, that is not said first layer in time, does not satisfy one or more constraints applying to a task of the current layer:

rescheduling the last layer in time of those layers containing the respective predecessor tasks corresponding to the unsatisfied constraints of said tasks within said current layer by shifting the execution time of the predecessor task contained in that last layer in a direction and by an amount such that the unsatisfied constraint can be satisfied on subsequent rescheduling of said current layer; and

rescheduling said last layer in time and all other layers following it in time and then deciding whether the resulting rescheduling succeeds.

5,826,081
REAL TIME THREAD DISPATCHER FOR MULTIPROCESSOR APPLICATIONS

John E. Zolnowsky, Milpitas, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed May 6, 1996, Ser. No. 643,543
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—673 **17 Claims**

1. A method for scheduling a thread in a multiprocessor system based on a preemptive priority scheduling, said multiprocessor system comprising a plurality of processors, said method comprising:

selecting a first thread as a candidate thread to execute from a first local dispatch queue of a plurality of local dispatch queues and a global queue, said plurality of local dispatch queues for storing threads to be scheduled, each of said plurality of local dispatch queues coupled to one of said plurality of processors, said global queue for storing threads to be scheduled, said global queue accessible by each of said plurality of processors;

notifying said plurality of processors of the candidate thread;

checking whether a higher priority thread having higher priority than said first thread is available in said first local dispatch queue and said global queue;

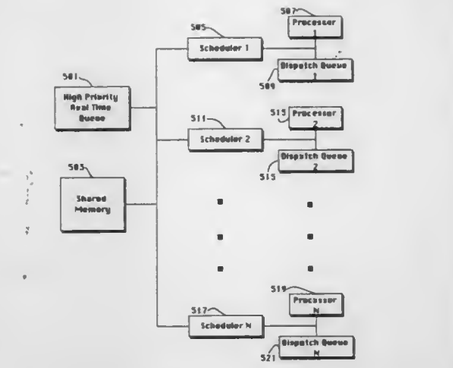
preempting the first thread and selecting the higher priority thread as the candidate thread to execute when said higher priority thread is available;

executing the candidate thread.

5,826,082
METHOD FOR RESERVING RESOURCES

Alan Bishop, Mountain View; Graham Hamilton, Palo Alto, and Theron Tock, Sunnyvale, all of Calif., assignors to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 1, 1996, Ser. No. 671,313
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—674 **45 Claims**



1. A computer-implemented method for managing resources in a computer system comprising the steps of:

a resource manager receiving a first request of a first operation, said first request identifies a first resource and specifies an amount of the first resource needed to execute the first operation;

the resource manager determining if the amount of the first resource specified by the first request, is available to be reserved;

in response to the amount of the first resource specified in the first request being available to be reserved, the resource manager reserving the amount of the first resource specified in the first request in advance of allocating the first resource to the first operation; and

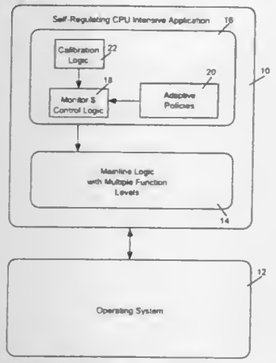
after reserving said first resource for said first request, temporarily allocating said first resource to a second request prior to allocating said first resource to said first request.

5,826,083

CPU CYCLE CONSUMPTION SELF-REGULATING METHOD AND APPARATUS

Rama R. Prasad, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Jun. 20, 1996, Ser. No. 668,567
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—675 **34 Claims**



1. An apparatus comprising:

a CPU for executing programming instructions; and

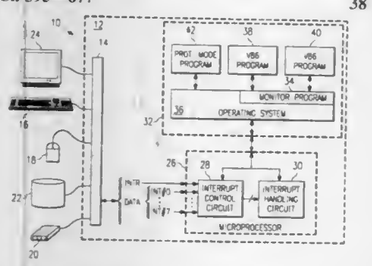
a storage medium coupled to the execution unit, and having stored therein programming instructions to be executed by the CPU during operation, the programming instructions having mainline logic that can be adaptively executed at different functional levels, consuming different rates of CPU cycles, and self-regulating logic for monitoring CPU load, and decrementally adapting execution of the mainline logic at decreasingly lower functional level, resulting in lower rates of CPU cycle consumption, in accordance to a set of adaptive policies.

5,826,084

MICROPROCESSOR WITH CIRCUITS, SYSTEMS, AND METHODS FOR SELECTIVELY BYPASSING EXTERNAL INTERRUPTS PAST THE MONITOR PROGRAM DURING VIRTUAL PROGRAM OPERATION

James E. Brooks, Addison; Robert R. Collins, and Jonathan H. Shiell, both of Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 25, 1997, Ser. No. 827,012
Int. Cl.[6] G06F *12/00*
U.S. Cl. 395—677 **38 Claims**



1. A microprocessor for multi-tasking a plurality of programs, wherein the plurality of programs comprise a virtual program operable in a virtual mode and a monitor program operable using protected mode semantics, said microprocessor comprising:

input circuitry for receiving an external interrupt request signal corresponding to an external interrupt directed to the virtual program;

input circuitry for receiving an external interrupt number corresponding to the external interrupt directed to the virtual program;

an interrupt handling circuit comprising circuitry for identifying an interrupt vector and presenting an interrupt corresponding to the external interrupt request number;

control circuitry coupled to said interrupt handling circuit, and comprising:

circuitry for detecting receipt of the external interrupt request signal;

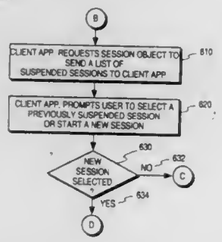
circuitry, responsive to receipt of the external interrupt request signal and the external interrupt number, for providing a select signal to said interrupt handling circuit, wherein said interrupt handling circuit identifies the interrupt vector using protected mode semantics and presents an interrupt to the monitor program in response to the select signal comprising a first state, and wherein said interrupt handling circuit identifies the interrupt vector using a second set of semantics differing from the protected mode semantics and presents an interrupt to the virtual program in response to the select signal comprising a second state.

5,826,085

OBJECT ORIENTED COMPUTER INTERFACE SUPPORTING INTERACTIVE NETWORKED APPLICATIONS

Curtis Bennett, Houston, Tex.; Dan Berkery, Minnetonka, Minn.; Shanmugam Chinnasamy, San Mateo, Calif.; Jay Daugherty; John C. Hughes, both of Arlington, Va.; Rob Lippmann, Falls Church, Va.; Niranjan Nagar; Ronald K. Park, both of San Mateo, Calif., and Ankur Sharma, Belmont, Calif., assignors to Oracle Corporation, Redwood Shores, Calif.

Filed Jul. 12, 1995, Ser. No. 501,272
Int. Cl.[6] G06F *9/40*
U.S. Cl. 395—683 **5 Claims**



1. In a networked computer system having a client device coupled to a server over a network, said client device including a client application executing therein, said client application generating requests for service, an object oriented interactive application interface comprising:

a client interface for sending and receiving messages related to said client application requests via said network;

a client interactive application module interposed between said client application and said client interface that provides at least one object for use by said application;

a server interface for facilitating communication between said server and said client application via said network;

a database interface for storing and querying information related to said client application requests;

an on-line service interface for interacting with a particular network accessible service having a specific service protocol, said service having resources necessary to respond to said client application requests;

a server interactive application module that integrates said database interface and said on-line service interface in processing said client application requests through a Common Object Request Broker (CORBA) component, said server interactive application module containing objects accessible by said client interactive application module via said client interface; and

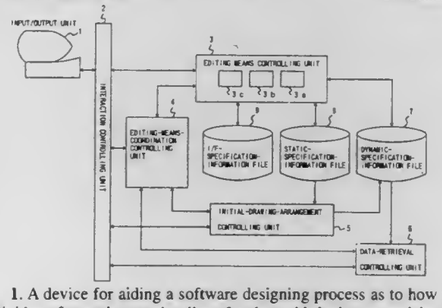
a session object including a resume session method, said session object supporting transactions during a user log-on time.

5,826,086

DEVICE AND METHOD FOR AIDING DESIGNING PROCESS OF SOFTWARE DEVELOPMENT

Yasuhiko Arima, Sapporo; Yoshio Nishiyama, Kawasaki; Itaru Fukao, Kawasaki; Hiroaki Abe, Kawasaki, and Yuji Kubota, Sapporo, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Oct. 30, 1995, Ser. No. 550,074
Claims priority, application Japan, Mar. 17, 1995, 7-059399
Int. Cl.[6] G06F *9/44*
U.S. Cl. 395—701 **17 Claims**



1. A device for aiding a software designing process as to how to divide software into a plurality of tasks, said device comprising:

dynamic-specification-information editing means for defining dynamic behaviors between said tasks to create a dynamic specification;

static-specification-information editing means for defining static configurations between said tasks to create a static specification; and

editing-means coordination controlling means for coordinating operations of said dynamic-specification-information editing means and said static-specification-information editing means so as to reduce a variation in expressions between said dynamic specification and said static specification regarding said tasks.

5,826,087

METHOD AND APPARATUS FOR CROSS CALLING PROGRAMS OF DIFFERENT LEXICAL SCOPING METHODOLOGY

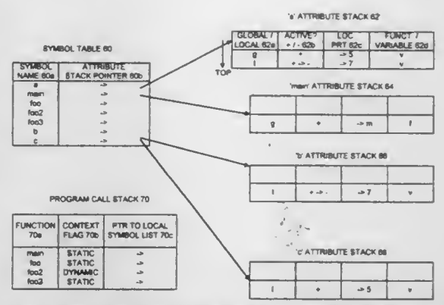
William C. Lohmann, 4617 NW. Imnaha Ct., Portland, Oreg. 97229

Filed Oct. 2, 1995, Ser. No. 538,114
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—705 **15 Claims**

1. A method of calling a program written in a language of one scope from a program written in a language of another scope, the method comprising the following steps:

storing a name of the called program and its scope as dynamic or static;

in response to detection of a reference to a variable in the called program, determining if the scope of the called program is dynamic or



if the scope of the called program is determined to be dynamic, providing to the called program a value associated with the variable's latest declaration; and

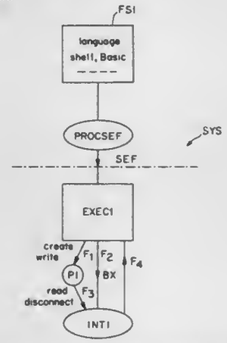
if the scope of the called program is determined to be static, providing to the called program a value associated with the variable's latest active declaration.

5,826,088

SYSTEM FOR PROTECTING COMPUTER SOFTWARE WRITTEN IN INTERPRETED LANGUAGE

Gérard Sitbon, Vitry; Daniel Gobert, Chilly Mazarin; Christian Baillif, Bourg la Reine, and François Urbain, Paris, all of France, assignors to Bull S.A., Louveciennes, France

Filed Dec. 11, 1996, Ser. No. 762,002
Claims priority, application France, Dec. 21, 1995, 95 15287
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—705 **6 Claims**



1. A system for protecting software written in interpreted language which uses a process for protecting software for computer (ORD) written in interpreted language comprising:

a source command file (FSI) which is a script file containing commands (scripts) written in uncoded form readable by standard editing tools,

a processor (PROCSEF) for transforming the content of the command file (FSI) into the content of an executable file, thus rendering it unreadable by the known text editing tools,

an executable file (EXECI) containing the executable commands resulting from the transformation carried out by the processor (PROCSEF), and

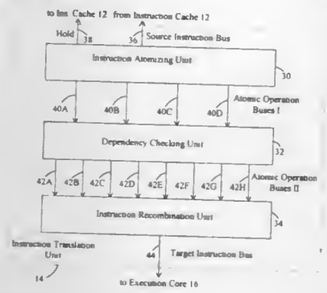
a command interpreter (INTI) software program for executing the commands contained in the executable file (EXECI), said program being specific to the uncoded language used to write the software.

5,826,089

INSTRUCTION TRANSLATION UNIT CONFIGURED TO TRANSLATE FROM A FIRST INSTRUCTION SET TO A SECOND INSTRUCTION SET

Mark A. Ireton, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 4, 1996, Ser. No. 583,154
Int. Cl.[6] G06F *9/45*
U.S. Cl. 395—707 10 Claims



1. A microprocessor comprising:

an instruction cache configured to store instructions from a first instruction set and instructions from a second instruction set, wherein each instruction stored within the instruction cache includes an indication of whether the instruction belongs to said first instruction set or said second instruction set;

an instruction translation unit coupled to receive a first instruction belonging to said first instruction set from the instruction cache, said instruction translation unit comprising:

an instruction atomizing unit configured to generate a plurality of intermediate operations corresponding to said first instruction; and

an instruction recombination unit coupled to receive said plurality of intermediate operations and to combine one or more of said plurality of intermediate operations into a second instruction from said second instruction set; and

an execution core coupled to receive from said instruction cache said instructions from said second instruction set, and coupled to receive said second instruction from said instruction translation unit;

wherein said instruction cache is configured to selectively provide each instruction stored within said instruction cache to either said instruction translation unit or said execution core depending upon said indication.

5,826,090

LOADABLE HARDWARE SUPPORT

Bruce Gerard Mealey, Austin; Randal Craig Swanberg, Round Rock, and Michael Stephen Williams, Austin, all of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

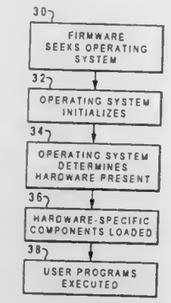
Filed Mar. 17, 1997, Ser. No. 820,471
Int. Cl.[6] G06F *9/06*
U.S. Cl. 395—712 16 Claims

1. A method of providing an operating system for a computer having a processor for carrying out program instructions, a memory device connected to the processor, and a hardware component connected to the processor, the method comprising the steps of:

loading into the memory device a base portion of an operating system, the base portion having instructions for dynamically detecting the hardware component;

dynamically detecting the hardware component using the instructions; and

loading a software component into the operating system that is specifically associated with the hardware component.

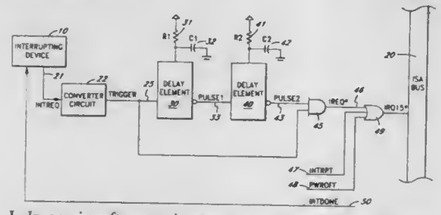


5,826,091

METHOD AND APPARATUS FOR REGENERATING EDGE-SENSITIVE INTERRUPTS

Dilip C. Shah, Laguna Hills; Michael Atkinson, Irvine, and Kaz Takata, Placentia, all of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Trans Com Inc., Irvine, Calif.

Filed Aug. 30, 1996, Ser. No. 697,910
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—733 22 Claims



1. In an aircraft entertainment system, an interrupt regenerator circuit for converting a passenger's data entry into an interrupt signal and regenerating an interrupt signal to a host processor from a transition signal asserted by said passenger's data entry, said interrupt regenerator circuit comprising:

a converter circuit to convert said transition signal into a triggering signal;

a delay element coupled to receive said triggering signal, said delay element producing a delayed signal which is delayed by a specified time interval with respect to said triggering signal;

an acknowledgment circuit for de-asserting said transition signal if said host processor responds to said passenger's data entry; and

a gating circuit coupled to receive said delayed signal and said triggering signal for producing said interrupt signal, said interrupt signal representing said delayed signal and said triggering signal.

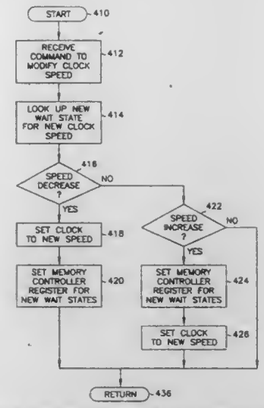
5,826,092

METHOD AND APPARATUS FOR PERFORMANCE OPTIMIZATION IN POWER-MANAGED COMPUTER SYSTEMS

Michael R. Flannery, Sioux City, Iowa, assignor to Gateway 2000, Inc., North Sioux City, S. Dak.

Filed Sep. 15, 1995, Ser. No. 529,237
Int. Cl.[6] G06F *1/00;1/18;1/26*
U.S. Cl. 395—750.06 7 Claims

2. A method of improving performance in a power-managed computer system having a minimum number of memory access wait states, the method comprising the steps of:



(a) detecting a request to change a clock speed of said system;

(b) determining if implementation of said request requires a decrease in said clock speed; and

(c) implementing said request; and

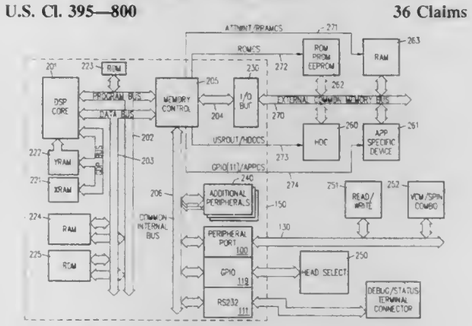
(d) adjusting the minimum number of memory access wait states based on said request.

5,826,093

DUAL FUNCTION DISK DRIVE INTEGRATED CIRCUIT FOR MASTER MODE AND SLAVE MODE OPERATIONS

Nicolas C. Assouad; David L. Dyer, both of Boulder, and Thomas G. Adams, Longmont, all of Colo., assignors to Adaptec, Inc., Milpitas, Calif.

Filed Dec. 22, 1994, Ser. No. 363,448
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—800 36 Claims



1. A disk drive integrated circuit comprising:

a program bus having a program address bus;

a data bus having a data address bus;

a common external memory bus;

an internal common memory bus;

a memory controller coupled to said program bus, said data bus, said common external memory bus, and said internal common memory bus; and

a peripheral port coupled to said memory controller by said internal common memory bus

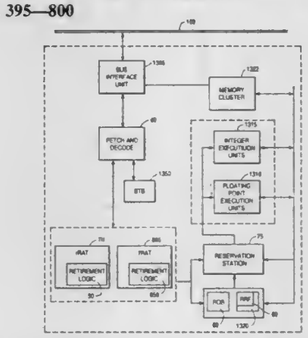
wherein said peripheral port includes a master mode circuit and a slave mode circuit.

5,826,094

REGISTER ALIAS TABLE UPDATE TO INDICATE ARCHITECTURALLY VISIBLE STATE

Robert P. Colwell, Portland; David B. Papworth, Beaverton; Michael A. Fetterman; Andrew F. Glew, both of Hillsboro, and Glenn J. Hinton, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 563,359, Nov. 28, 1995, abandoned, which is a continuation of Ser. No. 201,566, Feb. 25, 1994, abandoned, which is a continuation-in-part of Ser. No. 129,867, Sep. 30, 1993, Pat. No. 5,548,776. This application Jul. 8, 1996, Ser. No. 676,887
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—800 40 Claims



29. In a mechanism for renaming a set of logical registers associated with a set of operations to a set of physical registers, an apparatus for indicating that certain information is contained in an architecturally visible buffer containing a plurality of registers, said apparatus comprising:

means for receiving a retiring physical register pointer;

a register alias table comprising a plurality of individual entries for associating logical registers with assigned physical registers, said register alias table containing speculative information;

a retirement register alias table for maintaining a register ordering of said plurality of registers, said retirement register alias table not containing speculative information;

means for recording values of entries of said register alias table when individual physical registers are allocated to said entries; and

indicating means for indicating that information associated with a particular entry of said register alias table is architecturally visible, said particular entry containing said retiring physical register pointer, said means for indicating comprising:

means for reading said means for recording to obtain a first absolute value corresponding to said retiring physical register pointer;

means for obtaining a pointer value from said second array based on said first absolute value, said pointer value indicating a register of said architecturally visible buffer;

means for updating said particular entry of said first array with said pointer value; and

means for setting an indicia corresponding to said particular entry to indicate that said architecturally visible buffer contains said information associated with said particular entry.

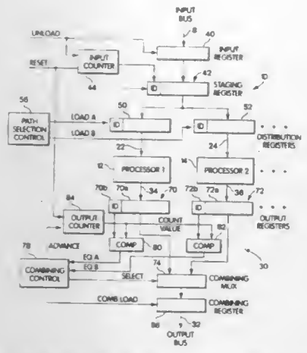
5,826,095

METHOD AND APPARATUS FOR MAINTAINING THE ORDER OF DATA ITEMS PROCESSED BY PARALLEL PROCESSORS

Stephen D. Jordan, Fort Collins, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Aug. 27, 1996, Ser. No. 703,713
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—800.11 14 Claims

1. A data processing system comprising:



a plurality of parallel processors for processing input data items from an input data stream and generating corresponding output data items, each of said processors having an input and an output;

a distributor including an input counter for generating an ID corresponding to each of said input data items and a distributing circuit for placing said input data items and said corresponding ID's in processor input words and for distributing each of said processor input words to selected ones of said processors in accordance with a distribution algorithm, said input counter being advanced to its next state in association with receipt of each input data item in the input data stream, each of said processors receiving said processor input words at the input thereof and providing at the output thereof processor output words containing said output data items and said corresponding ID's; and

a combiner for receiving each of said processor output words from said processors, said combiner including an output counter for generating an output count, said output counter having the same number of states as said input counter, said output counter being advanced to its next state in association with transfer of each of said output data items to an output data stream, said combiner further including comparators for comparing said output count with the ID's in said processor output words and a combining circuit for transferring an output data item to the output data stream in response to detection by one of said comparators of a match condition between said output count and an ID corresponding to the output data item to be transferred, wherein the output data items in said output data stream have the same order as the input data items in said input data stream.

5,826,096

MINIMAL INSTRUCTION SET COMPUTER ARCHITECTURE AND MULTIPLE INSTRUCTION ISSUE METHOD

Michael Alan Baxter, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 129,697, Sep. 30, 1993, Pat. No. 5,481,743. This application May 19, 1995, Ser. No. 446,086

Int. Cl.[6] G06F *15/00*

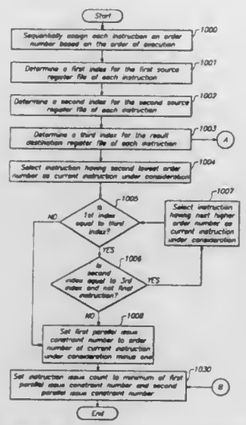
U.S. Cl. 395—800.24 **4 Claims**

1. In a computer system capable of issuing a plurality of instructions in parallel, a method for determining the number of instructions that can be issued without conflict, the method comprising the steps of:

assigning an order number to each instruction within an issue consideration group;

determining for each instruction a first index for the first source register file of the instruction;

determining for each instruction a second index for the second source register file of the instruction;



determining for each instruction a third index for the result destination file of the instruction;

comparing the third indices of the instructions in the issue consideration group to determine an instruction at which a destination register file conflict exists comprising the steps of,

a) using a first instruction to create a list of previously considered instructions;

b) retrieving the instruction having the next highest order number as the current instruction under consideration;

c) determining whether the destination register file of the current instruction is the same as the destination register file of any instruction in the list;

d) adding the current instruction to the list and returning to step b) if the destination register file of the current instruction is not the same as the destination register file of any instruction in the list; and

e) outputting the order number of the current instruction under consideration minus one if the destination register file of the current instruction is the same as the destination register file of any instruction in the list; and

comparing the third index to the first and second indices for each instruction in the issue consideration group to determine an instruction at which a source register file conflict exists.

5,826,097

METHOD OF CONTROLLING EXECUTION OF DATA FLOW PROGRAM FOR PERFORMING CORRELATED OPERATION PROCESSING ON DATA IN THE ORDER RECEIVED AND APPARATUS THEREFOR

Ryuzi Miyama, Tenri, Japan, assignor to Sharp Kabushiki Kaisha, Osaka-fu, Japan

Continuation of Ser. No. 102,726, Aug. 6, 1993, abandoned. This application Mar. 20, 1996, Ser. No. 618,725

Claims priority, application Japan, Aug. 7, 1992, 4-211356

Int. Cl.[6] G06F *15/82*

U.S. Cl. 395—800.25 **14 Claims**

14. A method for controlling execution of a data flow program including an accumulation operation in a data driven information processor comprising:

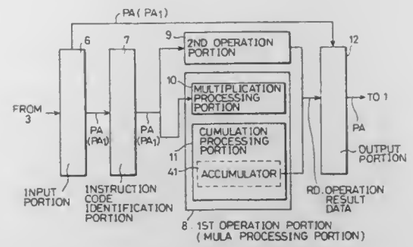
receiving a plurality of data packets having generation information different from each other sequentially;

identifying an instruction code associated with a data packet received by said input section;

performing an operation based on the content of the data packet received from said receiving in an order received, on said data packet in accordance with said instruction code and outputting resultant data;

storing a value; and

adding, when said instruction code indicates accumulation processing, said resultant data to said value even when resultant



data associated with all data packets required for said operation have not been received.

5,826,098

DATA PROCESSING SYSTEM WHICH CONVERTS RECEIVED DATA PACKET INTO EXTENDED PACKET WITH PRESCRIBED FIELD FOR ACCUMULATION PROCESS

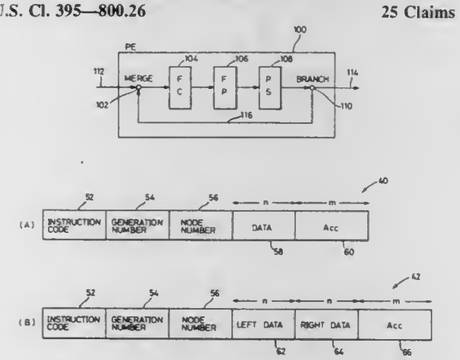
Hiroshi Kanekura, and Tsuyoshi Muramatsu, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 29, 1996, Ser. No. 654,520

Claims priority, application Japan, May 29, 1995, 7-130387

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800.26 **25 Claims**



1. A data processing apparatus comprising:

matching means for matching externally received packets necessary for execution of an instruction and for outputting a matched packet in a form of an extended packet having a prescribed field added thereto,

the externally received packet having regular packet form including at least a destination field, a data field and an instruction field;

operation means, coupled to said matching means, for carrying out a process on a content of the data field and a content of the prescribed field of the matched packet in accordance with a content of the instruction field of the matched packet and for outputting a resultant packet having an updated data field or an updated prescribed field;

program storage means, coupled to said operation means, for adding information about an instruction to be executed next to the resultant packet to output a program updated packet; and

branching means, coupled to said program storage means, for selectively branching the program updated packet, in accordance with a content of the destination field of the program updated packet, to said matching means in the form of an extended packet or branching the program updated packet externally of the data processing apparatus as converted into regular packet form without the prescribed field.

5,826,099

DATA PROCESSOR HAVING A COMPUTING ELEMENT MOUNTED ON A MICROCONTROLLER

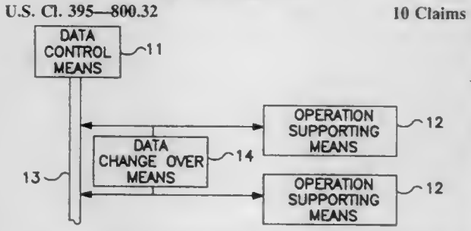
Takashi Sugimoto, Kasugai, Japan, assignor to Fujitsu Limited, Kawasaki, and Fujitsu VLSI Limited, Kasugai, both of Japan

Continuation-in-part of Ser. No. 605,804, Feb. 23, 1996, which is a continuation of Ser. No. 207,031, Mar. 7, 1994, abandoned. This application Sep. 10, 1996, Ser. No. 709,683

Claims priority, application Japan, Mar. 15, 1993, 5-054341

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800.32 **10 Claims**



7. A data processor having first and second writing cycles and a reading cycle, comprising:

(a) data control means having a computing portion;

(b) a plurality of supporting means for respectively supporting the computing portion of the data control means, each of the supporting means comprising:

first storing means for storing first set data,

second storing means for storing second set data,

arithmetic means for performing an arithmetic operation by using the first set data stored in the first storing means and the second set data stored in the second storing means,

third storing means for storing arithmetic resulting data obtained in the arithmetic means, and

control means for inputting and storing a lower half portion of the first set data in the first storing means in synchronization with a first clock of the first writing cycle, inputting and storing an upper half portion of the first set data in the first storing means in synchronization with a second clock of the first writing cycle, inputting and storing a lower half portion of the second set data Y in the second storing means in synchronization with a first clock of the second writing cycle, inputting and storing an upper half portion of the second set data in the second storing means in synchronization with a second clock of the second writing cycle, inputting the lower half portion of the first set data stored in the first storing means and the lower half portion of the second set data stored in the second storing means to the arithmetic means bit by bit in the order from least significant bits of the first and second set data to upper bits in synchronization with the second clock of the second writing cycle, performing an arithmetic operation in the arithmetic means by using a bit of the lower half portion of the first set data and a corresponding bit of the lower half portion of the second set data each time one bit of the lower half portion of the first set data and one bit of the lower half portion of the second set data are input to the arithmetic means in synchronization with each other, storing each bit of a lower half portion of the arithmetic resulting data obtained as a result of the arithmetic operation in the third storing means in the order in which bits of the arithmetic resulting data are obtained, outputting the lower half portion of the arithmetic resulting data from the third storing means in synchronization with a first clock of the reading cycle, inputting the upper half portion of the first set data stored in the first storing means and the upper half portion of the second set data stored in the second storing means to the arithmetic means bit by bit in the order from least significant bits of the first and second set data to upper bits in synchronization with the first clock of the reading cycle, performing an arithmetic operation in the arithmetic means by using a bit of the upper half portion of the first set data

and a bit of the upper half portion of the second set data each time one bit of the upper half portion of the first set data and one bit of the upper half portion of the second set data are input to the arithmetic means in synchronization with each other, storing each bit of an upper half portion of the arithmetic resulting data obtained as a result of the arithmetic operation in the third storing means in the order in which bits of the arithmetic resulting data are obtained, and outputting the upper half portion of the arithmetic resulting data from the third storing means in synchronization with a second clock of the reading cycle; and

(c) data change-over means for transferring the arithmetic resulting data output from one of the supporting means to one of another one of the supporting means and the data control means.

5,826,100

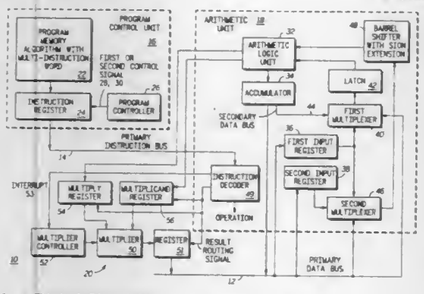
DIGITAL SIGNAL PROCESSOR FOR EXECUTING MULTIPLE INSTRUCTION WORDS

Luis A. Bonet; David Yatim, and James W. Girardeau, Jr., all of Austin, Tex., assignors to Motorola Inc., Schaumburg, Ill.

Division of Ser. No. 397,447, Mar. 2, 1995, Pat. No. 5,600,674. This application Nov. 4, 1996, Ser. No. 743,605

Int. Cl.[6] G06F *15/78*

U.S. Cl. 395—800.33 **6 Claims**



1. A Digital Signal Processor comprising:

(a) a primary data bus;

(b) a primary instruction bus;

(c) program control unit operably coupled to the primary instruction bus, wherein the program control unit includes:

(i) program memory that stores an algorithm, wherein the algorithm includes a plurality of operations, and wherein at least some of the plurality of operations include multiple-instruction words;

(ii) instruction register that temporarily stores at least one of the plurality of operations when a first control signal is received and provides the at least one of the plurality of operations to the primary instruction bus when a second control signal is received; and

(iii) program controller operably coupled to the program memory, wherein the program controller generates the first and second control signals; and

(d) arithmetic unit operably coupled to the program control unit and the primary data bus, wherein the arithmetic unit includes:

(i) an arithmetic logic unit;

(ii) an accumulator operably coupled to the arithmetic logic unit and the primary data bus;

(iii) a first input register operably coupled to the primary data bus;

(iv) a second input register operably coupled to the primary data bus;

(v) a first multiplexer operably coupled to the first input register, the primary data bus, the arithmetic logic unit, and the accumulator, wherein the first multiplexer is coupled to the accumulator via a secondary data bus, wherein the secondary data bus has less parasitic capacitance than the primary data bus;

(vi) a second multiplexer operably coupled to the second input register, the primary data bus, and the first input register; and

(vii) a barrel shifter having sign extension, wherein the barrel shifter is operably coupled to the second multiplexer and the arithmetic logic unit.

5,826,101

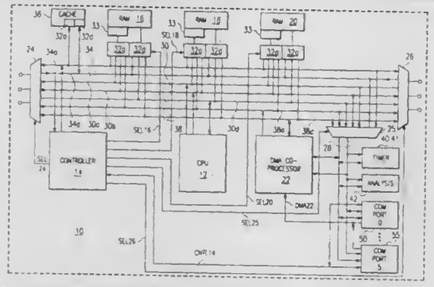
DATA PROCESSING DEVICE HAVING SPLIT-MODE DMA CHANNEL

Michael D. Beck, Houston, and Laurence R. Simar, Richmond, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 590,106, Sep. 28, 1990, abandoned. This application Aug. 19, 1993, Ser. No. 109,201

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—800.34 **15 Claims**



1. A data processing device, comprising:

memory circuitry having a plurality of addressable locations for storing data therein;

data processing circuitry connected to said memory circuitry; and

a direct memory access (DMA) circuit connected to said memory circuitry for, during a normal mode of operation, transferring data from a source address of said memory circuitry to a destination address of said memory circuitry, said direct memory access circuit including an address generator which provides said source address and said destination address, and a data channel for carrying data from said source address to said destination address, said direct memory access circuit having a further mode of operation wherein said data channel is divided into an input data channel and an output data channel which are operable independently of each other to respectively input data to said destination address from a source other than said source address, and output data from said source address to a destination other than said destination address.

5,826,102

NETWORK ARRANGEMENT FOR DEVELOPMENT DELIVERY AND PRESENTATION OF MULTIMEDIA APPLICATIONS USING TIMELINES TO INTEGRATE MULTIMEDIA OBJECTS AND PROGRAM OBJECTS

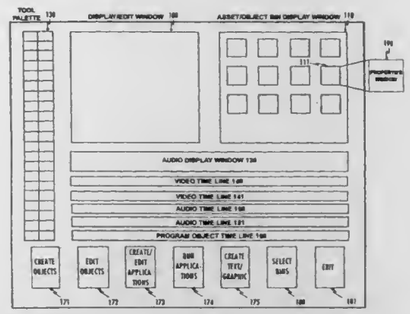
George Escobar, Herndon, and Laurence Kirsh, Reston, both of Va., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Continuation of Ser. No. 361,808, Dec. 22, 1994, abandoned. This application Sep. 23, 1996, Ser. No. 717,737

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—806 **19 Claims**

1. A network arrangement for the delivery and presentation of multimedia applications comprising:



a network,

one or more file servers connected to the network, at least one of said file servers containing multimedia assets and at least one of said file servers containing program objects,

a user terminal connected to the network and including a display for displaying a plurality of timelines, a graphical user interface for placing icons representing one or more said multimedia assets on a first of said plurality of timelines and for placing icons representing one or more said program objects on a second of said plurality of timelines and a processor for integrating multimedia objects from the one or more multimedia assets associated with said first timeline with the one or more program objects associated with said second timeline to produce an interactive multimedia application,

a user input device cooperating with the user terminal for retrieving from the one or more file servers and for playing back or executing at least one object at a relative time represented on the interactive multimedia application.

5,826,103

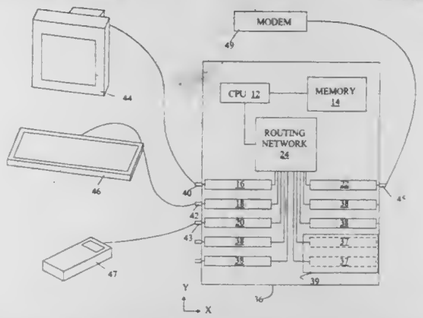
SYSTEM FOR STORING PHYSICAL LOCATIONS OF ALL PORTS SPECIFIED IN TERMS OF PORT LOCATIONS RELATIVE TO PARAMETERS OF A PREDETERMINED CONFIGURATION WITHIN DATA PROCESSING SYSTEM

Martin John Whittaker, Cupertino, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 177,582, Jan. 5, 1994, abandoned. This application Nov. 22, 1996, Ser. No. 754,466

Int. Cl.[6] G06F *15/40;11/30*

U.S. Cl. 395—828 **12 Claims**



1. A data processing system, having a predetermined configuration comprising:

a central processing unit for executing instructions stored in a memory;

a plurality of peripheral ports at a plurality of physical locations, wherein said physical locations are specified in terms of the location of the ports relative to the parameters of the predetermined configuration within the data processing system; and

a routing network for coupling said central processing unit to said peripheral ports, said routing network having network storage means for storing location information specifying the physical locations of each of said ports coupled to said routing network, and control means responsive to a location command for reporting said location information to said central processing unit, wherein said location information is sufficient to specify the location of each of said peripheral ports without reference to any other information.

5,826,104

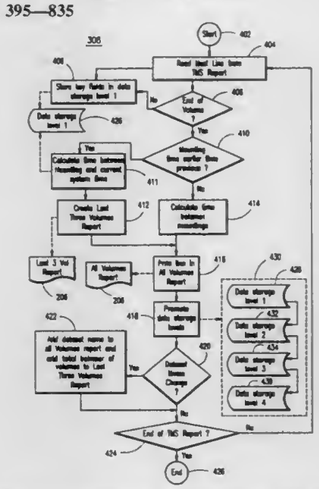
BATCH PROGRAM STATUS VIA TAPE DATA SET INFORMATION FOR DYNAMICALLY DETERMINING THE REAL TIME STATUS OF A BATCH PROGRAM RUNNING IN A MAIN FRAME COMPUTER SYSTEM

Donald Owen Rifkin, Colorado Spring, Colo., assignor to MCI Communications Corporation, Washington, D.C.

Filed Apr. 15, 1996, Ser. No. 632,192

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—835 **5 Claims**



1. A method for dynamically determining the real-time status of a batch program running on a mainframe computer system, the method comprising the steps of:

(1) accepting as input the name of at least one dataset comprising a plurality of tape volumes;

(2) querying a tape management system to retrieve information about each of the plurality of tape volumes, the plurality of tape volumes being organized into sequential pairs;

(3) capturing recently updated information, including which batch program most recently utilized each of the plurality of tape volumes and the date and time when each of the plurality of tape volumes was accessed;

(4) deriving an elapsed time by comparing a first tape volume with a second tape volume within each of the sequential pairs comprising the plurality of tape volumes;

(5) excluding misleading elapsed time data as derived in step (4) and determining the most recently accessed tape volume of the plurality of tape volumes;

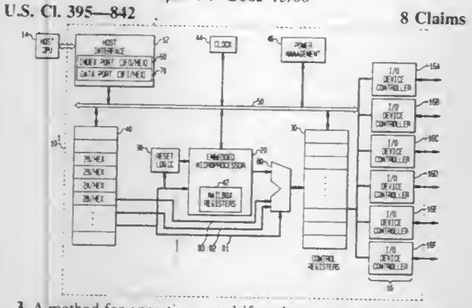
(6) calculating the elapsed time between the current real time and the time when the most recently accessed tape volume was accessed as determined in step (3).

5,826,105

SYSTEM FOR USING AN EXTERNAL CPU TO ACCESS MULTIFUNCTION CONTROLLER'S CONTROL REGISTERS VIA CONFIGURATION REGISTERS THEREOF AFTER DISABLING THE EMBEDDED MICROPROCESSOR

Steven Burstein, Smithtown; Kenneth George Smalley, Hauppauge, and Ian Fraser Harris, Kings Park, all of N.Y., assignors to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Jun. 10, 1996, Ser. No. 661,128
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—842 **8 Claims**



3. A method for operating a multifunction controller circuit, said multifunction controller circuit comprising a host interface for interfacing with a host CPU located externally to said multifunction controller circuit, a plurality of independent devices, a set of control registers for controlling the independent devices, an embedded microprocessor located within said multifunction controller circuit for performing read and write operations in said control registers, and a set of configuration registers accessible to said host CPU and said embedded microprocessor, said control registers being normally accessible to said host CPU via said embedded microprocessor when said embedded microprocessor is executing a program, said method enabling said host CPU to access said control registers without intervention of the embedded microprocessor, said method comprising of the steps of:

utilizing said host CPU, writing control information into a first configuration register for disabling said microprocessor and for enabling multiplexing circuitry which allows address information and data to be directly transferred from said configuration registers to said control registers;

utilizing said host CPU, writing an address of a particular control register into one or more second configuration registers; and

transferring data via said multiplexing circuitry between one or more third configuration registers and said particular control register, without intervention of said disabled embedded microprocessor.

5,826,106

HIGH PERFORMANCE MULTIFUNCTION DIRECT MEMORY ACCESS (DMA) CONTROLLER

Jianhua Pang, Arlington, Tex., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 453,076, May 26, 1995, abandoned. This application Feb. 10, 1997, Ser. No. 797,034
Int. Cl.[6] G06F *9/00*
U.S. Cl. 395—845 **13 Claims**

1. A direct memory access (DMA) controller, comprising:

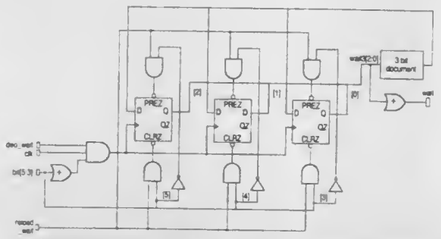
a channel circuit connected to transfer data to and from a port;

a CPU interface;

a bus connected to the channel circuit and

to the CPU interface and configured to transfer data therebetween;

a state machine coupled to the CPU interface and configured to process a clock signal which controls a transfer of data from the channel circuit across the bus to the CPU interface and to



delay the transfer of data for a preprogrammed number of clock cycles in response to a wait signal, the state machine including a wait signal generation circuit configured to generate the wait signal; and

a data mode register configured to receive a wait number which corresponds to the preprogrammed number of clock cycles;

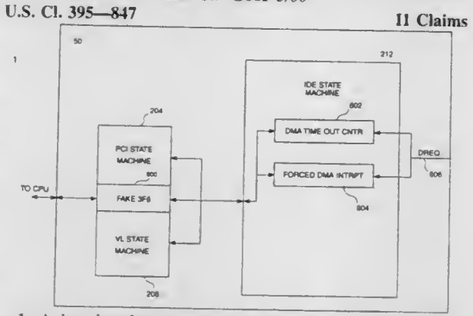
wherein the wait signal generation circuit includes circuitry configured to receive the wait number, decrement the wait number by one during each cycle of the clock signal, and to generate the wait signal in response to decrementation of the wait number.

5,826,107

METHOD AND APPARATUS FOR IMPLEMENTING A DMA TIMEOUT COUNTER FEATURE

Leslie E. Cline, Sunnybale; Edward J. Chejlava, Jr., San Bruno, and Anh L. Pham, Sunnyvale, all of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Continuation-in-part of Ser. No. 964,590, Oct. 20, 1992, Pat. No. 5,584,040. This application Oct. 25, 1994, Ser. No. 329,360
Int. Cl.[6] G06F *3/00*
U.S. Cl. 395—847 **11 Claims**



1. A bus interface apparatus for interfacing a host system through a first bus not supporting direct memory access (DMA) and a peripheral device through a second bus supporting direct memory access and for converting programmed input/output (PIO) cycles from the first bus into direct memory access (DMA) cycles on the second bus, said bus interface apparatus comprising:

a DMA timeout counter comprising:

a counter, coupled to the first bus and the second bus and clocked by a clock signal from the first bus for counting to a predetermined value and outputting a first signal when said predetermined value is reached,

a counter reset, coupled to said counter, and said second bus, for clearing and starting the counter when a DMA cycle on the second bus is initialized by the bus interface apparatus,

a first detector, coupled to said counter and said second bus for detecting when a peripheral device asserts a DMA request signal on said second bus and stopping and clearing said counter in response to such a detection, and

a second detector coupled to said counter and said second bus for detecting when a peripheral device de-asserts the DMA request signal and starting said counter in response to such detection and

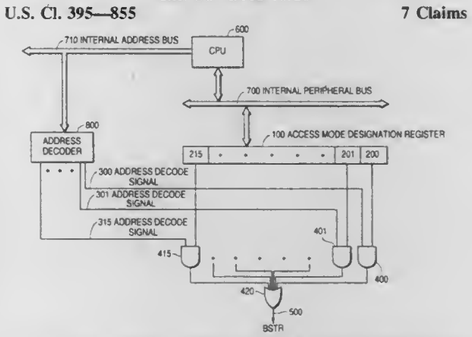
a first bus state machine, coupled to said DMA timeout counter, for terminating a PIO cycle on said first bus in response to the first signal from said DMA timeout counter.

5,826,108

DATA PROCESSING SYSTEM HAVING MICROPROCESSOR-BASED BURST MODE CONTROL

Satoru Sonobe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 11, 1995, Ser. No. 526,090
Claims priority, application Japan, Sep. 9, 1994, 6-240847
Int. Cl.[6] G06F *13/28*
U.S. Cl. 395—855 **7 Claims**



1. A data processing system having a microcomputer and a memory means coupled thereto, said memory means having a single access mode in which one item of data is outputted in response to reception of one address and a burst access mode in which a plurality of items of data are continuously outputted in response to reception of a burst request signal and one address, a memory region of said memory means being divided into a plurality of memory blocks, said microcomputer comprising:

a register for storing, for each of said memory blocks, information indicating whether burst access mode is available for a corresponding memory block;

an address decode means for receiving an address to be supplied to said memory means, and for outputting a decode signal indicative of which of said plurality of memory blocks corresponds to a memory region to be accessed by said address to be supplied to said memory means; and

means for activating said burst signal to be supplied to said memory means, when said information stored in said register designated by said decode signal indicates that burst access is available for said memory means.

5,826,109

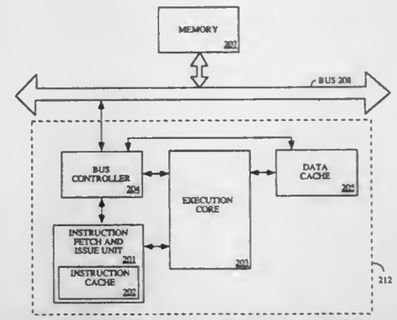
METHOD AND APPARATUS FOR PERFORMING MULTIPLE LOAD OPERATIONS TO THE SAME MEMORY LOCATION IN A COMPUTER SYSTEM

Jeffery M. Abramson, Aloha; Haitham Akkary, Portland; Andrew F. Glew, Hillsboro; Glenn J. Hinton; Kris G. Konigsfeld, both of Portland; Paul D. Madland; David B. Papworth, both of Beaverton, and Robert W. Martell, Hillsboro, all of Oreg., assignors to Intel Corporation, Sant Clara, Calif.

Continuation of Ser. No. 177,258, Jan. 4, 1994, abandoned. This application Nov. 12, 1996, Ser. No. 747,197
Int. Cl.[6] G06F *13/18*
U.S. Cl. 395—859 **18 Claims**

1. A processor for use in a computer system, said processor comprising:

a memory execution unit (MEU) that executes load operations by dispatching the load operations to memory, wherein the MEU comprises a load buffer to store load operations dispatched to the MEU for execution;



a non-blocking level one (L1) cache memory coupled to receive the load operations once dispatched, wherein the cache memory comprises

an L1 data array, and

a storage area containing load operation identifiers of cache lines being obtained through currently pending bus cycles, and containing data obtained from memory in response to recent load operations, wherein the cache memory provides data from the L1 data array to complete one of the load operations if the data is in stored therein at receipt of said one load operation and prevents said one load operation from being sent to a memory external to the processor when said one load operation attempts to access a cache line that is a subject of one of the currently pending bus cycles; and

wherein the memory execution unit stores said one load operation in the load buffer until receipt of a signal from the cache memory with an identifier (ID) of an entry in the storage area that caused the cache memory to prevent dispatching of said one load operation to external memory, said MEU redispatching said one load operation to the cache memory in response to the signal and a match of the indication to a stored ID in the load buffer in response to which the cache memory provides data for said one load operation from said storage area.

5,826,110

SYSTEM FOR VIDEO SERVER USING COARSE-GRAINED DISK STRIPING METHOD IN WHICH INCOMING REQUESTS ARE SCHEDULED AND RESCHEDULED BASED ON AVAILABILITY OF BANDWIDTH

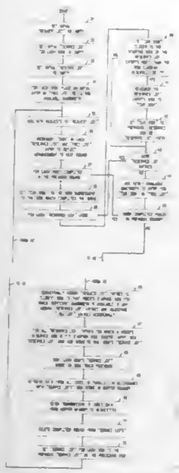
Banu Ozden, Summit; Rajeev Rastogi, New Providence, and Abraham Silberschatz, Summit, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 19, 1995, Ser. No. 492,315
Int. Cl.[6] G06F *13/14;13/37*
U.S. Cl. 395—865 **12 Claims**

7. A video server for servicing a plurality of incoming requests to retrieve a corresponding plurality of stored sequences of bits representing video information, the video server comprising:

a plurality of disks, each of said disks having a bandwidth associated therewith, each of said sequences of bits having been stored on the plurality of disks in accordance with a coarse-grained disk striping technique in which each of the stored sequences of bits is adapted to be retrieved in response to a corresponding request thereto and in a successive plurality of rounds including a first round, each of said rounds comprising the retrieval of a corresponding successive subsequence of said sequence of bits, each of said successive subsequences having been stored on exactly one of said disks;

means for scheduling the first round of the retrieval of one of said sequences of bits to occur at a first point in time, the means for scheduling responsive to one of said incoming requests, wherein said first point in time is based on both the order in which said incoming requests are received and a



measure of availability of said bandwidth associated with one or more of said disks; and

means for rescheduling the first round of said retrieval of said one of said sequences of bits to occur at a second point in time earlier than the first point in time, the means for rescheduling responsive to a change in said measure of availability of said bandwidth associated with said one or more of said disks, said change in said measure of availability of said bandwidth resulting from a completion of the retrieval of another one of said sequences of bits.

5,826,111

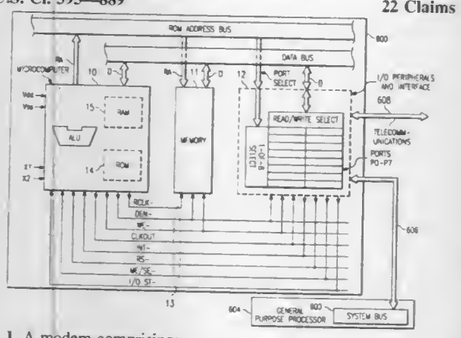
MODEM EMPLOYING DIGITAL SIGNAL PROCESSOR

Edward R. Caudel, and Surendar S. Magar, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 272,729, Jul. 8, 1994, which is a continuation of Ser. No. 797,854, Nov. 26, 1991, abandoned, which is a division of Ser. No. 468,490, Jan. 23, 1990, abandoned, which is a division of Ser. No. 841,123, Mar. 18, 1986, abandoned, which is a division of Ser. No. 350,852, Feb. 22, 1982, Pat. No. 4,577,282. This application Jun. 7, 1995, Ser. No. 490,445

Int. Cl.[6] G06F *3/05*

U.S. Cl. 395—889 **22 Claims**



1. A modem comprising:

analog-to-digital conversion circuitry;

a microcomputer device for digital signal processing including a semiconductor substrate, a bus extending across a portion of said semiconductor substrate and including plural conductors operative to carry data bits in parallel, a hardware multiplier and an arithmetic logic unit, both located on said semiconductor substrate, interconnected with each other and the bus, said arithmetic logic unit having an output coupled to said bus and operative to perform arithmetic or logic operations, and a control circuit located on said semiconductor substrate for decoding different instructions to make said arithmetic logic unit perform an arithmetic operation in response to one of the instructions and to alternatively perform a logic operation in response to another of the instructions, while contemporaneously performing data transfers via the bus; and

a memory storing instructions for modulation and demodulation functions.

5,826,112

LENS-FITTED PHOTO FILM UNIT AND CLASSIFYING APPARATUS AND METHOD FOR THE SAME

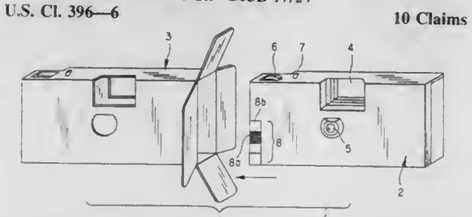
Toshihiro Matsushita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 620,564, Mar. 22, 1996, abandoned, which is a division of Ser. No. 262,339, Jun. 17, 1994, Pat. No. 5,530,500. This application May 30, 1997, Ser. No. 865,860

Claims priority, application Japan, Jun. 18, 1993, 5-148013

Int. Cl.[6] G03B *17/24*

U.S. Cl. 396—6 **10 Claims**



1. A lens-fitted photo film unit including a housing which incorporates an exposure device and is pre-loaded with photo film, and a packaging cardboard for covering said housing, said photo film unit comprising:

an identification sign, disposed on an outside portion of said housing, said identification sign comprising:

a plurality of aligned digits, each of said digits being represented by at least one of a rough face and a smooth face;

wherein said rough face has an optical reflectance lower than that of said smooth face; and

wherein said identification sign is adapted to be automatically read by an external non-visual mechanism and to relay information on a type of said housing based upon a sequential arrangement of each rough face and each smooth face, such that each housing is automatically sorted into separate recycling processing lines; and

wherein an arithmetical mean deviation of profile of each of said rough face and said smooth face is 0.1 μm or more, and an arithmetical mean deviation of profile of said rough face is at least two times as great as an arithmetical mean deviation of profile of said smooth face.

5,826,113

AUTO-FOCUSING CAMERA CAPABLE OF PHOTOGRAPHING IN WATER

Osamu Nonaka, Sagamihara, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 6, 1995, Ser. No. 554,550

Claims priority, application Japan, Nov. 14, 1994, 6-279401; Jan. 12, 1995, 7-003473

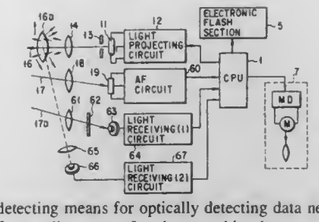
Int. Cl.[6] G03B *17/08*

U.S. Cl. 396—25 **34 Claims**

1. An auto-focusing camera capable of photographing in water, comprising:

underwater state detecting means for detecting or setting a condition in which a medium around the camera is water;





focus detecting means for optically detecting data necessary for the focus adjustment of a photographing lens;

transparency evaluating means for optically detecting the degree of transparency of a medium around the camera; and

lens driving means for adjusting the focus of the photographing lens based on an output of said focus detecting means, output of said underwater state detecting means and output of said transparency evaluating means.

5,826,114

CAMERA EQUIPPED WITH A DEVICE FOR FOCUS ADJUSTMENT DURING TIMES OF CAMERA VIBRATION AND THE LIKE

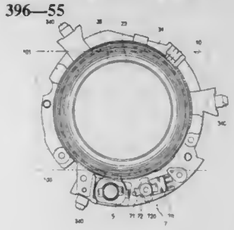
Hidenori Miyamoto, Urayasu; Minoru Kato; Junichi Omi, both of Kawasaki, and Isao Soshi, Tokyo, all of Japan, assignors to Nikon Corporation, Tokyo, Japan

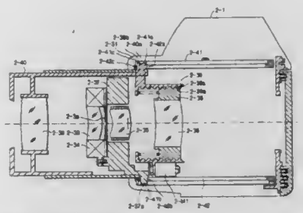
Continuation of Ser. No. 378,243, Jan. 25, 1995, abandoned. This application Feb. 18, 1997, Ser. No. 801,184

Claims priority, application Japan, Apr. 8, 1994, 6-093946; Apr. 15, 1994, 6-077351

Int. Cl.[6] G03B *5/00;13/34*

U.S. Cl. 396—55 **12 Claims**





1. A camera comprising:

an optical system;

a helicoid arrangement having a male helicoid member surrounded by a female helicoid member;

an actuator generating a drive force which moves said optical system;

a transmission mechanism transmitting said drive force from said actuator to said optical system; and

a drive amount detection mechanism detecting an amount of drive of said optical system caused by said actuator,

wherein said actuator, said transmission mechanism and said drive amount detection mechanism are disposed on said female helicoid member, on the outer circumference of said optical system, on a long side of an aperture that forms light fluxes into a rectangular shape to become incident on a film surface.

5,826,115

CAMERA WITH AN IMAGE STABILIZING FUNCTION

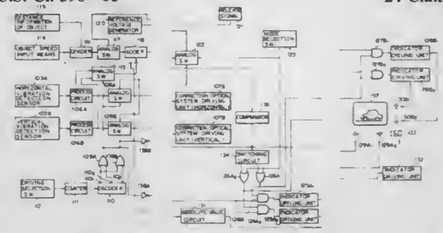
Koichi Washisu, Tokyo; Toru Nagata, Yokohama; Hiroshi Sumio, Tokyo, and Masao Shikaumi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 180,799, Jan. 10, 1994, abandoned, which is a continuation of Ser. No. 813,055, Dec. 23, 1991, abandoned, which is a continuation of Ser. No. 653,748, Feb. 11, 1991, abandoned, which is a continuation of Ser. No. 555,361, Jul. 18, 1990, abandoned, which is a continuation of Ser. No. 430,056, Oct. 31, 1989, abandoned, which is a continuation of Ser. No. 271,598, Nov. 15, 1988, abandoned. This application Aug. 5, 1997, Ser. No. 906,108

Claims priority, application Japan, Nov. 16, 1987, 62-289136; Jan. 28, 1988, 63-18208

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—55 **24 Claims**



1. An image blur prevention apparatus for use with a camera and including a signal output circuit which outputs a signal for starting a photographing operation, said apparatus comprising:

an image blur prevention device which prevents image blur;

a setting portion that selectively sets said image blur prevention device in a first operation mode and a second operation mode, wherein in the first operation mode said image blur prevention device performs image blur prevention, and wherein in the second operation mode said image blur prevention device operates such that an aimed direction of an optical device is continuously changed;

a varying portion which varies an operation speed of said image blur prevention device so that said image blur prevention device is capable of varying the aimed direction to follow objects which move at different speeds; and

control means for starting operation of said image blur prevention device in the second operation mode in response to an output signal of said signal output circuit.

5,826,116

CAMERA CAPABLE OF REMOTE-CONTROL OPERATION

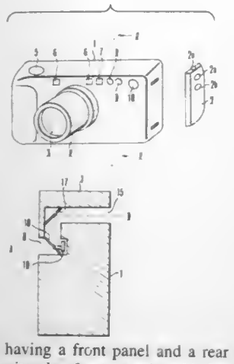
Yoshiyuki Kaneko, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 326,051, Oct. 19, 1994, abandoned, which is a continuation of Ser. No. 159,933, Nov. 30, 1993, abandoned, which is a continuation of Ser. No. 908,428, Jun. 30, 1992, abandoned, which is a continuation of Ser. No. 485,377, Feb. 26, 1990, abandoned. This application Jan. 9, 1995, Ser. No. 370,543

Int. Cl.[6] G03B *17/20*

U.S. Cl. 396—56 **29 Claims**

11. A camera comprising:



a camera body having a front panel and a rear panel which is situated opposite the front panel, said front panel facing toward an object when the object is being photographed with the camera,

a signal receiving window for receiving a wireless remote control signal provided on said rear panel of the camera body and

a control device for controlling an operation of the camera according to the wireless remote-control signal received by the signal receiving window.

5,826,117

TV CAMERA LENS DRIVING DEVICE AND TV CAMERA LENS

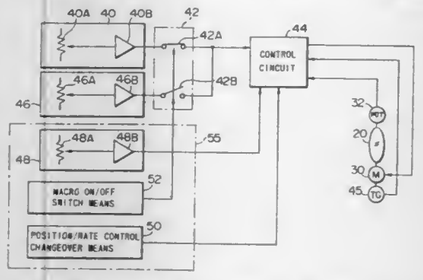
Hiroyuki Kawamura, and Hiroshi Mizumura, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Saitama, Japan

Filed Nov. 12, 1997, Ser. No. 968,449

Claims priority, application Japan, Nov. 15, 1996, 8-305134; Nov. 26, 1996, 8-315216

Int. Cl.[6] G03B *3/10;13/34;* **G02B** *7/105*

U.S. Cl. 396—79 **9 Claims**



1. A driving device for a TV camera lens in which one of the whole of a master lens group arranged in a lens mount and a part of said master lens group is moved forward and backward along an optical axis so as to perform macro-shooting, and a macro position, at which the one of the whole of said master lens group and the part of said master lens group is positioned during the macro-shooting, is preset, said driving device comprising:

macro position-control signal generating means for outputting a macro position-control signal for moving the one of the whole of said master lens group and the part of said master lens group to the preset macro position;

rate-control signal generating means for outputting a rate-control signal for controlling a rate at which the one of the whole of said master lens group and the part of said master lens group moves, in accordance with operated amount of an operation member;

control changeover means for validating one of the macro position-control signal and the rate-control signal; and

lens driving means for moving the one of the whole of said master lens group and the part of said master lens group forward and backward along the optical axis in accordance with the control signal which is validated by said control changeover means.

5,826,118

CAMERA HAVING A CONTROLLER TO DETERMINE A REFERENCE POSITION OF A LENS BARREL

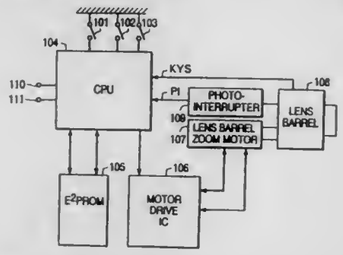
Masayuki Koga, Fuchu, and Toru Kosaka, Zama, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 384,558, Feb. 6, 1995, abandoned. This application Mar. 5, 1997, Ser. No. 812,332

Claims priority, application Japan, Feb. 4, 1994, 6-012825

Int. Cl.[6] G03B *1/18;3/10*

U.S. Cl. 396—87 **10 Claims**



1. A camera having a camera body, a power supply source, a main switch to alternately enable connection of the power supply source to circuits in the camera, the camera comprising:

a lens barrel having a first position fully collapsed within the camera body, a second position extending from the camera body when the power supply source is connected to the circuits, and a reference position with respect to the camera body, wherein the second position is a wide angle end position, and the reference position of said lens barrel with respect to the camera body is between the first position and the second position; and

a controller to positionally control said lens barrel based upon distances of said lens barrel from the reference position.

5,826,119

SHUTTER-PRIORITY AUTOMATIC EXPOSURE CAMERA

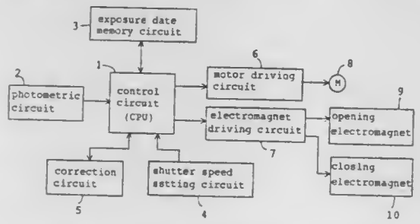
Seiichi Imano, and Kazuo Akimoto, both of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan

Filed Mar. 28, 1997, Ser. No. 825,351

Claims priority, application Japan, Mar. 29, 1996, 8-077212

Int. Cl.[6] G03B *7/095*

U.S. Cl. 396—236 **3 Claims**



1. A camera operable in shutter-priority automatic exposure mode, comprising:

a photometric circuit;

an exposure data memory circuit for storing information on a plurality of selectable diaphragm openings; and

a control circuit for calculating a desirable diaphragm opening based on a shutter speed preset prior to an exposure and luminance data output from the photometric circuit, and determining an actual diaphragm opening based on a comparison between the calculated diaphragm opening and the selectable diaphragm openings;

wherein the control circuit checks whether the preset shutter speed is higher or lower than a predefined reference shutter speed and selects one of the selectable diaphragm openings that provides a higher shutter speed if the preset shutter speed is higher than the reference shutter speed, or selects one of the selectable diaphragm openings that provides a lower shutter speed if the preset shutter speed is lower than the reference shutter speed.

5,826,120

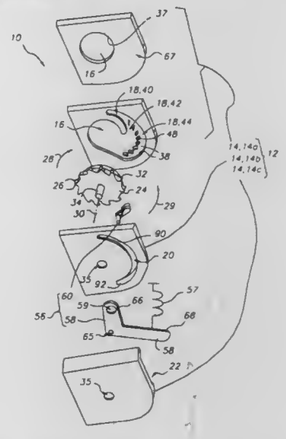
ONE-WAY WINDER, FILM ADVANCE AND CAMERA

Patricia L. Williams, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Oct. 30, 1997, Ser. No. 960,932

Int. Cl.[6] G03B *1/00*

U.S. Cl. 396—396 **20 Claims**



1. A one-way winder comprising:

a body defining a bifurcated guideway having a trunk and first and second branches, said guideway having at least one portal connecting said branches;

a director having an arm-pawl and a guide cam, said director being movable relative to said body in a forward movement and in a return movement, said guide cam moving along said first branch during said forward movement and along said second branch during said return movement, said guide cam being movable unidirectionally along said first branch;

an endless ratchet intruding into said first branch, said endless ratchet being driven by said arm-pawl during said forward movement and spaced apart from said arm-pawl during said return movement.

5,826,121

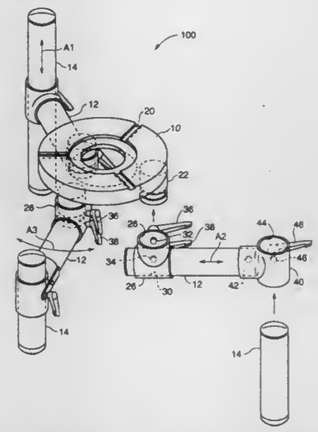
ADJUSTABLE CAMERA SUPPORT BASE FOR LOW CAMERA POSITIONING

Steven L. Cardellini, 22 Council Crest, Corte Madera, Calif. 94925

Filed Aug. 25, 1997, Ser. No. 917,241

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—428 **19 Claims**



1. An adjustable base for a camera, the base comprising:

a mount configured to receive a camera head;

a plurality of arms extending laterally of the mount, the arms independently adjustable relative to the mount; and

a plurality of legs adjustably attached to and supporting the arms.

5,826,122

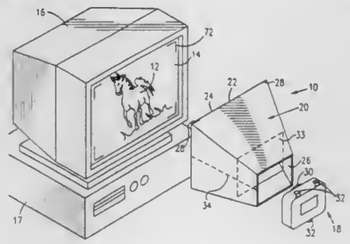
APPARATUS AND METHOD FOR TRANSMITTING IMAGES TO A REMOTE LOCATION

Eyal Shekel, 22 Haportzim Street, Jerusalem, Israel, 92541

Filed Jan. 6, 1997, Ser. No. 779,345

Int. Cl.[6] G03B *29/00*

U.S. Cl. 396—429 **29 Claims**



1. Apparatus for photographing an image from a screen of a computer terminal, comprising:

a camera comprising:

a lens which projects said image on a film;

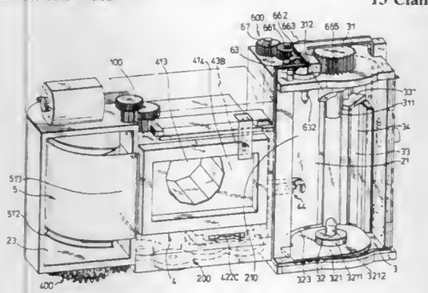
a shutter for selectively exposing said film; and

a shutter tripping mechanism which trips said shutter to allow exposure of said film for a duration longer than a plurality of refreshes of said image on said screen;

a hood manually abuttable against said screen, said camera being fixable to said hood such that said image may be projected on said film; and

graphics apparatus for controlling a size of said image being displayed on said screen.

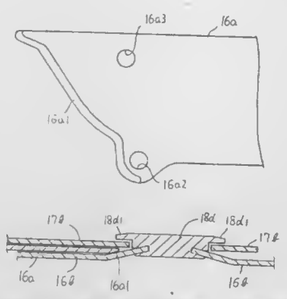
5,826,123
CAMERA, ADAPTED TO HOLD FILM CARTRIDGES OF DIFFERENT SIZES
Jing-Shiun Lai, Taichung, Taiwan, assignor to Shansun Technology Company Ltd., Taipei Hsien, Taiwan
Filed Feb. 6, 1997, Ser. No. 796,702
Int. Cl.[6] G03B *19/06;17/02*
U.S. Cl. 396—446 **13 Claims**



1. A camera capable of accommodating small and large film cartridges, each having a cartridge spool, said camera comprising:
- a film cartridge mounting chamber having a bottom film cartridge opening, and a rear film cartridge opening;
- a back cover for closing said rear film cartridge opening;
- a bottom cover for closing said bottom film cartridge opening;
- a lower spindle member mounted on said bottom cover for holding a bottom of the cartridge spool of the loaded small or large film cartridge;
- an upper spindle member mounted on top of the cartridge mounting chamber above said lower spindle member to hold a top of the cartridge spool of said loaded small or large film cartridge;
- a first elastic clamping member mounted inside said cartridge mounting chamber arranged to apply an axial clamping force in a downward direction on a top of the loaded small or large film cartridge when either cartridge is loaded into said mounting chamber; and
- a second elastic clamping member mounted inside said cartridge mounting chamber and arranged to apply a lateral clamping force on a periphery of the loaded small or large film cartridge, wherein
- said upper and lower spindle members and said first and second elastic clamping members cooperate to accommodate film cartridges of at least two different sizes; and
- wherein said cartridge mounting chamber has a surrounding wall extending between said top and said bottom of said cartridge mounting chamber, said first elastic clamping member including a first elongated plate mounted on said surrounding wall in an axially slidable position, said first elongated plate having a top clamping member which projects into said cartridge mounting chamber from said surrounding wall and which is biased to press against the top of the loaded small or large film cartridge.

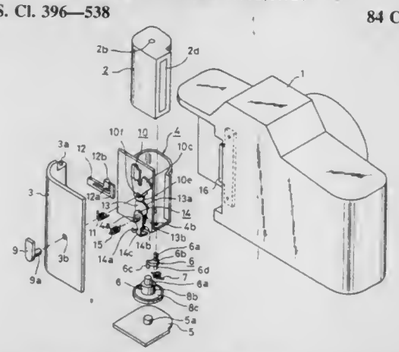
5,826,124
FOCAL PLANE SHUTTER
Kunioki Takahashi; Toshiaki Hirai, and Makoto Mikami, all of Yotsukaido, Japan, assignors to Seiko Precision Inc., Japan
Filed May 30, 1997, Ser. No. 866,622
Claims priority, application Japan, May 31, 1996, 8-138915
Int. Cl.[6] G03B *9/40*
U.S. Cl. 396—488 **13 Claims**

1. A focal plane shutter comprising: a base plate having a shutter opening; an opening sector group including a plurality of sectors; a closing sector group including a plurality of sectors, the opening and closing sector groups being operable to open and close the shutter opening; and a plurality of arms each having one end



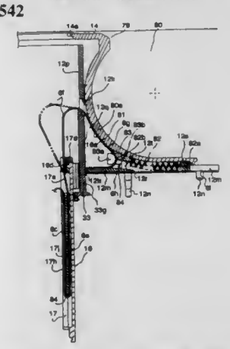
pivotally supported on the base plate and another end pivotally connected to and supporting the sectors of the opening and closing sector groups for effecting displacement of the sectors relative to the shutter opening to open and close the shutter opening; wherein at least a first one of the sectors is interposed between a second one of the sectors and a first one of the arms connecting and supporting the second sector, and wherein the first sector bas an edge portion thereof disposed proximate a connection of the second sector and the first arm, at least the edge portion of the first sector being thinner than other portions thereof to avoid an obstruction of movement of the sectors during displacement thereof.

5,826,125
CAMERA WHICH USES FILM CARTRIDGE HAVING A MOVABLE LIGHT SHIELD DOOR
Tetsuya Nishio, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 689,009, Jul. 30, 1996, abandoned, which is a continuation of Ser. No. 591,940, Jan. 23, 1996, abandoned, which is a continuation of Ser. No. 304,946, Sep. 13, 1994, abandoned. This application Dec. 16, 1996, Ser. No. 766,938
Claims priority, application Japan, Sep. 20, 1993, 5-233357
Int. Cl.[6] G03B *17/02;17/26*
U.S. Cl. 396—538 **84 Claims**



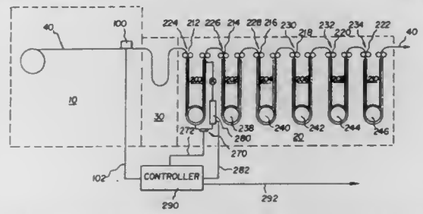
1. An apparatus adapted to use an image recording medium cartridge having a cover for allowing an image recording medium in the cartridge to be thrust out from the image recording medium cartridge, said apparatus comprising:
- (A) a movement device movable with a cartridge so as to move the cartridge to a position for unloading the cartridge;
- (B) a cover operation device which opens the cover of the cartridge; and
- (C) a linkage device which restricts an opening operation of the cover of the cartridge by said cover operation device when said movement device is in the position for unloading the cartridge.

5,826,126
FLEXIBLE PRINTED CIRCUIT BOARD HOUSING STRUCTURE FOR A CAMERA
Hiroshi Nomura; Kazuyoshi Azegami, and Takamitsu Sasaki, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 30, 1996, Ser. No. 777,481
Claims priority, application Japan, Jan. 26, 1996, 8-012317; Feb. 16, 1996, 8-029486; Feb. 16, 1996, 8-029487
Int. Cl.[6] G03B *17/02*
U.S. Cl. 396—542 **19 Claims**



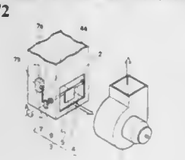
1. A flexible printed circuit board housing structure for a camera, said camera including a movable barrel that moves along an optical axis of a lens of the camera and a flexible printed circuit board electrically connecting an electrical unit on said movable barrel to a unit on said camera, said flexible printed circuit board housing structure comprising:
- a flexible printed circuit board housing space formed on said camera and defined by a substantially cylindrical wall face of a film chamber; and
- a spring mechanism provided in said flexible printed circuit board housing space, said spring mechanism applying an urging force to said flexible printed circuit board, said urging force urging said flexible printed circuit board in a direction away from the optical axis and into said flexible printed circuit board housing space, said substantially cylindrical wall face of said film chamber comprising a guiding structure that guides a slack portion of said flexible printed circuit board in a direction away from the optical axis.

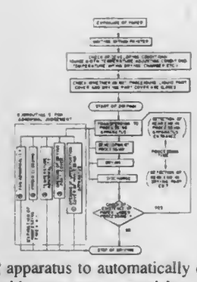
5,826,127
RELATING TO PHOTOGRAPHIC PROCESSING APPARATUS
Gareth B. Evans, Potten End, and Anthony Earle, Harrow Weald, both of England, assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 9, 1996, Ser. No. 762,224
Claims priority, application United Kingdom, Jan. 4, 1996, 9600112
Int. Cl.[6] G03D *3/10*
U.S. Cl. 396—571 **7 Claims**



1. A method of processing a continuous web of photographic material in a combined photographic processing apparatus comprising a printing stage and a processing stage, the processing stage having at least one processing tank in which the processing solution volume divided by the maximum area of the material immersed in the processing solution is less than 25 mm, the method comprising the steps of:
- sensing a transport speed of the photographic material through the printing stage;
- varying the transport speed of the photographic material through the processing tank in response to a sensed change of the transport speed of the photographic material through the printing stage; and
- changing an activity of the processing solution in accordance with the sensed transport speed thereby to maintain a predetermined photographic performance.

5,826,128
APPARATUS FOR PROCESSING PHOTOSENSITIVE MATERIAL
Yoshio Nishida, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama, Japan
Filed Aug. 7, 1996, Ser. No. 693,456
Claims priority, application Japan, Aug. 31, 1995, 7-223378
Int. Cl.[6] G03D *7/00;13/00*
U.S. Cl. 396—572 **8 Claims**

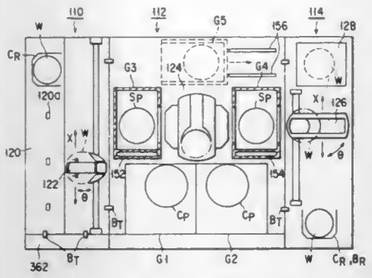




1. A processing apparatus to automatically develop a photosensitive material, said apparatus comprising a drying part that includes:
- a drying heater heating air to dry the photosensitive material;
- a drying fan circulating the air heated by said drying heater inside said drying part; and
- a means for detecting a reduction in the air circulation by said drying fan.

5,826,129
SUBSTRATE PROCESSING SYSTEM
Keizo Hasebe, Kofu; Shinji Nagashima, Kumamoto; Norio Semba, Kumamoto; Masami Akimoto, Kumamoto; Yoshio Kimura, Kumamoto-ken; Naruaki Iida, Kumamoto; Kouji Harada, Kumamoto-ken; Issei Ueda, Kumamoto, and Nobuo Konishi, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Toyko, and Tokyo Electron Kyushu Limited, Tosu, both of Japan
Filed Jun. 29, 1995, Ser. No. 496,319
Claims priority, application Japan, Jun. 30, 1994, 6-173510; Aug. 4, 1994, 6-202717; Jan. 10, 1995, 7-018680
Int. Cl.[6] G03D *5/00*
U.S. Cl. 396—611 **23 Claims**

1. A substrate processing system comprising:
- a cassette station on which at least one cassette containing a plurality of objects is placed;
- a process station including a plurality of process chambers for performing processing for the objects, and object conveying



means for loading the objects into said process chambers and unloading the objects from said process chambers;

first object transfer means for transferring the objects between said cassette station and said process station; and

an interface section including an object waiting region where the objects wait, and second object transfer means for transferring the objects to said process station,

wherein said process chambers in said process station are arranged around said object conveying means, and

said object conveying means has a rotating shaft substantially parallel to the vertical direction and can move up and down in the vertical direction along said rotating shaft and rotate about said rotating shaft.

5,826,130

APPARATUS AND METHOD FOR DEVELOPING RESIST COATED ON SUBSTRATE

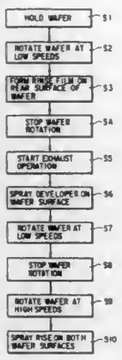
Hideya Tanaka; Norimitsu Morioka, and Kosuke Yoshihara, all of Kumamoto, Japan, assignors to Tokyo Electron Limited, Tokyo, and Tokyo Electron Kyushu Limited, Tosu, both of Japan

Division of Ser. No. 521,845, Aug. 31, 1995, Pat. No. 5,689,749. This application Jun. 5, 1997, Ser. No. 868,963

Claims priority, application Japan, Aug. 31, 1994, 6-230627

Int. Cl.[6] G03D *3/02*

U.S. Cl. 396—611 **6 Claims**



1. A developing method for developing a photoresist-coated substrate, comprising the steps of;

(a) supporting the photoresist-coated substrate on a spin chuck in a chamber with the photoresist-coated substrate held upward and facing a liquid film forming means at an area near a periphery of a rear surface of the substrate to define a clearance between the liquid film forming means and the periphery of the rear surface of the substrate;

(b) starting an exhaust operation in the chamber and, while rotating the substrate at a first rotation speed, supplying a washing solution to the clearance to create an annular continuous washing solution film;

(c) while stopping the rotation of the substrate, stopping an exhaust operation in the chamber and applying a developing solution to the photoresist-coated surface of the substrate to develop the coated photoresist in a hermetically sealed chamber; and

(d) while rotating the substrate at a second rotation speed, applying the washing solution on both surfaces of the substrate and removing the developing solution from both surfaces of the substrate.

5,826,131

DEVELOPMENT PROCESSING APPARATUS

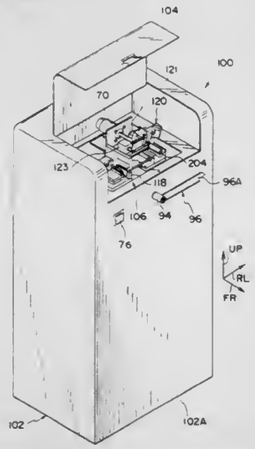
Osami Tsuji; Toshio Kurokawa, and Hideaki Nomura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 24, 1997, Ser. No. 998,058

Claims priority, application Japan, Dec. 26, 1996, 8-349095; Jun. 30, 1997, 9-174998; Jun. 30, 1997, 9-175000

Int. Cl.[6] G03D *3/13*

U.S. Cl. 396—613 **15 Claims**



1. A photosensitive material processing apparatus comprising:

a loading section for loading therein a film container accommodating a film which is wound from one edge section in the longitudinal section thereof around a spool shaft with the edge section thereof in the longitudinal section separated from the spool shaft for development and also which is returned in the separated state to a customer, said film accommodated therein in the state of being wound around the spool shaft;

a feeding means for feeding the film into the loading section from another edge section of the film wound around the spool shaft and also retaining the film in the state where the former edge section of the film in the longitudinal direction is kept locked in the loading section; and

a single processing tank for receiving a portion of the film fed out by the feeding means from the loading section and developing the film with a processing liquid.

5,826,132

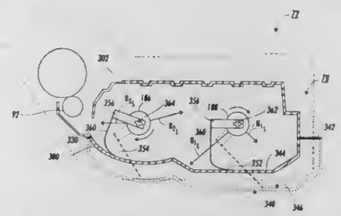
VARIABLE SIZE, REPLACEABLE TONER SUMP PANS FOR PRINT CARTRIDGES

Dhirendra C. Damji, Webster, and Ajay Kumar, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 17, 1997, Ser. No. 971,690

Int. Cl.[6] G03G *15/00;21/18*

U.S. Cl. 399—110 **21 Claims**



1. A system for providing a plurality of process cartridges for developing with marking particles a latent image with common components, said system comprising:

a housing;

a member mounted to said housing for advancing the marking particles toward the latent image;

a first pan securable to said housing and defining a first cavity therebetween, said first cavity defining a first volume;

a second pan securable to said housing and defining a second cavity therebetween, said second cavity defining a second volume substantially different than said first volume, said housing, said member and said first pan being assemblable to form a first process cartridge with said first volume and said housing, said member and said second pan being assemblable to form a second process cartridge with said second volume.

5,826,133

IMAGE READING APPARATUS USEABLE IN A COPY MODE OR A FACSIMILE MODE

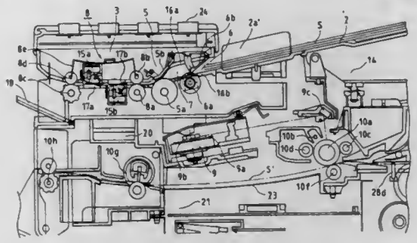
Masaaki Saito, Tokyo; Koji Takahashi, Yokohama, and Masahiko Yokota, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,543

Claims priority, application Japan, Feb. 22, 1995, 7-033863

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—2 **20 Claims**



1. An image reading apparatus comprising:

stacking means for stacking a plurality of originals;

separating means for sequentially separating an original in a bottom portion among said originals on said stacking means;

conveying means for conveying the original which was sequentially separated by said separating means along a conveying path;

first reading means for reading the original surface which faces up when it is stacked onto said stacking means when the original passes through said conveying path;

second reading means for reading the original surface which faces down when it is stacked onto said stacking means when the original passes through said conveying path; and

control means for controlling said first and second reading means in accordance with a copy mode and a mode other than said copy mode,

wherein said control means allows said first reading means to read the original in said copy mode and allows said second reading means to read the original in the mode other than said copy mode, and

wherein said mode other than said copy mode is a facsimile transmission mode.

5,826,134

ELECTROPHOTOGRAPHYING APPARATUS HAVING A TONER EMPTY DISCRIMINATING UNIT

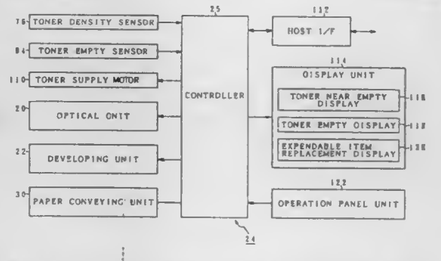
Toshio Hino, and Yoshihiro Tonomoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 2, 1997, Ser. No. 887,282

Claims priority, application Japan, Jan. 23, 1997, 9-009891

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—27 **14 Claims**



9. An apparatus in which an electrostatic latent image formed on a photosensitive material is developed and, thereafter, is transferred onto a paper, comprising:

a developing unit for developing the electrostatic latent image on said photosensitive material by a two-component developing agent composed of toner and carrier;

a toner density sensor for detecting a toner density of said two-component developing agent in said developing unit;

a toner hopper containing the toner to be supplied to said developing unit by receiving a filling of a specified amount of toner by the setting of a toner cartridge;

a toner supplying mechanism for supplying the toner from said toner hopper to said developing unit;

a toner supply control unit for supplying the toner from said toner hopper to said developing unit by driving said toner supplying mechanism each time a detection density of said toner density sensor is equal to or less than a specified value;

a toner sensor for detecting the toner contained in said toner hopper;

a toner empty discriminating unit for discriminating a toner empty on the basis of a detection value of said toner sensor;

a toner supply counter which is reset at the time of the filling of the toner by the setting of said toner cartridge and counts the number of toner supplying times by said toner supply control unit; and

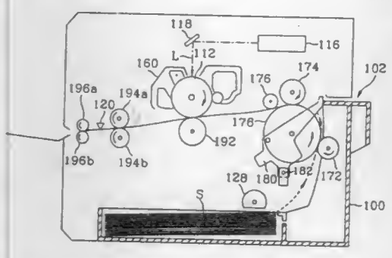
a toner supply amount calculating unit for calculating a toner supply amount per time from the number of toner supplying times of said toner supply counter and a specified toner filling amount by said toner cartridge when said toner empty is determined.

5,826,135

PAPER FEEDING CONTROL METHOD OF AN IMAGE FORMING APPARATUS

Young-Seob Lee, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed May 30, 1996, Ser. No. 655,167
Claims priority, application Rep. of Korea, May 31, 1995, 14063/1995
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—43 14 Claims



10. An image forming apparatus, comprising:

feed sensing means for sensing paper feeding states and for generating a sensing signal that sequentially shifts between first and second states during paper feeding; and

engine control means for controlling an engine of said image forming apparatus by sequentially: enabling pick up and feeding of a sheet of paper in response to a printing command, determining whether a predetermined time period has elapsed since the sheet of paper was picked up, detecting when said sensing signal shifts to said first state after said predetermined time period has elapsed, detecting when said sensing signal shifts to said second state after said sensing signal shifts to said first state, starting a counting operation and detecting when said sensing signal shifts back to said first state after said sensing signal shifts to said second state, comparing a present counting value generated from said counting operation with a reference value after said sensing signal shifts back to said first state, returning to said step of detecting when said sensing signal shifts to said second state when said present counting value is less than said reference value, and enabling performance of an image forming operation when said present counting value is greater than or equal to said reference value.

5,826,136

IMAGE STABILIZING METHOD FOR USE IN AN IMAGE FORMING APPARATUS

Hideji Saiko; Motoyuki Itoyama, both of Yamatokoriyama; Jitsuo Masuda, Yamatotakada; Toshihisa Ishida, Kashiba; Katsuhiro Nagayama, Yamabe-gun; Hiroo Naoi, Yamatokoriyama; Masayasu Narimatsu, Nara, and Tomoko Nishino, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 21, 1997, Ser. No. 821,933
Claims priority, application Japan, Mar. 21, 1996, 8-064301
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—49 7 Claims

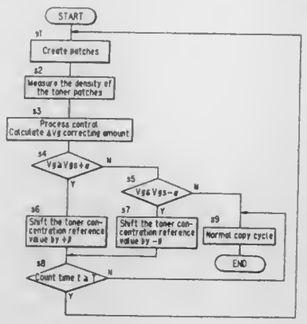
1. An image stabilizing method for use in an image forming apparatus, comprising the steps of:

creating toner patches on the surface of the photoreceptor;

detecting the density of the toner patches;

correcting the charger output in accordance with the density of toner patches detected; and

implementing process control for correcting the toner concentration in the developing unit if the correcting amount of the charger output excesses a predetermined value, wherein if the toner concentration is corrected at the current process control,



a concentration stabilizing treatment for stabilizing the image density is implemented before the start of the next process control.

5,826,137

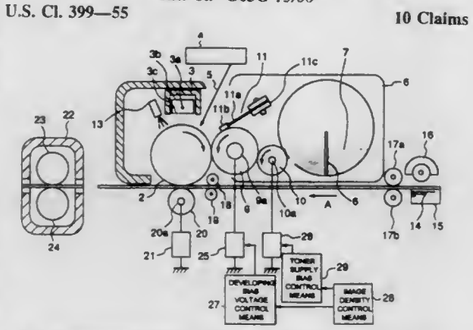
Patent Not Issued For This Number

5,826,138

TONER SUPPLY ROLLER APPLIED WITH A.C. VOLTAGE IN NONMAGNETIC SINGLE COMPONENT DEVELOPING DEVICE

Akihiro Tsuru, Kitakyushu; Hiromitsu Shimazaki, Fukuoka-ken; Hironori Taguchi, Saga-ken, and Kazuhiko Noda, Chikushino, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed May 14, 1997, Ser. No. 856,251
Claims priority, application Japan, Feb. 4, 1997, 9-021188
Int. Cl.[6] G03G *15/06*
U.S. Cl. 399—55 10 Claims



1. A nonmagnetic single component developing device comprising:

a developing roller having an outer surface formed thereon with a layer of a nonmagnetic single component developer comprising nonmagnetic toner;

means for applying a developing bias voltage to the developing roller;

a toner supply roller arranged in rear of said developing roller and for making contact with the developing roller for agitating and supplying said toner to the developing roller; and

a toner regulating member arranged above said developing roller and for making press-contact with the developing roller for regulating a volume of said toner, wherein:

said toner supply roller comprises an electroconductive member and a toner supply roller bias power source for applying an a.c. voltage to said toner supply roller; and

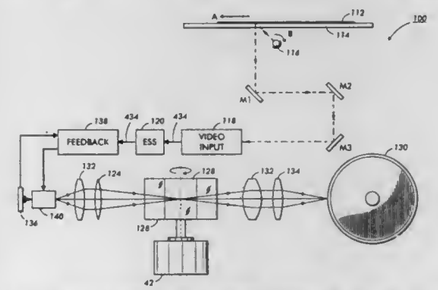
a relationship $|V_{p-p}|>2|V_B|$ is satisfied, where V_B (V) is said developing bias voltage and V_{p-p} (V) is a peak-to-peak value of said a.c. voltage.

5,826,139

METHOD AND APPARATUS FOR CONTROLLING THE SEQUENCE, SIZE AND POSITION OF AN IMAGE CONTROL PATCH

Aron Nacman, Penfield; Roger W. Budnik, Rochester, and Guru B. Raj, Fairport, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1996, Ser. No. 720,533
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—72 18 Claims



1. A circuit for generating document images and process control patches, and for placing the process control patches at any location upon the surface of a charge retentive photographic imaging member, comprising:

a) a machine controller;

b) an image control circuit communicating with said machine controller;

c) a patch control circuit, communicating with said machine controller and with said image control circuit;

d) a computer memory communicating with said patch control circuit and with said image control circuit; and

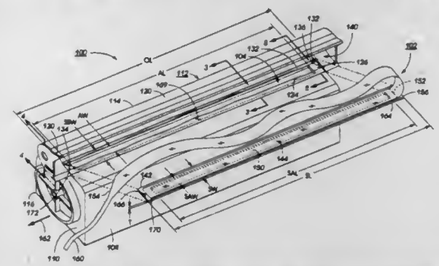
e) a plurality of patch patterns stored in said computer memory, said patch patterns having a plurality of shapes and/or sizes.

5,826,140

METHOD OF REMANUFACTURING TONER CARTRIDGES

Michael F. Zona, Holley, and Lucy A. Allchin, Penfield, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 28, 1997, Ser. No. 829,129
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—106 26 Claims



1. A seal for use with a refilled toner cartridge for resealing an aperture in communication with a chamber for storing toner, the aperture being defined by a planar recessed wall of a housing of the refilled toner cartridge, the cartridge including remnants of a ruptured closure positioned on the planar recessed wall, the remnants including at least portions of a pair of longitudinal strips of said closure, a first portion of at least one of the strips located between opposed ends of the aperture and a second portion of at least one of the strips extending past opposed ends of the aperture, the seal being positioned on the housing adjacent the aperture, the housing and the longitudinal strips cooperating to define a non-planar surface surrounding the periphery of the aperture, said seal comprising:

a body having an inner periphery thereof defining a opening through said body, said body defining an outer periphery thereof, a portion of which is matingly fittable to the housing, said body having a first surface including a section thereof positionable outside the first portion of at least one of the strips;

a member secured to a second surface of said body, said second surface opposed to said first surface; and

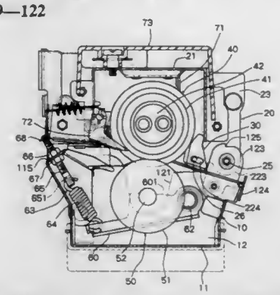
an adhesive secured to at least a portion of the first surface of said body, said adhesive extendible between the first surface and the longitudinal strips and between the first surface and the wall such that the strips and the adhesive form a toner retaining seal around the aperture between the wall and the body so as to permit the cartridge to be sealed without removal of the pair of longitudinal strips.

5,826,141

FIXING DEVICE IN AN IMAGE-FORMING MACHINE

Toshiyuki Mitsuya, Osaka, Japan, assignor to Mita Industrial Company, Ltd., Osaka, Japan

Filed Jul. 9, 1997, Ser. No. 890,346
Claims priority, application Japan, Jul. 9, 1996, 8-199655
Int. Cl.[6] G03G *15/20*
U.S. Cl. 399—122 2 Claims

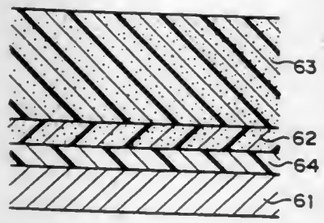


1. A fixing device in an image-forming machine comprising a lower housing, an upper housing which is supported on one side of said lower housing and is allowed to rotate between a closed position and an open position, a pressing roller rotatably mounted on said lower housing, and a heating roller which has bearing members attached to both ends thereof and is detachably mounted on said upper housing, said upper housing being provided with nearly semicircular recessed mounting portions of which the lower portions are opened so that said bearing members attached to said heating rollers can be fitted thereto, and said heating roller being allowed to be attached to, or detached from, said recessed mounting portions in a state where said upper housing is located at the open position, wherein said upper housing is equipped with a holder member which is so constituted as to move to a first position where said bearing members attached to said heating roller are allowed to be attached to, or detached from, said mounting recessed portions, and to a second position where said it comes into contact with said bearing members fitted to said recessed mounting portions to maintain the fitting of said bearing members to said recessed mounting portions, and a fastening means is provided to fasten said holding member at second position.

5,826,142
IMAGE FORMING APPARATUS AND ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER TO BE USED THEREFOR

Michiaki Takahashi, and Tomoo Kobayashi, both of Minami-Ashigara, Japan, assignors to Fuji Xerox, Ltd., Tokyo, Japan

Filed Dec. 30, 1996, Ser. No. 775,448
Claims priority, application Japan, Jan. 9, 1996, 8-001507; Jun. 27, 1996, 8-168018
Int. Cl.[6] G03G *15/00;15/08*
U.S. Cl. 399—159 15 Claims

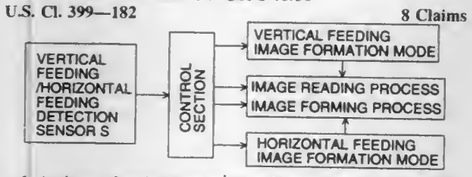


1. An electrophotographic organic photosensitive member for use in an image forming apparatus for forming an image, the electrophotographic organic photosensitive member comprising a charge transport agent-having an oxidation potential of more than 0.7V vs SCE.

5,826,143
IMAGE FORMING APPARATUS WITH TWO TRANSFER MEANS

Satoshi Haneda; Kunio Shigeta; Yotaro Sato; Masakazu Fukuchi; Akitoshi Matsubara, and Tadayoshi Ikeda, all of Hachioji, Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 21, 1997, Ser. No. 821,877
Claims priority, application Japan, Mar. 26, 1996, 8-070317; Mar. 26, 1996, 8-070321
Int. Cl.[6] G03G *15/36*
U.S. Cl. 399—182 8 Claims

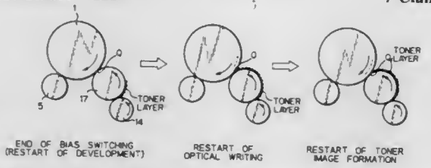


1. An image forming apparatus for forming images corresponding to image data, comprising:
an image carrier;
a toner image forming means for forming a toner image on said image carrier in correspondence with the image data in a primary scanning direction and a subsidiary scanning direction;
a toner image receiving body for receiving said toner image from said toner image forming means and for carrying said toner image;
a first transfer means for transferring said toner image on said image carrier onto one side surface of a transfer material;
a second transfer means for transferring said toner image on said toner image receiving body onto an other side surface of said transfer material;
a fixing means for fixing said toner image, being transferred onto said transfer material, on said transfer material;
a control means for controlling said toner image forming means; and
a discriminating means for discriminating whether a given image, corresponding to said image data, is longitudinally formed on said transfer material or laterally formed on said transfer material in relation to a conveyance direction of said transfer material;
wherein said control means controls said toner image forming means so as to change a direction of said given image to the reverse direction, in relation to one of said primary scanning direction and said subsidiary scanning direction, corresponding to the result of discrimination with said discriminating means when said toner image is formed on said other side surface of said transfer material.

5,826,144
DEVELOPING DEVICE FOR AN ELECTROPHOTOGRAPHIC RECORDING APPARATUS INCLUDING BIAS CONTROL OF A TONER SUPPLYING ROLLER

Eiji Takenaka, Atsugi; Kazuhiro Yuasa, Zama; Shuichi Endoh, Isehara; Iwao Matsumae, Tokyo; Yoshiaki Tanaka, Kawasaki; Hiroshi Hosokawa, Yokohama; Mugijiroh Uno, Isehara; Hiroshi Saitoh, Ayase; Toshihiro Sugiyama; Tetsuo Yamanaka, both of Tokyo; Eisaku Murakami, Hiratsuka, and Satoru Komatsubara, Isehara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Apr. 26, 1996, Ser. No. 638,697
Claims priority, application Japan, Apr. 28, 1995, 7-106535; Apr. 19, 1996, 8-098693
Int. Cl.[6] G03G *15/06;15/08*
U.S. Cl. 399—222 7 Claims



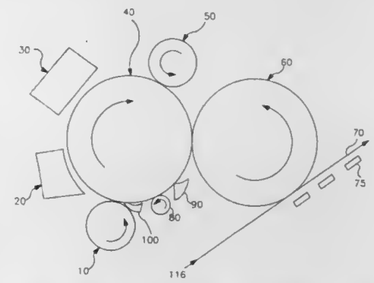
1. A developing device for an electrophotographic image recording apparatus, comprising:
first toner conveying means for conveying a single-component type toner deposited thereon;
second toner conveying means contacting said first toner conveying means and an image carrier for electrostatically forming a latent image thereon, and for conveying the toner transferred theretofrom said first toner conveying means and depositing said toner on said latent image to thereby produce a corresponding toner image; and
control means for stopping a rotation of the image carrier when a toner layer is positioned at a nip between the image carrier and said second toner conveying means.

5,826,145
ELECTROGRAPHIC PRINTING APPARATUS WITH A LIQUID DEVELOPEMENT SYSTEM

Kensuke Fukae, Boulder, Colo., assignor to Advanced Color Technology, Inc., Boulder, Colo.

Filed May 14, 1997, Ser. No. 856,635
Int. Cl.[6] G03G *15/10*
U.S. Cl. 399—233 42 Claims

1. An electrographic printing apparatus with a liquid development system, comprising:
a) a rotatable charge bearing member having a chargeable surface;
b) a rotatable roller assembly configured to apply a chargeable pre-wetting oil to said chargeable surface;
c) a charger which charges said pre-wetting oil on said chargeable surface;
d) a discharging unit which discharges selected areas of said pre-wetting oil to produce an electrostatic latent image thereon;
e) an ink head assembly configured to apply liquid toner comprising solid toner particles and oil onto said electrostatic latent image to produce a developed image; and

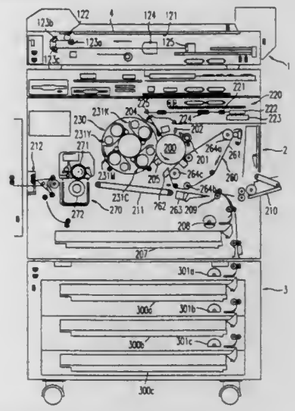


f) a transfer member having a surface configured to receive said developed image from said surface of said charge bearing member and then to transfer said developed image to a substrate.

5,826,146
COLOR IMAGE FORMING DEVICE WHICH CHANGES DEVELOPING BIAS WHEN SWITCHING BETWEEN DEVELOPER UNITS

Takayuki Maruta, Tokyo; Hiroshi Takashima, Yono; Tomoji Ishikawa; Kazuyuki Sugihara, both of Yokohama; Shinji Kato, Kawasaki, and Katsuhiro Kosuge, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 553,776, Oct. 23, 1995, Pat. No. 5,671,470. This application Jun. 6, 1997, Ser. No. 870,555
Claims priority, application Japan, Oct. 21, 1994, 6-282655; Jul. 12, 1995, 7-199151
Int. Cl.[6] G03G *15/08*
U.S. Cl. 399—235 30 Claims

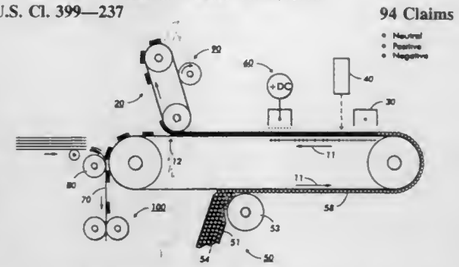


1. An image forming device comprising:
a plurality of developing devices, each including a developer carrying body driven by a drive means, a two component developer including carrier and toner, and a developer agitation paddle which pumps up and agitates the two component developer including the carrier and the toner;
an image carrying body;
developing device moving means f or moving one of said developing devices to a developing position adjacent to the image carrying body which has a latent image thereon;
a voltage generator for generating a first developing bias having an a.c. component and a d.c. component, and for generating a second developing bias; and
developing bias applying means for applying, at different times, the first and second developing biases to the developer carrying body of one of the developing devices at the developing position, the developing bias applying means including a developing bias switching means for switching between the first and second developing biases, the developing bias switching means applying the first developing bias to the developer carrying body when developing the latent image on said image carrying body, and applying the second developing bias when the developer carrying body moves to the developing position and when the developer carrying body moves from the developing position, the second developing bias generating an electric field such that the two component developer on the developer carrying body is more reluctant to move toward the image carrying body as compared with an electric field generated by the first developing bias.

5,826,147
ELECTROSTATIC LATENT IMAGE DEVELOPMENT

Chu-heng Liu, and Weizhong Zhao, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 27, 1997, Ser. No. 883,292
Int. Cl.[6] G03G *15/10;15/16*
U.S. Cl. 399—237 94 Claims



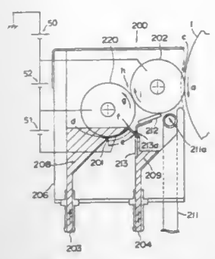
1. An imaging apparatus, comprising:
an imaging member for having an electrostatic latent image formed thereon, said imaging member having a surface capable of supporting marking material;
an imaging device for generating the electrostatic latent image on said imaging member, wherein the electrostatic latent image includes image areas defined by a first charge voltage and non-image areas defined by a second charge voltage distinguishable from the first charge voltage;
a marking material supply apparatus for depositing marking material on the surface of said imaging member to form a marking material layer thereon adjacent the electrostatic latent image on said imaging member;
a charging source for selectively delivering charges to the marking material layer in an image-wise manner responsive to the electrostatic latent image on said imaging member to form a secondary latent image in the marking material layer having image and non-image areas corresponding to the electrostatic latent image on said imaging member; and
a separator member for selectively separating portions of the marking material layer in accordance with the secondary latent image in the marking material layer to create a developed image corresponding to the electrostatic latent image formed on said imaging member.

5,826,148
LIQUID DEVELOPER TRANSPORTING DEVICE AND LIQUID DEVELOPING DEVICE

Shuji Iino, Muko; Toshimitsu Fujiwara, Kobe; Hidetoshi Miyamoto, Takatsuki, and Takaji Kurita, Osakasayama, all of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 638,041, Apr. 26, 1996, abandoned. This application Dec. 19, 1996, Ser. No. 758,762
Claims priority, application Japan, Apr. 27, 1995, 7-104081
Int. Cl.[6] G03G *15/10*
U.S. Cl. 399—240 21 Claims

1. A liquid developer transporting device disposed between a reservoir accommodating a liquid developer comprising a fluid medium, a charge controlling agent and electrically charged toner



particles dispersed therein and an electrostatic latent image carrying member, wherein said toner particles comprises a resin and a colorant, comprising:

(a) a first developer carrying member;

(b) a supplier which supplies a liquid developer accommodated in the reservoir to the first developer carrying member;

(c) a first deposition device which electrically deposits toner particles on the first developer carrying member;

(d) a second developer carrying member confronting the first developer carrying member;

(e) a second deposition device which electrically deposits toner particles on the second developer carrying member at the confrontation area between first and second developer carrying members;

(f) a third liquid developer carrying member confronting with the second developer carrying member; and

(g) a third deposition device which electrically deposits toner particles on the third developer carrying member at the confrontation area between second and third developer carrying members.

5,826,149

DEVELOPING DEVICE EMPLOYING A LIQUID DEVELOPER AND PICTURE FORMING DEVICE HAVING SUCH DEVELOPING DEVICE

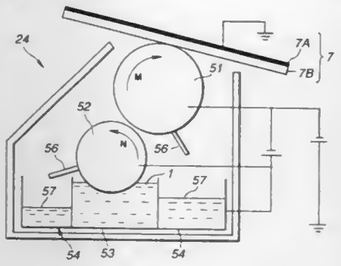
Shinichi Horii, Kanagawa, and Hiroshi Tokunaga, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 17, 1996, Ser. No. 768,174

Claims priority, application Japan, Dec. 27, 1995, 7-352004

Int. Cl.[6] G03G *15/10*

U.S. Cl. 399—240 **6 Claims**



1. A developing apparatus employing a liquid developer for developing an image on a charge carrier having a surface potential V_p, the apparatus comprising:

a developer container containing the liquid developer comprised of charged toner particles at least made up of a coloration agent and a resin, said charged toner particles being dispersed in an electrically insulating liquid;

a developer carrier;

developer supplying means for uniformly depositing the liquid developer from said developer container on a surface of the developer carrier having a surface potential V_b; and

electrical field impressing means for creating an electrical field impressed across the liquid developer deposited on the surface of said developer carrier, thereby forming a liquid toner layer comprised of charged toner particles assembled together on the surface of said developer carrier, said liquid toner layer having a potential V_1 in a direction of thickness of the developer carrier and having a potential V_2 in a direction of thickness of the charge carrier,

wherein said developer carrier holding the liquid toner layer comprised of charged toner particles assembled together is subsequently brought into pressure contact with the charge carrier, having formed thereon an electrostatic latent image, in order to effect development under a condition in which the following equation holds:

$$V_p+V_2=V_1+V_b.$$

5,826,150

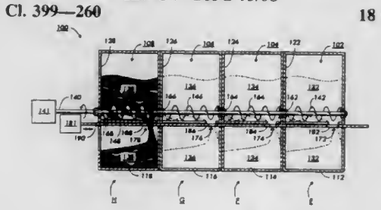
INTEGRATED MULTI-TONER DISPENSING SYSTEM

Jeffrey J. Folkins, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 14, 1997, Ser. No. 892,218

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—260 **18 Claims**



1. An apparatus for dispensing toner, comprising:

at least two toner dispensers, each toner dispenser having a supply of toner contained therein and an opening through which toner passes from the toner dispenser;

a toner dispenser member associated with the toner dispensers, the toner dispenser member having at least two toner dispenser sections, each toner dispenser section having a toner dispenser associated therewith and the toner dispenser member is a toner moving member extending between the toner dispensers which moves toner in each toner dispenser towards the opening through which toner passes from the toner dispenser; and

a toner dispenser member control for controlling movement of the toner dispenser member.

5,826,151

APPARATUS AND METHOD FOR NON INTERACTIVE AGITATED MAGNETIC BRUSH DEVELOPMENT

Frank C. Genovese, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 30, 1997, Ser. No. 885,910

Int. Cl.[6] G03G *15/09*

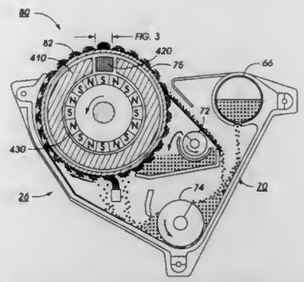
U.S. Cl. 399—277 **24 Claims**

1. In a development system including a developer transport adapted for depositing developer material on an imaging surface having an electrostatic latent image thereon, said developer transport comprising:

a core;

a rotating drive means;

a magnetic transport member rotating about said core, said magnetic transport member having a static magnetic field for transporting developer material to a development zone; and



means for generating a superimposed alternating magnetic field over said static magnetic field to agitate developer material on said magnetic transport member predominately in said development zone.

5,826,152

FIXING UNIT AND HEAT ROLLER FOR FIXING UNIT

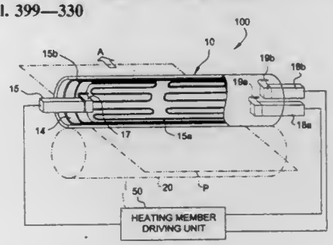
Makoto Suzuki, and Kazuhiko Takagi, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed May 28, 1997, Ser. No. 864,621

Claims priority, application Japan, May 30, 1996, 8-136349

Int. Cl.[6] G03G *15/20*

U.S. Cl. 399—330 **19 Claims**



6. A heat roller comprising:

a hollow cylindrical tube; and

a resistance heating member provided inside said tube, said resistance heating member comprising:

an insulating layer affixed to said tube;

at least three electrode portions formed on said insulating layer to extend in a circumferential direction of said tube; and

a plurality of resistance heating patterns formed on said insulating layer and arranged along an axial length of said tube, each of said resistance heating patterns electrically connected to predetermined electrode portions of said at least three electrode portions and said plurality of resistance heating patterns being electrically connected in series.

5,826,153

IMAGE-FORMING MACHINE

Hiroyuki Hazama; Eiichi Miyamoto; Hideo Nakamori; Takashi Terada; Masayuki Ishii, and Takahiko Murata, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Nov. 3, 1997, Ser. No. 962,773

Claims priority, application Japan, Nov. 18, 1996, 8-306598

Int. Cl.[6] G03G *21/00;* **A47L** *13/40*

U.S. Cl. 399—353 **8 Claims**

2. An image-forming machine comprising a photosensitive drum which is rotatably disposed and successively passes through a charging zone, an electrostatic latent image-forming zone, a developing zone and a transfer zone; a charger which is disposed in said charging zone and charges the peripheral surface of said photosensitive drum into a predetermined polarity; a developing device which is disposed in said developing zone, and develops an electrostatic latent image formed on the peripheral surface of said photosensitive drum in said electrostatic latent image-forming zone into a toner image; a transfer means which is disposed in said transfer zone and transfers the toner image formed on the peripheral surface of said photosensitive drum onto a transfer paper; and a foreign matter-recovering means which is disposed between said transfer zone and said charging zone and comes into contact with the peripheral surface of said photosensitive drum, and removes foreign matter adhered onto the peripheral surface of said photosensitive drum;

wherein said foreign matter-recovering means comprises a foreign matter-recovering brush which is made of an electrically conducting material and is brought into contact with the peripheral surface of said photosensitive drum, a flexible electrically conducting sheet member mounting said foreign matter-recovering brush, an elastic holding member made of an elastic material mounting said electrically conducting sheet member, a grounding member made of a metal member mounting said elastic holding member, and a brush-support member for supporting said grounding member, said electrically conducting sheet member being partly brought into contact with said grounding member.

5,826,154

COPIER

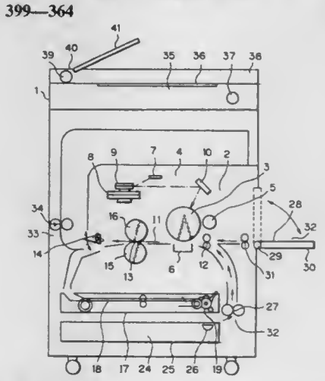
Toshiki Yamashita, Tokyo; Jun Doi, Kawasaki; Tomonori Fukui, Tokyo; Fumio Kawamura, Yamato; Jyouji Katoh, Yokohama, and Yasuo Kawada, Kawasaki, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 29, 1996, Ser. No. 654,671

Claims priority, application Japan, May 30, 1995, 7-131458

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—364 **6 Claims**



1. A copier comprising:

an image reading device for reading a first document and a second document;

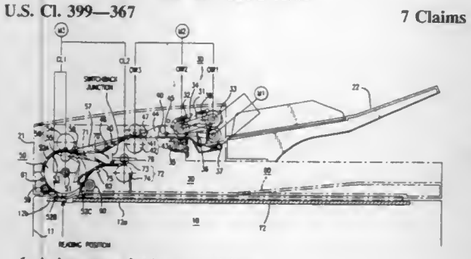
a feeding device for feeding recording media one at a time;
an image forming section for forming an image on the recording medium on the basis of an image read by said image reading device;
a duplex copy unit for turning over the recording medium carrying the image formed by said image forming section on one side, and refeeding said recording medium to said image forming section;
image read control means for controlling said image reading device such that said image reading device reads the first document, then reads said first document and the second document alternately, and finally reads said second document; and
feed control means for controlling said feeding device and said duplex copy unit such that one recording medium is fed from said feeding device, then the recording media are alternately fed from said feeding device and said duplex copy unit one at a time, and finally one recording medium is fed from said duplex copy unit;
wherein said duplex copy unit comprises a turning section for turning over a paper entering said duplex copy unit;
a stacking section for storing papers entering said duplex copy unit when a paper is currently in said turning section;
a sensing unit for sensing if a paper is located in said turning section; and
a directing mechanism for directing a paper entering said duplex copy unit to said turning section if said sensing unit does not sense a paper treated in said turning section, and directs said paper entering said duplex copy unit to said stacking section if said sensing unit senses a paper in said turning section.

5,826,155

COMPACT AUTOMATIC DOCUMENT FEEDER WITH A COMPACT DOCUMENT REVERSING DEVICE

Atsumi Kobayashi; Hidenobu Sugano; Masaki Ohmori, and Tetsuya Aiyama, all of Minamikoma-gun, Japan, assignors to Nisca Corporation, Minamikoma-gun, Japan

Continuation of Ser. No. 552,084, Nov. 2, 1995, Pat. No. 5,689,793. This application May 22, 1997, Ser. No. 861,651
Claims priority, application Japan, Nov. 8, 1994, 6-298816
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—367 **7 Claims**



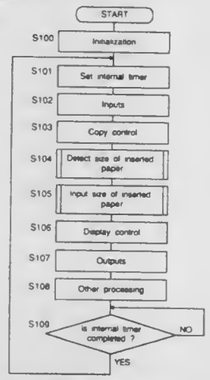
1. A document feeder comprising:
a platen for reading and scanning original documents having a reading position;
a document tray for placing the original documents to be processed situated above the platen, said document tray having an exit;
an ejection tray for receiving the original documents after being processed situated between the platen and the document tray spaced in a vertical direction, said ejection tray having an entrance for receiving the original documents;
a transfer path for transferring the original documents from the document tray to the election tray through the reading position on the platen so that the exit of the document tray, the entrance of the ejection tray and the reading position on the platen are arranged laterally in this order above the platen with a predetermined distance spaced away from each other; and
separating means for separating the original documents one by one situated between the exit of the document tray and the entrance of the ejection tray laterally spaced apart from each other.

5,826,156

IMAGE FORMING APPARATUS

Junko Natsume, Aichi-Ken, and Kazuhiro Araki, Okazaki, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Feb. 27, 1997, Ser. No. 810,976
Claims priority, application Japan, Feb. 28, 1996, 8-041069; Feb. 28, 1996, 8-041072; Feb. 28, 1996, 8-041073
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—389 **21 Claims**



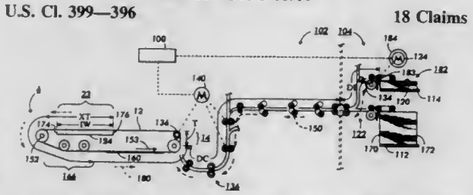
1. An image forming apparatus comprising:
a paper supplier for inserting a sheet of paper;
a detector for detecting at least a length of one side of the paper supplied to said paper supplier;
a specifying means for specifying a paper size according to signals received from said detector;
an input device for inputting a size of the paper manually when said specifying means fails to specify the paper size; and
an image forming means for forming an image on the paper.

5,826,157

SYCHRONIZED PAPER FEEDING ACROSS MODULE BOUNDARIES WITH TIMED CLOCK TICKS

Ronald R. Wierszewski, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 31, 1997, Ser. No. 903,808
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—396 **18 Claims**



1. A method for tracking the position of a sheet through a paper path being moved by a plurality of feed mechanisms within a printing machine, comprising:
driving a first feed mechanism with the motion of a first drive means;
placing the sheet in cooperation with the first feed mechanism at a first position;
moving the sheet with the first feed mechanism toward a second feed mechanism;

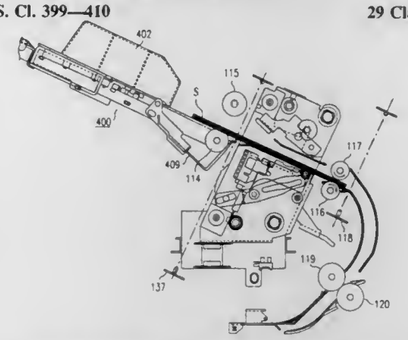
driving the second feed mechanism with the motion of a second drive means;
placing the sheet in cooperation with the second feed mechanism at a second position;
moving the sheet with the second feed mechanism toward a sheet output position, the paper path being defined by the motion of the sheet through the first feed mechanism and the second feed mechanism from the first position to the sheet output position;
calculating the distance the sheet traverses while influenced by one of the first drive means and the second drive means based at least partially upon the motion of the other of at least one of the first drive means and the second drive means;
measuring the motion of the first drive means as it moves the sheet toward the second feed mechanism; and
measuring the motion of the second drive means as it moves the sheet toward the sheet output position.

5,826,158

FINISHER AND METHOD OF STAPLING BY USING THE SAME

Ryo Hirano, Toyohashi, and Shinji Wakamatsu, Toyokawa, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Filed Oct. 8, 1997, Ser. No. 947,208
Claims priority, application Japan, Mar. 12, 1997, 9-058126
Int. Cl.[6] G03G *15/00*
U.S. Cl. 399—410 **29 Claims**



1. A finisher incorporating therein a stapling device for accumulating a plurality of sheets and performing a stapling treatment on a bundle of accumulated sheets, comprising:
a first sheet bundle conveying device disposed on the upstream side of said stapling device relative to the direction of conveyance of said bundle of sheets and formed of a pair of rollers capable of being pressed against each other and separated from each other;
a second sheet bundle conveying device disposed on the downstream side of said stapling device relative to the direction of conveyance of said bundle of sheets and formed of a pair of rollers capable of being pressed against each other and separated from each other; and
a sheet end detecting device disposed near the downstream side of said second sheet bundle conveying device and adapted to detect the leading end of said bundle of sheets in the direction of conveyance.

5,826,159

PROCESS FOR RETARDING SPONTANEOUS COMBUSTION OF POWDERY MIXTURES

David E. Jech; Juan L. Sepulveda, and Anthony B. Traversone, all of Tucson, Ariz., assignors to Brush Wellman, Inc., Cleveland, Ohio

Division of Ser. No. 646,449, May 7, 1996, Pat. No. 5,686,676. This application Apr. 29, 1997, Ser. No. 840,415
Int. Cl.[6] B22F *1/00*
U.S. Cl. 419—30 **16 Claims**

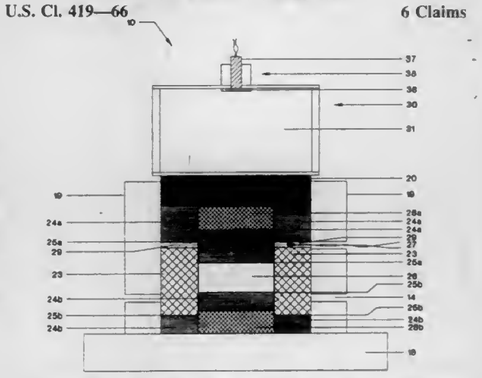
1. A process for retarding spontaneous combustion of a powdery mixture consisting of at least two materials, said process comprising treating at least one of said materials with a corrosion inhibitor.

5,826,160

HOT EXPLOSIVE CONSOLIDATION OF REFRACTORY METAL AND ALLOYS

Laszlo J. Kecskes, Havre de Grace, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 14, 1995, Ser. No. 514,936
Int. Cl.[6] B22F *1/00;* **F42D** *3/00*
U.S. Cl. 419—66 **6 Claims**



1. A process for the fabrication of metal alloy billets comprising:
selecting a vessel;
blending an alloy precusor mixture;
storing said precusors under argon in the vessel;
placing said vessel in a sand pile to protect said vessel and contents therein;
activating said precusor mixture by means of a electric match;
preheating said precusor mixture by means of an external combustion synthesis reaction, to produce a precusor mixture having a high purity;
preheating said resultant precusor mixture;
consolidating said mixture to a a high density by the detonation of an explosion, and steel insert means;
exposing said billets to post compaction heat treatment means. and receovering the billets.

5,826,161

PROCESS FOR THE SELECTIVE SEPARATION OF ACTINIDES (III) AND LANTHANIDES (III)

Charles Madic, Thiais, and Pierre-Yves Cordier, Avignon, both of France, assignors to Commissariat A L'Energie Atomique, Paris, and Cpmpagnie Generale Des Matieres Nucleaires, Velizy Villacoublay, both of France

Filed May 15, 1997, Ser. No. 856,839
Claims priority, application France, May 24, 1996, 96 06488
Int. Cl.[6] B01D *11/04*
U.S. Cl. 423—8 **10 Claims**

1. Process for the selective separation of actinides and trivalent lanthanides in a reaction medium, comprising the steps of dispos-

ing said actinides and trivalent lanthanides in an aqueous reaction medium containing pertechnetate ions, contacting said aqueous medium with an organic solvent including an extracting agent and separating an organic actinide-rich extraction phase and an aqueous lanthanide-rich phase.

5,826,162

LEACHING OF TITANIFEROUS MATERIALS

Halil Aral, East Bentleigh; Warren John Bruckard, North Balwyn; David Edward Freeman, North Dandenong; Ian Edward Grey, Melbourne; Martin Richard Houchin, Pascoe Vale; Kenneth John McDonald, Glen Waverly; Graham Jeffrey Sparrow, Vermont South; Kaye Patricia Hart, New South Wales, and Harold Robert Harris, Geraldton, all of Australia, assignors to RGC Mineral Sands Limited, Australia

PCT No. PCT/AU95/00112, § 371 Date Oct. 28, 1996, § 102(e) Date Oct. 28, 1996, PCT Pub. No. WO95/24510, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 8, 1995, Ser. No. 702,653

Claims priority, application Australia, Mar. 8, 1994, PM4299; Jun. 7, 1994, PM6104

Int. Cl.[6] C01G *43/00;* **C01F** *13/00*

U.S. Cl. 423—20 **39 Claims**

1. In a process for removing one or more radionuclides including one or more radionuclide decay products from titaniferous material, said material

(i) being an aerated product or synthetic rutile, and

(ii) containing said radionuclides in a form which is highly soluble in acid,

the process comprising leaching said material in a step-wise manner with sulphuric acid solution and with hydrochloric acid solution in either order, the improvement wherein the hydrochloric acid leach is enhanced for removal of one or more of said radionuclide decay products by pre-treatment of said material with a solution of an effective amount of a hydroxide.

5,826,163

REMOVAL OF TECHNETIUM IMPURITIES FROM URANIUM HEXAFLUORIDE

Anthony J. Saraceno, Waverly, and Keith D. Banks, Lucasville, both of Ohio, assignors to United States Enrichment Corporation, Bethesda, Md.

Filed May 21, 1997, Ser. No. 860,000

Int. Cl.[6] C01G *43/06*

U.S. Cl. 423—258 **12 Claims**



1. A process for the removal of technetium from contaminated liquefied uranium hexafluoride containing said technetium, said process comprising;

(a) contacting said contaminated liquefied uranium hexafluoride with metal fluoride in solid form for a period of time sufficient for said technetium to become adsorbed onto said metal fluoride thereby producing a purified uranium hexafluoride liquid; and

(b) removing said purified uranium hexafluoride liquid from said metal fluoride having adsorbed technetium.

5,826,164

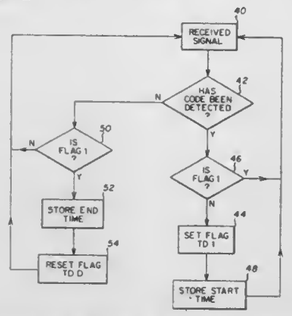
TECHNIQUE FOR SURVEYING A RADIO OR A TELEVISION AUDIENCE

Lee S. Weinblatt, 797 Winthrop Rd., Teaneck, N.J. 07666

Continuation of Ser. No. 3,325, Jan. 12, 1993, Pat. No. 5,630,203. This application Oct. 26, 1995, Ser. No. 548,591

Int. Cl.[6] H04B *17/00*

U.S. Cl. 455—2 **2 Claims**



1. An apparatus for surveying an audience to determine whether a tuning device is tuned to a given signal source which is transmitting a survey signal at preset intervals and is characteristic of said signal source, comprising:

means to detect a first occurrence of the survey signal received by said tuning device and to store a first time signal in response to said first occurrence;

means to inhibit storing a time signal in response to receptions of said survey signal following said first time signal;

means to generate a stop signal upon stoppage of said survey signal being received; and

means to store a second time signal in response to said stop signal.

5,826,165

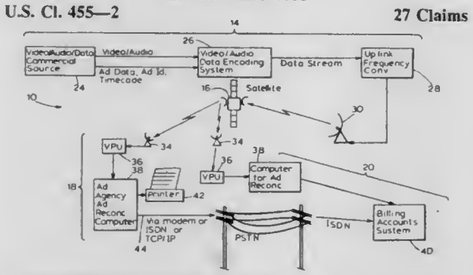
ADVERTISEMENT RECONCILIATION SYSTEM

Richard J. Echeita, Redondo Beach, and James E. Yokers, Castaic, both of Calif., assignors to Hughes Electronics Corporation, El Segundo, Calif.

Filed Jan. 21, 1997, Ser. No. 784,665

Int. Cl.[6] H04N *7/08*

U.S. Cl. 455—2 **27 Claims**



1. A method of determining the receipt of an advertisement, the steps comprising:

receiving from a remote location digital data comprising programming, an advertisement and advertisement reconciliation data;

said advertisement reconciliation data comprising the scheduled air time

of said advertisement, along with timing information related to the actual air time of said advertisement;

using said timing information to determine the actual air time of said advertisement: and

passing at least some of said advertisement reconciliation data to a processor.

5,826,166

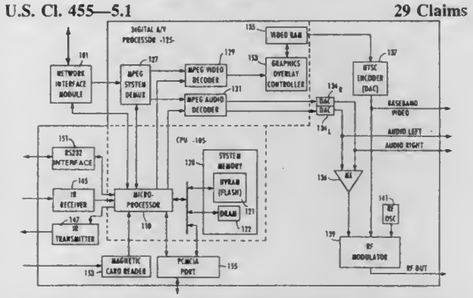
DIGITAL ENTERTAINMENT TERMINAL PROVIDING DYNAMIC EXECUTION IN VIDEO DIAL TONE NETWORKS

Kenneth R. Brooks, Middletown, and Ulric E. Arthur, Burtonsville, both of Md., assignors to Bell Atlantic Network Services, Inc., Arlington, Va.

Filed Jul. 6, 1995, Ser. No. 499,013

Int. Cl.[6] H04N *7/173*

U.S. Cl. 455—5.1 **29 Claims**



1. In a digital entertainment terminal adapted to receive broadband information from at least one information provider via a broadband data network, the digital entertainment terminal comprising a first memory for storing a first executable data enabling communication between the digital entertainment terminal and the broadband data network, a second memory for storing second executable data from the at least one information provider, and a user interface for receiving inputs from a user, a method for receiving the broadband data in response to user inputs, comprising the steps of:

executing a first portion of said second executable data from said at least one information provider and stored in said second memory in response to a first user input;

receiving first broadband information from said at least one information provider in response to said first portion executing step; and

suspending said first portion executing step and executing said first executable data in response to a second user input; said method further comprising the steps of receiving second broadband information during said executing of said first executable data, comprising the steps of:

accessing a connection block descriptor stored in said first memory corresponding to said second broadband information, said connection block descriptor comprising network interface access data and program decoding data;

supplying said network interface access data to a network interface coupled to said digital entertainment terminal for communication with the broadband data network;

receiving encoded data from said network interface in response to said supplying step; and

decoding said encoded data with said program decoding data to obtain said second broadband information.

5,826,167

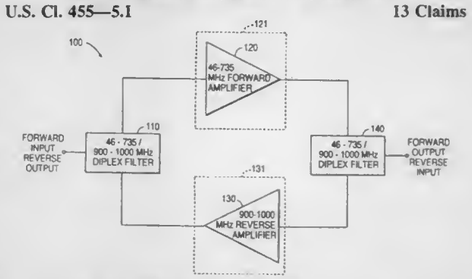
BI-DIRECTIONAL CABLE TELEVISION SYSTEM INCLUDING A UHF FILTER

Catherine W. Jelinek, Lawrenceville; Herman A. Kruse, Winder; Munther A. Al-Khalil, Norcross, and Leo J. Thompson, Lilburn, all of Ga., assignors to Scientific-Atlanta, Inc., Norcross, Ga.

Continuation of Ser. No. 304,171, Sep. 12, 1994, abandoned. This application Apr. 8, 1997, Ser. No. 838,333

Int. Cl.[6] H04H *1/00;* **H04N** *7/14;* **H01P** *5/12*

U.S. Cl. 455—5.1 **13 Claims**



1. A cable television system, comprising:

a headend for transmitting signals having a plurality of octaves of bandwidth to at least one subscriber terminal across a distribution plant, said transmitted signals being transmitted within a first predetermined frequency band wherein said transmitted signals comprise a spectrum of frequencies, each said frequency being less than 1 Ghz; and

a distribution plant including:

a distribution cable; and

a plurality of line amplifiers connected to said distribution plant, wherein each of said plurality of line amplifiers includes:

two diplex filters each having a high pass portion and a low pass portion;

a forward amplifier connected between said low pass portions of said diplex filters, wherein said forward amplifier further comprises a low pass filter having a microstrip inductor wherein said low pass filter passes said signals having a plurality of octaves of bandwidth and comprising a spectrum of frequencies with each frequency being less than 1 GHz; and

a reverse amplifier connected between said high pass portions of said diplex filters, wherein said reverse amplifier further comprises a high pass filter; said distribution plant coupled to said headend and said at least one subscriber terminal wherein said subscriber terminal receives said signals from said headend and further transmits signals to said headend over said distribution plant.

5,826,168

NEAR VIDEO-ON-DEMAND SIGNAL RECEIVER

Hajime Inoue, Chiba; Yukio Kubota, Kanagawa; Toshimichi Nagashima, Kanagawa; Akira Shimazu, Kanagawa, and Keiji Kanota, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 520,564, Aug. 28, 1995, Pat. No. 5,729,280. This application Apr. 11, 1997, Ser. No. 840,217

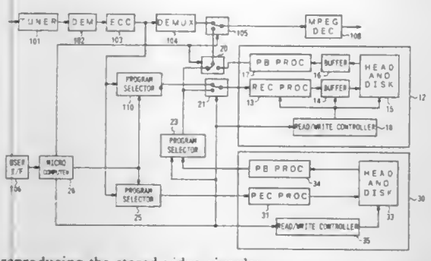
Claims priority, application Japan, Aug. 31, 1994, 6-230281; Oct. 14, 1994, 6-275936

Int. Cl.[6] H04N *4/167*

U.S. Cl. 455—6.2 **2 Claims**

1. A method of receiving a plurality of video channels simultaneously carrying a single video program comprised of video signals, each transmission of said video program on one of said channels being offset by a time interval with respect to the transmission of said video program on another one of said channels, said method comprising the steps of:

storing received video signals;



reproducing the stored video signals;

storing preview video signals representing previews of a plurality of video programs and storing a first segment of each of said plurality of video programs;

selecting one of said video channels and supplying the video signals carried on the one channel for storage;

providing commands from a user;

controlling the storage of said preview video signals so that, in response to a preview command received from said user, said preview video signals are reproduced and in response to a select command received from said user, the first segment of a selected video program which includes a segment end video signal is produced;

determining a next channel that is next to carry said segment end video signal;

controlling the supply of the video signals carried on said next channel for storage as a stored segment, and

controlling the reproduction of said stored segment after said segment end video signal is reproduced.

5,826,169

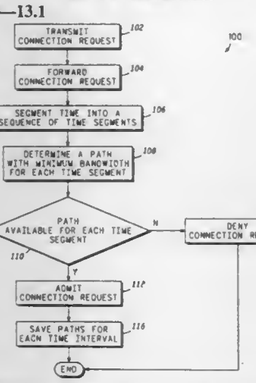
ADMISSION CONTROL SYSTEM AND METHOD IN SPACE-BASED MOBILE TELECOMMUNICATION SYSTEM

Kadathur S. Natarajan, Schaumburg, Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 25, 1995, Ser. No. 533,125

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—13.1 **13 Claims**



1. A call admission control method of admitting or denying a connection request in a network of nodes, comprising the steps of:

a) receiving the connection request, including a call holding time;

b) determining whether sufficient resources are available for setting up a connection to service the connection request in the network of nodes that is changing with time by segmenting the call holding time into a sequence of time segments and determining for each of the time segments whether there is a path through the network of nodes that has a required amount of bandwidth; and

c) accepting the connection request if there are sufficient resources in the network of nodes.

5,826,170

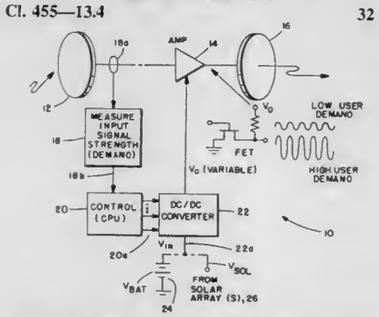
SATELLITE COMMUNICATIONS POWER MANAGEMENT SYSTEM

Edward Hirschfield, Cupertino; Robert A. Wiedeman, Los Altos, both of Calif., and Stanley Canter, Phoenix, Ariz., assignors to Space Systems/Loral, Inc., Palo Alto, Calif.

Continuation of Ser. No. 336,387, Nov. 8, 1994. This application Mar. 3, 1997, Ser. No. 796,725

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—13.4 **32 Claims**



1. A method for operating a communications signal transmitter, comprising the steps of:

receiving a communications signal;

sensing a signal strength of the received communications signal;

adjusting an output of a power supply that supplies operating power to a communications signal transmitter amplifier in accordance with the sensed signal strength so as to increase the output power of the power supply when the sensed signal strength increases and to decrease the output power of the power supply when the sensed signal strength decreases to thereby change the output power capacity of the communications signal transmitter amplifier; and

amplifying the received communications signal with the communications signal transmitter amplifier.

5,826,171

MOBILE-RADIO SYSTEM WITH A RECONNAISSANCE DEVICE CONTAINED IN A BASE STATION

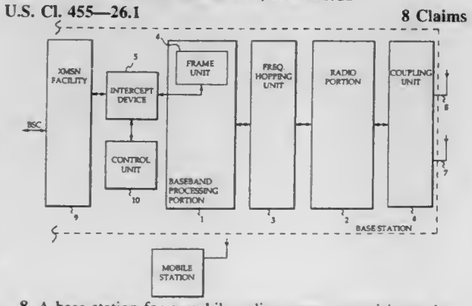
Erich Franke, Königsbach-Stein, Germany, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Feb. 7, 1996, Ser. No. 598,204

Claims priority, application Germany, Feb. 27, 1995, 195 06 807.6

Int. Cl.[6] H04B *1/06;* **H04M** *3/22*

U.S. Cl. 455—26.1 **8 Claims**



8. A base station for a mobile-radio system comprising at least one mobile station and at least one base station which has a baseband-processing portion (**1**) and a radio portion (**2**), characterized in that a control unit (**10**) is provided for connection to the reconnaissance device (**5**) for controlling the intercept device (**5**) for controlling said intercepting and for controlling recording, jamming, interrupting, or blocking transmissions on the traffic channel.

5,826,172

MOBILE COMMUNICATIONS SYSTEM FOR REPEATEDLY TRANSMITTING PAGING SIGNALS

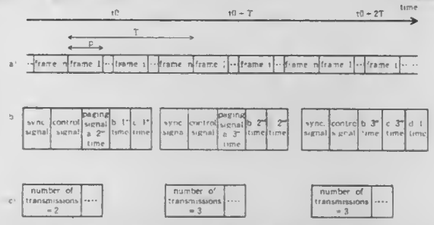
Shogo Ito, Yokohama; Yasushi Yamao, Yokosuka, and Shinzo Ohkubo, Tokorozawa, all of Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan

Filed Oct. 2, 1995, Ser. No. 537,616

Claims priority, application Japan, Feb. 3, 1994, 6-011901; WIPO, Feb. 2, 1995, PCT/JP95/00134

Int. Cl.[6] H04Q *9/14*

U.S. Cl. 455—38.3 **4 Claims**



1. The mobile communications system comprising:

a transmitting means for transmitting paging signals a plurality of times through the air by radio waves, said paging signals serving to selectively page radio receivers;

a means for variably setting the number of times that said paging signals are transmitted from said transmitting means; and

wherein said transmitting means includes:

a means for transmitting information relating to the number of times that said paging signals are transmitted;

a means for transmitting in units of frames, said frames comprising one or more paging signals to which a control signal has been added;

a means for inserting information relating to the number of transmissions in said control signal;

a means for forming n subframes within a frame when the number of transmissions is n;

wherein said means for forming includes:

a means for inserting a new paging signal in a subframe positioned at one end of said frame, and for inserting a paging signal that is to be transmitted for the second or subsequent time in a subframe arranged at a position corresponding to this number of times; and

a means which changes the number and length of subframes within a frame when said setting means changes the number of transmissions n.

5,826,173

EFFICIENT PAGING SYSTEM WITH SLEEP MODE DURATION DETERMINED BY THE GUARANTEED NUMBER OF REPEATS

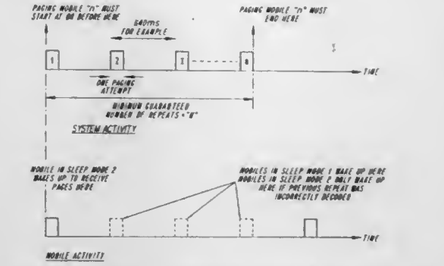
Paul W. Dent, Stehags, Sweden, assignor to Ericsson Inc., Research Triangle Park, N.C.

Division of Ser. No. 305,652, Sep. 14, 1994. This application Nov. 15, 1995, Ser. No. 559,458

Int. Cl.[6] H04M *11/00;* **G08B** *5/22*

U.S. Cl. 455—38.3 **28 Claims**

1. A method for saving battery power in a portable telephone for use in a radio communication system having battery-saving sleep modes, comprising the steps of:



repeating transmissions of calling messages from a base station to the portable telephone a guaranteed number of times;

operating the portable telephone in a first low-power sleep mode during periods of normal expected use;

waking the portable telephone in said first sleep mode at regular intervals to receive signals from the communication system;

operating the portable telephone in a second lower-power sleep mode during periods of low expected use; and

waking the portable telephone in said second sleep mode less frequently than in said first sleep mode and in relation to the guaranteed number of times transmissions of calling messages are repeated in said step of repeating.

5,826,174

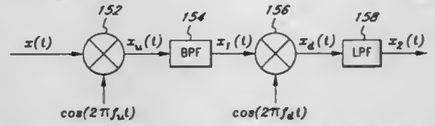
METHOD AND APPARATUS FOR IMPROVING DATA TRANSMISSION OVER A WIRELESS SYSTEM BY OPTICAL SPECTRUM POSITIONING

Hoai Xuan Vu, Stanton, Calif., assignor to Simple Technology, Inc., Santa Ana, Calif.

Filed Jan. 23, 1996, Ser. No. 589,884

Int. Cl.[6] H04N *1/00;* **H04B** *1/26*

U.S. Cl. 455—42 **3 Claims**



1. In a wireless FM communication system having at least one communication channel having an RF communication frequency band, a method of providing a modem carrier f_0 modulated by data to provide a modem signal having a predetermined frequency band, the modem carrier f_0 being selected to place the low frequency of the frequency band of the modem signal at the low band-edge of the communication channel, comprising the steps of;

(a) providing a modem carrier f_c modulated by data to provide a modem signal the modem signal having a predetermined frequency band centered around the carrier frequency f_c; and,

(b) shifting the modem signal by a frequency f_u to provide sum and difference frequency bands;

(c) removing one of the sum and difference frequency bands:

(d) shifting the remaining frequency bands to again provide sum and difference frequency bands, one of which is centered around f_0 and

(e) removing the frequency band not centered around f_0 to provide the modem signal having the low frequency at the low band-edge of the communication channel.

5,826,175

ACTIVE TAG HAVING ONE DIODE FOR MODULATION AND DEMODULATION

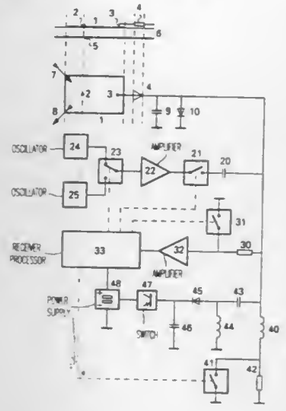
Johan Richard Schmidt, Leiden; Eric Johannes De Kok, Nootdrop, and Jacob Cornelis Stolk, Berkel & Rodenrijs, all of Netherlands, assignors to Koninklijke PTT Nederland N.V., Groningen, Netherlands

Filed Dec. 5, 1996, Ser. No. 760,803

Claims priority, application Netherlands, Dec. 7, 1995, 1001840

Int. Cl.[6] H04B *1/40*

U.S. Cl. 455—77 8 Claims



1. A tag system comprising:

an antenna configured to receive a carrier-wave modulated with data, said antenna including a first antenna terminal and a second antenna terminal, said first antenna terminal being configured to have a higher ohmic impedance value than the second antenna terminal;

a diode having a first diode terminal coupled to the first antenna terminal to receive the carrier wave modulated with data and a second diode terminal providing a demodulated first data output;

a source of earth potential;

a capacitive element coupling said second diode terminal to the source of earth potential;

an inductive element coupling said second antenna terminal to the source of earth potential;

a tag circuit further coupled to said second diode terminal, said tag circuit comprising,

an activating portion coupled to said second diode terminal and configured to receive said demodulated first data output and to selectively produce an activation signal based upon a characteristic of said demodulated first data output to activate control circuitry,

a generator portion selectively coupled to the second diode terminal in response to activation of the control circuitry, said generator portion having an oscillator circuit configured to generate a tag signal of varying frequency or phase in response to the activation of the control circuitry, said tag signal having a first amplitude level and a second amplitude level; and

wherein said first amplitude level of the tag signal renders the diode nonconducting and the second amplitude level of the tag signal renders the diode conducting when the tag signal is selectively applied to the second diode terminal by the generator portion.

5,826,176

SLIDABLE CARD RECEPTOR FOR USE IN A SATELLITE BROADCASTING TUNER

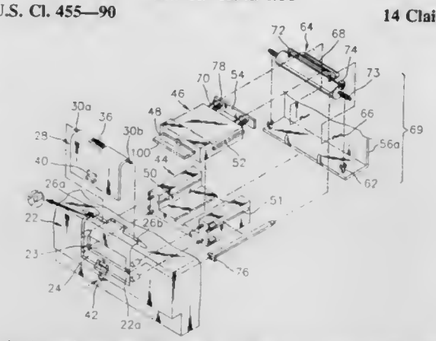
Yong-Hwan Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Oct. 21, 1996, Ser. No. 731,810

Claims priority, application Rep. of Korea, Oct. 19, 1995, 1995-36213

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—90 14 Claims



1. A card receptor for use in a satellite broadcasting tuner comprising:

a housing having a case slot therethrough;

a door rotatable mounted to the housing, for opening and closing the case slot;

a card case for receiving and keeping a card therein, the card case slidable between an inside position and an outside position of the housing through the case slot;

a case guider fixedly mounted on an inside of the housing, corresponding to the case slot, in order to guide the sliding movement of the card case; and

a case locking means for locking the card case with respect to the housing and for unlocking the card case from the housing, the case locking means including an elastic hook protruding from a rear portion of the card case, a cylindrical body rotatably mounted behind the card case, biased by a tension spring in a first rotating direction and having a hook-seat radially protruding from an external surface of the cylindrical body and a means for limiting a rotating movement of the cylindrical body in the first rotating direction to make the hook-seat pose in an engagable orientation with the elastic hook, when the card case slides into the inside position, a stopping wall fixedly mounted behind the card case, a spring mounted between the card case and the stopping wall, for biasing the card case toward the outside position, and a disengaging means for disengaging the elastic hook from the hook-seat by rotating the cylindrical body in a second rotating direction.

5,826,177

RADIO TRANSMITTER

Masahiro Uno, Saitama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 21, 1996, Ser. No. 670,747

Claims priority, application Japan, Jun. 27, 1995, 7-160983

Int. Cl.[6] H03G *3/30;3/20*

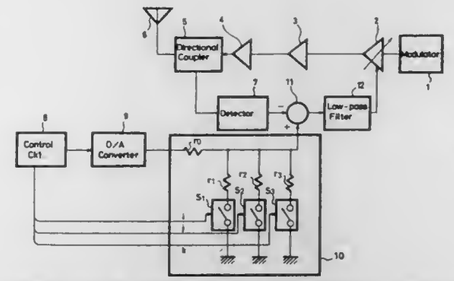
U.S. Cl. 455—126 8 Claims

1. A transmitter apparatus for transmitting radio waves comprising:

a variable amplifier for amplifying a transmission signal with a variable amplitude gain and producing an amplified transmission signal;

a directional coupler for dividing a signal fed thereto in a plurality of directions and producing first and second outputs;

detecting means for detecting a signal power in said first output from said directional coupler and providing an output signal;



reference signal generating means for generating a reference signal;

subtracting means for subtracting said output signal of said detecting means from said reference signal of said reference signal generating means and an output signal of said subtracting means being supplied to said variable amplifier as a gain control signal therefor, wherein said reference signal generating means comprises control means for producing a basic reference signal and for producing a plurality of control signals, setting means for setting said basic reference signal as stepped voltage values in response to said plurality of control signals from said control means, and decreasing voltage means for decreasing a voltage of said basic reference signal produced by said control means, whereby said reference signal fed to said subtracting means is formed of said stepped voltage values and the decreased voltage basic reference signal.

5,826,178

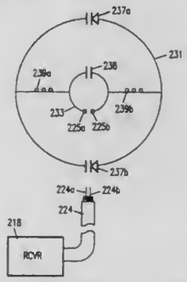
LOOP ANTENNA WITH REDUCED ELECTRICAL FIELD SENSITIVITY

Jeffrey R. Owen, Portland, Oreg., assignor to Seiko Communications Systems, Inc., Beaverton, Oreg.

Filed Jan. 29, 1996, Ser. No. 592,908

Int. Cl.[6] H04B *1/18*

U.S. Cl. 455—193.1 2 Claims



1. A radio signal receiving device for receiving radio signals of a particular frequency comprising:

a planar antenna loop structure;

a magnetic pickup device coplanar to said antenna loop structure, located within said antenna loop structure, and offset from the center of said loop structure, said magnetic pickup being electrically isolated at said particular frequency; and

a radio signal receiving device coupled to said magnetic pickup device;

wherein the location of said magnetic pickup device relative to said antenna loop is selected to minimize capacitive coupling between said magnetic pickup device and said antenna loop.

5,826,179

MULTI-ANTENNA SCANNING DIVERSITY SYSTEM

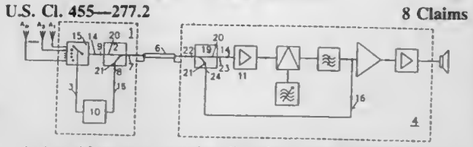
Heinz Lindenmeier, Planegg; Jochen Hopf, Haar, and Leopold Reiter, Gilching, all of Germany, assignors to FUBA Automotive GmbH, Bad Salzdetfurth, Germany

Filed Nov. 20, 1995, Ser. No. 561,135

Claims priority, application Germany, Nov. 23, 1994, 44 41 761

Int. Cl.[6] H04B *1/06;1/08*

U.S. Cl. 455—277.2 8 Claims



1. A multi-antenna scanning diversity system, comprising

a diversity circuit (**1**) arranged adjacent to a plurality of antenna terminals at which respective antenna signals appear, said diversity circuit comprising a circuit input at which said antenna signals are input, means (**15**) for selecting one of said antenna signals as a RF received signal according to a switch signal provided to said means for selecting, processor means (**10**) for analyzing an IF signal for interference and for generating said switch signal when a predetermined critical level of said interference is detected and a circuit output at which said RF received signal is available, said RF received signal comprising a modulated RF carrier and said IF signal comprising a modulated IF carrier;

a radio receiver (**4**) arranged remotely from said diversity circuit (**1**) and having an input at which said RF received signal selected by said diversity circuit is received in the radio receiver and means for generating said IF signal and for supplying said IF signal to said diversity circuit to be scanned for said interference by said processor means (**10**) so that, when said predetermined critical level of said interference is detected due to unfavorable reception conditions, said means (**15**) for selecting selects another of said antenna signals as said RF received signal in response to said switch signal from said processor means;

a single common bidirectional transmission line (**6**) through which said RF received signal comprising said modulated RF carrier is supplied to said radio receiver (**4**) and through which said IF signal comprising said modulated IF carrier is supplied from said radio receiver (**4**) to said diversity circuit (**1**); and

selectivity means for guaranteeing that bidirectional transfer of said signals over the single common bidirectional transmission line (**6**) does not degrade operations of the multi-antenna scanning diversity system.

5,826,180

NEAR HOMODYNE RADIO FREQUENCY RECEIVER

Mordechay Golan, Rishon LeZion, Israel, assignor to Nice Systems Ltd., Tel-Aviv, Israel

Filed Aug. 16, 1994, Ser. No. 291,251

Claims priority, application Israel, Aug. 8, 1994, 110592

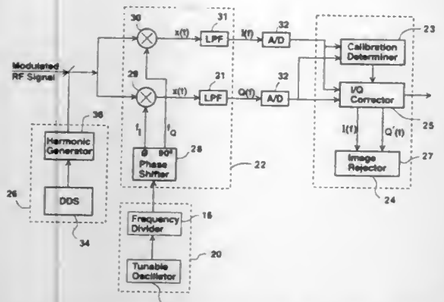
Int. Cl.[6] H04B *1/12*

U.S. Cl. 455—302 2 Claims

1. A near homodyne radio frequency (RF) receiver for receiving a modulated RF signal having a center frequency and able to be calibrated utilizing a calibration signal, said receiver comprising:

an RF switch having a first and second inputs and an output, said first input coupled to said modulated RF signal, said second input coupled to said calibration signal, said IRF switch able to switch between said first input and said second input being coupled to said output, said RF switch coupling said calibration signal to said output during a calibration period;

a tuning unit for generating a local oscillator signal relatively close to but not exactly equal to said center frequency of said modulated RF signal;



an inphase/guadrature (I/Q) mixer having an I input, I output, a Q input and Q output, said I/Q mixer mixing said output of said RF switch shifted by 90 degrees with said local oscillator signal and low pass filtering the resultant signal to generate said I output signal, said I/Q mixer mixing said output of said RF switch with said local oscillator signal and low pass filtering the resultant signal to generate said Q output signal;

wherein said modulated RF signal is mixed by said local oscillator signal such that the center frequency of said I output and said Q output signals are relatively close to but not equal to zero Hertz;

a direct digital synthesizer for generating a periodic signal;

a harmonic generator coupled to said direct digital synthesizer for processing the output of said direct digital synthesizer and generating said calibration signal;

an image rejection processor coupled to said I output and said Q output, said image rejection processor correcting said I output and said Q output signals and performing image rejection on said I output and Q output signals.

5,826,181

RADIO FREQUENCY NOISE REDUCTION ARRANGEMENT

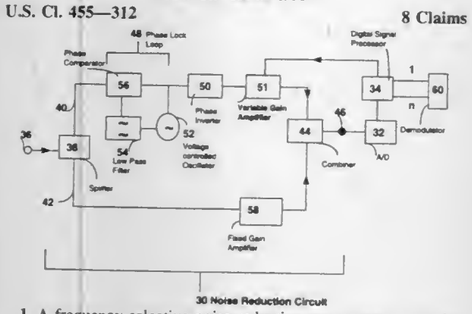
Christopher John Reed, Harlow, Great Britain, assignor to Northern Telecom Limited, Montreal, Canada

Filed Oct. 10, 1996, Ser. No. 731,035

Claims priority, application United Kingdom, May 18, 1996, 9610498

Int. Cl.[6] H04B *1/10*

U.S. Cl. 455—312 **8 Claims**



1. A frequency selective noise reduction arrangement operating at radio frequency comprising

an input, a divider, a combiner, an output and first and second paths between the divider and combiner;

wherein the first path possesses a phase lock loop circuit, an amplifier and a phase inverter and the second path is connected to the combiner;

wherein the divider is operable to divide an input signal into the first and second paths and the first path is operable to select, amplify and phase invert a noise signal present in the input signal;

wherein the combiner is operable to combine the signal of the first path with the signal of the second path; and

wherein the phase inverted and amplified noise signal of the first path can be combined with the noise signal in the second path by the combiner whereby the noise is reduced from the output signal at the output of the combiner.

5,826,182

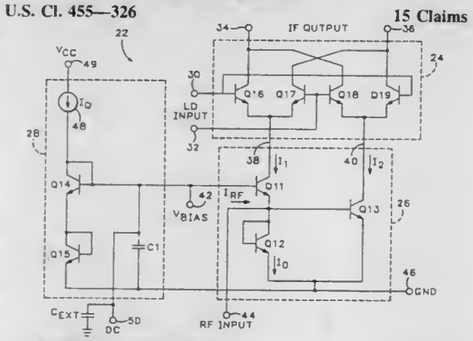
DOUBLE BALANCED RF MIXER WITH PREDETERMINED INPUT IMPEDANCE

Barrie Gilbert, Portland, Oreg., assignor to Analog Devices, Inc., Norwood, Mass.

Filed Jan. 25, 1995, Ser. No. 377,752

Int. Cl.[6] H04B *01/28*

U.S. Cl. 455—326 **15 Claims**



1. An RF mixer comprising:

a mixer core having an LO interface for receiving a local oscillator signal, an IF output for providing an IF output signal, a first input, and a second input; and

an RF input section having:

a bias input for receiving a bias signal;

an RF input for receiving an RF input signal;

a first transistor having a first terminal coupled to the first input of the mixer core to supply a first current to the mixer core, the first current being responsive to the RF input signal, a second terminal coupled to the bias input, and a third terminal coupled to the RF input;

a current mirror coupled to the third terminal of the first transistor and to the second input of the mixer core to supply a second current to the mixer core, the second current being the complement of the first current for small RF input signal variations; and

a biasing circuit having a bias output coupled to the bias input of the RF input section for supplying the bias signal to the RF input section to establish a quiescent level of the first and second currents;

the current mirror including:

a diode having an anode coupled to the third terminal of the first transistor and a cathode coupled to a common terminal for receiving a common voltage; and

a mirror transistor having a first terminal coupled to the second input of the mixer core, a second terminal coupled to the anode of the diode, and a third terminal coupled to the common terminal;

wherein the diode includes a diode-connected transistor having a first terminal, a second terminal, and a third terminal, the first terminal being coupled to the second terminal to form the anode of the diode and the third terminal forming the cathode of the diode; and

wherein the RF input section further includes a resistive element interposed between the first terminal and the second terminal of the diode-connected transistor.

5,826,183

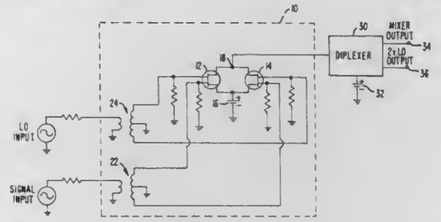
CIRCUIT FOR SIMULTANEOUS FREQUENCY DOUBLER AND MIXER

Thomas R. Apel, Plano, Tex., assignor to Samsung Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Mar. 5, 1997, Ser. No. 811,625

Int. Cl.[6] H04B *1/26*

U.S. Cl. 455—326 **3 Claims**



1. A balanced mixer comprising:

a first phase-inverter input unit, coupled to receive an input signal at an input signal frequency, for providing an in-phase input component and an out-of-phase input component differing in phase by 180°;

a second phase-inverter input unit, coupled to receive an LO signal at an LO frequency, for providing an in-phase LO component and an out-of-phase LO component differing in phase by 180°;

a push-push mixing stage comprising:

a first mixing element, having first and second terminals and first and second signal ports, with said first signal port coupled to the first phase-inverter input unit to receive said input in-phase component, with said second signal port coupled to the second phase inverter input unit to receive said LO in-phase component, said first mixing element for mixing frequency components of the input and LO in-phase components and for generating frequency components at double the LO frequency of the LO in-phase component;

a second mixing element, having first and second terminals and first and second signal ports, with said first signal port coupled to the first phase-inverter input unit to receive said input out-of-phase component, with said second signal port coupled to the second phase inverter input unit to receive said LO out-of-phase component, said second mixing element for mixing frequency components of the input and LO out-of-phase components and for generating frequency components at double the LO frequency of the LO out-of-phase component;

with the first terminals of said first and second mixing elements coupled to a reference voltage and the second terminals of said first and second mixing elements coupled to a mixer output port; and

a multiplexer, coupled to the mixer output port, having a first output for providing a converted signal having frequency components at the sum of the input signal and LO frequencies and a second output for providing a second output signal having frequency components at double the LO frequency.

5,826,184

Patent Not Issued For This Number

5,826,185

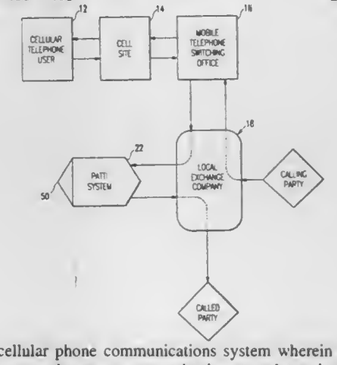
CELLULAR PHONE SYSTEM WHEREIN THE AIR TIME USE IS PREDETERMINED

Andrew Wise, and Ted G. Rich, both of Glendale, Ariz., assignors to Banana Cellular, Inc., Phoenix, Ariz.

Continuation of Ser. No. 340,738, Nov. 16, 1994, abandoned. This application Aug. 19, 1996, Ser. No. 699,168

Int. Cl.[6] H04Q *7/20*

U.S. Cl. 455—405 **28 Claims**



1. A cellular phone communications system wherein a cellular phone user purchases an account having a predetermined amount of air time units prior to initiating any cellular phone calls, the system comprising:

a. a cellular phone for calling a telephone number for causing a first signal to be generated;

b. a cellular switching device, having a cellular port and a telephone exchange port, the cellular switching device being responsive to receiving the first signal, for generating a second signal identifying the cellular phone being utilized and consisting essentially of at least one dual-tone-multi-frequency (DTMF) or multi-frequency (MF) tones, the cellular phone being coupled to the cellular port and being remotely located from the cellular switching device; and

c. a tracking interface, responsive to receiving the second signal and coupled by a voice transmission line to the telephone exchange port of the cellular switching device for:

(1) verifying whether the cellular phone identified by the second signal has any air time units available in the account, a return signal being sent to the cellular phone user indicating to the cellular phone user that the number to be called should be entered,

(2) checking the telephone number called to see if it is valid, the call being connected to a telephone line if valid,

(3) monitoring the call in order to deduct units of air time during the call, the call being terminated when air time units are no longer available.

5,826,186

METHOD FOR TERMINATING A WIRELESS COMMUNICATION OF A MOBILE COMMUNICATION UNIT

John Mitchell, Crystal Lake, and Matthew A. Houghton, Lake Zurich, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

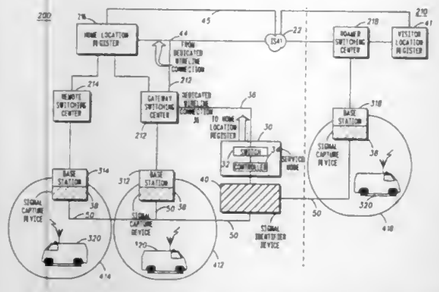
Filed Oct. 25, 1996, Ser. No. 736,870

Int. Cl.[6] H04Q *7/38*

U.S. Cl. 455—410 **4 Claims**

1. In a communication system comprising a first switching center, a second switching center responsive to the first switching center, a second base station responsive to the second switching center and a mobile communication unit responsive to the second base station, a method for terminating a wireless communication of the mobile communication unit, comprising the steps of:

providing a system for identifying a fraudulent mobile communication unit, the system comprising



a signal capture device in communication with the second base station,

an intelligent peripheral responsive to the signal capture device,

a service node responsive to the intelligent peripheral, and

a dedicated wireline connection coupling the service node and the first switching center;

receiving at the base station a first message from the mobile communication unit;

determining a radio frequency signal characteristic of the mobile communication unit by the signal capture device;

receiving the radio frequency signal characteristic by the intelligent peripheral;

determining whether the mobile communication unit is fraudulent;

based on the determination, receiving a second message at the first switching center from the dedicated wireline connection, the second message identifying the mobile communication unit as fraudulent;

in response to the second message, receiving a third message at the second switching center from the first switching center; and

in response to the third message, terminating the communication of the mobile unit by the base station.

5,826,187

INTEGRATED CORDLESS TELEPHONE WITH TELEPHONE ANSWERING DEVICE AND METHOD OF REPLAYING MESSAGES THROUGH A HANDSET THEREOF

Kenneth R. Core, Staaton; Alex Nirshberg, Torrance; Stephen B. Knuth, Mission Viejo, and Mark J. Karnowski, Huntington Beach, all of Calif., assignors to Casio PhoneMate, Inc., Torrance, Calif.

Filed Jan. 2, 1996, Ser. No. 582,163

Int. Cl.[6] H04Q *7/00;7/18*

U.S. Cl. 455—412 **52 Claims**

1. An integrated cordless telephone and telephone answering device comprising:

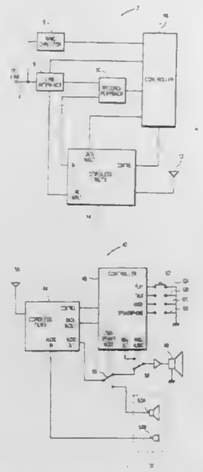
ring detector means for detecting ringing signals on a telephone line of an incoming telephone call from a central telephone office;

record and playback means for recording a message and playing back a recorded message;

line interface means for coupling said record and playback means to said telephone line;

a handset having an earphone, loudspeaker and a microphone; and

controller means for controlling said ring detector means, said record and playback means and said line interface means such that a recorded message recorded on said record and playback



means is selectively played back and broadcast over one of said loudspeaker and said earphone.

5,826,188

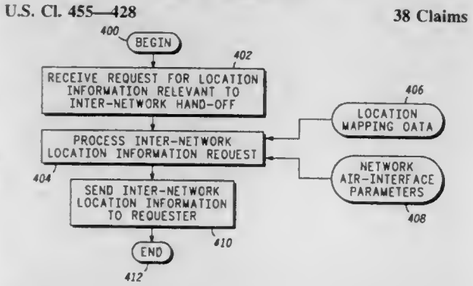
METHOD AND APPARATUS FOR HANDING OFF CALLS BETWEEN DIFFERING RADIO TELECOMMUNICATION NETWORKS

Daniel Richard Tayloe, Phoenix; Johanna Alexandra Wild, Scottsdale; James William Bishop, Jr., Chandler, all of Ariz., and William Neil Robinson, Farnham, United Kingdom, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1995, Ser. No. 568,928

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—428 **38 Claims**



14. A method for handing-off a subscriber unit (SU) from a first network to a second network, the method comprising the steps of:

a) sending, by the first network, a hand-off request to the second network, wherein the hand-off request includes first location information describing a location of the SU converted into a locational standard used by the second network to describe locations of subscriber units;

b) receiving from the second network, a decision whether the second network will allow the SU to hand-off to the second network, wherein the decision was based on the first location information; and

c) when the decision indicates that the second network will allow the SU to hand-off to the second network, handing-off the SU to the second network.

5,826,189

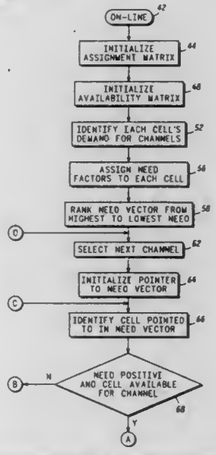
CELLULAR COMMUNICATION SYSTEM WITH EFFICIENT CHANNEL ASSIGNMENTS AND METHOD THEREFOR

Mukund Narain-dhami Thapa, Palo Alto, Calif.; Kenneth Maynard Peterson; Yih Guang Jan, both of Phoenix, Ariz., and Amir David Foroudi, Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 258,877, Jun. 13, 1994, abandoned. This application Sep. 17, 1996, Ser. No. 715,113

Int. Cl.[6] H04B *7/185*

U.S. Cl. 455—428 **25 Claims**



1. A method of operating a cellular communication system which uses communication channels, said method comprising the steps of:

a) ranking cells of said cellular system in accordance with each cell's need for channel assignments thereby forming a ranked list of cells;

b) selecting one of said channels;

c) assigning said selected channel to a plurality of cells and adjusting said ranked list of cells in response to said channel assignments of each selected channel; and

d) repeating said steps b) and c) for other ones of said channels.

5,826,190

EMERGENCY HANDOFF METHOD OF REDIRECTING CALLS IN A SATELLITE COMMUNICATION SYSTEM

Michael William Krutz, Chandler; Daniel Richard Tayloe, Poenix, both of Ariz., and Bradley B. Bakke, Elgin, Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 368,450, Jan. 4, 1994. This application Feb. 18, 1997, Ser. No. 801,322

Int. Cl.[6] H04Q *7/38;* **H04B** *7/185*

U.S. Cl. 455—428 **5 Claims**

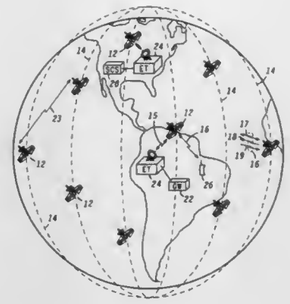
1. A method of handing-off a call from a current channel to one of a plurality of available channels in a satellite cellular communication system, the call being between a first subscriber unit (SU) and a second SU, the current channel being projected onto earth by a first satellite, the available channels being projected onto earth by a second satellite, a third satellite servicing the second SU, the method comprising the steps of:

a) the first SU determining that an emergency handoff is needed, wherein synchronization is not lost;

b) the first SU acquiring an available channel from the available channels and providing a logical channel number to the second satellite;

c) the second satellite creating a new logical channel number;

d) the second satellite receiving a pathend from the first satellite;



e) the second satellite transmitting the new logical channel number to the pathend, the pathend being the third satellite;

f) the third satellite rerouting the call from the first satellite to the second satellite; and

g) the third satellite rerouting the call from the first satellite to the second satellite so that the second satellite can redirect the call to the available channel.

5,826,191

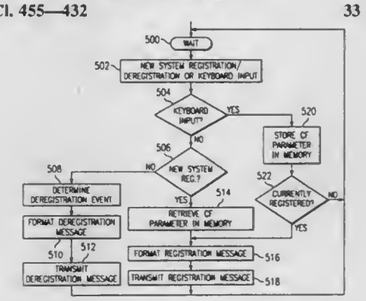
DUAL MODE NETWORK CALL FORWARDING ACTIVATION AND DEACTIVATION

Arjun Krishnan, Richardson, Tex., assignor to Nokia Mobile Phones Limited, Espoo, Finland

Filed Jul. 3, 1996, Ser. No. 675,739

Int. Cl.[6] H04Q *7/24*

U.S. Cl. 455—432 **33 Claims**



1. In a telecommunications network having a first and a second system, and a subscriber station capable of receiving calls at a first number, when operating in said first system, and at a second number, when operating in said second system, a method for controlling call forwarding, said method comprising the steps of:

receiving a registration message in the first system, said registration message transmitted from the subscriber station and including a field, said field settable to at least a first or a second state;

determining, responsive to receiving said registration message, whether said field is set to said first state; and

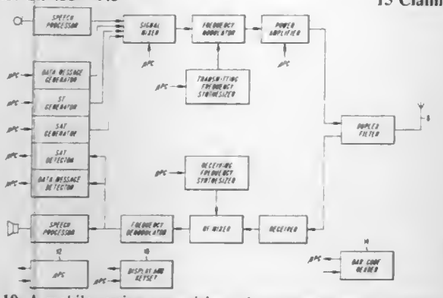
if it is so determined, activating, in the network, call forwarding from the second number to the first number;

else, if it is determined that said first field is set to said second state, registering the subscriber station in the first system without activating said call forwarding.

5,826,192

Patent Not Issued For This Number

5,826,193
METHOD AND APPARATUS OF FACILITATING INTERCHANGING THE USE OF A MOBILE STATION AND A PERMANENTLY WIRED TELEPHONE SET
Walter Ghisler, Båtmansvägen; Per Viktor Israelsson, Ryttarvägen, and Georg William Robin Chambert, Hävelvägen, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Aug. 28, 1992, Ser. No. 936,273
Claims priority, application Sweden, Aug. 30, 1991, 9102514
Int. Cl.[6] H04Q 7/38
U.S. Cl. 455—445 15 Claims



10. A mobile station comprising a keyset and means connected thereto for controlling and performing desired functions, said keyset in addition to dialing also permitting ordering interchanging to a permanently wired telephone set in a telephone network system, and a bar code reader for facilitating interchanging the mobile station and a permanently wired telephone set in the network, a number of the permanently wired telephone set being provided in the proximity thereof in the form of a bar code,

said bar code reader being connected to the mobile station for scanning of such bar coded number for ordering of interchanging the mobile station and the telephone set without dialing the number by the keyset,

said bar code reader further comprising a function key on said keyset designated and connected for initiating said interchanging.

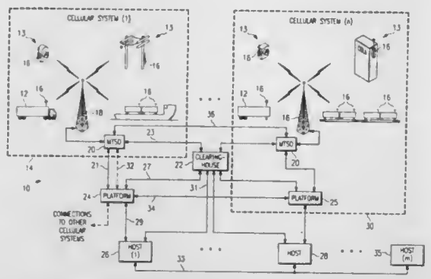
5,826,194

Patent Not Issued For This Number

5,826,195
DATA MESSAGING IN A COMMUNICATIONS NETWORK
Kenneth R. Westerlage, Forth Worth, and William C. Kennedy, III, Dallas, both of Tex., assignors to HighwayMaster Communications, Inc., Dallas, Tex.
Continuation-in-part of Ser. No. 465,525, Jun. 5, 1995, Pat. No. 5,544,225, which is a continuation of Ser. No. 175,256, Dec. 28, 1993, Pat. No. 5,539,810, which is a continuation-in-part of Ser. No. 95,166, Jul. 20, 1993, abandoned, which is a continuation-in-part of Ser. No. 826,521, Jan. 27, 1992, abandoned. This application Aug. 5, 1996, Ser. No. 700,317
Int. Cl.[6] H04Q 7/22
U.S. Cl. 455—456 27 Claims

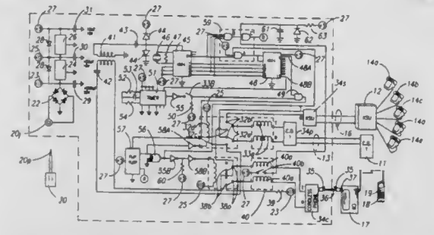
1. A system for communicating information about an item using a cellular telephone network, comprising:

a messaging unit coupled to the item, the messaging unit having a cellular transceiver coupled to the cellular telephone network, the messaging unit operable to alter an identifier of the cellular transceiver to reflect the information about the item and to transmit the altered identifier of the cellular transceiver; and



a remote site coupled to the cellular telephone network and operable to recognize a received altered identifier transmitted by the messaging unit to obtain the information about the item.

5,826,196
MULTI-LINE REMOTELY-ACCESSIBLE CONTROLLER FOR CORDLESS TELEPHONES
Gordon A. Cuthrell, 1340 E. 48th Pl., Apt. 404, Tulsa, Okla. 74105
Filed Nov. 2, 1995, Ser. No. 556,750
Int. Cl.[6] H04Q 7/26
U.S. Cl. 455—462 13 Claims



1. Apparatus for remotely controlled access from a handset of a cordless phone to a plurality of telephone lines including those serving a Key Service Unit (KSU) or Private Branch Exchange (PBX), by radio signals created by the handset of a cordless telephone comprising:

a controller adapted to accommodate a plurality of telephone lines between a demarcation terminal and said Key Service Unit (KSU) or said Private Branch Exchange (PBX), wherein said controller is connected in series or parallel to the telephone lines between said demarcation terminal and said telephones connected to said KSU or said PBX;

a cordless phone base unit connected to said controller;

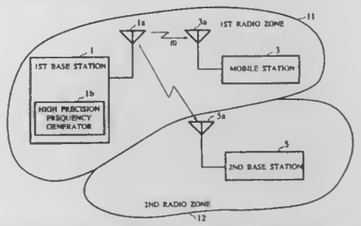
a power supply connected to said controller;

wherein said controller is further adapted to rectify and regulate the voltage of said power supply to a plurality of D.C. voltages required to power the operation of said apparatus;

means for receiving DTMF signals from a radio-frequency carrier emitted by said cordless handset to activate and deactivate the function of said controller, wherein the Dual-Tone, Multi-Frequency (DTMF) signals transmitted upon depression of numeric or symbolic buttons on a dialpad of said cordless handset perform control, switching, and line selection functions at said controller, and further wherein line selection is effected by the depression of the star or asterisk "*" button and the number on the dialpad corresponding to the telephone line number which contains an incoming call; and

wherein the apparatus allows the cordless handset to receive or originate calls on any telephone line connected to said controller, and wherein a plurality of cordless handsets may be connected to said apparatus.

5,826,197
MOBILE COMMUNICATION SYSTEM USING BASE STATION FREQUENCY CORRECTION SCHEME
Kiyohito Nagata, Yokohamashi; Teruya Fujii, Yokosukashi; Katsunori Hamada; Kazuhiko Kakinuma, both of Yokohamashi; Masaaki Yoshimi, Fujisawashi, and Tatsuaki Wakabayashi, Yokosukashi, all of Japan, assignors to NTT Mobile Communications Network, Inc., Tokyo, Japan
PCT No. PCT/JP95/01353, § 371 Date Mar. 5, 1996, § 102(e) Date Mar. 5, 1996, PCT Pub. No. WO96/01545, PCT Pub. Date Jan. 18, 1996
PCT Filed Jul. 6, 1995, Ser. No. 605,065
Claims priority, application Japan, Jul. 6, 1994, 6/154975; Jul. 6, 1994, 6/155054; Dec. 28, 1994, 6/328272
Int. Cl.[6] H04B 7/00
U.S. Cl. 455—524 41 Claims



1. A mobile communication system formed by a plurality of base stations with not always uniform transmission and reception frequency precision for forming a plurality of radio zones, and a mobile station for making communications via said plurality of base stations while moving within said plurality of radio zones, the mobile communication system characterized by having:

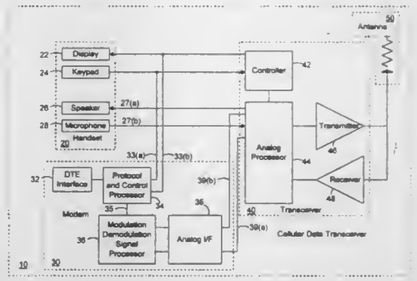
a high precision frequency base station device having a high precision frequency generator;

a mobile station device for a mobile station which receives the transmission waves from said high precision frequency base station device using the transmission frequency in a prescribed frequency precision, controls a reference frequency to be a reference for transmission and reception frequencies of own station in accordance with the frequency precision of the received transmission waves, and carries out transmission and reception with respect to a base station using transmission and reception frequencies according to the controlled reference frequency; and

a low precision frequency base station device having a low precision frequency generator other than said high precision frequency base station device, which receives the transmission waves from the mobile station device carrying out transmission and reception using the transmission and reception frequencies according to the controlled reference frequency, controls a reference frequency to be a reference for transmission and reception frequencies of own station in accordance with the frequency precision of the received transmission waves, and carries out transmission and reception with respect to the mobile station using transmission and reception frequencies according to the controlled reference frequency.

5,826,198
TRANSMISSION OF DATA OVER A RADIO FREQUENCY CHANNEL
Lewis A. Bergins, Millis; Michael Onorato, Acton; Jerry Falk, Medway; Richard Carey, Ashland; Dennis Kloc, Jamaica Plain, and Roy Greene, Franklin, all of Mass., assignors to Microcom Systems, Inc., Norwood, Mass.
Continuation of Ser. No. 392,298, Feb. 22, 1995, abandoned, which is a continuation of Ser. No. 86,766, Jul. 2, 1993, abandoned, which is a continuation of Ser. No. 819,287, Jan. 13, 1992, abandoned. This application Jul. 7, 1997, Ser. No. 888,444
Int. Cl.[6] H04B 1/38; H04M 1/00
U.S. Cl. 455—557 17 Claims

1. An apparatus for selectively transmitting and receiving data over a communications channel to and from a remote site, the communications channel having a determinable level of data transmission quality, said apparatus comprising:



data interface means for transferring data to and receiving data from a data source;

modulation means for modulating said data received from said data source in accordance with a transmission format so as to produce outgoing modulated data to be transmitted to said remote site;

demodulation means for demodulating incoming modulated data received from said remote site;

transceiver means for transmitting said outgoing modulated data over said communications channel and for receiving said incoming modulated data from said communications channel;

measuring means for measuring the level of data transmission quality of the communications channel irrespective of whether a connection has been established with the remote site;

connecting means for establishing a connection across said communication channel with said remote site if said level of data transmission quality of the communications channel is above a first predefined threshold level;

means for activating said measuring means so as to measure the level of data transmission quality of the communications channel at the end of each of successive time intervals after a connection has been established with the remote site so long as data is required to be transferred to said remote site and the connection with said remote said has not been terminated; and

means for immediately terminating said connection with said remote site if the measured level of signal transmission quality of the communication channel at the end of any of the time intervals is below a second predefined threshold level.

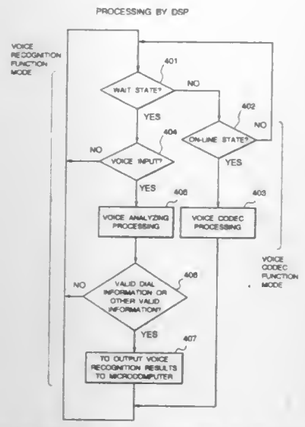
5,826,199
DIGITAL PORTABLE TELEPHONE WITH VOICE RECOGNITION AND VOICE CODEC PROCESSING ON SAME DIGITAL SIGNAL PROCESSOR
Koji Maeda, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Continuation of Ser. No. 490,554, Jun. 15, 1995. This application Aug. 28, 1997, Ser. No. 919,506
Claims priority, application Japan, Jun. 15, 1994, 6-156517
Int. Cl.[6] H04Q 7/20
U.S. Cl. 455—563 13 Claims

11. In a digital portable telephone having a single-chip digital signal processor which conducts voice codec processing with respect to transmission voice data input through a transmitter and digitalized, and reception demodulated data obtained by decoding a reception radio signal, a method for switching and controlling functions of the digital signal processor, comprising the steps of:

detecting the on-line state when the telephone is in the off-hook state and said demodulated data is voice information and otherwise detecting the wait state;

setting the operation mode of said single-chip digital signal processor to only a voice codec processing mode for conducting said voice codec processing when detecting said on-line state; and

setting the operation mode of said single-chip digital signal processor to only a voice recognition processing mode for



recognizing the contents of voice input through the transmitter when detecting said wait state.

5,826,200

Patent Not Issued For This Number

5,826,201

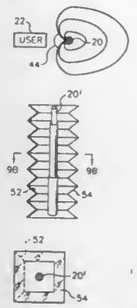
ANTENNA MICROWAVE SHIELD FOR CELLULAR TELEPHONE

Greg Gratias, Auburn, Wash., assignor to Asterion, Inc., Kent, Wash.

Continuation of Ser. No. 982,091, Nov. 25, 1992, abandoned. This application Nov. 8, 1996, Ser. No. 745,985

Int. Cl.[6] H04B *1/38*

U.S. Cl. 455—575 **27 Claims**



1. In a cellular telephone having a first antenna, at least a first portion of said antenna for emitting radiation, the first portion positioned adjacent a user's head when in normal use position, said antenna having an upper end, apparatus for protecting a user from electromagnetic radiation comprising:

a microwave radiation-reflecting or -absorbing shield extending at least to said upper end, wherein said shield comprises a plurality of segments which can be folded substantially adjacent to one another;

further comprising a bellows and wherein said segments are positioned on surfaces of said bellows;

a coupler positioning said shield on said telephone in a fixed position with respect to said telephone substantially between at least said first portion of said antenna and said user's head to provide a field strength pattern of said electromagnetic radiation which, in a plane passing through said first portion of said antenna, said shield and said user's head, is substantially diminished in a first direction within said plane from said antenna toward said user's head without being substantially diminished within said plane from said antenna away from said user's head.

5,826,202

PROCESS FOR THE PREPARATION OF CAMPHENE BY THE REARRANGEMENT OF A-PINENE

Manfred Gscheidmeier, Gablingen; Harald Häberlein, deceased, late of Neusäss; by Hans Harald Häberlein, Neu-Ulm; by Jörg Thomas Häberlein, Allersberg, and by Mark Christian Häberlein, Freiburg, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt, Germany

Filed Nov. 25, 1996, Ser. No. 758,145

Claims priority, application Germany, Nov. 27, 1995, 195 44 086.2

Int. Cl.[6] C07C *5/22*

U.S. Cl. 585—356 **9 Claims**

1. A two-step process to reduce the proportion of polymeric by-products in the conversion of α-pinene to camphene and to increase the proportion of camphene comprising:

reacting α-pinene in the presence of a titanium oxide hydrate catalyst in a reaction mixture at a temperature of 155° C. to 165° C.;

monitoring the content of said α-pinene in said reaction mixture until said α-pinene amount has dropped to about 3% by weight and carrying out the remainder of said reaction at a temperature below 160° C. and below first reacting temperature.

5,826,203

METHOD FOR SOLIDIFYING WASTE CONTAINING RADIOACTIVE IODINE

Masahiro Fukumoto, Abiko, and Manabu Kanzaki, Naka-gun, both of Japan, assignors to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo-to, Japan

Filed Jul. 14, 1997, Ser. No. 892,232

Claims priority, application Japan, Aug. 20, 1996, 8-218379

Int. Cl.[6] G21F *9/00*

U.S. Cl. 588—15 **8 Claims**

1. A method for solidifying a waste containing radioactive iodine, characterized by mixing a granular waste containing radioactive iodine with a metal powder having a corrosion resistance in an environment of solidified waste disposal, filling the resulting mixture in a metal capsule, and subjecting the whole to hot isostatic pressing to effect solidification.

5,826,204

CIRCUIT CONFIGURATION FOR EVALUATION OF THE SIGNALS FROM A YAW RATE SENSOR

Michael Ulm, Alteglofsheim, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Continuation of Ser. No. 656,413, May 30, 1996, abandoned. This application Sep. 2, 1997, Ser. No. 921,819

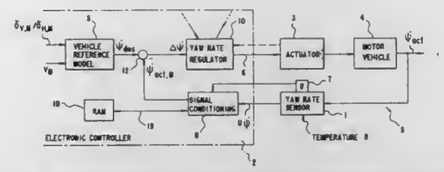
Claims priority, application Germany, Nov. 30, 1993, 43 40 719.6

Int. Cl.[6] G05D *1/02*

U.S. Cl. 704—1 **6 Claims**

1. In a control loop having a yaw rate sensor supplying an electrical sensor signal and a temperature sensor supplying an electrical sensor signal for compensation of temperature dependency of the sensor signal of the yaw rate sensor, a circuit configuration in the control loop for temperature-compensation of the sensor signal of the yaw rate sensor, comprising:

a first evaluation device for calculating an instantaneous yaw rate from the electrical sensor signals of the yaw rate sensor and of the temperature sensor; and



a second evaluation device for adaptively determining sensor-specific characteristic parameters of the yaw rate sensor as a function of temperature;

said first evaluation device calculating a reference yaw rate Ψ_{ref} in accordance with the following formula:

$$\Psi_{ref} = \frac{v_l - v_r}{l_{trackw}}$$

where l_{trackw} designates a distance between two centers of contact of wheels on a non-driven axle with the ground, and v_l and v_r designate speed values of a left and right wheel, respectively, of the non-driven axle, and wherein said first evaluation device calculates a measurement value for a yaw rate within one control cycle in accordance with the following relationship:

$$\Psi_{act,M} = a_M * U^*_\Psi + b_M$$

where:

U^*_Ψ is a filtered value of the yaw rate sensor signal;

a_M is a temperature-dependent gradient of an inverse characteristic of the yaw rate sensor signal, the gradient being interpolated from changes in the reference yaw rate Ψ_{ref} and from changes in the filtered value of the yaw rate sensor signal; and

b_M is a temperature-dependent zero value of an inverse characteristic of the yaw rate sensor signal, the zero value being determined from the reference yaw rate Ψ_{ref} and the filtered value of the yaw rate sensor signal.

5,826,205

REPROGRAMMABLE CONTROLLER CONTAINING MULTIPLE PROGRAMS

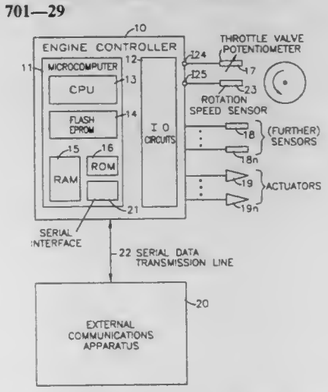
Ulrich Koelle, Schwieberdingen, and Hans-Joerg Schulz, Vaihingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Jul. 12, 1995, Ser. No. 501,756

Claims priority, application Germany, Jul. 19, 1994, 44 25 388.5

Int. Cl.[6] G06F *9/24*; G05B *19/42*

U.S. Cl. 701—29 **7 Claims**



1. A reprogrammable controller for a device, comprising:

an electrically erasable and programmable memory having a first program for controlling an operation of the device;

a read only memory for storing a second program and a third program, the second program for reprogramming the first program in the electrically erasable and programmable memory, and the third program for initiating the first program and the second program;

a serial interface;

a serial data transmission line coupled to the serial interface;

an external communications apparatus coupled to the serial data transmission line for providing data, to be used in reprogramming the first program by the second program, through the serial data transmission line; and

means for allowing initiation of one of the first program and the second program by the third program, wherein the third program starts program initiation, once the controller has been brought into use, based upon an interrogation which checks at least one input signal of at least one sensor of the object to determine whether a threshold value is present, wherein, when the threshold value is present, the second program controls the controller, and when the threshold value is not present, the first program controls the controller.

5,826,206

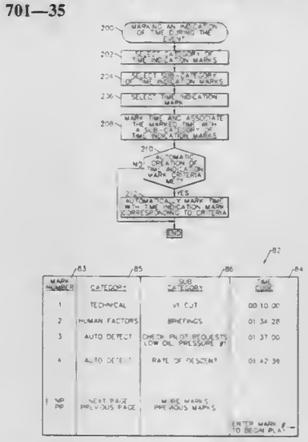
DEBRIEFING SYSTEMS AND METHODS FOR RETRIEVING AND PRESENTING MULTIPLE DATASTREAMS WITH TIME INDICATION MARKS IN TIME SYNCHRONISM

Louis G. Nemeth, Lake Wylie, S.C., assignor to Training Inovations Group, LLC, Charlotte, N.C.

Filed Mar. 12, 1996, Ser. No. 614,337

Int. Cl.[6] G09B *19/16*; G11B *15/00*

U.S. Cl. 701—35 **30 Claims**



1. An event debriefing system comprising:

means for recording a plurality of datastreams related to an event which occurs over an extended time period, each datastream including chronological information related to at least one aspect of the event over the extended time period;

categorized marking means, for marking times during the extended time period and for associating a category with the marked times; and

presenting means, responsive to said marking means, for retrieving information from said datastreams based upon the marked times in a selected category, and for presenting the retrieved information from the datastream for the marked times in the selected category.

5,826,207
DEVICE FOR ESTIMATING AIR PRESSURE OF TIRE FROM VIBRATION COMPONENTS OF VEHICLE WHEEL SPEED

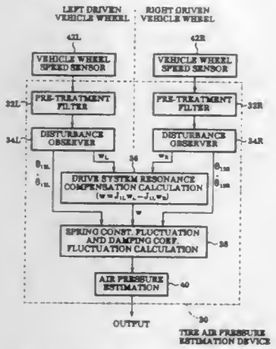
Hideki Ohashi; Hiroyuki Kawai, both of Susono; Hiroyoshi Kojima, Nishio; Katsuhiro Asano, Toyoake; Takaji Umeno, Aichi-gun; Toshiharu Naito, Okazaki; Nobuyoshi Onogi, Nagoya, and Yuuichi Inoue, Tokai, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha & Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi-ken, Japan

Filed Dec. 20, 1995, Ser. No. 575,250

Claims priority, application Japan, Dec. 26, 1994, 6-337253; Oct. 2, 1995, 7-278338

Int. Cl.[6] B60C *23/00*

U.S. Cl. 701—36 **10 Claims**



1. A device for estimating air pressure of a tire of a driven vehicle wheel of a vehicle having a drive system which operates to drive said driven vehicle wheel, said driven vehicle wheel being one of a pair of left and right vehicle wheels, comprising: means for detecting vehicle wheel speed of said driven vehicle wheel to provide a vehicle wheel speed signal; means for extracting vibration components from said vehicle wheel speed signal; means for canceling from said extracted vibration components those vibration components which are originated in the operation of said drive system and which are in the same phase between the left vehicle wheel and the right vehicle wheel, resulting in a modified vibration signal; and means for estimating an air pressure of said tire of a driven vehicle wheel based upon a spring constant of said tire which is calculated from said modified vibration signal.

5,826,208
POWERTRAIN CONTROL DEVICE FOR A VEHICLE USING TARGETED TONGUE GENERATION FOR ELIMINATING SHIFT SHOCK

Hiroshi Kuroiwa, Hitachi; Masahiko Ibamoto, Hitachinaka; Kazuhiko Sato, Hitachiohta; Mitsuyoshi Okada, Hitachinaka, and Masami Shida, Mito, all of Japan, assignors to Hitachi, Ltd. Hitachi Car Engineering Co., Ltd., and Hitachi Car Engineering Co., Ltd., both of Japan

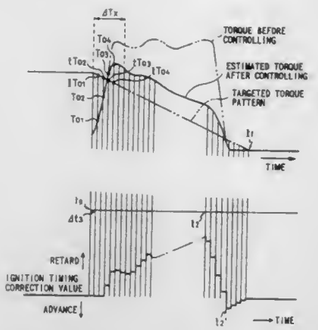
Filed Oct. 26, 1995, Ser. No. 548,470

Claims priority, application Japan, Oct. 26, 1994, 6-262283; Apr. 21, 1995, 7-096614

Int. Cl.[6] F16H *59/14*

U.S. Cl. 701—54 **24 Claims**

1. A powertrain control device for a vehicle comprising:
an automatic transmission having a torque converter;
a control device incorporating at least one microcomputer to control the engine and the automatic transmission;
a driving torque calculating means for estimating the output shaft torque of the automatic transmission;
a targeted torque generating means for generating a targeted torque based on the driving torque estimated by the driving torque calculating means;



an engine torque control value calculating means for calculating a control value for controlling the output torque of the engine from the deviation between the targeted torque generated by the targeted torque generating means and the driving torque estimated by the driving torque calculating means;
an engine torque control value limiting means provided in the engine torque control value calculating means, for limiting the engine torque control value below a specified value;
an engine torque control means for controlling the output torque of the engine in response to a signal from the engine torque control value calculating means;
an estimated driving torque monitoring means for monitoring the magnitude of the estimated driving torque calculated by the driving torque calculating means; and
a line pressure control device for controlling a line pressure of the automatic transmission by use of the estimated driving torque monitoring means.

5,826,209
DRIVING FORCE CONTROL SYSTEM FOR VEHICLE AND THE METHOD THEREOF

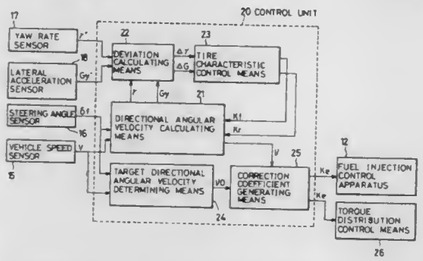
Koji Matsuno, Gunma Pref., Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 489,786, Jun. 13, 1995, Pat. No. 5,734,595. This application Mar. 27, 1997, Ser. No. 827,166

Claims priority, application Japan, Jun. 27, 1994, 6-144657

Int. Cl.[6] B60K *17/348*

U.S. Cl. 701—69 **13 Claims**



1. A driving force control system of a vehicle having an engine, a fuel injector, a front wheel and a rear wheel for controlling a driving force so as to control a behavior of said vehicle during running, comprising:
directional angular velocity calculating means for estimating a directional angular velocity of said vehicle;

target directional angular velocity determining means for determining a target directional angular velocity of said vehicle;
correction coefficient generating means for generating a correction coefficient based on said directional angular velocity and said target directional angular velocity; and
torque distribution control means for distributing a torque between said front wheel and said rear wheel based on said correction coefficient.

5,826,210
TIRE AIR PRESSURE WARINING DEVICE

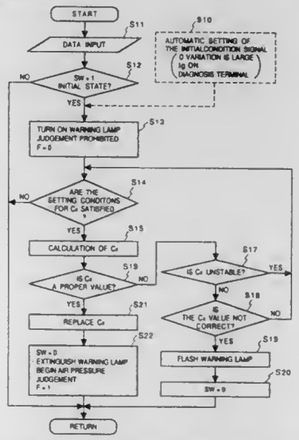
Tomoji Izumi, Hatsukaichi; Tetsuya Tachibata, Hiroshima, and Takeshi Edahiro, Higashihiroshima, all of Japan, assignors to Mazda Motor Corporation, Hiroshima-ken, Japan

Filed Mar. 29, 1994, Ser. No. 220,361

Claims priority, application Japan, Mar. 29, 1993, 5-070132; Mar. 29, 1993, 5-070133; Mar. 29, 1993, 5-070135; Mar. 30, 1993, 5-096744; Mar. 30, 1993, 5-096745; Mar. 30, 1993, 5-096746; Mar. 30, 1993, 5-096747; Jul. 27, 1993, 5-204531

Int. Cl.[6] B60C *23/00*

U.S. Cl. 701—70 **58 Claims**



1. A tire air pressure warning device that judges a tire air pressure abnormality utilizing detected signals from wheel velocity sensors that separately detect the revolving state of each tire of a vehicle, and outputs a warning signal, comprising:
a deviation width changing means for changing the prescribed width of a deviation width wherein, the tire air pressure abnormality is judged by a comparison between a deviation value which is determined from a prescribed equation based on the difference between the number of revolutions of each tire, and the average number of tire revolutions, and deviation width having a prescribed width; and
prescribed value change means for judging tire air pressure abnormality by comparing the deviation value with a deviation width having a prescribed maximum value and a prescribed minimum value, and changing the prescribed maximum and minimum values in accordance with the vehicle running conditions,
wherein, if the tire temperature is beyond a prescribed temperature, the prescribed width of said deviation width is changed to a fixed value, and further increase said prescribed width as a temperature of the tire increases until said prescribed width reaches a predetermined value.

5,826,211
ELECTRONIC CONTROLLER HAVING EXCELLENT CONTROL PROGRAM AND CONTROL DATA OVERWRITING CAPABILITIES

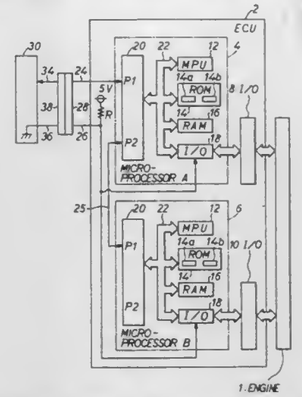
Masayuki Kobayashi, Anjo, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Nov. 22, 1996, Ser. No. 754,915

Claims priority, application Japan, Dec. 4, 1995, 7-315388

Int. Cl.[6] G06F *19/00;* **G06G** *7/70*

U.S. Cl. 701—115 **29 Claims**



1. An electronic controller for performing control operations based on control codes, said electronic controller comprising a first microprocessor unit that includes:
a first nonvolatile programmable memory for storing a first control code;
first detection means for detecting a control code overwrite command and a new control code from outside of said first microprocessor unit, said new control code including a new control code identification code;
first transmission means for transmitting said control code overwrite command to outside of said first microprocessor unit;
first identification code setting means for setting a first identification code of said first microprocessor unit when said first detection means detects said control code overwrite command;
first determination means for determining if said new control code identification code of said new control code detected by said first detection means matches said first identification code set by said first identification code setting means; and
first overwriting means for overwriting said first control code stored in said first nonvolatile programmable memory with said new control code in response to a result of a determination by said first determination means.

5,826,212
CURRENT-POSITION MAP AND THREE DIMENSIONAL GUIDING OBJECTS DISPLAYING DEVICE FOR VEHICLE

Takaaki Nagai, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

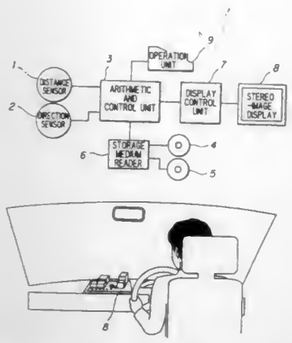
Filed Oct. 24, 1995, Ser. No. 547,530

Claims priority, application Japan, Oct. 25, 1994, 6-297783; Oct. 25, 1994, 6-297784

Int. Cl.[6] G06F *165/00;* **G08G** *1/0969*

U.S. Cl. 701—208 **5 Claims**

1. A vehicle current-position displaying device for searching and displaying a current position of the vehicle on a road map indicated on a display screen according to road map information, comprising, means for stereoscopically displaying the road map on a stereo-display screen by using road map information consisting of roadway-network information and stereo-image information, said stereo-image information consisting of a right viewpoint image and



a left viewpoint image of three-dimensional stereo-display elements on the road map, said roadway-network information and said stereo-image information being separately stored in at least one of either a storage medium or separate storage media; said road map information of said roadway-network information in a district and said stereo-image information in said district are separately read from the storage medium or media; and means for displaying a road map image of the roadway-network image and the stereo-image of the stereo-display elements by displaying one over the other on the stereo-display screen.

5,826,213

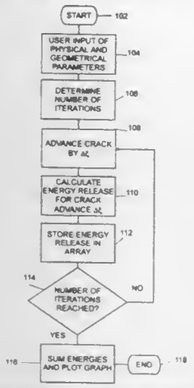
METHOD AND APPARATUS FOR INVESTIGATING TOUGHENING MECHANISMS AND CRACK ADVANCE IN LIGHTWEIGHT MATERIALS

Christine Kennefick, 2029 Turtle Pond Dr., Reston, Va. 20191

Filed Feb. 25, 1997, Ser. No. 805,466

Int. Cl.[6] G01N *3/08*

U.S. Cl. 702—35 **40 Claims**



1. A series of operational steps to be performed by means of a computing device including a processor, input means for receiving input from a user, and output means for displaying an output to the user, the series of operational steps comprising:

(a) prompting the user, with the output means, for information regarding a material having a crack therein;

(b) receiving the information from the user with the input means;

(c) selecting an increment of crack advance; and

(d) in accordance with the information received in step (b) and the increment of crack advance selected in step (c), integrating numerically by means of the processor over a region surrounding a tip of the crack to determine an energy change in the region caused by an advance of the crack by the increment of crack advance selected in step (c).

5,826,214

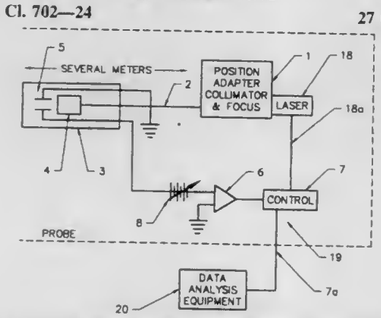
HAND-HELD PROBE FOR REAL-TIME ANALYSIS OF TRACE POLLUTANTS IN ATMOSPHERE AND ON SURFACES

Robert J. Lieb, Joppatowne; Richard B. Murray, Churchville, both of Md.; Robert L. Pastel, Alamosa, Colo., and Rosario C. Sausa, Bel Air, Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 26, 1996, Ser. No. 744,704

Int. Cl.[6] G01N *33/22*

U.S. Cl. 702—24 **27 Claims**



1. A device for real-time and in situ detection of an halogenated explosive in a building, luggage or parcel, the device comprising:

a wand for obtaining a sample of the atmosphere; the wand including an analysis region for holding the sample of the atmosphere and an aperture for allowing the sample of the atmosphere to enter the analysis region,

laser means for producing a laser beam and introducing the laser beam into the analysis region to fragment at least a portion of the sample of the atmosphere to produce a fragmentation product and to ionize the fragmentation produce to produce ions,

ionization detecting means for detecting the ions to produce a detection signal; and

data acquisition and analysis means, receiving the detection signal, for determining the presence of halogens in the vicinity.

5,826,215

METHOD AND COMPUTER PROGRAM PRODUCT FOR STABLE INTEGRAL EQUATION MODELS

Jan Elizabeth Garrett, Rochester, Minn., and Albert Emil Ruehli, Chappaqua, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 14, 1997, Ser. No. 783,218

Int. Cl.[6] G06G *7/19*

U.S. Cl. 702—75 **8 Claims**

6. A computer implemented method for creating a stable integral equation, Partial Element Equivalent Circuit (PEEC) model for both the time and frequency domains, using electric field integral equation (EFIE) formulations, magnetic field integral equation (MFIE) formulations, or combined field integral equation (CFIE) formulations, or other integration techniques, said computer implemented method comprising the steps of:

subdividing each volume cell into a finite number of partitions;

calculating a partial inductance term consisting of a summation over all the finite number of partitions in each volume cell;

subdividing each surface cell into a finite number of subcells;

calculating a coefficient of potential term consisting of a summation over all the finite number of subcells in each surface cell to create the PEEC model; and



utilizing the created PEEC model for assessing electromagnetic performance.

5,826,216

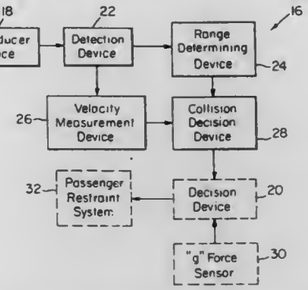
ANTICIPATORY COLLISION SENSOR SYSTEM

Christopher T. Lyons, Tyngsboro, and Ismail Taskin, Arlington, both of Mass., assignors to Hittite Microwave Corp., Woburn, Mass.

Filed Feb. 7, 1997, Ser. No. 796,290

Int. Cl.[6] G01S *9/56*

U.S. Cl. 702—143 **29 Claims**



1. An anticipatory object detection system comprising:

a transducer device for transmitting a modulated carrier signal and receiving the reflected modulated carrier signal from an object;

a detection device for detecting a plurality of Doppler shifted harmonic components from said reflected modulated carrier signal;

a range determining device responsive to the amplitudes of at least two of said harmonic components being equal for determining the instantaneous range of said object and, a predetermined distance thereafter, to a predetermined difference between the amplitudes of at least two of said harmonic components;

a velocity measurement device, responsive to the frequency of at least one of said harmonic components, for determining the relative, instantaneous velocity of said object; and

a collision decision device, responsive to said range determining device and said velocity measurement device for indicating that a collision with said object is imminent before contact is made with said object.

5,826,217

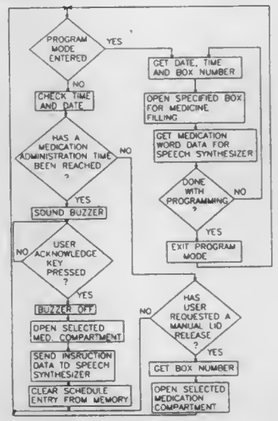
PROGRAMMABLE MEDICINE DISPENSER AND STORAGE DEVICE

Sam Lerner, 575 Kent Ave., Brooklyn, N.Y. 11211

Filed Mar. 5, 1997, Ser. No. 812,340

Int. Cl.[6] A47B *67/02;* **G08B** *1/00;* **G06F** *1/14*

U.S. Cl. 702—177 **13 Claims**



1. A programmable medicine dispenser and storage device for alerting a user of a medication administration schedule including at least one medication administration time comprising:

a clock means for generating real time signals;

a data entry means for setting each medication administration time;

an alarm means for alerting the user of each medication administration time;

an acknowledgment means for generating an acknowledgment signal;

a programmable controller and memory means for activating the alarm means in response to the medication administration schedule when each medication administration time is the same as the real time signal and for processing the acknowledgment signal;

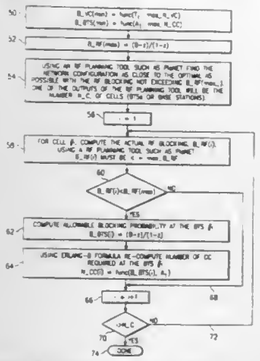
at least one medication compartment comprising a lower compartment and a lid hingedly and latchedly attached thereto, each medication compartment further comprising a means for unlatching the lid from the lower compartment when each medication administration time corresponds to the real time signal and in response to the acknowledgment signal, the means for unlatching the lid from the lower compartment being operably coupled to the programmable controller and memory means; and

wherein the means for unlatching the lid from the lower compartment further comprise a biasing spring fixedly attached to an angled interior lid surface corresponding to an exterior angled lid portion and a lower compartment back wall for holding the lid in an open position, a solenoid fixedly attached to an interior lid surface, a latching member having a first section, a second section and a pivot point disposed therebetween, and a shaft pivotally attached to the latching member first section, the shaft further comprising a solenoid core, the latching member being pivotally mounted to a bracket integrally formed on an interior lid front edge at the pivot point, the latching member further comprising an engaging portion formed at an end of the latching member second section, the latching member being pivotable about the pivot point between a first position in which the solenoid is not activated and the engaging portion engages a catch integrally formed on a front lower compartment rim and a second position in which the solenoid is activated and the engaging portion disengages the catch.

5,826,218
METHOD AND APPARATUS FOR SELECTING A COST EFFECTIVE CALL BLOCKING PROBABILITY DISTRIBUTION IN THE DESIGN OF A NEW CELLULAR NETWORK

Farid Khafizov, Dallas, and Nikhil Jain, Plano, both of Tex., assignors to Northern Telecom Limited, Montreal, Canada

Filed May 29, 1997, Ser. No. 864,500
Int. Cl.[6] H04Q *7/22;7/36*
U.S. Cl. 702—179 **10 Claims**



1. The method of designing a new cellular system having a given total blocking probability BP for the system comprising, the steps of:

a. assigning a minimum possible vocoder blocking probability value to B_VC;

b. assigning an initial minimum possible channel element blocking probability value to B_BTS;

c. assigning a RF blocking probability value to B_RF of (BP−z)/(1−z) where "z" equals the sum of the vocoder and channel element blocking probabilities less the product of the vocoder and channel element blocking probabilities;

d. designing a network configuration wherein RF blocking approaches B_RF for at least one cell but does not exceed B_RF in any of a plurality of N cells;

e. computing actual RF blocking for a first of said N cells and assigning same to B_RF_i where i=first cell;

f. computing the minimum number of channel elements for cell "i" based on a maximum allowable channel element blocking probability of $B\_BTS_i = (BP-z)/(1-z)$ where "z" equals the sum of the radio frequency and vocoder blocking probabilities less the product of the radio frequency and vocoder blocking probabilities; and

g. computing actual RF blocking B_RF_i and number of channel elements B_BTS_i in the manner set forth in paragraphs e and f for each of the remaining N−1 cells.

5,826,219
MACHINE TRANSLATION APPARATUS

Takeshi Kutsumi, Yamatokoriyama, Japan, assignor to Sharp Kabushiki kaisha, Osaka, Japan

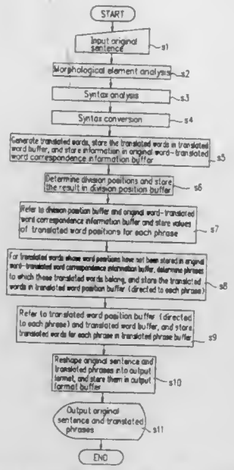
Filed Jan. 11, 1996, Ser. No. 584,361
Claims priority, application Japan, Jan. 12, 1995, 7-003522
Int. Cl.[6] G06F *17/28*
U.S. Cl. 704—4 **15 Claims**

1. A machine translation apparatus for translating a source language sentence into a target language sentence, the apparatus comprising:

an analysis unit for analyzing the source language sentence and generating a syntax tree of the source language;

a conversion unit for converting the syntax tree of the source language into a syntax tree of the target language;

a generation unit for generating the target language sentence based on the syntax tree of the target language;



a correspondence information storage unit for storing information of correspondence between words in the source language sentence and words in the target language sentence obtained by the generation unit;

a positioning unit for determining division positions at which to divide the source language sentence into phrases in the source language sentence based on phrase categories in the syntax tree of the source language generated by the analysis unit,

a translated phrase building unit for dividing the source language sentence at the division positions and generating phrases in the target language sentence corresponding to the phrases in the source language sentence;

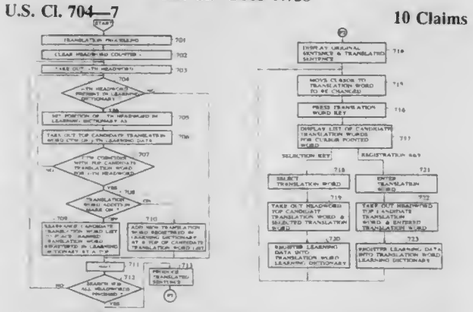
an output formatting unit for generating an output format for displaying the phrases in the source language sentence so that the phrases in the source language sentence correspond to the phrases in the target language sentence; and

a display unit for outputting the phrases in the source language sentence and the phrases in the target language sentence onto a display screen.

5,826,220
TRANSLATION WORD LEARNING SCHEME FOR MACHINE TRANSLATION

Kimihito Takeda; Yoshimi Saito, both of Kanagawa-ken, and Hideki Hirakawa, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 2, 1995, Ser. No. 538,417
Claims priority, application Japan, Sep. 30, 1994, 6-238085
Int. Cl.[6] G06F *17/28*
U.S. Cl. 704—7 **10 Claims**



1. A method of machine translation, comprising the steps of: translating original sentences in a first language into translated sentences in a second language, by obtaining a translation

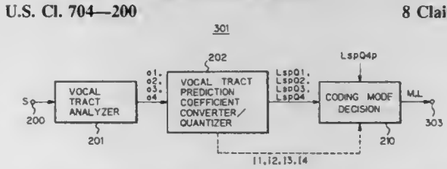
word for each original word according to a translation dictionary storing headwords in the first language, a plurality of lexical rules for each headword, and at least one candidate translation word in the second language corresponding to each lexical rule; and

learning a change of a translation word for one headword from a top candidate translation word obtained at the translating step according to one lexical rule in the translation dictionary to another translation word specified by a user, by registering a learning data indicating said one headword, the top candidate translation word corresponding to said one lexical rule, and said another translation word as a learned translation word, such that said another translation word is used in subsequent translations as a translation word for an original word coinciding with said one headword only when a top candidate translation word obtained at the translating step according to the lexical rules in the translation dictionary coincides with the top candidate translation word indicated in the learning data.

5,826,221
VOCAL TRACT PREDICTION COEFFICIENT CODING AND DECODING CIRCUITRY CAPABLE OF ADAPTIVELY SELECTING QUANTIZED VALUES AND INTERPOLATION VALUES

Hiromi Aoyagi, Tokyo, Japan, assignor to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1996, Ser. No. 738,779
Claims priority, application Japan, Nov. 30, 1995, 7-312548
Int. Cl.[6] G10L *9/00*
U.S. Cl. 704—200 **8 Claims**



1. Vocal tract prediction coefficient coding and decoding circuitry comprising:

a coding circuit for producing a vocal tract prediction coefficient from a speech signal input in a form of a frame including a plurality of subframes, and coding said vocal tract prediction coefficient to thereby output a coded signal; and

said coding circuit comprising:

vocal tract prediction coefficient generating means for generating a vocal tract prediction coefficient with each of the plurality of subframes constituting a current frame of the speech signal;

quantizing means for determining an LSP coefficient with each of vocal tract prediction coefficients of each of the plurality of subframes, and quantizing resulting LSP coefficients to thereby output corresponding quantized LSP coefficients values; and

coding mode decision means for analyzing a variation of the vocal tract prediction coefficient in the current frame on the basis of said quantized LSP coefficient values to thereby select either of a quantized mode and an interpolate mode prepared beforehand for selectively using a quantized value or an interpolation value as the individual vocal tract prediction coefficient, and generating quantize/interpolate mode information representative of the quantized mode or the interpolate mode determined and quantized LSP coefficient value information showing which of said quantized LSP coefficient values of the plurality of subframes should be sent to said decoding circuit;

a decoding circuit for receiving said coded signal from said coding circuit and reproducing a vocal tract prediction coefficient from the received coded signal;

said decoding circuit comprising:

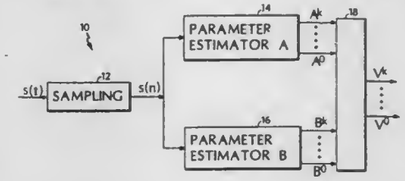
LSP coefficient reproducing means for reproducing said LSP coefficients of the plurality of subframes of the current frame on the basis of said quantize/interpolate mode information and said quantized LSP coefficient value information; and

vocal tract coefficient reproducing means for reproducing said vocal tract prediction coefficients of the plurality of subframes from said LSP coefficients of the plurality of subframes reproduced.

5,826,222
ESTIMATION OF EXCITATION PARAMETERS

Daniel Wayne Griffin, Hollis, N.H., assignor to Digital Voice Systems, Inc., Burlington, Mass.

Continuation of Ser. No. 371,743, Jan. 12, 1995, abandoned.
This application Apr. 14, 1997, Ser. No. 834,145
Int. Cl.[6] G10L *9/04*
U.S. Cl. 704—207 **41 Claims**



1. A method of analyzing a digitized speech signal to determine excitation parameters for the digitized speech signal, comprising:

dividing the digitized speech signal into one or more frequency band signals;

determining a first preliminary excitation parameter using a first method that includes performing a nonlinear operation on at least one of the frequency band signals to produce at least one modified frequency band signal and determining the first preliminary excitation parameter using the at least one modified frequency band signal;

determining at least a second preliminary excitation parameter using at least a second method different from the said first method; and

using the first and at least a second preliminary excitation parameters to determine an excitation parameter for the digitized speech signal.

5,826,223
METHOD FOR GENERATING RANDOM CODE BOOK OF CODE-EXCITED LINEAR PREDICTIVE CODING

Hong-kook Kim, Suwon; Kee-eun Oh, Seoul, and Moo-young Kim, Sungnam, all of Rep. of Korea, assignors to Samsung Electronics XCo., Ltd., Kyungki-do, Rep. of Korea

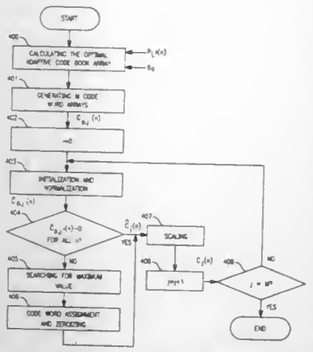
Filed Nov. 27, 1996, Ser. No. 756,581
Claims priority, application Rep. of Korea, Nov. 29, 1995, 95-44887
Int. Cl.[6] G10L *3/02;9/00*
U.S. Cl. 704—221 **3 Claims**

1. A method for generating a random code book having a characteristic similar to a periodic component of each frame of a voice signal in a code-excited linear predictive (CELP) coding method, the method comprising:

generating an adaptive code book for removing a periodic component of a current subframe of a voice signal;

determining an optimal delay and an optimal gain associated with each code word of the adaptive code book to minimize a difference signal between each code word and the voice signal;

generating an adaptive code book array with respect to the current subframe from the optimal delay and the optimal gain;



generating a number of code word arrays from the adaptive code book array and an excitation signal of an immediately previous subframe with respect to the current subframe;

selecting a code word which has a maximum value in each code word array and normalizing each code word array using each selected code word;

selecting a normalized maximum value in each normalized code word array, scaling each normalized maximum value by the power of the most previous subframe; and

generating a random code book comprising a set of the scaled normalized maximum code word values based on a periodic component of each frame of the voice signal.

5,826,224

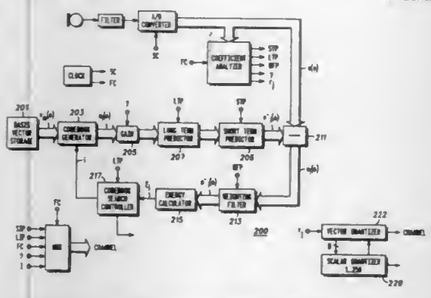
METHOD OF STORING REFLECTION COEFFIENTS IN A VECTOR QUANTIZER FOR A SPEECH CODER TO PROVIDE REDUCED STORAGE REQUIREMENTS

Ira A. Gerson, Schaumburg; Mark A. Jasiuk, Chicago, and Matthew A. Hartman, Schaumburg, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 37,793, Mar. 26, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 609,027

Int. Cl.[6] G10L *9/14;9/08*

U.S. Cl. 704—222 **6 Claims**



1. A speech coding method comprising the steps of:

(a) constructing an excitation codebook of 2^M codevectors using M basis vectors;

(b) receiving input speech;

(c) in response to the input speech, computing reflection coefficient values corresponding to speech parameters representative of the input speech;

(d) storing in a table 2^N reflection coefficient values, each reflection coefficient value addressable with an N-bit code;

(e) processing codevectors to produce synthesized speech;

(f) selecting a codevector from the excitation codebook which minimizes an error criterion for the synthesized speech relative to the input speech, including

(f1) when reflection coefficient values are required for processing, providing corresponding N-bit codes to the table to look up the reflection coefficient values,

(f2) otherwise storing only the N-bit codes during processing, thereby minimizing storage requirement for the reflection coefficient values.

5,826,225

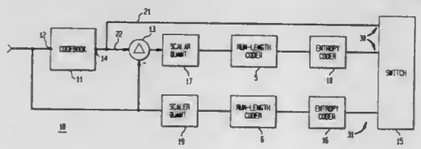
METHOD AND APPARATUS FOR IMPROVING VECTOR QUANTIZATION PERFORMANCE

John Hartung, Warren, and Jonathan David Rosenberg, Morganville, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 18, 1996, Ser. No. 718,110

Int. Cl.[6] G10L *7/02*

U.S. Cl. 704—222 **20 Claims**



1. A method for coding a signal comprising a set of input vectors with use of a set of codebook vectors, each codebook vector identified by a unique identification code, the method comprising the steps of:

a. selecting a codebook vector from said set of codebook vectors which closely matches a given one of said input vectors;

b. computing a difference between said given input vector and said selected, closely matching codebook vector;

c. determining a first number of bits in which said given input vector may be coded as a signal representing a combination of the unique identification code of said selected, closely matching codebook vector and said difference between said given input vector and said closely matching codebook vector;

d. determining a second number of bits in which said given input vector may be coded without the use of said set of codebook vectors;

e. coding said given input vector as said signal representing a combination of the unique identification code of said selected, closely matching codebook vector and said difference between said given input vector and said closely matching codebook vector, when said first number of bits does not exceed said second number of bits; and

f. coding said input vector without the use of said set of codebook vectors when said first number of bits exceeds said second number of bits, said coding of said input vector producing a coded input vector.

5,826,226

SPEECH CODING APPARATUS HAVING AMPLITUDE INFORMATION SET TO CORRESPOND WITH POSITION INFORMATION

Kazunori Ozawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Sep. 27, 1996, Ser. No. 722,635

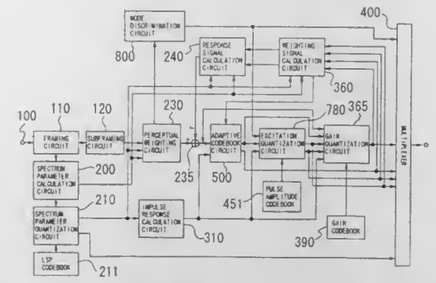
Claims priority, application Japan, Sep. 27, 1995, 7-249889

Int. Cl.[6] G10L *5/00*

U.S. Cl. 704—223 **20 Claims**

1. A speech coding apparatus for calculating a spectral parameter from a speech signal inputted thereto, quantizing an excitation signal of the speech signal using the spectral parameter and outputting the quantized excitation signal, comprising:

an excitation quantization section for quantizing the excitation signal using a plurality of pulses, each pulse being defined by a position and an amplitude,



wherein a position of at least one pulse is determined from N possible position variations of said at least one pulse, N being set in advance to be greater than one, and

wherein an amplitude value is set in advance for each of said N possible position variations of said at least one pulse and an amplitude of said at least one pulse is determined as the amplitude value corresponding to the determined position of the said at least one pulse.

5,826,227

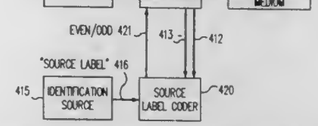
HIDING A SOURCE IDENTIFIER WITHIN A SIGNAL

Nuggehally Sampath Jayant, Gillette, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 18, 1995, Ser. No. 573,738

Int. Cl.[6] G10L *3/02;9/00*

U.S. Cl. 704—229 **43 Claims**



2. A method for compressing an original signal to provide a compressed signal, the method comprising the steps of:

associating a sequence of data bits with a source label; and

compressing the original signal to provide a compressed signal representing a sequence of frames, each frame including a number of coefficients that represent some of the data representing the compressed signal, such that in at least some of the frames the respective number of coefficients is selected as a function of values of ones of the sequence data bits associated with the source label.

5,826,228

Patent Not Issued For This Number

5,826,229

Patent Not Issued For This Number

5,826,230

SPEECH DETECTION DEVICE

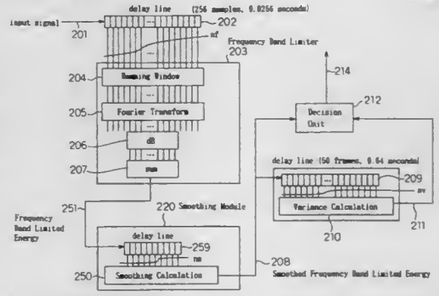
Benjamin Kerr Reaves, Yamatotakada, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan, and Panasonic Technologies, Inc., Princeton, N.J.

PCT No. PCT/JP94/01181, § 371 Date Mar. 18, 1996, § 102(e) Date Mar. 18, 1996, PCT Pub. No. WO96/02911, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 18, 1994, Ser. No. 615,320

Int. Cl.[6] G10L *5/06;9/00*

U.S. Cl. 704—233 **35 Claims**



1. A device for detecting speech in an input signal comprising:

means for determining a value representative of smoothed frequency band limited energy within the signal;

means for determining a variance of smoothed frequency band limited energy; and

means for determining the beginning and ending points of speech within the signal based on the variance of the smoothed frequency band limited energy and past history of the smoothed frequency band limited energy.

5,826,231

METHOD AND DEVICE FOR VOCAL SYNTHESIS AT VARIABLE SPEED

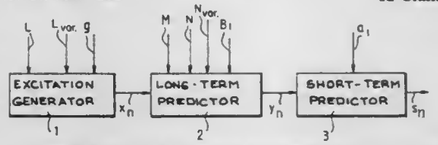
Alain Vigier, Paris, France, assignor to Thomson - CSF, Puteaux, France

Continuation of Ser. No. 774,080, Dec. 23, 1996, which is a continuation of Ser. No. 387,372, Feb. 13, 1995, which is a continuation of Ser. No. 65,497, May 24, 1993, abandoned. This application Jun. 25, 1997, Ser. No. 882,215

Claims priority, application France, Jun. 5, 1997, 92 06835

Int. Cl.[6] G10L *9/14*

U.S. Cl. 704—262 **12 Claims**



1. A method for vocal synthesis at variable speed of a vocal signal comprising the steps of:

segmenting the vocal signal into frames and sub-frames;

selecting waveforms in a dictionary during predetermined time intervals to excite at least one long-term predictive filter and at least one short-term predictive filter by the vocal signal, said long-term predictive filter having coefficients that are updated each sub-frame and said short-term predictive filter having coefficients that are updated every frame;

first modifying a size N_{var} of the frames and a size L_{var} of the sub-frames with respect to an initial frame size N and an initial sub-frame size L, where N and L are integers, by a constant ratio r such that:

$$r = \frac{L_{var}}{L} = \frac{N_{var}}{N}$$

where r corresponds to the variable speed rate;

second modifying the size L_{var} of the sub-frames and the size N_{var} of the frames as a function of a speed of synthesis of the vocal signal without modifying a pitch of the vocal signal applied to the at least one long-term predictive filter.

5,826,232

METHOD FOR VOICE ANALYSIS AND SYNTHESIS USING WAVELETS

Christian Gulli, St Medard en Jalles, France, assignor to Sextant Avionique, Meudon la Foret, France

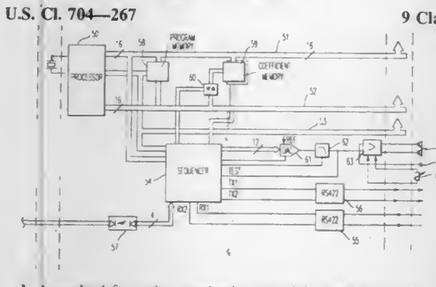
PCT No. PCT/FR92/00538, § 371 Date Feb. 18, 1993, § 102(e) Date Feb. 18, 1993, PCT Pub. No. WO92/22890, PCT Pub. Date Dec. 23, 1992

PCT Filed Jun. 16, 1992, Ser. No. 972,486

Claims priority, application France, Jun. 18, 1991, 91 07424

Int. Cl.[6] G10L *9/00*

U.S. Cl. 704—267 **9 Claims**



1. A method for voice synthesis comprising the steps of:

digitizing an input analog voice signal by an analog to digital conversion to generate a digitized signal;

breaking up the digitized signal into at least one orthogonal basis of wavelets, each wavelet having first and second components, with compact support, by use of breakdown filters with predetermined coefficients, the predetermined coefficients being real coefficients;

selecting from all of the predetermined coefficients only a selected portion of the predetermined coefficients which provide a restored analog signal of an adjudged satisfactory quality;

storing only the selected portion of the predetermined coefficients; and

reconstructing the input analog voice signal from the digitized signal by a reconstruction filtering utilizing the stored coefficients;

wherein the step of reconstructing the input analog voice signal comprises the substeps of:

interpolating and filtering the first components of the wavelets;

interpolating and filtering the second components of the wavelets;

adding the interpolated and filtered first and second components of the wavelets to generate a resulting signal;

multiplying the resulting signal; and

low-frequency amplifying the multiplied resulting signal.

5,826,233

SPEECH-INPUT CONTROL DEVICE

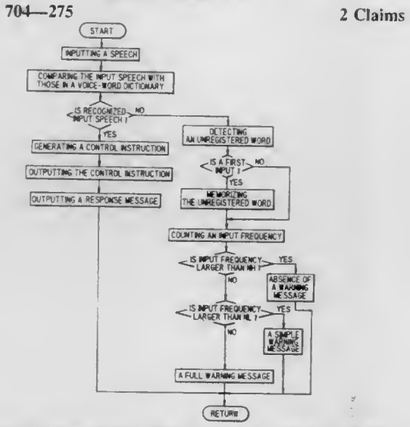
Yoshiyuki Matsumoto, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1997, Ser. No. 857,042

Claims priority, application Japan, May 16, 1996, 8-158766

Int. Cl.[6] G10L *3/00*

U.S. Cl. 704—275 **2 Claims**



1. A speech input control device having a speech recognition processing portion for extracting a feature of each word inputted by voice, comparing the extracted feature of each input word with stored features of previously registered words in a voice word dictionary, recognizing the input word by its similarity to the registered word and giving a control instruction to an objective device to be controlled, an improvement comprising providing the device with unregistered word detecting means for detecting a word that is included in an input speech and has not yet been registered in the voice word dictionary, storing means for storing the detected unregistered word inputted by voice together with its feature pattern, input-frequency counting means for counting an input frequency of each unregistered word and renewably storing the counted input-frequency of each unregistered word, and response message changing means for changing a responding program according to the counted input-frequency of an inputted unregistered word when said word is inputted.

5,826,234

DEVICE AND METHOD FOR DUBBING AN AUDIO-VISUAL PRESENTATION WHICH GENERATES SYNTHESIZED SPEECH AND CORRESPONDING FACIAL MOVEMENTS

Bertil Lyberg, Vagnharad, Sweden, assignor to Telia AB, Farsta, Sweden

Filed Dec. 5, 1996, Ser. No. 760,811

Claims priority, application Sweden, Dec. 6, 1995, 9504367

Int. Cl.[6] G10L *5/00*

U.S. Cl. 704—277 **26 Claims**

1. A speech synthesis device comprising:

a speech and visual input device configured to receive speech spoken in a first language by a subject and corresponding facial movement images of said subject:

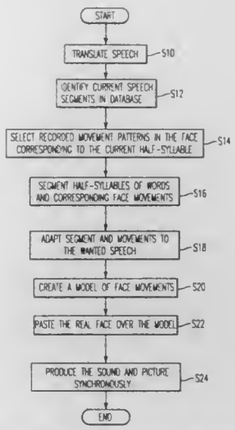
a storage unit comprising,

a polyphone storage section in which plural polyphones of said speech spoken in said first language are stored, and

a movement pattern storage section in which plural movement signals associated with movement of respective portions of the facial movement images of the subject while producing the plural polyphones are stored and associated with respective of said plural polyphones;

a selection mechanism that selects, based on a word that is to be synthesized in a second language, particular ones of said plural polyphones and corresponding ones of said plural movement signals; and

a combination mechanism that combines said particular ones of said plural polyphones to form an output audio signal indicative of said word and used to produce synthesized speech in said second language, and combines said plural movement signals corresponding with said output audio signal so as to form an output visual movement pattern signal that corresponds to the movement of respective portions of the facial movement images of the subject.



5,826,235

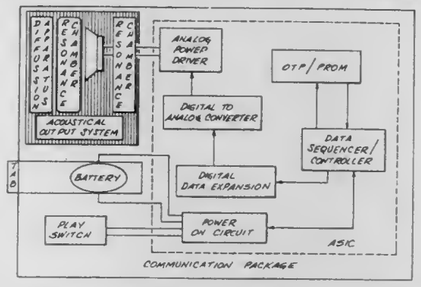
COMMUNICATION PACKAGE WITH APPARATUS AND METHOD FOR STORING AND RETRIEVING A PERMANENT MESSAGE

Jeffrey A. Harman, Kenosha, Wis., assignor to The Messenger Group, LLC, Milwaukee, Wis.

Continuation of Ser. No. 564,501, Nov. 29, 1995, Pat. No. 5,719,920, which is a continuation-in-part of Ser. No. 414,801, Mar. 31, 1995, abandoned. This application Feb. 7, 1997, Ser. No. 795,140

Int. Cl.[6] G06F *12/00*

U.S. Cl. 704—500 **6 Claims**



1. A unitized application specific integrated circuit (ASIC) for a communication package, the ASIC comprising as operating components:

(A) a one time programmable/programmable read only memory (OTP/PROM) operably connected to

(B) means for sequencing and controlling flow of data input to the ASIC providing transmittal of data to and from the OTP/PROM and operably connected to provide data to

(C) means for expanding data received which is operably connected to transmit expanded data to

(D) means for converting digital data to analog wave forms operably connected to

(E) means, operably connectable to an acoustical output system, for magnifying the analog wave forms to match the electrical requirements of an operably connected acoustical output system and

(F) power on circuitry with function timing means for controlling operating power to all internal functions of the ASIC with the power on circuitry (1) operably connected to power components (A)–(E) and (2) operably connectable to a power source and a play button circuit.

5,826,236

METHOD FOR ALLOCATING RESOURCES AND PROCESSES FOR DESIGN AND PRODUCTION PLAN SCHEDULING

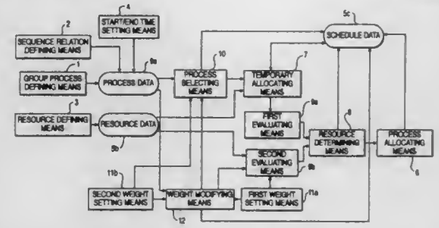
Katsumi Narimatsu, Kawasaki, and Shoichi Kojima, Fujisawa, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Dec. 8, 1995, Ser. No. 569,773

Claims priority, application Japan, Dec. 9, 1994, 6-306516; Sep. 27, 1995, 7-249746

Int. Cl.[6] G06F *17/60;17/50*

U.S. Cl. 705—8 **26 Claims**



1. A scheduling computer system for generating a scheduling chart, the computer system comprising:

resource defining means for inputting an attribute of each of a plurality of resources;

process defining means for inputting an attribute of each of a plurality of processes which are processed in a predefined sequence;

time setting means for inputting the processing start time and desired processing end time of each of said plurality of processes;

process selecting means for sequentially selecting a process, to which a resource is to be allocated, from said plurality of processes;

temporary allocating means for temporarily allocating each of said plurality of resources to the process selected by said process selecting means;

first evaluating means for evaluating the end time of a sequence of said plurality of processes by finding the end time of the sequence of said plurality of processes after said temporary allocation and for defining a resulting time evaluation value as the first criterion;

second evaluating means for evaluating the fitness of a resource for a process based on the attribute of the resource inputted by said resource defining means and on the attribute of the process inputted by said process defining means and for defining a resulting fitness evaluation value as the second criterion;

resource determining means for calculating an evaluation value for the combination of a process and a resource by evaluating said first criterion and second criterion for each of said plu-

rality of resources and for determining the optimum resource for the process by comparing said evaluation values of all the resources;

process allocating means for sequentially allocating a resource determined by said resource determining means to a process selected by said process selecting means as a final result; and

means for generating the scheduling chart illustrating the process to which the resources have been allocated by the process allocating means,

wherein said process selecting means does not select processes to which resources have been already allocated by said process allocating means as objects of said temporary allocation.

5,826,237

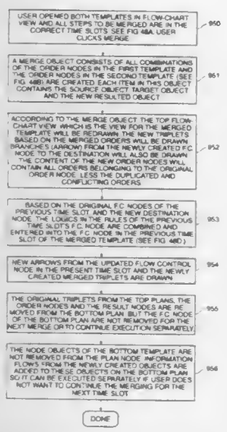
APPARATUS AND METHOD FOR MERGING MEDICAL PROTOCOLS

Kenneth I. Macrae, San Francisco; Annsheng C. Ting, Los Altos Hills; Ragnar W. Edholm, Sunnyvale; Erik Worth, Milpitas; Robert B. Sigmon, Jr., Redwood City; Toshikazu Matsumoto, Half Moon Bay, and Chung-Jen Ho, San Jose, all of Calif., assignors to Araxsys, Inc., Redwood City, Calif.

Filed Oct. 20, 1995, Ser. No. 546,213

Int. Cl.[6] G06F *17/60;7/14*

U.S. Cl. 705—2 **32 Claims**



1. A data processing apparatus, comprising:

a display for displaying data;

input means for supplying input data;

a storage location, coupled with the display and the input means, for storing data, images, and programs; and

processing means, coupled to the display means, the input means, and the storage means, for controlling the storage means, the input means, and the display means in response to stored programs and input data to perform data processing operations;

wherein the display includes,

a plurality of graphic icon images, stored in the storage location, arranged on the display representing a medical treatment plan;

wherein the stored programs includes,

a program for merging a first set of graphic icon images representing a first treatment plan with a second set of graphic icon images representing a second treatment plan to obtain a combined treatment plan.

5,826,238

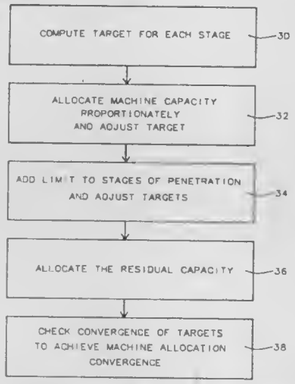
DAILY TARGET GENERATION AND MACHINE ALLOCATION WITH PRIORITY

Wen-Lin Chen, San chun; Sheng-Rong Huang, Hsin-chu, and Yi-Chin Hsu, Taipei, all of Taiwan, assignors to Taiwan Semiconductor Manufacturing, Hsin-Chu, Taiwan

Filed Apr. 2, 1996, Ser. No. 626,594

Int. Cl.[6] A47C *17/00*

U.S. Cl. 705—8 **30 Claims**



1. A method of operating a data processing system including a data base computer system and a resource allocation computer for control of resource allocation in a manufacturing plant with a manufacturing line comprising a plurality of stages with manufacturing machines, the resource allocation computer including data storage means, the method including the steps as follows:

deriving data from the data storage means and computing the targets for each of the stages;

obtaining machine capacity data from the data storage means and employing the machine capacity data for allocating machine capacity proportionally and adjusting targets;

adding limits to stages of penetration and adjusting targets;

determining residual capacity and allocating the residual capacity of the manufacturing machines;

checking the convergence of targets and machine allocation until convergence is achieved,

determining the push target,

determining the pull target,

determining the upper bound target,

determining the capacity constraint and machine allocation,

limiting the stages of penetration,

iterating the Target Generation and Machine Allocation and PRiority (TG&MA PR), and

executing the Stages Of PEnetrAtion (SOPEA) method.

5,826,239

DISTRIBUTED WORKFLOW RESOURCE MANAGEMENT SYSTEM AND METHOD

Weimin Du, San Jose, Calif.; Graham Eddy, Warradyte, Australia, and Ming-Chien Shan, Saratoga, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

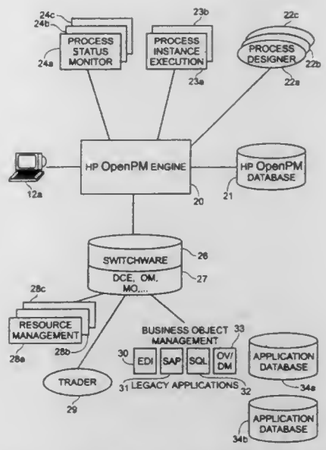
Filed Dec. 17, 1996, Ser. No. 768,261

Int. Cl.[6] G06F *17/60*

U.S. Cl. 705—8 **20 Claims**

1. A method for distributed resource management in a computer network including multiple computers operating under control of a workflow management software system (WFMS) to manage a plurality of resources to carry out a workflow process that includes multiple process activities, the computers comprising a processor, memory and input/output facilities, the method comprising:

grouping the resources according to a shared set of capabilities into resource groups including at least one resource;



storing in a first of said computers a global resource manager (GRM) and data defining a resource capability of one or more of said groups and a resource status for each group;

storing in a second of said computers a local resource manager (LRM) for at least one of the groups and data defining a capability and status of each resource in each group coupled to the second computer;

operating the WFMS to invoke the global resource manager with a request for a specified activity by one of the resources in the system; and

the GRM responding to the request by checking the stored capabilities and status the resource groups, selecting one of the resource groups having the capability to perform the specified activity and a status that enables the group to do so, and forwarding the request to the LRM of the second computer for the selected resource group.

5,826,240

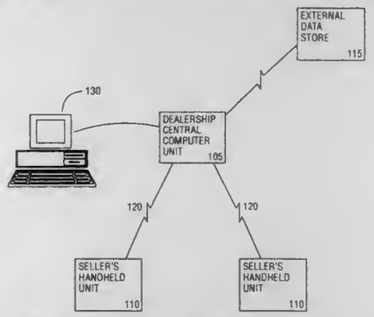
SALES PRESENTATION SYSTEM FOR COACHING SELLERS TO DESCRIBE SPECIFIC FEATURES AND BENEFITS OF A PRODUCT OR SERVICE BASED ON INPUT FROM A PROSPECT

Robert T. Brockman, Houston, Tex., and Donald D. Jones, Smiths, Bermuda, assignors to Rosefaire Development, Ltd., Hamilton, Bermuda

Filed Jan. 18, 1996, Ser. No. 587,276

Int. Cl.[6] G06F *19/00*

U.S. Cl. 705—11 **31 Claims**



1. A sales support computer comprising:

(a) means, operable by a sales person, referred to as a seller, for recording data, referred to as prospect data, about a prospective purchaser, referred to as a prospect;

(b) means for interrogating a sales information data store to obtain information requested by the seller, referred to as requested sales information;

(c) means for displaying the requested sales information to the seller; and

(d) means for displaying a series of prompts to the seller, as a function of the prospect data, to prompt the seller to perform steps in a desired sales communication process during an encounter with the prospect, including one or more prompts to the seller to describe orally to the prospect one or more specific features and benefits of a product or service.

5,826,241

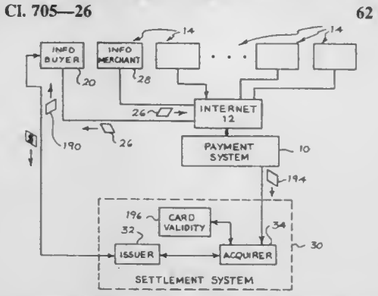
COMPUTERIZED SYSTEM FOR MAKING PAYMENTS AND AUTHENTICATING TRANSACTIONS OVER THE INTERNET

Lee H. Stein, Rancho Santa Fe; Einar A. Stefferud, Huntington Beach, both of Calif.; Nathaniel S. Borenstein, Morristown, N.J., and Marshall T. Rose, Mountain View, Calif., assignors to First Virtual Holdings Incorporated, San Diego, Calif.

Filed Sep. 16, 1994, Ser. No. 308,101

Int. Cl.[6] G06F *17/00*

U.S. Cl. 705—26 **62 Claims**



1. A system for enabling Internet users to make payments to other Internet users using the Internet comprising;

a computer system having stored thereon cardholder accounts for Internet users, said cardholder accounts including Internet address information and financial information;

and wherein said financial information is maintained isolated from said Internet address information so that said financial information is not accessible to Internet users via the Internet;

programming code on said computer system for accepting a transaction request from a second Internet user to make a charge to a first Internet user;

programming code on said computer system for inquiring of the first Internet user whether the first Internet user accepts the charge identified in said transaction request; and

programming code on said computer system for processing the charge to the first Internet user using said financial information upon notification by the first Internet user of acceptance of the charge.

5,826,242

METHOD OF ON-LINE SHOPPING UTILIZING PERSISTENT CLIENT STATE IN A HYPERTEXT TRANSFER PROTOCOL BASED CLIENT-SERVER SYSTEM

Lou Montulli, Palo Alto, Calif., assignor to Netscape Communications Corporation, Mountain View, Calif.

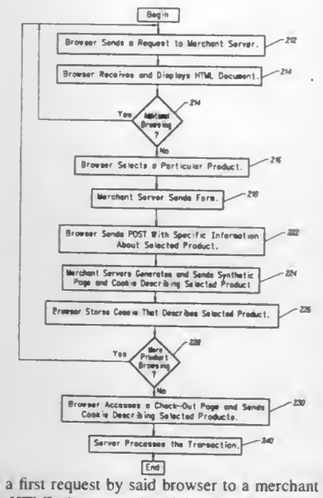
Division of Ser. No. 540,342, Oct. 6, 1995, Pat. No. 5,774,670.

This application Aug. 27, 1997, Ser. No. 919,439

Int. Cl.[6] G06F *17/60;15/16*

U.S. Cl. 705—27 **4 Claims**

1. A method of on-line shopping by a customer using a browser running on a client computer, said method comprising the steps of:



sending a first request by said browser to a merchant server for a first HTML document describing a product;

displaying said HTML document on said client computer, said displayed HTML document describing said product;

selecting, by said customer, said product;

sending a second request by said browser to said merchant server in response to said selection made by said customer;

sending a state object from said merchant server to said browser, said state object identifying said product; and

storing said state object on said client computer by said browser.

5,826,243

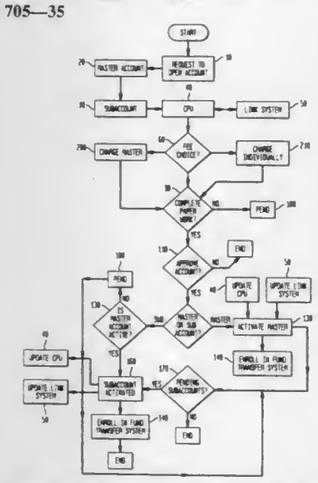
INTEGRATED SYSTEM FOR CONTROLLING MASTER ACCOUNT AND NESTED SUBACCOUNT(S)

Thomas Musmanno, Warren, and Kelly Ur, East Brunswick, both of N.J., assignors to Merrill Lynch & Co., Inc., New York, N.Y.

Filed Jan. 3, 1994, Ser. No. 176,207

Int. Cl.[6] G06F *12/60*

U.S. Cl. 705—35 **8 Claims**



1. A data processing system for managing a plurality of accounts, wherein each account includes a master account, is held by a first individual, and is directed to particular profile of financial attributes and capabilities, comprising:

account input means for receiving account transactions from said individual corresponding to account activity inquiries and account asset transfers in a master account;

account processing means for creating and controlling one or more subaccounts associated with said master account, wherein said account processor permits a particular profile of account transactions to be associated with each said subaccount, said profile representing a subset of transaction functions or identifications associated with said master account; and

account reporting means for creating, displaying, or outputting reports corresponding to transactions undertaken for each account on a periodic basis.

5,826,244

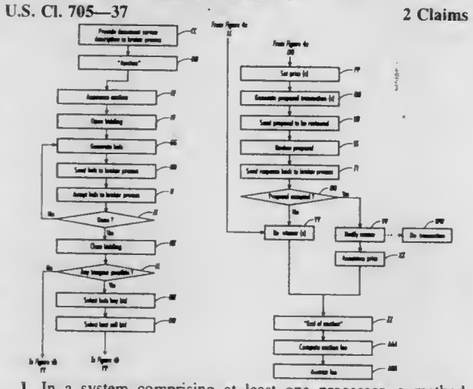
METHOD AND SYSTEM FOR PROVIDING A DOCUMENT SERVICE OVER A COMPUTER NETWORK USING AN AUTOMATED BROKERED AUCTION

Bernardo A. Huberman, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Aug. 23, 1995, Ser. No. 518,632

Int. Cl.[6] G06F *17/60*

U.S. Cl. 705—37 **2 Claims**



1. In a system comprising at least one processor, a method comprising the steps of:

executing in the system a plurality of processes including

a first collection of participant processes, the processes of the first collection being customer processes, each customer process representing a customer,

a second collection of participant processes, the processes of the second collection being supplier processes, each supplier process representing a supplier, and

a broker process capable of serving as an intermediary among the customer and supplier processes;

providing a description of a commercial document service to the broker process;

responsively to the description thus provided, conducting an auction for the document service, the auction including the steps of

submitting a set of bids for the document service, each bid of the set being submitted from a participant process,

receiving the bids of the set in the broker process,

determining in the broker process responsively to the received bids whether the bids can be reconciled to establish a price, and

if the bids can be reconciled performing the steps of;

establishing a price for the document service with the broker process;

selecting with the broker process from among the customer processes a first preferred process, the first preferred process representing a preferred customer;

selecting with the broker process from among the supplier processes a second preferred process, the second preferred process representing a preferred supplier;

proposing with the broker process a commercial transaction wherein the document service is to be provided for the preferred customer by the preferred supplier at the established price.

5,826,245

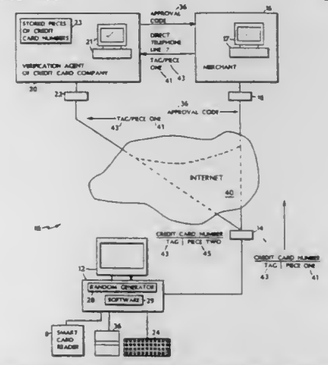
PROVIDING VERTIFICATION INFORMATION FOR A TRANSACTION

Erik Sandberg-Diment, 699 Pomfret Rd., Hampton, Conn. 06247

Filed Mar. 20, 1995, Ser. No. 407,503

Int. Cl.[6] H04M *17/00;11/00*

U.S. Cl. 705—44 **24 Claims**



24. A method for use in relation to providing verification information for a transaction, the verification information being based on confidential information, the method comprising:

on behalf of an initiating party, generating first and second tokens each of which represents some but not all of the confidential information,

sending the first token electronically via a communication network from the initiating party to a verification-seeking party,

sending the second token electronically via a communication network from the initiating party to a verifying party, and

sending the verification information electronically via a communication network from the verifying party to the verification-seeking party.

5,826,246

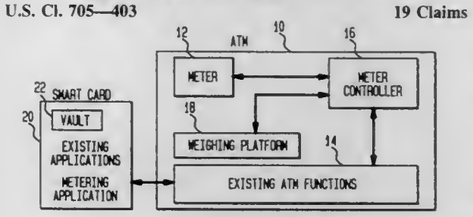
SECURE POSTAGE METER IN AN ATM APPLICATION

Feliks Bator, Easton; William Berson, Weston; John L. Campo, Trumbull; Kathryn V. Lawton, Brandford; Andrei Obrea, Georgetown; Michael Y. Swaluk, Redding, and Monroe A. Weiant, Jr., Trumbull, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 31, 1996, Ser. No. 775,545

Int. Cl.[6] G07B *17/02;* **G06F** *17/60;157/00*

U.S. Cl. 705—403 **19 Claims**



1. An apparatus for performing banking and postage metering functions comprising:

a postage metering apparatus including a meter controller;

a host secure banking apparatus securely housing said postage metering apparatus, said host secure banking apparatus having a separate controller for implementing customer directed banking functions distinct from postage metering functions using a plurality of components thereof, the separate controller being distinct from said meter controller

and said meter controller connected to the components of said host secure banking apparatus for implementing customer directed postage metering functions using the components of said host secure banking apparatus,

said meter controller further securely accounting for postage value dispensed by said postage metering apparatus.

5,826,247

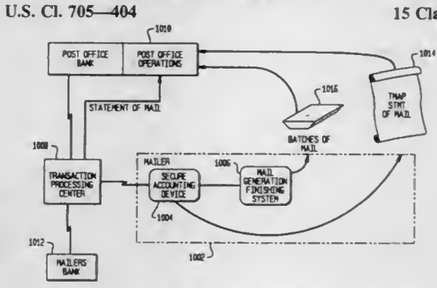
CLOSED LOOP TRANSACTION BASED MAIL ACCOUNTING AND PAYMENT SYSTEM WITH CARRIER PAYMENT THROUGH A THIRD PARTY INITIATED BY MAILING INFORMATION RELEASE

Leon A. Pintsov, W. Harford, and William T. Shannon, Shelton, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 9, 1996, Ser. No. 629,719

Int. Cl.[6] G07B *17/02*

U.S. Cl. 705—404 **15 Claims**



1. A method for mail accounting and payment, comprising the steps of:

creating a mail batch including a plurality of mailpieces;

creating a statement of mailing containing data relating to said mail batch;

digitally signing said statement of mailing, said digital signature included as part of said statement of mailing;

submitting said statement of mailing to a transaction processing center;

said transaction processing center authenticating the signed statement of mailing and then initiating a funds transfer to a carrier delivery service for carrier delivery services payment for said batch of mail; and

delivery the mail batch to the carrier delivery service upon confirmation by the transaction processing center.

5,826,248

NEURONIC CELLULAR AUTOMATION AND OPTIMIZER EMPLOYING THE SAME

Hugo R. de Garis, and Hitoshi Hemmi, both of Kyoto, Japan, assignors to ATR Human Information Processing Research Laboratories, Kyoto, Japan

Filed Sep. 30, 1994, Ser. No. 316,499

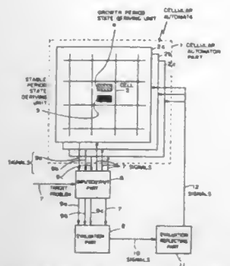
Claims priority, application Japan, Oct. 6, 1993, 5-250677

Int. Cl.[6] G06E *1/00;3/00*

U.S. Cl. 706—15 **6 Claims**

1. A cellular automaton provided with a plurality of cells being so interconnected with each other that signals indicating states of nearby cells can be input in respective said cells as input signals, comprising:

each said cell includes growth period state deriving means for progressing state propagation signals in said cell with reference to a prescribed rule, holding loci of progress thereof as



held signal propagation paths and stopping progress of those of said state propagation signals having heads colliding with each other, and

stable period state deriving means adding new signals to starting points of said held signal propagation paths for propagating said loci of progress toward head sides as propagated loci of progress, and changing other state propagation signals by head signals of said propagated loci of progress, thereby stabilizing said cellular automaton.

5,826,249

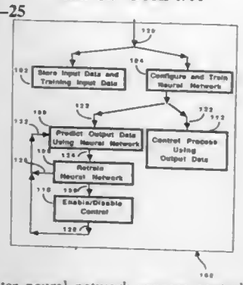
HISTORICAL DATABASE TRAINING METHOD FOR NEURAL NETWORKS

Richard D. Skeirik, Newark, Del., assignor to E.I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 422,955, Apr. 17, 1995, Pat. No. 5,640,493, which is a division of Ser. No. 42,500, Apr. 2, 1993, Pat. No. 5,408,586, which is a division of Ser. No. 563,092, Aug. 3, 1990, Pat. No. 5,212,765. This application Jun. 6, 1997, Ser. No. 870,659

Int. Cl.[6] G06E *1/00*

U.S. Cl. 706—25 **19 Claims**



1. A computer neural network process control method adapted for predicting output data provided to a controller used to control a process for producing a product property having at least one product property, the computer neural network process control method comprising the steps of:

(1) training a neural network using a first training set based on first lab data;

(2) training or retraining said neural network using a second training set based on second lab data, and using said first training set; and

(3) training or retraining said neural network using a third training set based on third lab data, and using said second training set, without using said first training set.

5,826,250

RULES BASES AND METHODS OF ACCESS THEREOF

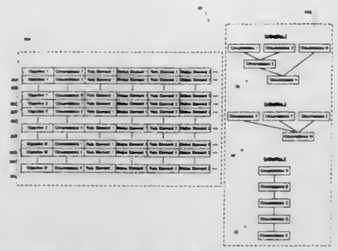
Alan Trefler, Chestnut Hill, Mass., assignor to Pegasystems Inc., Cambridge, Mass.

Filed Jun. 19, 1996, Ser. No. 666,165

Int. Cl.[6] G06F *17/30*

U.S. Cl. 706—50 **69 Claims**

47. A method of determining a rule for a designated objective and circumstance, the method comprising the steps of



A. accessing a rules base that includes

i. a plurality of entries, each associated with an objective and with a circumstance at least one of which entries has a status indicating that information associated with the entry corresponds to the rule for the associated objective and circumstance, and at least another of which entries has a status indicating that the rule for that objective and circumstance corresponds to information associated with an another entry,

ii. a structure that defines an ancestral relationship of circumstances,

B. responding to existence of an entry in the rules base associated with the designated objective and circumstance, which entry has a status indicating that information associated with the entry corresponds to the rule for that objective and circumstance, for generating a rule based on information associated with that entry,

C. responding to existence of an entry in the rules base associated with the designated objective and circumstance, which entry has a status indicating that information for the associated objective and circumstance should be sought elsewhere, for generating a rule based on information associated with an entry that is associated with the designated objective and with a circumstance that is any of an immediate or prior ancestor of the designated circumstance.

5,826,251

SYSTEM OF CONTROLLING OR MONITORING PROCESSES OR INDUSTRIAL PLANTS EMPLOYING A DUAL-LINE FUZZY UNIT

Harro Kiendl, Deipenbecke 16, 58452 Witten, Germany

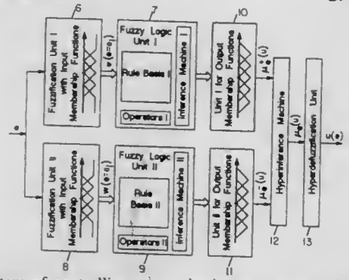
PCT No. PCT/EP94/00655, § 371 Date Nov. 2, 1995, § 102(e) Date Nov. 2, 1995, PCT Pub. No. WO94/22073, PCT Pub. Date Sep. 29, 1994

PCT Filed Mar. 5, 1995, Ser. No. 513,987

Claims priority, application Germany, Mar. 5, 1994, 43 08 083.9

Int. Cl.[6] G06F *15/18*

U.S. Cl. 706—52 **27 Claims**



1. System of controlling or monitoring processes or industrial plants achieved by generating an unambiguous scalar value of an output variable u or values of output variable $u_1, u_2, \ldots, u_r$ at the output of a fuzzy unit, in which each of the output values comes from a continuum of possible values and the output variables are generated as a function of the value of an input variable e or of the values of several input variables $e_1, e_2, \ldots, e_r$, from at least one sensor of said controlled or monitored processes or industrial

plants, subsequently combined to form a vector e for each output variable u_i, by means of two parallel processing lines, each containing the sections fuzzification, conclusion in accordance with a rule basis assisted by fuzzy logic and creation of a membership function on the output side, characterized in that, in the case of a scalar output variable u, the first processing line generates a membership function $\mu_c^+(u)$ on the basis of conclusions assisted by a first set of rules (rule basis I), the functional values of the said membership function indicating, in respect of each potential value of the output variable, how far the first set of rules (rule basis I) on the whole recommends the said value of the output variable, further characterized in that the second processing line generates a membership function $\mu_c^-(u)$ on the basis of conclusions assisted by a second set of rules (rule basis II), the functional values of the said membership function indicating, in respect of each potential value of the output variable, how far the second set of rules (rule basis II) on the whole warns against use of the said value of the output variable, further that a resulting membership function $\mu_c(u)$ is generated from membership functions $\mu_c^+(u)$ and $\mu_c^-(u)$ assisted by a hyperinference procedure (**12**) which makes a compromise between the recommendations and warnings; in addition, that an unambiguous output value u(e) is generated from the membership function $\mu_c(u)$ assisted by a hyper-defuzzification procedure (**13**); in addition, that, in case of several output variables $u_1, u_2, \ldots, u_s$, the system described above in respect of one output variable is applied for each individual output variable $u_1, u_2, \ldots, u_s$ still further characterized in that the hyperinference procedure functions in accordance with a rule corresponding to the form $\mu_c(u)=f(\mu_c^+(u), \mu_c^-(u))$, while at the same time the function f possesses the three properties $f(\mu,0)=\mu$ and $f(\mu,1)=0$ as well as $f(\mu_1$ and $\mu_2) \leqq f(\mu_1$ and $\mu_3)$ for $\mu_2 \geqq \mu_3$, the first effect of this rule being that the resulting membership function $\mu_c(u)$ is identical to the membership function $\mu_c^+(u)$ in respect of the values of u for which the membership function $\mu_c^-(u)$ assumes the functional value of 0, which means that none of the second rules (rule basis II) warns against the use of this value of the output variable, further the second effect of the said rule being that the resulting membership function $\mu_c(u)$ assumes the functional value 0 in respect of such values of u for which the membership function $\mu_c^-(u)$ assumes the functional value of 1 which means that the second rules (rule basis II) warn against the use of this value of the output variable in the maximum possible degree 1, further the third effect of the said rule being that, proceeding from the given value of u and the same functional value $\mu_c^+(u)$, the functional value of the resulting membership function $\mu_c(u)$ tends to decrease as the functional value of $\mu_c^-(u)$ increases, that is, the second rules (rule basis II) warn to an increased degree against the use of the value of the output variable.

5,826,252

SYSTEM FOR MANAGING MULTIPLE PROJECTS OF SIMILAR TYPE USING DYNAMICALLY UPDATED GLOBAL DATABASE

Richard Arthur Wolters, Jr., San Jose; Susan Mae Schwee, Scotts Valley, both of Calif.; James Russell Isaacs, Zurich, Switzerland; Michael Adrian Smitb, San Jose, Calif.; Walter Hening Cooley, Jr., Pacific Grove, Calif.; Craig Ernest Leighty, Pleasanton, Calif.; George Borst, Morgan Hill, Calif.; Paul Lawrence Mayo, San Jose, Calif., and Gregory Douglas Lownes, Exton, Pa., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 28, 1996, Ser. No. 671,999

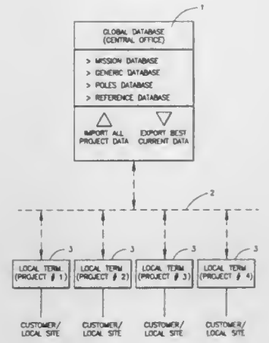
Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—1 **20 Claims**

7. A system for managing multiple projects of a similar type comprising:

(a) a global project management database for storing data for all projects participating in said system, said database being maintained and updated dynamically with best current data representing best current practices across all participating projects in said system;

(b) a plurality of localized computer terminals, each having a microprocessor for executing a project management program for a participating project associated with each said terminal



at a respective local site and a memory for storing and retrieving data obtained from said global project management database for use in the project management program at the respective local site;

(c) data access means operative between said global project management database and each one of the localized computer terminals for periodically importing data from said global project management database, including best current data across all projects, for use in the participating projects, and for periodically exporting data from the participating projects to said global project management database; and

(d) updating means operative in conjunction with said global project management database for allowing evaluation of said data periodically exported from the localized computer terminals of the participating projects, determining whether any such data constitutes best current practices across all participating projects, and updating the best current data of said global project management database with data determined to constitute new best current practices across all participating projects, said new best current practices then being imported by the localized computer terminals from said global project management database,

whereby said global project management database is updated dynamically with best current data representing new best current practices across all participating projects of said system, and the localized computer terminals import and use the new best current practices at the respective participating projects, and

wherein said data access means includes means for performing revision control by comparing an existing revision number of the project management program at a localized computer terminal with a revision number assigned to best current data currently imported from the global project management database.

5,826,253

DATABASE SYSTEM WITH METHODOLOGY FOR NOTIFYING CLIENTS OF ANY ADDITIONS, DELETIONS, OR MODIFICATIONS OCCURRING AT THE DATABASE SERVER WHICH AFFECT VALIDITY OF A RANGE OF DATA RECORDS CACHED IN LOCAL MEMORY BUFFERS OF CLIENTS

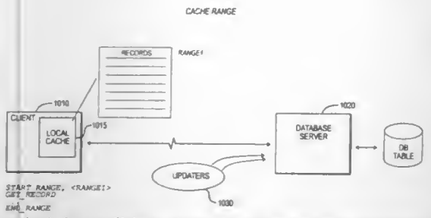
David Bredenberg, Acton, Mass., assignor to Borland International, Inc., Scotts Valley, Calif.

Continuation-in-part of Ser. No. 506,944, Jul. 26, 1995. This application Apr. 19, 1996, Ser. No. 635,133

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—2 **38 Claims**

1. In a multi-user computer system, the system including a database server maintaining on a storage device data records having data fields which store values that change in response to modifications posted by multiple clients in communication with said database server, each client maintaining a local memory buffer for caching a local copy of data records which have been retrieved,



a method for notifying clients of any additions, deletions, or modifications occurring at the database server which affect validity of a range of data records cached in the local memory buffer of clients, the method comprising:

receiving at said database server a request from a particular client which defines a range of data records to fetch;

in response to said request,

(i) transferring a valid copy of data records within said range from the storage device of the server to the particular client, whereupon a valid copy of data records within said range exists in the local memory buffer of the particular client, and

(ii) registering at the database server a request to notify the particular client of any event occurring at the database server that affects said range of data records as a result of additions, deletions, or modifications posted by other clients in communication with said database server;

receiving at said database server a request from a client other than said particular client to post a change;

determining by said database server if the request to post a change specifies a change affecting said range; and

if the request to post a change specifies a change that affects said range, notifying said particular client registered with said database server of occurrence of an event which has occurred at the database server which affects said range of data records.

5,826,254

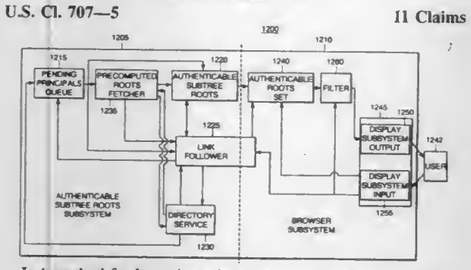
SYSTEM FOR SELECTIVELY BROWSING A LARGE, DISTRIBUTED DIRECTORY TREE USING AUTHENTICATION LINKS

Clifford Earl Kahn, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 18, 1995, Ser. No. 423,429

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—5 **11 Claims**



1. A method for browsing a large directory tree having a plurality of principals, comprising the steps of:

forming a plurality of authentication links among the plurality of principals, each authentication link linking one of the plurality of principals to one other principal, each principal in a linked pair able to verify the other principal in the linked pair by key encryption;

establishing a plurality of cells having one or more principals, one of the principals in each cell being an intermediary and every other principal in each cell being linked to the intermediary by an authentication link;

establishing at least one restricted chain among the plurality of cells, by linking intermediaries where each intermediary of said chain is linked to at least one other intermediary of said chain by an authentication link, said chain having zero or more up-links wherein a first intermediary in said chain vouches for an ancestor of said first intermediary, zero or one cross-link wherein a second intermediary in said chain vouches for a third intermediary that is neither an ancestor or a descendant of said second intermediary, and zero or more down-links wherein a fourth intermediary vouches for a descendant of said fourth intermediary;

predetermining the up-links of said chain;

predetermining the cross-links of said chain; and

storing the predetermined up-link and predetermined cross-links for use by a user during browsing.

5,826,255

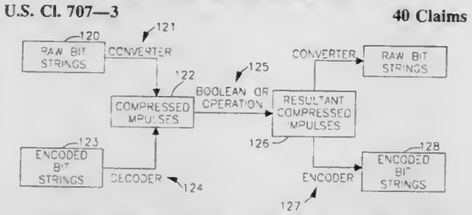
N-WAY PROCESSING OF BIT STRINGS IN A DATAFLOW ARCHITECTURE

Michael W. McCool, Pasadena, and Jean A. Marquis, Sierra Madre, both of Calif., assignors to Sand Technology Systems International, Inc., Canada

Filed Feb. 18, 1997, Ser. No. 801,317

Int. Cl.[6] G06F *5/00*; **H03M** *7/30*

U.S. Cl. 707—3 **40 Claims**



1. In a system having a plurality of processing elements in a dataflow architecture, each leaf node processing element taking two input bit strings as input data and performing a boolean operation on the two input bit strings to produce output bit units, a computer-implemented method of performing the boolean operation on a plurality of input bit strings to produce one resultant bit string comprising the steps of:

attaching each pair of input bit strings to selected ones of the processing elements;

connecting the processing elements to form a binary tree having a plurality of levels, wherein the selected processing elements are leaf nodes of the binary tree, output bit units of the selected processing elements being input to intermediate processing elements which are non-leaf nodes at a level of the binary tree lower than the leaf nodes, output bit units of the intermediate processing elements being input to other intermediate processing elements at lower levels of the binary tree, the resultant bit string being output by a root processing element which is a root node of the binary tree; and

processing all leaf nodes of the binary tree by performing the boolean operation on the input bit vectors to the selected processing elements to produce output bit units, the output bit units becoming input bit units to the intermediate processing elements, processing all non-leaf nodes of the binary tree by performing the boolean operation on input bit units to the intermediate processing elements to produce output bit units, and processing the root node of the binary tree by performing the boolean operation on input bit units to the root processing element to produce the resultant bit string.

5,826,256

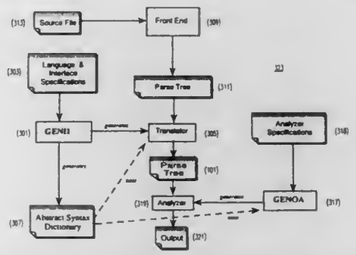
APPARATUS AND METHODS FOR SOURCE CODE DISCOVERY

Premkumar Devanbu, N. Plainville, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 22, 1991, Ser. No. 781,564

Int. Cl.[6] G06F *9/00*

U.S. Cl. 707—4 **13 Claims**



1. A method of discovering information useful to a programmer about a specific aspect of the source code of a computer program, the source code being written and compiled in one of a plurality of language-environment combinations and the method comprising the steps of:

receiving a dependent parse tree for the program which is generated as required by the language-environment combination used to write and compile the source code;

translating the dependent parse tree into an independent parse tree which is independent of the language-environment combination; and

analyzing the independent parse tree as required to obtain the information.

5,826,257

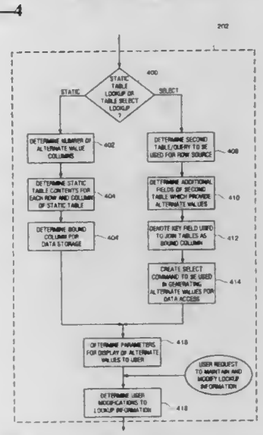
METHOD AND STRUCTURE FOR MAINTAINING AND UTILIZING A LOOKUP VALUE ASSOCIATED WITH A STORED DATABASE VALUE

George Arthur Snelling, Jr., Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Mar. 20, 1996, Ser. No. 619,129

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—4 **38 Claims**



9. A computer operable method for maintaining display parameters associated with a lookup column of a database table comprising the steps of:

receiving user input indicative of parameters associated with a lookup field of said lookup column of said database table;

generating said display parameters from said parameters, said display parameters identify at least one alternate value for said lookup field of said lookup column;

storing said display parameters in a data dictionary associated with said database table;

retrieving said display parameters in response to a user request to access said lookup column of said database table; and

utilizing said alternate value to present data in said lookup column in response to said user request.

5,826,258

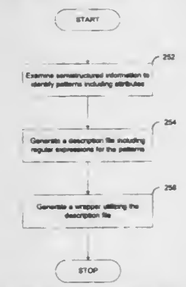
METHOD AND APPARATUS FOR STRUCTURING THE QUERYING AND INTERPRETATION OF SEMISTRUCTURED INFORMATION

Ashish Gupta, Menlo Park; Venky Harinariyan, Mountain View; Dallan Quass, Palo Alto, and Anand Rajaraman, Stanford, all of Calif., assignors to Junglee Corporation, Sunnyvale, Calif.

Filed Oct. 2, 1996, Ser. No. 724,943

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—4 **24 Claims**



1. A method of generating a wrapper for accessing semistructured information in order to provide access to at least one of a plurality of attributes in said semistructured information as tuples for a relational database system, said method comprising the steps of:

examining the semistructured information to identify patterns of interest, said patterns of interest including at least one of said attributes;

generating a description file, including regular expressions, for the patterns of interest, said regular expressions specifying at least one of a plurality of locations of the attributes within the semistructured information; and

generating said wrapper based upon the description file.

5,826,259

EASILY EXPANDABLE DATA PROCESSING SYSTEM AND METHOD

Karol Doktor, Wheelers Hill, Australia, assignor to Financial Systems Technology Pty. Ltd., Melbourne, Australia

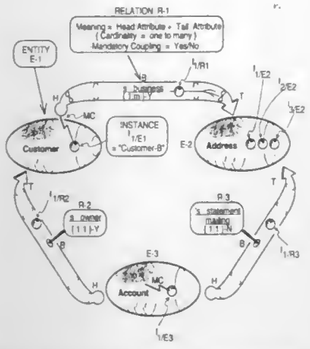
Continuation of Ser. No. 439,207, May 11, 1995, Pat. No. 5,675,779, which is a division of Ser. No. 83,361, Jun. 28, 1993, abandoned, which is a continuation of Ser. No. 526,424, May 21, 1990, abandoned. This application May 22, 1997, Ser. No. 862,176

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—4 **18 Claims**

1. A method for retrieving a desired entity of a desired entity type from a relational database, wherein said desired entity is related to a provided entity by a provided relation type associating an entity type of said provided entity with said desired entity type, said method comprising:

retrieving a specific relation type record defining said provided relation type from a relation definition table;



retrieving a specific relation instance record defining a relation of said provided relation type between said provided entity and said desired entity from a relation instance table corresponding to said specific relation type record;

retrieving a desired entity type record containing said desired entity type from an entity definition table, wherein said desired entity type record specifies a desired entity instance table associated with said desired entity type; and

retrieving said desired entity from said desired entity instance table.

5,826,260

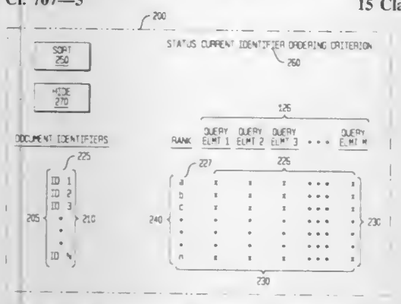
INFORMATION RETRIEVAL SYSTEM AND METHOD FOR DISPLAYING AND ORDERING INFORMATION BASED ON QUERY ELEMENT CONTRIBUTION

Roy Jefferson Byrd, Jr., Ossining, N.Y.; John Martin Prager, Ramsey, N.J.; Yael Ravin, Mt. Kisco, and Mark N. Wegman, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 11, 1995, Ser. No. 570,149

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—5 **15 Claims**



1. An information retrieval system having a computer and a data base with a document collection of a plurality of documents, the system further comprising:

a first display with one or more selected documents, each selected document having an identifier identifying the respective selected document, each selected document being a document in the document collection;

one or more query elements that are derived from a query used to select the selected documents;

one or more contribution components associated with each selected document, the contribution components showing the contribution of each of the query elements in ranking the selected document with a rank, the identifiers being displayed in order by the rank on a query result display with their associated contribution components; and

a second display, the second display having the identifiers shown in an alternative order, the alternative order being determined by the values of one or more contribution components as determined by executing a reordering process.

5,826,261

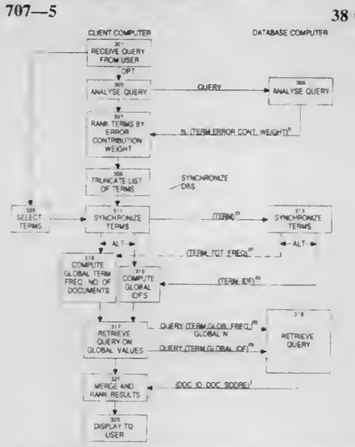
SYSTEM AND METHOD FOR QUERYING MULTIPLE, DISTRIBUTED DATABASES BY SELECTIVE SHARING OF LOCAL RELATIVE SIGNIFICANCE INFORMATION FOR TERMS RELATED TO THE QUERY

Graham Spencer, 10280 Lockwood Dr., Cupertino, Calif. 95014

Filed May 10, 1996, Ser. No. 644,302

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—5 **38 Claims**



1. In an information retrieval apparatus including a database of documents, each document having a plurality of terms and a unique document indicia, the information retrieval apparatus further including a programmed processor adapted to receive a query containing at least one term and to compute in response to the query a document score for each of a selected plurality of documents, the document score being a function of the terms of the query, a computer memory readable by the processor and comprising:

a first table that specifies for each document in the database a set of terms, each term in the set associated with a scalar measure of a contribution the term makes to the document score of the document, the scalar measure of contribution for a term being a function of an inverse document frequency of the term, and a frequency of the term within the document, the terms in each set ordered by the scalar measure of contribution, the sets ordered with respect to indicia of the documents, such that the information retrieval apparatus can determine for any document a selected number of terms that most significantly contribute to the document score.

5,826,262

PARALLEL BOTTOM-UP CONSTRUCTION OF RADIX TREES

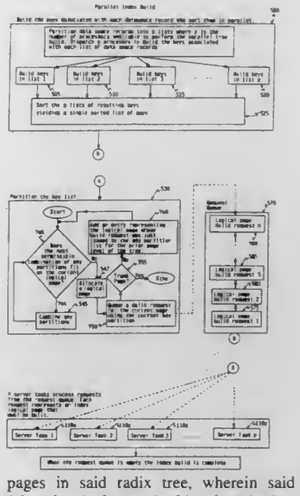
Thuan Quang Bui, Fremont, Calif.; Scott Dennis Helt, Rochester, Minn.; Balakrishna Raghavendra Iyer, San Jose, Calif., and Gary Ross Ricard, Chatfield, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1996, Ser. No. 621,757

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—7 **9 Claims**

1. A method for building a radix tree, comprising the computer executed steps of:



allocating pages in said radix tree, wherein said pages are organized into levels from a leaf level at the bottom of said radix tree to a trunk level at the top of said radix tree;

partitioning keys into said pages at each level of said radix tree starting at said leaf level of said radix tree and progressing to said trunk level of said radix tree, wherein all subtrees of keys on a first page have a common parent on said first page; and

building each page by inserting said keys into said page starting at the top of said page and progressing to the bottom of said page.

5,826,263

DATA MANAGEMENT, DISPLAY, AND RETRIEVAL SYSTEM FOR A HIERARCHICAL COLLECTION

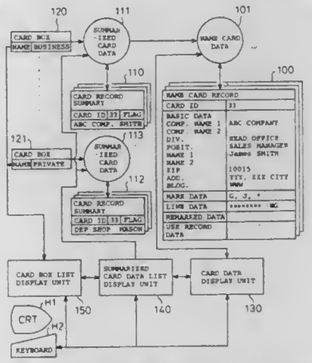
Kaoru Nakabayashi, and Akira Mochida, both of Suwa, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Division of Ser. No. 245,280, May 18, 1994, Pat. No. 5,600,827. This application Oct. 28, 1996, Ser. No. 738,694

Claims priority, application Japan, May 18, 1993, 5-116123

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—7 **20 Claims**



1. A data management system for managing a plurality of data sets where each data set includes a plurality of items, said data management system comprising:

sequence modification means for modifying a sequence of said plurality of data sets according to a certain item included in each data set;

arrangement data memory means for, with respect to at least a portion of said items included in said data sets, storing data representing an arrangement which complies with an external agreement on data to be input to said items, said external agreement being a customizable structure under user control; and

priority order specification means for, when instructed to modify the sequence of said plurality of data sets according to said arrangement stored in said arrangement data memory means, activating said sequence modification means to modify the sequence of said data sets according to said stored data.

5,826,264

Patent Not Issued For This Number

5,826,265

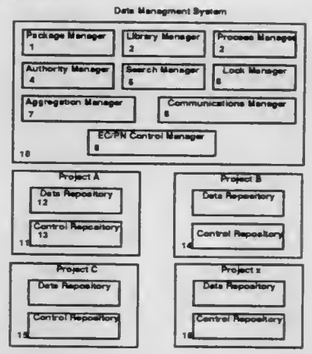
DATA MANAGEMENT SYSTEM HAVING SHARED LIBRARIES

Gary Alan Van Huben; Joseph Lawrence Mueller; Steve Yun Xiao, and Joyce Chang Mak, all of Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 6, 1996, Ser. No. 761,320

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—8 **26 Claims**



1. A data management system for file and database management useful in concurrent engineering processes, comprising: a design control system for fulfilling requests of a user initiated from a computer system client system coupled to a network, including

a data management control system for managing a plurality of projects, each project having a data repository for data records and a control repository comprising a common access interface and one or more databases,

said control repository communicating with users of said design control system for fulfilling requests of a user and the data repositories of said data management control system through a plurality of managers, each manager performing a unique function, wherein said managers act as building blocks which can be combined in a plurality of manners to support an environment for suitable for multiple users of a user community, and wherein

one of said managers is a process manager, and one of said managers is a lock and authority manager for permitting multiple users to possess ownership in a data object, but ensures only one owner is updating an individual instance at any given time, and wherein

a check out utility is provided for the user to request ownership to a piece of data, transfer ownership, or take ownership if they are an authorized surrogate of a current owner of said piece of data, and wherein is provided

a perform data deletion utility for ensuring only an authorized data manager or a valid data owner may delete their own data so as not to jeopardize any other data, and

one of said managers is a library manager enabling automated library processing of any application program or tool to be launched using input data from said data management control system and after processing enabling results to be recorded as output data in any data control repository of said data management control system as a record in said data control repository, and wherein

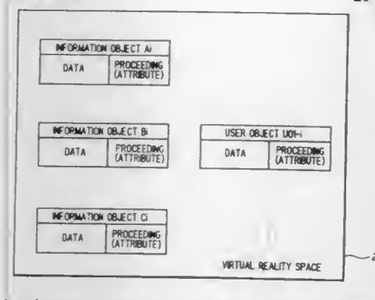
said library manager establishes and processes data for private and public libraries which can be shared by many users and in processing data for said public libraries manages the storage into and movement through a public library and also manages the movement of the data between physical locations in said data management system as specified under an established library structure for said data management system.

5,826,266

CYBERSPACE SYSTEM FOR ACCESSING VIRTUAL REALITY OBJECTS

Yasuaki Honda, Chiba, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 2, 1995, Ser. No. 552,065
Claims priority, application Japan, Nov. 8, 1994, 6-273293
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—9 **20 Claims**



1. A cyberspace system server for supplying a virtual reality space from said server to users' terminals, characterized in that the virtual reality space is constructed by information objects which supply information and user objects which access the information objects to receive the information, and each of said information objects allows or disallows an access of each of said user objects when F(Si, Su) is true, where Si represents a status of said information object, Su represents a status of said user object and F represents a function for determining allowance or disallowance of the access to said information object.

5,826,267

WEB INFORMATION KIOSK

James Michael McMillan, 35 River Drive #1507, Jersey City, N.J. 07310

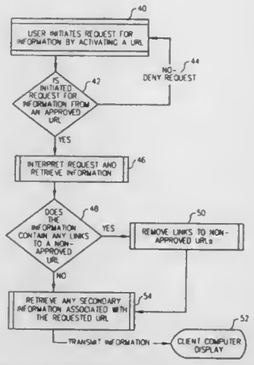
Filed Mar. 20, 1996, Ser. No. 619,904
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—9 **22 Claims**

1. A method for selectively displaying hypertext documents to a user by an operator on an electronic display associated with a client computer connected to a server computer through a data network comprising the steps of:

a) initiating a user request for the transfer of information from a server computer through a client computer by specifying to said server computer a Uniform Resource Locator;

b) verifying that said Universal Resource Locator is from a group of previously operator approved Uniform Resource Locators;

c) interpreting said request for the transfer of information if said Uniform Resource Locator is from said group of previously operator approved Uniform Resource Locators;



d) transmitting information associated with said Uniform Resource Locator to said client computer; and

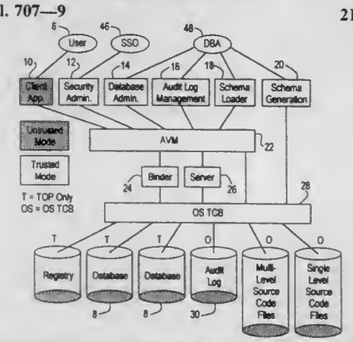
e) displaying said information to said user, wherein the step of displaying said information includes the substep of removing from said information Hyper Text Markup Language anchors which would initiate requests for information from said server computer by specifying Uniform Resource Locators which are not in said group of previously operator approved Uniform Resource Locators.

5,826,268

SECURE MULTILEVEL OBJECT ORIENTED DATABASE MANAGEMENT SYSTEM

Marvin Schaefer, Glenwood, Md.; Paul A. Martel, Fitchburg; Antoun J. Kanawati, Arlington, both of Mass., and Sandra A. Wade, Rockville, Md., assignors to Ontos, Inc., Lowell, Mass.

Filed Dec. 23, 1996, Ser. No. 772,315
Int. Cl.[6] G06F *17/00*
U.S. Cl. 707—9 **21 Claims**



1. A multilevel object database management system method for a database having levels 0 to N where each successive level from 0 to N exists at a higher level of security, comprising the steps of:

creating a plurality of views within at least one object, said views each existing at a different level of security; and

in response to a request by an entity to access the object,

determining the security clearance level of the entity;

if a view exists at the determined security clearance level, providing the view existing at the determined security clearance level; and

if a view does not exist at the determined security clearance level and a view exists at a lower level of security, providing the nearest existing lower level view,

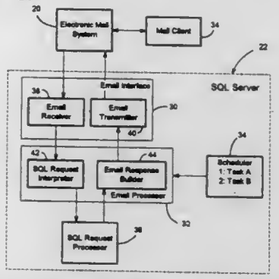
whereby an element of data of a given security level can be accessed by an entity at a higher security level, thereby avoiding wasteful duplicative data storage.

5,826,269

ELECTRONIC MAIL INTERFACE FOR A NETWORK SERVER

Peter Hussey, Seattle, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jun. 21, 1995, Ser. No. 493,095
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—10 **17 Claims**



1. A networked system for processing queries on a networked database server in a distributed processing environment, comprising:

at least one client having an electronic mail interface for submitting a query via an electronic mail system and receiving a corresponding response therefrom; and

a networked database server interconnected with and adapted for intercommunication with the at least one client and the electronic mail system, wherein the networked database server processes the query received from the client to obtain a result, and transmits the result back to the electronic mail system, the networked database server having:

(a) an electronic email interface within the networked database server for receiving and transmitting messages in an appropriate format and protocol prescribed by the electronic mail system;

(b) processing means within the networked database server for extracting queries from a received mail message, the queries being executed by an execution means disposed in communication with the processing means and configured to generate responses to the executed requests, the processing means also being for building mail messages from responses; and

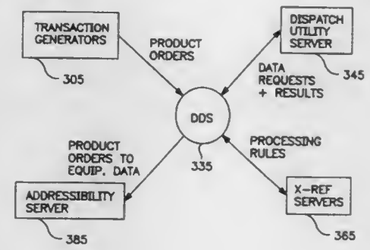
(c) a message queue means within the networked database server disposed for communication with the electronic mail interface, the message queue means configured to store both incoming messages received from the electronic mail system and outgoing messages built by the processing means.

5,826,270

METHODS AND SYSTEMS FOR CLIENT OR CUSTOMER-SITE TRANSACTION PROCESSING IN A DISTRIBUTED DATABASE SYSTEM

Steve Rutkowski, Aurora, and William Rierden, Evergreen, both of Colo., assignors to CSG Systems, Inc., Englewood, Colo.

Filed Dec. 28, 1995, Ser. No. 580,160
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—10 **23 Claims**



16. A method of processing client or customer-site initiated on-line data transactions comprising the steps of:

initiating a data transaction, including information identifying service location equipment and a desired product, at a service location and transmitting said transaction to a queue;

retrieving said transaction from said queue and transmitting said transaction to a data directory server;

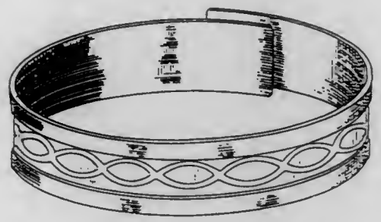
interrogating at least one of a plurality of dispatch utility servers to identify an available dispatch utility server and routing said transaction to said available dispatch utility server;

extracting said information identifying said service location equipment and said product from said data transaction, formulating an addressability change transaction and transmitting said change transaction to an addressability open server; and

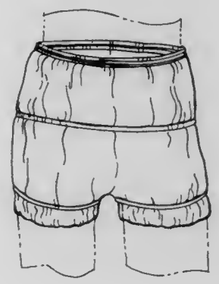
identifying a controller, which controls enabling and disabling said desired product, and instructing said controller to enable or disable said product.

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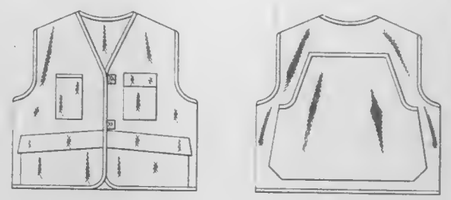
399,635
ILLUMINATED BELT
Michael Knight, Maple Plain, Minn., and Richard E. Harolde, Woodacre, Calif., assignors to Lumitech, Inc., Wayzata, Minn.
Continuation-in-part of Ser. No. 61,808, Oct. 31, 1996, and a continuation-in-part of Ser. No. 787,923, Jan. 23, 1997. This application Aug. 27, 1997, Ser. No. 76,037
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—627



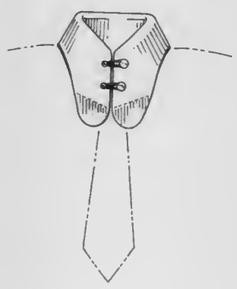
399,636
UNDER SHORTS
Peter Müller, Chiemsee, Germany, assignor to Tytex A/S, Ikast, Denmark
Filed Jan. 10, 1997, Ser. No. 64,799
Claims priority, application Germany, Aug. 7, 1996, 96 06 605.9
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—712



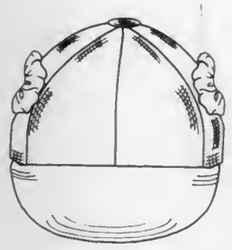
399,637
VEST
Janet Suding, P.O. Box 273, Brookville, Ind. 47012
Filed Jul. 25, 1997, Ser. No. 74,829
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—839



399,638
SHIRT COLLAR
Deane R. Watson, 1284 Tennyson La., Naperville, Ill. 60540
Filed Apr. 7, 1997, Ser. No. 67,861
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—853



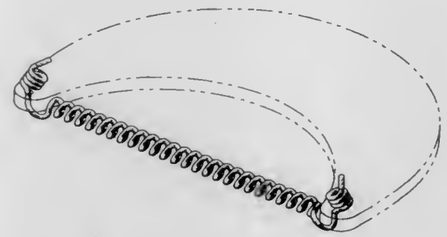
399,639
CAP
Sheila K. Bartz, 13459 SW. 136th Pl., Tigard, Oreg. 97223
Division of Ser. No. 63,508, Dec. 9, 1996. This application Nov. 21, 1997, Ser. No. 79,714
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—876



399,640
HEAD GEAR
Jari Hiltunen, Lahti, Finland, assignor to Caminno Consulting Oy Ab, Jorvas, Finland
Filed Aug. 26, 1997, Ser. No. 76,219
Claims priority, application Finland, Feb. 17, 1997, 160/97
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—877



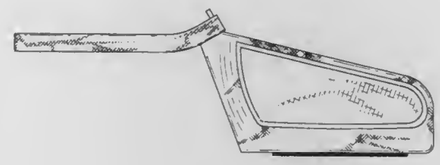
399,641
VISOR RETENTION STRAP
Debra Kay Meador, 2701 Argolis Way, Sacramento, Calif. 95826
Filed Jun. 11, 1997, Ser. No. 72,252
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—391



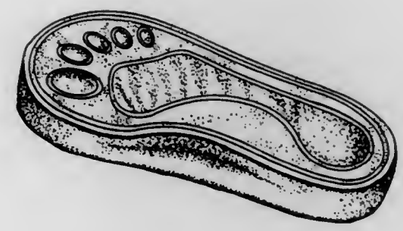
399,642
SKATE BOOT
T. Blaine Hoshizaki, Montreal West; Jeffrey J. Acheson, Weston, and Gerald Black, Cambridge, all of Canada, assignors to Canstar Sports Group Inc., Canada
Filed Dec. 3, 1993, Ser. No. 15,970
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—904



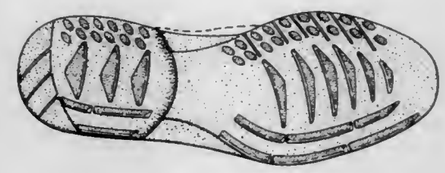
399,643
SNEAKER TOE COVER
Steve D. Harbison, 5100 Old Birmingham Hwy. #1106, Tuscaloosa, Ala. 35404
Filed May 22, 1997, Ser. No. 71,198
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—913



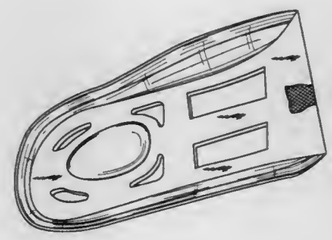
399,644
OUTSOLE
Kim Alan Ball, Taipei, Taiwan, assignor to Payless ShoeSource, Inc., Topeka, Kans.
Filed Jul. 10, 1995, Ser. No. 41,203
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—952



399,645
SHOE SOLE
Philip J. Percuoco, Wilmington, Mass., assignor to Reebok International Ltd., Stoughton, Mass.
Filed Nov. 20, 1997, Ser. No. 79,954
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—956

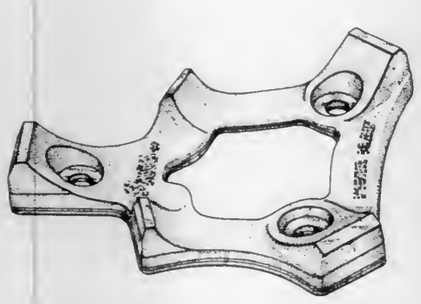


399,646
WINGED BLADDER FOR USE IN SHOES
Alexander W. Choi, Easton; Bernie Allen, Wayland; John J. Erickson, Brockton, and Doug K. Robinson, Mansfield, all of Mass., assignors to Acushnet Company, Fairhaven, Mass.
Filed May 16, 1997, Ser. No. 70,851
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—961

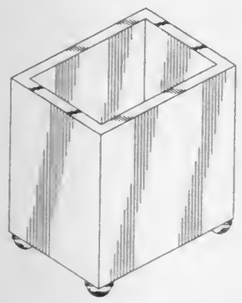


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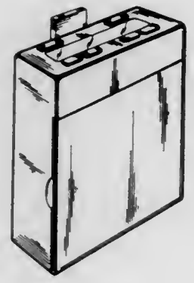
399,647
SPIKE FOR BASEBALL SHOES
Yoshihiko Hikita, and Kiyomu Ishihara, both of Kobe, Japan, assignors to Asics Corporation, Japan
Filed Aug. 27, 1997, Ser. No. 75,264
Claims priority, application Japan, Mar. 7, 1997, 9-6704
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—962



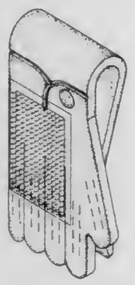
399,648
DECORATIVE CONTAINER HOLDER
Marjorie Hilton, 910 Park Ave., New York, N.Y. 10021, assignor to Marjorie Hilton, New York, N.Y.
Filed Nov. 26, 1996, Ser. No. 62,822
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—201



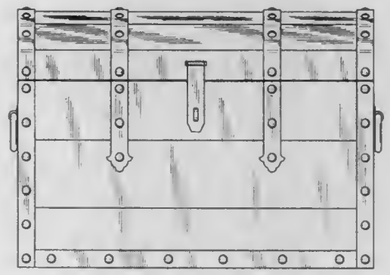
399,649
PAGER-SHAPED PILL BOX WITH CLIP
Nina Girvetz, 2913 Third St. Unit 310, Santa Monica, Calif. 90405
Filed Jun. 2, 1997, Ser. No. 71,734
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—215



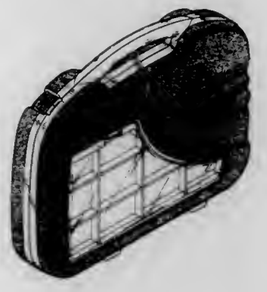
399,650
GOLF GLOVE HANGING CLIP
Te-Chen Lee, P.O. Box 96-405, Taipei 10098, Taiwan
Filed Oct. 28, 1997, Ser. No. 78,513
Term of patent 14 years
LOC (6) Cl. 03 - *99*
U.S. Cl. D3—329



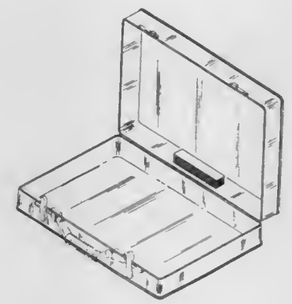
399,651
SEA CHEST STRUCTURE
Richard Maguire, 2201 Laguna St., #505, San Francisco, Calif. 94115
Filed Sep. 29, 1997, Ser. No. 77,124
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—272



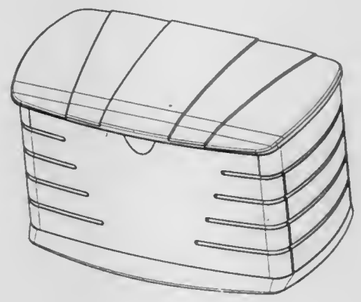
399,652
TOOL BOX
Zen-Chieh Fang, No. 2, Lane 565, Chung Cheng Rd., Wu Feng Hsiang, Taichung Hsien, Taiwan, Taiwan
Filed Sep. 2, 1997, Ser. No. 76,285
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—282



399,653
CASE FOR STORING SADDLE BLANKETS
Howard K. Shellenberger, and Linda J. Shellenberger, both of 1115 Brinckman Rd., Pennsburg, Pa. 18073
Filed Apr. 30, 1997, Ser. No. 69,453
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—294



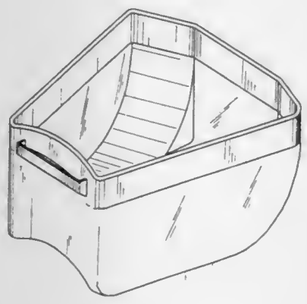
399,654
STORAGE BOX
Jon Mandell, North Canton, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 14, 1997, Ser. No. 73,511
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—294



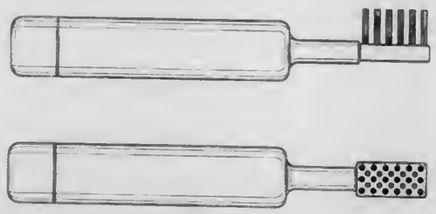
399,655
DECORATIVE SHOW SLIPS
Cuino Maxham, 1020 E. Magnolia Blvd., Burbank, Calif. 91501
Filed Mar. 27, 1997, Ser. No. 68,811
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—303



399,656
CANDY DISPENSER BIN WITH REFLECTIVE BACK SURFACE
Thomas C. Mulvihill, 59 River Ave., Monmouth County, N.J. 07750
Filed Mar. 21, 1997, Ser. No. 68,067
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—307



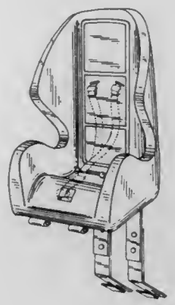
399,657
SELF-DISPENSING SQUEEZE TOOTHBRUSH
Jerry Davanzo, 27302 Strawberry 8-104, Farmington Hills, Mich. 48334
Filed Mar. 20, 1997, Ser. No. 68,217
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—108



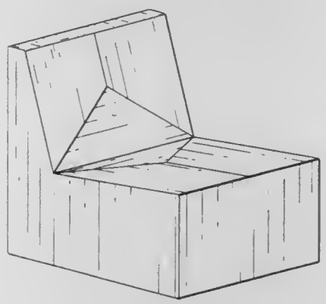
399,658
COMBINED COSMETIC BOTTLE AND CAP
Ermenegildo Nosella, Miami, Fla., assignor to New High Glass, Miami, Fla.
Filed Oct. 14, 1997, Ser. No. 78,311
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D4—116



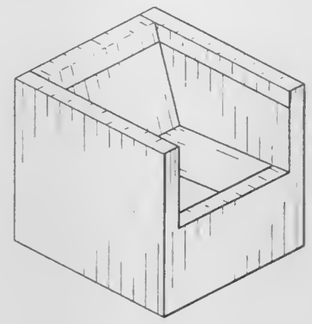
399,659
INFANT CARRIER SEAT
Mary J. Reiland; Kenneth H. Reiland, both of Apple Valley, and David Lehse, Oakdale, all of Minn., assignors to Four D, Inc., Apple Valley, Minn.
Filed Feb. 13, 1997, Ser. No. 66,415
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—333



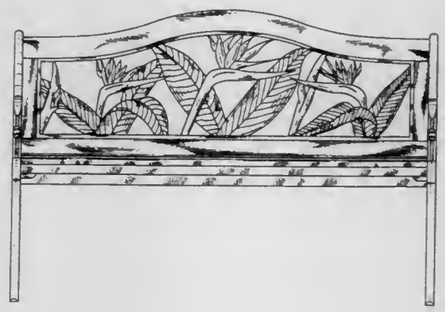
399,660
ARMLESS FIBREBOARD CHAIR
E. Dallas Smith, Indianapolis, Ind., assignor to DBX Engineering Corporation, Green Castle, Ind.
Filed Jun. 16, 1997, Ser. No. 72,393
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



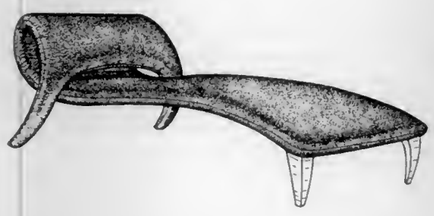
399,661
FIBREBOARD CHAIR WITH ARMS
E. Dallas Smith, Indianapolis, Ind., assignor to DBX Engineering Corporation, Green Castle, Ind.
Continuation-in-part of Ser. No. 66,329, Feb. 11, 1997, Pat. No. Des. 392,470. This application Jun. 16, 1997, Ser. No. 72,409
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



399,662
STYLIZED ARCH BENCH
Chary Jeng, La Mirada, Calif., assignor to Berkeley Products, Inc., La Mirada, Calif.
Filed Jan. 24, 1997, Ser. No. 65,367
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—358



399,663
CHAISE LOUNGE
Henry H. Vu, San Francisco, Calif., assignor to American West Furniture, Santa Clara, Calif.
Filed Oct. 14, 1997, Ser. No. 77,915
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—361



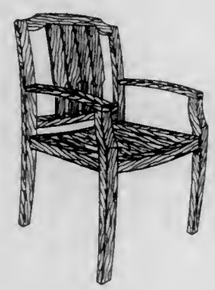
399,664
CHAIR
William H. Goodworth, Davenport, and Robert L. Baillie, Muscatine, both of Iowa, assignors to HON Technology Inc., Muscatine, Iowa
Filed Jun. 2, 1997, Ser. No. 71,727
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



399,665
CHAIR
Carl A. Muller, 1586 N. Harding, Altadena, Calif. 91001
Filed Jul. 11, 1997, Ser. No. 73,582
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—370



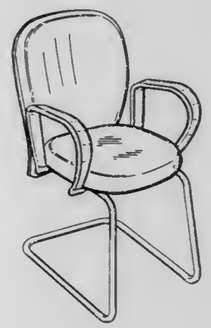
399,666
CHAIR
Carl A. Muller, 1856 N. Harding, Altadena, Calif. 91001
Filed Jul. 11, 1997, Ser. No. 73,583
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—370



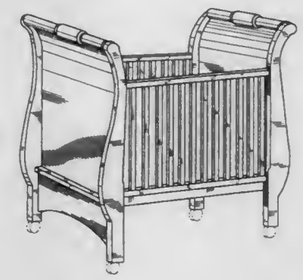
399,667
CHAIR
Carl A. Muller, 1856 N. Harding, Altadena, Calif. 91001
Filed Jul. 11, 1997, Ser. No. 73,584
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—370



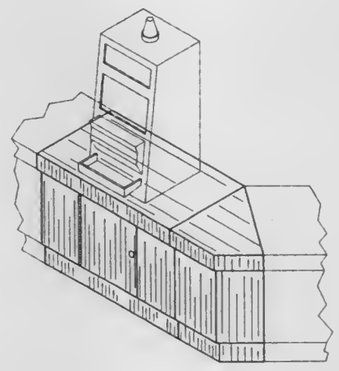
399,668
CHAIR
Jonathan Crinion, Toronto, Canada, assignor to Global Upholstery Company, Downsview, Canada
Filed Nov. 14, 1997, Ser. No. 79,205
Claims priority, application Canada, Nov. 14, 1997, 1997-2919
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—372



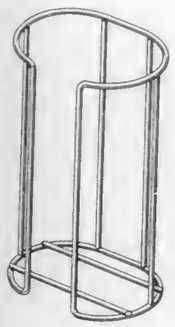
399,669
CHILD BED
Lawrence E. Tabbia, 102 E. Pleasant Grove Rd., Jackson, N.J. 08527
Filed Oct. 14, 1997, Ser. No. 77,808
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—390



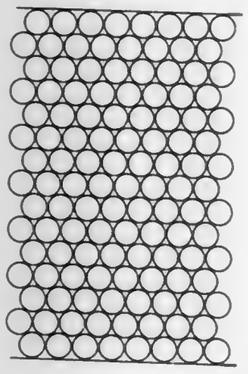
399,670
MODULAR SUPPORT STAND COMPONENT FOR GAMING MACHINES
Dennis D. Miller, and Robert G. Dixon, both of Las Vegas, Nev., assignors to Chempower, Inc., Akron, Ohio
Filed May 20, 1997, Ser. No. 70,973
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—442



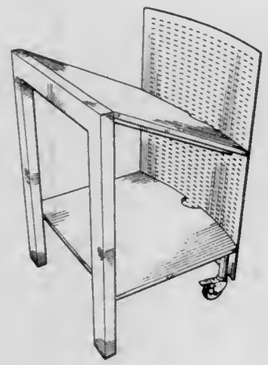
399,671
PLATE CARRIER
Robert S. Arvans, 133 Chaucer Ct., Willowbrook, Ill. 60521
Division of Ser. No. 60,963, Oct. 15, 1996. This application Jul. 14, 1997, Ser. No. 73,495
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—462



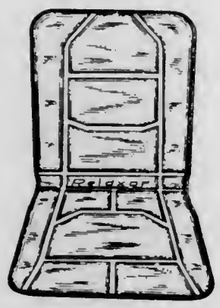
399,672
SUPPORT FOR A YARD DECORATION
Joseph G. Boeger, 5709 Lisette, St. Louis, Mo. 63109
Continuation-in-part of Ser. No. 40,354, Jun. 15, 1995, Pat. No. Des. 375,279. This application Nov. 4, 1996, Ser. No. 61,954
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—469



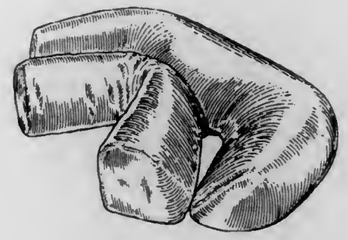
399,673
DISPLAY TABLE
Antonio Canton Gongora; Carlos Jesús Cruz Fernandez; José María Munagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Madrid, Spain, assignors to Telefonica de Espana, S.A., Madrid, Spain
Filed Nov. 21, 1996, Ser. No. 62,706
Claims priority, application Spain, May 22, 1996, 137554
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—478



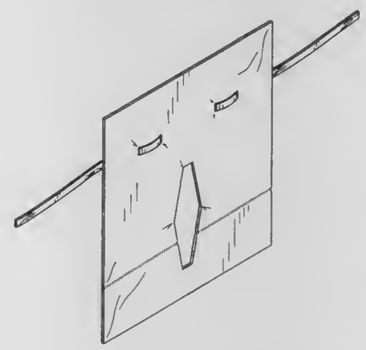
399,674
MASSAGING SYSTEM SEAT CUSHION
Craig M. Loud, Whittier, Calif., assignor to J B Research, Inc., Bellflower, Calif.
Division of Ser. No. 51,541, Mar. 13, 1996. This application Oct. 24, 1997, Ser. No. 79,140
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



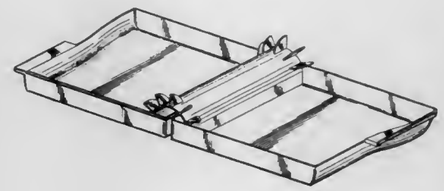
399,675
PILLOW
Robyn Wendy Ferris, 2 Tumut Court, Keilor, Victoria, 3036, Australia
Filed Nov. 14, 1997, Ser. No. 79,576
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



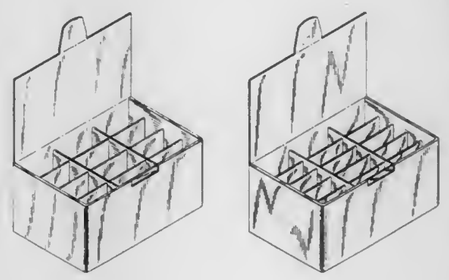
399,676
BABY BLANKET FOR CARRIAGES AND CAR SEATS
Doris T. Gerlach, 654 Clark Ave., Keport, N.J. 07735
Filed Apr. 2, 1997, Ser. No. 68,404
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—603



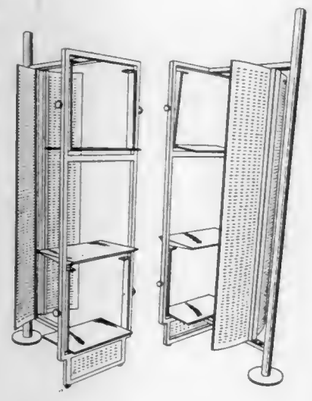
399,677
COMPACT DISC BINDER
Albert B. Cheris, Highland Park, Ill.; Robert B. Staubitz, Collinsville, and Timothy Repp, New Hartford, both of Conn., assignors to Tenex Corporation, Elk Grove Village, Ill.
Filed Nov. 1, 1996, Ser. No. 61,916
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—631



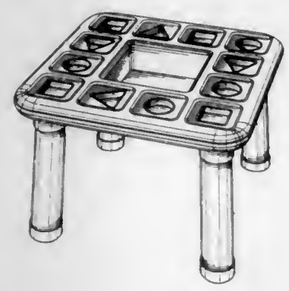
399,678
BOX FOR AUDIO/VISUAL MEDIA
Richard L. Aquino, Fort Lee, N.J., and Salvatore A. Aquino, Carolina Beach, N.C., assignors to S. A. Richards, Inc., Fort Lee, N.J.
Filed Sep. 13, 1993, Ser. No. 12,913
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D6—632



399,679
DISPLAY STAND WITH BACK SCREEN
Antonio Canton Gongora; Carlos Jesus Cruz Fernandez; José María Munagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Madrid, Spain, assignors to Telefonica de España, s.a., Madrid, Spain
Filed Nov. 22, 1996, Ser. No. 62,758
Claims priority, application Spain, Mar. 22, 1996, 137552
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—478



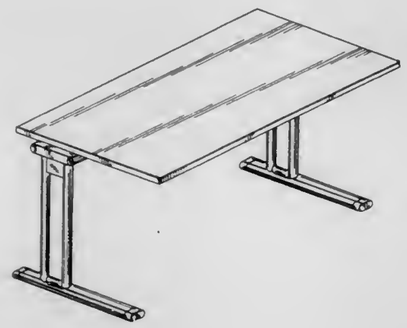
399,680
TABLE FOR EDUCATIONAL GAMES
Kai-Shun Mak, Hong Kong, Hong Kong, assignor to Hop Lee Cheong Industrial Co., Ltd., Hong Kong
Filed Jun. 13, 1997, Ser. No. 72,265
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480



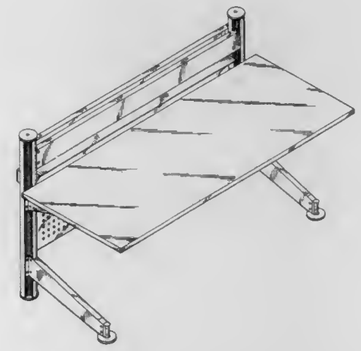
399,681
FOLDABLE TABLE
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex Sarl, Oyonnax, France
Filed Sep. 12, 1997, Ser. No. 77,435
Claims priority, application WIPO, Mar. 12, 1997, DMA003627
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—480



399,682
DESK
Christian Lepper; Roland Schmidt, both of Kassel, and Uwe Sommerlade, Calden, all of Germany, assignors to Mauser Office GmbH, Korbach, Germany
Filed May 21, 1997, Ser. No. 71,132
Claims priority, application Germany, Nov. 23, 1996, M 96 10 220.9
Term of patcnt 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—484



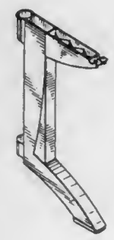
399,683
SMALL WORKSHOP TABLE
Mike Nicklas, Lüneburg, Germany, assignor to Knürr-Mechanik für die Elektronik Aktiengesellschaft, München, Germany
Filed Jun. 4, 1997, Ser. No. 71,694
Claims priority, application Germany, Dec. 5, 1996, M 96 10 561.5
Term of patent 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—484



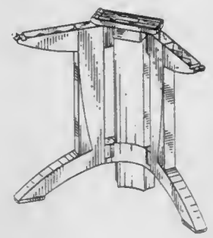
399,684
TABLE
Peter Glass, Napa, Calif., assignor to Virco Mfg. Corporation, Torrance, Calif.
Filed Jun. 5, 1997, Ser. No. 72,172
Term of patcnt 14 years
LOC (6) Cl. 06 - *03*
U.S. Cl. D6—484



399,685
TABLE LEG
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex SARL, Oyonnax, France
Filed Mar. 9, 1998, Ser. No. 84,681
Claims priority, application Hague Agreement, Oct. 9, 1997, PMA/003871
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—495

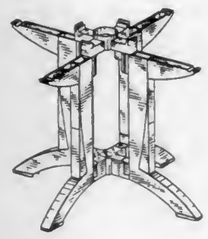


399,686
TABLE LEGS
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex SARL, Oyonnax, France
Filed Mar. 9, 1998, Ser. No. 84,701
Claims priority, application Hague Agreement, Oct. 9, 1997, DMA/003871
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—495

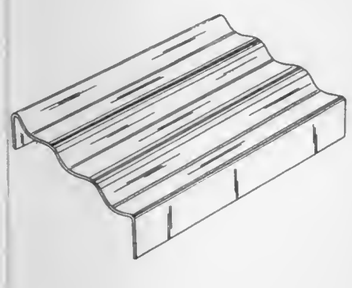


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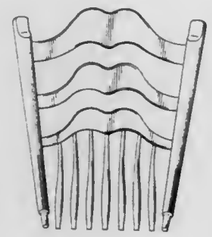
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TABLE LEG ASSEMBLY
Raymond Grosfillex, Oyonnax, France, assignor to Grosfillex SARL, Oyonnax, France
Filed Mar. 9, 1998, Ser. No. 84,703
Claims priority, application Hague Agreement, Oct. 9, 1997, DMA/003 871
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—498



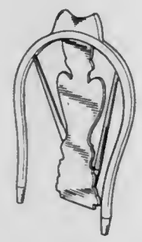
399,688
SOAP DISH
Scott Freeman, 15573 Commerce La., Huntington Beach, Calif. 92649
Filed Dec. 1, 1997, Ser. No. 80,277
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—536



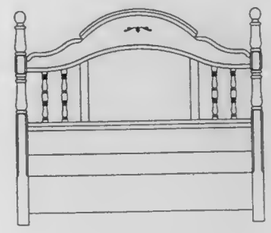
399,689
CHAIR BACK
Chain-Shin Lee, No. 303, Tzuli 1st Rd., Sanmin Dist., Kaohsiung, Taiwan
Filed Sep. 26, 1997, Ser. No. 76,893
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—502



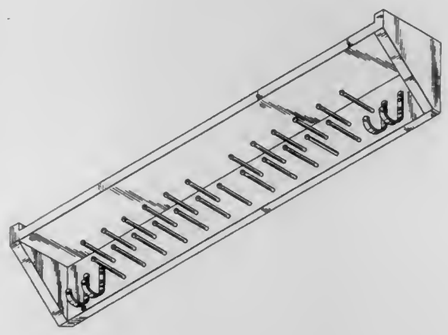
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CHAIR BACK
Chain-Shin Lee, No. 303, Tzuli 1st Rd., Sanmin Dist., Kaohsiung, Taiwan
Filed Oct. 14, 1997, Ser. No. 78,304
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—502



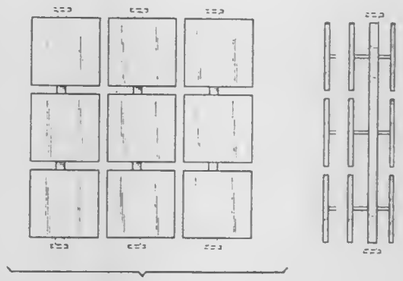
399,691
HEADBOARD
Paul Zaidman, Manitoba, Canada, assignor to Palliser Furniture, Ltd., Winnipeg, Canada
Filed Feb. 28, 1997, Ser. No. 67,406
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—508



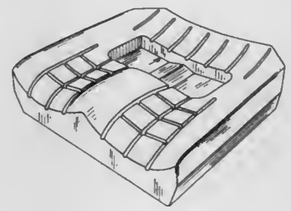
399,692
COMBINED SHELF FOR BELT AND TIE HANGERS
Jay P. Wilcox, Cedarburg, Wis., assignor to Allen-Edmonds Shoe Corporation, Port Washington, Wis.
Filed Apr. 24, 1996, Ser. No. 53,493
Term of patent 14 years
U.S. Cl. D6—567

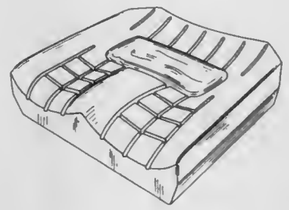


399,693
SET OF PANELS FOR WINDOW BLINDS, AWNINGS, AND ROOM DIVIDERS
Robert J. Vreeland, and Patricia E. Moss, both of 2229 Bainbridge St., Philadelphia, Pa. 19103
Filed Mar. 1, 1997, Ser. No. 67,907
Term of patent 14 years
LOC (6) Cl. 06 - *10*
U.S. Cl. D6—580

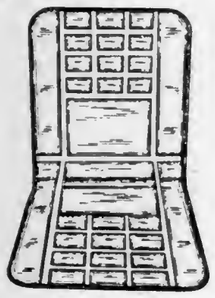


399,694
CUSHION
Colin A. Laidlaw, Carmarthen, United Kingdom, assignor to Medical Support Systems Limited, United Kingdom
Filed Oct. 2, 1996, Ser. No. 60,627
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601

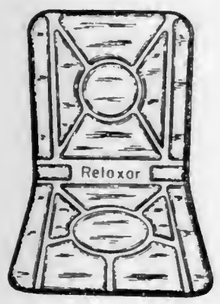




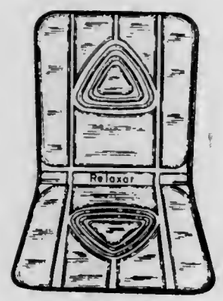
399,695
MASSAGING SYSTEM SEAT CUSHION
Craig M. Loud, Whittier, Calif., assignor to JB Research, Inc., Bellflower, Calif.
Division of Ser. No. 51,548, Mar. 13, 1996. This application Oct. 24, 1997, Ser. No. 79,132
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



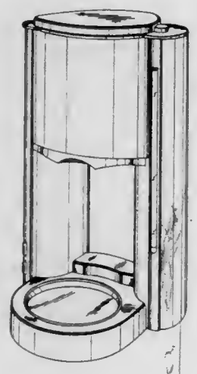
399,696
MASSAGING SYSTEM SEAT CUSHION
Craig M. Loud, Whittier, Calif., assignor to JB Research, Inc., Bellflower, Calif.
Division of Ser. No. 51,540, Mar. 13, 1996. This application Oct. 24, 1997, Ser. No. 79,134
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



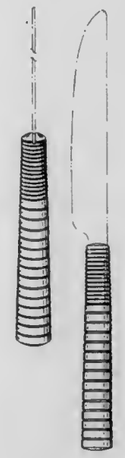
399,697
MASSAGING SYSTEM SEAT CUSHION
Craig M. Loud, Whittier, Calif., assignor to JB Research, Inc., Bellflower, Calif.
Division of Ser. No. 51,542, Mar. 13, 1996. This application Oct. 24, 1997, Ser. No. 79,139
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—601



399,698
ELECTRIC COFFEE MACHINE
Philippe Saltet, Chateaufort, Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Germany
Filed May 30, 1997, Ser. No. 71,529
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



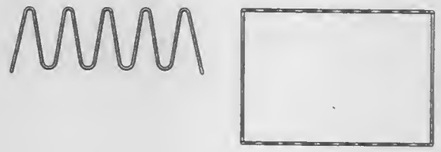
399,699
CUTLERY HANDLE
Andrew John Stokes, Sheffield, England, assignor to McPherson's Limited, Victoria, Australia
Filed Jul. 2, 1997, Ser. No. 73,079
Claims priority, application United Kingdom, Jan. 11, 1997, 2062331
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—401.2



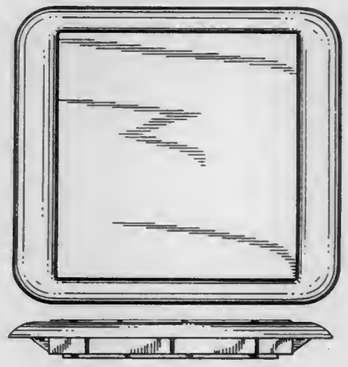
399,700
STEM FOR AN ARTICLE OF GLASSWARE
Lorelei K. Wilson, Toledo, Ohio, assignor to Libbey Glass Inc., Toledo, Ohio
Filed Mar. 3, 1998, Ser. No. 84,453
Term of patent 14 years
LOC (6) Cl. 07 - *99*
U.S. Cl. D7—396.6



399,701
TACO HOLDER
Lori J Olivarez, 564 E. 129th St., Shelbyville, Mich. 49344
Filed Oct. 20, 1997, Ser. No. 78,125
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—504



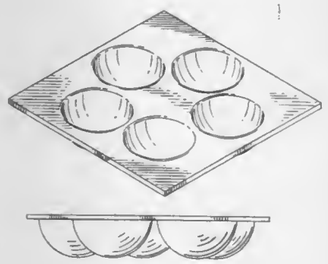
399,702
MICROWAVE TRAY WITH STONE
Steven Mishan, Brooklyn, N.Y., assignor to E. Mishan & Sons, Inc., New York, N.Y.
Filed Feb. 23, 1998, Ser. No. 84,030
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—550



399,703
FOOD CUP
Vardan Grigoryan, 521 E. Valencia Ave. #B, Burbank, Calif. 91501
Filed Dec. 8, 1997, Ser. No. 80,383
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—519



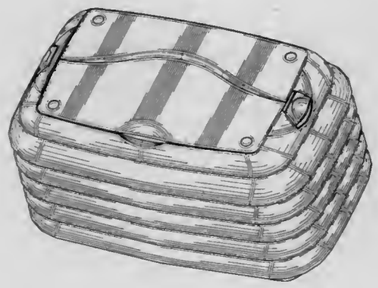
399,704
MULTI-COMPARTMENT TRAY
Morison S. Cousins, Winter Park, Fla., assignor to Dart Industries Inc., Orlando, Fla.
Filed Apr. 26, 1995, Ser. No. 38,044
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—554



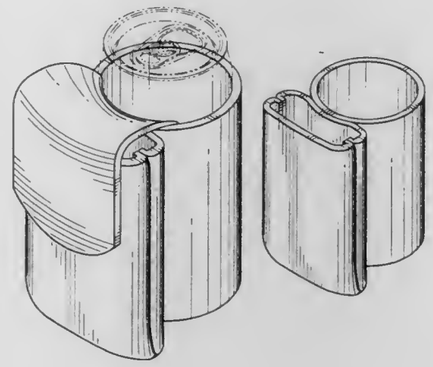
399,705
CONTAINER FOR THE PRESERVATION AND PRESENTATION OF PICKLES
Lyliam Bovard, Genève, Switzerland, and Jean-Paul Kerhoas, Saint-Jean-Port-Joli, Canada, assignors to Les Promotions Atlantiques Inc., Quebec, Canada
Filed Feb. 11, 1997, Ser. No. 66,353
Claims priority, application Canada, Aug. 12, 1996, 1996-1791
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—601



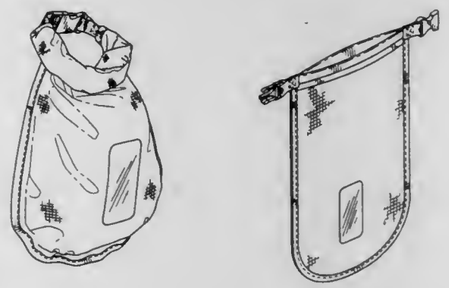
399,706
COOLER
Steve Paletti, Columbus, and Kevin Rausch, Wooster, both of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jul. 8, 1997, Ser. No. 73,411
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—605



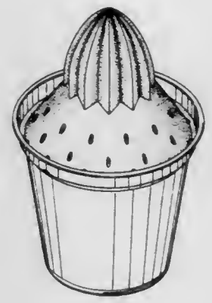
399,707
BEVERAGE HOLDER WITH POCKET
Jose Antonio Villarreal, Jr., and Carol Josephine Villarreal, both of 1606 Texas Oak Way, Cedar Park, Tex. 78613
Filed Oct. 1, 1997, Ser. No. 77,298
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—607



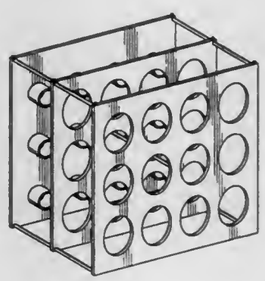
399,708
REUSABLE FOOD STORAGE BAG
David L. Grissom, 320 E. 1st Ave. #2, Salt Lake City, Utah 84103
Filed Jun. 25, 1997, Ser. No. 72,819
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—629



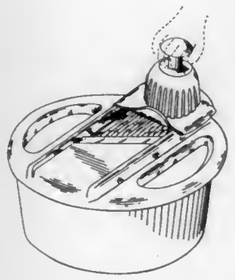
399,709
HAND-OPERATED JUICER
Jeff Lee, No. 280, Yen-Ho St., Yung-Kang City, Tainan Hsien, Taiwan
Filed Dec. 11, 1997, Ser. No. 80,624
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—665



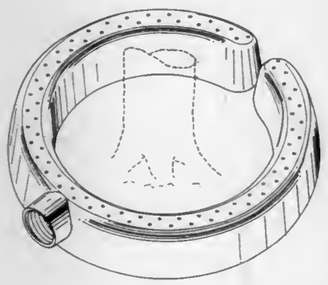
399,710
WINE RACK
Lane Baxter Brown, 3334 Lake Haven, Kingwood, Tex. 77339
Filed Nov. 21, 1997, Ser. No. 79,706
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—708



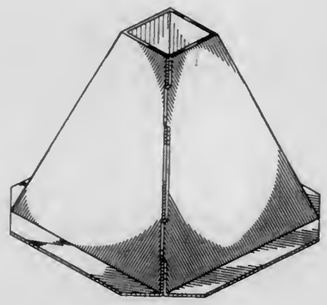
399,711
FOOD SLICER
Milton L. Cohen, Hewlett Bay Park; Jeff Siegel, Center Island, and Adam Krent, Brooklyn, all of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Oct. 20, 1997, Ser. No. 78,130
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—673



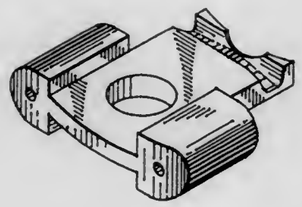
399,712
TREE WATERER
Larry Jason Villella, 3702 15th St. South, Fargo, N. Dak. 58104
Filed Sep. 16, 1992, Ser. No. 948,844
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



399,713
FLORA AND FAUNA GUARD
Gary E. Allen, Hamburg, and Rich Finiki, Tonawanda, both of N.Y., assignors to Eaton Brothers Corporation, Hamburg, N.Y.
Filed Nov. 21, 1997, Ser. No. 79,691
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—1



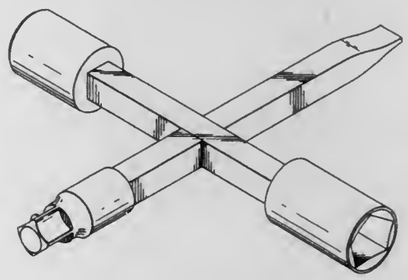
399,714
BRUSHCUTTING REED HOLDER
Edward J. Grossi, 35 Warner Ave., Proctor, Vt. 05765, and Jeffrey L. Schultz, Box 9005, Ruth Ave., Rutland, Vt. 05701
Filed Aug. 15, 1997, Ser. No. 75,232
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—8



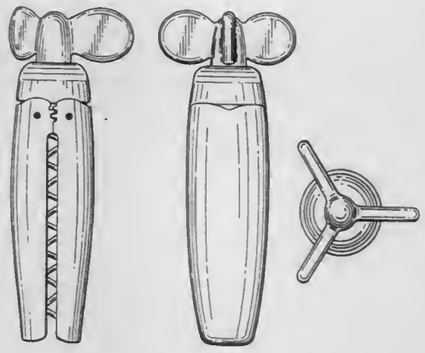
399,715
WRENCH
Charles A. Budd, Sr., 413 Center St., Sewell, N.J. 08080
Filed Nov. 4, 1996, Ser. No. 62,385
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—17



399,716
UNIVERSAL WRENCH
Steven H. Carr, Southampton, Pa., assignor to Valley Power, Inc., Willow Grove, Pa.
Filed Sep. 26, 1997, Ser. No. 77,075
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—21



399,717
CORKSCREW
Leslie Alexander Gort-Barten, London, England, assignor to Dualit Limited, London, England
Filed Aug. 11, 1997, Ser. No. 74,769
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D8—42

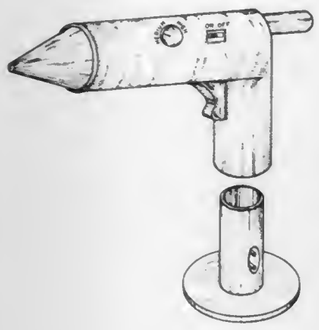


399,718
DRUM DEHEADER
Paul Spencer, New Hope, Pa., assignor to Wesco Manufacturing Company, Lansdale, Pa.
Filed Sep. 18, 1995, Ser. No. 44,137
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—51

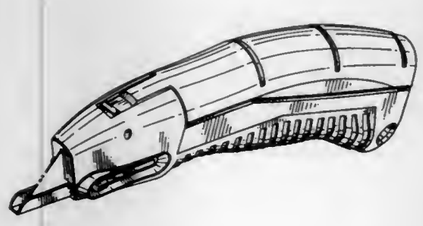


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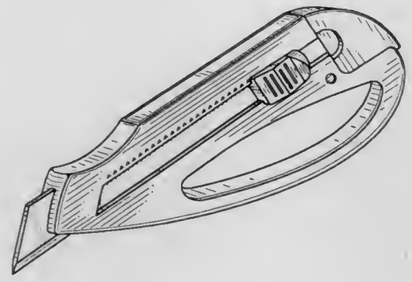
399,719
COMBINED CORDLESS GLUE GUN AND BASE
Jane Mignanelli, 207 McKinley Ave., Franklin Square, N.Y. 11010
Filed Dec. 29, 1997, Ser. No. 81,302
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—68



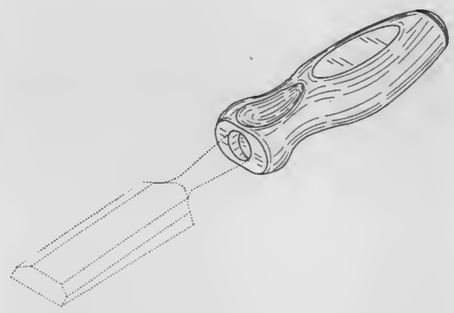
399,720
UTILITY KNIFE WITH RETRACTABLE BLADE GUARD
Robert L. Owens, Shaftsbury, Vt.; David Garabedian, Farmington, Conn.; David W. Kaiser, North Haven, Conn., and John M. Staton, Bristol, Conn., assignors to The Stanley Works, New Britain, Conn.
Filed Aug. 8, 1997, Ser. No. 74,813
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—98



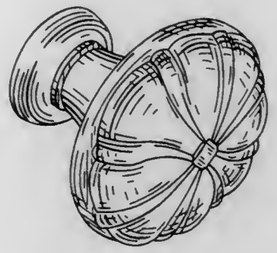
399,721
HAND HELD CUTTER
José Torre, 128 Poniente No. 745, Col. Industrial Vallejo, C.P. 02300 Delegación Aazcapotzalco, México D.F., Mexico
Filed Jun. 25, 1997, Ser. No. 73,731
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—99



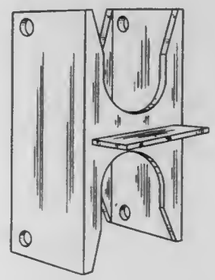
399,722
HANDLE FOR HAND TOOLS
Jeffery J. Eidsmoe, and Nicholas J. Kneipp, both of County of El Paso, Colo., assignors to Emerson Electric Co., St. Louis, Mo.
Filed Feb. 6, 1997, Ser. No. 68,084
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—107



399,723
KNOB
Cari L. Burns, Wheaton, Ill., and Robert Andrew Chieda, Akron, Ohio, assignors to Newell Operating Company, Freeport, Ill.
Filed Apr. 30, 1996, Ser. No. 53,761
Term of patent 14 years
LOC (6) Cl. 08 - *06*
U.S. Cl. D8—310



399,724
TRENCH SHIELD STACKING BRACKET
Luther Bradford Barringer, Richfield, N.C., assignor to Efficiency Production, Inc., Mason, Mich.
Filed Mar. 22, 1996, Ser. No. 52,058
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



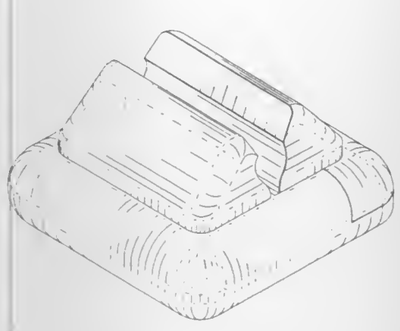
399,725
RAILING SPACER
Neill Baker, 13900 - 60th Avenue, Surrey, British Columbia, Canada, V5W 1S7
Continuation of Ser. No. 390,659, Feb. 17, 1995, Pat. No. 5,649,688. This application May 12, 1997, Ser. No. 70,627
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



399,726
SWIVEL SNAP HOOK
T. Y. Tsai, 3rd Floor, No. 168, Yung Chi Road, Taipei, Taiwan
Filed Feb. 17, 1998, Ser. No. 83,733
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—367



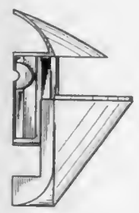
399,727
HOLDER FOR SUPPORTING ROD-LIKE OBJECTS
Herbert Richter, Drosselweg 8, 75331 Engelbrand, Germany
Filed Mar. 17, 1997, Ser. No. 69,243
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—380



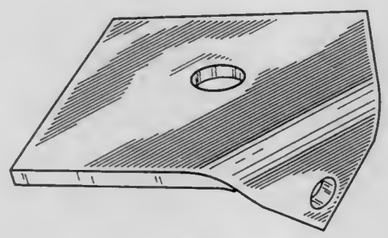
399,729
CLIP
Chin-Chuen Chen, No. 3, Yih Fan Lane, Chan Sha Li, Nan Tun Dist., Taichung City, Taiwan
Filed Dec. 18, 1996, Ser. No. 63,892
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—395



399,728
CORNER SHELF HOLDER
Chaim Cohen, Holon, Israel, assignor to R.C.S. Ltd., Rishon LeZion, Israel
Filed Feb. 20, 1997, Ser. No. 66,756
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—381



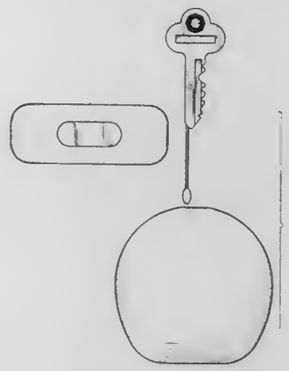
399,730
WASHER FOR MINE ROOF BOLT
Gerald J. Pitre, R. R. #5, Box 22, Site 7, Bathurst, New Brunswick, Canada, E2A 3Y8
Filed Oct. 7, 1996, Ser. No. 60,765
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—399



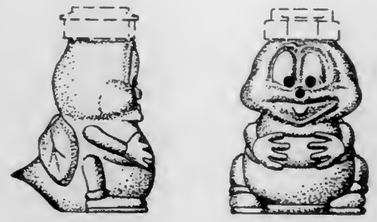
399,731
DISPENSER BOTTLE
Hans Ulrich Petzold, Wiesbaden, Germany, assignor to Petzold N.Y License, LLC, New York, N.Y.
Filed Aug. 7, 1997, Ser. No. 74,638
Claims priority, application Germany, Feb. 27, 1997, M 97 01 942.9
Term of patent 14 years
LOC (6) Cl. 09 - *05*
U.S. Cl. D9—305



399,732
PERFUME BOTTLE
Virginia L. Roberts, 25 S. Market St., Jefferson, Ohio 44047
Filed Jan. 2, 1998, Ser. No. 81,471
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—307



399,733
CONTAINER
Jeffrey D. Hand, 149 Patterson Rd., Roebuck, S.C. 29376
Filed Dec. 17, 1997, Ser. No. 80,900
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—310



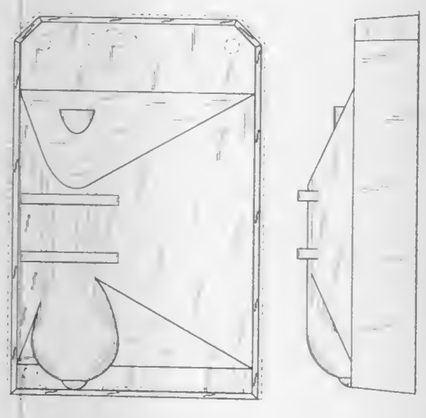
399,734
BOTTLE WITH SURFACE ORNAMENTATION
Michael H. Luh; Gregory A. Zimmer; Sunshine J. Thomas, all of Cincinnati, Ohio, and William H. Valls, Harwinton, Conn., assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Oct. 26, 1995, Ser. No. 45,678
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—329



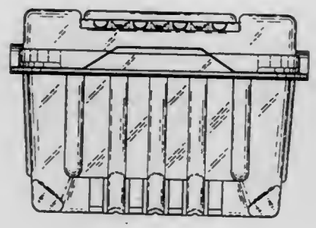
399,735
BOTTLE
Keith Marriage, London, England, assignor to SmithKline Beecham plc, Brentford, United Kingdom
Filed Jul. 23, 1997, Ser. No. 73,657
Claims priority, application United Kingdom, Jan. 28, 1997, 2062735
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—335



399,736
DISPLAY PACKAGE FOR LOCKSET
Vince Flores, Rohnert Park; Glen Miciano, San Jose, and Ryan Parsons, Walnut Creek, all of Calif., assignors to Schlage Lock Company, San Francisco, Calif.
Filed Jul. 31, 1997, Ser. No. 74,384
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



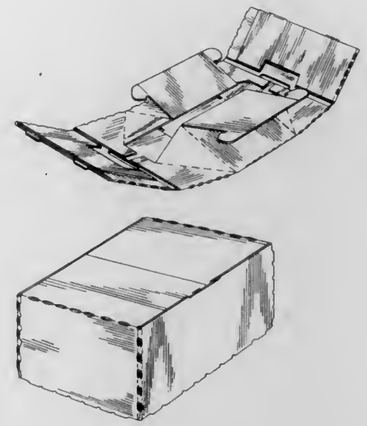
399,737
CLAM-SHELL CONTAINER
Kurt William Zuhlke, Jr., Roseto, Pa., and Richard T. Steichen, Elk River, Minn., assignors to Kurt Zuhlke, Inc. Associates, Bangor, Pa.
Filed Aug. 15, 1997, Ser. No. 77,360
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—423



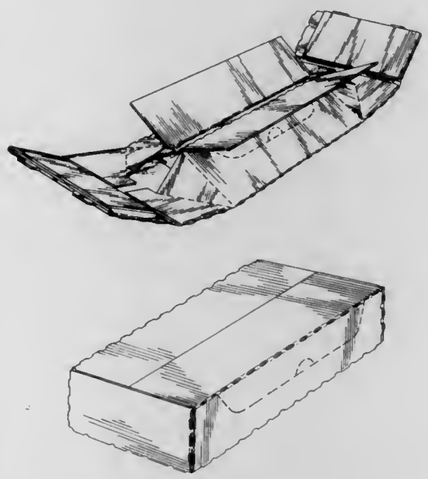
399,738
CONTAINER FOR WELDING WIRE
Bernt-Inge B-Jensen, Kungalv, and Gilbert Carlsson, Alingsås, both of Sweden, assignors to Esab AB, Gothenburg, Sweden
Filed Nov. 20, 1997, Ser. No. 79,734
Claims priority, application Sweden, May 20, 1997, 97-1157
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—430



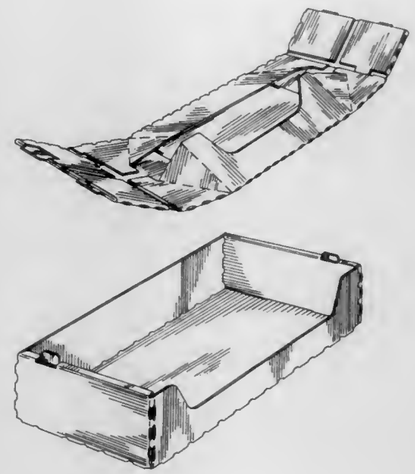
399,739
STACKABLE TRAY WITH TABBED LID
Phil B. Sheffer, Thomasville, Pa., assignor to Pack 'N' Stack, Inc., Philadelphia, Pa.
Filed Oct. 15, 1997, Ser. No. 78,020
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—432



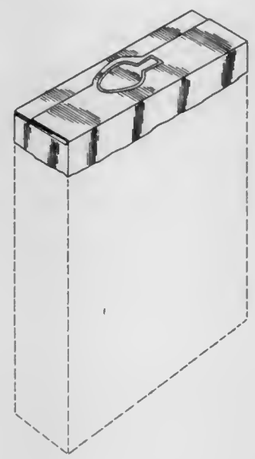
399,740
COMBINED STACKABLE TRAY AND SHIPPING CARTON
Phil B. Sheffer, Thomasville, Pa., assignor to Pack 'N' Stack, Inc., Philadelphia, Pa.
Filed Oct. 15, 1997, Ser. No. 78,021
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—432



399,741
STACKABLE TRAY
Phil B. Sheffer, Thomasville, Pa., assignor to Pack 'N' Stack, Inc., Philadelphia, Pa.
Filed Oct. 15, 1997, Ser. No. 78,023
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—432

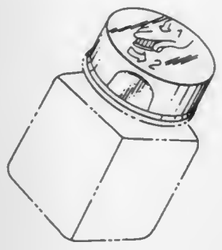


399,742
CARTON TOP
Arne H. Brauner, Minnetonka, and Paul M. Torniainen, Minneapolis, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Nov. 29, 1996, Ser. No. 65,445
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—434

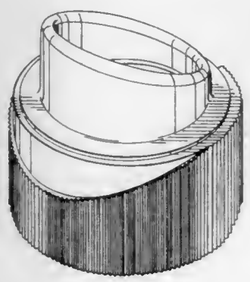


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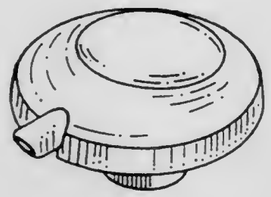
399,743
CHILD RESISTANT CLOSURE
Dean G. Coon, Perrysburg, and Michael K. Goettner, Sylvania, both of Ohio, assignors to Owens-Illinois Closure Inc., Toledo, Ohio
Filed Apr. 30, 1997, Ser. No. 69,596
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—443



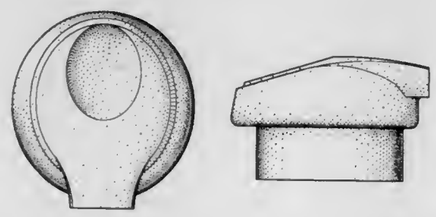
399,744
DRINK SPOUT FOR A CONTAINER
Richard A. Gross, Oconomowoc, Wis., assignor to AptarGroup, Inc., Crystal Lake, Ill.
Filed Jun. 26, 1997, Ser. No. 72,944
Term of patent 14 years
U.S. Cl. D9—447



399,745
DISPENSER CAP FOR BOTTLES
Francesco Mascitelli, Pescara, Italy, assignor to SAR S.p.A., San Giovanni Teatino, Italy
Filed Jun. 12, 1997, Ser. No. 72,032
Claims priority, application Italy, Dec. 13, 1996, RM9600243
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



399,746
DISPENSING SPOUT
Masaru Hayataka, Ashiya, Japan, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 13, 1997, Ser. No. 72,281
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



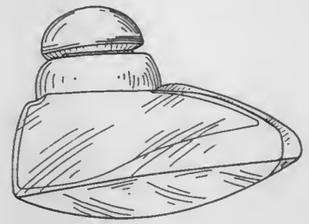
399,747
BOTTLE
Peter Bertolini, Shelton, Conn.; Matthew Scott Okin, Cresskill, N.J., and Bernard Kotyuk, Westbrookville, N.Y., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Sep. 2, 1997, Ser. No. 75,642
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



399,748
BOTTLE
Andrea C. Paoloski, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Sep. 16, 1997, Ser. No. 76,941
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—520



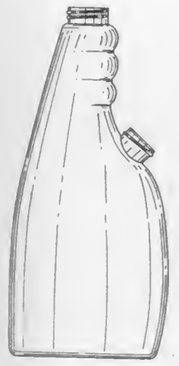
399,749
COMBINED BOTTLE AND CAP
Pierre Dinand, Le Vallois, France, assignor to Diana de Silva Cosmetiques S.p.A., Milan, Italy
Filed Mar. 13, 1996, Ser. No. 51,551
Claims priority, application Hague Agreement, Jan. 23, 1996, DM 035276
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—521



399,750
COMBINED BOTTLE AND CAP
Norman John Pikul, Mississauga, Canada, assignor to Petro-Canada, Calgary, Canada
Filed Oct. 15, 1997, Ser. No. 78,013
Claims priority, application Canada, Sep. 29, 1997, 1997-25534
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—523



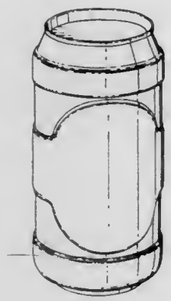
399,751
SPRAY BOTTLE
Walter F. Klima, Jr., Travelers Rest, S.C., and William L. Klima, Stafford, Va., assignors to Sprayex L.L.C., Stafford, Va.
Filed Jan. 27, 1997, Ser. No. 65,240
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—524



399,752
COMBINED BOTTLE AND CAP
R. Kent Farmer; James T. Nabors; Mark Palazola, and Trish Vigil, all of Memphis, Tenn., assignors to Coastal Unilube, Inc., Houston, Tex.
Filed Jan. 9, 1998, Ser. No. 82,821
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—529



399,753
CONTAINER
Christopher Paul Ramsey, Oxon, United Kingdom, assignor to CarnaudMetalbox (Holdings) USA, Inc., Wilmington, Del.
Filed Nov. 19, 1997, Ser. No. 79,548
Claims priority, application United Kingdom, May 20, 1997, 2065935
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—540



399,754
COMBINED BOTTLE AND CAP
Peter Bertolini, Shelton, and David Schweitzer, West Hartford, both of Conn., assignors to Chesebrough-Pond's USA Co., Division of Conopco, Inc., Greenwich, Conn.
Filed Oct. 1, 1997, Ser. No. 77,273
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—542



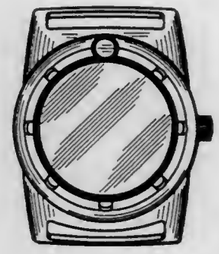
399,755
CHAMPAGNE BOTTLE
Jean-Pierre Daraut, Epernay Cedex, France, assignor to Centre Vinicole de la Champagne, Epernay Cedex, France
Filed Dec. 18, 1992, Ser. No. 2,792
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—550



399,756
BOTTLE
John Lonczak, Newburg; Leonard Alain Filiz; Kin Shun Yan, both of New York, and Victor Ivenitsky, Bronx, all of N.Y., assignors to Johnson & Johnson Consumer Products, Inc., Skillman, N.J.
Continuation of Ser. No. 932,856, Aug. 20, 1992, abandoned.
This application Dec. 1, 1995, Ser. No. 47,325
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—574



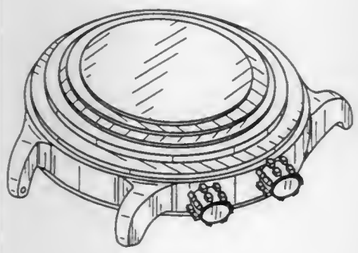
399,757
WRISTWATCH CASE
Judith R. Riley, Goshen, and David Guinlan, Marion, both of Conn., assignors to Timex Corporation, Middleburg, Conn.
Filed May 27, 1997, Ser. No. 71,454
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



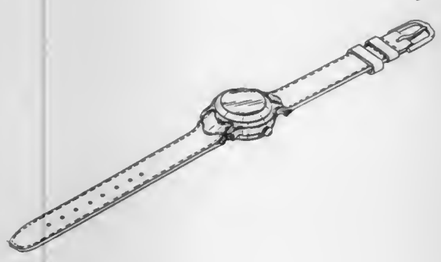
399,758
BEZEL AND CASING FOR A WATCH
Wilfredo E. Mendoza, Mandaue City, Philippines, assignor to Timex Corporation, Middlebury, Conn.
Filed Jul. 11, 1997, Ser. No. 73,581
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



399,759
BEZEL AND CASING FOR A WATCH
Amelia Kennedy, Woodbury, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Aug. 4, 1997, Ser. No. 74,389
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—30



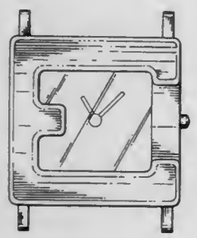
399,760
LUG INSERT, CASE AND STRAP
Judith Reichel Riley, Goshen, Conn., assignor to Timex Corporation, Middlebury, Conn.
Filed Jul. 16, 1997, Ser. No. 77,158
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



399,761
WATCH WITH BRACELET
Serge Rabassa, Geneva, Switzerland, assignor to S.A. Ancienne Fabrique Georges Piaget & Cie, La Cote-Aux-Fees, Switzerland
Filed Oct. 3, 1997, Ser. No. 77,526
Claims priority, application Hague Agreement, Apr. 4, 1997, DMA/003676
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—32



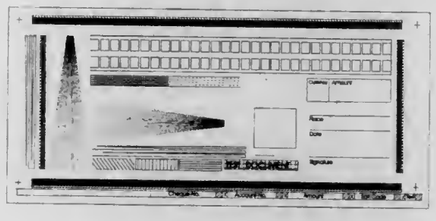
399,762
WATCH
Yacov Yida, 11700 Valleycrest Rd., Studio City, Calif. 91604-4226
Filed Mar. 17, 1997, Ser. No. 68,636
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—33



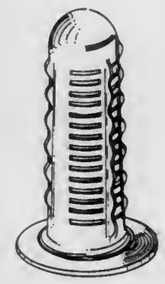
399,763
WATCH CASE
Serge Rabassa, Geneva, Switzerland, assignor to S.A. Ancienne Fabrique Georges Piaget & Cie, La Cote-Aux-Fees, Switzerland
Filed Oct. 3, 1997, Ser. No. 77,525
Claims priority, application Hague Agreement, Apr. 4, 1997, DMA/003676
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—38



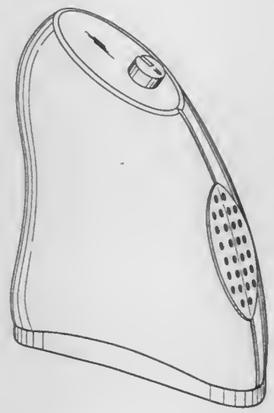
399,764
TEST DOCUMENT FOR SCANNERS
Winfried Bruegmann, and Werner Ruppert, both of Schoenaich, Germany, assignors to International Business Machines Corporation, Armonk, N.Y.
Division of Ser. No. 397, Oct. 13, 1992, Pat. No. Des. 363,031.
This application May 23, 1995, Ser. No. 39,799
Claims priority, application Germany, Apr. 13, 1992, M 92 02 913.2
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—46



399,765
TERMITE DETECTION STATION
Kirk N. Hovious, 569 Papalani St., Kailua, Hi. 96734
Filed Dec. 15, 1997, Ser. No. 80,738
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—46



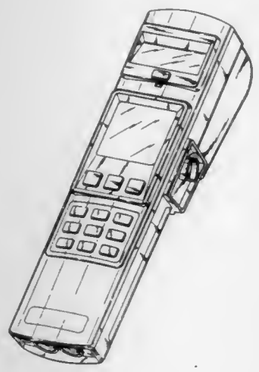
399,766
AIR QUALITY MONITOR
Augusto A. Picozza, Crystal Lake, Ill., assignor to Sunbeam Products, Inc., Delray Beach, Fla.
Filed Oct. 7, 1997, Ser. No. 77,671
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—52



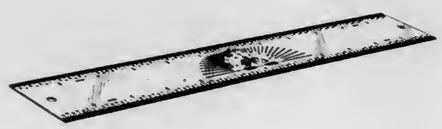
399,767
HYGROMETER
Peter Strunk, Eduard-Schloemann-Str. 37, 40237 Dusseldorf, Germany
Filed Jul. 11, 1997, Ser. No. 74,253
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—54



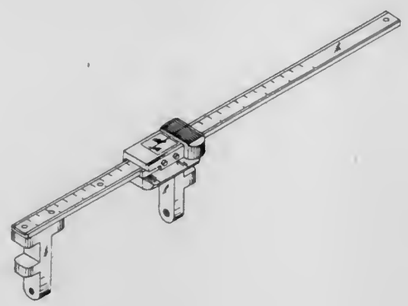
399,768
MEASURING INSTRUMENT
Bernhard Schwan, Werbach-Gamburg, Germany, assignor to Testo GmbH & Co., Germany
Filed Aug. 25, 1997, Ser. No. 76,135
Claims priority, application Hague Agreement, Feb. 25, 1997, DM/039 298
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—57



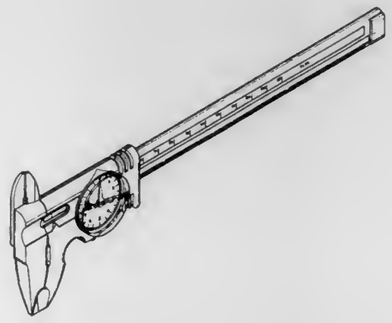
399,769
CENTERING RULE
Christopher L. Taylor, Dallas, Tex., assignor to Taylor Design Group, Inc., Carrollton, Tex.
Filed Nov. 26, 1997, Ser. No. 80,845
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—71



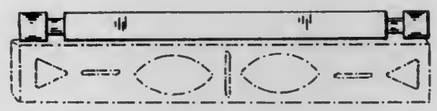
399,770
DIGITAL DRUM GAGE
Jonathan Adler, Great Neck, N.Y., assignor to Flexbar Machine Corporation, Islandia, N.Y.
Filed Oct. 9, 1997, Ser. No. 77,775
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—73



399,771
VERNIER
Paul Lin, No. 8, Lane 762, Chung Shan North Road, Yung Kang Shih, Tainan Hsien, Taiwan
Filed Oct. 21, 1997, Ser. No. 78,545
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—73

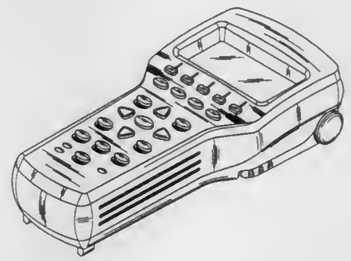


399,772
ADJUSTABLE TELESCOPIC EXTENSION DEVICE ADAPTER FOR CONTRACTOR LEVEL
Jeffrey S. Sanden, 14600 Riverside Rd., Lincolnshire, Ill. 60069, assignor to Jeffrey S. Sanden, Lincolnshire, Ill.
Filed Jan. 27, 1998, Ser. No. 82,618
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—74

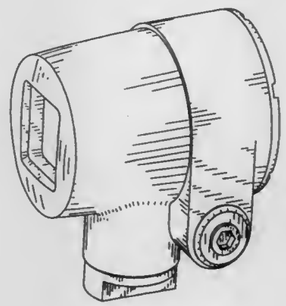


399,773
Patent Not Issued For This Number

399,774
HAND-HELD TEST INSTRUMENT
Robert H. Noble, Longmont, Colo., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed Oct. 31, 1997, Ser. No. 78,888
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—78



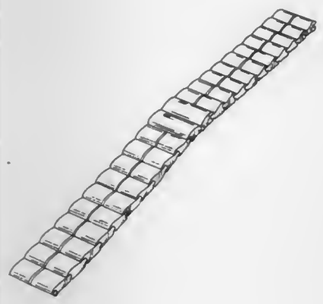
399,775
PRESSURE SENSOR
Fumikazu Masuda; Shunichiro Awa; Isamu Ikeda; Yoshihito Omura; Koichi Kondo, and Hideo Sawada, all of Tokyo, Japan, assignors to Yamatake-Honeywell Co., Ltd., Tokyo, Japan
Filed Oct. 1, 1997, Ser. No. 77,276
Claims priority, application Japan, Apr. 4, 1997, 9-50443
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—85



399,776
REFLECTION WAND
Mathew W. Hernandez, El Granada, and Richard D. Cappels, Sr., San Jose, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.
Filed Jul. 25, 1995, Ser. No. 41,870
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—109



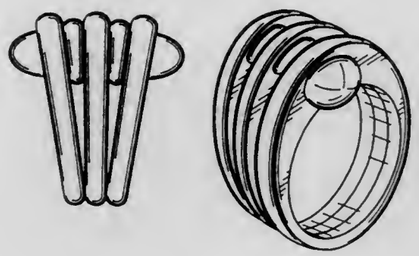
399,777
BRACELET FOR WATCH
Olivier C. Coquerel, Paris, France, assignor to S. T. Dupont S.A., Paris, France
Filed Sep. 29, 1997, Ser. No. 77,433
Claims priority, application France, Apr. 3, 1997, 971971
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—25



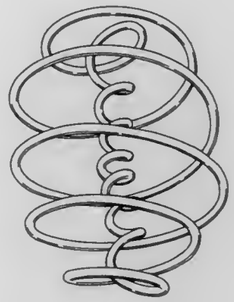
399,778
RING
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Filed Apr. 23, 1997, Ser. No. 68,996
Claims priority, application WIPO, Dec. 19, 1996, DM/038562
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—29



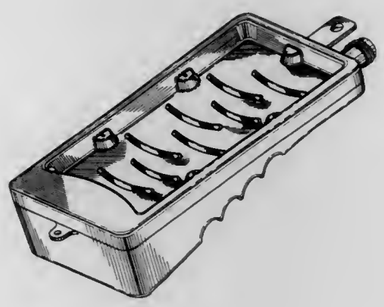
399,779
RING
Paolo Bulgari, Rome, Italy, assignor to Bulgari S.p.A., Rome, Italy
Filed Apr. 23, 1997, Ser. No. 69,003
Claims priority, application WIPO, Dec. 19, 1996, DM/038562
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—29



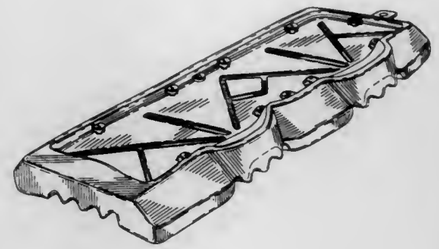
399,780
DECORATIVE ARTICLE
Michael Kauderer, Koerbiergosse 62, A-8010 Graz, Austria
Filed Jul. 23, 1997, Ser. No. 74,049
Claims priority, application Austria, Jan. 28, 1997, MI 430/97
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—131



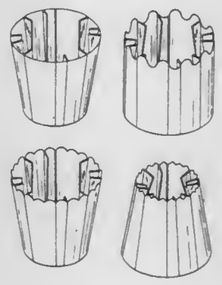
399,781
FLORAL DISPLAY HOLDER
James E. Ray, Brantford, Canada, assignor to Floral Ever Fresh Products Inc., Brantford, Canada
Filed Aug. 29, 1997, Ser. No. 75,267
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—143



399,782
HOLDER FOR FLORAL ARRANGEMENTS
James E. Ray, Brantford, Canada, assignor to Floral Ever Fresh Products Inc., Brantford, Canada
Filed Sep. 2, 1997, Ser. No. 76,096
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—143

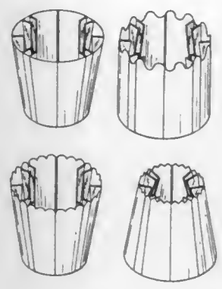


399,783
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.
Division of Ser. No. 46,629, Oct. 18, 1995, Pat. No. Des. 380,412, which is a division of Ser. No. 7,869, Apr. 30, 1993, Pat. No. Des. 364,123, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 21, 1997, Ser. No. 65,097
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164

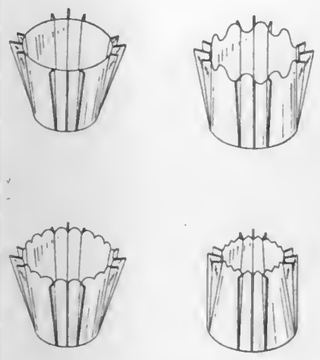


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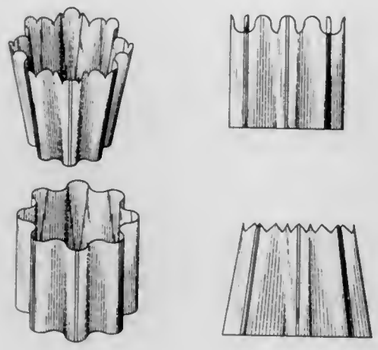
399,784
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.
Division of Ser. No. 46,635, Oct. 18, 1995, Pat. No. Des. 380,414, which is a division of Ser. No. 7,760, Apr. 30, 1993, Pat. No. Des. 363,899, which is a continuation-in-part of Ser. No. 782,237, Oct. 18, 1991, Pat. No. Des. 349,076, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Jan. 21, 1997, Ser. No. 65,328
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



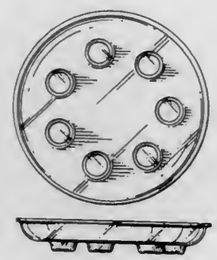
399,785
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International, Inc.
Division of Ser. No. 49,771, Jan. 30, 1996, Pat. No. Des. 385,817, which is a division of Ser. No. 1,292, Nov. 9, 1992, Pat. No. Des. 369,634, which is a continuation-in-part of Ser. No. 781,453, Oct. 21, 1991, Pat. No. Des. 348,634, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, and Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, and Ser. No. 411,247, Sep. 22, 1989, abandoned, and a continuation-in-part of Ser. No. 411,245, Sep. 22, 1989, abandoned. This application Apr. 24, 1997, Ser. No. 69,534
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



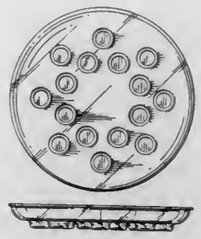
399,786
FLOWER POT COVER
Donald E. Weder, and Joseph G. Straeter, both of Highland, Ill., assignors to Southpac Trust International Inc.
Division of Ser. No. 49,311, Jan. 22, 1996, Pat. No. Des. 385,216, which is a division of Ser. No. 3,848, Jan. 19, 1993, Pat. No. Des. 370,870, which is a continuation-in-part of Ser. No. 807,904, Dec. 16, 1991, Pat. No. Des. 366,227, which is a continuation-in-part of Ser. No. 710,272, Jun. 4, 1991, Pat. No. Des. 365,302, which is a continuation-in-part of Ser. No. 617,454, Nov. 21, 1990, abandoned, Ser. No. 411,249, Sep. 22, 1989, Pat. No. Des. 358,113, Ser. No. 411,247, Sep. 22, 1989, abandoned, and Ser. No. 411,245, Sep. 22, 1989, abandoned.
This application Apr. 23, 1997, Ser. No. 69,773
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



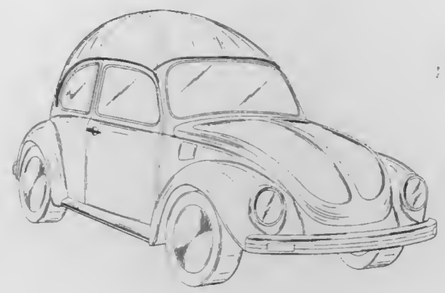
399,787
PLANT SAUCER
Curtis D. Wagner, P.O. Box 1226, League City, Tex. 77574
Filed Aug. 18, 1997, Ser. No. 75,304
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



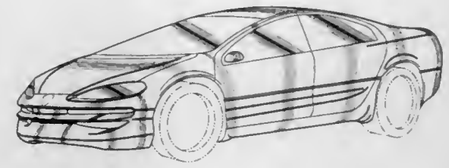
399,788
PLANT SAUCER
Curtis D. Wagner, P.O. Box 1226, League City, Tex. 77574
Filed Aug. 18, 1997, Ser. No. 75,963
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—164



399,789
BASKETBALL CAR
Dennis J. Adamovich, Atlanta; Steven R. Koonin, Marietta; Krista L. Lofstrom, Atlanta; Elizabeth W. O'Dowd, Atlanta, and Joseph A. Reiman, Atlanta, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.
Filed Sep. 4, 1997, Ser. No. 76,165
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—86



399,790
VEHICLE BODY
Robert E. Boniface, Royal Oak; John D. Bucci, Rochester; David C. McKinnon, Birmingham, and K. Neil Walling, Leonard, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Oct. 31, 1995, Ser. No. 45,837
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—92



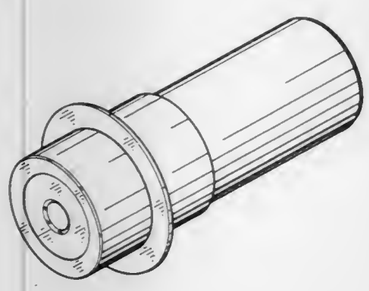
399,791
RAISED ROOF TRUCK EXTERIOR SURFACE
Ferdinand F. Hellhake, Beaverton; Mark S. Hurayt, Aloha; Joachim Paschke, Portland, and Sigmun D. Runyon, Sandy, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Filed Feb. 16, 1996, Ser. No. 50,609
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—96



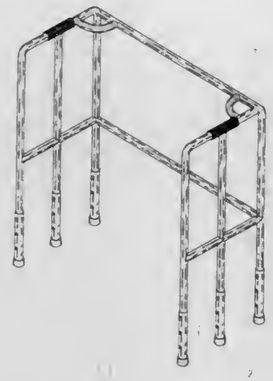
399,792
MID-HIGH ROOF TRUCK EXTERIOR SURFACE
Ferdinand F. Hellhake, Beaverton; Joachim Paschke, Portland; Mark S. Hurayt, Aloha, and Sigmun D. Runyon, Sandy, all of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Continuation of Ser. No. 50,612, Feb. 16, 1996, abandoned.
This application Oct. 28, 1996, Ser. No. 67,613
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—96



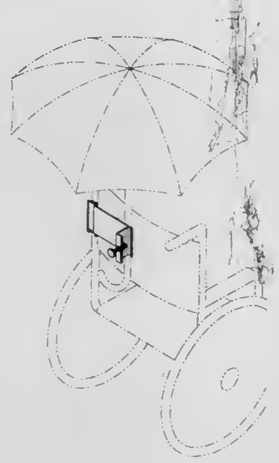
399,793
FLANGED GUIDING ROD FOR PERFORMING BICYCLE STUNTS ON A RAIL
Kun-Hu Lee, No. 63 Woven Chiu Road, Tachia, Taichung, Taiwan
Filed Apr. 10, 1996, Ser. No. 53,024
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—114



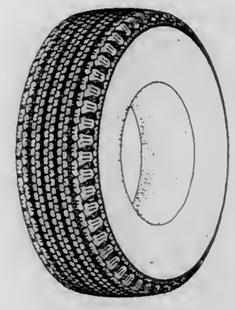
399,794
SIX LEG WALKER
James David VanBrakle, and Donna Jean VanBrakle, both of 549 Sand Hill Rd., Hershey, Pa. 17033
Filed Sep. 8, 1997, Ser. No. 76,173
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—130



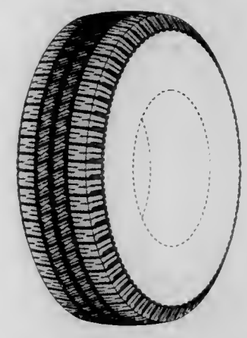
399,795
WHEELCHAIR SUPPORT BRACKET
Malee Rauscher, 4100 University Blvd., Dallas, Tex. 75205; Patrick E. Lenaburg, Denton, and Richard A. Arnim, Flower Mound, both of Tex., assignors to Malee Rauscher, Dallas, Tex.
Filed Jul. 15, 1997, Ser. No. 73,273
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—133



399,796
PNEUMATIC TIRE FOR VEHICLES
Myung-Kook Cho, Kwangju, Rep. of Korea, and Mark D. Slingluff, Akron, Ohio, assignors to Kumho Tire Co., Ltd., Seoul, Rep. of Korea
Filed Jun. 9, 1997, Ser. No. 71,794
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—143



399,797
TIRE TREAD
Kurt Jon Bergstrom, Green; David Earl Walker, Massillon; Perry Watrous Bell, North Lawrence, and Efimia Ellen Rohweder, Uniontown, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Jul. 31, 1997, Ser. No. 74,462
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



399,798
TIRE TREAD
Paul Phillip Grosskopf, Greenville, S.C., and Jean-Jacques Motta, Le Cendre, France, assignors to Michelin Recherche et Technique S.A., Switzerland
Filed Sep. 13, 1996, Ser. No. 59,596
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



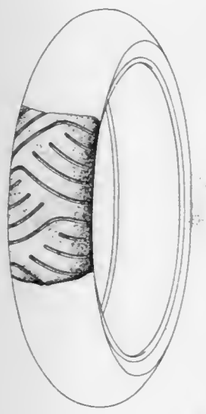
399,799
TIRE TREAD
Edward Lynn Dunlap, and Joseph Nicholas Brown, IV, both of Simpsonville, S.C., assignors to Michelin Recherche et Technique S.A., Switzerland
Filed Apr. 18, 1997, Ser. No. 70,955
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



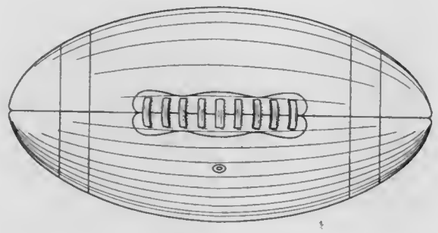
399,800
AUTOMOBILE TIRE
Yasuo Himuro; Hiroshi Sato, and Kenichi Kanazawa, all of Tokyo, Japan, assignors to Bridgestone Corporation, Tokyo, Japan
Filed Jun. 20, 1997, Ser. No. 72,637
Claims priority, application Japan, Dec. 24, 1996, 8-38610
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



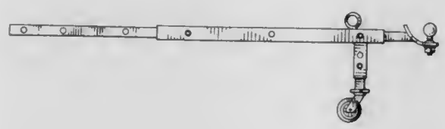
399,801
TIRE
Peter Kronthaler, München, Germany, assignor to Pirelli Coordinamento Pneumatici S.p.A., Milan, Italy
Filed Jan. 24, 1997, Ser. No. 65,219
Claims priority, application Italy, Jul. 29, 1996, MI96 0 000440
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151



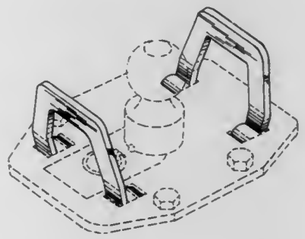
399,802
FOOTBALL HITCH COVER
Antoine Adelaar, Panoven 48, 3401 RB Usselstein, Netherlands
Filed Mar. 5, 1997, Ser. No. 67,369
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162



399,803
BOAT TRAILER HITCH EXTENSION ADAPTER
Dale A. Hilmen, 160 Thorn St., Suite 4, San Diego, Calif. 92103-5691
Filed Mar. 11, 1997, Ser. No. 67,548
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162



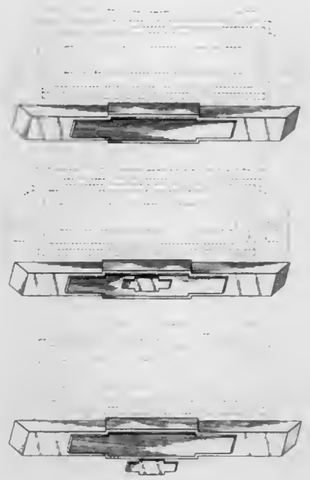
399,804
SAFETY CHAIN ANCHOR ARMS FOR A GOOSENECK HITCH ASSEMBLY
Thomas W. Lindenman, South Bend, and Richard W. McCoy, Granger, both of Ind., assignors to Reese Products, Inc., Elkhart, Ind.
Filed Apr. 30, 1997, Ser. No. 70,102
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162



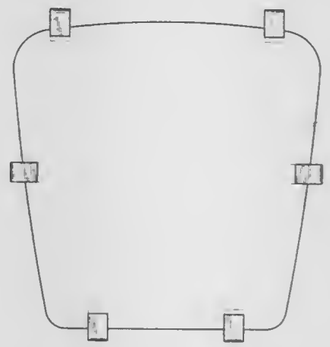
399,805
RECEIVER HITCH BUMPER STICKER HOLDER ASSEMBLY
Richard W. Donalies, 1545 Newcastle La., Hoffman Estates, Ill. 60194
Filed Jul. 17, 1997, Ser. No. 73,786
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—162



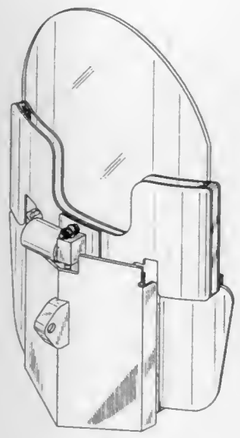
399,806
VEHICLE BUMPER
Daniel H. Lee, 803 Spartan Dr., Missoula, Mont. 59801
Filed Aug. 28, 1996, Ser. No. 58,923
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—169



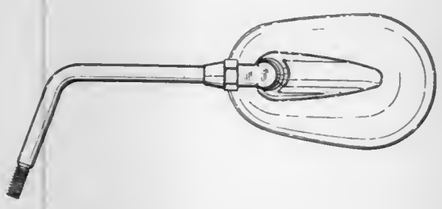
399,807
WINDSHIELD PROTECTOR
Beatrice B. Freeman, 35272 Shuis Cir., Wildomar, Calif. 92595
Filed Jun. 9, 1997, Ser. No. 72,130
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—182



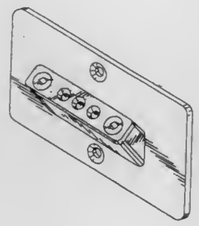
399,808
COMBINED MOTORCYCLE WINDSHIELD AND FLARE PANEL MODULE
Craig W. Vetter, P.O. Box 223820, Carmel, Calif. 93922
Continuation-in-part of Ser. No. 070,052, Apr. 25, 1997. This application Jul. 17, 1997, Ser. No. 74,061
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—182



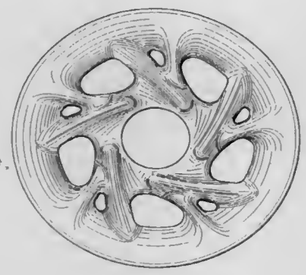
399,809
MIRROR
Richard G. Leveille, Port Huron, Mich., assignor to CIPA-USA, Inc., Port Huron, Mich.
Filed Oct. 6, 1997, Ser. No. 77,472
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—187



399,810
AUTOMOBILE LAMP MONITORING PANEL
Robbie Dean Tucker, 4943 Vecino Dr., Covina, Calif. 91722
Filed Nov. 13, 1996, Ser. No. 62,336
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—192



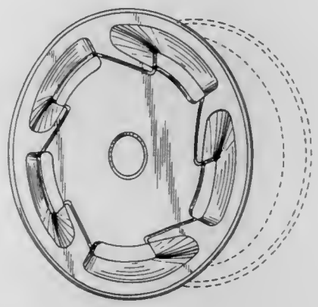
399,811
VEHICLE WHEEL FRONT FACE
Albert Echazabal, Miami, Fla., assignor to American Racing Equipment, Inc., Rancho Dominguez, Calif.
Filed Jul. 3, 1997, Ser. No. 73,312
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



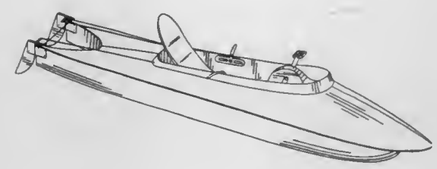
399,812
VEHICLE WHEEL FRONT FACE
Richard G. Weld, 933 Mulberry, Kansas City, Mo. 64101
Filed Oct. 31, 1997, Ser. No. 78,786
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



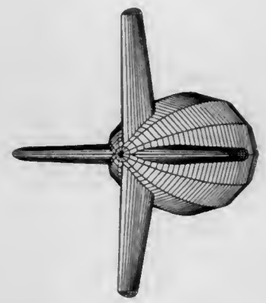
399,813
VEHICLE WHEEL FRONT FACE
Martin Harth, Böblingen; Hans-Joachim Maier, Besigheim, and Benedek Toth, Sindelfingen, all of Germany, assignors to Mercedes-Benz AG, Germany
Filed Sep. 17, 1992, Ser. No. 948,836
Claims priority, application Germany, Mar. 17, 1992, 92 02 137.9
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—211



399,814
AQUACYCLE
Andy Toro, 7234 Plank St., El Cerrito, Calif. 94530, and Harry Howard, 1705 Old Mill Rd., Encinitas, Calif. 92024
Filed Apr. 24, 1997, Ser. No. 69,528
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—306



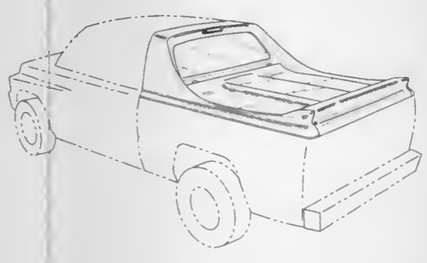
399,815
BLIMP
John Martin, and Ian Carwardine, both c/o Unit 1, 43 Roydon Place, Nepean, Ontario, Canada, K2E 1A3
Filed Mar. 7, 1996, Ser. No. 51,355
Claims priority, application Canada, Sep. 7, 1995, 1995-1993
Term of patent 14 years
LOC (6) Cl. 12 - *07*
U.S. Cl. D12—323



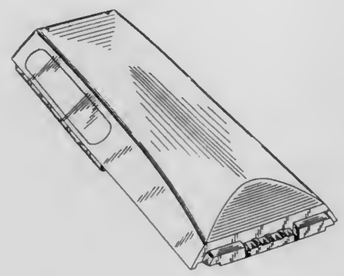
399,816
AIRPLANE
Lynn Edward Peacock, P.O. Box 14024, Macon, Ga. 31203-4024
Filed May 2, 1997, Ser. No. 70,245
Term of patent 14 years
LOC (6) Cl. 12 - *07*
U.S. Cl. D12—333



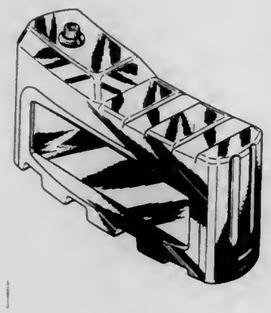
399,817
PICKUP TRUCK CAB EXTENDING TONNEAU COVER
David M. Lund, Andover, and Joel E. Johnson, Coon Rapids, both of Minn., assignors to Lund Industries, Incorporated, Anoka, Minn.
Filed Nov. 1, 1996, Ser. No. 61,875
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—404



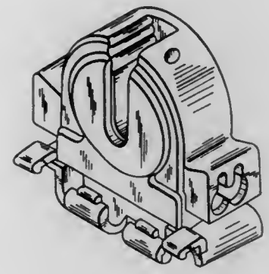
399,818
BATTERY
Richard Lindahl, Malmö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Sep. 14, 1994, Ser. No. 28,410
Claims priority, application Sweden, Mar. 14, 1994, 940687
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



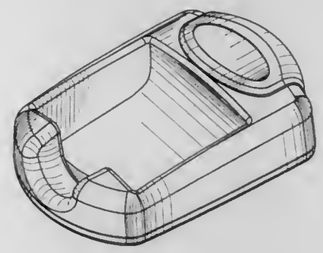
399,819
BATTERY CASE
Hiroyuki Iida, Sakai, Japan, assignor to Cateye Co., Ltd., Japan
Filed Aug. 7, 1996, Ser. No. 58,055
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



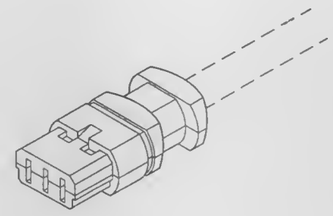
399,820
FLUORESCENT LAMP HOLDER
Dieter Henrici, Arnsberg, Germany, assignor to Brokelmann, Jaeger & Busse, GmbH & Co., Arnsberg, Germany
Division of Ser. No. 45,065, Oct. 6, 1995. This application May 6, 1997, Ser. No. 70,340
Claims priority, application Hague Agreement, Apr. 3, 1995, DM/032641
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—134



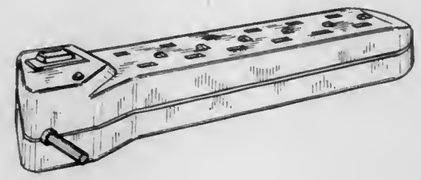
399,821
FRONT SECTION OF A BATTERY CHARGER
Frank M. Tyneski, Ft. Lauderdale; William H. Robertson, Jr., Plantation, and Mark I. Giaratano, Coral Springs, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Nov. 7, 1997, Ser. No. 79,048
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—118



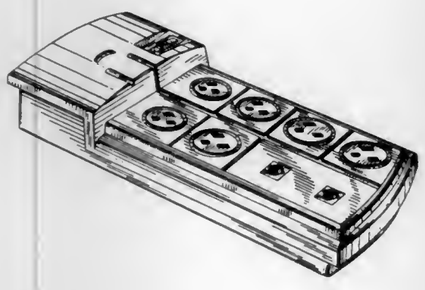
399,822
ELECTRICAL SOCKET
Rado Starec, and James Cowbey, both of Tullamarine, Australia, assignors to Greenshell Pty Ltd, Tullamarine, Australia
Filed Jun. 10, 1997, Ser. No. 71,976
Claims priority, application Australia, Jan. 14, 1997, 74/97
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.1



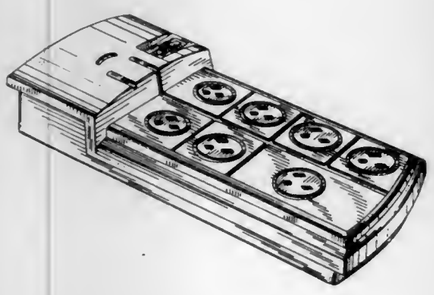
399,823
SOCKET
Albert Stekelenburg, Taipei, Taiwan, assignor to All-Line Inc., Taipei, Taiwan
Filed Mar. 12, 1997, Ser. No. 67,596
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.6



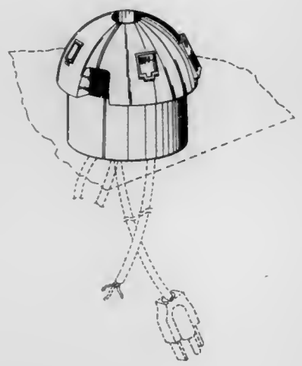
399,824
SURGE PROTECTOR
Leny Heung, and Samuel Cheung, both of Hong Kong, Hong Kong, assignors to Recoton Corporation, Lake Mary, Fla.
Filed Apr. 16, 1997, Ser. No. 69,735
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.6



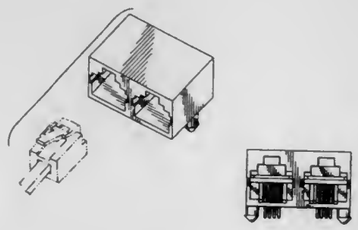
399,825
SURGE PROTECTOR
Leny Heung, and Samuel Cheung, both of Hong Kong, Hong Kong, assignors to Recoton Corporation, Lake Mary, Fla.
Filed Apr. 16, 1997, Ser. No. 70,860
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.6



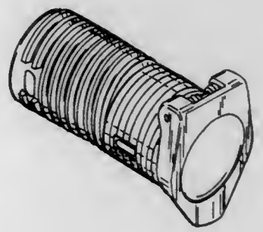
399,826
POWER AND DATA UNIT
Norman R. Byrne, 2736 Honey Creek, NE., Ada, Mich. 49301
Filed Mar. 28, 1996, Ser. No. 53,319
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—146



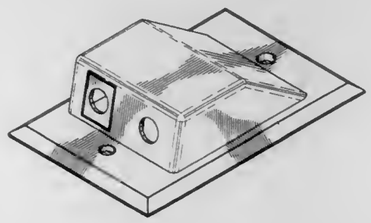
399,827
DUAL RJ11 CONNECTOR
David G. Gaffney, 880 B Forest Ave., Evanston, Ill. 60202
Filed Sep. 24, 1997, Ser. No. 77,033
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



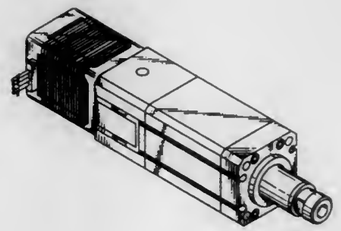
399,828
SOCKET FOR APPARATUS INTAKE
Terje Eidsvig, Oslo, Norway, assignor to DEFA Group, A.S., Nesbyen, Norway
Filed Jan. 12, 1996, Ser. No. 48,729
Claims priority, application Norway, May 30, 1995, 950384
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156



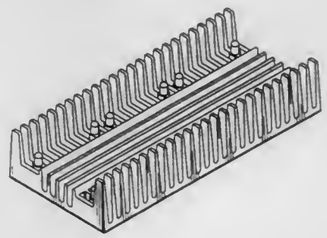
399,829
CABLE TELEVISION WALL OUTLET
Carl Gene Reed, Clemmons, N.C., assignor to The Whitaker Corporation, Wilmington, Del.
Filed Nov. 21, 1996, Ser. No. 62,689
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—156



399,830
ELECTRIC ACTUATOR
Shigekazu Nagai, Tokyo, and Shuuzou Sakurai, Funabashi, both of Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 10, 1997, Ser. No. 72,087
Claims priority, application Japan, Dec. 13, 1996, 8-37949
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—158



399,831
COOLING DEVICE
Douglas A. Dodson, 5995 Avenida Encinas, Carlsbad, Calif. 92008
Filed Apr. 29, 1997, Ser. No. 69,566
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—179



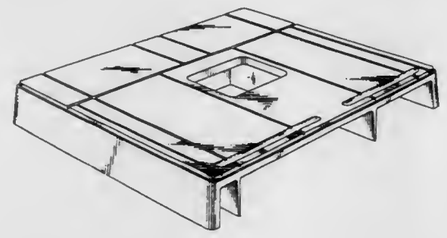
399,832
MOUSE PAD
David W. Barrette, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 23, 1996, Ser. No. 49,356
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



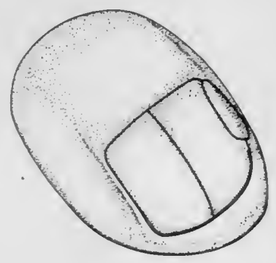
399,833
MOUSE PAD
David W. Barrette, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Jan. 23, 1996, Ser. No. 49,357
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



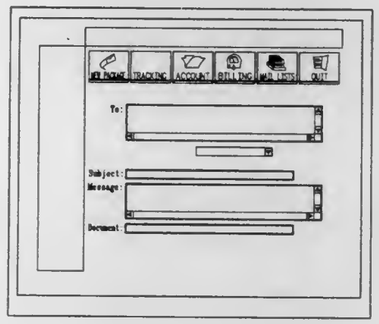
399,834
VIDEO DISPLAY PEDESTAL
Clifford T. Calfee, Richardson, Tex., assignor to Vu Ryte, Inc., Tyler, Tex.
Continuation-in-part of Ser. No. 53,039, Apr. 12, 1996, Pat. No. Des. 390,546, which is a division of Ser. No. 32,207, Dec. 14, 1994, Pat. No. Des. 376,787, which is a continuation-in-part of Ser. No. 873,035, Apr. 22, 1992, Pat. No. Des. 375,298. This application Mar. 31, 1997, Ser. No. 68,316
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



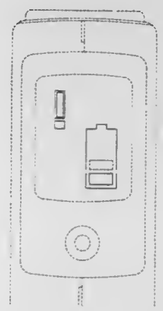
399,835
ERGONOMIC COMPUTER MOUSE
Mark Goldstein; Elizabeth Cecelia Goldstein, both of Thredbo Village, Australia; Paul E. Bradley, Woodside, and Joseph W. Yang, Castro Valley, both of Calif., assignors to Midas Mouse International Pty. Ltd., Sydney, Australia
Continuation-in-part of Ser. No. 573,105, Aug. 9, 1995. This application May 30, 1997, Ser. No. 72,206
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



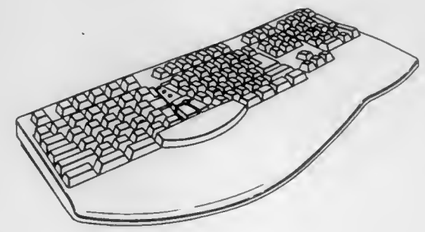
399,836
COMPUTER DISPLAY WITH AN ELECTRONIC DOCUMENT DELIVERY SYSTEM WINDOW
Jennifer Wu, Portola Valley, and Marsh Chamberlain, Belmont, both of Calif., assignors to Tumbleweed Software Corporation, Redwood City, Calif.
Filed May 20, 1997, Ser. No. 70,978
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.2



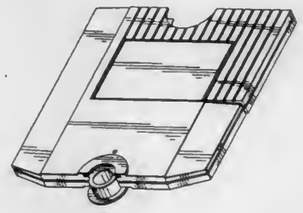
399,837
ICONIC DISPLAY FOR USE ON AN ARTICLE OF MANUFACTURE
Thomas Garguilo, New York, N.Y., assignor to Philip Morris Incorporated, New York, N.Y.
Filed Apr. 28, 1997, Ser. No. 69,033
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.3



399,838
KEYBOARD
Huo-Lu Tsai, No. 126-1, Shui-Nan Rd., Taichung City, Taiwan
Filed Oct. 14, 1997, Ser. No. 77,813
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



399,839
DISKETTE COVER
Krista Paloheimo, Laivanvarustajankatu 8 A B 37, 00140 Helsinki; Markus Paloheimo, Mechelininkatu 17 A 8, 00100 Helsinki, and Arni Aromaa, Särkiniementie 14 B 4, 00210 Helsinki, all of Finland
Filed Dec. 4, 1997, Ser. No. 80,305
Claims priority, application Finland, Jun. 4, 1997, 426/97
Term of patent 14 years
LOC (6) Cl. 14 - *99*
U.S. Cl. D14—121

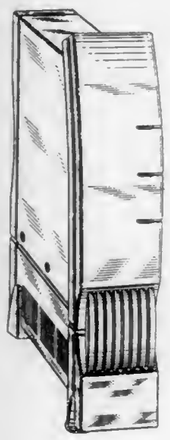


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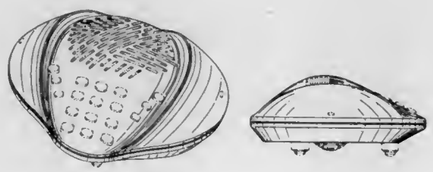
399,840
INTEGRATED RECEIVER/DECODER
Charles Stanley Curbbun, Leucadia, and Virginia Walker Keating, Los Angeles, both of Calif., assignors to General Instrument Corporation, Horsham, Pa.
Filed Feb. 12, 1998, Ser. No. 83,585
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—124



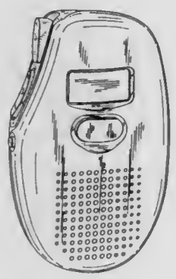
399,841
STORAGE MODULE FOR A VIDEO EDITING SYSTEM
Jonathan C. Burke, Corte Madera, Calif., assignor to Scitex Digital Video, Inc., Redwood City, Calif.
Filed Apr. 9, 1996, Ser. No. 52,815
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—125



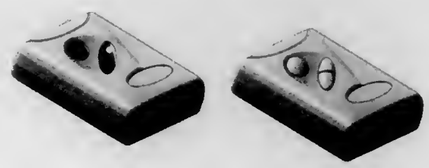
399,842
SPEAKER PHONE
Hari Matsuda, Evantson, Ill.; Rick T. Mason, Westland, Mich., and Frank J. Annerino, Rolling Meadows, Ill., assignors to 3Com Corporation, Santa Clara, Calif.
Filed Oct. 21, 1997, Ser. No. 78,333
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—150



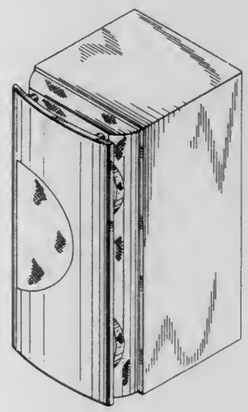
399,843
DATA RECORDER
Satoshi Masamitsu, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Jul. 29, 1996, Ser. No. 57,597
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—154



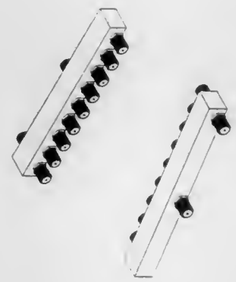
399,844
SELECTIVE CALL RECEIVER HOUSING
William Joseph Scheid, Coral Springs, and Paul Anthony Disalvo, Lake Worth, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 30, 1998, Ser. No. 85,777
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—191



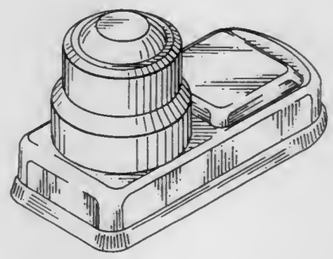
399,845
LOUDSPEAKER WITH REMOVABLE GRILLE CLOTH
Knut T. Fenner, Westfield; Richard Gioscia, Mahwah, and Kelichi Totsuka, Weehawken, all of N.J., assignors to Sony Corporation, Tokyo, Japan, and Sony Corporation of America, New York, N.Y.
Filed May 23, 1997, Ser. No. 71,238
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—214



399,846
IN-LINE 8-WAY SPLITTER/COMBINER
Mark Beggs, Ajax, Canada, assignor to PCI Technologies Inc., Ajax, Canada
Filed Jun. 4, 1997, Ser. No. 71,691
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—217



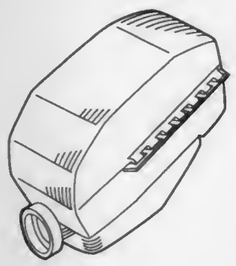
399,847
COMBINED ANTENNA AND BASE
Charles A. Seifert, Canton, Ohio, assignor to Allen Telecom Inc., Solon, Ohio
Filed Oct. 10, 1997, Ser. No. 78,349
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—230



399,848
MOUNT FOR MULTICOMMUNICATOR
Malcolm Hebblewhite, and Robert Matchett, both of Cremorne, Australia, assignors to Nokia Mobile Phones Limited, Espoo, Finland
Filed Aug. 22, 1996, Ser. No. 58,735
Claims priority, application Finland, Feb. 23, 1996, 139/96
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—253



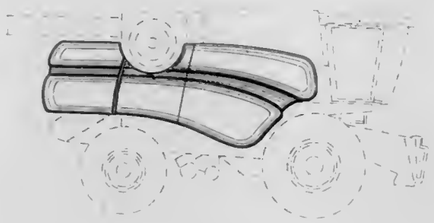
399,849
MODULAR RESONATOR
Changize Sadr, North York, Canada, assignor to ABC Group, Rexdale, Canada
Filed Feb. 6, 1997, Ser. No. 66,105
Term of patent 14 years
LOC (6) Cl. 15 - *01*
U.S. Cl. D15—5



399,850
MODULE FOR A MULTIPURPOSE UTILITY STATION FOR USE AT E.G. A PETROL STATION, PROVIDING E.G. SUPPLIES OF AIR, OIL, SCREEN WASHER FLUID, COOLANT AS WELL AS WASHING FACILITIES
Stein Alvern, Houston, Tex., and Oyvind Alvern, Hjellestad, Norway, assignors to Alvern-Norway A/S
Division of Ser. No. 61,104, Oct. 16, 1996. This application Nov. 4, 1997, Ser. No. 78,739
Claims priority, application Norway, Apr. 24, 1996, D960272
Term of patent 14 years
LOC (6) Cl. 15 - *02*
U.S. Cl. D15—19.1



399,851
SHIELDING FOR A COMBINE HARVESTER
David B. Stauffer, New Holland; Tyler R. Benedict, Ephrata, both of Pa., and Russell W. Strong, Craftsbury Common, Vt., assignors to New Holland North America, Inc., New Holland, Pa.
Filed May 27, 1997, Ser. No. 71,471
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—10



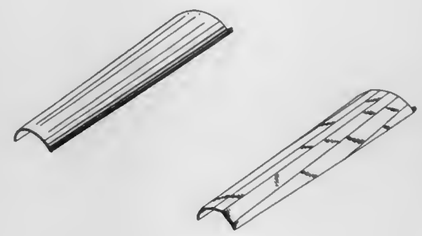
399,852
RIBBED WEAR PLATE FOR A RIPPER PLOW
Brian L. Launder, Tulsa, and Charles Clendenning, Broken Arrow, both of Okla., assignors to H&L Tooth Company, Tulsa, Okla.
Filed Sep. 3, 1997, Ser. No. 75,655
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—11



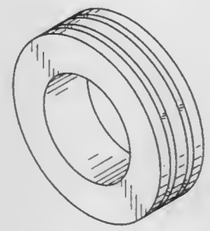
399,853
SPRAYER ASSEMBLY
Jacob R. Prosper, Brockville; Tri Nguyen, Toronto; Colin Dyke, North Augusta; Jerry N. Moscovitch, Toronto; Rene Allen, Oakville, all of Canada, and Gabriel E. Concari, Eldersburg, Md., assignors to Black & Decker Inc., Newark, Del.
Filed Apr. 24, 1997, Ser. No. 69,023
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—13



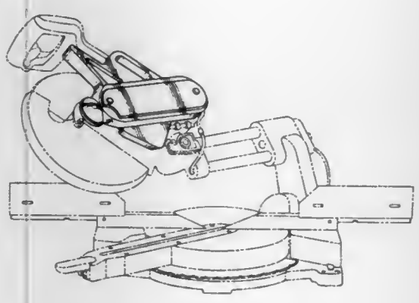
399,854
CORN SAVER SHIELD
Paul Willard Pearson, Rte. 1, Box 98, Dawson, Minn. 56232
Continuation-in-part of Ser. No. 990,789, May 27, 1993, abandoned. This application Apr. 11, 1994, Ser. No. 21,122
Term of patent 14 years
LOC (6) Cl. 15 - *03*
U.S. Cl. D15—28



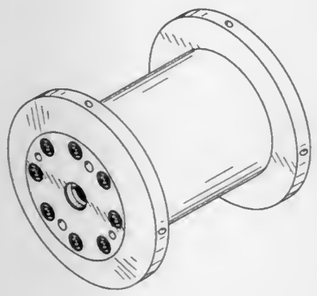
399,855
WIRE GUIDING ROLLER
Yasuhiro Ito, Yokohama, Japan, assignor to Nippei Toyama Corporation, Japan
Filed Aug. 5, 1997, Ser. No. 74,158
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



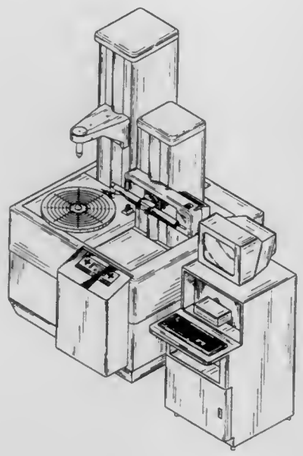
399,856
MOTOR HOUSING FOR A SLIDING COMPOUND MITER SAW
Scott Price, Pylesville, and Robert P. Welsh, Hunt Valley, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Nov. 12, 1997, Ser. No. 79,316
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



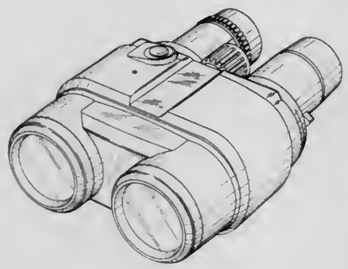
399,857
REEL BOBBIN FOR A WIRE SAW FOR SEMICONDUCTORS
Yukihiro Kanemichi, Yokosuka, Japan, assignor to Nippei Toyama Corporation, Japan
Filed Aug. 5, 1997, Ser. No. 74,079
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—138



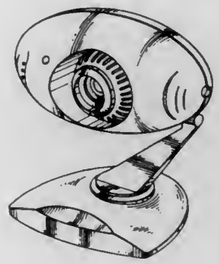
399,858
PART CHECKING MACHINE
James E. Helton, Carlisle, Ohio, assignor to M&M Precision Systems Corporation, West Carrollton, Ohio
Filed Oct, 7, 1997, Ser. No. 77,685
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—199



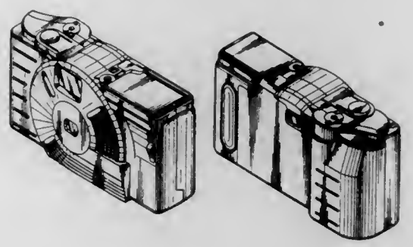
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BINOCULARS
Masato Hasegawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 19, 1997, Ser. No. 72,358
Claims priority, application Japan, Jan. 9, 1997, 9-238
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—133



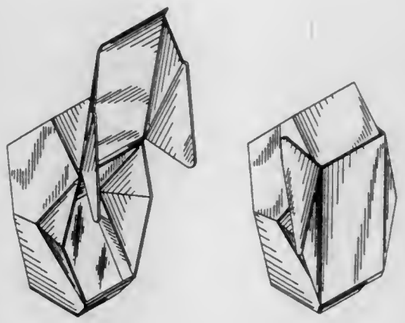
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CCD CAMERA
Fong-San Huang, Taipei, Taiwan, assignor to Puretek Industrial Co., Ltd., Taipei, Taiwan
Filed Oct. 28, 1997, Ser. No. 79,191
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—202



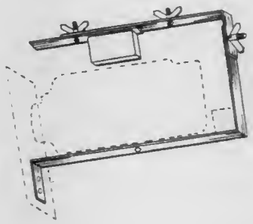
399,861
CAMERA
Kazuhiro Nihei, Tokyo, Japan, assignor to Konica Corporation, Tokyo, Japan
Filed Jul. 25, 1997, Ser. No. 74,826
Claims priority, application Japan, Feb. 12, 1997, 9-3859
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—209



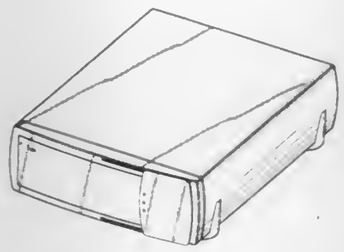
399,862
REFLECTOR FOR STILL OR MOTION-PICTURE CAMERA
Mardick Baliozian, Paris, France, assignor to Balcar, Paris, France
Filed Mar. 4, 1997, Ser. No. 67,331
Claims priority, application WIPO, Sep. 13, 1996, DM/037530
Term of patent 14 years
LOC (6) Cl. 16 - *05*
U.S. Cl. D16—219



399,863
CAMERA MOUNTING PLATFORM
Joseph LaCicero, 117 W. 65 St., Kansas City, Mo. 64113
Division of Ser. No. 714,195, Sep. 16, 1996, abandoned. This application Apr. 30, 1997, Ser. No. 70,384
Term of patent 14 years
LOC (6) Cl. 16 - *05*
U.S. Cl. D16—242

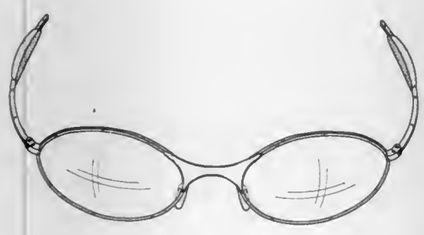


399,864
FILM SCANNER
David R. Gotham, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 14, 1997, Ser. No. 79,557
Term of patent 14 years
LOC (6) Cl. 16 - *04*
U.S. Cl. D16—246

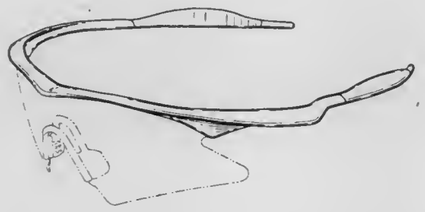




399,865
EYEGLASSES
James H. Jannard, Eastsound, Wash., and Peter Yee, Irvine, Calif., assignors to Oakley, Inc., Foothill Ranch, Calif.
Filed Mar. 27, 1996, Ser. No. 52,275
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



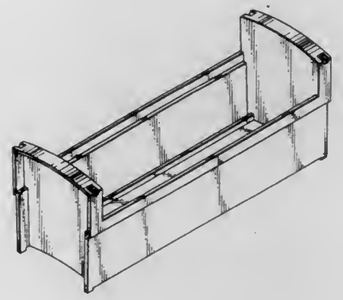
399,866
EYEGLASS COMPONENT
Peter Yee, Irvine, Calif., assignor to Oakley, Inc., Foothill Ranch, Calif.
Division of Ser. No. 55,504, Jun. 6, 1996, Pat. No. Des. 384,364. This application Aug. 12, 1997, Ser. No. 75,379
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—330



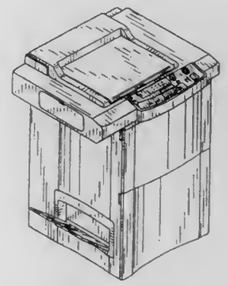
399,867
LOCK FOR A CYMBAL SUPPORT
Wu-Hong Hsieh, No. 46, Lane 59, Chungcheng Rd., Luchou Hsiang, Taipei Hsien, Taiwan
Filed Jan. 28, 1997, Ser. No. 65,247
Term of patent 14 years
LOC (6) Cl. 17 - *04*
U.S. Cl. D17—22



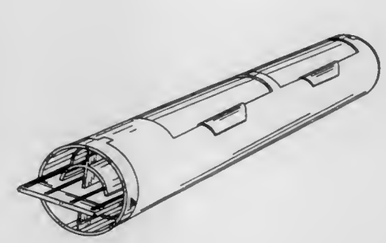
399,868
CASING FOR STAMPERS
Dan Harden, Palo Alto, Calif., assignor to Shachihata Inc., Nagoya, Japan
Filed Jul. 9, 1996, Ser. No. 56,770
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D18—18



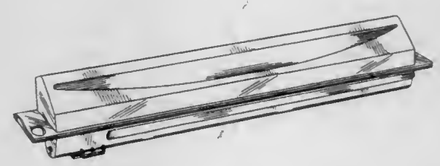
399,869
COPYING MACHINE
Koji Yoshida; Eiichi Okamoto, and Noriko Katayama, all of Tokyo, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Aug. 6, 1997, Ser. No. 74,593
Claims priority, application Japan, Feb. 7, 1997, 9-3422
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—39



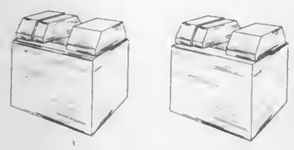
399,870
TONER CARTRIDGE
Mitsuharu Okada, and Teruki Kishimoto, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan
Filed Feb. 21, 1997, Ser. No. 66,850
Claims priority, application Japan, Aug. 23, 1996, 8-25244
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—43



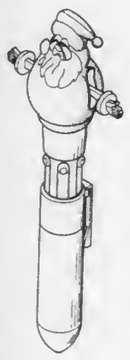
399,871
DEVELOPER FEEDER FOR AN IMAGE FORMING APPARATUS
Kazuo Joroku, and Toshihiko Watanabe, both of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka-fu, Japan
Filed May 9, 1997, Ser. No. 70,558
Claims priority, application Japan, Nov. 14, 1996, 8-34792
Term of patent 14 years
LOC (6) Cl. 16 - *03*
U.S. Cl. D18—43



399,872
PAPER SET FEEDER
James A. Darcy, Windham, N.H.; Gilbert G. Fryklund, Winchester, and William E. Sydlowski, Wakefield, both of Mass., assignors to Standard Duplicating Machines Corporation, Andover, Mass.
Filed Apr. 22, 1996, Ser. No. 53,416
Term of patent 14 years
LOC (6) Cl. 18 - *99*
U.S. Cl. D18—49



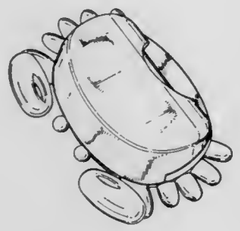
399,873
PEN
Chin-Chen Yang, No. 3 Alley 7, Lane 228, San Ming Rd., Lu Chou Hsiang, Taipei Hsien, Taiwan
Filed Feb. 18, 1998, Ser. No. 83,760
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—42



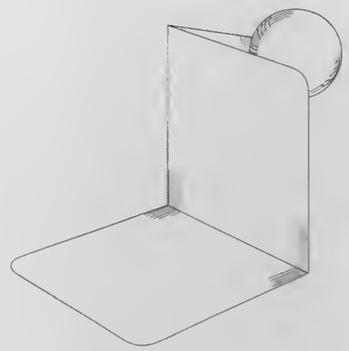
399,874
BALLPOINT PEN
Maria Boix Gacia, Ganduxer, 43, Barcelona, Spain, 08021
Filed Dec. 30, 1997, Ser. No. 81,521
Term of patent 14 years
LOC (6) Cl. 19 - *06*
U.S. Cl. D19—51



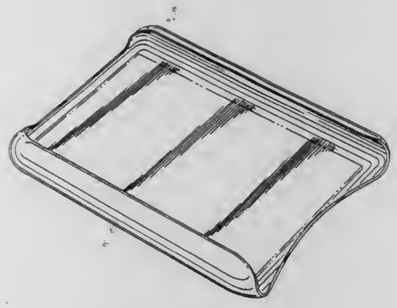
399,875
PAPER CLIP
Alan Lo, 8F, No, 204, Ta Tung Rd., Sec. 3, Hsi-Chih, Taipei Hsien, Taiwan
Filed Nov. 25, 1997, Ser. No. 79,765
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—65



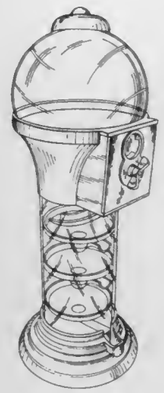
399,876
BOOK-SUPPORT
Rikki Westman, Valborgsmässovägen 3, S-126 37 Hägersten, Sweden
Filed Feb. 20, 1997, Ser. No. 68,149
Claims priority, application Sweden, Sep. 2, 1996, 96-1814
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D19—91



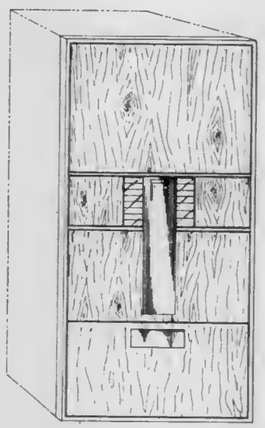
399,877
MEMO HOLDER
Albert B. Cheris, Highland Park, and Mark Dziersk, Chicago, both of Ill., assignors to Tenex Corporation, Elk Grove Village, Ill.
Filed Aug. 29, 1997, Ser. No. 75,951
Term of patent 14 years
LOC (6) Cl. 19 - *02*
U.S. Cl. D19—92



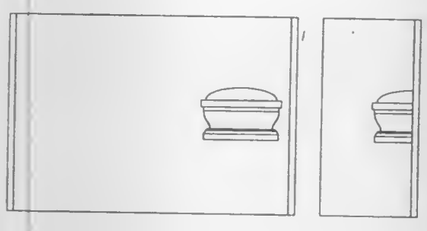
399,878
GUMBALL DISPENSING MACHINE
Irene An-Yun Lin, P.O. Box 80393, San Marino, Calif. 91118
Filed Sep. 24, 1997, Ser. No. 76,911
Term of patent 14 years
LOC (6) Cl. 20 - *01*
U.S. Cl. D20—7



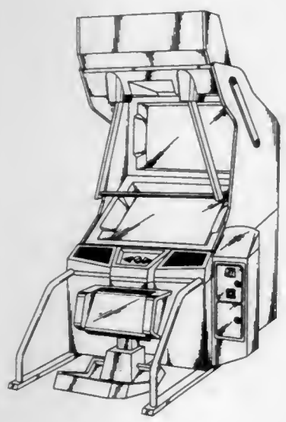
399,879
FRONT FACE HAVING A WOODEN APPEARANCE FOR A VENDING MACHINE
Eddie Wayne King, Marietta, Ga., assignor to The Coca-Cola Company, Atlanta, Ga.
Filed Jun. 27, 1997, Ser. No. 73,017
Term of patent 14 years
LOC (6) Cl. 20 - *01*
U.S. Cl. D20—8



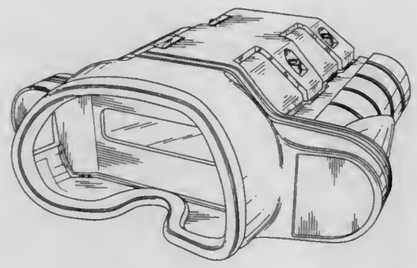
399,880
CASKET DISPLAY
Dennis J. Riga, New Albany, Ohio, assignor to The York Group, Inc., Houston, Tex.
Filed Jan. 24, 1997, Ser. No. 65,687
Term of patent 14 years
LOC (6) Cl. 20 - *02*
U.S. Cl. D20—29



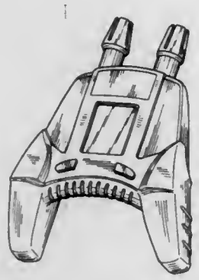
399,881
GAME MACHINE
Hiroyuki Muraki; Katsunori Okita, and Satoshi Uchiyama, all of Kobe, Japan, assignors to Konami Co., Ltd., Hyogo-ken, Japan
Filed Nov. 3, 1997, Ser. No. 78,749
Claims priority, application Japan, May 6, 1997, 9-053509
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



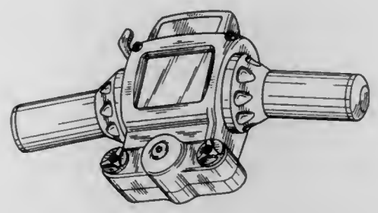
399,882
HAND HELD ELECTRONIC GAME
Ronald D. Bagley, Garland, and Andrew J. Riggs, Carrolton, both of Tex., assignors to Radica China Limited, Hong Kong, Hong Kong
Filed Dec. 22, 1997, Ser. No. 80,948
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



399,883
HAND HELD ELECTRONIC GAME
Charles C. Jensen, SeaTac, Wash., assignor to Radica China Limited, Hong Kong, Hong Kong
Filed Dec. 22, 1997, Ser. No. 80,952
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



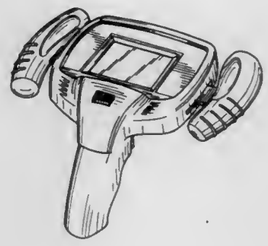
399,884
HAND HELD ELECTRONIC GAME
David E. Schultz, Cincinnati, Ohio, and Ronald D. Bagley, Garland, Tex., assignors to Radica China Limited, Hong Kong, Hong Kong
Filed Dec. 22, 1997, Ser. No. 80,953
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



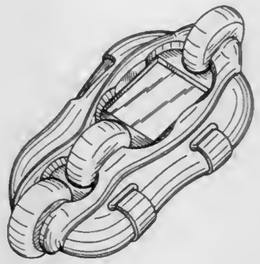
399,885
HAND HELD ELECTRONIC GAME
Ronald D. Bagley, Garland, Tex., and Charles C. Jensen, SeaTac, Wash., assignors to Radica China Limited, Hong Kong, Hong Kong
Filed Dec. 22, 1997, Ser. No. 80,955
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



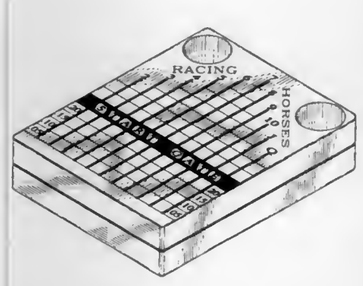
399,886
HAND HELD ELECTRONIC GAME
Kevin D. Brase, Lewisville, Tex., and Charles C. Jensen, Sea Tac, Wash., assignors to Radica China Limited, Hong Kong, Hong Kong
Filed Dec. 22, 1997, Ser. No. 80,956
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



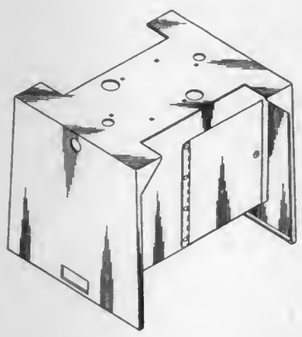
399,887
HAND HELD ELECTRONIC GAME
David E. Schultz, Cincinnati, Ohio, and Ronald D. Bagley, Garland, Tex., assignors to Radica China Limited, Hong Kong, Hong Kong
Filed Dec. 22, 1997, Ser. No. 80,957
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



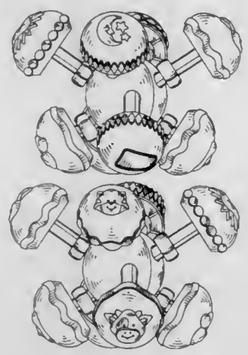
399,888
HORSE RACING GAME
Faye E. Beam, 101 Buckeye Dr., Morton, Ill. 61550-1259
Filed Apr. 24, 1997, Ser. No. 69,784
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—37



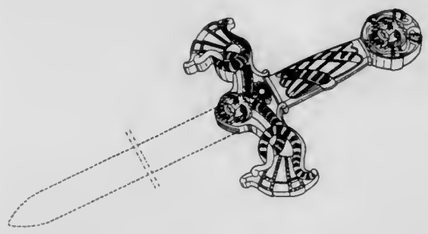
399,889
BASE CABINET
Daniel E. Ward, Boulder, Colo., assignor to Vector Slot Machine Company, L.L.C., Boulder, Colo.
Filed Nov. 12, 1996, Ser. No. 62,256
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—48



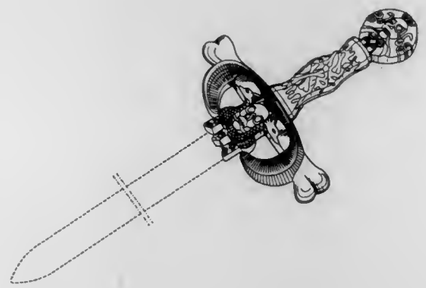
399,890
TOY FOR INFANTS
Richard B. Esterle, New York, N.Y., and Christopher J. Reinke, Barrington, R.I., assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Mar. 20, 1997, Ser. No. 68,224
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—59



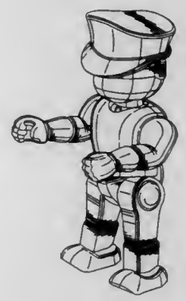
399,891
TOY SWORD
Chung-Hing Choi, Kowloon, Hong Kong, assignor to Hing Fat Toys Manufacturer Limited, Hong Kong, Hong Kong
Filed Dec. 2, 1997, Ser. No. 81,454
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—145



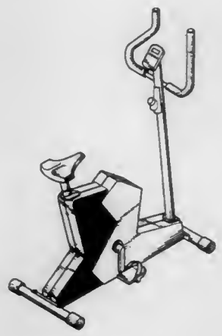
399,892
TOY SWORD
Chung-Hing Choi, Kowloon, Hong Kong, assignor to Hing Fat Toys Manufacturer Limited, Hong Kong, Hong Kong
Filed Jan. 2, 1998, Ser. No. 81,445
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—145



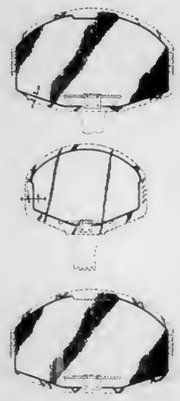
399,893
POLICEMAN TOY FIGURE
Lim Tak Tong, Hong Kong, Hong Kong, assignor to Sunny Industrial Development Co., Ltd., Hong Kong, China
Filed Sep. 2, 1997, Ser. No. 76,283
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—178



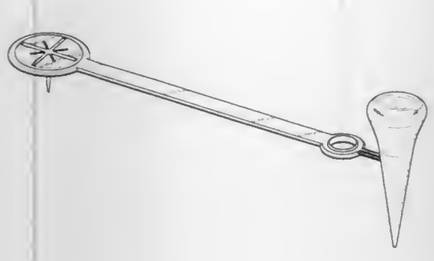
399,894
EXERCISE BICYCLE
Rody Chiu, 12th Fl.-5, No. 764, Ta Tun Rd., Nan Tun Dist., Taichung, Taiwan
Filed Aug. 8, 1997, Ser. No. 74,659
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—194



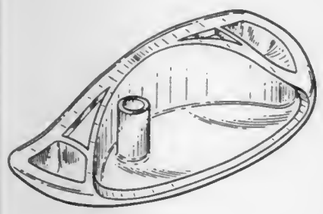
399,895
PORTION OF A FRONT SURFACE OF A BASKETBALL BACKBOARD
Randy R. Schickert, Kewaskum, and Jon C. Gallun, Waukesha, both of Wis., assignors to Huffy Corporation, Miamisburg, Ohio
Division of Ser. No. 57,120, Jul. 16, 1996, and Ser. No. 38,705, May 11, 1995, Pat. No. Des. 371,813, which is a division of Ser. No. 26,607, Aug. 1, 1994, which is a continuation-in-part of Ser. No. 22,566, May 9, 1994, Pat. No. Des. 362,881, which is a continuation-in-part of Ser. No. 190,914, Feb. 3, 1994, Pat. No. 5,626,339. This application Nov. 13, 1996, Ser. No. 62,346
Term of patent 14 years
LOC (6) Cl. 21 - *99*
U.S. Cl. D21—201



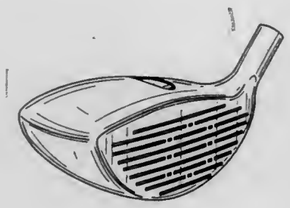
399,896
GOLF TEE SIGHTING DEVICE
S. James Plain, 9875 Brunswick Way, San Ramon, Calif. 94583
Filed Sep. 17, 1997, Ser. No. 76,494
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—208



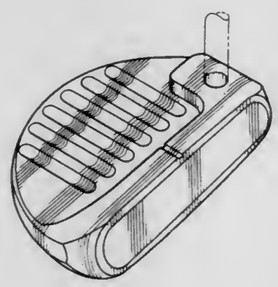
399,897
ARCHED BRIDGE PUTTER HEAD
Clive S. Lu, 282 Newbridge Rd., Hicksville, N.Y. 11801
Filed May 6, 1997, Ser. No. 70,425
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—217



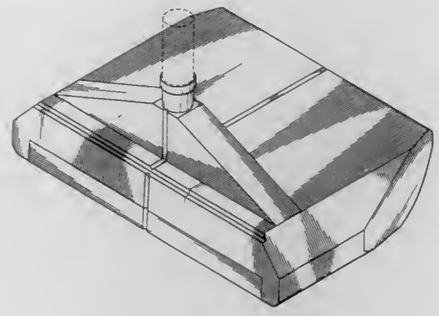
399,898
WOOD-TYPE GOLF CLUB HEAD
Daniel J. Stone, Long Beach; Stephen Chi-Yu, Irvine; Joseph Lemus, III, Long Beach, and John A. Creel, Newport Beach, all of Calif., assignors to Roger Cleveland Golf Company, Inc., Cypress, Calif.
Filed Aug. 26, 1997, Ser. No. 75,328
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—214



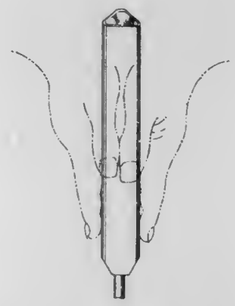
399,899
GOLF PUTTER HEAD
Bruce E. Sizemore, Jr., Palm Harbor, Fla., assignor to Bruce E. Sizemore, Jr. Golf Design, L.L.C., Bloomfield Hills, Mich.
Filed Jul. 21, 1997, Ser. No. 73,858
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—211



399,900
PUTTER HEAD
Charles Nelson Hogan, Phoenix, Ariz., assignor to Holey-Moley LLC, Hayden Lake, Id.
Filed Nov. 6, 1997, Ser. No. 79,019
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—219



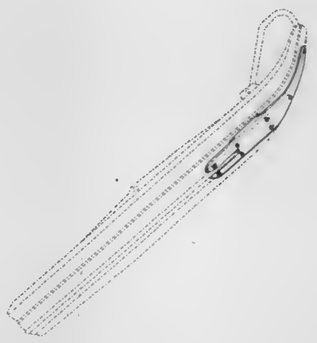
399,901
GOLF PUTTER GRIP
Frederick P. Beyer, 1501 NE. 5th Ct., Fort Lauderdale, Fla. 33301
Filed Dec. 8, 1997, Ser. No. 80,384
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—222



399,902
ALL TERRAIN BOARD DECK
Jason Lee, 323 E. Willlamette Ave., Colorado Springs, Colo. 80903
Filed Dec. 23, 1996, Ser. No. 64,387
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—227



399,903
SKI STABILIZER
Serge A. Bédard, Valcourt, Canada, assignor to Bombardier Inc., Canada
Continuation of Ser. No. 64,622, Jan. 7, 1997, abandoned.
This application Sep. 3, 1997, Ser. No. 77,172
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—230



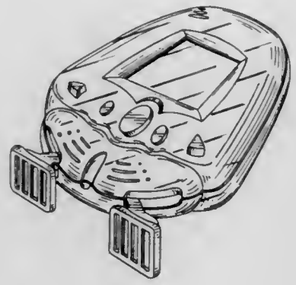
399,904
GAME BALL CONDITIONER
Lawrence M. Burke, P.O. Box 1402, DeLeon Springs, Fla. 32130, and Ronald L. Shalla, P.O. Box 3189, Deland, Fla. 32723
Continuation-in-part of Ser. No. 165,227, Dec. 10, 1993, Pat. No. 5,463,787. This application Jun. 14, 1995, Ser. No. 40,260
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—234



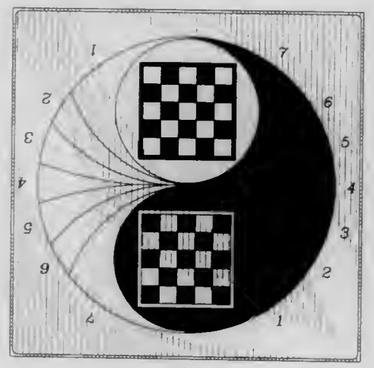
399,905
BODY SURFER'S AID
Dale R. VanderMolen, 6061 E. Cave Creek Rd., Carefree, Ariz. 85331
Filed Aug. 8, 1997, Ser. No. 74,836
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D21—236



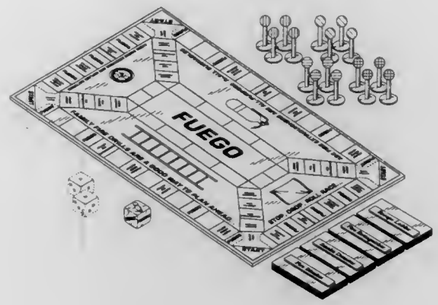
399,906
ELECTRONIC GAME HOUSING
Wong Chun Chi, Pakfulam, and Kenny Ho To Ling, Quarry Bay, both of Hong Kong, assignors to Tiger Electronics, Inc., Vernon Hills, Ill.
Filed Sep. 30, 1997, Ser. No. 77,355
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—329



399,907
GAME BOARD
Barry M. Hershkoff, 81-9th St., Apt. 401, San Francisco, Calif. 94103
Filed Aug. 25, 1997, Ser. No. 75,692
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—349



399,908
FIRE SAFETY GAME
Heliodoro Guzman, Sr., and Indie Rae Cooper, both of 19 Grochowiak St., South River, N.J. 08882
Filed Feb. 20, 1998, Ser. No. 83,939
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—350



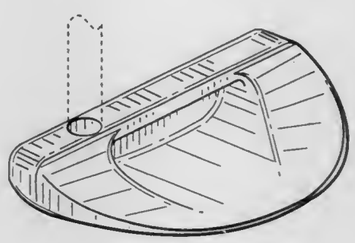
399,909
TOY ANIMAL
Paul Leadbetter, Søborg, Denmark, assignor to INTERLEGO AG, Baar, Switzerland
Filed Sep. 18, 1997, Ser. No. 76,850
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—617



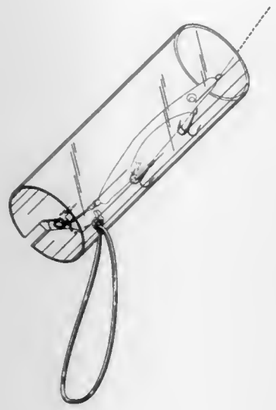
399,910
COMPACT DUMBBELL
James A. Eckmann, Libertyville, Ill., assignor to Sportworks, Ltd., Vernon Hills, Ill.
Continuation-in-part of Ser. No. 53,057, Apr. 16, 1996. This application Apr. 23, 1997, Ser. No. 69,516
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—682



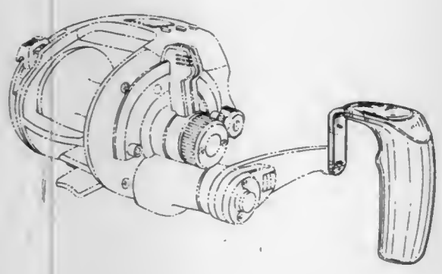
399,911
GOLF PUTTER HEAD
Michael R. Nicolette, Scottsdale, and Richard R. Sanchez, Glendale, both of Ariz., assignors to Karsten Manufacturing Corp., Phoenix, Ariz.
Filed Nov. 25, 1997, Ser. No. 79,984
Term of patent 14 years
LOC (6) Cl. 21 - *02*
U.S. Cl. D21—736



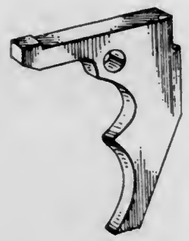
399,912
LURE GUARD
Oliver W. Kopp, III, 6945 Torres Dr., Jacksonville, Fla. 32210
Filed May 15, 1997, Ser. No. 69,861
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—126



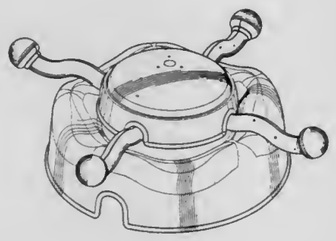
399,913
HANDLE FOR FISHING REEL
Takeshi Ikuta, Osaka, Japan, assignor to Shimano Inc., Osaka, Japan
Filed Dec. 11, 1997, Ser. No. 80,611
Claims priority, application Japan, Jun. 20, 1997, 9-58846
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—140



399,914
PAINTBALL GUN TRIGGER
Robert G. Walker, 25225 Pericia, Mission Viejo, Calif. 92691
Filed Feb. 10, 1997, Ser. No. 66,435
Term of patent 14 years
LOC (6) Cl. 22 - *01*
U.S. Cl. D22—108



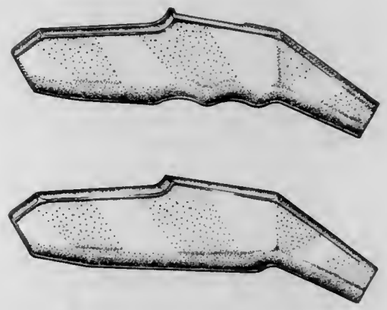
399,915
TOY WATER SPRINKLER
Peter C. McEachen, Cleveland Heights, Ohio, assignor to The Little Tikes Company, Hudson, Ohio
Filed Jul. 12, 1996, Ser. No. 56,959
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—214



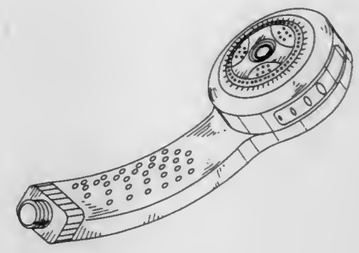
399,916
MISTING APPARATUS
Gary Wintering, Tempe, Ariz., assignor to Arizona Mist, Inc., Tempe, Ariz.
Filed Aug. 11, 1997, Ser. No. 74,818
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—214



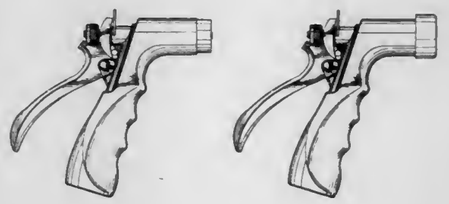
399,917
FLUID DISPENSER
James R. Edwards; Chester E. Chomka, both of Dubuque, Iowa, and Lawrence J. Fenske, Oregon, Wis., assignors to Barnstead/Thermolyne Corporation, Dubuque, Iowa
Filed Jul. 9, 1997, Ser. No. 73,552
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—223



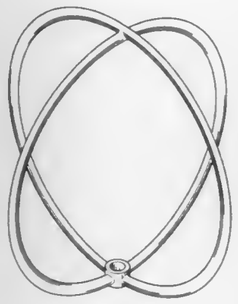
399,918
HAND-HELD SHOWER HEAD
Hing Wah Huen, Hong Kong, Hong Kong, assignor to Oasis Global Limited, Kowloon, Hong Kong
Filed Oct. 23, 1997, Ser. No. 78,273
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—223



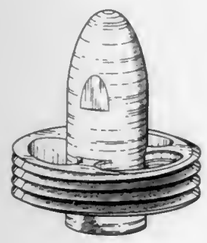
399,919
PISTOL HOSE NOZZLE
John W. Goodin, Coto De Caza, Calif., assignor to L. R. Nelson Corporation, Peoria, Ill.
Filed Dec. 15, 1995, Ser. No. 47,945
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—226



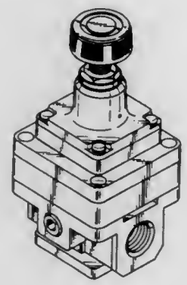
399,920
NOZZLE GUARD
Douglas Edward Bate, Alberta, Canada, assignor to Skyscraper Cleaning Services Inc., Alberta, Canada
Filed Sep. 19, 1996, Ser. No. 72,141
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—227



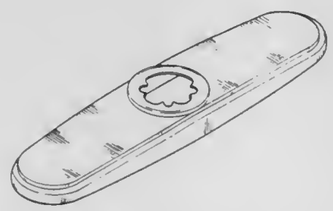
399,921
VALVE FLOW DIFFUSER
Curtis M. Jones, Largo, Fla., assignor to Brady Products, Inc., Clearwater, Fla.
Filed Nov. 13, 1996, Ser. No. 62,342
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—235



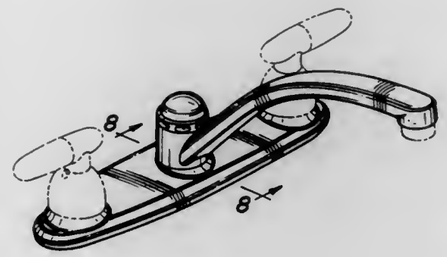
399,922
PRESSURE REDUCING VALVE
Teruo Uehara, Ibaraki-ken, Japan, assignor to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 27, 1997, Ser. No. 78,468
Claims priority, application Japan, Apr. 28, 1997, 9-52949
Term of patent 14 years
U.S. Cl. D23—235



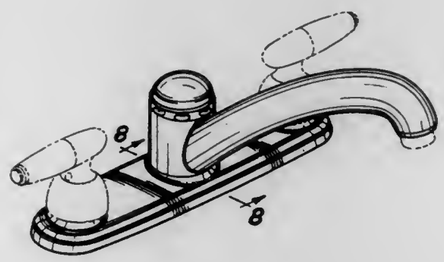
399,923
FAUCET SEAT BOARD
Hsi-Chia Ko, Changhua Hsien, Taiwan, assignor to Chung-Cheng Faucet Co., Ltd., Changhua Hsien, Taiwan
Filed Dec. 4, 1997, Ser. No. 81,420
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—238



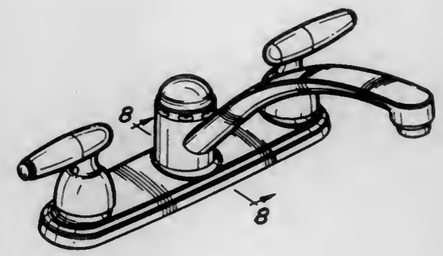
399,924
TWO HANDLE FAUCET
Judd A. Lord, Carmel, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Dec. 4, 1997, Ser. No. 80,838
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—241



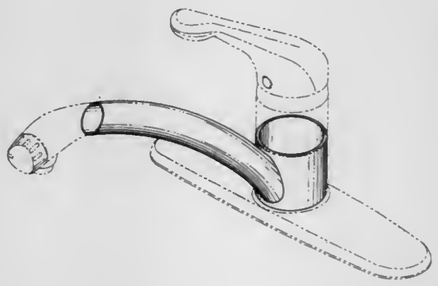
399,925
TWO HANDLE FAUCET
Judd A. Lord, Carmel, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Dec. 4, 1997, Ser. No. 80,338
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—241



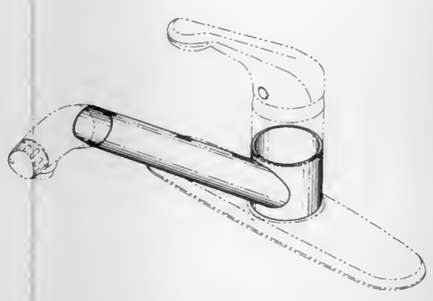
399,926
TWO HANDLE FAUCET
Judd A. Lord, Carmel, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Dec. 22, 1997, Ser. No. 81,014
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—241



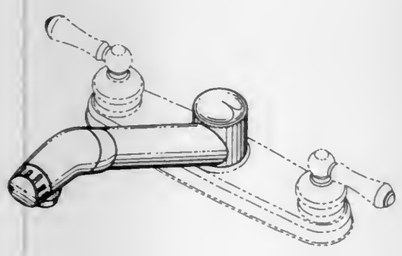
399,927
SPOUT
Frederic C. Doughty, South Pasadena; Darren M. Mark, Valencia, and Alvin Tolosa, Ventura, all of Calif., assignors to Emhart Inc., Newark, Del.
Filed Oct. 23, 1997, Ser. No. 78,256
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—255



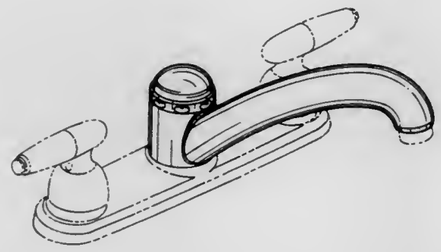
399,928
SPOUT
Frederic C. Doughty, South Pasadena; Darren M. Mark, Valencia, and Alvin Tolosa, Ventura, all of Calif., assignors to Emhart Inc., Newark, Del.
Filed Oct. 23, 1997, Ser. No. 78,258
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—255



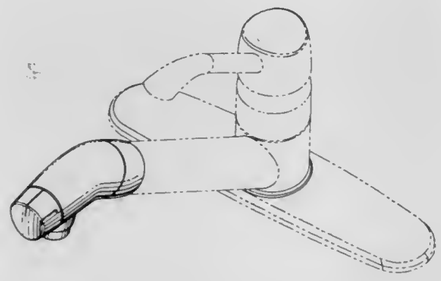
399,929
SPOUT
Frederic C. Doughty, South Pasadena; Darren M. Mark, Valencia, and Alvin Tolosa, Ventura, all of Calif., assignors to Emhart Inc., Newark, Del.
Filed Oct. 23, 1997, Ser. No. 78,259
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—255



399,930
FAUCET
Judd A. Lord, Carmel, Ind., assignor to Masco Corporation of Indiana, Indianapolis, Ind.
Filed Dec. 4, 1997, Ser. No. 80,017
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—255

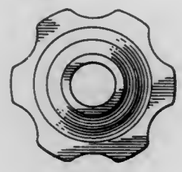


399,931
SPOUT
Frederic C. Doughty, South Pasadena; Darren M. Mark, Valencia, and Alvin Tolosa, Ventura, all of Calif., assignors to Emhart Inc., Newark, Del.
Filed Dec. 2, 1997, Ser. No. 80,178
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—255

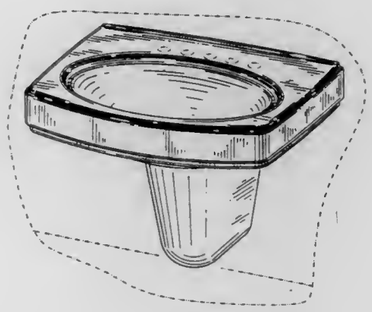


399,932
FLUSHOMETER SEAL
Michael C. Heathcote, Hinsdale, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.
Filed Sep. 3, 1996, Ser. No. 59,080
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—269

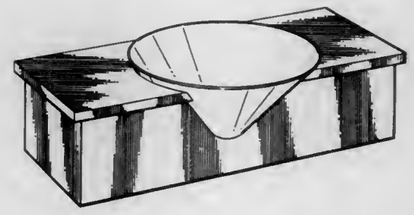




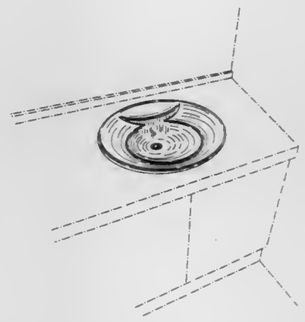
399,933
LAVATORY
Carter J. Thomas, Port Washington, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Nov. 13, 1997, Ser. No. 79,360
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—284



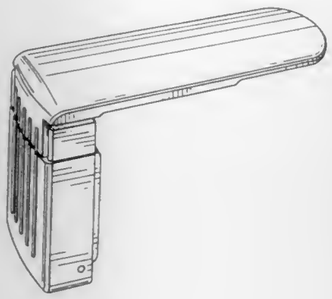
399,934
CONICAL WASH BASIN
Robert John Westcott, Otter lake group box RR#2, Parry Sound Ontario, Canada, P2A 2W8, and Michael Alan Niven, 676 Richmond Street West unit 104, Toronto Ontario, Canada, M6A 1C8
Filed Dec. 1, 1997, Ser. No. 80,102
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—284



399,935
BASIN
Kenichi Nagato, Kitakyushu, Japan, assignor to Toto Ltd., Japan
Filed Jun. 5, 1997, Ser. No. 71,658
Claims priority, application Japan, Dec. 5, 1996, 8-37255
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—293.1



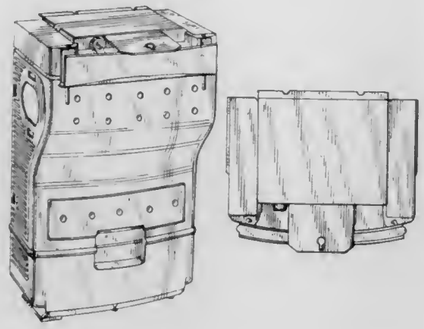
399,936
SELF LOCKING TOILET SEAT COVER LOCK
Craig S. Scherer; David C. Brown, both of Chicago; Robert Saul Gerlick, Evanston, and Michael C. Thuma, Des Plaines, all of Ill., assignors to BRK Brands, Inc., Aurora, Ill.
Continuation of Ser. No. 56,409, Jun. 28, 1996, abandoned.
This application Jan. 13, 1997, Ser. No. 64,865
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—303



399,937
AUXILIARY HANDLE FOR A TOILET SEAT
Brian Daniel Earleywine, 945 S. Second St., Springfield, Ill. 62704
Filed Jul. 3, 1997, Ser. No. 73,202
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—311



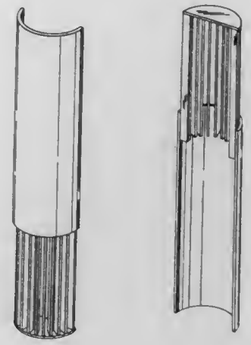
399,938
SUPPLIED AIR FAN AND ELECTRONICS UNIT FOR A PERSONAL ENVIRONMENT SYSTEM INCLUDING AN AIR MIXING EXTENSION UNIT
Dennis E. Miller, Greendale, Wis.; Doug Cooke, Charlestown, Mass.; Ricardo L. Fernandez, Beverly, Mass.; Kenneth G. Shown, Southbridge, Mass.; Keith H. Lengling; Carol Lomonaco, both of Wauwatosa, Wis., and Richard Watson, Boston, Mass., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Mar. 25, 1997, Ser. No. 69,283
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—351



399,939
SUPPLY AIR DEVICE
Bernt Nystrom, Huddinge, Sweden, assignor to Air Innovation Sweden AB, Sodertalje, Sweden
Division of Ser. No. 63,945, Dec. 19, 1996, Pat. No. Des. 392,030. This application Nov. 14, 1997, Ser. No. 79,566
Claims priority, application Sweden, Jun. 20, 1996, 96-1413
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—355



399,940
SUPPLY AIR DEVICE
Bernt Nystrom, Huddinge, Sweden, assignor to Air Innovation Sweden AB, Sweden
Division of Ser. No. 63,945, Dec. 19, 1996, Pat. No. Des. 392,030. This application Nov. 14, 1997, Ser. No. 79,567
Claims priority, application Sweden, Jun. 20, 1996, 96-1413
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—355



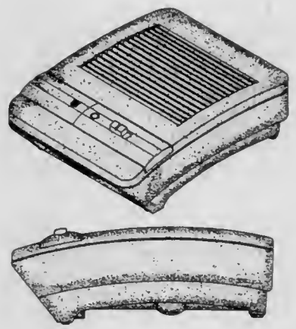
399,941
SUPPLY AIR DEVICE
Bernt Nystrom, Huddinge, Sweden, assignor to Air Innovation Sweden AB, Sweden
Division of Ser. No. 63,945, Dec. 19, 1996, Pat. No. Des. 392,030. This application Nov. 14, 1997, Ser. No. 79,580
Claims priority, application Sweden, Jun. 20, 1996, 96-1413
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—355



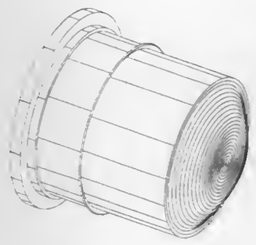
399,942
AIR CLEANER
Maureen Carroll, Atlanta, and Mark J. Moneypenny, Atlanta, both of Ga., assignors to Sunbeam Products, Inc., Delray Beach, Fla.
Filed Oct. 31, 1995, Ser. No. 46,737
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—364



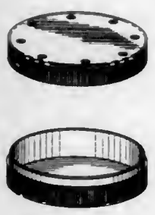
399,943
ELECTRONIC AIR PURIFIER
Li-Sheng Ko, 3/F., No. 245, Jao-Ho St., Taipei City, Taiwan
Filed Jan. 8, 1998, Ser. No. 81,680
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—364



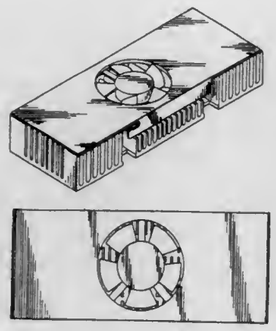
399,944
CONICAL FILTER
Gary R. Gillingham, Prior Lake; Wayne M. Wagner; Joseph C. Tokar, both of Apple Valley; Daniel T. Risch; Jim C. Rothman, both of Burnsville, and Steven A. Carter, Eagan, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.
Filed Apr. 26, 1996, Ser. No. 53,683
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—365



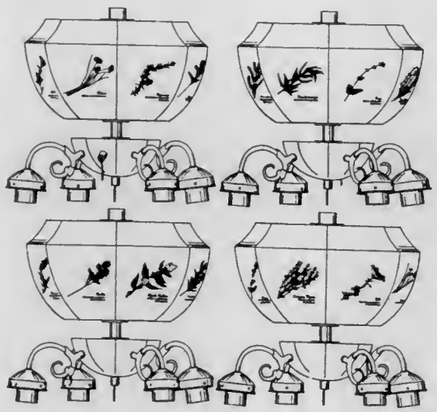
399,945
SPORTS BAG DEODORIZER
Joseph S. Bonomo, and Carmen P. Muraca, both of Hamilton, Canada, assignors to Freddy Fresh Puck Industries Inc., Hamilton, Canada
Filed Feb. 24, 1997, Ser. No. 66,868
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—369



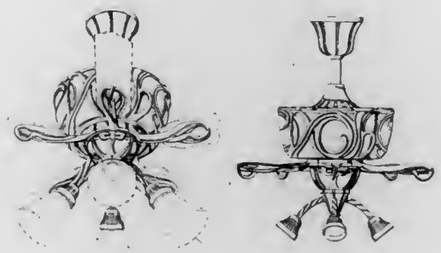
399,946
HEAT DISSIPATION FAN
Alex Horng, Kaohsiung, Taiwan, assignor to Sunonwealth Electric Machine Industry Co., Ltd., Taiwan
Filed Oct. 7, 1997, Ser. No. 77,605
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—370



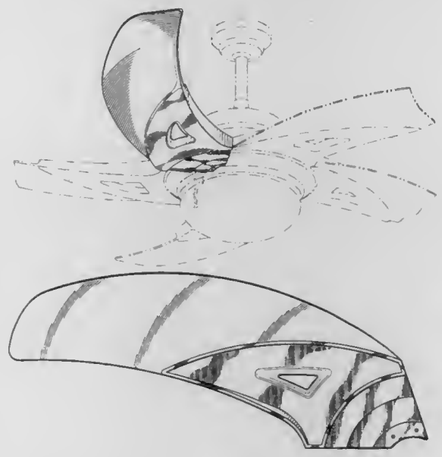
399,947
COMBINED CEILING FAN MOTOR HOUSING SWITCH HOUSING AND LIGHT FITTER UNIT
Robert M. Kennedy, Tampa, Fla., assignor to Litex Industries, Inc., Grand Prairie, Tex.
Filed Feb. 14, 1997, Ser. No. 66,494
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



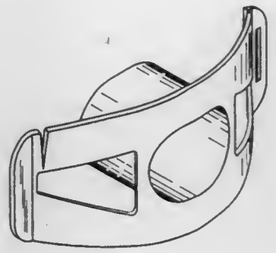
399,948
COMBINED CANOPY, MOTOR HOUSING, SWITCH HOUSING, BLADE IRONS AND LIGHT KIT UNIT FOR A CEILING FAN
Masao Tsuji, Germantown, Tenn., assignor to Hunter Fan Company, Memphis, Tenn.
Filed Dec. 15, 1997, Ser. No. 80,758
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411



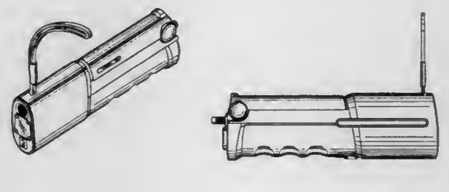
399,949
COMBINED BLADE ARM AND FAN BLADE UNIT FOR A CEILING FAN
Wang Liang Chou, Taichung, Taiwan, assignor to Aloha Housewares Co. Ltd., Taiwan
Filed Dec. 24, 1997, Ser. No. 81,229
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—413



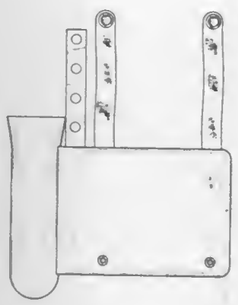
399,950
MEDICAL MOUTHPIECE
R. David Shepard, 18135 Market Sq., Zephyrhills, Fla. 33540
Filed Apr. 4, 1997, Ser. No. 68,421
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D24—110.5



399,951
INJECTION APPARATUS
Thomas J. Drach, Hood River, Oreg., assignor to Bioject, Inc., Portland, Oreg.
Filed Jun. 30, 1997, Ser. No. 73,094
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—112



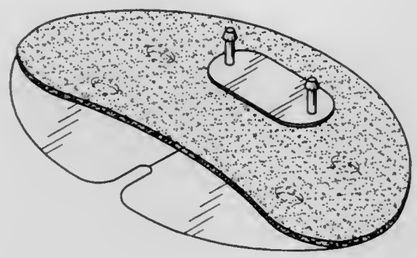
399,952
COMBINED PENILE DISCHARGE OR URINE COLLECTOR
L. Mac McMillian, 10800 Crenshaw Blvd. #30, Inglewood, Calif. 90303
Filed Jan. 21, 1997, Ser. No. 65,132
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—122



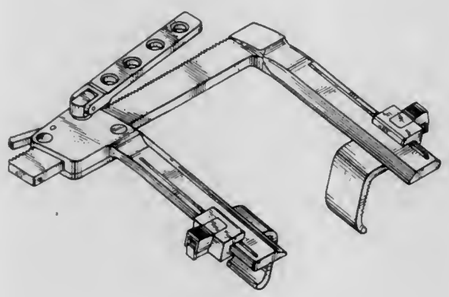
399,953
SURFACE PATTERN FOR DISPOSABLE ABSORBENT ARTICLE
Wilfried M. Kollner, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 20, 1996, Ser. No. 64,017
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—125



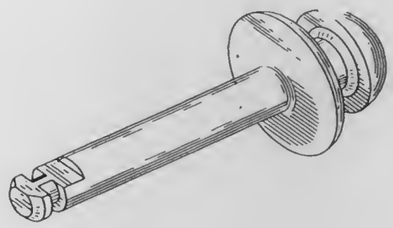
399,954
ANCHOR PAD AND RELEASE LAYER
Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.
Filed Sep. 17, 1997, Ser. No. 76,838
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—128



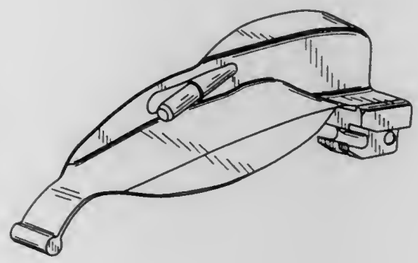
399,955
COMBINED SPINE/STERNUM RETRACTOR FRAME AND BLADES
Tibor B. Koros, and Gabriel J. Koros, both of 610 Flinn Ave., Moorpark, Calif. 93021
Filed Nov. 14, 1997, Ser. No. 79,372
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—135



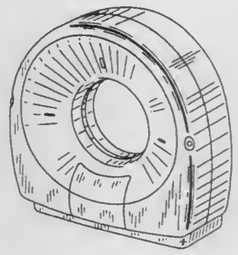
399,956
SNAP ON LATCH
José L. Mendoza, Cordova, Calif., assignor to Denticator International, Inc., Sacramento, Calif.
Filed May 30, 1997, Ser. No. 71,486
Term of patent 14 years
LOC (6) Cl. 24 - *03*
U.S. Cl. D24—156



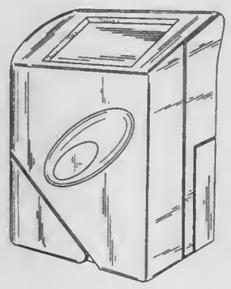
399,957
LARYNGOSCOPE BLADE
Mikhail Chernov, 110-45 71st Rd., Apt. 6H, Forest Hills, N.Y. 11375, and Gerald L. Wolf, Box 1064, Alpine, N.J. 07620
Filed Jun. 5, 1997, Ser. No. 71,657
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—146



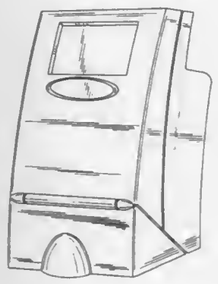
399,958
SCANNER FOR AN X-RAY TOMOGRAPHY DIAGNOSTIC MACHINE
Kenzo Hiramatsu, Musashino, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Jul. 28, 1997, Ser. No. 74,689
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—158



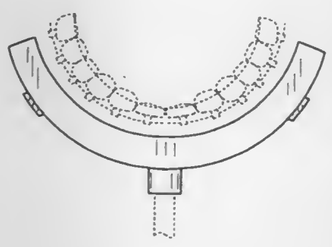
399,959
HOUSING FOR A DEVICE FOR MEASURING THE CONCENTRATION OF AN ANALYTE IN A SAMPLE OF BLOOD
Gary F. Prokop, Wheaton, and Joshua P. Goldfarb, Chicago, both of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jan. 24, 1997, Ser. No. 65,678
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—169



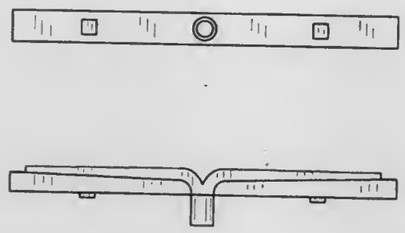
399,960
HOUSING FOR A DEVICE FOR MEASURING THE CONCENTRATION OF AN ANALYTE IN A SAMPLE OF BLOOD
Gary F. Prokop, Wheaton; Joshua P. Goldfarb, and Gregory J. Holderfield, both of Chicago, all of Ill., assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jan. 24, 1997, Ser. No. 65,679
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—169



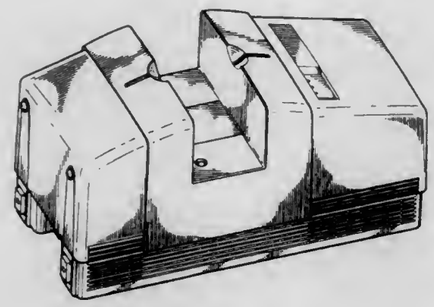
399,961
ORTHODONTIC BRACE INSTALLER
Stephen G. Nikodem, 4110 Von Talge, St. Louis, Mo. 63128
Filed Apr. 7, 1997, Ser. No. 67,913
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—180



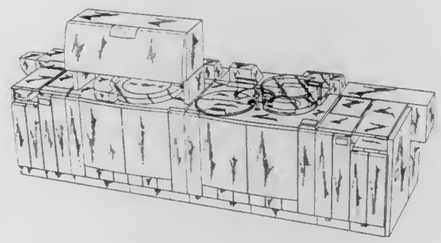
399,962
ORTHODONTIC BRACE INSTALLER
Stephen G. Nikodem, 4110 Von Talge, St. Louis, Mo. 63128
Filed Apr. 7, 1997, Ser. No. 69,352
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—180



399,963
PERIPHERAL BONE DENSITOMETER WITH HEEL POSITIONER
Richard B. Mazess, and Daniel R. Bullis, both of Madison, Wis., assignors to Lunar Corporation, Madison, Wis.
Filed Mar. 7, 1997, Ser. No. 67,457
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—186



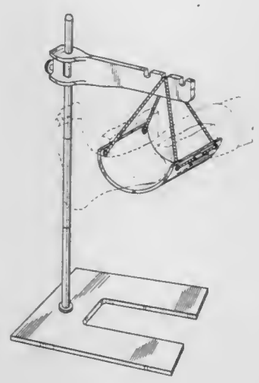
399,964
BIOCHEMICAL ANALYSIS MACHINE
Atsushi Katayama, Kokubunji; Hiroyuki Kuriyama, Tokyo; Hiroshi Mitsumaki, Mito, all of Japan, and Peter Hohmann, Milan, Italy, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Oct. 14, 1997, Ser. No. 78,482
Claims priority, application Japan, Apr. 11, 1997, 9-50793
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—186



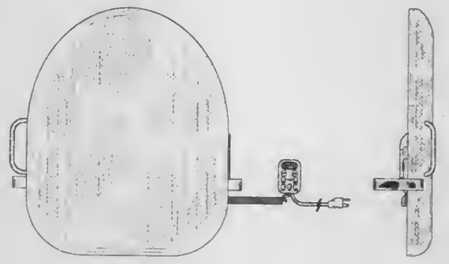
399,965
CORN PAD
Thomas J. Laughlin, Germantown, and Ronald M. Feret, Bartlett, both of Tenn., assignors to Schering-Plough HealthCare Products, Inc., Memphis, Tenn.
Filed Dec. 23, 1993, Ser. No. 16,739
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—189



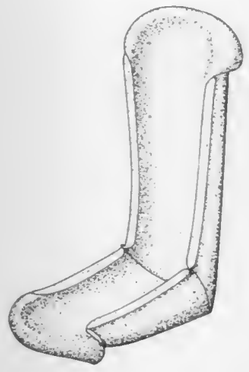
399,966
SUPPORT FOR LEG OR ARM
Lawrence A. Brown, Pekin, Ind., and Karen L. Bonn, Brandenburg, Ky., assignors to Restorative Medical, Inc., Brandenburg, Ky.
Filed Jun. 14, 1997, Ser. No. 72,435
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



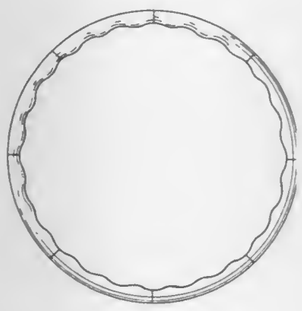
399,967
HEATED BACK SUPPORT PAD
Frank Scala, and Mario Bordonaro, both of 8 Boynton Circle, Markham, Ontario, Canada, L6C1A8
Filed Aug. 29, 1997, Ser. No. 76,163
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—190



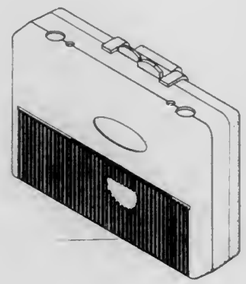
399,968
PAD FOR A KNEE POSITIONER
Thomas D. Petersen, 9680 Alto Dr., La Mesa, Calif. 92041
Filed Aug. 25, 1997, Ser. No. 76,252
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—190



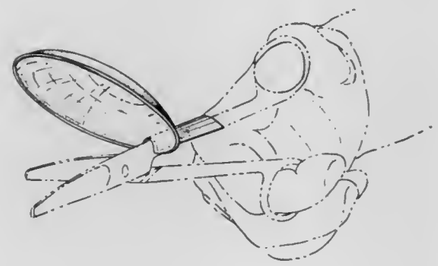
399,969
MASSAGE HOOP
Kun-Yuan Lin, No. 64, Alley 31, Sec. 1, Tantzu St., Tantzu Taichung, Taiwan, 42075
Filed Jul. 24, 1997, Ser. No. 73,285
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—200



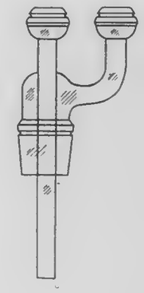
399,970
TRANSCUTANEOUS ELECTRICAL NERVE STIMULATOR
Poonam Agarwala, and David M. Zuppan, both of Brighton, Minn., assignors to Empi, Inc., St. Paul, Minn.
Filed Jul. 29, 1997, Ser. No. 74,167
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—200



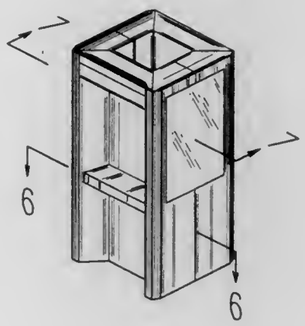
399,971
BLOOD SPRAY SHIELD FOR SURGICAL SCISSORS
Roger C. Scherer, 3226 Old Post Rd., Portsmouth, Ohio 45662-2427
Filed Dec. 4, 1996, Ser. No. 63,281
Term of patent 14 years
LOC (6) Cl. 24 - *99*
U.S. Cl. D24—231



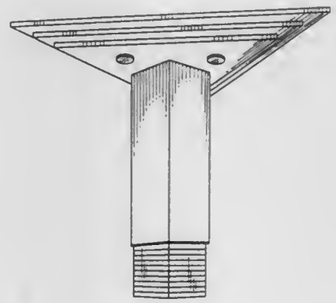
399,972
TOP FOR AN IMPINGER
John O. Foscato, 6109 Ivy Ridge Rd., Raleigh, N.C. 27612
Continuation of Ser. No. 258,987, Jun. 13, 1994, abandoned.
This application May 28, 1996, Ser. No. 55,036
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—232



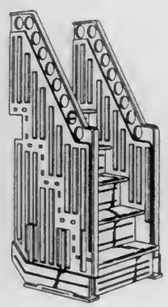
399,973
COMBINED TELEPHONE BOOTH AND ADVERTISING DISPLAY UNIT
Lawrence Patrick O'Reilly, 832 Town and River Dr., Ft. Myers, Fla. 33919
Filed May 5, 1997, Ser. No. 70,293
Term of patent 14 years
LOC (6) Cl. 25 - *03*
U.S. Cl. D25—16



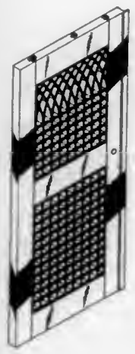
399,974
COVERED SERVICE MODULE
Lars Olofsson, Mölndalsvägen 81, Göteborg, Sweden, S-412 63
Filed Sep. 2, 1994, Ser. No. 27,946
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—56



399,975
STAIRCASE
Raymond C. Confer, Lockport, N.Y., assignor to Confer Plastics Inc., North Tonawanda, N.Y.
Filed Jul. 17, 1997, Ser. No. 73,277
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—62



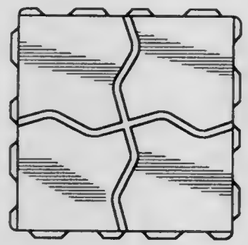
399,976
STAINLESS STEEL DOOR
Ming-Kun Lee, 2/F., No. 13, Hsing-Nan St., Nan-Kang Dist., Taipei City, Taiwan
Filed Jun. 23, 1997, Ser. No. 72,658
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—53



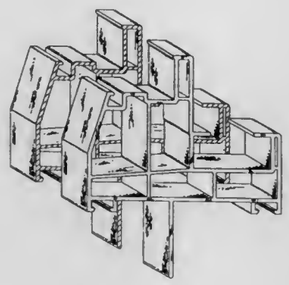
399,977
FOLDING STEEL SAWHORSE BEAM
Kenneth Laga, Franklin, Mass., assignor to American Manufacturing Company, Inc., Allentown, Pa.
Filed Jul. 8, 1997, Ser. No. 74,058
Term of patent 14 years
LOC (6) Cl. 25 - *04*
U.S. Cl. D25—67



399,978
PAVING ELEMENT
Gunther Barth, Buhlertal; Fritz Von Langsdorff, Rastatt, both of Germany, and Harald Von Langsdorff, Mississauga, Canada, assignors to F. Von Langsdorff Licensing Limited, Ontario, Canada
Continuation-in-part of Ser. No. 13,673, Sep. 29, 1993, abandoned. This application Feb. 16, 1995, Ser. No. 34,948
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—113



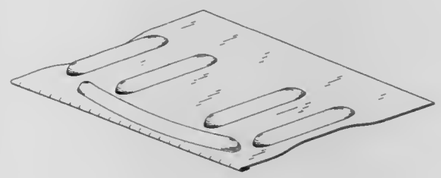
399,979
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Kent, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Dec. 1, 1995, Ser. No. 47,335
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



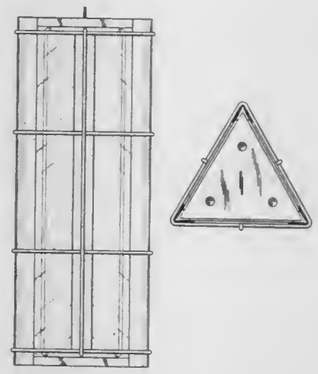
399,980
POST FOR A STAIR HANDRAIL
Bertrand Massé, 1440 Ste-Madeleine, Ancienne-Lorette, Quebec, Canada, G2F 3Y5
Filed Sep. 8, 1997, Ser. No. 76,211
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—126



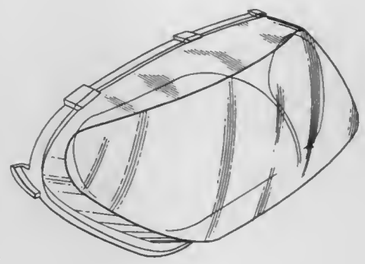
399,981
METAL ROOFING SHINGLE
Radovan Blagojevic, 515 Alice St., Crown Point, Ind. 46307
Filed Oct. 23, 1997, Ser. No. 78,435
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—139



399,982
CANDLE LANTERN
Robert Moore, 151 Country Club Dr., Florida, N.Y. 10921
Filed Dec. 4, 1997, Ser. No. 80,230
Term of patent 14 years
LOC (6) Cl. 26 - *01*
U.S. Cl. D26—11



399,983
LAMP
Germain Cadotte, 389 des Bois Francs, St-élie d'Orford, Quebec, Canada, J0B 250, and Martin Aube, 3790 Monseigneur Moisan, Sherbrooke, Quebec, Canada, J1L 2C1
Filed Nov. 7, 1997, Ser. No. 79,077
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28



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399,984
ASTROLOGICAL MODEL
Carl V. Stone, 200 Highland, Fairfield, Iowa 52556
Filed Mar. 31, 1995, Ser. No. 38,777
Term of patent 14 years
LOC (6) Cl. 99 - *00*
U.S. Cl. D99—99



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TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF OCTOBER, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A-B Products, Inc.: *See*—
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A-Dec, Inc.: *See*—
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A.L.D. Advanced Logistics Developments Ltd.: *See*—
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A. O. Smith Corporation: *See*—
Page, Alan, 5,825,110, Cl. 310-90.000.

Aach, Til; and Kunz, Dietmar W., to U.S. Philips Corporation. Noise reduction in an image. 5,825,846, Cl. 378-98.000.

AB Rexroth Mecman: *See*—
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AB Volvo: *See*—
Archer, Michael Anthony; Hodgetts, Paul; Mannerfelt, Carl; and Larsson, Johan, 5,825,216, Cl. 327-110.000.

Abad, Glen Silva: *See*—
Kirby, James E.; Abad, Glen Silva; and Jaffke, Ralph E., 5,823,236, Cl. 141-330.000.

ABB Daimler-Benz Transportation Signal AB: *See*—
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ABB Industry OY: *See*—
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Abbott, Dwight E.; and Brown, Kenneth L., to Arthrotek, Inc. Dynamically sealed surgical drill. 5,823,774, Cl. 433-115.000.

Abbott Laboratories: *See*—
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ABC TechCorp: *See*—
Green, Thomas S., 5,823,388, Cl. 222-1.000.

Abdulmassih, Antoine G.; Johnson, Donald B.; Young, Douglas L. G.; and Gallagher, Brian J., to Beloit Technologies, Inc. Fibresaver screen basket support. 5,823,355, Cl. 209-406.000.

Abe, Akira; Yoshida, Kiyohide; Muramatsu, Gyo; Sumiya, Satoshi; Irite, Naoko; and Saito, Mika, to Kabushiki Kaisha Riken. Exhaust gas cleaner. 5,824,621, Cl. 502-305.000.

Abe, Hiroaki: *See*—
Arima, Yasuhiko; Nishiyama, Yoshio; Fukao, Itaru; Abe, Hiroaki; and Kubota, Yuji, 5,826,086, Cl. 395-701.000.

Abe, Michiharu, to Ricoh Company, Ltd. Light irradiation method and optical information recording method. 5,824,450, Cl. 430-269.000.

Abe, Shingo; Inui, Tetsuya; Matoba, Hirotsugu; Hirata, Susumu; Kimura, Masaharu; Ishii, Yorishige; Horinaka, Hajime; and Onda, Hiroshi, to Sharp Kabushiki Kaisha. Ink jet head compact and allowing ink to be discharged with great force by using deformable structure. 5,825,383, Cl. 347-54.000.

Abe, Shunji, to Yamaichi Electronics Co., Ltd. IC pressing rotating lever mechanism IC socket. 5,823,794, Cl. 439-73.000.

Abe, Takafumi; Gotoh, Toshiyuki; Uchiyama, Takako; Higuchi, Hirofumi; Shima, Yoshikazu; and Ikemoto, Kazuto, to Mitsubishi Gas Chemical Company, Inc. Process for preparing lactate. 5,824,818, Cl. 560-179.000.

Abe, Tatsutoshi: *See*—
Fujimori, Junichi; and Abe, Tatsutoshi, 5,825,752, Cl. 370-260.000.

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Abendschein, Dana R., to G. D. Searle & Co. Method of attenuating arterial stenosis. 5,824,644, Cl. 514-12.000.

Aberdeen University and Plasma Biotal Limited: *See*—
Aspden, Richard Malcom; Murali, Srimathi Rajagopalan; and Porter, Richard William, 5,824,087, Cl. 623-16.000.

Aberle, Alfred M.: *See*—
Nantz, Michael H.; Bennett, Michael J.; Balasubramaniam, Rajiv P.; Aberle, Alfred M.; and Malone, Robert W., 5,824,812, Cl. 554-110.000.

Abitol, Marc; Blum, Ariel; Halimi, Alain; and Meimoun, Elie, to Visionix Ltd. Apparatus for mapping optical elements. 5,825,476, Cl. 356-124.000.

Abolfathi, Amir: *See*—
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Abrams, Michael J.; Fricker, Simon P.; Murrer, Barry A.; and Vaughan, Owen J., to Johnson Matthey Public Limted Company. Pharmaceutical compositions comprising metal complexes. 5,824,673, Cl. 514-184.000.

Abrams, Richard Wayne: *See*—
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Abramson, Adele: *See*—
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Abramson, Jeffery M.; Akkary, Haitham; Glew, Andrew F.; Hinton, Glenn J.; Konigsfeld, Kris G.; Madland, Paul D.; Papworth, David B.; and Martell, Robert W., to Intel Corporation. Method and apparatus for performing multiple load operations to the same memory location in a computer system. 5,826,109, Cl. 395-859.000.

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Abusafieh, Abdel: *See*—
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Ackeret, Peter, to fischerwerke, Arthur Fischer GmbH & Co. KG. Holding device for liquid containers, especially for installation in motor vehicles. 5,823,410, Cl. 224-281.000.

AcroMed Corporation: *See*—
Serhan, Hassan; Kuras, James; McMillin, Carl; and Persenaire, Maarten, 5,824,094, Cl. 623-17.000.

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Yen, Yeochung; Chen, Wenn-Jei; Chiang, Steve S.; and Forouhi, Abdul Rahim, 5,825,072, Cl. 257-530.000.

Actor, James M. Air-actuated ball-throwing and batting method. 5,823,894, Cl. 473-422.000.

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Adal, Zubir, to Texas Instruments Incorporated. Peak detector for automatic gain control. 5,825,239, Cl. 327-563.000.

Adams, Carlisle Michael; Wiener, Michael James; and Lockhart, Roland Thomas, to Entrust Technologies Ltd. Construction symmetric ciphers using the cast design procedure. 5,825,886, Cl. 380-28.000.

Adams, Harold F.: *See*—
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Adams, Mary Katherine. Rotating pie graph: mathematics learning tool. 5,823,783, Cl. 434-208.000.

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Assouad, Nicolas C.; Dyer, David L.; and Adams, Thomas G., 5,826,093, Cl. 395-800.000.
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ADB-Alnaco, Inc.: *See*—
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Phillips, Noel M.; Stiles, Tammy L.; Harding, Jennifer R.; and Lofgren, Lewis C., 5,823,348, Cl. 206-583.000.

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Luthi, Simon; Kälin, Xavier; Scholz, Wolfgang; and Stüssi, Edgar, 5,822,886, Cl. 36-28.000.

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Adler, Herbert: *See*—
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Adolph, Dirk; and Herpel, Carsten, to Deutsche Thomson Brandt GmbH. Method, encoder and decoder for the transmission of digital signals which are hierarchically structured into a plurality of parts. 5,825,430, Cl. 348-487.000.

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Advanced Bionics Corporation: *See—*
Zilberman, Yitzhak; and Hazard, Steven A., 5,824,022, Cl. 607-57.000.

Advanced Color Technology, Inc.: *See—*
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Ben-Meir, Amos; and Favor, John G., 5,826,073, Cl. 395-567.000.
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Glick, Jeffrey S.; and Spencer, Kimberly J., 5,823,593, Cl. 294-27.100.
Huddleston, Richard E., Jr., 5,824,983, Cl. 219-61.000.
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Krivokapic, Zoran, 5,824,587, Cl. 438-300.000.
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Stiles, David R.; and Roth, Teresa A., 5,826,052, Cl. 395-381.000.
Witt, David B., 5,826,053, Cl. 395-386.000.
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Aerospatiale Societe Nationale Industrielle: *See—*
Dazet, Francis, 5,823,471, Cl. 244-75.00R.

Afek, Yachin: *See—*
Koifman, Vladimir; Afek, Yachin; and Kashat, Israel, 5,825,246, Cl. 330-255.000.

Ag Processing, Inc.: *See—*
Heitritter, Glen V.; Yeates, James B.; and Huffman, Phillip L., 5,824,355, Cl. 426-459.000.

Agarwal, Ajay: *See—*
Gupta, Neeraj; Veeraraghavan, Venky; and Agarwal, Ajay, 5,825,651, Cl. 364-468.090.

Agarwal, Ramesh Chandra; Groves, Randall Dean; Gustavson, Fred Gehrung; Johnson, Mark Alan; and Olsson, Brett, to International Business Machines Corporation. Numerically intensive computer accelerator. 5,825,677, Cl. 364-736.030.

Agarwala, Mukesh: *See—*
Whalen, Philip J.; Jamalabad, Vikram R.; Pollinger, John P.; Agarwala, Mukesh; and Danforth, Stephen C., 5,824,250, Cl. 264-219.000.

Agaskar, Pradyot A.; and Huang, Tracy J., to Mobil Oil Corporation. Isoparaffin-olefin alkylation process. 5,824,835, Cl. 585-722.000.

Agata, Hiromichi; Minatani, Yoshihiko; Suzuki, Akira; and Hotta, Yutaka, to Aisin AW Co., Ltd. Motor drive device. 5,825,146, Cl. 318-439.000.

Agency of Industrial Science and Technology and Seiko Instruments Inc.: *See—*
Hayashi, Yutaka; Kojima, Yoshikazu; Takada, Ryoji; and Kamiya, Masaaki, 5,825,064, Cl. 257-316.000.

Ager, Mark Allan Nicholas, to Stage Technologies Limited. Powered stage wagon. 5,823,884, Cl. 472-77.000.

AGFA Gevaert: *See—*
Broddin, Dirk; and Tavernier, Serge, 5,825,504, Cl. 358-300.000.

Agfa-Gevaert, N.V.: *See—*
Marien, August; Hagemann, Jörg; and Weber, Beate, 5,824,465, Cl. 430-631.000.
Tavernier, Serge; Broddin, Dirk; De Meutter, Stefaan; Vermeulen, Leon; and Boulonne, Michel, 5,824,447, Cl. 430-124.000.

Aggarwal, Bharat B.; Gray, Patrick W.; and Nedwin, Glenn E., to Genentech, Inc. Recombinant lymphotoxin cDNA and variants. 5,824,509, Cl. 435-69.500.

Aggarwal, Bharat B.; and Rodriguez-Padilla, Cristina, to Research Development Corporation; and Universidad Autonoma de Nuevo Leon. Antiproliferative protein from *Bacillus thoringiensis* var. *thuringiensis* . 5,824,636, Cl. 514-2.000.

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Derighetti, René; and Dresti, Silvano, 5,824,986, Cl. 219-69.120.
Lodetti, Attilio; Erter, Hansjürg; and Tobler, Karl, 5,824,985, Cl. 219-69.120.

Agnese, Patrick; and Sajer, Jean-Michel, to Commissariat a L'Energie Atomique. Bolometric detection device for millimeter and sub-millimeter waves and a method for manufacturing this device. 5,825,029, Cl. 250-338.100.

Agostino, Joseph D. Five position bow playable, electric bass guitar. 5,824,924, Cl. 84-291.000.

Agouron Pharmaceuticals, Inc.: *See—*
Kalish, Vincent J.; Reich, Siegfried Heinz; Tatlock, John H.; and Rodriguez, Michael J., 5,824,688, Cl. 514-307.000.

Agrawal, Raj K., to Donnelly Corporation. Method for making a vehicle window panel using a melt-processible gasket material. 5,822,932, Cl. 52-597.000.

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Clarys, Bernard James; and Schmeichel, Charles Milton, 5,823,067, Cl. 74-546.000.

Agri-Food Canada: *See—*
Miki, Brian; Iyer, V. N.; and Fobert, Pierre, 5,824,863, Cl. 800-205.000.

Aguilar, Daniel A.: *See—*
Peng, Wei-Jen; Ramos, Humberto, Jr.; and Aguilar, Daniel A., 5,824,288, Cl. 424-9.400.

Ahlstone, Arthur Gustaf, to Oil Country Manufacturing, Inc. Open head foster-style back-up tong. 5,823,074, Cl. 81-57.340.

Ahlstrom Machinery Inc.: *See—*
Prough, J. Robert; Marcoccia, Bruno S.; Laakso, Richard O.; and Luhrmann, Carl L., 5,824,188, Cl. 162-49.000.

Ahluwalia, Gurpreet: *See—*
Henry, James; Ahluwalia, Gurpreet; and Shander, Douglas, 5,824,665, Cl. 514-143.000.

Ahmad, Kaleem: *See—*
Syed, Ali N.; and Ahmad, Kaleem, 5,824,295, Cl. 424-70.400.

Ahmad, Margaret: *See—*
Cashmore, Anthony Robert; Ahmad, Margaret; and Lin, Chentao, 5,824,859, Cl. 800-205.000.

Ahmad, Subutai; Bhadkamkar, Neal A.; Cousins, Steve B.; Freiberger, Paul A.; and Ullmer, Brygg A., to Interval Research Corporation. Display pause with elastic playback. 5,825,354, Cl. 345-327.000.

Ahmed, Adel A.; and Hakki, Hassan. Apparatus and method for monitoring breathing magnetically. 5,825,293, Cl. 340-573.000.

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Heo, Man-Yeong; and Ahn, Byung-Sun, 5,825,990, Cl. 395-113.000.

Ahn, In Seok: *See—*
Park, Jong-Oh; Lee, Chong Won; Ahn, In Seok; and Kang, Hyo Sik, 5,825,983, Cl. 395-99.000.

Ahrens, Kenneth A.: *See—*
Guiles, Melvin J.; and Ahrens, Kenneth A., 5,822,929, Cl. 52-9.000.

Aida, Chieko: *See—*
Kamijo, Noriyuki; Watanabe, Kenji; Kameda, Takanobu; Shimmura, Tomoyuki; and Aida, Chieko, 5,824,184, Cl. 156-584.000.

Aida, Kazuo: *See—*
Kobayashi, Hiroshi; Hidaka, Yoshiharu; Aida, Kazuo; Ikeda, Takashi; Yano, Motomitsu; and Kamura, Kouichirou, 5,825,766, Cl. 370-395.000.

Aigami, Koji: *See—*
Kubota, Yuichi; Hoshino, Eiichi; and Aigami, Koji, 5,824,115, Cl. 8-194.000.

Aikawa, Katsuaki: *See—*
Noda, Kazuyoshi; Aikawa, Katsuaki; and Saito, Toshihiko, 5,824,994, Cl. 219-203.000.

Air Products and Chemicals, Inc.: *See—*
Kimock, Michael John; and Listemann, Mark Leo, 5,824,711, Cl. 521-129.000.
Yang, Philip Yung-Chin, 5,824,734, Cl. 524-555.000.

Airtech GmbH: *See—*
Van Den Broek, Eric, 5,825,667, Cl. 364-562.000.

Aisin AW Co., Ltd.: *See—*
Agata, Hiromichi; Minatani, Yoshihiko; Suzuki, Akira; and Hotta, Yutaka, 5,825,146, Cl. 318-439.000.
Hiyokawa, Toyoji; Nimura, Mitsuhiro; and Ito, Yasunobu, 5,825,306, Cl. 340-988.000.
Taniguchi, Takao; Miki, Nobuaki; Kano, Takenori; Morishita, Toshiya; Ogasawara, Naoto; Murakami, Naotaka; and Kiyama, Ken, 5,823,070, Cl. 74-606.00R.
Tsukamoto, Kazumasa; Hayabuchi, Masahiro; Maeda, Koji; Teraoka, Yutaka; and Yamaguchi, Makoto, 5,822,987, Cl. 60-441.000.
Yamaguchi, Kozo; and Kojima, Hiroyuki, 5,823,281, Cl. 180-65.200.

Aisin Seiki Kabushiki Kaisha: *See—*
Inden, Masahiro; Katoh, Yoshiyuki; and Sugiura, Akihiko, 5,823,507, Cl. 251-129.150.
Ito, Sadao; and Kato, Haruo, 5,823,499, Cl. 248-429.000.
Nishida, Koji; Yamada, Daisuke; and Matsutani, Taku, 5,824,428, Cl. 429-26.000.
Shimizu, Motoyuki; Hayashi, Minoru; and Nakai, Kiyotaka, 5,823,094, Cl. 92-170.100.

Aiyama, Tetsuya: *See—*
Kobayashi, Atsumi; Sugano, Hidenobu; Ohmori, Masaki; and Aiyama, Tetsuya, 5,826,155, Cl. 399-367.000.

Ajax Metal Processing, Inc.: *See—*
Goodrich, Lloyd; Carpenter, James F.; and Wronkowicz, Gregory J., 5,823,356, Cl. 209-601.000.

Ajinomoto Co., Inc.: *See—*
Asano, Minao; Kawai, Misako; Miwa, Tetsuya; and Nio, Noriki, 5,824,534, Cl. 435-212.000.
Ohnishi, Norimasa; Niwa, Chisa; and Yokozeki, Kenzo, 5,824,449, Cl. 435-145.000.

Ajisawa, Akira; Terakado, Tomoji; Yamaguchi, Masayuki; and Komatsu, Keiro, to NEC Corporation. Optical semiconductor device. 5,825,047, Cl. 257-12.000.

Akai, Minoru; Suda, Itsuo; Nonomura, Katsumi; and Arai, Kumiko, to Hodogaya Chemical Co., Ltd. Dyeing automobile seat covers containing acrylic or cationic-dyeable polyester. 5,824,118, Cl. 8-662.000.

Akamatsu, Masao: *See—*
Itsuji, Takayuki; and Akamatsu, Masao, 5,824,895, Cl. 73-204.170.

Akasaki, Isamu: *See—*
Watanabe, Yoshiaki; Miyaguchi, Satoshi; Amano, Hiroshi; and Akasaki, Isamu, 5,825,789, Cl. 372-21.000.

Akebi, Yasunobu; Kubo, Masumi; and Yamashita, Toshihiro, to Sharp Kabushiki Kaisha. Liquid crystal display and projector employing the same. 5,825,342, Cl. 345-87.000.

Akimoto, Kazuo: *See—*
Imano, Seiichi; and Akimoto, Kazuo, 5,826,119, Cl. 396-236.000.

Akimoto, Masami: *See—*
Hasebe, Keizo; Nagashima, Shinji; Semba, Norio; Akimoto, Masami; Kimura, Yoshio; Iida, Naruaki; Harada, Kouji; Ueda, Issei; and Konishi, Nobuo, 5,826,129, Cl. 396-611.000.

Akita, Sadanori: *See—*
Melmed, Shlomo; Akita, Sadanori; and Readhead, Carol, 5,824,838, Cl. 800-2.000.

Akita Zinc Co., Ltd.: *See—*
Nagata, Hideki; Kuramochi, Shuji; and Ishimori, Norihito, 5,824,282, Cl. 423-578.100.

Akiyama, Itsutarou: *See—*
Suzuki, Tomoko; Yoshida, Takayuki; Kotoh, Satoru; Ishikawa, Hiroaki; Jojima, Kazunobu; Akiyama, Itsutarou; Matsushita, Akihiro; and Kabuki, Masataka, 5,823,009, Cl. 62-410.000.

Akiyama, Yuji: *See—*
Gotoh, Fumihiro; Hirabayashi, Hiromitsu; Kashino, Toshio; Tajika, Hiroshi; Akiyama, Yuji; Sugimoto, Hitoshi; Matsubara, Miyuki; and Kanda, Hidehiko, 5,825,377, Cl. 347-15.000.

Akkary, Haitham: *See—*
Abramson, Jeffery M.; Akkary, Haitham; Glew, Andrew F.; Hinton, Glenn J.; Konigsfeld, Kris G.; Madland, Paul D.; Papworth, David B.; and Martell, Robert W., 5,826,109, Cl. 395-859.000.

Aktsionernoe Obscnestvo othkrytogo Tipa Proizvodstenno-Torgovaya Avtor: *See—*
Mamonov, Alexandr Sergeevich, 5,823,283, Cl. 180-116.000.

Akzo Nobel NV: *See—*
Sherif, Fawzy G.; Shyu, Lieh-Jiun; and Greco, Carl C., 5,824,832, Cl. 585-455.000.

Alaniz, Glenn R.; Claflin, William H., Reeves, Deborah R.; and Vandermolen, Dale, to Pharmacia & Upjohn. Animal restraining device. 5,823,146, Cl. 119-725.000.

Alas, Michel, to Rhone-Poulenc Chimie. Process for the preparation of citraconic anhydride. 5,824,820, Cl. 562-895.000.

Albal, Nandakishore A., to Paradyne Croporation. System and method for transmission of communication signals through different media. 5,826,034, Cl. 395-200.690.

Albecker, Walter J., III. Leisure chair structure. 5,825,095, Cl. 297-377.000.

Albemarle Corporation: *See—*
Bildinov, Igor; Podsevalov, Pavel; Nazarenko, Tatjana; and Deev, Leonid, 5,824,827, Cl. 570-147.000.
Horvat, Stephen G., 5,824,241, Cl. 252-609.000.

Albers, Albert; and Felger, Robert, to Luk Lamellen Und Kupplungsbau GmbH. Method of making a coil spring. 5,823,035, Cl. 72-136.000.

Albert, Vivian R.: *See—*
Borden, Laurence A.; De Vivo, Michael; Yokoyama, Midori; and Albert, Vivian R., 5,824,486, Cl. 435-72.000.

Albertalli, David; Andriancen, Gus; and Saadat, Sasan, to Raster Graphics, Inc. Apparatus and method for advancing a web. 5,825,374, Cl. 346-136.000.

Alberti, Marco; Rizzi, Roberto; Martano, Marcello; De Michele, Gennaro; and Ligasacchi, Sergio, to Ansaldo Energia S.p.A.; and Enel S.p.A. Three-stage low NOx burner for burning solid, liquid and gaseous fuels. 5,823,764, Cl. 431-184.000.

Albertsen, Marc C.; Beach, Larry R.; Howard, John; and Huffman, Gary A., to Pioneer Hi-Bred International, Inc. Nucleotide sequences mediating fertility and method of using same. 5,824,524, Cl. 435-172.300.

Albion Engineering Company: *See—*
Schneider, Mark C., 5,823,403, Cl. 222-391.000.

Albrit Technologies Ltd.: *See—*
Cowe, Alan B.; and Clowes, Richard F., 5,825,407, Cl. 348-6.000.

Alcatel Mobile Phones: *See—*
Villain, Jean-Christophe; and Bezieres, Alain, 5,825,606, Cl. 361-220.000.

Alcatel N.V.: *See—*
Franke, Erich, 5,826,171, Cl. 455-26.100.

Alcatel NV: *See—*
Rudolph, Colin, 5,825,764, Cl. 370-337.000.

Alderton, George A., IV: *See—*
Porter, Michael A.; Kruše, Richard H.; DiCesare, Samuel; Berland, Kerry S.; Helms, James M.; and Alderton, George A., IV, 5,825,147, Cl. 312-466.000.

Aldwinckle, Herbert S.; and Norelli, John L., to Cornell Research Foundation, Inc. Transgenic pomaceous fruit with fire blight resistance. 5,824,861, Cl. 800-205.000.

Alexander, Arthur Ray; Porter, Warren W., deceased (by Carla D. Porter, legal representative), to NCR Corporation. Focused air cooling employing a dedicated chiller. 5,823,005, Cl. 62-259.200.

Alexander, Thomas: *See—*
Daniel, Andrew D.; and Alexander, Thomas, 5,825,681, Cl. 364-765.000.

Alfano, James P.: *See—*
Li, Affred C.; Hynnek, Pamela K.; Alfano, James P.; Lan, Xuekui; and Becker, Rex A., 5,824,369, Cl. 427-345.000.

Alfenaar, Marinus: *See—*
Petrakis, Jordanis; Hoge, Wolfgang; Leenaerts, Torsten; Alfenaar, Marinus; and Nieuwkamp, Johannes G. M., 5,824,400, Cl. 428-218.000.

Alfred University: *See—*
Chediak, Juan Alexander; Young, Lincoln Clark; and Edson, Daniel Lee, 5,824,940, Cl. 89-36.050.

Alizon, Marc; Sonigo, Pierre; Wain-Hobson, Simon; and Montagnier, Luc, to Institut Pasteur. Purification, cloning, and characterization of a novel human immunodeficiency virus LAV_{MAL}. 5,824,482, Cl. 435-7.100.

Al-Khalil, Munther A.: *See—*
Jelinek, Catherine W.; Kruse, Herman A.; Al-Khalil, Munther A.; and Thompson, Leo J., 5,826,167, Cl. 455-5.100.

Allanic, Al; Medard, Claude; and Schaeffer, P., to Laser International S.A. Process and installation for the manufacture of parts by phototransformation of material. 5,824,259, Cl. 264-401.000.

Allchin, Lucy A.: *See—*
Zona, Michael F.; and Allchin, Lucy A., 5,826,140, Cl. 399-106.000.

Allelix Biopharmaceuticals Inc.: *See—*
Tehim, Ashok; Fu, Jian-min; and Rakhit, Sumanas, 5,824,676, Cl. 514-220.000.

Allelix Neuroscience Inc.: *See—*
Borden, Laurence A.; De Vivo, Michael; Yokoyama, Midori; and Albert, Vivian R., 5,824,486, Cl. 435-72.000.

Allen, Dillis V., to Vardon Golf Company, Inc. Spinal brace for correcting lordosis. 5,824,013, Cl. 606-240.000.

Allen, Griffin M., Jr.: *See—*
Sturdevant, Michael L.; Allen, Griffin M., Jr.; and Schneider, Edward T., 5,822,989, Cl. 60-528.000.

Allen, Jonathan W., to Wallace Packaging Corporation. Foldable box with insert. 5,823,424, Cl. 229-120.070.

Allen, Richard B. Stadium umbrella. 5,823,212, Cl. 135-16.000.

Allen, Richard C.: *See—*
Ouderkirk, Andrew J.; Carlson, Lockwood W.; Kotz, Arthur L.; Nevitt, Timothy J.; Stover, Carl A.; Weber, Michael F.; Allen, Richard C.; and Majumdar, Biswaroop, 5,825,543, Cl. 359-494.000.

Allen, Robert C.: *See—*
Hitchcock, William A.; and Allen, Robert C., 5,823,781, Cl. 434-118.000.

Allen, Robert F.: *See—*
Bartels, Anthony L.; Allen, Robert F.; Holzapfel, Paul; and Lin, Warren, 5,823,853, Cl. 451-5.000.

Allen, Ross R.; Beard, David; Smith, Mark T.; and Tullis, Barclay J., to Hewlett-Packard Company. Freehand image scanning device which compensates for non-linear color movement. 5,825,044, Cl. 250-557.000.

Allen, Shawn Lee: *See—*
Mazion, Leigh Allen; Hall, Gregory Kent Elliot; Brothers, Daniel Leio, Jr.; and Allen, Shawn Lee, 5,825,471, Cl. 355-72.000.

Allen, Standish K., Jr.: *See—*
Guo, Ximing; and Allen, Standish K., Jr., 5,824,841, Cl. 800-2.000.

Allen Telecom Inc.: *See—*
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Allergan: *See—*
Campochiaro, Peter A.; Wheeler, Larry A.; Chandraratna, Roshantha A.; and Nagpal, Sunil, 5,824,685, Cl. 514-277.000.

Alley, Lewis F.; and Brim, Billy F., to A-B Products, Inc. Emergency shut-off mechanism for propane delivery systems and the like. 5,823,235, Cl. 141-197.000.

Allgood, Glenn O.: *See—*
Mee, David K.; Allgood, Glenn O.; Mooney, Larry R.; Duncan, Michael G.; Turner, John C.; and Treece, Dale A., 5,825,501, Cl. 356-429.000.

Alliance Semiconductor Corporation: *See—*
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AlliedSignal Inc.: *See—*
Capozoli, Martin Stephen, 5,825,322, Cl. 342-37.000.
Jablon, Michael, 5,824,732, Cl. 524-504.000.
Manire, Gregory B., 5,823,566, Cl. 280-728.300.
Thenappan, Alagappan; Van Der Puy, Michael; and Poss, Andrew J., 5,824,826, Cl. 570-134.000.
Whalen, Philip J.; Jamalabad, Vikram R.; Pollinger, John P.; Agarwala, Mukesh; and Danforth, Stephen C., 5,824,250, Cl. 264-219.000.

Allred, Brian M. Gripping football shirt. 5,822,794, Cl. 2-115.000.

Allred, Ron: *See—*
Brown, Janis; Allred, Ron; Duncan, Tom; Facciano, Andrew; and Kirby, Kevin, 5,824,404, Cl. 428-301.400.

Allseas Group S.A.: *See—*
Kalkman, Piet; Roodenburg, Joop; and de Groot, Anne Klaas, 5,823,712, Cl. 405-165.000.

Allsoft Distributing Inc.: *See—*
Colvin, Bryan, Sr., 5,825,881, Cl. 380-24.000.

Allsop, Inc.: *See—*
Clausen, Eivind, 5,823,332, Cl. 206-307.100.

Alnet (Proprietary) Limited: *See—*
Du Plessis, Joseph A., 5,823,718, Cl. 405-288.000.

Alobaidi, Imad M: *See—*
Hoare, David J; Alobaidi, Imad M; and Ghataora, Gurmel Singh, 5,823,706, Cl. 404-28.000.

Alofs, Cornell W.; and Drenth, Ronald R., to Jervis B. Webb Company. Optic position sensor. 5,825,481, Cl. 356-138.000.

Alon, Alexander: *See—*
Goodson, Doris L.; and Alon, Alexander, 5,823,024, Cl. 70-218.000.
Alon, Amir; and Shapira, Shlomo, to ZEN Research N.V. Illuminating multiple data tracks of an optical disk with a laser source of reduced coherence. 5,825,743, Cl. 369-121.000.
Alpermann, Hans-Georg: *See—*
Stache, Ulrich; Alpermann, Hans-Georg; and Bohn, Manfred, 5,824,670, Cl. 514-177.000.
Alpha Holdings, Inc.: *See—*
McGrath, Patrick James, 5,823,376, Cl. 220-516.000.
Alps Electric Co., Ltd.: *See—*
Date, Takashi; and Kusano, Manabu, 5,825,450, Cl. 349-149.000.
Saiso, Kenichi; and Tokunaga, Ken, 5,824,955, Cl. 174-88.00R.
Alps Electronic Co., Ltd.: *See—*
Dobashi, Koichi; Ohwada, Isao; Zama, Hiroyoshi; Sato, Makoto; and Shimamoto, Noboru, 5,824,420, Cl. 428-447.000.
Alt, Eckhard, to Inflow Dynamics Inc., (Delaware Corporation). Vascular and endoluminal stents. 5,824,045, Cl. 623-1.000.
Altera Corporation: *See—*
Lane, Christopher F.; Reddy, Srinivas T.; and Wang, Bonnie I-Keh, 5,825,197, Cl. 326-10.000.
Alternative Energy Development, Inc.: *See—*
Woerner, William L.; and Chronowski, Robert A., 5,823,122, Cl. 110-346.000.
Altex Technologies Corp.: *See—*
Kelly, John T.; and Namazian, Mehdi, 5,824,244, Cl. 264-37.290.
Altman, Peter A.: *See—*
Yang, Weiqun; and Altman, Peter A., 5,824,030, Cl. 607-122.000.
Altmann, Michael; and Guay, Bernard, to Northern Telecom Limited. Method of processing multi-level signals for simple clock recovery. 5,825,825, Cl. 375-293.000.
Aluminum Company of America: *See—*
Diekhoff, Hans H.; and Clarke, Andrew F., 5,822,843, Cl. 29-512.000.
Alvern Norway A/S: *See—*
Alvern, Stein, 5,822,902, Cl. 40-584.000.
Alvern, Stein; and Alvern, Øyvind, 5,823,237, Cl. 141-392.000.
Alvern, Øyvind: *See—*
Alvern, Stein; and Alvern, Øyvind, 5,823,237, Cl. 141-392.000.
Alvern, Stein, to Alvern Norway A/S. Device for displaying information on a fuel pump filler gun. 5,822,902, Cl. 40-584.000.
Alvern, Stein; and Alvern, Øyvind, to Alvern-Norway A/S. Protective cover for a fuel pump filler gun and method for protecting same. 5,823,237, Cl. 141-392.000.
Alwine, K. Troy, to Osram Sylvania Inc. Connector module having connector positive assurance member and internally latching connector housings. 5,823,814, Cl. 439-352.000.
ALZA Corporation: *See—*
Maruyama, Frederick H.; and Magruder, Judy A., 5,824,340, Cl. 424-473.000.
Amada, Nobutaka: *See—*
Ono, Hiroaki; Kano, Kiyoshi; Nishijima, Hideo; Arai, Takao; Noguchi, Takaharu; Amada, Nobutaka; Okamoto, Hiroo; Owashi, Hitoaki; Nishimura, Keizo; Kaku, Nobuyuki; and Fujimori, Shinya, 5,825,969, Cl. 386-94.000.
Amano, Hiroshi: *See—*
Watanabe, Yoshiaki; Miyaguchi, Satoshi; Amano, Hiroshi; and Akasaki, Isamu, 5,825,789, Cl. 372-21.000.
Ambar, Inc.: *See—*
Tate, Robert D., 5,824,159, Cl. 134-3.000.
Amcast Industrial Corporation: *See—*
Daniels, James R., 5,823,509, Cl. 251-335.200.
American Building Restoration Products, Inc.: *See—*
Tadych, John E., 5,822,914, Cl. 43-42.390.
American Cyanamid Company: *See—*
Kleeman, Axel; Baltruschat, Helmut Siegfried; and Hülsen, Thelka, 5,824,624, Cl. 504-242.000.
Mohr, Ian J.; Gluzman, Yakov, deceased, 5,824,318, Cl. 424-229.100.
American Home Products Corporation: *See—*
Kreft, Anthony F.; Caufield, Craig E.; Failli, Amedeo A.; Caggiano, Thomas J.; Greenfield, Alexander A.; and Kubrak, Dennis M., 5,824,699, Cl. 514-411.000.
American Products, Inc.: *See—*
Dunn, Dennis C.; and Swain, Richard L., 5,825,954, Cl. 385-79.000.
American Standard Inc.: *See—*
Polley, Phillip L.; and Hansen, William G., 5,823,004, Cl. 62-179.000.
Amersham International plc: *See—*
Friedlander, Uri; and Stubbs, Richard Ashley, 5,823,379, Cl. 220-408.000.
Amgen Inc.: *See—*
Bartley, Timothy D.; Boyle, William J.; Fox, Gary M.; Welcher, Andrew A.; Magal, Ella; Lindberg, Richard A.; and Parker, Vann P., 5,824,303, Cl. 424-94.500.
Kinstler, Olaf B.; Gabriel, Nancy E.; Farrar, Christine E.; and DePrince, Randolph B., 5,824,784, Cl. 530-399.000.
Pierce, Glenn Francis; Housley, Regina Mae; and Morris, Charles Frederick, 5,824,643, Cl. 514-12.000.
Amir, Chaim: *See—*
Klass, Edgardo F.; Poole, David W.; Amir, Chaim; and Heald, Raymond A., 5,825,224, Cl. 327-200.000.
Amitai, Yaakov, Linear beam steering device. 5,825,523, Cl. 359-209.000.
Ammermann, Eberhard: *See—*
Mueller, Bernd; Sauter, Hubert; Roehl, Franz; Doetzer, Reinhard; Lorenz, Gisela; and Ammermann, Eberhard, 5,824,705, Cl. 514-485.000.
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Anand, Prem K., to General Electric Company. Mirror and support for use in a magnetic resonance imaging device. 5,825,563, Cl. 359-872.000.
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Anderson, Karl Rudolph, III; Crawmer, Gerald Richard; Ellis, Edward Kenneth; Nolan, John Francis; Earvolino, Louis Patrick; Seeley, Robert Ellis; Pepe, Joseph John; Christoffel, Robert Joseph; and Van Ullen, Joseph Louis, to General Electric Co. Method of repairing a steam turbine rotor. 5,823,745, Cl. 416-213.00R.
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Anderson, Michael D., to Microsoft Corporation. Method and apparatus for determining visible surfaces. 5,825,363, Cl. 345-422.000.
Anderson, Richard Rox, to General Hospital Corporation, The. Radiation-delivery device. 5,824,023, Cl. 607-88.000.
Anderson, Seth I., to Loki, LLC. Multi-functional hat. 5,822,800, Cl. 2-202.000.
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Andress, Alfonso G. Portable cooking device with vertically arranged hearth. 5,823,174, Cl. 126-25.00R.
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Angelo, Jeffrey J., to PACCAR Inc. Vehicle dash storage box assembly. 5,823,612, Cl. 296-37.120.
Anger, Alan R., to Freezedry Specialties, Inc. Freeze dryer method and apparatus with enclosed heater and controller. 5,822,882, Cl. 34-296.000.
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Antonacci, Paul N.; and Rusert, Craig R., to Amoco Corporation. Self-seaming produce bag. 5,823,683, Cl. 383-107.000.
Antoniades, Neophytos Andreas; Bala, Krishna; Ellinas, Georgios Nicos; and Yoo, Sung-Joo, to Tellium, Inc. Parametric wavelength interchanging cross-connect. 5,825,517, Cl. 359-117.000.
Antonietti, Markus, to BASF Lacke +Farbem AG. Process for the preparation of aqueous polymer dispersions, aqueous polymer dispersions prepared by this process and the use of these polymer dispersions. 5,824,737, Cl. 524-707.000.
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Aoki, Sachiko; and Mizuno, Chiharu, to Kabushiki Kaisha Toshiba. Method for designing a semiconductor integrated circuit. 5,824,570, Cl. 438-128.000.
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Aono, Masao; Yamamoto, Kohji; Matsutani, Kanji; and Tezuka, Satoshi, to Kabushiki Kaisha Matsutani Seisakusho. Practical cutting bur and method of training using same for the cutting of human teeth. 5,823,775, Cl. 433-166.000.
Aonuma, Koichi; Aoki, Yoshimasa; and Hayashi, Koichiro, to Hitachi Powdered Metals Co., Ltd. Wear-resistant sintered alloy, and its production method. 5,824,922, Cl. 75-236.000.
Aoyagi, Hiromi, to Oki Electric Industry Co., Ltd. Vocal tract prediction coefficient coding and decoding circuitry capable of adaptively selecting quantized values and interpolation values. 5,826,221, Cl. 704-200.000.
Aoyama, Steven, to Acushnet Company. Solid golf ball and method of making. 5,823,889, Cl. 473-374.000.
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Derby, Herbert G.; and Charlton, Paul, 5,825,359, Cl. 345-344.000.
Hulick, Troy K.; and Lee, Wayman, 5,825,626, Cl. 361-724.000.
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Arai, Kunihiro, to Nippon Telegraph and Telephone Corporation. Semiconductor functional device and electronic circuit provided with the same. 5,825,048, Cl. 257-25.000.
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Arakawa, Isao; Hirata, Yosinori; and Miyamoto, Ryoichi, to Mitsubishi Denki Kabushiki Kaisha. IC mounting/demounting system and a mounting/demounting head therefor. 5,822,847, Cl. 29-741.000.
Araki, Kazuhiro: *See—*
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Araki, Ryuji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; Nomura, Yoshiya; Matsuda, Kenji; and Miura, Kouji, to Canon Kabushiki Kaisha. Photosensitive drum, process cartridge and image forming apparatus. 5,825,472, Cl. 355-200.000.
Araki, Yoshiyuki: *See—*
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Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Grey, Ian Edward; Houchin, Martin Richard; McDonald, Kenneth John; Sparrow, Graham Jeffrey; Hart, Kaye Patricia; and Harris, Harold Robert, to RGC Mineral Sands Limited. leaching of titaniferous materials. 5,826,162, Cl. 423-20.000.
Arand, Anthony J.; and Arand, John K., Jr., to Pac Rim Products, Inc. Method and apparatus for catalytic low temperature air pressure reforming of light hydrocarbon fuels for selective production of aromatics, olefins, and saturates. 5,824,209, Cl. 208-135.000.
Arand, John K., Jr.: *See—*
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Arataki, Yuji, to Sony Corporation. Rotation control circuit based on the mean value of run length code generation patterns reproducing apparatus equipped with the rotation control circuit. 5,825,732, Cl. 369-50.000.

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Arbeiter, Markus, to Mannesmann Sachs AG. Twist-grip shifter for bicycles and a bicycle having a twist-grip shifter. 5,823,058, Cl. 74-489.000.

Archer, Michael Anthony; Hodgetts, Paul; Mannerfelt, Carl; and Larsson, Johan, to Lucas Industries Public Limited Company; and AB Volvo. Method of operating a drive circuit for a solenoid. 5,825,216, Cl. 327-110.000.

Archibald, Thomas G.: *See*—
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Stec, Daniel, III; Perez, Ralph L.; Dave, Paritosh R.; and Archibald, Thomas G., 5,824,806, Cl. 548-953.000.

Archibald, William Charles; Spielman, Terence Paul; and Spielman, Jason, to Interval Systems, Inc. Method and apparatus that accounts for usage of digital applications. 5,825,883, Cl. 380-25.000.

Ardex Inc.: *See*—
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Ariga, Susumu, to Southwest Research Institute. Independent valve train lubrication system. 5,823,159, Cl. 123-196.0AB.

Arima, Yasuhiko; Nishiyama, Yoshio; Fukao, Itaru; Abe, Hiroaki; and Kubota, Yuji, to Fujitsu Limited. Device and method for aiding designing process of software development. 5,826,086, Cl. 395-701.000.

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Arizpe, Ronald E.; Dagley, Mark R.; Hall, David C.; and Morgan, Kevin L., to Siecor Corporation. Door assembly for optical hardware cabinet. 5,823,646, Cl. 312-324.000.

Arkhangelsky, Ivan Ivanovitch; Bolotov, Eugène Gueorguevitch; Philippov, Vladimir Sergueevitch; Mizrokhi, Vladimir Yakovlevitch; Svetlov, Vladimir Grigorievitch; Stanevsky, Gregory Andreevitch; Khitenkov, Serge Grigorievitch; Gaidoukevitch, Victor Leonidovitch; and Chmikov, Eugène Afanassievitch, to Thomson-CSF. Missile launching and orientation system. 5,823,469, Cl. 244-3.220.

Arlington Industries, Inc.: *See*—
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Armendariz, Esther; Mireles, Victor; and Balibrera, Michael Angel, to Aztec Imports Inc. Foldable pinata. 5,824,378, Cl. 428-7.000.

Armentano, Donna; Romanczuk, Helen; and Wadsworth, Samuel Charles, to Genzyme Corporation. Adenovirus vectors for gene therapy. 5,824,544, Cl. 435-320.100.

Armstrong, William C. Vehicle signalling device with trigger grip operation. 5,822,900, Cl. 40-473.000.

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Arnaud, Daniel: *See*—
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Arnold, Judson V.; Peoples, James R.; and McKague, Elbert L., to Lockhead Fort Worth Company. High heat density transfer device. 5,825,624, Cl. 361-708.000.

Arnold, Steven C.: *See*—
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Aronne, Armand J., to Northrop Grumman Corporation. Testing device for and method of testing a squib of an electro ballistic system. 5,825,282, Cl. 340-438.000.

Arrington, Eric E., to Eastman Kodak Company. Method to increase the production rate of photographic paper through application of ozone. 5,824,463, Cl. 430-532.000.

Arriola, Martin F.; Chaikumnerd, Tichakorn; Simmons, Janet K.; McDonough, Diana L.; and Volynsky, Isaak, to Mattel, Inc. Hoop for exercise and entertainment having decorative appearance. 5,823,846, Cl. 446-236.000.

Arthrotek, Inc.: *See*—
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Arthur, Ulric E.: *See*—
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Artieri, Alain, to SGS-Thomson Microelectronics S.A. Image processing system including a variable size memory bus. 5,825,372, Cl. 345-509.000.

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Aruin, Alexander S.; and Raitsin, Leonid M. Method for exercising the abdominal muscles. 5,823,913, Cl. 482-4.000.

Arye, Ram; and Lasser, Menachem, to Simtech Advanced Training & Simulation Systems, Ltd. Apparatus and method for simulation. 5,823,780, Cl. 434-38.000.

Asada, Kei, to Fuji Xerox Co., Ltd. Character output device. 5,825,987, Cl. 395-110.000.

Asahi Glass Company Ltd.: *See*—
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Asai, Tamotsu; Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Thermal printer and thermal printer head driving system. 5,825,985, Cl. 395-108.000.

Asakawa, Gary J.: *See*—
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Asamura, Yoshinori: *See*—
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Asano, Katsuhiro: *See*—
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Asano, Masamichi; Iwahashi, Hiroshi; Kirisawa, Ryouhei; Nakayama, Ryozo; Inoue, Satoshi; Shirota, Riichiro; Endoh, Tetsuo; and Masuoka, Fujio, to Kabushiki Kaisha Toshiba; and Toshiba Micro-Electronics Corporation. Non-volatile semiconductor memory and method of manufacturing the same. 5,824,583, Cl. 438-258.000.

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Weyer, Hans-Jürgen; and Fischer, Rolf, 5,824,769, Cl. 528-485.000.

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Beale, Terrance Ralph; and McDanell, Roger Alan, to Delco Electronics Corporation. Differential demodulator. 5,825,241, Cl. 329-304.000.

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Williams, Joel L.; Burkett, Susan L.; and McGuire, Shel, 5,824,198, Cl. 204-192.140.

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Begun, Ralph Murray: *See*—
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Beisel, Winfried; Schulze, Eckehart; Groos, Heinz; Budenbender, Dieter; and Kutscher, Hans-Werner, to Grabener Pressensysteme GmbH & Co., KG. Press for cold working of metal workpieces. 5,823,104, Cl. 100-48.000

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Belek, Ronald E.; and Burger, Robert, to Loctite Corporation. System for optical curing. 5,825,041, Cl. 250-504.000.

Belendiuk, George W., deceased (by Krystyna Belendiuk, executrix): *See*—
Burnside, Beth A.; Mattes, Carol E.; McGuinness, Charlotte M.; Rudnic, Edward M.; Belendiuk, George W., deceased, 5,824,638, Cl. 514-3.000.

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Bellamy, David M. Bathtub caddy. 5,823,366, Cl. 211-119.011.

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Barkey, Kathy Sue; Bender, Carl Alfred; Garmire, Derrick LeRoy; Roman, Harold Edgar; and Smyth, Daniel Gerard, 5,825,748, Cl. 370-236.000.

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Berdan, Karl, to JPE, Inc. Multi-venting molding apparatus. 5,824,261, Cl. 264-572.000.

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Coates, David; and Gelder, Andrew, 5,824,628, Cl. 508-433.000.

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Cline, Leslie E.; Chejlava, Edward J., Jr.; and Pham, Anh L., 5,826,107, Cl. 395-847.000.

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Yang, Mable M. P.; and Chen, George, 5,824,648, Cl. 514-14.000.

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Chi, Yi-Chen. Head set for a bicycle. 5,823,556, Cl. 280-279.000.
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Coqueret, Xavier; Rousseau, Pierre; and Verge, Christophe, to Elf Atochem S.A. Photocurable film-forming acrylic latices. 5,824,716, Cl. 522-31.000.
Cordier, Pierre-Yves: *See*—
Madic, Charles; and Cordier, Pierre-Yves, 5,826,161, Cl. 423-8.000.
Cordis Corporation: *See*—
Cottone, Robert J., Jr., 5,824,043, Cl. 623-1.000.
Fontirroche, Carlos A.; and Querns, Stephen J., 5,824,173, Cl. 156-86.000.
Sparks, Kurt D., 5,823,996, Cl. 604-96.000.
Core, Kenneth R.; Nirshberg, Alex; Knuth, Stephen B.; and Karnowski, Mark J., to Casio PhoneMate, Inc. Integrated cordless telephone with telephone answering device and method of replaying messages through a handset thereof. 5,826,187, Cl. 455-412.000.
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Elgas, Roger J.; and Corey, Edmund R., Jr., 5,823,987, Cl. 604-4.000.
Corkum, David L.; Park, June; and Kawate, Keith W., to Texas Instruments Incorporated. Condition responsive sensor having a signal conditioning capacitor. 5,824,902, Cl. 73-514.320.
Cornay, Paul Joseph. Universal joint having centering device. 5,823,881, Cl. 464-118.000.
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Aldwinckle, Herbert S.; and Norelli, John L., 5,824,861, Cl. 800-205.000.
Schacham-Diamand, Yosef; Dubin, Valery M.; Ting, Chiu H.; Zhao, Bin; Vasudev, Prahalad K.; and Desilva, Melvin, 5,824,599, Cl. 438-678.000.
Cornet, Jean Claude: *See*—
Sugisawa, Junji; and Cornet, Jean Claude, 5,825,225, Cl. 327-208.000.
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Bange, James C.; Dorfeld, William G.; Hayes, James C.; and Lapp, Josef C., 5,824,127, Cl. 65-90.000.
Chalasani, Devi; Locker, Robert J.; and Sawyer, Constance B., 5,824,143, Cl. 106-181.100.
Cornish, Kevin C.: *See*—
Giannatto, Carl J.; and Cornish, Kevin C., 5,825,621, Cl. 361-701.000.
Cornwell, Charles E. Sound absorbing cementitious composition and method of making same. 5,824,148, Cl. 106-678.000.
Coronet-Werk GmbH: *See*—
Weihrauch, Georg, 5,823,633, Cl. 300-21.000.
Correia, Victor Hugo: *See*—
Predmore, Daniel Ross; Kellock, Iain Robertson; Correia, Victor Hugo; Starkweather, John Howard; and Lenahan, Dean Thomas, 5,823,741, Cl. 415-134.000.
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Mynott, Tracey Leahanne, 5,824,305, Cl. 424-94.650.
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Hori, Takashi; Kumagai, Hitoshi; Hasegawa, Mitsuharu; Sato, Yoko; Munakata, Hiroshi; and Sugawa, Yoshihiro, 5,824,808, Cl. 549-1.000.
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Costello, Thomas M.; Trapuzzano, Gary M.; and Bader, Carl V., to Ensoniq Corporation. Velocity sensing trigger interface for musical instrument. 5,824,938, Cl. 84-687.000.
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Selby, Theodore W.; Tubbs, Michael A.; Trombley, Joseph S.; Cotter, James R.; and Miiller, Gregory C., 5,824,886, Cl. 73-60.110.
Cotton, Michael; and Horan, Kevin Michael, to British Gas plc. Guiding of a pipe travelling device. 5,823,115, Cl. 104-138.200.
Cottone, Robert J., Jr., to Cordis Corporation. Endoprosthesis having graft member and exposed welded end junctions, method and procedure. 5,824,043, Cl. 623-1.000.
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Tolstoshev, Paul; Harvey, Richard; Courtney, Michael; and LeCocq, Jean-Pierre, 5,824,505, Cl. 435-69.200.
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Cousins, Steve B.: *See*—
Ahmad, Subutai; Bhadkamkar, Neal A.; Cousins, Steve B.; Freiberger, Paul A.; and Ullmer, Brygg A., 5,825,354, Cl. 345-327.000.
Cove Corporation: *See*—
Beal, Harold F., 5,822,904, Cl. 42-76.010.
Cowe, Alan B.; and Clowes, Richard F., to Albrit Technologies Ltd. Cable television audio messaging systems. 5,825,407, Cl. 348-6.000.
Cowger, Bruce; Pawlowski, Norman, Jr.; and Barinaga, John A., Jr., to Hewlett-Packard Company. Ink supply for an ink-jet printer. 5,825,387, Cl. 347-86.000.
Cowger, Bruce, to Hewlett-Packard Company. Pen body exhibiting opposing strain to counter thermal inward strain adjacent flex circuit. 5,825,389, Cl. 347-87.000.
Cox, Brian; Evans, Michael A.; Will, Allan; Lenker, Jay A.; Kim, Steven W.; and Freislinger, Kirsten, to Medtronic, Inc. Endoluminal prostheses and therapies for highly variable body lumens. 5,824,040, Cl. 623-1.000.
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Cox, Clifford W. Dual-use fishing lure. 5,822,911, Cl. 43-37.000.
Cox, James L. Method of replacing atrioventricular heart valves using flexible tubes. 5,824,063, Cl. 623-2.000.
Cox, Kingsley James Arthur. Thermal combination cup and fluid container receptacle. 5,823,380, Cl. 220-502.000.
Coyle, Catherine Louise: *See*—
McConnachie, Jonathan M.; Coyle, Catherine Louise; Greaney, Mark Alan; and Stiefel, Edward Ira, 5,824,627, Cl. 508-363.000.
CP8 Transac: *See*—
Ugon, Michel, 5,825,875, Cl. 380-4.000.
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Madic, Charles; and Cordier, Pierre-Yves, 5,826,161, Cl. 423-8.000.
Craig, Gary A.; Heath, Gregory F.; and Sheth, Vijay J., to McDonnell Douglas Helicopter Co. Split torque proprotor transmission. 5,823,470, Cl. 244-7.00R.
Crankshaw, Michael. High speed corner labeler. 5,824,183, Cl. 156-486.000.
Crawford, Douglas Gordon: *See*—
Gabor, George; Orr, Thomas Robert; Greene, Charles Maurice; Crawford, Douglas Gordon; and Berman, Samuel Maurice, 5,825,132, Cl. 315-39.000.
Crawmer, Gerald Richard: *See*—
Anderson, Karl Rudolph, III; Crawmer, Gerald Richard; Ellis, Edward Kenneth; Nolan, John Francis; Earvolino, Louis Patrick; Seeley, Robert Ellis; Pepe, Joseph John; Christoffel, Robert Joseph; and Van Ullen, Joseph Louis, 5,823,745, Cl. 416-213.00R.
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Komarek, James A.; Minney, Jack L.; Nordine, Stephen P.; Lewis, Harold F.; Wada, Richard; and Stockman, John F., 5,825,777, Cl. 370-458.000.
Creative Manufacturing, Inc.: *See*—
Sullins, Patrick H.; and Sullins, Robert D., 5,823,574, Cl. 281-45.000.
Cree, Stephen Henry: *See*—
Penfold, John; Hughes, Morgan M.; Cree, Stephen Henry; and Brann, Jeffery E., 5,824,718, Cl. 522-120.000.
Crescenzi, Mark K.: *See*—
Cargnel, Daniel A.; and Crescenzi, Mark K., 5,824,227, Cl. 210-713.000.
Crestbury Limited: *See*—
Wise, John Richard, 5,824,995, Cl. 219-393.000.
Cripe, Todd E.: *See*—
Grumm, Darren M.; Schamanek, Roger E.; Cripe, Todd E.; and Butler, Raymond S., 5,822,922, Cl. 49-360.000.
Crook, David J. C.: *See*—
Barba, Valentin G.; Crook, David J. C.; and Shube, Eugene E., 5,825,663, Cl. 364-508.000.
Crossland, Lyle D.; Tuttle, Annmarie; and Stein, Jeffrey I., to Novartis Finance Corporation. Methods for the production of hybrid seed. 5,824,542, Cl. 435-320.100.

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Crow, Robert W.; Gano, John C.; Van Le, Nam; Longbottom, James R.; and Hagen, Karluf, to Halliburton Energy Services, Inc. Well completion system with well control valve. 5,823,265, Cl. 166-373.000.

Crowe, Allen A.: *See—*
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Crowley, Joseph M., to Xerox Corporation. Gyricon display with no elastomer substrate. 5,825,529, Cl. 359-296.000.

Crowley, William F.; Jameson, J. Larry; Schneyer, Alan L.; and Weiss, Jeffrey, to General Hospital Corporation, The. Activin antagonists as novel contraceptives. 5,824,637, Cl. 514-2.000.

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Somayajula, Shyam S., 5,825,244, Cl. 330-253.000.

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DuPuis, Timothy J.; and Jaric, Melita, 5,824,936, Cl. 84-663.000.

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Benedetto, Valter, 5,825,832, Cl. 375-341.000.

CSG Systems, Inc.: *See—*
Rutkowski, Steve; and Rierden, William, 5,826,270, Cl. 707-10.000.

Csomos, Steven, Window platform and scaffolding device. 5,823,289, Cl. 182-61.000.

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Hill, Jason M.; and Kluge, Arthur F., 5,824,657, Cl. 514-46.000.

Cuchiaro, Joseph D.: *See—*
Watanabe, Hitoshi; Paz De Araujo, Carlos A.; Yoshimori, Hiroyuki; Scott, Michael C.; Mihara, Takashi; Cuchiaro, Joseph D.; and McMillan, Larry D., 5,825,057, Cl. 257-295.000.

Cueman, Glenn F.; Richbourg, Henry L., Jr.; and Williamson, Tony A., to Clinitex Medical Corporation. Low modulus synthetic fiber casting system. 5,823,978, Cl. 602-6.000.

Cull, Brian D.: *See—*
Cobb, Sanford, Jr.; Cull, Brian D.; Ouderkirk, Andrew J.; Weber, Michael F.; and Wortman, David L., 5,825,542, Cl. 359-487.000.

Cullen, Peter F.: *See—*
Bommarito, Silvia L.; Chen, Kejian; Cullen, Peter F.; Hardy, L. Charles; and Lugg, Paul S., 5,825,526, Cl. 359-265.000.

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Dobbins, Kurt; Grant, Thomas A.; Ruffen, David J.; Kane, Laura; Len, Theodore; Andlauer, Philip; Bahi, David H.; Yohe, Kevin; Fee, Brendan; Oliver, Chris; Cullerot, David L.; and Skubisz, Michael, 5,825,772, Cl. 370-396.000.

Cummings, Charles. Toy auto racing power shifter and car. 5,823,848, Cl. 446-429.000.

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Ritter, Ann Melinda; Hughes, John Raymond; Jackson, Melvin Robert; Kirkpatrick, Francis Lawrence; Cunha, Francisco Jose Tenreiro; Abuaf, Nesim; and Bunker, Ronald Scott, 5,822,853, Cl. 29-890.010.

Curley, Craig D.: *See—*
Bednar, Gregory M.; Carr, Thomas E.; Curley, Craig D.; Curley, Lynn P.; Mazina, Dorothy I.; Olson, Paul L.; and Yeskel, Filip J., 5,825,506, Cl. 358-402.000.

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Currle, Joachim, to Mercedes-Benz AG. High-temperature battery. 5,824,432, Cl. 429-120.000.

Curtis, Joseph Edward; and Helgerson, Sam Leland, to Baxter International Inc. Activated human factor VIII and method of preparation. 5,824,780, Cl. 530-383.000.

Cuthrell, Gordon A. Multi-line remotely-accessible controller for cordless telephones. 5,826,196, Cl. 455-462.000.

Cutler, David J., to Perkin-Elmer Ltd. Interferometer alignment system utilizing a step calibration. 5,825,491, Cl. 356-345.000.

Cutone, John: *See—*
Evarts, David A.; Ruskouski, Charles R.; and Cutone, John, 5,823,378, Cl. 220-374.000.

Cuvelliez, Charles: *See—*
Dehennau, Claude; Leo, Vito; and Cuvelliez, Charles, 5,824,254, Cl. 264-312.000.

CV Dynamics, Inc.: *See—*
Patke, Nandkishor G.; Mikhail, Adel A.; Stobbs, Gene E.; and Johnson, Shelley N., 5,824,062, Cl. 623-2.000.

Cwalina, David S., to United States of America, Navy. Underwater search angle selection system and method of special utility with surface contacts. 5,824,946, Cl. 114-21.300.

CWW-Gerko Akustik GmbH & Co. KG: *See—*
Bildner, Karlheinz; and Freist, Christoph, 5,823,301, Cl. 188-73.370.

Cybularz, Joseph M.; Fisher, Richard K., Jr.; Franke, Gary F.; and Grubb, Robert G., to Voith Hydro, Inc. Dissolved gas augmentation with mixing chambers. 5,823,740, Cl. 415-115.000.

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Omura, Jimmy K.; Yang, Paul T.; Khachatrian, Gurgen H.; Nikogossian, Karen M.; Hovakimian, Karen S.; and Vartapetian, Armen L., 5,825,810, Cl. 375-200.000.

Cypress Semiconductor Corp.: *See—*
Rezeanu, Stefan-Cristian, 5,825,715, Cl. 365-233.500.
Watt, Jeffrey, 5,825,600, Cl. 361-56.000.

Cytec Technology Corp.: *See—*
Guerro, Gerald; Dauplaise, David; and Bazaj, Rajiv, 5,824,190, Cl. 162-135.000.

CytRx Corporation: *See—*
Balasubramanian, Mannarsamy, 5,824,322, Cl. 424-280.100.

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Strobel, David J.; and Czajkowski, David R., 5,825,042, Cl. 250-515.100.

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La Palm, James; and Czapski, Piotr, 5,824,890, Cl. 73-117.300.

Czubatyj, Wolodymyr; Ovshinsky, Stanford R.; Strand, David A.; Klersy, Patrick; Kostylev, Sergey; and Pashmakov, Boil, to Energy Conversion Devices, Inc. Composite memory material comprising a mixture of phase-change memory material and dielectric material. 5,825,046, Cl. 257-2.000.

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Wilson, Francis P.; Dacosta, Andrea B.; and Bush, James W., 5,823,755, Cl. 418-15.000.

Daemen, Roger A.: *See—*
Nagarajan, Sundaram; and Daemen, Roger A., 5,824,992, Cl. 219-145.220.

Daewoo Electronics Co., Ltd.: *See—*
Choi, Yong-Hwan, 5,826,176, Cl. 455-90.000.
Jun, Woo-Keum, 5,825,000, Cl. 219-746.000.
Jung, Hae-Mook, 5,825,423, Cl. 348-413.000.
Lee, Jae-Yoll, 5,823,018, Cl. 68-23.500.
Park, Jun-Hyun, 5,825,737, Cl. 369-77.100.
Park, Kwan-Cheol, 5,823,019, Cl. 68-133.000.
Yoon, Sung-Wook, 5,825,422, Cl. 348-410.000.

Dagley, Mark R.: *See—*
Arizpe, Ronald E.; Dagley, Mark R.; Hall, David C.; and Morgan, Kevin L., 5,823,646, Cl. 312-324.000.

Dahlbacka, Bruce B., to Milsco Manufacturing Company. Modular height adjustable vehicle seat armrest. 5,823,624, Cl. 297-411.360.

Dahn, Jeffery Raymond; Eguchi, Katsuya; Wilson, Alf M.; Xing, Weibing; and Zank, Gregg Alan, to Dow Corning Corporation. Electrodes for lithium ion batteries using polysiloxanes. 5,824,280, Cl. 423-325.000.

Dai Nippon Printing Co., Ltd.: *See—*
Kanki, Masahiro; Tsukada, Masaki; and Ishii, Tadamichi, 5,824,415, Cl. 428-411.100.
Kawai, Satoru; Yamazaki, Masayasu; Sudo, Kenichiro; and Saito, Hitoshi, 5,824,623, Cl. 503-227.000.
Tamura, Yoshihiko; and Tsuchiya, Mitsuru, 5,824,760, Cl. 528-15.000.

Dai, Yuzhong, to Brown & Sharpe Manufacturing Company. Multi-probe system for dimensional metrology. 5,822,877, Cl. 33-560.000.

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Fujiwa, Takaaki; Daito, Terumasa; Yamamoto, Takashi; and Matsufuji, Takashi, 5,824,815, Cl. 558-161.000.
Matsumura, Hiroyuki, 5,823,201, Cl. 131-343.000.

Daikyo Seiko, Ltd.: *See—*
Sudo, Morihiro; and Togashi, Hiroshi, 5,823,373, Cl. 215-249.000.

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Ludwig, Michael; and Rieger, Ralf, 5,825,260, Cl. 333-116.000.
Papenburg, Ulrich; Blenninger, Ernst; Goedtke, Peter; and Deyerler, Michael, 5,825,565, Cl. 359-883.000.

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Stengel, Martin; and Wörner, Günter, 5,823,053, Cl. 74-335.000.
Waitkat, Peter; Benz, Uwe; and Einhart, Jobann, 5,823,252, Cl. 165-166.000.

Dainippon Screen Mfg. Co., Ltd.: *See—*
Matsumura, Yoshio, 5,823,736, Cl. 414-609.000.

Daito, Terumasa: *See—*
Fujiwa, Takaaki; Daito, Terumasa; Yamamoto, Takashi; and Matsufuji, Takashi, 5,824,815, Cl. 558-161.000.

Daiwa Seiko, Inc.: *See—*
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Dallas Semiconductor Corporation: *See—*
Glick, Mark M.; Fekete, Nicholas M. G.; Bolan, Michael L.; and Owens, Jeffrey D., 5,823,027, Cl. 70-278.000.
Smith, Michael D.; and Williamson, Michael R., 5,825,211, Cl. 327-19.000.

Dalyea, Lorraine. Waterproof protective covering for medical uses. 5,823,977, Cl. 602-3.000.

Dam, Robert; Marx, Charles E.; and Genz, Earl J., to Illinois Tool Works Inc. Accelerator module. 5,824,979, Cl. 200-61.880.

Damage Prevention Company: *See—*
Woods, James L.; and Thomasino, Robert F., 5,823,726, Cl. 410-155.000.

Damji, Dhirendra C.; and Kumar, Ajay, to Xerox Corporation. Variable size, replaceable toner sump pans for print cartridges. 5,826,132, Cl. 399-110.000.

Damme, Jo Van; Proost, Paul; Houssiau, Frédéric; and Renauld, Jean-Christophe, to Ludwig Institute For Cancer Research. Method for modulating cell apoptosis. 5,824,551, Cl. 435-375.000.

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Dana Corporation: *See—*
Stefanek, Gerald Andrew, 5,823,908, Cl. 475-230.000.

Dana-Farber Cancer Institute: *See—*
Mashal, Robert; Sklar, Jeffrey; and Kolodner, Richard, 5,824,471, Cl. 435-6.000.

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Whalen, Philip J.; Jamalabad, Vikram R.; Pollinger, John P.; Agarwala, Mukesh; and Danforth, Stephen C., 5,824,250, Cl. 264-219.000.

Daniel, Andrew D.; and Alexander, Thomas, to Alliance Semiconductor Corporation. Divider/multiplier circuit having high precision mode. 5,825,681, Cl. 364-765.000.

Daniel, Jeffrey A.; and Erickson, Brian L., to Prince Corporation. Headliner with integral impact absorption panels. 5,823,611, Cl. 296-214.000.

Danieli & C. Officine Meccaniche SpA: *See—*
Bordignon, Giuseppe; Tomat, Ferruccio; Danielsson, Kurt Lennart; and Lavaroni, Giorgio, 5,823,456, Cl. 242-362.000.

Daniels, James R., to Amcast Industrial Corporation. Diaphragm valve with means for adjustably setting the maxium valve opening. 5,823,509, Cl. 251-335.200.

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Danmoto, Shojiro; Kanno, Fumio; Komiya, Takao; and Ito, Sumiyoshi, to Canon Kabushiki Kaisha. Robot hand structure, and method of selecting hand structure. 5,825,980, Cl. 395-80.000.

Danner, Fred M.: *See—*
Hunter, Richard E.; and Danner, Fred M., 5,823,439, Cl. 239-205.000.

Danno, Atsushi: *See—*
Miyamoto, Noritaka; Onishi, Masazumi; Fujiwara, Yasuyuki; Tanaka, Toshiaki; Sawamura, Masatoshi; and Danno, Atsushi, 5,824,168, Cl. 148-573.000.

Dantzig, Anne H.: *See—*
Bright, Stuart W.; Dantzig, Anne H.; Tabas, Linda B.; and Sportsman, J. Richard, 5,824,510, Cl. 435-70.210.

Dao, Patrick P. H.; Dryer, Paul William; Lue, Ping-Chang; Davison, Michael J.; Willett, Terry Andrew; Kniffin, Margaret Leslie; and Subrahmanyan, Rita Prasad, to Motorola, Inc. Carboxylic acid etching solution and method. 5,824,601, Cl. 438-713.000.

Darby, Christopher Paul; and Husby, Harald Snorre, to Breed Automotive Technologies, Inc. Vehicle safety device controller. 5,825,098, Cl. 307-10.100.

Darcy, Roderick Gerard; and Kelly, Aidan, to O'Dare International Limited. Life-jacket. 5,823,838, Cl. 441-106.000.

Darland, Timothy: *See—*
Reto, Luis; Turner, Don; Darland, Timothy; Khalil, Anis; Lenger, Cory; and Merchant, Amyn, 5,825,857, Cl. 379-114.000.

Darling, Sharon K. Portable storage compartment. 5,823,645, Cl. 312-297.000.

Dart Industries Inc.: *See—*
Cautereels, Victor J. J., 5,823,385, Cl. 220-762.000.

Das, Dasarathi; Edwards, Jimmie; Kindermann, Lutz; Hilpert, Klaus; and Pütz, Günther, to Forschungszentrum Julich GmbH. Perovskite electrodes and high temperature fuel cells fitted therein. 5,824,429, Cl. 429-44.000.

Das, Mohan, to Netech Corporation. Electrical connector for use with an electroencephalograph electrode. 5,823,832, Cl. 439-817.000.

Dashevsky, Vladimir A.; Owsley, Robert A.; Pratt, Gregory R.; and Regnier, Kent E., to Molex Incorporated. Molding core construction and process for molding of high-density electrical connector housings. 5,824,257, Cl. 264-328.100.

Da Silva, Alberto Cunha Carneiro: *See—*
Khalil, Carlos Nagib; Da Silva, Alberto Cunha Carneiro; De Souza, Celso Rodrigo; Brum, Maria Cristina; Martins, Claudio Silvio Viana; and De Menezes, Sonia Maria Cabral, 5,824,160, Cl. 134-5.000.

DasSarma, Shiladitya; Morshed, Fazeela; Stuart, Elizabeth; and Black, Samuel, to University of Massachusetts. Recombinant gas vesicles and uses thereof. 5,824,309, Cl. 424-188.100.

Dassel, Mark W.; Vassiliou, Eustathios; DeCoster, David C.; and Rostami, Ader M., to Twenty-First Century Research Corporation. Methods of preparing an intermediate oxidation product from a hydrocarbon by utilizing an activated initiator. 5,824,819, Cl. 562-529.000.

DataHand Corporation: *See—*
Retter, Dale, 5,825,362, Cl. 345-357.000.

Datascope Corp: *See—*
Lauterjung, Karl L., 5,824,036, Cl. 623-1.000.

Date, Takashi; and Kusano, Manabu, to Alps Electric Co., Ltd. Liquid crystal display device. 5,825,450, Cl. 349-149.000.

Daugherty, Jay: *See—*
Bennett, Curtis; Berkery, Dan; Chinnasamy, Shanmugam; Daugberty, Jay; Hughes, John C.; Lippmann, Rob; Nagar, Niranjan; Park, Ronald K.; and Sharma, Ankur, 5,826,085, Cl. 395-683.000.

Daughton, John W.: *See—*
Mandel, Barry P.; Daughton, John W.; Rizzolo, Charles D.; Hower, John D., Jr.; and Walker, Don S., 5,823,529, Cl. 271-296.000.

Dauphin Biotechnologies Promotion, Ltd.: *See—*
Handelman, Doron, 5,824,939, Cl. 89-1.110.

Dauplaise, David: *See—*
Guerro, Gerald; Dauplaise, David; and Bazaj, Rajiv, 5,824,190, Cl. 162-135.000.

Dausmann, Guenther; and Gnaedig, Klaus, to Bundesdruckerei GmbH. Master hologram for the production of copy-proof holograms. 5,825,514, Cl. 359-2.000.

Dave, Paritosh R.; and Archibald, Thomas G., to United States of America, Army. Preparations of azabicylobutane precursors and related compositions. 5,824,807, Cl. 548-953.000.

Dave, Paritosh R.: *See—*
Stec, Daniel, III; Perez, Ralph L.; Dave, Paritosh R.; and Archibald, Thomas G., 5,824,806, Cl. 548-953.000.

Davenport, Gary L.: *See—*
Seidel, Randy R.; Bush, Lawrence; Cohen, Neal; Davenport, Gary L.; Silva, Robert M.; and Honegger, Roger, 5,823,320, Cl. 198-803.500.

David Sarnoff Research Center Inc.: *See—*
Leedom, Marvin Allan, 5,825,896, Cl. 381-69.000.

Davidson Textron Inc.: *See—*
Humphrey, William M.; and Gerard, Victor E., 5,824,738, Cl. 524-715.000.
Kelman, Josh; Gray, John; and Gorman, Michael, 5,823,602, Cl. 296-70.000.

Davies, Barrie L.: *See—*
Gupta, Balaram B.; Auerbach, Andrew B.; and Davies, Barrie L., 5,824,767, Cl. 528-387.000.

Davies, Huw Maelor; Hawkins, Deborah; and Nelsen, Janet, to Calgene, Inc. Plant lysophosphatidic acid acyltransferases. 5,824,858, Cl. 800-205.000.

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Davis, Derek L., to Intel Corporation. System and method for copy-protecting distributed video content. 5,825,879, Cl. 380-5.000.

Davis, Duane Albrecht: *See—*
Murdoch, Michele Ann; Bretz, Glenwood; Karrh, Billie Rue; Davis, Duane Albrecht; Oppedisano, Samuel J.; Hatch, William G.; Huang, Tsongshih; Mack, Kit L.; and Lin, Sheng S., 5,823,715, Cl. 405-219.000.

Davis, James Jefrey, Sr., to Luttes, Craig T. Externally adjustable slide trigger assemblies for handguns. 5,822,903, Cl. 42-69.010.

Davis, Jeffery M.: *See—*
Gadsby, Winston M.; and Davis, Jeffery M., 5,825,781, Cl. 370-525.000.

Davis, Jeffrey B.: *See—*
Dunham, David A.; Haskett, Robert G.; Owings, Paul Dennis; Tew, Henry Louis; Davis, Jeffrey B.; Jacob, Christopher E.; and Wolthuis, Maureen, 5,823,339, Cl. 206-349.000.

Davis, Keith J., to Boeing Company, The. Appliques to eliminate painted coatings on surfaces having complex curvature. 5,824,391, Cl. 428-174.000.

Davis, R. Michael: *See—*
Paul, James M.; and Davis, R. Michael, 5,824,214, Cl. 208-107.000.

Davis, Steven D., to Winpak Lane, Inc. Sanitary fill tube and piston valve assembly for a pouch packaging machine. 5,822,958, Cl. 53-551.000.

Davis, William N.; and Mirochnick, Ira, to Monotype Typography, Inc. Print-to-edge desktop printing. 5,825,996, Cl. 395-117.000.

Davison, Michael J.: *See—*
Dao, Patrick P. H.; Dryer, Paul William; Lue, Ping-Chang; Davison, Michael J.; Willett, Terry Andrew; Kniffin, Margaret Leslie; and Subrahmanyan, Rita Prasad, 5,824,601, Cl. 438-713.000.

Daw, Edward: *See—*
Oldfield, William W.; and Daw, Edward, 5,825,669, Cl. 364-521.010.

Dawson, Jeffrey S. Freeweight barbell lifting exercise machine with user controllable lift assist and safety device. 5,823,921, Cl. 482-104.000.

Dawson, Marcia I.: *See—*
Pfahl, Magnus; Zhang, Xiao-kun; Lehmann, Jürgen M.; Dawson, Marcia I.; Cameron, James F.; Hobbs, Peter D.; and Jong, Ling, 5,824,484, Cl. 435-7.100.

Daynes, Raymond A.; and Araneo, Barbara A., to University of Utah Research Foundation. Vaccine compositions and method for induction of mucosal immune response via systemic vaccination. 5,824,313, Cl. 424-184.100.

Dayton Machine Tool Company: *See—*
Siler, G. Daniel, 5,823,055, Cl. 74-425.000.

Dazet, Francis, to Aerospatiale Societe Nationale Industrielle. System for controlling a control surface articulated to a structure of a vehicle. 5,823,471, Cl. 244-75.00R.

DB Stratabit S.A.: *See—*
Delwiche, Robert; and Besson, Alain, 5,823,277, Cl. 175-428.000.

De Nora S.p.A.: *See—*
Fabian, Peter; and Zioni, Emilio, 5,824,201, Cl. 204-284.000.
Fabian, Peter; and Zioni, Emilio, 5,824,202, Cl. 204-284.000.

De Puy DuPont Orthopedics: *See—*
Di Maio, William G., Jr.; Marcolongo, Michele Staud; and Weiss, Arnold-Peter C., 5,824,095, Cl. 623-18.000.

Dean, Anthony John, to General Electric Company. Low emissions combustor premixer. 5,822,992, Cl. 60-737.000.

de Angeli, Michael: *See—*
Slonaker, Robert M.; and de Angeli, Michael, 5,823,173, Cl. 124-56.000.

Debesis, John R.: *See—*
Kurtz, Andrew F.; Debesis, John R.; and Sarraf, Sanwal P., 5,825,552, Cl. 359-629.000.

DeBord, Jeffrey Robert Douglas; Haushalter, Robert C.; and Zhang, Yiping, to NEC Research Institute, Inc.; Texas A&M University; and Syracuse University. Layered vanadium oxide compositions. 5,824,813, Cl. 556-28.000.

Debrauwere, Jack: *See*—
Joie, Michel; Debrauwere, Jack; Bernes, Jean-Claude; and Goldhaber, Richard. 5,824,216, Cl. 210-257.100.

De Bruyn, Marcel Frans Leopold: *See*—
Van Lommen, Guy Rosalia Eugène; Wigerinck, Piet Tom Bert Paul; De Bruyn, Marcel Frans Leopold; Verschueren, Wim Gaston; and Schroven, Marc Francis Josephine. 5,824,682, Cl. 514-256.000.

Decibel Instruments, Inc.: *See*—
Shennib, Adnan. 5,825,894, Cl. 381-60.000.

Decker Mfg.: *See*—
Waldner, Clarence. 5,823,123, Cl. 110-257.000.

Deckner, George Endel; Rinaldi, Marie Antoinette; and Szymanski, Victoria Claire, to Procter & Gamble Company, The. Low PH, hydrolytically stable, cosmetic compositions containing acidic actives. 5,824,666, Cl. 514-152.000.

DeCoster, David C.: *See*—
Dassel, Mark W.; Vassiliou, Eustathios; DeCoster, David C.; and Rostami, Ader M., 5,824,819, Cl. 562-529.000.

Deev, Leonid: *See*—
Bildinov, Igor; Podsevalov, Pavel; Nazarenko, Tatjana; and Deev, Leonid, 5,824,827, Cl. 570-147.000.

De Filippis, Pietro, to Bitron S.p.A. Brushless electric motor, particularly for direct driving of a washing machine. 5,825,108, Cl. 310-67.00R.

de Garis, Hugo R.; and Hemmi, Hitoshi, to ATR Human Information Processing Research Laboratories. Neuronic cellular automation and optimizer employing the same. 5,826,248, Cl. 706-15.000.

de Groot, Anne Klaas: *See*—
Kalkman, Piet; Roodenburg, Joop; and de Groot, Anne Klaas, 5,823,712, Cl. 405-165.000.

Degussa Aktiengesellschaft: *See*—
Lansink-Rotgerink, Hermanus; Hoecker, Harald; Wieland, Stefan; Seebald, Steffen; and Riedemann, Heike, 5,824,825, Cl. 568-898.000.

Dehennau, Claude; Leo, Vito; and Cuvelliez, Charles, to Solvay (Société Anonyme). Process for moulding a thermoplastic material by injection onto a rotating core. 5,824,254, Cl. 264-312.000.

Deisenhofer, Siegfried: *See*—
Grönwoldt, Rolf; Deisenhofer, Siegfried; and Hirtsiefer, Artur, 5,823,411, Cl. 224-328.000.

De Jong, Feike: *See*—
Beerepoot, Johannes Petrus JozeF; Blom, Johannes Jozias; De Jong, Feike; Van Der Linden-Lemmers, Wilhelmina Johanna Maria; Sjardijn, Willem; Van Liempd, Virgilius Christiaan Johannes Nicolaas; and Raas, Paulus Egidius, 5,824,752, Cl. 525-523.000.

DeKalb Genetics Corporation: *See*—
Johnson, Steve K., 5,824,849, Cl. 800-200.000.
Morgan, Thomas E., 5,824,848, Cl. 800-200.000.

De Kok, Eric Johannes: *See*—
Schmidt, Johan Richard; De Kok, Eric Johannes; and Stolk, Jacob Cornelis, 5,826,175, Cl. 455-77.000.

De Labbey, Arnaud: *See*—
Dubief, Claude; De Labbey, Arnaud; De La Mettrie, Roland; and Rondeau, Christine, 5,824,296, Cl. 424-70.110.

De Lacharriere, Olivier; and Breton, Lionel, to L'Oreal. Topical composition containing a substance P antagoinst. 5,824,650, Cl. 514-15.000.

De La Mettrie, Roland: *See*—
Dubief, Claude; De Labbey, Arnaud; De La Mettrie, Roland; and Rondeau, Christine, 5,824,296, Cl. 424-70.110.

De Lange, Alphonsius A. J., to U.S. Philips Corporation. System and method for enhancing the sharpness of a colour image. 5,825,938, Cl. 382-263.000.

Delco Electronics Corporation: *See*—
Beale, Terrance Ralph; and McDanell, Roger Alan, 5,825,241, Cl. 329-304.000.

Delgado, Joaquin: *See*—
Kesti, Michael R.; Garbe, James E.; Delgado, Joaquin; Silver, Spencer F.; and Goetz, Richard J., 5,824,748, Cl. 525-243.000.

Delgado, Jose Avelino; and Gaul, Stephen Joseph, to Harris Corporation. Integrated circuit with an air bridge having a lid. 5,825,092, Cl. 257-778.000.

Dell U.S.A., L.P.: *See*—
Bell, James S.; and Tomlinson, Franklin D., 5,823,818, Cl. 439-482.000.

Dell USA, L.P.: *See*—
Bridges, John W., 5,823,349, Cl. 206-597.000.
Brown, Alan E., 5,825,972, Cl. 388-811.000.
Howell, Bryan F.; Busch, John P.; Haven, Kenneth R.; and Lau, Tim O., 5,825,616, Cl. 361-684.000.

Delphi Automotive Systems Deutschland GmbH: *See*—
Viano, David Charles; Nini, James Peter; Neely, Richard Jon; and Nilson, Hans Gert, 5,823,627, Cl. 297-471.000.

Del Signore, James R., II; Nye, Andrew B., III; Mitchell, John G.; and Maginnity, Kathleen, to NCR Corporation. Check-reading machine. 5,825,946, Cl. 382-320.000.

Delwiche, Robert; and Besson, Alain, to Total; and DB Stratabit S.A. Cutting edge for monobloc drilling tools. 5,823,277, Cl. 175-428.000.

DeMaio, James: *See*—
Bishai, William R.; and DeMaio, James, 5,824,546, Cl. 435-325.000.

De Man, Rolf E.: *See*—
Ligthart, Franciscus A. S.; De Man, Rolf E.; Roozekrans, Christianus J.; and Van Der Voort, Dick, 5,825,125, Cl. 313-485.000.

Demartelaere, Gary: *See*—
Campbell, Larry D.; Demartelaere, Gary; and Stange, Ronald R., 5,823,031, Cl. 72-58.000.

DeMeester, Gordon D.: *See*—
Liu, Haiying; Bearden, Francis H.; and DeMeester, Gordon D., 5,825,185, Cl. 324-309.000.

De Menezes, Sonia Maria Cabral: *See*—
Khalil, Carlos Nagib; Da Silva, Alberto Cunha Carneiro; De Souza, Celso Rodrigo; Brum, Maria Cristina; Martins, Claudio Silvio Viana; and De Menezes, Sonia Maria Cabral, 5,824,160, Cl. 134-5.000.

De Meutter, Stefaan: *See*—
Tavernier, Serge; Broddin, Dirk; De Meutter, Stefaan; Vermeulen, Leon; and Boulonne, Michel, 5,824,447, Cl. 430-124.000.

De Michele, Gennaro: *See*—
Alberti, Marco; Rizzi, Roberto; Martano, Marcello; De Michele, Gennaro; and Ligasacchi, Sergio, 5,823,764, Cl. 431-184.000.

Demizu, Ichiro: *See*—
Nishihara, Yoshikazu; Demizu, Ichiro; Mikuriya, Yoshihiro; Nakazawa, Fumiko; and Fukao, Hiroshi, 5,824,446, Cl. 430-110.000.

de Molina, Simon Anne, to Tenneco Automotive Inc. Stroke dependent damping. 5,823,306, Cl. 188-322.150.

de Moya, Jorge; and Basso, Albert E. Maestro mouthpiece. 5,822,950, Cl. 54-8.000.

Dempsey, Morgan James; and Jayavant, Rajeev, to VLSI Technology, Inc. PCI bus with reduced number of signals. 5,826,048, Cl. 395-309.000.

Dempster, Shawn B.: *See*—
Stark, John G.; and Dempster, Shawn B., 5,823,975, Cl. 600-595.000.

Demshki, Robert J., Jr.; and Thornton, Gerry F., to Hubbell Incorporated. Recessed lighting fixture. 5,823,664, Cl. 362-366.000.

Denber, Michel, to Eastman Kodak Company. Illuminant color detection. 5,825,916, Cl. 382-162.000.

Deng, Meng: *See*—
Shalaby, Shalaby W.; and Deng, Meng, 5,824,411, Cl. 428-364.000.

Denki Kagaku Kogyo Kabushiki Kaisha: *See*—
Mashiko, Yoshihiro; Koga, Masao; and Matsunaga, Shiro, 5,824,758, Cl. 526-295.000.

Dennis, Christopher L.: *See*—
Geis, Michael W.; Brown, Elliott R.; Eglash, Stephen J.; and Dennis, Christopher L., 5,825,240, Cl. 327-570.000.

Dennis, Robert W.: *See*—
Walters, Mark D.; Morgan, Kevin L.; and Dennis, Robert W., 5,825,962, Cl. 385-135.000.

Dennison, Charles H.: *See*—
Doan, Trung Tri; and Dennison, Charles H., 5,824,576, Cl. 438-199.000.

Denso Corporation: *See*—
Hosoya, Akifumi, 5,823,047, Cl. 74-7.00E.
Ishikawa, Hiroaki, 5,825,116, Cl. 310-263.000.
Kawasaki, Eishi; Koumura, Tsukasa; Onda, Shoichi; and Ohoka, Tadao, 5,825,443, Cl. 349-95.000.
Kobayashi, Masayuki, 5,826,211, Cl. 701-115.000.
Mukai, Takuzou, 5,825,114, Cl. 310-251.000.

Dent, Paul W., to Ericsson Inc. Use of duplex cipher algorithms for satellite channels with delay. 5,825,889, Cl. 380-49.000.

Dent, Paul W., to Ericsson Inc. Efficient paging system with sleep mode duration determined by the guaranteed number of repeats. 5,826,173, Cl. 455-38.300.

Denton, Jeffery S.; and Olmstead, Michael W., to NCR Corporation. Multilayered thermal transfer medium with opaque sub-coat. 5,824,399, Cl. 428-212.000.

Deosaran, Trevor: *See*—
Wang, Johannes; Garg, Sanjiv; and Deosaran, Trevor, 5,826,055, Cl. 395-394.000.

DePaul, Kenneth E.: *See*—
Voit, Eric A.; Sours, Larry W.; Liptak, Lance S.; and DePaul, Kenneth E., 5,825,862, Cl. 379-142.000.

DePond, Paul F.; Larson, Gaylan; Neal, Greg; and Yewell, David, to Notify Corporation. Multisensing circuitry for class signals and stutter dial tone in visual message waiting indicator. 5,825,852, Cl. 379-67.000.

DePrince, Randolph B.: *See*—
Kinstler, Olaf B.; Gabriel, Nancy E.; Farrar, Christine E.; and DePrince, Randolph B., 5,824,784, Cl. 530-399.000.

Derby, Herbert G.; and Charlton, Paul, to Apple Computer, Inc. Method and system for improved arbitration of a display screen in a computer system. 5,825,359, Cl. 345-344.000.

Derighetti, René; and Dresti, Silvano, to Agie SA. Method and apparatus for wire erosion. 5,824,986, Cl. 219-69.120.

Derocher, Michael D.: *See*—
Helot, Jacques H.; and Derocher, Michael D., 5,823,651, Cl. 353-120.000.

DeSatnick, Allen H.: *See*—
Stone, Kevin R.; and DeSatnick, Allen H., 5,824,011, Cl. 606-232.000.

DeShazer, Larry G.: *See*—
Gollihar, William A.; DeShazer, Larry G.; and Bradley, Scott, 5,825,958, Cl. 385-125.000.

Desilva, Melvin: *See*—
Schacham-Diamand, Yosef; Dubin, Valery M.; Ting, Chiu H.; Zhao, Bin; Vasudev, Prahalad K.; and Desilva, Melvin, 5,824,599, Cl. 438-678.000.

DeSimone, Joseph M.; and Romack, Timothy, to University of North Carolina—Chapel Hill. Multi-phase polymerization process. 5,824,726, Cl. 524-424.000.

De Souza, Celso Rodrigo: *See*—
Khalil, Carlos Nagib; Da Silva, Alberto Cunha Carneiro; De Souza, Celso Rodrigo; Brum, Maria Cristina; Martins, Claudio Silvio Viana; and De Menezes, Sonia Maria Cabral, 5,824,160, Cl. 134-5.000.

Despres, Dominique, to Valeo. Torsion damping device having metallic seats for its springs, especially for a motor vehicle. 5,823,516, Cl. 267-168.000.

Desy, Raoul: *See*—
Fecteau, Keith; Hall, James; Desy, Raoul; Salce, John; and Hasenauer, David M., 5,825,455, Cl. 351-159.000.

Detwiler, Peter Mead; White, Andrew Burton; and Hulse, Kelly James, to PinOak Digital Corporation. High speed, high and medium frequency communication system. 5,825,814, Cl. 375-219.000.

Deutsche ITT Industries GmbH: *See*—
Igel, Gunter; and Mall, Martin, 5,824,595, Cl. 438-464.000.

Deutsche Thomson Brandt GmbH: *See*—
Adolph, Dirk; and Herpel, Carsten, 5,825,430, Cl. 348-487.000.
Link, Hermann; Marzluf, Axel; and Mace, Philippe, 5,825,573, Cl. 360-72.200.

Devanbu, Premkumar, to Lucent Technologies Inc. Apparatus and methods for source code discovery. 5,826,256, Cl. 707-4.000.

Deville, Yannick, to U.S. Philips Corporation. Signal-source characterization system. 5,825,671, Cl. 364-574.000.

DeVito, Jonathan; Garland, Harry; Hunter, Ken; May, Gerald A.; and Roberts, Michael G., to Canon Inc. Selective document retrieval method and system. 5,825,943, Cl. 382-306.000.

De Vivo, Michael: *See*—
Borden, Laurence A.; De Vivo, Michael; Yokoyama, Midori; and Albert, Vivian R., 5,824,486, Cl. 435-72.000.

Deyerler, Michael: *See*—
Papenburg, Ulrich; Blenninger, Ernst; Goedtke, Peter; and Deyerler, Michael, 5,825,565, Cl. 359-883.000.

DFM Corporation: *See*—
Stanesic, John M.; and Thompson, Scott P., 5,823,601, Cl. 296-41.000.
Thompson, Scott P., 5,823,553, Cl. 280-164.100.

Dhand, Ritu: *See*—
Hiles, Ian D.; Fry, Michael J.; Dhand, Ritu; Waterfield, Michael D.; Parker, Peter J.; Otsu, Masayuki; Panayoutou, George; Volinia, Stefano; and Gout, Ivan, 5,824,492, Cl. 435-15.000.

Dhole, Vikas Raghunath, to Linnhoff March Limited. Fluid efficiency. 5,824,888, Cl. 73-112.000.

Diab, Mohamed Kheir; Kiani-Azarbayjany, Esmaiel; Ragsdale, Charles Robert; and Lepper, James M., Jr., to Masimo Corporation. Manual and automatic probe calibration. 5,823,950, Cl. 600-310.000.

Diafoil Hoechst Company, Limited: *See*—
Kinoshita, Shinichi; and Masuda, Narihiro, 5,824,394, Cl. 428-195.000.

Diagraph Corporation: *See*—
Droit, Jimmy L.; Johnsen, Ronald J.; Reinders, Mark V.; and Virkus, Mark K., 5,825,375, Cl. 347-4.000.

Dial, Daniel Christoper. Illumination devices and methods for treating light deficiency and mood disorders. 5,824,024, Cl. 607-88.000.

Diamond, William, to Lucent Technologies Inc. Arrangement for providing private-network line features on central-office-to-PBX trunks. 5,825,868, Cl. 379-243.000.

Dias, Anthony Jay: *See*—
Merrill, Natalie Ann; Wang, Hsien-Chang; and Dias, Anthony Jay, 5,824,717, Cl. 522-81.000.

Diaz, Cesar M., to Spectranetics Corporation, The. Catheter for delivery of electric energy and a process for manufacturing same. 5,824,026, Cl. 607-116.000.

Diazzi, Claudio; Tarantola, Mario; and Martignoni, Fabrizio, to SGS-Thomson Microelectronics, S.r.l. Timing of different phases in an ignition circuit. 5,825,138, Cl. 315-294.000.

Dible, Robert D.; Bradley, Stephen G.; and Jafarian-Tehrani, Seyed Jafar, to Lam Research Corporation. Methods and apparatuses for controlling phase difference in plasma processing systems. 5,824,606, Cl. 438-729.000.

DiCesare, Samuel: *See*—
Porter, Michael A.; Kruse, Richard H.; DiCesare, Samuel; Berland, Kerry S.; Helms, James M.; and Alderton, George A., IV, 5,825,147, Cl. 312-466.000.

Dickens, James W.; and Brooks, Stanley J., to Square D Company. Arcing fault detection system installed in a panelboard. 5,825,598, Cl. 361-42.000.

Dicker, Timothy P. Bra sport top. 5,823,851, Cl. 450-2.000.

Dickerson, Robert E., to Eastman Kodak Company. Symmetrical thoracic cavity imaging radiographic element. 5,824,459, Cl. 430-502.000.

Dickerson, Robert E., to Eastman Kodak Company. Symmetrical radiographic elements for gastrointestinal tract imaging. 5,824,460, Cl. 430-502.000.

Dickhudt, Eugene A.: *See*—
Ray, Charles D.; Dickhudt, Eugene A.; and Assell, Robert L., 5,824,093, Cl. 623-17.000.

Dick-Madelpuech, Marie-Hélène: *See*—
Mähl, Philippe; and Dick-Madelpuech, Marie-Hélène, 5,824,537, Cl. 435-243.000.

Dickson, Clarence E.: *See*—
Mladjan, Gary J.; Anderson, Douglas A.; and Dickson, Clarence E., 5,824,942, Cl. 89-41.170.

Diebolt International, Inc.: *See*—
Stenquist, Sven, 5,823,513, Cl. 267-64.260.

Diehl, David F., to GenCorp Inc. Nonwoven fabric of non-cellulose fibers having improved water tensile properties. 5,824,610, Cl. 442-164.000.

Diehl Stiftung & Co.: *See*—
Knäpper, Stefan, 5,824,941, Cl. 89-36.170.

Diekhoff, Hans H.; and Clarke, Andrew F., to Aluminum Company of America. Method of making bottle-shaped metal cans. 5,822,843, Cl. 29-512.000.

Dietle, Lannie L.; and Conroy, William T., to Kalsi Engineering, Inc. Rod seal cartridge for progressing cavity artificial lift pumps. 5,823,541, Cl. 277-320.000.

DiFrank, Frank J.; and Menzie, Andrew B., to Owens-Brockway Glass Container Inc. Glass gob shearing apparatus with improved cushioning of shear blade carriages. 5,824,128, Cl. 65-159.000.

Digalakis, Vassilios; and Murveit, Hy, to SRI International. Method and apparatus for speech recognition using optimized partial mixture tying of HMM state functions. 5,825,978, Cl. 395-2.650.

Digby, Dennis: *See*—
Thong, Tran; Digby, Dennis; and Schaldach, Max, 5,824,014, Cl. 607-4.000.

Digital Equipment Corporation: *See*—
Kahn, Clifford Earl, 5,826,254, Cl. 707-5.000.
Lubbers, Clark E.; Sicola, Stephen J.; McLean, Ronald H.; Jackson, James Perry; and Ellis, Robert A., 5,826,001, Cl. 395-182.040.
Schmidt, Thomas J., 5,826,015, Cl. 395-187.010.
Wheeler, William R.; and Adiletta, Matthew J., 5,825,680, Cl. 364-761.000.
Wolrich, Gilbert M.; and Olesin, Andrew S., 5,825,679, Cl. 364-760.010.

Digital Optics Corporation: *See*—
Welch, William H.; Te Kolste, Robert D.; and Feldman, Michael R., 5,825,741, Cl. 369-112.000.

Digital Voice Systems, Inc.: *See*—
Griffin, Daniel Wayne, 5,826,222, Cl. 704-207.000.

Dijke, Peter Ten: *See*—
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Erskine, Timothy J., to Becton Dickinson and Company. Radially vented flashback chamber and plug assembly. 5,824,001, Cl. 604-158.000.
Ertzan, Michelle. Combination greeting card photograph frame and envelope. 5,822,897, Cl. 40-124.090.
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Fissmann, Hans-Joachim; and Wohlfahrt, Matthias, to Voith Sulzer Papiermaschinen GmbH. Wound roll support in a web winding machine. 5,823,463, Cl. 242-541.700.
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Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, 5,825,313, Cl. 341-67.000.

Fujimoto, Hiromasa; Masato, Hiroyuki; Ota, Yorito; and Uda, Tomoya, to Matsushita Electric Industrial Co., Ltd. Semiconductor device and method of manufacturing the same. 5,824,575, Cl. 438-174.000.

Fujimoto, Katsumi: *See—*
Ebara, Kazuhiro; Fujimoto, Katsumi; and Makino, Shiro, 5,824,899, Cl. 73-504.120.

Fujimoto, Masahiro: *See—*
Harrison, David; and Fujimoto, Masahiro, 5,825,554, Cl. 359-652.000.

Fujisawa, Hiroshi, to Nissin Electric Co., Ltd. Radio-frequency type charged particle accelerator. 5,825,140, Cl. 315-505.000.

Fujisawa Pharmaceutical Co., Ltd.: *See—*
Kuno, Atsushi; Inoue, Yoshikazu; Takasugi, Hisashi; Mizuno, Hiroaki; and Yamasaki, Kumi, 5,824,691, Cl. 514-335.500.

Fujisawa, Shoji: *See—*
Kondo, Takuo; Fujisawa, Shoji; and Kitade, Norimitsu, 5,825,104, Cl. 310-12.000.

Fujishima, Kazuo; Watanabe, Hiroshi; and Haga, Masakazu, to Hitachi Construction Machinery Co., Ltd. Work area limitation control system for construction machine. 5,822,891, Cl. 37-348.000.

Fujishima, Satoru, to Murata Manufacturing Co., Ltd. Spherical piezoelectric speaker. 5,825,902, Cl. 381-190.000.

Fujishiro, Akihito: *See—*
Kobayashi, Hisamine; Izuhara, Katsuhiro; and Fujishiro, Akihito, 5,823,861, Cl. 451-326.000.

Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, to Tomy Seiko Co., Ltd. Process and apparatus for the extraction and purification of DNA. 5,824,224, Cl. 210-651.000.

Fujishiro, Takeshi, to Fuji Photo Film Co., Ltd. Color thermal printer with driver and interlocking device. 5,825,396, Cl. 347-212.000.

Fujishiro, Takeshi, to Fuji Photo Film Co., Ltd. Color thermal printer and optical fixing device therefor. 5,825,397, Cl. 347-212.000.

Fujita, Hirokazu, to Sharp Kabushiki Kaisha. Image forming apparatus including means for controlling the flight of toner or visualizing particles in accordance with an image signal. 5,825,384, Cl. 347-55.000.

Fujita, Kenichi; Nagao, Takeshi; Kawaguchi, Toru; Kaneko, Shigeki; and Hikita, Hiroyuki, to Matsushita Electric Industrial Co.,Ltd. Remote operation apparatus. 5,825,336, Cl. 345-2.000.

Fujita, Makiko: *See—*
Gotoh, Yoshitaka; Fujita, Makiko; and Takeuchi, Yukihiro, 5,824,608, Cl. 438-745.000.

Fujita, Masanori, to Seiko Precision Inc. Method for driving electro-optical display device. 5,825,346, Cl. 345-112.000.

Fujita, Tsuyoshi: *See—*
Tanei, Hirayoshi; Iwanaga, Shoichi; Okamoto, Masahide; Nakamura, Masato; Morita, Kousaku; Ishihara, Shousaku; Kobayashi, Fumiyuki; Tagami, Fumikazu; Sengoku, Norio; and Fujita, Tsuyoshi, 5,825,632, Cl. 361-795.000.

Fujitsu Limited: *See—*
Arima, Yasuhiko; Nishiyama, Yoshio; Fukao, Itaru; Abe, Hiroaki; and Kubota, Yuji, 5,826,086, Cl. 395-701.000.
Betsui, Keiichi; Fukuta, Shin'ya; Kosaka, Tadayoshi; Namiki, Fumihiro; Toyoda, Osamu; and Kasahara, Shigeo, 5,825,128, Cl. 313-582.000.
Fujiwara, Tatsuo; Maruyama, Hiroyuki; and Saitoh, Toshio, 5,823,522, Cl. 271-4.080.
Hayashi, Kenichi; and Horie, Takeshi, 5,826,033, Cl. 395-200.680.
Hino, Toshio; and Tonomoto, Yoshihiro, 5,826,134, Cl. 399-27.000.
Hirota, Katsuhiko; Kamada, Hiroshi; Suzuki, Kaori; Tada, Atsuko; Yumoto, Asako; Kasai, Satoshi; and Shibata, Kazumi, 5,825,365, Cl. 345-433.000.
Kaito, Yoshihiko, 5,825,953, Cl. 385-79.000.
Kaku, Takashi; and Okita, Ryoji, 5,825,818, Cl. 375-232.000.
Kanegae, Masahide; Kondou, Masao; Sugaya, Tomoki; and Tanaka, Hiroyuki, 5,825,570, Cl. 360-65.000.
Kazui, Kimihiko; Nakagawa, Akira; and Morimatsu, Eishi, 5,825,425, Cl. 348-420.000.
Kouhei, Tohru; and Imamura, Takahiro, 5,824,904, Cl. 73-514.340.
Matoba, Tatsuo; and Yorimitsu, Keiichi, 5,826,003, Cl. 395-182.050.
Mukoyama, Takahide; Ozawa, Fujio; Inoue, Takashi; Suzuki, Katsunori; Tsuruoka, Yasutaka; Hirao, Mieko; and Mori, Kozo, 5,825,635, Cl. 361-826.000.
Murashita, Kimitaka; Yoshida, Shigeru; and Okada, Yoshiyuki, 5,825,315, Cl. 341-106.000.
Nakazumi, Seiji, 5,826,038, Cl. 395-200.810.
Nozaki, Koji; Yano, Ei; Watanabe, Keiji; Namiki, Takahisa; Igarashi, Miwa; and Kuramitsu, Yoko, 5,824,452, Cl. 430-313.000.
Ohwe, Takeshi, 5,825,590, Cl. 360-104.000.
Okubo, Kazuo; Teguri, Hironori; and Ito, Akio, 5,825,912, Cl. 382-145.000.
Sakakibara, Takayuki; Sagoh, Satoru; Yamazaki, Satoru; Sakamoto, Kiichi; and Yasuda, Hiroshi, 5,824,437, Cl. 430-5.000.
Sugimoto, Masaharu; Takahashi, Minoru; Wakamatsu, Hiroaki; and Satou, Hirosi, 5,824,920, Cl. 73-865.800.
Sugimoto, Takashi, 5,826,099, Cl. 395-800.320.
Takase, Hiroshi, 5,825,221, Cl. 327-143.000.
Takeuchi, Mitsuo, 5,824,119, Cl. 29-25.010.
Tanaka, Hiroshi, 5,825,926, Cl. 382-229.000.
Tanaka, Tsutomu; Ikeya, Tomonori; and Itakura, Akihiro, 5,825,742, Cl. 369-116.000.
Tomita, Hiroyoshi, 5,825,703, Cl. 365-204.000.
Tsurumaru, Shinichiro; and Sasaki, Shyuzi, 5,824,431, Cl. 429-97.000.
Yamaguchi, Syoji; Naito, Ayumi; and Miyadai, Tomoharu, 5,825,899, Cl. 381-94.400.
Yoshida, Toshikuni; Motokado, Shinichiro; Motokado, Tomoko; Ohtomo, Mutsumi; and Hellmann, Antonius, 5,825,370, Cl. 345-472.000.

Fujitsu VLSI Limited: *See—*
Sugimoto, Takashi, 5,826,099, Cl. 395-800.320.

Fujitsuka, Shuji; and Honbou, Shinichi, to Kabushiki Kaisha Toshiba. Private electronic exchange apparatus having a plurality of extension terminals and office line terminals. 5,825,866, Cl. 379-211.000.

Fujiu, Isao; and Yabutsuka, Mitsuo, to Kabushiki Kaisha Yamada Seisakusho. Apparatus for manufacturing a steering shaft. 5,824,348, Cl. 425-120.000.

Fujiwa, Takaaki; Daito, Terumasa; Yamamoto, Takashi; and Matsufuji, Takashi, to Daicel Chemical Industries, Ltd. Composition comprising a novel phosphatized alicyclic compound and process for the preparation thereof. 5,824,815, Cl. 558-161.000.

Fujiwara, Koji: *See—*
Kitamura, Junichi; Tachibana, Matsuo; Fujiwara, Koji; Fujiwara, Osami; Samejima, Kazuo; Miyata, Junji; Togoshi, Yoshikazu; Tsuchihashi, Hironori; and Esaki, Yoshiyuki, 5,822,960, Cl. 56-7.000.

Fujiwara, Masatsugu: *See—*
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; and Kato, Kazunori, 5,824,442, Cl. 430-45.000.

Fujiwara, Osami: *See—*
Kitamura, Junichi; Tachibana, Matsuo; Fujiwara, Koji; Fujiwara, Osami; Samejima, Kazuo; Miyata, Junji; Togoshi, Yoshikazu; Tsuchihashi, Hironori; and Esaki, Yoshiyuki, 5,822,960, Cl. 56-7.000.
Tsuchihashi, Hironori; Togoshi, Yoshikazu; Fujiwara, Osami; Shimamura, Teruo; Matsui, Akio; Umemoto, Hideya; Chujo, Kenichi; and Bando, Niro, 5,823,285, Cl. 180-242.000.

Fujiwara, Takashi: *See—*
Yamasaki, Masashi; Ogawa, Kouichi; Nishimura, Katsuhiko; Fujiwara, Takashi; Yanagimoto, Hironori; and Hamamoto, Tomoo, 5,823,807, Cl. 439-157.000.

Fujiwara, Tatsuo; Maruyama, Hiroyuki; and Saitoh, Toshio, to Fujitsu Limited. Sheet holder removably attached to data processing apparatus. 5,823,522, Cl. 271-4.080.

Fujiwara, Toshimitsu: *See—*
Iino, Shuji; Fujiwara, Toshimitsu; Miyamoto, Hidetoshi; and Kurita, Takaji, 5,826,148, Cl. 399-240.000.

Fujiwara, Yasuyuki: *See—*
Miyamoto, Noritaka; Onishi, Masazumi; Fujiwara, Yasuyuki; Tanaka, Toshiaki; Sawamura, Masatoshi; and Danno, Atsushi, 5,824,168, Cl. 148-573.000.

Fukae, Kensuke, to Advanced Color Technology, Inc. Electrographic printing apparatus with a liquid developement system. 5,826,145, Cl. 399-233.000.

Fukao, Hiroshi: *See—*
Nishihara, Yoshikazu; Demizu, Ichiro; Mikuriya, Yoshihiro; Nakazawa, Fumiko; and Fukao, Hiroshi, 5,824,446, Cl. 430-110.000.

Fukao, Itaru: *See—*
Arima, Yasuhiko; Nishiyama, Yoshio; Fukao, Itaru; Abe, Hiroaki; and Kubota, Yuji, 5,826,086, Cl. 395-701.000.

Fukaya, Takashi: *See—*
Yasunaga, Koji; and Fukaya, Takashi, 5,825,536, Cl. 359-384.000.

Fukuchi, Hironao; Shiina, Takanori; Nakano, Kenji; Kumagai, Katsuhiro; and Hara, Yoshihisa, to Honda Giken Kogyo Kabushiki Kaisha. Control system for internal combustion engines. 5,823,167, Cl. 723-421.000.

Fukuchi, Masakazu: *See—*
Haneda, Satoshi; Shigeta, Kunio; Sato, Yotaro; Fukuchi, Masakazu; Matsubara, Akitoshi; and Ikeda, Tadayoshi, 5,826,143, Cl. 399-182.000.

Fukuda, Hiroshi, to Fuji Photo Film Co., Ltd. Thermal head. 5,825,395, Cl. 347-206.000.

Fukuda, Kensei; Kuroda, Shoji; Kuwamoto, Yoshinobu; and Sakanoue, Kei, to Matsushita Electric Industrial Co., Ltd. Method of and apparatus for purifying exhaust gas utilizing a heated filter which is heated at a rate of no more than 10° C./minute. 5,822,977, Cl. 60-274.000.

Fukuda, Kiyoto: *See—*
Kimae, Yoichi; Tsuchiya, Katsuyoshi; Matsuo, Takashi; and Fukuda, Kiyoto, 5,824,195, Cl. 203-8.000.

Fukuda, Masatoshi; Ohtsuka, Tadashi; Isaki, Haruo; and Matsutani, Kanji, to Kabushiki Kaisha Matsutani Seisakusho. Guide instrument for a medical needle with thread. 5,824,009, Cl. 606-144.000.

Fukuda, Shigeharu: *See—*
Nishimoto, Tomoyuki; Chaen, Hiroto; Fukuda, Shigeharu; and Miyake, Toshiu, 5,824,521, Cl. 435-100.000.

Fukui, Hirofumi; and Sung, Chae Gee, to Frontec Incorporated. Method of manufacturing thin film transistor. 5,824,572, Cl. 438-158.000.

Fukui, Takahiro, to NEC Corporation. Cache memory capable of using faulty tag memory. 5,825,682, Cl. 365-49.000.

Fukui, Tomonori: *See—*
Yamashita, Toshiki; Doi, Jun; Fukui, Tomonori; Kawamura, Fumio; Katoh, Jyouji; and Kawada, Yasuo, 5,826,154, Cl. 399-364.000.

Fukumoto, Koji: Soda, Yutaka; Saito, Norio; and Shibata, Takuji, to Sony Corporation. Magneto-resistance effect-type magnetic head. 5,825,594, Cl. 360-113.000.

Fukumoto, Masahiro; and Kanzaki, Manabu, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Method for solidifying waste containing radioactive iodine. 5,826,203, Cl. 588-15.000.

Fukuoka, Nobuko: *See—*
Okamoto, Masumi; Shoji, Masato; Tanaka, Yasuharu; Ishikawa, Masahito; Fukuoka, Nobuko; Ninomiya, Toshihiro; Ohyama, Tsuyoshi; Yoshida, Norihiro; and Hatoh, Hitoshi, 5,825,445, Cl. 349-118.000.

Fukushima, Takeshi; and Yamamoto, Hisashi, to Pacific Machinery & Engineering Co., Ltd. Mixer having a segmented helical mixing blade. 5,823,667, Cl. 366-65.000.

Fukuta, Shin'ya: *See—*
Betsui, Keiichi; Fukuta, Shin'ya; Kosaka, Tadayoshi; Namiki, Fumihiro; Toyoda, Osamu; and Kasahara, Shigeo, 5,825,128, Cl. 313-582.000.

Fukutani, Hideshi: *See—*
Moritan, Norishige; Matsuo, Akihide; and Fukutani, Hideshi, 5,822,846, Cl. 29-598.000.

Fuller, Billy J., to Sun Microsystems, Inc. System and method for diagnosing computer program faults through the provision of program probe points and referenceable diagnostic program probes. 5,826,005, Cl. 385-183.140.

Fuller, Robert M.: *See—*
Epler, Frederick A.; Fuller, Robert M.; Kranzler, Daniel R.; and Blanchard, John T., 5,825,867, Cl. 379-215.000.

Fultz, Timothy J.: *See—*
Kacian, Daniel Louis; and Fultz, Timothy J., 5,824,518, Cl. 435-91.210.

Fumiaki, Kawawaki: *See—*
Oba, Toshiro; and Fumiaki, Kawawaki, 5,825,001, Cl. 235-85.00R.

Funaki, Tamio, to NEC Corporation. Job re-execution system and controlling method thereof. 5,826,078, Cl. 395-670.000.

Funatsu, Fumiyo: *See—*
Kato, Nobuo; Sakai, Yasuyoshi; Tani, Yoshiki; Yagi, Masayuki; and Funatsu, Fumiyo, 5,824,527, Cl. 435-191.000.

Furlani, Edward P.: *See—*
Ghosh, Syamal K.; Furlani, Edward P.; and Chatterjee, Dilip K., 5,822,839, Cl. 29-596.000.

Furuhashi, Takeshi: *See—*

Obata, Kenzo; Uchikawa, Yoshiki; Furuhashi, Takeshi; and Yang, Xuhua, 5,825,906, Cl. 382-119.000.
Furuie, Dai, to TOA Medical Electronics Co., Ltd. Apparatus for measuring particle morphology and method thereof. 5,825,477, Cl. 356-72.000.
Furukawa Electric Co., Ltd., The: *See—*
Yamasaki, Masashi; Ogawa, Kouichi; Nishimura, Katsuhiko; Fujiwara, Takashi; Yanagimoto, Hironori; and Hamamoto, Tomoo, 5,823,807, Cl. 439-157.000.
Furukawa, Takashi: *See—*
Kadota, Shigeru; Furukawa, Takashi; Kawaguchi, Kiyoshi; Suzuki, Masahiko; and Yamada, Kenji, 5,823,248, Cl. 165-104.330.
Furukawa, Teruo: *See—*
Yoshimoto, Kyosuke; Rao, M. C.; Ohata, Hiroyuki; Nakane, Kazuhiko; Furukawa, Teruo; Kondo, Junichi; and Ototake, Masafumi, 5,825,728, Cl. 369-32.000.
Furukawa, Yasunori: *See—*
Miyai, Tsuyoshi; Makio, Satoshi; Furukawa, Yasunori; and Sato, Masayoshi, 5,825,793, Cl. 372-33.000.
Furukoshi, Takayuki: *See—*
Nakagawa, Hitoshi; Kondo, Toshiaki; Ogawa, Tetsuya; and Furukoshi, Takayuki, 5,825,655, Cl. 364-474.170.
Furusawa, Iwao: *See—*
Mori, Masashi; Mise, Kazuyuki; Okuno, Tetsuro, and Furusawa, Iwao, 5,824,856, Cl. 800-205.000.
Furusawa, Kenji: *See—*
Nakamura, Takao; Sekiyama, Nobuya; Nakano, Keiko; Furusawa, Kenji; Kataoka, Hiroyuki; Shirakura, Takaaki; and Matsuoka, Shinya, 5,825,591, Cl. 360-104.000.
Furuta, Hideya; Sakai, Yoshihiro; Taguchi, Kazushige; and Mamizuka, Mitsuru, to Ricoh Company, Ltd. Image forming apparatus using a synchronized transfer medium driver. 5,825,398, Cl. 347-235.000.
Furuya, Yoshiyuki; Aoki, Kunimitsu; and Iino, Tadashi, to Yazaki Corporation. Display apparatus for automobiles. 5,825,339, Cl. 345-8.000.
Furuyama, Hiroko: *See—*
Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,824,481, Cl. 435-6.000.
Fuse, Takeshi: *See—*
Nikai, Isao; Uda, Motohisa; Shindo, Naoki; and Fuse, Takeshi, 5,823,008, Cl. 62-401.000.
Fuselage Engineering Services Ltd.: *See—*
Luria, David, 5,823,472, Cl. 244-118.100.
Fusion Medical Technologies, Inc.: *See—*
Sawyer, Philip N., 5,824,015, Cl. 606-214.000.
Fuso Pharmaceutical Industries, Ltd.: *See—*
Matsuhisa, Akio; Shiba, Kiyotaka; Mikawa, Yoshikazu; and Kishi, Yuichiro, 5,824,474, Cl. 435-6.000.
Fussnegger, Wolfgang: *See—*
Schenk, Bernhard; Seel, Holger; Fussnegger, Wolfgang; Schaible, Kurt; and Tegeler, Roland, 5,823,606, Cl. 296-107.080.
Futsuhara, Koichi: *See—*
Suzuki, Masatoshi; Futsuhara, Koichi; and Sakai, Masayoshi, 5,825,144, Cl. 318-434.000.
Future Systems, Inc.: *See—*
Geringer, E. Randy; Goldberg, Joseph; and Crowe, Allen A., 5,823,278, Cl. 177-144.000.
G. D. Searle & Co.: *See—*
Abendschein, Dana R., 5,824,644, Cl. 514-12.000.
Tipping, Peter G.; and Wun, Tze-Chein, 5,824,660, Cl. 514-56.000.
G.D Societa' per Azioni: *See—*
Boldrini, Fulvio, 5,822,952, Cl. 53-444.000.
Draghetti, Fiorenzo; and Boldrini, Fulvio, 5,823,528, Cl. 271-270.000.
Manservigi, Alberto; and Draghetti, Fiorenzo, 5,822,948, Cl. 53-466.000.
Manservigi, Alberto; and Draghetti, Fiorenzo, 5,823,331, Cl. 203-268.000.
Osti, Roberto; and Draghetti, Fiorenzo, 5,822,954, Cl. 53-466.000.
Gabor, George; Orr, Thomas Robert; Greene, Charles Maurice; Crawford, Douglas Gordon; and Berman, Samuel Maurice. RF driven sulfur lamp having driving electrodes arranged to cool the lamp. 5,825,132, Cl. 315-39.000.
Gabriel, Joshua, to Interactive Music Corp. Method and apparatus for synchronizing and simultaneously playing predefined musical sequences using visual display and input device such as joystick or keyboard. 5,824,933, Cl. 84-609.000.
Gabriel, Nancy E.: *See—*
Kinstler, Olaf B.; Gabriel, Nancy E.; Farrar, Christine E.; and DePrince, Randolph B., 5,824,784, Cl. 530-399.000.
Gabriel, Stefan M.; and Colleran, Dennis P., to Johnson & Johnson Professional, Inc. Medical fastening system. 5,824,097, Cl. 623-20.000.
Gabrielson, Lance A.: *See—*
Brooks, Peter E.; and Gabrielson, Lance A., 5,824,898, Cl. 73-469.000.
Gadoury, Dean R., to BASF Corporation. Articles having a chambray appearance and process for making them. 5,824,614, Cl. 442-415.000.
Gadsby, Winston M.; and Davis, Jeffery M., to Hubbell, Inc. Pulse amplitude modulated tone generator. 5,825,781, Cl. 370-525.000.
Gafri, Oren: *See—*
Livshiz, Yuri; and Gafri, Oren, 5,824,998, Cl. 219-617.000.
GageTek Company: *See—*
Bruns, Robert W.; and Payne, John R., 5,824,963, Cl. 177-136.000.
Gagné, Robert R.; Marrocco, Matthew Louis, III; Trimmer, Mark Steven; and Hendricks, Neil H., to Maxdem Incorporated. Macromonomers having reactive end groups. 5,824,744, Cl. 525-143.000.
Gaidoukevitch, Victor Leonidovitch: *See—*
Arkhangelsky, Ivan Ivanovitch; Bolotov, Eugène Gueorguevitch; Philippov, Vladimir Sergueevitch; Mizrokhi, Vladimir Yakovlevitch; Svetlov, Vladimir Grigorievitch; Stanevsky, Gregory Andreevitch; Khitenkov, Serge Grigorievitch; Gaidoukevitch, Victor Leonidovitch; and Chmikov, Eugène Afanassievitch, 5,823,469, Cl. 244-3.220.
Gal, Yann Le; and Finot, André, to Lafuma SA. System for carrying articles on one's back. 5,823,414, Cl. 224-637.000.
Gallagher, Brian J.: *See—*
Abdulmassih, Antoine G.; Johnson, Donald B.; Young, Douglas L. G.; and Gallagher, Brian J., 5,823,355, Cl. 209-406.000.
Gallagher, Patrick J.; and Mills, Larry R. Suction relief apparatus. 5,822,807, Cl. 4-507.000.
Gallo, Thomas S. Transfer seat apparatus. 5,822,809, Cl. 4-578.100.
Galowitz, Dennis A.; and Bruchu, Todd W., to Andersen Corporation. Method and apparatus for extending a frame. 5,822,931, Cl. 52-204.500.
Galyon, Michael E.: *See—*
Patelke, David B.; Williams, Gordon F.; Galyon, Michael E.; and Ghorashi, Hossein M., 5,822,972, Cl. 57-408.000.
Game Data, Inc.: *See—*
Tarantino, Elia R., 5,823,875, Cl. 463-29.000.
Gamma-Metrics: *See—*
Hurwitz, Michael J.; Proctor, Raymond J.; and Yusuf, Siaka, 5,825,030, Cl. 250-358.100.
Gandini, Mario: *See—*
Obertegger, Franz; Gandini, Mario; and Profanter, Anton, 5,823,083, Cl. 83-175.000.
Gang, Eli S.: *See—*
Cookston, H. Stephen; and Gang, Eli S., 5,824,031, Cl. 607-122.000.
Gangnus, Bernd: *See—*
Nowak, Reinhold; Wanek, Erich; and Gangnus, Bernd, 5,824,720, Cl. 523-116.000.
Gano, John C.: *See—*
Crow, Robert W.; Gano, John C.; Van Le, Nam; Longbottom, James R.; and Hagen, Karluf, 5,823,265, Cl. 166-373.000.
Garasimowicz, Gregory Alexander, to J & L Fiber Services, Inc. Refiner disc with curved refiner bars. 5,823,453, Cl. 241-261.300.
Garban, Béatrice Jeanne Marie Claude; and Dupays, Daniel Hubert Marie, to Cables Pirelli. Connection accessory for low voltage power cables. 5,824,956, Cl. 174-93.000.
Garbe, James E.: *See—*
Kesti, Michael R.; Garbe, James E.; Delgado, Joaquin; Silver, Spencer F.; and Goetz, Richard J., 5,824,748, Cl. 525-243.000.
Garbelli, Francesco; and Oggioni, Stefano, to International Business Machines Corporation. Electronic package with enhanced pad design. 5,825,628, Cl. 361-763.000.
Garber, John W.: *See—*
Bathrick, Erwin W.; Garber, John W.; Huang, Cheng-Chi; Kung, Kenneth C.; Matthews, Todd E.; Zmuda, James E.; and Matthews, Regina L., 5,825,300, Cl. 340-825.330.
Garcia, Gilbert; and Durual, Pierre, to Elf Atochem S.A. Alcohol resistant film-forming fluoroprotein foam concentrates. 5,824,238, Cl. 252-8.050.
Gardner, David L.: *See—*
Casper, Robert A.; Leith, Frank A.; and Gardner, David L., 5,823,183, Cl. 128-203.150.
Gardner, Robert M.: *See—*
Anderson, David J.; Gardner, Robert M.; and Hallmark, Jerald A., 5,825,317, Cl. 341-120.000.
Buchanan, Charles M.; Gardner, Robert M.; Harris, James E.; Irick, Gether, Jr.; and Strickler, David V., Jr., 5,823,202, Cl. 131-345.000.
Gardner, Roger; and Rudell, Elliot, to Rudell, Elliot A. Circuit with intermittent sensing of liquid contact, and game method. 5,823,849, Cl. 446-473.000.
Garg, Sanjiv: *See—*
Wang, Johannes; Garg, Sanjiv; and Deosaran, Trevor, 5,826,055, Cl. 395-394.000.
Garland, Harry: *See—*
DeVito, Jonathan; Garland, Harry; Hunter, Ken; May, Gerald A.; and Roberts, Michael G., 5,825,943, Cl. 382-306.000.
Garland, Stuart Mandel; and Smith, David B., to Lucent Technologies, Inc. Loop-back test system using a suppressed ringing connection. 5,825,849, Cl. 379-5.000.
Garlichs, Dietmar, to Ardex Inc. Peel-away closure for a bag. 5,823,685, Cl. 383-211.000.
Garmire, Derrick LeRoy: *See—*
Barkey, Kathy Sue; Bender, Carl Alfred; Garmire, Derrick LeRoy; Roman, Harold Edgar; and Smyth, Daniel Gerard, 5,825,748, Cl. 370-236.000.
Garnaat, Carl W.: *See—*
Fox, Timothy W.; Garnaat, Carl W.; and Meyer, Terry EuClaire, 5,824,864, Cl. 800-205.000.
Garrett, Jan Elizabeth; and Ruehli, Albert Emil, to International Business Machines Corporation. Method and computer program product for stable integral equation models. 5,826,215, Cl. 702-75.000.

Gartner, Peter. Container adapted for spraying. 5,823,399, Cl. 222-209.000.
Garvey, David S.; Letts, L. Gordon; Renfroe, H. Burt; and Richardson, Stewart K., to NitroMed, Inc. Nitrosated and nitrosylated compounds and compositions and their use for treating respiratory disorders. 5,824,669, Cl. 514-174.000.
Garvick, Donald R.: *See—*
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Goldner, Herman. Centralizer apparatus. 5,823,258, Cl. 166-77.100.
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Song, Ki Hwan; and Lee, Chang Pyo, 5,825,418, Cl. 348-402.000.
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Silvent, Therese M.; Golec, Valentine W.; and Godziela, James T., 5,825,358, Cl. 345-340.000.
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Bandman, Olga; Hillman, Jennifer L.; and Goli, Surya K., 5,824,500, Cl. 435-69.100.
Gollihar, William A.; DeShazer, Larry G.; and Bradley, Scott, to Pharos Optics, Inc. Fiber optic delivery system for infrared lasers. 5,825,958, Cl. 385-125.000.
Goltra, Peter S. Intelligent prompting. 5,823,949, Cl. 600-300.000.
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Gomez, Luis, to Brifer International Ltd. Slide valve. 5,823,224, Cl. 137-240.000.
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Hellenkamp, Michael; Ebert, Jörg; Griep, Winfried; Findeisen, Volker; and Gomon, Volker, 5,822,927, Cl. 49-502.000.
Gonzalez, René M.; and Schaefer, John J., III, to Medical Plastics Laboratory, Inc. Training mannequin for management of normal and abnormal airways. 5,823,787, Cl. 434-265.000.
Goodge, Graham, to Dunlop Slazenger Group Limited. Games racket frame. 5,823,899, Cl. 473-540.000.
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Goodson, Doris: *See*—
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Tuttle, James Robert; Vannan, Frederick Forbes, Jr.; and Head, William James, 5,824,383, Cl. 428-60.000.
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Gopalswamy, Swaminathan; and Jones, Gary Lee, to General Motors Corporation. Magnetorheological transmission clutch. 5,823,309, Cl. 192-21.500.
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Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, to Merck & Co., Inc. Method of treating androgenic alopecia with 5-alpha reductase inhibitors. 5,824,686, Cl. 514-284.000.
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Burns, Elizabeth Gertrude; Kovacs, Csaba Andras; Goswami, Ramanuj; and Chapman, Derek D., 5,824,768, Cl. 528-422.000.
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Goto, Yasuo, to Home Co., Ltd. Connector, method for connecting structural members with connector and connection structure between structural members. 5,823,701, Cl. 403-268.000.
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Momiuchi, Masayuki; Koizumi, Hiroshi; Ohishi, Masahiro; Goto, Yoshiaki; and Ohtomo, Fumio, 5,825,798, Cl. 372-75.000.

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Gotoh, Takashi: *See*—
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Gottehrer, Neil R.: *See*—
Singer, Gary H.; Misch, Carl Erwin; and Gottehrer, Neil R., 5,823,193, Cl. 128-848.000.

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Governale, Bernard, to Caradon Doors & Windows Group. Door with swinging side light panel. 5,822,923, Cl. 49-365.000.

Graab, Gerhard; Heckel, Klaus; Butscher, Alfons; and Nahe, Torsten, to Firma Carl Freudenberg. Moire floor covering and method for its manufacture. 5,824,735, Cl. 524-575.000.

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Grace, Dorman John, III: *See*—
Streit, Leon George; and Grace, Dorman John, III, 5,824,844, Cl. 800-200.000.

Gracia, Albert Louis. Marine engine silencer having internal apertured baffle and weir plate. 5,824,970, Cl. 181-228.000.

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Grafix Zerstaubungstechnik GmbH: *See*—
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Graham, Donald D., to Omni Holding Company. Pivot lip dump gate. 5,823,630, Cl. 298-235.000.

Gramlich, Wayne C., to Sun Microsystems, Inc. System for annotation overlay proxy configured to retrieve associated overlays associated with a document request from annotation directory created from list of overlay groups. 5,826,025, Cl. 395-200.470.

Granberg, Rune, to AB Rexroth Mecman. Rotary actuator with mating housing halves. 5,823,092, Cl. 92-121.000.

Grangeon, André; and Lescoche, Philippe, to T.A.M.I. Industries. Inorganic porous support for a filter membrane, and method of manufacture. 5,824,220, Cl. 210-490.000.

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Grant, Thomas A.: *See*—
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Seidel, Randy R.; Bush, Lawrence; Cohen, Neal; Davenport, Gary L.; Silva, Robert M.; and Honegger, Roger, 5,823,320, Cl. 198-803.500.

Grasfield, James A.; Winston, David E.; Purbrick, John A.; Stark, Peter R. H.; and Steinhubel, Daniela, to StethTech Corporation. Electronic stethoscope. 5,825,895, Cl. 381-67.000.

Grass America, Inc.: *See*—
Domenig, Georg, 5,823,648, Cl. 312-334.500.

Grassi, Silvano, to Sponsor S.r.l. Biomedical apparatus particularly for measuring anisomelia of the lower limbs. 5,823,974, Cl. 600-595.000.

Gratias, Greg, to Asterion, Inc. Antenna microwave shield for cellular telephone. 5,826,201, Cl. 455-575.000.

Grauman, Joyce A.: *See*—
Malamud, Mark A.; Marceau, Renee; Grauman, Joyce A.; Levien, Royce A.; Oran, Daniel P.; Bolnick, David A.; Barnes, David A., Jr.; and Johnson, Russell Scott, 5,825,357, Cl. 345-340.000.

Gray, Darren S.: *See*—
Van Driel, Michael R.; Gray, Darren S.; Lam, Victor C.H.; Uyeno, Jill E.; and Wong, Yu-Tung, 5,823,045, Cl. 73-299.000.

Gray, Erick: *See*—
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Gray, John: *See*—
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Gray, John D., to Textron Automotive Company Inc. Mechanized floor console. 5,823,599, Cl. 296-37.800.

Gray, Patrick W.: *See*—
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Greaney, Mark Alan: *See*—
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Greaves, Carlos A.: *See*—
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Greco, Carl C.: *See*—
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Green, Pattie S.: *See*—
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Green, Paul Eliot, Jr.: *See*—
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Green, Robert R. Vertical-axis wind turbine with two-phase sails. 5,823,749, Cl. 416-132.00B.

Green, Thomas S., to ABC TechCorp. Liquid dispenser having flow rate compensation. 5,823,388, Cl. 222-1.000.

Greenberger, Joel: *See*—
Kalend, Andre M.; Greenberger, Joel; Shimoga, Karun B.; Athanassiou, Charalambos N.; and Kanade, Takeo, 5,823,192, Cl. 128-845.000.

GreenBest, Inc.: *See*—
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Greene, Charles Maurice: *See*—
Gabor, George; Orr, Thomas Robert; Greene, Charles Maurice; Crawford, Douglas Gordon; and Berman, Samuel Maurice, 5,825,132, Cl. 315-39.000.

Greene, Mark I.; and Drebin, Jeffrey A., to University of Pennsylvania, Trustees of The. Treatment of tumors with monoclonal antibodies against oncogene antigens. 5,824,311, Cl. 424-138.100.

Greene, Roy: *See*—
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Greenfield, Alexander A.: *See*—
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Greenwald, Richard B.; and Pendri, Annapurna, to Enzon, Inc. Taxane-based prodrugs. 5,824,701, Cl. 514-449.000.

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Greff, Richard J.: *See*—
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Greig, John Martyn, to British Gas plc. Method of joining reinforced thermoplastic pipes. 5,824,179, Cl. 156-274.200.

Greiner, Rudolf; and Fisch, Torsten, to Mercedes-Benz AG. Fastening device for a battery in a vehicle. 5,823,502, Cl. 248-503.000.

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Gretz, Thomas J., to Arlington Industries, Inc. Wiring device support. 5,823,482, Cl. 248-27.100.

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Griebel, Robert Andre Emil; and Gormley, Gregory J. Device for checking the porosity of thin rubber products. 5,824,882, Cl. 73-38.000.

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Griep, Winfried: *See*—
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Grier, Martin Bottomley: *See*—
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Grierson, Donald; Lawrence, Susan Dale; Moore, Gloria Andrews; and Schuch, Wolfgang Walter, to University of Florida; and Zeneca Limited. Tomato ripening TOM 41 compositions and methods of use. 5,824,873, Cl. 800-205.000.

Griffeth, Jeffrey D. Natural vegetation reservoir feeding system for wildlife. 5,822,919, Cl. 47-48.500.

Griffin Corporation: *See*—
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Griffin, Daniel Wayne, to Digital Voice Systems, Inc. Estimation of excitation parameters. 5,826,222, Cl. 704-207.000.

Griffith, Bobby D.; Hawkins, Mark R.; Schlickbernd, Dean J.; and Zmuda, Steven J., to Caterpillar Inc. Lubrication control system for a work machine. 5,823,295, Cl. 184-6.400.

Grim, Tracy E.; Bobroff, Alec D.; Bourne, John Morgan; and Iglesias, Joseph Michael, to Royce Medical Company. Resilient orthopaedic support with independently stretchable layers. 5,823,981, Cl. 602-26.000.

Grist, Matt M.: *See*—
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Griswold, Don Edgar; and Wharton, John, to SmithKline Beecham Corporation. Medicaments. 5,824,696, Cl. 514-382.000.

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Grönwoldt, Rolf; Deisenhofer, Siegfried; and Hirtsiefer, Artur, to Huwil-Werke GmbH; and Thule GmbH. Locking device for suitcases and trunks, especially roof trunks for motor vehicles. 5,823,411, Cl. 224-328.000.

Groos, Heinz: *See*—
Beisel, Winfried; Schulze, Eckehart; Groos, Heinz; Budenbender, Dieter; and Kutscher, Hans-Werner, 5,823,104, Cl. 100-48.000.

Gross, James R., to Tyco International (US) Inc. Breathing circuit. 5,823,184, Cl. 128-294.180.

Gross, Jeffrey M., to Medtronic, Inc. Sewing tube for a xenograft mitral valve. 5,824,065, Cl. 623-2.000.

Gross, Jeffrey M., to Medtronic, Inc. Annuloplasty prosthesis. 5,824,066, Cl. 623-2.000.

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Gross, William H., to Linear Technology Corp. Low quiescent power, high output power rail-to rail amplifier output stages and methods for using same. 5,825,228, Cl. 327-333.000.

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Grubb, Robert G.: *See*—
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Gruber, Stephen Scott: *See*—
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Grubman, Marvin J.; Mason, Peter W.; Piccone, Maria Elisa; and Rieder, Elizabeth, to United States of America, Agriculture. Leader-proteinase deleted foot-and-mouth disease viruses and their use as vaccines. 5,824,316, Cl. 424-216.100.

Grumm, Darren M.; Schamanek, Roger E.; Cripe, Todd E.; and Butler, Raymond S., to Excel Industries, Inc. Power drive system for modular dual pane rear-mounted window assembly. 5,822,922, Cl. 49-360.000.

Grumm, Darren M.: *See*—
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Gryaznov, Sergei M.: *See*—
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Grychowski, Jerry R.; Baran, George; and Foley, Martin P., to 1263152 Ontario Inc. Nebulizer apparatus and method. 5,823,179, Cl. 128-200.180.

Gscheidmeier, Manfred; Häberlein, Harald, deceased; Häberlein, by Hans Harald; Häberlein, by Jörg Thomas; and Häberlein, by Mark Christian, to Hoechst Aktiengesellschaft. Process for the preparation of camphene by the rearrangement of a-pinene. 5,826,202, Cl. 585-356.000.

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Guan, Hanping: *See*—
Keeling, Peter Lewis; Knight, Mary E.; and Guan, Hanping, 5,824,790, Cl. 536-23.600.

Guan, Ming: *See*—
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Guay, Bernard: *See*—
Altmann, Michael; and Guay, Bernard, 5,825,825, Cl. 375-293.000.

Guerra, Manuel, Jr., to Remet Corporation. Fast processing water based binder system. 5,824,730, Cl. 524-493.000.

Guerrette, Michael C.: *See*—
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Guerro, Gerald; Dauplaise, David; and Bazaj, Rajiv, to Cytec Technology Corp. Methods and agents for improving paper printability and strength. 5,824,190, Cl. 162-135.000.

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Guhring, Manfred; and Weldle, Helmut, to Heckler & Koch GmbH. Self-loading rifle with gas-pressure loading arrangement. 5,824,943, Cl. 89-192.000.

Guiles, Melvin J.; and Ahrens, Kenneth A., to Interkal, Inc. Aisle riser backstops for telescopic seating systems. 5,822,929, Cl. 52-9.000.

Guilford Pharmaceuticals Inc.: *See*—
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Gulli, Christian, to Sextant Avionique. Method for voice analysis and synthesis using wavelets. 5,826,232, Cl. 704-267.000.

Guo, Song: *See*—
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Guo, Wen-Li. Spray nozzle. 5,823,442, Cl. 239-394.000.

Guo, Ximing; and Allen, Standish K., Jr., to Rutgers, The State University of New Jersey. Tetraploid shellfish. 5,824,841, Cl. 800-2.000.

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Gupta, Anand, to Applied Materials, Inc. Decontamination of a plasma reactor using a plasma after a chamber clean. 5,824,375, Cl. 427-569.000.

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Gupta, Niranjan Lal; Sankaran, Ramanathan; Chattejee, Sugata; and Krishna, Tumma Hari, to Lupin Laboratories Ltd. A process for sterospecific synthesis of keto-enol tautomeric mixture of p nitrobenzyl (1R, 6R, 7R)-7-phenoxyacetamido-3-oxo-3-cepham-4-(R/S)-carboxylate-1-oxide and p-nitrobenzyl (1R, 6R, 7R)-7-phenoxyacteamido-3-hydroxy-3-cephem-4-carboxylate-1-oxide. 5,824,801, Cl. 540-215.000.

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Gurevich, Arthur: *See*—
Kochman, Arkady; and Gurevich, Arthur, 5,824,996, Cl. 219-529.000.

Gurr, Sarah Jane; McPherson, Michael John; Atkinson, Howard John; and Bowles, Dianna Joy, to Advanced Technologies (Cambridge) Limited. Plant parasitic nematode control. 5,824,876, Cl. 800-205.000.

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Agarwal, Ramesh Chandra; Groves, Randall Dean; Gustavson, Fred Gehrung; Johnson, Mark Alan; and Olsson, Brett, 5,825,677, Cl. 364-736.030.

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Blomkvist, Sten-Åke; Gustavsson, Jan-Peter; Konow, Anders; and Lundquist, Eskil, 5,824,727, Cl. 524-52.000.

Gutowski, Robert J.: *See*—
Richmond, Alvin; and Gutowski, Robert J., 5,824,279, Cl. 423-265.000.

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Güttler, Herman, to Zinser Textilmaschinen GmbH. Transport apparatus for bobbins and bobbin sleeves in a textile plant. 5,822,970, Cl. 57-281.000.

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Behr, Vance L.; Nelsen, James M.; and Gwinn, Kenneth W., 5,823,567, Cl. 280-743.100.

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Case, Charles Whipple, Jr.; Hovden, Torbjorn; Smith, Gregory Clark; Hotelling, Steven Porter; and Sabina, Michael Kenneth, 5,825,350, Cl. 345-163.000.

H.B. Fuller Licensing & Financing Inc.: *See*—
Schmitz, Franz Peter; Horeis, Kai; and Razzak, Ramzi, 5,824,713, Cl. 521-155.000.

H&H Eco Systems, Inc.: *See*—
Horn, Terry Dean; Horn, Ronald Dean; Glaze, Bradley S.; and Warner, Kenneth R., 5,824,541, Cl. 435-262.500.

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Birrell, Peter C., 5,825,019, Cl. 250-214.0AL.

Ha, Vinh Van; Trublowski, John; Nation, Brenda Joyce; Lin, Jeff; and Perng, Chin-Yuan, to Ford Motor Company. Method and apparatus for dispensing viscous material. 5,824,155, Cl. 118-410.000.

Haake, David A., to University of California, The Regents of the. Cloned leptospira outer membrane protein. 5,824,321, Cl. 424-266.100.

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Elendt, Harald; Haas, Michael; and Maas, Gerhard, 5,823,151, Cl. 123-90.160.

Haas, Peter J. Mechanism for reclining chairs. 5,823,626, Cl. 297-448.200.

Häberlein, by Hans Harald: *See—*
Gscheidmeier, Manfred; Häberlein, Harald, deceased; Häberlein, by Hans Harald; Häberlein, by Jörg Thomas; and Häberlein, by Mark Christian, 5,826,202, Cl. 585-356.000.

Häberlein, by Jörg Thomas: *See—*
Gscheidmeier, Manfred; Häberlein, Harald, deceased; Häberlein, by Hans Harald; Häberlein, by Jörg Thomas; and Häberlein, by Mark Christian, 5,826,202, Cl. 585-356.000.

Häberlein, by Mark Christian: *See—*
Gscheidmeier, Manfred; Häberlein, Harald, deceased; Häberlein, by Hans Harald; Häberlein, by Jörg Thomas; and Häberlein, by Mark Christian, 5,826,202, Cl. 585-356.000.

Häberlein, Harald, deceased: *See—*
Gscheidmeier, Manfred; Häberlein, Harald, deceased; Häberlein, by Hans Harald; Häberlein, by Jörg Thomas; and Häberlein, by Mark Christian, 5,826,202, Cl. 585-356.000.

Habib, Dennis M.; Engelberg, Mindy J.; McNutt, Kathryn A.; Kinser, Colby E.; Lynch, Charles E., II; and Williams, Chauncey L., to Wall Data Incorporated. Help system with semitransparent window for disabling controls. 5,825,356, Cl. 345-338.000.

Hable, Mary R.; Larson, Mark R.; and Law, Kam W., to Imation Corp. Belt-driven data storage device with corner roller assemblies preselected to have different drag force profiles. 5,823,455, Cl. 242-340.000.

Hachmann, Klaus: *See—*
Disch, Karl-Heinz; Bansemir, Klaus-Peter; Hachmann, Klaus; and von Rheinbaben, Friedrich, 5,824,708, Cl. 514-563.000.

Hackman, Charles David: *See—*
Lindsay, Richard Arthur; and Hackman, Charles David, 5,823,491, Cl. 248-169.000.

Hacskaylo, Charles A., to Pine Hosiery Mills, Inc. Jacquard knit patterned wristband and headband and methods of making same. 5,823,012, Cl. 66-171.000.

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Tsuboi, Yasutaka; Hada, Junichi; and Morimoto, Masamichi, 5,825,914, Cl. 382-151.000.

Haddock, Graham: *See—*
Kamin, Ralph A., Jr.; and Haddock, Graham, 5,825,762, Cl. 370-335.000.

Haener, Juan. Insulated building block system. 5,822,939, Cl. 52-405.200.

Haeussler, Georg: *See—*
Strohl, Willi; Haeussler, Georg; Rose, Jochen; Wahl, Oliver; and Eiler, Erich, 5,823,169, Cl. 123-516.000.

Hafstrom, Torvid, to Scandinavian Candy Co., Inc., The. Disposable package and dispenser. 5,823,393, Cl. 222-130.000.

Haga, Masakazu: *See—*
Fujishima, Kazuo; Watanabe, Hiroshi; and Haga, Masakazu, 5,822,891, Cl. 37-348.000.

Hagemann, Jörg: *See—*
Marien, August; Hagemann, Jörg; and Weber, Beate, 5,824,465, Cl. 430-631.000.

Hagemeyer, Roland L.; and Manon, Kenneth P., to Louis Berkman Company, The. Rotatable feedgate. 5,823,734, Cl. 414-519.000.

Hagen, Karluf: *See—*
Crow, Robert W.; Gano, John C.; Van Le, Nam; Longbottum, James R.; and Hagen, Karluf, 5,823,265, Cl. 166-373.000.

Hagen, Ronald G., to Menasha Corp. Package reclosure label and package. 5,824,380, Cl. 428-41.900.

Haggstrom, Robert: *See—*
Hayes, Matthew L.; Hayes, Jeffrey A.; and Lilliott, William R., III, 5,823,594, Cl. 294-142.000.

Hagihara, Junichi, to Tokyo Electron Limited. Probe card device used in probing apparatus. 5,825,192, Cl. 324-757.000.

Hagiwara, Masahiko: *See—*
Ito, Hironori; Hino, Yuichiro; Tashiro, Naoki; Hagiwara, Masahiko; Mitsui, Keiichi; and Uchida, Akihiko, 5,825,155, Cl. 320-16.000.

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Hori, Yoji; Takahashi, Yoko; Hongo, Hideyuki; Yamaguchi, Akio; and Hagiwara, Toshimitsu, 5,824,751, Cl. 525-450.000.

Hague, Brian L: *See—*
Stanley, Theodore H.; and Hague, Brian L., 5,824,334, Cl. 424-440.000.

Haines, James Charles; and Fay, Ralph Michael, to Johns Manville International, Inc. Method of making sound absorbing laminates and laminates having maximized sound absorbing characteristics. 5,824,973, Cl. 181-286.000.

Haji, Hiroshi, to Matsushita Electric Industrial Co., Ltd. Apparatus and method for surface treatment, and apparatus and method for wire bonding using the surface treatment apparatus. 5,823,416, Cl. 228-4.500.

Hakala, Harri: *See—*
Aulanko, Esko; Hakala, Harri; and Mustalahti, Jorma, 5,823,298, Cl. 187-266.000.

Hakki, Hassan: *See—*
Ahmed, Adel A.; and Hakki, Hassan, 5,825,293, Cl. 340-573.000.

Haley, John D.: *See—*
Iwata, Kenneth K.; Foulkes, J. Gordon; Dijke, Peter Ten; and Haley, John D., 5,824,297, Cl. 424-85.100.

Halimi, Alain: *See—*
Abitol, Marc; Blum, Ariel; Halimi, Alain; and Meimoun, Elie, 5,825,476, Cl. 356-124.000.

Halimi, Edward M.: *See—*
Mezheritsky, Anatoly D.; and Halimi, Edward M., 5,823,149, Cl. 123-25.00A.

Hall, Arthur, III, to General Motors Corporation. Multi-speed power transmission. 5,823,051, Cl. 74-325.000.

Hall, Bart; and Grodski, Julius J., to Canada, Her Majesty the Queen in right of, as represented by Minister of National Defence of her Majesty's Canadian Government. Force generation device for simulation of shoulder-supported rocket launching. 5,823,511, Cl. 254-264.000.

Hall, David C.: *See—*
Arizpe, Ronald E.; Dagley, Mark R.; Hall, David C.; and Morgan, Kevin L., 5,823,646, Cl. 312-324.000.

Hall, Gregory Kent Elliot: *See—*
Mazion, Leigh Allen; Hall, Gregory Kent Elliot; Brothers, Daniel Leio, Jr.; and Allen, Shawn Lee, 5,825,471, Cl. 355-72.000.

Hall, James: *See—*
Fecteau, Keith; Hall, James; Desy, Raoul; Salce, John; and Hasenauer, David M., 5,825,455, Cl. 351-159.000.

Hall, Larry D.: *See—*
Wagstaff, Robert A.; and Hall, Larry D., 5,822,962, Cl. 56-16.40R.

Hall, Mary Susan; and Romano, George James, to International Business Machines Corporation. Communications tunneling. 5,826,023, Cl. 395-200.360.

Hall, William Eric: *See—*
Choy, Michael M.; Green, Paul Eliot, Jr.; Hall, William Eric; Janniello, Frank James; Kravitz, Jeff Kenneth; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin Fuk-Kay, 5,825,949, Cl. 385-24.000.

Hallaren, Gerard F.: *See—*
Freeland, Stephen J.; Hallaren, Gerard F.; and Skinn, Neil C., 5,824,929, Cl. 84-454.000.

Halliburton Company: *See—*
Ravi, Krishna M.; Beirute, Robert M.; Duell, Alan B.; Rogers, Henry E.; Murray, Dick A.; and Webb, Earl D., 5,823,273, Cl. 175-72.000.

Halliburton Energy Services, Inc.: *See—*
Burleson, John D.; and Henke, Joseph A., 5,823,266, Cl. 166-380.000.
Crow, Robert W.; Gano, John C.; Van Le, Nam; Longbottom, James R.; and Hagen, Karluf, 5,823,265, Cl. 166-373.000.
Ringgenberg, Paul D., 5,823,264, Cl. 166-355.000.

Hallmark, Jerald A.: *See—*
Anderson, David J.; Gardner, Robert M.; and Hallmark, Jerald A., 5,825,317, Cl. 341-120.000.

Halvorson, Daniel J.: *See—*
Erickson, Stewart E.; and Halvorson, Daniel J., 5,823,225, Cl. 137-347.000.

Hama, Yoshihiro: *See—*
Iima, Mitsunori; and Hama, Yoshihiro, 5,825,403, Cl. 347-259.000.

Hamada, Hideki: *See—*
Nagase, Haruo; Ichikawa, Masaaki; Hamada, Hideki; Kato, Nobuo; Ono, Tomoyuki; and Kimura, Yasuhiro, 5,823,806, Cl. 439-140.000.

Hamada, Katsunori: *See—*
Nagata, Kiyohito; Fujii, Teruya; Hamada, Katsunori; Kakinuma, Kazuhiko; Yoshimi, Masaaki; and Wakabayashi, Tatsuaki, 5,826,197, Cl. 455-524.000.

Hamada, Nagaharu; Kamiuchi, Toshiro; Hikawa, Ikuo; Nakasugi, Takashi; Azuma, Takashi; and Takayama, Chiharu, to Hitachi, Ltd. Image display apparatus. 5,826,035, Cl. 395-200.770.

Hamaguchi, Makoto: *See—*
Ochiai, Eiji; Hamaguchi, Makoto; and Tode, Hiroyoshi, 5,824,445, Cl. 430-106.600.

Hamaguchi, Masanao, to Seiko Instruments Inc. Semiconductor device for reference voltage. 5,825,695, Cl. 365-189.090.

Hamai, Shinji; Okabe, Masao; and Kawakami, Yasunori, to Matsushita Electric Industrial Co., Ltd. Apparatus for recording digital signals by controlling frequency characteristics of digital signals utilizing bit extraction and interleaved NRZI modulation. 5,825,567, Cl. 360-41.000.

Hämäläinen, Jari: *See—*
Huovila, Jyrki; Hämäläinen, Jari; Nyberg, Petri; and Pakarinen, Pekka, 5,825,653, Cl. 364-471.020.

Hamamoto, Tomoo: *See—*
Yamasaki, Masashi; Ogawa, Kouichi; Nishimura, Katsuhiko; Fujiwara, Takashi; Yanagimoto, Hironori; and Hamamoto, Tomoo, 5,823,807, Cl. 439-157.000.

Hamamura, Yuuichi: *See—*
Mizumura, Michinobu; Hamamura, Yuuichi; Azuma, Junzou; Shimase, Akira; Kamimura, Takashi; Itoh, Fumikazu; Umemura, Kaoru; Kawanami, Yoshimi; and Madokoro, Yuuichi, 5,825,035, Cl. 250-423.00R.

Hamanaka, Naoki. *See—*
Ogata, Yasuhiro; Nakagoshi, Junji; Hamanaka, Naoki; Chiba, Hiroyuki; Shutoh, Shinichi; Higuchi, Tatsuo; Takeuchi, Shigeo; Toba, Taturu; and Tanaka, Teruo, 5,826,049, Cl. 395-311.000.
Shutoh, Shin'ichi; Nakagoshi, Junji; Hamanaka, Naoki; Chiba, Hiroyuki; Higuchi, Tatsuo; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,825,773, Cl. 370-398.000.

Hamburg, Douglas Ray; Logothetis, Eleftherios Miltiadis; Visser, Jacobus Hendrik; and Zanini-Fisher, Margherita, to Ford Global Technologies, Inc. Catalyst monitoring using a hydrocarbon sensor. 5,822,979, Cl. 60-274.000.

Hamburger, Andreas: *See—*
Straeb, Martin; and Hamburger, Andreas, 5,823,834, Cl. 439-884.000.

Hamilton Beach/Proctor-Silex, Inc.: *See—*
Pyle, Michael L., 5,823,817, Cl. 439-447.000.

Hamilton, Graham, to Sun Microsystems, Inc. System and method for automatic configuration of home network computers. 5,826,000, Cl. 395-182.020.

Hamilton, Graham: *See—*
Bishop, Alan; Hamilton, Graham; and Tock, Theron, 5,826,082, Cl. 395-674.000.

Hampton, John R.: *See—*
Asher, Thomas L.; and Hampton, John R., 5,824,232, Cl. 210-787.000.

Han, Cheol-Hee, to SamSung Electronics Co., Ltd. Method and apparatus for automatically transferring a caller to a selected extension. 5,825,851, Cl. 379-67.000.

Han, Naiming: *See—*
Progulske-Fox, Ann; Tumwasorn, Somying; Lepine, Guylaine; Han, Naiming; Lantz, Marilyn; and Patti, Joseph M., 5,824,791, Cl. 536-237.000.

Han, Seog Yeon, to LG Electronics Inc. Apparatus and method for selecting multi-angle of digital video disc. 5,825,727, Cl. 369-32.000.

Han, Seok-Kil; Kang, Kwang-Yong; and Kim, Je-Ha, to Electronics and Telecommunications Research Institute. Coaxial connector for vacuum chamber for microwave and millimeter wave measurement. 5,824,953, Cl. 174-65.0SS.

Han, Yong-Woon: *See—*
Kim, Chul; Han, Yong-Woon; Sung, Han-Jun; and Jang, Seong-Deok, 5,824,999, Cl. 219-74.200.

Hanafusa, Morihisa: *See—*
Takehara, Shin; Taniguchi, Haruyuki; Tanaka, Takahiko; Hashino, Hiroshi; Komoto, Yoichi; Ota, Katsutoshi; and Hanafusa, Morihisa, 5,823,515, Cl. 267-140.130.

Hand, John E.: *See—*
Salyer, Brian D.; and Hand, John E., 5,824,181, Cl. 156-379.800.

Handelman, Doron, to Dauphin Biotechnologies Promotion, Ltd. System and method for deceiving enemy forces in battlefield. 5,824,939, Cl. 89-1.110.

Handley, Alan John: *See—*
Powell, Richard Llewellyn; Handley, Alan John; and Clarke, Richard Dominic, 5,824,225, Cl. 210-656.000.

Haneda, Satoshi; Shigeta, Kunio; Sato, Yotaro; Fukuchi, Masakazu; Matsubara, Akitoshi; and Ikeda, Tadayoshi, to Konica Corporation. Image forming apparatus with two transfer means. 5,826,143, Cl. 399-182.000.

Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, to Kansai Paint Co., Ltd. Cationic electrodepositable coating composition and coating method using the same. 5,824,424, Cl. 428-626.000.

Hänel, Heinz: *See—*
Ulbrich, Norbert; Hilgenfeld, Rolf; Hänel, Heinz; Sachse, Burkhard; Braun, Peter; Wink, Joachim; Eckes, Peter; Logemann, Jürgen; and Schell, Jozef, 5,824,874, Cl. 800-205.000.

Hanitowoc Crane Group, Inc.: *See—*
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Hanna, David Colin: *See—*
Clarkson, William Andrew; Neilson, Anthony Brian; and Hanna, David Colin, 5,825,551, Cl. 359-629.000.

Hansen, David B.: *See—*
Clark, Dean B.; Hartwig, Kenneth; Neblett, Larry L.; Zielinski, Thomas E.; and Hansen, David B., 5,823,808, Cl. 439-157.000.

Hansen, Nathaniel S.: *See—*
Ishii, Hideo; Moriguchi, Haruo; Hansen, Nathaniel S.; and Dumont, Michael R., 5,825,642, Cl. 363-141.000.

Hansen, Neils Richard Stewart, to Telegan Gas Monitoring Limited. Sample conditioning flue gas probe. 5,824,919, Cl. 73-863.230.

Hansen, William G.: *See—*
Polley, Phillip L.; and Hansen, William G., 5,823,004, Cl. 62-179.000.

Hansma, Paul K.; Schaffer, Tilman E.; and Cleveland, Jason P., to University of California, The Regents of the. Atomic force microscope for generating a small incident beam spot. 5,825,020, Cl. 250-216.000.

Hanson, George E.: *See—*
Koenck, Steven E.; Miller, Phillip; and Hanson, George E., 5,825,045, Cl. 250-566.000.

Hanyu, Yukio; Nakamura, Katsutoshi; and Ito, Nobuhiro, to Canon Kabushiki Kaisha. Liquid crystal device with a bistable chiral smectic liquid crystal having a phase transition series lacking a choleteric phase #16. 5,825,447, Cl. 349-128.000.

Hanzawa, Shinichi: *See—*
Itoigawa, Masahide; Hanzawa, Shinichi; Nonaka, Yoshitaka; Watanabe, Junichi; and Maruyama, Haruhisa, 5,824,385, Cl. 428-64.100.

Hapke, Kenyon A.; Laseke, Timothy; and Schantz, Spencer C., to U.S. Controls Corporation. Rapid release washing machine lid lock. 5,823,017, Cl. 68-12.260.

Hara, Kaoru: *See—*
Kasai, Yoshiji; Hara, Kaoru; and Aruga, Misao, 5,824,964, Cl. 174-252.000.

Hara, Shinichi; Mizusawa, Nobutoshi; and Chiba, Yuji, to Canon Kabushiki Kaisha. Mask and mask supporting mechanism. 5,825,463, Cl. 355-75.000.

Hara, Yoshihisa: *See—*
Fukuchi, Hironao; Shiina, Takanori; Nakano, Kenji; Kumagai, Katsuhiro; and Hara, Yoshihisa, 5,823,167, Cl. 723-421.000.

Harada, Daijiro; Hongo, Katsunobu; and Koura, Masato, to Mitsubishi Denki Kabushiki Kaisha. Microcomputer for emulation. 5,826,059, Cl. 395-500.000.

Harada, Kouji: *See—*
Hasebe, Keizo; Nagashima, Shinji; Semba, Norio; Akimoto, Masami; Kimura, Yoshio; Iida, Naruaki; Harada, Kouji; Ueda, Issei; and Konishi, Nobuo, 5,826,129, Cl. 396-611.000.

Haraichi, Satoshi: *See—*
Yamaguchi, Hiroshi; Hongo, Mikio; Miyauchi, Tateoki; Shimase, Akira; Haraichi, Satoshi; Takahashi, Takahiko; and Saito, Keiya, 5,824,598, Cl. 438-676.000.

Haramaty, Lior: *See—*
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Harasymiw, James W. Method for detecting alcohol consumption rates. 5,823,196, Cl. 128-898.000.

Harbison-Walker Refractories Company: *See—*
Erny, Edward L.; and Winters, William J., 5,824,263, Cl. 266-283.000.

Harding, Jennifer R.: *See—*
Phillips, Noel M.; Stiles, Tammy L.; Harding, Jennifer R.; and Lofgren, Lewis C., 5,823,348, Cl. 206-583.000.

Hardy, L. Charles: *See—*
Bommarito, Silvia L.; Chen, Kejian; Cullen, Peter F.; Hardy, L. Charles; and Lugg, Paul S., 5,825,526, Cl. 359-265.000.

Harges, Cordell Frank, Jr.; and Rivera, Bert. Firefighter glove. 5,822,796, Cl. 2-161.600.

Harges, Cordell Frank, Jr.; and Rivera, Bert. Heat and fire resistant respiratory filtration mask. 5,823,188, Cl. 128-206.190.

Harima Chemicals, Inc.: *See—*
Ohnishi, Akiyoshi; Mekada, Machiko; Hata, Noriaki; Suzuki, Hiroyuki; and Morikawa, Hiroyuki, 5,824,722, Cl. 524-99.000.

Harinariyan, Venky: *See—*
Gupta, Ashish; Harinariyan, Venky; Quass, Dallan; and Rajaraman, Anand, 5,826,258, Cl. 707-4.000.

Harker, James Riddle: *See—*
Odam, Seth Tobin; Harker, James Riddle; Ansanelli, Joseph G.; and Welde, John Linehan, Jr., 5,825,360, Cl. 345-344.000.

Harley-Davidson Motor Company: *See—*
Roark, Michael A.; Searles, James A.; Swenson, Dale R.; Downey, Phillip; and Stonecipher, Scott W., 5,823,069, Cl. 74-551.900.

Harlow, Tracy L. Wind governed sprinkler control system. 5,823,433, Cl. 239-67.000.

Harman, Jeffrey A., to Messenger Group, LLC, The. Communication package with apparatus and method for storing and retrievin g a permanent message. 5,826,235, Cl. 704-500.000.

Harmer, Mark Andrew; and Sun, Qun, to Du Pont de Nemours, E. I., and Company. Porous microcomposite of perfluorinated ion-exchange polymer and metal oxide, a network of silica, or a network of metal oxide and silica derived via a sol-gel process. 5,824,622, Cl. 502-407.000.

Harmon, Daniel Lee: *See—*
Dimatteo, Michael Anthony; Harmon, Daniel Lee; Rogakos, Deno John, deceased, 5,822,827, Cl. 15-250.203.

Harms, Christian: *See—*
Carswell, Gleta; Harms, Christian; Chang, Yin-Fu; and Chilton, Mary-Dell, 5,824,302, Cl. 424-93.210.

Harness System Technologies Research, Ltd.: *See—*
Takata, Kensaku, 5,823,815, Cl. 439-374.000.

Harpham, Lewis Freeth, to Madge Networks Limited. Electromagnetic interference isolator with common mode choke. 5,825,259, Cl. 333-22.00R.

Harren, Ernst-Diethelm; and Bangert, Christian. Process and device for bringing into alignment the strings of an interlaced network. 5,823,900, Cl. 473-553.000.

Harris Corporation: *See—*
Delgado, Jose Avelino; and Gaul, Stephen Joseph, 5,825,092, Cl. 257-778.000.
Giannatto, Carl J.; and Cornish, Kevin C., 5,825,621, Cl. 361-701.000.

Harris, David C.; Markelz, Aimee J.; and Bain, Charles E., to Sterling Plastics Co. Desktop vertical file assembly. 5,823,359, Cl. 211-11.000.

Harris, Don. Solar water heating panel attachment device. 5,823,176, Cl. 126-624.000.

Harris, Harold Robert: *See—*
Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Grey, Ian Edward; Houchin, Martin Richard; McDonald, Kenneth John; Sparrow, Graham Jeffrey; Hart, Kaye Patricia; and Harris, Harold Robert, 5,826,162, Cl. 423-20.000.

Harris, Ian Fraser: *See—*
Burstein, Steven; Smalley, Kenneth George; and Harris, Ian Fraser, 5,826,105, Cl. 395-842.000.

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Miyai, Tsuyoshi; Makio, Satoshi; Furukawa, Yasunori; and Sato, Masayoshi, 5,825,793, Cl. 372-33.000.
Hitachi Powdered Metals Co., Ltd.: *See—*
Aonuma, Koichi; Aoki, Yoshimasa; and Hayashi, Koichiro, 5,824,922, Cl. 75-236.000.
Hitachi Seiko Ltd.: *See—*
Mita, Tsuneo; Shinada, Tsuneo; and Matsui, Hitoshi, 5,824,991, Cl. 219-130.510.
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Ito, Toshiya; Takano, Kosuke; Ito, Hiromichi; and Mori, Mitsuru, 5,826,016, Cl. 395-188.010.
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Ogata, Yasuhiro; Nakagoshi, Junji; Hamanaka, Naoki; Chiba, Hiroyuki; Shutoh, Shinichi; Higuchi, Tatsuo; Takeuchi, Shigeo; Toba, Taturu; and Tanaka, Teruo, 5,826,049, Cl. 395-311.000.
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Hitchcock, J. C., Jr., to Combustion Engineering, Inc. Steam generator steam drum mounting. 5,823,147, Cl. 122-510.000.
Hitchcock, William A.; and Allen, Robert C., to Electronic Data Systems Coporation. Electronic mentor training system and method. 5,823,781, Cl. 434-118.000.
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Lyons, Christopher T.; and Taskin, Ismail, 5,826,216, Cl. 702-143.000.
Hiyokawa, Toyoji; Nimura, Mitsuhiro; and Ito, Yasunobu, to Aisin AW Co., Ltd. Navigation system for vehicles. 5,825,306, Cl. 340-988.000.
Hiyoshi, Toru; Mine, Toshiki; Kasaoka, Keisuke; Tyson, Robert Huw; and Page, Anthony Miles John, to Japan Tobacco Inc. DNA encoding ATP-dependent fructose 6-phosphate 1-phosphotransferase originating from plant, recombinant vector containing the same and method for changing sugar content in plant cells under low temperature. 5,824,862, Cl. 800-205.000.
HNA Holdings, Inc.: *See—*
Forschirm, Alex; and Howard, James, 5,822,868, Cl. 30-340.000.
Ho, Chung-Jen: *See—*
Macrae, Kenneth I.; Ting, Annsheng C.; Edholm, Ragnar W.; Worth, Erik; Sigmon, Robert B., Jr.; Matsumoto, Toshikazu; and Ho, Chung-Jen, 5,826,237, Cl. 705-2.000.
Ho, Horace C.: *See—*
Knapp, David J.; and Ho, Horace C., 5,826,072, Cl. 395-567.000.
Ho, James B.: *See—*
Tso, Vincent S.; and Ho, James B., 5,825,166, Cl. 323-299.000.
Ho, Seng-Tiong; Chu, Daniel Yen; Zhang, Jian-Ping; and Wu, Shengli, to Northwestern University. Microcavity semiconductor laser. 5,825,799, Cl. 372-92.000.
Ho, Tin Kam: *See—*
Baird, Henry Spalding; and Ho, Tin Kam, 5,825,925, Cl. 382-225.000.
Hoar, David L.; Mersereau, Ronald G.; and Welton, Larry A., to Central Mechanical Ltd. Utility vehicle. 5,823,284, Cl. 180-240.000.
Hoare, David J; Alobaidi, Imad M; and Ghataora, Gurmel Singh, to University of Birmingham, The. Pavements. 5,823,706, Cl. 404-28.000.
Hobbs, Peter D.: *See—*
Pfahl, Magnus; Zhang, Xiao-kun; Lehmann, Jürgen M.; Dawson, Marcia I.; Cameron, James F.; Hobbs, Peter D.; and Jong, Ling, 5,824,484, Cl. 435-7.100.
Hobdy, Miles A.: *See—*
Boatman, L. Terry; and Hobdy, Miles A., 5,823,837, Cl. 441-5.000.
Hobson, Gregory; and Wootton, John R., to Esco Electronics Corporation. Video detection apparatus for monitoring a railroad crossing. 5,825,412, Cl. 348-149.000.
Hodgen, Gary D., to Medical College of Hampton Roads, The. Mammography method. 5,824,286, Cl. 424-9.100.
Hodges, Brian A.: *See—*
Bolduc, Lee; Kramer, Thomas A.; Hodges, Brian A.; McCoy, Tim; and Lunsford, John, 5,824,008, Cl. 606-43.000.
Hodges, Robert S.: *See—*
Houston, Michael E., Jr.; and Hodges, Robert S., 5,824,483, Cl. 435-7.100.
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Archer, Michael Anthony; Hodgetts, Paul; Mannerfelt, Carl; and Larsson, Johan, 5,825,216, Cl. 327-110.000.
Hodjat, Yahya; and Kutzscher, Michael H., to Gates Corporation, The. Renforced hub, pulley. 5,823,904, Cl. 474-170.000.
Hodogaya Chemical Co., Ltd.: *See—*
Akai, Minoru; Suda, Itsuo; Nonomura, Katsumi; and Arai, Kumiko, 5,824,118, Cl. 8-662.000.
Hoebener, Karl Grant; Hubacher, Eric Max; and Partridge, Julian Peter, to International Business Machines Corporation; and Motorola, Inc. Print circuit board product with stencil controlled fine pitch solder formation for fine and coarse pitch component attachment. 5,825,629, Cl. 361-777.000.
Hoechst Aktiengesellschaft: *See—*
Gscheidmeier, Manfred; Häberlein, Harald, deceased; Häberlein, by Hans Harald; Häberlein, by Jörg Thomas; and Häberlein, by Mark Christian, 5,826,202, Cl. 585-356.000.
Stache, Ulrich; Alpermann, Hans-Georg; and Bohn, Manfred, 5,824,670, Cl. 514-177.000.

Ulbrich, Norbert; Hilgenfeld, Rolf; Hänel, Heinz; Sachse, Burkhard; Braun, Peter; Wink, Joachim; Eckes, Peter; Logemann, Jürgen; and Schell, Jozef, 5,824,874, Cl. 800-205.000.
Hoechst Celanese Corporation: *See—*
Gupta, Balaram B.; Auerbach, Andrew B.; and Davies, Barrie L., 5,824,767, Cl. 528-387.000.
Peng, Wei-Jen; Ramos, Humberto, Jr.; and Aguilar, Daniel A., 5,824,288, Cl. 424-9.400.
Hoechst Marion Roussel Inc.: *See—*
Burkholder, Timothy P.; Kudlacz, Elizabeth M.; Le, Tieu-Binh; and Maynard, George D., 5,824,690, Cl. 546-202.000.
Hoecker, Harald: *See—*
Lansink-Rotgerink, Hermanus; Hoecker, Harald; Wieland, Stefan; Seebald, Steffen; and Riedemann, Heike, 5,824,825, Cl. 568-898.000.
Hoehne, Hans Juergen: *See—*
Mista, Kresimir; and Hoehne, Hans Juergen, 5,824,959, Cl. 174-117.00F.
Hoenisch, Herb; Kern, Robert D.; Ruehlow, Gerald C.; and Sodemann, Wes, to Generac Portable Products, LLC. Adapter for mechanically coupling a pump and a prime mover. 5,823,752, Cl. 417-363.000.
Hoesch Metall + Kunststoffwerk GmbH: *See—*
Esser, Hans-Peter, 5,822,808, Cl. 4-541.100.
Hoffer, Joaquin Andreas; Chen, Yunquan; Strange, Kevin D.; and Christensen, Paul Richard, to Simon Fraser University. Nerve cuff having one or more isolated chambers. 5,824,027, Cl. 607-118.000.
Hoffman, Kirk D.; Ferrantelli, Joe; and Huizenger, Robert, to Coin Mechanisms, Inc. Coin detector and identifier apparatus and method. 5,823,315, Cl. 194-203.000.
Hoffman-La Roche Inc.: *See—*
Häsler, Walter; Ji, Yu-Hua; and Leupin, Werner, 5,824,698, Cl. 514-394.000.
Hoffman, Roger J.: *See—*
Janssen, Robert A.; Heyl, Barbara L.; Hoffman, Roger J.; and Shank, Thomas E., 5,824,276, Cl. 422-292.000.
Hoffmann, Kurt; and Maucher, Franz, to Schwabische Huttenwerke GmbH. Housing arrangement for an external rotar driven lubricating pump. 5,823,750, Cl. 417-310.000.
Hoffmann, Peter; and Knabe, Gerald, to Q-Team Dr. Knabe Gesellschaft für Informations-und Qualifikations-systeme mbH. Method and apparatus for generating and reproducing of compressed colored video scenes. 5,825,918, Cl. 382-166.000.
Hofmann, Kathryn J.: *See—*
Chen, Howard Y.; Hofmann, Kathryn J.; Van Der Ploeg, Leonardus H. T.; Shaw, Alan R.; Trumbauer, Myrna E.; and Zheng, Hui, 5,824,837, Cl. 800-2.000.
Hofvander, Per: *See—*
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Hog, Norbert; Pientka, Rainer; Meier, Hans; Riehl, Guenther; and Blitzke, Henry, to Robert Bosch GmbH. Circuit arrangement, particularly for a wiper arrangement for motor vehicle windshields. 5,825,148, Cl. 318-443.000.
Hogan, Howard D. Air freshner device. 5,823,432, Cl. 239-36.000.
Hoge, Wolfgang: *See—*
Petrakis, Jordanis; Hoge, Wolfgang; Leenaerts, Torsten; Alfenaar, Marinus; and Nieuwkamp, Johannes G. M., 5,824,400, Cl. 428-218.000.
Hogendijk, Michael: *See—*
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Khosravi, Farhad; Hogendijk, Michael; and Ross, Michael R., 5,824,053, Cl. 623-1.000.
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Hogue, William: *See—*
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Hohmuth, Andrea: *See—*
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Hojo, Hiroshi. Method of modifying keratin fiber. 5,824,113, Cl. 8-128.300.
Holcombe, Donald Marvin: *See—*
Keyser, Gene E.; and Holcombe, Donald Marvin, 5,824,222, Cl. 210-607.000.
Holden, Irving Harold, deceased (by Virginia Holden, legal representative): *See—*
Mooney, Charles W.; McKee, John M.; Holden, Irving Harold, deceased; and Brinkley, Gerald Eugene, 5,825,297, Cl. 340-825.460.
Holden, Thomas J., to Strongarm Designs, Inc. Tilting display with cabinet seal. 5,825,613, Cl. 361-681.000.
Holden, Virginia, legal representative: *See—*
Mooney, Charles W.; McKee, John M.; Holden, Irving Harold, deceased; and Brinkley, Gerald Eugene, 5,825,297, Cl. 340-825.460.
Holden's Foundation Seeds, Inc.: *See—*
Geadelmann, Jon, 5,824,843, Cl. 800-200.000.
Hollander, Milton Bernard; and McKinley, William Earl, to Omega Engineering, Inc. Light source aiming system and method for hand-held temperature measuring unit. 5,823,678, Cl. 374-121.000.
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Hollis, J. Marcus: *See—*
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Holm, Niels Erik; and Edwardson, Peter A. D., to E.R. Squibb & Sons, Inc. Method and device for separating a component such as fibrin I from blood plasma. 5,824,230, Cl. 210-749.000.
Holmes, Keith A.: *See—*
Barnard, Steven W.; and Holmes, Keith A., 5,823,484, Cl. 248-72.000.
Holmes, Lester, to Chromcraft/Revington Company. Arm and back attachment. 5,823,625, Cl. 297-411.440.
Holmquist, Roland, to JELTEC Ergonomiteknik AB. Vertically adjustable desktop, preferably a school desk. 5,823,120, Cl. 108-147.000.
Holshausen, Nicholas Hugo, to Technology Finance Corporation (Proprietary) Limited. Electrical cable containment. 5,824,957, Cl. 174-95.000.
Holt, Earl R., to Hose Specialties/Capri, Inc. Recirculating paint system having improved fluid coupling assemblies. 5,823,438, Cl. 239-127.000.
Holtek Micro Electronics, Inc.: *See—*
Wu, Chi-Yung; and Wu, Rong-Tyan, 5,825,859, Cl. 379-131.000.
Holtek Microelectronics, Inc.: *See—*
Shiau, Juh-Gua, 5,823,871, Cl. 463-1.000.
Holton, Carvel E.: *See—*
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Holz, Peter: *See—*
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Hölzer, Wolfgang; von Hoegen, Ilka; Strittmatter, Wolfgang; and Matzku, Siegfried, to Merck Patent Gesellschaft mit Beschrankter Haftung. Immunoconjugates II. 5,824,782, Cl. 530-391.100.
Holzmann, Gerard Johan, to Lucent Technologies. Apparatus and method for communicating data between elements of a distributed system using a general protocol. 5,826,017, Cl. 395-200.600.
Homan, Gary Rex: *See—*
Bujanowski, Valerie Joy; Glover, Shedric Oneal; Perz, Susan Victoria; Ziemelis, Maris Jazeps; Homan, Gary Rex; and Skinner, Michael Ward, 5,824,761, Cl. 528-25.000.
Home Co., Ltd.: *See—*
Goto, Yasuo, 5,823,701, Cl. 403-268.000.
Hon Hai Precision Ind. Co., Ltd.: *See—*
Tan, Haw-Chan; Lok, Gordon; and Yeh, Joel J., 5,823,822, Cl. 439-541.500.
Honbou, Shinichi: *See—*
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Honda Engineering North America: *See—*
Nagamitsu, Tatsuo; and Dye, Robert Duane, 5,823,518, Cl. 267-291.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Fukuchi, Hironao; Shiina, Takanori; Nakano, Kenji; Kumagai, Katsuhiro; and Hara, Yoshihisa, 5,823,167, Cl. 723-421.000.
Ishihara, Satoshi; and Kuwabara, Yukishige, 5,823,286, Cl. 180-309.000.
Kudoh, Hiroshi; Tohya, Kenichi; and Urabe, Masanobu, 5,825,333, Cl. 343-781.00R.
Matsumoto, Yoshiyuki, 5,826,233, Cl. 704-275.000.
Nagai, Takaaki, 5,826,212, Cl. 701-208.000.
Honda, Yasuaki, to Sony Corporation. Cyberspace system for accessing virtual reality objects. 5,826,266, Cl. 707-9.000.
Honegger, Roger: *See—*
Seidel, Randy R.; Bush, Lawrence; Cohen, Neal; Davenport, Gary L.; Silva, Robert M.; and Honegger, Roger, 5,823,320, Cl. 198-803.500.
Honeywell Inc.: *See—*
Konar, Ahmet Ferit; and Samad, Tariq, 5,825,645, Cl. 364-148.000.
Silvent, Therese M.; Golec, Valentine W.; and Godziela, James T., 5,825,358, Cl. 345-340.000.
Troxel, James R.; and Schwerman, Paul W., 5,825,827, Cl. 375-296.000.
Hong, Chan-Ook, to LG Industrial Systems Co., Ltd. Speed control apparatus for compensating vibration of elevator. 5,824,975, Cl. 187-292.600.
Hong, Jeonge, to LG Semicon Co., Ltd. Method of forming contact hole plug. 5,824,597, Cl. 438-625.000.
Hong Kong University of Science & Technology, The: *See—*
Cai, Lilong; and Zhang, Jihua, 5,825,023, Cl. 250-237.00G.
Hong, Young-Taik: *See—*
Choi, Kil-Yeong; Yi, Mi-Hie; Jin, Moon-Young; and Hong, Young-Taik, 5,824,766, Cl. 528-350.000.
Hongo, Hideyuki: *See—*
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Hongo, Katsunobu: *See—*
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Hongo, Mikio: *See—*
Yamaguchi, Hiroshi; Hongo, Mikio; Miyauchi, Tateoki; Shimase, Akira; Haraichi, Satoshi; Takahashi, Takahiko; and Saito, Keiya, 5,824,598, Cl. 438-676.000.
Honjo, Masaru; Naito, Naokazu; and Uchida, Hiroshi, to Mitsui Chemicals, Inc. Method for secretory production of protein. 5,824,502, Cl. 435-69.100.
Honma, Masatoshi: *See—*
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Honsberg, Günter: *See—*
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Hood, Elizabeth: *See—*
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Hood, William A.; Van Maaren, Alfred L.; and Walker, Ryan G., to Vermeer Manufacturing Co. Baler with swing arm bale wrapper. 5,822,967, Cl. 56-341.000.

Hoopengardner, Merle R., to Step Loc Corporation. Carpet seaming tape and method. 5,824,175, Cl. 156-229.000.

Hooworth, Allan James: *See—*
Mayer, Gerhard Joachim; and Hooworth, Allan James, 5,823,407, Cl. 223-85.000.

Hopf, Jochen: *See—*
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Höpfl, Markus: *See—*
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Hopper, Philip K.: *See—*
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Hopson, Michael W., to Ford Motor Company. Constant velocity joint with reactive cage. 5,823,883, Cl. 464-145.000.

Horan, Kevin Michael: *See—*
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Horeis, Kai: *See—*
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Hori, Hidetaka: *See—*
Ohba, Michio; Iwahana, Hidenori; Sato, Ryoichi; Suzuki, Nobukazu; Ogiwara, Katsutoshi; Sakanaka, Kazunobu; Hori, Hidetaka; Asano, Shouji; and Kawasugi, Tadaaki, 5,824,878, Cl. 800-205.000.

Hori, Masashi; Sakaegi, Yuji; Nakazato, Saburo; and Horiuchi, Izuru, to Canon Kabushiki Kaisha. Image pickup apparatus. 5,825,511, Cl. 358-486.000.

Hori, Shuji; Kawabata, Kei; and Maruyama, June, to Komatsu, Ltd. Hydraulic pilot valve. 5,823,227, Cl. 137-636.100.

Hori, Takashi; Kumagai, Hitoshi; Hasegawa, Mitsuharu; Sato, Yoko; Munakata, Hiroshi; and Sugawa, Yoshihiro, to Cosmo Research Institute; and Cosmo Oil Co., Ltd. Cyclic phenol sulfide and process for producing the same. 5,824,808, Cl. 549-1.000.

Hori, Yoji; Takahashi, Yoko; Hongo, Hideyuki; Yamaguchi, Akio; and Hagiwara, Toshimitsu, to Takasago Koryo Kogyo Kabushiki Kaisha (Takasago International Corporation). Biodegradable high molecular composition. 5,824,751, Cl. 525-450.000.

Horibe, Kyoichi: *See—*
Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, 5,824,424, Cl. 428-626.000.

Horie, Mikio: *See—*
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Horie, Takeshi: *See—*
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Horiguchi, Masashi: *See—*
Sakata, Takeshi; Itoh, Kiyoo; and Horiguchi, Masashi, 5,825,198, Cl. 326-34.000.

Horii, Shinichi; and Tokunaga, Hiroshi, to Sony Corporation. Developing device employing a liquid developer and picture forming device having such developing device. 5,826,149, Cl. 399-240.000.

Horikawa, Jun-ichi: *See—*
Kobayashi, Masato; Moroishi, Keiji; Horikawa, Jun-ichi; and Nozawa, Osamu, 5,824,427, Cl. 428-694.0TS.

Horinaka, Hajime: *See—*
Abe, Shingo; Inui, Tetsuya; Matoba, Hirotsugu; Hirata, Susumu; Kimura, Masaharu; Ishii, Yorishige; Horinaka, Hajime; and Onda, Hiroshi, 5,825,383, Cl. 347-54.000.

Horiuchi, Izuru: *See—*
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Horn, Ronald Dean: *See—*
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Horn, Terry Dean; Horn, Ronald Dean; Glaze, Bradley S.; and Warner, Kenneth R., to H&H Eco Systems, Inc. Method for accelerated remediation and method of using an apparatus therefor. 5,824,541, Cl. 435-262.500.

Hörnell, Ake; and Palmer, Stephen. Liquid crystal welding glass shields having improved optical angular properties. 5,825,441, Cl. 349-77.000.

Horvat, Stephen G., to Albemarle Corporation. Brominated tetrabromophthalate ester flame retardants flame retardant polymer compostions. 5,824,241, Cl. 252-609.000.

Horwitz, Marshall S.; and Loeb, Lawrence A., to University of Washington. Method for producing novel DNA sequences with biological activity. 5,824,469, Cl. 435-6.000.

Horwitz, Steven A., to White Consolidated Industries, Inc. Exhaust air particulate contamination sensing for tumbler dryers. 5,822,883, Cl. 34-494.000.

Hose Specialties/Capri, Inc.: *See—*
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Hoshi, Hiroaki, to Canon Kabushiki Kaisha. Multi-eye image display apparatus. 5,825,539, Cl. 359-462.000.

Hoshi, Koichi, to Toyota Jidosha Kabushiki Kaisha. Intake air-flow control device for an internal combustion engine. 5,823,163, Cl. 123-336.000.

Hoshino, Eiichi: *See—*
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Hosokawa, Hiroshi: *See—*
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Hosomi, Eiichi; Takubo, Chiaki; Tazawa, Hiroshi; and Shibasaki, Koji, to Kabushiki Kaisha Toshiba. Tape carrier and assembly structure thereof. 5,825,081, Cl. 257-668.000.

Hosoya, Akifumi, to Denso Corporation. Starter with separating wall having slanting portion. 5,823,047, Cl. 74-7.00E.

Hotelling, Steven Porter: *See—*
Case, Charles Whipple, Jr.; Hovden, Torbjorn; Smith, Gregory Clark; Hotelling, Steven Porter; and Sabina, Michael Kenneth, 5,825,350, Cl. 345-163.000.

Hotta, Yutaka: *See—*
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Hotz, Steven M.: *See—*
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Hou, Jason: *See—*
Jeng, Terry; Wu, Chuan-Yu; and Hou, Jason, 5,825,710, Cl. 365-230.030.

Houchin, Martin Richard: *See—*
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Houda, James D.: *See—*
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Houghton, Matthew A.: *See—*
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Houle, Frances Anne: *See—*
Hinsberg, William Dinan, III; and Houle, Frances Anne, 5,826,065, Cl. 395-500.000.

Housand, Raymond W., Sr. Apparatus for introducing combustion supporting particles to an internal combustion engine. 5,823,148, Cl. 123-1.00A.

Housley, Regina Mae: *See—*
Pierce, Glenn Francis; Housley, Regina Mae; and Morris, Charles Frederick, 5,824,643, Cl. 514-12.000.

Houssiau, Frédéric: *See—*
Damme, Jo Van; Proost, Paul; Houssiau, Frédéric; and Renauld, Jean-Christophe, 5,824,551, Cl. 435-375.000.

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McConnell, Howard T.; and Whitworth, Robert D., 5,823,260, Cl. 166-230.000.

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Omura, Jimmy K.; Yang, Paul T.; Khachatrian, Gurgen H.; Nikogossian, Karen M.; Hovakimian, Karen S.; and Vartapetian, Armen L., 5,825,810, Cl. 375-200.000.

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Case, Charles Whipple, Jr.; Hovden, Torbjorn; Smith, Gregory Clark; Hotelling, Steven Porter; and Sabina, Michael Kenneth, 5,825,350, Cl. 345-163.000.

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Salmon, Michael E.; Ehle, David L.; and Hovis, Jeffrey G., 5,825,338, Cl. 345-7.000.

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Forschirm, Alex; and Howard, James, 5,822,868, Cl. 30-340.000.

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Albertsen, Marc C.; Beach, Larry R.; Howard, John; and Huffman, Gary A., 5,824,524, Cl. 435-172.300.

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Baszczynski, Chris; Czapla, Thomas; Hood, Elizabeth; Meyer, Terry EuClaire; Peterson, David; Rao, A. Gururaj; Register, James C., III; Witcher, Derrick; and Howard, John A., 5,824,870, Cl. 800-205.000.

Howe, Thomas; and Schütz, Berndt, to Mercedes-Benz AG. Vibration dampening mounting arrangement for supporting a component on an internal combustion engine. 5,823,514, Cl. 267-130.000.

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Mandel, Barry P.; Daughton, John W.; Rizzolo, Charles D.; Hower, John D., Jr.; and Walker, Don S., 5,823,529, Cl. 271-296.000.

Howmedica, Inc.: *See—*
Tunc, Deger C., 5,824,247, Cl. 264-135.000.
Williams, Welcome H., 5,824,103, Cl. 623-20.000.

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Shook, C. David; and Hoy, David J., 5,823,195, Cl. 128-893.000.

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Kobayashi, Masato; Moroishi, Keiji; Horikawa, Jun-ichi; and Nozawa, Osamu, 5,824,427, Cl. 428-694.0TS.
Yamakaji, Tetsuma; Qi, Hua; and Minato, Atsuo, 5,825,454, Cl. 351-159.000.
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Tuttle, John R.; Hoyt, Eugene P.; and Springett, James C., 5,825,806, Cl. 375-200.000.

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Johnson, Glenn W.; and Hozman, Nelson D., 5,825,559, Cl. 359-819.000.

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Hsia, Jen-Chang. Compositions and methods utilizing nitroxides in combination with biocompatible macromolecules. 5,824,781, Cl. 530-385.000.

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Corazzi, Gloria; Oliveira, Igor; Lam, Hon-Ming; and Hsieh, Ming-Hsiun, 5,824,867, Cl. 800-205.000.

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Hsu, Yuan-Shun. Automatic lighting control device for a decorative light string. 5,823,660, Cl. 362-276.000.

Hu, Yu Kuang. Magnet assembly. 5,825,271, Cl. 335-285.000.

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Bathrick, Erwin W.; Garber, John W.; Huang, Cheng-Chi; Kung, Kenneth C.; Matthews, Todd E.; Zmuda, James E.; and Matthews, Regina L., 5,825,300, Cl. 340-825.330.

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Sudia, Frank W.; Freund, Peter C.; and Huang, Stuart T.F., 5,825,880, Cl. 380-21.000.

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Ruth, Ronald D.; and Huang, Zhirong, 5,825,847, Cl. 378-119.000.

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Hoebener, Karl Grant; Hubacher, Eric Max; and Partridge, Julian Peter, 5,825,629, Cl. 361-777.000.

Hubbard, Jack E.: *See—*
Forrest, Bradley A.; and Hubbard, Jack E., 5,823,590, Cl. 294-19.100.

Hubbell Incorporated: *See—*
Demshki, Robert J., Jr.; and Thornton, Gerry F., 5,823,664, Cl. 362-366.000.
Gadsby, Winston M.; and Davis, Jeffery M., 5,825,781, Cl. 370-525.000.
Nuckolls, Joe Allen; and Lin, Lily Li, 5,825,139, Cl. 315-307.000.

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Huber, David R. Optical demultiplexers with grating reflectors. 5,825,520, Cl. 359-130.000.

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Huberman, Bernardo A., to Xerox Corporation. Method and system for providing a document service over a computer network using an automated brokered auction. 5,826,244, Cl. 705-37.000.

Huddleston, Richard E., Jr., to Advanced Micro Devices, Inc. Weld assembly purge restrictor. 5,824,983, Cl. 219-61.000.

Hudson, Guy F., to Micron Technology, Inc. Quality control method for detecting defective polishing pads used in planarization of semiconductor wafers. 5,825,028, Cl. 250-302.000.

Hudson, Leo D.: *See—*
Dobson, Richard M.; Herndon, Jefferey D.; and Hudson, Leo D., 5,823,254, Cl. 166-51.000.

Huebner, Randall J., to Johnson & Johnson Professional, Inc. Bipolar acetabular cup. 5,824,108, Cl. 623-22.000.

Huetten, Andreas R.: *See—*
Bernardi, Johannes J.; Thomas, Gareth; and Huetten, Andreas R., 5,824,165, Cl. 148-313.000.

Huffman, Gary A.: *See—*
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Huffman, John W.: *See—*
Wadley, Don K.; Huffman, John W.; and Mui, Paul K., 5,825,401, Cl. 347-247.000.

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Bathrick, Erwin W.; Garber, John W.; Huang, Cheng-Chi; Kung, Kenneth C.; Matthews, Todd E.; Zmuda, James E.; and Matthews, Regina L., 5,825,300, Cl. 340-825.330.

Hughes Aircraft Company now known as Ragtheon Company: *See—*
Chen, Chungte W., 5,825,553, Cl. 359-643.000.

Hughes Electronics: *See—*
Chao, Sidney C.; and Purer, Edna M., 5,822,818, Cl. 8-158.000.

Hughes Electronics Corporation: *See—*
Caplin, Glenn N., 5,823,476, Cl. 244-158.00R.
Echeita, Richard J.; and Yokers, James E., 5,826,165, Cl. 455-2.000.
Williamson, Weldon S.; Dolezal, Franklin A.; Sorbo, Nelson W.; and Wang, John H. S., 5,822,981, Cl. 60-275.000.
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Bennett, Curtis; Berkery, Dan; Chinnasamy, Shanmugam; Daugherty, Jay; Hughes, John C.; Lippmann, Rob; Nagar, Niranjan; Park, Ronald K.; and Sharma, Ankur, 5,826,085, Cl. 395-683.000.

Hughes, John Raymond: *See—*
Ritter, Ann Melinda; Hughes, John Raymond; Jackson, Melvin Robert; Kirkpatrick, Francis Lawrence; Cunha, Francisco Jose Tenreiro; Abuaf, Nesim; and Bunker, Ronald Scott, 5,822,853, Cl. 29-890.010.

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Hughes, Martin John Glenton: *See—*
Andrews, David W.; Hughes, Martin John Glenton; and Vassilakos, Akaterini, 5,824,497, Cl. 435-69.100.

Hughes, Morgan M.: *See—*
Penfold, John; Hughes, Morgan M.; Cree, Stephen Henry; and Brann, Jeffery E., 5,824,718, Cl. 522-120.000.

Hughey, Barbara J.: *See—*
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Huitema, Thomas; Nuchols, Richard P.; and Knodel, Bryan D., to Ethicon Endo-Surgery, Inc. Articulation transmission mechanism for surgical instruments. 5,823,066, Cl. 74-527.000.

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Huijzer, Arie; and Boer, Andre H., to Krohne A.G. Volumetric flow meter. 5,824,915, Cl. 73-861.270.

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Hulse, Kelly James: *See—*
Detwiler, Peter Mead; White, Andrew Burton; and Hulse, Kelly James, 5,825,814, Cl. 375-219.000.

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Kleeman, Axel; Baltruschat, Helmut Siegfried; and Hülsen, Thelka, 5,824,624, Cl. 504-242.000.

Humberstone, Victor Carey; and Sant, Andrew Jonathan, to Technology Partnership PLC, The. Liquid spray apparatus and method. 5,823,428, Cl. 239-4.000.

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Hunt, Devlin A.: *See—*

Bennett, David E.; Hunt, Devlin A.; and Roche, Ronald H., 5,823,446, Cl. 239-585.100.

Hunter, Gregory: *See—*
Bertrand, John E.; Mercer, Lee A.; Burchard, Thomas H.; Hunter, Gregory; Lofgren, John; Wagner, Henry N.; Johnson, Kevin M.; and Karg, Jeffery, 5,823,229, Cl. 137-614.200.

Hunter Industries, Incorporated: *See—*
Clark, Mike, 5,823,440, Cl. 239-206.000.
Hunter, Richard E.; and Danner, Fred M., 5,823,439, Cl. 239-205.000.

Hunter, Ken: *See—*
DeVito, Jonathan; Garland, Harry; Hunter, Ken; May, Gerald A.; and Roberts, Michael G., 5,825,943, Cl. 382-306.000.

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Hurley, Michael D.: *See—*
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Hurr, Hellmut: *See—*
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Hurst, Gerald D.: *See—*
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Hemstreet, George P., III; Hurst, Robert E.; and Bonner, Rebecca B., 5,824,495, Cl. 435-40.500.

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Larson, James A; Boss, Scott; Veeramoney, Murali; Rosenweig, Mike; Hurwitz, Roger; Colville, Scott; and Raman, T. V., 5,825,854, Cl. 379-67.000.

Hushy, Harald Snorre: *See—*
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Hussey, Peter, to Microsoft Corporation. Electronic mail interface for a network server. 5,826,269, Cl. 707-10.000.

Hussey, Robert M.: *See—*
Longacre, Andrew, Jr., Hüssey, Robert M.; Ehrhart, Michael A.; and Koziol, Thomas J., 5,825,006, Cl. 235-462.000.

Hutchins, David A.: *See—*
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Hutchins, Robert Allen; Jaquette, Glen Alan; and Clark, Alan Robert, to International Business Machines Corporation. Configurable read detection channel and method for decoding data stored within a data storage medium. 5,825,744, Cl. 369-124.000.

Hutchinson, Franklin D.: *See—*
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Hutchison, Robert J.: *See—*
Zavislan, James M.; Eastman, Jay M.; and Hutchison, Robert J., 5,825,486, Cl. 356-326.000.

Hutter, Louis N.: *See—*
Corsi, Marco; Hutter, Louis N.; and Erdeljac, John P., 5,825,065, Cl. 257-328.000.

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Hutton, Richard W.: *See—*
Bornhorst, James M.; and Hutton, Richard W., 5,825,548, Cl. 359-578.000.

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Hwang, Cheol-sung, to Samsung Electronics Co., Ltd. Method for forming lower electrode of capacitor. 5,824,563, Cl. 438-3.000.

Hwang, In-Wook; and Park, Jeong-Ho, to Samsung Electronics Co., Ltd. Multi-session disc and a high-speed access method thereto. 5,825,726, Cl. 369-32.000.

Hyal Pharmaceutical Corporation: *See—*
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Hydrocool Pty Limited: *See—*
Attey, Graeme Scott, 5,822,993, Cl. 62-3.700.

Hygrama AG: *See—*
Frisch, Herbert, 5,823,088, Cl. 91-1.000.

Hynnek, Pamela K.: *See—*
Li, Alfred C.; Hynnek, Pamela K.; Alfano, James P.; Lan, Xuekui; and Becker, Rex A., 5,824,369, Cl. 427-345.000.

Hyperform Technologies, Inc.: *See—*
Nefepovitz, Donald O., 5,823,034, Cl. 72-60.000.

Hyundai Electronic Industries, Co., Ltd.: *See—*
Oh, Jong Hoon, 5,825,235, Cl. 327-408.000.

Hyundai Motor Company: *See—*
Kim, Jeong-Gi, 5,823,408, Cl. 224-42.210.
Kim, Sungjai, 5,823,587, Cl. 293-150.000.
Park, Jong-Sul, 5,823,910, Cl. 475-271.000.

i f m electronic gmbh: *See—*
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I Mar Planning Inc.: *See—*
Izume, Masayuki, 5,823,110, Cl. 101-352.091.

Iba, Yoichi: *See—*
Tabata, Seiichiro; and Iba, Yoichi, 5,825,456, Cl. 351-201.000.

Ibamoto, Masahiko: *See—*
Kuroiwa, Hiroshi; Ibamoto, Masahiko; Sato, Kazuhiko; Okada, Mitsuyoshi; and Shida, Masami, 5,826,208, Cl. 701-54.000.

IC Sensors, Inc.: *See—*
Jerman, John H., 5,824,204, Cl. 204-601.000.

Ichibangase, Atsushi; and Ogawa, Masahiro, to Kabushiki Kaisha Yaskawa Denki. Lead wire processing device for industrial robot. 5,823,060, Cl. 74-490.020.

Ichikawa, Hiroshi; Takeda, Michio; Sakamoto, Junichi; and Saeki, Akinori, to Nippon Carbon Co., Ltd. Process for producing silicon carbide fibers. 5,824,281, Cl. 423-345.000.

Ichikawa, Masaaki: *See—*
Nagase, Haruo; Ichikawa, Masaaki; Hamada, Hideki; Kato, Nobuo; Ono, Tomoyuki; and Kimura, Yasuhiro, 5,823,806, Cl. 439-140.000.

Ichikawa, Shigeru, to Kabushiki Kaisha Shinkawa. Bonding tool. 5,823,419, Cl. 228-55.000.

Ichikawa, Shigeru: *See—*
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Ichinose, Harunobu: *See—*
Kino, Yoshiki; Kaneda, Naoya; Matsuda, Kazuya; Iwasaki, Youichi; Wada, Hiroyuki; Takashima, Tsuneo; and Ichinose, Harunobu, 5,825,545, Cl. 359-557.000.

Ichizawa, Nobuyuki; and Hashimoto, Ken, to Fuji Xerox Co., Ltd. Ink-jet recording head cleaning method and cleaning cartridge therefor. 5,825,380, Cl. 347-28.000.

Idemitsu Kosan Co., Ltd.: *See—*
Naganuma, Shoji; and Tomotsu, Norio, 5,824,753, Cl. 526-82.000.

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Gotoh, Shuichi; and Yamashita, Yukio, 5,824,392, Cl. 428-178.000.
Shiraki, Yasushi; and Matsui, Junshi, 5,824,831, Cl. 585-444.000.

Identix Corporation: *See—*
Maase, Daniel Frederick, 5,825,474, Cl. 356-71.000.

Idogaki, Takaharu: *See—*
Matsumoto, Naoki; Otsuka, Manabu; Ogusu, Koji; and Idogaki, Takaharu, 5,825,149, Cl. 318-587.000.

IFM Electronic GmbH: *See—*
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Igarashi, Miwa: *See—*
Nozaki, Koji; Yano, Ei; Watanabe, Keiji; Namiki, Takahisa; Igarashi, Miwa; and Kuramitsu, Yoko, 5,824,452, Cl. 430-313.000.

Igarashi, Tatsuya; and Teranishi, Katsuyuki, to Sony Corporation. Recording medium management method. 5,825,734, Cl. 369-58.000.

Igel, Gunter; and Mall, Martin, to Deutsche ITT Industries GmbH. Method of separating electronic elements. 5,824,595, Cl. 438-464.000.

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Ihara, Masaru: *See—*
Ohno, Katsutoshi; Kusunoki, Tsuneo; Takayanagi, Kenji; and Ihara, Masaru, 5,825,124, Cl. 313-467.000.

Iida, Hiroko: *See—*
Nohta, Hitoshi; Yamaguchi, Masatoshi; Ishida, Junichi; Zaitsu, Kivoshi; and Iida, Hiroko, 5,824,559, Cl. 436-111.000.

Iida, Naruaki: *See—*
Hasebe, Keizo; Nagashima, Shinji; Semba, Norio; Akimoto, Masami; Kimura, Yoshio; Iida, Naruaki; Harada, Kouji; Ueda, Issei; and Konishi, Nobuo, 5,826,129, Cl. 396-611.000.

Iida, Tetsuhiro: *See—*
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Iima, Mitsunori; and Hama, Yoshihiro, to Asahi Kogaku Kogyo Kabushiki Kaisha. Optical scanning system and method for setting curvature of field therein. 5,825,403, Cl. 347-259.000.

Iima, Mitsunori: *See—*
Takano, Masatoshi; Takasugi, Eiji; Kikuchi, Shinji; Sato, Tsutomu; Saito, Hiroyuki; Araki, Yoshiyuki; Iima, Mitsunori; Sasaki, Takashi; and Iizuka, Takashi, 5,825,522, Cl. 359-201.000.

Iino, Shinji; and Hayakawa, Noboru, to Tokyo Electron Limited. Unit for transferring to-be-inspected object to inspection position. 5,825,500, Cl. 356-394.000.

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Furuya, Yoshiyuki; Aoki, Kuninitsu; and Iino, Tadashi, 5,825,339, Cl. 345-8.000.

Iizuka, Takashi: *See—*
Takano, Masatoshi; Takasugi, Eiji; Kikuchi, Shinji; Sato, Tsutomu; Saito, Hiroyuki; Araki, Yoshiyuki; Iima, Mitsunori; Sasaki, Takashi; and Iizuka, Takashi, 5,825,522, Cl. 359-201.000.

Ikariya, Takao, to Takasago International Corporation. Ruthenium-phosphine complex. 5,824,830, Cl. 585-269.000.

Ikawa, Yoshihiro; Takizawa, Teruyuki; and Kawamura, Ichiro, to Matsushita Electric Industrial Co., Ltd. Apparatus for driving stepping motor. 5,825,151, Cl. 318-685.000.

Ikeda, Fumiyuki: *See—*
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Ikeda, Hiromu: *See—*
Kawamata, Ken; and Ikeda, Hiromu, 5,825,549, Cl. 359-582.000.

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Haneda, Satoshi; Shigeta, Kunio; Sato, Yotaro; Fukuchi, Masakazu; Matsubara, Akitoshi; and Ikeda, Tadayoshi, 5,826,143, Cl. 399-182.000.

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Ikeda, Toshifumi: *See—*
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Ikeda, Yukihiro: *See—*
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Interval Research Corporation: *See*—
Ahmad, Subutai; Bhadkamkar, Neal A.; Cousins, Steve B.; Freiberger, Paul A.; and Ullmer, Brygg A., 5,825,354, Cl. 345-327.000.
Interval Systems, Inc.: *See*—
Archibald, William Charles; Spielman, Terence Paul; and Spielman, Jason, 5,825,883, Cl. 380-25.000.
Inui, Tetsuya: *See*—
Abe, Shingo; Inui, Tetsuya; Matoba, Hirotsugu; Hirata, Susumu; Kimura, Masaharu; Ishii, Yorishige; Horinaka, Hajime; and Onda, Hiroshi, 5,825,383, Cl. 347-54.000.
Invacare Corporation: *See*—
Broadhead, Douglas, 5,823,621, Cl. 297-354.130.
Iomega Corporation: *See*—
Ma, Yiping; and Jones, David E., 5,825,409, Cl. 348-88.000.
Ireton, Mark A., to Advanced Micro Devices, Inc. Instruction translation unit configured to translate from a first instruction set to a second instruction set. 5,826,089, Cl. 395-707.000.
Irick, Gether, Jr.: *See*—
Buchanan, Charles M.; Gardner, Robert M.; Harris, James E.; Irick, Gether, Jr.; and Strickler, David V., Jr., 5,823,202, Cl. 131-345.000.
Irie, Katsumi; Kawase, Nobuyuki; Hayama, Takafumi; and Kasahara, Touko, to Sharp Kabushiki Kaisha. Method for detecting defects in an active matrix liquid crystal display panel. 5,825,196, Cl. 324-770.000.
Irite, Naoko: *See*—
Abe, Akira; Yoshida, Kiyohide; Muramatsu, Gyo; Sumiya, Satoshi; Irite, Naoko; and Saito, Mika, 5,824,621, Cl. 502-305.000.
Iruvanti, Sushumna; Klepeis, Martin; Messina, Gaetano Paolo; and Sherif, Raed, to International Business Machines Corporation. Integral mesh flat plate cooling module. 5,825,087, Cl. 257-707.000.
Isaacs, James Russell: *See*—
Wolters, Richard Arthur, Jr.; Schwee, Susan Mae; Isaacs, James Russell; Smith, Michael Adrian; Cooley, Walter Hening, Jr.; Leighty, Craig Ernest; Borst, George; Mayo, Paul Lawrence; and Lownes, Gregory Douglas, 5,826,252, Cl. 707-1.000.
Isaki, Haruo: *See*—
Fukuda, Masatoshi; Ohtsuka, Tadashi; Isaki, Haruo; and Matsutani, Kanji, 5,824,009, Cl. 606-144.000.
Iseki, Masami: *See*—
Kawasaki, Somei; Iseki, Masami; and Ebata, Hironari, 5,825,939, Cl. 382-270.000.
Ishibashi, Satoshi: *See*—
Yagi, Takashi; Arita, Kazuho; Oikawa, Shigeru; and Ishibashi, Satoshi, 5,825,366, Cl. 345-433.000.
Ishibe, Hiroshi; Inoue, Manabu; Yagura, Hirokazu; Katoh, Takehiro; Yamada, Tetsuo; Kakudo, Kyoko; and Nanba, Katsuyuki, to Minolta Co., Ltd. Apparatus for reproducing still images of a plurality of frames. 5,825,410, Cl. 348-107.000.
Ishida, Junichi: *See*—
Nohta, Hitoshi; Yamaguchi, Masatoshi; Ishida, Junichi; Zaitsu, Kivoshi; and Iida, Hiroko, 5,824,559, Cl. 436-111.000.
Ishida, Kensuke: *See*—
Arai, Hiroyuki; Mura, Hiroshi; Sakata, Hideo; Mizoguchi, Takahiro; Ishida, Kensuke; and Niimi, Hiroshi, 5,825,335, Cl. 343-866.000.
Ishida, Toshihisa: *See*—
Saiko, Hideji; Itoyama, Motoyuki; Masuda, Jitsuo; Ishida, Toshihisa; Nagayama, Katsuhiro; Naoi, Hiroo; Narimatsu, Masayasu; and Nishino, Tomoko, 5,826,136, Cl. 399-49.000.
Ishiguro, Yoshihisa: *See*—
Ishikawa, Shuhei; Hiramitsu, Hiroyuki; Ishiguro, Yoshihisa; and Yashiro, Kazumasa, 5,824,167, Cl. 148-435.000.
Ishihara, Makoto: *See*—
Muramatsu, Katsutoshi; Kaneko, Toshiaki; Kiyohara, Kouichi; Ito, Kenji; Nishihara, Yoshimi; Inoue, Hiroyuki; and Ishihara, Makoto, 5,823,510, Cl. 251-368.000.
Ishihara, Satoshi; and Kuwabara, Yukishige, to Honda Giken Kogyo Kabushiki Kaisha. Supporting structure for exhaust pipe system of a vehicle. 5,823,286, Cl. 180-309.000.
Ishihara, Shousaku: *See*—
Tanei, Hirayoshi; Iwanaga, Shoichi; Okamoto, Masahide; Nakamura, Masato; Morita, Kousaku; Ishihara, Shousaku; Kobayashi, Fumiyuki; Tagami, Fumikazu; Sengoku, Norio; and Fujita, Tsuyoshi, 5,825,632, Cl. 361-795.000.
Ishii, Hideo; Moriguchi, Haruo; Hansen, Nathaniel S.; and Dumont, Michael R., to Sansha Electric Manufacuring Co. Limited; and Thermal Dynamics Corporation. Power supply apparatus. 5,825,642, Cl. 363-141.000.
Ishii, Koichiro: *See*—
Matsumoto, Hiroyuki; and Ishii, Koichiro, 5,825,724, Cl. 369-13.000.
Ishii, Masayuki: *See*—
Hazama, Hiroyuki; Miyamoto, Eiichi; Nakamori, Hideo; Terada, Takashi; Ishii, Masayuki; and Murata, Takahiko, 5,826,153, Cl. 399-353.000.
Ishii, Tadamichi: *See*—
Kanki, Masahiro; Tsukada, Masaki; and Ishii, Tadamichi, 5,824,415, Cl. 428-411.100.
Ishii, Takamaro: *See*—
Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, 5,824,224, Cl. 210-651.000.
Ishii, Yasushi. Acoustic device for measuring volume difference. 5,824,892, Cl. 73-149.000.
Ishii, Yorishige: *See*—
Abe, Shingo; Inui, Tetsuya; Matoba, Hirotsugu; Hirata, Susumu; Kimura, Masaharu; Ishii, Yorishige; Horinaka, Hajime; and Onda, Hiroshi, 5,825,383, Cl. 347-54.000.
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Ishikawa, Hiroaki, to Denso Corporation. AC generator for vehicle having combined structure of field coil and permanent magnet. 5,825,116, Cl. 310-263.000.
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Suzuki, Tomoko; Yoshida, Takayuki; Kotoh, Satoru; Ishikawa, Hiroaki; Jojima, Kazunobu; Akiyama, Itsutarou; Matsushita, Akihiro; and Kabuki, Masataka, 5,823,009, Cl. 62-410.000.
Ishikawa, Masahito: *See*—

Okamoto, Masumi; Shoji, Masato; Tanaka, Yasuharu; Ishikawa, Masahito; Fukuoka, Nobuko; Ninomiya, Toshihiro; Ohyama, Tsuyoshi; Yoshida, Norihiro; and Hatoh, Hitoshi, 5,825,445, Cl. 349-118.000.

Ishikawa, Rika; Okada, Yuji; and Kakitani, Makoto, to Kirin-Amgen, Inc. Chemically-modified G-CSF. 5,824,778, Cl. 530-351.000.

Ishikawa, Shuhei; Hiramitsu, Hiroyuki; Ishiguro, Yoshihisa; and Yashiro, Kazumasa, to NGK Insulators, Ltd. Beryllium-copper alloy excellent in strength, workability and heat resistance and method for producing the same. 5,824,167, Cl. 148-435.000.

Ishikawa, Tetsuya: *See*—
Trow, John; and Ishikawa, Tetsuya, 5,824,607, Cl. 438-732.000.

Ishikawa, Tomoji: *See*—
Maruta, Takayuki; Takashima, Hiroshi; Ishikawa, Tomoji; Sugihara, Kazuyuki; Kato, Shinji; and Kosuge, Katsuhiro, 5,826,146, Cl. 399-235.000.

Ishikawa, Youhei; Tanizaki, Toru; and Nishida, Hiroshi, to Murata Manufacturing Co., Ltd. Device with a nonradiative dielectric waveguide. 5,825,268, Cl. 333-254.000.

Ishimaru, Toshiyuki, to Sony Corporation. Exposure system for lithography apparatus. 5,825,468, Cl. 355-55.000.

Ishimori, Norihito: *See*—
Nagata, Hideki; Kuramochi, Shuji; and Ishimori, Norihito, 5,824,282, Cl. 423-578.100.

Isis Innovation Ltd.: *See*—
Hill, Adrian Vivian Sinton, 5,824,515, Cl. 435-91.100.

Israelsson, Per Viktor: *See*—
Ghisler, Walter; Israelsson, Per Viktor; and Chambert, Georg William Robin, 5,826,193, Cl. 455-445.000.

Isuzu Motors Limited: *See*—
Otoh, Takashi; and Murata, Mitsuhiro, 5,823,168, Cl. 123-496.000.

Itakura, Akihiro: *See*—
Tanaka, Tsutomu; Ikeya, Tomonori; and Itakura, Akihiro, 5,825,742, Cl. 369-116.000.

Ito, Akio: *See*—
Okubo, Kazuo; Teguri, Hironori; and Ito, Akio, 5,825,912, Cl. 382-145.000.

Ito, Fuminori, to NEC Corporation. Method of holding field emission cathode in its standby state. 5,825,134, Cl. 315-169.100.

Ito, Hiromichi: *See*—
Ito, Toshiya; Takano, Kosuke; Ito, Hiromichi; and Mori, Mitsuru, 5,826,016, Cl. 395-188.010.

Ito, Hironori; Hino, Yuichiro; Tashiro, Naoki; Hagiwara, Masahiko; Mitsui, Keiichi; and Uchida, Akihiko, to Kabushiki Kaisha Toshiba. Battery set structure and charge/ discharge control apparatus for lithium-ion battery. 5,825,155, Cl. 320-16.000.

Ito, Hiroshi, to Kabushikikaishi Daiki. Animal excreta disposing material containing waste plastic and process for the production of the material. 5,823,139, Cl. 119-171.000.

Ito, Junji, to Kabushiki Kaisha Toshiba. Output buffer circuit. 5,825,207, Cl. 326-83.000.

Ito, Kenji: *See*—
Muramatsu, Katsutoshi; Kaneko, Toshiaki; Kiyohara, Kouichi; Ito, Kenji; Nishihara, Yoshimi; Inoue, Hiroyuki; and Ishihara, Makoto, 5,823,510, Cl. 251-368.000.

Ito, Makoto: *See*—
Kurome, Yoko; Izu, Hiroyuki; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,824,503, Cl. 435-69.100.

Ito, Nobuhiro: *See*—
Hanyu, Yukio; Nakamura, Katsutoshi; and Ito, Nobuhiro, 5,825,447, Cl. 349-128.000.

Ito, Sadao; and Kato, Haruo, to Aisin Seiki Kabushiki Kaisha. Drive apparatus with a resilient coupling for a power seat. 5,823,499, Cl. 248-429.000.

Ito, Shogo; Yamao, Yasushi; and Ohkubo, Shinzo, to NTT Mobile Communications Network, Inc. Mobile communications system for repeatedly transmitting paging signals. 5,826,172, Cl. 455-38.300.

Ito, Sumiyoshi: *See*—
Danmoto, Shojiro; Kanno, Fumio; Komiya, Takao; and Ito, Sumiyoshi, 5,825,980, Cl. 395-80.000.

Ito, Toshiya; Takano, Kosuke; Ito, Hiromichi; and Mori, Mitsuru, to Hitachi, Ltd.; and Hitachi Software Engineering. Pass-word managing system and pass-word managing method. 5,826,016, Cl. 395-188.010.

Ito, Yasunobu: *See*—
Hiyokawa, Toyoji; Nimura, Mitsuhiro; and Ito, Yasunobu, 5,825,306, Cl. 340-988.000.

Itoh, Fumikazu: *See*—
Mizumura, Michinobu; Hamamura, Yuuichi; Azuma, Junzou; Shimase, Akira; Kamimura, Takashi; Itoh, Fumikazu; Umemura, Kaoru; Kawanami, Yoshimi; and Madokoro, Yuuichi, 5,825,035, Cl. 250-423.00R.

Itoh, Kiyoo: *See*—
Sakata, Takeshi; Itoh, Kiyoo; and Horiguchi, Masashi, 5,825,198, Cl. 326-34.000.

Itoh, Takashi: *See*—
Suzuki, Masashi; and Itoh, Takashi, 5,825,011, Cl. 235-472.000.

Itoigawa, Masahide; Hanzawa, Shinichi; Nonaka, Yoshitaka; Watanabe, Junichi; and Maruyama, Haruhisa, to Pioneer Electronic Corporation; and Pioneer Video Corporation. Optical disc and method for manufacturing the same. 5,824,385, Cl. 428-64.100.

Itoyama, Motoyuki: *See*—
Saiko, Hideji; Itoyama, Motoyuki; Masuda, Jitsuo; Ishida, Toshihisa; Nagayama, Katsuhiro; Naoi, Hiroo; Narimatsu, Masayasu; and Nishino, Tomoko, 5,826,136, Cl. 399-49.000.

Itsuji, Takayuki; and Akamatsu, Masao, to Hitachi, Ltd. and Hitachi Car Engineering Co., Ltd. Air flow meter of a heating resistor type. 5,824,895, Cl. 73-204.170.

ITT Automotive Electrical Inc.: *See*—
Dimatteo, Michael Anthony; Harmon, Daniel Lee; Rogakos, Deno John, deceased, 5,822,827, Cl. 15-250.203.

ITT Automotive Europe GmbH: *See*—
Egner-Walter, Bruno, 5,823,065, Cl. 74-519.000.

ITT Automotive, Inc.: *See*—
Nie, Tao, 5,823,508, Cl. 251-149.600.

ITT Flygt AB: *See*—
Sjoblom, Torbjorn; and Unden, Bjorn, 5,823,751, Cl. 417-360.000.
Sodergard, Bengt, 5,824,980, Cl. 200-84.00R.

ITT Manufacturing Enterprises, Inc.: *See*—
Bethurum, Gary Cain, 5,823,796, Cl. 439-76.100.
Bricaud, Herve' Guy; Valcher, Fabrice; and Pizard, Yves, 5,823,828, Cl. 439-630.000.
Dye, David Eugene, 5,823,813, Cl. 439-347.000.

ITW-ATECO GmbH: *See*—
Beck, Christian, 5,823,623, Cl. 297-410.000.

Ives, John E. Advertising check. 5,823,575, Cl. 283-58.000.

Iwahana, Hidenori: *See*—
Ohba, Michio; Iwahana, Hidenori; Sato, Ryoichi; Suzuki, Nobukazu; Ogiwara, Katsutoshi; Sakanaka, Kazunobu; Hori, Hidetaka; Asano, Shouji; and Kawasugi, Tadaaki, 5,824,878, Cl. 800-205.000.

Iwahashi, Hiroshi: *See*—
Asano, Masamichi; Iwahashi, Hiroshi; Kirisawa, Ryouhei; Nakayama, Ryozo; Inoue, Satoshi; Shirota, Riichiro; Endoh, Tetsuo; and Masuoka, Fujio, 5,824,583, Cl. 438-258.000.

Iwamoto, Masako: *See*—
Iwamoto, Yukio; and Iwamoto, Masako, 5,823,296, Cl. 186-49.000.

Iwamoto, Yukio; and Iwamoto, Masako. Hydraulic system for serving food. 5,823,296, Cl. 186-49.000.

Iwanaga, Shoichi: *See*—
Tanei, Hirayoshi; Iwanaga, Shoichi; Okamoto, Masahide; Nakamura, Masato; Morita, Kousaku; Ishihara, Shousaku; Kobayashi, Fumiyuki; Tagami, Fumikazu; Sengoku, Norio; and Fujita, Tsuyoshi, 5,825,632, Cl. 361-795.000.

Iwao, Keijiro, to Nissan Motor Co., Ltd. Noise insulating wall structure. 5,823,600, Cl. 296-39.300.

Iwasaki, Takashi, to Ando Electric Co., Ltd. Optical spectrum measuring device. 5,825,484, Cl. 356-300.000.

Iwasaki, Youichi: *See*—
Kino, Yoshiki; Kaneda, Naoya; Matsuda, Kazuya; Iwasaki, Youichi; Wada, Hiroyuki; Takashima, Tsuneo; and Ichinose, Harunobu, 5,825,545, Cl. 359-557.000.

Iwata, Kenneth K.; Foulkes, J. Gordon; Dijke, Peter Ten; and Haley, John D., to Oncogene Science, Inc. Tissue-derived tumor growth inhibitors,methods of preparation and uses thereof. 5,824,297, Cl. 424-85.100.

Iyer, Balakrishna Raghavendra: *See*—
Bui, Thuan Quang; Helt, Scott Dennis; Iyer, Balakrishna Raghavendra; and Ricard, Gary Ross, 5,826,262, Cl. 707-7.000.

Iyer, Ravi: *See*—
Sandhu, Gurtej S.; Iyer, Ravi; and Westmoreland, Donald L., 5,824,365, Cl. 427-239.000.

Iyer, Venkatran N.: *See*—
Miki, Brian; Hattori, Jiro; Fobert, Pierre; and Iyer, Venkatran N., 5,824,872, Cl. 800-205.000.

Iyer, V. N.: *See*—
Miki, Brian; Iyer, V. N.; and Fobert, Pierre, 5,824,863, Cl. 800-205.000.

Izu, Hiroyuki: *See*—
Kurome, Yoko; Izu, Hiroyuki; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,824,503, Cl. 435-69.100.

Izuhara, Katsuhiro: *See*—
Kobayashi, Hisamine; Izuhara, Katsuhiro; and Fujishiro, Akihito, 5,823,861, Cl. 451-326.000.

Izume, Masayuki, to I Mar Planning Inc. Inking arrangement for printing presses. 5,823,110, Cl. 101-352.091.

Izumi, Tomoji; Tachihata, Tetsuya; and Edahiro, Takeshi, to Mazda Motor Corporation. Tire air pressure warining device. 5,826,210, Cl. 701-70.000.

Izumi, Yoshiya: *See*—
Kurome, Yoko; Izu, Hiroyuki; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,824,503, Cl. 435-69.100.

J & L Fiber Services, Inc.: *See*—
Dodd, John, 5,824,265, Cl. 420-60.000.
Garasimowicz, Gregory Alexander, 5,823,453, Cl. 241-261.300.

J. Eberspächer GmbH & Co.: *See*—
Burner, Erwin, 5,823,155, Cl. 123-145.00A.

J&L Structural, Inc.: *See*—
Snyder, Carl A.; Karczewski, Michael A.; Shurskis, Karl W.; and Saigal, Sunil, 5,823,042, Cl. 72-366.200.

J. M. Smucker Company, The: *See*—
Bye, Douglas A.; and Maxwell, Joann, 5,824,358, Cl. 426-658.000.

Jabba, Ronald J.: *See*—
Salmon, Stephen; and Jabba, Ronald J., 5,823,992, Cl. 604-53.000.

Jablon, Michael, to AlliedSignal Inc. Process for producing coating compositions containing ethylene-acrylic acid copolymers with polyamide grafts as rheology modifiers. 5,824,732, Cl. 524-504.000.

Jackman, Winthrop T.: *See*—
Spaete, Richard; and Jackman, Winthrop T., 5,824,508, Cl. 435-69.300.

Jackson, James Perry: *See*—
Lubbers, Clark E.; Sicola, Stephen J.; McLean, Ronald H.; Jackson, James Perry; and Ellis, Robert A., 5,826,001, Cl. 395-182.040.

Jackson, Johnny L.: *See*—
Benko, Zoltan L.; Turner, James A.; Weimer, Monte R.; Garvin, Gail M.; Jackson, Johnny L.; Shinkle, Sharon L.; and Webster, Jeffery D., 5,824,802, Cl. 544-140.000.

Jackson, Martin A.; and Rhatigan, John M., to Entwistle Company, The. Multipurpose energy absorbing barrier system. 5,823,705, Cl. 404-6.000.

Jackson, Melvin Robert: *See*—
Bewlay, Bernard Patrick; and Jackson, Melvin Robert, 5,822,852, Cl. 29-889.100.
Ritter, Ann Melinda; Hughes, John Raymond; Jackson, Melvin Robert; Kirkpatrick, Francis Lawrence; Cunha, Francisco Jose Tenreiro; Abuaf, Nesim; and Bunker, Ronald Scott, 5,822,853, Cl. 29-890.010.

Jackson, Paul F.: *See*—
Slusher, Barbara S.; and Jackson, Paul F., 5,824,662, Cl. 514-75.000.

Jackson, Robert T., to Intel Corporation. Power control for mobile electronics using no-operation instructions. 5,825,674, Cl. 364-707.000.

Jacob Berg GmbH & Co. KG: *See*—
Krautkrämer, Günter Jakob, 5,823,377, Cl. 220-268.000.

Jacob, Christopher E.: *See*—
Dunham, David A.; Haskett, Robert G.; Owings, Paul Dennis; Tew, Henry Louis; Davis, Jeffrey B.; Jacob, Christopher E.; and Wolthuis, Maureen, 5,823,339, Cl. 206-349.000.

Jacobs, Eino; and Ang, Michael, to Philips Electronics North America Corporation. Compressed Instruction format for use in a VLIW processor. 5,826,054, Cl. 395-389.000.

Jacobs, Richard L.; and Shah, Shirish A., to L. Perrigo Company. Caplet and gelatin covering therefor. 5,824,338, Cl. 424-460.000.

Jacobson, Vincent C.: *See*—
Warrior, Jogesh; Jacobson, Vincent C.; Orth, Kelly M.; Tielens, Craig R.; and Lanctot, Jane Barbara, 5,825,664, Cl. 364-550.000.

Jacques, G. Eric: *See*—
Maxwell, Ian; Coito, Ilidio Paulo; and Jacques, G. Eric, 5,822,928, Cl. 52-8.000.

Jae-Hong, Park; and Jong-In, Lee, to Korea Institute Of Nuclear Safety. Reactor flooding system for a retaining molten core materials in a reactor vessel by the improved external vessel cooling capability. 5,825,838, Cl. 376-299.000.

Jafarian-Tehrani, Seyed Jafar: *See*—
Dible, Robert D.; Bradley, Stephen G.; and Jafarian-Tehrani, Seyed Jafar, 5,824,606, Cl. 438-729.000.

Jaffke, Ralph E.: *See*—
Kirby, James E.; Abad, Glen Silva; and Jaffke, Ralph E., 5,823,236, Cl. 141-330.000.

Jäger, Thomas: *See*—
Fischer, Robert; Jäger, Thomas; and Zimmermann, Martin, 5,823,912, Cl. 477-97.000.

Jahn, Walter; Axelsson, Lars; and Fugel, Frank, to Autoliv Development AB; and Mercedes-Benz AG. Safety belt reeling device with comfort function. 5,823,457, Cl. 242-372.000.

Jailloux, Jean-Marc: *See*—
Bastick, Michel J; Gorce, Alain; Jailloux, Jean-Marc; Segrestin, Pierre; and Schodts, Paul, 5,823,717, Cl. 405-286.000.

Jain, Kanti: *See*—
Farmiga, Nestor O.; and Jain, Kanti, 5,825,558, Cl. 359-819.000.

Jain, Nikhil: *See*—
Khafizov, Farid; and Jain, Nikhil, 5,826,218, Cl. 702-179.000.

Jakoby, Nikolaus, to SMS Eumuco GmbH. Apparatus for loading a billet and, if necessary, a pressing disc into a horizontal metal extrusion press. 5,823,038, Cl. 72-270.000.

Jakubec, Lubos: *See*—
Pavlicek, Jan; Jakubec, Lubos; and Robes, Mojmir, 5,823,162, Cl. 123-311.000.

Jamalabad, Vikram R.: *See*—
Whalen, Philip J.; Jamalabad, Vikram R.; Pollinger, John P.; Agarwala, Mukesh; and Danforth, Stephen C., 5,824,250, Cl. 264-219.000.

James Cook University of North Queensland: *See*—
Suehrcke, Harry; and Lovisa, Noel Wilhelmus, 5,823,800, Cl. 439-82.000.

James, William A.; and Kelly, William G. F., to McNeil-PPC, Inc. Apparatus for making nonwoven fabrics having raised portions. 5,822,833, Cl. 28-105.000.

Jameson, J. Larry: *See*—
Crowley, William F.; Jameson, J. Larry; Schneyer, Alan L.; and Weiss, Jeffrey, 5,824,637, Cl. 514-2.000.

Jamieson, Eric K.; and Williams, Daniel S., to Otis Elevator Company. Method and apparatus for sensing fault conditions for an elevator active roller guide. 5,824,976, Cl. 187-393.000.

Jamieson, Frederick T. Propeller balancing method and apparatus. 5,823,466, Cl. 244-65.000.

Jan, Gerald: *See*—
Baettig, Kurt; and Jan, Gerald, 5,824,785, Cl. 534-803.000.

Jan, Te-Chin. Mole chaser. 5,822,917, Cl. 43-124.000.

Jan, Yih Guang: *See*—
Thapa, Mukund Narain-dhami; Peterson, Kenneth Maynard; Jan, Yih Guang; and Foroudi, Amir David, 5,826,189, Cl. 455-428.000.

Jang, Ben Kwei, to Eastman Kodak Company. Automated method and system for image segmentation in digital radiographic images. 5,825,909, Cl. 382-132.000.

Jang, Byoung Gyu: *See*—
Kang, Myung Goo; Kang, Seong Sik; Choi, Sung Hoon; Joung, Mun Chea; Jang, Byoung Gyu; Ryu, Kye Yeon; Yu, Hyo Chong; and Lee, Sang Jig, 5,825,583, Cl. 360-85.000.

Jang, Seong-Deok: *See*—
Kim, Chul; Han, Yong-Woon; Sung, Han-Jun; and Jang, Seong-Deok, 5,824,999, Cl. 219-74.200.

Jannetta, Peter J. Method and apparatus for treatment of neurogenic diabetes mellitus, and other conditions. 5,824,332, Cl. 424-423.000.

Janniello, Frank James: *See*—
Choy, Michael M.; Green, Paul Eliot, Jr.; Hall, William Eric; Janniello, Frank James; Kravitz, Jeff Kenneth; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin Fuk-Kay, 5,825,949, Cl. 385-24.000.

Jans, Eugene Maria Jozef; and Gilis, Paul Marie Victor, to Janssen Pharmaceutica, N.V. Chewable flubendazole tablets for companion animals. 5,824,336, Cl. 424-441.000.

Jansen, Alexander C. L.: *See*—
Van Der Wel, Willem; Jansen, Alexander C. L.; Koster, Ronald; and Pruijmboom, Armand, 5,824,560, Cl. 437-31.000.

Janssen Pharmaceutica, N.V.: *See*—
Jans, Eugene Maria Jozef; and Gilis, Paul Marie Victor, 5,824,336, Cl. 424-441.000.
Van Lommen, Guy Rosalia Eugène; Wigerinck, Piet Tom Bert Paul; De Bruyn, Marcel Frans Leopold; Verschueren, Wim Gaston; and Schroven, Marc Francis Josephine, 5,824,682, Cl. 514-256.000.

Janssen, Robert A.; Heyl, Barbara L.; Hoffman, Roger J.; and Shank, Thomas E., to CIBA Vision Corporation. Method and apparatus for uniformly dispersing articles in a treatment solution. 5,824,276, Cl. 422-292.000.

Japan Tobacco Inc.: *See*—
Hiyoshi, Toru; Mine, Toshiki; Kasaoka, Keisuke; Tyson, Robert Huw; and Page, Anthony Miles John, 5,824,862, Cl. 800-205.000.

Japp, Robert M.: *See*—
Foster, Elizabeth F.; Hedrick, Jeffrey C.; Japp, Robert M.; Papathomas, Konstantinos; Tisdale, Stephen L.; and Viehbeck, Alfred, 5,824,157, Cl. 118-419.000.

Jaquess, Percy A., to Buckman Laboratories International, Inc. Method to remove biguanide from an aqueous source. 5,824,239, Cl. 252-175.000.

Jaquette, Glen Alan: *See*—
Hutchins, Robert Allen; Jaquette, Glen Alan; and Clark, Alan Robert, 5,825,744, Cl. 369-124.000.

Jardine, Robert L.; and Moiin, Hossein, to Tandem Computers Incorporated. Method for keeping accurate time in a computer system. 5,826,066, Cl. 395-551.000.

Jaric, Melita: *See*—
DuPuis, Timothy J.; and Jaric, Melita, 5,824,936, Cl. 84-663.000.

Jarmusch, D. Lloyd. Tetrahedral colliding beam nuclear fusion. 5,825,836, Cl. 376-107.000.

Jarske, Petri: *See*—
Tchamov, Nicolay; and Jarske, Petri, 5,825,256, Cl. 331-113.00R.

Jarvik, Robert. Hybrid flow blood pump. 5,824,070, Cl. 623-3.000.

Jasiuk, Mark A.: *See*—
Gerson, Ira A.; Jasiuk, Mark A.; and Hartman, Matthew A., 5,826,224, Cl. 704-222.000.

Jasty, Shashi G.: *See*—
Epstein, Arthur J.; and Jasty, Shashi G., 5,824,371, Cl. 427-388.100.

Jatom Systems Incorporated: *See*—
Mason, Philip L., 5,825,492, Cl. 356-345.000.

Jay, Michael E.; Collins, Robert J.; Jeffrey, Richard S.; and Ramsay, Colin, to MediaSeek Technologies, Inc. Method and apparatus for correlating educational requirements. 5,823,789, Cl. 434-365.000.

Jayant, Nuggehally Sampath, to Lucent Technologies Inc. Hiding a source identifier within a signal. 5,826,227, Cl. 704-229.000.

Jayant, Nuggehally Sampath: *See*—
Dorward, Sean Matthew; Jayant, Nuggehally Sampath; Johnston, James David; Quackenbush, Schuyler Reynier; and Thompson, Kenneth Lane, 5,825,976, Cl. 395-2.380.

Jayavant, Rajeev: *See*—
Dempsey, Morgan James; and Jayavant, Rajeev, 5,826,048, Cl. 395-309.000.

JDS Fitel Inc.: *See*—
Cheng, Yihao, 5,825,950, Cl. 385-27.000.

Jean, Robert: *See*—
Jourde, Bernard; Louis, Francois; and Jean, Robert, 5,822,834, Cl. 28-113.000.

Jech, David E.; Sepulveda, Juan L.; and Traversone, Anthony B., to Brush Wellman, Inc. Process for retarding spontaneous combustion of powdery mixtures. 5,826,159, Cl. 419-30.000.

Jee, Won-Guk: *See*—
Kim, Stanislav K.; Anisimov, Eduard I.; Kutsenko, Sergey A.; Petrochenko, Yury N.; Sterlin, Andrey Y.; Voznesensky, Valery V.; Jee, Won-Guk; and Rho, Hyung-Min, 5,823,037, Cl. 72-201.000.

Jeffrey, Richard S.: *See*—
Jay, Michael E.; Collins, Robert J.; Jeffrey, Richard S.; and Ramsay, Colin, 5,823,789, Cl. 434-365.000.

Jelinek, Catherine W.; Kruse, Herman A.; Al-Khalif, Munther A.; and Thompson, Leo J., to Scientific-Atlanta, Inc. Bi-directional cable television system including a UHF filter. 5,826,167, Cl. 455-5.100.

JELTEC Ergonomiteknik AB: *See*—

Holmquist, Roland, 5,823,120, Cl. 108-147.000.
Jeng, Terry; Wu, Chuan-Yu; and Hou, Jason, to Powerchip Semiconductor Corp. Synchronous semiconductor memory device. 5,825,710, Cl. 365-230.030.
Jenkins, Laird C.: *See—*
Herd, Ian M.; Herd, Gary; Jenkins, Laird C.; and Maxwell, James E. A., 5,823,711, Cl. 405-36.000.
Jenkins, Robert Francis; and Wiercinski, Robert Alan, to W.R. Grace & Co.-Conn. Oil-barrier waterproofing membrance laminate. 5,824,401, Cl. 428-215.000.
Jennings, Horton; Pinnell, Nigel; Do, Khanh; Shah, Virendrakumar; Profumo, Marjorie; Downing, John; Goodhand, Neil; Maino, Marion; and Thompson, Michael H., to Citicorp Development Center. Customer-directed, automated process for transferring funds between accounts using a holding account and local processing. 5,825,003, Cl. 235-379.000.
Jennmar Corporation: *See—*
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Jeon, Chang Wook, to LG Electronics Inc. Loudspeaker housing for video display appliance. 5,825,900, Cl. 381-154.000.
Jeon, Young-Sam: *See—*
Song, Ki-Chang; Lee, Don-Hee; Jeon, Young-Sam; and Park, Chil-Keun, 5,824,440, Cl. 430-5.000.
Jeong, Deog-Kyon: *See—*
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Jeong, Eui-Jin, to Samsung Electronics Co., Ltd. Air conditioner and method therefor. 5,823,002, Cl. 62-131.000.
Jeong, Jae-Keun: *See—*
Nam, Byung-Ho; and Jeong, Jae-Keun, 5,825,469, Cl. 355-55.000.
Jeong, Sang-Hoon: *See—*
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Jerman, John H., to IC Sensors, Inc. Micromachined capillary electrophoresis device. 5,824,204, Cl. 204-601.000.
Jervis B. Webb Company: *See—*
Alofs, Cornell W.; and Drenth, Ronald R., 5,825,481, Cl. 356-138.000.
Jesadanont, Mongkol. Automatic non-computer network no-stop collection of expressway tolls by prepaid cards and method: pay according to category of vehicle and the distance it travels. 5,825,007, Cl. 235-384.000.
Jeske, Allen L., to Calumet Armature & Electric Co. Vehicular oil cooled alternator with stator coil terminal assembly terminal assembly kit and method. 5,825,109, Cl. 310-71.000.
Jessem Products Limited: *See—*
Smith, Darrin E., 5,823,239, Cl. 144-135.200.
Jester Games International, L.L.C.: *See—*
Banyai, Frank B., 5,823,534, Cl. 273-269.000.
Jewell, Jack L.; and Temkin, Henryk, to Picolight Incorporated. Extended wavelength strained layer lasers having strain compensated layers. 5,825,796, Cl. 372-45.000.
Ji, Young-Bae: *See—*
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Ji, Yu-Hua: *See—*
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Jidosha Kiki Co., Ltd.: *See—*
Inoue, Hidefumi; and Ikeda, Masahiro, 5,823,089, Cl. 91-369.200.
Jikei University School of Medicine, The: *See—*
Kitamura, Masanori, 5,824,839, Cl. 800-2.000.
Jin Fong Hydrauli Company: *See—*
Huang, Wen-Cheng, 5,823,458, Cl. 242-396.600.
Jin, Moon-Young: *See—*
Choi, Kil-Yeong; Yi, Mi-Hie; Jin, Moon-Young; and Hong, Young-Taik, 5,824,766, Cl. 528-350.000.
Jo, Whan-haeng: *See—*
Suh, Dong-Ki; and Jo, Whan-haeng, 5,823,644, Cl. 312-223.200.
Joh, William K. Golf club divider assembly. 5,823,335, Cl. 206-315.600.
Johansson, Peter K. (.): *See—*
Quiachon, Dinah B.; Piplani, Alec A.; Baker, Steve G.; Williams, Ronald G.; Williams, Richard S.; Osborn, Kenneth L.; Layman, Ted W.; Johansson, Peter K., 5,824,044, Cl. 623-1.000.
Johns, Allan Thomas, to GEC Alsthom Limited. Method of locating the position of a fault on a power transmission. 5,825,189, Cl. 324-525.000.
Johns Hopkins University, The: *See—*
Bishai, William R.; and DeMaio, James, 5,824,546, Cl. 435-325.000.
Johns Hopkins University School of Medicine, The: *See—*
Campochiaro, Peter A.; Wheeler, Larry A.; Chandraratna, Roshantha A.; and Nagpal, Sunil, 5,824,685, Cl. 514-277.000.
Coffey, Donald S.; Partin, Alan W.; and Getzenberg, Robert H., 5,824,490, Cl. 435-7.230.
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Haines, James Charles; and Fay, Ralph Michael, 5,824,973, Cl. 181-286.000.
Johnsen, Ronald J.: *See—*
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Johnson, Alvan Harold: *See—*
Freestone, Kevin Lloyd; Smouse, Edward Olen; Smith, Mabel Winifred; Weaver, Herbert Allen; Parks, Stephen Alan; Johnson, Alvan Harold; Nelson, Brian Raymond; Brake, Ronald Lee, Sr.; and Suber, Jeremy Grant, 5,823,230, Cl. 138-89.000.
Johnson & Johnson Professional, Inc.: *See—*
Gabriel, Stefan M.; and Colleran, Dennis P., 5,824,097, Cl. 623-20.000.
Huebner, Randall J., 5,824,108, Cl. 623-22.000.
Johnson & Johnson Vision Products, Inc.: *See—*
Wu, Jongliang; Wang, Daniel Tsu-Fang; Beaton, Stephen Robert; Renkema, Kornelis; Van Der Meulen, Wybren; Lust, Victor; and Abrams, Richard Wayne, 5,823,327, Cl. 206-5.100.
Johnson, Anthony: *See—*
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Johnson, Bates. Snapin instantly wired one piece thermo plastic lamp socket. 5,823,322, Cl. 200-51.170.
Johnson, Carol L.: *See—*
Mena, J. Joe; Johnson, Charles F.; Johnson, Carol L.; and Maenpaa, Gustav M., 5,823,352, Cl. 206-721.000.
Johnson, Charles F.: *See—*
Mena, J. Joe; Johnson, Charles F.; Johnson, Carol L.; and Maenpaa, Gustav M., 5,823,352, Cl. 206-721.000.
Johnson, David L., deceased (Rosine M. Johnson, executor): *See—*
Bos, Philip J.; Chen, Jianmin; Johnson, David L., deceased; Glenn, William E.; Holton, Carvel E.; and Smith, Brett E., 5,825,448, Cl. 349-128.000.
Johnson, Donald B.: *See—*
Abdulmassih, Antoine G.; Johnson, Donald B.; Young, Douglas L. G.; and Gallagher, Brian J., 5,823,355, Cl. 209-406.000.
Johnson, Gary V.: *See—*
Wagenknecht, John H.; and Johnson, Gary V., 5,824,631, Cl. 510-254.000.
Johnson, Glenn W.; and Hozman, Nelson D., to Eastman Kodak Company. Optical assembly having a dual purpose focus. 5,825,559, Cl. 359-819.000.
Johnson, Jay Gregory, to SIMS Deltec, Inc. Reusable pressure plates and methods. 5,823,746, Cl. 417-53.000.
Johnson, Jeffrey Don. Laser pressure foot. 5,823,417, Cl. 228-44.300.
Johnson, Kevin M.: *See—*
Bertrand, John E.; Mercer, Lee A.; Burchard, Thomas H.; Hunter, Gregory; Lofgren, John; Wagner, Henry N.; Johnson, Kevin M.; and Karg, Jeffery, 5,823,229, Cl. 137-614.200.
Johnson, Leslie Sid, to MedImmune, Inc. Human-murine chimeric antibodies against respiratory syncytial virus. 5,824,307, Cl. 424-133.100.
Johnson, Mark Alan: *See—*
Agarwal, Ramesh Chandra; Groves, Randall Dean; Gustavson, Fred Gehrung; Johnson, Mark Alan; and Olsson, Brett, 5,825,677, Cl. 364-736.030.
Johnson Matthey Public Limted Company: *See—*
Abrams, Michael J.; Fricker, Simon P.; Murrer, Barry A.; and Vaughan, Owen J., 5,824,673, Cl. 514-184.000.
Johnson, Philip W.; Neumann, Jeffrey D.; and Brattoli, Mark A., to General Electric Company. Drive package for a dynamoelectric machine. 5,825,107, Cl. 310-64.000.
Johnson, Robert: *See—*
Michaels, Alan Sherman; and Johnson, Robert, 5,824,223, Cl. 210-642.000.
Johnson, Rosine M., executor: *See—*
Bos, Philip J.; Chen, Jianmin; Johnson, David L., deceased; Glenn, William E.; Holton, Carvel E.; and Smith, Brett E., 5,825,448, Cl. 349-128.000.
Johnson, Russell Scott: *See—*
Malamud, Mark A.; Marceau, Renee; Grauman, Joyce A.; Levien, Royce A.; Oran, Daniel P.; Bolnick, David A.; Barnes, David A., Jr.; and Johnson, Russell Scott, 5,825,357, Cl. 345-340.000.
Johnson, Shelley N.: *See—*
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Johnson, Steve K., to DeKalb Genetics Corporation. Inbred corn plant 171K13 and seeds thereof. 5,824,849, Cl. 800-200.000.
Johnson, Terry; Hartline, Mike; and White, Nikki, to L&P Property Management Company. Three-way reclining furniture item. 5,823,614, Cl. 297-85.000.
Johnson, William R.: *See—*
Smith, Fred T.; Smith, Fred P.; Strong, Brooks; and Johnson, William R., 5,823,629, Cl. 298-23.00R.
Johnston, Brad. Accessory for charcoal grill. 5,823,589, Cl. 294-7.000.
Johnston, James David: *See—*
Dorward, Sean Matthew; Jayant, Nuggehally Sampath; Johnston, James David; Quackenbush, Schuyler Reynier; and Thompson, Kenneth Lane, 5,825,976, Cl. 395-2.380.
Johnston, Randy S.: *See—*
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Johnston, Sammie "J". Plastic meter box bottom. 5,823,577, Cl. 285-30.000.
Joie, Michel; Debrauwere, Jack; Bernes, Jean-Claude; and Goldhaber, Richard, to Baxter International Inc. Blood collection container. 5,824,216, Cl. 210-257.100.
Jojima, Kazunobu: *See—*
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Jolitz, Randal J.: *See—*
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Jones, Allen, to PDQ Manufacturing, Inc. Motor vehicle dryer with ovoid shaped nozzle member. 5,822,878, Cl. 34-585.000.
Jones, Antoine L.: *See—*
Elam, Walter Thomas, Jr.; and Jones, Antoine L., 5,823,653, Cl. 362-72.000.
Jones, Catherine Z., Joseph B. Cross, executors: *See—*
Burwell, Fred J.; Jones, Ronald D., deceased; Millard, Wayne A.; Sprague, Dennis C.; Pinnick, Herbert R., Jr.; and Dorsey, George L., 5,824,880, Cl. 73-12.060.
Jones, Clifford; and Tsang, Peter P., to Ford Global Technologies, Inc. Pen holder. 5,823,494, Cl. 248-309.100.
Jones, Clifford, to Lolco Packaging Corp. Method for blending diverse blowing agents. 5,823,669, Cl. 366-132.000.
Jones, David E.: *See—*
Ma, Yiping; and Jones, David E., 5,825,409, Cl. 348-88.000.
Jones, Donald D.: *See—*
Brockman, Robert T.; and Jones, Donald D., 5,826,240, Cl. 705-11.000.
Jones, Gary Lee: *See—*
Gopalswamy, Swaminathan; and Jones, Gary Lee, 5,823,309, Cl. 192-21.500.
Jones, Marc Duane: *See—*
Burek, Denis Edward; Jones, Marc Duane; and Small, William H., 5,824,961, Cl. 174-135.000.
Jones, Mark Alan, to Lucent Technologies Inc. Universal connection point for resources and communication unrelated to a physical endpoint. 5,826,039, Cl. 395-200.360.
Jones, Michael L.; and Greff, Richard J., to Micro Therapeutics, Inc. Method and apparatus for intravasculer embolization. 5,823,198, Cl. 128-899.000.
Jones, Richard W.: *See—*
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Jones, Ronald D., deceased (by Catherine Z. Jones, Joseph B. Cross, executors): *See—*
Burwell, Fred J.; Jones, Ronald D., deceased; Millard, Wayne A.; Sprague, Dennis C.; Pinnick, Herbert R., Jr.; and Dorsey, George L., 5,824,880, Cl. 73-12.060.
Jones, Russell Albert. Rubber tire mailbox. 5,823,425, Cl. 232-17.000.
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Joseph, Brett; and McConnell, Kathleen, to Banyan Systems, Inc. Predefined access rights for undefined attributes in a naming service. 5,826,010, Cl. 395-186.000.
Joshi, Mahendra L.; and Mohr, Patrick J., to Combustion Tec, Inc. In-line method of burner firing and NO_x emission control for glass melting. 5,823,769, Cl. 432-181.000.
Joss, Steve M.; Robertson, William H., Jr.; and Mallar, Elias R., to Motorola, Inc. Mounting apparatus for a high power mobile radio. 5,823,495, Cl. 248-309.100.
Josse, Annabelle: *See—*
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Joux, Antoine: *See—*
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JPE, Inc.: *See—*
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Price, Scott D.; Judge, Alfred H.; Wheeler, Thomas J.; and Gifford, Robert H., 5,823,657, Cl. 362-191.000.
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Julian, Michael D., to Raytheon Company. Passive ranging of a noise beacon using correlation monopulse processing on the direct and bounce emissions. 5,825,324, Cl. 342-118.000.
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Jung, Hae-Mook, to Daewoo Electronics Co., Ltd. Apparatus for detecting motion vectors using moving object patterns. 5,825,423, Cl. 348-413.000.
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Juridical Foundation The Chemo-Sero-Therapeutic Research Institute: *See—*
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Justice, Alan; Singh, Tejinder; Gohil, Kishor Chandra; Valentino, Karen L.; and Miljanich, George P., to Neurex Corporation. Method of treating inflammation. 5,824,645, Cl. 514-12.000.
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Kabushiki Kaisha Komatsu Seisakusho: *See—*
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Kabushiki Kaisha TEC: *See—*
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Kabushiki Kaisha Tokai Rika Denki Seisakusho: *See—*
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Fujitsuka, Shuji; and Honbou, Shinichi, 5,825,866, Cl. 379-211.000.
Higashi, Tomoki; and Noji, Hiroyuki, 5,825,712, Cl. 365-230.030.
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Ito, Hironori; Hino, Yuichiro; Tashiro, Naoki; Hagiwara, Masahiko; Mitsui, Keiichi; and Uchida, Akihiko, 5,825,155, Cl. 320-16.000.
Ito, Junji, 5,825,207, Cl. 326-83.000.
Kinugasa, Masanori; Shigehara, Hiroshi; and Takiba, Akira, 5,825,220, Cl. 327-143.000.
Kobayashi, Hiroshi; Hidaka, Yoshiharu; Aida, Kazuo; Ikeda, Takashi; Yano, Motomitsu; and Kamura, Kouichirou, 5,825,766, Cl. 370-395.000.
Kohno, Fumihiro, 5,825,714, Cl. 365-230.060.
Momohara, Tomomi, 5,825,783, Cl. 371-21.100.
Morita, Yasuhiro; and Yamamoto, Kotaro, 5,825,581, Cl. 360-78.040.
Nagai, Koichi, 5,825,745, Cl. 369-219.000.
Narimatsu, Katsumi; and Kojima, Shoichi, 5,826,236, Cl. 705-8.000.
Nishida, Jun; Kikuiri, Nobutaka; and Tachikawa, Yuuichi, 5,825,730, Cl. 369-44.320.
Noriyama, Hidetaka, 5,825,439, Cl. 349-54.000.
Nozawa, Yasumitsu; Nakamura, Kenichi; Otani, Takayuki; and Segawa, Makoto, 5,825,707, Cl. 365-226.000.

Odaira, Hiroshi; Imamura, Eiji; Wada, Yusuke; Arai, Yasushi; Sasaoka, Kenji; Mori, Takahiro; Ikegaya, Fumitoshi; and Kowatari, Sadao, 5,822,850, Cl. 29-846.000.
Ohtsuka, Nobuaki, 5,825,205, Cl. 326-81.000.
Okamoto, Masumi; Shoji, Masato; Tanaka, Yasuharu; Ishikawa, Masahito; Fukuoka, Nobuko; Ninomiya, Toshihiro; Ohyama, Tsuyoshi; Yoshida, Norihiro; and Hatoh, Hitoshi, 5,825,445, Cl. 349-118.000.
Okamoto, Toshio; Segawa, Hideo; Saito, Mitsuo; and Wakamori, Osamu, 5,826,057, Cl. 395-500.000.
Sai, Yukio, 5,825,804, Cl. 374-137.000.
Sakaki, Kinya; and Mori, Kimio, 5,826,007, Cl. 395-183.180.
Shibata, Satoshi, 5,825,580, Cl. 360-77.080.
Taguchi, Katsuyuki, 5,825,842, Cl. 378-15.000.
Takahashi, Wataru, 5,825,082, Cl. 257-685.000.
Takeda, Kimihito; Saito, Yoshimi; and Hirakawa, Hideki, 5,826,220, Cl. 704-7.000.
Takeuchi, Yoshinori; and Endo, Koichi, 5,825,067, Cl. 257-355.000.
Tanaka, Satoshi, 5,825,747, Cl. 369-291.000.
Yoshimura, Masahiko, 5,825,649, Cl. 364-187.000.
Zenda, Hiroki, 5,826,044, Cl. 395-282.000.
Kabushiki Kaisha Towa Denki Seisakusho: *See*—
Watanabe, Kohei, 5,823,864, Cl. 452-182.000.
Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See*—
Mizutani, Hideki; Kayukawa, Hiroaki; Hirota, Suguru; and Enokijima, Fuminobu, 5,823,294, Cl. 184-6.300.
Kabushiki Kaisha Toyoda Jodoshokki Seisakusho: *See*—
Otobe, Tetsuro; Matsumoto, Hiroshi; Sasaki, Kazuhiro; Okumura, Kazumasa; Sato, Kazuo; and Toya, Masaaki, 5,823,547, Cl. 280-30.000.
Kabushiki Kaisha Yakult Honsha: *See*—
No, Shinichiro; and Watanabe, Shinichiro, 5,823,106, Cl. 101-35.000.
Kabushiki Kaisha Yamada Seisakusho: *See*—
Fujiu, Isao; and Yabutsuka, Mitsuo, 5,824,348, Cl. 425-120.000.
Kabushiki Kaisha Yaskawa Denki: *See*—
Ichibangase, Atsushi; and Ogawa, Masahiro, 5,823,060, Cl. 74-490.020.
Tomiyasu, Kazuhiro, 5,823,061, Cl. 74-490.030.
Kabushikikaisha Equos Reseach: *See*—
Yamaguchi, Kozo; and Kojima, Hiroyuki, 5,823,281, Cl. 180-65.200.
Kabushikikaisha Equos Research: *See*—
Yamaguchi, Kozo, 5,823,282, Cl. 180-65.200.
Kabushikikaishi Daiki: *See*—
Ito, Hiroshi, 5,823,139, Cl. 119-171.000.
Kachi, Masanori: *See*—
Takahashi, Noboru; and Kachi, Masanori, 5,823,810, Cl. 439-188.000.
Kachi, Mitsuyasu; and Tsutsui, Kazuhiko, to Mitsubishi Denki Kabushiki Kaisha. Method of detecting, diagnosing and automatically correcting abnormalities in servo control system. 5,825,150, Cl. 318-610.000.
Kacian, Daniel L.: *See*—
Nelson, Norman C.; Velarde, Jorge, Jr.; and Kacian, Daniel L., 5,824,475, Cl. 435-6.000.
Kacian, Daniel Louis; and Fultz, Timothy J., to Gen-Probe Incorporated. Nucleic acid sequence amplification methods. 5,824,518, Cl. 435-91.210.
Kadota, Shigeru; Furukawa, Takashi; Kawaguchi, Kiyoshi; Suzuki, Masahiko; and Yamada, Kenji, to Nippondenso Co., Ltd. Cooling apparatus using boiling and condensing refrigerant. 5,823,248, Cl. 165-104.330.
Kagami, Toshiki, to Sony Corporation. Ink jet printer and printer head having means for quantifying liquids and mixing liquids outside the printer head. 5,825,379, Cl. 347-20.000.
Kagata, Hiroshi; Kato, Junichi; and Nishimoto, Keiji, to Matsushita Electric Industrial Co., Ltd. Dielectric ceramic compositions. 5,824,616, Cl. 501-136.000.
Kagawa, Sakae; and Nagano, Kazunori, to Fuji Photo Film Co., Ltd. Method of and system for packaging rolls of photographic film in box. 5,822,953, Cl. 53-544.000.
Kahlman, Josephus A. H. M.; and Van Rosmalen, Gerard E., to U.S. Philips Corporation. Device for scanning information tracks on a record carrier. 5,825,740, Cl. 369-97.000.
Kahn, Clifford Earl, to Digital Equipment Corporation. System for selectively browsing a large, distributed directory tree using authentication links. 5,826,254, Cl. 707-5.000.
Kai, Keiichi: *See*—
Sato, Hisaaki; Kumagai, Masato; Kudo, Munehiro; and Kai, Keiichi, 5,823,165, Cl. 123-399.000.
Kai, Koji: *See*—
Urabe, Yoshio; Koga, Shouichi; Takai, Hitoshi; Kai, Koji; and Yamasaki, Hidetoshi, 5,825,820, Cl. 375-259.000.
Kaifu, Noriyuki: *See*—
Nonaka, Hideki; Endo, Yutaka; Kaifu, Noriyuki; Kobayashi, Isao; Kameshima, Toshio; and Ogura, Takashi, 5,825,032, Cl. 250-370.090.
Kaiser, James Jay: *See*—
McCormick, Patrick J.; Kaiser, James Jay; and Eckardt, Paul M., 5,824,553, Cl. 436-1.000.
Kaito, Yoshihiko, to Fujitsu Limited. Polarized light variable lens holder. 5,825,953, Cl. 385-79.000.
Kajima Corporation: *See*—
Nikai, Isao; Uda, Motohisa; Shindo, Naoki; and Fuse, Takeshi, 5,823,008, Cl. 62-401.000.
Kajitani, Koji; and Mizukami, Hiroshi, to Exedy Corporation. Dual flywheel assembly with lockup mechanism between two flywheels. 5,823,880, Cl. 464-66.000.
Kakinuma, Kazuhiko: *See*—
Nagata, Kiyohito; Fujii, Teruya; Hamada, Katsunori; Kakinuma, Kazuhiko; Yoshimi, Masaaki; and Wakabayashi, Tatsuaki, 5,826,197, Cl. 455-524.000.
Kakinuma, Koichiro: *See*—
Narushima, Toshio; Kakinuma, Koichiro; Araya, Masao; Mikami, Shinichiro; and Ikegami, Junko, 5,823,690, Cl. 400-120.070.
Kakitani, Makoto: *See*—
Ishikawa, Rika; Okada, Yuji; and Kakitani, Makoto, 5,824,778, Cl. 530-351.000.
Kakiuchi, Shinichi: *See*—
Maruko, Takashi; Kakiuchi, Shinichi; and Umezawa, Junji, 5,823,890, Cl. 473-354.000.
Kaku, Nobuyuki: *See*—
Ono, Hiroaki; Kano, Kiyoshi; Nishijima, Hideo; Arai, Takao; Noguchi, Takaharu; Amada, Nobutaka; Okamoto, Hiroo; Owashi, Hitoaki; Nishimura, Keizo; Kaku, Nobuyuki; and Fujimori, Shinya, 5,825,969, Cl. 386-94.000.
Kaku, Takashi; and Okita, Ryoji, to Fujitsu Limited. Apparatus and method of recovering a timing signal in a transmission apparatus by adjusting tap coefficients. 5,825,818, Cl. 375-232.000.
Kakudo, Kyoko: *See*—
Ishibe, Hiroshi; Inoue, Manabu; Yagura, Hirokazu; Katoh, Takehiro; Yamada, Tetsuo; Kakudo, Kyoko; and Nanba, Katsuyuki, 5,825,410, Cl. 348-107.000.
Kalagian, Curt A. Fishing lure with illuminating eyes. 5,822,909, Cl. 43-17.600.
Kalapodis, James B.: *See*—
Bishop, Ralph L.; and Kalapodis, James B., 5,825,277, Cl. 337-407.000.
Reid, Carl R.; Lanham, David; Grist, Matt M.; and Kalapodis, James B., 5,825,278, Cl. 337-407.000.
Kalebic, Thea: *See*—
Schein, Philip S.; and Kalebic, Thea, 5,824,664, Cl. 514-143.000.
Kalend, Andre M.; Greenberger, Joel; Shimoga, Karun B.; Athanassiou, Charalambos N.; and Kanade, Takeo, to Commonwealth System of Higher Education, University of Pittsburgh of the. Apparatus for automatically positioning a patient for treatment/diagnoses. 5,823,192, Cl. 128-845.000.
Kalidindi, Raju K.: *See*—
Fisher, Alfred J., IV; Collins, Cecil A.; Bonk, Jeffery T.; and Kalidindi, Raju K., 5,823,622, Cl. 297-362.120.
Kalidindi, Sanyasi Raju. Flexible swabbing tool. 5,823,592, Cl. 294-24.000.
Kalidindi, Surya: *See*—
Siegler, Sorin; Kalidindi, Surya; and Abusafieh, Abdel, 5,824,079, Cl. 623-11.000.
Kälin, Xavier: *See*—
Luthi, Simon; Kälin, Xavier; Scholz, Wolfgang; and Stüssi, Edgar, 5,822,886, Cl. 36-28.000.
Kalina, Alexander I.; and Rhodes, Lawrence B., to Exergy, Inc. Converting heat into useful energy using separate closed loops. 5,822,990, Cl. 60-649.000.
Kalish, Vincent J.; Reich, Siegfried Heinz; Tatlock, John H.; and Rodriguez, Michael J., to Agouron Pharmaceuticals, Inc. HIV protease inhibitors. 5,824,688, Cl. 514-307.000.
Kalkman, Piet; Roodenburg, Joop; and de Groot, Anne Klaas, to Allseas Group S.A. Method and installation for laying a pipeline on a surface located under water. 5,823,712, Cl. 405-165.000.
Kallergi, Maria: *See*—
Clarke, Laurence P.; Qian, Wei; and Kallergi, Maria, 5,825,936, Cl. 382-261.000.
Kalsi Engineering, Inc.: *See*—
Dietle, Lannie L.; and Conroy, William T., 5,823,541, Cl. 277-320.000.
Kamada, Hiroshi: *See*—
Hirota, Katsuhiko; Kamada, Hiroshi; Suzuki, Kaori; Tada, Atsuko; Yumoto, Asako; Kasai, Satoshi; and Shibata, Kazumi, 5,825,365, Cl. 345-433.000.
Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, to Hitachi, Ltd. DNA analyzing method. 5,824,481, Cl. 435-6.000.
Kameda, Takanobu: *See*—
Kamijo, Noriyuki; Watanabe, Kenji; Kameda, Takanobu; Shimmura, Tomoyuki; and Aida, Chieko, 5,824,184, Cl. 156-584.000.
Kamerbeek, Evert M. H., to U. S. Philips Corporation. Information storage unit with magnetic information disc. 5,825,576, Cl. 360-75.000.
Kameshima, Toshio: *See*—
Nonaka, Hideki; Endo, Yutaka; Kaifu, Noriyuki; Kobayashi, Isao; Kameshima, Toshio; and Ogura, Takashi, 5,825,032, Cl. 250-370.090.
Kamijo, Noriyuki; Watanabe, Kenji; Kameda, Takanobu; Shimmura, Tomoyuki; and Aida, Chieko, to Seiko Epson Corporation; and King Jim Co., Ltd. Structure for removing a peel-off backing from an adhesive tape. 5,824,184, Cl. 156-584.000.
Kamikado, Koji: *See*—
Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, 5,824,424, Cl. 428-626.000.
Kamimura, Takashi: *See*—
Mizumura, Michinobu; Hamamura, Yuuichi; Azuma, Junzou; Shimase, Akira; Kamimura, Takashi; Itoh, Fumikazu; Umemura, Kaoru; Kawanami, Yoshimi; and Madokoro, Yuuichi, 5,825,035, Cl. 250-423.00R.

Kamin, Ralph A., Jr.; and Haddock, Graham, to Motorola, Inc. Apparatus and methods for providing wireless communication to a sectorized coverage area. 5,825,762, Cl. 370-335.000.
Kamiuchi, Toshiro: *See*—
Hamada, Nagaharu; Kamiuchi, Toshiro; Hikawa, Ikuo; Nakasugi, Takashi; Azuma, Takashi; and Takayama, Chiharu, 5,826,035, Cl. 395-200.770.
Kojima, Noboru; Kamiuchi, Toshiro; Morikawa, Juichi; and Nejime, Yoshito, 5,825,853, Cl. 379-67.000.
Kamiya, Masaaki: *See*—
Hayashi, Yutaka; Kojima, Yoshikazu; Takada, Ryoji; and Kamiya, Masaaki, 5,825,064, Cl. 257-316.000.
Kampmann, Stefan: *See*—
Poiz, Detlev; Lewentz, Guenter; Maier, Ralf; Kampmann, Stefan; Gordon, Uwe; Kreh, Andreas; and Rodriguez-Amaya, Nestor, 5,823,161, Cl. 123-305.000.
Kamura, Kouichirou: *See*—
Kobayashi, Hiroshi; Hidaka, Yoshiharu; Aida, Kazuo; Ikeda, Takashi; Yano, Motomitsu; and Kamura, Kouichirou, 5,825,766, Cl. 370-395.000.
Kanade, Takeo: *See*—
Kalend, Andre M.; Greenberger, Joel; Shimoga, Karun B.; Athanassiou, Charalambos N.; and Kanade, Takeo, 5,823,192, Cl. 128-845.000.
Kanai, Hiroshi, to Sanyo Electric Co., Ltd. Method and system for testing performance of refrigeration units. 5,824,921, Cl. 73-865.800.
Kanawati, Antoun J.: *See*—
Schaefer, Marvin; Martel, Paul A.; Kanawati, Antoun J.; and Wade, Sandra A., 5,826,268, Cl. 707-9.000.
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, to Canon Kabushiki Kaisha. Method of driving optical modulation device. 5,825,390, Cl. 345-17.000.
Kanda, Hidehiko: *See*—
Gotoh, Fumibiro; Hirabayashi, Hiromitsu; Kashino, Toshio; Tajika, Hiroshi; Akiyama, Yuji; Sugimoto, Hitoshi; Matsubara, Miyuki; and Kanda, Hidehiko, 5,825,377, Cl. 347-15.000.
Kane, Charles Theodore, Jr.: *See*—
Malspeis, Louis; Vishnuvajjala, B. Rao; Supko, Jeffrey G.; and Kane, Charles Theodore, Jr., 5,824,674, Cl. 514-211.000.
Kane, Laura: *See*—
Dobbins, Kurt; Grant, Thomas A.; Ruffen, David J.; Kane, Laura; Len, Theodore; Andlauer, Philip; Bahi, David H.; Yohe, Kevin; Fee, Brendan; Oliver, Chris; Cullerot, David L.; and Skubisz, Michael, 5,825,772, Cl. 370-396.000.
Kaneda, Kitahiro; and Inou, Kazuya, to Canon Kabushiki Kaisha. Electronic image-movement correcting device with a variable correction step feature. 5,825,415, Cl. 348-208.000.
Kaneda, Naoya: *See*—
Kino, Yoshiki; Kaneda, Naoya; Matsuda, Kazuya; Iwasaki, Youichi; Wada, Hiroyuki; Takashima, Tsuneo; and Ichinose, Harunobu, 5,825,545, Cl. 359-557.000.
Kanegae, Masahide; Kondou, Masao; Sugaya, Tomoki; and Tanaka, Hiroyuki, to Fujitsu Limited. PRML regenerating apparatus having reduced number of charge pump circuits. 5,825,570, Cl. 360-65.000.
Kanegafuchi Kagaku Kogyo Kabushiki Kaisha: *See*—
Ikenaka, Yasuhiro; Nanba, Hirokazu; Takano, Masayuki; Yajima, Kazuyoshi; Yamada, Yukio; Takahashi, Satomi; Okubo, Kazuma; Yamada, Kazuhiko; and Hiraishi, Yoshiro, 5,824,522, Cl. 435-106.000.
Kaneko, Atsushi: *See*—
Takayama, Hirokazu; Ogawa, Toshiyuki; and Kaneko, Atsushi, 5,823,033, Cl. 72-60.000.
Kaneko, Hideki: *See*—
Inoue, Tohru; Yamasaki, Tatsuo; Nose, Junichi; Kaneko, Hideki; and Onishi, Ken, 5,825,971, Cl. 386-122.000.
Kaneko, Shigeki: *See*—
Fujita, Kenichi; Nagao, Takeshi; Kawaguchi, Toru; Kaneko, Shigeki; and Hikita, Hiroyuki, 5,825,336, Cl. 345-2.000.
Kaneko, Syuzo: *See*—
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, 5,825,390, Cl. 345-17.000.
Kaneko, Takayuki: *See*—
Nakamura, Takeshi; and Kaneko, Takayuki, 5,824,903, Cl. 73-514.340.
Saito, Yuji; and Kaneko, Takayuki, 5,825,739, Cl. 369-83.000.
Kaneko, Toshiaki: *See*—
Muramatsu, Katsutoshi; Kaneko, Toshiaki; Kiyohara, Kouichi; Ito, Kenji; Nishihara, Yoshimi; Inoue, Hiroyuki; and Ishihara, Makoto, 5,823,510, Cl. 251-368.000.
Kaneko, Yoshikazu; and Obana, Naohiko, to Bridgestone Metalpha Corporation. Corrosion resistant steel filament. 5,822,973, Cl. 57-902.000.
Kaneko, Yoshiyuki, to Canon Kabushiki Kaisha. Camera capable of remote-control operation. 5,826,116, Cl. 396-56.000.
Kaneko, Yushi: *See*—
Owada, Mitsuru; and Kaneko, Yushi, 5,825,931, Cl. 382-236.000.
Kanekura, Hiroshi; and Muramatsu, Tsuyoshi, to Sharp Kabushiki Kaisha. Data processing system which converts received data packet into extended packet with prescribed field for accumulation process. 5,826,098, Cl. 395-800.260.
Kang, Andrew: *See*—
Postlethwaite, Arnold E.; Seyer, Jerome; and Kang, Andrew, 5,824,647, Cl. 514-13.000.
Kang, Hyo Sik: *See*—
Park, Jong-Oh; Lee, Chong Won; Ahn, In Seok; and Kang, Hyo Sik, 5,825,983, Cl. 395-99.000.
Kang, Kwang-Yong: *See*—
Han, Seok-Kil; Kang, Kwang-Yong; and Kim, Je-Ha, 5,824,953, Cl. 174-65.0SS.
Kang, Myung Goo; Kang, Seong Sik; Choi, Sung Hoon; Joung, Mun Chea; Jang, Byoung Gyu; Ryu, Kye Yeon; Yu, Hyo Chong; and Lee, Sang Jig, to Goldstar Co., Ltd. Magnetic recording and reproducing apparatus deck mechanism with a slide base and a power transmission mechanism respectively disposed on opposite side surfaces of a fixed base plate. 5,825,583, Cl. 360-85.000.
Kang, Seong Sik: *See*—
Kang, Myung Goo; Kang, Seong Sik; Choi, Sung Hoon; Joung, Mun Chea; Jang, Byoung Gyu; Ryu, Kye Yeon; Yu, Hyo Chong; and Lee, Sang Jig, 5,825,583, Cl. 360-85.000.
Kania, Eugeniusz: *See*—
Seiler, Peter Wilhelm; Pawlowski, Stanislaw; Kania, Eugeniusz; Mathejka, Horst Wolfgang; and Kircher, Werner, 5,823,766, Cl. 432-121.000.
Kanki, Masahiro; Tsukada, Masaki; and Ishii, Tadamichi, to Dai Nippon Printing Co., Ltd. Decorative material. 5,824,415, Cl. 428-411.100.
Kanno, Fumio: *See*—
Danmoto, Shojiro; Kanno, Fumio; Komiya, Takao; and Ito, Sumiyoshi, 5,825,980, Cl. 395-80.000.
Kano, Kiyoshi: *See*—
Ono, Hiroaki; Kano, Kiyoshi; Nishijima, Hideo; Arai, Takao; Noguchi, Takaharu; Amada, Nobutaka; Okamoto, Hiroo; Owashi, Hitoaki; Nishimura, Keizo; Kaku, Nobuyuki; and Fujimori, Shinya, 5,825,969, Cl. 386-94.000.
Kano, Takenori: *See*—
Taniguchi, Takao; Miki, Nobuaki; Kano, Takenori; Morishita, Toshiya; Ogasawara, Naoto; Murakami, Naotaka; and Kiyama, Ken, 5,823,070, Cl. 74-606.00R.
Kanota, Keiji: *See*—
Inoue, Hajime; Kubota, Yukio; Nagashima, Toshimichi; Shimazu, Akira; and Kanota, Keiji, 5,826,168, Cl. 455-6.200.
Kansai Paint Co., Ltd.: *See*—
Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, 5,824,424, Cl. 428-626.000.
Kanzaki, Manabu: *See*—
Fukumoto, Masahiro; and Kanzaki, Manabu, 5,826,203, Cl. 588-15.000.
Kao Corporation: *See*—
Kubota, Yuichi; Hoshino, Eiichi; and Aigami, Koji, 5,824,115, Cl. 8-194.000.
Omori, Toshiyuki; and Inagawa, Yoshinori, 5,823,400, Cl. 222-318.000.
Suzuki, Masatoshi; Futsuhara, Koichi; and Sakai, Masayoshi, 5,825,144, Cl. 318-434.000.
Kara, Salim G., to E-Stamp Corporation. System and method for registgration using indicia. 5,825,893, Cl. 380-51.000.
Karasik, Boris G.; and Karasik, Vladimir G., to UT Automotive, Inc. Multiple detent membrane switch. 5,824,978, Cl. 200-1.00B.
Karasik, Vladimir G.: *See*—
Karasik, Boris G.; and Karasik, Vladimir G., 5,824,978, Cl. 200-1.00B.
Karczewski, Michael A.: *See*—
Snyder, Carl A.; Karczewski, Michael A.; Shurskis, Karl W.; and Saigal, Sunil, 5,823,042, Cl. 72-366.200.
Karg, Jeffery: *See*—
Bertrand, John E.; Mercer, Lee A.; Burchard, Thomas H.; Hunter, Gregory; Lofgren, John; Wagner, Henry N.; Johnson, Kevin M.; and Karg, Jeffery, 5,823,229, Cl. 137-614.200.
Karl Mayer Textilmachinenfabrik GmbH: *See*—
Mista, Kresimir; and Hoehne, Hans Juergen, 5,824,959, Cl. 174-117.00F.
Karl Walther Alben und Rahmen GmbH & Co. KG: *See*—
Mattes, Peter, 5,823,347, Cl. 206-555.000.
Karnowski, Mark J., to Casio PhoneMate, Inc. Backup system for a time of day clock in an electronic device. 5,825,648, Cl. 364-187.000.
Karnowski, Mark J.: *See*—
Core, Kenneth R.; Nirshberg, Alex; Knuth, Stephen B.; and Karnowski, Mark J., 5,826,187, Cl. 455-412.000.
Karrh, Billie Rue: *See*—
Murdoch, Michele Ann; Bretz, Glenwood; Karrh, Billie Rue; Davis, Duane Albrecht; Oppedisano, Samuel J.; Hatch, William G.; Huang, Tsongshih; Mack, Kit L.; and Lin, Sheng S., 5,823,715, Cl. 405-219.000.
Karwoski, Theodore; Martakos, Paul; Gingras, Peter; Herweck, Steve A.; and Swanick, Tom, to Atrium Medical Corporation. Prosthesis with in-wall modulation. 5,824,050, Cl. 623-1.000.
Kasahara, Michio: *See*—
Hayashi, Kenichi; Hashimura, Kenzo; Kasahara, Michio; and Ikeda, Yukihiro, 5,824,755, Cl. 526-206.000.
Kasahara, Shigeo: *See*—
Betsui, Keiichi; Fukuta, Shin'ya; Kosaka, Tadayoshi; Namiki, Fumihiro; Toyoda, Osamu; and Kasahara, Shigeo, 5,825,128, Cl. 313-582.000.
Kasahara, Takeshi, to Toko Kabushiki Kaisha. Variable capacitance diode device and method of manufacturing same. 5,825,075, Cl. 257-596.000.
Kasahara, Touko: *See*—
Irie, Katsumi; Kawase, Nobuyuki; Hayama, Takafumi; and Kasahara, Touko, 5,825,196, Cl. 324-770.000.

Kasai, Satoshi: *See*—
Hirota, Katsuhiko; Kamada, Hiroshi; Suzuki, Kaori; Tada, Atsuko; Yumoto, Asako; Kasai, Satoshi; and Shibata, Kazumi, 5,825,365, Cl. 345-433.000.

Kasai, Yoshiji; Hara, Kaoru; and Aruga, Misao, to Kabushiki Kaisha Eastern. Circuit board for a semiconductor device and method of making the same. 5,824,964, Cl. 174-252.000.

Kasaoka, Keisuke: *See*—
Hiyoshi, Toru; Mine, Toshiki; Kasaoka, Keisuke; Tyson, Robert Huw; and Page, Anthony Miles John, 5,824,862, Cl. 800-205.000.

Käshauer, Josef: *See*—
Lantzsch, Reinhard; Bussmann, Werner; Käshauer, Josef; Dollinger, Markus; and Santel, Hans-Joachim, 5,824,817, Cl. 558-425.000.

Kashat, Israel: *See*—
Koifman, Vladimir; Afek, Yachin; and Kashat, Israel, 5,825,246, Cl. 330-255.000.

Kashino, Toshio: *See*—
Gotoh, Fumihiro; Hirabayashi, Hiromitsu; Kashino, Toshio; Tajika, Hiroshi; Akiyama, Yuji; Sugimoto, Hitoshi; Matsubara, Miyuki; and Kanda, Hidehiko, 5,825,377, Cl. 347-15.000.

Kashiwagi, Hiroshi: *See*—
Tani, Takao; and Kashiwagi, Hiroshi, 5,822,857, Cl. 29-887.000.

Kassardjian, Vasken; and Wilson, Patrick Joseph, to Don De Cristo Concrete Accessories, Inc. Method for molding a protective cover for an exposed end of a bar. 5,824,253, Cl. 264-275.000.

Kasser, Bernard: *See*—
Bisset, Stephen J.; and Kasser, Bernard, 5,825,352, Cl. 345-173.000.

Kastenhuber, Werner: *See*—
Bachtler, Michael; Schnur, Rudolf R.; Pässler, Peter; Scheidsteger, Olaf; Kastenhuber, Werner; Schlindwein, Gerd; and König, Rainer, 5,824,834, Cl. 585-540.000.

Kasukawa, Takahisa: *See*—
Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, 5,824,424, Cl. 428-626.000.

Katagiri, Kazuharu: *See*—
Kanbe, Junichiro; Katagiri, Kazuharu; and Kaneko, Syuzo, 5,825,390, Cl. 345-17.000.

Kataoka, Akitoshi; and Ikedo, Jotaro, to Nippon Telegraph and Telephone Corp. Vector coding method, encoder using the same and decoder therefor. 5,825,311, Cl. 341-51.000.

Kataoka, Hiroyuki: *See*—
Nakamura, Takao; Sekiyama, Nobuya; Nakano, Keiko; Furusawa, Kenji; Kataoka, Hiroyuki; Shirakura, Takaaki; and Matsuoka, Shinya, 5,825,591, Cl. 360-104.000.

Kataoka, Naoki: *See*—
Tajima, Yoshio; Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; and Matsuura, Kazuo, 5,824,618, Cl. 502-108.000.

Kathan, Benno; and Schütze, Jörg, to IFM Electronic GmbH. Pressure measuring sensor and apparatus having a seal between a housing and a pressure measuring cell. 5,824,909, Cl. 73-706.000.

Kato, Haruo: *See*—
Ito, Sadao; and Kato, Haruo, 5,823,499, Cl. 248-429.000.

Kato, Hideya, to Toyoda Koki Kabushiki Kaisha. Flow control device of a power steering apparatus. 5,822,988, Cl. 60-468.000.

Kato, Ichiro, to Canon. Spread spectrum communication system. 5,825,805, Cl. 375-200.000.

Kato, Ikunoshin: *See*—
Hashino, Kimikazu; Matsushita, Hideyuki; and Kato, Ikunoshin, 5,824,547, Cl. 435-325.000.
Kurome, Yoko; Izu, Hiroyuki; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, 5,824,503, Cl. 435-69.100.

Kato, Junichi: *See*—
Kagata, Hiroshi; Kato, Junichi; and Nishimoto, Keiji, 5,824,616, Cl. 501-136.000.

Kato, Kazunori: *See*—
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; and Kato, Kazunori, 5,824,442, Cl. 430-45.000.

Kato, Kintaro: *See*—
Matsuo, Shinichi; Fujimaki, Nobuyoshi; Watanabe, Shiroyasu; and Kato, Kintaro, 5,823,351, Cl. 206-710.000.

Kato, Masao: *See*—
Higashimura, Mamoru; Kato, Masao; Tamura, Mitsuo; Inagaki, Akira; and Uenoyama, Tsutomu, 5,826,024, Cl. 395-200.440.

Kato, Minoru: *See*—
Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; and Soshi, Isao, 5,826,114, Cl. 396-55.000.

Kato, Naomiki: *See*—
Yamasaki, Kozo; and Kato, Naomiki, 5,822,851, Cl. 29-846.000.

Kato, Nobuhide; and Ikoma, Nobukazu, to NGK Insulators, Ltd. Temperature sensor. 5,823,680, Cl. 374-185.000.

Kato, Nobuo; Sakai, Yasuyoshi; Tani, Yoshiki; Yagi, Masayuki; and Funatsu, Fumiyo, to Kyoto Daiichi Kagaku Co., Ltd. Fructosyl amino acid oxidase and process for producting the same. 5,824,527, Cl. 435-191.000.

Kato, Nobuo: *See*—
Nagase, Haruo; Ichikawa, Masaaki; Hamada, Hideki; Kato, Nobuo; Ono, Tomoyuki; and Kimura, Yasuhiro, 5,823,806, Cl. 439-140.000.

Kato, Osamu; and Hayashi, Masaki, to Matsushita Electric Industrial Co., Ltd. Mobile communication apparatus. 5,825,763, Cl. 370-335.000.

Kato, Seiji; and Tanaka, Hisayuki, to Daiwa Seiko, Inc. Lure with stabilized movement. 5,822,912, Cl. 43-42.220.

Kato, Shinji: *See*—
Maruta, Takayuki; Takashima, Hiroshi; Ishikawa, Tomoji; Sugihara, Kazuyuki; Kato, Shinji; and Kosuge, Katsuhiro, 5,826,146, Cl. 399-235.000.

Katoh, Jyouji: *See*—
Yamashita, Toshiki; Doi, Jun; Fukui, Tomonori; Kawamura, Fumio; Katoh, Jyouji; and Kawada, Yasuo, 5,826,154, Cl. 399-364.000.

Katoh, Takehiro: *See*—
Ishibe, Hiroshi; Inoue, Manabu; Yagura, Hirokazu; Katoh, Takehiro; Yamada, Tetsuo; Kakudo, Kyoko; and Nanba, Katsuyuki, 5,825,410, Cl. 348-107.000.

Katoh, Yoshiyuki: *See*—
Inden, Masahiro; Katoh, Yoshiyuki; and Sugiura, Akihiko, 5,823,507, Cl. 251-129.150.

Kats, Aleksandr: *See*—
Ernst, Scot A.; Grois, Igor; Kats, Aleksandr; Makhlin, Ilya; and Pescetto, Michael J., 5,825,955, Cl. 385-79.000.

Katsuki, Takayo: *See*—
Ikeda, Yutaka; and Katsuki, Takayo, 5,825,604, Cl. 361-149.000.

Katsuma, Takatoshi, to Sumitomo Wiring Systems, Ltd. Sealing rubber plug with interposing band under the insulation barrel of a wire terminal. 5,824,962, Cl. 174-135.000.

Katsuta, Yasushi: *See*—
Tamaki, Toshio; Tamaki, Minoru; and Katsuta, Yasushi, 5,824,245, Cl. 264-29.200.

Katz, Joseph: *See*—
Dvorkis, Paul; Shepard, Howard; Bard, Simon; Katz, Joseph; and Barkan, Edward, 5,825,013, Cl. 235-472.000.

Katz, Leonard; Donadio, Stefano; and McAlpine, James B., to Abbott Laboratories. Recombinant DNA method for producing erythromycin analogs. 5,824,513, Cl. 435-76.000.

Kauffman, Peter J.: *See*—
Hayes, Matthew I.; Hayes, Jeffrey A.; and Lilliott, William R., III, 5,823,594, Cl. 294-142.000.

Kauffman, Stuart A.: *See*—
Kauffman, Stuart Alan; and Ballivet, Marc, 5,824,514, Cl. 435-91.100.

Kauffman, Stuart Alan; and Ballivet, Marc, to Kauffman, Stuart A. Process for the production of expression vectors comprising at least one stochastic sequence of polynucleotides. 5,824,514, Cl. 435-91.100.

Kaufman, Gary Stanley: *See*—
Brooks, Nancy Sinling; Fryer, Paul Douglas; Kaufman, Gary Stanley; Berkson, Stephen Phillip; Herel, Charles R.; and Brooks, Laura M., 5,825,869, Cl. 379-265.000.

Kaufman, Keith D.: *See*—
Gormley, Glenn J.; Kaufman, Keith D.; Stoner, Elizabeth; and Waldstreicher, Joanne, 5,824,686, Cl. 514-284.000.

Kaverin, Nicolai V.: *See*—
Webster, Robert G.; and Kaverin, Nicolai V., 5,824,536, Cl. 435-235.100.

Kavlico Corporation: *See*—
Park, Kyong M.; and Nassar, Marcos A., 5,824,889, Cl. 73-116.000.

Kavolius, Vytas A.; White, Joseph E.; and Buttner, Bradford G., to Genicom Corporation. Reconditioning primary charge rollers for electrostatographic imaging machines. 5,823,929, Cl. 492-53.000.

Kawabata, Kei: *See*—
Hori, Shuji; Kawabata, Kei; and Maruyama, June, 5,823,227, Cl. 137-636.100.

Kawada, Shunichirou, to Riso Kagaku Corporation. Sheet feeder with flexible frictional member for separating sheets. 5,823,524, Cl. 271-124.000.

Kawada, Yasuo: *See*—
Yamashita, Toshiki; Doi, Jun; Fukui, Tomonori; Kawamura, Fumio; Katoh, Jyouji; and Kawada, Yasuo, 5,826,154, Cl. 399-364.000.

Kawagoe, Junichi: *See*—
Yamauchi, Yoichi; Nakagawa, Takashi; and Kawagoe, Junichi, 5,824,675, Cl. 514-218.000.

Kawaguchi, Hideshi: *See*—
Araki, Ryuji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; Nomura, Yoshiya; Matsuda, Kenji; and Miura, Kouji, 5,825,472, Cl. 355-200.000.

Kawaguchi, Kiyoshi: *See*—
Kadota, Shigeru; Furukawa, Takashi; Kawaguchi, Kiyoshi; Suzuki, Masahiko; and Yamada, Kenji, 5,823,248, Cl. 165-104.330.

Kawaguchi, Kunio: *See*—
Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, 5,825,313, Cl. 341-67.000.

Kawaguchi, Toru: *See*—
Fujita, Kenichi; Nagao, Takeshi; Kawaguchi, Toru; Kaneko, Shigeki; and Hikita, Hiroyuki, 5,825,336, Cl. 345-2.000.

Kawai, Hideki; Hashima, Hidekazu; and Nakajima, Sadao, to Yamamura Glass Co., Ltd. Thin film of potassium niobate, process for producing the thin film, and optical device using the thin film. 5,824,419, Cl. 428-432.000.

Kawai, Hiroyuki: *See*—
Ohashi, Hideki; Kawai, Hiroyuki; Kojima, Hiroyoshi; Asano, Katsuhiro; Umeno, Takaji; Naito, Toshiharu; Onogi, Nobuyoshi; and Inoue, Yuuichi, 5,826,207, Cl. 701-36.000.

Kawai, Misako: *See*—
Asano, Minao; Kawai, Misako; Miwa, Tetsuya; and Nio, Noriki, 5,824,534, Cl. 435-212.000.

Kawai, Satoru; Yamazaki, Masayasu; Sudo, Kenichiro; and Saito, Hitoshi, to Dai Nippon Printing Co., Ltd. Thermal transfer image-receiving sheet. 5,824,623, Cl. 503-227.000.

Kawai, Yoshio: *See*—
Osawa, Yoichi; Watanabe, Satoshi; Takemura, Kaysuya; Nagura, Shigehiro; Tanaka, Akinobu; and Kawai, Yoshio, 5,824,824, Cl. 568-49.000.

Kawakami, Hiroaki: *See*—
Tanikawa, Hirohide; Kawakami, Hiroaki; Fujiwara, Masatsugu; and Kato, Kazunori, 5,824,442, Cl. 430-45.000.

Kawakami, Soichiro; Mishina, Shinya; and Kobayashi, Naoya, to Canon Kabushiki Kaisha. Secondary battery. 5,824,434, Cl. 429-209.000.

Kawakami, Yasunori: *See*—
Hamai, Shinji; Okabe, Masao; and Kawakami, Yasunori, 5,825,567, Cl. 360-41.000.

Kawamata, Ken; and Ikeda, Hiromu, to Olympus Optical Co., Ltd. Optical thin film for optical element. 5,825,549, Cl. 359-582.000.

Kawamoto, Kazuko: *See*—
Kambara, Hideki; Okano, Kazunori; Takahashi, Satoshi; Nagai, Keiichi; Kawamoto, Kazuko; and Furuyama, Hiroko, 5,824,481, Cl. 435-6.000.

Kawamura, Fumio: *See*—
Yamashita, Toshiki; Doi, Jun; Fukui, Tomonori; Kawamura, Fumio; Katoh, Jyouji; and Kawada, Yasuo, 5,826,154, Cl. 399-364.000.

Kawamura, Hiroyuki; and Mizumura, Hiroshi, to Fuji Photo Optical Co., Ltd. TV camera lens driving device and TV camera lens. 5,826,117, Cl. 396-79.000.

Kawamura, Ichiro: *See*—
Ikawa, Yoshihiro; Takizawa, Teruyuki; and Kawamura, Ichiro, 5,825,151, Cl. 318-685.000.

Kawamura, Katsumi: *See*—
Asai, Tamotsu; Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, 5,825,985, Cl. 395-108.000.

Kawamuro, Junji, to Toyota Jidosha Kabushiki Kaisha. Power steering apparatus having an easily adjustable counter force mechanism. 5,823,090, Cl. 91-375.00A.

Kawanami, Yoshimi: *See*—
Mizumura, Michinobu; Hamamura, Yuuichi; Azuma, Junzou; Shimase, Akira; Kamimura, Takashi; Itoh, Fumikazu; Umemura, Kaoru; Kawanami, Yoshimi; and Madokoro, Yuuichi, 5,825,035, Cl. 250-423.00R.

Kawanishi, Hidenori; and Shimonaka, Atsushi, to Sharp Kabushiki Kaisha. Optical circuit element and an integrated type optical circuit device. 5,825,952, Cl. 385-47.000.

Kawanishi, Toshiaki: *See*—
Terayama, Koji; Hirano, Seiji; Kawanishi, Toshiaki; Ikeda, Toshifumi; and Sakamoto, Hiroaki, 5,825,749, Cl. 370-244.000.

Kawano, Hiroshi; Hayashi, Takayuki; and Matsumoto, Isao, to Matsushita Electric Industrial Co., Ltd. Non-sintered type nickel electrode. 5,824,435, Cl. 429-223.000.

Kawasaki, Eishi; Koumura, Tsukasa; Onda, Shoichi; and Ohoka, Tadao, to Denso Corporation. Color liquid crystal display with three dichroic mirrors reflecting in different directions to three pixels which reflect to common optics. 5,825,443, Cl. 349-95.000.

Kawasaki, Minoru, to Tokai Rubber Industries, Ltd. Multi-layered hose. 5,823,231, Cl. 138-109.000.

Kawasaki, Somei; Iseki, Masami; and Ebata, Hironari, to Canon Kabushiki Kaisha. Pixel modulation circuit and recording apparatus using the same. 5,825,939, Cl. 382-270.000.

Kawase, Akira: *See*—
Kubodera, Noboru; and Kawase, Akira, 5,824,811, Cl. 552-653.000.

Kawase, Nobuyuki: *See*—
Irie, Katsumi; Kawase, Nobuyuki; Hayama, Takafumi; and Kasahara, Touko, 5,825,196, Cl. 324-770.000.

Kawasugi, Tadaaki: *See*—
Ohba, Michio; Iwahana, Hidenori; Sato, Ryoichi; Suzuki, Nobukazu; Ogiwara, Katsutoshi; Sakanaka, Kazunobu; Hori, Hidetaka; Asano, Shouji; and Kawasugi, Tadaaki, 5,824,878, Cl. 800-205.000.

Kawasumi Laboritories, Inc.: *See*—
Kawasumi, Shinroku; Yamada, Michio; and Honma, Masatoshi, 5,824,267, Cl. 422-28.000.

Kawasumi, Shinroku; Yamada, Michio; and Honma, Masatoshi, to Kawasumi Laboritories, Inc. Metallic bactericidal agent. 5,824,267, Cl. 422-28.000.

Kawate, Keith W.: *See*—
Corkum, David L.; Park, June; and Kawate, Keith W., 5,824,902, Cl. 73-514.320.

Kawate, Shin-Ichi: *See*—
Komatsu, Toshiyuki; Sato, Yasue; and Kawate, Shin-Ichi, 5,824,455, Cl. 430-323.000.

Kawauchi, Kenichi; Yokose, Taro; Koshi, Yutaka; Tomida, Koumei; and Hashimoto, Eiri, to Fuji Xerox Co., Ltd. Variable-length code decoder. 5,825,314, Cl. 341-67.000.

Kawazoe, Shinji, to Anest Iwata Corporation. Scroll fluid discharging apparatus. 5,823,756, Cl. 418-55.400.

Kayukawa, Hiroaki: *See*—
Mizutani, Hideki; Kayukawa, Hiroaki; Hirota, Suguru; and Enokijima, Fuminobu, 5,823,294, Cl. 184-6.300.

Kayyem, Jon Faiz: *See*—
Meade, Thomas J.; Kayyem, Jon Faiz; and Fraser, Scott E., 5,824,473, Cl. 435-6.000.

Kazanzides, Peter: *See*—
Sahay, Alind; Mittelstadt, Brent; Williamson, Willie, Jr.; Zuhars, Joel; and Kazanzides, Peter, 5,824,085, Cl. 623-16.000.

Kazui, Kimihiko; Nakagawa, Akira; and Morimatsu, Eishi, to Fujitsu Limited. Moving-picture coding device employing intra-frame coding and inter-frame coding. 5,825,425, Cl. 348-420.000.

Keay, James G.: *See*—
Scriven, Eric F. V.; Stout, James R.; Murugan, Ramiah; and Keay, James G., 5,824,756, Cl. 526-212.000.

Kecskes, Laszlo J., to United States of America, Army. Hot explosive consolidation of refractory metal and alloys. 5,826,160, Cl. 419-66.000.

Keeler, James David; Hartman, Eric J.; and Liano, Kadir, to Pavilion Technologies, Inc. Method and apparatus for determining the sensitivity of inputs to a neural network on output parameters. 5,825,646, Cl. 364-164.000.

Keeling, Peter Lewis; Knight, Mary E.; and Guan, Hanping, to Zeneca Limited. Modification of starch synthesis in plants. 5,824,790, Cl. 536-23.600.

Kehoe, Timothy: *See*—
Bhargava, Vikram; Kehoe, Timothy; and Stratienco, Daniela, 5,823,812, Cl. 439-345.000.

Kellock, Iain Robertson: *See*—
Predmore, Daniel Ross; Kellock, Iain Robertson; Correia, Victor Hugo; Starkweather, John Howard; and Lenahan, Dean Thomas, 5,823,741, Cl. 415-134.000.

Kelly, Aidan: *See*—
Darcy, Roderick Gerard; and Kelly, Aidan, 5,823,838, Cl. 441-106.000.

Kelly, John T.; and Namazian, Mehdi, to Altex Technologies Corp. Lime mud regeneration process. 5,824,244, Cl. 264-37.290.

Kelly, Thomas J., to General Electric Company. Low-porosity gamma titanium aluminide cast articles and their preparation. 5,823,243, Cl. 164-57.100.

Kelly, William G. F.: *See*—
James, William A.; and Kelly, William G. F., 5,822,833, Cl. 28-105.000.

Kelm, Carsten, to Heidelberger Druckmaschinen AG. Device for stabilizing the temperature of a duct roller in an inking unit of a printing press. 5,823,108, Cl. 101-348.000.

Kelm, Ron L.: *See*—
Boatman, L. Terry; Kelm, Ron L.; Salyer, Brent A.; McCollum, Jerry L.; and Etheridge, Charles O., 5,823,131, Cl. 114-230.000.

Kelman, Josh; Gray, John; and Gorman, Michael, to Davidson Textron Inc. Structural instrument panel carrier assembly. 5,823,602, Cl. 296-70.000.

Kelsch, Christopher: *See*—
Leyden, Roger J.; Surma, Terrance; and Kelsch, Christopher, 5,823,358, Cl. 211-8.000.

Kelsey-Hayes Company: *See*—
Wagg, Theodore J., 5,823,304, Cl. 188-218.00R.

Kemmerling, Frank, to Pierburg GmbH. Metal reinforced pump cover of an electrically driven air pump. 5,823,753, Cl. 417-423.140.

Kemmish, David John; Newton, Alan Branford; and Staniland, Philip Anthony, to Victrex Manufacturing Ltd. Aromatic polyether. 5,824,402, Cl. 428-297.400.

Kemper, Börries; Golz, Stefan; and Birkenbihl, Rainer P., to Variagenics, Inc. Overexpression of recombinant bacteriophage T4 endonuclease VII and uses thereof. 5,824,530, Cl. 435-199.000.

Kenmochi, Toshio: *See*—
Toyoda, Hisashi; Yokoyama, Minoru; Kenmochi, Toshio; Ezumi, Yosuke; and Yamada, Masakatsu, 5,825,505, Cl. 358-400.000.

Kennedy, Amelia, to Timex Corporation. Expandable strap for a wrist instrument. 5,823,409, Cl. 224-175.000.

Kennedy, James R.: *See*—
Haas, Edwin G.; Kennedy, James R.; Levy, Alvin; and Papazian, John M., 5,822,876, Cl. 33-533.000.

Kennedy, M. Keith: *See*—
Payne, Jewel M.; Kennedy, M. Keith; Randall, John Brookes; Meier, Henry; Uick, Heidi Jane; Foncerrada, Luis; Schnepf, H. Ernest; Schwab, George E.; and Fu, Jenny, 5,824,792, Cl. 536-23.710.

Kennedy, Timothy: *See*—
Swimmer, Candace; Shyjan, Anne; Leonardo, David; Zhang, Yuan; Kennedy, Timothy; Serafini, Tito; and Tessier-Lavigne, Marc, 5,824,775, Cl. 530-350.000.

Kennedy, William C., III: *See*—
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Kennefick, Christine. Method and apparatus for investigating toughening mechanisms and crack advance in lightweight materials. 5,826,213, Cl. 702-35.000.

Kent State University: *See*—
Bos, Philip J.; Chen, Jianmin; Johnson, David L., deceased; Glenn, William E.; Holton, Carvel E.; and Smith, Brett E., 5,825,448, Cl. 349-128.000.

Kepple, Jeffrey L., to Bollman Hat Company. Sweating for head covering and method for manufacturing. 5,822,799, Cl. 2-183.000.

KeraVision, Inc.: *See*—
Silvestrini, Thomas A., 5,824,086, Cl. 623-5.000.

Kerley, Eric L., to Comstock, Inc. Miniaturized time-of-flight mass spectrometer. 5,825,025, Cl. 250-287.000.

Kern, Robert D.: *See*—
Hoenisch, Herb; Kern, Robert D.; Ruehlow, Gerald C.; and Sodemann, Wes, 5,823,752, Cl. 417-363.000.

Kerpays, Rudy, Jr. Hot-gas engine electric heater. 5,822,964, Cl. 60-523.000.
Kessen, Jeffrey Steven; and Wadsworth-Dubbert, Debbie Sue, to General Motors Corporation. Bearing with integrally retained separable race. 5,822,859, Cl. 29-898.061.
Kessen, Jeffrey Steven: *See—*
Wadsworth-Dubbert, Debbie Sue; Michel, Douglas Arnold; Kessen, Jeffrey Steven; and Price, Charles Alan, 5,822,860, Cl. 29-898.061.
Kester, Mark A.; and Weissman, Marc G., to Osteonics Corp. Knee prosthesis with increased balance and reduced bearing stress. 5,824,100, Cl. 623-20.000.
Kesti, Michael R.; Garbe, James E.; Delgado, Joaquin; Silver, Spencer F.; and Goetz, Richard J., to Minnesota Mining And Manufacturing Company. Composite pressure sensitive adhesive microspheres. 5,824,748, Cl. 525-243.000.
Kettler, Heinz, to Herlag Holzwarenfabrik GmbH & Co. Collapsible baby carriage and stroller. 5,823,564, Cl. 280-642.000.
Keutz, Markus: *See—*
Kronenberg, Klaus; Vorberg, Sabine; Keutz, Markus; Wilhelm, Andreas; Weiand, Frank; Beckhaus, Christian; Vorberg, Thomas; Schmidt, Peter; and Blume, Jochen, 5,825,115, Cl. 310-254.000.
Kevin Business Corporation: *See—*
Brockhoff, Alexander, 5,824,212, Cl. 210-194.000.
Keys, Robert O. Cationic compositions containing hydroxyester. 5,824,635, Cl. 510-433.000.
Keyser, Gene E.; and Holcombe, Donald Marvin, to Micronair, LLC. Method for removing suspended inert solids from a waste stream. 5,824,222, Cl. 210-607.000.
Keystone International Holdings Corp.: *See—*
Chou, Alan F., 5,823,228, Cl. 137-597.000.
Khachatrian, Gurgen H.: *See—*
Omura, Jimmy K.; Yang, Paul T.; Khachatrian, Gurgen H.; Nikogossian, Karen M.; Hovakimian, Karen S.; and Vartapetian, Armen L., 5,825,810, Cl. 375-200.000.
Khafizov, Farid; and Jain, Nikhil, to Northern Telecom Limited. Method and apparatus for selecting a cost effective call blocking probability distribution in the design of a new cellular network. 5,826,218, Cl. 702-179.000.
Khait, Zakhar R.: *See—*
Lyapin, Andrei G.; and Khait, Zakhar R., 5,824,207, Cl. 208-3.000.
Khalil, Anis: *See—*
Reto, Luis; Turner, Don; Darland, Timothy; Khalil, Anis; Lenger, Cory; and Merchant, Amyn, 5,825,857, Cl. 379-114.000.
Khalil, Carlos Nagib; Da Silva, Alberto Cunha Carneiro; De Souza, Celso Rodrigo; Brum, Maria Cristina; Martins, Claudio Silvio Viana; and De Menezes, Sonia Maria Cabral, to Petroleo Brasileiro S.A. Petrobras. Method for the thermo-chemical dewaxing of large dimension lines. 5,824,160, Cl. 134-5.000.
Khan, Amanullah, to Quantum Corporation. Low stiffness apparatus for supporting a read/write transducer head slider. 5,825,589, Cl. 360-104.000.
Khan, Azhar J.; and Khan, Mohammad A., to Becton Dickinson and Company. Medical device lubricant containing lecithin. 5,824,359, Cl. 427-2.300.
Khan, Mohammad A.: *See—*
Khan, Azhar J.; and Khan, Mohammad A., 5,824,359, Cl. 427-2.300.
Khanamirian, Alexander, to Extrasport, Inc. Personal flotation device having elastic armhole periphery. 5,823,839, Cl. 441-106.000.
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Keeling, Peter Lewis; Knight, Mary E.; and Guan, Hanping, 5,824,790, Cl. 536-23.600.

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Niijima, Hironobu; and Kobayashi, Hiroaki, 5,825,191, Cl. 324-751.000.

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Nonaka, Hideki; Endo, Yutaka; Kaifu, Noriyuki; Kobayashi, Isao; Kameshima, Toshio; and Ogura, Takashi, 5,825,032, Cl. 250-370.090.

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Kawakami, Soichiro; Mishina, Shinya; and Kobayashi, Naoya, 5,824,434, Cl. 429-209.000.

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Lau, John H.; Chen, Yung Shih; Chou, Tai-Yu; Wu, Frank H.; Chen, Kuan Luen; and Koh, Wei H., 5,825,084, Cl. 257-700.000.

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Thiel, Timothy S.; and Van Dyke, Victor, 5,823,156, Cl. 123-184.310.

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Koifman, Vladimir; Afek, Yachin; and Kashat, Israel, to Motorola, Inc. Low voltage class AB amplifier. 5,825,246, Cl. 330-255.000.

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Koito Manufacturing Co., Ltd.: *See—*
Uchida, Kihachiro; and Tsukamoto, Hironori, 5,823,816, Cl. 439-419.000.

Koizumi, Hideaki: *See—*
Takada, Yasuaki; Sakairi, Minoru; Nabeshima, Takayuki; Hirabayashi, Yukiko; and Koizumi, Hideaki, 5,825,027, Cl. 250-292.000.

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Ohashi, Hideki; Kawai, Hiroyuki; Kojima, Hiroyoshi; Asano, Katsuhiro; Umeno, Takaji; Naito, Toshiharu; Onogi, Nobuyoshi; and Inoue, Yuuichi, 5,826,207, Cl. 701-36.000.

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Yamaguchi, Kozo; and Kojima, Hiroyuki, 5,823,281, Cl. 180-65.200.

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Narimatsu, Katsumi; and Kojima, Shoichi, 5,826,236, Cl. 705-8.000.

Kojima, Yoshikazu: *See—*
Hayashi, Yutaka; Kojima, Yoshikazu; Takada, Ryoji; and Kamiya, Masaaki, 5,825,064, Cl. 257-316.000.

Koksbang, Rene, to Valence Technology, Inc. Method of making lithium manganese oxide compounds. 5,824,285, Cl. 423-599.000.

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Mizuno, Takashi; Kokubu, Sadao; Aoki, Hisashi; and Mizuno, Yoshiyuki, 5,823,028, Cl. 70-278.000.

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Kolli, Ashish: *See—*
Cagan, Jonathan; Kolli, Ashish; Szykman, Simon; and Rutenbar, Robin, 5,825,660, Cl. 364-491.000.

Kolodner, Richard: *See—*
Mashal, Robert; Sklar, Jeffrey; and Kolodner, Richard, 5,824,471, Cl. 435-6.000.

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Kubota, Toshimichi; Kotooka, Toshiro; Saishoji, Toshiaki; and Iida, Tetsuhiro, 5,824,152, Cl. 117-217.000.
Suda, Ayumi; Hiraishi, Yoshinobu; and Shimomura, Koichi, 5,824,153, Cl. 117-208.000.

Komatsu, Keiro: *See—*
Ajisawa, Akira; Terakado, Tomoji; Yamaguchi, Masayuki; and Komatsu, Keiro, 5,825,047, Cl. 257-12.000.

Komatsu, Ltd.: *See—*
Hori, Shuji; Kawabata, Kei; and Maruyama, June, 5,823,227, Cl. 137-636.100.
Matsuda, Tomoo, 5,825,981, Cl. 395-83.000.
Nakagawa, Hitoshi; Kondo, Toshiaki; Ogawa, Tetsuya; and Furukoshi, Takayuki, 5,825,655, Cl. 364-474.170.
Ohbatake, Youjirou; and Sasaki, Hidetoshi, 5,822,892, Cl. 37-397.000.
Ueda, Masamichi, 5,823,370, Cl. 212-276.000.

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Komiya, Takao: *See*—
Danmoto, Shojiro; Kanno, Fumio; Komiya, Takao; and Ito, Sumiyoshi, 5,825,980, Cl. 395-80.000.

Komoto, Yoichi: *See*—
Takehara, Shin; Taniguchi, Haruyuki; Tanaka, Takahiko; Hashino, Hiroshi; Komoto, Yoichi; Ota, Katsutoshi; and Hanafusa, Morihisa, 5,823,515, Cl. 267-140.130.

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Kondo, Kazuharu; Yamaguchi, Tohru; and Yokoyama, Kazuaki, to Yazaki Corporation. Electric junction box. 5,823,819, Cl. 439-487.000.

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Kondo, Shinichi: *See*—
Kida, Junzo; Arita, Hiroshi; and Kondo, Shinichi, 5,825,162, Cl. 323-210.000.

Kondo, Takuo; Fujisawa, Shoji; and Kitade, Norimitsu, to Nippon Thompson Co., Ltd. Small linear motor table. 5,825,104, Cl. 310-12.000.

Kondo, Tetsujiro; Fujimori, Yasuhiro; Takahashi, Kenji; and Kawaguchi, Kunio, to Sony Corporation. Information signal encoding apparatus, encoding method thereof, information signal decoding method, and information signal record medium thereof. 5,825,313, Cl. 341-67.000.

Kondo, Toshiaki: *See*—
Nakagawa, Hitoshi; Kondo, Toshiaki; Ogawa, Tetsuya; and Furukoshi, Takayuki, 5,825,655, Cl. 364-474.170.

Kondoh, Katsuyoshi; and Takano, Yoshishige, to Sumitomo Electric Industries, Ltd. Sintered friction material, composite copper alloy powder used therefor and manufacturing method thereof. 5,824,923, Cl. 75-247.000.

Kondou, Masao: *See*—
Kanegae, Masahide; Kondou, Masao; Sugaya, Tomoki; and Tanaka, Hiroyuki, 5,825,570, Cl. 360-65.000.

Kone Oy: *See*—
Aulanko, Esko; Hakala, Harri; and Mustalahti, Jorma, 5,823,298, Cl. 187-266.000.

Koni, Mitsuru: *See*—
Saito, Hiroyuki; and Koni, Mitsuru, 5,825,097, Cl. 307-10.100.

Konica Corporation: *See*—
Haneda, Satoshi; Shigeta, Kunio; Sato, Yotaro; Fukuchi, Masakazu; Matsubara, Akitoshi; and Ikeda, Tadayoshi, 5,826,143, Cl. 399-182.000.
Kinoshita, Akira; and Matsuura, Katsumi, 5,824,444, Cl. 430-59.000.

König, Herbert, to Dr. Fischer Aktiengesellschaft. Electrical line system. 5,825,101, Cl. 307-91.000.

König, Rainer: *See*—
Bachtler, Michael; Schnur, Rudolf R.; Pässler, Peter; Scheidsteger, Olaf; Kastenhuber, Werner; Schlindwein, Gerd; and König, Rainer, 5,824,834, Cl. 585-540.000.

Konigsfeld, Kris G.: *See*—
Abramson, Jeffery M.; Akkary, Haitham; Glew, Andrew F.; Hinton, Glenn J.; Konigsfeld, Kris G.; Madland, Paul D.; Papworth, David B.; and Martell, Robert W., 5,826,109, Cl. 395-859.000.

Koning, Norman L.: *See*—
Tsai, Ching-Long; Koning, Norman L.; Fitzgerald, John G.; Piotrowski, Chester; and Lunderville, Rita M., 5,825,292, Cl. 340-572.000.

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Van Giezen, Maurice Gerardus Maria; and Feijth, Harald, 5,823,382, Cl. 220-571.000.

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Schmidt, Johan Richard; De Kok, Eric Johannes; and Stolk, Jacob Cornelis, 5,826,175, Cl. 455-77.000.

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Hasebe, Keizo; Nagashima, Shinji; Semba, Norio; Akimoto, Masami; Kimura, Yoshio; Iida, Naruaki; Harada, Kouji; Ueda, Issei; and Konishi, Nobuo, 5,826,129, Cl. 396-611.000.

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Uzaki, Jiro; and Kono, Masanori, 5,825,999, Cl. 395-167.000.

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Umeda, Katsumi; Umekawa, Kanji; Umeda, Yasushi; and Kono, Shiro, 5,823,039, Cl. 72-286.000.

Konow, Anders: *See*—
Blomkvist, Sten-Åke; Gustavsson, Jan-Peter; Konow, Anders; and Lundquist, Eskil, 5,824,727, Cl. 524-52.000.

Kontu, Mauri, Plate heat exchanger and method for its manufacture. 5,823,253, Cl. 165-167.000.

Koo, Ja-Il: *See*—
Liu, Dong-Chyuan; and Koo, Ja-Il, 5,823,964, Cl. 600-454.000.

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Kolk, Howard; Kolk, Robert; Kooiker, Ken; and Dykgraaf, Brent, 5,823,126, Cl. 111-109.000.

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Kooima, Philip G.: *See*—
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Kooima, Roger. Attaching a wheel lift apparatus to a road tractor. 5,823,735, Cl. 414-563.000.

Koops, Arne; Külper, Klaus; Ofer, Ulrich; and Kreft, Christian, to Beiersdorf AG. Use of labels for the labelling of rubber parts, in particular tires. 5,824,397, Cl. 428-207.000.

Kopf, David A. Method and apparatus for the compression of audio, video or other data. 5,825,830, Cl. 375-340.000.

Kopfer, Rudolph J. Collapsible tactile support for body joints. 5,823,980, Cl. 602-21.000.

Koppang, Richard R., to Gas Research Institute. Method and system to reduced NO_x and fuel emissions from a furnace. 5,823,124, Cl. 110-345.000.

Koppel, Norbert: *See*—
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Korea Institute Of Nuclear Safety: *See*—
Jae-Hong, Park; and Jong-In, Lee, 5,825,838, Cl. 376-299.000.

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Park, Jong-Oh; Lee, Chong Won; Ahn, In Seok; and Kang, Hyo Sik, 5,825,983, Cl. 395-99.000.

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Choi, Kil-Yeong; Yi, Mi-Hie; Jin, Moon-Young; and Hong, Young-Taik, 5,824,766, Cl. 528-350.000.

Korolainen, Jussi. ADP-table. 5,823,642, Cl. 312-7.200.

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Elkind, Alexander; MacFarlane, James; Krymsky, Mark; Tisenko, Victor Nikolaevich; Shneerson, German Abramovich; Korolev, Vyacheslav Semenovich; Krivosheev, Sergey Ivanovich; Nenashev, Alexey Pavlovich; and Vasilevskiy, Vladimir Markovich, 5,823,354, Cl. 209-212.000.

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Seidel, Joachim, 5,823,214, Cl. 135-22.000.

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Koga, Masayuki; and Kosaka, Toru, 5,826,118, Cl. 396-87.000.

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Kawauchi, Kenichi; Yokose, Taro; Koshi, Yutaka; Tomida, Koumei; and Hashimoto, Eiri, 5,825,314, Cl. 341-67.000.

Koshimura, Atsushi: *See*—
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Van Der Wel, Willem; Jansen, Alexander C. L.; Koster, Ronald; and Pruijmboom, Armand, 5,824,560, Cl. 437-31.000.

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Maruta, Takayuki; Takashima, Hiroshi; Ishikawa, Tomoji; Sugihara, Kazuyuki; Kato, Shinji; and Kosuge, Katsuhiro, 5,826,146, Cl. 399-235.000.

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Burns, Elizabeth Gertrude; Kovacs, Csaba Andras; Goswami, Ramanuj; and Chapman, Derek D., 5,824,768, Cl. 528-422.000.

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Yamauchi, Yoichi; Nakagawa, Takashi; and Kawagoe, Junichi, 5,824,675, Cl. 514-218.000.

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Matsuda, Shinya, 5,823,687, Cl. 384-558.000.

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Longacre, Andrew, Jr.; Hussey, Robert M.; Ehrhart, Michael A.; and Koziol, Thomas J., 5,825,006, Cl. 235-462.000.

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Ragheb, Anthony O.; Bates, Brian L.; Fearnot, Neal E.; Kozma, Thomas G.; and Voorhees, William D., III, 5,824,049, Cl. 623-1.000.

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Geiman, James D.; Gupta, Rakesh K.; Kozulla, Randall E.; Legare, Richard J.; and MacLellan, Robert G., 5,824,613, Cl. 442-240.000.

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Levesque, Roger H.; Kraemer, Jeffrey A.; and Nadkarni, Ashok P., 5,825,891, Cl. 380-49.000.

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Fuentes, Vincent; Fritsch, Hans Ulrich; Merz, Andreas; Plasberg, Georg; and Kraft, Wolfgang, 5,825,299, Cl. 340-825.540.

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Wienhold, James L.; and Kramer, Irene C., 5,823,100, Cl. 99-449.000.

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Bolduc, Lee; Kramer, Thomas A.; Hodges, Brian A.; McCoy, Tim; and Lunsford, John, 5,824,008, Cl. 606-43.000.

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Santi, John D.; and Kratz, David A., 5,823,153, Cl. 123-182.100.

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Carroll, George H.; and Krause, Arthur A., 5,823,203, Cl. 132-200.000.

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Choy, Michael M.; Green, Paul Eliot, Jr.; Hall, William Eric; Janniello, Frank James; Kravitz, Jeff Kenneth; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin Fuk-Kay, 5,825,949, Cl. 385-24.000.

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Reyes, Gregory R.; Yarbough, Patrice O.; Bradley, Daniel W.; Krawczynski, Krzysztof Z.; Tam, Albert; and Fry, Kirk E., 5,824,649, Cl. 514-12.000.

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Kikelj, Danijel; Suhadolc, Elizabeta; Rutar, Alenka; Pecar, Slavko; Puncuh, Alesa; Urleb, Uros; Leskovsek, Vesna; Marc, Gasper; Sollner, Marija; Krbavcic, Ales; Sersa, Gregor; Novakovic, Srdjan; Povsic, Lucka; and Stalc, Anton, 5,824,652, Cl. 514-19.000.

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Kreh, Andreas: *See*—
Potz, Detlev; Lewentz, Guenter; Maier, Ralf; Kampmann, Stefan; Gordon, Uwe; Kreh, Andreas; and Rodriguez-Amaya, Nestor, 5,823,161, Cl. 123-305.000.

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Nehowig, Kelly R.; Kullman, Scott W.; and Kremers, Douglas R., 5,823,689, Cl. 400-83.000.

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Orth, Gerard; Favre, Michel; Kremsdorf, Dina; and Pehau-Arnaudet, Gérard, 5,824,466, Cl. 435-5.000.

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Kreyn, Alex Z.; and Kreyn, Zachary A., 5,823,130, Cl. 114-61.000.

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Strickland, Faith M.; Pelley, Ronald P.; and Kripke, Margaret L., 5,824,659, Cl. 514-54.000.

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Gupta, Niranjan Lal; Sankaran, Ramanathan; Chattejee, Sugata; and Krishna, Tumma Hari, 5,824,801, Cl. 540-215.000.

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Elkind, Alexander; MacFarlane, James; Krymsky, Mark; Tisenko, Victor Nikolaevich; Shneerson, German Abramovich; Korolev, Vyacheslav Semenovich; Krivosheev, Sergey Ivanovich; Nenashev, Alexey Pavlovich; and Vasilevskiy, Vladimir Markovich, 5,823,354, Cl. 209-212.000.

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Huijzer, Arie; and Boer, Andre H., 5,824,915, Cl. 73-861.270.

Krohnen, Thomas: *See*—
Kischkel, Ditmar; Schmid, Karl; Syldath, Andreas; and Krohnen, Thomas, 5,824,633, Cl. 510-349.000.

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Goetter, Erwin H.; Levac, Daniel J.; and Krout, Gary R., 5,825,964, Cl. 385-135.000.

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Kowoll, Johannes, 5,824,121, Cl. 48-85.000.

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Kruse, Hubert: *See*—
Bühler, Ulrich; Kühlwein, Jürgen; and Kruse, Hubert, 5,824,117, Cl. 8-526.000.

Kruse, Richard H.: *See*—
Porter, Michael A.; Kruse, Richard H.; DiCesare, Samuel; Berland, Kerry S.; Helms, James M.; and Alderton, George A., IV, 5,825,147, Cl. 312-466.000.

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Elkind, Alexander; MacFarlane, James; Krymsky, Mark; Tisenko, Victor Nikolaevich; Shneerson, German Abramovich; Korolev, Vyacheslav Semenovich; Krivosheev, Sergey Ivanovich; Nenashev, Alexey Pavlovich; and Vasilevskiy, Vladimir Markovich, 5,823,354, Cl. 209-212.000.

Ku, Chao-Hsiang: *See*—
Ku, Chun-Yi; and Ku, Chao-Hsiang, 5,823,275, Cl. 175-403.000.

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Kubena, Ronald Albert: *See—*
Duncan, Michael Glen; Findley, Geoffrey; Kubena, Ronald Albert; and Moellering, Douglas E., 5,825,873, Cl. 379-419.000.

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Akebi, Yasunobu; Kubo, Masumi; and Yamashita, Toshihiro, 5,825,342, Cl. 345-87.000.

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Kubota Corporation: *See—*
Arai, Hiroyuki; Mura, Hiroshi; Sakata, Hideo; Mizoguchi, Takahiro; Ishida, Kensuke; and Niimi, Hiroshi, 5,825,335, Cl. 343-866.000.
Kitamura, Junichi; Tachibana, Matsuo; Fujiwara, Koji; Fujiwara, Osami; Samejima, Kazuo; Miyata, Junji; Togoshi, Yoshikazu; Tsuchihashi, Hironori; and Esaki, Yoshiyuki, 5,822,960, Cl. 56-7.000.
Ohba, Michio; Iwahana, Hidenori; Sato, Ryoichi; Suzuki, Nobukazu; Ogiwara, Katsutoshi; Sakanaka, Kazunobu; Hori, Hidetaka; Asano, Shouji; and Kawasugi, Tadaaki, 5,824,878, Cl. 800-205.000.
Tsuchihashi, Hironori; Togoshi, Yoshikazu; Fujiwara, Osami; Shimamura, Teruo; Matsui, Akio; Umemoto, Hideya; Chujo, Kenichi; and Bando, Niro, 5,823,285, Cl. 180-242.000.

Kubota, Fumio: *See—*
Kosaka, Tokihiro; Nakamoto, Hiroyuki; and Kubota, Fumio, 5,824,269, Cl. 422-73.000.

Kubota, Toshimichi; Kotooka, Toshiro; Saishoji, Toshiaki; and Iida, Tetsuhiro, to Komatsu Electronic Metals Co., Ltd. Semiconductor single-crystal pulling apparatus. 5,824,152, Cl. 117-217.000.

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Arima, Yasuhiko; Nishiyama, Yoshio; Fukao, Itaru; Abe, Hiroaki; and Kubota, Yuji, 5,826,086, Cl. 395-701.000.

Kubota, Yukio: *See—*
Inoue, Hajime; Kubota, Yukio; Nagashima, Toshimichi; Shimazu, Akira; and Kanota, Keiji, 5,826,168, Cl. 455-6.200.

Kuboyama, Katsunori: *See—*
Tosaka, Hiroaki; Nomura, Koji; Kuboyama, Katsunori; Takahashi, Tatsunori; and Ikeda, Fumiyuki, 5,825,602, Cl. 361-94.000.

Kubrak, Dennis M.: *See—*
Kreft, Anthony F.; Caufield, Craig E.; Failli, Amedeo A.; Caggiano, Thomas J.; Greenfield, Alexander A.; and Kubrak, Dennis M., 5,824,699, Cl. 514-411.000.

Kuck, Karl Heinz; and Nguyen, Frank, to Medtronic CardioRhythm. Atrioventricular valve tissue ablation catheter and method. 5,823,955, Cl. 600-374.000.

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Burkholder, Timothy P.; Kudlacz, Elizabeth M.; Le, Tieu-Bihn; and Maynard, George D., 5,824,690, Cl. 546-202.000.

Kudo, Masaru: *See—*
Hayashihara, Shoiti; Kudo, Masaru; and Shinmoto, Masaki, 5,824,715, Cl. 522-14.000.

Kudo, Munehiro: *See—*
Sato, Hisaaki; Kumagai, Masato; Kudo, Munehiro; and Kai, Keiichi, 5,823,165, Cl. 123-399.000.

Kudoh, Hiroshi; Tohya, Kenichi; and Urabe, Masanobu, to Honda Giken Kogyo Kabushiki Kaisha. Offset multibeam antenna. 5,825,333, Cl. 343-781.00R.

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Kuei, Li Pi, to Gin Dah Enterprise Corp. Strap-feeding mechanism for an automatic strapping machine. 5,823,103, Cl. 100-4.000.

Kugelev, Vladimir S.; and Matzner, Mark D., to SPM, Inc. Liner assembly with a fluid end cylinder. 5,823,093, Cl. 92-128.000.

Kühlwein, Jürgen: *See—*
Bühler, Ulrich; Kühlwein, Jürgen; and Kruse, Hubert, 5,824,117, Cl. 8-526.000.

Kuhn, Uwe; Kirschner, Juergen; and Soccol, Sandro, to Robert Bosch GmbH. Internal combustion engine with a cam drive. 5,823,154, Cl. 123-90.330.

Kuhnley, Brian: *See—*
Dreher, Robert; Kuhnley, Brian; and Sowder, Conrad L., 5,824,018, Cl. 607-6.000.

Kulesza, Frank H Truck tailgate fence mechanism. 5,823,596, Cl. 296-26.080.

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Chou, Wayne W.; Kulinets, Joseph M.; and Elteto, Laszlo, 5,826,011, Cl. 395-186.000.

Kullman, Scott W.: *See—*
Nehowig, Kelly R.; Kullman, Scott W.; and Kremers, Douglas R., 5,823,689, Cl. 400-83.000.

Külper, Klaus: *See—*
Koops, Arne; Külper, Klaus; Ofer, Ulrich; and Kreft, Christian, 5,824,397, Cl. 428-207.000.

Kumada, Shuichi, to Canon Kabushiki Kaisha. Image processing method and apparatus. 5,825,994, Cl. 395-116.000.

Kumagai, Hitoshi: *See—*
Hori, Takashi; Kumagai, Hitoshi; Hasegawa, Mitsuharu; Sato, Yoko; Munakata, Hiroshi; and Sugawa, Yoshihiro, 5,824,808, Cl. 549-1.000.

Kumagai, Katsuhiro: *See—*
Fukuchi, Hironao; Shiina, Takanori; Nakano, Kenji; Kumagai, Katsuhiro; and Hara, Yoshihisa, 5,823,167, Cl. 723-421.000.

Kumagai, Masato: *See—*
Sato, Hisaaki; Kumagai, Masato; Kudo, Munehiro; and Kai, Keiichi, 5,823,165, Cl. 123-399.000.

Kumagai, Norihiro: *See—*
Nakagawa, Kanji; and Kumagai, Norihiro, 5,826,036, Cl. 395-200.770.

Kumano, Shinji; and Sato, Tsuyoshi, to Yamaha Corporation. Keyboard apparatus for musical instrument. 5,824,928, Cl. 84-423.00R.

Kumar, Ajay: *See—*
Damji, Dhirendra C.; and Kumar, Ajay, 5,826,132, Cl. 399-110.000.

Kumar, Anil M.: *See—*
Klein, J. Peter; Underiner, Gail E.; and Kumar, Anil M., 5,824,677, Cl. 514-222.500.

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Kumar, Sundeep: *See—*
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Klymyshyn, David M.; Kumar, Surinder; and Mohammadi, Abbas, 5,825,257, Cl. 332-100.000.

Kumazawa, Nobumitsu: *See—*
Maeda, Noriaki; Taguchi, Toru; Tanizaki, Seiji; Kumazawa, Nobumitsu; and Takeuchi, Yutaka, 5,824,829, Cl. 585-3.000.

Kume, Akiya; Nishimura, Yoshiaki; Murata, Jun; Hayashi, Nobutoshi; Nagata, Yukinori; and Mayuzumi, Hiroshi, to Canon Kabushiki Kaisha. White electroconductive coating composition and transfer material-carrying member. 5,824,408, Cl. 428-323.000.

Kume, Masafumi: *See—*
Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, 5,824,424, Cl. 428-626.000.

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Saito, Takao; Yoshida, Akifumi; Matsumura, Kazuhiko; Miura, Takashi; and Kumobayashi, Hidenori, 5,824,822, Cl. 568-10.000.

Kung, Kenneth C.: *See—*
Bathrick, Erwin W.; Garber, John W.; Huang, Cheng-Chi; Kung, Kenneth C.; Matthews, Todd E.; Zmuda, James E.; and Matthews, Regina L., 5,825,300, Cl. 340-825.330.

Kunig, Helmut, to Nordischer Maschinenbau Rud. Baader GmbH & Co KG. Pressing belt for separators. 5,823,866, Cl. 452-138.000.

Kuno, Atsushi; Inoue, Yoshikazu; Takasugi, Hisashi; Mizuno, Hiroaki; and Yamasaki, Kumi, to Fujisawa Pharmaceutical Co., Ltd. Guanidine derivatives as inhibitors of Na^+/H^+ exchange in cells. 5,824,691, Cl. 514-335.500.

Kunz, Alfred: *See—*
Liechti, Pierre; Kunz, Alfred; List, Jörg; and Arnaud, Daniel, 5,823,674, Cl. 366-303.000.

Kunz, Dietmar W.: *See—*
Aach, Til; and Kunz, Dietmar W., 5,825,846, Cl. 378-98.000.

Kunzler, Jay F.; and Nandu, Mahendra P., to Bausch & Lomb Incorporated. Polymer compositions for contact lenses. 5,824,719, Cl. 523-106.000.

Kuo, Wen-Hai. Mallet for croquet. 5,823,892, Cl. 473-412.000.

Kurahashi, Takashi: *See—*
Yoshihara, Shinji; Inomata, Sumitomo; Ohara, Fumio; and Kurahashi, Takashi, 5,824,177, Cl. 156-250.000.

Kuramitsu, Yoko: *See—*
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Kuramochi, Shuji: *See—*
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Kurano, Akira: *See—*
Yamamoto, Akira; Tamiya, Toshihiko; Takamatsu, Hisashi; Kurano, Akira; and Inomata, Hirofumi, 5,826,002, Cl. 395-182.040.

Kuras, James: *See—*
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Kurashiki Kako Co., Ltd.: *See—*
Takehara, Shin; Taniguchi, Haruyuki; Tanaka, Takahiko; Hashino, Hiroshi; Komoto, Yoichi; Ota, Katsutoshi; and Hanafusa, Morihisa, 5,823,515, Cl. 267-140.130.

Kurihashi, Toshiya: *See—*
Ogura, Shigeo; Kurihashi, Toshiya; Takeda, Nobuhiro; Uchino, Yoshihiro; Kimura, Kenichi; and Yanai, Toshikazu, 5,825,560, Cl. 359-822.000.

Kurita, Takaji: *See—*
Iino, Shuji; Fujiwara, Toshimitsu; Miyamoto, Hidetoshi; and Kurita, Takaji, 5,826,148, Cl. 399-240.000.

Kuroda, Hideaki, to Sony Corporation. Semiconductor device and an interconnection structure of same. 5,825,059, Cl. 257-301.000.

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Fukuda, Kensei; Kuroda, Shoji; Kuwamoto, Yoshinobu; and Sakanoue, Kei, 5,822,977, Cl. 60-274.000.

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Kuroiwa, Michiaki: *See—*
Matsui, Hideo; Kuroiwa, Michiaki; and Nishiuchi, Taiki, 5,825,141, Cl. 318-254.000.

Kurokawa, Toshio: *See—*
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Kurome, Yoko; Izu, Hiroyuki; Izumi, Yoshiya; Sano, Mutsumi; Kato, Ikunoshin; and Ito, Makoto, to Takara Shuzo Co. Ltd. Gene encoding endoglycoceramidase activator. 5,824,503, Cl. 435-69.100.

Kuromoto, Kazunori, to Kabushiki Kaisha Komatsu Seisakusho. Control device for automatically stopping swiveling of cranes. 5,823,369, Cl. 212-273.000.

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Ravetch, Jeffrey V.; and Kurosaki, Tomohiro, 5,824,487, Cl. 435-7.800.

Kurtz, Andrew F.; Debesis, John R.; and Sarraf, Sanwal P., to Eastman Kodak Company. Beamsplitter/staggerer for multi-beam laser printers. 5,825,552, Cl. 359-629.000.

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Kuryluk, Michael H. Separation of minerals. 5,824,210, Cl. 209-3.000.

Kusano, Manabu: *See—*
Date, Takashi; and Kusano, Manabu, 5,825,450, Cl. 349-149.000.

Kushibiki, Nobuo; and Takeuchi, Kikuko, to Dow Corning Asia, Ltd. Method of manufacturing sililcon-type charge transporting materials. 5,824,443, Cl. 430-59.000.

Kusunoki, Mitsugu; and Tamba, Nobuo, to Hitachi, Ltd. Variable logic integrated circuit device having connections through switch matrix and top layers for inter-cell connections. 5,825,203, Cl. 326-41.000.

Kusunoki, Tsuneo: *See—*
Ohno, Katsutoshi; Kusunoki, Tsuneo; Takayanagi, Kenji; and Ihara, Masaru, 5,825,124, Cl. 313-467.000.

Kutscher, Hans-Werner: *See—*
Beisel, Winfried; Schulze, Eckehart; Groos, Heinz; Budenbender, Dieter; and Kutscher, Hans-Werner, 5,823,104, Cl. 100-48.000.

Kutsenko, Sergey A.: *See—*
Kim, Stanislav K.; Anisimov, Eduard I.; Kutsenko, Sergey A.; Petrochenko, Yury N.; Sterlin, Andrey Y.; Voznesensky, Valery V.; Jee, Won-Guk; and Rho, Hyung-Min, 5,823,037, Cl. 72-201.000.

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Kutzscher, Michael H.: *See—*
Hodjat, Yahya; and Kutzscher, Michael H., 5,823,904, Cl. 474-170.000.

Kuwabara, Yukishige: *See—*
Ishihara, Satoshi; and Kuwabara, Yukishige, 5,823,286, Cl. 180-309.000.

Kuwajima, Wataru, to Nitsuko Corporation. Adjusting mechanism for adjusting the installation angle of appliances. 5,823,504, Cl. 248-685.000.

Kuwamoto, Yoshinobu: *See—*
Fukuda, Kensei; Kuroda, Shoji; Kuwamoto, Yoshinobu; and Sakanoue, Kei, 5,822,977, Cl. 60-274.000.

Kvaerner Pulping AB: *See—*
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Kwan, Wai-Kin Steven: *See—*
Snowden, Ralph; Reed, Wendy; Zoerner, Glen James; Kwan, Wai-Kin Steven; Chu, On Ki Andrew; and Yiu, Hing Leung, 5,825,706, Cl. 365-222.000.

Kwon, Hun-Cheol, to SamSung Electronics Co., Ltd. Uninterruptible power supply circuit. 5,825,099, Cl. 307-48.000.

Kwon, Oh-Hun: *See—*
Laconto, Ronald W., Sr.; and Kwon, Oh-Hun, 5,824,386, Cl. 428-64.100.

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Ochiai, Eiji; Hamaguchi, Makoto; and Tode, Hiroyoshi, 5,824,445, Cl. 430-106.600.

Kyong In Special Metal Co., Ltd.: *See—*
Kim, Stanislav K.; Anisimov, Eduard I.; Kutsenko, Sergey A.; Petrochenko, Yury N.; Sterlin, Andrey Y.; Voznesensky, Valery V.; Jee, Won-Guk; and Rho, Hyung-Min, 5,823,037, Cl. 72-201.000.

Kyoto Daiichi Kagaku Co., Ltd.: *See—*
Kato, Nobuo; Sakai, Yasuyoshi; Tani, Yoshiki; Yagi, Masayuki; and Funatsu, Fumiyo, 5,824,527, Cl. 435-191.000.

L-3 Communications Corporation: *See—*
Kingston, Samuel C.; Giallorenzi, Thomas R.; Steagall, Robert William; and Matolak, David, 5,825,835, Cl. 375-367.000.

L & L Products: *See—*
Wienhold, James L.; and Kramer, Irene C., 5,823,100, Cl. 99-449.000.

L&P Property Management Company: *See—*
Johnson, Terry; Hartline, Mike; and White, Nikki, 5,823,614, Cl. 297-85.000.

L. Perrigo Company: *See—*
Jacobs, Richard L.; and Shah, Shirish A., 5,824,338, Cl. 424-460.000.

La Jolla Cancer Research Foundation: *See—*
Pfahl, Magnus; Zhang, Xiao-kun; Lehmann, Jürgen M.; Dawson, Marcia I.; Cameron, James F.; Hobbs, Peter D.; and Jong, Ling, 5,824,484, Cl. 435-7.100.

Laakso, Richard O.: *See—*
Prough, J. Robert; Marcoccia, Bruno S.; Laakso, Richard O.; and Luhrmann, Carl L., 5,824,188, Cl. 162-49.000.

Laarhoven Design, Inc.: *See—*
Bennett, Joel S.; and McRorie, Robert G., III, 5,823,550, Cl. 280-47.260.

Labatt Brewing Company Limited: *See—*
Minshull, James Edward; and Lawrence, Robert G., 5,823,222, Cl. 137-15.000.

Laboratoires Virbac: *See—*
Mähl, Philippe; and Dick-Madelpuech, Marie-Hélène, 5,824,537, Cl. 435-243.000.

Laboratories de Biologie Vegetale Yves Rocher: *See—*
Rouillard, Francoise; Josse, Annabelle; and Robin, Jean-Renaud, 5,824,320, Cl. 424-401.000.

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Nohta, Hitoshi; Yamaguchi, Masatoshi; Ishida, Junichi; Zaitsu, Kivoshi; and Iida, Hiroko, 5,824,559, Cl. 436-111.000.

Labranche, Bruno; Snell, Kevin; and Parent, André, to Institut National d'Optique. Multiple emitter laser diode assembly with graded-index fiber microlens. 5,825,803, Cl. 372-101.000.

Labrie, Fernand, to Endorecherche Inc. Therapeutic methods and delivery systems utilizing sex steroid precursors. 5,824,671, Cl. 514-178.000.

Lachman, Leigh J.; and Stoffel, Klaus P. Toilet flush actuator. 5,822,805, Cl. 4-249.000.

Lack, Lloyd. Fuel combustion enhancing catalytic composition and methods of formulating and utilizing same, 5,823,758, Cl. 431-4.000.

Laconto, Ronald W., Sr.; and Kwon, Oh-Hun, to Saint-Gobain/Norton Industrial Ceramics Corporation. Zirconia disk substrate having high surface finish, 5,824,386, Cl. 428-64.100.

La Coste, Lee. Clipboard drafting system. 5,823,500, Cl. 248-444.000.

LaCroix, Thomas R.: *See—*
Swift, Daniel P.; LaCroix, Thomas R.; Bullock, William E.; and Frobish, Dennis L., 5,825,665, Cl. 364-559.000.

Ladin, Eli M.; and Ladin, Lily W., legal representative. Clutch control with multiple actuating cylinders for a pull-type clutch. 5,823,308, Cl. 192-13.00R.

Ladin, Lily W., legal representative: *See—*
Ladin, Eli M.; and Ladin, Lily W., legal representative, 5,823,308, Cl. 192-13.00R.

Ladwig, Paul K.: *See—*
Bienstock, Martin G.; and Ladwig, Paul K., 5,824,208, Cl. 2108-76.000.

Ladyjensky, Jacques, to Prolufab S.A.R.L.; and Chemical Light Technologies Inc. Improved chemiluminescent solution. 5,824,242, Cl. 252-700.000.

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Bose, Krishnangshu; Perry, Terry T.; LaFlamme, David W.; and Magyar, Lester J., 5,824,366, Cl. 427-239.000.

Lafontaine, Daniel M.: *See—*
Hastings, Roger; Larson, Kenneth; Berman, Michael; and Lafontaine, Daniel M., 5,823,199, Cl. 128-899.000.

La Forest, Guy, to BIC Corporation. Lighter having a non-rotating flint. 5,823,765, Cl. 431-276.000.

Lafuente, Antonio Muñoz-Escalona: *See—*
Vega, Wilfried Michiels; Cañas, Pilar Lafuente; Lafuente, Antonio Muñoz-Escalona; Llinas, Gerardo Hidalgo; Royo, Jose Sancho; and Llatas, Luis Mendez, 5,824,620, Cl. 502-117.000.

Lafuma SA: *See—*
Gal, Yann Le; and Finot, André, 5,823,414, Cl. 224-637.000.

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Collu, Robert; Tang, JianQing; and Lagacé , Ginette, 5,824,516, Cl. 435-91.200.

Lagakos, Nicholas; and Bucaro, Joseph A., to United States of America, Navy. Mandrell based embedded planar fiber-optic interferometric acoustic sensor. 5,825,489, Cl. 356-345.000.

Lahalih, Shawqui M., to King Fahd University of Petroleum And Minerals Research Institute. Method and composition for stabilizing soil and process for making the same. 5,824,725, Cl. 524-404.000.

Lai, Cheng-Chen. Water spout seat of water filtration device. 5,824,219, Cl. 210-418.000.

Lai, Jing-Shiun, to Shansun Technology Company Ltd. Camera, adapted to hold film cartridges of different sizes. 5,826,123, Cl. 396-446.000.

Lai, Ming; Lai, Shui; and Ou, Zhiming, to Novatec Corporation. Method of continuous motion for prolong usage of optical elements under the irradiation of intensive laser beams. 5,825,562, Cl. 359-822.000.

Lai, Shui: *See—*
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Lai, Wenyih Frank, to Exxon Research & Engineering Company. Low alkaline inverted in-situ crystallized zeolite membrane. 5,824,617, Cl. 502-4.000.

Lam, Hon-Ming: *See—*
Coruzzi, Gloria; Oliveira, Igor; Lam, Hon-Ming; and Hsieh, Ming-Hsiun, 5,824,867, Cl. 800-205.000.

Lam Research Corporation: *See—*
Chen, Ching-Hwa; Liu, David; and Christensen, Mark J., 5,824,605, Cl. 438-729.000.
Dible, Robert D.; Bradley, Stephen G.; and Jafarian-Tehrani, Seyed Jafar, 5,824,606, Cl. 438-729.000.

Lam, Victor C.H.: *See—*
Van Driel, Michael R.; Gray, Darren S.; Lam, Victor C.H.; Uyeno, Jill E.; and Wong, Yu-Tung, 5,823,045, Cl. 73-299.000.

Lam, Wai-Man: *See*—
Canfield, Barth Alan; Lam, Wai-Man; and Beyers, Billy Wesley, Jr., 5,825,424, Cl. 348-416.000.
Lamar Signal Processing Ltd.: *See*—
Marash, Joseph, 5,825,898, Cl. 381-92.000.
Lamarche, Jean-Luc; and Rundel, Guntram, to i f m electronic gmbh. Electronic proximity switching device. 5,825,233, Cl. 327-365.000.
Lamat, Olivier: *See*—
Huber, Christian, 5,823,531, Cl. 273-156.000.
Lambert, Lew, to Lambert, Lew. Copy-resistant document. 5,823,576, Cl. 283-93.000.
Lamond, Donald R.: *See*—
Foster, Donald D.; Heinzelman, Bert D.; Lamond, Donald R.; and Fiebel, William, 5,823,395, Cl. 222-153.020.
Lamons Metal Gasket Co.: *See*—
Owen, Richard S., 5,823,542, Cl. 277-603.000.
Lampert, Barry. Flexible retentive bite block and fabrication process. 5,823,194, Cl. 128-848.000.
Lamson & Sessions Co., The: *See*—
Roesch, Mark A.; Maccarone, David A.; Hillenbrand, Gary F.; Newsom, Morris F.; and Lynch, Roland M., 5,824,724, Cl. 524-365.000.
Lamuraglia, Glenn M., to General Hospital Corporation, The. Photochemistry for the preparation of biologic grafts—allografts and xenografts. 5,824,080, Cl. 623-11.000.
Lan, Xuekui: *See*—
Li, Alfred C.; Hynnek, Pamela K.; Alfano, James P.; Lan, Xuekui; and Becker, Rex A., 5,824,369, Cl. 427-345.000.
Lanctot, Jane Barbara: *See*—
Warrior, Jogesh; Jacobson, Vincent C.; Orth, Kelly M.; Tielens, Craig R.; and Lanctot, Jane Barbara, 5,825,664, Cl. 364-550.000.
Landers, Samuel Patrick; Attinello, John Steven; Stroble, James Christopher; and Lazeration, Joel Joseph, to Goodyear Tire & Rubber Company, The. Pneumatic tire having improved wear properties. 5,824,169, Cl. 152-209.00R.
Landes, Ross A.: *See*—
Nield, Brian N.; Landes, Ross A.; and Evans, Monte R., 5,823,479, Cl. 244-187.000.
Landolt, Bruno: *See*—
Liechti, Vreny; and Landolt, Bruno, 5,822,956, Cl. 53-510.000.
Lane, Christopher F.; Reddy, Srinivas T.; and Wang, Bonnie I-Keh, to Altera Corporation. Means and apparatus to minimize the effects of silicon processing defects in programmable logic devices. 5,825,197, Cl. 326-10.000.
Lane, David Redick; and Vasilevskis, Janis, to Nycomed Imaging AS. Process for the preparation of iodinated contrast agents and intermediates therefor. 5,824,821, Cl. 564-153.000.
Lane, Kerry S. Electric fire simulator. 5,823,784, Cl. 434-226.000.
Lane, Wendell C., Jr.; Bauer, Barney J.; Steffens, Charles E., Jr.; and Sayles, Robert D., to TRW Vehicle Safety Systems Inc. Seat belt retractor with energy management. 5,823,570, Cl. 280-806.000.
Laney, Scot H., to Laney, Scot H. Iron-ferrite-filled polymer-based composite material and method of making the same. 5,824,728, Cl. 524-435.000.
Lang, Robert: *See*—
Schwellenbach, Kurt; and Lang, Robert, 5,822,837, Cl. 29-450.000.
Lang, Tracy A.: *See*—
Esterberg, Dennis R.; Smith, Mark A.; Rubens, Paul A.; and Lang, Tracy A., 5,825,625, Cl. 361-719.000.
Langhans, Dieter: *See*—
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Langner, Peter S., to State of Oregon Acting by and through the State Board of Higher Education on Behalf of Oregon State University, The. Method and apparatus for producing embossed images. 5,823,691, Cl. 400-127.000.
Lanham, David: *See*—
Reid, Carl R.; Lanham, David; Grist, Matt M.; and Kalapodis, James B., 5,825,278, Cl. 337-407.000.
Lansink-Rotgerink, Hermanus; Hoecker, Harald; Wieland, Stefan; Seebald, Steffen; and Riedemann, Heike, to Degussa Aktiengesellschaft. Phosphoric acid catalyst and its use. 5,824,825, Cl. 568-898.000.
Lantman, Christopher Wayne: *See*—
Bradley, Richard Alan, Jr.; Yamasaki, Nancy Lee Schultz; Lantman, Christopher Wayne; and Hichwa, Bryant, 5,824,374, Cl. 427-555.000.
Lantz, Marilyn: *See*—
Proguske-Fox, Ann; Tumwasorn, Somying; Lepine, Guylaine; Han, Naiming; Lantz, Marilyn; and Patti, Joseph M., 5,824,791, Cl. 536-237.000.
Lantzsch, Reinhard; Bussmann, Werner; Käsbauer, Josef; Dollinger, Markus; and Santel, Hans-Joachim, to Bayer Aktiengesellschaft. Herbicidal compositions based on 2,6-dichloro-3-fluoro-benzonitrile, and new intermediates. 5,824,817, Cl. 558–425.000.
Lao, Kenneth Quochuy: *See*—
Lo, Allen Kwok Wah; and Lao, Kenneth Quochuy, 5,825,466, Cl. 355-33.000.
Laou, Philips: *See*—
Shih, Ishiang; Phong, Linh Ngo; Qiu, Cindy Xing; and Laou, Philips, 5,824,567, Cl. 438-73.000.
La Palm, James; and Czapski, Piotr, to Chrysler Corporation. Real time misfire detection for automobile engines. 5,824,890, Cl. 73-117.300.
Lapidus, Olivier, to Lapidus, Ted. Method for producing a flap pocket and an item having the flap pocket. 5,823,128, Cl. 112-475.060.
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Lapidus, Olivier, 5,823,128, Cl. 112-475.060.
Lapp, Josef C.: *See*—
Bange, James C.; Dorfeld, William G.; Hayes, James C.; and Lapp, Josef C., 5,824,127, Cl. 65-90.000.
Larex A.G.: *See*—
Lauener, Wilhelm F., 5,823,246, Cl. 164-488.000.
Larkey, James G.; Bowering, Richard E.; Dragasevich, John; and Orlans, Yitzhak. Filtration of rolling solutions. 5,824,229, Cl. 210-741.000.
Laroche, Pierre: *See*—
Missout, Bernard Michel; Heude, Herve; and Laroche, Pierre, 5,825,956, Cl. 385-102.000.
La Roche, Ulrich. Wing with a wing grid as the end section. 5,823,480, Cl. 244-199.000.
La Rovere, Ruggiero, to Rheem Empreendimentos Industriais e Comerciais S/A. Can with easy open end and protection against cuts. 5,823,730, Cl. 413-12.000.
Larson, Gaylan: *See*—
DePond, Paul F.; Larson, Gaylan; Neal, Greg; and Yewell, David, 5,825,852, Cl. 379-67.000.
Larson, James A; Boss, Scott; Veeramoney, Murali; Rosenweig, Mike; Hurwitz, Roger; Colville, Scott; and Raman, T. V., to Intel Corporation. Telephone access system for accessing a computer through a telephone handset. 5,825,854, Cl. 379-67.000.
Larson, Kenneth: *See*—
Hastings, Roger; Larson, Kenneth; Berman, Michael; and Lafontaine, Daniel M., 5,823,199, Cl. 128-899.000.
Larson, Mark R.: *See*—
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Larsson, Johan: *See*—
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Laseke, Timothy: *See*—
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Laser International S.A.: *See*—
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LaserMaster Corporation: *See*—
Gilbert, J. Mark; Johnston, Randy S.; and Vatland, Danny J., 5,825,394, Cl. 347-191.000.
Lasser, Menachem: *See*—
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Lassman, Steven J.: *See*—
Webb, James R.; Lassman, Steven J.; and Simpson, Ron C., 5,825,414, Cl. 348-180.000.
Last, Howard R.; Fan, Lawrence C.; Balestrieri, Ralph E.; Garvick, Donald R.; and Wood, Robert L., to United States of America, Navy. Miniature hydrostat fabricated using multiple microelectromechanical processes. 5,824,910, Cl. 73-715.000.
Lateur, Michel J.; and Pliskin, Daniel P., to Nevcor, Inc. Hybrid parallel electric vehicle. 5,823,280, Cl. 180-65.200.
Lau, James C. K. Folding, pedal-driven vehicle with universal joint transmission system. 5,823,554, Cl. 280-261.000.
Lau, John H.; Chen, Yung Shih; Chou, Tai-Yu; Wu, Frank H.; Chen, Kuan Luen; and Koh, Wei H., to Express Packaging Systems, Inc. Single-core two-side substrate with u-strip and co-planar signal traces, and power and ground planes through split-wrap-around (SWA) or split-via-connections (SVC) for packaging IC devices. 5,825,084, Cl. 257-700.000.
Lau, Richard. Fishing lure assembly. 5,822,913, Cl. 43-42.000.
Lau, Tim O.: *See*—
Howell, Bryan F.; Busch, John P.; Haven, Kenneth R.; and Lau, Tim O., 5,825,616, Cl. 361-684.000.
Lauener, Wilhelm F., to Larex A.G. Trundish including a baffle for directing molten metal therethrough and an associated caster and method of casting molten metal. 5,823,246, Cl. 164-488.000.
Lauterjung, Karl L., to Datascope Corp. Stent for intraluminal grafts and device and methods for delivering and assembling same. 5,824,036, Cl. 623-1.000.
Lavaroni, Giorgio: *See*—
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Lavie, Gad; and Prince, Alfred M., to New York University; and New York Blood Center. Method for delivery of nucleic acids to cells using hypericin polyamine complexes. 5,824,654, Cl. 514-44.000.
LaVigna, Christopher J.: *See*—
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Law, Clarence Garlan, Jr.: *See*—
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Law, Kam W.: *See*—
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Lawandy, Nabil M., to Brown University Research Foundation. Optical sources having a strongly scattering gain medium providing laser-like action. 5,825,790, Cl. 372-23.000.
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Lawrence, Susan Dale: *See*—
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Lawton, Kathryn V.: *See*—
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Layman, Ted W.: *See*—
Quiachon, Dinah B.; Piplani, Alec A.; Baker, Steve G.; Williams, Ronald G.; Williams, Richard S.; Osborn, Kenneth L.; Layman, Ted W.; Johansson, Peter K., 5,824,044, Cl. 623-1.000.
Lazar, Mark M.: *See*—
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Lazeration, Joel Joseph: *See*—
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Le, Chinh H.: *See*—
Hartvigsen, Jay A.; Le, Chinh H.; and Harwood, Wallace B., III, 5,826,058, Cl. 395-500.000.
Le, Tieu-Bihn: *See*—
Burkholder, Timothy P.; Kudlacz, Elizabeth M.; Le, Tieu-Bihn; and Maynard, George D., 5,824,690, Cl. 546-202.000.
Lear Corporation: *See*—
Le Caz, Christian, 5,823,620, Cl. 297-284.400.
LeBlond, Claude; Williams, Kevin M.; Zusmanovich, Alex; Buckle, Allan; and Stein, Darryl Colburn, to Gerber Garment Technology, Inc. Sample garment making system. 5,825,652, Cl. 364-470.030.
Lebrun, Michel: *See*—
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Le Caz, Christian, to Lear Corporation. Vehicle seat having lumbar support. 5,823,620, Cl. 297-284.400.
Lechner, Michael: *See*—
Henneborn, Roland; Holz, Peter; Lechner, Michael; and Volker, Wolfgang, 5,823,863, Cl. 451-449.000.
Leckel, Edgar; and Mueller, Emmerich, to Hewlett-Packard Company. Arrangement and method for operating and testing an optical device. 5,825,530, Cl. 359-333.000.
Leclerc, Francois. Turf aerator attachment for tractor. 5,823,269, Cl. 172-21.000.
Leclerc, Michel. Locking device for unipolar breaker. 5,823,321, Cl. 200-43.190.
LeCocq, Jean-Pierre: *See*—
Tolstoshev, Paul; Harvey, Richard; Courtney, Michael; and LeCocq, Jean-Pierre, 5,824,505, Cl. 435-69.200.
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Luster, Andrew; and Leder, Philip, 5,824,299, Cl. 424-85.100.
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Diazzi, Claudio; Tarantola, Mario; and Martignoni, Fabrizio, 5,825,138, Cl. 315-294.000.
Martin, Gerard: *See*—
Euzen, Patrick; Le Gal, Jean-Herve; and Martin, Gerard, 5,823,761, Cl. 431-7.000.
Martin, Kevin, to Network Computing Devices, Inc. Raster operation lookup and execution. 5,825,373, Cl. 345-524.000.
Martin Marietta Corporation: *See*—
Pearson, William A.; Benton, Richard W.; and Lofgren, John D., 5,825,922, Cl. 382-199.000.
Martin Marietta Magnesia Specialties, Inc.: *See*—
Richmond, Alvin; and Gutowski, Robert J., 5,824,279, Cl. 423-265.000.
Martin, Michel: *See*—
Kowalski, Jacek; Martin, Michel; Stern, Jacques; and Joux, Antoine, 5,825,882, Cl. 380-25.000.
Martins, Claudio Silvio Viana: *See*—
Khalil, Carlos Nagib; Da Silva, Alberto Cunha Carneiro; De Souza, Celso Rodrigo; Brum, Maria Cristina; Martins, Claudio Silvio Viana; and De Menezes, Sonia Maria Cabral, 5,824,160, Cl. 134-5.000.
Marts, William M. Cat litter separator. 5,823,138, Cl. 119-166.000.
Maruko, Takashi; and Umezawa, Junji, to Bridgestone Sports Co., Ltd. Wound golf ball. 5,823,888, Cl. 473-354.000.
Maruko, Takashi; Kakiuchi, Shinichi; and Umezawa, Junji, to Bridgestone Sports Co., Ltd. Golf ball. 5,823,890, Cl. 473-354.000.
Maruta, Takayuki; Takashima, Hiroshi; Ishikawa, Tomoji; Sugihara, Kazuyuki; Kato, Shinji; and Kosuge, Katsuhiro, to Ricoh Company, Ltd. Color image forming device which changes developing bias when switching between developer units. 5,826,146, Cl. 399-235.000.
Maruyama, Frederick H.; and Magruder, Judy A., to ALZA Corporation. Ruminal drug delivery device. 5,824,340, Cl. 424-473.000.
Maruyama, Haruhisa: *See*—
Itoigawa, Masahide; Hanzawa, Shinichi; Nonaka, Yoshitaka; Watanabe, Junichi; and Maruyama, Haruhisa, 5,824,385, Cl. 428-64.100.
Maruyama, Hiroyuki: *See*—
Fujiwara, Tatsuo; Maruyama, Hiroyuki; and Saitoh, Toshio, 5,823,522, Cl. 271-4.080.
Maruyama, June: *See*—
Hori, Shuji; Kawabata, Kei; and Maruyama, June, 5,823,227, Cl. 137-636.100.
Maruyama, Koichi: *See*—
Oono, Masahiro; Sonoda, Tunehiko; Tachihara, Satoru; and Maruyama, Koichi, 5,825,555, Cl. 359-668.000.
Marx, Charles E.: *See*—
Dam, Robert; Marx, Charles E.; and Genz, Earl J., 5,824,979, Cl. 200-61.880.
Marzluf, Axel: *See*—
Link, Hermann; Marzluf, Axel; and Mace, Philippe, 5,825,573, Cl. 360-72.200.
Masato, Hiroyuki: *See*—
Fujimoto, Hiromasa; Masato, Hiroyuki; Ota, Yorito; and Uda, Tomoya, 5,824,575, Cl. 438-174.000.
Masatomi, Toru: *See*—
Kobayashi, Hideki; and Masatomi, Toru, 5,824,421, Cl. 428-447.000.
Mascarenhas, Desmond, to Celtrix Pharmaceuticals. Methods for predicting drug response. 5,824,467, Cl. 435-4.000.
Masco Corporation: *See*—
Gil, Amos, 5,823,397, Cl. 222-181.300.
Mase, Akira: *See*—
Yamazaki, Shunepi; Mase, Akira; Hiroki, Masaaki; and Takemura, Yasuhiko, 5,825,434, Cl. 348-625.000.
Mashal, Robert; Sklar, Jeffrey; and Kolodner, Richard, to Brigham and Women's Hospital; and Dana-Farber Cancer Institute. Detection of mismatches by cleavage of nucleic acid heteroduplexes. 5,824,471, Cl. 435-6.000.
Mashiko, Yoshihiro; Koga, Masao; and Matsunaga, Shiro, to Denki Kagaku Kogyo Kabushiki Kaisha. Copolymer of chloroprene and α-cyanoacrylate. 5,824,758, Cl. 526-295.000.
Mashinsky, Alex, to Anip, Inc. Portable automated dialer with tone completion indicator. 5,825,872, Cl. 379-355.000.
Masimo Corporation: *See*—
Diab, Mohamed Kheir; Kiani-Azarbayjany, Esmaiel; Ragsdale, Charles Robert; and Lepper, James M., Jr., 5,823,950, Cl. 600-310.000.
Mason, Martin K.: *See*—
Ossmann, William J.; Pendergrass, Larry; and Mason, Martin K., 5,825,117, Cl. 310-317.000.
Mason, Peter W.: *See*—
Grubman, Marvin J.; Mason, Peter W.; Piccone, Maria Elisa; and Rieder, Elizabeth, 5,824,316, Cl. 424-216.100.
Mason, Philip L., to Jatom Systems Incorporated. Method and apparatus for measuring retardation and birefringence. 5,825,492, Cl. 356-345.000.
Mason, Wayne Andrew: *See*—
Worthington, Albert Edward; O'Connell, Cavan John; and Mason, Wayne Andrew, 5,822,812, Cl. 4-689.000.
Massachusetts Institute of Technology: *See*—
Geis, Michael W.; Brown, Elliott R.; Eglash, Stephen J.; and Dennis, Christopher L., 5,825,240, Cl. 327-570.000.
Mastors, Robert N.; and Stillwell, Michael J., to Sun Microsystems, Inc. Disconnected write authorization in a client/server computing system. 5,826,021, Cl. 395-200.330.
Masu, Kazuya: *See*—
Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Masu, Kazuya, 5,824,150, Cl. 117-84.000.
Masuda, Jitsuo: *See*—
Saiko, Hideji; Itoyama, Motoyuki; Masuda, Jitsuo; Ishida, Toshihisa; Nagayama, Katsuhiro; Naoi, Hiroo; Narimatsu, Masayasu; and Nishino, Tomoko, 5,826,136, Cl. 399-49.000.
Masuda, Koichi: *See*—
Maeda, Kazuki; Masuda, Koichi; and Nakata, Hiroaki, 5,825,518, Cl. 359-124.000.
Masuda, Narihiro: *See*—
Kinoshita, Shinichi; and Masuda, Narihiro, 5,824,394, Cl. 428-195.000.
Masumoto, Toshikazu; and Arita, Hisatoshi, to Mitsubishi Denki Kabushiki Kaisha. Power semiconductor device, armoring case thereof and method for manufacturing the same. 5,825,085, Cl. 257-704.000.
Masuoka, Fujio: *See*—
Asano, Masamichi; Iwahashi, Hiroshi; Kirisawa, Ryouhei; Nakayama, Ryozo; Inoue, Satoshi; Shirota, Riichiro; Endoh, Tetsuo; and Masuoka, Fujio, 5,824,583, Cl. 438-258.000.
Mathe, Lennart Karl-Axel; and Younis, Saed G., to Qualcomm Incorporated. Phase-locked-loop with noise shaper. 5,825,253, Cl. 331-18.000.
Mathejka, Horst Wolfgang: *See*—
Seiler, Peter Wilhelm; Pawlowski, Stanislaw; Kania, Eugeniusz; Mathejka, Horst Wolfgang; and Kircher, Werner, 5,823,766, Cl. 432-121.000.
Matherne, Lee, Jr. Simulator for pipe welding. 5,823,785, Cl. 434-234.000.
Mathur, Gopal P., to McDonnell Douglas Corp. Passive damping wedge. 5,823,467, Cl. 244-1.00N.
Matoba, Hirotsugu: *See*—
Abe, Shingo; Inui, Tetsuya; Matoba, Hirotsugu; Hirata, Susumu; Kimura, Masaharu; Ishii, Yorishige; Horinaka, Hajime; and Onda, Hiroshi, 5,825,383, Cl. 347-54.000.
Matoba, Tatsuo; and Yorimitsu, Keiichi, to Fujitsu Limited. Input/output controller providing preventive maintenance information regarding a spare I/O unit. 5,826,003, Cl. 395-182.050.
Matolak, David: *See*—
Kingston, Samuel C.; Giallorenzi, Thomas R.; Steagall, Robert William; and Matolak, David, 5,825,835, Cl. 375-367.000.
Matranga, Vincenzo: *See*—
Manaresi, Nicolò; Franchi, Eleonora; Bruno, Dario; Giacalone, Biagio; and Matranga, Vincenzo, 5,825,229, Cl. 327-333.000.
Matros, Yurii Shaevich; Bounimovitch, Grigori Abramovich; and Strots, Vadim Olegovich, to Monsanto Company. Process and apparatus for oxidizing components of a feed gas mixture in a heat regenerative reactor. 5,823,770, Cl. 432-181.000.
Matsubara, Akitoshi: *See*—

Haneda, Satoshi; Shigeta, Kunio; Sato, Yotaro; Fukuchi, Masakazu; Matsubara, Akitoshi; and Ikeda, Tadayoshi, 5,826,143, Cl. 399-182.000.
Matsubara, Kouji: *See*—
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Matsubara, Miyuki: *See*—
Gotoh, Fumihiro; Hirabayashi, Hiromitsu; Kashino, Toshio; Tajika, Hiroshi; Akiyama, Yuji; Sugimoto, Hitoshi; Matsubara, Miyuki; and Kanda, Hidehiko, 5,825,377, Cl. 347-15.000.
Matsuda, Kazuya: *See*—
Kino, Yoshiki; Kaneda, Naoya; Matsuda, Kazuya; Iwasaki, Youichi; Wada, Hiroyuki; Takashima, Tsuneo; and Ichinose, Harunobu, 5,825,545, Cl. 359-557.000.
Matsuda, Kenji: *See*—
Araki, Ryuji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; Nomura, Yoshiya; Matsuda, Kenji; and Miura, Kouji, 5,825,472, Cl. 355-200.000.
Matsuda, Shinya, to Koyo Seiko Co., Ltd. Rolling bearing with aligning ring. 5,823,687, Cl. 384-558.000.
Matsuda, Tomoo, to Komatsu Ltd. Bobot system and robot control device. 5,825,981, Cl. 395-83.000.
Matsufuji, Takashi: *See*—
Fujiwa, Takaaki; Daito, Terumasa; Yamamoto, Takashi; and Matsufuji, Takashi, 5,824,815, Cl. 558-161.000.
Matsuhisa, Akio; Shiba, Kiyotaka; Mikawa, Yoshikazu; and Kishi, Yuichiro, to Fuso Pharmaceutical Industries, Ltd. Method for detecting nucleic acid. 5,824,474, Cl. 435-6.000.
Matsui, Akio: *See*—
Tsuchihashi, Hironori; Togoshi, Yoshikazu; Fujiwara, Osami; Shimamura, Teruo; Matsui, Akio; Umemoto, Hideya; Chujo, Kenichi; and Bando, Niro, 5,823,285, Cl. 180-242.000.
Matsui, Hideo; Kuroiwa, Michiaki; and Nishiuchi, Taiki, to Mitsubishi Electric Engineering Co., Ltd.; and Mitsubishi Denki Kabushiki Kaisha. Motor control apparatus. 5,825,141, Cl. 318-254.000.
Matsui, Hitoshi: *See*—
Mita, Tsuneo; Shinada, Tsuneo; and Matsui, Hitoshi, 5,824,991, Cl. 219-130.510.
Matsui, Junshi: *See*—
Shiraki, Yasushi; and Matsui, Junshi, 5,824,831, Cl. 585-444.000.
Matsui, Sei, to Nikon Corporation. "Marco" Photographic lens having long focal length and vibration compensation. 5,825,546, Cl. 359-557.000.
Matsui, Shinzo; and Mori, Takeshi, to Olympus Optical Co., Ltd.. Data modulating method and modulating and demodulating apparatuses. 5,825,309, Cl. 341-50.000.
Matsumae, Iwao: *See*—
Takenaka, Eiji; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Sugiyama, Toshihiro; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,826,144, Cl. 399-222.000.
Matsumoto, Hiroshi: *See*—
Otobe, Tetsuro; Matsumoto, Hiroshi; Sasaki, Kazuhiro; Okumura, Kazumasa; Sato, Kazuo; and Toya, Masaaki, 5,823,547, Cl. 280-30.000.
Matsumoto, Hiroyuki; and Ishii, Koichiro, to Nikon Corporation. Magneto-optical recording method using laser beam intensity setting based on playback signal. 5,825,724, Cl. 369-13.000.
Matsumoto, Isao: *See*—
Kawano, Hiroshi; Hayashi, Takayuki; and Matsumoto, Isao, 5,824,435, Cl. 429-223.000.
Matsumoto, Mitsuhiro: *See*—
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Matsumoto, Naoki; Otsuka, Manabu; Ogusu, Koji; and Idogaki, Takaharu, to Nippondenso Co., Ltd. Mobile communication device having a direct communication capability. 5,825,149, Cl. 318-587.000.
Matsumoto, Shinya: *See*—
Tomioka, Makoto; Hasegawa, Akira; Matsumoto, Shinya; and Suzuki, Takayuki, 5,823,943, Cl. 600-178.000.
Matsumoto, Toshikazu: *See*—
Macrae, Kenneth I.; Ting, Annsheng C.; Edholm, Ragnar W.; Worth, Erik; Sigmon, Robert B., Jr.; Matsumoto, Toshikazu; and Ho, Chung-Jen, 5,826,237, Cl. 705-2.000.
Matsumoto, Yoshiyuki, to Honda Giken Kogyo Kabushiki Kaisha. Speech-input control device. 5,826,233, Cl. 704-275.000.
Matsumura, Hiroyuki, to Daicel Chemical Industries, Ltd. Tobacco filters and a method of producing the same. 5,823,201, Cl. 131-343.000.
Matsumura, Kazuhiko: *See*—
Saito, Takao; Yoshida, Akifumi; Matsumura, Kazuhiko; Miura, Takashi; and Kumobayashi, Hidenori, 5,824,822, Cl. 568-10.000.
Matsumura, Yoshio, to Dainippon Screen Mfg. Co., Ltd. Substrate processing device and method for substrate from the substrate processing device. 5,823,736, Cl. 414-609.000.
Matsunaga, Douglas S., to Braner USA, Inc. Roll forming machine and method for changing rolls. 5,823,036, Cl. 72-181.000.
Matsunaga, Shiro: *See*—
Mashiko, Yoshihiro; Koga, Masao; and Matsunaga, Shiro, 5,824,758, Cl. 526-295.000.
Matsuno, Koji, to Fuji Jukogyo Kabushiki Kaisha. Driving force control system for vehicle and the method thereof. 5,826,209, Cl. 701-69.000.
Matsuo, Akihide: *See*—
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Matsuo, Shinichi; Fujimaki, Nobuyoshi; Watanabe, Shiroyasu; and Kato, Kintaro, to Shin-Etsu Handotai Co., Ltd. Semiconductor crystal packaging device. 5,823,351, Cl. 206-710.000.
Matsuo, Takashi, to Suzuki Motor Company. Retractor attaching structure of seat belt for vehicle. 5,823,628, Cl. 297-475.000.
Matsuo, Takashi: *See*—
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Matsuoka, Shinya: *See*—
Nakamura, Takao; Sekiyama, Nobuya; Nakano, Keiko; Furusawa, Kenji; Kataoka, Hiroyuki; Shirakura, Takaaki; and Matsuoka, Shinya, 5,825,591, Cl. 360-104.000.
Matsushita, Akihiro: *See*—
Suzuki, Tomoko; Yoshida, Takayuki; Kotoh, Satoru; Ishikawa, Hiroaki; Jojima, Kazunobu; Akiyama, Itsutarou; Matsushita, Akihiro; and Kabuki, Masataka, 5,823,009, Cl. 62-410.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Fujimoto, Hiromasa; Masato, Hiroyuki; Ota, Yorito; and Uda, Tomoya, 5,824,575, Cl. 438-174.000.
Fukuda, Kensei; Kuroda, Shoji; Kuwamoto, Yoshinobu; and Sakanoue, Kei, 5,822,977, Cl. 60-274.000.
Haji, Hiroshi, 5,823,416, Cl. 228-4.500.
Hamai, Shinji; Okabe, Masao; and Kawakami, Yasunori, 5,825,567, Cl. 360-41.000.
Higashimura, Mamoru; Kato, Masao; Tamura, Mitsuo; Inagaki, Akira; and Uenoyama, Tsutomu, 5,826,024, Cl. 395-200.440.
Ikawa, Yoshihiro; Takizawa, Teruyuki; and Kawamura, Ichiro, 5,825,151, Cl. 318-685.000.
Kagata, Hiroshi; Kato, Junichi; and Nishimoto, Keiji, 5,824,616, Cl. 501-136.000.
Kato, Osamu; and Hayashi, Masaki, 5,825,763, Cl. 370-335.000.
Kawano, Hiroshi; Hayashi, Takayuki; and Matsumoto, Isao, 5,824,435, Cl. 429-223.000.
Konno, Masashi; Sugawara, Sumio; Atoji, Nobuhisa; Terada, Jiro; and Tamura, Masami, 5,824,900, Cl. 73-504.160.
Maeda, Kazuki; Masuda, Koichi; and Nakata, Hiroaki, 5,825,518, Cl. 359-124.000.
Michimoto, Yasuyuki; Onda, Katsumasa; and Nishizawa, Masato, 5,825,915, Cl. 382-154.000.
Mitani, Katsuaki; Sakaguchi, Hirokazu; and Aoki, Satoshi, 5,824,174, Cl. 156-99.000.
Miyaji, Atsuko; Omori, Motoji; and Tatebayashi, Makoto, 5,825,885, Cl. 380-25.000.
Moritan, Norishige; Matsuo, Akihide; and Fukutani, Hideshi, 5,822,846, Cl. 29-598.000.
Nakata, Yoshiro; Hashimoto, Shin; and Miyanaga, Isao, 5,825,193, Cl. 324-763.000.
Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, 5,825,738, Cl. 369-77.200.
Reaves, Benjamin Kerr, 5,826,230, Cl. 704-233.000.
Shiota, Tomio; Shikata, Naohiro; and Shimizu, Kaoru, 5,825,903, Cl. 381-391.000.
Teshima, Hiroyoshi, 5,825,586, Cl. 360-99.040.
Tsuboi, Yasutaka; Hada, Junichi; and Morimoto, Masamichi, 5,825,914, Cl. 382-151.000.
Tsuru, Akihiro; Shimazaki, Hiromitsu; Taguchi, Hironori; and Noda, Kazuhiko, 5,826,138, Cl. 399-55.000.
Urabe, Yoshio; Koga, Shouichi; Takai, Hitoshi; Kai, Koji; and Yamasaki, Hidetoshi, 5,825,820, Cl. 375-259.000.
Watanabe, Masaru; Ueyama, Yasuhiro; Nakamura, Toshikazu; Ohana, Yorihito; and Hayashi, Tetsuya, 5,824,156, Cl. 118-410.000.
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Matsushita Electric Industrial Co.,Ltd: *See*—
Fujita, Kenichi; Nagao, Takeshi; Kawaguchi, Toru; Kaneko, Shigeki; and Hikita, Hiroyuki, 5,825,336, Cl. 345-2.000.
Matsushita Electric Works, Ltd.: *See*—
Nagase, Haruo; Ichikawa, Masaaki; Hamada, Hideki; Kato, Nobuo; Ono, Tomoyuki; and Kimura, Yasuhiro, 5,823,806, Cl. 439-140.000.
Matsushita Electronic Industrial Co., Ltd.: *See*—
Tan, Thiow Keng, 5,825,421, Cl. 348-409.000.
Matsushita Electronics Corporation: *See*—
Oga, Toshiyoshi; Saito, Masaru; and Asai, Shunji, 5,824,130, Cl. 65-276.000.
Matsushita, Hideyuki: *See*—
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Matsushita, Kiichiro: *See*—
Higuchi, Hiroyuki; Matsushita, Kiichiro; and Nishiyama, Soji, 5,824,430, Cl. 429-62.000.
Matsushita, Takao; and Takuman, Osamu, to Dow Corning Toray Silicone Co., LTD. Silicone rubber composition. 5,824,729, Cl. 524-437.000.
Matsushita, Toshihiro, to Fuji Photo Film Co., Ltd. Lens-fitted photo film unit and classifying apparatus and method for the same. 5,826,112, Cl. 396-6.000.
Matsushita, Yuji: *See*—

Yamazaki, Kazuhisa; Nakamura, Nobuaki; Matsushita, Yuji; Sato, Hisao; and Ban, Tomohiko, 5,825,264, Cl. 333-204.000.
Matsutani, Kanji: *See—*
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Fukuda, Masatoshi; Ohtsuka, Tadashi; Isaki, Haruo; and Matsutani, Kanji, 5,824,009, Cl. 606-144.000.
Matsutani, Taku: *See—*
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Matsuura, Katsumi: *See—*
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Matsuura, Kazuo: *See—*
Tajima, Yoshio; Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; and Matsuura, Kazuo, 5,824,618, Cl. 502-108.000.
Mattel, Inc.: *See—*
Arriola, Martin F.; Chaikumnerd, Tichakorn; Simmons, Janet K.; McDonough, Diana L.; and Volynsky, Isaak, 5,823,846, Cl. 446-236.000.
Mattes, Carol E.: *See—*
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Mattes, Peter, to Karl Walther Alben und Rahmen GmbH & Co. KG. Device for storing photographic film negative cassettes. 5,823,347, Cl. 206-555.000.
Matthews, Regina L.: *See—*
Bathrick, Erwin W.; Garber, John W.; Huang, Cheng-Chi; Kung, Kenneth C.; Matthews, Todd E.; Zmuda, James E.; and Matthews, Regina L., 5,825,300, Cl. 340-825.330.
Matthews, Todd E.: *See—*
Bathrick, Erwin W.; Garber, John W.; Huang, Cheng-Chi; Kung, Kenneth C.; Matthews, Todd E.; Zmuda, James E.; and Matthews, Regina L., 5,825,300, Cl. 340-825.330.
Mattoon, James R.; and Bajszár, George, to University Technology Corporation. Method for enhancing the production of hemoproteins. 5,824,511, Cl. 435-69.600.
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Bar-Gadda, Ronny, 5,824,604, Cl. 438-725.000.
Matz, Bret Allen: *See—*
Schnoor, William John; Matz, Bret Allen; McKechnie, Keith James; and Downs, Richard Charles, 5,825,618, Cl. 361-686.000.
Matzku, Siegfried: *See—*
Hölzer, Wolfgang; von Hoegen, Ilka; Strittmatter, Wolfgang; and Matzku, Siegfried, 5,824,782, Cl. 530-391.100.
Matzner, Mark D.: *See—*
Kugelev, Vladimir S.; and Matzner, Mark D., 5,823,093, Cl. 92-128.000.
Mauch, Konrad: *See—*
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Maucher, Franz: *See—*
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Maute, Kurt: *See—*
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Max Co., Ltd.: *See—*
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Maxdem Incorporated: *See—*
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Maxtor Corporation: *See—*
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Maxwell, Douglas Hugh; and Marijnissen, Giel, to N.V. Interturbine. Thermal barrier coating system and methods. 5,824,423, Cl. 428-623.000.
Maxwell, Ian; Coito, Ilidio Paulo; and Jacques, G. Eric, to Imax Corporation. Motion picture theatre structure. 5,822,928, Cl. 52-8.000.
Maxwell, James E. A.: *See—*
Herd, Ian M.; Herd, Gary; Jenkins, Laird C.; and Maxwell, James E. A., 5,823,711, Cl. 405-36.000.
Maxwell, Joann: *See—*
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May, Gerald A.: *See—*
DeVito, Jonathan; Garland, Harry; Hunter, Ken; May, Gerald A.; and Roberts, Michael G., 5,825,943, Cl. 382-306.000.
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Merendini, Andrew Vito; Oddo, John A.; and Petosa, Dennis A. Portable safety light and audible signal apparatus. 5,825,280, Cl. 340-326.000.
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Musmanno, Thomas; and Ur, Kelly, 5,826,243, Cl. 705-35.000.
Merrill, Natalie Ann; Wang, Hsien-Chang; and Dias, Anthony Jay, to Exxon Chemical Patents Inc. Peroxide and radiation curable compositions containing isobutylenene copolymers having acrylate functionality. 5,824,717, Cl. 522-81.000.
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Mersereau, Ronald G.: *See*—
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Mertelsmann, Roland; Welte, Karl; and Venuta, Salvatore, to Sloan-Kettering Institute for Cancer Research. Highly purified interleukin-2 and method. 5,824,330, Cl. 424-423.000.
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Fuentes, Vincent; Fritsch, Hans Ulrich; Merz, Andreas; Plasberg, Georg; and Kraft, Wolfgang, 5,825,299, Cl. 340-825.540.
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Iruvanti, Sushumna; Klepeis, Martin; Messina, Gaetano Paolo; and Sherif, Raed, 5,825,087, Cl. 257-707.000.
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Meyerowitz, Elliot M.; Chang, Caren; and Bleecker, Anthony B., to California Institute of Technology. Plants having modified response to ethylene. 5,824,868, Cl. 800-205.000.
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Mezõ , Róbert. Device for stabilizing joints of the limbs. 5,823,979, Cl. 602-16.000.
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Mikame, Daisuke; Hiruta, Masaomi; Shimasaki, Hirato; and Ezaki, Hiroshi, to Bridgestone Sports Co., Ltd. Iron golf club set. 5,823,887, Cl. 473-290.000.
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Miki, Brian; Iyer, V. N.; and Fobert, Pierre, to Canada, Her Majesty the Queen in right of, as represented by Agriculture; and Agri-Food Canada. Seed coat-specific cryptic promoter in tobacco. 5,824,863, Cl. 800-205.000.
Miki, Brian; Hattori, Jiro; Fobert, Pierre; and Iyer, Venkatran N. A constitutive promoter from tobacco. 5,824,872, Cl. 800-205.000.
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Mikoshiba, Nobuo; Tsubouchi, Kazuo; and Masu, Kazuya, to Canon Kabushiki Kaisha. Process for forming deposited film by use of alkyl aluminum hydride. 5,824,150, Cl. 117-84.000.
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Mitamura, Kenichi; Nakamoto, Shinji; Endo, Takayoshi; and Matsumoto, Mitsuhiro, to Yazaki Corporation. Sealed connector. 5,823,824, Cl. 439-585.000.
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Mitchell, Porter H.; and Saidi, M. Yazid, to Valence Technology, Inc. Electrically conductive adhesion promoters for current collectors. 5,824,120, Cl. 29-623.100.
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Sanemitsu, Yoshikado, 5,825,014, Cl. 235-492.000.
Suzuki, Tomoko; Yoshida, Takayuki; Kotoh, Satoru; Ishikawa, Hiroaki; Jojima, Kazunobu; Akiyama, Itsutarou; Matsushita, Akihiro; and Kabuki, Masataka, 5,823,009, Cl. 62-410.000.

Takahashi, Noboru; and Kachi, Masanori, 5,823,810, Cl. 439-188.000.
Tanaka, Shinji, 5,825,699, Cl. 365-200.000.
Tsukude, Masaki; and Arimoto, Kazutami, 5,825,705, Cl. 365-222.000.
Ueki, Hiroshi, 5,825,688, Cl. 365-185.110.
Yoshimoto, Kyosuke; Rao, M. C.; Ohata, Hiroyuki; Nakane, Kazuhiko; Furukawa, Teruo; Kondo, Junichi; and Ototake, Masafumi, 5,825,728, Cl. 369-32.000.
Mitsubishi Electric Engineering Co., Ltd.: *See—*
Matsui, Hideo; Kuroiwa, Michiaki; and Nishiuchi, Taiki, 5,825,141, Cl. 318-254.000.
Noda, Kazuyuki, 5,825,702, Cl. 365-203.000.
Noda, Kazuyuki, 5,826,056, Cl. 395-494.000.
Mitsubishi Gas Chemical Company, Inc.: *See—*
Abe, Takafumi; Gotoh, Toshiyuki; Uchiyama, Takako; Higuchi, Hirofumi; Shima, Yoshikazu; and Ikemoto, Kazuto, 5,824,818, Cl. 560-179.000.
Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Oda, Hideyuki; Goto, Kenji; and Miyamoto, Masayuki, 5,823,160, Cl. 123-295.000.
Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Tatani, Atsushi; Susaki, Makoto; Kimura, Kazuaki; Shimizu, Taku; Sera, Toshikuni; and Inoue, Kenji, 5,824,273, Cl. 422-171.000.
Mitsubishi Materials Corporation: *See—*
Ogi, Katsumi; Atsuki, Tsutomu; Sasaki, Go; Yonezawa, Tadashi; and Soyama, Nobuyuki, 5,824,456, Cl. 430-325.000.
Mitsubishi Paper Mills Limited: *See—*
Ashida, Tetsuya; Noda, Touru; Kojima, Osamu; Morita, Tomoichi; Ikeya, Nobushige; Seri, Takuya; and Nitta, Kohhei, 5,824,462, Cl. 430-531.000.
Mitsuhashi, Shunya: *See—*
Shimura, Akihiro; Nagata, Satoshi; Okamoto, Yoshifumi; Morita, Tetsuya; Mitsuhashi, Shunya; Sato, Nobuhiko; Nishijima, Takanori; and Unishi, Masaki, 5,825,993, Cl. 395-115.000.
Mitsui Chemicals, Inc.: *See—*
Honjo, Masaru; Naito, Naokazu; and Uchida, Hiroshi, 5,824,502, Cl. 435-69.100.
Kobayashi, Shiro; Uyama, Hiroshi; Maeda, Sunao; and Tawaki, Shinichirou, 5,824,414, Cl. 428-402.000.
Shingu, Jyunichi; Morita, Katsuyuki; Toyoda, Toshihiro; Tachihara, Shinji; Motai, Kojiro; and Kishi, Satoru, 5,824,178, Cl. 156-265.000.
Mitsui, Keiichi: *See—*
Ito, Hironori; Hino, Yuichiro; Tashiro, Naoki; Hagiwara, Masahiko; Mitsui, Keiichi; and Uchida, Akihiko, 5,825,155, Cl. 320-16.000.
Mitsuji, Masaru: *See—*
Haneishi, Hidehiko; Kudoh, Masanobu; Kamikado, Koji; Horibe, Kyoichi; Kume, Masafumi; Kasukawa, Takahisa; Ohkoshi, Toshio; Nakahata, Akimasa; Tatsuno, Tadayoshi; and Mitsuji, Masaru, 5,824,424, Cl. 428-626.000.
Mitsumi Electric Co., Ltd.: *See—*
Sakaue, Yoichi, 5,825,833, Cl. 375-344.000.
Mitsutani, Noritake, to Toyota Jidosha Kabushiki Kaisha. Device for determining deterioration of a catalytic converter for an engine. 5,822,982, Cl. 60-276.000.
Mitsuya, Toshiyuki, to Mita Industrial Company, Ltd. Fixing device in an image-forming machine. 5,826,141, Cl. 399-122.000.
Mittelstadt, Brent: *See—*
Sahay, Alind; Mittelstadt, Brent; Williamson, Willie, Jr.; Zuhars, Joel; and Kazanzides, Peter, 5,824,085, Cl. 623-16.000.
Mittendorf, Donald Lee. Method for joining rhenium to niobium. 5,824,425, Cl. 428-655.000.
Mitulla, Jeffrey A.: *See—*
McGraw, Thomas F.; Mitulla, Jeffrey A.; and Woll, Richard S., 5,825,864, Cl. 379-210.000.
Miura, Kouji: *See—*
Araki, Ryuji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; Nomura, Yoshiya; Matsuda, Kenji; and Miura, Kouji, 5,825,472, Cl. 355-200.000.
Miura, Masahiro: *See—*
Goto, Mitsuru; and Miura, Masahiro, 5,823,641, Cl. 312-7.200.
Miura, Takashi: *See—*
Saito, Takao; Yoshida, Akifumi; Matsumura, Kazuhiko; Miura, Takashi; and Kumobayashi, Hidenori, 5,824,822, Cl. 568-10.000.
Miwa, Hiroyuki, to Sony Corporation. Method for forming bipolar transistor having a reduced base transit time. 5,824,589, Cl. 438-309.000.
Miwa, Tetsuya: *See—*
Asano, Minao; Kawai, Misako; Miwa, Tetsuya; and Nio, Noriki, 5,824,534, Cl. 435-212.000.
Miyadai, Tomoharu: *See—*
Yamaguchi, Syoji; Naito, Ayumi; and Miyadai, Tomoharu, 5,825,899, Cl. 381-94.400.
Miyaguchi, Satoshi: *See—*
Watanabe, Yoshiaki; Miyaguchi, Satoshi; Amano, Hiroshi; and Akasaki, Isamu, 5,825,789, Cl. 372-21.000.
Miyai, Tsuneo; and Imai, Yuji, to Nikon Corporation. Exposure apparatus. 5,825,470, Cl. 355-72.000.
Miyai, Tsuyoshi; Makio, Satoshi; Furukawa, Yasunori; and Sato, Masayoshi, to Hitachi Metals, Ltd. Laser and laser applied units. 5,825,793, Cl. 372-33.000.
Miyaji, Atsuko; Omori, Motoji; and Tatebayashi, Makoto, to Matsushita Electric Industrial Co., Ltd. Bit agitator. 5,825,885, Cl. 380-25.000.
Miyajima, Fumio, to Apic Yamada Corporation. Method of resin molding and resin molding machine for the same. 5,824,252, Cl. 264-272.170..
Miyake, Akira; and Watanabe, Yutaka, to Canon Kabushiki Kaisha. Optical arrangement and illumination method. 5,825,844, Cl. 378-34.000.
Miyake, Hiroaki: *See—*
Araki, Ryuji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; Nomura, Yoshiya; Matsuda, Kenji; and Miura, Kouji, 5,825,472, Cl. 355-200.000.
Miyake, Toshio: *See—*
Nishimoto, Tomoyuki; Chaen, Hiroto; Fukuda, Shigeharu; and Miyake, Toshio, 5,824,521, Cl. 435-100.000.
Miyama, Ryuzi, to Sharp Kabushiki Kaisha. Method of controlling execution of data flow program for performing correlated operation processing on data in the order received and apparatus therefor. 5,826,097, Cl. 395-800.250.
Miyamori, Shinji; and Ueno, Masatoshi, to Sony Corporation. Gain control method for audio encoding device. 5,825,320, Cl. 341-139.000.
Miyamori, Takahisa; Yamaji, Yoshiyuki; and Yoshikawa, Toru, to Noritsu Koki Co., Ltd. Film cartridge storage apparatus. 5,825,462, Cl. 355-75.000.
Miyamoto, Eiichi: *See—*
Hazama, Hiroyuki; Miyamoto, Eiichi; Nakamori, Hideo; Terada, Takashi; Ishii, Masayuki; and Murata, Takahiko, 5,826,153, Cl. 399-353.000.
Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; and Soshi, Isao, to Nikon Corporation. Camera equipped with a device for focus adjustment during times of camera vibration and the like. 5,826,114, Cl. 396-55.000.
Miyamoto, Hidetoshi: *See—*
Iino, Shuji; Fujiwara, Toshimitsu; Miyamoto, Hidetoshi; and Kurita, Takaji, 5,826,148, Cl. 399-240.000.
Miyamoto, Masayuki: *See—*
Oda, Hideyuki; Goto, Kenji; and Miyamoto, Masayuki, 5,823,160, Cl. 123-295.000.
Miyamoto, Noritaka; Onishi, Masazumi; Fujiwara, Yasuyuki; Tanaka, Toshiaki; Sawamura, Masatoshi; and Danno, Atsushi, to Toyota Jidosha Kabushiki Kaisha. Process for gear-rolling a high accuracy gear. 5,824,168, Cl. 148-573.000.
Miyamoto, Ryoichi: *See—*
Arakawa, Isao; Hirata, Yosinori; and Miyamoto, Ryoichi, 5,822,847, Cl. 29-741.000.
Miyanaga, Akiharu: *See—*
Yamazaki, Shunpei; Miyanaga, Akiharu; and Teramoto, Satoshi, 5,824,574, Cl. 438-150.000.
Miyanaga, Isao: *See—*
Nakata, Yoshiro; Hashimoto, Shin; and Miyanaga, Isao, 5,825,193, Cl. 324-763.000.
Miyane, Shinji, to Rhythm Watch Co., Ltd. Timepiece with music box. 5,825,721, Cl. 368-10.000.
Miyashita, Akira: *See—*
Ogasawara, Yutaka; Ando, Hirotake; Miyashita, Akira; and Tonegawa, Nobuyuki, 5,825,729, Cl. 369-44.270.
Miyata, Junji: *See—*
Kitamura, Junichi; Tachibana, Matsuo; Fujiwara, Koji; Fujiwara, Osami; Samejima, Kazuo; Miyata, Junji; Togoshi, Yoshikazu; Tsuchihashi, Hironori; and Esaki, Yoshiyuki, 5,822,960, Cl. 56-7.000.
Miyata, Koji: *See—*
Ohashi, Ken; Yoneda, Yuhito; Miyata, Koji; and Higuchi, Dai, 5,825,187, Cl. 324-319.000.
Miyatake, Masami; Okamoto, Nobuyuki; and Ebihara, Susumu, to Hitachi, Ltd. Magnetic disk device for detecting a floating state of a magnetic head. 5,825,577, Cl. 360-75.000.
Miyatsu, Yoshinobu: *See—*
Takazawa, Yoshiharu; Arai, Takami; Motoki, Masamichi; Nagura, Kenji; Yokoyama, Seiichi; Miyatsu, Yoshinobu; and Mizokami, Hiroshi, 5,824,552, Cl. 435-384.000.
Miyauchi, Tateoki: *See—*
Yamaguchi, Hiroshi; Hongo, Mikio; Miyauchi, Tateoki; Shimase, Akira; Haraichi, Satoshi; Takahashi, Takahiko; and Saito, Keiya, 5,824,598, Cl. 438-676.000.
Miyaza, Masao, to Sharp Kabushiki Kaisha. Image processor providing improved readability of characters. 5,825,942, Cl. 382-298.000.
Miyazono, Toshiya; Kohno, Yoshihide; Koseki, Hiroyuki; and Okamoto, Yoichi, to Bridgestone Corporation. Pneumatic radial tires including a tire component containing groups of reinforcing elements. 5,824,171, Cl. 152-526.000.
Miyoshi, Yoshitake, to Mita Industrial Co., Ltd. Paper holder mounting mechanism. 5,823,647, Cl. 312-333.000.
Mizoguchi, Takahiro: *See—*
Arai, Hiroyuki; Mura, Hiroshi; Sakata, Hideo; Mizoguchi, Takahiro; Ishida, Kensuke; and Niimi, Hiroshi, 5,825,335, Cl. 343-866.000.
Mizokami, Hiroshi: *See—*
Takazawa, Yoshiharu; Arai, Takami; Motoki, Masamichi; Nagura, Kenji; Yokoyama, Seiichi; Miyatsu, Yoshinobu; and Mizokami, Hiroshi, 5,824,552, Cl. 435-384.000.
Mizrokhi, Vladimir Yakovlevitch: *See—*
Arkhangelsky, Ivan Ivanovitch; Bolotov, Eugène Gueorguevitch; Philippov, Vladimir Sergueevitch; Mizrokhi, Vladimir Yakovlevitch; Svetlov, Vladimir Grigorievitch; Stanevsky, Gregory Andreevitch; Khitenkov, Serge Grigorievitch; Gaidoukevitch, Victor Leonidovitch; and Chmikov, Eugène Afanassievitch, 5,823,469, Cl. 244-3.220.
Mizukami, Hiroshi: *See—*
Kajitani, Koji; and Mizukami, Hiroshi, 5,823,880, Cl. 464-66.000.

Mizukami, Tokio; and Fujikura, Hiroshi, to International Mfg. and Engineering Services Co. Printer including improved print head control. 5,823,688, Cl. 400-27.000.

Mizukami, Tokio: *See*—
Kuroki, Michio; Mizukami, Tokio; and Nakaya, Yoshiyuki, 5,825,636, Cl. 362-309.000.

Mizukoshi, Nobuyuki; and Fan, Ruixue, to NEC Corporation. ATM switch with input and output ports. 5,825,767, Cl. 370-395.000.

Mizumura, Hiroshi: *See*—
Kawamura, Hiroyuki; and Mizumura, Hiroshi, 5,826,117, Cl. 396-79.000.

Mizumura, Michinobu; Hamamura, Yuuichi; Azuma, Junzou; Shimase, Akira; Kamimura, Takashi; Itoh, Fumikazu; Umemura, Kaoru; Kawanami, Yoshimi; and Madokoro, Yuuichi, to Hitachi, Ltd. Processing method and apparatus using focused ion beam generating means. 5,825,035, Cl. 250-423.00R.

Mizuno, Chiharu: *See*—
Aoki, Sachiko; and Mizuno, Chiharu, 5,824,570, Cl. 438-128.000.

Mizuno, Hiroaki: *See*—
Kuno, Atsushi; Inoue, Yoshikazu; Takasugi, Hisashi; Mizuno, Hiroaki; and Yamasaki, Kumi, 5,824,691, Cl. 514-335.500.

Mizuno, Masahiro, to Brother Kogyo Kabushiki Kaisha. Embroidery data processing apparatus. 5,823,127, Cl. 112-102.500.

Mizuno, Takashi; Kokubu, Sadao; Aoki, Hisashi; and Mizuno, Yoshiyuki, to Kabushiki Kaisha Tokai Rika Denki Seisakusho. Cylinder lock and key device. 5,823,028, Cl. 70-278.000.

Mizuno, Yoshiyuki: *See*—
Mizuno, Takashi; Kokubu, Sadao; Aoki, Hisashi; and Mizuno, Yoshiyuki, 5,823,028, Cl. 70-278.000.

Mizusawa, Nobutoshi: *See*—
Hara, Shinichi; Mizusawa, Nobutoshi; and Chiba, Yuji, 5,825,463, Cl. 355-75.000.

Mizutani, Hideki; Kayukawa, Hiroaki; Hirota, Suguru; and Enokijima, Fuminobu, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Lubrication mechanism in compressor. 5,823,294, Cl. 184-6.300.

Mkrtchyan, Masis: *See*—
Farrow, Reginald Conway; and Mkrtchyan, Masis, 5,824,441, Cl. 430-22.000.

MKS Instruments, Inc.: *See*—
Lucas, Paul D.; Luft, Frederick J.; and Huang, Ting, 5,824,894, Cl. 73-202.500.

Mladjan, Gary J.; Anderson, Douglas A.; and Dickson, Clarence E., to Raytheon Company. Method and device for fire control of a high apogee trajectory weapon. 5,824,942, Cl. 89-41.170.

Mobil Oil Corporation: *See*—
Agaskar, Pradyot A.; and Huang, Tracy J., 5,824,835, Cl. 585-722.000.
Paul, James M.; and Davis, R. Michael, 5,824,214, Cl. 208-107.000.

Mochida, Akira: *See*—
Nakabayashi, Kaoru; and Mochida, Akira, 5,826,263, Cl. 707-7.000.

Mochizuki, Ryo; Nagashima, Shinrokuro; and Saito, Hiroshi, to NHK Engineering Services, Inc. Microscopic system integrated with wide-screen television. 5,825,532, Cl. 359-368.000.

Mochizuki, Tatsuo, to NISCA Corporation. Recording device having detachable printing head. 5,825,392, Cl. 347-197.000.

Modern Controls, Inc.: *See*—
Rosik, Richard, 5,822,951, Cl. 53-432.000.

Modern Electric Co., Ltd.: *See*—
Wei, Jung-Kuei, 5,825,158, Cl. 320-111.000.

Modern Transport Systems, Corp.: *See*—
Barber, John B.; and Barber, Duane B., 5,825,105, Cl. 310-12.000.

Moellering, Douglas F.: *See*—
Duncan, Michael Glen; Findley, Geoffrey; Kubena, Ronald Albert; and Moellering, Douglas F., 5,825,873, Cl. 379-419.000.

Moen Incorporated: *See*—
Bertrand, John E.; Mercer, Lee A.; Burchard, Thomas H.; Hunter, Gregory; Lofgren, John; Wagner, Henry N.; Johnson, Kevin M.; and Karg, Jeffery, 5,823,229, Cl. 137-614.200.

Mohammadi, Abbas: *See*—
Klymyshyn, David M.; Kumar, Surinder; and Mohammadi, Abbas, 5,825,257, Cl. 332-100.000.

Moharram, Omayma El-Sayed, to Northern Telecom Limited. Load sharing group of service control points connected to a mediation point for traffic management control. 5,825,860, Cl. 379-133.000.

Mohr, Ian J.; Gluzman, Yakov, deceased (by Ilan Gluzman, administrator), to American Cyanamid Company. Avirulent herpetic viruses useful as tumoricidal agents and vaccines. 5,824,318, Cl. 424-229.100.

Mohr, Patrick J.: *See*—
Joshi, Mahendra L.; and Mohr, Patrick J., 5,823,769, Cl. 432-181.000.

Moiin, Hossein: *See*—
Jardine, Robert L.; and Moiin, Hossein, 5,826,066, Cl. 395-551.000.

Moineau, Sylvain; Walker, Shirley A.; Vedamuthu, Ebenezer R.; and Vandenbergh, Peter A., to Quest International Flavors & Food Ingredients Company, Division of Indopco, Inc. Isolated DNA encoding enzyme for phage resistance. 5,824,523, Cl. 435-172.300.

Mokdad, Ayman; and Grieco, Giovanni, to Valeo. Flywheel, in particular for motor vehicles. 5,823,311, Cl. 192-70.170.

Mol, Grietje N.: *See*—
Broer, Dirk J.; Van Haaren, Johannes A. M. M.; Mol, Grietje N.; and Leenhouts, Frans, 5,825,444, Cl. 349-98.000.

Molex Incorporated: *See*—
Dashevsky, Vladimir A.; Owsley, Robert A.; Pratt, Gregory R.; and Regnier, Kent E., 5,824,257, Cl. 264-328.100.
Ernst, Scot A.; Grois, Igor; Kats, Aleksandr; Makhlin, Ilya; and Pescetto, Michael J., 5,825,955, Cl. 385-79.000.
Murphy, Paul, 5,823,825, Cl. 439-610.000.
Patel, Arvind; Pearson, Nels; and Rushton, Robert, 5,823,820, Cl. 439-500.000.
Regnier, Kent E., 5,823,792, Cl. 439-66.000.

Molitor, James A.: *See*—
Griepenstroh, Bruce A.; Grumm, Darren M.; Kobrehel, Michael D.; Molitor, James A.; and Flanagan, Clayton E., 5,822,921, Cl. 49-350.000.

Moll, Frederic H.; Gresl, Charles, Jr.; Chin, Albert K.; and Hopper, Philip K., to Origin Medsystems, Inc. Endoscopic inflatable retraction device with additional inflatable chamber. 5,823,945, Cl. 600-204.000.

Möller, Eckhard: *See*—
Struckmeier, Manfred; Graefe, Andreas; and Möller, Eckhard, 5,824,129, Cl. 65-207.000.

Molvik, Arthur W.; and Ellingboe, Albert R., to United States of America, Energy. Helicon wave excitation to produce energetic electrons for manufacturing semiconductors. 5,824,602, Cl. 438-714.000.

Momiuchi, Masayuki; Koizumi, Hiroshi; Ohishi, Masahiro; Goto, Yoshiaki; and Ohtomo, Fumio, to Kabushiki Kaisha Topcon. Laser oscillating apparatus and method of driving laser beam source. 5,825,798, Cl. 372-75.000.

Momohara, Tomomi, to Kabushiki Kaisha Toshiba. Semiconductor integrated circuit device with large-scale memory and controller embedded on one semiconductor chip and method of testing the device. 5,825,783, Cl. 371-21.100.

Monarch Marking Systems, Inc.: *See*—
Riley, Brad S.; and Pou, Frederick M., 5,824,379, Cl. 428-40.100.

Monitoring Technology Corporation: *See*—
Hernandez, Walter C., 5,825,657, Cl. 364-486.000.

Monotype Typography, Inc.: *See*—
Davis, William N.; and Mirochnick, Ira, 5,825,996, Cl. 395-117.000.

Monsanto Company: *See*—
Betlach, Michael R.; Doherty, Daniel H.; and Vanderslice, Rebecca W., 5,824,472, Cl. 435-6.000.
Hinchee, Maud A.; and Connor-Ward, Dannette, 5,824,877, Cl. 800-205.000.
Matros, Yurii Shaevich; Bounimovitch, Grigori Abramovich; and Strots, Vadim Olegovich, 5,823,770, Cl. 432-181.000.

Monson, Mark Brian, to SSI Technologies, Inc. Method and apparatus for effiviently phase modulating a subcarrier signal for an inductively coupled transponder. 5,824,891, Cl. 73-146.500.

Montagnier, Luc: *See*—
Alizon, Marc; Sonigo, Pierre; Wain-Hobson, Simon; and Montagnier, Luc, 5,824,482, Cl. 435-7.100.

Montgomery, Jerry R.; and Phillips, Thomas A. Method of mapping and monitoring groundwater and subsurface aqueous systems. 5,825,188, Cl. 324-357.000.

Montgomery, Randy, to Lord Electrical Industrial Distributors Ltd. Method and apparatus for slowing back spin of a rod string of a progressing cavity pump powered by an electric motor when power is lost. 5,825,143, Cl. 318-381.000.

Montreuil, Michel, to Filtre-Expert. Magnetically coupled alternating stray current neutralizing method and system. 5,825,170, Cl. 323-355.000.

Montulli, Lou, to Netscape Communications Corporation. Method of on-line shopping utilizing persistent client state in a hypertext transfer protocol based client-server system. 5,826,242, Cl. 705-27.000.

Moody, Ernest W. Method of playing electronic video poker games. 5,823,873, Cl. 463-13.000.

Moon, Billy G., to Ericsson Inc. Circuitry and method for transmitting voice and data signals upon a wireless communication channel. 5,825,776, Cl. 370-437.000.

Moon, Seok-Shik: *See*—
Lee, Ho-Seong; Park, Young-Jun; Kim, Min-Hwan; Moon, Seok-Shik; Cho, Nam-Sun; Shin, Jong-Hyun; Suh, Young-Whan; and Lee, Jung-Ok, 5,824,689, Cl. 514-312.000.

Moon, Seung-Hwan, to Samsung Electronics Co., Ltd. Driving device and driving method for a thin film transistor liquid crystal display. 5,825,343, Cl. 345-94.000.

Mooney, Charles W.; McKee, John M.; Holden, Irving Harold, deceased (by Virginia Holden, legal representative); and Brinkley, Gerald Eugene, to Motorola, Inc. Taut armature reciprocating impulse transducer. 5,825,297, Cl. 340-825.460.

Mooney, Larry R.: *See*—
Mee, David K.; Allgood, Glenn O.; Mooney, Larry R.; Duncan, Michael G.; Turner, John C.; and Treece, Dale A., 5,825,501, Cl. 356-429.000.

Moore, Boyd B. Ferrule—type fitting for sealing an electrical conduit in a well head barrier. 5,823,256, Cl. 16-65.100.

Moore, Frank M.: *See*—
Rondy, Donald R.; and Moore, Frank M., 5,824,731, Cl. 524-496.000.

Moore, Gloria Andrews: *See*—
Grierson, Donald; Lawrence, Susan Dale; Moore, Gloria Andrews; and Schuch, Wolfgang Walter, 5,824,873, Cl. 800-205.000.

Moore, Richard A., to Bitmoore. High precision cutting tools. 5,823,720, Cl. 408-204.000.

Moore, Robert E.; Nitz, Frederic W.; and Gipe, Michael A., to Reliable Power Meters, Inc. Apparatus and method for power disturbance analysis by display of power quality information. 5,825,656, Cl. 364-483.000.

Moorehead, Joseph W., Jr., to BFGoodrich Avionics Systems, Inc. Circuit board having an EMI shielded area. 5,825,634, Cl. 361-816.000.

Moots, Craig K., to Asgrow Seed Company. Soybean cultivar 9115369325667. 5,824,851, Cl. 800-200.000.

Mooty, Thomas A.: *See*—
Patrick, Kenneth H.; Mooty, Thomas A.; and Unger, Larry E., 5,823,001, Cl. 62-135.000.

Mora, Fernand: *See*—
Cousin, Laurent; and Mora, Fernand, 5,824,364, Cl. 427-212.000.

Moran, Robert E., Jr., to Vollrath Company, L.L.C., The. Adapter for holding a pan in a food serving station. 5,823,367, Cl. 211-126.100.

Morbitzer, Hans-Peter, to Electrovac, Fabrikation Elektrotechnischer Spezialartikel Gesellschaft M.B.H. Temperature sensor with improved adjustment mobility. 5,825,276, Cl. 337-394.000.

Moreland, Janet L., to C. R. Bard, Inc. Vascular graft fabric. 5,824,047, Cl. 623-1.000.

Morgan, David E.: *See*—
Oberlander, Lewis B.; and Morgan, David E., 5,825,865, Cl. 379-211.000.

Morgan, David Lee: *See*—
Flaningam, Ora Ley; Morgan, David Lee; and Williams, Dwight Edward, 5,824,632, Cl. 510-411.000.

Morgan, George Joseph, Jr. Stacking dolly. 5,823,549, Cl. 280-33.998.

Morgan, Kevin L.: *See*—
Arizpe, Ronald E.; Dagley, Mark R.; Hall, David C.; and Morgan, Kevin L., 5,823,646, Cl. 312-324.000.
Walters, Mark D.; Morgan, Kevin L.; and Dennis, Robert W., 5,825,962, Cl. 385-135.000.

Morgan, Richard D.: *See*—
Chang, Zhiyuh; and Morgan, Richard D., 5,824,529, Cl. 435-199.000.

Morgan, Sean; and Morgan, Stuart, to Spray Nozzle Engineering Pty. Limited. Rotating nozzle. 5,823,435, Cl. 239-107.000.

Morgan, Stuart: *See*—
Morgan, Sean; and Morgan, Stuart, 5,823,435, Cl. 239-107.000.

Morgan, Thomas E., to DEKALB Genetics Corporation. Inbred corn plant F361 and seeds thereof. 5,824,848, Cl. 800-200.000.

Morghen, Manfred A. Universal hoist assembly. 5,823,588, Cl. 294-1.100.

Mori, Hirotaka; and Ando, Ryo, to Fuji Xerox Co., Ltd. Image formation system. 5,825,984, Cl. 395-105.000.

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Nagar, Niranjan: *See*—
Bennett, Curtis; Berkery, Dan; Chinnasamy, Shanmugam; Daugherty, Jay; Hughes, John C.; Lippmann, Rob; Nagar, Niranjan; Park, Ronald K.; and Sharma, Ankur, 5,826,085, Cl. 395-683.000.

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Nagel, Gunter: *See*—
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Nagura, Shigehiro: *See*—
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Nakagawa, Eiji, to Rohm Co., Ltd. Audio signal amplifying circuit. 5,825,251, Cl. 330-297.000.
Nakagawa, Hitoshi; Kondo, Toshiaki; Ogawa, Tetsuya; and Furukoshi, Takayuki, to Komatsu Ltd. Normal operating condition restoration device. 5,825,655, Cl. 364-474.170.
Nakagawa, Kanji; and Kumagai, Norihiro, to Sharp Kabushiki Kaisha. Information processing apparatus. 5,826,036, Cl. 395-200.770.
Nakagawa, Takashi: *See*—
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Nakahata, Akimasa: *See*—
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Nakama, Hidekazu: *See*—
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NakaMats, Yoshiro. Self defense weapon with memo. 5,823,572, Cl. 281-2.000.
Nakamori, Hideo: *See*—
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Nakamoto, Shinji: *See*—
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Nakamura, Kenichi: *See*—
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Nakamura, Osamu; and Arai, Tsuneharu, to Kabushiki Kaisha Shinkawa. Die transporting device. 5,823,418, Cl. 228-49.500.
Nakamura, Osamu; Ichikawa, Shigeru; and Arai, Tsuneharu, to Kabushiki Kaisha Shinkawa. Wafer ring supply and return device. 5,824,185, Cl. 156-584.000.
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Nakamura, Takao; Sekiyama, Nobuya; Nakano, Keiko; Furusawa, Kenji; Kataoka, Hiroyuki; Shirakura, Takaaki; and Matsuoka, Shinya, to Hitachi, Ltd. Frictionally sliding head magnet disk apparatus. 5,825,591, Cl. 360-104.000.
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Nakao, Shuji, to Mitsubishi Denki Kabushiki Kaisha. Monitoring method and apparatus of surface area of semiconductor wafer. 5,825,668, Cl. 364-564.000.
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Nakasugi, Takashi: *See*—

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Nakata, Takuya, to Yamaha Corporation. Automatic performing apparatus with sequence data modification. 5,824,932, Cl. 84-609.000.
Nakata, Yoshiro; Hashimoto, Shin; and Miyanaga, Isao, to Matsushita Electric Industrial Co., Ltd. Semiconductor integrated circuit device. 5,825,193, Cl. 324-763.000.
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Nanci, Antonio; McKee, Marc D.; Sacher, Edward; Savadogo, Oumarou; and Wuest, James, to Universite de Montreal. Process for modification of implant surface with bioactive conjugates for improved integration. 5,824,651, Cl. 514-21.000.
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Nantz, Michael H.; Bennett, Michael J.; Balasubramaniam, Rajiv P.; Aberle, Alfred M.; and Malone, Robert W., to University of California, The Regents of the. Polyfunctional cationic cytofectins, formulations and methods for generating active cytofectin: polynucleotide transfection complexes. 5,824,812, Cl. 554-110.000.
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Narayan, Rammohan, to Advanced Micro Devices, Inc. Parallel mask decoder and method for generating said mask. 5,826,071, Cl. 395-568.000.
Narimatsu, Katsumi; and Kojima, Shoichi, to Kabushiki Kaisha Toshiba. Method for allocating resources and processes for design and production plan scheduling. 5,826,236, Cl. 705-8.000.
Narimatsu, Masayasu: *See*—
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Nask, Aleene F.; Willett, Timmy L.; and Rhodes, Richard, to Berry Plastics Corporation; and Olin Corporation. Stackable receptacle assembly for pourable products. 5,823,345, Cl. 206-509.000.
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Sienicki, Edward J., 5,823,170, Cl. 123-551.000.
Nayak, Deepak: *See*—
Wollesen, Donald L.; and Nayak, Deepak, 5,824,586, Cl. 438-300.000.
Nazarenko, Tatjana: *See*—
Bildinov, Igor; Podsevalov, Pavel; Nazarenko, Tatjana; and Deev, Leonid, 5,824,827, Cl. 570-147.000.
NCR Corporation: *See*—
Alexander, Arthur Ray; Porter, Warren W., deceased, 5,823,005, Cl. 62-259.200.
Boland, Vernon K.; Brasche, Kevin R.; and Smith, Kenneth A., 5,826,079, Cl. 395-672.000.
Del Signore, James R., II; Nye, Andrew B., III; Mitchell, John G.; and Maginnity, Kathleen, 5,825,946, Cl. 382-320.000.
Denton, Jeffery S.; and Olmstead, Michael W., 5,824,399, Cl. 428-212.000.
Knight, Kenneth R., 5,825,436, Cl. 349-16.000.
Papierniak, Karen A.; and Ellestad, Michael D., 5,825,751, Cl. 370-248.000.
Reams, Byron L., 5,826,045, Cl. 395-287.000.
Taylor, Billy K.; and Mellitz, Richard I., 5,825,630, Cl. 361-790.000.
Neal, Greg: *See*—
DePond, Paul F.; Larson, Gaylan; Neal, Greg; and Yewell, David, 5,825,852, Cl. 379-67.000.
Neblett, Larry L.: *See*—
Clark, Dean B.; Hartwig, Kenneth; Neblett, Larry L.; Zielinski, Thomas E.; and Hansen, David B., 5,823,808, Cl. 439-157.000.
NEC Corporaiton: *See*—
Mukai, Hirokazu, 5,825,508, Cl. 358-412.000.
NEC Corporation: *See*—
Ajisawa, Akira; Terakado, Tomoji; Yamaguchi, Masayuki; and Komatsu, Keiro, 5,825,047, Cl. 257-12.000.
Fujii, Tomohiro, 5,825,265, Cl. 333-215.000.
Fukui, Takahiro, 5,825,682, Cl. 365-49.000.
Funaki, Tamio, 5,826,078, Cl. 395-670.000.
Hirakawa, Katsunori, 5,825,050, Cl. 257-57.000.
Imai, Masao, 5,825,541, Cl. 359-464.000.
Ito, Fuminori, 5,825,134, Cl. 315-169.100.
Kimura, Akitaka; Sunakawa, Haruo; Nido, Masaaki; and Yamaguchi, Atsushi, 5,825,053, Cl. 257-94.000.
Kimura, Katsuji, 5,825,232, Cl. 327-356.000.
Kitajima, Hiroshi; and Shiramizu, Yoshimi, 5,824,200, Cl. 204-265.000.
Kitamura, Naoki, 5,825,951, Cl. 385-45.000.
Maeda, Koji, 5,826,199, Cl. 455-563.000.
Mizukoshi, Nobuyuki; and Fan, Ruixue, 5,825,767, Cl. 370-395.000.
Nakano, Takashi, 5,825,249, Cl. 330-277.000.
Ohguri, Osamu, 5,825,561, Cl. 359-822.000.
Okuyama, Keiichi, 5,825,821, Cl. 375-260.000.
Ozawa, Kazunori, 5,826,226, Cl. 704-223.000.
Saitoh, Kenji, 5,825,690, Cl. 365-185.220.

Sakoh, Takashi, 5,824,591, Cl. 438-396.000.
Sasaki, Eisaku, 5,825,828, Cl. 375-298.000.
Shirakawa, Haruyuki, 5,825,371, Cl. 345-501.000.
Sonobe, Satoru, 5,826,108, Cl. 395-855.000.
Tamura, Takao, 5,825,034, Cl. 250-397.000.
Tamura, Tetsuya, 5,825,627, Cl. 361-730.000.
Tanaka, Masahiko; and Okita, Kenji, 5,825,761, Cl. 370-333.000.
Uemura, Toshimi, 5,825,021, Cl. 250-222.100.
Wakita, Shinichi, 5,825,689, Cl. 365-185.110.
Watanabe, Takahiko, 5,824,564, Cl. 438-30.000.
Yoshifuji, Yuuki, 5,825,301, Cl. 340-826.000.

NEC Research Institute, Inc.: *See*—
DeBord, Jeffrey Robert Douglas; Haushalter, Robert C.; and Zhang, Yiping, 5,824,813, Cl. 556-28.000.

Nedwin, Glenn E.: *See*—
Aggarwal, Bharat B.; Gray, Patrick W.; and Nedwin, Glenn E., 5,824,509, Cl. 435-69.500.

Neely, Richard Jon: *See*—
Viano, David Charles; Nini, James Peter; Neely, Richard Jon; and Nilson, Hans Gert, 5,823,627, Cl. 297-471.000.

Neff, Helmut; and Langhans, Dieter, to TZN-Forschungs-und Entwicklungszentrum Unterlüss GmbH. Device for protecting an optical component from laser beam damage. 5,825,550, Cl. 359-614.000.

Negishi, Kiyoshi: *See*—
Asai, Tamotsu; Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, 5,825,985, Cl. 395-108.000.

Nehowig, Kelly R.; Kullman, Scott W.; and Kremers, Douglas R., to Varitronic Systems, Inc. Computer system with bi-directional communication and method. 5,823,689, Cl. 400-83.000.

Neilson, Anthony Brian: *See*—
Clarkson, William Andrew; Neilson, Anthony Brian; and Hanna, David Colin, 5,825,551, Cl. 359-629.000.

Neis, Robert: *See*—
Whittemore, Jerry; and Neis, Robert, 5,824,327, Cl. 424-401.000.

Neiser, Raymond R.: *See*—
Resnick, Brian J.; and Neiser, Raymond R., 5,823,319, Cl. 198-781.060.

Nejime, Yoshito: *See*—
Kojima, Noboru; Kamiuchi, Toshiro; Morikawa, Juichi; and Nejime, Yoshito, 5,825,853, Cl. 379-67.000.

Nelepovitz, Donald O., to Hyperform Technologies, Inc. Superplastic metalforming with self-contained die. 5,823,034, Cl. 72-60.000.

Nellcor Incorporated: *See*—
Levinson, Mitchell; Mannheimer, Paul; Nierlich, Steven L.; Palmer, Phillip S.; and Warring, Jessica, 5,823,952, Cl. 600-338.000.

Nelsen, James M.: *See*—
Behr, Vance L.; Nelsen, James M.; and Gwinn, Kenneth W., 5,823,567, Cl. 280-743.100.

Nelsen, Janet: *See*—
Davies, Huw Maelor; Hawkins, Deborah; and Nelsen, Janet, 5,824,858, Cl. 800-205.000.

Nelson, Arthur R.: *See*—
Belk, Daniel James; Donahoe, Thomas S.; Nelson, Arthur R.; and Van Court, Gary W., 5,822,994, Cl. 62-6.000.

Nelson, Brian Raymond: *See*—
Freestone, Kevin Lloyd; Smouse, Edward Olen; Smith, Mabel Winifred; Weaver, Herbert Allen; Parks, Stephen Alan; Johnson, Alvan Harold; Nelson, Brian Raymond; Brake, Ronald Lee, Sr.; and Suber, Jeremy Grant, 5,823,230, Cl. 138-89.000.

Nelson, Carl; Hollis, J. Marcus; Flahiff, Charlene; and Hogue, William, to University of Arkansas, The Board of Trustees of The. Composite allograft, press, and methods. 5,824,078, Cl. 623-66.000.

Nelson, Eric Michael: *See*—
Priest, John Hedger; and Nelson, Eric Michael, 5,824,491, Cl. 435-28.000.

Nelson Irrigation Corporation: *See*—
Ungerecht, Cliff, 5,823,580, Cl. 285-242.000.

Nelson, James A.; and Shmulewitz, Ascher, to Circulation, Inc. Apparatus for treatment of ischemic heart disease by providing transvenous myocardial perfusion. 5,824,071, Cl. 623-3.000.

Nelson, Jeffery S.: *See*—
Hirschbein, Bernard L.; Fearon, Karen L.; Gryaznov, Sergei M.; McCurdy, Sarah N.; Nelson, Jeffery S.; and Schultz, Ronald G., 5,824,793, Cl. 536-25.340.

Nelson, Norman C.; Velarde, Jorge, Jr.; and Kacian, Daniel L., to Gen-Probe Incorporated. Oligonucleotide screening assay using DNA-altering agents and probes with protectable labels. 5,824,475, Cl. 435-6.000.

Nemes, Anne. Automatically retracting chalk line marking tool. 5,822,874, Cl. 33-414.000.

Nemeth, Louis G., to Training Inovations Group, LLC. Debriefing systems and methods for retrieving and presenting multiple datastreams with time indication marks in time synchronism. 5,826,206, Cl. 701-35.000.

Nemoto, Hirohiko: *See*—
Kishi, Matsuo; Nemoto, Hirohiko; and Okano, Hiroshi, 5,824,561, Cl. 437-209.000.

Nemoto, Koji: *See*—
Ogino, Shinji; Kitamura, Shoji; Shindo, Yoichi; Sakamoto, Naokazu; and Nemoto, Koji, 5,825,794, Cl. 372-36.000.

Nenasbev, Alexey Pavlovich: *See*—
Elkind, Alexander; MacFarlane, James; Krymsky, Mark; Tisenko, Victor Nikolaevich; Shneerson, German Abramovich; Korolev, Vyacheslav Semenovich; Krivosheev, Sergey Ivanovich; Nenashev, Alexey Pavlovich; and Vasilevskiy, Vladimir Markovich, 5,823,354, Cl. 209-212.000.

Nerin, Philippe; Besesty, Pascal; Giraud, Hervé; and Mouttet, André, to Commissariat A L'Energie Atomique. Autodyne detection laser velocimeter. 5,825,465, Cl. 356-28.500.

Nerone, Louis R.; and Mieskoski, James D., to General Electric Company. External metallization configuration for an electrodeless fluorescent lamp. 5,825,130, Cl. 313-635.000.

Nessfield, Stanley, to Sea Containers Ltd. Cargo container. 5,823,375, Cl. 220-1.500.

Nestec S.A.: *See*—
Badertscher, Ernest; and Poget, Paul-Henri, 5,824,266, Cl. 422-26.000.
Chaveron, Michel; Schlaginhaufen, Jürg; and Wyss, Heinz, 5,824,357, Cl. 426-580.000.

Netech Corporation: *See*—
Das, Mohan, 5,823,832, Cl. 439-817.000.

Netscape Communications Corporation: *See*—
Elgamal, Taher; and Hickman, Kipp E.B., 5,825,890, Cl. 380-49.000.
Montulli, Lou, 5,826,242, Cl. 705-27.000.

Nettekoven, Bernard E. Arm/wrist positioning and rest device. 5,823,488, Cl. 248-118.000.

Network Computing Devices, Inc.: *See*—
Martin, Kevin, 5,825,373, Cl. 345-524.000.

Network Engineering Software: *See*—
Coley, Christopher D.; and Wesinger, Ralph E., Jr., 5,826,014, Cl. 395-187.010.

Neumann, Jeffrey D.: *See*—
Johnson, Philip W.; Neumann, Jeffrey D.; and Brattoli, Mark A., 5,825,107, Cl. 310-64.000.

Neumann, William: *See*—
Heimann, Rudy J., Jr.; Levin, Victor D.; Neumann, William; Palko, Joseph L.; and Southam, Robert E., 5,823,158, Cl. 123-188.300.

Neupak, Inc.: *See*—
Roberts, Terence P., 5,823,406, Cl. 222-626.000.

Neupert, Daniel: *See*—
Drechsler, Andreas; Neupert, Daniel; Newham, Simon; and Rademacher, Ingo, 5,824,147, Cl. 106-600.000.

Neurex Corporation: *See*—
Justice, Alan; Singh, Tejinder; Gohil, Kishor Chandra; Valentino, Karen L.; and Miljanich, George P., 5,824,645, Cl. 514-12.000.

Nevcor, Inc.: *See*—
Lateur, Michel J.; and Pliskin, Daniel P., 5,823,280, Cl. 180-65.200.

Nevill, Leland R.: *See*—
Gilliam, Gary R.; Duesman, Kevin G.; and Nevill, Leland R., 5,825,697, Cl. 365-200.000.

Nevitt, Timothy J.: *See*—
Ouderkirk, Andrew J.; Carlson, Lockwood W.; Kotz, Arthur L.; Nevitt, Timothy J.; Stover, Carl A.; Weber, Michael F.; Allen, Richard C.; and Majumdar, Biswaroop, 5,825,543, Cl. 359-494.000.

New, Daryl C., to Micron Technology, Inc. Method for oxidation and crystallization of ferroelectric material. 5,824,590, Cl. 438-393.000.

New England Biolabs, Inc.: *See*—
Chang, Zhiyuh; and Morgan, Richard D., 5,824,529, Cl. 435-199.000.

New England Machinery, Inc.: *See*—
Bankuty, Geza E.; Perazzo, Nicholas J.; and Pearson, Steven Louis, 5,823,317, Cl. 198-395.000.

New Haven Moving Equipment Corp. of California, Inc.: *See*—
Lee, Ray, 5,823,724, Cl. 410-104.000.

New Holland North America, Inc.: *See*—
Wagstaff, Robert A.; and Hall, Larry D., 5,822,962, Cl. 56-16.40R.

New York Blood Center: *See*—
Ellis, Nathan A.; German, James; and Groden, Joanna, 5,824,501, Cl. 435-69.100.
Lavie, Gad; and Prince, Alfred M., 5,824,654, Cl. 514-44.000.

New York University: *See*—
Coruzzi, Gloria; Oliveira, Igor; Lam, Hon-Ming; and Hsieh, Ming-Hsiun, 5,824,867, Cl. 800-205.000.
Lavie, Gad; and Prince, Alfred M., 5,824,654, Cl. 514-44.000.
Sun, Tung-Tien, 5,824,543, Cl. 435-320.100.

Newell Operating Company: *See*—
Polzin, Bruce C.; Shehow, Kenneth L.; Sterwald, Mark T.; and Barton, William W., 5,822,823, Cl. 15-210.100.

Newham, Simon: *See*—
Drechsler, Andreas; Neupert, Daniel; Newham, Simon; and Rademacher, Ingo, 5,824,147, Cl. 106-600.000.

Newman, Allen, to Vista Medical Technologies, Inc. Optical surgical device for examining genitourinary tissue. 5,823,940, Cl. 600-105.000.

Newman, David A.: *See*—
Quigley, John H.; and Newman, David A., 5,825,640, Cl. 363-60.000.

Newman, John Scott: *See*—
Simmons, Walter John; Law, Clarence Garlan, Jr.; Trainham, James Arthur, III; and Newman, John Scott, 5,824,199, Cl. 204-262.000.

Newman, Leon A.: *See*—
Olender, Frederick T.; Woody, Bernard A.; and Newman, Leon A., 5,824,884, Cl. 73-40.50A.

Newsom, Morris F: *See*—
Roesch, Mark A.; Maccarone, David A.; Hillenbrand, Gary F.; Newsom, Morris F.; and Lynch, Roland M., 5,824,724, Cl. 524-365.000.

Newton, Alan Branford: *See*—
Kemmish, David John; Newton, Alan Branford; and Staniland, Philip Anthony, 5,824,402, Cl. 428-297.400.

Ng, Steve Y. W.; and Heller, Jorge, to Pharmaceutical Delivery Systems. Bioerodible polymers, compositions and therapeutic method. 5,824,343, Cl. 424-486.000.

NGK Insulators, Ltd.: *See*—
Ishikawa, Shuhei; Hiramitsu, Hiroyuki; Ishiguro, Yoshihisa; and Yashiro, Kazumasa, 5,824,167, Cl. 148-435.000.
Kato, Nobuhide; and Ikoma, Nobukazu, 5,823,680, Cl. 374-185.000.
Shibata, Kazuyoshi; Takeuchi, Yukihisa; Shrader, Eric J.; Eckerle, Joseph S.; and Peltrine, Ronald E., 5,825,119, Cl. 310-338.000.
Tani, Takao; and Kashiwagi, Hiroshi, 5,822,857, Cl. 29-887.000.

NGK Spark Plug Co., Ltd.: *See*—
Kimura, Kazuo; Murata, Haruhiko; and Aoyama, Yukihiro, 5,825,086, Cl. 257-704.000.
Yamasaki, Kozo; and Kato, Naomiki, 5,822,851, Cl. 29-846.000.

Nguyen, Frank: *See*—
Kuck, Karl Heinz; and Nguyen, Frank, 5,823,955, Cl. 600-374.000.

Nguyen, James H.: *See*—
Pham, Giao M.; and Nguyen, James H., 5,825,145, Cl. 318-439.000.

Nguyen, Lieu T.; and Yue, Kwok Ming, to LSI Logic Corporation. Method for local rip-up and reroute of signal paths in an IC design. 5,825,659, Cl. 364-490.000.

Nguyen, Tram Thi Mai; Bui, Thao Bich; and Tran, Christina Hien, to International Business Machines Corporation. Method and apparatus for polling and selecting any paired device in any drawer. 5,826,046, Cl. 395-309.000.

Nguyen, Tuan: *See*—
Bhatt, Nikhil; Nguyen, Tuan; Smith, Lee; Tarbill, David; and Waldecker, Manfred, 5,825,507, Cl. 358-403.000.

NHK Engineering Services, Inc.: *See*—
Mochizuki, Ryo; Nagashima, Shinrokuro; and Saito, Hiroshi, 5,825,532, Cl. 359-368.000.

NHK Spring Co., Ltd.: *See*—
Nikai, Isao; Uda, Motohisa; Shindo, Naoki; and Fuse, Takeshi, 5,823,008, Cl. 62-401.000.

Ni, Ful-Long: *See*—
Takata, Akira; Hikawa, Tetsuo; Sawada, Takashi; Yiu, Tom Dang-hsing; and Ni, Ful-Long, 5,825,083, Cl. 257-691.000.

Nice Systems Ltd.: *See*—
Golan, Mordechay, 5,826,180, Cl. 455-302.000.

Nichols, David Newell: *See*—
Hawkins, Gilbert Alan; Nichols, David Newell; Losee, David Lawrence; and Nielsen, Robert Leroy, 5,824,236, Cl. 216-26.000.

Nicholson, Paul T. Shower grooming system. 5,823,441, Cl. 239-317.000.

Nicolette, Thomas A.: *See*—
Platt, Victor; Paul, Christopher Reinard; Nicolette, Thomas A.; and Zhou, Peter Y., 5,825,291, Cl. 340-572.000.

Nido, Masaaki: *See*—
Kimura, Akitaka; Sunakawa, Haruo; Nido, Masaaki; and Yamaguchi, Atsushi, 5,825,053, Cl. 257-94.000.

Nie, Tao, to ITT Automotive, Inc. One piece quick connect. 5,823,508, Cl. 251-149.600.

Niederkorn, Serge: *See*—
Wittmann, Robert; Müller, Frank; Niederkorn, Serge; Settele, Matin; Frueth, Hans-Juergen; and Wahlers, Helmut, 5,823,568, Cl. 280-743.100.

Nield, Brian N.; Landes, Ross A.; and Evans, Monte R., to Boeing Company, The. Landing attitude modifier for airplane. 5,823,479, Cl. 244-187.000.

Nielsen, Jakob, to Sun Microsystems, Inc. Method and apparatus for receiving electronic mail. 5,826,022, Cl. 395-200.360.

Nielsen, Jakob, to Sun Microsystems, Inc. Method and system for prioritized downloading of embedded web objects. 5,826,031, Cl. 395-200.630.

Nielsen, Peter Madelaire: *See*—
Burns, Clay Allen; Nielsen, Peter Madelaire; Sullivan, John Aloysius; and Sullivan, Frederick Ballou-Viaux, 5,823,543, Cl. 280-11.220.

Nielsen, Robert Leroy: *See*—
Hawkins, Gilbert Alan; Nichols, David Newell; Losee, David Lawrence; and Nielsen, Robert Leroy, 5,824,236, Cl. 216-26.000.

Nierlich, Steven L.: *See*—
Levinson, Mitchell; Mannheimer, Paul; Nierlich, Steven L.; Palmer, Phillip S.; and Warring, Jessica, 5,823,952, Cl. 600-338.000.

Nieuwkamp, Johannes G. M.: *See*—
Petrakis, Jordanis; Hoge, Wolfgang; Leenaerts, Torsten; Alfenaar, Marinus; and Nieuwkamp, Johannes G. M., 5,824,400, Cl. 428-218.000.

Nihon Nohyaku Co., Ltd.: *See*—
Mori, Masashi; Mise, Kazuyuki; Okuno, Tetsuro; and Furusawa, Iwao, 5,824,856, Cl. 800-205.000.

Niijima, Hironobu; and Kobayashi, Hiroaki, to Advantest Corp. IC fault location tracing apparatus and method. 5,825,191, Cl. 324-751.000.

Niimi, Hiroshi: *See*—
Arai, Hiroyuki; Mura, Hiroshi; Sakata, Hideo; Mizoguchi, Takahiro; Ishida, Kensuke; and Niimi, Hiroshi, 5,825,335, Cl. 343-866.000.

Nikai, Isao; Uda, Motohisa; Shindo, Naoki; and Fuse, Takeshi, to Kajima Corporation; and NHK Spring Co., Ltd. Cold air supply unit. 5,823,008, Cl. 62-401.000.

Nikogossian, Karen M.: *See*—
Omura, Jimmy K.; Yang, Paul T.; Khachatrian, Gurgen H.; Nikogossian, Karen M.; Hovakimian, Karen S.; and Vartapetian, Armen L., 5,825,810, Cl. 375-200.000.

Nikon Corporation: *See*—
Kimura, Isao; Tanaka, Shinichi; and Oshikiri, Hiroyuki, 5,825,736, Cl. 369-59.000.
Koga, Masayuki; and Kosaka, Toru, 5,826,118, Cl. 396-87.000.
Matsui, Sei, 5,825,546, Cl. 359-557.000.
Matsumoto, Hiroyuki; and Ishii, Koichiro, 5,825,724, Cl. 369-13.000.
Miyai, Tsuneo; and Imai, Yuji, 5,825,470, Cl. 355-72.000.
Miyamoto, Hidenori; Kato, Minoru; Omi, Junichi; and Soshi, Isao, 5,826,114, Cl. 396-55.000.
Okazaki, Mitsuhiro, 5,825,118, Cl. 310-323.000.
Otomo, Masahiko, 5,825,531, Cl. 359-368.000.
Yonezawa, Yasuo, 5,825,533, Cl. 359-372.000.

Nikon Precision Inc.: *See*—
Suwa, Kyoichi, 5,825,043, Cl. 250-548.000.

Nikoonahad, Mehrdad; and Wayman, Charles E., to Kla-Tencor Corporation. Surface inspection system with misregistration error correction and adaptive illumination. 5,825,482, Cl. 356-237.000.

Niles Parts Co., Ltd.: *See*—
Saito, Takehiko; and Ohtaki, Kazue, 5,823,326, Cl. 200-524.000.
Suzuki, Hiroshi, 5,824,981, Cl. 200-302.100.

Nilson, Hans Gert: *See*—
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Nimura, Mitsuhiro: *See*—
Hiyokawa, Toyoji; Nimura, Mitsuhiro; and Ito, Yasunobu, 5,825,306, Cl. 340-988.000.

Nini, James Peter: *See*—
Viano, David Charles; Nini, James Peter; Neely, Richard Jon; and Nilson, Hans Gert, 5,823,627, Cl. 297-471.000.

Ninomiya, Toshihiro: *See*—
Okamoto, Masumi; Shoji, Masato; Tanaka, Yasuharu; Ishikawa, Masahito; Fukuoka, Nobuko; Ninomiya, Toshihiro; Ohyama, Tsuyoshi; Yoshida, Norihiro; and Hatoh, Hitoshi, 5,825,445, Cl. 349-118.000.

Nio, Noriki: *See*—
Asano, Minao; Kawai, Misako; Miwa, Tetsuya; and Nio, Noriki, 5,824,534, Cl. 435-212.000.

Nippon Carbide Kogyo Kabushiki Kaisha: *See*—
Ochi, Katsura; Tanaka, Osamu; and Yoshizawa, Masaki, 5,824,390, Cl. 428-143.000.

Nippon Carbon Co., Ltd.: *See*—
Ichikawa, Hiroshi; Takeda, Michio; Sakamoto, Junichi; and Saeki, Akinori, 5,824,281, Cl. 423-345.000.

Nippon Kayaku Kabushiki Kaisha: *See*—
Hayashihara, Shoiti; Kudo, Masaru; and Shinmoto, Masaki, 5,824,715, Cl. 522-14.000.

Nippon Mektron, Limited: *See*—
Sonoi, Takehiro; Tatsu, Haruyoshi; Solomonovich, Lev, deceased; Polishchuk, Valerii Romanovich, deceased; and Saito, Satoru, 5,824,749, Cl. 525-351.000.

Nippon Oil Co., Ltd.: *See*—
Tajima, Yoshio; Kataoka, Naoki; Numao, Yosuke; Seki, Takashi; and Matsuura, Kazuo, 5,824,618, Cl. 502-108.000.

Nippon Pneumatics/Fluidics Systems Co. Ltd.: *See*—
Tanaka, Tadao; and Nagai, Naotsuka, 5,823,608, Cl. 296-146.200.

Nippon Signal Co., Ltd., The: *See*—
Suzuki, Masatoshi; Futsuhara, Koichi; and Sakai, Masayoshi, 5,825,144, Cl. 318-434.000.

Nippon Telegraph and Telephone Corporation: *See*—
Arai, Kunihiro, 5,825,048, Cl. 257-25.000.
Kataoka, Akitoshi; and Ikedo, Jotaro, 5,825,311, Cl. 341-51.000.
Kobayashi, Tetsuji, 5,825,924, Cl. 382-219.000.
Osawa, Yoichi; Watanabe, Satoshi; Takemura, Kaysuya; Nagura, Shigehiro; Tanaka, Akinobu; and Kawai, Yoshio, 5,824,824, Cl. 568-49.000.
Yagi, Takashi; Arita, Kazuho; Oikawa, Shigeru; and Ishibashi, Satoshi, 5,825,366, Cl. 345-433.000.

Nippon Thompson Co., Ltd.: *See*—
Kondo, Takuo; Fujisawa, Shoji; and Kitade, Norimitsu, 5,825,104, Cl. 310-12.000.

Nippondenso Co., Ltd.: *See*—
Gotoh, Yoshitaka; Fujita, Makiko; and Takeuchi, Yukihiro, 5,824,608, Cl. 438-745.000.
Kadota, Shigeru; Furukawa, Takashi; Kawaguchi, Kiyoshi; Suzuki, Masahiko; and Yamada, Kenji, 5,823,248, Cl. 165-104.330.
Matsumoto, Naoki; Otsuka, Manabu; Ogusu, Koji; and Idogaki, Takaharu, 5,825,149, Cl. 318-587.000.
Obata, Kenzo; Uchikawa, Yoshiki; Furuhashi, Takeshi; and Yang, Xuhua, 5,825,906, Cl. 382-119.000.
Ushida, Masayasu, 5,823,152, Cl. 123-90.170.
Yoshihara, Shinji; Inomata, Sumitomo; Ohara, Fumio; and Kurahashi, Takashi, 5,824,177, Cl. 156-250.000.

Nirshberg, Alex: *See*—
Core, Kenneth R.; Nirshberg, Alex; Knuth, Stephen B.; and Karnowski, Mark J., 5,826,187, Cl. 455-412.000.

Nisca Corporation: *See*—
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Collard, René Francois Albert; and Teeuwen, Peter Johannes Hendrikus, 5,825,988, Cl. 395-112.000.
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Lodovico, Laurini, 5,823,707, Cl. 404-91.000.
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Uno, Hideki; Nishiyama, Yoshitaka; Sawaragi, Yoshiatsu; Otsuka, Nobuo; Ogawa, Kazuhiro; and Anraku, Toshiro, 5,824,264, Cl. 420-40.000.
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Nonaka, Hideki; Endo, Yutaka; Kaifu, Noriyuki; Kobayashi, Isao; Kameshima, Toshio; and Ogura, Takashi, 5,825,032, Cl. 250-370.090.
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Nishio, Ayataka; and Ogura, Yasuhiro, 5,825,735, Cl. 369-58.000.
Ogus, Aaron William, to Microsoft Corporation. Method and system for buffering network packets that are transferred between a V86 mode network driver and a protected mode computer program. 5,826,041, Cl. 395-250.000.
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Matsumoto, Naoki; Otsuka, Manabu; Ogusu, Koji; and Idogaki, Takaharu, 5,825,149, Cl. 318-587.000.
Oh, Jong Hoon, to Hyundai Electronic Industries, Co., Ltd. Multiplexer for semiconductor memory device. 5,825,235, Cl. 327-408.000.
Oh, Kee-eun: *See—*
Kim, Hong-kook; Oh, Kee-eun; and Kim, Moo-young, 5,826,223, Cl. 704-221.000.
Oh, Sung-Hun, to VLSI Technology. Symmetrical phase-frequency detector. 5,825,210, Cl. 327-12.000.
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O'Handley, Robert C.: *See—*
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Yoshihara, Shinji; Inomata, Sumitomo; Ohara, Fumio; and Kurahashi, Takashi, 5,824,177, Cl. 156-250.000.
Ohara, Takeyoshi. Improved structure of drawer type computer housing mounting system. 5,825,615, Cl. 361-683.000.
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Ohashi, Isao: *See—*
Watanabe, Makoto; Ohashi, Isao; Umeda, Hisashi; and Hayashi, Koji, 5,823,767, Cl. 432-72.000.
Ohashi, Ken; Yoneda, Yuhito; Miyata, Koji; and Higuchi, Dai, to Shin-Etsu Chemical Co., Ltd. Magnetic circuit system with opposite permanent magnets. 5,825,187, Cl. 324-319.000.
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Brewer, Matthew C.; Reese, David M.; and Woods, Curtis, 5,825,503, Cl. 358-299.000.
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Ohishi, Masahiro: *See—*
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Ohkubo, Masashi; and Machida, Hideo, to Zexel Corporation. Air-conditioning system malfunction compensation method and apparatus. 5,823,868, Cl. 454-121.000.
Ohkubo, Nobuhiro, to Sharp Kabushiki Kaisha. Vapor deposition method. 5,824,151, Cl. 117-89.000.
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Ohmi Electric Wire Co., Ltd.: *See—*
Yamasaki, Masashi; Ogawa, Kouichi; Nishimura, Katsuhiko; Fujiwara, Takashi; Yanagimoto, Hironori; and Hamamoto, Tomoo, 5,823,807, Cl. 439-157.000.
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Ohnishi, Akiyoshi; Mekada, Machiko; Hata, Noriaki; Suzuki, Hiroyuki; and Morikawa, Hiroyuki, to Mitsubishi Chemical Corporation; and Harima Chemicals, Inc. Stabilizer and resin composition containing the same. 5,824,722, Cl. 524-99.000.
Ohnishi, Norimasa; Niwa, Chisa; and Yokozeki, Kenzo, to Ajinomoto Co., Inc. Process for producing D-malic acid. 5,824,449, Cl. 435-145.000.
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Ohno, Kazunori, to Fuji Photo Optical Co. Ltd. Two-group zoom lens. 5,825,557, Cl. 359-692.000.
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Ohsawa, Hidefumi, to Canon Kabushiki Kaisha. Adaptive image coding method and apparatus. 5,825,934, Cl. 382-246.000.
Ohsugi, Yasuhiro, to NKG Co., Ltd. Invertible ironing board. 5,822,894, Cl. 38-136.000.
Ohta, Kenji: *See—*
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Ohtsuka, Nobuaki, to Kabushiki Kaisha Toshiba. Level-shift circuit for driving word lines of negative gate erasable type flash memory. 5,825,205, Cl. 326-81.000.
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Ohuchi, Satoshi; and Takahashi, Sadao, to Ricoh Company, Ltd. Spatial-filtering unit for performing adaptive edge-enhancement process. 5,825,937, Cl. 382-261.000.
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Ohwe, Takeshi, to Fujitsu Limited. Magnetic head suspension mechanism with a thin film thereon for creating a bent portion of a vibration absorbing portion. 5,825,590, Cl. 360-104.000.
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Okada, Mitsuyoshi: *See—*
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Okamoto, Hiroo: *See—*
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Okamoto, Masahide: *See—*
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Okazaki, Mitsuhiro, to Nikon Corporation. Vibration actuator. 5,825,118, Cl. 310-323.000.
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Aoyagi, Hiromi, 5,826,221, Cl. 704-200.000.
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Sugio, Kenichiro; and Mitoma, Tetsuya, 5,825,215, Cl. 327-108.000.
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Okita, Hisao, to Canon Kabushiki Kaisha. Image reading method and apparatus. 5,825,512, Cl. 358-496.000.
Okita, Kenji: *See—*
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Okutsu, Eiichi; and Inoue, Rikio, to Fuji Photo Film Co., Ltd. Developer and fixing solution for silver halide photographic material and processing method using the same. 5,824,458, Cl. 430-490.000.
Okuyama, Keiichi, to NEC Corporation. Hitless switch device and method of switching between different paths. 5,825,821, Cl. 375-260.000.
Oldfield, William W.; and Daw, Edward, to Wiltron Company. Method of updating automatic calibration to provide a perceived perfect through connection. 5,825,669, Cl. 364-521.010.
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Olender, Frederick T.; Woody, Bernard A.; and Newman, Leon A., to United Technologies Corporation. Photo-acoustic leak detector with baseline measuring. 5,824,884, Cl. 73-40.50A.
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Olin Corporation: *See—*
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Nask, Aleene F.; Willett, Timmy L.; and Rhodes, Richard, 5,823,345, Cl. 206-509.000.
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Olson, Christopher Hans; Brooks, Jeffrey Scott; and Schmookler, Martin Stanley, to International Business Machines Corporation. Apparatus and method for maintaining status flags and condition codes using a renaming technique in an out of order floating point execution unit. 5,826,070, Cl. 395-563.000.
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Olsson, Brett: *See—*
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Merendini, Andrew Vito; Oddo, John A.; and Petosa, Dennis A., 5,825,280, Cl. 340-326.000.

Petrakis, Jordanis; Hoge, Wolfgang; Leenaerts, Torsten; Alfenaar, Marinus; and Nieuwkamp, Johannes G. M., to DSM N.V. Plastic article and process for the preparation thereof. 5,824,400, Cl. 428-218.000.

Petrie, Charles R.; Meyer, Rich B.; Tabone, John C.; and Hurst, Gerald D., to EPOCH Pharmaceuticals, Inc. Cross-linking oligonucleotides. 5,824,796, Cl. 536-26.700.

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Petroleo Brasileiro S.A. Petrobras: *See*—
Khalil, Carlos Nagib; Da Silva, Alberto Cunha Cameiro; De Souza, Celso Rodrigo; Brum, Maria Cristina; Martins, Claudio Silvio Viana; and De Menezes, Sonia Maria Cabral, 5,824,160, Cl. 134-5.000.

Petrosky, Gregg W.; and Fagan, Brian C., to Borg-Warner Automotive, Inc. Integrated transmission control system. 5,823,071, Cl. 74-606.00R.

Petsinger, Jeffrey M.: *See*—
Bujalski, C. Gregory; Petsinger, Jeffrey M.; and Rooney, Daniel T., 5,825,633, Cl. 361-804.000.

Petty, J. Scott: *See*—
Ferragut, Nelson J.; Estenson, Michael A.; and Petty, J. Scott, 5,822,819, Cl. 8-158.000.

Petzold, Jürgen: *See*—
Bolyard, Darl J.; Price, James E.; Welch, Dicky Ray; Henn, Gerhard; and Petzold, Jürgen, 5,823,240, Cl. 144-369.000.

Petzold, Terry Lee, to Hanitowoc Crane Group, Inc. Carbody to crawler connection. 5,823,279, Cl. 180-9.100.

Peyman, Gholam A. Macular indentor for use in the treatment of subretinal neovascular membranes. 5,824,073, Cl. 623-4.000.

Peyton, Mark Alan. Rotatable wet connect for downhole logging devices. 5,823,257, Cl. 166-65.100.

Pfahl, Magnus; Zhang, Xiao-kun; Lehmann, Jürgen M.; Dawson, Marcia I.; Cameron, James F.; Hobbs, Peter D.; and Jong, Ling, to La Jolla Cancer Research Foundation. RXR homodimer formation. 5,824,484, Cl. 435-7.100.

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Bosch, Martin; Pfefferle, Joachim; Roth, Michael; Scheuble, Peter; and Zeuner, Hermann, 5,822,865, Cl. 30-134.000.

PGS Tensor Inc.: *See*—
Starr, Joel G., 5,825,716, Cl. 367-24.000.

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Cline, Leslie E.; Chejlava, Edward J., Jr.; and Pham, Anh L., 5,826,107, Cl. 395-847.000.

Pham, Giao M.; and Nguyen, James H., to Siliconix incorporated. Quiet commutation circuit for an electric motor. 5,825,145, Cl. 318-439.000.

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Seth, Pawan; and Stamm, Andre, 5,824,341, Cl. 424-473.000.

Pharmaceutical Delivery Systems: *See*—
Ng, Steve Y. W.; and Heller, Jorge, 5,824,343, Cl. 424-486.000.

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Alaniz, Glenn R.; Claflin, William H.; Reeves, Deborah R.; and Vandermolen, Dale, 5,823,146, Cl. 119-725.000.

Pharos Optics, Inc.: *See*—
Gollihar, William A.; DeShazer, Larry G.; and Bradley, Scott, 5,825,958, Cl. 385-125.000.

Phifer, Sherwood. Lock system with a lock-out safety device for wheeled vehicles. 5,823,025, Cl. 70-226.000.

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Philips Electronics North America Corporation: *See*—
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Vafai, Shohreh, 5,825,910, Cl. 382-132.000.

Phillips, Noel M.; Stiles, Tammy L.; Harding, Jennifer R.; and Lofgren, Lewis C., to ADE, Inc. Suspension package. 5,823,348, Cl. 206-583.000.

Phillips Petroleum Company: *See*—
Burwell, Fred J.; Jones, Ronald D., deceased; Millard, Wayne A.; Sprague, Dennis C.; Pinnick, Herbert R., Jr.; and Dorsey, George L., 5,824,880, Cl. 73-12.060.

Phillips, Thomas A.: *See*—
Montgomery, Jerry R.; and Phillips, Thomas A., 5,825,188, Cl. 324-357.000.

Phillips, Van L. Prosthetic device incorporating low ankle design. 5,824,112, Cl. 623-52.000.

Phong, Linh Ngo: *See*—
Shih, Ishiang; Phong, Linh Ngo; Qiu, Cindy Xing; and Laou, Philips, 5,824,567, Cl. 438-73.000.

Physio-Control Corporation: *See*—
Sulliyan, Joseph L.; Borschowa, Lawrence A.; and Nova, Richard C., 5,824,017, Cl. 607-5.000.

Piazza, David S.: *See*—
Valenti, Gregory P.; Bartlow, Howard D.; and Piazza, David S., 5,825,089, Cl. 257-718.000.

Piccone, Dante E., to Silicon Power Corporation. High power semiconductor device and method of making same. 5,825,090, Cl. 257-747.000.

Piccone, Maria Elisa: *See*—
Grubman, Marvin J.; Mason, Peter W.; Piccone, Maria Elisa; and Rieder, Elizabeth, 5,824,316, Cl. 424-216.100.

Picker International, Inc.: *See*—
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Young, Ian Robert; and McNally, James Michael, 5,823,960, Cl. 600-415.000.

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Picolight Incorporated: *See*—
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Pientka, Rainer: *See*—
Hog, Norbert; Pientka, Rainer; Meier, Hans; Riehl, Guenther; and Blitzke, Henry, 5,825,148, Cl. 318-443.000.

Pieper, Steven D.; McKenna, Michael A.; and Chen, David T., to Medical Media Systems. Anatomical visualization and measurement system. 5,825,908, Cl. 382-131.000.

Pierburg GmbH: *See*—
Kemmerling, Frank, 5,823,753, Cl. 417-423.140.

Pierce, Adam B. Illuminated lawn sprinkler. 5,823,431, Cl. 239-19.000.

Pierce, Glenn Francis; Housley, Regina Mae; and Morris, Charles Frederick, to Amgen Inc. Therapeutic uses of keratinocyte growth factor. 5,824,643, Cl. 514-12.000.

Pierzchala, Stephen A.; and Wilhelm, Bruce W., to Combustion Engineering, Inc. Circulating fluidized bed steam generator (CFB) with a superheater and a reheater. 5,822,991, Cl. 60-653.000.

Pillar, John Frank: *See*—
Coady, Alan Charles; Pillar, John Frank; and Loewen, Jonathan David, 5,825,770, Cl. 370-378.000.

Pine Hosiery Mills, Inc.: *See*—
Hacskaylo, Charles A., 5,823,012, Cl. 66-171.000.

Pine Instrument Company: *See*—
Pyle, Roger A., 5,824,913, Cl. 73-818.000.

Pinnell, Nigel: *See*—
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Pinnick, Herbert R., Jr.: *See*—
Burwell, Fred J.; Jones, Ronald D., deceased; Millard, Wayne A.; Sprague, Dennis C.; Pinnick, Herbert R., Jr.; and Dorsey, George L., 5,824,880, Cl. 73-12.060.

PinOak 'Digital Corporation: *See*—
Detwiler, Peter Mead; White, Andrew Burton; and Hulse, Kelly James, 5,825,814, Cl. 375-219.000.

Pintsov, Leon A.; and Shannon, William T., to Pitney Bowes Inc. Closed loop transaction based mail accounting and payment system with carrier payment through a third party initiated by mailing information release. 5,826,247, Cl. 705-404.000.

Pioneer Electric Corporation: *See*—
Watanabe, Yoshiaki; Miyaguchi, Satoshi; Amano, Hiroshi; and Akasaki, Isamu, 5,825,789, Cl. 372-21.000.

Pioneer Electronic Corporation: *See*—
Itoigawa, Masahide; Hanzawa, Shinichi; Nonaka, Yoshitaka; Watanabe, Junichi; and Maruyama, Haruhisa, 5,824,385, Cl. 428-64.100.
Murakoshi, Sho, 5,825,935, Cl. 382-248.000.
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Pioneer Hi-Bred International, Inc.: *See*—
Albertsen, Marc C.; Beach, Larry R.; Howard, John; and Huffman, Gary A., 5,824,524, Cl. 435-172.300.
Fox, Timothy W.; Garnaat, Carl W.; and Meyer, Terry EuClaire, 5,824,864, Cl. 800-205.000.
Streit, Leon George; and Grace, Dorman John, III, 5,824,844, Cl. 800-200.000.

Pioneer Video Corporation: *See*—
Itoigawa, Masahide; Hanzawa, Shinichi; Nonaka, Yoshitaka; Watanabe, Junichi; and Maruyama, Haruhisa, 5,824,385, Cl. 428-64.100.

Piotrowski, Chester: *See*—
Tsai, Ching-Long; Koning, Norman L.; Fitzgerald, John G.; Piotrowski, Chester; and Lunderville, Rita M., 5,825,292, Cl. 340-572.000.

Piplani, Alec A.; Quiachon, Dinah B.; and Sterman, Wesley D., to Endovascular Technologies, Inc. Endovascular graft having bifurcation and apparatus and method for deploying the same. 5,824,039, Cl. 623-1.000.

Piplani, Alec A.: *See*—
Quiachon, Dinah B.; Piplani, Alec A.; Baker, Steve G.; Williams, Ronald G.; Williams, Richard S.; Osborn, Kenneth L.; Layman, Ted W.; Johansson, Peter K., 5,824,044, Cl. 623-1.000.

Pirwitz, Grit; Zaschke, Horst; Hohmuth, Andrea; Reznikov, Yuriy; Yaroshchuk, Oleg; and Cerus, Igor, to LG Electronics Inc. Photosensitive material for orientation of liquid crystal device and liquid crystal device thereof. 5,824,377, Cl. 428-1.000.

Piscine Service Anjou SA: *See*—
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Pitney Bowes Inc.: *See*—
Bator, Feliks; Berson, William; Campo, John L.; Lawton, Kathryn V.; Obrea, Andrei; Swaluk, Michael Y.; and Weiant, Monroe A., Jr., 5,826,246, Cl. 705-403.000.
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Pittet, Alan Owen; Lee, Phillip G.; and Ellis, Jennifer C., to International Flavors & Fragrances Inc.; and Board of Regents, The University of Texas System. Variable focus multidirectional video or camcorder platform apparatus. 5,823,140, Cl. 119-174.000.

Pittet, Alan Owen; Lee, Phillip G.; Ellis, Jennifer C.; and McCliment, Elizabeth A., to International Flavors & Fragrances Inc.; and Board of Regents, The University of Texas System. Process and for exciting, attracting, stimulating, and/or inciting members of the class crustacea. 5,823,141, Cl. 119-207.000.

Pittet, Alan Owen: *See*—
Cardinale, Giampietro; Pittet, Alan Owen; Lee, Phillip G.; Ellis, Jennifer C.; and McCliment, Elizabeth A., 5,823,142, Cl. 119-212.000.

Pizard, Yves: *See*—
Bricaud, Herve' Guy; Valcher, Fabrice; and Pizard, Yves, 5,823,828, Cl. 439-630.000.

Plaiá , Mark; Reger, Vincent A.; and Nordgren, Gregory N., to Endo-Vascular Instruments, Inc. Anti-stenotic method and product for occluded and partially occluded arteries. 5,824,057, Cl. 623-1.000.

Plakosh, David; Wiegand, Michael A.; and Wright, Norman E., to Xerox Corporation. System for balancing CPU demands in a high-volume print server. 5,825,991, Cl. 395-115.000.

Plano Molding Company: *See*—
Yunger, Robert J.; and Schumaker, James, 5,823,337, Cl. 206-315.110.

Plantan, Ronald S.: *See*—
Zarybnicky, Richard F., Sr.; Lesesky, Alan C.; and Plantan, Ronald S., 5,825,287, Cl. 340-453.000.

Planton, Peter S.: *See*—
Edstrom, William E., Sr.; Trickle, Glen W.; and Planton, Peter S., 5,823,144, Cl. 119-475.000.

Plasberg, Georg: *See*—
Fuentes, Vincent; Fritsch, Hans Ulrich; Merz, Andreas; Plasberg, Georg; and Kraft, Wolfgang, 5,825,299, Cl. 340-825.540.

Plastic Technologies, Inc.: *See*—
Schloss, Francis M., 5,824,196, Cl. 203-95.000.

Platsch, Hans Georg, to Grafix Zerstaubungstechnik GmbH. Powder-dusting apparatus. 5,823,112, Cl. 101-424.200.

Platt, Victor; Paul, Christopher Reinard; Nicolette, Thomas A.; and Zhou, Peter Y., to Sentry Technology Corporation. Electronic article surveillance system; 5,825,291, Cl. 340-572.000.

Pletcher, Harvey A. Process for harvesting freshly cut hay. 5,822,963, Cl. 56-16.40R.

Pliskin, Daniel P.: *See*—
Lateur, Michel J.; and Pliskin, Daniel P., 5,823,280, Cl. 180-65.200.

Podsevalov, Pavel: *See*—
Bildinov, Igor; Podsevalov, Pavel; Nazarenko, Tatjana; and Deev, Leonid, 5,824,827, Cl. 570-147.000.

Poget, Paul-Henri: *See*—
Badertscher, Ernest; and Poget, Paul-Henri, 5,824,266, Cl. 422-26.000.

Pohlman, Joe K. Spherical element combination for construction toy set. 5,823,843, Cl. 446-120.000.

Poimboeuf, Michael K.; DiNapoli, Jeff; and Brainard, Gerald L., to Silicon Graphics, Inc. Circuit for filtering a power supply for noise sensitive devices. 5,825,238, Cl. 327-552.000.

Poisson, Réjean. Road surface light reflector. 5,825,544, Cl. 359-551.000.

Polishchuk, Margarita, executrix: *See*—
Sonoi, Takehiro; Tatsu, Haruyoshi; Solomonovich, Lev, deceased; Polishchuk, Valerii Romanovich, deceased; and Saito, Satoru, 5,824,749, Cl. 525-351.000.

Polishchuk, Valerii Romanovich, deceased (by Margarita Polishchuk, executrix): *See*—
Sonoi, Takehiro; Tatsu, Haruyoshi; Solomonovich, Lev, deceased; Polishchuk, Valerii Romanovich, deceased; and Saito, Satoru, 5,824,749, Cl. 525-351.000.

Polka, John G. Method and apparatus for attaching a cover to the wheel of a vehicle where the wheel has hand holes. 5,823,635, Cl. 301-37.100.

Polley, Phillip L.; and Hansen, William G., to American Standard Inc. Outdoor fan control for part load efficiency. 5,823,004, Cl. 62-179.000.

Pollich, Gerhard: *See*—
Voge, Michael; Hirth, Roland; and Pollich, Gerhard, 5,823,526, Cl. 271-204.000.

Pollinger, John P.: *See*—
Whalen, Philip J.; Jamalabad, Vikram R.; Pollinger, John P.; Agarwala, Mukesh; and Danforth, Stephen C., 5,824,250, Cl. 264-219.000.

Poly-Med, Inc.: *See*—
Shalaby, Shalaby W.; and Deng, Meng, 5,824,411, Cl. 428-364.000.

Polzin, Bruce C.; Shehow, Kenneth L.; Sterwald, Mark T.; and Barton, William W., to Newell Operating Company. Apparatus and method for applying coatings to planar and non-planar surfaces. 5,822,823, Cl. 15-210.100.

Pontarollo, Serge, to SGS-Thomson Microelectronics S.A. DC-to-DC converter with low supply voltage. 5,825,163, Cl. 323-222.000.

Poole, Daniel L.; and Poole, Robert N., to Blackhawk Metal Products, Inc. Wallpaper pasting machine and method of making and using the same thereof. 5,824,363, Cl. 427-207.100.

Poole, David W.: *See*—
Klass, Edgardo F.; Poole, David W.; Amir, Chaim; and Heald, Raymond A., 5,825,224, Cl. 327-200.000.

Poole, Robert N.: *See*—
Poole, Daniel L.; and Poole, Robert N., 5,824,363, Cl. 427-207.100.

Popoff, Michel Y.; and Fellous, Muriel Le Guern, to Institut Pasteur; and Institut National de la Sante et de la Recherche Medicale. Oligonucleotides for the detection of salmonella. 5,824,795, Cl. 536-24.300.

Porter, Carla D., legal representative: *See*—
Alexander, Arthur Ray; Porter, Warren W., deceased, 5,823,005, Cl. 62-259.200.

Porter, Daniel R.; Boss, Dale W.; Anderson, David L.; Salvador, Anthony C.; and Skarbo, Rune A., to Intel Corporation. Method and apparatus for simplifying active window selection, application activation, and shared command execution in a multi-application environment. 5,826,051, Cl. 395-345.000.

Porter, Donna; and Weiss, Lawrence D., to Citibank, N.A. Interactive voice response system for banking by telephone. 5,825,856, Cl. 379-93.120.

Porter, Michael A.; Kruse, Richard H.; DiCesare, Samuel; Berland, Kerry S.; Helms, James M.; and Alderton, George A., IV, to ASC Incorporated. Control system for a vehicle having a moveable vehicle body member. 5,825,147, Cl. 312-466.000.

Porter, Raymond P.: *See*—
Emigh, Jonathan D.; Porter, Raymond P.; and Qutub, Motaz M., 5,823,521, Cl. 270-58.060.

Porter, Richard William: *See*—
Aspden, Richard Malcom; Murali, Srimathi Rajagopalan; and Porter, Richard William, 5,824,087, Cl. 623-16.000.

Porter, Warren W., deceased (by Carla D. Porter, legal representative): *See*—
Alexander, Arthur Ray; Porter, Warren W., deceased, 5,823,005, Cl. 62-259.200.

Portuondo, Maria M.: *See*—
Mosley, Joseph M.; Portuondo, Maria M.; and Taylor, Drew L., 5,824,950, Cl. 174-52.400.

Posner, Paul H., Jr.; and Schaefer, Clifford L., II. System for measuring the volume and rate of flow of a media. 5,824,916, Cl. 73-861.770.

Poss, Andrew J.: *See*—
Thenappan, Alagappan; Van Der Puy, Michael; and Poss, Andrew J., 5,824,826, Cl. 570-134.000.

Postlethwaite, Arnold E.; Seyer, Jerome; and Kang, Andrew. Chemotactic wound healing peptides. 5,824,647, Cl. 514-13.000.

Poting GmbH & Co. KG: *See*—
Pöting, Klaus, 5,823,011, Cl. 65-305.000.

Pöting, Klaus, to Poting GmbH & Co. KG. Apparatus for press molding glass bodies. 5,823,011, Cl. 65-305.000.

Potter, Keith: *See*—
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Potz, Detlev; Lewentz, Guenter; Maier, Ralf; Kampmann, Stefan; Gordon, Uwe; Kreh, Andreas; and Rodriguez-Amaya, Nestor, to Robert Bosch GmbH. Fuel injection device for internal combustion engines. 5,823,161, Cl. 123-305.000.

Pou, Frederick M.: *See*—
Riley, Brad S.; and Pou, Frederick M., 5,824,379, Cl. 428-40.100.

Povsic, Lucka: *See*—
Kikelj, Danijel; Suhadolc, Elizabeta; Rutar, Alenka; Pecar, Slavko; Puncuh, Alesa; Urleb, Uros; Leskovsek, Vesna; Marc, Gasper; Sollner, Marija; Krbavcic, Ales; Sersa, Gregor; Novakovic, Srdjan; Povsic, Lucka; and Stalc, Anton, 5,824,652, Cl. 514-19.000.

Powell, Bruce A.: *See*—
Wierschke, Gilbert W.; Barker, Frederick H.; Bennett, Paul; Cooney, Anthony; McCarthy, Richard C.; Bittar, Joseph; Powell, Bruce A.; and Wan, Samuel C., 5,823,299, Cl. 187-277.000.

Powell, Richard Llewellyn; Handley, Alan John; and Clarke, Richard Dominic, to Imperial Chemical Industries PLC. Purification process. 5,824,225, Cl. 210-656.000.

Powell, Tyrone E. Motion compensated apparatus. 5,822,813, Cl. 5-118.000.

Power, Mark Gerard. Electronically automated portable live and bait well. 5,822,916, Cl. 43-57.000.

Power, Scott D.: *See*—
Barnett, Christopher C.; Mitchinson, Colin; Power, Scott D.; and Requadt, Carol A., 5,824,532, Cl. 435-202.000.

Powerchip Semiconductor Corp.: *See*—
Jeng, Terry; Wu, Chuan-Yu; and Hou, Jason, 5,825,710, Cl. 365-230.030.

Powers, Jim. Direct reduction of iron ore utilizing organic hazardous materials. 5,824,134, Cl. 75-473.000.

Powers, John Richard, III: *See*—
Palmer, James Edward; Coleman, Patricia J.; Herman, Jeffrey Alan; Cochran, Eli; and Powers, John Richard, III, 5,825,355, Cl. 345-336.000.

Powers, William C. Emergency flotation device. 5,823,840, Cl. 441-122.000.

Poworoznek, Robert C., to Bush Industries, Inc. Drawer front fastener. 5,823,700, Cl. 403-245.000.

Pozdeev, Yuri L., to Vishay Sprague, Inc. Doped sintered tantalum pellets with nitrogen in a capacitor. 5,825,611, Cl. 361-524.000.

Pozo, Jaime F.: *See*—
Sieradzki, Christopher Z.; and Pozo, Jaime F., 5,823,357, Cl. 209-703.000.

Pozzobon, Alessandro, to Nordica S.p.A. Wheel, particularly for skateboards or rollerskates. 5,823,634, Cl. 301-5.300.

PPG Industries, Inc.: *See*—

Schell, Philip L., 5,824,413, Cl. 428-378.000.

Prager, John Martin: *See*—
Byrd, Roy Jefferson, Jr.; Prager, John Martin; Ravin, Yael; and Wegman, Mark N., 5,826,260, Cl. 707-5.000.

Pragmatic Designs, Inc.: *See*—
Gellman, Jonathan, 5,823,847, Cl. 446-301.000.

Prasad, Rama R., to Intel Corporation. CPU cycle consumption self-regulating method and apparatus. 5,826,083, Cl. 395-675.000.

Prather, Thomas A.; and Schmidt, Kenneth P. R., to Chicago Casino Systems, Inc. Simulated racing game. 5,823,872, Cl. 463-6.000.

Pratt, Gregory R.: *See*—
Dashevsky, Vladimir A.; Owsley, Robert A.; Pratt, Gregory R.; and Regnier, Kent E., 5,824,257, Cl. 264-328.100.

Praxair S.T. Technology, Inc.: *See*—
Foster, John, 5,824,205, Cl. 205-109.000.

Praxair Technology, Inc.: *See*—
Anderson, John Erling; and Farrenkopf, Dennis Robert, 5,823,762, Cl. 431-8.000.

Prchal, Dave, to Starkey Laboratories. Method for connecting two substrates in a thick film hybrid circuit. 5,825,631, Cl. 361-790.000.

Precision Fabrics Group, Inc.: *See*—
Behr, Vance L.; Nelsen, James M.; and Gwinn, Kenneth W., 5,823,567, Cl. 280-743.100.

Precision Fukuhara Works, Ltd.: *See*—
Shibata, Takao, 5,823,015, Cl. 66-218.000.

Predmore, Daniel Ross; Kellock, Iain Robertson; Correia, Victor Hugo; Starkweather, John Howard; and Lenahan, Dean Thomas, to General Electric Co. Cooling joint connection for abutting segments in a gas turbine engine. 5,823,741, Cl. 415-134.000.

Preformed Line Products Company: *See*—
Goetter, Erwin H.; Levac, Daniel J.; and Krout, Gary R., 5,825,964, Cl. 385-135.000.

Preh-Werke GmbH & Co. KG: *See*—
Bauer, Karl-Heinz; and Brueggemann, Ulrich, 5,825,051, Cl. 257-82.000.

Prescher, Michael: *See*—
Döbert, Jürgen; Oppermann, Manfred; Prescher, Michael; and Richter, Günter, 5,824,733, Cl. 524-506.000.

President & Fellows of Harvard College: *See*—
Luster, Andrew; and Leder, Philip, 5,824,299, Cl. 424-85.100.

Preussner, Christian: *See*—
Reiter, Ferdinand; and Preussner, Christian, 5,823,444, Cl. 239-533.120.

Price, Charles Alan: *See*—
Wadsworth-Dubbert, Debbie Sue; Michel, Douglas Arnold; Kessen, Jeffrey Steven; and Price, Charles Alan, 5,822,860, Cl. 29-898.061.

Price, James E.: *See*—
Bolyard, Darl J.; Price, James E.; Welch, Dicky Ray; Henn, Gerhard; and Petzold, Jürgen, 5,823,240, Cl. 144-369.000.

Price, Scott D.; Judge, Alfred H.; Wheeler, Thomas J.; and Gifford, Robert H. Lamp clamp. 5,823,657, Cl. 362-191.000.

Pricer, Wilbur David: *See*—
Michail, Michel S.; and Pricer, Wilbur David, 5,825,245, Cl. 330-253.000.

Priebe, Gordon W., to LSI Logic Corporation. High speed single ended bit line sense amplifier. 5,825,212, Cl. 327-52.000.

Priesgen, Tony P.; and Youmans, Gary L., to Triton Corporation. Trailer. 5,823,559, Cl. 280-414.100.

Priest, John Hedger; and Nelson, Eric Michael, to Mercury Diagnostics, Inc. Dry reagent test strip comprising benzidine dye precursor and antipyrine compound. 5,824,491, Cl. 435-28.000.

Prince, Alfred M.: *See*—
Lavie, Gad; and Prince, Alfred M., 5,824,654, Cl. 514-44.000.

Prince Corporation: *See*—
Daniel, Jeffrey A.; and Erickson, Brian L., 5,823,611, Cl. 296-214.000.

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Deckner, George Endel; Rinaldi, Marie Antoinette; and Szymanski, Victoria Claire, 5,824,666, Cl. 514-152.000.
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Babbs, Daniel A., 5,823,361, Cl. 211-41.000.

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Macor, Richard J., 5,823,077, Cl. 81-177.100.

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Schall, Scott R.; and Slemker, Tracy C., 5,824,111, Cl. 623-33.000.

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Wilkins, Timothy A.; and Smith, Donald J., 5,825,961, Cl. 385-135.000.

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Puncuh, Alesa: *See*—
Kikelj, Danijel; Suhadolc, Elizabeta; Rutar, Alenka; Pecar, Slavko; Puncuh, Alesa; Urleb, Uros; Leskovsek, Vesna; Marc, Gasper; Sollner, Marija; Krbavcic, Ales; Sersa, Gregor; Novakovic, Srdjan; Povsic, Lucka; and Stalc, Anton, 5,824,652, Cl. 514-19.000.

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Shih, Ishiang; Phong, Linh Ngo; Qiu, Cindy Xing; and Laou, Philips, 5,824,567, Cl. 438-73.000.
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Rao, Tenneti V. On-line water monitor. 5,824,270, Cl. 422-82.090.
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Rasmussen, Henning Baltzer. Spacing member. 5,822,946, Cl. 52-68.100.
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Reid, Carl R.; Lanham, David; Grist, Matt M.; and Kalapodis, James B., to Therm-O-Disc, Incorporated. Thermal pellet cutoff switch. 5,825,278, Cl. 337-407.000.
Reik, Wolfgang; Kimmig, Karl-Ludwig; Maucher, Edmund; and Wittmann, Christoph, to LuK Lamellen und Kupplungsbau GmbH. Automatically adjustable friction clutch. 5,823,312, Cl. 192-70.250.
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RGC Mineral Sands Limited: *See—*
Aral, Halil; Bruckard, Warren John; Freeman, David Edward; Grey, Ian Edward; Houchin, Martin Richard; McDonald, Kenneth John; Sparrow, Graham Jeffrey; Hart, Kaye Patricia; and Harris, Harold Robert, 5,826,162, Cl. 423-20.000.

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Rhom Co., Ltd.: *See—*
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Rich, Ted G.: *See—*
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Richard Frisse GmbH: *See—*
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Richardson, Wayne S.: *See—*
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Richbourg, Henry L., Jr.: *See—*
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Richmond, Alvin; and Gutowski, Robert J., to Martin Marietta Magnesia Specialties, Inc. Process for producing stabilized magnesium hydroxide slurries, 5,824,279, Cl. 423-265.000.

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Richter, Günter: *See—*
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Ricoh Company, Ltd.: *See—*
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Furuta, Hideya; Sakai, Yoshihiro; Taguchi, Kazushige; and Mamizuka, Mitsuru, 5,825,398, Cl. 347-235.000.
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Ohuchi, Satoshi; and Takahashi, Sadao, 5,825,937, Cl. 382-261.000.
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Stewart, Ian Malcolm; and Beckwith, Timothy John, 5,825,967, Cl. 386-52.000.
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Riddle, Matthew Guy, to United Defense LP. Rear drive M113 conversion method. 5,822,836, Cl. 29-401.100.

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Rieger, Wolfhart, to Metoxit AG. Ceramic bodies of zirconium oxide stabilized with yttrium oxide. 5,824,089, Cl. 623-16.000.

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Rierden, William: *See—*
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Ries, Michael; and Schumacher, Brian, to Smith & Nephew, Inc. Asymmetric femoral prosthesis. 5,824,105, Cl. 623-20.000.

Ries-Müller, Klaus: *See—*
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Rieter Elitex a.s.: *See—*
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Rife, William B.; and Pare, Rodney H., to Chip Coolers, Inc. Heat sink assembly with adjustable mounting clip. 5,825,622, Cl. 361-704.000.

Rifkin, Donald Owen, to MCI Communications Corporation. Batch program status via tape data set information for dynamically determining the real time status of a batch program running in a main frame computer system. 5,826,104, Cl. 395-835.000.

Riggle, Perry: *See—*
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Riley, Brad S.; and Pou, Frederick M., to Monarch Marking Systems, Inc. Composite label web. 5,824,379, Cl. 428-40.100.

Riley, H. Lee; and Staat, Robert H., to Bachmann Industries, Inc. Magnetically actuated coupler assembly. 5,823,371, Cl. 213-75.0TC.

Rinaldi, Marie Antoinette: *See—*
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Ringgenberg, Paul D., to Halliburton Energy Services, inc. Travel joint for use in a subterranean well. 5,823,264, Cl. 166-355.000.

Rio Grande Medical Technologies, Inc.: *See—*
Messerschmidt, Robert G., 5,823,951, Cl. 600-322.000.

Riordan, Dennis E. Combined alarm system and window covering assembly. 5,825,289, Cl. 340-550.000.

Risdal, Bruce D. Archival visual memorial. 5,822,895, Cl. 40-124.500.

Rise, Mark T., to Medtronic Inc. Method and apparatus for providing feedback to spinal cord stimulation for angina. 5,824,021, Cl. 607-46.000.

Riso Kagaku Corporation: *See—*
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Ritter, Ann Melinda; Hughes, John Raymond; Jackson, Melvin Robert; Kirkpatrick, Francis Lawrence; Cunha, Francisco Jose Tenreiro; Abuaf, Nesim; and Bunker, Ronald Scott, to General Electric Company. Method for making cylindrical structures with cooling channels. 5,822,853, Cl. 29-890.010.

Ritter, Chris; Sikorski, Chris; Shieh, Wen; and Hedges, Allan, to Cerestar USA, Inc. Process for reducing sterols and free fatty acids from animal fat. 5,824,354, Cl. 426-417.000.

Rivera, Bert: *See—*
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Ro, Jeong-Rae: *See—*
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Roark, Michael A.; Searles, James A.; Swenson, Dale R.; Downey, Phillip; and Stonecipher, Scott W., to Harley-Davidson Motor Company. Resilient hand grip. 5,823,069, Cl. 74-551.900.

Robert Bosch GmbH: *See—*
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Eichhorn, Alexander; and Wiss, Helmut, 5,823,640, Cl. 303-119.200.

Entenmann, Robert; and Ries-Müller, Klaus, 5,823,166, Cl. 123-414.000.

Hipp, Ulrich; and Abendroth, Manfred, 5,825,178, Cl. 324-207.200.

Hog, Norbert; Pientka, Rainer; Meier, Hans; Riehl, Guenther; and Blitzke, Henry, 5,825,148, Cl. 318-443.000.

Koelle, Ulrich; and Schulz, Hans-Joerg, 5,826,205, Cl. 701-29.000.

Kuhn, Uwe; Kirschner, Juergen; and Soccol, Sandro, 5,823,154, Cl. 123-90.330.

Potz, Detlev; Lewentz, Guenter; Maier, Ralf; Kampmann, Stefan; Gordon, Uwe; Kreh, Andreas; and Rodriguez-Amaya, Nestor, 5,823,161, Cl. 123-305.000.

Reiter, Ferdinand; and Preussner, Christian, 5,823,444, Cl. 239-533.120.

Strohl, Willi; Haeussler, Georg; Rose, Jochen; Wahl, Oliver; and Eiler, Erich, 5,823,169, Cl. 123-516.000.

Roberts, Brian G. Infant food dish with motivation means. 5,823,329, Cl. 206-216.000.

Roberts, George T.; and Andersen, Erik, to Boston Scientific Corporation. Prosthesis delivery system with dilating tip. 5,824,035, Cl. 623-1.000.

Roberts, George T.: *See—*
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Roberts, Michael G.: *See—*
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Roberts, Terence P., to Neupak, Inc. Mobile volume flow filling unit. 5,823,406, Cl. 222-626.000.

Roberts, Wilburn C.: *See—*
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Robertson, Jeffrey Charles, to Eastman Kodak Company. Externally driveable cassette with knife for cutting photosensitive material and closing exit slit from cassette. 5,823,080, Cl. 83-649.000.

Robertson, William H., Jr.: *See—*
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Robes, Mojmir: *See—*
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Robichaud, Arthur W.: *See—*
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Robin, Jean-Renaud: *See—*
Rouillard, Francoise; Josse, Annabelle; and Robin, Jean-Renaud, 5,824,320, Cl. 424-401.000.

Robinson, Donald E.; and Banik, Michael S., to Boston Scientific Corporation. Multiple biopsy sampling coring device. 5,823,971, Cl. 600-567.000.

Robinson, Karl M., to Micron Technology, Inc. Polishing pad and a method for making a polishing pad with covalently bonded particles. 5,823,855, Cl. 451-41.000.

Robinson, William Neil: *See—*
Taylor, Daniel Richard; Wild, Johanna Alexandra; Bishop, James William, Jr.; and Robinson, William Neil, 5,826,188, Cl. 455-428.000.

Roche, Ronald H.: *See—*
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Rockstein, George; Wilz, David, Sr.; Blake, Robert; and Knowles, C. Harry, to Metrologic Instruments, Inc. Hand-supportable laser scanning bar code symbol reader with bar code symbol detection activated symbol decoder. 5,825,012, Cl. 235-472.000.

Rockwell International: *See—*
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Rockwood, Robert E., to Environamics Corporation. Environmentally safe pump having a bellows seal and a split ring shaft seal. 5,823,539, Cl. 277-85.000.

Rockwood, Robert E., to Environamics Corporation. Centrifugal pump with means for preventing impeller from unscrewing off of shaft. 5,823,744, Cl. 416-204.00R.

Rodov, Vladimir: *See—*
Metzler, Richard A.; and Rodov, Vladimir, 5,825,079, Cl. 257-653.000.

Rodriguez, Michael J.: *See—*
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Rodriguez-Amaya, Nestor: *See—*
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Rodriguez-Padilla, Cristina: *See—*
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Roeder, Robert J., to Kimberly-Clark Worldwide, Inc. Slip-resistant shoe cover. 5,822,884, Cl. 36-7.10R.

Roehl, Franz: *See—*
Mueller, Bernd; Sauter, Hubert; Roehl, Franz; Doetzer, Reinhard; Lorenz, Gisela; and Ammermann, Eberhard, 5,824,705, Cl. 514-485.000.

Roesch, Mark A.; Maccarone, David A.; Hillenbrand, Gary F.; Newsom, Morris F.; and Lynch, Roland M., to Lamson & Sessions Co., The. Microencapsulatable solvent adhesive composition and method for coupling conduits. 5,824,724, Cl. 524-365.000.

Rogakos, Deno John, deceased (by Niki Rogakos, administrator): *See—*
Dimatteo, Michael Anthony; Harmon, Daniel Lee; Rogakos, Deno John, deceased, 5,822,827, Cl. 15-250.203.

Rogakos, Niki, administrator: *See—*
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Roger, Patrick, to Schneider Electric SA. Differential thermal tripping device with bimetallic strips. 5,825,273, Cl. 337-49.000.

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Rogers, Henry E.: *See—*
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Rogers, Kevin J.: *See—*
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Rohm and Haas Company: *See—*
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Rohm Co., Ltd.: *See—*
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Nakagawa, Eiji, 5,825,251, Cl. 330-297.000.
Shakuda, Yukio, 5,825,052, Cl. 257-94.000.

Rolfson, J. Brett; and Manning, Monte, to Micron Technology, Inc. Method of making a resistor, method of making a diode, and SRAM circuitry and other integrated circuitry. 5,825,074, Cl. 257-536.000.

Rolfson, J. Brett: *See—*
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Rollender, Matthew; and Hirt, Ray, to Intel Corporation. Multi-layered contacting for securing integrated circuits. 5,824,571, Cl. 438-130.000.

Rollover Operations, LLC: *See—*
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Romack, Timothy: *See—*
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Roman, Harold Edgar: *See—*
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Roman, Michael John: *See—*
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Romanczuk, Helen: *See—*
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Romano, George James: *See—*
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Romano, Paul M.: *See—*
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Romeo, Aurelio: *See—*
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Romero, Francis, to Piscine Service Anjou SA. Heat exchanger. 5,823,251, Cl. 165-158.000.

Romriell, Joseph N.: *See—*
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Romweber, Frank T.; and Sowa, Dennis F. Method for conditioning refuse. 5,822,881, Cl. 34-136.000.

Ronca, Piero Vittorio: *See—*
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Ronchail, Guglielmo L. Beverage can with integral pour spout. 5,823,404, Cl. 222-535.000.

Rondeau, Christine: *See—*
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Rondy & Co., Inc.: *See—*
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Ronstrom, Mikael, to Telefonaktiebolaget LM Ericsson. Modular application software and data providing mobility in telecommunication networks. 5,826,019, Cl. 395-200.310.

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Rood, John D.; and Rood, John W., 5,823,137, Cl. 119-166.000.

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Roohparvar, Frankie F., to Micron Technology, Inc. Low voltage test mode operation enable scheme with hardware safeguard. 5,825,700, Cl. 365-201.000.

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Rooney, Daniel T.: *See—*

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Rostoker, Michael D., to LSI Logic Corporation. Micromachined microscopic particle selecting apparatus. 5,824,389, Cl. 428-137.000.
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Rouillard, Francoise; Josse, Annabelle; and Robin, Jean-Renaud, to Laboratories de Biologie Vegetale Yves Rocher. Cosmetic or pharmaceutical compositions containing, as active ingredient, mangiferine or its derivatives, in pure form or in plant extracts. 5,824,320, Cl. 424-401.000.
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Rubin, Bruce. Optician's ruler with sliding height indicator. 5,825,459, Cl. 351-204.000.
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Rubinfeld, Joseph; Vida, Julius A.; Bradlow, H. Leon; and Fineman, Elliott L., to Supergen, Inc. Formulation for administration of steroid compounds. 5,824,668, Cl. 514-170.000.
Rubinstein, Joseph. Golf-ball retriever. 5,823,591, Cl. 294-19.200.
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Rudolph, Colin, to Alcatel NV. TDMA base station arrangement. 5,825,764, Cl. 370-337.000.
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Rushing, J. Mitchell; Scruggs, Terry L.; and Malone, John J., to Calgon Corporation. Chemical delivery and on-site blending system for producing multiple products. 5,823,670, Cl. 366-152.100.
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Rutkowski, Steve; and Rierden, William, to CSG Systems, Inc. Methods and systems for client or customer-site transaction processing in a distributed database system. 5,826,270, Cl. 707-10.000.
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Ryan, William J.; Ryan, J. Barry; and Ryan, Patrick E., to Ryan, James C.; and Ryan, Thomas J. Drag reducing apparatus for a vehicle. 5,823,610, Cl. 296-180.400.
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Saito, Hiroyuki; and Koni, Mitsuru, to Hitachi Ltd.; and Hitachi Car Engineering Co., Ltd. Apparatus for driving electrical loads provided at a car. 5,825,097, Cl. 307-10.100.
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Saito, Masaaki; Takahashi, Koji; and Yokota, Masahiko, to Canon Kabushiki Kaisha. Image reading apparatus useable in a copy mode or a facsimile mode. 5,826,133, Cl. 399-2.000.
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Saito, Takao; Yoshida, Akifumi; Matsumura, Kazuhiko; Miura, Takashi; and Kumobayashi, Hidenori, to Takasago International Corporation. Phospphine-phosinite compound and process for preparing 4-[(R)-1'-formylethyl]-azetidin-2-one derivatives using the same. 5,824,822, Cl. 568-10.000.

Saito, Takehiko; and Ohtaki, Kazue, to Niles Parts Co., Ltd. Push lock switch. 5,823,326, Cl. 200-524.000.

Saito, Toshihiko: *See—*
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Saito, Yoshimi: *See—*
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Saito, Yuji; and Kaneko, Takayuki, to Sony Corporation. Recording method and apparatus for recording medium. 5,825,739, Cl. 369-83.000.

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Saitoh, Kenji, to NEC Corporation. Semiconductor non-volatile storage device having verification potential applying device for re-writing to insufficiently written memory cells. 5,825,690, Cl. 365-185.220.

Saitoh, Toshiharu, to International Business Machines Corporation. Method and apparatus for testing the data output system of a memory system. 5,826,006, Cl. 395-183.180.

Saitoh, Toshio: *See—*
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Sajer, Jean-Michel: *See—*
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Sakai, Hidetoshi; Hiratsuka, Motoki; Watanabe, Akihiko; and Yamada, Motonobu, to Toray Industries, Inc. Fiber reinforced thermoplastic resin structure, process for production of same, and extruder for production of same. 5,824,410, Cl. 428-361.000.

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Sakai, Yasuyoshi: *See—*
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Takada, Yasuaki; Sakairi, Minoru; Nabeshima, Takayuki; Hirabayashi, Yukiko; and Koizumi, Hideaki, 5,825,027, Cl. 250-292.000.

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Salk Institute for Biological Studies, The: *See—*
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Salmon, Huw J.: *See—*
Odell, Richard B.; Fox, Stephen J.; Salmon, Huw J.; and Ennes, John A., 5,823,473, Cl. 244-129.500.

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Samsung Display Devices Co., Ltd.: *See—*
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Kim, Si-hwan, 5,825,440, Cl. 349-61.000.
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Park, Hyun Seo; and Kim, Jin Gwan, 5,825,574, Cl. 360-74.200.

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An, Jung-geen; and An, Jung-soo, 5,823,763, Cl. 431-41.000.
Apel, Thomas R., 5,826,183, Cl. 455-326.000.
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Kim, Chang-Rae; Kim, Jong-Young; and Park, Hee-Choul, 5,825,698, Cl. 365-200.000.
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Kim, Sung-eui; and Kim, Young-dae, 5,824,594, Cl. 438-446.000.
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Lim, Jae Hoon; Kim, Yong Myoung; Song, Ki Woong; and Park, Seak Haeng, 5,822,998, Cl. 62-186.000.
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Park, Dong-seek; Villasenor, John; and Chen, Feng, 5,825,930, Cl. 382-236.000.
Park, Jin-ho, 5,823,523, Cl. 271-10.040.
Park, Sung-Uk, 5,825,321, Cl. 341-144.000.
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Pyo, Sang Yeon, 5,824,114, Cl. 8-159.000.
Shin, Kyung-Mo, 5,825,171, Cl. 324-73.100.
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Son, Byung-Sam, 5,825,584, Cl. 360-96.500.
Song, Jun-ho; and Kim, Dong-gyu, 5,825,438, Cl. 349-54.000.
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Samsung Electronics XCo., Ltd.: *See—*
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Samsung General Chemicals Co., Ltd.: *See—*
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Samuelson, Laurence S.: *See—*
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Sand Technology Systems International, Inc.: *See—*
McCool, Michael W.; and Marquis, Jean A., 5,826,255, Cl. 707-3.000.

Sandberg-Diment, Erik. Providing vertification information for a transaction. 5,826,245, Cl. 705-44.000.

Sanden Corporation: *See—*
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Sander, Charles M.: *See—*
Shrinkle, Louis J.; and Sander, Charles M., 5,825,578, Cl. 360-77.080.

Sanders, John M.; and Ryan, Patrick M., to McDermott Technology, Inc. Method to control starting and stopping a plasma arc welding keyhold. 5,824,989, Cl. 219-121.460.

Sandhu, Chain; and Lilov, Lev, to NYX, Inc. Latch mechanism for glove box door. 5,823,583, Cl. 292-173.000.

Sandhu, Gurtej S.; Iyer, Ravi; and Westmoreland, Donald L., to Micron Technology, Inc. Method of inhibiting deposition of material on an internal wall of a chemical vapor deposition reactor. 5,824,365, Cl. 427-239.000.

Sandia Corporation: *See—*
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Drumheller, Douglas S., 5,823,261, Cl. 166-250.010.
Simmons, Jerry A.; Sherwin, Marc E.; Drummond, Timothy J.; and Weckwerth, Mark V., 5,825,049, Cl. 257-25.000.

Sandusky, Randall L.; and Asakawa, Gary J., to Texas Instruments Incorporated. Input switching network. 5,825,571, Cl. 360-67.000.

Sanemitsu, Yoshikado, to Mitsubishi Denki Kabushiki Kaisha. IC card. 5,825,014, Cl. 235-492.000.

Sangha, Parminder Singh: *See—*
Broennum, Thomas; Sangha, Parminder Singh; and Steinmetz, Johannes Cornelis, 5,824,714, Cl. 521-155.000.

Sankaran, Ramanathan: *See—*
Gupta, Niranjan Lal; Sankaran, Ramanathan; Chattejee, Sugata; and Krishna, Tumma Hari, 5,824,801, Cl. 540-215.000.

Sanko Machinery Co., Ltd.: *See—*
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Sano, Masafumi; and Saito, Keishi, to Canon Kabushiki Kaisha. Method of producing a photovoltaic device. 5,824,566, Cl. 438-69.000.

Sano, Mutsumi: *See—*
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Sano, Yoshinori: *See—*
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Sansha Electric Manufacuring Co. Limited: *See—*
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Sanshin Kogyo Kabushiki Kaisha: *See—*
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Sansom, Robert D.: *See—*
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Sant, Andrew Jonathan: *See—*
Humberstone, Victor Carey; and Sant, Andrew Jonathan, 5,823,428, Cl. 239-4.000.

Santel, Hans-Joachim: *See—*
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Santi, John D.; and Kratz, David A., to Briggs & Stratton Corporation. Compressing release with snap-in components. 5,823,153, Cl. 123-182.100.

Santoline, Linda L.; Gaussa, Louis W., Jr.; Shemony, Robert A.; Broderick, Deborah D.; and Tran, Thuy T., to Westinghouse Electric Corporation. Stimulated simulator for a distributed process control system. 5,826,060, Cl. 395-500.000.

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Kimura, Kazuhiro; Hayashibe, Shigeaki; Ozawa, Toshiyuki; Hiramatsu, Tatsuo; and Tomida, Yoshikazu, 5,825,888, Cl. 380-49.000.
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Yamada, Teruhiro; Ando, Takahisa; and Enomoto, Tetsuya, 5,825,997, Cl. 395-119.000.

Saraceno, Anthony J.; and Banks, Keith D., to United States Enrichment Corporation. Removal of technetium impurities from uranium hexafluoride. 5,826,163, Cl. 423-258.000.

Saratoga, Inc.: *See—*
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Sarraf, Sanwal P.: *See—*
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Sartori de Zamparolo, Carmen Maria. Drinking insert for cans containing beverages. 5,823,384, Cl. 220-717.000.

Saruyama, Toshio; and Yoshitake, Makoto, to Dow Corning Toray Silicone Co., Ltd. Organopolysiloxane and method for the preparation of the same. 5,824,762, Cl. 528-26.000.

Sasaki, Eisaku, to NEC Corporation. Method and apparatus for multi-level quadrature amplitude modulation. 5,825,828, Cl. 375-298.000.

Sasaki, Go: *See—*
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Sasaki, Hidetoshi: *See—*
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Sasaki, Hiroshi; and Tsuruoka, Takao, to Olympus Optical Co., Ltd. Optical reproducing system for multimedia information recorded with code data having function for correcting image reading distortion. 5,825,947, Cl. 382-321.000.

Sasaki, Kazuhiro: *See—*
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Sasaki, Keiko; Mori, Takayuki; and Makino, Satoshi, to Kitasato Institute, The. Attenuated measles virus vaccine containing specific nucleotide sequence and a method for its absolute identification. 5,824,777, Cl. 530-350.000.

Sasaki, Shyuzi: *See—*
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Sasaki, Takamitsu: *See—*
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Sasaki, Takashi: *See—*
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Sasaki, Toshiaki: *See—*
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Sasaki, Toyonori, to Brother Kogyo Kabushiki Kaisha. Ink jetting apparatus. 5,825,388, Cl. 347-86.000.

Sasaki, Tsutomu: *See—*
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Sasaoka, Kenji: *See—*
Odaira, Hiroshi; Imamura, Eiji; Wada, Yusuke; Arai, Yasushi; Sasaoka, Kenji; Mori, Takahiro; Ikegaya, Fumitoshi; and Kowatari, Sadao, 5,822,850, Cl. 29-846.000.

Sato, Hisaaki; Kumagai, Masato; Kudo, Munehiro; and Kai, Keiichi, to Unisia Jecs Corporation. Valve actuator arrangement for internal combustion engine. 5,823,165, Cl. 123-399.000.

Sato, Hisao: *See—*
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Sato, Katsuhiro; Ono, Yoshiyuki; and Nakamura, Shigetoshi, to Fuji Xerox Co. Ltd. Nonlinear optical element and process for the preparation of same. 5,824,240, Cl. 252-582.000.

Sato, Kazuhiko: *See—*
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Sato, Makoto: *See—*
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Sato, Masayoshi: *See—*
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Sato, Nobuhiko: *See—*

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Sato, Ryoichi: *See—*
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Sato, Takahido: *See—*
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Sato, Tsuyoshi: *See—*
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Sato, Yasue: *See—*
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Sato, Yasunori: *See—*
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Sato, Yoko: *See—*
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Satoh, Kazuhiro, to Ricoh Company, Ltd. Facsimile device. 5,825,992, Cl. 395-115.000.

Satoh, Tomoari; Nakane, Kenji; and Nishida, Yasunori, to Sumitomo Chemical Company, Limited. Cathode material for lithium secondary battery and method for producing lithiated nickel dioxide and lithium secondary battery. 5,824,284, Cl. 423-594.000.

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Sauerhoefer, Marc Raymond, to United Technologies Corporation. Method of producing a strong, dimensionally stable object. 5,824,260, Cl. 264-401.000.

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Saupe, Thomas, to FEV Motorentechnik GmbH & Co. KG. Starter for an engine, 5,823,048, Cl. 74-8.000.

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Savala, Rodney M. Garden tool and sprayer. 5,822,968, Cl. 56-400.040.

Sawada, Takashi: *See—*
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Sawyer, Philip N., to Fusion Medical Technologies, Inc. Method for welding biological tissue. 5,824,015, Cl. 606-214.000.

Saxton, Gary B., to Griffin Corporation. Method for improving the weight gain and feed conversion efficiency of swine. 5,824,707, Cl. 514-499.000.

Sayles, Robert D.: *See—*
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Scagnelli, John B.; and Fiscella, Joseph A., to Lottotron, Inc. Computerized lottery wagering system. 5,823,877, Cl. 463-41.000.

Scandinavian Candy Co., Inc., The: *See—*
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Scattergood, David Charles: *See—*
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Schach, Harald, to Moto Meter GmbH. Tubular shaped housing comprising a flexible belt-shaped wall, particularly for a display instrument of a motor vehicle. 5,824,949, Cl. 174-52.100.

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Schaenzer, Mark J.; Boutaghou, Zine-Eddine; Nagarajan, Subrahmanyan; and Sundram, Ramesh, to Seagate Technology, Inc. Multi-impact thermal asperity sensor head. 5,825,181, Cl. 324-212.000.

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Schafer, Richard D. Misting chair. 5,823,617, Cl. 297-180.150.

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Schaffer, Tilman E.: *See—*
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Schagerström, Tonie; Eriksson, Pär; and Olsson, Anders. Measuring vessel. 5,823,046, Cl. 73-427.000.

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Schaldach, Max: *See—*
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Schall, Scott R.; and Slemker, Tracy C., to Prosthetic Design, Inc. Method for fabricating a prosthetic limb socket. 5,824,111, Cl. 623-33.000.

Schamanek, Roger E.: *See—*
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Schantz, Spencer C.: *See—*
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Schechter, Stuart E., to Synkinetics, Inc. Mechanical scanner. 5,823,049, Cl. 74-25.000.

Scheidsteger, Olaf: *See—*
Bachtler, Michael; Schnur, Rudolf R.; Pässler, Peter; Scheidsteger, Olaf; Kastenhuber, Werner; Schlindwein, Gerd; and König, Rainer, 5,824,834, Cl. 585-540.000.

Schein, Philip S.; and Kalebic, Thea, to U.S. Bioscience, Inc.; and National Institutes of Health, The National Cancer Institute. Suppression of HIV expression by organic thiophosphate. 5,824,664, Cl. 514-143.000.

Schell, Brian A.; Orem, Michael W.; and Wang, Yongcai, to Eastman Kodak Company. Fluoropolyether containing aqueous coating compositions for an imaging element. 5,824,461, Cl. 430-529.000.

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Ulbrich, Norbert; Hilgenfeld, Rolf; Hänel, Heinz; Sachse, Burkhard; Braun, Peter; Wink, Joachim; Eckes, Peter; Logemann, Jürgen; and Schell, Jozef, 5,824,874, Cl. 800-205.000.

Schell, Philip L., to PPG Industries, Inc. Secondary coating for fiber strands, coated strand reinforcements, reinforced polymeric composites and a method of reinforcing a polymeric material. 5,824,413, Cl. 428-378.000.

Scheller, Wolfgang: *See—*
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Schenk, Bernhard; Seel, Holger; Fussnegger, Wolfgang; Schaible, Kurt; and Tegeler, Roland, to Mercedes-Benz AG. Hard-top vehicle. 5,823,606, Cl. 296-107.080.

Schenk, Donald Edward: *See—*
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Scherer, Siegfried; and Loessner, Martin, to Merck Patent Gesellschaft mit beschrankkter Haftung. Detection of listeria by means of recombinant bacteriophages. 5,824,468, Cl. 435-5.000.

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Schering Corporation: *See—*
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Wilhelmstätter, Johann; Jerg, Helmut; Schessl, Bernd; Fetzer, Gerhard; Hartmann, Michael; Höpfl, Markus; Rehm, Karl-Heinz; and Schmidt, Rudolf, 5,823,211, Cl. 134-176.000.

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Schiabel, Antonio; and Giorgi, Stefano Paolo, to SAES Getters, S.p.A. Combination of materials for integrated getter and mercury-dispensing devices and the devices so obtained. 5,823,841, Cl. 445-9.000.

Schilling, Kurt Matthew: *See—*
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Schilling-Ostermeyer Maschinenbau GmbH: *See—*
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Schinazi, Raymond F.; and Hill, Craig L. Method, compositions, and apparatus for treating and preventing respiratory viral infections. 5,824,706, Cl. 514-492.000.

Schindel, David W.; and Hutchins, David A., to Queen's University at Kingston. Non-contact characterization and inspection of materials using wideband air coupled ultrasound. 5,824,908, Cl. 73-632.000.

Schipper, John F.; and Loomis, Peter, to Trimble Navigation Limited. Precise inverse differential corrections for location determination. 5,825,328, Cl. 342-357.000.

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Schlecht, Karl; and Benckert, Hartmut, to Putzmeister Aktiengesellschaft. Large manipulator, especially for self-propelled concrete pumps, and method for operating it. 5,823,218, Cl. 137-1.000.

Schlickbernd, Dean J.: *See—*
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Schloss, Francis M., to Plastic Technologies, Inc. Decontamination of RPET by steam distillation. 5,824,196, Cl. 203-95.000.

Schmeichel, Charles Milton: *See—*
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Schmid, Karl: *See—*
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Schmid, William M.; and Behrens, James R., to PSC, Inc. Wireless bar code scanning system. 5,825,009, Cl. 235-462.000.

Schmidt, Johan Richard; De Kok, Eric Johannes; and Stolk, Jacob Cornelis, to Koninklijke PTT Nederland N.V. Active tag having one diode for modulation and demodulation. 5,826,175, Cl. 455-77.000.

Schmidt, Kenneth P. R.: *See—*
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Schmidt, Thomas J., to Digital Equipment Corporation. Method and apparatus for secure remote programming of firmware and configurations of a computer over a network. 5,826,015, Cl. 395-187.010.

Schmidt, William P.; and Hutchinson, Franklin D. Vehicular mirror mounting assembly. 5,823,501, Cl. 248-475.100.

Schmidtmann, William E.: *See—*
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Schmitt, Anton, to Voith Sulzer Papiermaschinen GmbH. Exchange device for replacing transport belts in a web producing machine. 5,823,462, Cl. 242-533.800.

Schmitt, Peter J.; and Lentz, David J., to Meadox Medicals, Inc. Method for repositioning a radially self-expanding implantable intraluminal device. 5,824,034, Cl. 623-1.000.

Schmitt, Stephen M.; and Chance, David A., to United States of America, Air Force. Imaging method for fabricating dental devices. 5,823,778, Cl. 433-214.000.

Schmitt, Ulrich: *See—*
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Schmitt-Landsiedel, Doris; Thewes, Roland; Bollu, Michael; and von Basse, Paul-Werner, to Siemens Aktiengesellschaft. Multi-value read-only memory cell having an improved signal-to-noise ratio. 5,825,686, Cl. 365-185.030.

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Schmitz, Franz Peter; Horeis, Kai; and Razzak, Ramzi, to H.B. Fuller Licensing & Financing Inc. Foamable two-component material based on polyurethane. 5,824,713, Cl. 521-155.000.

Schmookler, Martin Stanley: *See—*
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Schnoor, William John; Matz, Bret Allen; McKechnie, Keith James; and Downs, Richard Charles, to Whitaker Corporation, The. Hub for a communications network. 5,825,618, Cl. 361-686.000.

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Scholz, Wolfgang: *See—*
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Schubert, Dale W.; Beard, Andrew Michael; Shedd, Steven Frank; Earles, Marion Richard, Jr.; and Von Flotow, Andreas H., to Technical Manufacturing Corporation. Stiff actuator active vibration isolation system. 5,823,307, Cl. 188-378.000.

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Scopelianos, Angelo G.; Bezwada, Rao S.; and Arnold, Steven C., to Ethicon, Inc. Injectable liquid copolymers for soft tissue repair and augmentation. 5,824,333, Cl. 424-423.000.
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Shimoga, Karun B.: *See*—
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Shimomura, Koichi: *See* —
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Tanaka, Takanori; Shimura, Yasuhiko; and Yanagawa, Hirokazu, 5,825,817, Cl. 375-228.000.

Shin Caterpillar Mitsubishi Ltd.: *See*—
Fujii, Satoshi; Tozawa, Shoji; and Ono, Tomoaki, 5,824,965, Cl. 177-136.000.

Shin-Etsu Chemical Co., Ltd.: *See*—
Ohashi, Ken; Yoneda, Yuhito; Miyata, Koji; and Higuchi, Dai, 5,825,187, Cl. 324-319.000.
Osawa, Yoichi; Watanabe, Satoshi; Takemura, Kaysuya; Nagura, Shigehiro; Tanaka, Akinobu; and Kawai, Yoshio, 5,824,824, Cl. 568-49.000.

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Matsuo, Shinichi; Fujimaki, Nobuyoshi; Watanabe, Shiroyasu; and Kato, Kintaro, 5,823,351, Cl. 206-710.000.

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Lee, Ho-Seong; Park, Young-Jun; Kim, Min-Hwan; Moon, Seok-Shik; Cho, Nam-Sun; Shin, Jong-Hyun; Suh, Young-Whan; and Lee, Jung-Ok, 5,824,689, Cl. 514-312.000.

Shin, Kyung-Mo, to Samsung Electronics Co., Ltd. Universal burn-in board. 5,825,171, Cl. 324-73.100.

Shin, Woo Sup, to LG Electronics, Inc. Liquid crystal display device and method of manufacturing the same. 5,825,449, Cl. 349-148.000.

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Shindo, Naoki: *See*—
Nikai, Isao; Uda, Motohisa; Shindo, Naoki; and Fuse, Takeshi, 5,823,008, Cl. 62-401.000.

Shindo, Yoichi: *See*—
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Shingu, Jyunichi; Morita, Katsuyuki; Toyoda, Toshihiro; Tachihara, Shinji; Motai, Kojiro; and Kishi, Satoru, to Mitsui Chemicals, Inc. Preparation of laminated sheets. 5,824,178, Cl. 156-265.000.

Shinkle, Sharon L.: *See*—
Benko, Zoltan L.; Turner, James A.; Weimer, Monte R.; Garvin, Gail M.; Jackson, Johnny L.; Shinkle, Sharon L.; and Webster, Jeffery D., 5,824,802, Cl. 544-140.000.

Shinmoto, Masaki: *See*—
Hayashihara, Shoiti; Kudo, Masaru; and Shinmoto, Masaki, 5,824,715, Cl. 522-14.000.

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Shirakawa, Haruyuki, to NEC Corporation. Graphics controller including a sub-memory. 5,825,371, Cl. 345-501.000.

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Shiramizu, Yoshimi: *See*—
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Shire Laboratories, Inc.: *See*—
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Shiro Kobayashi: *See*—
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Shirota, Riichiro: *See*—
Asano, Masamichi; Iwahashi, Hiroshi; Kirisawa, Ryouhei; Nakayama, Ryozo; Inoue, Satoshi; Shirota, Riichiro; Endoh, Tetsuo; and Masuoka, Fujio, 5,824,583, Cl. 438-258.000.

Shmidt, Creston D.: *See*—
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Shneerson, German Abramovich: *See*—
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Shoji, Masato: *See*—
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Shoji, Osamu: *See*—
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Shook, C. David; and Hoy, David J. Ankle pad. 5,823,195, Cl. 128-893.000.

Shoquist, William A. Trailer loading support. 5,823,558, Cl. 280-405.100.

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Shouldice, David; and Toavs, Coy Vann, to COBE Laboratories. Gas/fluid detector for contained fluid systems. 5,824,881, Cl. 73-19.100.

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Shube, Eugene E.: *See*—
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Shurskis, Karl W.: *See*—
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Shutoh, Shin'ichi; Nakagoshi, Junji; Hamanaka, Naoki; Chiba, Hiroyuki; Higuchi, Tatsuo; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, to Hitachi, Ltd.; and Hitachi VLSI Engineering Corporation. Switching system for transferring broadcast packet held in broadcast buffer received from input port to output ports according to the state of each output port. 5,825,773, Cl. 370-398.000.

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Shutts, Bruce Wayne, to Thomson Consumer Electronics, Inc. Switched-mode power supply control circuit. 5,825,638, Cl. 363-21.000.

Shvartsman, Yuriy: *See*—
Kopyleva, Bronislava; and Shvartsman, Yuriy, 5,824,132, Cl. 71-43.000.

Shyjan, Anne: *See*—
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Shyu, Rong-Fuh; and Chang, Feng-Ling, to Winbond Electronics Corp. Apparatus for real time two-dimensional scaling of a digital image. 5,825,367, Cl. 345-439.000.

Sich, Gary M.; and Paul, John E., to Westinghouse Air Brake Company. Microprocessor controlled electro-pneumatic brake system in a multi-platform railroad freight car. 5,823,638, Cl. 303-22.100.

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Sideman, Carl E.; and Snyder, Donald M., to Armstrong World Industries, Inc. Water soluble triazole derivative embossing inhibitor and the use thereof. 5,824,721, Cl. 523-161.000.
Siecor Corporation: *See—*
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Ott, Michael J., 5,822,863, Cl. 30-90.400.
Walters, Mark D.; Morgan, Kevin L.; and Dennis, Robert W., 5,825,962, Cl. 385-135.000.
Siegler, Sorin; Kalidindi, Surya; and Abusafieh, Abdel, to Drexel University. Swelling type copolymeric composite material with self-fixation characteristics. 5,824,079, Cl. 623-11.000.
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Frank, Joachim; Fleischer, Maximilian; and Meixner, Hans, 5,824,271, Cl. 422-98.000.
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Koppmann, Bardo, 5,825,269, Cl. 335-132.000.
Kuttner, Franz, 5,825,316, Cl. 341-120.000.
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Runggaldier, Diethard; and Seitz, Johann, 5,825,154, Cl. 318-757.000.
Schaetzle, Ulrich; Sheljaskov, Todor; and Lerch, Reinhard, 5,823,962, Cl. 600-439.000.
Schmitt-Landsiedel, Doris; Thewes, Roland; Bollu, Michael; and von Basse, Paul-Werner, 5,825,686, Cl. 365-185.030.
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Von Basse, Paul-Werner; Thewes, Roland; Schmitt-Landsiedel, Doris; and Bollu, Michael, 5,825,701, Cl. 365-203.000.
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Duncan, Michael Glen; Findley, Geoffrey; Kubena, Ronald Albert; and Moellering, Douglas F., 5,825,873, Cl. 379-419.000.
Shaffer, Shmuel; and Fernandes, Neufito, 5,825,858, Cl. 379-120.000.
Siemens Elema AB: *See—*
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Siemens Medical Systems, Inc.: *See—*
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Siemens Nixdorf Informationssysteme Aktiengesellschaft: *See—*
Baumgartner, Robert; and Gröger, Hans-Detlef, 5,825,692, Cl. 365-189.040.
Siemer, John Robert, to Eastman Kodak Company. Apparatus and method for setting radial bar code disc sensor gain in a phtographic camera. 5,825,008, Cl. 235-462.000.
Sienel, Tobias H.; and Pandy, Dennis R., to Carrier Corporation. Vapor separation of variable capacity heat pump refrigerant. 5,822,996, Cl. 62-114.000.
Sienicki, Edward J., to Navistar International Transportation Corp. Method and apparatus for reducing engine NOx emissions. 5,823,170, Cl. 123-551.000.
Sieradzki, Christopher Z.; and Pozo, Jaime F., to AMSTED Industries Incorporated. Automated wheel sorting system and method. 5,823,357, Cl. 209-703.000.
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Tso, Vincent S.; and Ho, James B., 5,825,166, Cl. 323-299.000.
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Siira, Mikko, to Nokia Telecommunications Oy. Transmission method and a cellular radio system. 5,825,760, Cl. 370-331.000.
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Silicon Image, Inc.: *See—*
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Silvent, Therese M.; Golec, Valentine W.; and Godziela, James T., to Honeywell, Inc. Process and system for forming multiple preemptive modeless dialog boxes. 5,825,358, Cl. 345-340.000.
Silver, Barnard Stewart; and Zimmerman, Robert V. Method and apparatus for cleaning roots, tubers, bulbs, and the like. 5,824,356, Cl. 426-481.000.
Silver, Spencer F.: *See—*
Kesti, Michael R.; Garbe, James E.; Delgado, Joaquin; Silver, Spencer F.; and Goetz, Richard J., 5,824,748, Cl. 525-243.000.
Silverberg, Ian. Expandable wrap with multiple panels and attachable pocket. 5,823,984, Cl. 602-61.000.
Silverbrook, Kia, to Eastman Kodak Company. Constructions and manufacturing processes for thermally activated print heads. 5,825,385, Cl. 347-56.000.
Silverbrook Limited: *See—*
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Silvestrini, Thomas A., to KeraVision, Inc. Segmented pre-formed intrastromal corneal insert. 5,824,086, Cl. 623-5.000.
Sim, Bok-tae, to Samsung Electronics Co., Ltd. Digital filter having an energy level detector for selecting a coefficient. 5,825,809, Cl. 375-200.000.
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Simmons, Janet K.: *See—*
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Simmons, Jerry A.; Sherwin, Marc E.; Drummond, Timothy J.; and Weckwerth, Mark V., to Sandia Corporation. Resonant tunneling device with two-dimensional quantum well emitter and base layers. 5,825,049, Cl. 257-25.000.
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Simonetti, Louis, to Zip Dee, Inc. Automatic awning for recreational vehicle. 5,823,216, Cl. 135-88.100.
Simpkins, James W.; Green, Pattie S.; and Gridley, Kelly E., to University of Florida Research Foundation, Inc. Preservation of tissue during removal, storage and implantation. 5,824,672, Cl. 514-182.000.
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Sinclair, Bruce D.: *See—*
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Singer, Gary H.; Misch, Carl Erwin; and Gottehrer, Neil R. Dental appliance for alleviating snoring and protecting teeth from bruxism. 5,823,193, Cl. 128-848.000.
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Sitzes, Steven O.; and Turner, Keith B. User fittable venetian blinds for differing arched windows. 5,823,241, Cl. 160-107.000.
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Skidata Computer Gesellschaft m.b.H.: *See—*
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Stone, Kevin R.; and DeSatnick, Allen H., to Stone, Kevin R. Suture anchor assembly. 5,824,011, Cl. 606-232.000.

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Subramanian, Chitra K.; and Hayden, James D., to Motorola, Inc. Method of forming shared contact structure. 5,824,579, Cl. 438-238.000.

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Hori, Takashi; Kumagai, Hitoshi; Hasegawa, Mitsuharu; Sato, Yoko; Munakata, Hiroshi; and Sugawa, Yoshihiro, 5,824,808, Cl. 549-1.000.

Sugawara, Sumio: *See*—
Konno, Masashi; Sugawara, Sumio; Atoji, Nobuhisa; Terada, Jiro; and Tamura, Masami, 5,824,900, Cl. 73-504.160.

Sugaya, Tomoki: *See*—
Kanegae, Masahide; Kondou, Masao; Sugaya, Tomoki; and Tanaka, Hiroyuki, 5,825,570, Cl. 360-65.000.

Suggitt, Jack A. Crossbow bow string drawing device. 5,823,172, Cl. 124-25.000.

Sugihara, Kazuyuki: *See*—
Maruta, Takayuki; Takashima, Hiroshi; Ishikawa, Tomoji; Sugihara, Kazuyuki; Kato, Shinji; and Kosuge, Katsuhiro, 5,826,146, Cl. 399-235.000.

Sugimoto, Hitoshi: *See*—

Gotoh, Fumihiro; Hirabayashi, Hiromitsu; Kashino, Toshio; Tajika, Hiroshi; Akiyama, Yuji; Sugimoto, Hitoshi; Matsubara, Miyuki; and Kanda, Hidehiko, 5,825,377, Cl. 347-15.000.

Sugimoto, Masaharu; Takahashi, Minoru; Wakamatsu, Hiroaki; and Satou, Hirosi, to Fujitsu Limited. Apparatus for evaluating magnetic recording medium. 5,824,920, Cl. 73-865.800.

Sugimoto, Takashi, to Fujitsu Limited; and Fujitsu VLSI Limited. Data processor having a computing element mounted on a microcontroller. 5,826,099, Cl. 395-800.320.

Sugio, Kenichiro; and Mitoma, Tetsuya, to Oki Electric Industry Co., Ltd. Output buffer circuit. 5,825,215, Cl. 327-108.000.

Sugisawa, Junji; and Cornet, Jean Claude, to Intel Corporation. Boosted differential latch. 5,825,225, Cl. 327-208.000.

Sugiura, Akihiko: *See*—
Inden, Masahiro; Katoh, Yoshiyuki; and Sugiura, Akihiko, 5,823,507, Cl. 251-129.150.

Sugiura, Yoshinori: *See*—
Araki, Ryuji; Sugiura, Yoshinori; Kawaguchi, Hideshi; Miyake, Hiroaki; Nomura, Yoshiya; Matsuda, Kenji; and Miura, Kouji, 5,825,472, Cl. 355-200.000.

Sugiyama, Norio, to Yazaki Corporation. Connector-combined unit case, method of molding thereof, and mold for molding thereof. 5,823,797, Cl. 439-76.100.

Sugiyama, Toshihiro: *See*—
Takenaka, Eiji; Yuasa, Kazuhiro; Endoh, Shuichi; Matsumae, Iwao; Tanaka, Yoshiaki; Hosokawa, Hiroshi; Uno, Mugijiroh; Saitoh, Hiroshi; Sugiyama, Toshihiro; Yamanaka, Tetsuo; Murakami, Eisaku; and Komatsubara, Satoru, 5,826,144, Cl. 399-222.000.

Suh, Dong-Ki; and Jo, Whan-haeng, to SamSung Electronics Co., Ltd. Personal computer with an easy assembly structure. 5,823,644, Cl. 312-223.200.

Suh, Dongwook Drew: *See*—
Statz, Timothy V.; Suh, Dongwook Drew; and Spielberger, Kevin, 5,825,601, Cl. 361-56.000.

Suh, Kyung W.: *See*—
Imeokparia, Daniel D.; Shmidt, Creston D.; and Suh, Kyung W., 5,824,710, Cl. 521-79.000.

Suh, Sang-Wook, to Samsung Electronics Co., Ltd. Water purifier. 5,824,215, Cl. 210-249.000.

Suh, Young-Whan: *See*—
Lee, Ho-Seong; Park, Young-Jun; Kim, Min-Hwan; Moon, Seok-Shik; Cho, Nam-Sun; Shin, Jong-Hyun; Suh, Young-Whan; and Lee, Jung-Ok, 5,824,689, Cl. 514-312.000.

Suhadolc, Elizabeta: *See*—
Kikelj, Danijel; Suhadolc, Elizabeta; Rutar, Alenka; Pecar, Slavko; Puncuh, Alesa; Urleb, Uros; Leskovsek, Vesna; Marc, Gasper; Sollner, Marija; Krbavcic, Ales; Sersa, Gregor; Novakovic, Srdjan; Povsic, Lucka; and Stalc, Anton, 5,824,652, Cl. 514-19.000.

Suhr, Manfred W.: *See*—
Kirchhoff, Kenneth J.; Wolf, Robert J.; Frater, James J.; Suhr, Manfred W.; and Fenske, Lawrence J., 5,823,487, Cl. 248-118.000.

Suk, Young J. Detachable sports equipment bag leg stand. 5,823,489, Cl. 248-96.000.

Suka, Motoshi. Method for recycling waste plastic material containing styrene polymer. 5,824,709, Cl. 521-47.000.

Sullins, Patrick H.; and Sullins, Robert D., to Creative Manufacturing, Inc. Writing board with padded surface. 5,823,574, Cl. 281-45.000.

Sullins, Robert D.: *See*—
Sullins, Patrick H.; and Sullins, Robert D., 5,823,574, Cl. 281-45.000.

Sullivan, Frederick Ballou-Viaux: *See*—
Burns, Clay Allen; Nielsen, Peter Madelaire; Sullivan, John Aloysius; and Sullivan, Frederick Ballou-Viaux, 5,823,543, Cl. 280-11.220.

Sullivan, John: *See*—
Meier, John R.; Sullivan, John; and Mercer, Paul, 5,825,349, Cl. 345-123.000.

Sullivan, John Aloysius: *See*—
Burns, Clay Allen; Nielsen, Peter Madelaire; Sullivan, John Aloysius; and Sullivan, Frederick Ballou-Viaux, 5,823,543, Cl. 280-11.220.

Sullivan, Joseph L.; Borschowa, Lawrence A.; and Nova, Richard C., to Physio-Control Corporation. H-bridge circuit for generating a high-energy biphasic waveform in an external defibrillator. 5,824,017, Cl. 607-5.000.

Sultan Dental Products: *See*—
Stoltz, Edwin I., 5,824,289, Cl. 424-45.000.

Sulzer Carbomedics Inc.: *See*—
Caudillo, Roberto; and Klostermeyer, Tammi, 5,823,342, Cl. 206-438.000.

Suma, Katsuhiro: *See*—
Hidaka, Hideto; Suma, Katsuhiro; and Tsuruda, Takahiro, 5,825,696, Cl. 365-189.090.

Sumio, Hiroshi: *See*—
Washisu, Koichi; Nagata, Toru; Sumio, Hiroshi; and Shikaumi, Masao, 5,826,115, Cl. 396-55.000.

Sumitomo Chemical Company, Limited: *See*—
Satoh, Tomoari; Nakane, Kenji; and Nishida, Yasunori, 5,824,284, Cl. 423-594.000.

Sumitomo Electric Industries, Ltd.: *See*—
Kondoh, Katsuyoshi; and Takano, Yoshishige, 5,824,923, Cl. 75-247.000.
Takata, Kensaku, 5,823,815, Cl. 439-374.000.

Sumitomo Metal Industries, Ltd.: *See*—
Uno, Hideki; Nishiyama, Yoshitaka; Sawaragi, Yoshiatsu; Otsuka, Nobuo; Ogawa, Kazuhiro; and Anraku, Toshiro, 5,824,264, Cl. 420-40.000.

Sumitomo Rubber Industries, Ltd.: *See*—
Yabuki, Yoshikazu; Sano, Yoshinori; and Tanaka, Hiroaki, 5,824,740, Cl. 525-71.000.
Yokota, Masatoshi, 5,824,747, Cl. 525-221.000.

Sumitomo Wiring Systems, Ltd.: *See*—
Higashikozono, Makoto; and Inoue, Hiroshi, 5,824,958, Cl. 174-105.00R.
Katsuma, Takatoshi, 5,824,962, Cl. 174-135.000.
Takata, Kensaku, 5,823,815, Cl. 439-374.000.
Wakata, Shigekazu, 5,823,809, Cl. 439-157.000.

Sumiya, Satoshi: *See*—
Abe, Akira; Yoshida, Kiyohide; Muramatsu, Gyo; Sumiya, Satoshi; Irite, Naoko; and Saito, Mika, 5,824,621, Cl. 502-305.000.

Summerfelt, Scott R., to Texas Instruments Incorporated. Fabricating high-dielectric constant oxides on semiconductors using a GE buffer layer. 5,825,055, Cl. 257-183.000.

Summers, Neil. Muscle exerciser. 5,823,924, Cl. 482-125.000.

Summit Container Corporation: *See*—
Mena, J. Joe; Johnson, Charles F.; Johnson, Carol L.; and Maenpaa, Gustav M., 5,823,352, Cl. 206-721.000.

Sun, Jerry Shunneng: *See*—
Frydman, Benjamin J.; Witiak, Donald T.; Sun, Jerry Shunneng; and Geiser, Andrew H., 5,824,700, Cl. 514-454.000.

Sun Microsystems, Inc.: *See*—
Bishop, Alan; Hamilton, Graham; and Tock, Theron, 5,826,082, Cl. 395-674.000.
Fuller, Billy J., 5,826,005, Cl. 385-183.140.
Gramlich, Wayne C., 5,826,025, Cl. 395-200.470.
Hamilton, Graham, 5,826,000, Cl. 395-182.020.
Klass, Edgardo F.; Poole, David W.; Amir, Chaim; and Heald, Raymond A., 5,825,224, Cl. 327-200.000.
Mastors, Robert N.; and Stillwell, Michael J., 5,826,021, Cl. 395-200.330.
Nielsen, Jakob, 5,826,022, Cl. 395-200.360.
Nielsen, Jakob, 5,826,031, Cl. 395-200.630.
Zolnowsky, John E., 5,826,081, Cl. 395-673.000.

Sun, Qun: *See*—
Harmer, Mark Andrew; and Sun, Qun, 5,824,622, Cl. 502-407.000.

Sun, Tung-Tien, to New York University. Method for expression and isolation of biologically active molecules in urine using a mouse uroplakin-II promoter. 5,824,543, Cl. 435-320.100.

Sunakawa, Haruo: *See*—
Kimura, Akitaka; Sunakawa, Haruo; Nido, Masaaki; and Yamaguchi, Atsushi, 5,825,053, Cl. 257-94.000.

Sunbeam Products, Inc.: *See*—
Myerly, R. M. Scott, 5,823,675, Cl. 366-310.000.

Sundram, Ramesh: *See*—
Schaenzer, Mark J.; Boutaghou, Zine-Eddine; Nagarajan, Subrahmanyan; and Sundram, Ramesh, 5,825,181, Cl. 324-212.000.

Sung, Chae Gee: *See*—
Fukui, Hirofumi; and Sung, Chae Gee, 5,824,572, Cl. 438-158.000.

Sung, Han-Jun: *See*—
Kim, Chul; Han, Yong-Woon; Sung, Han-Jun; and Jang, Seong-Deok, 5,824,999, Cl. 219-74.200.

Sung, Hwan-Ho; and Jeong, Sang-Hoon, to Samsung Electronics, Co., Ltd. Switch-control integrated circuit. 5,825,234, Cl. 327-378.000.

Sunila, Arto Sakari: *See*—
Seppä , Heikki; Varpula, Timo; Sunila, Arto Sakari; and Antola, Janne-Yrjö, 5,824,914, Cl. 73-861.110.

SunLase, Inc.: *See*—
Nunnally, William C., 5,823,474, Cl. 244-134.00E.

Supergen, Inc.: *See*—
Rubinfeld, Joseph; Vida, Julius A.; Bradlow, H. Leon; and Fineman, Elliott L., 5,824,668, Cl. 514-170.000.

Supino, Louis; and Romano, Paul M., to Cirrus Logic, Inc. Sliding mode control of a disk drive actuator for positioning a read/write head over a selected track during seeking and tracking operations. 5,825,582, Cl. 360-78.060.

Supko, Jeffrey G.: *See*—
Malspeis, Louis; Vishnuvajjala, B. Rao; Supko, Jeffrey G.; and Kane, Charles Theodore, Jr., 5,824,674, Cl. 514-211.000.

Suppelsa, Anthony J.: *See*—
Shaw, Michael F.; Suppelsa, Anthony J.; and Jones, Richard W., 5,823,316, Cl. 198-341.000.

Surma, Jeffrey E.: *See*—
Cohn, Daniel R.; Woskov, Paul; Titus, Charles H.; and Surma, Jeffrey E., 5,825,485, Cl. 356-316.000.

Surma, Terrance: *See*—
Leyden, Roger J.; Surma, Terrance; and Kelsch, Christopher, 5,823,358, Cl. 211-8.000.

Surnilla, Gopichandra: *See*—
Farmer, David George; Surnilla, Gopichandra; and Orzel, Daniel V., 5,823,171, Cl. 123-704.000.

Susaki, Makoto: *See*—
Tatani, Atsushi; Susaki, Makoto; Kimura, Kazuaki; Shimizu, Taku; Sera, Toshikuni; and Inoue, Kenji, 5,824,273, Cl. 422-171.000.

Sutherland, Colin A. Electrostatic shock prevention device for use in vehicles. 5,825,605, Cl. 361-216.000.

Suwa, Kyoichi, to Nikon Precision Inc. Focusing and tilting adjustment system for lithography aligner, manufacturing apparatus or inspection apparatus. 5,825,043, Cl. 250-548.000.

Suzuki, Akira: *See*—
Agata, Hiromichi; Minatani, Yoshihiko; Suzuki, Akira; and Hotta, Yutaka, 5,825,146, Cl. 318-439.000.

Suzuki, Hiroshi, to Niles Parts Co., Ltd. Waterproof case for switch. 5,824,981, Cl. 200-302.100.

Suzuki, Hiroyuki. Connection body's fitting connection structures and sockets structures to hold an electric bulb. 5,823,829, Cl. 439-668.000.

Suzuki, Hiroyuki: *See*—
Ohnishi, Akiyoshi; Mekada, Machiko; Hata, Noriaki; Suzuki, Hiroyuki; and Morikawa, Hiroyuki, 5,824,722, Cl. 524-99.000.

Suzuki Kabushiki Kaisha: *See*—
Yoshimura, Masaaki, 5,822.985, Cl. 60-302.000.

Suzuki, Kaori: *See*—
Hirota, Katsuhiko; Kamada, Hiroshi; Suzuki, Kaori; Tada, Atsuko; Yumoto, Asako; Kasai, Satoshi; and Shibata, Kazumi, 5,825,365, Cl. 345-433.000.

Suzuki, Katsunori: *See*—
Mukoyama, Takahide; Ozawa, Fujio; Inoue, Takashi; Suzuki, Katsunori; Tsuruoka, Yasutaka; Hirao, Mieko; and Mori, Kozo, 5,825,635, Cl. 361-826.000.

Suzuki, Katsuyoshi: *See*—
Asai, Tamotsu; Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, 5,825,985, Cl. 395-108.000.

Suzuki, Makoto; and Sakai, Masaki, to NSK-Warner Kabushiki Kaisha. Wet frictional engagement plate. 5,823,314, Cl. 192-107.00M.

Suzuki, Makoto; and Takagi, Kazuhiko, to Brother Kogyo Kabushiki Kaisha. Fixing unit and heat roller for fixing unit. 5,826,152, Cl. 399-330.000.

Suzuki, Masahiko: *See*—
Kadota, Shigeru; Furukawa, Takashi; Kawaguchi, Kiyoshi; Suzuki, Masahiko; and Yamada, Kenji, 5,823,248, Cl. 165-104.330.

Suzuki, Masashi; and Itoh, Takashi, to Kabushiki Kaisha TEC. Handle like reading unit for use in code reading apparatus and having plural light reflectors and direct light shielding plate. 5,825,011, Cl. 235-472.000.

Suzuki, Masatoshi; Futsuhara, Koichi; and Sakai, Masayoshi, to Kao Corporation; and Nippon Signal Co., Ltd., The. Drive control apparatus for a rotating machine. 5,825,144. Cl. 318-434.000.

Suzuki, Minoru: *See*—
Asai, Tamotsu; Suzuki, Minoru; Negishi, Kiyoshi; Kawamura, Katsumi; Horie, Mikio; Orita, Hiroshi; and Suzuki, Katsuyoshi, 5,825,985, Cl. 395-108.000.

Suzuki Motor Company: *See*—
Matsuo, Takashi, 5,823,628, Cl. 297-475.000.

Suzuki, Nobukazu: *See*—
Ohba, Michio; Iwahana, Hidenori; Sato, Ryoichi; Suzuki, Nobukazu; Ogiwara, Katsutoshi; Sakanaka, Kazunobu; Hori, Hidetaka; Asano, Shouji; and Kawasugi, Tadaaki, 5,824,878, Cl. 800-205.000.

Suzuki, Nobuya, to Sanyo Electric Co., Ltd. Region-based image processing method, image processing apparatus and image communication apparatus. 5,825,917, Cl. 382-164.000.

Suzuki, Norio: *See*—
Yamada, Yoshiki; and Suzuki, Norio, 5,825,433, Cl. 348-584.000.

Suzuki, Ryoichi, to Canon Kabushiki Kaisha. Camera using solar battery. 5,825,157, Cl. 320-30.000.

Suzuki, Takashi: *See*—
Ookawa, Eiichi; Nishida, Hiroto; Suzuki, Takashi; Watanabe, Hitoshi; and Sasaki, Toshiaki, 5,825,738, Cl. 369-77.200.

Suzuki, Takayuki: *See*—
Tomioka, Makoto; Hasegawa, Akira; Matsumoto, Shinya; and Suzuki, Takayuki, 5,823,943, Cl. 600-178.000.

Suzuki, Tomoko; Yoshida, Takayuki; Kotoh, Satoru; Ishikawa, Hiroaki; Jojima, Kazunobu; Akiyama, Itsutarou; Matsushita, Akihiro; and Kabuki, Masataka, to Mitsubishi Denki Kabushiki Kaisha. Blowoff orifice. 5,823,009, Cl. 62-410.000.

Svetlov, Vladimir Grigorievitch: *See*—
Arkhangelsky, Ivan Ivanovitch; Bolotov, Eugène Gueorguevitch; Philippov, Vladimir Sergueevitch; Mizrokhi, Vladimir Yakovlevitch; Svetlov, Vladimir Grigorievitch; Stanevsky, Gregory Andreevitch; Khitenkov, Serge Grigorievitch; Gaidoukevitch, Victor Leonidovitch; and Chmikov, Eugène Afanassievitch, 5,823,469, Cl. 244-3.220.

Swain, Christopher John: *See*—
Harrison, Timothy; Owens, Andrew Pate; and Swain, Christopher John, 5,824,678, Cl. 514-237.800.

Swain, Richard L.: *See*—
Dunn, Dennis C.; and Swain, Richard L., 5,825,954, Cl. 385-79.000.

Swaluk, Michael Y.: *See*—
Bator, Feliks; Berson, William; Campo, John L.; Lawton, Kathryn V.; Obrea, Andrei; Swaluk, Michael Y.; and Weiant, Monroe A., Jr., 5,826,246, Cl. 705-403.000.

Swan, Geoff: *See*—
Guo, Yifan; Bonda, Rao; and Swan, Geoff, 5,825,093, Cl. 257-782.000.

Swan, Jimmy G.: *See*—
McBrayer, Roy N., Jr.; Swan, Jimmy G.; and Barber, John S., 5,823,220, Cl. 137-13.000.

Swanberg, Randal Craig: *See*—
Mealey, Bruce Gerard; Swanberg, Randal Craig; and Williams, Michael Stephen, 5,826,090, Cl. 395-712.000.

Swanick, Tom: *See*—
Karwoski, Theodore; Martakos, Paul; Gingras, Peter; Herweck, Steve A.; and Swanick, Tom, 5,824,050, Cl. 623-1.000.

Swartz, Jerome, to Symbol Technologies, Inc. Method and appratus for reading and writing indicia such as bar codes using a scanned laser beam. 5,825,402, Cl. 347-251.000.

Sweet, Gregory Eugene; and Vassilatos, George, to Du Pont de Nemours, E. I., and Company. Spinning polymeric filaments. 5,824,248, Cl. 264-211.140.

Sweet, Thomas A.: *See*—
Henderson, Thomas A.; Sweet, Thomas A.; and Schoen, Joel A., 5,823,693, Cl. 400-611.000.
Wiklof, Christopher A.; Sweet, Thomas A.; and Miazga, Jay Michael, 5,825,995, Cl. 395-117.000.

Sweitzer, Barbara E.: *See*—
Sweitzer, Bruce K.; and Sweitzer, Barbara E., 5,823,175, Cl. 126-34.000.

Sweitzer, Bruce K.; and Sweitzer, Barbara E. Thermal protective barrier. 5,823,175, Cl. 126-34.000.

Swenson, Dale R.: *See*—
Roark, Michael A.; Searles, James A.; Swenson, Dale R.; Downey, Phillip; and Stonecipher, Scott W., 5,823,069, Cl. 74-551.900.

Swett, James Elms, Jr.: *See*—
Biche, Barton A.; Nyberg, Eric David; and Swett, James Elms, Jr., 5,824,954, Cl. 174-74.00A.

Swiatowy, Jeffrey; and Ferrar, Scott, to E. H. Wachs Company, The. Tubular casing cutter. 5,823,255, Cl. 166-55.100.

Swift, Craig: *See*—
Chen, Wei-Ming; Wang, Lee Z.; Chang, Kuo-Tung; and Swift, Craig, 5,824,584, Cl. 438-267.000.

Swift, Daniel P.; LaCroix, Thomas R.; Bullock, William E.; and Frobish, Dennis L. Bicycle inclinometer. 5,825,665, Cl. 364-559.000.

Swimmer, Candace; Shyjan, Anne; Leonardo, David; Zhang, Yuan; Kennedy, Timothy; Serafini, Tito; and Tessier-Lavigne, Marc, to University of California, The Regents of the. Human netrin-1. 5,824,775, Cl. 530-350.000.

Swithenbank, Joshua, to Cabot Corporation. Apparatus and method for burning combustible gases. 5,823,759, Cl. 431-5.000.

Syed, Ali N.; and Ahmad, Kaleem. Composition for decreasing combing damage and methods. 5,824,295, Cl. 424-70.400.

Syldath, Andreas: *See*—
Kischkel, Ditmar; Schmid, Karl; Syldath, Andreas; and Krohnen, Thomas, 5,824,633, Cl. 510-349.000.

Symantec Corporation: *See*—
Nachenberg, Carey S., 5,826,013, Cl. 395-186.000.

Symbol Technologies, Inc.: *See*—
Bhargava, Vikram; Kehoe, Timothy; and Stratienco, Daniela, 5,823,812, Cl. 439-345.000.
Charych, Hal; Osterweil, Stephen; and Kumar, Sundeep, 5,825,010, Cl. 235-472.000.
Dvorkis, Paul; Shepard, Howard; Bard, Simon; Katz, Joseph; and Barkan, Edward, 5,825,013, Cl. 235-472.000.
Roslak, Thomas, 5,825,002, Cl. 235-375.000.
Swartz, Jerome, 5,825,402, Cl. 347-251.000.

Symetrix Corporation: *See*—
Watanabe, Hitoshi; Paz De Araujo, Carlos A.; Yoshimori, Hiroyuki; Scott, Michael C.; Mihara, Takashi; Cuchiaro, Joseph D.; and McMillan, Larry D., 5,825,057, Cl. 257-295.000.

Synapse Pharmaceuticals International, Inc.: *See*—
Viner, Norman, 5,824,684, Cl. 514-291.000.

Synkinetics, Inc.: *See*—
Schechter, Stuart E., 5,823,049, Cl. 74-25.000.

Syntex (U.S.A.) Inc.: *See*—
Borden, Paula Ann; and Heller, Renu Anand, 5,824,794, Cl. 536-24.100.

Synthetic Blood International, Inc.: *See*—
Clark, Leland C., Jr., 5,824,703, Cl. 514-461.000.

Syracuse University: *See*—
DeBord, Jeffrey Robert Douglas; Haushalter, Robert C.; and Zhang, Yiping, 5,824,813, Cl. 556-28.000.
Zwislocki, Jozef J., 5,824,967, Cl. 181-130.000.

SySTemix, Inc.: *See*—
Van Den Berg, David John, 5,824,789, Cl. 536-23.500.

Szalay, Andreas, to Yamaha Corporation; and Blue Chip Music GmbH. Signal analysis device having at least one stretched string and one pickup. 5,824,937, Cl. 84-654.000.

Szczesny, David Stanley; Pauza, William V.; and Fetterolf, James Ray, Sr., to Whitaker Corporation, The. Method of making electrical connector having a two part articulated housing. 5,822,855, Cl. 29-883.000.

Szuma, Liang: *See*—
Liu, Hsiang; Chung, Chien-Ming; Szuma, Liang; and Wang, Ding-Shan, 5,824,457, Cl. 430-394.000.

Szykman, Simon: *See*—
Cagan, Jonathan; Kolli, Ashish; Szykman, Simon; and Rutenbar, Robin, 5,825,660, Cl. 364-491.000.

Szymanski, Victoria Claire: *See*—
Deckner, George Endel; Rinaldi, Marie Antoinette; and Szymanski, Victoria Claire, 5,824,666, Cl. 514-152.000.

T.A.M.I. Industries: *See*—
Grangeon, André; and Lesconche, Philippe, 5,824.220, Cl. 210-490.000.

T & T Fixings Limited: *See*—
Kinsella, Thomas, 5,822,941, Cl. 52-506.050.

Tabas, Linda B.: *See*—

Bright, Stuart W.; Dantzig, Anne H.; Tabas, Linda B.; and Sportsman, J. Richard, 5,824,510, Cl. 435-70.210.

Tabata, Seiichiro; and Iba, Yoichi, to Olympus Optical Company, Ltd. Stereoscopic video display apparatus. 5,825,456, Cl. 351-201.000.

Tabata, Tetsuro: *See*—
Shimizu, Toshihiro; Tabata, Tetsuro; and Kikuta, Junichi, 5,824,339, Cl. 424-466.000.

Tabone, John C.: *See*—
Petrie, Charles R.; Meyer, Rich B.; Tabone, John C.; and Hurst, Gerald D., 5,824,796, Cl. 536-26.700.

Tachibana, Matsuo: *See*—
Kitamura, Junichi; Tachibana, Matsuo; Fujiwara, Koji; Fujiwara, Osami; Samejima, Kazuo; Miyata, Junji; Togoshi, Yoshikazu; Tsuchihashi, Hironori; and Esaki, Yoshiyuki, 5,822,960, Cl. 56-7.000.

Tachihara, Satoru: *See*—
Oono, Masahiro; Sonoda, Tunehiko; Tachihara, Satoru; and Maruyama, Koichi, 5,825,555, Cl. 359-668.000.

Tachihara, Shinji: *See*—
Shingu, Jyunichi; Morita, Katsuyuki; Toyoda, Toshihiro; Tachihara, Shinji; Motai, Kojiro; and Kishi, Satoru, 5,824,178, Cl. 156-265.000.

Tachihata, Tetsuya: *See*—
Izumi, Tomoji; Tachihata, Tetsuya; and Edahiro, Takeshi, 5,826,210, Cl. 701-70.000.

Tachikawa, Yuuichi: *See*—
Nishida, Jun; Kikuiri, Nobutaka; and Tachikawa, Yuuichi, 5,825,730, Cl. 369-44.320.

Tada, Atsuko: *See*—
Hirota, Katsuhiko; Kamada, Hiroshi; Suzuki, Kaori; Tada, Atsuko; Yumoto, Asako; Kasai, Satoshi; and Shibata, Kazumi, 5,825,365, Cl. 345-433.000.

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Thompson, Leo J.; and Anemogiannis, Emmanuel, to VeriFiber Technologies, Inc. Apparatus for detecting fibers with different dispersion characteristics and method. 5,825,479, Cl. 356-73.100.

Thompson, Leo J.: *See—*
Jelinek, Catherine W.; Kruse, Herman A.; Al-Khalil, Munther A.; and Thompson, Leo J., 5,826,167, Cl. 455-5.100.

Thompson, Michael H.: *See—*
Jennings, Horton; Pinnell, Nigel; Do, Khanh; Shah, Virendrakumar; Profumo, Marjorie; Downing, John; Goodhand, Neil; Maino, Marion; and Thompson, Michael H., 5,825,003, Cl. 235-379.000.

Thompson, Scott P. to DFM Corporation. Running board accessory with flap seal. 5,823,553, Cl. 280-164.100.

Thompson, Scott P.: *See—*
Stanesic, John M.; and Thompson, Scott P., 5,823,601, Cl. 296-41.000.

Thomson Consumer Electronics: *See—*
Zdepski, Joel Walter; and Page, Howard Geza, 5,825,884, Cl. 380-25.000.

Thomson Consumer Electronics, Inc.: *See—*
Canfield, Barth Alan; Lam, Wai-Man; and Beyers, Billy Wesley, Jr., 5,825,424, Cl. 348-416.000.
Mullis, Phillip Russell, 5,825,413, Cl. 348-155.000.
Shutts, Bruce Wayne, 5,825,638, Cl. 363-21.000.

Thomson Consumer Electronics, S.A.: *See—*
Harrison, David; and Fujimoto, Masahiro, 5,825,554, Cl. 359-652.000.

Thomson-CSF: *See—*
Arkhangelsky, Ivan Ivanovitch; Bolotov, Eugène Gueorguevitch; Philippov, Vladimir Sergueevitch; Mizrokhi, Vladimir Yakovlevitch; Svetlov, Vladimir Grigorievitch; Stanevsky, Gregory Andreevitch; Khitenkov, Serge Grigorievitch; Gaidoukevitch, Victor Leonidovitch; and Chmikov, Eugène Afanassievitch, 5,823,469, Cl. 244-3.220.
Vigier, Alain, 5,826,231, Cl. 704-262.000.

Thong, Tran; Digby, Dennis; and Schaldach, Max, to Biotronik Mess- und Therapiegeraete GmbH & Co. Ingenieurburero Berlin. Medical therapy device producing a variable therapy in response to measured sensor values corrected with temporal fluctuation values. 5,824,014, Cl. 607-4.000.

Thor Chemie GmbH: *See—*
Baum, Rüdiger, 5,824,695, Cl. 514-372.000.

Thorndyke, Earl Clare, Jr.: *See—*
Semler, James Russell; and Thorndyke, Earl Clare, Jr., 5,825,326, Cl. 342-357.000.

Thorne, David L., to Specialized Health Products, Inc. Medical needle safety apparatus and methods. 5,823,997, Cl. 604-110.000.

Thornton, Gerry F.: *See—*
Demshki, Robert J., Jr.; and Thornton, Gerry F., 5,823,664, Cl. 362-366.000.

Three Bond Co., Ltd.: *See—*
Mikuni, Hiroyuki; and Nishiyama, Yuko, 5,824,180, Cl. 156-275.300.

Thüer, Markus; Stucki, Gerhard; and Reisinger, Michael, to Ciba Specialty Chemicals Corporation. Water purification process. 5,824,221, Cl. 210-605.000.

Thule GmbH: *See—*
Grönwoldt, Rolf; Deisenhofer, Siegfried; and Hirtsiefer, Artur, 5,823,411, Cl. 224-328.000.

Tickner, Jerold A., to Transition Lighting, Inc. Tubular fluorescent lamp tool. 5,823,073, Cl. 81-53.110.

Tielens, Craig R.: *See—*
Warrior, Jogesh; Jacobson, Vincent C.; Orth, Kelly M.; Tielens, Craig R.; and Lanctot, Jane Barbara, 5,825,664, Cl. 364-550.000.

Tiemann, Jerome Johnson: *See—*
Hershey, John Erik; and Tiemann, Jerome Johnson, 5,825,808, Cl. 375-200.000.

Time Warner Entertainment Co. L.P.: *See—*
Bren, Pavel; and Mallette, William V., 5,825,850, Cl. 379-26.000.

Timeplex, Inc.: *See—*
Putnins, Zigmunds Andis; Koepper, Richard; and Balasubramania, Adoor V., 5,825,779, Cl. 370-477.000.

Timex Corporation: *See—*
Kennedy, Amelia, 5,823,409, Cl. 224-175.000.

Timmer, Jan, to U.S. Philips Corporation. Correction for ring-like image artefacts. 5,825,841, Cl. 378-4.000.

Ting, Annsheng C.: *See—*
Macrae, Kenneth I.; Ting, Annsheng C.; Edholm, Ragnar W.; Worth, Erik; Sigmon, Robert B., Jr.; Matsumoto, Toshikazu; and Ho, Chung-Jen, 5,826,237, Cl. 705-2.000.

Ting, Chiu H.: *See—*
Schacham-Diamand, Yosef; Dubin, Valery M.; Ting, Chiu H.; Zhao, Bin; Vasudev, Prahalad K.; and Desilva, Melvin, 5,824,599, Cl. 438-678.000.

Tinkers & Chance: *See—*
Marcus, Brian I.; and Heit, Warren S., 5,823,782, Cl. 434-156.000.

Tipping, Peter G.; and Wun, Tze-Chein, to G. D. Searle & Co. Method of inhibiting glomerulonephritis. 5,824,660, Cl. 514-56.000.

Tipton Corp.: *See—*
Kobayashi, Hisamine; Izuhara, Katsuhiro; and Fujishiro, Akihito, 5,823,861, Cl. 451-326.000.

Tischer, Werner: *See—*
Köhler, Burkhard; Tischer, Werner; and Meyer, Rolf-Volker, 5,824,741, Cl. 525-73.000.

Tisdale, Stephen L.: *See—*
Foster, Elizabeth F.; Hedrick, Jeffrey C.; Japp, Robert M.; Papathomas, Konstantinos; Tisdale, Stephen L.; and Viehbeck, Alfred, 5,824,157, Cl. 118-419.000.

Tisenko, Victor Nikolaevich: *See—*
Elkind, Alexander; MacFarlane, James; Krymsky, Mark; Tisenko, Victor Nikolaevich; Shneerson, German Abramovich; Korolev, Vyacheslav Semenovich; Krivosheev, Sergey Ivanovich; Nenashev, Alexey Pavlovich; and Vasilevskiy, Vladimir Markovich, 5,823,354, Cl. 209-212.000.

Titus, Charles H. Electronic ballasts for plural lamp fluorescent lighting without feedback circuitry. 5,825,137, Cl. 315-291.000.

Titus, Charles H.: *See—*
Cohn, Daniel R.; Woskov, Paul; Titus, Charles H.; and Surma, Jeffrey E., 5,825,485, Cl. 356-316.000.

Titus, John; and Meyer, Paul R., to Perception Incorporated. Absolute linear encoder and method of production utilizing index and counter channels. 5,825,307, Cl. 341-13.000.

TOA Medical Electronics Co., Ltd.: *See—*
Furuie, Dai, 5,825,477, Cl. 356-72.000.
Kosaka, Tokihiro; Nakamoto, Hiroyuki; and Kubota, Fumio, 5,824,269, Cl. 422-73.000.

Toavs, Coy Vann: *See—*
Shouldice, David; and Toavs, Coy Vann, 5,824,881, Cl. 73-19.100.

Toba, Taturu: *See—*
Ogata, Yasuhiro; Nakagoshi, Junji; Hamanaka, Naoki; Chiba, Hiroyuki; Shutoh, Shinichi; Higuchi, Tatsuo; Takeuchi, Shigeo; Toba, Taturu; and Tanaka, Teruo, 5,826,049, Cl. 395-311.000.
Shutoh, Shin'ichi; Nakagoshi, Junji; Hamanaka, Naoki; Chiba, Hiroyuki; Higuchi, Tatsuo; Takeuchi, Shigeo; Ogata, Yasuhiro; and Toba, Taturu, 5,825,773, Cl. 370-398.000.

Tobias, John S.: *See—*
Bellantoni, John V.; and Tobias, John S., 5,823,791, Cl. 439-63.000.

Tobita, Youichi: *See—*
Okimoto, Hiromi; Hayashikoshi, Masanori; and Tobita, Youichi, 5,825,694, Cl. 365-189.060.

Tobler, Karl: *See—*
Lodetti, Attilio; Etter, Hansjürg; and Tobler, Karl, 5,824,985, Cl. 219-69.120.

Toccoa Metal Technologies, Inc.: *See—*
Veldman, Russell; and Becvar, Thomas A., 5,823,728, Cl. 414-510.000.

Tochigi Fuji Sangyo Kabushiki Kaisha: *See—*
Teraoka, Masao; Wakaizumi, Takayuki; and Schoeberle, John J., 5,823,907, Cl. 475-248.000.

Tock, Theron: *See—*
Bishop, Alan; Hamilton, Graham; and Tock, Theron, 5,826,082, Cl. 395-674.000.

Todd, Mark D., to Todd, Mark D. Process for crimping and tattooing hair. 5,823,204, Cl. 132-208.000.

Tode, Hiroyoshi: *See—*
Ochiai, Eiji; Hamaguchi, Makoto; and Tode, Hiroyoshi, 5,824,445, Cl. 430-106.600.

Togashi, Akio: *See—*
Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, 5,824,224, Cl. 210-651.000.

Togashi, Hiroshi: *See—*
Sudo, Morihiro; and Togashi, Hiroshi, 5,823,373, Cl. 215-249.000.

Togoshi, Yoshikazu: *See—*
Kitamura, Junichi; Tachibana, Matsuo; Fujiwara, Koji; Fujiwara, Osami; Samejima, Kazuo; Miyata, Junji; Togoshi, Yoshikazu; Tsuchihashi, Hironori; and Esaki, Yoshiyuki, 5,822,960, Cl. 56-7.000.
Tsuchihashi, Hironori; Togoshi, Yoshikazu; Fujiwara, Osami; Shimamura, Teruo; Matsui, Akio; Umemoto, Hideya; Chujo, Kenichi; and Bando, Niro, 5,823,285, Cl. 180-242.000.

Tohanczyn, Edward, Jr. Apparatus for securing an electrical outlet to an outlet box having stripped threads. 5,823,821, Cl. 439-538.000.

Tohya, Kenichi: *See—*
Kudoh, Hiroshi; Tohya, Kenichi; and Urabe, Masanobu, 5,825,333, Cl. 343-781.00R.

Toida, Masahiro, to Fuji Photo Film Co., Ltd. Endoscope with surface and deep portion imaging systems. 5,823,942, Cl. 600-160.000.

Tokai Rubber Industries, Ltd.: *See—*
Kawasaki, Minoru, 5,823,231, Cl. 138-109.000.

Tokarski, Michael G.; Miller, C. Daniel; and Robichaud, Arthur W., to Combibloc, Inc. Push-tab hinge for a container closure apparatus. 5,823,420, Cl. 229-125.040.

Toko Kabushiki Kaisha: *See—*
Kasahara, Takeshi, 5,825,075, Cl. 257-596.000.

Tokunaga, Hiroshi: *See—*
Horii, Shinichi; and Tokunaga, Hiroshi, 5,826,149, Cl. 399-240.000.

Tokunaga, Ken: *See—*
Saiso, Kenichi; and Tokunaga, Ken, 5,824,955, Cl. 174-88.00R.

Tokura, Shigeko; and Tanaka, Kumiko, to Jumbo Tokura Co. Ltd. Clothing capable of exposing inside thereof. 5,822,793, Cl. 2-69.000.

Tokyo Electron Kyushu Limited: *See—*
Hasebe, Keizo; Nagashima, Shinji; Semba, Norio; Akimoto, Masami; Kimura, Yoshio; Iida, Naruaki; Harada, Kouji; Ueda, Issei; and Konishi, Nobuo, 5,826,129, Cl. 396-611.000.
Tanaka, Hideya; Morioka, Norimitsu; and Yoshihara, Kosuke, 5,826,130, Cl. 396-611.000.

Tokyo Electron Limited: *See—*
Hagihara, Junichi, 5,825,192, Cl. 324-757.000.
Hasebe, Keizo; Nagashima, Shinji; Semba, Norio; Akimoto, Masami; Kimura, Yoshio; Iida, Naruaki; Harada, Kouji; Ueda, Issei; and Konishi, Nobuo, 5,826,129, Cl. 396-611.000.
Iino, Shinji; and Hayakawa, Noboru, 5,825,500, Cl. 356-394.000.
Tanaka, Hideya; Morioka, Norimitsu; and Yoshihara, Kosuke, 5,826,130, Cl. 396-611.000.

Tolrud, Michael R.; Dunham, Matthew K.; and Klinefelter, Gary M., to Fargo Electronics, Inc. Optical registration system for label printer cutter attachment. 5,823,692, Cl. 400-582.000.

Tolstoshev, Paul; Harvey, Richard; Courtney, Michael; and LeCocq, Jean-Pierre, to Transgene S.A. Vectors, transformed cells and process for the preparation of hirudin. 5,824,505, Cl. 435-69.200.

Tomasini, Luciano; Castello, Rinaldo; Clerici, Giancarlo; and Bietti, Ivan, to SGS-Thomson Microelectronics S.r.l. Operational amplifier having an adjustable frequency compensation. 5,825,250, Cl. 330-292.000.

Tomat, Ferruccio: *See—*
Bordignon, Giuseppe; Tomat, Ferruccio; Danielsson, Kurt Lennart; and Lavaroni, Giorgio, 5,823,456, Cl. 242-362.000.

Tomida, Koumei: *See—*
Kawauchi, Kenichi; Yokose, Taro; Koshi, Yutaka; Tomida, Koumei; and Hashimoto, Eiri, 5,825,314, Cl. 341-67.000.

Tomida, Yoshikazu: *See—*
Kimura, Kazuhiro; Hayashibe, Shigeaki; Ozawa, Toshiyuki; Hiramatsu, Tatsuo; and Tomida, Yoshikazu, 5,825,888, Cl. 380-49.000.

Tomioka, Makoto; Hasegawa, Akira; Matsumoto, Shinya; and Suzuki, Takayuki, to Olympus Optical Co., Ltd. Light source device for endoscopes. 5,823,943, Cl. 600-178.000.

Tomita, Hiroyoshi, to Fujitsu Limited. Semiconductor memory device having p-channel field effect transistor to drive word line. 5,825,703, Cl. 365-204.000.

Tomiyasu, Kazuhiro, to Kabushiki Kaisha Yaskawa Denki. Industrial robot. 5,823,061, Cl. 74-490.030.

Tomlinson, Franklin D.: *See—*
Bell, James S.; and Tomlinson, Franklin D., 5,823,818, Cl. 439-482.000.

Tomoegawa Paper Co., Ltd.: *See—*
Sakumoto, Yukinori; Yokoyama, Shigeyuki; Shibuya, Akihiro; and Koshimura, Atsushi, 5,824,182, Cl. 156-300.000.

Tomotsu, Norio: *See—*
Naganuma, Shoji; and Tomotsu, Norio, 5,824,753, Cl. 526-82.000.

Tomy Seiko Co., Ltd.: *See—*
Fujishiro, Masatoshi; Togashi, Akio; Tani, Youichiro; and Ishii, Takamaro, 5,824,224, Cl. 210-651.000.

Tonegawa, Nobuyuki: *See—*
Ogasawara, Yutaka; Ando, Hirotake; Miyashita, Akira; and Tonegawa, Nobuyuki, 5,825,729, Cl. 369-44.270.

Tong, Franklin Fuk-Kay: *See—*
Choy, Michael M.; Green, Paul Eliot, Jr.; Hall, William Eric; Janniello, Frank James; Kravitz, Jeff Kenneth; Liu, Karen; Ramaswami, Rajiv; and Tong, Franklin Fuk-Kay, 5,825,949, Cl. 385-24.000.

Tonomoto, Yoshihiro: *See—*
Hino, Toshio; and Tonomoto, Yoshihiro, 5,826,134, Cl. 399-27.000.

Tonon, Thomas. Keyed free-reed instruments scope. 5,824,927, Cl. 84-375.000.

Tools for Bending, Inc.: *See—*
Campbell, Larry D.; Demartelaere, Gary; and Stange, Ronald R., 5,823,031, Cl. 72-58.000.

Topf, Martin: *See—*
Andrea, Douglas; and Topf, Martin, 5,825,897, Cl. 381-71.600.

Tor, Peng-Seng; Kiat-Hup, Joey Ng; and Lwee, Nai-Hock, to Thomas & Betts Corporation. Single-sided, straddle mount printed circuit board connector. 5,823,799, Cl. 439-79.000.

Toray Industries, Inc.: *See—*
Kobayashi, Hirofumi; Nagayasu, Tadahito; and Himeno, Nagafumi, 5,823,014, Cl. 66-178.00R.

Sakai, Hidetoshi; Hiratsuka, Motoki; Watanabe, Akihiko; and Yamada, Motonobu, 5,824,410, Cl. 428-361.000.

Torii, Katsuhiko; Yamamura, Kengo; and Ikeya, Mitsuhiro, to Asmo Co., Ltd. Mobile member position detection apparatus. 5,823,905, Cl. 475-149.000.

Torizuka, Masami; Muracka, Yoshiro; and Nakamura, Renshi, to Sony Corporation. Head-mounted image display apparatus. 5,825,340, Cl. 345-8.000.

Tornier SA: *See—*
Fournol, Stéphane, 5,824,106, Cl. 623-21.000.

Torrekens, Daniel Octaaf Ghislain. Tightening spanner. 5,823,075, Cl. 81-57.390.

Tortorello, Anthony J., to DSM N.V. Radiation curable composition comprising an urethane oligomer having a polyester backbone. 5,825,959, Cl. 385-128.000.

Tosaka, Hiroaki; Nomura, Koji; Kuboyama, Katsunori; Takahashi, Tatsunori; and Ikeda, Fumiyuki, to Fuji Electric Co., Ltd. Overcurrent trip device. 5,825,602, Cl. 361-94.000.

Toshiba America Information Systems, Inc.: *See—*
Astarabadi, Shaun, 5,825,855, Cl. 379-67.000.

Toshiba Micro-Electronics Corporation: *See—*
Asano, Masamichi; Iwahashi, Hiroshi; Kirisawa, Ryouhei; Nakayama, Ryozo; Inoue, Satoshi; Shirota, Riichiro; Endoh, Tetsuo; and Masuoka, Fujio, 5,824,583, Cl. 438-258.000.

Toshiba Silicone Co., Ltd.: *See—*
Inada, Minoru; Imajo, Yasutaka; and Uchino, Masahide, 5,823,210, Cl. 134-105.000.

Total: *See—*
Delwiche, Robert; and Besson, Alain, 5,823,277, Cl. 175-428.000.

Totsuka, Mitsuhiko, to Yazaki Corporation. Fusible link. 5,825,274, Cl. 337-190.000.

Towler, Michael John: *See—*
Hughes, Jonathan R.; Scattergood, David Charles; and Towler, Michael John, 5,825,344, Cl. 345-101.000.

Toya, Masaaki: *See—*
Otobe, Tetsuro; Matsumoto, Hiroshi; Sasaki, Kazuhiro; Okumura, Kazumasa; Sato, Kazuo; and Toya, Masaaki, 5,823,547, Cl. 280-30.000.

Toyoda Gosei Co., Ltd.: *See—*
Hayashi, Itsuki; Ushida, Yoshio; and Uchida, Sadao, 5,824,407, Cl. 428-318.800.

Toyoda, Hisashi; Yokoyama, Minoru; Kenmochi, Toshio; Ezumi, Yosuke; and Yamada, Masakatsu, to Canon Kabushiki Kaisha. Image communication apparatus. 5,825,505, Cl. 358-400.000.

Toyoda Koki Kabushiki Kaisha: *See—*
Kato, Hideya, 5,822,988, Cl. 60-468.000.

Toyoda, Osamu: *See—*
Betsui, Keiichi; Fukuta, Shin'ya; Kosaka, Tadayoshi; Namiki, Fumihiro; Toyoda, Osamu; and Kasahara, Shigeo, 5,825,128, Cl. 313-582.000.

Toyoda, Toshihiro: *See—*
Shingu, Jyunichi; Morita, Katsuyuki; Toyoda, Toshihiro; Tachihara, Shinji; Motai, Kojiro; and Kishi, Satoru, 5,824,178, Cl. 156-265.000.

Toyota Jidosha Kabushiki Kaisha: *See—*
Hoshi, Koichi, 5,823,163, Cl. 123-336.000.
Ikeda, Shinji, 5,822,983, Cl. 60-284.000.
Kawamuro, Junji, 5,823,090, Cl. 91-375.00A.
Mitsutani, Noritake, 5,822,982, Cl. 60-276.000.
Miyamoto, Noritaka; Onishi, Masazumi; Fujiwara, Yasuyuki; Tanaka, Toshiaki; Sawamura, Masatoshi; and Danno, Atsushi, 5,824,168, Cl. 148-573.000.
Muramatsu, Hiroaki, 5,823,157, Cl. 123-184.560.
Seki, Masato; and Kitamura, Takamasa, 5,823,164, Cl. 123-396.000.

Toyota Jidosha Kabushiki Kaisha & Kabushiki Kaisha Toyota Chuo Kenkyusho: *See—*
Ohashi, Hideki; Kawai, Hiroyuki; Kojima, Hiroyoshi; Asano, Katsuhiro; Umeno, Takaji; Naito, Toshiharu; Onogi, Nobuyoshi; and Inoue, Yuuichi, 5,826,207, Cl. 701-36.000.

Toyota Jidosha Kabushiki Kaishi: *See—*
Mita, Tsuneo; Shinada, Tsuneo; and Matsui, Hitoshi, 5,824,991, Cl. 219-130.510.

Tozawa, Shoji: *See—*
Fujii, Satoshi; Tozawa, Shoji; and Ono, Tomoaki, 5,824,965, Cl. 177-136.000.

Trail, Pamela: *See—*
King, Dalton; Firestone, Raymond A.; and Trail, Pamela, 5,824,805, Cl. 548-546.000.

Trainham, James Arthur, III: *See—*
Simmons, Walter John; Law, Clarence Garlan, Jr.; Trainham, James Arthur, III; and Newman, John Scott, 5,824,199, Cl. 204-262.000.

Training Inovations Group, LLC: *See—*
Nemeth, Louis G., 5,826,206, Cl. 701-35.000.

Trainor, William: *See—*
Bernstein, David; Childs, Mary Ann; Trainor, William; Wier, Majorie; and Gray, Erick, 5,824,268, Cl. 422-56.000.

Tran, Bao: *See—*
Bhuva, Rohit L.; Tran, Bao; Conner, James L.; Overlaur, Michael; and Paulsen, Tracy S., 5,825,194, Cl. 324-763.000.

Tran, Christina Hien: *See—*
Nguyen, Tram Thi Mai; Bui, Thao Bich; and Tran, Christina Hien, 5,826,046, Cl. 395-309.000.

Tran, Thuy T.: *See—*
Santoline, Linda L.; Gaussa, Louis W., Jr.; Shemony, Robert A.; Broderick, Deborah D.; and Tran, Thuy T., 5,826,060, Cl. 395-500.000.

Tranquilla, James M., to EMR Microwave Technology Corporation. Microwave treatment of metal bearing ores and concentrates. 5,824,133, Cl. 75-10.130.

Transcend Therapeutics, Inc.: *See—*
Goldberg, Dennis I., 5,824,693, Cl. 514-365.000.

Transgene S.A.: *See—*
Tolstoshev, Paul; Harvey, Richard; Courtney, Michael; and LeCocq, Jean-Pierre, 5,824,505, Cl. 435-69.200.

Transition Lighting, Inc.: *See—*
Tickner, Jerold A., 5,823,073, Cl. 81-53.110.

Transperformance, LLC: *See—*
Freeland, Stephen J.; Hallaren, Gerard F.; and Skinn, Neil C., 5,824,929, Cl. 84-454.000.

Trapuzzano, Gary M.: *See—*
Costello, Thomas M.; Trapuzzano, Gary M.; and Bader, Carl V., 5,824,938, Cl. 84-687.000.

Tratz, Herbert: *See—*
Baumgärtel, Gerd; and Tratz, Herbert, 5,824,122, Cl. 48-128.000.

Traversone, Anthony B.: *See—*
Jech, David E.; Sepulveda, Juan L.; and Traversone, Anthony B., 5,826,159, Cl. 419-30.000.

Travis, Adrian Robert Leigh: *See—*
Wiseman, Susan; and Travis, Adrian Robert Leigh, 5,825,337, Cl. 345-6.000.

Treat, Irwin C., Jr.: *See—*
Muehle, Eric G.; and Treat, Irwin C., Jr., 5,823,779, Cl. 434-121.000.

Treece, Dale A.: *See—*
Mee, David K.; Allgood, Glenn O.; Mooney, Larry R.; Duncan, Michael G.; Turner, John C.; and Treece, Dale A., 5,825,501, Cl. 356-429.000.

Trefler, Alan, to Pegasystems Inc. Rules bases and methods of access thereof. 5,826,250, Cl. 706-50.000.

Triangle Pacific Corporation: *See—*
Bolyard, Darl J.; Price, James E.; Welch, Dicky Ray; Henn, Gerhard; and Petzold, Jürgen, 5,823,240, Cl. 144-369.000.

Trickle, Glen W.: *See—*
Edstrom, William E., Sr.; Trickle, Glen W.; and Planton, Peter S., 5,823,144, Cl. 119-475.000.

Trilogy Development Group, Inc.: *See—*
Gupta, Neeraj; Veeraraghavan, Venky; and Agarwal, Ajay, 5,825,651, Cl. 364-468.090.

Trimberger, Stephen M., to Xilinx, Inc. Computer-implemented method of optimizing a time multiplexed programmable logic device. 5,825,662, Cl. 364-491.000.

Trimberger, Stephen M.: *See—*
Tavana, Danesh; Yee, Wilson K.; and Trimberger, Stephen M., 5,825,202, Cl. 326-39.000.

Trimble Navigation Limited: *See—*
Lennen, Gary R., 5,825,887, Cl. 380-34.000.
Schipper, John F.; and Loomis, Peter, 5,825,328, Cl. 342-357.000.

Trimmer, Mark Steven: *See—*
Gagné , Robert R.; Marrocco, Matthew Louis, III; Trimmer, Mark Steven; and Hendricks, Neil H., 5,824,744, Cl. 525-143.000.

Triton Corporation: *See—*
Priesgen, Tony P.; and Youmans, Gary L., 5,823,559, Cl. 280-414.100.

Trombley, Joseph S.: *See—*
Selby, Theodore W.; Tubbs, Michael A.; Trombley, Joseph S.; Cotter, James R.; and Miiller, Gregory C., 5,824,886, Cl. 73-60.110.

Tronco, Nicholas A. Work bench. 5,823,595, Cl. 296-26.030.

Trow, John; and Ishikawa, Tetsuya, to Applied Materials, Inc. Plasma confinement for an inductively coupled plasma reactor. 5,824,607, Cl. 438-732.000.

Troxel, James R.; and Schwerman, Paul W., to Honeywell Inc. Dynamically compensated linear regulator for pulsed transmitters. 5,825,827, Cl. 375-296.000.

Trublowski, John: *See—*
Ha, Vinh Van; Trublowski, John; Nation, Brenda Joyce; Lin, Jeff; and Perng, Chin-Yuan, 5,824,155, Cl. 118-410.000.

Trumbauer, Myrna E.: *See—*
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Ulbrich, Norbert; Hilgenfeld, Rolf; Hänel, Heinz; Sachse, Burkhard; Braun, Peter; Wink, Joachim; Eckes, Peter; Logemann, Jürgen; and Schell, Jozef, to Hoechst Aktiengesellschaft. Antifungal polypeptide and process for its production. 5,824,874, Cl. 800-205.000.
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Uno, Hideki; Nishiyama, Yoshitaka; Sawaragi, Yoshiatsu; Otsuka, Nobuo; Ogawa, Kazuhiro; and Anraku, Toshiro, to Sumitomo Metal Industries, Ltd. High-temperature stainless steel and method for its production. 5,824,264, Cl. 420-40.000.
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Van Haag, Rolf, to Voith Sulzer Finishing GmbH. Deflection controllable roller for use in calender. 5,823,927, Cl. 492-7.000.
Van Haaren, Johannes A. M. M.: *See—*
Broer, Dirk J.; Van Haaren, Johannes A. M. M.; Mol, Grietje N.; and Leenhouts, Frans, 5,825,444, Cl. 349-98.000.
van Halteren, Tijmen. Vibrating hammer, more particularly for driving sheet piles into the ground. 5,823,272, Cl. 173-49.000.
Van Horck, Franciscus Bernardus Marie: *See—*
Van Der Laan, Pieter Cornelis Tobias; Van Deursen, Alexander Petrus Johannes; Van Horck, Franciscus Bernardus Marie; and Paagman, Bernardus Lambertus Franciscus, 5,825,190, Cl. 324-627.000.
Van Huben, Gary Alan; Mueller, Joseph Lawrence; Xiao, Steve Yun; and Mak, Joyce Chang, to International Business Machines Corporation. Data management system having shared libraries. 5,826,265, Cl. 707-8.000.
Van Le, Nam: *See—*
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Van Lommen, Guy Rosalia Eugène; Wigerinck, Piet Tom Bert Paul; De Bruyn, Marcel Frans Leopold; Verschueren, Wim Gaston; and Schroven, Marc Francis Josephine, to Janssen Pharmaceutica, N.V. Vasoconstrictive dihydrobenzopyran derivatives. 5,824,682, Cl. 514-256.000.
Van Maaren, Alfred L.: *See—*
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Vanoostveen, Adrian G.: *See—*
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Van Rosmalen, Gerard E.: *See—*
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van Seeters, Josephus, to Leica Geosystems AG. Capacitive sensor for measuring accelerations and inclinations. 5,824,901, Cl. 73-514.320.
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Van Vleet, Robert D. Two way cushioning trailer hitch. 5,823,560, Cl. 280-484.000.
Van Zanten, David: *See—*
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Variagenics, Inc.: *See—*
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Vega, Wilfried Michiels; Cañas, Pilar Lafuente; Lafuente, Antonio Muñoz-Escalona; Llinas, Gerardo Hidalgo; Royo, Jose Sancho; and Llatas, Luis Mendez, to Repsol Quimica S.A. Heterogeneous metallocene catalysts and use thereof in olefin polymerization process. 5,824,620, Cl. 502-117.000.

Veghte, Richard L.; and Carrender, Curtis L., to Amtech Corporation. Modulated backscatter microstrip patch antenna. 5,825,329, Cl. 343-700.0MS.

Velarde, Jorge, Jr.: *See*—
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Veldman, Russell; and Becvar, Thomas A., to Toccoa Metal Technologies, Inc. Segmented residential front loading refuse collection vehicle. 5,823,728, Cl. 414-510.000.

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Viano, David Charles; Nini, James Peter; Neely, Richard Jon; and Nilson, Hans Gert, to General Motors Corporation; and Delphi Automotive Systems Deutschland GmbH. Vehicle seat with integral, load limiting belt system. 5,823,627, Cl. 297-471.000.

Victor Company of Japan, Ltd.: *See*—
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Victrex Manufacturing Ltd.: *See*—
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Vida, Julius A.: *See*—
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Videojet Systems International, Inc.: *See*—
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Vidwans, Rohit A.: *See*—
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Viehbeck, Alfred: *See*—
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Vigier, Alain, to Thomson - CSF. Method and device for vocal synthesis at variable speed. 5,826,231, Cl. 704-262.000.

Villain, Jean-Christophe; and Bezieres, Alain, to Alcatel Mobile Phones. Communications set with electrostatic protection. 5,825,606, Cl. 361-220.000.

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Villeneuve, Bernard; and Kim, Hyung B., to Northern Telecom Limited. Wavelength monitoring and control assembly for WDM optical transmission systems. 5,825,792, Cl. 372-32.000.

Vincent, Jean-Jacques; Silve, Jean-Marc; Cartier, René; and Frejaville, Hubert, to COMMISSARIAT a l'Energie Atomique; and Compagnie General des Matieres Nucleaires. Method and oven for homogeneously melting by microwaves with oscillation of stationary waves for vitrifying materials and gas outlet flow. 5,822,879, Cl. 34-262.000.

Vincent, Jean-Pierre; Gaudriault, Georges; and Beaudet, Alain, to Advanced Bioconcept, Inc. Fluorescent somatostatin. 5,824,772, Cl. 530-311.000.

Viner, Norman, to Synapse Pharmaceuticals International, Inc. Method for treating drug and alcohol addiction. 5,824,684, Cl. 514-291.000.

Virbac S.A.: *See*—
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Virkus, Mark K.: *See*—
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Virshup, Gary Fredric; and Reynolds, Glyn Jeremy, to Varian Associates, Inc. X-ray target having big Z particles imbedded in a matrix. 5,825,848, Cl. 378-144.000.

Vishay Sprague, Inc.: *See*—
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Vishnuvajjala, B. Rao: *See*—
Malspeis, Louis; Vishnuvajjala, B. Rao; Supko, Jeffrey G.; and Kane, Charles Theodore, Jr., 5,824,674, Cl. 514-211.000.

Visionix Ltd.: *See*—
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Visser, Jacobus Hendrik: *See*—
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Vista Medical Technologies, Inc.: *See*—
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Vitec Group PLC: *See*—
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Vitro Products, Inc.: *See*—
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Vixie, Robert L.; and Shah, Pankaj K., to Hewlett-Packard Company. Method and appparatus for automatically determining the starting location and starting protocol of LAN data in a WAN link frame. 5,826,018, Cl. 395-200.600.

VLSI Technlogy, Inc.: *See*—
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VLSI Technology, Inc.: *See*—
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Ginetti, Arnold; Spyrou, Athanasius W.; Fernandez, Jean-Michel; and Silve, Francois, 5,825,658, Cl. 364-488.000.
Lee, Sang S.; and Chen, Che-Yuan, 5,825,623, Cl. 361-707.000.
Shelton, Roger; and Chambers, Peter, 5,825,199, Cl. 326-38.000.
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VocalTec Ltd.: *See*—
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Voge, Michael; Hirth, Roland; and Pollich, Gerhard, to Heidelberger Druckmaschinen AG. Sheet delivery for a sheet-fed printing press. 5,823,526, Cl. 271-204.000.

Vogt, William. Folded orthodontic spring. 5,823,772, Cl. 433-21.000.

Voipio, Ville Sakari. Automatization of electro-oculographic examination. 5,823,190, Cl. 128-745.000.

Voit, Eric A.; Sours, Larry W.; Liptak, Lance S.; and DePaul, Kenneth E., to Bell Atlantic Network Services, Inc. Method of altering the destination telephone number of an incoming call. 5,825,862, Cl. 379-142.000.

Voith Hydro, Inc.: *See*—
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Voith Sulzer Papiermaschinen GmbH: *See*—
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Volinia, Stefano: *See*—
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Vollmer, Jürgen: *See*—
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Volfrath Company, L.L.C., The: *See*—
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Von Basse, Paul-Werner; Thewes, Roland; Schmitt-Landsiedel, Doris; and Bollu, Michael, to Siemens Aktiengesellschaft. Memory cell arrangement of memory cells arranged in the form of a matrix. 5,825,701, Cl. 365-203.000.

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Schmitt-Landsiedel, Doris; Thewes, Roland; Bollu, Michael; and von Basse, Paul-Werner, 5,825,686, Cl. 365-185.030.

Von Der Saal, Wolfgang; Leinert, Herbert; and Stegmeier, Karlheinz, to Boehringer Mannheim GmbH. Phosphanoxides—preparation and use. 5,824,679, Cl. 514-252.000.

Von Flotow, Andreas H.: *See*—
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Kronenberg, Klaus; Vorberg, Sabine; Keutz, Markus; Wilhelm, Andreas; Weiand, Frank; Beckhaus, Christian; Vorberg, Thomas; Schmidt, Peter; and Blume, Jochen, 5,825,115, Cl. 310-254.000.

Voznesensky, Valery V.: *See*—
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Vriens, Leendert; and Stoffels, René A., to U.S. Philips Corporation. Colour cathrode ray tube and display device. 5,825,435, Cl. 348-841.000.

VTC, Inc.: *See*—
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VTEL Corporation: *See*—
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Vu, Hoai Xuan, to Simple Technology, Inc. Method and apparatus for improving data transmission over a wireless system by optical spectrum positioning. 5,826,174, Cl. 455-42.000.

VYSIS, Inc.: *See*—
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W.R. Grace & Co.-Conn.: *See*—
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White, Lloyd Steven, 5,824,405, Cl. 428-304.400.

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Wada, Hiroyuki: *See*—
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Wada, Richard: *See*—
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Wada, Yusuke: *See*—
Odaira, Hiroshi; Imamura, Eiji; Wada, Yusuke; Arai, Yasushi; Sasaoka, Kenji; Mori, Takahiro; Ikegaya, Fumitoshi; and Kowatari, Sadao, 5,822,850, Cl. 29-846.000.

Wade, Sandra A.: *See*—
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Wadley, Don K.; Huffman, John W.; and Mui, Paul K., to Hewlett-Packard Company. Slide in formatter for image forming devices. 5,825,401, Cl. 347-247.000.

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Wadsworth-Dubbert, Debbie Sue; Michel, Douglas Arnold; Kessen, Jeffrey Steven; and Price, Charles Alan, to General Motors Corporation. Integrally retained bearing race with improved twisting resistance. 5,822,860, Cl. 29-898.061.

Wadsworth-Dubbert, Debbie Sue: *See*—
Kessen, Jeffrey Steven; and Wadsworth-Dubbert, Debbie Sue, 5,822,859, Cl. 29-898.061.

Wagenknecht, John H.; and Johnson, Gary V. Compositions for dissolution of soft metals. 5,824,631, Cl. 510-254.000.

Wagenseil, Ludwig, to Brueninghaus Hydromatik GmbH. Method of producing an undercut, concave, self-contained bearing surface. 5,823,721, Cl. 409-132.000.

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Wagg, Theodore J., to Kelsey-Hayes Company. Method for producing a brake drum. 5,823,304, Cl. 188-218.00R.

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Wagoner, Robert G., to MagneTek, Inc. DC bus capacitor arrangement. 5,825,639, Cl. 363-39.000.

Wagstaff, Robert A.; and Hall, Larry D., to New Holland North America, Inc. Crop processor apparatus for pull-type forage harvester. 5,822,962, Cl. 56-16.40R.

Wahl, Oliver: *See*—
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Wain-Hobson, Simon: *See*—
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Waitkat, Peter; Benz, Uwe; and Einhart, Johann, to Daimler-Benz Aktiengesellschaft. Two-stage evaporator unit. 5,823,252, Cl. 165-166.000.

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Yamazaki, Hideto, to Brother Kogyo Kabushiki Kaisha. Ink composition, process for its preparation, and ink-jet recording process. 5,824,142, Cl. 106-20.00R.
Yamazaki, Kazuhisa; Nakamura, Nobuaki; Matsushita, Yuji; Sato, Hisao; and Ban, Tomohiko, to FDK Corporation. Stripline laminate dielectric filter with input/output patterns overlapping resonator conductors. 5,825,264, Cl. 333-204.000.
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Yamazaki, Shunepi; Mase, Akira; Hiroki, Masaaki; and Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Method and circuitry for providing a clear profile of image data displayed in an electro-optic device. 5,825,434, Cl. 348-625.000.
Yamazaki, Shunpei; and Koyama, Jun, to Semiconductor Energy Laboratory Co., Ltd. Method of manufacturing semiconductor device. 5,824,235, Cl. 216-23.000.
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Yang, Ching-Nan, to Mosel Vitelic Inc. Method of making a CMOS transistor using liquid phase deposition. 5,824,578, Cl. 438-231.000.
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Yang, Edward, to Videojet Systems International, Inc. Method for forming images using a jet ink which is rub resistant to alcohol. 5,825,391, Cl. 347-106.000.
Yang, Jar-Ferr; and Bai, Bor-Long, to National Science Council. Processor for performing two-dimensional inverse discrete cosine transform. 5,825,420, Cl. 348-403.000.
Yang, Jeng-Jiun, to Integrated Device Technology, Inc. Integrated circuits that include a barrier layer reducing hydrogen diffusion into a polysilicon resistor. 5,825,068, Cl. 257-380.000.
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Zinser Textilmaschinen GmbH: *See—*
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Zintler, Albert; Busch, Dieter; and Ullrich, Horst, to VDO Adolf Schindling AG. Electric center for motor vehicles. 5,823,798, Cl. 439-76.200.
Zioni, Emilio: *See—*
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Ziskin, Marvin C.: *See—*
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Zmuda, James E.: *See—*
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Znaiden, Alexander Paul: *See—*
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Zoggia, Antonio, to Ingenia S.r.L. Method for producing and/or controlling chromatic luminous beams applicable on light projectors and/or observing and measuring instruments or the like. 5,825,566, Cl. 359-889.000.
Zolnowsky, John E., to Sun Microsystems, Inc. Real time thread dispatcher for multiprocessor applications. 5,826,081, Cl. 395-673.000.
Zona, Michael F.; and Allchin, Lucy A., to Xerox Corporation. Method of remanufacturing toner cartridges. 5,826,140, Cl. 399-106.000.
Zuhars, Joel: *See—*
Sahay, Alind; Mittelstadt, Brent; Williamson, Willie, Jr.; Zuhars, Joel; and Kazanzides, Peter, 5,824,085, Cl. 623-16.000.
Zuk, Boris, to Singleton Corporation, The. Relative humidity control system for corrosion test chamber. 5,824,918, Cl. 73-865.600.
Zuranski, Edward Sigmund: *See—*
Betts, William Lewis; and Zuranski, Edward Sigmund, 5,825,753, Cl. 370-289.000.
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Zusmanovich, Alex: *See—*
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Zutler, Bruce, to MCI Products Group, Inc. Imaged light switch plate. 5,824,116, Cl. 8-471.000.
Zweigart & Sawitzki: *See—*
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1263152 Ontario Inc.: *See—*
Grychowski, Jerry R.; Baran, George; and Foley, Martin P., 5,823,179, Cl. 128-200.180.
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20th DAY OF OCTOBER, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Brueck, Steven R. J.; Zaidi, Saleem; and Chu, An-Shyang, to the University of New Mexico. Method for fine-line interferometric lithography. RE. 35,930, Cl. 430-311.000.

Cerny, Zdenek; and Clark, Michael, to Tesma International, Inc. Torsional vibration damper. RE. 35,932, Cl. 474-135.000.

Chu, An-Shyang: *See*—
Brueck, Steven R. J.; Zaidi, Saleem; and Chu, An-Shyang, RE. 35,930, Cl. 430-311.000.

Clark, Michael: *See*—
Cerny, Zdenek; and Clark, Michael, RE. 35,932, Cl. 474-135.000.

Daoud, Bassel Hage. Multilayered type network interface unit. RE. 35,929, Cl. 379-399.000.

Dohr, Jeremy J.; Toms, Robert S.; and Fischer, Robert T., to Miner Enterprises, Inc. Apparatus for controlling operation of a railcar discharge gate assembly having a lost motion mechanism for unlocking the gate prior to movement. RE. 35,925, Cl. 105-310.000.

Fischer, Robert T.: *See*—
Dohr, Jeremy J.; Toms, Robert S.; and Fischer, Robert T., RE. 35,925, Cl. 105-310.000.

Hagen, Helge, to Nordicon Develop ApS. Venetian- or pleated blinds, particularly for multiple pane insulating glass window. RE. 35,926, Cl. 160-107.000.

Miner Enterprises, Inc.: *See*—
Dohr, Jeremy J.; Toms, Robert S.; and Fischer, Robert T., RE. 35,925, Cl. 105-310.000.

Nordicon Develop ApS: *See*—
Hagen, Helge, RE. 35,926, Cl. 160-107.000.

Schroder, Edward W.; and Schroder, Jeffrey. Golf club. RE. 35,931, Cl. 473-305.000.

Schroder, Jeffrey: *See*—
Schroder, Edward W.; and Schroder, Jeffrey, RE. 35,931, Cl. 473-305.000.

Tesma International, Inc.: *See*—
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the University of New Mexico: *See*—
Brueck, Steven R. J.; Zaidi, Saleem; and Chu, An-Shyang, RE. 35,930, Cl. 430-311.000.

Toms, Robert S.: *See*—
Dohr, Jeremy J.; Toms, Robert S.; and Fischer, Robert T., RE. 35,925, Cl. 105-310.000.

Zaidi, Saleem: *See*—
Brueck, Steven R. J.; Zaidi, Saleem; and Chu, An-Shyang, RE. 35,930, Cl. 430-311.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Carter, Charles G.; Hull, Clifford J., Jr.; Luthra, Narender P.; and Walter, James F., to W. R. Grace & Co.-Conn. Storage stable azadirachtin formulation. B1 124,349, Cl. 514-453.000.

Hull, Clifford J., Jr.: *See*—
Carter, Charles G.; Hull, Clifford J., Jr.; Luthra, Narender P.; and Walter, James F., B1 124,349, Cl. 514-453.000.

Luthra, Narender P.: *See*—
Carter, Charles G.; Hull, Clifford J., Jr.; Luthra, Narender P.; and Walter, James F., B1 124,349, Cl. 514-453.000.

Mangum, Barry O.: *See*—
Riggs, John H.; and Mangum, Barry O., B1 355,872, Cl. 128-200.210.

Riggs, John H.; and Mangum, Barry O. Low flow rate nebulizer apparatus and method of nebulization. B1 355,872, Cl. 128-200.210.

W. R. Grace & Co.-Conn.: *See*—
Carter, Charles G.; Hull, Clifford J., Jr.; Luthra, Narender P.; and Walter, James F., B1 124,349, Cl. 514-453.000.

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Prokop, Gary F.; Goldfarb, Joshua P.; and Holderfield, Gregory J., 399,960, Cl. D24-169.000.

ABC Group: *See*—
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Acheson, Jeffrey J.: *See*—
Hoshizaki, T. Blaine; Acheson, Jeffrey J.; and Black, Gerald, 399,642, Cl. D2-904.000.

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Adamovich, Dennis J.; Koonin, Steven R.; Lofstrom, Krista L.; O'Dowd, Elizabeth W.; and Reiman, Joseph A., to Coca-Cola Company, The. Basketball car. 399,789, Cl. D12-86.000.

Adelaar, Antoine. Football hitch cover. 399,802, Cl. D12-162.000.

Adler, Jonathan, to Flexbar Machine Corporation. Digital drum gage. 399,770, Cl. D10-73.000.

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Air Innovation Sweden AB: *See*—
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Allen, Gary E.; and Finiki, Rich, to Eaton Brothers Corporation. Flora and fauna guard. 399,713, Cl. D8-1.000.

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Alvern, Oyvind: *See*—
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Alvern, Stein; and Alvern, Oyvind, to Alvern-Norway A/S. Module for a multipurpose utility station for use at e.g. a petrol station, providing e.g. supplies of air, oil, screen washer fluid, coolant as well as washing facilities. 399,850, Cl. D15-19.100.

American Manufacturing Company, Inc.: *See*—
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American Racing Equipment, Inc.: *See*—
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Bagley, Ronald D.; and Jensen, Charles C., to Radica China Limited. Hand held electronic game. 399,885, Cl. D21-13.000.

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Schultz, David E.; and Bagley, Ronald D., 399,887, Cl. D21-13.000.

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Barrette, David W., to Minnesota Mining and Manufacturing Company. Mouse pad. 399,833, Cl. D14-114.000.

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Bertolini, Peter; and Schweitzer, David, to Chesebrough-Pond's USA Co., Division of Conopco, Inc. Combined bottle and cap. 399,754, Cl. D9-542.000.

Beyer, Frederick P. Golf putter grip. 399,901, Cl. D21-222.000.

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Bulgari, Paolo, to Bulgari S.p.A. Ring. 399,779, Cl. D11-29.000.

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Choi, Chung-Hing, to Hing Fat Toys Manufacturer Limited. Toy sword. 399,892, Cl. D21-145.000.
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Ray, James E., 399,782, Cl. D11-143.000.
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Grosfillex, Raymond, to Grosfillex SARL. Table legs. 399,686, Cl. D6-495.000.
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Hellhake, Ferdinand F.; Paschke, Joachim; Hurayt, Mark S.; and Runyon, Sigmun D., to Freightliner Corporation. Mid-high roof truck exterior surface. 399,792, Cl. D12-96.000.

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Choi, Chung-Hing, 399,892, Cl. D21-145.000.
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Lee, Chain-Shin. Chair back. 399,690, Cl. D6-502.000.
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Lord, Judd A., to Masco Corporation of Indiana. Two handle faucet. 399,925, Cl. D23-241.000.
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Loud, Craig M., to JB Research, Inc. Massaging system seat cushion. 399,695, Cl. D6-601.000.
Loud, Craig M., to JB Research, Inc. Massaging system seat cushion. 399,696, Cl. D6-601.000.
Loud, Craig M., to JB Research, Inc. Massaging system seat cushion. 399,697, Cl. D6-601.000.
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Muller, Carl A. Chair. 399,666, Cl. D6-370.000.
Muller, Carl A. Chair. 399,667, Cl. D6-370.000.
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Nikodem, Stephen G. Orthodontic brace installer. 399,962, Cl. D24-180.000.
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Plain, S. James. Golf tee sighting device. 399,896, Cl. D21-208.000.
Price, Scott; and Welsh, Robert P., to Black & Decker Inc. Motor housing for a sliding compound miter saw. 399,856, Cl. D15-133.000.
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Prokop, Gary F.; and Goldfarb, Joshua P., to Abbott Laboratories. Housing for a device for measuring the concentration of an analyte in a sample of blood. 399,959, Cl. D24-169.000.
Prokop, Gary F.; Goldfarb, Joshua P.; and Holderfield, Gregory J., to Abbott Laboratories. Housing for a device for measuring the concentration of an analyte in a sample of blood. 399,960, Cl. D24-169.000.
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Wagner, Curtis D. Plant saucer. 399,788, Cl. D11-164.000.
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ISSUED OCTOBER 20, 1998

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86 5,824,173
99 5,824,174
164 5,824,172
229 5,824,175
239 5,824,176
250 5,824,177
265 5,824,178
274.2 5,824,179
275.3 5,824,180
300 5,824,182
379.8 5,824,181
486 5,824,183
584 5,824,184
5,824,185
655.1 5,824,186

CLASS 160

107 RE. 35,926
5,823,241
178.1 R 5,823,242

CLASS 162

41 5,824,187
49 5,824,188
79 5,824,189
135 5,824,190
146 5,824,191
158 5,824,192

CLASS 164

57.1 5,823,243
112 5,823,244
452 5,823,245
488 5,823,246

CLASS 165

76 5,823,247
104.33 5,823,248
121 5,823,249
140 5,823,250
158 5,823,251
166 5,823,252
167 5,823,253

CLASS 166

51 5,823,254
55.1 5,823,255
65.1 5,823,257
77.1 5,823,258
97.1 5,823,259
230 5,823,260
250.01 5,823,261
250.15 5,823,262
313 5,823,263
355 5,823,264
373 5,823,265
380 5,823,266
385 5,823,267

CLASS 172

21 5,823,269
439 5,823,270
450 5,823,268
5,823,271

CLASS 173

49 5,823,272

CLASS 174

5 R 5,824,948
52.1 5,824,949
52.4 5,824,950
5,824,951
53 5,824,952
65 SS 5,824,953
74 A 5,824,954
88 R 5,824,955
93 5,824,956
95 5,824,957
105 R 5,824,958
117 F 5,824,959
135 5,824,960
5,824,961
5,824,962
252 5,824,964

CLASS 175

72 5,823,273
215 5,823,274
403 5,823,275
405.1 5,823,276
428 5,823,277

CLASS 177

136 5,824,963
5,824,965
144 5,823,278

CLASS 180

9.1 5,823,279
65.2 5,823,280
5,823,281
5,823,282
116 5,823,283
240 5,823,284
242 5,823,285
309 5,823,286
377 5,823,287
445 5,823,288

CLASS 181

130 5,824,966
5,824,967
131 5,824,968
156 5,824,969
228 5,824,970
279 5,824,972
286 5,824,973
290 5,824,974

CLASS 182

61 5,823,289
141 5,823,291
186.8 5,823,292

CLASS 184

5.1 5,823,293
6.3 5,823,294
6.4 5,823,295

CLASS 186

49 5,823,296

CLASS 187

266 5,823,298
277 5,823,299
292 5,824,975
393 5,824,976

CLASS 188

67 5,823,300
73.37 5,823,301
111 5,823,302
218 R 5,823,304
218 XL 5,823,303
275 5,823,305
322.15 5,823,306
378 5,823,307

CLASS 192

13 R 5,823,308
21.5 5,823,309
53.34 5,823,310
70.17 5,823,311
70.25 5,823,312
85 R 5,823,313
107 M 5,823,314

CLASS 194

203 5,823,315

CLASS 198

341 5,823,316
395 5,823,317
699.1 5,823,318
781.06 5,823,319
803.5 5,823,320

CLASS 200

1 B 5,824,978
16 C 5,824,977
43.19 5,823,321
51.17 5,823,322
61.88 5,824,979
84 R 5,824,980
302.1 5,824,981
308 5,823,323
333 5,824,982
344 5,823,324
5,823,325
524 5,823,326

CLASS 201

7 5,824,193
29 5,824,194

CLASS 203

8 5,824,195
95 5,824,196
268 5,823,331

CLASS 204

192.12 5,824,197
192.14 5,824,198
262 5,824,199
265 5,824,200
284 5,824,201
5,824,202
559 5,824,203
601 5,824,204

CLASS 205

109 5,824,205
646 5,824,206

CLASS 206

5.1 5,823,327
8 5,823,328
216 5,823,329
232 5,823,330
307.1 5,823,332
308.1 5,823,333
5,823,334
315.11 5,823,337
315.6 5,823,335
5,823,336
338 5,823,338
349 5,823,339
370 5,823,340
387.11 5,823,341
438 5,823,342
451 5,823,343
459.5 5,823,344
509 5,823,345
534 5,823,346
555 5,823,347
583 5,823,348
597 5,823,349
705 5,823,350
710 5,823,351
721 5,823,352
752 5,823,353

CLASS 208

3 5,824,207
107 5,824,214
135 5,824,209

CLASS 209

3 5,824,210
212 5,823,354
406 5,823,355
601 5,823,356
703 5,823,357

CLASS 210

92 5,824,211
194 5,824,212
241 5,824,213
249 5,824,215
257.1 5,824,216
321.75 5,824,217
337 5,824,218
418 5,824,219
490 5,824,220
605 5,824,221
607 5,824,222
642 5,824,223
651 5,824,224
656 5,824,225
679 5,824,226
713 5,824,227
740 5,824,228
741 5,824,229
749 5,824,230
776 5,824,231
787 5,824,232

CLASS 211

8 5,823,358
11 5,823,359
13.1 5,823,360
41 5,823,361
60.1 5,823,363
70.6 5,823,364
113 5,823,365
119.011 5,823,366
126.1 5,823,367
175 5,823,368

CLASS 212

273 5,823,369
276 5,823,370

CLASS 213

75 TC 5,823,371

CLASS 215

228 5,823,372
249 5,823,373

CLASS 216

2 5,824,233
18 5,824,234
23 5,824,235
26 5,824,236

CLASS 217

51 5,823,374

CLASS 219

61 5,824,983
68 5,824,984
69.12 5,824,985
5,824,986
74.2 5,824,999
98 5,824,987
121.36 5,824,988
121.46 5,824,989
130.21 5,824,990
130.51 5,824,991
145.22 5,824,992
203 5,824,993
5,824,994
393 5,824,995
529 5,824,996
537 5,824,997
617 5,824,998
746 5,825,000

CLASS 220

1.5 5,823,375
268 5,823,377
374 5,823,378
408 5,823,379
502 5,823,380
516 5,823,376
559 5,823,381
571 5,823,382
601 5,823,383
717 5,823,384
762 5,823,385

CLASS 221

2 5,823,386

CLASS 222

1 5,823,387
5,823,388
5,823,389
38 5,823,390
94 5,823,391
129 5,823,392
130 5,823,393
137 5,823,394
153.02 5,823,395
153.13 5,823,396
181.3 5,823,397
185.1 5,823,398
209 5,823,399
318 5,823,400
333 5,823,401
383.1 5,823,402
391 5,823,403
535 5,823,404
538 5,823,405
626 5,823,406

CLASS 223

85 5,823,407

CLASS 224

42.21 5,823,408
175 5,823,409
281 5,823,410
328 5,823,411
329 5,823,412
402 5,823,413
637 5,823,414

CLASS 227

120 5,823,415

CLASS 228

4.5 5,823,416
44.3 5,823,417
49.5 5,823,418
55 5,823,419

CLASS 229

101 5,823,421
103.1 5,823,422
120.07 5,823,424
125.04 5,823,420
303 5,823,423

CLASS 232

17 5,823,425

CLASS 235

85 R 5,825,001
375 5,825,002
379 5,825,003
380 5,825,005
384 5,825,007
462 5,825,006
5,825,008
5,825,009
472 5,825,010
5,825,011
5,825,012
5,825,013
492 5,825,014
494 5,825,015

CLASS 238

272 5,823,426

CLASS 239

4 5,823,428
5 5,823,429
10 5,823,430
14.2 5,823,427
19 5,823,431
36 5,823,432
67 5,823,433
102.2 5,823,434
107 5,823,435
123 5,823,436
124 5,823,437
127 5,823,438
205 5,823,439
206 5,823,440
317 5,823,441
394 5,823,442
533.12 5,823,444
533.9 5,823,443
585.1 5,823,445
5,823,446
596 5,823,447

CLASS 241

27 5,823,449
47 5,823,450
169.2 5,823,451
225 5,823,452
261.3 5,823,453

CLASS 242

332 5,823,454
340 5,823,455
362 5,823,456
372 5,823,457
396.6 5,823,458
471 5,823,459
485.7 5,823,460
532.3 5,823,461
533.8 5,823,462

541.7 5,823,463
604.1 5,823,465
615.21 5,823,464

CLASS 244

1 N 5,823,467
2 5,823,468
3.22 5,823,469
7 R 5,823,470
65 5,823,466
75 R 5,823,471
118.1 5,823,472
129.5 5,823,473
134 E 5,823,474
158 R 5,823,476
163 5,823,477
172 5,823,478
187 5,823,479
199 5,823,480

CLASS 246

28 R 5,823,481

CLASS 248

27.1 5,823,482
37.6 5,823,483
72 5,823,484
96 5,823,485
5,823,489
104 5,823,486
118 5,823,487
5,823,488
129 5,823,490
169 5,823,491
213.2 5,823,493
309.1 5,823,494
5,823,495
314 5,823,496
316.7 5,823,497
429 5,823,499
444 5,823,500
475.1 5,823,501
503 5,823,502
683 5,823,503
685 5,823,504

CLASS 249

80 5,824,237

CLASS 250

201.8 5,825,016
208.1 5,825,017
5,825,018
214 AL 5,825,019
216 5,825,020
222.1 5,825,021
225 5,825,022
239 G 5,825,023
269.6 5,825,024
287 5,825,025
288 5,825,026
292 5,825,027
302 5,825,028
338.1 5,825,029
358.1 5,825,030
363.03 5,825,031
370.09 5,825,032
370.1 5,825,033
397 5,825,034
423 R 5,825,035
492.1 5,825,036
492.21 5,825,038
492.22 5,825,039
5,825,040
492.3 5,825,037
504 5,825,041
515.1 5,825,042
548 5,825,043
557 5,825,044
566 5,825,045

CLASS 251

129.07 5,823,505
129.15 5,823,507
149.6 5,823,508
335.2 5,823,509
368 5,823,510

CLASS 252

8.05 5,824,238
175 5,824,239
582 5,824,240
609 5,824,241
700 5,824,242

CLASS 254

264 5,823,511

CLASS 257

2 5,825,046
12 5,825,047
25 5,825,048
5,825,049
57 5,825,050
82 5,825,051
94 5,825,052
5,825,053
98 5,825,054
183 5,825,055
290 5,825,056
295 5,825,057
300 5,825,058
301 5,825,059
304 5,825,060
309 5,825,061
315 5,825,062
316 5,825,063
5,825,064
328 5,825,065
345 5,825,066
355 5,825,067
380 5,825,068
390 5,825,069
392 5,825,070
440 5,825,071
530 5,825,072
534 5,825,073
536 5,825,074
596 5,825,075
622 5,825,076
629 5,825,077
632 5,825,078
653 5,825,079
659 5,825,080
668 5,825,081
685 5,825,082
691 5,825,083
700 5,825,084
704 5,825,085
5,825,086
707 5,825,087
712 5,825,088
718 5,825,089
747 5,825,090
777 5,825,091
778 5,825,092
782 5,825,093

CLASS 261

36.1 5,824,243

CLASS 264

29.2 5,824,245
37.29 5,824,244
122 5,824,246
135 5,824,247
211.14 5,824,248
219 5,824,249
5,824,250
259 5,824,251
272.17 5,824,252
275 5,824,253
312 5,824,254
316 5,824,255
318 5,824,256
328.1 5,824,257
5,824,258
401 5,824,259
5,824,260
572 5,824,261
661 5,824,262

CLASS 266

283 5,824,263

CLASS 267

64.12 5,823,512
64.26 5,823,513
130 5,823,514
140.13 5,823,515
168 5,823,516
221 5,823,517
291 5,823,518

CLASS 269

29 5,823,519
48.3 5,823,520

CLASS 270

58.06 5,823,521

CLASS 271

4.08 5,823,522
10.04 5,823,523
124 5,823,524
127 5,823,525
204 5,823,526
265.02 5,823,527
270 5,823,528
296 5,823,529

CLASS 273

153 S 5,823,530
156 5,823,531
157 R 5,823,532
160 5,823,533
180.15 5,823,617
201 5,823,618
216.12 5,823,619
284.4 5,823,620
354.13 5,823,621
362.12 5,823,622
377 5,825,095
410 5,823,623
411.36 5,823,624
411.44 5,823,625
448.2 5,823,626
471 5,823,627
475 5,823,628

CLASS 298

23 R 5,823,629
235 5,823,630

CLASS 299

4 5,823,631
104 5,823,632

CLASS 300

21 5,823,633

CLASS 301

5.3 5,823,634
37.1 5,823,635

CLASS 303

3 5,823,636
7 5,823,637
22.1 5,823,638
116.4 5,823,639
119.2 5,823,640

CLASS 307

9.1 5,825,096
10.1 5,825,097
5,825,098
48 5,825,099
66 5,825,100
91 5,825,101
127 5,825,102
130 5,825,103

CLASS 310

12 5,825,104
5,825,105
49 R 5,825,106
64 5,825,107
67 R 5,825,108
71 5,825,109
90 5,825,110
179 5,825,111
181 5,825,112
5,825,113
251 5,825,114
254 5,825,115
263 5,825,116
317 5,825,117
323 5,825,118
338 5,825,119
344 5,825,120
358 5,825,121

CLASS 312

7.2 5,823,641
5,823,642
221 5,823,643
223.2 5,823,644
297 5,823,645
324 5,823,646
333 5,823,647
334.45 5,823,649
334.5 5,823,648
348.1 5,823,650
466 5,825,147

CLASS 313

336 5,825,122
413 5,825,123
467 5,825,124
485 5,825,125
497 5,825,126
553 5,825,127
582 5,825,128
634 5,825,129
635 5,825,130

CLASS 315

8 5,825,131
39 5,825,132
105 5,825,133
169.1 5,825,134
291 5,825,135
5,825,136
5,825,137
294 5,825,138
307 5,825,139
505 5,825,140

CLASS 318

254 5,825,141
381 5,825,143
434 5,825,144
439 5,825,145
5,825,146
443 5,825,148
587 5,825,149
610 5,825,150
685 5,825,151
700 5,825,152
701 5,825,153
757 5,825,154

CLASS 320

16 5,825,155
21 5,825,156
30 5,825,157
111 5,825,158
125 5,825,159
134 5,825,160
162 5,825,161

CLASS 323

210 5,825,162
222 5,825,163
255 5,825,164
282 5,825,165
299 5,825,166
312 5,825,167
315 5,825,168
5,825,169
355 5,825,170

CLASS 324

73.1 5,825,171
76.35 5,825,172
76.77 5,825,173
106 5,825,174
117 H 5,825,175
174 5,825,176
179 5,825,177
207.2 5,825,178
210 5,825,179
212 5,825,180
5,825,181
241 5,825,182
248 5,825,183
309 5,825,184
5,825,185
5,825,186
319 5,825,187
357 5,825,188
525 5,825,189
627 5,825,190
751 5,825,191
757 5,825,192
763 5,825,193
5,825,194
765 5,825,195
770 5,825,196

CLASS 326

10 5,825,197
34 5,825,198
38 5,825,199
5,825,200
39 5,825,201
5,825,202
41 5,825,203
54 5,825,204
81 5,825,205
5,825,206
83 5,825,207
98 5,825,208

CLASS 327

3 5,825,209
12 5,825,210
19 5,825,211
52 5,825,212
104 5,825,214
105 5,825,213
108 5,825,215
110 5,825,216
111 5,825,217
112 5,825,218
5,825,219
143 5,825,220
5,825,221
156 5,825,222
170 5,825,223
200 5,825,224
208 5,825,225
250 5,825,226
308 5,825,227
333 5,825,228
5,825,229
337 5,825,230
356 5,825,231
5,825,232
365 5,825,233
378 5,825,234
408 5,825,235
538 5,825,236
545 5,825,237
552 5,825,238
563 5,825,239
570 5,825,240

CLASS 329

304 5,825,241
5,825,242
311 5,825,243

CLASS 330

253 5,825,244
5,825,245
255 5,825,246
265 5,825,247
267 5,825,248
277 5,825,249
292 5,825,250
297 5,825,251

CLASS 331

1 R 5,825,252
18 5,825,253
25 5,825,254
113 R 5,825,256
173 5,825,255

CLASS 332

100 5,825,257
127 5,825,258

CLASS 333

22 R 5,825,259
116 5,825,260
139 5,825,261
189 5,825,262
204 5,825,263
5,825,264
215 5,825,265
219 5,825,266
235 5,825,267
254 5,825,268

CLASS 335

132 5,825,269
223 5,825,270
285 5,825,271

CLASS 336

212 5,825,272

CLASS 337

49 5,825,273
139 5,825,275
190 5,825,274
394 5,825,276
407 5,825,277
5,825,278

CLASS 338

176 5,825,279

CLASS 340

326 5,825,280
425.5 5,825,281
438 5,825,282
5,825,283
440 5,825,284
445 5,825,285
447 5,825,286
453 5,825,287
542 5,825,288
550 5,825,289
572 5,825,290
5,825,291
5,825,292
573 5,825,293
594 5,825,294
602 5,825,295
825.33 5,825,300
825.46 5,825,297
825.54 5,825,298
5,825,299
826 5,825,301
870.01 5,825,302
870.02 5,825,303
903 5,825,304
958 5,825,305
988 5,825,306

CLASS 341

13 5,825,307
20 5,825,308
50 5,825,309
51 5,825,310
5,825,311
65 5,825,312
67 5,825,313
5,825,314
106 5,825,315
120 5,825,316

5,825,317
131 5,825,318
132 5,825,319
139 5,825,320
144 5,825,321

CLASS 342

37 5,825,322
114 5,825,323
118 5,825,324
353 5,825,325
357 5,825,326
5,825,327
5,825,328

CLASS 343

700 MS 5,825,329
702 5,825,330
703 5,825,331
708 5,825,332
781 R 5,825,333
830 5,825,334
866 5,825,335

CLASS 345

2 5,825,336
6 5,825,337
7 5,825,338
8 5,825,339
5,825,340
17 5,825,390
87 5,825,341
5,825,342
94 5,825,343
101 5,825,344
104 5,825,345
112 5,825,346
5,825,347
115 5,825,348
123 5,825,349
163 5,825,350
173 5,825,351
5,825,352
184 5,825,353
327 5,825,354
336 5,825,355
338 5,825,356
340 5,825,357
5,825,358
344 5,825,359
5,825,360
349 5,825,361
357 5,825,362
422 5,825,363
424 5,825,364
433 5,825,365
5,825,366
439 5,825,367
440 5,825,368
5,825,369
472 5,825,370
501 5,825,371
509 5,825,372
524 5,825,373

CLASS 346

136 5,825,374

CLASS 347

4 5,825,375
15 5,825,377
19 5,825,378
20 5,825,379
28 5,825,380
37 5,825,381
40 5,825,382
54 5,825,383
55 5,825,384
56 5,825,385
71 5,825,386
86 5,825,387
5,825,388
87 5,825,389
106 5,825,391
171 5,825,393
191 5,825,394
197 5,825,392
206 5,825,395
212 5,825,396
5,825,397
235 5,825,398
237 5,825,399
239 5,825,400
247 5,825,401
251 5,825,402
259 5,825,403
262 5,825,404
5,825,405
264 5,825,406

CLASS 348

6 5,825,407
14 5,825,408
88 5,825,409
107 5,825,410
149 5,825,412
155 5,825,413
159 5,825,411
180 5,825,414
208 5,825,415
364 5,825,417
402 5,825,418
5,825,419
403 5,825,420
409 5,825,421
410 5,825,422
413 5,825,423
416 5,825,424
420 5,825,425
425 5,825,426
445 5,825,427
5,825,428
448 5,825,429
487 5,825,430
536 5,825,431
563 5,825,432
584 5,825,433
625 5,825,434
841 5,825,435

CLASS 349

16 5,825,436
46 5,825,437
54 5,825,438
5,825,439
61 5,825,440
77 5,825,441
95 5,825,442
5,825,443
98 5,825,444
118 5,825,445
128 5,825,447
5,825,448
148 5,825,449
149 5,825,450
187 5,825,451

CLASS 351

46 5,825,452
137 5,825,453
159 5,825,454
5,825,455
201 5,825,456
203 5,825,458
204 5,825,459
221 5,825,457
237 5,825,460

CLASS 353

120 5,823,651

CLASS 354

187 5,825,461

CLASS 355

33 5,825,466
40 5,825,467
55 5,825,468
5,825,469
72 5,825,470
5,825,471
75 5,825,462
5,825,463
200 5,825,472

CLASS 356

3.04 5,825,473
4.02 5,825,464
28.5 5,825,465
71 5,825,474
5,825,475
72 5,825,477
73 5,825,478
73.1 5,825,479
124 5,825,476
138 5,825,480
5,825,481
237 5,825,482
243 5,825,483
300 5,825,484
316 5,825,485
326 5,825,486
338 5,825,487
342 5,825,488
345 5,825,489
5,825,490
5,825,491
5,825,492
346 5,825,493
371 5,825,495
375 5,825,496
381 5,825,497
394 5,825,498
5,825,499
5,825,500
429 5,825,501

CLASS 358

296 5,825,502
299 5,825,503
300 5,825,504
400 5,825,505
402 5,825,506
403 5,825,507
412 5,825,508
456 5,825,509
471 5,825,510
486 5,825,511
496 5,825,512
498 5,825,513

CLASS 359

2 5,825,514
110 5,825,515
112 5,825,516
117 5,825,517
124 5,825,518
127 5,825,519
130 5,825,520
161 5,825,521
201 5,825,522
209 5,825,523
245 5,825,524
248 5,825,525
265 5,825,526
267 5,825,527
291 5,825,528
296 5,825,529
333 5,825,530
368 5,825,531
5,825,532
372 5,825,533
376 5,825,534
380 5,825,535
384 5,825,536
408 5,825,537
451 5,825,538
462 5,825,539
5,825,540
464 5,825,541
487 5,825,542
494 5,825,543
551 5,825,544
557 5,825,545
5,825,546
567 5,825,547
578 5,825,548
582 5,825,549
614 5,825,550
629 5,825,551
5,825,552
643 5,825,553
652 5,825,554
668 5,825,555
690 5,825,556
692 5,825,557
819 5,825,558
5,825,559
822 5,825,560
5,825,561
5,825,562
872 5,825,563
5,825,564
883 5,825,565
889 5,825,566

CLASS 360

41 5,825,567
51 5,825,568
5,825,569
65 5,825,570
67 5,825,571
69 5,825,572
72.2 5,825,573
74.2 5,825,574
75 5,825,575
5,825,576
5,825,577
77.08 5,825,578
5,825,579
5,825,580
78.04 5,825,581
78.06 5,825,582
85 5,825,583
96.5 5,825,584
97.02 5,825,585
99.04 5,825,586
103 5,825,587
5,825,588
104 5,825,589
5,825,590
5,825,591
106 5,825,592
113 5,825,593
5,825,594
5,825,595
135 5,825,596

CLASS 361

31 5,825,597
42 5,825,598
45 5,825,599
56 5,825,600
5,825,601
94 5,825,602
111 5,825,603
149 5,825,604
216 5,825,605
220 5,825,606
234 5,825,607
302 5,825,608
321.4 5,825,609
524 5,825,611
680 5,825,612
681 5,825,613
683 5,825,614
5,825,615
684 5,825,616
686 5,825,617
5,825,618
695 5,825,620
701 5,825,621
704 5,825,622
707 5,825,623
708 5,825,624
719 5,825,625
724 5,825,626
730 5,825,627
763 5,825,628
777 5,825,629
790 5,825,630
5,825,631
795 5,825,632
804 5,825,633
816 5,825,634
826 5,825,635

CLASS 362

32 5,823,652
72 5,823,653
83.1 5,823,654
145 5,823,655
147 5,823,656
191 5,823,657
5,823,658
252 5,823,659
276 5,823,660
293 5,823,661
309 5,825,636
328 5,823,662
362 5,823,663
366 5,823,664
376 5,823,665
417 5,825,637
488 5,823,666

CLASS 363

21 5,825,638
39 5,825,639
60 5,825,640
98 5,825,641
141 5,825,642

CLASS 364

140 5,825,643
141 5,825,644
148 5,825,645
164 5,825,646
167.03 5,825,647
197 5,825,648
5,825,649
468.06 5,825,650
468.09 5,825,651
470.03 5,825,652
471.02 5,825,653
474.17 5,825,655
474.3 5,825,654
483 5,825,656
486 5,825,657
488 5,825,658
490 5,825,659
491 5,825,660
- 5,825,661
5,825,662
508 5,825,663
521.01 5,825,669
550 5,825,664
559 5,825,665
560 5,825,666
562 5,825,667
564 5,825,668
571.02 5,825,670
574 5,825,671
5,825,672
578 5,825,673
707 5,825,674
708.1 5,825,675
725.02 5,825,676
736.03 5,825,677
748 5,825,678
760.01 5,825,679
761 5,825,680
765 5,825,681

CLASS 365

49 5,825,682
104 5,825,683
154 5,825,684
158 5,825,685
175 5,825,687
185.03 5,825,686
185.11 5,825,688
5,825,689
185.22 5,825,690
189.01 5,825,691
189.04 5,825,692
189.05 5,825,693
189.06 5,825,694
189.09 5,825,695
5,825,696
200 5,825,697
5,825,698
5,825,699
201 5,825,700
203 5,825,701
5,825,702
204 5,825,703
222 5,825,704
5,825,705
5,825,706
226 5,825,707
5,825,708
230.03 5,825,709
5,825,710
5,825,711
230.05 5,825,712
230.06 5,825,713
233.5 5,825,714
5,825,715

CLASS 366

65 5,823,667
89 5,823,668
132 5,823,669
152.1 5,823,670
205 5,823,672
268 5,823,671
303 5,823,673
5,823,674
310 5,823,675
348 5,823,676

CLASS 367

24 5,825,716
103 5,825,717
132 5,825,718
144 5,825,719
5,825,720

CLASS 368

10 5,825,721
276 5,825,722

CLASS 369

13 5,825,723
5,825,724
14 5,825,725
32 5,825,726
5,825,727
5,825,728
44.27 5,825,729
44.32 5,825,730
48 5,825,731
50 5,825,732
5,825,733
58 5,825,734
5,825,735
59 5,825,736
77.1 5,825,737
77.2 5,825,738
83 5,825,739
97 5,825,740
112 5,825,741
116 5,825,742
121 5,825,743
124 5,825,744
219 5,825,745
270 5,825,746
291 5,825,747

CLASS 370

236 5,825,748
244 5,825,749
5,825,750
248 5,825,751
260 5,825,752
289 5,825,753
290 5,825,754
296 5,825,755
319 5,825,756
330 5,825,757
5,825,758
331 5,825,759
5,825,760
333 5,825,761
335 5,825,762
5,825,763
337 5,825,764
341 5,825,768
360 5,825,769
378 5,825,770
394 5,825,765
5,825,771
395 5,825,766
5,825,767
396 5,825,772
398 5,825,773
401 5,825,774
5,825,775
437 5,825,776
458 5,825,777
473 5,825,778
477 5,825,779
522 5,825,780
525 5,825,781

CLASS 371

21.1 5,825,782
5,825,783
22.1 5,825,784
22.4 5,825,785
27.1 5,825,787
40.11 5,825,788
167.1 5,825,786

CLASS 372

21 5,825,789
23 5,825,790
26 5,825,791
32 5,825,792
33 5,825,793
36 5,825,794
38 5,825,795
45 5,825,796
46 5,825,797
75 5,825,798
92 5,825,799
99 5,825,801
100 5,825,802
101 5,825,803

CLASS 374

10 5,823,677
121 5,823,678
5,823,679
126 5,823,681
130 5,823,682
137 5,825,804
185 5,823,680

CLASS 375

200 5,825,805
5,825,806
5,825,807
5,825,808
5,825,809
5,825,810
202 5,825,811
206 5,825,812
219 5,825,813
5,825,814
220 5,825,815
222 5,825,816
228 5,825,817
232 5,825,818
257 5,825,819
259 5,825,820
260 5,825,821
286 5,825,823
292 5,825,824
293 5,825,825
295 5,825,826
296 5,825,827
298 5,825,828
308 5,825,829
340 5,825,830
341 5,825,832
344 5,825,833
360 5,825,834
367 5,825,835

CLASS 376

107 5,825,836
261 5,825,837
299 5,825,838
320 5,825,839

CLASS 377

60 5,825,840

CLASS 378

4 5,825,841
15 5,825,842
20 5,825,843
34 5,825,844
62 5,825,845
98 5,825,846
119 5,825,847
144 5,825,848

CLASS 379

5 5,825,849
26 5,825,850
67 5,825,851
5,825,852
5,825,853
5,825,854
5,825,855
93.12 5,825,856
114 5,825,857
120 5,825,858
131 5,825,859
133 5,825,860
134 5,825,861
142 5,825,862
144 5,825,863
210 5,825,864
211 5,825,865
5,825,866
215 5,825,867
243 5,825,868
265 5,825,869
5,825,870
355 5,825,871
5,825,872
399 RE. 35,929
419 5,825,873
446 5,825,874

CLASS 380

4 5,825,875
5,825,876
5,825,877
5,825,878
5 5,825,879
21 5,825,880
24 5,825,881
25 5,825,882
5,825,883
5,825,884
5,825,885
28 5,825,886
34 5,825,887
49 5,825,888
5,825,889
5,825,890
5,825,891
51 5,825,892
5,825,893

CLASS 381

60 5,825,894
67 5,825,895
69 5,825,896
71.6 5,825,897
92 5,825,898
94.4 5,825,899
154 5,825,900
165 5,825,901
190 5,825,902
391 5,825,903

CLASS 382

113 5,825,905
119 5,825,906
124 5,825,907
131 5,825,908
132 5,825,909
5,825,910
135 5,825,911
145 5,825,912
151 5,825,913
5,825,914
154 5,825,915
162 5,825,916
164 5,825,917
166 5,825,918
177 5,825,919
178 5,825,920
181 5,825,921
199 5,825,922
204 5,825,923
219 5,825,924
225 5,825,925
229 5,825,926
232 5,825,927
236 5,825,928
5,825,929
5,825,930
5,825,931
237 5,825,932
243 5,825,933
246 5,825,934
248 5,825,935
261 5,825,936
5,825,937
263 5,825,938
270 5,825,939
276 5,825,940
294 5,825,941
298 5,825,942
306 5,825,943
309 5,825,944
312 5,825,945
320 5,825,946
321 5,825,947

CLASS 383

107 5,823,683
119 5,823,684
211 5,823,685

CLASS 384

492 5,823,686
558 5,823,687

CLASS 385

12 5,825,948
24 5,825,949
27 5,825,950
45 5,825,951
47 5,825,952
79 5,825,953
5,825,954
5,825,955
102 5,825,956
113 5,825,957
125 5,825,958
128 5,825,959
135 5,825,960
5,825,961
5,825,962
5,825,963
5,825,964
183.14 5,826,005

CLASS 386

52 5,825,965
5,825,967
94 5,825,968
5,825,969
109 5,825,970
122 5,825,971

CLASS 388

811 5,825,972

CLASS 392

353 5,825,973
360 5,825,974
404 5,825,975

CLASS 395

2.38 5,825,976
2.64 5,825,977
2.65 5,825,978
2.91 5,825,979
80 5,825,980
83 5,825,981
94 5,825,982
99 5,825,983
105 5,825,984
108 5,825,985
109 5,825,986
110 5,825,987
112 5,825,988
113 5,825,989
5,825,990
115 5,825,991
5,825,992
5,825,993
116 5,825,994
117 5,825,995
5,825,996
119 5,825,997
128 5,825,998
167 5,825,999
182.02 5,826,000
182.04 5,826,001
5,826,002
182.05 5,826,003
183.01 5,826,004
183.18 5,826,006
5,826,007
185.1 5,826,008
186 5,826,009
5,826,010
5,826,011
5,826,012
5,826,013
187.01 5,826,014
5,826,015
188.01 5,826,016
200.31 5,826,019
200.32 5,826,020
200.33 5,826,021
200.36 5,826,022
5,826,023
5,826,039
200.44 5,826,024
200.47 5,826,025
5,826,026
200.51 5,826,027
200.52 5,826,028
200.57 5,826,029
200.58 5,826,030
200.6 5,826,017
5,826,018
200.63 5,826,031
200.66 5,826,032
200.68 5,826,033
200.69 5,826,034
200.77 5,826,035
5,826,036
200.81 5,826,037
5,826,038
5,826,040
250 5,826,041
281 5,826,042
5,826,043
282 5,826,044
287 5,826,045
309 5,826,046
5,826,047
5,826,048
311 5,826,049
345 5,826,051
381 5,826,052
386 5,826,053
389 5,826,054
394 5,826,055
494 5,826,056
500 5,826,057
5,826,058
5,826,059
5,826,060
5,826,061
5,826,062
5,826,064
5,826,065
550 5,826,063
551 5,826,066
558 5,826,067
559 5,826,068
561 5,826,069
563 5,826,070
567 5,826,072
5,826,073
568 5,826,071
581 5,826,074
600 5,826,075
604 5,826,076
5,826,077
670 5,826,078
672 5,826,079
673 5,826,080
5,826,081
674 5,826,082
675 5,826,083
677 5,826,084
683 5,826,085
701 5,826,086
705 5,826,087
5,826,088
707 5,826,089
712 5,826,090
733 5,826,091
750.06 5,826,092
800 5,826,093
5,826,094
800.11 5,826,095
800.24 5,826,096
800.25 5,826,097
800.26 5,826,098
800.32 5,826,099
800.33 5,826,100
800.34 5,826,101
806 5,826,102
828 5,826,103
835 5,826,104
842 5,826,105
845 5,826,106
847 5,826,107
855 5,826,108
859 5,826,109
865 5,826,110
889 5,826,111

CLASS 396

6 5,826,112
25 5,826,113
55 5,826,114
5,826,115
5,826,116
79 5,826,117
87 5,826,118
236 5,826,119
396 5,826,120
428 5,826,121
429 5,826,122
446 5,826,123
488 5,826,124
538 5,826,125
542 5,826,126
571 5,826,127
572 5,826,128
611 5,826,129
5,826,130
613 5,826,131

CLASS 399

2 5,826,133
27 5,826,134
43 5,826,135
49 5,826,136
55 5,826,138
72 5,826,139
106 5,826,140
110 5,826,132
122 5,826,141
159 5,826,142
182 5,826,143
222 5,826,144
233 5,826,145
235 5,826,146
237 5,826,147
240 5,826,148
5,826,149
260 5,826,150
277 5,826,151
330 5,826,152
353 5,826,153
364 5,826,154
367 5,826,155
389 5,826,156
396 5,826,157
410 5,826,158

CLASS 400

27 5,823,688
83 5,823,689
120.07 5,823,690
127 5,823,691
582 5,823,692
611 5,823,693
621 5,823,694
642 5,823,695
708 5,823,696

CLASS 401

108 5,823,697

CLASS 403

109 5,823,699
245 5,823,700
268 5,823,701
320 5,823,702
373 5,823,703
396 5,823,704

CLASS 404

6 5,823,705
28 5,823,706
91 5,823,707

CLASS 405

12 5,823,708
20 5,823,709
29 5,823,710
36 5,823,711
165 5,823,712
186 5,823,713
204 5,823,714
219 5,823,715
258 5,823,716
286 5,823,717
288 5,823,718

CLASS 407

29.1 5,823,719

CLASS 408

204 5,823,720

CLASS 409

132 5,823,721
230 5,823,722

CLASS 410

22 5,823,723
104 5,823,724
117 5,823,725
155 5,823,726

CLASS 411

85 5,823,727
429 5,823,729

CLASS 413

12 5,823,730

CLASS 414

278 5,823,732
498 5,823,733
510 5,823,728
519 5,823,734
563 5,823,735
609 5,823,736
621 5,823,737
795.1 5,823,738

CLASS 415

9 5,823,739
115 5,823,740
134 5,823,741
150 5,823,742

CLASS 416

96 R 5,823,743
132 B 5,823,749
204 R 5,823,744
213 R 5,823,745

CLASS 417

53 5,823,746
216 5,823,747
305 5,823,748
310 5,823,750
360 5,823,751
363 5,823,752
423.14 5,823,753
437 5,823,754

CLASS 418

15 5,823,755
55.4 5,823,756
55.5 5,823,757

CLASS 419

30 5,826,159
66 5,826,160

CLASS 420

40 5,824,264
60 5,824,265

CLASS 422

26 5,824,266
28 5,824,267
56 5,824,268
73 5,824,269
82.09 5,824,270
98 5,824,271
102 5,824,272
171 5,824,273
184 5,824,275
186.07 5,824,274
292 5,824,276

CLASS 423

8 5,826,161
20 5,826,162
242.1 5,824,277
258 5,826,163
263 5,824,278
265 5,824,279
325 5,824,280
345 5,824,281
578.1 5,824,282
592 5,824,283
594 5,824,284
599 5,824,285

CLASS 424

9.1 5,824,286
9.2 5,824,287
9.4 5,824,288
45 5,824,289
48 5,824,291
49 5,824,292
61 5,824,293
69 5,824,294
70.11 5,824,296
70.4 5,824,295
85.1 5,824,297
5,824,299
85.7 5,824,300
93.21 5,824,302
94.5 5,824,303
94.65 5,824,305
130.1 5,824,306
132.1 5,824,304
133.1 5,824,307
138.1 5,824,311
184.1 5,824,313
188.1 5,824,309
193.1 5,824,310
195.1 5,824,312
195.11 5,824,315
216.1 5,824,316
229.1 5,824,318
230.1 5,824,319
266.1 5,824,321
280.1 5,824,322
401 5,824,320
5,824,323
5,824,324
5,824,326
5,824,327
409 5,824,328
423 5,824,330
5,824,332
5,824,333
424 5,824,331
440 5,824,334
441 5,824,336
443 5,824,335
450 5,824,337
460 5,824,338
466 5,824,339
473 5,824,340
5,824,341
484 5,824,342
486 5,824,343
489 5,824,344
5,824,345
649 5,824,346

CLASS 425

84 5,824,347
120 5,824,348
145 5,824,349
190 5,824,350
233 5,824,351
290 5,824,352

CLASS 426

66 5,824,353
417 5,824,354
459 5,824,355
481 5,824,356
580 5,824,357
658 5,824,358

CLASS 427

2.3 5,824,359
126.2 5,824,360
127 5,824,361
143 5,824,362
207.1 5,824,363
212 5,824,364
239 5,824,365
5,824,366
249 5,824,367
5,824,368
297 5,824,370
345 5,824,369
388.1 5,824,371
393.5 5,824,372
474 5,824,373
555 5,824,374
569 5,824,375

CLASS 428

1 5,824,377
7 5,824,378
40.1 5,824,379
41.9 5,824,380
56 5,824,382
60 5,824,383
61 5,824,384
64.1 5,824,385
5,824,386
65.5 5,824,387
131 5,824,388
137 5,824,389
143 5,824,390
174 5,824,391
178 5,824,392
195 5,824,393
5,824,394
5,824,395
5,824,396
207 5,824,397
211 5,824,398
212 5,824,399
215 5,824,401
218 5,824,400
297.4 5,824,402
300.4 5,824,403
301.4 5,824,404
304.4 5,824,405
318.8 5,824,407
323 5,824,408
332 5,824,409
361 5,824,410
364 5,824,411
378 5,824,412
5,824,413
402 5,824,414
411.1 5,824,415
422 5,824,416
424.4 5,824,417
426 5,824,418
432 5,824,419
447 5,824,420
5,824,421
623 5,824,423
626 5,824,424
655 5,824,425
694 ML 5,824,426
694 TS 5,824,427

CLASS 429

26 5,824,428
44 5,824,429
62 5,824,430
97 5,824,431
120 5,824,432

194 5,824,433
209 5,824,434
223 5,824,435
245 5,824,436

CLASS 430

5 5,824,437
5,824,438
5,824,439
5,824,440
22 5,824,441
45 5,824,442
59 5,824,443
5,824,444
106.6 5,824,445
110 5,824,446
124 5,824,447
143 5,824,448
269 5,824,450
270.1 5,824,451
311 RE. 35,930
313 5,824,452
5,824,453
318 5,824,454
323 5,824,455
325 5,824,456
394 5,824,457
490 5,824,458
502 5,824,459
5,824,460
529 5,824,461
531 5,824,462
532 5,824,463
533 5,824,464
631 5,824,465

CLASS 431

4 5,823,758
5 5,823,759
5,823,760
7 5,823,761
8 5,823,762
41 5,823,763
184 5,823,764
276 5,823,765

CLASS 432

72 5,823,767
115 5,823,768
121 5,823,766
181 5,823,769
5,823,770

CLASS 433

14 5,823,771
21 5,823,772
77 5,823,773
115 5,823,774
166 5,823,775
173 5,823,776
174 5,823,777
214 5,823,778

CLASS 434

38 5,823,780
118 5,823,781
121 5,823,779
156 5,823,782
208 5,823,783
226 5,823,784
234 5,823,785
247 5,823,786
265 5,823,787
350 5,823,788
365 5,823,789

CLASS 435

4 5,824,467
5 5,824,466
5,824,468
6 5,824,469
5,824,470
5,824,471
5,824,472
5,824,473
5,824,474
5,824,475
5,824,476
5,824,477
5,824,478
5,824,479
5,824,480
5,824,481
5,824,485
7.1 5,824,482
5,824,483
5,824,484
7.21 5,824,489
7.23 5,824,488
5,824,490
7.8 5,824,487
15 5,824,492
28 5,824,491
29 5,824,493
40 5,824,494
40.5 5,824,495
69.1 5,824,496
5,824,497
5,824,500
5,824,501
5,824,502
5,824,503
5,824,504
69.2 5,824,505
69.3 5,824,506
5,824,507
5,824,508
69.5 5,824,509
69.6 5,824,511
69.7 5,824,512
70.21 5,824,510
72 5,824,486
76 5,824,513
91.1 5,824,514
5,824,515
91.2 5,824,516
5,824,517
91.21 5,824,518
91.31 5,824,519
91.41 5,824,520
100 5,824,521
106 5,824,522
145 5,824,449
172.3 5,824,523
5,824,524
5,824,525
176 5,824,526
191 5,824,527
194 5,824,528
199 5,824,529
5,824,530
202 5,824,531
5,824,532
209 5,824,533
212 5,824,534
235.1 5,824,536
239 5,824,535
243 5,824,537
252.1 5,824,538
253.3 5,824,540
262.5 5,824,541
320.1 5,824,542
5,824,543
5,824,544
5,824,545
325 5,824,546
5,824,547
363 5,824,548
372.3 5,824,549
375 5,824,550
5,824,551
384 5,824,552

CLASS 436

1 5,824,553
20 5,824,554
64 5,824,555
89 5,824,556
94 5,824,557
111 5,824,559

CLASS 437

31 5,824,560
209 5,824,561
228 TR 5,824,562

CLASS 438

3 5,824,563
30 5,824,564
48 5,824,565
69 5,824,566
73 5,824,567
112 5,824,568
127 5,824,569
128 5,824,570
130 5,824,571
150 5,824,573
5,824,574
158 5,824,572
174 5,824,575
199 5,824,576
231 5,824,578
233 5,824,577
238 5,824,579
243 5,824,580
253 5,824,581
254 5,824,582
258 5,824,583
267 5,824,584
275 5,824,585
300 5,824,586
5,824,587
302 5,824,588
309 5,824,589
393 5,824,590
396 5,824,591
397 5,824,592
446 5,824,594
464 5,824,595
566 5,824,596
625 5,824,597
676 5,824,598
678 5,824,599
682 5,824,600
713 5,824,601
714 5,824,602
725 5,824,603
5,824,604
729 5,824,605
5,824,606
732 5,824,607
745 5,824,608

CLASS 439

63 5,823,790
5,823,791
66 5,823,792
68 5,823,793
73 5,823,794
76.1 5,823,795
5,823,796
5,823,797
76.2 5,823,798
79 5,823,799
82 5,823,800
83 5,823,801
86 5,823,802
98 5,823,803
5,823,804
108 5,823,805
140 5,823,806
157 5,823,807
5,823,808
188 5,823,810
274 5,823,811
345 5,823,812
347 5,823,813
352 5,823,814
374 5,823,815
419 5,823,816
447 5,823,817
482 5,823,818
487 5,823,819
500 5,823,820
538 5,823,821
541.5 5,823,822
571 5,823,823
585 5,823,824
610 5,823,825
620 5,823,826
5,823,827
630 5,823,828
668 5,823,829
751 5,823,830
773 5,823,831
817 5,823,832
851 5,823,833
884 5,823,834

CLASS 440

2 5,823,835
88 5,823,836

CLASS 441

5 5,823,837
106 5,823,838
5,823,839
122 5,823,840

CLASS 442

164 5,824,610
240 5,824,613
401 5,824,611
415 5,824,614

CLASS 445

9 5,823,841

CLASS 446

120 5,823,843
175 5,823,844
234 5,823,845
236 5,823,846
301 5,823,847
429 5,823,848
473 5,823,849
475 5,823,850

CLASS 450

2 5,823,851
38 5,823,852

CLASS 451

5 5,823,853
9 5,823,854
41 5,823,855
45 5,823,856
47 5,823,857
49 5,823,858
65 5,823,859
89 5,823,860
326 5,823,861
344 5,823,862
449 5,823,863

CLASS 452

138 5,823,866
5,823,867
182 5,823,864

CLASS 454

121 5,823,868
152 5,823,869
162 5,823,870

CLASS 455

2 5,826,164
5,826,165
5.1 5,826,166
5,826,167
6.2 5,826,168
13.1 5,826,169
13.4 5,826,170
26.1 5,826,171
38.3 5,826,172
5,826,173
42 5,826,174
77 5,826,175
90 5,826,176
126 5,826,177
193.1 5,826,178
277.2 5,826,179
302 5,826,180
312 5,826,181
326 5,826,182
5,826,183
405 5,826,185
410 5,826,186
412 5,826,187
428 5,826,188
5,826,189
5,826,190
432 5,826,191
445 5,826,193
456 5,826,195
462 5,826,196
524 5,826,197
557 5,826,198
563 5,826,199
575 5,826,201

CLASS 463

1 5,823,871
6 5,823,872
13 5,823,873
17 5,823,874
29 5,823,875
37 5,823,876
41 5,823,877
42 5,823,879
43 5,823,878

CLASS 464

66 5,823,880
118 5,823,881
125 5,823,882
145 5,823,883

CLASS 472

77 5,823,884

CLASS 473

197 5,823,885
213 5,823,886
290 5,823,887
305 RE. 35,931
354 5,823,888
5,823,890
374 5,823,889
378 5,823,891
412 5,823,892
422 5,823,894
430 5,823,895
448 5,823,896
481 5,823,897
483 5,823,898
540 5,823,899
553 5,823,900
560 5,823,901
578 5,823,902

CLASS 474

25 5,823,903
135 RE. 35,932
170 5,823,904

CLASS 475

149 5,823,905
164 5,823,906
230 5,823,908
248 5,823,907
269 5,823,909
271 5,823,910

CLASS 476

40 5,823,911

CLASS 477

97 5,823,912

CLASS 482

4 5,823,913
51 5,823,914
57 5,823,915
5,823,917
62 5,823,919
100 5,823,920
104 5,823,921
108 5,823,922
125 5,823,924
129 5,823,925

CLASS 492

1 5,823,926
7 5,823,927
5,823,928
53 5,823,929

CLASS 493

213 5,823,933
342 5,823,934
354 5,823,935
464 5,823,936

CLASS 494

67 5,823,937

CLASS 501

48 5,824,615
136 5,824,616

CLASS 502

4 5,824,617
34 5,824,619
108 5,824,618
117 5,824,620
305 5,824,621
407 5,824,622

CLASS 503

227 5,824,623

CLASS 504

242 5,824,624
252 5,824,625

CLASS 508

300 5,824,626
363 5,824,627
433 5,824,628

CLASS 510

120 5,824,629
220 5,824,630
254 5,824,631
349 5,824,633
411 5,824,632
412 5,824,634
433 5,824,635

CLASS 514

2 5,824,636
5,824,637
3 5,824,638
12 5,824,639
5,824,640
5,824,641
5,824,642
5,824,643
5,824,644
5,824,645
5,824,646
5,824,649
13 5,824,647
14 5,824,648
15 5,824,650
19 5,824,652
21 5,824,651
30 5,824,653
44 5,824,654
5,824,655
5,824,656
46 5,824,657
54 5,824,658
5,824,659
56 5,824,660
75 5,824,661
5,824,662
104 5,824,663
143 5,824,664
5,824,665
152 5,824,666
170 5,824,667
174 5,824,668
177 5,824,670
178 5,824,671
182 5,824,672
184 5,824,673
211 5,824,674
218 5,824,675
220 5,824,676
222.5 5,824,677
237.8 5,824,678
252 5,824,679
253 5,824,680
255 5,824,681
256 5,824,682
257 5,824,683
277 5,824,685
284 5,824,686
291 5,824,684
300 5,824,687
307 5,824,688
312 5,824,689
335.5 5,824,691
343 5,824,692
365 5,824,693
369 5,824,694
372 5,824,695
382 5,824,696
394 5,824,698
411 5,824,699
449 5,824,701
453 B1 124,349
454 5,824,700
456 5,824,702
461 5,824,703
471 5,824,704
485 5,824,705
492 5,824,706
499 5,824,707
563 5,824,708

CLASS 521

47 5,824,709
79 5,824,710
129 5,824,711
135 5,824,712
155 5,824,713
5,824,714

CLASS 522

14 5,824,715
31 5,824,716
81 5,824,717
120 5,824,718

CLASS 523

106 5,824,719
116 5,824,720
161 5,824,721

CLASS 524

52 5,824,727
99 5,824,722
262 5,824,723
365 5,824,724
404 5,824,725
424 5,824,726
435 5,824,728
437 5,824,729
493 5,824,730
496 5,824,731
504 5,824,732
506 5,824,733
555 5,824,734
575 5,824,735
588 5,824,736
707 5,824,737
715 5,824,738
860 5,824,739

CLASS 525

71 5,824,740
73 5,824,741
88 5,824,742
127 5,824,743
143 5,824,744
178 5,824,745
196 5,824,746
221 5,824,747
243 5,824,748
351 5,824,749
390 5,824,750
450 5,824,751
523 5,824,752

CLASS 526

82 5,824,753
141 5,824,754
206 5,824,755
212 5,824,756
239 5,824,757
295 5,824,758
348 5,824,759

CLASS 528

15 5,824,760
25 5,824,761
26 5,824,762
322 5,824,763
328 5,824,765
350 5,824,766
387 5,824,767
422 5,824,768
485 5,824,769

CLASS 530

300 5,824,770
306 5,824,771
311 5,824,772
350 5,824,774
5,824,775
5,824,776
5,824,777
351 5,824,778
370 5,824,779
383 5,824,780
385 5,824,781
391.1 5,824,782
399 5,824,784

CLASS 534

803 5,824,785

CLASS 536

18.6 5,824,786
22.1 5,824,787
23.5 5,824,789
23.6 5,824,790
23.7 5,824,788
23.71 5,824,792
24.1 5,824,794
24.3 5,824,795
25.34 5,824,793
26.7 5,824,796
114 5,824,797
128 5,824,798
237 5,824,791

CLASS 540

128 5,824,799
142 5,824,800
215 5,824,801

CLASS 544

140 5,824,802

CLASS 546

202 5,824,690

CLASS 548

109 5,824,803
514 5,824,804
546 5,824,805
953 5,824,806
5,824,807

CLASS 549

1 5,824,808
218 5,824,809

CLASS 552

653 5,824,811

CLASS 554

110 5,824,812

CLASS 556

28 5,824,813
401 5,824,814

CLASS 558

161 5,824,815
274 5,824,816
425 5,824,817

CLASS 560

179 5,824,818

CLASS 562

529 5,824,819
895 5,824,820

CLASS 564

153 5,824,821

CLASS 568

10 5,824,822
49 5,824,824
898 5,824,825

CLASS 570

134 5,824,826
147 5,824,827
168 5,824,828

CLASS 585

3 5,824,829
269 5,824,830
356 5,826,202
444 5,824,831
455 5,824,832
511 5,824,833
540 5,824,834
722 5,824,835
800 5,824,836

CLASS 588

15 5,826,203

CLASS 600

15 5,823,938
16 5,823,930
26 5,823,932
38 5,823,939
105 5,823,940
108 5,823,941
160 5,823,942
178 5,823,943
204 5,823,945
5,823,946
207 5,823,947
300 5,823,948
5,823,949
310 5,823,950
322 5,823,951
338 5,823,952
367 5,823,953
5,823,954
374 5,823,955
5,823,956
397 5,823,957
410 5,823,959
415 5,823,960
426 5,823,958
434 5,823,961
439 5,823,962
443 5,823,963
454 5,823,964
462 5,823,965
473 5,823,966
486 5,823,967
557 5,823,969
564 5,823,970
567 5,823,971
573 5,823,972
5,823,973
595 5,823,974
5,823,975

CLASS 601

23 5,823,976

CLASS 602

3 5,823,977
6 5,823,978
16 5,823,979
21 5,823,980
24 5,823,931
26 5,823,981
36 5,823,982
41 5,823,983
61 5,823,984

CLASS 604

4 5,823,986
5,823,987
15 5,823,988
20 5,823,989
22 5,823,990
49 5,823,991
51 5,823,993
53 5,823,992
60 5,823,994
96 5,823,995
5,823,996
110 5,823,997
131 5,823,998
142 5,824,000
158 5,824,001
164 5,824,002
385.2 5,824,004

CLASS 606

15 5,824,005
43 5,824,008
130 5,824,007
144 5,824,009
148 5,824,010
214 5,824,015
232 5,824,011
236 5,824,012
240 5,824,013

CLASS 607

4 5,824,014
5 5,824,017
6 5,824,018
9 5,824,016
17 5,824,019
5,824,020
46 5,824,021
57 5,824,022
88 5,824,023
5,824,024
107 5,824,025
116 5,824,026
118 5,824,027
119 5,824,028
122 5,824,029
5,824,030
5,824,031
126 5,824,032
142 5,824,033

CLASS 618

188.1 5,823,492

CLASS 623

1 5,824,034
5,824,035
5,824,036
5,824,037
5,824,038
5,824,039
5,824,040
5,824,041
5,824,042
5,824,043
5,824,044
5,824,045
5,824,046
5,824,047
5,824,048
5,824,049
5,824,050
5,824,052
5,824,053
5,824,054
5,824,055
5,824,056
5,824,057
5,824,058
5,824,059
2 5,824,060
5,824,061
5,824,062
5,824,063
5,824,064
5,824,065
5,824,066
5,824,067
5,824,068
5,824,069
3 5,824,070
5,824,071
4 5,824,072
5,824,073
5 5,824,086
6 5,824,074
7 5,824,075
8 5,824,076
11 5,824,077
5,824,079
5,824,080
5,824,081
5,824,082
16 5,824,083
5,824,084
5,824,085
5,824,087
5,824,088
5,824,089
17 5,824,093
5,824,094
18 5,824,095
20 5,824,096
5,824,097
5,824,098
5,824,099
5,824,100
5,824,101
5,824,102
5,824,103
5,824,104
5,824,105
21 5,824,106
22 5,824,107
5,824,108
33 5,824,111
36 5,824,110
52 5,824,112
66 5,824,078

CLASS 701

29 5,826,205
35 5,826,206
36 5,826,207
54 5,826,208
69 5,826,209
70 5,826,210
115 5,826,211
208 5,826,212

CLASS 702

24 5,826,214
35 5,826,213
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	57	399,768		169	399,806		154	399,843		29	399,880		223	399,917		128	399,954
	71	399,769		182	399,807		191	399,844	D21—	13	399,881			399,918		135	399,955
	73	399,770			399,808		214	399,845			399,882		226	399,919		146	399,957
		399,771		187	399,809		217	399,846			399,883		227	399,920		156	399,956
	74	399,772		192	399,810		230	399,847			399,884		235	399,921		158	399,958
	78	399,774		209	399,811		253	399,848			399,885			399,922		169	399,959
	85	399,775			399,812	D15—	5	399,849			399,886		238	399,923			399,960
	109	399,776		211	399,813		10	399,851			399,887		241	399,924		180	399,961
D11—	25	399,777		306	399,814		11	399,852		37	399,888			399,925			399,962
	29	399,778		323	399,815		13	399,853		48	399,889			399,926		186	399,963
		399,779		333	399,816		19.1	399,850		59	399,890		255	399,927			399,964
	131	399,780		404	399,817		28	399,854		145	399,891			399,928		189	399,965
	143	399,781	D13—	103	399,818		133	399,855			399,892			399,929		190	399,966
		399,782			399,819			399,856		178	399,893			399,930			399,967
	164	399,783		118	399,821		138	399,857		194	399,894			399,931			399,968
		399,784		134	399,820		199	399,858		201	399,895		269	399,932		200	399,969
		399,785		139.1	399,822	D16—	133	399,859		208	399,896		284	399,933			399,970
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		399,787			399,824		209	399,861		214	399,898		293.1	399,935		232	399,972
		399,788			399,825		219	399,862		217	399,897		303	399,936	D25—	16	399,973
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	92	399,790		147	399,827		246	399,864		222	399,901		351	399,938		56	399,974
	96	399,791		156	399,828		326	399,865		227	399,902		355	399,939		62	399,975
		399,792			399,829		330	399,866		230	399,903			399,940		67	399,977
	114	399,793		158	399,830	D17—	22	399,867		234	399,904			399,941		113	399,978
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	143	399,796			399,833		43	399,870		349	399,907		365	399,944		139	399,981
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	162	399,802		121	399,839		91	399,876		126	399,912	D24—	110.5	399,950			
		399,803		124	399,840		92	399,877		140	399,913		112	399,951			
		399,804		125	399,841	D20—	7	399,878	D23—	214	399,915		122	399,952			

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P.—	1	10,648		21	10,650		43.1	10,652		87.12	10,657			10,655			10,659
	8.1	10,649		39	10,651		54.1	10,653		87.4	10,654		88.1	10,658		879	10,656

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		5,822,909			5,823,577			5,823,412			5,823,950			5,824,253			5,824,771
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		5,823,502	06	:	5,822,794			5,823,434			5,823,955			5,824,287			5,824,781
		5,823,933			5,822,796			5,823,439			5,823,956			5,824,293			5,824,784
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		5,823,073			5,822,897			5,823,477			5,823,992			5,824,327			5,824,799
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		5,824,425			5,823,034			5,823,594			5,824,042			5,824,475			5,824,942
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		5,825,834			5,823,280			5,823,851			5,824,165			5,824,642			5,825,119
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		5,826,048			5,823,305			5,823,920			5,824,186			5,824,649			5,825,166
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Patent Cooperation Treaty (PCT) Information

For information concerning PCT member countries, see the notice appearing in the *Official Gazette* at 1214 O.G. 47, on September 15, 1998.

For use of the European Patent Office as an International Searching Authority for international applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52, on September 28, 1982.

For use of the European Patent Office as an International Preliminary Examining Authority for international applications filed in the United States Receiving Office, see the notices appearing in the *Official Gazette* at 1080 O.G. 2, on July 7, 1987, and at 1091 O.G. 2, on June 7, 1988. There is no longer a limit on the number of such international applications accepted for international preliminary examination by the European Patent Office; see the notice appearing at 1116 O.G. 32, on July 17, 1990.

The search fee of the European Patent Office was increased, effective January 1, 1998, and was announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

International fees were changed, effective on May 1, 1997, due to a change in the exchange rate of the U.S. dollar with regard to the Swiss franc, and were announced in the *Official Gazette* at 1197 O.G. 69, on April 22, 1997. The basic fee and the designation fee were further changed effective January 1, 1998 and were announced in the *Official Gazette* at 1205 O.G. 3, on December 2, 1997.

Certain domestic PCT fees and charges for International Search and Preliminary Examination were changed, effective October 1, 1998, and were announced in the *Official Gazette* at 1213 O.G. 153, on August 18, 1998.

The schedule of PCT fees (in U.S. dollars), effective October 1, 1998, is as follows:

International Application (PCT Chapter I) fees:	
Transmittal fee	240.00
Search Fee	
U.S. Patent and Trademark Office (USPTO) as International Searching Authority (ISA)	
— No corresponding prior U.S. national application filed under 35 U.S.C. 111(a)	700.00
— Corresponding prior U.S. national application filed under 35 U.S.C. 111(a and filing fee under 37 CFR 1.16(a) paid)	450.00
— Supplemental search fee, per additional invention (payable only upon invitation)	210.00
European Patent Office as ISA	1250.00
International fees	
Basic fee	455.00
Basic supplemental fee (for each page over 30)	10.00
Designation fee per country or region	
— For the first 11 national or regional offices designated	105.00
— For each designation in excess of 11 offices	No Charge
Precautionary designation fee and confirmation fee for each precautionary designation confirmed (PCT Rule 15.5)	
— Designation fee	105.00
— Confirmation fee	52.50
International Application (PCT Chapter II) fees associated with filing a Demand for Preliminary Examination:	
Handling fee	162.00
Preliminary examination fee	
USPTO as International Preliminary Examining Authority (IPEA)	
— USPTO was ISA in PCT Chapter I	490.00
— Additional examination fee, per additional invention (payable only upon invitation)	140.00
— USPTO was not ISA in PCT Chapter I	750.00
— Additional examination fee, per additional invention (payable only upon invitation)	270.00

U.S. National Stage Fees	Small Entity	Regular
Basic National fee		
USPTO was IPEA		
— All claims presented satisfied provisions of PCT Article 33(2) to (4)	*	*
— All claims presented did not satisfy provisions of PCT Article 33(2) to (4)	*	*
USPTO was ISA but not IPEA	*	*
USPTO was neither ISA nor IPEA		
— Search report has not been prepared by the European Patent Office or the Japanese Patent Office	*	*
— Search report has been prepared by the European Patent Office or the Japanese Patent Office	*	*
Other National fees		
— For each independent claim in excess of 3	*	*
— For each claim in excess of 20	*	*
— For each application containing a multiple dependent claim	*	*
— Surcharge for filing oath or declaration after the time limit applicable under PCT Article 22 or 39(1)	65.00	130.00
— Processing fee for filing English translation after the time limit applicable under PCT Article 22 or 39(1)	130.00	130.00

* No fees are indicated because as of the date this notice was prepared these fee amounts were uncertain. Current fee amounts may be obtained from the Patent and Trademark Office's Web site (www.uspto.gov) or by contacting the PTO General Information Services Division at (703) 308-4357 or (800) 786-9199.

Sep. 16, 1998

BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

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Notice of Maintenance Fees Payable

Title 37 Code of Federal Regulations (CFR), Section 1.362(d) provides that maintenance fees may be paid without surcharge for the six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(h), as amended effective Dec. 16, 1991. If the

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maintenance fee is not paid in the patent requiring such payment the patent will expire on the 4th, 8th, or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on October 24, 1995 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,459,874 through 5,461,723
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 22, 1991 for which maintenance fees due at 7 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 5,058,207 through 5,060,312
Reissue Patents based on the above identified patents.

Attention is drawn to the patents which were issued on October 20, 1987 for which maintenance fees due at 11 years and six months may now be paid. The patents have patent numbers within the following ranges:

Utility Patents 4,700,403 through 4,701,961
Reissue Patents based on the above identified patents.

No maintenance fees are required for design or plant patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

For patents based on applications filed on or after Dec. 12, 1980, but before Aug. 27, 1982, patent owners must establish small entity status according to 37 CFR 1.27 if they have not done so and if they wish to pay the small entity amount.

The current amounts of the maintenance fees due at 3 years and six months, 7 years and six months, and 11 years and six months are set forth in 37 CFR 1.20(e)-(g), as amended Oct. 1, 1997, which are reproduced below:

37 CFR § 1.20 Post-issuance fees

(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980, in force beyond 4 years; the fee is due by three years and six months after the original grant:

By a small entity (§ 1.9(f)) ..... *
By other than a small entity ..... *

(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Dec. 12, 1980 in force beyond 8 years; the fee is due by seven years and six months after the original grant:

By a small entity (§ 1.9(f)) ..... *
By other than a small entity ..... *

(g) For maintaining an original or reissue patent, except a design or plant patent, based on applications filed on or after Dec. 12, 1980 in force beyond 12 years; the fee is due by eleven years and six months after the original grant:

By a small entity (§ 1.9(f)) ..... *
By other than a small entity ..... *

The amount of the surcharge for paying the maintenance fee during the grace period or after expiration of the patent are set forth in 37 CFR 1.20(h), and (i) which are reproduced below:

(h) Surcharge for paying a maintenance fee during the 6 month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980:

By a small entity (§ 1.9(f)) $65.00
By other than a small entity $130.00

(i) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee where the delay is shown to the satisfaction of the Commissioner to have been:

(1) unavoidable $700.00
(2) unintentional $1,640.00

* No fees are indicated because as of the date this notice was prepared these fee amounts were uncertain. Current fee amounts may be obtained from the Patent and Trademark Office's Web site (www.uspto.gov) or by contacting the PTO General Information Services Division at (703) 308-4357 or (800) 786-9199.

Notice of Expiration of Patents Due to Failure to Pay Maintenance Fee

35 U.S.C. 41 and 37 CFR 1.362(g) provide that if the required maintenance fee and any applicable surcharge are not paid in a patent requiring such payment, the patent will expire at the end of the 4th, 8th or 12th anniversary of the grant of the patent depending on the first maintenance fee which was not paid.

According to the records of the Office, the patents listed below have expired due to failure to pay the required maintenance fee and any applicable surcharge.

PATENTS WHICH EXPIRED ON August 19, 1998 DUE TO FAILURE TO PAY MAINTENANCE FEES

Patent Number	Application Number	Issue Date
4,606,080	06/723,887	08/19/86
4,606,082	06/628,607	08/19/86
4,606,083	06/591,303	08/19/86
4,606,089	06/732,450	08/19/86
4,606,095	06/776,844	08/19/86
4,606,107	06/738,341	08/19/86
4,606,109	06/570,487	08/19/86
4,606,112	06/749,820	08/19/86
4,606,116	06/753,836	08/19/86
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4,606,127	06/729,390	08/19/86
4,606,130	06/690,128	08/19/86
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4,606,202	06/690,838	08/19/86
4,606,214	06/677,098	08/19/86
4,606,216	06/790,550	08/19/86
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4,606,243	06/657,544	08/19/86
4,606,249	06/696,404	08/19/86
4,606,254	06/678,007	08/19/86
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4,606,263	06/742,455	08/19/86
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4,606,312	06/758,078	08/19/86
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Patent Number	Application Number	Issue Date
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4,606,356	06/667,395	08/19/86
4,606,357	06/672,800	08/19/86
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4,606,412	06/700,164	08/19/86
4,606,427	06/784,357	08/19/86
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4,947,922	07/307,789	08/14/90
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4,947,517	07/296,158	08/14/90
4,947,521	07/409,365	08/14/90

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4,949,396	07/261,208	08/14/90
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5,338,162	08/170,670	08/16/94
5,338,172	08/095,664	08/16/94
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5,339,414	07/965,092	08/16/94
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Errata

In the list of patents which expired on February 21, 1996, due to failure to pay maintenance fees, in the OG of April 30, 1996, Patent Number 4,433,057 should not have appeared in that no maintenance fees are required for this patent.

Patents Reinstated Due to the Acceptance of a Late Maintenance Fee From 8/21/98

Patent Number	Serial Number	Filing Date	Issue Date	Granted Date
4,580,629	06/706,951	02/28/85	04/08/86	08/24/98
4,690,213	06/825,338	02/03/86	09/01/87	08/24/98
4,739,547	07/096,100	09/11/87	04/26/88	08/21/98
4,806,918	07/042,544	04/24/87	02/21/89	08/21/98
4,817,043	07/213,026	06/28/88	03/28/89	08/25/98
4,874,952	07/187,367	04/28/88	10/17/89	08/25/98
4,898,197	07/120,942	11/16/87	02/06/90	08/21/98
4,906,484	07/146,845	01/22/88	03/06/90	08/21/98
5,129,045	07/677,315	03/29/91	07/07/92	08/25/98
5,175,223	07/665,851	03/07/91	12/29/92	08/27/98
5,176,520	07/510,141	04/17/90	01/05/93	08/24/98
5,179,205	07/687,147	04/18/91	01/12/93	08/27/98

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Reissue Applications Filed

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.12(b)).

5,453,863, Re. S.N. 09/069,048, Apr. 28, 1998, Cl. 359/91, MULTISTABLE CHIRAL NEMATIC DISPLAYS, John West, et. al., Owner of Record: *Kent State University, Kent, Ohio*. Attorney or Agent: Ray L. Weber, Ex. Gp.: 2515

5,481,657, Re. S.N. 09/001,595, Dec. 31, 1997, Cl. 395/118, MULTI-USER DIGITAL LASER IMAGING SYSTEM, Paul C. Schubert, et. al., Owner of Record: *Minnesota Mining and Manufacturing Co., St. Paul, Minn.*, Attorney or Agent: Kent J. Sielfert, Ex. Gp.: 2412

5,514,797, Re. S.N. 09/028,863, Feb. 23, 1998, Cl. 544/203, METHOD OF INCREASING PURITY OF MELAMINE, David Best, et. al., Owner of Record: *DSM Melamine, Heerlen, Netherlands*, Attorney or Agent: Donald J. Bird, Ex. Gp.: 1611

5,530,518, Re. S.N. 09/103,536, Jun. 24, 1998, Cl. 355/053, PROJECTION EXPOSURE APPARATUS, Kazuo Ushida, et. al., Owner of Record: *Nikon Corp., Tokyo, Japan*, Attorney or Agent: Nelson H. Shapiro, Ex. Gp.: 2852

5,539,074, Re. S.N. 09/119,787, Jul 21, 1998, Cl. 526/326, LINEAR AND CYCLIC POLYMERS OR OLIGOMERS HAVING A PHOTOREACTIVE ETHENE GROUP, Rolf-Peter Herr, et. al., Owner of Record: *Rolic AG, Basle, Switzerland*, Attorney or Agent: Joel F. Spivak, Ex. Gp.: 1505

5,551,514, Re. S.N. 09/146,204, Sep. 2, 1998, Cl. 166/280, SAND CONTROL WITHOUT REQUIRING A GRAVEL PACK SCREEN, Erik B. Nelson, Owner of Record: *Dowell, Sugarland, Tex.*, Attorney or Agent: Jonathon P. Osha, Ex. Gp.: 3506

5,555,526, Re. S.N. 09/151,414, Sep. 10, 1998, Cl. 365/203, SYNCHRONOUS SEMICONDUCTOR MEMORY DEVICE HAVING AN AUTO-PRECHARGE FUNCTION, Gyu-Hong Kim, Owner of Record: *Samsung Electronics Co. Ltd., Kyungki-Do, Korea*, Attorney or Agent: Grant J. Scott, Ex. Gp.: 2511

5,589,468, Re. S.N. 09/112,575, Jul. 9, 1998, Cl. 514/052, METHOD FOR PROVIDING NUTRITION TO ELDERLY PATIENTS, Paul M. Lin, Shen-Youn Chang, and Chris Kruzel, Owner of Record: *Nestec, Ltd., Vevey, Switzerland*, Attorney or Agent: Robert M. Barrett, Ex. Gp.: 1711

5,595,211, Re. S.N. 09/098,222, Jun. 16, 1998, Cl. 137/625.460, STEAM TRAP TEST STATION, Don L. Adams, Owner of Record: *Inventor*, Attorney or Agent: Daniel V. Thompson, Ex. Gp.: 3407

5,597,734, Re. S.N. 09/067,471, Apr. 27, 1998, Cl. 436/, ION CHROMATOGRAPHY USING FREQUENT REGENERATION OF BATCH-TYPE SUPPRESSOR, Hamish Small, et. al., Owner of Record: *Dionex Corp., Sunnyvale, Calif.*, Attorney or Agent: David J. Brezner, Ex. Gp.: 1743

5,669,182, Re. S.N. 09/151,515, Sep. 10, 1998, Cl. 135/087, COCOON, Richard Ciriffis, Owner of Record: *Inventor*, Attorney or Agent: Laurence A. Greenberg, Ex. Gp.: 3621

5,748,249, Re. S.N. 09/150,683, Sep. 10, 1998, Cl. 348/419, VARIABLE TRANSFER RATE CONTROL CODING APPARATUS, Mitsuaki Fujiwara, Owner of Record: *Victor Co. of Japan Ltd., Yokohama-Shi, Japan*, Attorney or Agent: J. C. Holman, Ex. Gp.: 2713

5,758,593, Re. S.N. 09/149,756, Sep. 9, 1998, Cl. 114/178, PORT ASSEMBLY FOR A MARINE VESSEL, James H. Kyle, Owner of Record: *Pompanette Inc., Charlestown, N.H.*, Attorney or Agent: David E. Dougherty, Ex. Gp.: 3612

Requests for Reexaminations Filed

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,306,042, Re. S.N. 90/005,090, Aug. 27, 1998, Cl. 522/099, METHOD OF MAKING A CONTACT LENS MATERIAL WITH INCREASED OXYGEN PERMEABILITY, Russell A. Neefe, Owner of Record: *Dome Patent, L.P., Sacramento, Calif.*, Attorney or Agent: John P. Sutton, Bryan Hinshaw and Barnet, San Francisco, Calif., Ex. Gp.: 1711, Requester: Herbert W. Larson, Larson and Larson, Largo, Fla.

4,691,975, Re. S.N. 90/005,091, Aug. 27, 1998, Cl. 439/266, INTEGRATED CIRCUIT TESTER SOCKET, Masami Fukunaga, et. al., Owner of Record: *Dai-Ichi Seiko Kabushiki Kaisha, Kawaguchi, Japan*, Attorney or Agent: Pillsbury Madison and Sutro, Washington, D.C., Ex. Gp.: 2833, Requester: Adam C. Volentine, Reston, Va.

5,120,420, Re. S.N. 90/005,085, Aug. 26, 1998, Cl. 204/408, BIOSENSOR AND A PROCESS FOR PREPARATION THEREOF, Shiro Nankai, et. al., Owner of Record: *Matsushita Electric Industrial Co., Inc., Osaka, Japan*, Attorney or Agent: Renner Otto Boisselle and Sklar, Cleveland, Ohio, Ex. Gp.: 1744, Requester: Owner

5,160,925, Re. S.N. 90/005,082, Aug. 24, 1998, Cl. 340/853.3, SHORT HOP COMMUNICATION LINK FOR DOWNHOLE MWD SYSTEM, Patrick E. Dalley, et. al., Owner of Record: *Halliburton Co., Duncan, Okla.*, Attorney or Agent: Michael F. Heim, Conley Rose and Tayon, Houston, Tex., Ex. Gp.: 2735, Requester: Owner

5,500,968, Re. S.N. 90/005,092, Aug. 31, 1998, Cl. 014/071.7, DOCK LEVELER INCORPORATING AN INFLATABLE BAG, Charles H. Hodges, Owner of Record: *Kelley Co., Inc., Milwaukee, Wis.*, Attorney or Agent: David B. Smith, Michael Best and Friedrich, Milwaukee, Wis., Ex. Gp.: 3625, Requester: Matthew C. McNeill, Rite Hite Holding Corp., Milwaukee, Wis.

5,553,262, Re. S.N. 90/005,086, Aug. 26, 1998, Cl. 711/123, MEMORY APPARATUS AND METHOD CAPABLE OF SETTING ATTRIBUTE OF INFORMATION TO BE CACHED, Itsuko Ishida, et. al., Owner of Record: *Mitsubishi Denki Kabushiki Kaisha, Itami-Shi, Japan*, Attorney or Agent: Stephen C. Carlson, McDermott Will and Emery, Alexandria, Va., Ex. Gp.: 2751, Requester: Owner

5,599,681, Re. S.N. 90/005,087, Aug. 26, 1998, Cl. 435/007.23, ACTIVATION-STATE-SPECIFIC PHOSPHOPROTEIN IMMUNODETECTION, Richard J. Epstein, et. al., Owner of Record: *Dana-Farber Cancer Institute, Inc., Boston, Mass.*, Attorney or Agent: Paul T. Clark, Clark and Elbing, Boston, Mass. Ex. Gp.: 1641, Requester: Owner

5,607,077, Re. S.N. 90/005,083, Aug. 24, 1998, Cl. 220/575, FOOD BEVERAGE AND ACCESSORIES PLATE, Torkel E. Torkelson, Owner of Record: *Inventor*, Attorney or Agent: Merrill N. Johnson, Naples, Fla., Ex. Gp.: 3727, Requester: William E. Noonan, Fort Myers, Fla.

5,661,117, Re. S.N. 90/005,088, Aug. 26, 1998, Cl. 508/433, REGENERATION OF PHOSPHATE ESTER LUBRICATING FIELDS, Peter Dufresne, Owner of Record: *Inventor*, Attorney or Agent: Paul S. Sharpe, McFadden Fincham, Ottawa Ontario, Canada, Ex. Gp.: 1721, Requester: Bruce Monroe, Ratner and Prestia, Wilmington, Del.

5,669,998, Re. S.N. 90/005,089, Aug. 26, 1998, Cl. 156/159, HEAT-SEAL SPLICING ASSEMBLY AND METHOD,

James K. Ward, et. al., Owner of Record: *Martin Automatic Inc., Rockford, Ill.*, Attorney or Agent: John J. Held, McAndrews Held and Malloy, Ltd., Chicago, Ill., Ex. Gp.: 1734, Requester: Richard M. Goldberg, Hackensack, N.J.

5,750,087, Re. S.N. 90/005,084, Aug. 25, 1998, Cl. 423/604, PROCESS FOR THE REDUCTION OF COPPER OXIDE, Joseph A. Corella, Owner of Record: *Mine Safety Appliances Co., Pittsburgh, Pa.*, Attorney or Agent: James G. Uber, Mine Safety Appliances Co., Pittsburgh, Pa., Ex. Gp.: 1754, Requester: Gerald K. White, Morton International Inc., Chicago, Ill.

Notice of Expiration of Trademark Registrations Due To Failure to Renew

15 U.S.C. 1059 provides that each trademark registration may be renewed for periods of ten years from the end of the expiring period upon payment of the prescribed fee and the filing of an acceptable application for renewal. This may be done at any time within six months before the expiration of the period for which the registration was issued or renewed, or it may be done within three months after such expiration on payment of an additional fee.

According to the records of the Office, the trademark registrations listed below are expired due to failure to renew in accordance with 15 U.S.C. 1059.

TRADEMARK REGISTRATIONS WHICH EXPIRED
September 7, 1998
DUE TO FAILURE TO RENEW

Reg. Number	Serial Number	Reg. Date
352,324	71/366,256	11/30/1937
352,340	71/385,936	11/30/1937
352,342	71/386,270	11/30/1937
352,346	71/387,346	11/30/1937
352,387	71/393,261	11/30/1937
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1,077,568	73/088,299	11/15/1977

Notice Regarding Technical Center Box Issue Fee Mailings

The Office will begin mailing address labels with the PTOL-85, "Notice of Allowance and Issue Fee Due" for patent applications allowed in all Technology Centers. These address labels should be used to ensure proper routing of post-allowance correspondence. This directive supersedes the "Special Boxes for Patent Mail" instruction. Any Notice of Allowance and Issue Fee Due received without the accompanying address labels should continue to be addressed to Box Issue Fee.

March 11, 1998 NICHOLAS P. GODICI
Deputy Assistant Commissioner for Patents (Acting)

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37 CFR 1.47 Notice by Publication

Notice is hereby given of the filing of a national stage application with a petition under 37 CFR 1.47 requesting acceptance of the application without the signature of all inventors. The petition has been granted. A notice has been sent to the last known address of the non-signing inventor. The inventor whose signature is missing (Jacob Yadegar) may join in the application by promptly filing an appropriate oath or declaration complying with 37 CFR 1.63. The international application number is PCT/GB94/02613 and was filed on 30 November 1994 in the names of Nicolae Marius Busuioc, Bharat Purohit, Ian Barry Crabtree and Jacob Yadegar for the invention entitled Communications Network Management. The national stage application is assigned number 08/652,433 and has a 35 U.S.C. 371(c) date of 05 August 1997.

DEPARTMENT OF COMMERCE
Patent and Trademark Office
37 CFR Part 1

[Docket No.: 980826226-8226-01]

RIN 0651-AA98

Changes to Implement the Patent Business Goals

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Advance notice of proposed rulemaking.

SUMMARY: The Patent and Trademark Office (PTO) has established business goals for the organizations reporting to the Assistant Commissioner for Patents (Patent Business Goals). The Patent Business Goals have been established in

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response to the Vice-President's designation of the PTO as an agency that has a high impact on the public, and they are designed to make the PTO a more business-like agency. The focus of the Patent Business Goals is to increase the level of service to the public by raising the efficiency and effectiveness of the PTO's business processes.

The PTO is considering a number of changes to the rules of practice and procedure to support the Patent Business Goals. The PTO is publishing this Advance Notice of Proposed Rulemaking to allow for public input at an early stage in the rule making process. The PTO is soliciting comments on these specific changes to the rules of practice or procedures.

DATES: COMMENT DEADLINE DATE: To be ensured of consideration, written comments must be received on or before December 4, 1998. While comments may be submitted after this date, the PTO cannot ensure that consideration will be given to such comments. No public hearing will be held.

ADDRESSES: Comments should be sent by mail message over the Internet addressed to regreform@uspto.gov. Comments may also be submitted by mail addressed to: Box Comments—Patents, Assistant Commissioner for Patents, Washington, D.C. 20231, or by facsimile to (703) 308-6916, marked to the attention of Hiram H. Bernstein. Although comments may be submitted by mail or facsimile, the Office prefers to receive comments via the Internet. Where comments are submitted by mail, the Office would prefer that the comments be submitted on a DOS formatted 3 1/4 inch disk accompanied by a paper copy.

The comments will be available for public inspection at the Special Program Law Office, Office of the Deputy Assistant Commissioner for Patent Policy and Projects, located at Suite 520, of One Crystal Park, 2011 Crystal Drive, Arlington, Virginia, and will be available through anonymous file transfer protocol (ftp) via the Internet (address: ftp.uspto.gov). Since comments will be made available for public inspection, information that is not desired to be made public, such as an address or phone number, should not be included in the comments.

FOR FURTHER INFORMATION CONTACT: With regard to this Advance Notice of Proposed Rulemaking in General: Hiram H. Bernstein or Robert W. Bahr, by telephone at (703) 305-9285, or by mail addressed to: Box Comments—Patents, Assistant Commissioner for Patents, Washington, DC 20231, or by facsimile to (703) 308-6916, marked to the attention of Mr. Bernstein.

With regard to simplifying request for small entity status (Topic 1): James E. Bryant, III, at the above telephone number.

With regard to requiring separate surcharges and supplying filing receipts (Topic 2), and permitting delayed submission of an oath or declaration, and changing time period for submission of the basic filing fee and English translation (Topic 3), and creating a PTO review service for applicant-created forms (Topic 21): Fred A. Silverberg, at the above telephone number.

With regard to limiting the number of claims in an application (Topic 4), providing for presumptive elections (Topic 14), and creating alternative review procedures for applications under appeal (Topic 18): Robert W. Bahr, at the above telephone number.

With regard to harmonizing standards for patent drawings (Topic 5), printing patents in color (Topic 6), and reducing time for filing corrected or formal drawings (Topic 7): Karin L. Tyson, at the above telephone number.

With regard to permitting electronic submission of voluminous material (Topic 8): Jay Lucas, at the above telephone number.

With regard to imposing limits/requirements on information disclosure statement submissions (Topic 9), and refusing information disclosure statement consideration under certain circumstances (Topic 10): Kenneth M. Schor, at the above telephone number.

With regard to providing no cause suspension of action (Topic 11): Gerald A. Dost, at the above telephone number.

With regard to requiring a handling fee for preliminary amendments and supplemental replies (Topic 12): Randall L. Green, at the above telephone number.

With regard to changing amendment practice to replacement by paragraphs/claims (Topic 13), requiring identification of broadening in a reissue application (Topic 16), and changing multiple reissue application treatment (Topic 17): Joseph A. Narcavage, at the above telephone number.

With regard to creating a rocket docket for design applications (Topic 15): Lawrence E. Anderson, at the above telephone number.

With regard to eliminating preauthorization of payment of the issue fee (Topic 19), and reevaluating the Disclosure Document Program (Topic 20): John F. Gonzales, at the above telephone number.

SUPPLEMENTARY INFORMATION:

I. Background.

For Fiscal Year 1999, the PTO is emphasizing its core business: (1) the granting of patents; (2) the registering of trademarks; and (3) the dissemination of the information contained in those documents. The Presidential themes of encouraging innovation and investment, enhancing our customers' satisfaction and seeking efficiencies through international cooperation are embodied in the business goals of the organizations reporting to the Assistant Commissioner for Patents (Patent Business Goals).

President Clinton's Framework for Global Electronic Commerce demands that the United States make its system for protecting patentable innovations more efficient to meet the needs of the fast-moving electronic age. The PTO was selected by Vice President Gore as one of a small group of Federal agencies, known as High Impact Agencies, that has a direct impact on the public. The products and services that the PTO provides to its customers must enable them to get their new inventions and new ideas into the American and global marketplace.

The PTO's participation as a High Impact Agency is expressed in its Year 2000 Commitments, part of the Fiscal Year 1999 Annual Performance Plan. Some key objectives of that plan include:

1. The PTO will reduce its processing or cycle time (*i.e.*, the actual time spent by the PTO in processing an application, which does not include the time when the PTO is awaiting a reply or other action by the applicant) for inventions to twelve months by the year 2003.

2. The PTO will test reengineered processes and automated systems, and be ready to deploy electronic processing of patent applications by the year 2003.

3. The PTO will work with the World Intellectual Property Organization (WIPO) to achieve electronic filing of Patent Cooperation Treaty applications, and by the year 2000, electronically receive and process Patent Cooperation Treaty (PCT) applications at the PTO.

The activities in this plan call for changes in the very nature of the patent prosecution activity as it currently exists. Such activities are reflected in the regulations of the PTO, Title 37 of the Code of Federal Regulations. This rulemaking is designed to be the vehicle of the changes to these regulations, to embody the spirit and substance of the PTO's activities for self-improvement.

II. Specific Patent Business Goals.

The PTO has established five specific Patent Business Goals, which have been adopted as part of the Fiscal Year 1999 Corporate Plan Submission of the President. The five Patent Business Goals are:

Goal 1: Reduce PTO processing time (cycle time) to twelve months or less for all inventions.

Goal 2: Establish fully-supported and integrated Industry Sectors.

Goal 3: Receive applications and publish patents electronically.

Goal 4: Exceed our customers' quality expectations, through the competencies and empowerment of our employees.

Goal 5: Align fees commensurate with resource utilization and customer efficiency.

The organizations reporting to the Assistant Commissioner for Patents have developed a business plan (Patent Business Plan) to achieve the Patents Business Goals. The rule and procedure changes currently under consideration by the PTO, and to which this Advance Notice of Proposed Rulemaking (Advance Notice) pertains, are in support of the Patent Business Plan.

An example of how the PTO is considering changes to the rules of practice and procedure to meet the varied demands of its customers is shown by the consideration of both an expedited examination procedure for design applications as well as an expanded suspension of action (or deferred examination) procedure. Currently, all applications are, with limited exceptions, scheduled for examination based upon their filing date. *See* section 708.02 of the Manual of Patent Examining Procedure (6th ed., rev. 3, July 1997) (MPEP). While the rules of practice do provide for the advancement of applications for examination (37 CFR 1.102) and suspension of action in an application (37 CFR 1.103), the current procedures are not sufficiently tailored to the varied needs of the PTO's customers.

The PTO is considering providing a procedure under which those design applicants who need rapid examination due to rapid style changes will be able to request expedited examination of their applications. The PTO is also considering providing a procedure under which those applicants who do not need or desire examination (*e.g.*, the cost of prosecution is a burden and the invention is not yet commercially viable) will be able to request a prolonged suspension of action. Obviously, applicants may be required to pay additional fees (*e.g.*, to recover the PTO's costs of exception processing for an expedited application) or waive certain rights (*e.g.*, agree to publication of the application as a condition of a prolonged suspension of action) to avail themselves of the benefits of these procedures.

Finally, the changes under consideration are intended to improve the PTO's business processes in the context of the current legal and technological environment. Should these environments change (*e.g.*, by adoption of an international Patent Law Treaty, enactment of H.R. 400 or S. 507, 105th Cong., 1st Sess. (1997), or implementation of new automation capabilities), the PTO would have to reconsider its business processes and make such further changes to the rules of practice as are necessary.

III. Topics for Public Comment.

A. Introduction.

The topics on which the PTO particularly desires public input at this rulemaking stage are:

(1) Simplifying requests for small entity status (37 CFR 1.27);

(2) Requiring separate surcharges and supplying filing receipts (37 CFR 1.53);

(3) Permitting delayed submission of an oath or declaration, and changing time period for submission of the basic filing fee and English translation (37 CFR 1.52, 1.53);

(4) Limiting the number of claims in an application (37 CFR 1.75);

(5) Harmonizing standards for patent drawings (37 CFR 1.84);

(6) Printing patents in color (37 CFR 1.84);

(7) Reducing time for filing corrected or formal drawings (37 CFR 1.85);

(8) Permitting electronic submission of voluminous material (37 CFR 1.96, 1.821);

(9) Imposing limits/requirements on information disclosure statement submissions (37 CFR 1.98);

(10) Refusing information disclosure statement consideration under certain circumstances (37 CFR 1.98);

(11) Providing no cause suspension of action (37 CFR 1.103);

(12) Requiring a handling fee for preliminary amendments and supplemental replies (37 CFR 1.111);

(13) Changing amendment practice to replacement by paragraphs/claims (37 CFR 1.121);

(14) Providing for presumptive elections (37 CFR 1.141);

(15) Creating a rocket docket for design applications (37 CFR 1.155);

(16) Requiring identification of broadening in a reissue application (37 CFR 1.173);

(17) Changing multiple reissue application treatment (37 CFR 1.177);

(18) Creating alternative review procedures for applications under appeal (37 CFR 1.192);

(19) Eliminating preauthorization of payment of the issue fee (37 CFR 1.311);

(20) Reevaluating the Disclosure Document Program; and

(21) Creating a PTO review service for applicant-created forms.

A discussion of each of these topics is set forth below.

The topics discussed in this Advance Notice are those for which the PTO is considering the greatest change from current practice. For this reason, the PTO is publishing this Advance Notice (rather than a Notice of Proposed Rulemaking) to obtain public input on these topics at the inception of the rulemaking process. The public is invited to submit written comments on any of the topics, including issues related to changes in practice as well as the implementation of any such change in practice. Certain topics do not conclude with questions; however, the PTO desires comments on such topics in general.

Other Considerations.

This Advance Notice is in conformity with the requirements of the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*), Executive Order 12612 (October 26, 1987), and the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). It has been determined that this rulemaking is significant for the purposes of Executive Order 12866 (September 30, 1993).

This Advance Notice involves information collection requirements which are subject to review by the Office of Management and Budget (OMB) under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 *et seq.*). The collections of information involved in this Advance Notice have been reviewed and previously approved by OMB under the following control numbers: 0651-0021, 0651-0030, 0651-0031, 0651-0032, 0651-0033, 0651-0035, and 0651-0037. Any collections of information whose requirements will be revised as a result of the proposed rule changes discussed in this Advance Notice will be submitted to OMB for approval. The principal impact of the changes under consideration in this Advance Rule is to raise the efficiency and effectiveness of the PTO's business processes to make the PTO a more business-like agency and increase the level of the PTO's service to the public.

Notwithstanding any other provision of law, no person is required to respond to nor shall a person be subject to a penalty for failure to comply with a collection of information subject

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to the requirements of the Paperwork Reduction Act unless that collection of information displays a currently valid OMB control number.

As required by the Paperwork Reduction Act of 1995 (44 U.S.C. 3507(d)), the PTO has submitted a copy of this Advance Notice to OMB for its review of these information collections. Interested persons are requested to send comments regarding these information collections, including suggestions for reducing this burden, to Robert J. Spar, Director, Special Program Law Office, Patent and Trademark Office, Washington, D.C. 20231, or to the Office of Information and Regulatory Affairs of OMB, New Executive Office Bldg., 725 17th St. NW, rm. 10235, Washington, DC 20503, Attn: Desk Officer for the Patent and Trademark Office.

The PTO has determined that this Advance Notice has no Federalism implications affecting the relationship between the National Government and the States as outlined in Executive Order 12612.

B. Discussion of Specific Topics.

1. Simplifying request for small entity status (37 CFR 1.27).

Summary: The PTO is considering simplifying applicant's request for small entity status. The currently used small entity statement forms would be eliminated as they would no longer be needed.

Specifics of Change being Considered: Small entity status would be established at any time by a simple assertion of entitlement to small entity status without the currently required formalistic reference to 37 CFR 1.9. Payment of the (exact) small entity basic filing fee would be considered an assertion of small entity status. To establish small entity status after payment of the basic filing fee, a written assertion of small entity status would be required to be submitted with or prior to a fee payment. There would be no change in the current requirement to make an investigation in order to determine entitlement to small entity status; the PTO would only be changing the ease with which small entity status can be claimed once it has been determined that a claim to such status is appropriate.

Problem and Background:

37 CFR 1.27 currently requires that a request for small entity status be accompanied by submission of an appropriate statement that the party seeking small entity status qualifies in accordance with 37 CFR 1.9. Either a reference to 37 CFR 1.9 or a specific statement relating to the provisions of 37 CFR 1.9 is mandatory. For a small business, the small business must either state that exclusive rights remain with the small business, or if not, identify the party to which some rights have been transferred so that the party to which rights have been transferred can submit its own small entity statement (37 CFR 1.27(c)(1)(iii)). This can lead to the submission of multiple small entity statements for each request for small entity status where rights in the invention are split. The request for small entity status and reference/statement may be submitted prior to paying, or at the time of paying, any small entity fee. In part, to ensure that at least the reference to 37 CFR 1.9 is complied with, the PTO has produced four types of small entity statement forms (including ones for the inventors, small businesses and non-profit organizations) that include the required reference to 37 CFR 1.9 and specific statements as to exclusive rights in the invention. Additionally, the statement forms relating to small businesses and non-profit organizations need to be signed by an appropriate official empowered to act on behalf of the small business or non-profit organization. Refunds of non-small entity fees can only be obtained if a refund is specifically requested within two months of the payment of the full (non-small entity) fee and is supported by the required small entity statement. *See* 37 CFR 1.28(a)(1). The two-month refund window is not extendable.

The rigid requirements of 37 CFR 1.27 and 1.28 have led to a substantial number of problems. Applicants, particularly *pro se* applicants, do not always recognize that a particular reference to 37 CFR 1.9 is required in their request to establish small entity status. They believe that all they have to do is pay the small entity fee and state that they are a small entity. Further, the time required to ascertain who are the appropriate officials to sign the statement and to have the statements (referring to 37 CFR 1.9) signed and collected (where more than one is necessary), results, in many instances, in having to pay the higher non-small entity fees and then seek a refund. These situations result in: (1) small entity applicants also having to pay additional fees (*e.g.*, surcharges and extension(s) of time fees for the delayed submission of the small entity statement form); (2) additional correspondence with the PTO to perfect a claim for small entity status; and (3) the filing of petitions with petition fees to revive abandoned applications. This increases the pendency of the prosecution of the application in the PTO and, in some cases, results in loss of patent term. For example, under current procedures, if a *pro se* applicant files a new application with small entity fees but without a small entity statement, the PTO mails a notice to the *pro se* applicant requiring the full basic filing fee of a non-small entity. Even if the applicant timely files a small entity statement, the applicant must still timely pay the small entity surcharge for the delayed submission of the small entity statement to avoid abandonment of the application. A second example is a non-profit organization paying the basic filing fee as a non-small entity because of difficulty in obtaining the non-profit small entity statement form signed by an appropriate official. In this situation, a refund pursuant to 37 CFR 1.26, based on establishing status as a small entity, may only be obtained if a statement under 37 CFR 1.27 and the request for the excess amount are filed within the non-extendable two-month period from the date of the timely payment of the full fee. A third example is an application filed without the basic filing fee on behalf of a small business by a practitioner who includes the standard authorization to pay additional fees. The PTO will immediately charge the non-small entity basic filing fee without specific notification thereof at the time of the charge. By the time the deposit account statement is received and reviewed, the two-month period for refund may have expired.

Accordingly, a simpler procedure to establish small entity status would reduce processing time within the PTO (Patent Business Goal 1) and would be a tremendous benefit to small entity applicants as it would eliminate the time-consuming and aggravating processing requirements that are mandated by the current rules. Thus, the proposed simplification would help small entity applicants to receive patents sooner with fewer expenditures in fees and resources and the PTO could issue the patent with fewer resources (Patent Business Goals 4 and 5).

Simplified Request for Small Entity Status:

The PTO is considering allowing small entity status to be established by the submission of an assertion of entitlement to small entity status. The current formal requirements of 37 CFR 1.27, which include a reference to either 37 CFR 1.9, or to the exclusive rights in the invention, would be eliminated. If small entity status is to be requested at the time of payment of the basic filing fee, the payment of the (exact) small entity basic filing fee will be considered to be a sufficient assertion. If small entity status was not established when the basic filing fee was paid, a later claim to small entity status would be by way of a written assertion. Payment of a small entity fee (*e.g.*, extension of time, or issue fee) without inclusion of a written assertion would not be sufficient.

The written assertion will not be required to be presented in any particular form. Written assertions of small entity status or references to small entity fees will be liberally interpreted to represent the required assertion. The written assertion could be made in any paper filed in or with the application and need be no more than a simple sentence or a box checked in an application transmittal letter or reply cover sheet. Accordingly, small entity status could be established without submission of any of the current small entity statement forms (PTO/SB/09-12) that embody and comply with the current requirements of 37 CFR 1.27 and which are therefore now used to establish small entity status.

An applicant filing a patent application and paying the exact small entity basic filing fee would automatically establish small entity status for the application even without any further written assertion of small entity status. If payment is made, but it is not the exact small entity basic filing fee required and a written assertion of small entity status is not present, the PTO would mail a notice of insufficient filing fees as in current practice. The PTO would not consider a basic filing fee submitted in an amount above the correct small entity basic filing fee, but below the non-small entity filing fee, as a request to establish small entity status unless an additional written assertion is also present. Of course, the submission of a basic filing fee below the correct small entity basic filing fee would not serve to establish small entity status. Where an application is originally filed by a party, who is in fact a small entity, with an authorization to charge fees (including filing fees) and no indication (assertion) of entitlement to small entity status, that authorization would not be sufficient to establish small entity status unless the authorization was specifically directed to **small entity** filing fees. The general authorization to charge fees would continue to be acted upon immediately and the full (not small entity) filing fees would be charged with applicant having two months to request a refund by asserting entitlement to small entity status. This would be so even if the application were a continuing application where small entity status had been established in the prior application.

Once small entity status is established in an application, any change in status from small to non-small, would also require a specific written assertion to that extent, similar to current practice.

The party who could request small entity status would be any party permitted by PTO regulations to pay the basic filing fee and file a paper in the application. This eliminates the additional requirement of obtaining the signature of an appropriate party other than the party prosecuting the application. By way of example, in the case of three *pro se* inventors for a particular application, any of the three inventors upon filing the application could pay a small entity basic filing fee and thereby establish small entity status for the application. For small business concerns and non-profit organizations, the practitioner could supply the assertion rather than the current requirement for an appropriate official of the organization to execute a small entity statement form.

PTO policy and procedures already permit establishment of small entity status in certain applications through simplified procedures. For example, small entity status may be established in a continuing or reissue applications simply by payment of the small entity basic filing fee if the prior application/patent had small entity status. *See* 37 CFR 1.28(a)(2). The instant concept of payment of the basic statutory filing fee to establish small entity status in a new application is merely a logical extension of that practice.

There may be some concern that elimination of the small entity statement forms will result in applicants requesting small entity status who are not actually entitled to such status. On balance, it seems that more errors occur where small entity applicants who are entitled to such status run afoul of procedural hurdles formed by the requirements of 37 CFR 1.27 than the requirements help to prevent status claims for those who are not in fact entitled to such status.

Correction of any inadvertent and incorrect establishment of small entity status would be by way of a paper under 37 CFR 1.28(c) as in current practice.

Continued Obligations for Thorough Investigation of Small Entity Status:

Applicants should not confuse the fact that the PTO is making it easier to qualify for small entity status with the need to do a complete and thorough investigation and to assert that they do in fact qualify for small entity status. **It should be clearly understood that, even though it would be much easier to assert and thereby establish small entity status, applicants would continue to need to make a full and complete investigatinn of all facts and circumstances before making a determination of actual entitlement to small entity status. Where entitlement to small entity status is uncertain it should not be claimed.** *See* MPEP 509.03. The assertion of small entity status (even by mere payment of the exact small entity basic filing fee) is not appropriate until such an investigation has been completed. Thus, in the previous example of the three *pro se* inventors, before one of the inventors could pay the small entity basic filing fee to establish small entity status, the inventor would need to check with the other two inventors to determine whether small entity status was appropriate.

The intent of 37 CFR 1.27 is that the person making the assertion of small entity status is the person in a position to know the facts about whether or not status as a small entity can be properly established. That person, thus, has a duty to investigate the circumstances surrounding entitlement to small entity status to the fullest extent. Therefore, while the PTO is interested in making it easier to claim small entity status, it is important to note that small entity status must not be claimed unless the person or persons can unequivocally make the required self-certification.

Consistent with 37 CFR 1.4(d)(2), which sets forth that for the presentation to the PTO (whether by signing, filing, submitting, or later advocating) of any paper by a party, whether a practitioner or non-practitioner, the payment of a small entity basic filing fee would constitute a certification under 37 CFR 10.18. Thus, a simple payment of the small entity basic statutory filing fee will activate the provisions of 37 CFR 1.4(d)(2) and, by that, provoke the self-certification as set forth in 37 CFR 10.18(b), regardless of whether the party is a practitioner or non-practitioner.

2. Requiring separate surcharges and supplying filing receipts (37 CFR 1.53).

Summary: The PTO is considering charging separate surcharges in a nonprovisional application for the delayed submission of an oath/declaration, and the application filing fee, and issuing another filing receipt, without charge, to correct any errors or to update filing information, as needed.

Specifics of Change Being Considered: The PTO would charge a separate surcharge (currently $130) for each missing part item that is submitted in a delayed manner. Thus, the delayed submission of both an oath/declaration under 37 CFR 1.63, and the payment of the basic filing fee in a nonprovisional application filed under 35 U.S.C. 111(a), would result in the imposition of two surcharges (totaling $260). The change under consideration would not apply to provisional applications filed under 35 U.S.C. 111(b) and 37 CFR 1.53(c). In addition, as the basic national fee must be submitted by the expiration of the applicable twenty- or thirty-month period in 35 U.S.C. 371(b) in a PCT application, the change under consideration would also be inapplicable to applications filed under the PCT.

While the PTO would be charging a separate surcharge for each missing part submitted in a delayed manner, the PTO would also be providing three new user-friendly services which were requested by, and would provide benefits that are desired by, our customers.The three new user-friendly services are: (1) issuing a corrected filing receipt without the fee presently required by 37 CFR 1.9(h) when an oath/declaration, and/or the payment of the application filing fee are submitted in a delayed manner; (2) issuing an additional filing receipt without the fee presently required by 37 CFR 1.19(h), and without a question as to fault, for any error in the filing receipt; and (3) placing a copy of each filing receipt supplied to the applicant in the application file as evidence of issuance of the filing receipt.

Background: Approximately thirty-one per cent of all nonprovisional applications filed are missing parts applications, that is, an application filed without an executed oath/declaration and/or the application filing fee, with a substantial burden being placed on the PTO to provide additional handling, storage and processing for these missing part applications. Neither the payment of the application filing fee nor an oath/declaration in compliance with 37 CFR 1.63 is needed for an application to meet the minimum requirements to be accorded a filing date in a nonprovisional application. *See* 37 CFR 1.53(b). Currently, the PTO charges a single surcharge of $130 for the filing of

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an oath/declaration or the filing fee or both on a date later than the application filing date. At present, the PTO issues a filing receipt at the time a determination is made that an application meets the minimum requirements to receive a filing date. The filing receipt includes, among other things, bibliographic information (*e.g.*, inventive entity/application identifier, title, continuing data, inventor's city and state address, foreign priority, attorney docket number), while also denoting, among other things, the application number, filing date and receipt of the application filing fee. A "Notice Of Omitted Item(s)" (form PTO-1669) or a "Notice To File Missing Parts" (PTO-1533), if needed, are mailed separately. A "Notice of Omitted Items" is mailed by the PTO in an application wherein the application papers so deposited have been accorded a filing date, but a portion (*e.g.*, some of the page(s) of or figure(s) of drawings described in the specification) has been omitted from the submitted application parts. *see Change in Procedure Relating to an Application Filing Date*; Notice, 61 FR 30041 (June 13, 1996), 1188 *Off. Gaz. Pat. Office* 48 (July 9, 1996) , and MPEP 601.01(d)-(h). A "Notice To File Missing Parts" is mailed by the PTO in an application wherein a part of the application (*e.g.*, the oath/declaration, or the appropriate application filing fee) has been omitted on filing. *See Changes in Practice in Supplying Certified Copies and Filing Receipts*; Notice, 1199 *Off. Gaz. Pat. Office* 38 (June 10, 1997), and MPEP 601.01(a). Examination of the application does **not** begin until all the required parts (*e.g.*, filing fee, and oath/declaration) are received. *See* 37 CFR 1.53(h).

In addition, the PTO recently amended 37 CFR 1.41 and 1.53 (effective December 1, 1997) to provide that the names of the inventors are no longer required in order for an application to meet the minimum requirements to be accorded a filing date. *See Changes to Patent Practice and Procedure*; Final Rule Notice, 62 FR 53131, 53186-88 (October 10, 1997), 1203 *Off. Gaz. Pat. Office* 63, 111-13 (October 21, 1997). The names of all the inventors are taken from an executed oath/declaration timely submitted in compliance with 37 CFR 1.63, with the inventive entity being set at that time, 37 CFR 1.41(a)(1). The filing receipt is mailed even if an oath/declaration in compliance with 37 CFR 1.63, the application filing fee, or the actual names of the inventors have not been submitted on filing. In an application which is entitled to a filing date but not naming the actual inventors on filing, an identifier (*e.g.*, the attorney's docket number, or all or a part of the names of the actual inventors) may be used to identify the application, 37 CFR 1.41(a)(3). In the past, upon the filing of an oath/declaration in compliance with 37 CFR 1.63, the PTO did not issue a corrected filing receipt, but only updated PTO records as to the actual inventors for the application. If (1) the inventive entity being submitted by the later filed oath/declaration was different from the identifier/inventive entity used to identify the application on filing and (2) applicant(s) desired a corrected filing receipt containing the corrected information or correction of any other information contained thereon (not due to PTO error), then applicant(s) had to request such in a separate paper filed with the PTO along with the requisite fee under 37 CFR 1.19(h). Further, where a proper small entity statement was not submitted until after the mailing of the filing receipt and a corrected filing receipt was desired to show small entity status based on the small entity statement submitted after the mailing of the filing receipt, a request for such a corrected filing receipt must have been filed along with the requisite fee under 37 CFR 1.19(h).

Separate surcharges: The cost for processing these missing parts applications has increased. Further, the separate submission of each missing part in a delayed manner causes the PTO to perform double the amount of work, as the application would be twice processed for a submitted missing part, with presently only one surcharge being required. Those who delay in submitting either of the items noted above should bear the costs. Patent Business Goal (5) is to assess fees commensurate with resource utilization and customer efficiency. In support of that goal, it is being considered that a separate surcharge be required for the filing of an oath/declaration in compliance with 37 CFR 1.63, and for the payment of the application filing fee on a date later than the application filing date. Therefore, if both the oath/declaration and the application filing fee were submitted on a date later than the application filing date, a payment of $260 ($130 for the late filing of the oath/declaration, and $130 for the late filing of the application filing fee) in current fees would be due on the application.

No incentive currently exists for the submission of the basic filing fee on filing if an executed oath or declaration is not also available for submission. This change would encourage applicants to submit the basic filing fee on filing, even if an executed oath or declaration is not available for submission. Patent Business Goal (1) is to reduce PTO processing time to twelve months or less for all inventions. This change, in combination with the change under consideration in topic 3, would reduce pre-examination processing time, since it would encourage the submission on filing of an application in condition for examination, even if an executed oath or declaration is not available for submission on filing.

Three new services: While the PTO would be charging a separate surcharge for each missing part submitted in a delayed manner, the PTO would also be providing three new user-friendly services which were requested by our customers and provide benefits that are desired by our customers. As a first new service, in addition to the filing receipt being mailed at the time the application is accorded a filing date, a corrected filing receipt would always be mailed to reflect receipt of the oath/declaration in compliance with 37 CFR 1.63, and/or the payment of the application filing fee when they are submitted. No longer would applicant have to file a request for a new filing receipt, to pay a separate fee for it per 37 CFR 1.19(h), or submit a status letter to see if PTO records were updated due to the filing of the oath/declaration. The corrected filing receipt should reflect the actual inventive entity of the application, if it was mailed in response to the receipt of the oath/declaration in compliance with 37 CFR 1.63. Patent Business Goal (4) is to exceed our customers' quality expectations, through the competencies and empowerment of our employees. This new service would be in support of that goal. The PTO has begun this first new service in anticipation of the increase in surcharge fees and to better serve our customers' needs.

As a second new service, if there is an error in the data printed on the filing receipt and a request for a corrected receipt is submitted, the PTO would issue a corrected filing receipt without a fee and without a question as to fault. Patent Business Goal (1) is to reduce PTO processing time to twelve months or less for all inventions. Patent Business Goal (4) is to exceed our customers' quality expectations, through the competencies and empowerment of our employees. Without having to determine who caused the error in the filing receipt, corrected filing receipts would be issued faster and with less inconvenience to all, which would be in support of those goals. Further, the PTO has received substantial feedback that timely receipt of an accurate filing receipt is of great importance to our customers. This second new service is in direct response to this repeated message. Again, the PTO has already begun this second new service in anticipation of the increase in surcharge fees and to better serve our customers' needs.

As a third new service, every time a filing receipt is issued, the PTO would place a copy of the filing receipt in the application file as evidence thereof. Today, a copy of a filing receipt is not placed in the application file, irrespective of the reasons for its issuance. By always placing a copy of the filing receipt in the application file, it will be easier to later determine whether there is still an error in the filing receipt in question, or whether a filing receipt or a corrected filing receipt was actually mailed. Further, since a copy of the filing receipt would now be located in the application file, the time for the PTO to answer questions regarding a particular filing receipt would be greatly reduced. Patent Business Goal (4) is to exceed our customer's quality expectations, through the competencies and empowerment of our employees. This would be in support of that goal.

3. Permitting delayed submission of an oath or declaration, and changing the time period for submission of the basic filing fee and English translation (37 CFR 1.52, 1.53).

Summary: The PTO is considering amending 37 CFR 1.53 to provide that an executed oath or declaration for a nonprovisional application would not be required until the expiration of a period that would be set in a "Notice of Allowability" (PTOL-37). The PTO is also considering amending 37 CFR 1.52 and 1.53 to provide that the basic filing fee and an English translation (if necessary) for a nonprovisional application must be submitted within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application.

Specifics of Change Being Considered: The PTO is considering amending 37 CFR 1.53 to provide that an executed oath or declaration for a nonprovisional application would not be required until the applicant is notified that it must be submitted within a one-month period that would be set in a "Notice of Allowability," provided that the following are submitted within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application: (1) the name(s), residence(s), and citizenship(s) of the person(s) believed to be the inventor(s); (2) all foreign priority claims; and (3) a statement submitted by a registered practitioner that: (a) an inventorship inquiry has been made, (b) the practitioner has sent a copy of the application (as filed) to each of the person(s) believed to be the inventor(s), (c) the practitioner believes that the inventorship of the application is as indicated by the practitioner, and (d) the practitioner has given the person(s) believed to be the inventor(s) notice of their obligations under 37 CFR 1.63(b). In addition, the PTO is considering requiring an applicant to file a continuing application to file an executed oath or declaration naming an inventorship different from that previously stated by the practitioner once prosecution in an application is closed.

The PTO is also considering amending 37 CFR 1.52 and 1.53 to provide, by rule, that the basic filing fee and an English translation (if the application was filed in a language other than English) for a nonprovisional application must be submitted within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application. Applicants will not be given a notice (*e.g.*, a "Notice To File Missing Parts" (PTO-1533)) that the basic filing fee is missing or insufficient, unless the application is filed with an insufficient basic filing fee that at least equals the basic filing fee that was in effect the previous fiscal year. Finally, the filing receipt will indicate the amount of filing fee received and remind applicants that the basic filing fee must be submitted within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application.

These changes will permit the PTO to virtually eliminate the current practice of mailing notices (*e.g.*, a "Notice To File Missing Parts") during the initial processing of a nonprovisional application to require submission of an oath or declaration, basic filing fee, or an English translation.

Background: As discussed above, 37 CFR 1.53(b), as amended effective December 1, 1997, does not require that a nonprovisional application under 35 U.S.C. 111(a) include an executed oath or declaration under 37 CFR 1.63, the names of the inventor(s), any filing fee, or English language application papers for the application to meet the minimum requirements to be accorded a filing date. The PTO, however, does not examine the application until an executed oath or declaration under 37 CFR 1.63 (naming the inventor(s)), the filing fee, and English language application papers are submitted. If an executed oath or declaration under 37 CFR 1.63, filing fee, or English language application papers are not submitted with the filing of a nonprovisional application, the PTO will mail a notice requiring that they be filed (with a surcharge) within two months from the mail date of the notice (plus any extensions under 37 CFR 1.136) to avoid abandonment.

The PTO has received numerous comments from the public indicating that there is great difficulty in filing an executed oath or declaration (*e.g.*, at times it is difficult to determine the names of the actual inventor(s) or it may be difficult to locate the inventor(s)), and that pre-examination processing of a nonprovisional application is a long burdensome process.Difficulty in obtaining the signatures of all the inventor(s) has often resulted in a petition (and fee) under 37 CFR 1.47 (filing when an inventor refuses to sign or cannot be reached). The PTO cannot eliminate the requirement for an oath or declaration in a nonprovisional application without a statutory change. See 35 U.S.C. 111(a)(2)(C) and 115. The Commissioner, however, has latitude as to when an oath or declaration and the filing fee must be submitted for a nonprovisional application. See 35 U.S.C. 111(a)(3).

Discussion: The PTO is considering amending 37 CFR 1.53 to provide that an executed oath or declaration for a nonprovisional application is not required until the expiration of a period that would be set in a "Notice of Allowability" (plus extensions under 37 CFR 1.136), rather than prior to examination of the application. Permitting delayed submission of the oath or declaration until the expiration of a period set in the mailing of a "Notice of Allowability" would allow practitioners additional time to have the oath or declaration executed by all the inventor(s). In addition, if the invention turns out to be unpatentable, no signatures for the oath or declaration would ever be needed.

If an oath or declaration is not submitted within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application, the PTO will require that within this period a registered practitioner: (1) submit the name(s), residence(s), and citizenship(s) of the person(s) believed to be the inventor(s); (2) submit all foreign priority claims; and (3) make and submit a statement that he or she has made an inventorship inquiry (*i.e.*, ascertain the inventorship of the application to the best of his or her knowledge) and that he or she believes that the inventorship is in fact those person(s) so identified as the person(s) believed to be the inventor(s). In addition, the practitioner must state that he or she has sent such person(s) a copy of the application (specification, including claims, and drawings) filed in the PTO, and given such person(s) notice of their obligations to review and understand the contents of the application and of their duty to disclose to the PTO all information known to the person to be material to patentability under 37 CFR 1.56. *See* 37 CFR 1.63(b).

The surcharge set forth in 37 CFR 1.16(e) would also be required if the oath or declaration is submitted on a date later than the filing date of the application, regardless of whether the oath or declaration is filed before a "Notice of Allowability" is mailed.

For examination purposes, it would be presumed that the inventive entity is that set forth by the practitioner in the application as forwarded to the examiner. As discussed above, all claims for foreign priority benefits under 35 U.S.C. 119 or 365 would be submitted prior to examination. The examiner needs this foreign priority claim information to determine whether an additional "back-up" rejection is appropriate. *See* MPEP 904.02. If an oath or declaration is omitted on filing, the first Office action would inform applicant(s) (*e.g.*, through an attached Notice of Informal Application, PTO-152) that an oath or declaration is outstanding.

37 CFR 1.48(f)(1) would continue to provide that, in an application not including an executed oath or declaration, the submission of an executed oath or declaration (such as in reply to a "Notice of Allowability") naming an inventorship different from that previously indicated by the practitioner as the person(s) believed to be the inventor(s) would operate to correct the inventorship without the need for the filing of a petition under 37 CFR 1.48. Nevertheless, this action may cause examination-related problems with the application, in that upon entry of such an oath or declaration the examiner would have to consider whether new rejection(s) are necessary under, for example, 35 U.S.C. 102(a) ("invention . . . by others"), or 102(e) ("invention . . . by another"), or 103/102(a) or (e). Therefore, the PTO is considering requiring a processing fee (in addition to the surcharge) for submission of such an oath or declaration after the first Office action but before the close of prosecution on the merits. In addition, if such an oath or declaration necessitates that a new ground of rejection be made, the next Office action containing the new ground of rejection, absent anything to the contrary, may be made final. *See* MPEP 706.07(a). The PTO is also considering prohibiting the submission of such an oath or declaration that names an inventorship different from that previously indicated by the practitioner as the person(s) believed to be the inventor(s) after prosecution on the merits has closed (*e.g.*, after a final Office action, allowance, or action under *Ex parte Quayle*, 1935 Dec. Comm'r Pat.

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11 (1935)), and requiring that a continuing application be filed in order to permit entry of such an oath or declaration.

The right to prosecute an application (*e.g.*, appoint a representative by a power of attorney or authorization of agent) flows from ownership of the application, which in turn flows from inventorship. In the absence of an assignment the inventor has the right to conduct prosecution of the application (even if the application was prepared and filed by the company for whom the inventor works). Where there is an assignment, the assignee may intervene pursuant to 37 CFR 3.71 and conduct the prosecution to the exclusion of the named inventors. In a large percentage of applications, inventors execute an assignment when the oath or declaration under 37 CFR 1.63 is executed, and appoint representatives as part of the oath or declaration.

Delaying execution of the oath or declaration will, most likely, also encourage delaying execution of the assignment. 37 CFR 3.71 requires an actual assignee of record and does not provide a right of prosecution for parties having an expectation of assignment (*e.g.*, based on an employment contract or a shop right). Hence, since a delay in executing the oath or declaration under 37 CFR 1.63 will probably cause a delay in executing an assignment, an assignee may be unable to avail itself of controlling prosecution under 37 CFR 3.71.

A registered practitioner may take some actions in a patent application by providing his registration number on the paper. *See* 37 CFR 1.34(b). However, only an attorney or agent that is of record, the inventor, or the assignee of the entire interest can take certain actions in an application. For example, only an attorney or agent that is of record can change the correspondence address. *See* 37 CFR 1.33(a). In addition, only an attorney or agent that is of record may execute a power to inspect. *See* 37 CFR 1.14(e)(2).

The PTO is also considering amending 37 CFR 1.34(b) to include in the definition of "attorney or agent of record" the attorney or agent that filed the application. With such a change, an appointment as a representative would not be required before the attorney could change the address in the application file or authorize another to inspect the patent application file, among other things. In addition, 37 CFR 1.34(b) would be amended to provide that a *pro se* inventor who signs a transmittal letter for an application is considered to represent all inventors for the purposes of prosecuting the patent application. *Pro se* inventors frequently do not realize that all inventors need to sign each piece of correspondence to the Office (*e.g.*, each amendment, *see* MPEP 714.01(a)) and a *pro se* inventor will frequently have difficulty obtaining the other inventor's signature during the time provided. With such a change, *pro se* applicants that do not have the foresight of appointing a single representative will have an easier time filing a response to Office actions.

Additionally, the PTO is considering amending 37 CFR 1.52(d) and 1.53 to provide that an English language translation (if the application was filed in a language other than English) and the basic filing fee be submitted no later than one month from the filing date of the nonprovisional application. This one-month period would be extendable under 37 CFR 1.136. The current process of mailing notices (*e.g.*, a "Notice To File Missing Parts" (PTO-1533)) which gives a period (*e.g.*, two months) for submitting the basic filing fee or English translation in a nonprovisional application would be eliminated, as: (1) the basic filing fee would be due on filing, or required with the surcharge under 37 CFR 1.16(e) within one month (plus extensions under 37 CFR 1.136) from the filing date of the application; and (2) any English translation (if the application was filed in a language other than English) would be required with the processing fee set forth in 37 CFR 1.17(k) within one month (plus extensions under 37 CFR 1.136) from the filing date of the application. Except for the situation discussed below, there is no apparent justification for the PTO continuing to mail notices to advise applicants of that which they should already know: (1) that they did not submit the basic filing fee with the application; or (2) that they did not file the application in English.

For example: (1) if the basic filing fee is submitted on filing, no surcharge under 37 CFR 1.16(e) or extension fee under 37 CFR 1.17(a) is required; (2) if the basic filing fee is not submitted on filing but is submitted within one month of the application filing date, the surcharge under 37 CFR 1.16(e) is required but no extension fee under 37 CFR 1.17(a) is required; and (3) if the basic filing fee is not submitted on filing or within one month of the application filing date, but is submitted within six months (the one month that would be provided by rule plus five additional months that may be obtained pursuant to 37 CFR 1.136) of the application filing date, the surcharge under 37 CFR 1.16(e) and appropriate extension fee under 37 CFR 1.17(a) are required. The processing fee set forth in 37 CFR 1.17(k) is required whenever the original application is filed in a language other than English, regardless of when the English translation is submitted.

Exception: In the situation in which an application is filed with an insufficient basic filing fee (due to a fee increase) that at least equals the basic filing fee that was in effect the previous Fiscal Year, the applicant will be given a filing fee deficiency notice, which notice will set a one-month period (extendable under 37 CFR 1.136) within which the balance of the current basic filing fee and the surcharge under 37 CFR 1.16(e) must be filed to avoid abandonment. In all other situations, the current basic filing fee, if not submitted on filing, must be submitted with the surcharge under 37 CFR 1.16(e) within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application to avoid abandonment of the application. The filing receipt will indicate the filing fee received and would be modified to include language reminding applicants that the basic filing fee must be submitted within one month (plus any extensions under 37 CFR 1.136) from the filing date of the application.

For PCT international applications: The PTO is considering amending 37 CFR 1.494 and 1.495 to provide that an English translation of the international application, if filed in a language other than English (35 U.S.C. 371(c)(2)), would be required within one month of the expiration of the applicable twenty- or thirty-month period in 35 U.S.C. 371(b), which one-month period may be extended under 37 CFR 1.136. The PTO is also considering amending 37 CFR 1.494 and 1.495 to provide that an oath or declaration (35 U.S.C. 371(c)(4)) would not be required until the applicant is notified that it must be submitted within a one-month period that would be set in a "Notice of Allowability," provided that the following are submitted within one month (which one-month period is may be extended under 37 CFR 1.136) of the expiration of the applicable twenty- or thirty-month period in 35 U.S.C. 371(b): (1) the residence of each inventor (the name and citizenship of each inventor must be provided on the PCT Request); and (2) a statement submitted by a registered practitioner that: (a) the practitioner has sent a copy of the application (as filed) to each of the inventors, and (b) the practitioner has given the inventor(s) notice of their obligations under 37 CFR 1.63(b). The basic national fee (35 U.S.C. 371(c)(1)) would continue to be required by the expiration of the applicable twenty- or thirty-month period in 35 U.S.C. 371(b), which period is non-extendable.

Patent Business Goal (1) is to reduce PTO processing time to twelve months or less for all inventions. Reducing pre-examination cycle time of an application and forwarding applications on for examination in a shorter period of time would be consistent with that goal. This change (in combination with the change to the period within which an oath or declaration must be submitted) will greatly reduce the number of notices that the PTO must issue during the pre-examination processing of new applications. These changes will also result in applications being initially processed and forwarded for examination in a shorter period of time, and reduce the amount of storage space used for and ease the tracking of applications in pre-examination processing.

The PTO considers the changes to permit delayed submission of an oath or declaration and to require the basic filing fee and any necessary translation within one month of the application filing date to be linked, in that together they will permit a great reduction in the number of notices that the PTO must issue during the pre-examination processing of new applications. Thus, comments opposing any change to require the basic filing fee and any necessary translation within one month of the application filing date should consider that the PTO will probably not adopt the change to permit delayed submission of an oath or declaration if the PTO does not also adopt the change to require the basic filing fee and any necessary translation within one month of the application filing date.

Questions: The PTO is specifically requesting comments on the following issues:

1. The submission of an oath or declaration after the first Office action which changes the names of the inventor(s) from those originally indicated by the practitioner may cause additional work to be performed by the PTO, in particular, by an examiner, as set forth above. As a result, the PTO is considering charging an additional processing fee for the submission of such an oath or declaration, and prohibiting the submission of such an oath or declaration after the close of prosecution. Would the benefits gained by the ability to delay the filing of the oath or declaration outweigh the drawbacks resulting from: (1) the PTO charging a fee for the submission of such an oath or declaration after the first Office action but before close of prosecution; and (2) the PTO prohibiting the submission of an oath or declaration that names an inventorship different from that previously indicated by the practitioner as the person(s) believed to be the inventor(s) after the close of prosecution?

2. Over time, obtaining an executed oath or declaration from all of the inventors becomes increasingly difficult: inventors may forget about or lose interest in an application; they may leave the corporation; and they may become disgruntled. While delaying obtaining the inventor's signature on an oath or declaration may be initially beneficial to the practitioner, it would be more difficult for the practitioner to obtain all of the inventors' signatures on an oath or declaration at the time of allowance (which may be years after filing). National applications resulting from a PCT application entering the national stage have a higher incidence of petitions under 37 CFR 1.47 than national applications filed under 35 U.S.C. 111(a). This may be caused by delay in filing the oath or declaration, which could be thirty months after the filing of the PCT application. Therefore, permitting applicants to delay the submission of an oath or declaration until the expiration of a period set in a "Notice of Allowability" may result in an increase in the number of petitions filed under 37 CFR 1.47. Would the benefits gained by delaying the filing of the oath or declaration outweigh the drawbacks resulting from the increased difficulty in obtaining the inventor(s)' signatures on the oath or declaration, and an increased number of petitions under 37 CFR 1.47 due to the inability to obtain an inventor's signature? Is it a concern to applicants that these petitions under 37 CFR 1.47 will be filed during the publishing (and not pre-examination) process?

3. Delaying submission of the oath or declaration in a PCT application until the mailing of a "Notice of Allowability" would delay its entry into the national stage. A PCT application is not accorded a 35 U.S.C. 102(e) date until the applicant fulfills the requirements of 35 U.S.C. 371(c)(1), (2) and (4), which include filing an oath or declaration in compliance with 35 U.S.C. 115 and 37 CFR 1.497. See 35 U.S.C. 371(c)(4). Is it a concern that, if an applicant in a PCT application delays submission of the oath or declaration until the period set in a "Notice of Allowability," the PCT application would be accorded a 35 U.S.C. 102(e) date as of the date the oath or declaration is submitted?

4. Assuming the above-noted change to 37 CFR 1.34(b) is made giving control of the prosecution to the filer (the attorney or agent that filed the patent application) and the attorney or agent's client is not the inventor, can the client (a potential assignee) take actions allowed an assignee, such as filing a reissue application under 37 CFR 1.172 and submitting a 37 CFR 3.73 statement establishing the right of an assignee to take action?

5. Assuming the above-noted change to 37 CFR 1.34(b) is made, how should an attempt by the inventor(s) to appoint another representative be treated? Should the inventor(s) first be required to file an oath or declaration under 37 CFR 1.63? Should an actual assignee of the inventor(s) be allowed to take action in an application and revoke the attorney of record if an executed oath or declaration of the inventor(s) has not been filed?

6. Notwithstanding any change to 37 CFR 1.34(a), where the inventors execute an assignment but not an oath or declaration under 37 CFR 1.63, is the assignment effective so that the assignee can control prosecution under 37 CFR 3.71 and take necessary action in accordance with 37 CFR 3.73? Note that if status under 37 CFR 1.47 is accorded, if the inventor who originally refused to execute the oath or declaration assigns his interest, the non-signing inventor's assignee cannot control prosecution of the application even if the inventor executes a declaration. Who should the attorney or agent be understood to represent absent an express authorization to act as a representative in the application, the persons indicated as the inventors or an actual or potential assignee?

4. Limiting the number of claims in an application (37 CFR 1.75).

Summary: The PTO is considering a change to 37 CFR 1.75 to limit the number of total and independent claims that will be examined (at one time) in an application.

Specific Change Being Considered: The PTO is considering a change to the rules of practice to: (1) limit the number of total claims that will be examined (at one time) in an application to forty; and (2) limit the number of independent claims that will be examined (at one time) in an application to six. In the event that an applicant presented more than forty total claims or six independent claims for examination at one time, the PTO would withdraw the excess claims from consideration, and require the applicant to cancel the excess claims. This change would apply to all non-reissue utility applications filed on or after the effective date of the rule change, to all reissue utility applications in which the application for the original patent was subject to this change, and to national applications filed under 35 U.S.C. 111(a), as well as national applications that resulted from a PCT international application.

Discussion: Applications containing an excessive number of claims present a specific and significant obstacle to the PTO's meeting its business goals of reducing PTO processing time to twelve months or less for all inventions. While the applications that contain an excessive number of claims are relatively few in percentage (less than 5%), these applications impose a severe burden on PTO clerical and examining resources, as they are extremely difficult to properly process and examine. The extra time and effort spent on these applications has a negative ripple effect, resulting in delays in the processing and examination of all applications, which, in turn, results in an increase in pendency for all applications. In view of the patent term provisions of 35 U.S.C. 154, as amended by the Uruguay Round Agreements Act (URAA), Pub. L. 103-465, 108 Stat. 4809 (1994), PTO processing time and pendency are concerns to the PTO and all applicants. Thus, the PTO considers it inappropriate to continue to permit the proclivity of a relatively low number of applicants (less than 5%) for excessive claim presentation to result in delays in examination and unnecessary pendency for the vast majority of applicants.

Approximately 215,000 utility applications were filed in the PTO in Fiscal Year 1997. PTO computer records indicate that the approximate number and percentage of applications filed in Fiscal Year 1997 containing the following ranges of independent and total claims breaks down as follows:

Applications filed in FY 1997 containing	Number	Percentage FY 1997 filings
Over 50 independent claims:	11	00.005%
Between 41 and 50 independent claims:	23	00.011%
Between 31 and 40 independent claims:	77	00.358%

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Between 21 and 30 independent claims:	275	00.128%
Between 16 and 20 independent claims:	536	00.249%
Between 11 and 15 independent claims:	1,887	00.878%
Between 7 and 10 independent claims:	7,024	03.267%
Between 4 and 6 independent claims:	27,147	12.627%
Over 6 independent claims:	9833	4.896%

Applications filed in FY 1997 containing	Number	Percentage FY 1997 filings
Over 500 total claims:	5	00.002%
Between 201 and 500 total claims:	88	00.041%
Between 101 and 200 total claims:	652	00.303%
Between 61 and 100 total claims:	2,514	01.169%
Between 51 and 60 total claims:	2,143	00.997%
Between 41 and 50 total claims:	4,056	01.887%
Between 31 and 40 total claims:	8,631	04.014%
Between 21 and 30 total claims:	23,323	10.848%
Over 40 total claims:	9458	4.399%

These numbers indicate that over 95% of all applications filed in Fiscal Year 1997 contained fewer than forty total claims and over 95% of all applications filed in Fiscal Year 1997 contained fewer than six independent claims. Thus, the rule change under consideration should not prevent the overwhelming majority of applicants from presenting the desired number of total and independent claims for examination. In addition, the rule change under consideration will benefit the overwhelming majority of applicants, since it will stop a relatively small number of applicants from occupying an inordinate amount of PTO resources.

While the problem with applications containing an excessive number of claims is now reaching a critical stage, this problem has long confronted the PTO. In 1926, Commissioner Robertson remarked that applications containing an excessive number of claims constitute the greatest abuse confronting the PTO (then the Patent Office). *See Ex parte McCullough*, 1927 Dec. Comm'r Pat. 12, 13 (1926). The issuance of patents containing an excessive number of claims has also long been considered an abuse of the courts and the public. *See Carlton v. Bokee*, 84 U.S. (17 Wall) 463, 471-72 (1873) (needless multiplication of nebulous claims deemed calculated to deceive and mislead the public); *Wahpeton Canvas Co. v. Frontier, Inc.*, 870 F.2d 1546, 1551 n.6, 10 USPQ2d 1201, 1206 n.6 (Fed. Cir. 1989) (presentation of the infringement issue on an overgrown claims jungle to a jury and judge at trial is an unprofessional exercise in obfuscation). Put simply, applications (and the resulting patents) that contain an excessive number of claims are a problem that has long confronted the PTO, the courts, and the public.

Historically, this problem (applications containing an excessive number of claims) has been dealt with on a case-by-case basis, in that the presentation of an unreasonable number of claims in an application may result in an undue multiplicity rejection. *See* MPEP 2173.05(n). The CCPA has affirmed rejections based upon undue multiplicity when the degree of repetition and multiplicity" in the claims "beclouds definition in a maze of confusion." *See In re Chandler*, 319 F.2d 211, 225, 138 USPQ 138, 148 (CCPA 1963); *see also In re Chandler*, 254 F.2d 396, 117 USPQ 361 (CCPA 1958). In subsequent decisions, however, the CCPA has declined to hold that the presentation of any particular number of claims is so excessive as to confuse or obscure the inventions defined by the claims. *See In re Wakefield*, 422 F.2d 897, 164 USPQ 636 (CCPA 1970); and In re Flint, 411 F.2d 1353, 162 USPQ 228 (CCPA 1969). These subsequent decisions have severely cut back on the use of rejections based upon undue multiplicity. *See Ex parte Sheldon*, 172 USPQ 319 (BPAI 1972).

After the 1970s, the PTO balanced the difficulty of making and defending undue multiplicity rejections with likelihood of its success on appeal against the burden of just examining applications containing an excessive number of claims, and generally chose to simply suffer the burden of examining such applications. Recently, however, this problem (applications containing an excessive number of claims) has been exacerbated by the advent of word-processing equipment, which significantly reduces the skill and effort required to draft and present a seemingly endless number of claims in an application. The change during the last twenty years to the index of claims in the application file wrapper illustrates this point: the file wrapper for the 1979 series (the 06 series) applications had an index for fifty claims; the file wrapper for the 1987 series (the 07 series) and 1993 series (the 08 series) applications had an index for 100 claims; the file wrapper for the 1998 series (the 09 series) now has an index for 150 claims.

For these reasons, it is now time for the PTO to act to limit the use of excessive numbers of claims in an application. The PTO is specifically proposing to deal with this problem now on a systemic basis by limiting, via rulemaking, the number of claims that will be examined in an application. This proposal supports the PTO business goals of reducing PTO processing time to twelve months or less for all inventions, and aligning fees to be commensurate with resource utilization and customer efficiency.

A rule limiting the number of claims in an application is within the PTO's rulemaking authority under 35 U.S.C. 6(a) if it "is within the [PTO's] statutory authority and is reasonably related to the purposes of the enabling legislation . . . and does no violence to due process." *See Patlex Corp. v. Mossinghoff*, 758 F.2d 594, 606, 225 USPQ 543, 252 (Fed. Cir. 1985) (citations omitted).

35 U.S.C. 41(a)(1)(B) provides that an applicant must pay an additional fee for the presentation of each independent claim in excess of three and each claim in excess of twenty. This implies that an applicant is entitled to present more than three independent claims, and more than twenty total claims, but it does not imply that the PTO may place no limit on the number of claims that an applicant may present. *See Ex parte Jenkins*, 1930 Dec. Comm'r Pat. 8 (1930) (that the patent statute now requires a fee for additional claims does not mean that there is no end to the number of claims that the applicant may present). In addition, PCT Rule 6.1 specifically states that "[t]he number of claims shall be reasonable in consideration of the nature of the invention claimed." Placing a reasonable limit (*e.g.*, no more than six independent claims and no more than forty total claims) will: (1) permit the PTO to more equitably distribute its resources among the vast number of applications that must be examined each year (35 U.S.C. 131 and 132); and (2) assist the PTO, public, and the courts in ascertaining what it is that the applicant considers to be the invention (35 U.S.C. 112, ¶ 2).

35 U.S.C. 131 and 132 require the PTO to examine the more than two hundred thousand applications that are filed each year, and 35 U.S.C. 282 provides that each claim of the patents resulting from these applications is presumed to be valid, each

independently of the others. It is the PTO's goal to issue patents containing claims whose validity is based not solely upon presumptions resulting from the patent statute and PTO regulations, but based upon the actuality that each claim of the applications resulting in such issued patents has been subjected to an effective, high-quality examination. In view of the ever increasing number of applications filed each year, the PTO has determined that it must place some limits on the number of total claims and independent claims that an applicant may present in a single application to ensure that the PTO continues to issue patents that contain only claims that have been subjected to such effective, high-quality examination.

Such a rule would bear a reasonable relationship to the provisions of 35 U.S.C. 112, ¶ 2, that an application conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. While 35 U.S.C. 112, ¶ 2, provides that the claims describe "the subject matter which the **applicant** regards as **his** invention" (emphasis added), it does not preclude the PTO from limiting the claims in regard to matters of form. *See Fressola v. Manbeck*, 36 USPQ2d 1211, 1214 (D.D.C. 1995).

As discussed above, the historical basis for undue multiplicity rejections was that the presentation of an excessive number of claims in an application generally operated to confuse or obscure the invention. This problem existed in the nineteenth century (*Carlton*) and remains a problem today (*Wahpeton Canvas*). Limiting the number of claims in an application will discourage applicants from presenting claims that confuse or obscure the point of the invention. Thus, such a rule would advance the statutory goal of 35 U.S.C. 112, ¶ 2, that an application or patent conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention. *See Fressola*, 36 USPQ2d at 1214.

Any change to 37 CFR 1.75 to limit the number of claims in an application must also take into account the situation in which a single claim is, in actuality, a plurality of claims (*e.g.*, multiple dependent claims, *Markush* claims (*see Ex parte Markush*, 1925 Dec. Comm'r Pat. 126 (1924)), claims referencing plural sequence listings (*see* MPEP 2422.04), and claims setting forth (non-*Markush*) alternative limitations (*see* MPEP 2173.05(h)). A multiple dependent claim will be counted as the number of claims to which direct reference is made in that multiple dependent claim. *See* 37 CFR 1.75(c). Limits (for a claim to be counted as a single claim) would also be placed on: (1) the number of species that may be embraced within a *Markush* claim; (2) the number of sequence listings that may be referenced in a single claim; and (3) the number of alternative limitations that may be included in a claim.

The PTO is considering only a limit on the number of claims that will be examined in a single application, not a limit of the number of claims that may be presented for the invention(s) disclosed in an application. Forty total claims with six independent claims should be sufficient for an applicant to obtain adequate coverage for an invention. An applicant who is unable to limit him or herself to forty total or six independent claims in a single application may effectively obtain examination of additional claims in another application. As the PTO would expend more of its scarce processing and examination resources on ten applications containing forty claims each than the PTO would expend on a single application containing four hundred claims, the PTO's objective is not to have applicants to spread-out excessive numbers of claims among multiple applications to increase fee revenue. The PTO's objective is to encourage the few applicants who currently present an excessive number of claims in an application to place reasonable limits on the number of claims presented for examination.

Nevertheless, an applicant would effectively be permitted to present any number of claims for examination by filing any number of continuing applications, each application presenting no more than forty total or six independent claims for examination. Thus, the PTO's refusal to examine more than forty total or six independent claims in a single application is not tantamount to a rejection of such claims, as the excess claims would be examined if presented in another application. *See In re Fressola*, 22 USPQ2d 1828, 1831-32 (Comm'r Pat. 1992) (an objection or other requirement is not a rejection if it does not interfere with applicant's substantive right of expression).

In the extraordinary situation in which it would be more beneficial to the PTO, the public, and the applicant to permit the applicant to maintain more than forty claims in a single application (*e.g.*, numerous species claims depending from a single allowable genus claim), the applicant may file a petition under 37 CFR 1.183 requesting a waiver of this limitation. Such petitions would be decided on a case-by-case basis, and would be subject to such other requirements as may be imposed. *See* 37 CFR 1.183.

5. Harmonizing standards for patent drawings (37 CFR 1.84).

Summary: The PTO is considering harmonizing the requirements for patent drawings in 37 CFR 1.84 with the requirements for drawings in the Patent Cooperation Treaty (PCT).

Specifics of Change Being Considered: Amending 37 CFR 1.84 to be more similar to PCT Rule 11.13.

Discussion: The PTO is considering amending 37 CFR 1.84 to harmonize the standards for drawings in U.S. national applications with the standards for drawings in Patent Cooperation Treaty (PCT) applications, which is a well-known and widely accepted standard. The PTO has received a number of comments complaining that the same drawings which were approved and printed in PCT published applications have been objected to under 37 CFR 1.84 in U.S. national applications. This inconsistency is not understood by patent applicants who feel that a drawing that is acceptable for publication of a PCT application should also be acceptable for publication in a U.S. patent. Making corrections to drawings to comply with unnecessary requirements increases the cost to the applicant and the time required to respond to an Office action, both of which patent applicants would like to reduce. In response to these comments, the PTO is looking into replacing 37 CFR 1.84 with the PCT standards for drawing requirements.

The requirements for drawings in a PCT application are set forth in four places, namely: (1) PCT Article 7; (2) PCT Rules 7, 9, 10, 11, and 12; (3) the PCT Applicant's Guide, Vol. I/A, pages 24-25 (paragraphs 133-141); and (4) the "Guidelines for Drawings Under the Patent Cooperation Treaty (PCT)," published in the *PCT Gazette* (No. 7/1978).

Current PTO processing of applications with drawings results in some unnecessary delays in the handling of those applications contrary to Patent Business Goal 1 (reducing PTO processing time). For example, petitions are now required in order to accept black and white photographs, color drawings or color photographs, and the PTO processing of these petitions delays the handling of the application by the examiner. The PCT permits black and white photographs, but does not permit color photographs or color drawings. Thus, to harmonize with the PCT, which does not require a petition to allow black and white photographs, the PTO is considering deleting the requirement for a petition while providing instead that black and white and color photographs and color drawings would be permitted where it is impossible to present in a drawing what is to be shown (*e.g.*, crystalline structures). The examiner, however, may require drawings, where it is possible to present the subject matter in a drawing. For example, a syringe may be drawn. Thus, an examiner would require an applicant who has submitted an application for a syringe and which included a photograph of the syringe to submit a drawing to replace the photograph. The PTO does not currently envision an examiner requiring color drawings or photographs in a design or utility application where black and white drawings or photographs have been submitted.

Question: The drawing standards for PCT applications may not be clearly understood or known because the requirements are set forth in the previously identified four different documents, and not everyone has easy access to these documents. Nonetheless, it is apparent that compliance with the PCT is easier given the experience of many patent applicants of having drawings approved in a PCT application, but objected to in a

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United States application. Accordingly, if adoption of the PCT standards for drawings is not supported, comments are requested as to whether the PTO should keep 37 CFR 1.84 as is, or how it should be modified, or should the PTO adopt some other standard for the drawings?

6. Printing patents in color (37 CFR 1.84).

Summary: The PTO is considering printing design and utility patents that have color drawings or color photographs in color, along with imposing a fee to cover the extra processing and publication costs.

Specifics of Change Being Considered: The PTO is considering deleting the current requirement for a petition (and $130 petition fee) to accept color drawings or photographs. The PTO is also considering printing in color design and utility patents with color drawings or color photographs, and charging a fee to recover the PTO's cost of processing and printing design and utility patents with such color drawings or color photographs. The cost to the public for ordering color copies would continue to be governed by 37 CFR 1.19(a)(2) (for plant patents) and 1.19(a)(3) (for utility patents).

Discussion: The PTO is considering amending 37 CFR 1.84(a) and (b) to delete the current requirement for a petition (and $130 petition fee) to accept color drawings or photographs. The PTO is also considering amending 37 CFR 1.84 to provide for processing and printing design and utility patents having color drawings or color photographs in color rather than in black and white. A fee will be required. Utility and design patents with color drawings or color photographs are currently printed in black and white, with a note indicating that color drawings or photographs were present in the application. Where color is part of applicant's invention, such as where color is a feature of the claimed invention in a design application, a member of the public seeking to understand the subject matter that is claimed or an examiner seeking to understand the invention disclosed in evaluating the patent as prior art during examination of another application would have to order a color copy of the patent drawings, thereby incurring delays for the special handling required. If design and utility applications were to be printed in color in the same manner as plant patents are printed in color, the copy of the patent in the search files would be a color copy and members of the public and examiners would not have to take additional steps to understand the disclosure of the patent and the scope of the claims. Patents printed in color would continue to have legends indicating that drawings are in color so that a person inspecting a black and white copy thereof would have notice as to the existence of the color drawings.

Processing a patent in color would incur costs separate from those incurred in the printing process in that identification of applications filed in color would need to be made so that the printing contractor would know the color printing was required. The PTO currently scans the originally filed application papers in black-and-white images, and may begin scanning color drawings or photographs included with originally filed application paper in color images. The examination process may also be more complex due to questions relating to the accuracy of the color depiction in color photographs. In addition, printing a patent in color would currently require an expensive photographic process to ensure the proper coloring of the drawings, as is currently required for plant patents. Pursuant to 35 U.S.C. 41(d), the PTO may recover the cost of the service of making color copies of color drawings or photographs included in an application as originally filed available as scanned images and preparing color drawings or photographs as part of the patent publication process. Charging a fee for such additional costs (as compared to the normal patent publication process) would be consistent with Business Goal 5 (assess fees commensurate with resource utilization).

Accordingly, if design and utility patents are to be printed in color, patentees would be required to pay the additional fee, and would not be allowed to not pay the fee or request that the patent be printed only in black and white. In addition, the two-tier fee system, in which a higher fee is charged for color copies of a patent (37 CFR 1.19(a)(3)) than for a copy without color (37 CFR 1.19(a)(1)(i)), for patent copy sales would continue so that customers could obtain a black and white copy of a patent with color drawings for a reduced fee.

While plant patents are currently printed in color, electronic copies of plant patents currently displayed with the Automated Patent System or from CD ROM products are in black and white. The Office has an ongoing project to create color images of plant patents for electronic searching and dissemination. Accordingly, if design and utility patents are printed in color, they also would be available in color electronically.

7. Reducing time for filing corrected or formal drawings (37 CFR 1.85).

Summary: The PTO is considering reducing the time period for submitting corrected or formal drawings from three months to one month from the mailing of the "Notice of Allowability" (extensions of time under 37 CFR 1.136 being permitted). The PTO is also requesting comment on the advisability of requiring submission of corrected or formal drawings upon an indication of allowable subject matter.

Specifics of Change Being Considered: The PTO is considering amending 37 CFR 1.85(c) to require either that: (1) corrected or formal drawings be submitted within one month of the mailing of the "Notice of Allowability" (extensions of time under 37 CFR 1.136 being permitted); or (2) formal drawings be submitted in reply to any Office action indicating allowable subject matter, and, if a drawing correction has been required, requiring that corrected drawings be submitted in reply to the next Office action indicating allowable subject matter.

Discussion: Currently, 37 CFR 1.85(c) requires corrected or formal drawings to be filed within a period of three months of the mailing date of the "Notice of Allowability," which period may be extended up to six months under 37 CFR 1.136. This causes many problems. First, permitting corrected or formal drawings to be filed as late as six months after the mailing of the "Notice of Allowability" leads to a lengthy delay in issuance of patents. Second, the corrected or formal drawings may be submitted after the payment of the issue fee (which must be paid within three months from the mail date of the "Notice of Allowance and Issue Fee Due"). Thus, if formal or corrected drawings are not filed before payment of the issue fee, the application must still be stored and tracked to await the required drawings. This results in increased processing costs to the PTO, as greater storage space is needed along with continued tracking and monitoring functions. Thus, the current process not only causes delays in issuing patents which is inconsistent with Patent Business Goal 1, reducing PTO processing to twelve months or less, but it also increases our costs which is inconsistent with Patent Business Goal 5, assessing fees commensurate with resource use.

The PTO hopes to address these problems in the following three ways. First, as discussed with regard to 37 CFR 1.84, the PTO would like to make drawing requirements consistent with those of the PCT so as to make it easier to submit drawings which will be approved by the PTO draftspersons and thereby reduce the burden on the applicant. If drawing requirements are consistent with those of the PCT, as proposed with respect to 37 CFR 1.84, applicants would be more likely to submit formal drawings upon filing or while the application is being examined, but prior to allowance. These formal drawings should have a greater chance of being approved by the PTO Draftsperson. Thus, this should reduce the number of applications that are allowed with drawings that are not accepted by the PTO Draftsperson. Second, the PTO intends to encourage drawing corrections and/or formal drawings to be submitted earlier in the examination process. This is because the PTO intends to deploy draftspersons into each of the technology centers where it will be easier for the Draftsperson to review such corrected or formal drawings without interrupting the examination process. Thus, this should also reduce the number of applications with drawings that have not been approved by the PTO Draftsperson. Third, with the current proposal, the PTO proposes to reduce the time for submitting drawings to one month from the Notice of Allowability. By reducing the window for submitting drawings to one month, and then charging for extension of time fees, applicants will be encouraged to quickly submit the drawings within the one month period and, more than likely, before payment of the issue fee, in order to avoid extension of time fees, which rapidly increase as more extensions are requested. Thus, the change in the period for submitting corrected/formal drawings under consideration should have the effect of reducing the number of applications that have drawing corrections or formal drawings submitted after the payment of the issue fee.

Question: Should the PTO require corrected or formal drawings to be filed in reply to an Office action indicating allowable subject matter?

8. Permitting electronic submission of voluminous material (37 CFR 1.96, 1.821).

Summary: The PTO is considering rule changes to permit the voluntary submission of large computer program listings and nucleotide and/or amino acid sequence listings in only a machine-readable form. This would save the handling of heavy and voluminous paper listings.

Specifics of Change Being Considered: Suitable changes would be made to 37 CFR 1.96 and 1.821 *et seq.* to: (1) permit machine readable computer program listings to be submitted as the official copy provided it is submitted in an appropriate archival medium; (2) permit a machine-readable submission of the nucleotide and/or amino acid sequence listings as the official copy provided it is submitted in an appropriate archival medium; and (3) no longer require the voluminous paper submissions of computer program listings or nucleotide and/or amino acid sequence listings.

Background: Since 1990, the PTO has required the submission of the nucleotide and/or amino acid sequence listings (sequence listings) associated with biotechnology applications to be presented in computer readable form on floppy disks, as well as in paper. The sequence listings, which are often over ten thousand bases in length, are not susceptible to human eye-searching. The magnetic storage and processing is therefore the only practical means for examining this very important branch of technology, which grew by fifty percent in 1997 and is expected to undergo sustained growth. Not only are the number of pending applications multiplying, but the number of sequence listings per application and the size of the sequence listings themselves have grown by one-hundred percent each year. The PTO recently received a submission containing twenty-two thousand sequence listings, which required eight boxes of paper for the sequence listing. The PTO is also starting to see very long individual sequence listings of over one million residues. As the genome projects complete more of the genomes of various organisms, the PTO will see more of these voluminous applications.

This sequence size expansion has had a significant effect on electronic storage, but even worse has created paper files of gross size which are very difficult to manage. The paper printouts are often over five thousand pages in length, and require boxes to contain them. Carts carry the applications to the examiners for processing. For example, the Expressed Sequence Tags (EST) applications include up to several thousand sequence listings and may be over a foot thick. In some applications, the file wrappers are falling apart and contain only the sequence listing, with the specification separately preserved. Physically storing the applications becomes problematic because the entire file takes up several cubic feet of space. Since each examiner may have twenty or more of these applications, the applications may take up the bulk of an examiner's office. The magnitude of these problems is expected to increase. For example, an application with ten thousand sequence listings could result in one thousand applications of ten sequence listings each. *See* MPEP 803.04. Considering that the growth rate of sequence listings is such that they now approach one foot per application, this would require one thousand linear feet of shelf space. With each rack holding twenty-four linear feet, the PTO would need forty-two (1000/24) racks for the applications resulting from that one application. Clearly, something needs to be done to address this onslaught of paper.

The current regulations at 37 CFR 1.821(e) indicate that the electronic version of the sequence listing is a "copy" of the paper sequence listing, and that the paper sequence listing is the official copy. In practice, however, the electronic version is the one that enters the computer database of references, and serves as the basis for examination, printing and copies. The concurrence of the electronic and paper version is assured only by a statement of the registered attorney or agent, and cannot be readily checked without the expensive and laborious effort usually reserved only for litigation.

Considering the difficulty of maintaining the two independent versions of the sequence listing, and the irony that the official paper copy is effectively ignored while the unofficial electronic copy is the only one that is used, the PTO is proposing that the paper copy be eliminated in favor of the useful, handy and verifiable computer readable version.

Difficulties with massive amounts of paper also plague the computer arts. One of the major problems facing the computer areas is the filing of applications having several boxes of printed material, which may include computer program listings, appendices and boxes of prior art. Often a single examiner may have several similar applications containing multiple boxes of paper (*i.e.*, programs, appendices and prior art). Just the short-term storage of these boxes is becoming more of a headache. For example, if an examiner has three or four of these applications, he or she may be required to store six to eight boxes of paper. These boxes are stored either in the examiner's office or in an empty room if one is available. The examiner is expected to: (1) keep track of these boxes of materials; (2) physically haul them to his or her office; and (3) consider and be familiar with thousands of sheets of paper. Often when related applications are transferred to another Art Unit, these boxes of materials are misplaced and the applicant is forced to resubmit the boxes of papers.

Computer program listings often come to the office on numerous sheets of microfiche. However, the microfiche films are often copied to paper before printing when a patent is allowed. Since the copies from the microfiche are not copied to the standards of 37 CFR 1.52, the applications are often sent back to the examiner as a printer rush, slowing the publication of the patent.

The PTO may accept electronically filed material in a patent application, regardless of whether it is considered "essential" or "nonessential." The patent statute requires that "[a]n application for patent shall be made . . . **in writing** to the Commissioner." 35 U.S.C. 111(a)(1) (emphasis added). With regard to the meaning of the "in writing" requirement of 35 U.S.C. 111(a)(1), "[i]n determining any Act of Congress, unless the context indicates otherwise . . . , 'writing' includes printing and typewriting and **reproduction of visual symbols** by photographing, multigraphing, mimeographing, manifolding, or otherwise." 1 U.S.C. 1 (emphasis added); *see also* Fed. R. Evid. 1001(1) (writing defined as including magnetic impulse and electronic recording). An electronic document (or an electronic transmission of a document) is a "reproduction of visual symbols," and the "in writing" requirement of 35 U.S.C. 111(a)(1) does not preclude the PTO from accepting an electronically filed document. Likewise, there is nothing in the patent statute that precludes the PTO from designating an "electronic" record of an application file as the PTO's "official" copy of the application.

The recognition of the electronically stored version of the sequence listings as the official copy is expected to have a minor consequence on our processing of these applications. Sequence listings are already required to be submitted in electronic form, and a receipt system is already in place to handle the acceptance and storage of the electronic versions.Currently the machine-readable version is the copy of choice for search, for printing and for reference purposes.

The submission of machine readable versions of computer program listings, or other voluminous materials, would require the PTO to establish an appropriate system for accepting and using such submissions such that the paper versions of such information will no longer be needed. The submitted archival media

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may be transferred to centralized electronic office systems to facilitate in-house processing of the information.

Discussion of change under consideration: The PTO is considering revising 37 CFR 1.821 *et seq.* to permit the voluntary submission of a machine readable version of the sequence listings to be the official copy provided it is presented in an appropriate archival medium. The PTO cannot simply make the current submissions of diskettes the official copy in view of the regulations requiring a true archival medium (36 CFR 1228.28(3) and 1234.30). In addition, the PTO is considering revising 37 CFR 1.96 to permit the voluntary submission of all computer program listings in machine readable form provided they are in an appropriate archival medium.

The changes contemplated for sequence listings and computer program listings would eliminate the need for submissions of voluminous paper sequence listings and hard to handle and reproduce microfiche computer program listings. To focus specifically on the PTO's difficult paper handling problem, and to simplify this project so it can be deployed in a short time span, only the nucleotide and/or amino acid sequences and the computer program listings would be accepted in machine readable format. The rest of the specification of a nonprovisional application will be submitted in paper in the conventional manner, subject to 37 CFR 1.52 and other applicable regulations.

In addition to permitting the above-mentioned submissions in nonprovisional applications, the PTO is also considering changing the rules of practice to permit provisional applications to be submitted *in toto* in a machine readable format, again provided that it is presented in an appropriate archival medium.

This initiative is in support of the Patent Business Goal to reduce PTO processing time to twelve months or less for all inventions (Goal 1) and to receive applications and publish patents electronically (Goal 3). Specifically, it would reduce the time and effort required to scan into our electronic archival systems the text of sequence listings and of computer program listings included in the applications as filed.

Appropriate Archival Media: Regulations promulgated by National Archives and Records Administration define the acceptable archival media and formats for transfer and storage of information. *See* 36 CFR 1234.30 and 1228.28.

Relationship to PTO automation plans: These changes being considered are understood to be temporary solutions to a difficult PTO paper-handling problem.

It should be noted that the PTO is planning for full electronic submission of applications and related documents by Fiscal Year 2003. The changes described above are a smaller step in that direction, permitting the essential, but bulky parts of some applications to be submitted on an acceptable archival medium.

Question: Other materials may also be subject to these large submissions, and part of this endeavor would be the identification and inclusion of definable entities from other technologies that are of a similar nature. The PTO is requesting the public to suggest examples. In considering responses to this question, issues of practical implementation will be given weight. For example, elements of Technical Appendices or documents of an Information Disclosure Statement may be flowcharts, bound books or other items not suitable yet for electronic submission.

9. Imposing limits/requirements on information disclosure statement submissions (37 CFR 1.98).

Summary: The PTO is considering revising 37 CFR 1.98 to establish new requirements and/or limits on information submitted as part of an Information Disclosure Statement (IDS).

Specifics of Change Being Considered: In order to limit IDS submissions to relevant information and to ensure full consideration of an IDS by the PTO, the PTO is considering imposing the following additional requirements for IDS submissions: (1) a statement in the IDS that each citation has been personally reviewed by the registered practitioner who represents applicant, or by at least one inventor where applicant is **not** represented by a registered practitioner; (2) a copy of each cited U.S. application; and (3) a unique description of each citation's importance relative to each independent claim, or specific dependent claim(s) if that is why it was cited, **except** that a description would not be required for: (a) any ten citations, and (b) any item cited in a corresponding application by a foreign patent office, PCT international searching authority (ISA), or PCT international preliminary examining authority (IPEA), provided the search report or office action in the English language is also submitted.

The description of each citation would have to set forth a teaching or showing of a feature relative to the claimed invention which is not taught or shown by other citations in the IDS or is taught in a different manner. The description of each citation must be unique to that citation, in that an applicant would not be permitted to provide a description of a citation that is merely cumulative to that of other citations.

Background: Under the current rules (37 CFR 1.56, 1.97 and 1.98), the PTO is being overwhelmed with voluminous IDS submissions which, in many situations, make it very difficult, if not impossible, for an examiner to fully evaluate all of the citations that have been submitted. This is especially true when the citations involved are large in size and/or when large numbers of citations have been submitted. The submission of large numbers of citations and of the entire content of large citations may be due to the public's perception that it must submit, in order to ensure compliance with the duty to disclose requirements of 37 CFR 1.56, even questionable or marginally related citations (*i.e.*, cited items that are clearly not material to patentability). The public appears to have taken the view that it should submit, in compliance with 37 CFR 1.97 and 1.98, even questionable citations in order to ensure that applicant is viewed by the courts as having satisfied the duty of disclosure requirements. MPEP 2001.04 points out as to noncompliance with 37 CFR 1.97 and 1.98 that "the applicant will have assumed the risk that the failure to submit the information in a manner that will result in its being considered by the examiner may be held to be a violation" by the courts. MPEP 2004 adds: "When in doubt, it is desirable and safest to submit information. Even though the attorney, agent, or applicant doesn't consider it necessarily material, someone else may see it differently and embarrassing questions can be avoided". Thus, an environment has been established that promotes submission of citations which might **in some way** be considered to be sufficiently relevant to breach the duty of disclosure (once applicant or applicant's counsel becomes aware of the citation) in order to avoid an inference of intentional noncompliance. Applicant presumably does not wish to be placed in a position (in court) of having to explain why a particular document **of which applicant was aware** was not deemed relevant enough to submit. Therefore, even a document of very questionable relationship to the claims may very well be submitted by applicants (the public), in order to err on the side of caution.

This approach has created an enormous burden on the PTO and seriously jeopardizes the PTO's ability to examine applications in a timely and efficient manner, or achieve its Business Goal to reduce PTO processing time (cycle time) to twelve months or less for all inventions (Goal 1). Applicants frequently cite large numbers of unrelated documents in citation "dumps" where applicant does not wish to expend the time to weed out the unrelated documents from large groups of documents (for example those obtained by a pre-search or found in a related U.S. application). In addition, large citations such as compendiums are submitted where only one or two small unidentified portions are relevant.

While it may have been intended under 37 CFR 1.97 and 1.98 that applicant submit questionably related citations, it was never intended that large numbers of unrelated documents be submitted solely to save applicant the effort of reviewing each of them to determine their relevance. Likewise, it was not intended that the entire volume of a large citation be submitted so that applicant need not take the trouble to target the one or two relevant portions.

A further concern arises in those situations where current 37 CFR 1.98 permits applicants to not supply copies of cited U.S. applications. It is a real burden on the examiner to locate and copy one or more pending applications, and this activity (removal of a cited application for copying) has the potential for interfering with the processing and examination of the cited application.

The following are examples of IDS submissions which have placed inordinate demands on the PTO:

(1) For one family of related applications (of several hundred applications), applicants have cited almost **three thousand items** in **each** of the several hundred applications.

(2) In another family of five related applications, more than one thousand items were cited in IDS submissions in each of the applications. The items cited were not the same for each application. The five related applications are the children of numerous other applications, each of which had IDS submissions citing at least seven hundred items. The examiner presently has in his office sixteen containers of cited items for these applications, and stacks of cited items which would fill at least eight more containers.

(3) A pending application contains a citation of ten related U.S. applications. Additionally, about eighty-five documents were cited, including text citations which included sixty-nine pages from one text book and 137 pages from another. The Examiner noted in his Office action that these texts appeared to be background related to the general area of the invention. In addition, some of the cited documents were listed in more than one of multiple IDSs submitted, and the additional listings had to be located and crossed through on the appropriate form PTO-1449 accompanying the IDS.

While these three examples represent **some** of the more extreme IDS submissions, submissions of this nature are **not** infrequent nor are they isolated occurrences. Also, the PTO frequently receives IDS submissions which are not only large submissions, but they contain unrelated or non-relevant material, thereby making it difficult to identify and evaluate the more significant citations. In conjunction with this, there is a practical limit to the number of citations an examiner can effectively consider, especially where the citations have not been described and copies have not been supplied (and the more significant citations are scattered throughout the lengthy IDS submission).

Although the PTO remains sensitive to the need for applicants to comply with their duty of disclosure under 37 CFR 1.56, the PTO must deal with the growing burden on PTO resources to handle IDS submissions. The PTO obviously does not desire to receive bulky, irrelevant IDSs and "dumps" of citations in an application. Also, to the extent that these burdensome submissions are in fact received, it is the intent of the PTO to make the information contained in them as useful to the examiner as is effectively possible. Accordingly, the PTO is considering imposing new limitations to (a) reduce both the number as well as the size of citations that are submitted in IDSs, and (b) impose requirements as to the citations which will make them more usable by the examiner.

Proposal: The PTO is considering revising 37 CFR 1.98 to impose three new requirements/limitations as follows:

I. A statement of personal review of each citation submitted in the IDS would be required.

The IDS submitter would be required to state that he/she has personally reviewed **each** submitted IDS citation to determine whether or not that citation is relevant to the claimed invention(s) and is appropriate to cite to the PTO in the IDS. This statement of personal review would have to be made by:

a registered practitioner, where applicant is represented by a registered practitioner, or

at least one of the inventors where applicant is **not** represented by a registered practitioner.

II. A copy of each cited U.S. application would have to be supplied.

The current exception in 37 CFR 1.98(a)(2)(iii) for pending U.S. applications would be eliminated. Accordingly, 37 CFR 1.98(a)(2) would require that an IDS include a legible copy of each cited pending U.S. application.

III. Each citation submitted in the IDS would have to be uniquely described.

Applicant would have to compare **each** of the citations to each of the independent claims, or specific dependent claim(s), in a meaningful way that is **unique to each citation.** The description of each citation would have to point out **why** applicant believes the citation to be unique in its teaching/showing relative to the claimed invention(s).

Exceptions to the unique description requirement for each of the citations are:

(a) an item does not have to be described if- the item was previously cited (i) by a foreign patent office, and/or (ii) in a PCT ISA search report or IPEA office action, in a corresponding application; and

applicant submits a copy of the search report or office action where the item was cited (issued by the foreign patent office or PCT) in the English language;

(b) in addition, up to ten citations do not have to be described.

It should be noted that **no exception** to the unique description requirement will be made for items which were cited in a related U.S. application, even if that related application claims 35 U.S.C. 120 priority from, or provides 35 U.S.C. 120 priority to, the application in which the IDS is submitted. In addition, an exception will **not** be made for items cited in litigation related to the application.

As to the exception to the unique description requirement made for ten citations of any type: Where more than one IDS submission is made in one application, all of the submitted IDS documents will be taken together as one consolidated IDS. Thus, applicant would not be able to circumvent the exception for up to ten citations by submitting multiple but separate IDS submissions. For example, if six U.S. applications and four patents are cited without descriptions in a first IDS submission, then all additional items included in any subsequent IDS submission must be described or they will not be considered by the PTO.

It should be noted that the choice of which ten citations would be submitted without the unique description is that of the IDS submitter, and there should be **no** negative inference as to compliance with the provisions of 37 CFR 1.56 where it is chosen to submit the more relevant citations without any description.

Copies of citations contain confidential information: Pending U.S. applications are an example of items containing confidential information which might be submitted in an IDS. In accordance with MPEP 724.02, IDS citations containing confidential information (*e.g.*, that which is considered by the party submitting same to be either trade secret material or proprietary material, and any such information which is subject to a protective order) are to be clearly labeled as such and are to be filed in a sealed, clearly labeled, envelope or container. The party submitting an IDS citation containing information which is confidential may subsequently petition to expunge that citation from the record as set forth in MPEP 724.05.

Explanation of the unique description requirement for each citation.

Each item must be individually and uniquely described relative to each of the independent claims, or, if appropriate, to one or more of the dependent claims, in a meaningful way. When determining whether reexamination may be ordered in compliance with *In re Portola Packaging, Inc.*, 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir. 1997), the PTO would consider a citation described in this manner during a prior related PTO proceeding to have had "its relevance to patentability of any claim discussed." *See Request for Comments on Interim Guidelines for Reexamination of Cases in View of In re Portola Packaging, Inc., 110 F.3d 786, 42 USPQ2d 1295 (Fed. Cir.*

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1997); Notice and Request for Public Comments; 63 FR 32646, 32646, 1212 *Off. Gaz. Pat. Office* 13, 13 (July 7, 1998).

Examples of ways to describe a citation (any of which would be acceptable) are as follows:

(1) For the closest or most related citation(s): Point out the features of the citation which are similar to the features of each independent claim. For example — "Of the six ingredients recited in the claim 1 breakfast beverage, Citation A teaches beverage ingredients which are similar to the claimed protein, salt and gum. Citation B teaches beverage ingredients which are similar to claimed protein, sugar and carbonating agent.

(2) Point out how the citation contains or teaches the general inventive concept of each independent claim. For example — "Citation C teaches the coating method of claim 4 using light to cure the coating shortly after it is cooled in a wind tunnel.

(3) Point out how the citation represents the invention upon which the independent claim is an improvement. For example — "Citation D shows the entire conveying system of claim 7, except for the inventive friction roller placed between the two mergers."

(4) Indicate how the citation teaches at least one feature which is similar to a claim feature that is **not already taught.** For example — "Citation E shows a valve that is the same type of valve set forth in dependent claim 7."

(5) Indicate where the citation teaches, **in a different way,** an already-taught feature which is similar to a claim feature. For example — "Citation F teaches a force-cooling of the exiting material (similar to that of dependent claim 8) as opposed to citation X which taught the cooling as an inherent result of the material exiting into the air."

In each situation, an additional explanation would be required of how each independent claim (or dependent claim(s), if the citation was for same) patentably defines over the citation.

It is **not** necessary that the description for each citation be given as related to **all** claims of the application. Rather, each citation would be described as to its relevance *vis-a-vis* each independent claim (or specific dependent claim(s) if that is why it was cited). Further, it is contemplated that the closest citations would be described in the greatest detail, and the remaining citations compared to the closest citations.

Impact of compliance with 37 CFR 1.98, as it would be amended: The examiner will fully consider each citation in an IDS which is in compliance with 37 CFR 1.97 and with 1.98 as it would be amended. Conversely, the examiner would not be required to consider any citation in an IDS where the citation is not presented in compliance with 37 CFR 1.97 and 1.98 as it would be amended. It should be noted that the three requirements set forth above would apply to any citation in an IDS. Thus, for example, if a related U.S. application is cited in an IDS and a copy of the specification, including the claims, and the drawings is not provided, the examiner would not be required to consider that U.S. application. Further, the PTO will discard copies of any citations that are submitted where a unique description is required but is not supplied, or where the statement of personal review is not made.

Prior to discarding the citations, the PTO would notify applicant that the citations have been refused further consideration. In the notice to applicant, the PTO would point out why consideration has been refused and how the submission of the citations could be corrected. As is currently the practice, the notice may, at the examiner's option, be set forth in the next Office action on the merits issued by the examiner or be provided in a separate notice giving the applicant an opportunity to correct the IDS. *See* MPEP 609. Thus, the examiner could delay action on the merits until the corrected IDS is received or the time for correction has expired. If the notice is included in the next Office action on the merits, then the application status would advance with the issuance of that action on the merits. Thus, the timeliness of the citations (and refusal of consideration for lack of timeliness) would quite possibly become dependent on a more limiting subsection of 37 CFR 1.97. For example, if the action on the merits is a first Office action, 37 CFR 1.97(b) will apply to the corrected IDS submission, while 37 CFR 1.97(a) would have applied to the original IDS submission (had it been in order). If appropriate correction is made and the submission is considered timely under 37 CFR 1.97, the citations will then be considered. If not, the citations would be removed from the record and discarded. In such a situation, the list of citations (*e.g.*, PTO-1449) which was submitted with the IDS (the citations which were not considered being lined through by the examiner) would be retained in the application file to serve as a permanent record of what item(s) was/were cited.

Rationale as to the contemplated revision:

I. Statement of personal review of each citation submitted in the IDS

With the requirement for personal review of each citation, applicants must review an item so that applicant can then make an informed decision that the item is relevant and appropriate to cite to the PTO. This would be effected by requiring the attorney, or where there is no attorney, at least one of the inventors, to do the personal review. In addition, the examiner should only be required to consider a citation where the person submitting the citation to the PTO has first reviewed that citation and determined that the citation is relevant to the claimed invention(s). If the submitter reviews the citation in its entirety and determines that the citation is relevant to the claimed invention(s), then the examiner should consider that citation in its entirety. If only a portion of the citation is pertinent and thus only that portion of the citation has been reviewed by the IDS submitter, then that portion alone should be cited to the PTO, and that portion alone will be considered by the examiner.

The personal review of each citation is a subjective and individual determination of which citations the submitter wishes to make of record, and the reason for doing so is not subject to review. It is envisioned, however, that the very act of making this determination should function as a screening process to effectively filter out marginally related and unrelated citations. As to the requirement to describe each citation relative to the claims, the PTO believes that imposing this requirement is reasonable and fair, and is also highly desirable, because this requirement (coupled with a requirement for personal review of each citation) would enable the PTO to achieve the relief it desires by:

(1) Providing meaningful, useful and relevant information to the examiner, which would greatly facilitate the examiner's evaluation of each IDS citation and the examiner's making a patentability determination on each of the independent and dependent claims. Thus, it would improve the quality of examination, while improving the efficiency of the examination process;

(2) Providing an incentive to cite only the most relevant citations (to avoid having to describe marginally related and unrelated citations). Thus, the citation of large numbers of marginally related and unrelated items would be diminished or eliminated; and

(3) Reducing the overall number of IDS citations that are submitted by eliminating the marginally related and the unrelated citations.

II. A copy of each U.S. application would have to be supplied

Applicants often do not submit copies of cited pending U.S. applications listed in IDSs. Applicant may list multiple application citations in an IDS (sometimes as many as ten or twenty are listed), and if no copies are supplied, the examiner must make a time-consuming effort to obtain and copy all of the cited pending applications so that they can be considered. This will interrupt the examination of the application whenever the file of a cited pending application is not available for inspection and copying. In addition, obtaining and removing the cited application for copying will also interrupt the examination of the cited application.

III. IDS citations would have to be uniquely described

The present proposal would permit filers of small IDSs (*i.e.*, ten or less citations) to continue filing IDSs without any description, as they are currently filed under 37 CFR 1.98. While it is believed to be unreasonably burdensome for the PTO to consider unduly large numbers of IDS citations which are not described, the PTO is amenable to dealing with ten (or less) IDS citations which are not described, even though the examiner has no guidance from applicant as to what is actually shown or disclosed in the ten citations.

PTO Goals to be Furthered: The proposal being considered is important to the PTO Goals of reducing PTO processing time (PTO Goal 1) and enhancing the quality of examination (PTO Goal 4). Requiring copies of all citations will reduce delays and help the PTO meet its twelve-month pendency goal. The presence of the copies of cited documents will permit those citations to be considered by the examiner at the earliest possible point after their submission and thereby enhance the quality of the examination. The descriptions of citations will provide for better quality because the examiner will have a better understanding of why **applicant** considers the citation to be relevant (*i.e.*, the citation will be made more useful to the examiner). Imposing a requirement of a statement of personal review of the citations will force applicants to evaluate all possible items being considered for citation to the PTO such that only the most relevant items will be cited to the PTO, and correspondingly, it should cut down on or eliminate the large dumps of citations that the PTO is now receiving. This will save the examiner time which is presently expended to read and evaluate cumulative and minimally relevant citations. This time can be better spent evaluating the more relevant citations, thus resulting in a higher quality of examination.

The PTO has determined that it must do **something** to reduce the size of the voluminous IDS submissions. Suggestions of other options are welcomed. If another option is suggested, it should explain why and how that option would be better.

The PTO expects that many will oppose the above-described proposal for a variety of reasons. These reasons may include, for example, concerns as to the burden being imposed on applicant to prepare the IDS, the conflicting time requirements that will create problems (the need to submit the IDS by a certain date conflicts with the extra time needed to prepare the descriptions which would be required before the IDS could be submitted), and concerns about not properly analyzing or describing a citation (or all the features, embodiments or parts of the entire disclosure of the citation) or even overlooking a relevant citation. The comments, however, should be constructive and address how (and why) some other option(s) would be better, or as effective, while being more acceptable to the public.

10. Refusing information disclosure statement consideration under certain circumstances (37 CFR 1.98).

Summary: The PTO is considering revising 37 CFR 1.98 to reserve the PTO's authority to not consider submissions of an Information Disclosure Statement (IDS) in unduly burdensome circumstances, even where all the stated requirements of 37 CFR 1.98 are met.

Specifics of Change Being Considered: An unduly burdensome IDS submission may be denied consideration even though it complies with 37 CFR 1.98. For example, extremely large documents and compendiums may not be accepted if submitted. Applicant will, however, be notified and given an opportunity to modify the submission to eliminate the burdensome aspect of the IDS.

Background: 37 CFR 1.97 states that information will be considered by the PTO if it satisfies the provisions of 37 CFR 1.97 and 1.98. In the above proposal to revise 37 CFR 1.98 (see above), the PTO is contemplating revision of 37 CFR 1.98 to deal with unduly burdensome IDS submissions by imposing new requirements/limitations.

It should be noted that even if the rules of practice are revised as per the above proposal for 37 CFR 1.98, applicants may still cite compendiums, such as compilations of individual articles, entire magazines, journals, encyclopedia or technical dictionary volumes, textbooks, and volumes of technical abstracts. In addition, if a compendium is submitted as one of the "excepted ten citations," no description would be required as to the entire compendium. Even though such a submission might comply with the letter of 37 CFR 1.98, consideration of the submission would be unduly burdensome to the examiner. It clearly would not further the PTO mission and goals to have the examiner consider the entire text of the compendium. Rather, applicant should be required to submit and describe the specific section(s) or portion(s) of the compendium which applicant deems to provide the basis for making the citation, and such a specific citation would be acceptable.

Therefore, the PTO should have a mechanism to deal with unusual IDS circumstances where consideration of all or some part of an IDS would be unduly burdensome to the examiner.

Proposal: The PTO is contemplating revision of 37 CFR 1.98 to reserve the authority of the examiner to refuse consideration of an IDS submission, or any part of it, where such consideration would be unduly burdensome to the examiner (such that the PTO mission and goals would not be furthered by requiring the examiner to provide consideration).

When an unduly burdensome IDS is submitted, the PTO would notify applicant that the IDS, or a particular portion of it, has been refused further consideration. In the notice to applicant, the PTO would point out why it would be unduly burdensome for the examiner to consider the IDS (or portion thereof) and how the IDS could be modified to eliminate its burdensome aspect. As is currently the practice, the notice may, at the examiner's option, be set forth in the next Office action on the merits issued by the examiner or be provided in a separate notice giving the applicant an opportunity to correct the IDS. *See* MPEP 609. Thus, the examiner could delay action on the merits until the corrected IDS is received or the time for correction has expired. If the notice is included in the next Office action on the merits, then the application status would advance with the issuance of that action on the merits. Thus, the timeliness of the citations (and refusal of consideration for lack of timeliness) would quite possibly become dependent on a more limiting subsection of 37 CFR 1.97. For example, if the action on the merits is a first Office action, 37 CFR 1.97(b) will apply to the corrected IDS submission, while 37 CFR 1.97(a) would have applied to the original IDS submission (had it been in order). If appropriate correction is made and the submission is considered timely under 37 CFR 1.97, the resubmitted citations will then be considered. If not, the IDS documents objected to as unduly burdensome would be removed from the record and discarded. In such a situation, the list of citations (e.g., PTO-1449) which was submitted with the IDS (the citations which were not considered being lined through by the examiner) would be retained in the application file to serve as a permanent record of what item(s) was/were cited.

Examples: Presented are some examples of IDS submissions (in addition to the compendium submission which is discussed above) that comply with the letter of 37 CFR 1.98, yet the PTO would, most likely, regard as unduly burdensome to the examiner:

(1) An IDS presents ten or less citations; however, one or more of the presented citations is a patent containing more than one hundred pages. There is no explanation as to the nature of the relevance of the patent(s) and no specific columns with lines are identified.

(2) An IDS presents ten related U.S. applications with copies of voluminous records (including litigation documents) and there is no explanation as to the nature of the relevance nor is there an identification of specific parts of the application records.

(3) An IDS presents five hundred citations, each uniquely described relative to the carving-member feature of claim 5 in a slightly different manner.

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(4) Applicant submits five hundred citations to a foreign patent office in a foreign application. Applicant then submits the five hundred citations in the corresponding U.S. application as citations previously cited by a foreign patent office (see the above discussion of 37 CFR 1.98) together with a copy of the foreign patent office search report that does not identify relevancy as to the citations, and without any citation description in the IDS.

The above are non-limiting examples of burdensome IDS submissions where consideration would be appropriately denied by the examiner.

PTO Goals to be Furthered: This revision being considered is important to PTO Goals of reducing PTO processing time (PTO Goal 1) and enhancing the quality of the examination (PTO Goal 4). At present, non-conforming and unduly burdensome IDSs are interfering with the PTO effectively carrying out its function of fully considering IDS documents. This second proposal for revision of 37 CFR 1.98 (coupled with the above-presented first proposal) would enable the PTO to reject abusive IDSs and thus permit examination of others in greater detail.

11. Providing no cause suspension of action (37 CFR 1.103).

Summary: The PTO is considering adding an additional suspension of action practice, under which an applicant may request deferred examination of an application without a showing of "good and sufficient cause," and for an extended period of time. The applicant would be required to waive the confidential status of the application under 35 U.S.C. 122, and agree to publication of the application.

Specifics of Change Being Considered: Prior to the first Office action of an application, the applicant may request deferred examination provided the application is entitled to a filing date, the filing fee has been paid, any needed English-language translation of the application has been filed, and all "outstanding requirements" have been satisfied, except that the oath or declaration need not be submitted. If an oath or declaration has not been submitted, the names of all of the persons believed to be the inventors must, in good faith, have been identified. Upon request by the applicant, the PTO may defer examination for a period not to exceed three years. Applicant would be required to waive his or her right to have the application kept in confidence under 35 U.S.C. 122, and pay a fee for publication of the application.

Discussion: Under 37 CFR 1.103(a), an applicant may request suspension of action of an application "for good and sufficient cause and for a reasonable time specified." There may be times, however, when suspension of action is desired by the applicant even though "good and sufficient cause" is not present, and also for a period greater than the six months permitted under MPEP 709. For example, an applicant may desire deferred examination to obtain time to align funding, or to resolve ownership or potential licensing issues. To provide applicants some flexibility in their business affairs, and a degree of relief from any business constraints due to the ongoing pendency of an application, the PTO is considering permitting applicant to request deferred examination solely at the discretion of the applicant, and for a period of extended length. A showing of "good and sufficient cause" would not be required.

This program is intended to provide better service to the public by making it possible to defer action on an application merely by asking, and paying a fee for it to be deferred. The PTO would benefit as well as the PTO would be better able to redirect its limited examining and processing resources to other applications in need of more immediate processing. The suspension may also allow search and/or examination results on counterpart cases in other countries to be received and considered.

In contrast to suspension of action under 37 CFR 1.103(a), which may not be granted for a period exceeding six months without approval of the group director (*see* MPEP 709), deferred examination under this option would continue until applicant requests resumption of prosecution, or the maximum time permitted for such deferral has expired.

A request for deferred examination under this option would only be granted if, in addition to satisfying the formal requirements and paying the required fee (set to recover PTO costs), applicant waives his or her right to have the application kept in confidence under 35 U.S.C. 122 and agrees to publication of the application.

The PTO is considering imposing the following requirements for this deferred examination program:

(1) The application must be entitled to a filing date.

(2) The basic application filing fee must have been paid.

(3) Any needed English-language translation of the application must have been filed.

(4) All "outstanding requirements" (*e.g.*, requirements to a Notice to File Missing Parts) must have been satisfied, except that the oath or declaration need not be submitted. See the related discussion on 37 CFR 1.53 where it is indicated that the PTO is considering changing the rules of practice to permit submission of the oath or declaration to be deferred until payment of the issue fee.

(5) If an oath or declaration has not been submitted, the names of all of the persons believed to be the inventors must, in good faith, have been identified.

(6) A first Office action on the merits must not have been mailed in the application, or any prior application assigned the same application number if the application is continued prosecution application under 37 CFR 1.53(d).

(7) Applicant must submit "A Request for Deferred Examination" under this program which includes:

(a) A waiver of his or her right to have the application kept in confidence under 35 U.S.C. 122, and payment of the fee for publication of the application;

(b) Payment of the required fee for deferred examination; and,

(c) In a design application, a utility application filed before June 8, 1995, or a plant application filed before June 8, 1995, a terminal disclaimer dedicating to the public a terminal part of the term of any patent granted thereon equivalent to the period of suspension of the application (this terminal disclaimer must also apply to any patent granted on any continuing design application that contains a specific reference under 35 U.S.C. 120, 121, or 365(c) to the suspended application).

The PTO considered not making this suspension of action provision inapplicable to any application not subject to the twenty-year patent term provisions of 35 U.S.C. 154(a)(2). Rather than excluding such applications from this program, the PTO is considering simply requiring that a terminal disclaimer for the period of suspension be filed as a condition of granting a suspension of action under this program in an application not subject to the twenty-year patent term provisions of 35 U.S.C. 154(a)(2).

The PTO is further considering the establishment of the following program guidelines:

1. Maximum period of suspension. Because deferral of action would delay development of final claim form, and in view of the public's right to early knowledge of patent rights, a maximum time for suspension would be set. The maximum time period of suspension would be measured from the filing date of the application, not the date a request for suspension is granted. The PTO favors a maximum period of three years from the filing date or earliest filing date for which a benefit is claimed under 35 U.S.C. 119, 120, 121, or 365. A longer period would seem excessive, and is seen as permitting an applicant to unduly delay issuance of the patent.

2. Time of publication. The PTO favors publication as soon as practicable after the PTO grants the request. This would make the specification a publication at the earliest possible time.

3. Form of publication. The PTO intends to publish a notice of the application, and of the suspension of action in the *Official Gazette*. The notice would include bibliographic information, an abstract of the invention, a drawing figure and at least one representative claim. A copy of the application, as filed, will be produced and made available to the public in a manner similar to the present Statutory Invention Registration (SIR) publications. This would include placement in the PTO's Automated Patent System (APS) and classified search files. Copies would be fully available to the public.

4. Effect of Publication. The application would be open to the public on the date of publication. An application, indexed or classified according to a classification system, and open to public inspection, with a publication document including an abstract and claim arranged with other such documents according to the classification system is available as a prior art publication under 35 U.S.C. 102/103 (*i.e.*, is "published"). *See In re Wyer*, 655 F.2d 221, 210 USPQ 790 (CCPA 1981); *see also In re Hall*, 781 F.2d 897, 900, 228 USPQ 453, 456 (Fed. Cir. 1986) (a dissertation in a library open to public inspection by the general public, and indexed and cataloged with the other documents in the library, is available as a publication under 35 U.S.C. 102/103). The published application would **not** be prior art under 35 U.S.C. 102(e) effective from the filing date of the so-published application. Obviously, if the application is subsequently issued as a patent, the patent would be available as prior art under 35 U.S.C. 102(e).

Comments on the following questions are solicited.

1. Should a maximum period for suspension be set for a period of other than three years?

2. Should the application be required to include an executed oath or declaration before a request for suspension of action may be granted? It is noted that the Office is also considering changing 37 CFR 1.53 to permit submission of the oath or declaration to be deferred.

3. Would publication of the application, coupled with the knowledge that a patent may be issued in the future, have a chilling effect on others active in the same field so as to freeze their activities in this area?

12. Requiring a handling fee for preliminary amendments and supplemental replies (37 CFR 1.111).

Summary: The PTO is considering imposing a handling fee for certain preliminary amendments and for all supplemental replies.

Specifics of Change Being Considered: The PTO is considering replacing the current practice of allowing unlimited preliminary amendments and multiple supplemental replies to be filed without requiring any fee with a new practice where a handling fee would be charged for each preliminary amendment filed later than a specified time period after the filing date of the application, and for each supplemental reply that is filed after the initial reply to an Office action has been filed.

Background: Preliminary amendments and supplemental replies cause the PTO to perform administrative processing, the cost of which is not covered by the filing fee. Some preliminary amendments and supplemental replies cause the PTO to perform examiner rework resulting in increased pendency time for the application when such submissions are timely filed but do not reach the examiner prior to the examiner acting on the application. For example, if a preliminary amendment or supplemental reply crosses in the mail with a PTO Office action, the PTO must perform rework including technical support processing of the submission, and further examination of the application by the examiner, and a new or supplemental Office action will most likely have to be prepared and mailed. If the preliminary amendment or supplemental reply is received by the examiner after the examiner has begun to examine the application, or even after the examiner's action has been prepared, but before the Office action was mailed, the examiner would still have to reconsider, and then revise or even redo the action, whether it was ready to be mailed or not, in light of the preliminary amendment or supplemental reply. This may also require an additional search or that the previous search be redone. *See* MPEP 714.05.Accordingly, the PTO is considering revising its patent rules of practice to impose a handling fee for the filing of certain preliminary amendments and for supplemental replies to recover the costs associated with these activities.

Such a change to the patent rules of practice would support the PTO's business goals of reducing the PTO processing time to twelve months or less for all inventions, and assessing fees commensurate with resource utilization and customer efficiency. Processing time in the PTO would be reduced in that applicants would have an incentive to promptly file preliminary amendments and to timely file complete replies to Office actions. The assessment of a handling fee for each preliminary amendment filed outside of a specified time period, and each supplemental reply, will offset the costs accrued by the PTO for extra technical support and examination processing, including the time spent by the examiner to reconsider, and (re)process, such submissions. The PTO anticipates that charging a handling fee for such preliminary amendments and supplemental replies will discourage such filings, thus resulting in a reduction in the amount of time it normally takes to complete the examination of an application, which now includes delays associated with such preliminary amendments and supplemental replies. The PTO is therefore considering charging a handling fee for each preliminary amendment filed later than a specified time period after the filing date of the application and each supplemental reply rather than banning them in their entirety.

Preliminary Amendments: Current practice permits an applicant to file preliminary amendments any time prior to the mailing of a first Office action. This practice often results in a preliminary amendment crossing in the mail with an Office action. Current practice has also resulted in complaints (petitions) by applicants when the PTO has refused to issue a new Office action when a preliminary amendment is not filed in the PTO before the mailing date of an Office action, but was mailed to the PTO before the applicant received the Office action, since such a preliminary amendment did not cross in the mail within the meaning of MPEP 714.05. Another area of concern with preliminary amendments is that some preliminary amendments are received at the PTO before the mail date of the first Office action, but not far enough in advance of such mail date that the amendment can be associated with the application file before the examiner has completed the first Office action (*i.e.*, filed a few weeks before the mail date of the Office action). In either scenario, a hardship is caused on both the Office and applicant due to the preliminary amendments not being considered. Preliminary amendments also cause the Office to incur extra expenses in technical support processing of the amendments, and in most instances, the examiner having to modify and mail a new Office action. The applicant suffers by having to inquire about the preliminary amendment not acted upon by the examiner and from having to request a new examiner's action when a timely filed preliminary amendment did not reach the file before the examiner's action was mailed.

An application should be ready for examination when filed, and an applicant may expect the PTO to take up an application for examination shortly thereafter. When the PTO reduces its cycle time to twelve months, applications will receive a first Office action in less than six months after filing. Therefore an effort should be made to have all preliminary amendments before the examiner at the time the application is filed. In the case of a continuing prosecution application (CPA), since the application could be ready for the examiner to review in as little as one day from the date the CPA is filed, the timely submission of a preliminary amendment is of even greater importance.

Accordingly, the PTO is considering charging a handling fee for each preliminary amendment filed: (1) later than one month from the expiration of the applicable twenty- or thirty-month period in 35 U.S.C. 371(b) in a PCT application; (2) later than one month from the filing date of the application in an application filed under 37 CFR 1.53(b); and (3) later than the filing date of the application in a continued prosecution application (CPA) filed under 37 CFR 1.53(d). These time periods would **not** be extendable. This handling fee will offset the handling costs incurred by the PTO, and act as an incentive for applicants to file an application in condition for examination.

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If the handling fee is not paid, the preliminary amendment would merely be made of record in the file but would not be entered.

Exceptions: Not every preliminary amendment filed outside this time period would require a handling fee. For example, no handling fee would be required for any paper submitted in reply to a requirement by the PTO, either written or oral, such as a request to submit a signed copy of a paper previously submitted, but which was not signed. Another example would be when a preliminary amendment is required (*e.g.*, filing of an English translation from a foreign filed application) as a result of a "Notice To File Missing Parts of Application" (37 CFR 1.53(f)). Any amendments filed in reply to a "Notice To File Correct Application Papers" would also not require a handling fee. It should be noted, however, that if any other type of amendment were to be submitted with the reply to the PTO requirement, which was not specifically required, then a handling fee would be required for that reply. No handling fee would be required for any preliminary amendment which is filed solely for the purpose of reducing the number of claims in an application to be examined, but amendments deleting some claims and adding new, or substitute, claims would have to pay a handling fee even if the net result of the amendment is that fewer claims would be present.

Supplemental Replies: Under current practice, an applicant must file a timely reply to avoid abandonment under 35 U.S.C. 133 and 37 CFR 1.135, but may then file one or more supplemental replies (which may include additional arguments, amendments, evidence, or other material) up until the mailing of the next Office action. This practice encourages the filing of a reply that, while satisfying the requirements of 37 CFR 1.111, may not include all of the amendments or evidence that the applicant seeks to be considered, since the original reply may be supplemented. 37 CFR 1.111(b), however, provides that a proper reply by an applicant to an Office action "must reply to every ground of objection and rejection in the prior Office action." Thus, no more than one reply to an Office action should be necessary in most situations.

Accordingly, the PTO is considering a change to the patent rules of practice to require that all supplemental replies to a non-final Office action must be filed with a handling fee to be entitled to consideration. Under this practice, an applicant would still be permitted to file supplemental replies to an Office action but all additional costs associated with the processing of the supplemental reply would be offset by the handling fee that would have to be paid. If the handling fee is not paid, the supplemental reply would merely be made of record in the file but would not be entered.

Exceptions: A handling fee would not be required for supplemental replies filed after a final Office action as such replies are not automatically entitled to entry. A handling fee would also not be required when the supplemental reply is filed after reaching an agreement for such with the examiner.

An example in which a handling fee would not be required would be when a supplemental reply is filed in response to an agreement reached with an examiner. In this situation the examiner's interview summary record should indicate that the filing of a supplemental reply was approved, and the supplemental reply should clearly indicate that it was filed after receiving approval from the examiner in order to not be subject to payment of the handling fee. It should be noted that the examiner will not be under any obligation to permit the submission of a supplemental reply without a handling fee.

Handling Fee: As earlier indicated, the PTO is taking the approach of charging a handling fee for certain preliminary amendments filed after the application was filed and for each supplemental reply rather than considering banning them in their entirety.

The PTO incurs costs associated with processing preliminary amendments and supplemental replies. Depending on when such papers are filed the costs include not only technical support processing time, but also additional time on the part of the examiner. In order to offset the costs accrued by the PTO in processing certain preliminary amendments filed after the application was filed, or supplemental replies, the handling fee will be set at the aggregate cost to the PTO for both administrative and examiner processing time required for the average preliminary amendment or supplemental reply. It is important to note that the paying of the handling fee does not guarantee that the submission forwarded therewith will be considered by the examiner, as all submissions must still meet the timeliness limitations which currently exist.

13. Changing amendment practice to replacement by paragraphs/claims (37 CFR 1.121).

Summary: The PTO is considering changing the manner of making amendments to require that all amendments to the specification including the claims be presented in the form of replacement paragraphs and claims, respectively.

Specifics of Change Being Considered: The PTO is considering replacing the current system for making amendments in non-reissue applications with amendment to the specification by replacement paragraphs and amendment to a claim by a replacement claim. This would eliminate the PTO's need to enter changes by handwriting in red ink. Deletions of a paragraph or a claim would be by instruction to cancel. Replacement paragraphs and claims would be a clean copy that is printer-ready, which can be optical character recognition (OCR) scanned during the publishing process. A marked-up copy of the changed paragraphs or claims, using the applicant's choice of mark-up system, would also be supplied as an aid to the examiner. All paragraphs in the specification, including charts, tables, equations, *etc.*, would have to be numbered. An option to provide substitute specifications would be retained for submission of extensive changes.

Background: 37 CFR 1.121(a) permits an applicant to amend the specification, and to a limited degree, the claims, by instructing the PTO to make insertions or deletions at precise points in the specification or claims. Alternatively, applicant may choose to cancel a claim or rewrite a claim in amended form with underlining and bracketing, designating additions or deletions, respectively. Under these rules, amendments are often many pages long, involve extensive and numerous changes to the specification and/or claims, have complex entry instructions, and sometimes include typographical errors. Entry of these amendments, especially when words and phrases must be inserted in hand-written red ink, and many such changes are being made, is very time-consuming and difficult to perform, frequently leading to entry errors (including spelling, wording, and entry locations). In addition, no clean copy of the specification or claims is available for scanning as part of the patent publication process. Thus, the current amendment process leads to printed patents being issued which contain many errors, which is an unsatisfactory situation for both the PTO and applicants/patentees for a number of reasons. First, the PTO has to expend valuable resources to make needed corrections via Certificates of Correction. Second, applicants/patentees want their patents to be correctly printed, without errors, and they are very disappointed when they receive patents that do contain errors. Further, while Certificates of Correction are issued at no cost to applicants/patentees if the errors are the fault of the PTO, applicants/patentees must expend a substantial amount of time and effort carefully reviewing their printed patents, then preparing and submitting requests to the PTO for any needed corrections. It can be readily seen, therefore, that the PTO and its customers both feel that there is a real need for changes to be made to the current system for making amendments so as to reduce the number and causes of Certificates of Correction.

The PTO has been considering changes to the procedure for making amendments to an application for several years. *See Notice of Public Hearing and Request for Comments on 18-Month Publication of Patent Applications*; Advance Proposed Rule Notice, 59 FR 63966, 63970 (December 12, 1994); 1170 *Off. Gaz. Pat. Office* 390, 393-94 (January 3, 1995). The PTO made a specific proposal for changing the procedure for making amendments to an application in late 1996. *See 1996 Changes to Patent Practice and Procedure*; Proposed Rule Notice, 61 FR 49819, 49830-31, 49852-54 (September 23, 1996); 1191

Off. Gaz. Pat. Office 105, 113-14, 133-34 (October 22, 1996). This proposal, however, was withdrawn for further study in view of the public comments received. *See Changes to Patent Practice and Procedure*; Final Rule Notice, 62 FR 53131, 53153 (October 10, 1997); 1203 *Off. Gaz. Pat. Office* 63, 82 (October 21, 1997). Comments received to date in response to both notices have been taken into account in arriving at the currently proposed procedure for making amendments.

Discussion: The preferred option under consideration is a change to 37 CFR 1.121 eliminating the current system for making amendments in non-reissue applications and requiring applicants to present amendments in the form of replacement paragraphs for changes to the specification and replacement claims for any changed claims. The replacement paragraphs/claims would be entered by the PTO as substitute inserts for the paragraphs in the specification or for the affected claims. Should an applicant merely wish to cancel a claim, a specific instruction to cancel or delete the claim would be sufficient. Similarly, a paragraph of the specification could be canceled by a specific instruction to cancel or delete. Except as currently provided, no claim would be canceled by the PTO without specific and direct instructions from the applicant to do so.

In order for the replacement paragraph system to work, all the paragraphs, including headings, charts, graphs, tables, and equations in the specification would have to be numbered. Thus, it is further contemplated that, in conjunction with the change to 37 CFR 1.121, a change to 37 CFR 1.52 may be necessary in order to provide a requirement for the numbering of paragraphs of the specification. Once all the paragraphs are numbered, amendments would be made merely by submitting a replacement paragraph (with the same number) with the desired changes made in the replacement paragraph. If an amendment results in the addition or deletion of one or more paragraphs, an arrangement for identifying any such added or deleted paragraphs shall be established so that the numbering of other paragraphs shall not have to be changed.

It should be noted that the PTO will retain the option of being able to require the submission of a substitute specification, as well as permitting the submission of a substitute specification. 37 CFR 1.125.

In addition to submitting a replacement paragraph/claim to make an amendment, applicant would also be required to submit a marked-up copy of the paragraph/claim to show the differences between the original and the replacement. The marked-up copy would be generated by any method applicant chooses, such as underlining and bracketing, redlining, or by whatever system is available with the compare function of applicant's software. However, it must be clear enough to be readily understood by the examiner.

The replacement paragraph/claim, which would be a clean version without any underlining or bracketing, would be able to be completely scanned as part of the printing process in the Office of Patent Publications which will result in a higher quality of printed patents. Complete scanning of amended portions of the specification and amended claims is not possible today because insertions of words, phrases or sentences made by handwriting in red ink and deletions made by words which have been lined through with red ink are ignored by the scanner. Further, while text marked with underlining and bracketing can be scanned, extra processing is required to delete the brackets and the text within the brackets and to correct misreading of letters caused by the underlining. Thus, using clean replacement paragraphs and claims would permit complete scanning which is a faster and more accurate method of capturing the application for printing while eliminating an extensive amount of key-entry of subject matter. This should result in patents with fewer errors in need of correction by certificate of correction, which clearly would be a benefit to the patentees while also conserving PTO resources.

When an amendment in the future is presented in an Electronic File Wrapper (EFW) environment, applicants would only have to submit a single clean copy of the replacement paragraph/claim, as the PTO's system (software) would be designed to allow the examiner to see the differences between the original and the amended versions.

Adoption of the preferred option would make the amendment process simpler, reduce processing time and operating costs, and reduce the opportunity for error associated with amendment entry. In addition, it would be consistent with the PTO objective of standardizing processing of amendments in both paper and electronic format in anticipation of a total EFW environment, which is currently under development. Further, the changes being considered are consistent with the PTO's efforts to harmonize with PCT practice and any changes being contemplated for that system.

The change in amendment procedure being considered would have a significant impact on several of the PTO's business goals. Specifically, amendment entry practice would be much easier and would increase efficiency in the technical support area with better resource utilization (Business Goal 5) and a reduction in cycle time (Business Goal 1). In addition, the changes proposed herein are consistent with the PTO's concurrent development of receiving applications and publishing patents electronically (Business Goal 3), in that they provide for enhanced and more efficient paper processing, in addition to establishing the groundwork for transition into a full EFW environment. Further, the simplified amendment entry practice would exceed our customers' quality expectations (Business Goal 4) by saving applicants a substantial amount of time and resources as: (1) it will be easier and take less time for applicants to prepare amendments to be submitted to the PTO; (2) it will be easier and take less time for applicants to enter amendments into and update their own application files; and (3) the printed patents should have less typographical errors, reducing the need for requesting Certificates of Correction. A secondary option under consideration is that of replacement sections of the specification and claims. A standardized form of section and heading identification would also be required to achieve uniformity in practice. Parts of the specification, as well as individual claims, would be defined as "sections" and would be replaced in a manner similar to that described above for replacement paragraphs/claims. While the procedure seems viable for electronic processing, it does not lend itself to paper format, primarily due to the larger number of replacement sheets which might be required.

One other option that was considered involved replacement pages of the specification and/or claims. Although this procedure currently enjoys limited success in PCT amendment practice in paper format, its future in electronic filing raises some apprehension. In an electronic environment, page numbering is dependent on word processing style and formatting and can be inconsistent; thus, sequential page numbering as in paper format would not be possible. For this reason, this option is not being further pursued.

It is noted that 37 CFR 1.121 is primarily directed to setting forth the procedural requirements for making amendments. Thus, consideration is being given to shifting several of the more substantive sections of this rule to more appropriate sections of the rules. For example, the provisions of 37 CFR 1.121(b)(2)(iii) and (b)(5), which are specific to reissue requirements, may be relocated to 37 CFR 1.173, and the provisions of 37 CFR 1.121(a)(6) relating to new matter may be relocated to 37 CFR 1.111.

14. Providing for presumptive elections (37 CFR 1.141).

Summary: The PTO is considering a change to restriction practice to eliminate the need for a written restriction requirement and express election in most restriction situations.

Specifics of Change Being Considered: The PTO is considering a change to restriction practice to provide: (1) that if more than one independent and distinct invention is claimed in an application, the applicant is considered to have constructively elected the invention first presented in the claims; (2) for rejoinder of certain process claims in an application containing allowed product claims; and (3) for rejoinder of certain combination claims in an application containing allowed subcombination claims. This will, in most restriction situations, eliminate

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the need for a written restriction requirement separate from an Office action on the merits and an express election by the applicant, which will reduce pendency and PTO cycle time. This change would apply to nonreissue applications filed under 35 U.S.C. 111(a), and would not apply to reissue applications or applications filed under the PCT.

Discussion:

The PTO is considering amending the rules of practice (37 CFR 1.141 *et seq.*) to avoid the delays inherent under current restriction practice. Specifically, when claims to more than one independent and distinct related invention are presented in an application, current practice is to require restriction and an express election by the applicant prior to an action on the merits. *See* 37 CFR 1.142(a). The PTO is considering amending restriction practice to provide, by rule, that if claims to more than one independent and distinct related invention are presented in an application, the applicant is considered to have constructively elected the invention first presented in the claims. That is, the PTO is considering adopting a PCT-type practice in regard to how the PTO determines the invention to be examined when multiple inventions are presented in an application. *See* PCT Article 17(3)(a) (when the unity of invention requirement is not met, the search report shall be established on the parts of the application that relate to the invention first mentioned in the claims unless additional fees are timely paid). This change should eliminate the need for a requirement for an express election prior to action on the merits in many restriction situations, and would support the PTO's business goal to reduce PTO processing time to twelve months or less for all inventions.

The PCT practice of permitting an applicant to obtain examination of additional inventions in a single application upon payment of additional fees is **not** currently under consideration. Except for the specific authorization in § 532(a)(2)(B) of Pub. L. 103-465 for the practice set forth in 37 CFR 1.129(b), there is currently no statutory authority for the PTO to simply charge the patent fees set forth in 35 U.S.C. 41(a) for the examination of additional inventions in a single application. 35 U.S.C. 41(d) would authorize the PTO to examine additional inventions in an application for a fee that recovers the estimated average cost to the PTO of such further examination; however, as 35 U.S.C. 41(h) is applicable only to fees under 35 U.S.C. 41(a) and (b), the PTO would not be authorized to provide a small entity reduction in regard to such fee. Thus, the only mechanism by which the PTO may provide examination of additional inventions for a fee to which the small entity reduction is applicable is via the divisional application practice.

The PTO is also considering providing, by rule, that the PTO will examine the claims to the product if either: (1) the first presented claims are claims to a product; or (2) the first presented claims are claims to a process of either using or making a product and the application contains claims to the product. If the claims to the product are determined to be allowable over the prior art, the PTO will also examine (permit joinder of) the corresponding process of making claims or the corresponding process of using claims (if the application contains claims to the process of using or making the product) that depend from or otherwise include all the limitations of the product claims that are allowable over the prior art. *See Guidance on Treatment of Product and Process Claims in light of In re Ochiai, In re Brouwer, and 35 U.S.C. 103(b)*, 1184 *Off. Gaz. Pat. Office* 86 (March 26, 1996).

The process of making claims or the process of using claims that do not depend from or otherwise include all the limitations of the product claims that are allowable over the prior art will, by rule, be treated as constructively non-elected due to the presentation of product claims.If the claims to such product are not determined to be allowable over the prior art, then, by rule, the presentation of product claims will be treated as a constructive election of the product for examination. Thus, a process claim will, by rule, be treated as constructively non-elected due to the presentation of a product claim in either of the following two situations: (1) if no constructively elected product claim is allowable over the prior art; or (2) if the process claim does not depend from or otherwise include all the limitations of a constructively elected product claim that is allowable over the prior art.

The PTO is also specifically considering providing, by rule, that the PTO will examine the claims to the subcombination if either: (1) the first presented claims are claims to a subcombination; or (2) the first presented claims are claims to a combination and the application contains claims to the subcombination. If the claims to the subcombination are determined to be allowable over the prior art, the PTO will also examine (permit joinder of) the corresponding combination claims (if the application contains claims to the combination) that depend from or otherwise include all the limitations of the subcombination claims that are allowable over the prior art.

Restriction is currently not permitted in the situation in which the combination includes all the limitations of the subcombination (*i.e.*, the subcombination is essential to the patentability of the combination), unless there is at least one combination claim that does not include all the limitations of the subcombination (*i.e.*, a claim that evidences that the applicant does not consider the subcombination is essential to the patentability of the combination or an "evidence claim"). *See* MPEP 806.05(c). Restriction may be permitted in the situation in which the combination does not include all the limitations of the subcombination (*i.e.*, the subcombination is not essential to the patentability of the combination). *See id.*

The combination claims that do not depend from or otherwise include all the limitations of the subcombination claims that are allowable over the prior art will, by rule, be treated as constructively non-elected due to the presentation of subcombination claims. If the claims to the subcombination are not determined to be allowable over the prior art, then, by rule, the presentation of subcombination claims will be treated as a constructive election of the subcombination for examination. Thus, a combination claim will, by rule, be treated as constructively non-elected due to the presentation of a subcombination claim in either of the following two situations: (1) if no constructively elected subcombination claim is allowable over the prior art; and (2) if the combination claim does not depend from or otherwise include all the limitations of a constructively elected subcombination claim that is allowable over the prior art.

The examiner would still be required to set forth the restriction requirement in the first Office action, and would then follow the requirement with an indication of which claims were constructively elected. If the applicant disagrees with the propriety of the restriction requirement, the applicant would continue to have the right to request reconsideration (37 CFR 1.143) and review (37 CFR 1.144) of the restriction requirement. The only change is that an applicant's election would be a constructive election based upon the order of presentation, rather than an express election in reply to a restriction requirement.

This change would apply to nonreissue applications filed under 35 U.S.C. 111(a), and would not apply to applications filed under the PCT. The PTO is also considering changes to restriction practice for reissue applications, which are discussed below. The discussion in this topic applies solely to restriction practice for a nonreissue application.

15. Creating a "rocket docket" for design applications (37 CFR 1.155).

Summary: The PTO is considering an expedited procedure to reduce the processing time for the examination of design applications.

Specifics of Change Being Considered: The PTO is considering a change to the rules of practice, so that design applicants may for a fee (roughly estimated at approximately $900) request to have their applications expedited. The PTO would also require the applicant to conduct a pre-examination search and file formal drawings. The applications would be individually examined with priority and the clerical processing would be conducted by special expediters and/or monitored by special expediters to achieve expeditious processing through initial application processing and the Design Examining Group.

Discussion: Because of the marketplace, there is a need for rapid protection of certain articles which are easy to copy, such as athletic shoes, toys or consumer goods. Consequently, the time spent securing patent protection may severely erode the benefit of design patent protection, since if the process is lengthy, once the design is patented, the damage in the form of infringement may already be done. Currently the "Petition to Make Special - Accelerated" procedure set forth at MPEP 708.02 (VIII) provides an under-utilized process for applicants seeking timely examination. Presumably this is because the procedure required to grant a Petition to Make Special is time-consuming in that the petitions must first be located from amongst the application papers and oft-times a considerable amount of time may transpire before the petition is acted upon by the required high-level official. Utilizing the proposed expedited procedure, this will be solved by having the request hand-delivered to the Director's Office where the PTO can be assured that it will be acted upon quickly. Moreover, the current Petition to Make Special procedures are primarily directed to prioritizing the application while it is on the Examiner's docket as opposed to decreasing time spent routing the application and clerical processing time. Certain design applicants have requested that additional measures, for an additional cost, be made available to design applicants so that their applications may be processed and/or monitored by expediters, who will assure hand-carrying of the applications between processing steps and top priority clerical processing of the applications. This is consistent with the PTO's goals of reducing the cycle time for applications (Goal 1) and exceeding customers' expectations (Goal 4). Accordingly, there is a need for a separate, streamlined, expedited procedure for designs.

Consequently, the PTO is considering amending 37 CFR 1.155 to create an additional avenue for design applicants seeking expedited processing during examination before the PTO. The fee for this expedited processing is that fee necessary to recover the PTO's cost of providing such expedited examination. *See* 35 U.S.C. 41(d). The initial estimate (approximately $900) is for the additional cost of: (1) hand-carrying/walking an application through processing stages in initial application processing and the Design Examining Group; (2) prioritizing the processing of the application and (3) individually searching and examining the application by itself and not along with other design applications.

Unlike utility and plant applications, design applications are generally searched (and examined) in groups of ten to twenty which reduces the search and examination time needed for each design application, which in turn permits a relatively low design application filing fee. Under this practice, the general procedure results in all applications being searched before any are completed and mailed. Given that expedited cases will be searched and examined individually by themselves rather than with many other design applications, a higher processing fee is justified.

The expedited procedure for design cases will afford expeditious treatment from the date of filing to the date of issuance or abandonment, except if the application is appealed or if a petition is filed there is no expedited treatment while the application is within the jurisdiction of the Board of Patent Appeals and Interferences (BPAI) or Special Program Law Office (SPLO) under the proposed 37 CFR 1.155. As to processing during the printing cycle, the time for processing prior to printing is expected to be reduced to eight weeks, so no special expedited procedure is deemed necessary.

Requirements:

(1) The Request to Expedite along with the design application should be filed by hand in the Design Group Director's Office. If the application has been previously filed, the request, which must indicate the application number, should be hand-carried or faxed to the Group Director's Office.

(2) The Request to Expedite will be treated promptly but will not be considered until the application is complete (*i.e.*, includes the basic filing fee, executed oath or declaration and drawings).

(3) Applicant will be required to conduct a preexamination search. The results of the search must be reported as set forth in MPEP 708.02 (VIII) "Special Examining Procedure for Certain New Applications - Accelerated Examination." *See* MPEP 708.02 (VIII) at 700-71.

(4) The requisite fee must accompany the Request to Expedite. The fee (roughly estimated at approximately $900) charged will be based on expenses for additional work and processing time (*e.g.*, search and examination on an individual application basis and special clerical processing/handling and stoppage of other work in progress). There will be no time limit on when the Request to Expedite may be filed, but the fee will be the same regardless of the point in the examination expedited status begins.

(5) Formal drawings are required for expedited status.

As to restriction practice, there will be a constructive election of the first presented invention. No right to traverse is to be provided. As an alternative, the applicant is given the right to traverse immediately following an Office action in which a constructive election has been set forth; but once the right to traverse is claimed, the expedited status under 37 CFR 1.155 will be terminated.

Benefits of Expedited Status:

Once the Request to Expedite is granted, the application will be provided special expedited processing including (a) essentially walk-through processing through initial application and Design Examining Group stages and (b) processing out-of-turn on an immediate basis. There will be specially designated expediters for clerical processing who will personally perform certain processing steps where possible, and if not possible, will wait with the application for immediate performance of processing steps by regular personnel. The applications will be hand-carried from step to step. These special expediters might be designated employees in existing organizations or a special central clerical operation that would serve as expediters and do or oversee the processing for most other operations.

Examiner processing of expedited applications (for first as well as subsequent actions) will be given the highest priority for examination and each application will be searched and examined individually by themselves and not along with a batch of other applications. A courtesy copy of all Office actions (with references if feasible) will be faxed if a fax number is provided.

The design group will monitor application progress using the Patent Application Locating and Monitoring (PALM) system to ensure that expedited applications are not misplaced or delayed. Distinctive markings or tags will be placed on the filewrapper. The applications will be specially coded with a PALM transaction code and specially run PALM reports will be generated to ensure that any expedited application in the same status for more than a predetermined period of time will be noted and brought to the attention of the monitoring officials.

The PTO will set a one-month Shortened Statutory Period (SSP) for reply for each action.

In addition, the PTO envisions setting aside an adequate number of "expedited status" slots at the printer for expedited cases. However, the time for the printing process is expected to be reduced to eight weeks, so no special provision is expected to be required.

The PTO is interested in whether you find this program desirable and, if not, why not. Please include with your comments an estimate of the number of expedited requests that your office or firm expects to file, should the expedited procedure be implemented.

16. Requiring identification of broadening in a reissue application (37 CFR 1.173).

Summary: The PTO is considering a change to 37 CFR 1.173 to require reissue applicants to identify all occurrences of broadening of the claimed invention in the reissue application.

Specifics of Change Being Considered: Reissue applicants would be specifically required to point out all occurrences of broadening of the claims. This will alert examiners to consider

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issues involving broadening relative to the two-year limit and the recapture doctrine. While this requirement is being imposed on applicants, the examiner will still be expected to independently look for and to appropriately treat any broadening issues under 35 U.S.C. 251, ¶¶ 1 and 4. If applicant fails to note a broadening and the examiner does identify a broadening, the examiner would not be permitted to make any rejection or objection as to the failure of applicant to identify the broadening.

Discussion: 35 U.S.C. 251, ¶ 4, provides that no reissue patent may enlarge (broaden) the scope of the claims of the original patent, unless the reissue patent was applied for within two years from the grant of the original patent. *See In re Graff*, 111 F.3d 874, 877, 42 USPQ2d 1471, 1473-74 (Fed. Cir. 1997). The standard for determining whether there has been a "broadening" has been set forth by the Court of Appeals for the Federal Circuit as follows:

a claim of a reissue application is broader in scope than the original claims if it contains within its scope any conceivable apparatus or process which would not have infringed the original patent . . . A claim that is broader in any respect is considered to be broader than the original claims even though it may be narrower in other respects.

See In re Freeman, 30 F.3d 1459, 1464, 31 USPQ2d 1444, 1447 (Fed. Cir. 1994) (quoting *Tillotson Ltd. v. Walbro Corp.* 831 F.2d 1033, 1037 n.2, 4 USPQ2d 1450, 1453 n.2 (Fed. Cir. 1987)); *see also Westvaco Corp. v. International Paper Co.*, 991 F.2d 735, 741-42, 26 USPQ2d 1353, 1358-59 (Fed. Cir. 1993); *and In re Self*, 671 F.2d 1344, 1346-47, 213 USPQ 1, 3-4 (CCPA 1982).

Further, even if a broadened reissue is applied for within two years (of the patent grant date), any broadening must also be considered in view of the recapture doctrine which prevents a patentee from regaining through reissue subject matter that the patentee surrendered in an effort to obtain the original patent claims. *See, In re Clement*, 131 F.3d 1464, 1468, 45 USPQ2d 1161, 1164 (Fed. Cir. 1997); *see also Hester Indus., Inc. v. Stein*, 142 F.3d 1472, 1480-82, 46 USPQ2d 1641, 1648-49 (Fed. Cir. 1998) (arguments during prosecution of the original patent may, even in the absence of an amendment to the claims, give rise to a surrender that bars recapture by reissue). Therefore, to properly examine any reissue application, the examiner must be aware of all occurrences of broadening of the original patent claims.

While it is often clear when a reissue application contains one or more claims that are broader than the claims of the original patent, sometimes issues of claim interpretation arise where it is not clear that the reissue application contains claims that are broader than the claims of the original patent. For example, a reissue application changing the phrase "perforation means" in the original patent claims to "perforations" is a broadening change if that phrase in the original patent is considered to have invoked 35 U.S.C. 112, ¶ 6 (*Johnston v. Ivac Corp.*, 885 F.2d 1574, 1580, 12 USPQ2d 1382, 1386 (Fed. Cir. 1989) (35 U.S.C. 112, ¶ 6, operates to cut back on the types of means which could literally satisfy the claim language)), but is not a broadening if that phrase in the original patent is not considered to have invoked 35 U.S.C. 112, ¶ 6 (*Cole v. Kimberly-Clark Corp.*, 102 F.3d 524, 531, 41 USPQ2d 1001, 1006 (Fed. Cir. 1996) (presence of the word "means" in a claim does not necessarily invoke 35 U.S.C. 112, ¶ 6)). Thus, in a significant number of reissue applications, it is not readily apparent from an inspection of the claims in the reissue application whether they are broader than the original patent claims. *See Freeman*, 30 F.3d at 1464-65, 31 USPQ2d at 1448 ("we cannot agree with [applicant] that simply because [applicant] added words to [the] claims that those claims are further narrowed in scope . . .[t]he English language is not that simple").

The PTO recently amended 37 CFR 1.175(a) (effective December 1, 1997) to require that a reissue applicant identify in his or her reissue oath or declaration only a single error being corrected in the reissue. *See Changes to Patent Practice and Procedure*; Final Rule Notice, 62 FR 53131, 53196 (October 10, 1997), 1203 *Off. Gaz. Pat. Office* 63, 121 (October 21, 1997).Thus, in a reissue application containing claims that have been both broadened and narrowed, the applicant may meet the literal requirements of 37 CFR 1.175(a) by identifying only the error involving the narrowing of the original patent claims, while still asserting a correction of "more or less" than applicant had a right to claim in the original patent and without addressing the issue of broadening. Without the identification of all occurrences of broadening, it may not be clear when a reissue application contains claims that are broader than the claims of the original patent.

Since this recent rule change did not specifically retain the requirement for indicating when an amendment (change to the original patent) will actually be a broadening amendment, or an attempt to be a broadening, amendment, the PTO is considering imposing a requirement for reissue applicants, at the time any changes are made, either at the time of filing or during the course of prosecution, to specifically identify the changes that involve, or may involve, broadening of the claims. Thus, applicants would be required to identify all occurrences of broadening of the patent claims in the reissue application. For example, a change from the term "rigid material," which might appear in an original patent, to the term "material" in a corresponding reissue application, is an easily identifiable broadening of the claim. Another example would be a totally rewritten new claim in a reissue application which may not have an easily recognizable correspondence to any original patent claim.

The intent is to impose on applicant a burden to identify all instances of broadening so as to alert the examiner in a timely manner to the fact that broadening has occurred so that the examiner can consider the questions of whether the broadening has occurred outside the two-year time period or whether the broadening amounts to an attempt to recapture subject matter previously given up in obtaining the patent. The examiner, however, is not relieved of his/her obligation to fully evaluate and examine the reissue application, including any issues related to broadening, as required by 35 U.S.C. 251, ¶ 4.

If an applicant fails to identify any broadening but the examiner has detected occurrences of broadening, the burden on applicant has been satisfied and there would be no point to having the examiner object and require the applicant to identify the broadening already detected by the examiner. An objection or rejection under 37 CFR 1.173 (or under 35 U.S.C. 251) would not be warranted. While the examiner would not be required to indicate that broadening had been found if an examination issue is not present based on the broadening, the examiner would have the option of reminding applicant of the requirement for identification of all instances of broadening and request applicant to identify any instance of broadening not yet identified by the examiner. The intent of the change is not for the examiner to rely upon applicant's duty to identify each broadening, but to have the applicant and the examiner each have responsibility to address the issue.

An intentional failure to identify material broadening to the PTO may result in a court finding that the reissue applicant has violated the duty of candor and good faith to the PTO under 37 CFR 1.56. If, however, an applicant makes a good faith attempt to alert the examiner to where broadening has occurred in the reissue claims but inadvertently omits one or more instances of broadening, or the applicant in good faith does not identify any broadening in that the applicant had no intent to broaden, the applicant may not have the requisite intent necessary for a finding that the applicant violated 37 CFR 1.56. In any event, such issues would not be addressed by the PTO.

The change to 37 CFR 1.173 under consideration would support the PTO's Business Goal 1 (reduce PTO processing time to twelve months or less for all inventions) because it would lead to an early identification of issues of broadening (within two years), recapture, and claim interpretation and, thereby, help to ensure that the examination process is efficiently performed. The change to 37 CFR 1.173 under consideration would also support the PTO's Business Goal 4 (exceed our customers' quality expectations, through the competencies and empowerment of our employees) because it would help to ensure that broadening and recapture doctrine issues are addressed. Since

it is the reissue applicant (and not the PTO or the public) who is seeking to change (or broaden) the original patent claims, the reissue applicant is in the best position to identify such broadening. In addition, if it is not clear that the reissue application contains claims that are broader than the claims of the original patent, the applicant's identification on filing of all occurrences of broadening may assist the applicant in meeting the two-year statutory requirement in 35 U.S.C. 251, ¶ 4. *See Graff*, 111 F.3d at 877, 42 USPQ2d at 1473-74 (35 U.S.C. 251, ¶ 4, requires that a reissue applicant give notice of proposals to broaden the claims of a patent to the public within two years of issuance of the patent). Thus, it is appropriate to place some responsibility for identifying all occurrences of broadening in the reissue application on the reissue applicant (rather than solely on the PTO examiner or the public).

The recent amendment to 37 CFR 1.175, inter alia, eliminated the requirement that an applicant submit an oath or declaration setting forth detailed showings concerning each and every change being made to the patent via reissue. *See Changes to Patent Practice and Procedure*, 62 FR at 53165-66, 1203 *Off. Gaz. Pat. Office* at 92-93. The changes to 37 CFR 1.173 under consideration do not readdress the requirements of former 37 CFR 1.175 because: (1) 37 CFR 1.175 relates to oath/declaration requirements and the identification of all occurrences of broadening need not (but may) be provided in the reissue oath or declaration (*e.g.*, they may be identified by a preliminary remarks paper, or in the application transmittal letter); (2) the identification requirement applies only to broadening changes, not to all of the changes being made by reissue; and (3) the identification of all occurrences of broadening need not include a discussion of the nature of the broadening as was required by former 37 CFR 1.175.

17. Changing multiple reissue application treatment (37 CFR 1.177).

Summary: The PTO is considering an amendment to 37 CFR 1.177 to streamline the processing of divisional (or multiple) reissue applications.

Specifics of the Change Being Considered: The PTO is considering an amendment to 37 CFR 1.177 to: (1) eliminate the current requirements of 37 CFR 1.177 that multiple reissue applications be referred to the Commissioner and issue simultaneously; and (2) require that each of the multiple reissue applications contains a specific cross-reference to each of the other reissue applications. Each reissue application would have to present all original claims (amended, unamended, or deleted). Issuance of reissues where no changes have been made would not be permitted.

Discussion: 37 CFR 1.177 currently provides that divisional reissue applications: (1) must be referred to the Commissioner; and (2) will issue simultaneously, unless otherwise ordered by the Commissioner. The specifics of the exception processing given to divisional reissue applications is set out at MPEP 1451. The PTO has determined that it is unnecessary to give this exception processing to divisional (or multiple) reissue applications.

Therefore, the PTO is considering amending 37 CFR 1.177 to: (1) eliminate the requirements that multiple reissue applications be referred to the Commissioner and issue simultaneously; and (2) require that each of the multiple reissue applications contains (at the beginning of the specification) a specific cross-reference to each of the other reissue applications. This cross-reference would serve as a notification to the public that more than one reissue patent may/will replace the single original patent. If applicant fails to present such an amendment to the specification(s) when filed, or if the first reissue fails to include a cross-reference to a later filed second reissue application, and the error is not detected by the PTO before the reissue application issues, the PTO would issue a certificate of correction under either 37 CFR 1.322 or 1.323 to provide such notice in the issued reissue patent(s).

The numbering of the claims in the multiple reissue applications should follow a simple basic numbering scheme. For several reissue patent applications being filed from a single original patent, **all** claims of the original patent should be presented in **each** reissue application as either amended, unamended, or deleted (shown in brackets) claims, respectively, with each claim bearing the same number it had in the original patent. The same claim of the original patent should not be presented in its **original unamended form** for examination in more than one of such several reissue applications or a double patenting rejection under 35 U.S.C. 101 shall be made. Added claims may be presented in any of the several applications and should be numbered beginning with the next number following the highest numbered patent claim. For example, an original patent containing fifteen claims may be filed as three separate reissue applications, each presenting all fifteen of the original claims but, of the fifteen, a different five claims for examination. The selected five claims being presented for examination in each reissue application could be amended or unamended and they would still carry their original numbering. The ten respective deleted claims (appearing in brackets) would also appear in each reissue application.Any added claims, even if different in each of the applications, would be numbered "16" and above. Each of the printed reissue patents would include all of the original claims (with or without brackets) as well as any claims added only into that reissue patent.

If the same or similar claims were presented in more than one of the multiple reissue applications, statutory double patenting (35 U.S.C. 101) or non-statutory (judicially created doctrine) double patenting considerations would be made by the examiner during examination, and appropriate rejections made.

The amendment to 37 CFR 1.177 being considered would support Patent Business Goals 1 (reduce PTO processing time to twelve months or less for all inventions) by eliminating: (1) the processing time needed for a petition for non-simultaneous issuance of multiple reissue applications; and (2) the suspension time of a reissue application in order to provide for simultaneous issuance of the multiple reissue applications.

18. Creating alternative review procedures for applications under appeal (37 CFR 1.192).

Summary: The PTO is considering alternative review procedures to reduce the number of appeals forwarded to the Board of Patent Appeals and Interferences.

Specifics of Change Being Considered: The PTO is considering two alternative review procedures to reduce the number of appeals having to be forwarded to the Board of Patent Appeals and Interferences (Board) for decision. Both review procedures involve a review that would be available upon request and payment of a fee by the appellant, and would involve review by at least one other PTO official. The first review would occur after the filing of a notice of appeal but before the filing of an appeal brief and involve a review of all rejections of a single claim being appealed to see whether any rejection plainly fails to establish a *prima facie* case of unpatentability. The second review would occur after the filing of an appeal brief and involve a review of all rejections on appeal.

Discussion: To expedite resolution of appeals, the PTO is considering two optional review procedures. The first review under consideration would take place prior to the filing of an appeal brief, and the second review under consideration would take place after the filing of an appeal brief. The procedures under consideration would be optional as to the appellant, in that the appellant need not request either such review as a prerequisite to obtaining a decision by the Board. The appellant, however, upon making a timely request accompanied by the appropriate fee, would be entitled to either such review (or even both such reviews) prior to the appeal going forward to the Board.

A patentee is entitled to patent term extension if, *inter alia*, "the issue of a patent is delayed due to appellate review by the Board of Patent Appeals and Interferences or by a Federal court and the patent is issued pursuant to a decision in the review reversing an adverse determination of patentability." *See* 35 U.S.C. 154(b)(2). Since the appeal reviews under consideration would not be by either the Board or a Federal court,

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the issuance of a patent as a result of a decision reached during such an appeal review to withdraw a rejection would not entitle the patentee to patent term extension under 35 U.S.C. 154(b)(2). Nevertheless, this should not dissuade applicants from using these appeal review procedures because: (1) patent term extension under 35 U.S.C. 154(a)(2) is preconditioned upon a decision by the Board or a Federal Court in the review reversing an adverse determination of patentability, which is never certain; and (2) the appeal reviews under consideration will take place before the preparation of any examiner's answer, and, as such, will not result in the delays inherent in Board or court review.

The purpose of these review procedures is not to place applications in better condition for appeal, but to reduce the number of applications that must be forwarded to the Board for a decision. The PTO anticipates that the appeal reviews under consideration will lead to the elimination of the need for Board review in appeals involving weak rejections.

a. Limited pre-brief review:

The PTO is considering an optional, limited review that would take place after a notice of appeal has been filed, but prior to the filing of an appeal brief. Under the limited pre-brief review, the appellant may file a request (accompanied by the requisite fee) for review of all of the rejections in the final rejection (or rejection being appealed if non-final) of **a selected claim.** The application will be given to a second primary examiner (reviewer) who will review the application to determine whether each rejection(s) of **the selected claim** plainly fails to establish a *prima facie* case of unpatentability. The reviewer is expected to make an independent evaluation of the merits of the appealed rejection(s), but may consult with the primary examiner (or examiner responsible for the application if not a primary examiner).

The limited pre-brief review would be based on the final rejection (or rejection being appealed) without the need for the filing of an appeal brief. All that would be required is a request for such a review and an identification of the claim to be reviewed. Arguments would, of course, be permitted, but the review would be limited to whether the rejection(s) plainly failed to establish a *prima facie* case of unpatentability of the identified claim. For example, a request for a review of whether affidavits or declarations under 37 CFR 1.132 overcome a *prima facie* case of unpatentability would exceed the limits of the limited pre-brief review under consideration.

The limited review would focus on whether the rejection(s) of the selected claim plainly fails to establish a *prima facie* case of unpatentability. In determining whether a rejection plainly fails to establish a *prima facie* case of unpatentability, the reviewer will evaluate the record (*e.g.*, the applied references) to determine whether it is plain that the primary examiner has failed to meet the burden of establishing a *prima facie* case of unpatentability, but will not evaluate the adequacy of the expression of the appealed rejection in the action. Obviously, if the reviewer must change the basic thrust of an appealed rejection as applied in the action to avoid the conclusion that it plainly fails to establish a *prima facie* case of unpatentability, the reviewer will consider the rejection to plainly fail to establish a *prima facie* case of unpatentability, since changing the basic thrust of a rejection would require a new ground of rejection and the reopening of prosecution. Thus, such a limited review is expected to lead to the withdrawal of clearly meritless rejections, but may also lead to either the suggestion of amendments which could be made to avoid the rejection(s), or to a reopening of prosecution.

Although the reviewer would not have the authority to overrule the primary examiner, that primary examiner would be made aware of situations in which another experienced examiner (the reviewer) not only disagreed with any or all of the rejections of the selected claim, but considered such rejection(s) to plainly fail to establish a *prima facie* case of unpatentability. It is generally expected that the primary examiner would withdraw such a rejection. Unless the review resulted in the withdrawal of all rejections and allowance of the application, the PTO would provide a notice to the appellant advising the appellant: (1) that the review occurred and that the period set in 37 CFR 1.192 for filing an appeal brief runs from the mail date of such notice (see discussion below); and (2) of any rejection(s) that is withdrawn as a result of the review.

Consideration is also required for the time frames for this type of review. Under the current rules, the mere filing of a such request would not satisfy the requirement for the filing of an appeal brief (and its fee) to avoid dismissal of the appeal. The PTO could, however, amend 37 CFR 1.192 to, in effect, stay the period for filing an appeal brief (and its fee) until completion of the review. Obviously, once an appellant has requested such a limited pre-brief review, the appellant would not be permitted to stay the period for filing an appeal brief by requesting another such limited review, but would be required to timely file an appeal brief to avoid dismissal of the appeal.

The benefit to applicants of a limited pre-brief review is that it permits the appellant to obtain review of what is considered a rejection that plainly fails to establish a *prima facie* case of unpatentability, while saving the costs involved in preparing an appeal brief. The PTO expects that this type of limited pre-brief review would be most useful in the situation in which there is a single representative claim upon which the appeal hinges, and the appellant considers the rejection(s) of such claim to be deficient on its face. In such a situation, a prompt resolution of the disagreement(s) as to that claim would in all likelihood lead to a resolution of all other issues. Specifically, the PTO anticipates that an appellant using this procedure would choose the narrowest claim that the appellant would be willing to accept (which may be a dependent claim) as the selected claim, and that the limited review would either lead to the examiner being informed by an experienced examiner that one or more rejections plainly fail to establish a *prima facie* case of unpatentability, or the appellant being informed by another experienced examiner that the rejection(s) do not plainly fail to establish a *prima facie* case of unpatentability.

b. Post-brief review:

The PTO is also considering adding an optional review that would take place after an appeal brief has been filed. Under the post-brief review, the appellant may file a request (accompanied by the requisite fee) and the application will be given to a second primary examiner (reviewer) who will review the application, focusing on the final rejection (or rejection being appealed) and the appeal brief. After this review, the primary examiner (and the examiner responsible for the application if not a primary examiner) and the reviewer will confer prior to mailing of an examiner's answer to review the appealed rejections and the brief. The conference would thus include at least two PTO officials, but may also include an examiner who is not a primary examiner. Such a post-brief review would focus on the tenability of the appealed rejection(s) and, accordingly, is expected to lead to the withdrawal of rejections of doubtful merit. Such a review may also lead to either the suggestion of amendments which could be made to avoid the rejections of record, or to reopening of prosecution.

Although the reviewer would not have the authority to overrule the primary examiner responsible for the appeal, that primary examiner would be made aware of weaknesses in his or her position as perceived by another experienced examiner. It is generally expected that the primary examiner will withdraw those rejections which another experienced examiner considers unlikely to be successful on appeal. If, however, a reasonable difference of opinion exists among the examiners as to the merits of the rejection(s), it should be expected that appeal will go forward to the Board. Unless the review resulted in the withdrawal of all rejections and allowance of the application, the examiner's answer would be initialed by the reviewer and would indicate:(1) that the review occurred; and (2) any rejection(s) that is withdrawn as a result of the review.

c. Issues for public comment:

The PTO requests public comment on each of the above-mentioned procedures, since the PTO may implement neither, one, or both procedures depending upon the public comments and internal feasibility concerns.

The PTO also desires public comment on the pool of PTO employees from which the reviewer for both reviews is taken. For example, the PTO could select as the reviewer: (1) a primary examiner from the same or related art; (2) a primary examiner from a different art; (3) a manager (*e.g.*, a Supervisory Patent Examiner, Group Special Program Examiner, or Quality Assurance Specialist); (4) a Legal Advisor from the Special Program Law Office; or (5) a Quality Review Examiner.

The PTO also desires public comment on whether it should establish a uniform procedure for both reviews to be used throughout the Examining Corps, or whether each technology center should be free (within specified guidelines) to establish its own procedures for such reviews.

19. Eliminating preauthorization of payment of the issue fee (37 CFR 1.311).

Summary: The PTO is considering amending 37 CFR 1.311(b) to eliminate the option of filing an authorization to charge an issue fee to a deposit account before the notice of allowance is mailed.

Specifics of Change Being Considered: 37 CFR 1.311(b) currently permits an authorization to be filed either before or after the mailing of a notice of allowance. The PTO is considering an amendment to 37 CFR 1.311(b) to permit an authorization to be filed after, but not before, the notice of allowance is mailed.

Discussion: Generally, it is in applicant's best interest not to pay the issue fee at the time the notice of allowance is mailed, since it is much easier to have a necessary amendment or an information disclosure statement considered if filed before the issue fee is paid than after the issue fee is paid. *See* 37 CFR 1.97 and 1.312(b). Also, once the issue fee has been paid, applicant's window of opportunity for filing a continuing application is reduced and the applicant no longer has the option of filing a continuation or divisional application as a continued prosecution application (CPA) under 37 CFR 1.53(d). Many applicants find the time period between the mailing date of the notice of allowance and the due date for paying the issue fee useful for re-evaluating the scope of protection afforded by the allowed claim(s) and for deciding whether to pay the issue fee and/or to file one or more continuing applications. Therefore, the PTO is considering amending 37 CFR 1.311(b) to permit an authorization to be filed after, but not before, the notice of allowance is mailed. This change in procedure would support the PTO's business goal to reduce PTO processing time to twelve months or less for all inventions.

37 CFR 1.311 (b), as currently written, causes problems for the PTO that tend to increase PTO processing time. The language used by applicants to authorize that fees be charged to a deposit account often varies from one application to another. As a result, conflicts arise between the PTO and applicants as to the proper interpretation of authorizing language found in their applications. For example, some applicants are not aware that it is current PTO policy to interpret broad language to "charge any additional fees which may be required at any time during the prosecution of the application" as authorization to charge the issue fee on applications filed on or after October 1, 1982. *See Deposit Account Authorization to Charge Issue Fee*; Notice, 1095 *Off. Gaz. Pat. Office* 44 (October 25, 1988), reprinted at 1206 *Off. Gaz. Pat. Office* 95 (January 6, 1998).

Even when the language pre-authorizing payment of the issue fee is clear, the pre-authorization can present problems for both the PTO and practitioners. For example, it may not be clear to the PTO whether a pre-authorization is still valid after the practitioner withdraws or the practitioner's authority to act as a representative is revoked. If the PTO charges the issue fee to the practitioner's deposit account, the practitioner may have difficulty getting reimbursement from the practitioner's former client.

When the issue fee is actually charged at the time the notice of allowance is mailed, a notice to that effect is printed on the notice of allowance (PTOL-85) and applicant is given one month to submit/return the PTOL-85B with information to be printed on the patent. However, applicants are sometimes confused by the usual three-month time period provided for paying the issue fee and do not, therefore, return the PTOL-85B until the end of the normal three-month period. Because the PTO recognizes that the information provided on the PTOL-85B is needed in order to print the assignee and the attorney information on the patent, the failure to respond within the one month period is waived and the later submission of the PTOL-85B is accepted. Thus, even though the issue fee was paid early, the issue process is delayed until the PTOL-85B is actually returned, or three months from the mail date of the notice of allowance passes, whichever occurs first. If no PTOL-85B is timely returned, the patent is published without the information provided on a PTOL-85B.

If prompt issuance of the patent is a high priority, applicant may promptly return the PTOL-85B (supplying any desired assignee and attorney information) and pay the issue fee after receipt of the notice of allowance. In this way, the PTO will be able to process the payment of the issue fee and the information on the PTOL-85B as a part of a single processing step. Further, no time would be saved even if the issue fee was pre-authorized for payment as the PTO would still have to wait for the return of the PTOL-85B. Thus, while it is not seen that the proposal to eliminate the pre-authorization to pay the issue fee would have any adverse effects on our customers, comments on this proposal are requested.

20. Reevaluating the Disclosure Document Program

Summary: The PTO is seeking customer feedback to assess the value of the Disclosure Document Program. From a preliminary evaluation it appears that: (1) it is unclear whether many inventors actually get any benefit from this program; (2) some inventors use this program as a result of actions by invention promotion firms which mislead them into believing that they are actually filing an application for a patent; and (3) better benefits and protection are afforded to inventors if they file a provisional application for patent instead.

Specifics of Change being Considered: The PTO is evaluating the Disclosure Document Program under the Paperwork Reduction Act (44 U.S.C. ch. 35) in order to determine if it is serving the needs of those inventors who have been using it and whether the PTO can encourage use of provisional application practice instead of the practice of filing a Disclosure Document and, subsequently, filing either a provisional or nonprovisional application.

Discussion: The PTO implemented the Disclosure Document Program in 1969 in order to provide a more credible form of evidence of conception of an invention than the "self-addressed envelope" form of evidence formerly used by inventors. *See Disclosure Document Program*; Notice, 34 FR 6003 (April 2, 1969), 861 *Off. Gaz. Pat. Office* 1 (May 6, 1969). An inventor may, under the Disclosure Document Program, file in the PTO a Disclosure Document which includes a written description and drawings of his or her invention in sufficient detail to enable a person of ordinary skill in the art to make and use the invention to establish a date of invention in the United States prior to the application filing date under 35 U.S.C. 104. The inventor must sign the Disclosure Document and include a separate signed cover letter identifying the papers as a Disclosure Document. A Disclosure Document does not require a claim in compliance with 35 U.S.C. 112, ¶ 2, nor an inventor's oath under 35 U.S.C. 115, and is not accorded a patent application filing date. A Disclosure Document is supposed to be destroyed by the PTO after two years unless it is referred to in a separate letter in a related provisional or nonprovisional application filed within those two years. The filing fee for a Disclosure Document set forth in 37 CFR 1.21(c) is $10. *See* MPEP 1706.

The PTO currently processes Disclosure Documents as follows: Each Disclosure Document is assigned an identifying number, the identifying number is stamped on the actual Disclosure Document, and the Disclosure Documents are stored in sequential number order. The PTO also prepares and mails a notice with the identifying number and date of receipt in the PTO to the customer. When a paper referring to a Disclosure Document is filed in a patent application within two years after the filing

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of a Disclosure Document, a retention label is attached to the Disclosure Document and the applicant is notified that the Disclosure Document will be retained. The paper filed by the applicant which referred to the Disclosure Document is retained in the application file.

Lately, the PTO has been receiving approximately twenty-five to thirty-five thousand Disclosure Documents per year. Of all the Disclosure Documents filed each year, however, only about 0.1% (about thirty per year) are actually retained at the inventor's request. The PTO perceives that inventors often file Disclosure Documents to establish a date of invention before exploring the feasibility of their ideas and disclosing their inventions to major corporations, prototype builders, investors, patent attorneys, patent depository library staff, prospective partners, or small business development companies to guard against misappropriation of their inventions. The vast majority of these inventions may simply be put aside if the inventors are unsuccessful at attracting interest and are not pursued until they do get support or interest in their inventions. The PTO also perceives that inventors file a Disclosure Document on each incremental modification of a basic invention. This may result in a dozen or more Disclosure Documents being filed before a patent application is filed, if ever, on the "final" version of the invention.

In 1995, Pub. L. 103-465 amended title 35, U.S.C., by providing for the filing of a provisional application for patent. A provisional application must contain a specification in compliance with 35 U.S.C. 112, ¶ 1, and drawings, if drawings are necessary to understand the invention described in the specification. A provisional application must name the inventors and be accompanied by a separate cover sheet identifying the papers as a provisional application. The basic filing fee for a provisional application by a small entity is $75 (37 CFR 1.16(k)). The filing fee and the names of the inventors may be supplied after the provisional application is filed, but a surcharge is required. A provisional application does not require a claim in compliance with 35 U.S.C. 112, ¶ 2, or an inventor's oath under 35 U.S.C. 115. While a provisional application is automatically abandoned twelve months after its filing date, the file of an abandoned provisional application is retained by the PTO for at least twenty years, or longer if it is referenced in a patent. A provisional application is considered a constructive reduction to practice of an invention as of the filing date accorded the application, if it describes the invention in sufficient detail to enable a person of ordinary skill in the art to make and use the invention and discloses the best mode known by the inventor for carrying out the invention. In other words, except for adding the best mode requirement, the disclosure requirements for a provisional application are identical to the disclosure requirements for a Disclosure Document and provide users with a filing date without starting the patent term period. Thus, almost any paper filed today as a proper Disclosure Document can now be filed as a provisional application with the necessary cover sheet.

A provisional application is, however, more valuable to an inventor than a Disclosure Document. A provisional application, just like a nonprovisional application, establishes a constructive reduction to practice date for any invention disclosed therein in the manner required by 35 U.S.C. 112, ¶ 1, and can be used under the Paris Convention to establish a priority date for foreign filing. On the other hand, a Disclosure Document may only be used as **evidence** of a date of conception of an invention under 35 U.S.C. 104. A Disclosure Document is **not** a patent application and the filing of a Disclosure Document does **not** establish a constructive reduction to practice date for an invention described in the Document. As a result, in order to use a Disclosure Document to establish prior invention under 35 U.S.C. 102(g) or under 37 CFR 1.131, an inventor may rely on the Disclosure Document to demonstrate that he or she conceived of the invention **first**, but the inventor must then demonstrate that he or she was reasonably diligent from a date just prior to: (1) the date of conception by the other party in an interference proceeding; or (2) the effective date of a reference being used by the PTO to reject one or more claims of an application until the inventor's actual or constructive reduction to practice. A provisional application, however, may be used to establish prior invention all by itself (without any need to demonstrate diligence) simply by its filing date being before the earliest actual or constructive reduction to practice date of the other party or the effective date of the reference.

Under 35 U.S.C. 102(b), any public use or sale of an invention in the U.S. or description of an invention in a patent or a printed publication anywhere in the world more than one year prior to the filing of a patent application on that invention will bar the grant of a patent. In addition, many foreign countries have what is known as an "absolute novelty" requirement which means that a public disclosure of an invention anywhere in the world prior to the filing date of an application for patent will act as a bar to the granting of any patent directed to the invention disclosed. Since a Disclosure Document is not a patent application, it does not help an inventor avoid the forfeiture of U.S. or foreign patent rights. For example, an inventor offers to sell his invention in the U.S. in March 1996. In April of 1996, the inventor files a Disclosure Document. In April of 1997, the inventor files a nonprovisional application referring to the Disclosure Document. Because the inventor did not file either a provisional or a nonprovisional application within twelve months of the first offer to sell in the U.S., the inventor has forfeited all U.S. patent rights. On the other hand, if the inventor files a provisional application in April of 1996 instead of a Disclosure Document, the offer to sell in March of 1996 would not be a bar under 35 U.S.C. 102(b) to any invention claimed in the nonprovisional application filed in April 1996 which is disclosed in the provisional application in the manner required by 35 U.S.C. 112, ¶ 1. Thus, a provisional application protects inventors from losing patent rights whereas a Disclosure Document does not.

Based on a sampling of Disclosure Documents filed in 1997, approximately 56% were filed by inventors with the assistance of an invention promotion firm. A recent Federal Trade Commission (FTC) consumer alert entitled "So You've Got a Great Idea? Heads Up: Invention Promotion Firms May Promise More Than They Can Deliver" (July 1997), warned that some invention promotion firms were using the Disclosure Document Program to mislead independent inventors into believing that a Disclosure Document affords some form of patent protection. In requesting a temporary restraining order against a number of invention development companies, the FTC indicated that:

> In a large number of cases, the [defendant invention development company] promises that it will "register" the inventor's idea with the U.S. Patent Office's Disclosure Document Program, and that doing so will "protect" the idea for 2 years. In fact, filing with this program provides no patent protection whatsoever. In some instances, customers are promised a patent application, but no such application is every [*sic.*, ever] prepared or filed.

See Plaintiff's Mem. In Support of Application for a T.R.O. at 13-14, *FTC v. International Product Design, Inc.*, Civ. Act. No. 97-1114-A (E.D. Va., filed July 14, 1997) (footnotes omitted).

Patent Business Goal (4) is to exceed our customer's service expectations. The Disclosure Document Program is being evaluated because it has been brought to the PTO's attention that this program has been the subject of numerous abuses and complaints, and therefore may be detrimental to the interests of a vast majority of the PTO's customers. This evaluation of the Disclosure Document Program is in support of that goal.

In view of the very small number of Disclosure Documents requested to be retained each year (less than one-tenth of one percent) versus the twenty-five to thirty-five thousand Disclosure Documents filed each year, the minimum benefits provided to an inventor by a Disclosure Document, the misuse of the Disclosure Document Program by some invention promotion firms and the better benefits and protection afforded by the provisional application option (which was not available when the Disclosure Document Program was initiated in 1969), the PTO is soliciting the opinion of its customers on whether the Disclosure Document Program should be continued in its present form, terminated, or substantially revised to serve their needs better.

Replies to the following questions are solicited.

1. As substantially fewer than one percent of the Disclosure Documents that are filed each year are requested by inventors to be retained by the PTO and the PTO does not know of any substantial reliance being had on Disclosure Documents, is there any factual evidence that Disclosure Documents do provide meaningful benefits and value to those who file Disclosure Documents? If so, please supply a copy of such evidence with your comments.

2. Does the Disclosure Document Program create a worthwhile sense of security? If so, why?

3. Do you know of a Disclosure Document that has actually been relied on in a nonprovisional application to successfully establish a conception date in an interference proceeding or in a 37 CFR 1.131 affidavit or declaration? If so, please identify the Disclosure Document number and whether it was successfully relied on in an interference proceeding or in a 37 CFR 1.131 affidavit or declaration.

4. Is the Disclosure Document Program addressing any need that is not being addressed by the provisional application practice? If so, please identify such needs.

5. In what ways can the PTO better address the needs of those who use the Disclosure Document Program that are not being addressed by provisional applications without the risks associated with the existing Disclosure Document Program? If so, please elaborate.

6. Do you know of any instance in which an invention development firm misled an inventor into believing that a Disclosure Document provides more benefit (patent protection) than it actually does? If so, please indicate what, if any, harm this caused?

21. Creating a PTO review service for applicant-created forms.

Summary: The PTO is considering establishing a new service, where the PTO would review, for a fee, a form prepared by a member of the public that is intended to be used for future correspondence to the PTO.

Specifics of Change Being Considered: A form intended to be used for future correspondence with the PTO could be submitted to the PTO for review. The PTO would charge a fee (roughly estimated at approximately $200) for each form up to four pages long for this review service. After the review is completed, the PTO would send the submitter a written report, including comments and suggestions, if any, even though the PTO will not formally "approve" any form. The form and all related documents submitted for the review would also be returned to the submitter. If a (reviewed) form is modified in view of a PTO written report, comments and/or suggestion, the revised form could be resubmitted to the PTO for a follow up review for an additional charge (roughly estimated at approximately $50). After a form has been reviewed and revised, as may be needed, to comply with the PTO's written report, it will be acceptable for the form to indicate if it is a substitute for a PTO form and/or that it has been "reviewed by the PTO."

Background: Currently, the PTO prepares and makes available forms (*e.g.*, application transmittal forms) for use by our customers when submitting correspondence to the PTO. The PTO forms are formatted to induce one to supply specific information. There is no requirement, however, that such PTO forms be used. Frequently members of the public, in particular, law firms and corporations, modify the PTO forms to include matter specific to their law firm or corporation, or find it convenient to create forms of a different nature or layout specific to their needs. A PTO form properly modified by a member of the public should induce one to supply at least the same information as the PTO form that was modified.

In the future, the submissions to the PTO would be either by specially formatted paper templates or by electronic transmission. However, until such efficiencies become the norm, many of our customers will be relying on pre-printed forms, created either by the PTO or by our customers themselves. While fully supporting the move to standardized formats and electronic submissions, it is important to today's customers to have complete and accurate forms for their daily work.

New Service: PTO Review of Applicant's forms: To better serve our customer's needs, the PTO is considering providing a new service where, upon request and payment of a nonrefundable fee, the PTO will review blank forms prepared by a member of the public that are intended to be used for future correspondence to the PTO. Non-English language forms will not be reviewed. The PTO will **not** formally "approve" any forms that are submitted. The rationale for not formally approving a form that is submitted for review by the PTO is the following: (1) a form designed/reviewed for a specific purpose may actually be used for a different purpose, and the PTO cannot control how a form may be used after it is reviewed (*e.g.*, filing a patent application under 37 CFR 1.53(b) using a Continued Prosecution Application (CPA) Request Transmittal form); (2) forms that have been reviewed may become out-of-date and be rendered obsolete due to subsequent changes in the patent statute (35 U.S.C.), rules of practice (37 CFR) and office policy and procedure as set forth in the MPEP; (3) any approval of a form would tend to discourage improvements in the form by the customer; and (4) non-approval of any form avoids the appearance that the PTO endorses a person, a product (*e.g.*, a particular form) or supports a business.

The PTO would primarily review the submitted forms to note any non-compliance (*e.g.*, errors, problems, defects, inaccuracies) with the patent statute (35 U.S.C.), rules of practice (37 CFR) and established office policy and procedure as set forth in the MPEP, and give a written report which would also include comments or suggestions. The PTO may also give advice as to matters which are related to the usefulness of the forms. Patent Business Goal (1) is to reduce PTO processing time to twelve months or less for all inventions. This new service would be in support of that goal since a properly prepared and used form by a member of the public would reduce the chance for error and the need for correction, and result in reduced PTO processing time. Patent Business Goal (4) is to exceed our customers' quality expectations, through the competencies and empowerment of our employees. The proactive role the Office will take in this area would be in support of that goal since this service will help our customers create better forms.

In general, modified versions of PTO forms associated with PCT practice (*e.g.*, "REQUEST FOR FILING A CONTINUATION OR DIVISIONAL APPLICATION OF AN INTERNATIONAL APPLICATION" (PTO/SB/13/PCT) and "PETITION FOR REVIVAL OF AN INTERNATIONAL APPLICATION FOR PATENT DESIGNATING THE U.S. ABANDONED UNINTENTIONALLY UNDER 37 CFR 1.137(b)" (PTO/SB/64/PCT)) would be subject to review. However, user-generated versions of the PCT Request (PCT/RO/101) and the Demand (PCT/IPEA/401) would be excluded from this new review service at this time because they are subject to further review, study and consultation with the International Bureau (IB), as the IB has control over these forms.

The PTO is considering charging a flat fee (roughly $200) to recover the cost of the review of and report on any one form containing up to a limit of four pages, with a further charge (again roughly $200) for each additional four pages or portion thereof. The fee is based upon an in-office, activity-based cost analysis. All fees submitted for this new service would be nonrefundable. Only complete forms, not parts of forms, would be reviewed. Therefore, all pages of a multiple page form would need to be submitted together. Forms for review would have to be submitted to the PTO with the required fee, as a separate wholly contained mailing and not with other papers for another purpose to keep handling and paper processing time to a minimum. However, multiple forms could be submitted at the same time, with the cost for each form being as set forth above. Anyone who submits a blank form (and the requisite fee) for review would also be encouraged to submit a completed form and a cover letter. The cover letter would provide the PTO

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with clear guidance as to what was intended to be reviewed. The completed form would aid the PTO in the review process as it would provide the PTO with guidance as to how the form was intended to be completed and used. Resubmission of a (reviewed) form, which was modified in view of the PTO written report, and comments and/or suggestions made by the PTO in their review of the form, for a second (follow up) review would require an additional charge (again roughly $50). The resubmission would need to include a resubmission of all documents (copies are acceptable) submitted for the review, and a submission of the previously reviewed form containing any PTO comments or suggestions thereon and any review papers (review sheet) prepared by the PTO. See discussion on the matter below. Patent Business Goal (5) is to assess fees commensurate with resource utilization and customer efficiency. The charging of a fee for this new service would be in support of that goal since the fee charged would recover both the cost of the review and the preparation of the report.

Any form submitted to the PTO for review would need to be formatted as it is intended to be submitted to the PTO; and must: (1) be either 21.0 cm. by 29.7 cm. (DIN size A4) or 21.6 cm. by 27.9 cm. (8 1/2 by 11 inches, commonly referred to as "letter size"), (2) have a left side margin of at least 2.5 cm. (1 inch), and a top, right, and bottom margin of at least 2.0 cm. (3/4 inch), and (3) have writing on only one side. *See* 37 CFR 1.52.

Forms intended to be a substitute for a PTO form would be permitted to contain an indication thereon that the form is a substitute for a particular PTO form. To properly identify the particular PTO form, such indication should include, among other things, the form's actual PTO form number and the PTO's version date (which may be located in the upper right hand corner of the form), and the PTO form's actual title (*e.g.*, "SUBSTITUTE for PTO/SB/05 (4/98), UTILITY APPLICATION TRANSMITTAL," with the words "SUBSTITUTE for" being separated from (on a different line from) the rest of the header to particularly denote that the form is a substitute for a PTO form.). The indication that the form is a substitute for a PTO form should be in a header, in the upper right hand corner of the form. See Example 1 below. Forms submitted for review are encouraged to include a header indicating that the form is a substitute for a particular PTO form. It should be noted that the other verbiage contained in the header of the PTO forms should not be reproduced on any PTO form that would be modified.

Example 1: A sample first header to be placed in the upper right hand corner of the form containing an indication that the form is a substitute for a PTO form. Note that the words "SUBSTITUTE for" are on a different line from the rest of the header to specifically denote that the form is a substitute for a PTO form.

SUBSTITUTE for
PTO/SB/05 (4/98),
UTILITY APPLICATION TRANSMITTAL

The PTO will review each submitted form and prepare a report, which will include a review sheet, and then return the original form with the completed review sheet to the submitter of the form. In the PTO review report, the PTO will identify, among other things, items or changes that are deemed to be critical. Also, the reviewed form itself may be marked up with comments by the PTO. The PTO will **not** retain a copy of any reviewed form. The PTO will, however, keep a record of the reviewing process. If the submitter of a form for review has a question about the review of the form after the review process has been completed and the reviewed form is no longer in the possession of the PTO, a submission of, **among other things**, (a copy of) of the reviewed form containing any PTO comments or suggestions thereon, all documents (copies are acceptable) submitted for the review, and any review papers (review sheet) prepared by the PTO may be necessary. Any form that has been reviewed by the PTO and has been modified to include, among other things, the items or changes that are deemed to be critical by the PTO, may include an indication on the form that the form has been reviewed by the PTO, provided that the date of the review is also included (*e.g.*, "REVIEWED by PTO on XX/XX/XX" (Date)). The indication that the form has been reviewed by the PTO should be in a header, in the **upper left hand** corner of the form. See Example 2 below. Forms submitted for review are encouraged to include a header indicating that the form has been reviewed with the date left blank. If the items or changes noted in the review report as being critical are not adopted, no indication may be placed on the form that the form has been reviewed. Since the PTO will not formally "approve" any forms that are submitted, the use of the word "APPROVED" on any form that has been reviewed would be misleading and must **not** be used.

Example 2: A sample second header to be placed in the upper left hand of the form containing an indication that the form has been reviewed.

Reviewed by PTO on XX/XX/XX

NOTE: When the first and second headers contained in Examples 1 and 2 are used together, it is recommended that the left hand header in Example 2 ("Reviewed by PTO on XX/XX/XX") be on the same line with, but spaced from the first line of the right hand header in Example 1 ("SUBSTITUTE for"). See Example 3 below.

Example 3: A single header combining the first and second headers set forth in Examples 1 and 2.

Reviewed by PTO on XX/XX/XX SUBSTITUTE for
PTO/SB/05 (4/98),
UTILITY APPLICATION TRANSMITTAL

Any PTO form that has been modified by a member of the public to be a substitute for a PTO form, but has not been submitted for review, would be permitted to contain an indication thereon, as set forth above, that the form is a substitute for a particular PTO form. Since such modified PTO form has not been reviewed, no indication may be placed on the form that the form has been reviewed. See Example 1 above.

Any pending form submitted for review is not subject to the confidentiality requirements of 35 U.S.C. 122, and may be subject to a request under the Freedom of Information Act (5 U.S.C. 552).

It should be recognized that the ultimate responsibility for complying with statutory and regulatory requirements lies with an applicant(s) and their attorney, whether they utilize a form prepared by the PTO or some other form which may or may not have been reviewed by the PTO.

It is predictable that the largest number of requests for a review of forms would come at a time when there has been a change in the PTO rules and/or procedures. The turn-around time for review of any form will be based on the workload of the area of the PTO selected to perform the review. Anyone desiring a form to be reviewed should allow ample time for PTO review. No assurances can be given that any form will be reviewed in a particular amount of time. Further, subsequent rule changes may render unusable a form that was previously used and/or reviewed by the PTO.

To jump-start this new service, and to avoid problems with electronic incompatibility that can take a lot of time to resolve, the PTO will only review forms that have been properly submitted in either paper form or by facsimile transmission. In the future, the PTO will consider expanding the service to include submission of the forms in an electronic format.

Current PTO Forms Availability: PTO forms are available on the PTO Home Page, and are available either individually or in a single zip-compressed file from the PTO ftp server at ftp://ftp.uspto.gov/pub/forms/. Individual forms for patent and trademark submissions can also be requested from 800-PTO-8199 or 703-308-HELP. A specimen book of Patent Forms can be purchased for $25 from the Office of Electronic Information Products, telephone number 703-306-2600.

Conclusion: This is a new service that the PTO is considering and would involve significant start-up costs. Therefore, absent positive feedback on the matter, the PTO does not intend to implement this new service.

September 28, 1998 BRUCE A. LEHMAN
Assistant Secretary of Commerce and
Commissioner of Patents and Trademarks

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by certified mail to registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will proceed as in the case of default.

Likud USA, Inc., New York, N.Y., Reg. No. 1,953,455, for the mark "LIKUD USA", Canc. No. 25,769.

JEAN BROWN
Technical Program Manager
Trademark Trial and Appeal Board, for
ROBERT M. ANDERSON
Deputy Assistant Commissioner
for Trademarks

Establishment of Box REISSUE Elimination of Box 7

The processing of reissue applications in the Patent and Trademark Office (PTO) has been modified with the establishment of a special box designated Box REISSUE and the elimination of Box 7.

(a) Effective immediately, the PTO has established a special box designated Box REISSUE for **new and continuing reissue application filings** under 37 CFR 1.53(b). All new and continuing reissue application filings addressed to this box will be forwarded immediately to the Office of Initial Patent Examination for expedited processing. This box should not be used for any other reissue application correspondence.

To maximize the advantages of the expedited processing, the envelope should be addressed:

Box REISSUE
Assistant Commissioner for Patents
Washington, D.C. 20231

Box REISSUE should **only** be used for the initial filing of all new and continuing reissue applications. Box REISSUE should **not** be used for any subsequently filed correspondence in reissue applications.

Placing unrelated or extraneous documents in an envelope marked for any special box will significantly delay their reaching the area for which they were intended.

(b) In addition, Box 7, designated for receiving correspondence in reissue applications for patents involved in litigation, is being ELIMINATED herewith. Correspondence addressed to Box 7 is rarely received in the PTO. Current PTO Mail Center procedures provide prompt delivery service, thus eliminating the need for continued use of Box 7. Any further correspondence addressed to Box 7 will be treated as ordinary mail and not given any special status by the PTO Mail Center.

September 28, 1998 STEPHEN G. KUNIN
Deputy Assistant Commissioner for
Patent Policy and Projects

Partial Payment of Patent Fees During Period of October 1, 1998 through no later than October 9, 1998 pursuant to Continuing Resolution

Congress recently passed a continuing resolution which has been signed by the President **that maintains patent fees at the amounts charged by the PTO on September 30, 1998 for the period from October 1, 1998 through no later than October 9, 1998**. *See* Pub. L. No. 105-240, § 117 (1998).

This continuing resolution supersedes the final rule entitled Revision of Patent Fees for Fiscal Year 1999, which was published in the Federal Register at 63 *Fed Reg.* 39731 (July 24, 1998), and reprinted in the Official Gazette at 1213 *Off. Gaz. Pat. Office* 153 (August 18, 1998). Section 117 of the continuing resolution authorizes the Commissioner, during the period of the continuing resolution, to recognize a partial payment of a fee and to require unpaid amounts to be paid within a time period set by the Commissioner.

Under the above-mentioned authority provided by Section 117 of the continuing resolution, if any patent fee is timely paid during the period covered by the resolution (October 1 through no later than October 9, 1998) in an amount which is at least equal to the fee published in the above-mentioned final rule but less than the fee set forth in the patent fee schedule in effect on September 30, 1998, **the PTO will mail applicant a notice setting a time period in which the balance of the fee may be paid without any penalty,** such as, payment of a surcharge required by 37 C.F.R. § 1.16(e), the abandonment of an application or the expiration of a patent.

Examples of how the PTO will exercise the above-mentioned authority provided by Section 117 of the continuing resolution during the period from October 1 through no later than October 9, 1998 with respect to the payment of: (1) a basic filing fee for an application under 35 U.S.C. § 111(a), (2) a basic national fee in an international application, and (3) a maintenance fee, are set forth in the following paragraphs.

(1) If a nonprovisional application under 35 U.S.C. § 111(a) is filed with the oath or declaration required by 37 C.F.R. § 1.51(b) and a basic filing fee which is at least equal to the basic filing fee published in the above-mentioned final rule but is less than the basic filing fee in effect on September 30, 1998, the PTO will mail applicant a notice setting a time period in which the balance of the basic filing fee must be paid. If the balance is paid within the time period set by the notice, the surcharge set forth in 37 C.F.R. § 1.16(e) will not be required.

(2) If the United States is an elected office in an international application, the applicant must pay the full basic national fee within 30 months from the priority date in order to avoid abandonment of the application. See 37 C.F.R. § 1.495(b). The amount of the basic national fee due is the fee in effect under 35 U.S.C. § 41(a)(9) - (12) at the time the basic national fee is paid. If applicant timely pays a basic national fee which at least equals the basic national fee published in the above-mentioned final rule but is less than the basic national fee in effect on September 30, 1998, the PTO will mail applicant a notice setting a time period in which the balance of the basic national fee must be paid to avoid abandonment of the international application. If the balance is paid within the time period set by the notice (even if that time period extends beyond 30 months from the priority date), the full basic national fee will be treated as being timely paid. If the balance is not paid within the time period set by the notice or the remainder of the period of 30 months from the priority date, if any, the full basic national fee will be treated as not having been paid and the international application will be abandoned.

(3) If a maintenance fee is submitted (with the surcharge under 37 C.F.R. § 1.20(h) within the six-month grace period in 35 U.S.C. § 41(b)) which at least equals the applicable maintenance fee published in the above-mentioned final rule but is less than the applicable maintenance fee in effect on September 30, 1998, the PTO will mail applicant a notice setting a time period in which the balance of the applicable maintenance fee must be paid. If the balance is paid within the time period set by the notice (even if that time period extends

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beyond the six-month grace period in 35 U.S.C. § 41(b)), the maintenance fee will be treated as timely paid. If the balance is not paid within the time period set by the notice or the remainder of the six-month grace period in 35 U.S.C. § 41(b), if any, the maintenance fee will be treated as not having been paid and the patent will expire at the end of the six-month grace period in 35 U.S.C. § 41(b).

Questions or comments concerning this notice should be forwarded to John F. Gonzales, Senior Legal Advisor, by facsimile at (703) 308-6916, by telephone at (703) 305-9285, or by e-mail at john.gonzales@uspto.gov.

October 1, 1998 BRUCE A. LEHMAN
Assistant Secretary of Commerce and Commissioner of Patents and Trademarks

Status of Certification Services

On November 28, 1995, the Office published an Official Gazette Notice entitled "Temporary Suspension of At Cost Services for Orders for Certified Copies" (1180 OG 121) to advise practitioners and the public of delays in filling orders for certified copies of PTO documents. This is an update of actual days to mail for orders filled during the month of September 1998:

Certified Product	Goal	Actual Calendar Days to Mail
Patent Application-As-Filed, Expedited	7	7
Patent Application-As-Filed, Regular	17	12
Patent Related File Wrapper	25	29*
Patent Copy	10	4
Patent Assignments	10	8
Trademark Application-As-Filed, Expedited	7	5
Trademark Application-As-Filed, Regular	17	7
Trademark Related File Wrapper	25	24*
Trademark Assignments	10	11
Trademark Registration, Expedited	5	4
Trademark Registration, Regular	14	5

*** Includes turnaround times for files on official search and file reconstruction.**

The backlog of orders resulting from the relocation of the Office of Public Records in late March and early April has been worked down. During the month of September 1998, a total of 9,208 orders (17,161 copies) were filled and closed, or 684 orders more (147 copies fewer) than the FY-98 planning number of 8,524 orders (17,308 copies) to be closed per month. The average turnaround times for products is returning to expected ranges as older orders are filled and closed.

Due to varying availability of media, customers will not be advised when orders are not delivered within the published goal periods. However, customers will be advised if any unexpected delay in their order has been identified. Customers should use the above actual days to mail for each product as a guide as to when they can expect their orders. In determining expected delivery times, the day an order is received in the Office is calculated as "day zero." The next business day is "day one."

Delivery of any specific copy will vary based on the availability of scanned images, microfilm products, and/or file accessibility. On June 10, 1997, the Office published an Official Gazette Notice entitled "Changes in Practice in Supplying Certified Copies and Filing Receipts" (1199 OG 39) which advised customers who place orders for certified copies of patent applications-as-filed not to request them until the official filing receipt is received; images and related bibliographic data are not available to Certification Division until the filing receipt is generated by the Office of Initial Patent Examination.

Customers are encouraged to fax orders for copies directly to Certification Division at (703) 308-9759 and to pay by PTO Deposit Account, MasterCard, Visa, or Discover. Information on the status of pending orders may be obtained by calling (703) 308-9726 or 1 (800) 972-6382 (outside the Washington, DC Metro area), or via E-mail: certdiv@uspto.gov.

October 1, 1998 WESLEY H. GEWEHR
Administrator for Information Dissemination

Adverse Decisions in Interference

In the designated interferences involving the following patents, final decisions have been rendered that the respective patentees are not entitled to patents containing the claims listed.

Patent No. D343,676, Ta Kwam Lim, PORTABLE ELECTRIC HEATER FAN, Interference No. 103,741, final judgement adverse to the patentee rendered May 5, 1997, as to claim 1.

Patent No. 4,599,481, Martin F. M. Post, Swan T. Sie, PROCESS FOR THE PREPARATION OF HYDROCARBONS, Interference No. 102,202, final judgment adverse to the patentees rendered March 12, 1997, as to claims 1-16.

Patent No. 4,942,516, Gilbert P. Hyatt, SINGLE CHIP INTEGRATED CIRCUIT COMPUTER ARCHITECTURE, Interference No. 102,598, final judgment adverse to the patentee rendered September 19, 1995, as to claims 1-35.

Patent No. 4,975,328, Yoshiro Hirose, Takeshi Sakamoto, Masahisa Kosaka, Mitsuo Sugimura, Kazuo Inoue, Eiichi Yajima, Kunio Sasaki, PROCESS FOR PRODUCING POLYURETHANE LENS, Interference No. 103,438, final judgment adverse to the patentees rendered March 21, 1997, as to claims 1 and 4.

Patent No. 5,086,311, Yoji Naka, Akio Ohmiya, PANORAMIC CAMERA, Interference No. 103,465, final judgment adverse to the patentees rendered April 16, 1997, as to claims 1-3, 5-17, 19-21, 23 and 26-31.

Patent No. 5,199,942, Steven Gillis, METHOD FOR IMPROVING AUTOLOGOUS TRANSPLANTATION, Interference No. 103,853, final judgment adverse to the patentee rendered September 3, 1998, as to claims 1-3.

Patent No. 5,218,173, Richard L. Garwin, Gregory F. Russell, SHIELDING MATERIALS FOR ELECTROMAGNETIC DIGITIZERS, Interference No. 103,723, final judgment adverse to the patentees rendered February 17, 1998, as to claims 1 and 4-21.

Patent No. 5,234,912, Marian N. Marra, Randal W. Scott, James L. Snable, Craig G. Wilde, PHARMACEUTICAL COMPOSITIONS COMPRISING RECOMBINANT BPI PROTEINS AND A LIPID CARRIER AND USES THEREOF, Interference No. 103,791, final judgment adverse to the patentees rendered August 27, 1998, as to clsims 1-6.

Patent No. 5,241,047, Martial Lacroix, SYNTHETIC PEPTIDES AND MIXTURES THEREOF FOR DETECTING HIV ANTIBODIES, Interference No. 104,054, final judgment adverse to the patentee rendered July 30, 1998, as to claims 1-2 and 7-9.

Patent No. 5,263,967, William G. Lyons, III; John Kirwan, MEDICAL INSTRUMENT WITH DUAL ACTION DRIVE, Interference No. 103,917, final judgment adverse to the patentees rendered July 31, 1998, as to claims 1~5.

Patent No 5,288,213, Ali M. Nasr, PUMP HAVING AN INTERNAL PUMP, Interference No. 103,927, final judgment adverse to the patentee rendered September 3, 1998, as to claims 1-13.

Patent No. 5,311,952, Alan Eddison, Lawrence J. Leising, Charles Ingold, APPARATUS AND METHOD FOR DIRECTIONAL DRILLING WITH DOWNHOLE MOTOR ON COILED TUBING, Interference No. 104,055, final judgment adverse to the patentees rendered July 23, 1998 as to claims 1-4, 6-13 and 15-23.

Patent No. 5,334,584, Randal W. Scott, Marian N. Marra, RECOMBINANT NON-GLYCOSYLATED BPI PROTEIN AND USES THEREOF, Interference No. 104,042, final judgment adverse to the patentees rendered August 28, 1998 as to claim 1.

Patent No. 5,367,524, Kenneth E. Rideout Jr., Donald C. Mills, METHOD FOR SEQUENTIAL DATA TRANSMISSION, Interference No. 103,759, final judgment adverse to the patentees rendered December 19, 1997, as to claims 1-4 and 5-9.

Patent No. 5,482,647, Steven A. Bolkan, Joseph G. Becker, HIGH SOLUBLE CARBONATE LAUNDRY DETERGENT COMPOSITION CONTAINING AN ACRYLIC TERPOLYMER, Interference No. 103,944, final judgment adverse to the patentees rendered July 31, 1998, as to claims 1-11.

Patent No. 5,532,203, Werner Fory, Elmar Kerber, Manfred Hudetz, SELECTIVE SAFENED HERBICIDAL COMPOSITION, Interference No. 104,080, final judgment adverse to the patentees rendered August 19, 1998, as to claims 19 and 20.

Patent No. 5,552,282, C. Thomas Caskey, Ying Hui-Fu, David L. Friedman, Antonio Pizzuti, Raymond G. Fenwick, DIAGNOSIS OF MYOTONIC MUSCULAR DYSTROPHY, Interference No. 103,977, final judgment adverse to the patentees rendered July 20, 1998, as to claim 17.

Patent No. 5,552,282, C. Thomas Caskey, Ying Hui-Fu, David L. Friedman, Antonio Pizzuti, Raymond G. Fenwick, DIAGNOSIS OF MYOTONIC MUSCULAR DYSTROPHY, Interference No. 103,978, final judgment adverse to the patentees rendered July 20, 1998, as to claims 1-16.

Patent No. 5,594,718, Lindsay A. Weaver, Jr, Gwain Bayley, Edward G. Tiedemann Jr, Klein S. Gilhousen, METHOD AND APPARATUS FOR PROVIDING MOBILE UNIT ASSISTED HARD HANDOFF FROM A CDMA COMMUNICATION SYSTEM TO AN ALTERNATIVE ACCESS COMMUNICATION SYSTEM, Interference No. 104,005, final judgment adverse to the patentees rendered September 11, 1998, as to clahns 1-13.

LAVERNE SMITH, *Deputy Clerk*
Board of Patent Appeals & Interferences
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Certificates of Correction for October 27, 1998

D. 394,167	5,313,296	5,566,319	5,621,221
D. 394,800	5,314,597	5,571,864	5,627,819
D. 395,517	5,370,922	5,578,098	5,634,229
D. 395,708	5,405,931	5,578,956	5,635,634
D. 396,452	5,432,270	5,582,177	5,635,639
P. 10,231	5,434,047	5,584,779	5,636,399
P. 10,376	5,453,509	5,584,896	5,640,917
Re. 35,725	5,461,098	5,585,320	5,641,880
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5,170,297	5,489,623	5,605,896	5,645,820
5,235,335	5,494,680	5,612,377	5,645,934
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5,309,407	5,539,272	5,621,061	5,648,541
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5,653,716	5,710,564	5,741,337	5,767,519
5,654,839	5,711,155	5,741,398	5,769,490
5,657,550	5,712,358	5,741,493	5,769,517
5,659,578	5,712,390	5,741,717	5,769,946
5,661,675	5,712,666	5,741,839	5,769,956
5,662,904	5,713,028	5,741,971	5,770,904
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5,686,362	5,728,595	5,751,259	5,780,995
5,686,413	5,729,256	5,751,851	5,781,415
5,686,974	5,729,290	5,752,312	5,781,724
5,688,858	5,729,358	5,752,417	5,781,736
5,688,944	5,729,514	5,752,760	5,782,105
5,689,135	5,729,518	5,752,962	5,782,614
5,689,941	5,729,928	5,753,827	5,783,342
5,690,581	5,730,243	5,755,519	5,783,393
5,690,654	5,730,494	5,755,707	5,783,445
5,690,660	5,731,159	5,755,802	5,783,521
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5,693,141	5,731,962	5,756,401	5,785,068
5,693,377	5,732,314	5,756,633	5,785,712
5,693,568	5,732,321	5,756,886	5,786,924
5,693,872	5,732,338	5,757,679	5,787,938
5,695,815	5,732,506	5,757,763	5,788,743
5,696,525	5,732,529	5,757,986	5,789,308
5,696,901	5,733,187	5,757,994	5,789,470
5,697,888	5,733,388	5,758,111	5,789,500
5,697,909	5,734,704	5,758,308	5,791,078
5,698,567	5,734,748	5,759,617	5,791,290
5,699,242	5,734,933	5,759,634	5,791,476
5,704,888	5,735,480	5,759,830	5,791,674
5,704,900	5,735,800	5,760,348	5,792,438
5,705,237	5,735,984	5,760,624	5,792,679
5,705,242	5,736,550	5,760,636	5,792,884
5,708,060	5,736,822	5,762,681	5,793,664
5,708,186	5,737,016	5,763,289	5,793,707
5,708,223	5,737,565	5,763,474	5,794,522
5,708,556	5,739,208	5,763,553	
5,709,019	5,739,519	5,764,347	

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FISCAL YEAR 1998

BOARD OF PATENT APPEALS AND INTERFERENCES
RECEIPTS AND DISPOSITIONS BY AREAS
EX PARTE APPEALS

AREA	TIME FRAME	PENDING BEGINNING MONTH	APPEALS RECEIVED MONTH	FY98 MONTHLY DISPOSITIONS August-98							PENDING END MONTH	INCREASE/ DECREASE MONTH
				AFFIRMED	MODIFIED*	REVERSED	REMANDS	DISMISSALS	WITHDRAWALS	TOTAL		
CHEMICAL	8-1-98 to 8-31-98	4943	54	57	8	41	34	7	0	147	4850	-93
ELECTRICAL	8-1-98 to 8-31-98	2834	207	34	9	38	19	3	0	103	2938	104
MECHANICAL	8-1-98 to 8-31-98	1050	127	35	15	30	9	2	0	91	1086	36
DESIGN	8-1-98 to 8-31-98	32	5	2	0	1	0	12	0	3	34	2

AREA	TIME FRAME	PENDING BEGINNING FISCAL YEAR	APPEALS RECEIVED FISCAL YEAR	FY98 CUMULATIVE DISPOSITIONS							PENDING END FISCAL YEAR	INCREASE/ DECREASE FISCAL YEAR
				AFFIRMED	MODIFIED*	REVERSED	REMANDS	DISMISSALS	WITHDRAWALS	TOTAL		
CHEMICAL	10-1-97 to 8-31-98	5285	1167	657	76	374	415	36	44	1602	4850	-435
ELECTRICAL	10-1-97 to 8-31-98	2673	1234	284	119	357	181	16	12	969	2938	265
MECHANICAL	10-1-97 to 8-31-98	1189	887	306	147	337	181	10	9	990	1086	-103
DESIGN	10-1-97 to 8-31-98	54	39	29	0	19	11	0	0	59	34	-20
BOARD	FY TOTALS	9201	3327	1276	342	1087	788	62	65	3620	8908	-293
	FY % DECISIONS			35.2	9.4	30.0	21.8	1.7	1.8			

* AFFIRMED-IN- PART

With the exception of a limited number of appeals involving special circumstances, the Board of Patent Appeals and Interferences is currently deciding appeals received at the Board as follows:

CHEMICAL	Fiscal Year 1995
ELECTRICAL	Fiscal Year 1996
MECHANICAL	Fiscal Year 1997
DESIGN	Fiscal Year 1998

Summary of Final Decisions Issued by the Trademark Trial and Appeal Board

September 7-11, 1998

Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
9-8	OPP	95,031	Beiersdorf Aktiengesell-schaft v. Southwest Technologies, Inc.	2(d); res judicata (asserted by opposer)	Opposition Sustained [on 2(d) ground only]	"ELASTOPLAST" [bandages and athletic tape] and "ELASTOMULL" [bandages]	"ELASTO-GEL" (and design) [cast and splint pads, wound dressings; medical cushions and pads, namely, hospital bed pads, wheelchair cushions, and therapeutic belts, pads and wraps]		No
9-8	EX	74/613,183	International Data Group, Inc.	2(e)(1)	Refusal Affirmed		"WEB BUSINESS" [arranging and conducting tradeshows, exhibitions, and expositions dealing with products and strategies on electronic networks]		No
9-9	EX	74/707,092	Garment Group of California	2(d)	Refusal Affirmed (as to each of the three cited registrations)		"GIORGIO BELLINI" [garments, namely, men's socks]	"BELLINI" [women's footwear]; "BELLINI KIDS" [children's footwear]; "BELLINI" (and design) [women's non-athletic leather and leather-like shoes and espadrilles]	No
9-9	EX	74/672,187	Matsushita Electric Corp. of America	2(e)(1)	Refusal Reversed		"SMART CART" [robotic multiple cartridge retrieval system comprising record/play transports for either audio/video or data storage and access to audio, video and data information]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
9-9	OPP	103,022	American Rental System, Inc. v. North American Warranty Service, Inc.	2(d)	Opposition Dismissed	"AMERICAR" [valet airport parking services and automobile cleaning services, automobile renting and leasing services and limousine services, and automobile dealership services]	"AMERICARE" [providing extended automotive warranties]		No
9-9	EX	75/059,887	Paris Seagul (Far East) Ltd.	2(d)	Refusal Affirmed		"RIVA" [clothing, namely, women's shirts, jackets, pants, blazers, shorts, t-shirts and underwear]	"RIVA" [footwear]	No
9-9	EX	74/581,437	Panavise Products, Inc.	2(e)(1)	Refusal Affirmed		"INDASH" [cellular telephone mounts]		No
9-10	EX	74/724,879	America Online, Inc.	whether the mark applicant seeks to register is used as a trademark for the goods identified in its application [mutilation]; whether applicant's mark is used as part of the title of a single creative work	Refusal Affirmed		"AOL" [publications, namely, books and pamphlets dealing with the subject of computer services and computer networks]		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

Date Issued	Type of Case[1]	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
9-10	EX	74/731,211	Fisheye, Inc.	Sec. 6 disclaimer requirement (of word "FISHEYE")	Refusal Affirmed		"FISHEYE" (and fish design) [underwater video cameras]		No
9-10	EX	74/677,288	FMC Corp.	2(d)	Refusal Affirmed		"ALSTAR" (and design) [traps, namely, bait stations containing an oxidative phosphorylation uncoupler for attracting and killing ants]	"ALL STAR" [pesticides, namely, bug and ant killing compositions for institutional and industrial use]; "ALLSTAR" (and design) [janitorial preparations for institutional and industrial use, namely, pesticides]	No
9-10	EX	74/490,595	Timothy J. Sheehan	2(e)(3)	Refusal Reversed		"CUBITA" [coffee]		No
9-11	OPP	96,404	The Goodyear Tire and Rubber Co. v. Interco Tire Corp.	de jure functionality; acquired distinctiveness [under Sec. 2(f)]	Opposition Sustained (but only on the grounds of lack of acquired distinctiveness)		configuration of the tread design of a tire asserted as a trademark for applicant's tires		No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Date Issued	Type of Case(1)	Proceeding or App'n No.	Party/Parties	Issue	TTAB Decision	Opposer's/Petitioner's Mark and Goods/Services	Applicant's/ Respondent's Mark and Goods/Services	Mark and Goods Cited by Examining Attorney	Citable as Precedent of TTAB
9-11	EX	75/050,185	Circuit City Stores West Coast, Inc.	2(e)(1)	Refusal Reversed		"APPLIANCE STATION" [retail stores featuring computer hardware, computer software, camcorders; compact discs featuring music, telephones, cellular telephones, satellite receiving equipment, facsimile machines, appliances, housewares and toys utilizing a computerized ordering and information system]		No
9-11	EX	74/553,068	General Electric Capital Assurance Co.	2(d)	Refusal Affirmed		"SOLUTION" [underwriting annuities]	"THE SOLUTION," "THE CHARITABLE SOLUTION," "SOLUTION VI" (in stylized lettering) and "THE SOLUTION FAMILY" (in stylized lettering) [all four marks registered for "life insurance underwriting services"]	No
9-11	EX	75/048,254	Richard Labrie	2(d)	Refusal Affirmed		"EAGLE INNOVATIONS" (and eagle design) [fishing tackle bags]	"EAGLE CLAW HOOKS" (and eagle design) [fishing hooks]; "EAGLE CLAW HOOKS" (in stylized lettering) [fish hooks and artificial fish lures]	No

(1)EX=EX PARTE APPEAL; OPP=OPPOSITION; CANC=CANCELLATION; CU=CONCURRENT USE; (SJ)=SUMMARY JUDGMENT; (R)=REQ. FOR RECONSIDERATION; (MD)=MOTION TO DISMISS; (MR)=MOTION TO REOPEN

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Box M Fee	Correspondence regarding patent maintenance fees and related matter.
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Partnership PTDLs provide enhanced and expanded services for which fees are charged. They offer on-line patent text and image searching, on-line trademark searching, and videoconferencing for examiner interviews and workshops. They accept disclosure documents on site, order file wrappers, assignment documents and certified copies for their customers, and host a variety of seminars aimed at specific audiences, including practitioners, paralegals, and independent inventors. Currently, partnerships are located at the Great Lakes Patent and Trademark Center (GLPTC) at the Detroit Public Library in Detroit, Michigan and the Sunnyvale Center for Innovation, Invention and Ideas (SCI[3]) in Sunnyvale, California.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(334) 844-1747
	Birmingham Public Library	(205) 226-3620
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Arizona	Tempe: Noble Library, Arizona State University	(602) 965-7010
Arkansas	Little Rock: Arkansas State Library	(501) 682-2053
California	Los Angeles Public Library	(213) 228-7220
	Sacramento: California State Library	(916) 654-0069
	San Diego Public Library	(619) 236-5813
	San Francisco Public Library	(415) 557-4500
	Sunnyvale Center for Innovation, Invention and Ideas	(408) 730-7290
Colorado	Denver Public Library	(303) 640-6220
Connecticut	Hartford Public Library	Not Yet Operational
	New Haven Free Public Library	Not Yet Operational
Delaware	Newark: University of Delaware Library	(302) 831-2965
Dist. of Columbia	Washington: Howard University Libraries	(202) 806-7252
Florida	Fort Lauderdale: Broward County Main Library	(954) 357-7444
	Miami-Dade Public Library	(305) 375-2665
	Orlando: University of Central Florida Libraries	(407) 823-2562
	Tampa Campus Library, University of South Florida	(813) 974-2726
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Hawaii	Honolulu: Hawaii State Public Library System	(808) 586-3477
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 747-4450
	Springfield: Illinois State Library	(217) 782-5659
Indiana	Indianapolis-Marion County Public Library	(317) 269-1741
	West Lafayette Siegesmund Engineering Library, Purdue University	(765) 494-2872
Iowa	Des Moines: State Library of Iowa	(515) 281-4118
Kansas	Wichita: Ablah Library, Wichita State University	(316) 978-3155
Kentucky	Louisville Free Public Library	(502) 574-1611
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-8875
Maine	Orono: Raymond H. Fogler Library, University of Maine	(207) 581-1678
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 405-9157
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Media Union Library, University of Michigan	(313) 647-5735
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	Detroit: Great Lakes Patent and Trademark Center	(313) 833-3379
Minnesota	Minneapolis Public Library and Information Center	(612) 630-6120
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	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4281
Nebraska	Lincoln: Engineering Library, University of Nebraska-Lincoln	(402) 472-3411
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	Buffalo and Erie County Public Library	(716) 858-7101
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North Dakota	Grand Forks: Chester Fritz Library, University of North Dakota	(701) 777-4888
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	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 292-6175
	Toledo/Lucas County Public Library	(419) 259-5212
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Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8877
	Nashville: Stevenson Science Library, Vanderbilt University	(615) 322-2717
Texas	Austin: McKinney Engineering Library, University of Texas at Austin	(512) 495-4500
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-3826
	Dallas Public Library	(214) 670-1468
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
	Lubbock: Texas Tech University	(806) 742-2282
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Vermont	Burlington: Bailey/Howe Library, University of Vermont	(802) 656-2542
Virginia	Richmond: James Branch Cabell Library, Virginia Commonwealth University	(804) 828-1104
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
West Virginia	Morgantown: Evansdale Library, West Virginia University	(304) 293-2510 Ext. 113
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	Milwaukee Public Library	(414) 286-3051
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LAWRENCE J. GOFFNEY Jr., Assistant Commissioner for Patents
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STEPHEN G. KUNIN, Deputy Assistant Commissioner for Patent Policy

PATENT EXAMINING GROUPS	Phone number Area Code 703	New Case Date*
CHEMICAL EXAMINING GROUPS		
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, ENGINEERING AND DESIGNS, GROUP 1100—THEODORE MORRIS, Director	308-0661	01/11/96
ORGANIC CHEMISTRY, DRUG, BIO-AFFECTING AND BODY TREATING COMPOSITION, GROUP 1200/2900—JOHN E. KITTLE, Director	308-1235	06/25/96
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 1300—RICHARD V. FISHER, Director	308-0651	07/29/96
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY STOCK MATERIALS AND COMPOSITIONS, GROUP 1500—MARY LEE, Acting Director	308-2351	05/27/96
BIOTECHNOLOGY, GROUP 1800—JOHN J. DOLL, Director	308-0196	11/23/95
ELECTRICAL EXAMINING GROUPS		
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 2100—STEWART LEVY, Director	308-1782	11/13/95
SPECIAL LAWS AND ADMINISTRATION, GROUP 2200—ROBERT E. GARRETT, Director	308-0511	04/26/96
COMPUTER SYSTEMS AND COMPUTER APPLICATION, GROUP 2300—JOSEPH J. ROLLA, Director	305-3900	04/26/96
SPECIAL COMPUTER APPLICATIONS: COMPUTER GRAPHICS, BUSINESS PRACTICES, & DIAGNOSTIC TESTING, GROUP 2400—GERALD GOLDBERG, Director	305-3900	12/21/95
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 2500—JANICE A. HOWELL, Director	308-0956	11/12/96
TELECOMMUNICATIONS, GROUP 2600—JIN F. NG, Director	305-3900	09/14/95
DESIGN, GROUP 2900—JOHN E. KITTLE, Director	305-3293	06/28/96
MECHANICAL EXAMINING GROUPS		
HANDLING AND TRANSPORTATION MEDIA, GROUP 3100—JOHN F. TERAPANE, JR., Director	308-1113	12/14/95
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 3200—ETHEL CROSS, Director	308-1148	03/11/97
MEDICAL INSTRUMENTS, DIAGNOSTIC EQUIPMENT AND TREATMENT DEVICES; SURGERY AND SURGICAL SUPPLIES; AMUSEMENT AND EXERCISING DEVICES; ANIMAL HUSBANDRY; SPORTING GOODS; TOBACCO PRODUCTS AND MANUFACTURING EQUIPMENT; AND PRINTING, GROUP 3300—J.J. LOVE, Director	308-0858	02/07/96
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 3400—DONALD G. KELLY, Director	308-0861	02/13/96
GENERAL CONSTRUCTION, PETROLEUM AND MINING ENGINEERING, GROUP 3500—A.L. SMITH, Director	308-2168	02/04/97

*A communication from the examiner should have been received in most applications filed prior to this date.

Patents will Expire as Follows:
(1) The term of any utility or plant patent that is in force on or results from an application filed before June 8, 1995 is the greater of the 20 year term provided in 35 U.S.C. 154(a)(2) or 17 years from grant subject to any terminal disclaimers. 35 U.S.C. 154(c)(1).
(2) All utility and plant patents granted on applications having an actual United States filing date on or after June 8, 1995 are granted for a term which begins on the date on which the patent is granted and ends 20 years from the date on which the application was filed in the United States. If the application contains a specific reference to an earlier application under 35 U.S.C. 120, 121 or 365(c), the patent term ends twenty years from that date on which the earliest application was filed. 35 U.S.C. 154(a)(2).
(3) All design patents are granted for a term of 14 years from the date of the grant.
However, the term of any patent may have been curtailed by disclaimer under the provisions of 35 U.S.C. 153, have lapsed due to failure to pay maintenance fees, or have been extended under the provisions of 35 U.S.C. 154, 155, or 156. Thus, if more reliable information is needed with respect to a particular patent, then the specific patent file should be reviewed to determine the actual date of patent expiration.

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TRADEMARK OPERATION

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David E. Bucher, Director, Trademark Examining Office
Condition of Trademark Applications as of September 1, 1998

Law Office	Oldest Date New*	Oldest Date Amendment Filed
Law Office 101—Jerry Price, Managing Attorney, (703) 308–9101—North Tower, 10th Floor Foods, Beverages, Wines & Spirits—Int. Classes 29, 30, 31, 32, 33 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	05/12/98	06/03/98
Law Office 102—Thomas Shaw, Managing Attorney, (703) 308–9102—South Tower, 5th Floor Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/06/98	04/20/98
Law Office 103—Michael A. Szoke, Acting Managing Attorney, (703) 308–9103—North Tower, 4th Floor, Scientific Equipment & Furniture—Int. Classes 9, 20 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/18/97	05/27/98
Law Office 104—Sidney Moskowitz, Managing Attorney, (703) 308–9104—South Tower, 6th Floor, Unwrought Metals, Industrial Equipment, Tools, Installation, Vehicles, Firearms, Musical Instruments, Building Materials & Floor Coverings—Int. Classes 6, 7, 8, 11, 12, 13, 15, 19, 27 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	11/14/97	06/08/98
Law Office 105—Thomas Howell, Managing Attorney, (703) 308–9105—South Tower, 6th Floor, Chemicals, Paints, Lubricants, Pharmaceuticals, Medical Apparatus & Tobacco—Int. Classes 1, 2, 4, 5, 10, 34 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/13/98	04/20/98
Law Office 106—Mary Sparrow, Managing Attorney, (703) 308–9106—South Tower, 7th Floor Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	02/20/98	05/07/98
Law Office 107—Thomas Lamone, Managing Attorney, (703) 308–9107—South Tower, 7th Floor, Cosmetics, Cleaning Preparations, Paper Products & Toys—Int. Classes 3, 16, 28 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	04/17/98	08/18/98
Law Office 108—David Shallant, Managing Attorney, (703) 308–9108—South Tower, 8th Floor Precious Metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions— Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services–Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	01/18/98	06/18/98
Law Office 109—Ronald Sussman, Managing Attorney, (703) 308–9109—South Tower, 8th Floor, Precious Metals, Fibers, Leather goods, Housewares, Cordage, Yarns, Fabrics, Clothing & Notions—Int. Classes 14, 17, 18, 21, 22, 23, 24, 25, 26 Services—Int. Classes 35, 36, 37, 38, 39, 40, 41, 42	12/01/97	06/06/98
**Collective Marks—Class 200		
**Certification Marks—Classes A & B		
Office of Trademark Services—Terron Sims, Director, (703) 308-9100		
Trademark Assistance Center—(703) 308-9000		
Pre-Examination—Alan Lambert, Supervisor, (703) 308-9401 ext. 188		
Intent-To-Use—(ITU)—(703) 308-9500		
Post Registration Section—(703) 308-9500		
Affidavits Under Sections 8 & 15 (All Classes)	06/10/98	—0—
Renewals (All Classes)	07/13/98	—0—
Section 12(c) Publications (All Classes)	07/01/98	—0—

1. ** Assigned to all Law Office

2. Applicants with inquiries concerning the status of their applications and a touch telephone should call (703) 305–8747 through (703) 305–9752 from 6:30 a.m. to Midnight EST, Monday through Friday. This automated voice system will provide the current status of your application. Applicants are urged not to file unnecessary inquiries concerning the status of their applications. See SECTION 411 of the TRADEMARK MANUAL OF EXAMINING PROCEDURE.

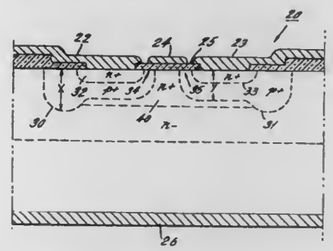
3. * These dates identify the oldest unassigned new case in each Law Office. All cases with earlier dates have either been examined and made the subject of an action or are currently being worked on by the assigned examining attorney.

REEXAMINATIONS

OCTOBER 27, 1998

Matter enclosed in heavy brackets **[ ]** appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

BI 4,642,666 (3649th)
HIGH POWER MOSFET WITH LOW ON-RESISTANCE AND HIGH BREAKDOWN VOLTAGE
Alexander Lidow, Manhattan, and Thomas Herman, Redondo, both of Calif., assignors to International Rectifier Corporation
Reexamination Request Nos. 90/002,818, Aug. 24, 1992 and 90/003,481, Jun. 29, 1994 and 90/003,888, Jul. 20, 1995.
Reexamination Certificate for Patent 4,642,666, issued Feb. 10, 1987, Ser. No. 471,818, Mar. 3, 1983.
Division of Ser. No. 232,713, Feb. 9, 1981, which is a continuation of Ser. No. 951,310, Oct. 13, 1978, abandoned.
The portion of the term of this patent subsequent to Mar. 8, 2000, has been disclaimed.
Int. Cl.[6] **H01L** *29/76*
U.S. Cl. 257—337



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claim **1** is determined to be patentable as amended.

Claims **2**, **3**, **4**, **5**, **6**, **7**, **8**, **9** and **10**, dependent on an amended claim, are determined to be patentable.

New claims **11** and **12** are added and determined to be patentable.

1. A three-terminal power metal oxide silicon field effect transistor device comprising:

a wafer of semiconductor material having first and second opposing semiconductor surfaces; said wafer of semiconductor material having a relatively lightly doped major body portion for receiving junctions and being doped with impurities of one conductivity type;

at least first and second spaced base regions of the opposite conductivity type to said one conductivity type formed in said wafer and extending from said first semiconductor surface to a depth beneath said first semiconductor surface; the space between said at least first and second base regions defining a *vertical* common conduction region of one conductivity type at a given first semiconductor surface location;

first and second source regions of said one conductivity type formed in each pair of said at least first and second base regions respectively at first and second first surface locations and extending from said first and second first surface locations to a depth less than said depth of said base regions; said first and second source regions being laterally spaced along said first semiconductor surface from the facing respective edges of said common conduction region thereby to define first and second channel regions along said first semiconductor surface between each pair of said first and second source regions, respectively and said common conduction region; *the concentration of carriers of said one conductivity type in said common conduction region at said first semiconductor surface being less than the concentration of carriers of said opposite conductivity type of said first and second base regions at said first semiconductor surface;*

source electrode means connected to said source regions and comprising a first terminal;

gate insulation layer means on said first surface, disposed at least on said first and second channel regions;

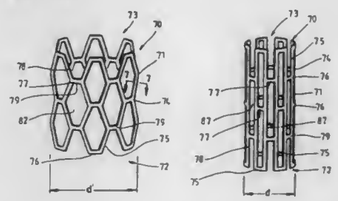
gate electrode means on said gate insulation layer means, overlying said first and second channel regions and comprising a second terminal;

a drain conductive region remote from said common region and separated therefrom by said relatively lightly doped major body portion;

a drain electrode coupled to said drain conductive region and comprising a third terminal;

each of said at least first and second spaced base regions of said opposite conductivity type having respective profiles which include, *to allow the device to withstand relatively high breakdown voltages,* relatively shallow depth regions *having a relatively small radius of curvature* extending from said common region and underlying their said respective first and second source regions, and respective relatively deep, relatively large radius regions extending from said shallow depth regions which are laterally spaced from beneath said respective source regions on the side of said source regions which is away from said common region.

BI 4,739,762 (3650th)
EXPANDABLE INTRALUMINAL GRAFT, AND METHOD AND APPARATUS FOR IMPLANTING AN EXPANDABLE INTRALUMINAL GRAFT
Julio C. Palmaz, San Antonio, Tex., assignor to Expandable Grafts Partnership, San Antonio, Tex.
Reexamination Request No. 90/004,785, Oct. 6, 1997.
Reexamination Certificate for Patent 4,739,762, issued Apr. 26, 1988, Ser. No. 923,798, Nov. 3, 1986.
Continuation-in-part of Ser. No. 796,009, Nov. 7, 1985.
Int. Cl.[6] **A61M** *29/00*
U.S. Cl. 606—108



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **23** and **34** is confirmed.

Claims **13** and **24** are cancelled.

Claims **1**, **14**, **16–19**, **25**, **29**, **31–33**, **35**, **37**, **40** and **41** are determined to be patentable as amended.

Claims **2–12**, **15**, **20–22**, **26–28**, **30**, **36**, **38**, **39**, **42** and **43**, dependent on an amended claim, are determined to be patentable.

New claims **44–59** are added and determined to be patentable.

[24. An expandable prosthesis for a body passageway, comprising:

a thin-walled tubular member having first and second ends and a wall surface disposed between the first and second ends, the wall surface having a substantially uniform thickness and a

plurality of slots formed therein, the slots being disposed substantially parallel to the longitudinal axis of the tubular member;

a tubular member having a first diameter which permits intraluminal delivery of the tubular member into a body passageay having a lumen; and

the tubular member having a second, expanded and deformed diameter, upon the application from the interior of the tubular member of radially, outwardly extending force, which second diameter is variable and dependent upon the amount of force applied to the tubular member, whereby the tubular member may be expanded and deformed to expand the lumen of the body passageway.]

34. The expandable prosthesis of claim **24**, wherein the outside of the wall surface, of the tubular member is a smooth surface, when the tubular member has the first diameter.

B1 5,096,607 (3651st)

METHOD FOR CLEANING AND DISINFECTING CONTACT LENSES

Mary F. Mowrey-McKee, Victor; David W. Proud, Rochester, and George E. Minno, Victor, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Reexamination Request Nos. 90/003,986, Oct. 3, 1995 and 90/004,599, Apr. 9, 1997.

Reexamination Certificate for Patent 5,096,607, issued Mar. 17, 1992, Ser. No. 515,290, Apr. 27, 1990.

Continuation-in-part of Ser. No. 313,643, Feb. 21, 1989, abandoned.

Int. Cl.[6] **C11D** *3/48;3/386;* **A61L** *2/16;* **G02C** *13/00*

U.S. Cl. 422—28

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–11** and **13–20** is confirmed.

Claim **12** is cancelled.

1. A method for simultaneously cleaning and disinfecting contact lenses comprising contacting the lenses with an aqueous system containing a disinfecting amount of an antimicrobial agent selected from the group consisting of polymeric quaternary ammonium salts used in ophthalmic applications and biguanides, in absence of thimerosal, and an effective amount of a proteolytic enzyme for a time sufficient to simultaneously clean and disinfect the lenses and wherein the osmotic value of said aqueous system, is adjusted to a level which does not substantially inhibit the activity of said antimicrobial agent.

B1 5,215,393 (3652nd)

DOCUMENT FEEDING DEVICE

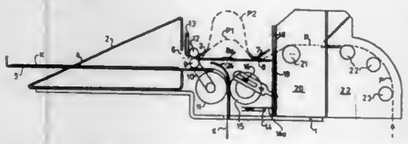
Tommy Wincent, Upplands Väsby, Sweden, assignor to Swecoin AB, Sundbyberg, Sweden

Reexamination Request No. 90/004,887, Jan. 8, 1998.

Reexamination Certificate for Patent 5,215,393, issued Jun. 1, 1993, Ser. No. 886,324, May 20, 1992.

Int. Cl.[6] **B41J** *11/26*

U.S. Cl. 400—621



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–5** is confirmed.

1. A device for feeding documents, such as receipts, to a receiver from a printing apparatus which prints information on the documents, the device including

means for preventing each document from being fed out and made available to the receiver until all information has been printed thereon;

means for preventing each document from being fed out until it has left the printing apparatus and has been severed from a slip by a severing device;

means for making possible the bending of the document to form a loop as a part of the slip during its feeding operation out from the printing apparatus, and

means for retaining a front portion of the slip, so that said portion will not be available to the receiver during said feeding operation.

B1 5,216,569 (3653rd)

METHOD AND APPARATUS FOR SUPPRESSING CABLE LINE TRANSIENTS

William L. Brookhiser, Lawrenceville, Ga., assignor to Cable Innovations, Inc., Lawrenceville, Ga.

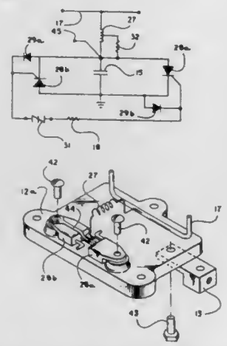
Reexamination Request No. 90/004,743, Sep. 8, 1997.

Reexamination Certificate for Patent 5,216,569, issued Jun. 1, 1993, Ser. No. 872,064, Apr. 22, 1992.

Continuation-in-part of Ser. No. 705,719, May 24, 1991, abandoned.

Int. Cl.[6] **H02H** *7/00*

U.S. Cl. 361—107



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **4** are determined to be patentable as amended.

Claims **2** and **3**, dependent on an amended claim, are determined to be patentable.

1. An electrical suppressor for suppressing an electrical transient by clamping the **[**electricl**]** *electrical* transient directly **[**directly**]** to ground, the suppressor being inserted in a signal carrying center conductor of a co-axial cable transmission line, an information bearing radio frequency signal and a power supply current impressed upon the center conductor, comprising:

a mounting case for mounting the suppressor to said co-axial cable transmission line,

sensing means within the case of sensing said electrical transient in the center conductor,

a trigger means within the case electrically connected to and operable by said sensing means when said sensing means senses said electrical transient,

said trigger means connected to ground to clamp the electrical transient directly to ground when said sensing means senses the electrical transient and causes said trigger means to energize and become conductive to shunt the electrical transient directly to ground,

said trigger means in connection with said sensing means being effective to block conduction to ground of normal power supply current on the center conductor during absence of said electrical transient,

a radio frequency choke connecting the suppressor to the center conductor, said radio frequency choke being effective to block the information bearing radio frequency signal being conveyed by the center conductor from passing through the suppressor to ground, said radio frequency choke being further effective to readily pass transient surge currents **[**throught**]** *through* the suppressor to ground,

a metal mounting base to which primary current carrying components of the suppressor are directly mounted, thereby providing a direct low resistance path for dissipation of heat and said transient surge currents,

a bond clamp attached to the mounting base to which **[**an**]** *a separate* external ground conductor is attached, *the separate external ground conductor physically connecting the mounting base directly to ground without any intervening devices being mounted in the ground conductor between the mounting base and ground,* thereby conveying said transient surge currents from the mounting base through a low resistance path to ground.

B1 5,516,496 (3654th)

METHOD AND FLUORING VALUES RECOVERY FROM FLUORIDE SALT MATRICES

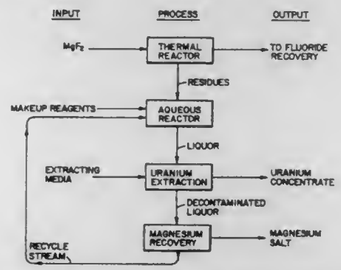
Randall P. Slage, Elizabethton, Tenn., assignor to Advanced Recovery Systems, Inc., Erwin, Tenn.

Reexamination Request No. 90/004,788, Oct. 3, 1997.

Reexamination Certificate for Patent 5,516,496, issued May 14, 1996, Ser. No. 457,261, Jun. 1, 1995.

Int. Cl.[6] **G01F** *1/00*

U.S. Cl. 423—20



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–9** is confirmed.

1. The process for converting feed materials of high mineral content and substantial radioactivity levels to concentrated radionuclide products of high radioactivity levels and to other products of discard or very low radioactivity levels, wherein said feed materials comprises a difficulty soluble matrix contain substantial metal, fluorine, and radionuclide values assaying above about 30 pCi/g, said process comprising contacting said feed materials with high temperature steam of from about 200° C. to about 1500° C., said contacting being carried out such as to convert said metal and radionuclide values to oxide residues at commercially acceptable rates and to evolve gaseous fluorides from said feed, digesting said oxide residues in an acidic digest medium, separating said radionuclide values from the resulting digest liquor and subsequently isolating said metal values from the resulting raffinate whereby said metal values have a radionuclide value assay of less than about 20% of the radioactivity level of said feed materials.

B1 5,622,019 (3655th)

SIMULATED GLASS-BLOCK STRUCTURE

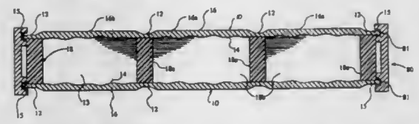
Joe Dorough, Jr., 2719 Royal La., #401, Irving, Tex. 75063

Reexamination Request No. 90/004,763, Sep. 29, 1997.

Reexamination Certificate for Patent 5,622,019, issued Apr. 22, 1997, Ser. No. 203,432, Mar. 1, 1994.

Int. Cl.[6] **E04C** *2/36;2/54*

U.S. Cl. 52—308



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims **1–18** is confirmed.

New claims **19–27** are added and determined to be patentable.

1. A translucent panel having the appearance of a panel formed by glass blocks having borders joined to form a matrix comprising:

a generally flat sheet of translucent material of substantially uniform thickness, said sheet having peripheral edges, each side of said sheet having a generally planar surface extending between said peripheral edges of said sheet, a grid pattern impressed in at least one of said generally planar surfaces of said sheet, a texture pattern impressed in at least one of said generally planar surfaces of said sheet, said grid pattern comprising a first plurlaity of parallel, spaced-apart linear grooves and a second plurality of parallel, spaced-apart linear grooves at right angles and intersecting the first plurality of grooves so that the first and second plurality of grooves together form a rectangular matrix impressed in the surface of said generally flat sheet to stimulate borders of each of a plurality of glass blocks in a matrix of glass blocks, said texture pattern comprising a wavy pattern causing light to refract and to simulate the appearance of translucent surfaces on glass blocks; and

frame means to support said peripheral edges of said sheet.

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Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 35,933

PAINT HOLDER AND DELIVERY DEVICE

Robert Scholl, Ramsey, N.J., assignor to R. B. Schnel, Inc., Ramsey, N.J.

Original No. 5,549,216, dated Aug. 27, 1996, Ser. No. 441,343, May 15, 1995. Application for reissue Dec. 12, 1996, Ser. No. 764,326

Int. Cl.[6] B65D *1/36*

U.S. Cl. 220—695 **10 Claims**



5. A paint holder and delivery device comprising:

a) a container having a generally cylindrical housing with an open top end and a vertically oriented C-shaped handle disposed on an outside surface of said housing; and

b) a removable insert adapted to fit within said housing comprising:

i) a first open-ended compartment adapted to receive a fluid;

ii) a second open-ended compartment adapted to receive a brush adjacent said first compartment;

iii) a tab extending from the top of said second compartment and resting on a upper surface of said C-shaped handle for securing said insert to said housing during manipulation thereof; and

iv) a pair of flanges extending circumferentially around an upper surface of said insert.

Re. 35,934

SEMICONDUCTOR MEMORY DEVICE SYNCHRONOUS WITH EXTERNAL CLOCK SIGNAL FOR OUTPUTTING DATA BITS THROUGH A SMALL NUMBER OF DATA LINES

Yasuhiro Takai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Original No. 5,426,606, dated Jun. 20, 1995, Ser. No. 221,574, Apr. 1, 1994. Application for reissue Jun. 20, 1997, Ser. No. 879,516

Claims priority, application Japan, Apr. 2, 1993, 5-077236

Int. Cl.[6] G11C *8/00*

U.S. Cl. 365—189.05 **30 Claims**

4. A semiconductor memory device, comprising:

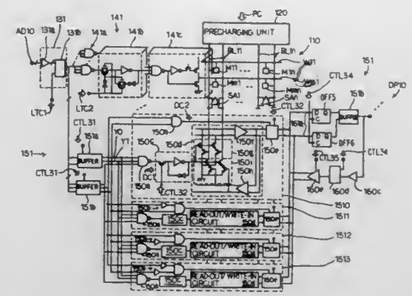
a memory cell array having a plurality of addressable memory cells for storing a plurality of data bits selectively assigned with addresses;

a selection circuit coupled to said memory cells for accessing said memory cells;

a buffer circuit supplied with address bits in synchronization with a clock signal;

an internal buffer receiving a predetermined number of said address bits;

a logic circuit, responsive to said predetermined number of address bits representing a value, for generating an internal set of address bits representing another value in synchronization with said clock signal;



an internal output buffer selectively coupled to receive one of: said predetermined number of address bits and said internal set of address bits, via a first switch, said internal output buffer being coupled to said selection circuit, said selection circuit having a first access to said memory cells corresponding to a value of said predetermined number of address bits and second access to said memory cells corresponding to a value of said internal set of address bits; and

a control circuit generating control information which is supplied to said first switch to first select said internal buffer supplying said predetermined number of address bits and subsequently to select said logic circuit generating said internal set of address bits, thereby accelerating said first and second accesses to said memory cells.

Re. 35,935

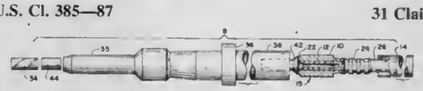
FIBER OPTIC CONNECTORS

Nellie L. Cabato, Plymouth Meeting; LeRoy Tabb, Doylestown, both of Pa.; Nicholas Volinic, St. Paul, Minn., and Laurence N. Wesson, Blue Bell, Pa., assignors to Labinal Components and Systems, Inc., Elk Grove Village, Ill.

Original No. 5,142,602, dated Aug. 25, 1992, Ser. No. 776,689, Oct. 15, 1991. Continuation of Ser. No. 403,097, Sep. 5, 1989, abandoned. Application for reissue Aug. 22, 1994, Ser. No. 293,760

Int. Cl.[6] G02B *6/36*

U.S. Cl. 385—87 **31 Claims**



1. A fiber optic terminus positioning assembly for closely controlling the axial position of an optical fiber end in a fiber optic connector, said terminus assembly comprising a single optical fiber having a bare portion of said fiber free of covering [and coating], said bare portion having a terminal end, a resilient fiber gripper element of [a material] *polyethersulfone* which has a high coefficient of friction with the material of which said fiber is formed, said gripper element being distinct from any such fiber covering [or coating] and in direct surface-to-surface contact with the surface of said bare portion of said fiber, and a metal support element surrounding said fiber portion and said gripper element in a predetermined axial position relative to said terminal end, said support element being in compressive engagement with said gripper element and thereby compressing said gripper element into gripping engagement with said bare fiber portion for retaining said terminal end of said fiber in said predetermined axial position relative to said support element.

Re. 35,936

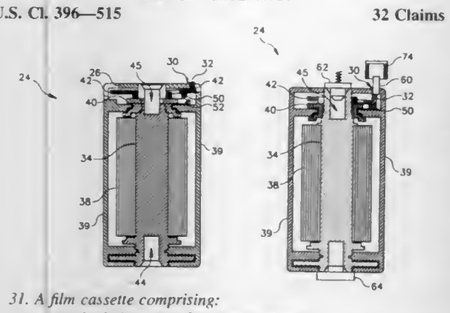
VISUAL EXPOSURE INDICATING SYSTEM

Anthony DiRisio, Rochester; Edgar Gene Earnhart, Hilton, and Michael Thomas Wolf, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Original No. 5,552,849, dated Sep. 3, 1996, Ser. No. 377,542, Jan. 23, 1995. Application for reissue Aug. 7, 1997, Ser. No. 908,423

Int. Cl.[6] G03B *17/26*

U.S. Cl. 396—515 32 Claims



31. A film cassette comprising:

a cassette body having a film status window;

a film spool contained within the cassette body;

a driver disk that is directly coupled to the film spool;

a flex disk that can be engaged and not engaged with the driver disk such that the flex disk rotates with the driver disk only when engaged with it; and

a film status indicator whose position relative to the film status window indicates the status of film;

wherein movement of the film when the flex disk is engaged with the driver disk causes the flex disk to move and the position of the film status indicator relative to the film status window to change, and movement of the film spool when the flex disk is not engaged with the driver disk causes no change in the relative position of the film status indicator.

Re. 35,937

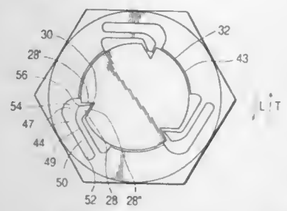
ONE-WAY NUT AND BOLT

Robert J. DiStasio, Valhalla, N.Y., assignor to Permanent Technologies, Inc., Massapequa Park, N.Y.

Original No. 5,460,468, dated Oct. 24, 1995, Ser. No. 302,127, Sep. 7, 1994. Application for reissue Aug. 12, 1996, Ser. No. 695,656

Int. Cl.[6] F16B *39/32;31/00*

U.S. Cl. 411—329 24 Claims



16. A one way nut and bolt combination comprising a bolt having a head, a stem and a bolt thread on said stem, said bolt having a plurality of indentations on each bolt thread aligned to form a locking channel on said stem;

a nut having a threaded bore that is complimentary to said bolt thread, said nut bore having at least one longitudinal cut-out;

a compressible tine extending into said cut-out having a body portion and substantially radially aligned distal end portion, said distal end portion of said tine defining a narrow mouth leading to a wider throat in said cut-out, said mouth opening to said nut bore;

whereby said nut thread and said bolt thread cooperatively permit translation of said nut along said bolt threads by one-way rotation, while said tine is alternately flexed inboard into said cut-out by said bolt threads and released when said tine is disposed in said locking channel, said locking channel and respective plurality of indentations preventing counter-rotational movement of said nut and bolt when said end of said tine is positioned in one of said plurality of indentations.

Re. 35,938

EJECTOR SYSTEM FOR AN IC PACK CONNECTOR APPARATUS

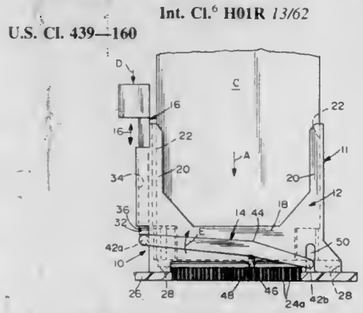
Paul O'Brien, Veradale, Wash., and Mario Previato, Padua, Italy, assignors to Molex Incorporated, Lisle, Ill.

Original No. 5,368,493, dated Nov. 29, 1994, Ser. No. 82,652, Jun. 25, 1993. Application for reissue Aug. 5, 1996, Ser. No. 689,030

Claims priority, application European Pat. Off., Jun. 26, 1992, 92110895

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—160 10 Claims



1. A connector apparatus for providing an interconnection between an IC pack and a printed circuit board, including

a plurality of terminals (**174**) adapted for inter-connection of the IC pack to electrical traces on the printed circuit board,

housing means including a housing (**12, 112, 212**) having an IC pack receiving opening *extending between opposite ends of said housing means* and an integrally formed channel (**34, 138, 234**) therein,

said IC pack being inwardly and outwardly movable within the housing between an inserted position wherein it electrically mates with the terminals and an ejected position wherein a portion of the IC pack extends outside the opening,

an ejector mechanism (**10, 110, 210**) for selectively moving an inserted IC pack from the inserted position to the ejected position, said ejector mechanism having

an ejector arm pivotally mounted relative to the housing adapted to effect movement of the IC pack to the ejected position, and

a manually manipulatable actuator (**16, 116, 216**) slidably mounted in said channel for movement in the same general direction as the insertion and ejection of the IC pack and adapted to cooperate with said ejector arm in moving the IC pack outwardly to the ejection position,

the improvement comprising:

said ejector arm defines an elongated lever (**14, 114, 214**) pivotally mounted on the housing means intermediate *said* opposite ends thereof and extending substantially entirely across the **[**integrally formed channel of the**]** housing means *between said opposite ends*, said elongated lever having a first end pivotally connected to said actuator and a second end for directly engaging the IC pack when said pack is in the inserted position;

whereby when the actuator is moved inwardly, the second end of the lever moves the IC pack outwardly to the ejected position.

Re. 35,939

POLYESTER RESIN, COMPOSITIONS THEREOF AND SEALANT MADE THEREFROM

Kouji Fukuda, Ohtsu; Shigeharu Sugihara, Iwakuni; Takeshi Kamoto, Ohara-gun; Keiji Mori, Ohtsu; Seiki Nishihara, Ohtsu; Katsuya Emoto, Ohtsu; Toshikazu Nishiwaki, Ohtsu, and Hiroshi Takeuchi, Ohtsu, all of Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Original No. 5,382,652, dated Jan. 17, 1995, Ser. No. 860,044, Mar. 30, 1992. Application for reissue Jan. 15, 1997, Ser. No. 782,429

Claims priority, application Japan, Apr. 1, 1991, 3-096248; Aug. 5, 1991, 3-220990; Oct. 21, 1991, 3-302467

Int. Cl.[6] C08G *63/18;* B32B *31/20*

U.S. Cl. 528—308.6 23 Claims

13. A polyester resin having branched chain, a Z average molecular weight (Mz) relative to standard polystyrene of not less than 250×10^3 and not more than 800×10^3, an acid component comprising an aromatic dicarboxylic acid in a proportion of from about 95 mole percent to about 100 mole percent relative to the entire acid component, said aromatic dicarboxylic acid comprising terephthalic acid in an amount ranging from about 60 mole percent to about 90 mole percent, and said polyester resin having a glycol component comprising ethylene glycol in a proportion of from about 90 mole percent to about 100 mole percent relative to the entire glycol component.

Re. 35,940

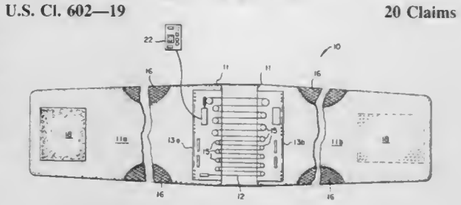
ELECTROMECHANICAL BACK BRACE APPARATUS

Thomas J. Heinz, Flintridge; Thomas A. Walker, Ojai, and Eric D. Plambeck, Ventura, all of Calif., assignors to Bio-Cybernetics, International, Flintridge, Calif.

Original No. 5,346,461, dated Sep. 13, 1994, Ser. No. 965,305, Oct. 23, 1992. Application for reissue Feb. 21, 1996, Ser. No. 604,381

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—19 20 Claims



16. A back brace apparatus comprising:

a brace body adapted to be wrapped around the trunk of a patient, said brace body comprising two separate segments;

means at the end of each brace segment for allowing the two ends to be detachably connected together around the patient's trunk;

a cable operatively connected to said two segments; and

a set of pulleys mounted on each brace segment with the cable running through a pulley on each segment in alteration, shortening of the cable pulling the two segments together and tightening the brace apparatus with the aid of a mechanical advantage dependent upon the number of pulleys mounted on each brace segment.

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PLANT PATENTS

GRANTED OCTOBER 27, 1998

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

10,660
STOKESIA PLANT NAMED 'PURPLE PARASOLS'
Clyde Scott Warren, 1559 Connor Rd., Hebron, Ky. 41048
Filed Mar. 31, 1997, Ser. No. 828,652
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Stokesia plant named 'Purple Parasols', as illustrated and described.

10,661
HOSTA PLANT NAMED 'ANNE'
Gerard J. C. M. Heemskerk, Noordwijk, Netherlands, assignor to Fa. W.J. Heemskerk & Zn., Noordwijk, Netherlands
Filed Aug. 29, 1997, Ser. No. 920,467
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—68.1 **1 Claim**

1. A new and distinct cultivar of Hosta plant named 'Anne', as illustrated and described.

10,662
CHRYSANTHEMUM PLANT NAMED 'YELLOW TRAVIATA'
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Jan. 21, 1997, Ser. No. 786,420
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—78 **1 Claim**

1. A new and distinct Chrysanthemum plant named Yellow Traviata, as described and illustrated.

10,663
CHRYSANTHENUM PLANT NAMED 'DETROIT'
Cornelis P. VandenBerg, Salinas, Calif., assignor to Yoder Brothers, Inc., Barberton, Ohio
Filed Jan. 21, 1997, Ser. No. 786,422
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—82.5 **1 Claim**

1. A new and distinct Chrysanthemum plant named Detroit, as described and illustrated.

10,664

Patent Not Issued For This Number

10,665
AECHMEA PLANT NAMED 'GREY GHOST'
Nat DeLeon, Goulds, Fla., assignor to Deleon's Bromeliads Inc., Goulds, Fla.
Filed Feb. 7, 1997, Ser. No. 797,513
Int. Cl.[6] A01H *5/00*
U.S. Cl. Plt.—88.8 **1 Claim**

1. A new and distinct variety of *Aechmea fasciata* plant characterized by the following combination of characteristics:

(a) forms a large pink-bracted inflorescence that is abundantly branched, and
(b) forms wide spineless leaves that heavily display a silver-white coloration;

substantially as herein illustrated and described.

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PATENTS

GRANTED October 27, 1998

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Patents

For CLASS	See PATENT NO.
251—355	5,826,788
473—225	5,826,874
374—124	5,826,980
473—365	5,827,167
606—194	5,827,231
429—194	5,827,602
438—199	5,827,747
504—245	5,827,799
523—210	5,827,800
368—278	5,828,541

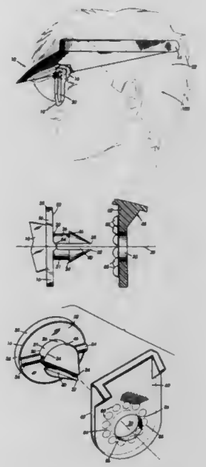
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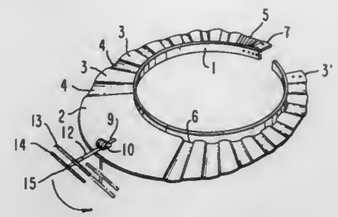
5,826,271

EYEWEAR IN COMBINATION WITH A VISOR

LaMills A. Garrett, Columbia, S.C., assignor to Vista Visor Inc, Columbus, Ohio

Filed Mar. 14, 1997, Ser. No. 818,633
Int. Cl.[6] A42B *1/06;1/24*
U.S. Cl. 2—10 15 Claims





1. A device for use on the head of a user, comprising:
a visor having two depending members, each depending member having a hole formed therein, said hole having a diameter, each member having an inner face, said inner face having a plurality of domes extending therefrom, said plurality of domes surrounding said hole;
means for holding said visor to the head of the user;
a frame;
a lens secured to said frame; and
means for securing said frame to said visor so that said frame has an up position against said visor and a down position away from said visor, said frame rotatable between said up and said down positions, said securing means having two posts, each post of said two posts having a first end and a second end, said second end of said each post being attached to a circular shoulder positioned perpendicularly to said each post, said shoulder having an inner face, said shoulder having a pair of ribs extending from a perimeter of said shoulder toward said post, said ribs abutting said domes, said ribs of said shoulder and said domes permitting incremental rotation of said post.

5,826,272

VISORED GOLF CAP

Bum-Ki Hong, 105-903, Hyundai first APT, 653 Gaepo-dong, Kangnam-gu, Seoul, Rep. of Korea

Filed Dec. 3, 1996, Ser. No. 759,789
Claims priority, application Rep. of Korea, Dec. 6, 1995, 95-38613
Int. Cl.[6] A61F *9/00*
U.S. Cl. 2—12 2 Claims

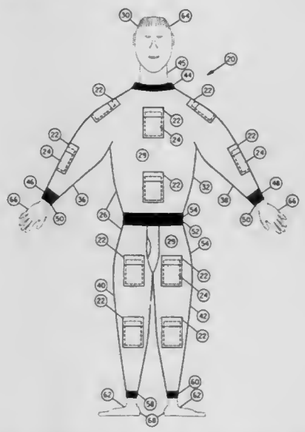
1. A visored golf cap comprising:
a size-adjustable head band having a strip shape;
a front visor attached to a front part of said head band corresponding to a forehead of a user;
a plurality of regularly-spaced visor holders attached to the entire length of said head band except for the front part of said head band, said visor holders being attached to said head band such that each of said visor holders project outwardly with respect to a wearer's head;
a plurality of flexible fabric visors covering intervals between said front visor and two of said visor holders adjacent to said front visor, and intervals between each adjacent pair of visor holders;
a visor coupling plate coupled to either one of two visor holders closest to either end of said head band, said visor coupling plate being coupled through a corrugated flexible connector;
means for adjusting the size of said band in accordance with the size of the wearer's head, said size adjusting means being provided on both ends of said band and on said visor coupling plate, and on one of said two visor holders closest to either end of said head band, said one visor holder not being coupled to said visor coupling plate through said corrugated flexible container; and
means for measuring a target direction, a target distance or an inclination angle of a slope on a golf course.

5,826,273

BODY CONFORMING ARTICLE OF CLOTHING HAVING MULTIPLE HEAT POCKETS

Mark A. Eckes, 11586 Hwy V, Marshfield, Wis. 54449

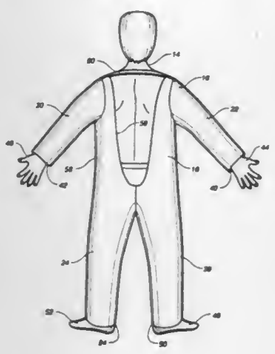
Filed Jan. 13, 1997, Ser. No. 782,213
Int. Cl.[6] A41D *1/12*
U.S. Cl. 2—69 6 Claims



1. A thermal garment with pockets in combination with thermal packets that are placed in one or more pockets; said thermal garment and said thermal packet combination comprising:

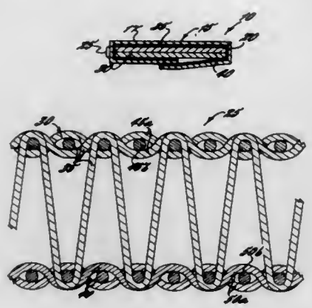
a plurality of thermal packets;
a thermal garment including a torso enveloping portion having an upper torso component and a lower torso component;
said upper torso component including arm receiving portions;
said lower torso component including leg receiving portions;
said torso enveloping portion constructed so as to conform to the body of the user; said thermal garment having a plurality of pockets affixed thereto and disposed upon said upper and lower torso components including said arm-receiving and said leg-receiving portions;
each said pocket having an inner wall integral with said torso enveloping portion and an outer wall;
said pocket being sized and shaped to receive one of said thermal packets for effecting a heat transfer between the packet and the body of the user;
said inner wall and said outer wall of said pocket is in direct contact with one of said thermal packets.

5,826,274
METHOD AND APPARATUS FOR FACILITATING THE APPLICATION AND REMOVAL OF A WET SUIT
Michael Thompson, 16460 Hwy. 3, #906, Webster, Tex. 77598
Continuation-in-part of Ser. No. 685,824, Jul. 25, 1996, abandoned. This application Jul. 9, 1997, Ser. No. 890,297
Int. Cl.[6] A41D *13/00*
U.S. Cl. 2—69 **8 Claims**



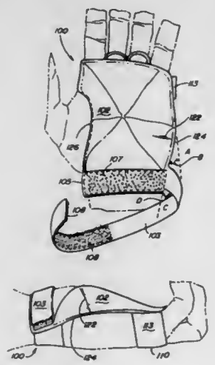
1. A method for facilitating the application of a wet suit comprising the steps of:
forming a non-skintight coverall suit of a spun high density polyethylene fiber material, said coverall suit having a torso portion with a first arm member and a second arm member extending outwardly from opposite sides thereof, said torso portion having a first leg member and a second leg member extending downwardly from said torso portion, said step of forming comprising the steps of:
forming a V-shaped area on a back of said torso portion, said V-shaped area having a wide portion adjacent a top of said coverall suit; and
affixing an elastic strap onto said torso portion across said wide portion of said V-shaped area;
placing said coverall suit onto a human body such that human arms extend through said first and second arm members and human legs extend through said first and second leg members;
sliding legs of the wet suit over said first and second leg members of said coverall suit such that human feet extend outwardly of an end of said legs of the wet suit;
sliding arms of the wet suit over said first and second arm members of said coverall suit such that human hands extend outwardly of an end of said arms of the wet suit; and
closing the wet suit over said torso portion of said coverall suit.

5,826,275
NECKWEAR CONSTRUCTION
Jeffrey L. Rachel, Siler; Jerry E. Snider, Albemarle, both of N.C.; Allan S. Lerner, New York, N.Y., and Lex L. Basinger, Concord, N.C., assignors to Collins & Aikman Products Co., Charlotte, N.C.
Filed Oct. 26, 1994, Ser. No. 329,173
Int. Cl.[6] A41D *25/00;25/16;27/00;27/02*
U.S. Cl. 2—144 **12 Claims**



1. A neckwear comprising an outer fabric casing and a one-piece multi-dimensional non-torqued lining carried within the casing and layered substantially coextensively along the length of said casing, the lining being formed of a double cloth fabric having a first fabric layer and a second fabric layer being of dissimilar constructions, and being joined by at least one of interlacing warp yarns or filling yarns in two planes, wherein said double cloth lining is constructed of smooth fabrics suitable for lining neckwear, and wherein the first fabric layer comprises warp and weft yarns and filling yarns of a first fabric type, and the second fabric layer comprises warp and weft yarns of a second fiber type, and the first fabric layer and second fabric layer are joined by interlacing a warp yarn of a third fiber type in two planes.

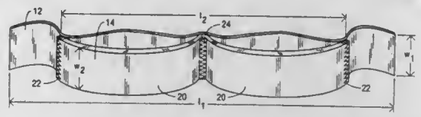
5,826,276
ERGONOMIC HAND COVERING AND GRIP ENHANCER
Dorothy S. Garceau-Verbeck, 7445 E. Cole Rd., Durand, Mich. 48429
Continuation-in-part of Ser. No. 209,112, Mar. 9, 1994, Pat. No. 5,459,883. This application Sep. 6, 1996, Ser. No. 709,028
Int. Cl.[6] A41D *19/00*
U.S. Cl. 2—161.1 **24 Claims**



1. A hang grip enhancer article for palm protection and gripping enhancement of a wearer for use in activities including golf comprising:
a panel portion sized to substantially cover a palm;

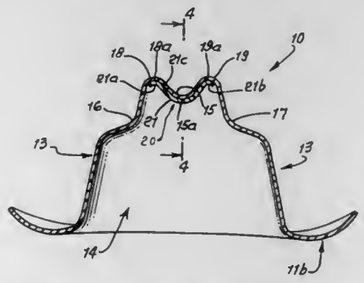
an anchor strap attached to a wrist end of the panel; and
a retaining band extending from and attached to a side edge of the panel and extending to and attached to an opposite side edge of the panel adjacent a finger junction end of the panel;
wherein the panel portion has a shape which forms a continuum with a palm of a hand of a wearer in a sustained position throughout expansion and contraction of the hand and wherein the panel portion includes a dart to form an integral hump portion to fit over a wearer's heel of the hand between a wearer's pinky finger and wrist for sustaining the continuum with the palm throughout expansion and contraction of the hand thereby preventing formation of blisters to the hand ordinarily caused by bunching.

5,826,277
SWEAT BAND
Christina H. McConville, 3120 Milhaven Lake Dr., Winston-Salem, N.C. 27106
Filed Dec. 29, 1997, Ser. No. 999,030
Int. Cl.[6] A42C *5/02*
U.S. Cl. 2—171 **34 Claims**



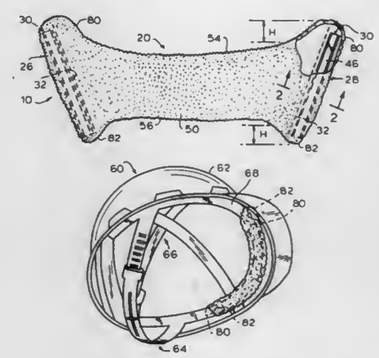
1. A sweat band for absorbing perspiration, said sweat band comprising:
(a) an elastic band adapted to fit around a user's head; and
(b) a length of sponge cloth intermittently attached along spaced apart locations to said elastic band.

5,826,278
THIN-WALLED PLASTIC HAT
William L. King, 808 Anita Dr., Tehachapi, Calif. 93561
Division of Ser. No. 785,866, Jan. 21, 1997, Pat. No. 5,713,083. This application Jun. 2, 1997, Ser. No. 867,503
Int. Cl.[6] A42B *1/02;3/06*
U.S. Cl. 2—175.4 **11 Claims**



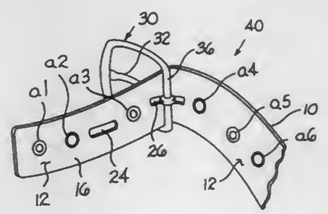
1. A one-piece, lightweight, molded plastic hat comprising, in combination:
a) a thin, molded plastic sheet forming a hat dome having an inner side, said sheet having a substantially uniform thickness of less than 3/16 inch,
b) said sheet forming a corrugation having a local portion defining a U-shaped cross section,
c) and a local plastic reinforcement sub-sheet having a U-shaped cross section matching that of said local portion, said sub-sheet fitting and adhesively bonded to said sheet local portion at said inner side of the hat dome.

5,826,279
LINER FOR PROTECTIVE HEADGEAR
Alan I. Tencer, Coram, N.Y., assignor to OccuNomix International, Inc., Port Jefferson, N.Y.
Filed Oct. 24, 1997, Ser. No. 957,154
Int. Cl.[6] A42B *3/10*
U.S. Cl. 2—181 **12 Claims**



1. A liner for use with protective headgear having a support harness, the liner comprising:
a body fabricated of an absorbent material configured and dimensioned to be removably mounted within said protective headgear in the region confronting the brow of a user of said protective headgear, said body being longitudinally elongated and terminating in enlarged opposite ends extending generally transverse to the longitudinal axis of said body; and
a deformable mounting member secured within each of said enlarged opposite ends of said body and substantially coextensive therewith, said deformable mounting member being adapted to be wrapped at least partially about said support harness to removably mount said liner within said protective headgear.

5,826,280
DUAL SIZE BELT
Flavian E. Bradley, 8327 County, 503 CC Rd., Rapid River, Mich. 49878
Filed Jul. 14, 1997, Ser. No. 891,727
Int. Cl.[6] A41F *9/00*
U.S. Cl. 2—322 **3 Claims**



1. A dual length belt comprising:
an elongated belt having a thickness dimension and a width dimension;
said belt having side edges and a longitudinal centerline midway between said side edges;
said belt having a buckle end section (**16**) and a tongue end section (**18**); said tongue end section having a plurality of longitudinally-spaced openings (**22**) spaced therealong;

a buckle (**30**) having a rectangular frame (**34**) and a latch (**32**) swingably mounted on said frame for swinging motion on said longitudinal centerline;

said rectangular frame comprising a frame element (**36**) extending transverse to said longitudinal centerline; said latch being swingably attached to said frame element for entry into selected ones of said longitudinally spaced openings;

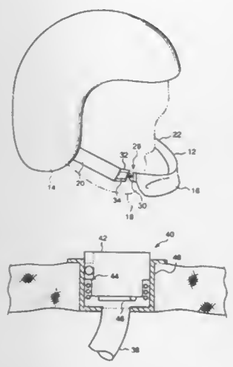
said buckle end section comprising at least two reduced thickness wall areas (**24***a* and **24***b*) spaced apart a predetermined distance, and a slot (**24** or **26**) intersecting each reduced thickness wall area, each of said slots being located on the belt longitudinal axis to selectively receive said swingable latch;

a series of complementary snap fasteners (**a1**–**a6**) mounted on said buckle end section of said elongated belt; said snap fasteners comprising male and female fasteners alternating along the belt longitudinal axis;

the spacing between said reduced thickness wall areas being the same as the spacing between said snap fasteners; each of said reduced thickness wall areas being located midway between two of said snap fasteners;

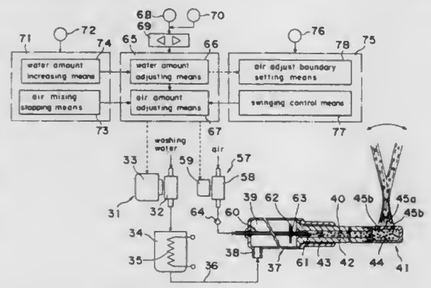
said reduced thickness wall areas forming readily bendable areas of said belt, whereby said transverse frame element (**36**) can be selectively positioned against any one of said reduced thickness wall areas so that the belt can be trained around said frame element and formed into a loop configuration by snapping selected ones of said snap fasteners together.

5,826,281
INFLATABLE CHIN STRAP FOR A HELMET
Gus A. Rush, III, 1800 12th St., Meridian, Miss. 39301
Filed Nov. 4, 1996, Ser. No. 743,029
Int. Cl.[6] A42B *3/08*
U.S. Cl. 2—421 **2 Claims**



1. A retaining member to hold head wear on the head of a user comprising an elongated strip having opposite ends for attachment to the head wear, a chin engaging portion including an inflatable member, said portion being located intermediate said opposite ends, said inflatable member and said elongated strip are integrally formed of a resilient material, said inflatable member comprising a section of said material in the form of a pouch, said pouch having a wall portion, a valve being secured to extend through said wall portion for inflating and deflating said pouch, said valve including a piston communicating with a pair of check valves, said piston being disposed in a skirt, said skirt including a removable closure member, said piston being movable in said skirt when said closure member has been removed to open a passage through the check valves to allow inflation of said pouch.

5,826,282
SANITARY CLEANING APPARATUS
Tomohide Matsumoto, Yamatotakada; Hiroaki Yonekubo, Soraku-gun, and Hiroaki Yoshida, Yamatokoriyama, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan
Continuation of Ser. No. 502,435, Jul. 14, 1995, abandoned, which is a continuation of Ser. No. 207,728, Mar. 9, 1994, abandoned. This application Apr. 22, 1997, Ser. No. 844,902
Int. Cl.[6] A47K *4/00*
U.S. Cl. 4—420.4 **11 Claims**



1. A sanitary cleaning apparatus comprising:

a cleaning water supply device;

a water supply channel fluidically connected to said cleaning water supply device;

a cleaning nozzle fluidically connected to said water supply channel for jetting cleaning water toward a region to be cleaned;

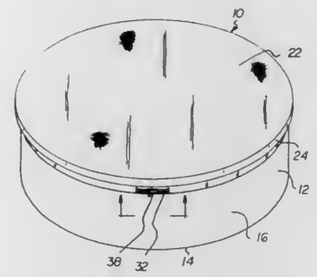
an air mixing device fluidically connected to said cleaning nozzle for mixing air with the cleaning water;

a first jet flow selection switch for selectively controlling said air mixing device to either supply air into a flow of cleaning water flowing into said cleaning nozzle or to stop supplying air into the flow of cleaning water flowing into said cleaning nozzle;

wherein said cleaning nozzle comprises discharging means for discharging a dispersed jet flow when said air mixing device is controlled to supply air into the flow of cleaning water and for discharging a concentrated jet flow when said air mixing device is controlled to stop supplying air into the flow of cleaning water;

wherein said discharging means comprises a nozzle chamber fluidically connected to said water supply channel, a main jetting opening leading out of said nozzle chamber and having a first diameter, and first and second pairs of subsidiary jetting openings leading out of said nozzle chamber and being disposed relative to said main jetting opening such that said first pair of said subsidiary jetting openings is spaced from said main jetting opening by a first given distance in a first longitudinal direction of said cleaning nozzle, said second pair of said subsidiary jetting openings is spaced from said main jetting opening by a second given distance in a second longitudinal direction of said cleaning nozzle opposite said first longitudinal direction, and the openings of said first pair of said subsidiary jetting openings are spaced apart from the openings of said second pair of said subsidiary jetting openings, respectively, by equal distances, each of said subsidiary jetting openings having a second diameter smaller than said first diameter of said main jetting opening, and said subsidiary jetting openings having axes inclined so that jet flows discharged therefrom intersect with one another at a location between said cleaning nozzle and the region to be cleaned.

5,826,283
LIFE SAFETY DEVICE
Mark J. Edwards, 221 Sygan Rd., McDonald, Pa. 15057
Filed May 16, 1997, Ser. No. 857,875
Int. Cl.[6] E04H *4/10*
U.S. Cl. 4—503 **1 Claim**



1. A life safety device comprising, in combination:

a pool having a circular bottom with a cylindrical periphery integrally coupled thereto and extending upwardly therefrom defining an interior space for containing water therein and an open circular top, the periphery having an upper exterior edge having an annular protrusion integrally formed therewith and extending radially outwardly therefrom;

a circular cover having a continuous skirt integrally coupled about an entire periphery thereof, wherein the cover is adapted to be disposed about the open top of the pool such that the skirt depends downwardly over the protrusion of the exterior edge thereof, the skirt having an interior layer and an exterior layer defining a continuous sleeve, wherein the interior layer is integral with the exterior layer at a lower edge and stitchedly coupled to the exterior layer at an upper edge, the skirt further including a pair of spaced slots formed in the exterior layer thereof;

said cover being constructed from woven nylon threads and being inextensible, flexible and water permeable, the cover further having a rubber coating formed on a top and a bottom thereof;

an inextensible, flexible belt situated within the sleeve of the cover and below the protrusion of the periphery of the pool, the belt further including a first end and a second end extending through a respective one of the slots of the sleeve;

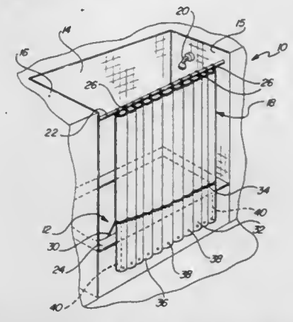
a winch having a rectilinear configuration with a top face, a bottom face, a rear face, a front face, and a pair of open ends defining an interior space, the rear face having a vertical slot formed therein adjacent a first one of the open ends for allowing the coupling of the first end of the belt thereto, the winch including a ratchet winding assembly having a spool rotatably coupled about a vertical axis within the interior space adjacent a second one of the open ends of the winch, the spool having a plurality of teeth formed in a lower disk thereof, a spring biased first pawl situated within the interior space and pivotally coupled to the bottom face of the winch for engaging the teeth of the spool and only allowing the rotation thereof in a first direction of rotation, and a lever ratchet arm, the lever ratchet arm having a planar member with a clevis coupled to a first end thereof, the clevis rotatably coupled to the top face and bottom face of the winch about the vertical axis of the spool wherein the clevis is rotatable with respect to the spool, the clevis having a second pawl pivotally coupled thereto for engaging the teeth of the spool for effecting the rotation of the spool only in the first direction of rotation upon the reciprocation of the lever ratchet arm between a first orientation with the planar member abutting the front face of the winch and a second orientation with the planar member extending outwardly therefrom;

whereby the second end of the belt is wrappedly coupled about the spool such that the belt tightens about the periphery of the pool when the spool is rotated in the first direction, wherein the tightening of the belt precludes the removal of the cover from the pool;

a plurality of apertures including a first aperture formed in the planar member of the lever ratchet arm of the ratchet winding assembly, a second aperture formed in the top face of the winch, and a third aperture formed in the front face of the winch; and

a lock for releasably engaging the apertures for precluding the reciprocation of the planar member of the lever ratchet arm of the ratchet winding assembly.

5,826,284
SHOWER CURTAIN WITH SKIRT
Boyd Wren, 2262 Uranus Ave., Las Cruces, N. Mex. 88012
Continuation-in-part of Ser. No. 727,909, Oct. 9, 1996, abandoned. This application Jun. 18, 1997, Ser. No. 877,933
Int. Cl.[6] A47K *3/22*
U.S. Cl. 4—609 **9 Claims**



1. A shower curtain for use with a bathtub having a front wall with opposite inner and outer surfaces and a curtain rod disposed above and substantially parallel with a top of the front wall, the shower curtain comprising a main curtain suspendable from the curtain rod to place a lower end of the main curtain below the top of the front wall and a skirt attached to the main curtain along a seam spaced from the lower end of the main curtain such that when the main curtain is suspended from the curtain rod and the lower end of the main curtain is adjacent one of the surfaces of the front wall the seam is above the top surface of the front wall and the skirt may drape downwardly from the seam to be adjacent the opposite surface of the front wall, the shower curtain characterized in that:

the main curtain is made of a first flexible sheet material and the skirt is made of a second flexible sheet material of greater weight per unit volume than the first sheet material to create a weight differential between the skirt and a portion of the main curtain below the seam, the weight differential being great enough to cause the main curtain to drape toward the opposite surface of the front wall.

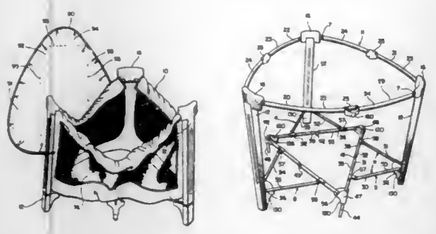
5,826,285
PLAY YARD
John V. Mariol, Cincinnati, Ohio, and Thomas J. Welsh, Jr., Naperville, Ill., assignors to Kolcraft Enterprises, Inc., Chicago, Ill.
Filed Sep. 10, 1996, Ser. No. 711,541
Int. Cl.[6] A47D *7/00;13/06*
U.S. Cl. 5—99.1 **27 Claims**

1. A triangular-shaped play yard comprising:

a collapsible, triangular-shaped top assembly;

a collapsible, triangular-shaped bottom assembly; and,

three spaced vertical posts each having upper and lower ends;



said top assembly connected to said vertical posts contiguous to the upper ends of said posts; and,

said bottom assembly connected to said vertical posts contiguous to the lower ends of said posts and including (a) a triangular-shaped subassembly comprising three collapsible legs; and, (b) pairs of post connecting members having one end of each member connected to a vertical post and a second end of each member connected to a subassembly leg to form truss segments between each post and said subassembly leg;

whereby said top and bottom assemblies can be erected to an assembled position and collapsed to a disassembled position.

5,826,286

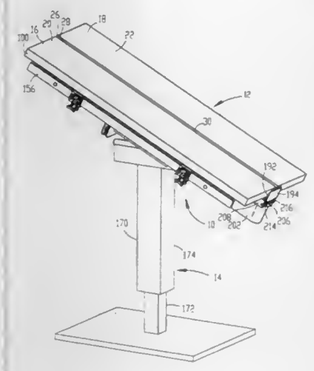
VETERINARY SURGICAL TABLE

Dale Cranston, Baldwin, Kans., assignor to VSSI, Inc.

Filed Oct. 9, 1996, Ser. No. 727,914

Int. Cl.[6] A61G *13/04;13/06;13/08;13/02*

U.S. Cl. 5—606 **18 Claims**



1. A veterinary surgical table comprising: a top presenting a surface for supporting an animal thereon; a base for elevating the top, said base including means for mounting said top for shiftable movement between a substantially horizontal position and an inclined position and a plurality of intermediate positions therebetween; and

means including an extensible member and force-supplying means operatively connecting said base and said top for supplying a force for counterbalancing the weight of the top during shifting movement thereof, said extensible member and force supplying means including a self-contained pressurized fluid cylinder coupled to an extensible rod wherein said pressurized fluid cylinder and extensible rod are coupled to said base for support of said top,

said table further including a control member including a locking member for releasably locking said top in a selected one of said positions.

5,826,287

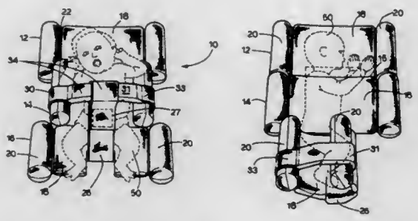
INFANT SUPPORT AND POSITIONING SYSTEM

Laurie L. Tandrup, P. O. Box 875, Onoway, Alberta, Canada, T0E 1V0

Filed Jul. 16, 1997, Ser. No. 895,566

Int. Cl.[6] A47C *7/02;31/11;* **A47D** *15/00*

U.S. Cl. 5—655 **4 Claims**



1. A modular device for placement within a child's seat to support an infant therein which comprises: first and second cushions releasably and pivotally attachable one to another, a third cushion having a harness means associated therewith to further secure an infant within a seat, wherein each cushion defines a substantially flat central section having generally rounded sections flexibly positioned along the sides thereof, said cushions being formed of a resilient padded material, said cushions further defining a recess therebetween whereby seat retaining straps may be inserted to thereby secure said infant and device in place; and at least one releasably attachable safety strap functional to engage the rear of one of said cushions on each side thereof.

5,826,288

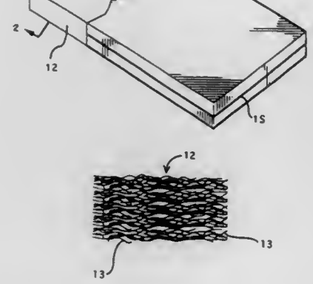
HIGHLY PREMEABLE INFANT MATTRESS AND PAD

Gunes M. Ecer, P. O. Box 4025, Thousand Oaks, Calif. 91359

Filed Nov. 4, 1996, Ser. No. 743,042

Int. Cl.[6] A47C *27/12;* **A47G** *9/00*

U.S. Cl. 5—724 **11 Claims**



1. In the method of producing and using an infant mattress or pad, the steps that include

a) providing said pad to have a liquid permeable fibrous core, and providing a high permeability cover to extend over and in contact with said pad, said cover provided to have a porous texture defined by strands of material,

b) said strand texture provided to have sufficient open work as to freely pass aqueous liquid of a viscosity between 0.03 and 0.09 poise through said open work, and into said core,

c) and maintaining the cover in contact with the core to wick liquid passing through the cover away from the covers,

d) said porous strand texture being further provided to have through openings between the strands, said through openings provided to have an average size, over a substantial area of the cover on the pad, between 0.0002 and 0.1 cm^2,

e) and including spilling said liquid onto said cover and allowing substantially all of said liquid to pass through said cover, within 3 seconds, said liquid consisting of infant formula.

5,826,289

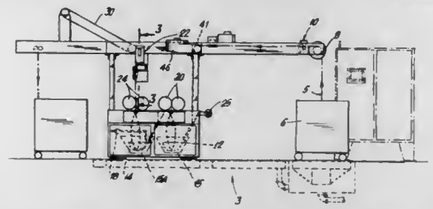
WET PROCESSING SYSTEM FOR TREATING WETTED ROPED KNITTED FABRIC TUBES

Frank Catallo, 75 Channel Dr., Port Washington, N.Y. 11050

Continuation-in-part of Ser. No. 722,951, Sep. 27, 1996, abandoned. This application Nov. 20, 1997, Ser. No. 974,927

Int. Cl.[6] D06B *3/18*

U.S. Cl. 8—152 **3 Claims**



1. A method for processing a wet roped knitted fabric tube comprising,

(a) moving a wet fabric tube from a container to a wet processing system;

(b) opening the fabric tube as it travels horizontally over the wet processing system;

(c) delivering the open fabric tube vertically down into a J-type balance scray moveably disposed in the wet processing system which controls the speed of movement the opened knit fabric;

(d) wetting the fabric in the J-scray as desired;

(e) ballooning the open fabric as it moves vertically up and out of the J-scray to straighten same;

(f) moving the ballooned fabric into a pair of extraction rolls to set the fabric wetness as desired;

(g) moving the open fabric vertically upwards directly into a spreader that is closely located relative the extraction rolls to set width and reduce fabric distortion and elongation;

(h) transferring the open fabric via a conveyor which is arranged to do so with minimum distortion; and,

(i) moving the open fabric into a truck for transport to other treating stations.

5,826,290

REUSABLE COMPOSITE BRIDGE STRUCTURE AND METHOD OF CONSTRUCTING AND ATTACHING THE SAME

George D. Kokonis, West Vancouver, Canada, assignor to West Bridge Corp., Vancouver, Canada

Filed Apr. 9, 1997, Ser. No. 840,081

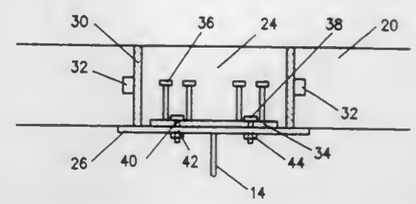
Int. Cl.[6] E01D *19/06;19/12*

U.S. Cl. 14—73.1 **28 Claims**

1. A composite steel girder and concrete deck panel bridge, wherein concrete deck panels are removable for reuse, comprising:

precast concrete deck panels, each of the panels having a plurality of holes therein extending through the panels to match stud group locations on top flanges of steel girders, the holes having releasable smooth inside surfaces through the panels;

a plurality of shear studs at each of the stud group locations extending up from the top flanges, the plurality of shear studs in the stud group locations having removable connections to the top flanges, and



concrete grout filling the holes of the deck panels and between adjacent deck panels to provide a substantially flush deck surface, the concrete grout joining the shear studs and the panels to provide composite strength action between the deck panels and the bridge girders.

5,826,291

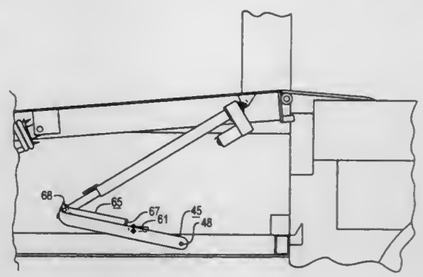
ELECTRICALLY ACTUATED DOCK LEVELER

James C. Alexander, London, Canada, assignor to United Dominion Industries, Inc., Charlotte, N.C.

Filed Oct. 22, 1996, Ser. No. 735,404

Int. Cl.[6] E01D *1/00*

U.S. Cl. 14—71.3 **20 Claims**



1. A dock leveler comprising:

a frame adapted to be fixedly mounted at a dock;

a deck, pivotally mounted to said frame at one end thereof, and having a pivotable lip at the other end thereof;

an electric actuator operably coupled to said deck for moving said deck from a generally horizontal stored position into an operative position,

means pivotally coupling said electric actuator to said dock leveler for providing float for said deck, and

a circuit for controlling operation of said electrical actuator.

5,826,292

DISK CLEANING AND DRYING APPARATUS

Kiyoshi Ikemoto, Ayase, Japan, assignor to Speedfam Co., Ltd., Japan

Filed Jun. 25, 1997, Ser. No. 882,560

Claims priority, application Japan, Jun. 27, 1996, 8-185344

Int. Cl.[6] B08B *11/02*

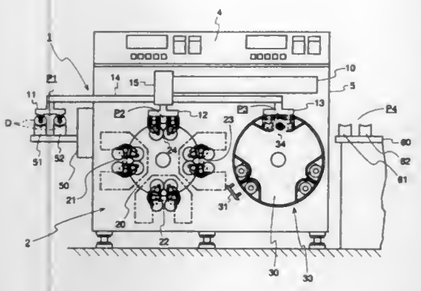
U.S. Cl. 15—102 **8 Claims**

1. A disk cleaning and drying apparatus comprising:

a cleaning unit having a first index table with a plurality of first holders for holding disks to be cleaned, cleaning means provided on said first index table for cleaning said disks, and first drive means for driving said first index table to rotate at a first predetermined angle of rotation to thereby move disks held by said plurality of first holders to said cleaning means;

a drying unit having a second index table with a plurality of second holders for holding disks to be dried, drying means

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provided on said second index table for drying said disks, and second drive means for driving said second index table to rotate at a second predetermined angle of rotation; and

conveyor means adapted to reciprocate from a first point to a second point, and from the second point to a third point, and from the third point to a fourth point, in a unitary manner for conveying disks to be cleaned from said first point to said second point at which the disks thus conveyed are delivered to and held by one of said first holders of said first index table just positioned at said second point, said conveyor means being operable to take disks which have been cleaned by said cleaning unit out of one of said first holders positioned at said second point and convey them to said third point at which the disks thus conveyed are delivered to and held by one of said second holders of said second index table just positioned at said third point, said conveyor means being further operable to take disks which have been dried by said drying unit out of one of said second holders of said second index table positioned at said third point and convey them to said fourth point.

5,826,293

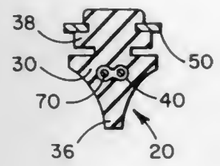
HEATED WIPER BLADE

Dewey T. Holland, 2275 Hamptons Crossing, Alpharetta, Ga. 30005

Division of Ser. No. 14,320, Feb. 5, 1993, Pat. No. 5,749,118. This application Jan. 14, 1998, Ser. No. 6,652

Int. Cl.[6] B60S *1/34;1/38*

U.S. Cl. 15—250.06 **3 Claims**



1. A wiper blade assembly capable of being heated and operating at substantially constant temperature, said wiper blade assembly comprising:

an elongated wiper blade having an attachment member connected thereto; and an elongated, flexible heating element positioned inside said wiper blade and directly contacting said wiper blade, said heating element consisting of (a) a pair of spaced apart, elongated conductive members extending substantially parallel to said wiper blade along the length of the elongated wiper blade and (b) a material with a positive temperature coefficient of resistence disposed around and in electrical contact with both of said conductive members.

5,826,294

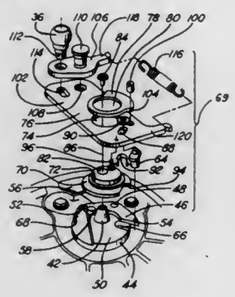
COMPACT DEPRESSED PARK WIPER SYSTEM WITH CLUTCH LOCK MECHANISM

Xiaoming Deng, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 27, 1995, Ser. No. 562,859

Int. Cl.[6] B60S *1/24;* **F16H** *21/20*

U.S. Cl. 15—250.16 **7 Claims**



1. A vehicle window wiper system having a run mode in which a vehicle window is wiped and a park mode, the wiper system comprising:

(1) a dual direction motor having a shaft rotatable thereby about a shaft axis;

(2) a drivepin in mechanical connection with the shaft for rotary motion therearound;

(3) means for transforming the rotary motion of the drivepin to oscillatory motion of at least one window wiper; and

(4) a clutch mechanism having a crank plate eccentrically mounted on the shaft for rotation in a forward and a reverse direction, and a base plate mounted around the shaft with the drivepin connected thereto for rotation with the crank plate in a run direction, the base plate separable from the crank plate when the motor direction is reversed, the clutch mechanism further comprising:

(a) depressed park means for moving the at least one wiper to a depressed park position when the wiper system is turned off upon reversal of the motor; and

(b) a clutch reversal prevention mechanism for preventing reverse rotation of the clutch mechanism when the wiper system is operating in the run mode, the clutch reversal prevention mechanism comprising:

an elongated lock pin slot in said base plate having a central axis of elongation lying in a plane perpendicular to said shaft axis and extending non-orthogonally to said shaft axis;

a lock pin mounted in said slot on a lower side of the base plate for slidable movement with respect thereto;

a notch in the crank plate for receiving the lock pin in engagement therewith when the system is in the run mode to prevent the clutch mechanism from reversing direction by retaining the crank plate to the base plate.

5,826,295

WINDSCREEN WIPERS

John Elmhirst, Hucclecote, and Denis J. Kirkby, Charlton Kings, both of England, assignors to Wynn Marine Ltd., Gloucestershire, England

PCT No. PCT/GB95/00728, § 371 Date Oct. 11, 1996, § 102(e) Date Oct. 11, 1996, PCT Pub. No. WO95/27641, PCT Pub. Date Oct. 19, 1995

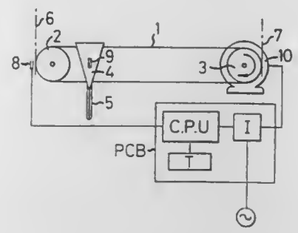
PCT Filed Mar. 30, 1995, Ser. No. 727,430

Claims priority, application United Kingdom, Apr. 11, 1994, 9407111

Int. Cl.[6] B60S *1/44*

U.S. Cl. 15—250.24 **6 Claims**

1. A heavy duty wiper device which includes a continuous drive means operating over spaced wheels, a wiper carriage driven by said continuous drive means so as to travel in a to and fro motion between first and second end of travel positions, and which is adapted to change the direction of drive by transferring the drive between upper and lower flights of the continuous drive means, a drive motor for driving at least one of said spaced wheels unidirectionally, speed profiling means for controlling the speed of said motor, said speed profiling means controlling an operational to and fro cycle where in a region at each end of the travel of said wiper carriage the motor speed is, over a selected period of time, smoothly increased from a low speed to an operational speed when moving from one of said first and second end of travel positions and is smoothly reduced from the operational speed to the low speed when approaching the other of said first and second end of travel positions, and a park sensor for sensing the region at one of said first and second end of travel positions of said wiper carriage and coupled with said profiling means to enable said wiper carriage to stop at a park position, wherein said park sensor also synchronizes operation of said speed profiling means.



5,826,296

ROLL CLEANING ASSEMBLY

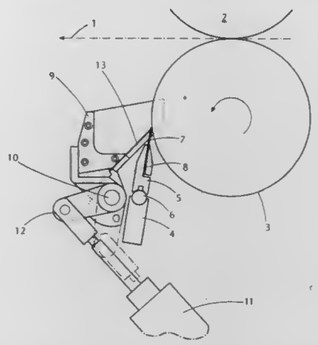
Andrew Steven, Greenside, England, assignor to Crabtree of Gateshead Limited, England

Filed Oct. 3, 1996, Ser. No. 724,842

Claims priority, application United Kingdom, Oct. 7, 1995, 9520536

Int. Cl.[6] D01H *11/00*

U.S. Cl. 15—256.51 **14 Claims**



1. A roll cleaning assembly, for removing liquid material continuously from the cylindrical surface of a rotating roll, comprising a rigid blade support member extending parallel to the axis of the roll, a blade holder mounted upon said member and adapted releasably to retain a doctor blade along an axis parallel to said roll axis, and force means, mounted independently of said blade support member along a further axis parallel to said roll axis and directed to apply force along the length of the doctor blade to urge said blade into contact with the surface of the roll.

5,826,297

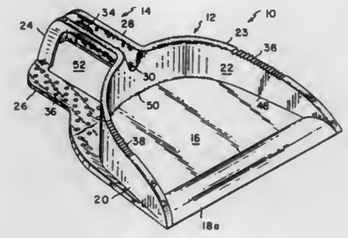
DUSTPAN

Harold Footer, Newton, and Robert Cann, Amherst, both of Mass., assignors to Easy Day Manufacturing Co., Holliston, Mass.

Filed Apr. 23, 1996, Ser. No. 636,284

Int. Cl.[6] A47L *13/52*

U.S. Cl. 15—257.2 **34 Claims**



1. A dustpan, comprising:

a pan comprising:

a pan floor having a perimeter, and a lip at one edge of the perimeter of the pan floor, the lip having first and second ends, and

a wall having an upper and a lower edge, the lower edge of the wall surrounding the perimeter of the pan floor from the first end of the lip to the second end of the lip, the wall forming an angle with the pan floor,

a grip having front and rear ends, the front end of the grip being attached to the pan opposite the lip,

a generally U-shaped footplate having a connector and two ends, the two ends being attached to the pan opposite the lip, the footplate having a top surface and a bottom surface, the grip and the footplate being separated by a void extending from the top surface of the footplate to the grip, and

a member having a top end attached to the rear end of the grip and a bottom end attached to the connector of the footplate.

5,826,298

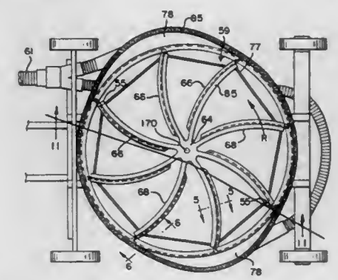
SURFACE CLEANER, SPRAYER AND RETRIEVAL UNIT

Richard D. Rohrbacher, Phoenix; Kemper Marley, Jr., Scottsdale, and Nelson D. Graves, Phoenix, all of Ariz., assignors to Cyclone Surface Cleaning Inc., Tempe, Ariz.

Continuation-in-part of Ser. No. 615,797, Mar. 14, 1996, which is a continuation of Ser. No. 343,193, Nov. 22, 1994, which is a division of Ser. No. 118,139, Sep. 8, 1993, Pat. No. 5,500,976. This application Nov. 4, 1996, Ser. No. 746,025

Int. Cl.[6] B08B *5/04*

U.S. Cl. 15—321 **28 Claims**

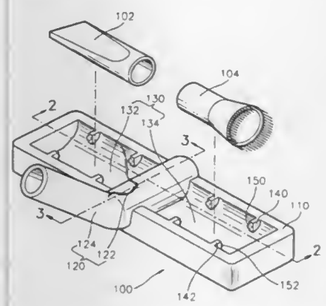


10. In a power wash system using high pressure water for cleaning flat surfaces including:

a water sprayer and retrieval unit for spraying pressurized water onto and retrieving the water and matter from the surface being cleaned comprising:

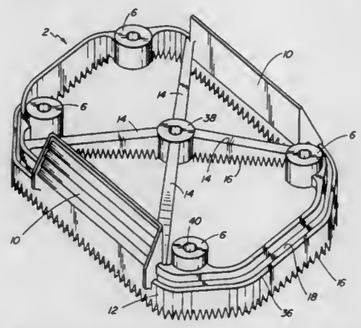
a carriage unit;
a tank mounted on said carriage unit;
a shroud comprised of a generally disk-shaped top having a skirt extending downwardly from the periphery thereof;
a hollow shaft journaled in the central portion of said disk-shaped top;
a power drive carried by said carriage, drive means for imparting rotation, in a given direction, to said hollow shaft from said power drive;
a retrieval rotor secured to said hollow shaft at
a location below said disk shaped top, said retrieval rotor including a plurality of blades, said blades being secured to and radiating from said hollow shaft, said blades including substantially vertical curved surfaces that are curved away from said given direction of rotation and terminate adjacent said skirt;
at least one exit opening formed in said skirt; at least one water jet secured to said retrieval rotor;
conduit means extending from said exit opening formed in said skirt to said tank for discharging water and recovered matter in said tank;
said tank includes a screen located below where said conduit means extending from said exit opening formed in said skirt to said tank discharges recovered water and matter into said tank such that large matter is collected by said screen and the filtered water passes through said screen;
a high pressure water inlet mounted on said water sprayer and retrieval unit for receiving high pressure water which is supplied to the interior of said hollow shaft;
conduit means extending from the interior of said hollow pipe to said water jet through which water flows from the interior of said hollow pipe to said water jets and is sprayed on the surface to be cleaned.

5,826,299
BRUSH ASSEMBLY FOR A VACUUM CLEANER
Suk-Koo Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea
Filed Sep. 11, 1997, Ser. No. 927,265
Claims priority, application Rep. of Korea, Sep. 30, 1996, 96-32299
Int. Cl.[6] A47L *9/00;9/02*
U.S. Cl. 15—523 **10 Claims**



1. A brush assembly for a vacuum cleaner, the brush assembly comprising:
a rectangular body formed at an upper surface thereof with a recess for storing auxiliary brushes, the recess being formed in a longitudinal direction of the body;
an air duct for sucking air, the air duct including a horizontal portion disposed at a center of the body and a neck portion integrally formed with the horizontal portion, the air duct being integrally formed with the body, the horizontal portion dividing the recess into a first recess and a second recess, the neck portion being inclined upward with respect to the horizontal portion; and
a means for clamping the auxiliary brushes stored in the recess.

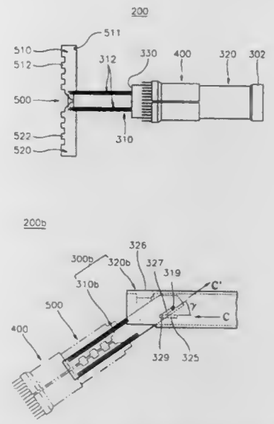
5,826,300
VACUUM CLEANER ACCESSORY
Arthur Shawn Dwight Smith, R.R. #3, Mouth of Keswick, New Brunswick, Canada, E0H 1N0
Continuation-in-part of Ser. No. 529,451, Sep. 18, 1995. This application Jun. 5, 1997, Ser. No. 869,482
Int. Cl.[6] A47L *9/06*
U.S. Cl. 15—402 **8 Claims**



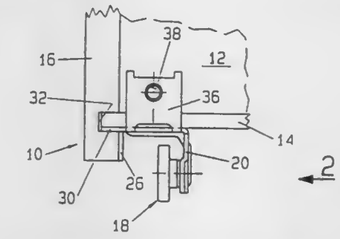
1. A multi-purpose vacuum cleaner accessory brush for use in grooming multiple types of animals and for cleaning fabric and flooring substrates, said brush being configured for attachment to a body having a nozzle for attachment to a vacuum source and for creating an airflow directed to the surface of the animal's coat or substrate, said brush comprising a circumferential, downwardly-extending skirt and a plurality of cross-members extending inwardly from sides of said brush and joining together in the interior thereof, said skirt and cross-members having a plurality of downwardly-projecting, spaced teeth wherein said teeth are comprised of a thermoplastic material having a relatively high co-efficient of friction to adhere to loose hair to be suctioned and sufficient strength for said brush to achieve brushing action, the length of said teeth teeth being in the range 4–10 mm and the ratio between the area of said teeth and the area of the spacing between said teeth being in the range of 1:1 to 1:2.

5,826,301
MULTIPURPOSE AUXILIARY BRUSH FOR A VACUUM CLEANER
Sang-Bo Kang, and Young-Soon Kim, both of Incheon, Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Rep. of Korea
Filed Dec. 11, 1996, Ser. No. 763,441
Claims priority, application Rep. of Korea, Dec. 29, 1995, 1995 65214; Dec. 29, 1995, 1995 65219; Dec. 29, 1995, 1995 65225
Int. Cl.[6] A47L *9/02;9/06*
U.S. Cl. 15—416 **30 Claims**

23. A multipurpose auxiliary brush for a vacuum cleaner, said multipurpose auxiliary brush comprising:
(a) a first auxiliary brush for complementing a cleaning function of a main brush, said first auxiliary brush being adapted to clean a recessed surface and being mounted on a hose assembly of the vacuum cleaner through an end thereof, said first auxiliary brush including a front portion and a rear portion, in which said front portion includes a first air flow passage formed through an interior of said front portion and includes a plurality of first protrusions formed on an outer periphery of said front portion and extending in the longitudinal direction of said front portion, and first guide grooves are formed on upper portions of said first protrusions, and first locking grooves are formed on front ends of said first guide grooves, and a recess is formed in said rear portion, and said rear portion includes a second air flow passage formed through an interior of said rear portion and includes a second locking groove formed on an outer periphery of said rear portion, and a diameter of said rear portion is larger than a diameter of said front portion, and a first shoulder is formed between said front portion and said rear portion, said first air flow passage is pneumatically connected with said second air flow passage, and a diameter of said second air flow passage is larger than a diameter of said first air flow passage;
(b) a second auxiliary brush for complementing a cleaning function of a main brush, said second auxiliary brush being adapted to clean an indented surface of predetermined woven goods and being slideably mounted on said front portion, said second auxiliary brush including a first semi-circle shaped portion and a second semi-circle shaped portion which are separated from each other, in which said first semi-circle shaped portion includes a third locking groove formed on an outer periphery of said first semi-circle shaped portion, and includes a plurality of first prominences and depressions formed at an inner lower portion of said first semi-circle shaped portion, and includes a plurality of first taper portions formed at an end of said first semi-circle shaped portion, and said second semi-circle shaped portion includes a plurality of second prominences and depressions formed at an inner lower portion of said second semi-circle shaped portion, and includes a plurality of second taper portions formed at an end of said second semi-circle shaped portion, and a first cut-off portion is formed between said first taper portions, and a second cut-off portion is formed between said second taper portions, and a second shoulder is formed at a lower portion of said first taper portion, and a third shoulder is formed at a lower portion of said second taper portion, and said first semi-circle shaped portion includes a plurality of second protrusions formed on an inner periphery of said first semi-circle shaped portion and extending in the longitudinal direction of said first semi-circle shaped portion, and includes a plurality of second locking protrusions formed on an inner periphery of said first taper portion and protruding in the inward direction, and said second semi-circle shaped portion includes a plurality of third protrusions formed on an inner periphery of said second semi-circle shaped portion and extending in the longitudinal direction of said second semi-circle shaped portion, and includes a plurality of third locking protrusions formed on an inner periphery of said second taper portion and protruding in the inward direction; and
(c) a third auxiliary brush for complementing a cleaning function of a main brush, said third auxiliary brush being adapted to clean a recessed surface and being slideably selectively mounted on said first auxiliary brush or said second auxiliary brush, said third auxiliary brush including a plurality of hairs attached to an end thereof, and including a first locking protrusion formed on an inner periphery of said third auxiliary brush and extending in the inward direction, in which said first locking protrusion is inserted into said second locking groove when said third auxiliary brush is slideably positioned on said first auxiliary brush, and said first locking protrusion is inserted into said third locking groove when said third auxiliary brush is slideably positioned on said second auxiliary brush.



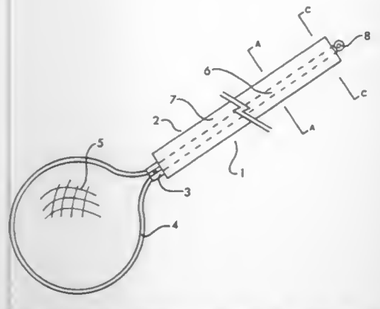
5,826,302
ROLLER-HOLDING FITTING FOR HOLDING THE ROLLER OF A ROLLER PULL-OUT GUIDE AT A DRAWER
Horst Lautenschläger, Reinheim, Germany, assignor to MEPLA-Werke Lautenschläger GmbH & Co.KG, Germany
Filed Jun. 4, 1997, Ser. No. 868,754
Int. Cl.[6] A47H *15/00*
U.S. Cl. 16—97 **14 Claims**



1. A fitting for holding, within a carcass, a roller of a roller pull-out guide in a position below the bottom and next to a side wall of an associated drawer, the side wall of which protrudes over the underside of the bottom and where the longitudinal edges of the bottom of the drawer are held in grooves in associated side walls of the drawer, said fitting comprising:
a panel-shaped supporting flange section fastenable in horizontal abutment to the underside of the drawer bottom,
a bearing flange section on which the roller is rotatably mounted, said bearing flange section protruding downward and at a right angle from the supporting flange,
at least one matching flange section for placement against the inner surface of the drawer side wall that extends below the bottom of the drawer, the matching flange section protruding downward and at a right angle from the supporting flange section in the same direction as the bearing flange section, said matching flange section being spaced apart from and parallel to the bearing flange section, and
at least one tab-like shoulder for insertion into an associated groove in the associated drawer side wall which accommodates the bottom of the drawer, said shoulder extending from and in alignment with the supporting flange section in a direction towards the associated drawer side wall.

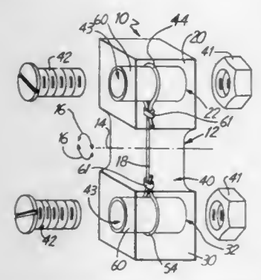
5,826,303
FLEXIBLE CABLE AND DIPNET
K. Craige Kellett, RR# 1 Minden, Ontario, Canada, K0M 2K0
Filed Aug. 2, 1996, Ser. No. 691,374
Int. Cl.[6] A47B *95/02*
U.S. Cl. 16—110 R **7 Claims**

1. A semi-rigid flexible shaft having increased buoyancy and decreased susceptibility to kinking, said shaft comprising:
a core formed of a bonded fibreglass rod;
a buoyancy layer disposed around said core and formed of a foamed plastic material;
a thin aluminum shell swage formed onto the outer surface of the buoyancy layer; and
a thin outer plastic jacket disposed on the exterior of said shell;



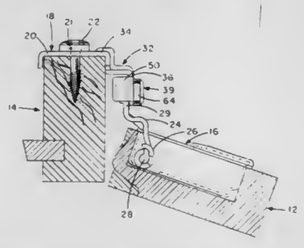
wherein the relative diameters of the core, the buoyancy layer, and the shell thickness are predeterminedly selected with respect to each other.

5,826,304
COMPOSITE FLEXURE UNIT
J. Martin Carlson, 6005 Kellogg Ave., Edina, Minn. 55424
Continuation of Ser. No. 529,706, Sep. 18, 1995, abandoned, which is a continuation of Ser. No. 286,694, Aug. 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 103,197, Aug. 6, 1993, abandoned. This application Jul. 23, 1997, Ser. No. 899,010
Int. Cl.[6] E05D *1/00*
U.S. Cl. 16—225 **10 Claims**



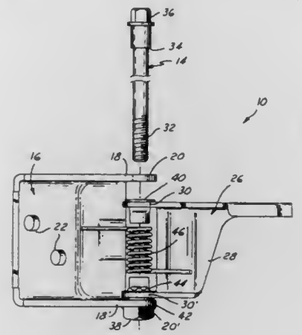
1. A composite flexure unit for hingedly joining two relatively movable parts together about a hinging axis comprising, a first part having a first edge, a second part having a second edge adjacent the first edge;
the flexure unit comprising:
a flexure member comprising a first material having low modulus of elasticity properties so as to permit flexing about the hinging axis, the flexure including a first end portion having a first mounting portion therein for mounting a first end of the flexure to the first part, a second end portion of the flexure member having a second mounting portion therein for mounting a second end of the flexure member to the second part, and a third portion of the flexure member connecting the first portion to the second portion, the flexure member providing the hinging axis passing through the third portion of the flexure member which is substantially between the edges of the first and second relatively moving parts on which the flexure is mounted; and
a load bearing element comprising a second material having a modulus of elasticity substantially greater than the first material coupled to the mounting portions of the flexure element and carrying tension loads between the mounting portions and being selected in cross sectional size to bend about the hinging axis without significantly increasing flexion stiffness about the hinging axis, the load bearing element comprising a multi-strand element formed of fiber wrapped around and extending between first and second end sleeves forming the first and second mounting portions to form two multi-strand lengths of fibers, the fibers being of a material having a low coefficient of friction, and the fibers on the multistrand lengths being free to slide relative to one another, and being operable with the flexure member to carry tension loading between the first and second mounting portions.

5,826,305
FURNITURE HINGE
Georg Domenig, and Andreas Moser, both of Kernersville, N.C., assignors to Grass America, Inc., Kernersville, N.C.
Filed Jun. 17, 1997, Ser. No. 877,545
Int. Cl.[6] E05D *7/04*
U.S. Cl. 16—235 **7 Claims**



1. A hinge for mounting a door on a frame of a furniture article, comprising:
a first hinge member adapted to be affixed to the furniture door;
a first hinge arm segment having a rearward end portion pivoted to the first hinge member on a pivot axis and having a forward end portion on which is formed a first adjustment plate, the rearward and forward end portions and the first adjustment plate of the forward end portion of the first hinge arm segment being formed as one piece;
a second hinge member adapted to be fastened to the furniture article frame;
a second hinge arm segment having a rearward end portion extending from the second hinge member, the second hinge member and second hinge arm segment being formed as one piece, and the second hinge arm segment having a forward end portion on which is formed a second adjustment plate;
the first and second hinge arm segments being connected to one another by screw means cooperating with the respective adjustment plates, one of the first and second adjustment plates, including positioning, means aligning the first and second adjustment plates on one another, and one of the first and second adjustment plates, including adjustment, means cooperating with the screw means to enable limited adjustment of the first and second adjustment plates in relation to one another;
said adjustment means comprising an open ended elongated slot formed in the second adjustment plate through which the screw means extends and which cooperates with the screw means to permit movement of the first and second adjustment plates in relation to one another; and
said first adjustment plate having portions defining a threaded opening, and wherein said screw means comprises a headed screw with a threaded shaft portion which is received in said threaded opening.

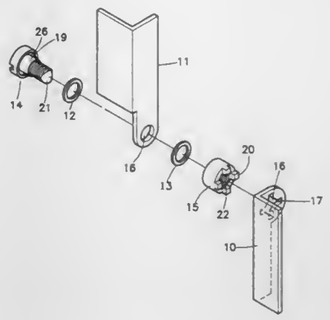
5,826,306
SLIDING DOOR CENTER ADJUSTABLE HINGE
Robert J. Faubert, Rochester Hills, and Richard C. Kapes, Sbelby Township, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.
Filed Oct. 28, 1997, Ser. No. 958,835
Int. Cl.[6] E05D *7/04*
U.S. Cl. 16—244 **9 Claims**



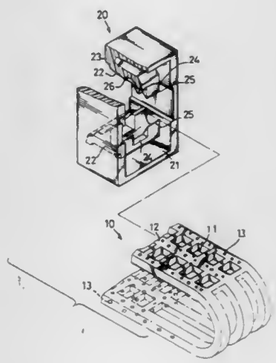
1. An adjustable hinge comprising:
a first hinge member having a pair of spaced walls with aligned hinge pin receiving apertures,
a second hinge member including a bracket received between the spaced walls with predetermined clearance for vertical motion therebetween, said bracket including hinge pin receiving apertures aligned with the apertures of said spaced walls, and
a hinge pin received in said apertures and including a threaded shank, a shoulder and a head engageable for rotation of the pin,
an internally threaded element fixed to one of said first and second hinge members and engaged by said threaded shank of the hinge pin, and an axial abutment on the other of said hinge members and engaged by the shoulder of the hinge pin so as to movably support one of said hinge members on another of the hinge members,
whereby rotation of the hinge pin by engagement of the head axially adjusts the position of the hinge pin in the threaded element and thereby moves the movably supported hinge member vertically relative to the supporting hinge member.

5,826,307
ROTATING SPINDLE MECHANISM
Horng Chin-Fu, 5F, No. 2, Alley 6, Lane 36, Tsu-Hsiu Rd., Tai Shan, Taipei Hsien, Taiwan
Filed Jun. 17, 1997, Ser. No. 877,176
Int. Cl.[6] E05C *17/64*
U.S. Cl. 16—340 **6 Claims**

1. A rotating spindle mechanism comprising:
a first fixed plate having a first spindle hole formed therethrough adjacent one end thereof, said first fixed plate having at least one rivet hole formed therethrough and extending from a perimeter edge of said first spindle hole;
a second fixed plate having a second spindle hole formed therethrough adjacent one end thereof and disposed in aligned relationship with said first fixed plate;
a screw having (a) a head end portion, (b) a spindle body portion extending from said head end portion and passing through said second spindle hole, and (c) a threaded portion extending from said spindle body portion;
a pair of washers disposed on said spindle body portion on opposing sides of said second fixing plate; and,
a sleeve having at least one rivet block formed on a first longitudinal end thereof and received in said at least one rivet hole of said first fixed plate and riveted thereto, said sleeve having an internally threaded bore extending longitudinally therethrough for threaded engagement with said threaded portion of said screw, said screw having a distal end of said threaded portion riveted to said sleeve, wherein said second spindle plate is rotatively displaceable on said spindle body portion of said screw.

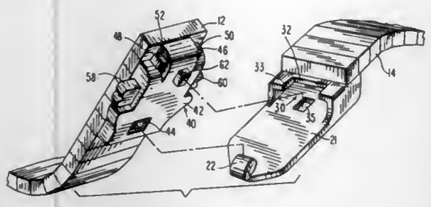


5,826,308
BUNDLING STRAP ASSEMBLY
Kun-sheng Chang, No. 25, Lane 59, Chungcheng Rd., Luchou Hsiang, Taipei Hsien, Taiwan
Filed Jul. 3, 1996, Ser. No. 675,617
Int. Cl.[6] B65D *63/00*
U.S. Cl. 24—16 PB **2 Claims**



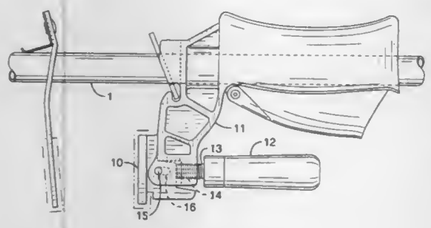
1. A bundling strap assembly comprising:
a strap for surrounding articles to be packed, the strap having two rows of through holes defined along a longitudinal direction of the strap, a reinforcement rib formed between the two rows of the through holes and a plurality of bosses formed on two major sides of the strap either of which may be in contact with the articles to be packed; and
a buckling means for securing the strap, the buckling means having a central through opening defined therein and two latching elements resiliently and respectively connected to two opposite inner faces defining the through opening, wherein each of the two latching elements is connected to the corresponding inner face at one end thereof and has two rows of single direction teeth protruding inward from an inner surface thereof to be received in the through holes of the strap.

5,826,309
JEWELRY SAFETY CLASP
Anton Tsamas, 408 Kaplan Ave., Hackensack, N.J. 07601
Filed Sep. 19, 1997, Ser. No. 934,271
Int. Cl.[6] A44B *17/00;11/00*
U.S. Cl. 24—68 J 8 Claims



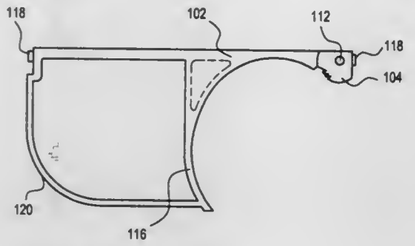
1. A jewelry safety clasp comprising: a hook member, a hook disposed on said hook member; a housing member, said housing member including a hole formed therein for receiving said hook and adapted to allow said hook member to pivot about said hook when said hook is received by said hole; at least one foot disposed in said housing member capable of movement between a first position corresponding to being retracted within the housing member and a second position corresponding to extending outside of the housing member; a foot receiving portion disposed on said hook member for receiving said foot and selectively retaining said foot therein to prevent disengagement of said hook member from said housing member when said foot is in the second position.

5,826,310
BAR CLAMP APPARATUS
Harold W. Hobday, Galt, Calif., assignor to Hobday Clamp Company, Pleasanton, Calif.
Filed Sep. 30, 1997, Ser. No. 940,647
Int. Cl.[6] A44B *21/00;* B25B *5/00*
U.S. Cl. 24—514 1 Claim



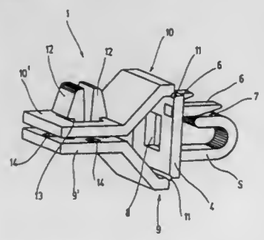
1. A bar clamp apparatus, comprising:
(a) a first jaw and a second jaw, said first jaw opposing said second jaw;
(b) a handle member, said handle member including a first bore and a second bore, said first jaw slidably mounted to said handle member adjacent said second bore;
(c) a bar, said bar attached to said second jaw, said bar slidably engaged within said first bore of said handle member;
(d) actuating means for incrementally moving or advancing said handle member along said bar towards said second jaw;
(e) braking means to prevent retracting of said handle member along said bar; and
(f) a knob, said knob threadably engaged within said second bore, said knob capable of slidably moving said first jaw relative to said handle member.

5,826,311
PLASTIC INJECTION MOLDED ADJUSTABLE ARM ASSEMBLY HAVING A MANUALLY RELEASABLE POSITIVE LOCKING MECHANISM
Douglas A. Henricksen, 938 99th Circle NE, Blaine, Minn. 55434
Filed Oct. 23, 1996, Ser. No. 735,457
Int. Cl.[6] A44B *21/00*
U.S. Cl. 24—518 4 Claims



1. An arm assembly, comprising:
a base;
a detent wheel coupled to said base and having a plurality of detents;
an arm movably attached to said base; and
a locking mechanism integrally molded as part of said arm, said locking mechanism including a lever and a resilient fulcrum attaching said lever to said arm, said lever having a first portion extending in one direction out from said fulcrum, and a second portion extending in the opposite direction from said fulcrum, the free end of said first portion of said lever having a pawl for engaging one of said detents in said detent wheel to lock the arm in one of a plurality of positions, wherein the application of force to the free end of said second portion of said lever causes said pawl to disengage from said one of said detents, thereby unlocking said arm and permitting said arm to be moved to a new position, and wherein said locking mechanism prevents both clockwise and counter-clockwise rotation of said arm when said pawl is engaged in one of said detents.

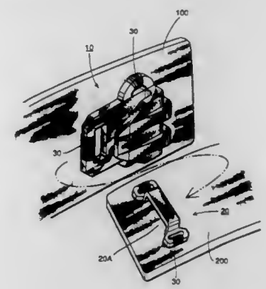
5,826,312
DEVICE FOR CONNECTING THE EDGE REGION OF A COVERING MATERIAL FOR VEHICLE SEAT UPHOLSTERY TO A MOUNTING
Wilhelm Schröder, St. Julian; Ralf Nolte, Enkenbach-Alsenborn, and Wolfgang Pluta, Imsweiler, all of Germany, assignors to Lear Corporation, Southfield, Mich.
Filed Oct. 28, 1997, Ser. No. 959,510
Int. Cl.[6] A47C *31/02;* B68G *7/12*
U.S. Cl. 24—601.2 13 Claims

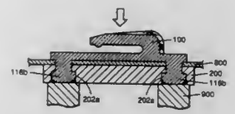


1. A device for connecting the edge region of a covering material for vehicle seat upholstery to a mounting, comprising:
a) a central piece on one side of which means provided for making a connection with the mounting,

b) an articulated zone along each of two opposite edges of the central piece,
c) two side pieces which are pivotally connected with the central piece via one or the other articulated zone and form arms of a clip which can be laid on the one or other side of the edge region of the covering material, which is to be grasped, and
d) at least one spring-like snap-in element, which protrudes form the surface of the one arm facing the other arm and is capable of penetrating the covering material and engaging in a snap-in aperture of the other arm.

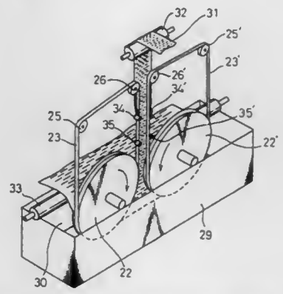
5,826,313
RETAINING DEVICE FOR CLOTHES
Morio Ishizaki, Hyogo, Japan, assignor to Ishizaki Press Kogyo Co., Ltd., Hyogo, Japan
Filed Jan. 6, 1997, Ser. No. 779,187
Claims priority, application Japan, Jan. 22, 1996, 8-000120 U; Nov. 8, 1996, 8-011375 U
Int. Cl.[6] A44B *13/00*
U.S. Cl. 24—694 18 Claims





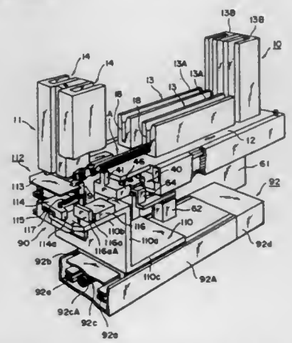
1. A retaining device for clothes attached to clothes for keeping said clothes fit on one's body, including a receiving member attached to one end of said clothes and forming an opening together with said clothes, and an inserting member attached to the other end of said clothes for engaging said one and the other ends of said clothes when inserted to said opening, wherein
said inserting member is formed of a plastic material and includes
a base plate attached to said clothes,
an inserting plate having a vertical portion extending vertically from said base plate at one end of said base plate, a bent portion bent in a direction parallel to said base plate from said vertical portion, and a parallel portion extending parallel to said base plate from said bent portion, forming, together with said base plate, a space for receiving said receiving member,
a convex portion provided on an inner surface of said parallel portion of said inserting plate opposing to said base plate, serving as a stop for said receiving member in disengaging direction, for preventing said receiving member from slipping out from said space, and
a rib provided protruding outward on an outer surface of said inserting plate to suppress deflection of said inserting plate.

5,826,314
DEVICE FOR TRANSVERSELY STRETCHING WEB
Kintaro Aihara, Chiba; Kazuhiko Kurihara, Itabashi-ku, and Hiroshi Yazawa, Kunitachi, all of Japan, assignors to Nippon Petrochemicals Company, Limited, and Polymer Processing Research Inst., Ltd., both of Tokyo, Japan
PCT No. PCT/JP95/02772, § 371 Date Dec. 3, 1997, § 102(e) Date Dec. 3, 1997, PCT Pub. No. WO97/24216, PCT Pub. Date Jul. 10, 1997
PCT Filed Dec. 28, 1995, Ser. No. 894,726
Claims priority, application Japan, Jul. 1, 1994, 6-150884
Int. Cl.[6] D06C *3/06*
U.S. Cl. 26—88 5 Claims



1. A device for transversely stretching a web, said device comprising a pair of pulleys arranged in the substantially same plane and rotating in the opposite directions to each other, and a pair of belts running around the pulleys, respectively, wherein the web is widthwise stretched, by gripping opposite side edges thereof by said pulleys and said belts and conveying the web in a divergent manner characterized in that at least one pair of pressing rolls are provided at an inclination relative to the belts for pressing the side edges of the web onto the belts prior to being gripped between the pulleys and the belts.

5,826,315
FLAT HEALD/DROPPER-DRAWING/SEPARATING METHOD AND APPARATUS
Kazunori Kuroyanagi, Inasa-gun, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed May 8, 1997, Ser. No. 848,404
Claims priority, application Japan, May 8, 1996, 8-113791; May 8, 1996, 8-113809
Int. Cl.[6] D03J *1/14*
U.S. Cl. 28—206 20 Claims



1. A flat heald drawing method of drawing an arbitrary flat heald out of a plurality of juxtaposed magnetic flat healds, each having two guide holes, comprising the steps of:

inserting a drawing pin of a magnetic head into the guide hole of a front-side ring portion of a lowermost flat heald while the flat healds are stacked vertically;
magnetically attracting the front-side ring portion of the lowermost flat heald to a tip end portion of said magnetic head;
moving said magnetic head horizontally: and
drawing the lowermost flat heald while hooking the flat heald on said drawing pin.

5,826,316

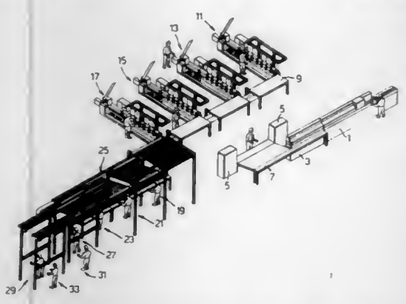
Patent Not Issued For This Number

5,826,317

SYSTEM FOR MANUFACTURING BLINDS

Peter van Oostrom, Tiel; Carl A. Knikkenberg, Bruinisse; John Peter Prins, Nieuw Vossemeer; Adri Steffen, Oud Vossemer, all of Netherlands; Reine Larsson, Hjäteby, Sweden; Peter Berntsson, Varekil, Sweden, and Peter Gawell, Jörlanda, Sweden, assignors to Hunter Douglas International N.V., Netherlands Antilles

Filed Dec. 12, 1996, Ser. No. 764,358
Claims priority, application European Pat. Off., Dec. 14, 1995, 95203476
Int. Cl.[6] B23P *19/04*
U.S. Cl. 29—24.5 **46 Claims**



1. System for manufacturing blinds, said system comprising a processor unit, at least one manufacturing facility for carrying out a manufacturing step and a communication device for exchanging data between the processor unit and said at least one manufacturing facility, characterized in that the processor unit is adapted to generate data for controlling the system taking into account an order portfolio and at least one parameter from said at least one manufacturing facility.

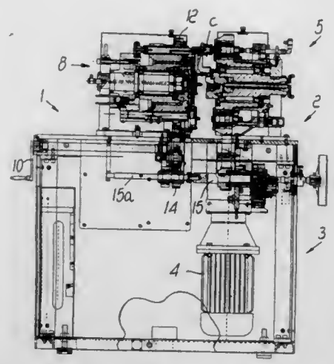
5,826,318

FAST FEEDER UNIT FOR AN AUTOMATIC MACHINE FOR MACHINING THE CYLINDRICAL SURFACE OF BOTTLE CLOSURE CAPS

Loretto Sullalti, Imola, Italy, assignor to Sacmi Cooperativa Meccanici Imola S.c.r.l., Imola, Italy

Filed Jun. 7, 1996, Ser. No. 660,356
Claims priority, application Italy, Jun. 20, 1995, B095 A 000312
Int. Cl.[6] B23Q *7/02;* **B65D** *41/34*
U.S. Cl. 29—38 B **8 Claims**

1. A fast feeder unit for an automatic machine for machining the cylindrical surface of bottle closure caps, comprising a continuously rotatable carousel whereon a plurality of annularly distributed chucks is rotatably mounted so as to rotate about an axis of



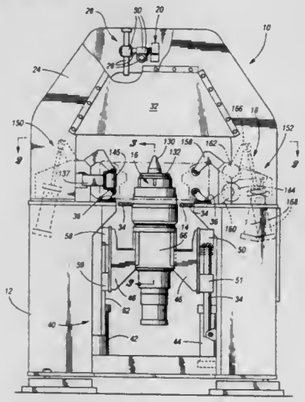
the machine, the caps to be machined being fitted on said chucks, said unit comprising: a feeder carousel; means for supporting and rotationally actuating said feeder carousel coaxially and in step with said rotatable carousel of the machine; a plurality of axially slidable stems being mounted on said feeder carousel; respective half-shells arranged on said feeder carousel, at said sliding stems, for supporting the caps, said stems directing said half-shells towards said chucks; respective axial translatory motion means for actuating said sliding stems so as to move the half-shells from a position that is spaced from the chucks and co-planar to an opening of a fixed guide for feeding the caps to be machined and to an opening of a fixed guide for removing the machined caps, to a position for fitting a cap on the chuck and a position for removing the cap from the chuck.

5,826,319

METHOD FOR MATCHMOUNTING AN UNIFLATED AUTOMOBILE TIRE ON A WHEEL

Dean A. Colwell, Chesterfield Township, and Paul George Doan, Warren, both of Mich., assignors to Fori Automation, Inc., Shelby Township, Mich.

Filed May 29, 1996, Ser. No. 654,645
Int. Cl.[6] B23Q *17/00*
U.S. Cl. 29—407.04 **19 Claims**



12. A method of orienting an uninflated tire relative to a wheel upon which the tire is mounted, wherein the tire includes a tire mark representative of a characteristic of the tire and the wheel includes a wheel mark representative of a characteristic of the wheel, the method comprising the steps of:
(a) determining the spatial location of said tire mark,

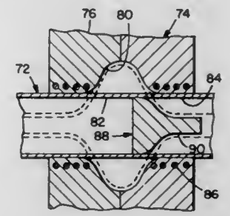
(b) determining the spatial location of said wheel mark,
(c) generating data indicative of a rectilinear relationship between said spatial locations, and
(d) rotating the wheel with respect to the tire in accordance with said data until said tire and wheel marks achieve a preselected relative orientation.

5,826,320

ELECTROMAGNETICALLY FORMING A TUBULAR WORKPIECE

John Rathke, Centerport; Elvin Charles Burger, New York; Edward M. Peterson, Syosset, and Christopher J. Horan, Huntington, all of N.Y., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jan. 8, 1997, Ser. No. 780,498
Int. Cl.[6] B23P *17/00*
U.S. Cl. 29—419.2 **6 Claims**



1. A process for electromagnetic forming of an elongated tubular metallic workpiece having a longitudinal axis into a product having a complex outer shape comprising the steps of:
(a) providing a workcoil connected to an energizing source;
(b) surrounding the workpiece with the workcoil of step (a);
(c) positioning a forming mandrel including an outer surface having a desired outer contour within the workpiece;
(d) energizing the workcoil so that an electromagnetic force is applied radially of the longitudinal axis of the work-piece such that the workpiece conformingly engages the outer contoured surface of the forming mandrel and thereby assumes the contoured shape of the forming mandrel; and
(e) simultaneously with step (d), applying an axial compressive force to the workpiece.

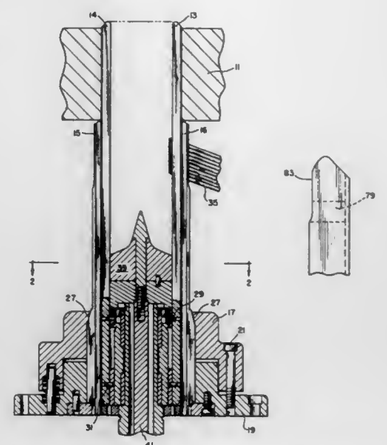
5,826,321

COIL INSERTING TOOLING WITH QUICK RELEASE COLLET

Timothy K. Pease, Kendallville, Ind., assignor to RMT, Inc., Huntertown, Ind.

Continuation of Ser. No. 202,762, Feb. 28, 1994, abandoned. This application Jan. 16, 1996, Ser. No. 586,585
Int. Cl.[6] B23P *17/00;* **H02K** *15/06*
U.S. Cl. 29—426.1 **4 Claims**

1. In coil placing tooling having a rigid annular collet having a fluted inner periphery with a plurality of lands and intervening grooves with the lands adapted to be aligned with and engage corresponding wedge guides to thereby maintain said wedge guides and blades axially and radially in position, the method of removing selected ones of said wedge guides comprising releasing the collet for limited angular displacement relative to said wedge guides and blades, rotating the collet to a position where the selected ones of said wedge guides are radially aligned with corresponding intervening grooves and freed axially and radially



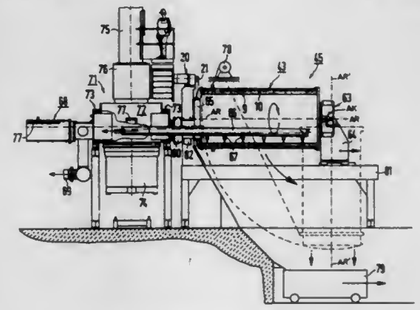
for ready removal, and removing the freed selected ones of said wedge guides.

5,826,322

PROCESS AND APPARATUS FOR THE PRODUCTION OF PARTICLES FROM CASTINGS WHICH HAVE SOLIDIFIED IN AN ORIENTED MANNER

Franz Hugo, Aschaffenburg; Hans-Johann Kemmer, Rödermark; Bernd Sitzmann, Maintal, and Michael Protzmann, Wächtersbach, all of Germany, assignors to ALD Vacuum Technologies GmbH, Eriensee, Germany

Filed Jul. 22, 1996, Ser. No. 681,014
Claims priority, application Germany, Aug. 2, 1995, 195 28 291.4
Int. Cl.[6] B22D *11/126;13/04;9/04;* **B22E** *9/04*
U.S. Cl. 29—527.5 **25 Claims**



1. Process for the production of particles from castings, said process comprising
providing a melt of metal selected from the group consisting of the lanthanides, aluminum, boron, chromium, iron, calcium, magnesium, manganese, nickel, niobium, cobalt, titanium, vanadium, zirconium, and alloys thereof,
providing an inward facing at least substantially cylindrical cooling surface having a central axis of rotation and a diameter of at least 200 mm,
rotating said cooling surface about said axis of rotation,
applying said melt to said cooling surface during rotation in a nonreactive atmosphere so that a casting forms by the principle of centrifugal casting with cooling causing an essentially

radial direction of solidification from the cooling surface toward the axis, and casting having a maximum radial-direction thickness no greater than 10% of said diameter,
removing the solidified casting from said cooling surface, and
grinding said casting to powder particles, and
said metal of the melt being selected so that the casting therefrom is brittle enough to be crushed into powder and so that the powder from the casting is suitable for use as a magnetic material, a hydrogen accumulator, or a battery electrode.

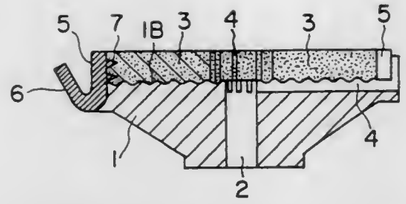
5,826,323
METHOD OF MAKING A HEIGHT COMPENSATED LAMINAR STACK
Harry J. Walters, Pittsburgh, Pa., assignor to Oberg Industries, Inc., Freeport, Pa.
Continuation-in-part of Ser. No. 782,985, Jan. 14, 1997. This application May 6, 1997, Ser. No. 852,017
Int. Cl.[6] H02K *15/04*
U.S. Cl. 29—593 **7 Claims**



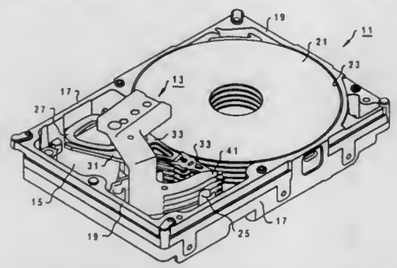
1. A method of manufacturing laminated parts from a plurality of laminas, wherein the laminas for forming a laminated part are blanked from strip stock material and are then stacked to form the laminated part, the method comprising the steps of:
(a) providing a desired stack height value;
(b) measuring a value of thickness of said strip stock;
(c) deriving an integer number of laminations by dividing the desired stack height value by the thickness value to provide a number of laminations to form the laminated part;
(d) computing an actual stack height value by multiplying the thickness value of step (b) by the integer number of laminations in step (c);
(e) subtracting the actual stack height value of step (d) from the desired stack height value of step (a) to provide a difference value;
(f) providing a predetermined protuberance height;
(g) dividing the difference value of step (e) by the protuberance height to provide a number of compensated laminations; and
(h) providing a protuberance, upon selected sections of said strip stock at the number of compensated laminations to provide a laminated part substantially equivalent to the desired stack height value.

5,826,324
METHOD OF MANUFACTURING FLAT-TYPE COMMUTATOR
Toru Abe, Chigasaki; Yuzuru Yoshida, Yamato; Mitsuhiko Yamaguchi, Fujisawa; Masakazu Suwa, Machida, and Shinya Ashimura, Chigasaki, all of Japan, assignors to Aupac Co., Ltd., Kanagawa, Japan
Filed Dec. 29, 1995, Ser. No. 580,643
Int. Cl.[6] H01R *43/06*
U.S. Cl. 29—597 **6 Claims**

1. A method for manufacturing a flat type commutator comprising the steps of:
providing a pre-formed annular member (5A) made of a metal web, for acting as a mold to shape an outer periphery of a commutator part, wherein said pre-formed annular member (5A) includes inner and outer side walls;
providing a mold-shaped electrically insulating support (1);
inserting lower portions of said inner and outer side walls of said pre-formed annular member (5A) along a peripheral edge of said electrically insulating support (1) so that upper portions of said inner and outer side walls of said pre-formed annular member (5A) extend perpendicularly upwardly from an upper surface of said electrically insulating support (1) to form a recess between said inner side wall of said annular member (5A) and said upper surface of said electrically insulating support (1), wherein said lower portion of said inner side wall of said pre-formed annular member (5A) is embedded in said electrically insulating support (1) so that said recess can be filled and said inner side wall of said pre-formed annular member (5A) and an upper surface of said electrically insulating support (1) act as a mold for forming said commutator part;
providing a material to said recess to form said commutator part of said commutator;
allowing said material, which consists principally of graphite, to fill and conform to said recess formed by said upper surface of said electrically insulating support (1) and said inner side wall of said annular member (5A);
pressed powder shaping and heating said material in said recess to form said commutator part so that said material provided to fill said recess solidifies in a shape of said recess; and
forming insulating slits (4) in said commutator part and said annular member (5A) so that said insulating slits (4) are formed through a thickness of said commutator part to divide said commutator part into a plurality of commutator fragments (3).

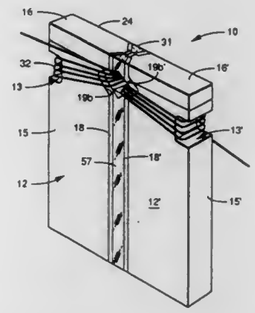


5,826,325
METHOD OF MERGING HEADS
Kirk B. Price; Brad J. Kriebn, both of San Jose; Roy J. Flowers, Gilroy; Brad V. Johnson, Santa Clara, all of Calif., and Eric Eckberg, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jul. 10, 1997, Ser. No. 890,897
Int. Cl.[6] G11B *5/42*
U.S. Cl. 29—603.03 **10 Claims**



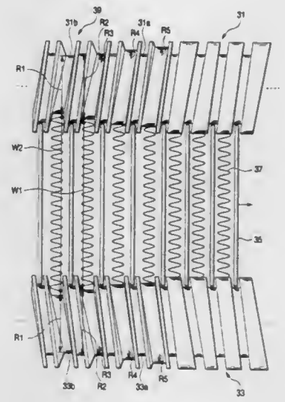
1. A method for merging heads on an actuator onto the disks of a hard disk drive file having a home latch, a flexible cable and a tub-type base with side walls and a floor, comprising:
(a) inserting a head merge tool having a merge comb with fingers into the base at a home position wherein the merge comb is free of contact with the actuator, side walls and floor;
(b) engaging the head merge tool to the file so that the merge comb is secured from axial movement and is free to rotate relative to the actuator;
(c) rotating the merge comb relative to the actuator so that the fingers contact and engage the actuator;
(d) further rotating the merge comb until the actuator is positioned at an inner diameter of the disks wherein a lowermost finger of the merge comb is located below a lowermost disk and above the floor of the base;
(e) capturing the actuator with the home latch to secure the actuator from movement;
(f) retracting the merge comb to the home position;
(g) disengaging the head merge tool from the file; and then
(h) removing the merge comb from the file.

5,826,326
METHOD FOR MANUFACTURING A COMPOSITE METAL AND FERRITE HEAD TRANSDUCER
Beverley R. Gooch, Sunnyvale, and Rex Niedermeyer, Newark, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.
Division of Ser. No. 287,459, Aug. 8, 1994, which is a continuation-in-part of Ser. No. 916,321, Jul. 17, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,522
Int. Cl.[6] H01F *7/06*
U.S. Cl. 29—603.13 **14 Claims**



1. A method of fabricating magnetic transducers for reproducing and/or recording high frequency signals with a magnetic medium, said method including the fabricating of a workpiece, comprising the steps of:
forming a first generally block-shaped piece of magnetic material;
forming a second generally block-shaped piece of non-magnetic material;
bonding said first piece to said second piece to form a block-shaped composite substrate having a first surface formed substantially of said non-magnetic material and a second mutually perpendicular surface;
forming a second block-shaped composite substrate of a first magnetic material piece and a second non-magnetic material, piece bonded together and including first and second surfaces in respective generally perpendicular relation;
shaping a winding groove in said second surface of one of the composite substrates on a line generally parallel to and proximate said first surface;
locating the winding groove relative to the first surface such that the winding groove extends slightly into one of the non-magnetic material pieces to define a depth of a front gap between the facing second surfaces of the non-magnetic material pieces;
shaping a plurality of equally spaced generally similar grooves in said second surface of one of the composite substrates in a direction generally perpendicular to said winding groove to provide a plurality of lands intermediate said spaced grooves;
depositing a thin layer of high permeability magnetic material on at least said plurality of lands, to confine a gap layer between the thin layer of each land and the facing second surface of the abutting composite substrate;
bonding together the first and second composite substrate with the second surfaces thereof in facing abutting relationship, to define said workpiece;
said workpiece forming a matrix of transducer blanks which, when separated by slicing, form transducers each having signal coil means disposed through said winding groove; and
selecting said non-magnetic material from the group consisting of alumina, silicon dioxide and ceramics, wherein the group includes Zirconia of optimum fracture toughness property.

5,826,327
TEMPORARY ASSEMBLING UNIT FOR HEAT EXCHANGER CORE
Hiroyasu Koizumi, and Hisashi Onuki, both of Tokyo, Japan, assignors to Calsonic Corporation, Tokyo, Japan
Filed Mar. 26, 1997, Ser. No. 824,464
Int. Cl.[6] B23P *15/26*
U.S. Cl. 29—726 **2 Claims**



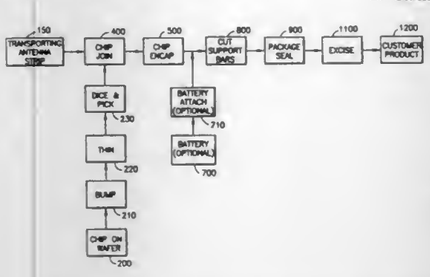
1. A temporary assembling unit for a heat exchanger core including a pair of parallel feed shafts placed facing each other in a predetermined spacing, comprising:
spiral tube guide grooves for guiding ends of a tube of the heat exchanger, and
spiral fin guide parts for guiding ends of a corrugated fin of the heat exchanger, the spiral fin guide parts being disposed between said tube guide grooves;
wherein an outer diameter of said fin guide part positioned in a supply section of the corrugated fin is smaller than an outer diameter of said tube guide groove.

VOL 1215 ISS 4 OCT 27 1998 UMI

5,826,328
METHOD OF MAKING A THIN RADIO FREQUENCY TRANSPONDER

Michael J. Brady, Brewster; Pedro A. Chalco, Yorktown Heights, both of N.Y.; Francois Guindon, Stukely sud, Canada; Paul Andrew Moskowitz, Yorktown Heights, N.Y., and Philip Murphy, New Fairfield, Conn., assignors to International Business Machines, Armonk, N.Y.

Filed Mar. 25, 1996, Ser. No. 621,385
Int. Cl.[6] H01R *43/00*
U.S. Cl. 29—827 **27 Claims**



1. A method of making a Radio Frequency (RF) tag, comprising the steps of:

forming a leadframe in which one or more conductors in the leadframe form an operative antenna;

joining a circuit chip directly to the leadframe by electrically connecting one or more connectors on the circuit chip directly to the operative antenna formed in the leadframe without any further antenna being connected to the circuit chip or to the operative antenna formed in the leadframe;

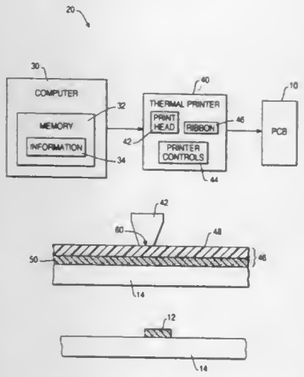
covering the circuit chip and operative antenna formed in the leadframe; and

cutting out the circuit chip along with the connected operative antenna formed in the leadframe.

5,826,329
METHOD OF MAKING PRINTED CIRCUIT BOARD USING THERMAL TRANSFER TECHNIQUES

Joseph D. Roth, Springboro, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 19, 1995, Ser. No. 574,734
Int. Cl.[6] H05K *3/12;3/46*
U.S. Cl. 29—846 **14 Claims**



1. A method of printing electrically conductive traces on a receiver board comprising the steps of:

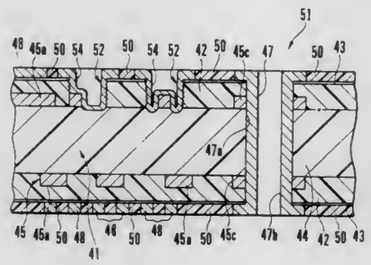
positioning a ribbon having a thermally active electrically conductive coating over a non-conductive surface of a non-conductive receiver board; and

applying heat to a portion of said ribbon causing a portion of said coating to transfer to the non-conductive surface of the non-conductive receiver board forming the electrically conductive traces on the non-conductive surface of the non-conductive receiver board.

5,826,330
METHOD OF MANUFACTURING MULTILAYER PRINTED WIRING BOARD

Satoshi Isoda; Yasuhiro Iwasaki; Kenshirou Fukuzato; Tsutomu Zama; Kōichi Noguchi; Toshiro Okamura; Hiroyoshi Yokoyama, and Youiti Matuda, all of Tochigi, Japan, assignors to Hitachi AIC Inc., Tokyo, Japan

Filed Dec. 18, 1996, Ser. No. 768,426
Claims priority, application Japan, Dec. 28, 1995, 7-343761; Jan. 22, 1996, 8-008260; Mar. 21, 1996, 8-064197; Aug. 23, 1996, 8-222281
Int. Cl.[6] H01K *3/10*
U.S. Cl. 29—852 **8 Claims**



1. A method of manufacturing a multilayer printed wiring board including an internal wiring circuit formed on a board, an insulating resin layer formed on the internal wiring circuit, a blind hole formed in the insulating resin layer and communicating with the internal wiring circuit, and a conductive portion formed on an inner wall of the blind hole and connected to the internal wiring circuit, the method comprising the steps of:

forming the blind hole by using a short-pulse CO_2 laser;

preparing at least two internal wiring circuits which are isolated from each other by an insulating layer in a direction of thickness;

forming one land portion, which has a hole formed in correspondence with the blind hole, on one of the two internal wiring circuits which is on an upper surface side;

forming the other land portion on the other internal wiring circuit on a lower surface side in correspondence with a bottom portion of the blind hole so as to have a diameter larger than that of the hole of said one land portion;

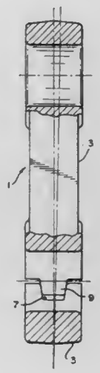
forming the blind hole by using a laser beam from a short-pulse CO_2 laser which has a diameter smaller than the diameters of the two land portions and larger than the diameter of the hole of said one land portion; and,

performing through hole plating.

5,826,331
METHOD FOR THE PRODUCTION OF A FRACTURE SPLIT CONNECTION COMPONENT

Martin R. Myers, Columbus; James W. Patten, Hope; Paul C. Becker, Bloomington; Terry M. McInerney, Columbus; Dennis P. Potter, Madison; James M. Short, South Commiskey; Paul Biggerstaff, North Vernon, and Robert Stevens, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Continuation-in-part of Ser. No. 472,773, Jun. 7, 1995, abandoned. This application Dec. 4, 1996, Ser. No. 760,574
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—888.09 **31 Claims**



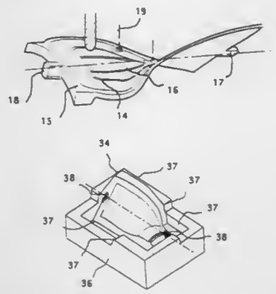
1. A method of manufacturing a component formed of parts capable of being separated for reassembly around another component comprising the steps of:

A) manufacturing a pair of separate parts;

B) bonding the two parts together along interfitting surfaces thereof to form a single part via at least one of mechanical and metallurgical means;

C) machining the resulting single part; and

D) fracturing the single part along a parting line extending along the original interfitting surfaces so as to obtain a pair of parts having two matched surfaces that need no further processing before being reassembled.



(d) depositing diffusion barriers on at least one of said primary components according to a predefined pattern;

(e) assembling said primary components to form a sandwich assembly followed by isostatic-pressure diffusion welding thereof;

(f) inflating said sandwich assembly under gas pressure and superplastic forming said assembly so as to shape said pressure face and suction face skins of the blade, and whereby said skins are separated by a central cavity and linked by welded stiffeners obtained from said central member; and,

(g) final machining;

the improvement wherein;

in steps (b) and (c) said primary components are provided with trunnion forming elements at each end, and at least two locating holes are formed in each of said components;

in step (c) said primary components are machined so as to leave spare material in localized regions of the inner faces of said skins;

step (d) comprises the steps of:

(d1) applying an organic-type mask onto at least one face of at least one of said primary components;

(d2) cutting the mask according to a predefined pattern representing the boundaries of the regions to be welded and not to be welded by means of a tool on a numerically controlled machine, adjustment of the position for cutting out the mask allowing control of the position of the welds in the regions corresponding to the junctions at the leading and trailing edges of the blade where a cavity radius is formed, as well as in the regions of the transition radius between said stiffeners and said skins;

(d3) peeling said mask from said regions which are not to be welded;

(d4) cleaning the surfaces of said at least one masked component;

(d5) depositing a coating product forming a diffusion barrier on said cleaned surfaces;

(d6) peeling the remainder of said mask from said at least one masked component;

(d7) prefiring said anti-diffusion barrier coating; and

(d8) cleaning and checking the surfaces to be welded;

in step (e) said primary components are assembled using said trunnion elements at the ends thereof and lateral positioning pins placed in said locating holes; and

in step (f), forming pressure is applied in a predetermined cycle including:

(f1) cold-debonding said primary components before starting said inflation;

(f2) closing a shaping mold around said sandwich assembly and causing said spare material provided as an overthickness around the cavity of the blade to flow before said inflation; and

(f3) after forming, extracting the blade from said mold at the forming temperature using mechanical means placing said blade under constraint.

5,826,332
METHOD AND MANUFACTURING A HOLLOW TURBOMACHINE BLADE

Mathieu Philippe Albert Bichon, Ermont; Xavier Gérard André Coudray, Fontainebleau; Alex Pierre Deblois, Fontaine Le Comte; Christophe Nicolas Marie Joseph Huon De Kermadec, Versailles; Jean-Francçois Georges Julien Lacuisse, Argenteuil, and Bruno André Rolland, Vaucresson, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, and Societe Dassault Aviation, both of Paris, France

Filed Sep. 26, 1996, Ser. No. 721,352
Claims priority, application France, Sep. 27, 1995, 95.11300
Int. Cl.[6] B23P *15/00*
U.S. Cl. 29—889.72 **11 Claims**

1. In a method of manufacturing a hollow blade for a turbomachine, particularly a large chord fan rotor blade, including the steps of:

(a) using Computer Aided Design and Manufacture (CADCAM) techniques to design the constituent components of the blade based on the definition of the blade to be obtained;

(b) using a press to forge the primary components comprising a pressure face skin, a suction face skin and at least one central member;

(c) machining said primary components;

5,826,333

METHOD OF MANUFACTURING AN INK JET HEAD

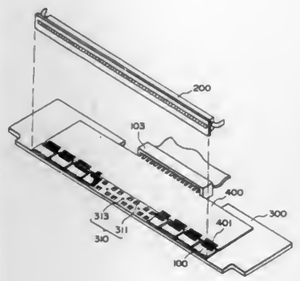
Masaru Iketani, Zama; Yutaka Koizumi, Yokohama; Toshio Kashino, Chigasaki; Selichiro Karita; Haruhiko Terai, both of Yokohama; Kouichi Omata, Kawasaki; Hiroki Tajima, Machida; Yasuhiro Sawada, Chofu, and Hiroshi Haruyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

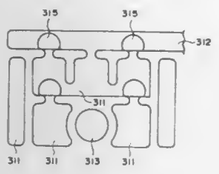
Filed Oct. 31, 1995, Ser. No. 550,648

Claims priority, application Japan, Oct. 31, 1994, 6-267057; Oct. 30, 1995, 7-281618

Int. Cl.[6] B41J *2/16*; G01D *15/18*

U.S. Cl. 29—890.1 4 Claims





1. In a method of manufacturing an ink jet head which comprises a supporting member for supporting a plurality of substrates provided with ejection energy generating elements for generating energy for ejecting ink, and a top plate mounted on the substrates that cooperates with the substrates to cover all of the substrates to form ink flow paths containing the election energy generating elements, the improvement residing in the steps of:

providing the supporting member, at a contact portion with the substrates, with a plurality of through holes and recesses for receiving a bonding agent;

closely-contacting the substrates and the contact portion of the supporting member to close the through holes and the recesses;

temporarily fixing the substrates on the supporting member by applying suction via the through holes; and

fixing the substrates on the supporting member by providing the bonding agent in the recesses.

5,826,334

BOILER TUBE REMOVAL METHOD

Bruce V. Weeks, Pataskala; Richard Arthur, New Albany, and Gary E. Ingram, Columbus, all of Ohio, assignors to Advanced Cutting Technologies, Inc., Dublin, Ohio

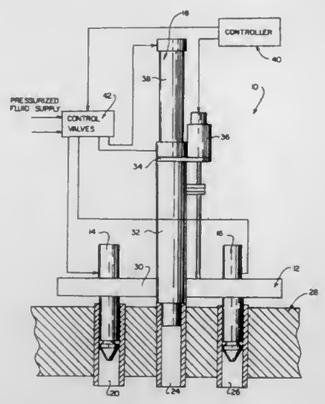
Filed Mar. 10, 1997, Ser. No. 814,093

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—890.031 3 Claims

1. In a method for removing an end-portion of a boiler tube installed and retained in a boiler header, the steps of:

cutting said boiler tube at a position exterior to and away from the boiler header thereby leaving a boiler tube end-portion retained by and projecting from the boiler header;



machining a compression gap in said retained boiler tube end-portion throughout the length and thickness of the boiler tube end-portion wall without removing material from the boiler header;

compressing the wall of said retained boiler tube end-portion projecting from the boiler header to close said machined compression gap and reduce the cross-sectional circumference of said retained boiler tube end-portion; and

subsequently longitudinally withdrawing said compressed boiler tube end-portion from co-operation with the boiler header.

5,826,335

PROCESS FOR REPAIRING HEAT EXCHANGER TUBES IN TUBE APPARATUS

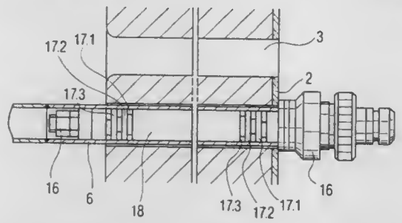
Helmut Tegethoff; Karl Struberg, and Paul Czeslik, all of Oberhausen, Germany, assignors to MAN Gutehoffnungshütte Aktiengesellschaft, Oberhausen, Germany

Filed Mar. 13, 1997, Ser. No. 816,302

Claims priority, application Germany, Mar. 14, 1996, 196 09 958.7

Int. Cl.[6] B23P *15/26*

U.S. Cl. 29—890.031 6 Claims



1. A process for repairing heat exchanger tubes from a tube side by partial tube replacement in an inside of a closed tube apparatus with at least one cylindrical tube bottom, the process comprising the steps of:

straightening dents in a tube section by introducing rotating drilling tools through a tube bottom into an inside of said tube section;

separating a partial tube section from a remainder of a tube by means of a rotating cutting tool in the interior of said partial tube section;

removing a connecting weld seam between a tube and the tube bottom by machining said connecting weld seam;

pulling said partial tube section through the tube bottom by means of one of a screw tap and an extracting device, after shrinking of a rolled area;

preparing a centering portion on said tube by means of a rotating milling cutter through the tube bottom;

inserting a new partial tube section through a hole in the tube bottom;

filling a jacket side of the apparatus with forming gas;

joining a new partial tube section to said remainder of said tube by inner tube welding with or without an auxiliary welding rod through the said tube bottom to form a joint;

pressure testing said joint;

one of joining of a new partial tube section to the tube bottom and plating the tube bottom;

hydraulicly expanding said new partial tube section in said hole of the tube bottom; and

rolling said new partial tube section onto said hole of said tube bottom.

5,826,336

PROCESS FOR THE PRODUCTION OF SERIES-PRODUCED VALVES USED IN HEATING, VENTILATING AND AIR-CONDITIONING SYSTEMS

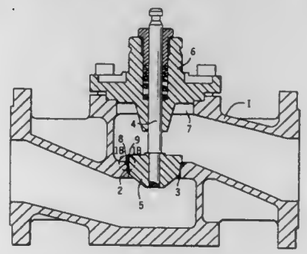
Maufred Schmitz, Essen, Germany, assignor to Johnson Service Company, Milwaukee, Wis.

Filed Aug. 1, 1995, Ser. No. 509,711

Claims priority, application Germany, Aug. 23, 1994, 44 29 804.8

Int. Cl.[6] B21D *53/00*

U.S. Cl. 29—890.124 10 Claims



1. A process for producing series-produced valves which are used in heating, ventilating and air-conditioning systems and which comprise a cast-iron valve body, at least one stainless steel valve seat disposed in a flow restrictor opening in the body and an actuating rod having at least one flow restrictor, comprising the steps of:

taking out the actuating rod from the valve body through a cover which closes an opening for the cover in the valve body, such opening being in alignment with the valve seat,

producing the valve body from a casting serving as a blank,

assembling the actuating rod with the flow restrictor and the cover.

welding the valve seat into the casting serving as the blank without previous chip removal treatment of the casting surface,

finish-treating the blank in one chucking.

5,826,337

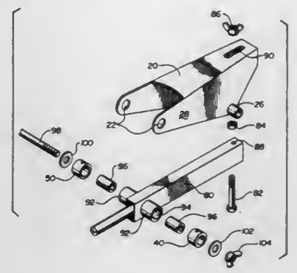
METHOD OF SECURING BUSHINGS TO A CLOSING WHEEL ARM

Allen O. Klinkner, Lake Crystal, and Larry R. Hancock, North Mankato, both of Minn., assignors to May-Wes Manufacturing, Inc., Hutchinson, Minn.

Division of Ser. No. 539,861, Oct. 6, 1995. This application Oct. 25, 1996, Ser. No. 740,236

Int. Cl.[6] B23P *6/00*

U.S. Cl. 29—891 23 Claims



1. A method for improving an attachment mechanism which connects a closing wheel arm having an attachment surface containing an aperture to the main structure of a planter, comprising the steps of:

attaching a welding jig having an alignment mechanism to the closing wheel arm;

placing the alignment mechanism adjacent the aperture in the closing wheel arm with a portion thereof extended through the aperture;

placing an outer bushing over the portion of the alignment mechanism extended through the aperture;

holding the outer bushing against the attachment surface of the closing wheel arm in alignment with the aperture and alignment mechanism;

welding the outer bushing to the attachment surface of the closing wheel arm; and

attaching a grease fitting to the outer bushing for allowing grease to be inserted into an aperture in the outer bushing.

5,826,338

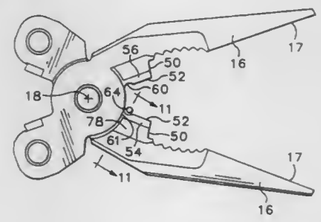
WIRE CUTTER STRUCTURE FOR MULTIPURPOSE TOOL

Richard A. Chilton, Oregon City, and Douglas M. Stapp, West Linn, both of Oreg., assignors to Leatherman Tool Group, Inc., Portland, Oreg.

Continuation of Ser. No. 374,310, Jan. 17, 1995, abandoned. This application May 23, 1997, Ser. No. 863,057

Int. Cl.[6] B21F *11/00*

U.S. Cl. 30—90.1 18 Claims



15. An improved hand-operated wire cutter, comprising:

(a) a pair of jaws movable with respect to each other about a pivot axis, between an open position and a closed position;

(b) a respective wire cutter portion included in each said jaw, each said wire cutter portion including an inner face and an outer face, said inner faces cooperatively defining a cutting plane extending parallel therewith and said outer face of each said wire cutter portion intersecting said inner face thereof in an acute angle defining a sharp edge, said sharp edges passing closely alongside each other in said cutting plane in scissors fashion as said jaws move from said open position to said closed position, and respective portions of said inner faces overlapping and being in close proximity to each other when said jaws are in said closed position; and

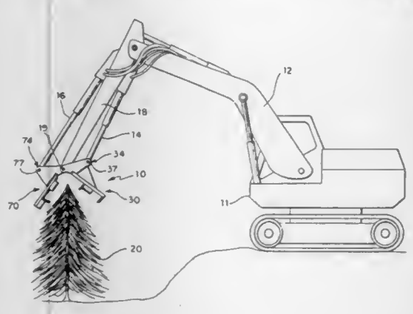
(c) each said wire cutter portion including a notch located adjacent to said sharp edge and having a bottom surface extending substantially normal to said cutting plane and intersecting said inner face, said notches being located alongside each other and said bottom surfaces being separated from each other and defining an opening through said cutting plane when said jaws have moved far enough toward said closed position for respective portions of said sharp edges located adjacent said notches to have passed alongside each other in scissors fashion.

5,826,339

FORESTRY CUTTING, MULCHING AND CLEARING TOOL

Douglas M. Price, P.O. Box 18052, Coffman Cove, Ak. 99918

Filed Aug. 11, 1997, Ser. No. 907,643
Int. Cl.[6] B26B *1/00*; A01G *23/07*
U.S. Cl. 30—134 **20 Claims**



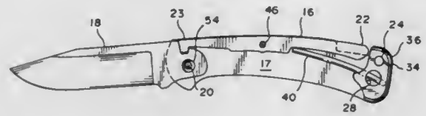
1. A forestry cutting, mulching, and clearing tool comprising:
a first frame including:
a first blade having a first end and a second end, said first end being rigidly attached to said first frame, said second end having an edge,
a first punch rigidly attached to said first frame, and
a first punch frame defining a first opening; and
a second frame pivotally connected to said first frame, said second frame including:
a second blade having a first end and a second end, said first end being rigidly attached to said second frame, said second end having an edge, said second blade cooperating with said first punch,
a second punch rigidly attached to said second frame, said second punch cooperating with said first opening, and
a second punch frame defining a second opening, said first punch cooperating with said second opening.

5,826,340

TWO-PIECE HANDLE AND METHOD OF ASSEMBLY

Stephen J. Hull, La Jolla, Calif., assignor to Buck Knives, El Cajon, Calif.

Continuation of Ser. No. 373,755, Jan. 17, 1995, abandoned. This application Jun. 12, 1996, Ser. No. 662,303
Int. Cl.[6] B26B *1/04*
U.S. Cl. 30—161 **8 Claims**



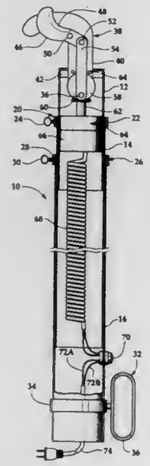
1. A two-piece handle comprising:
a first handle half having a projection, said projection having a first hole therein for receiving a spring rod; and
a second handle half having a recess for receiving said projection of said first handle half, said recess being formed in a generally kidney-shaped spring holding portion, said second handle half having a second hole formed in said generally kidney-shaped spring holding portion and intersecting with said recess for receiving a spring rod, said spring holding portion further providing an extended bearing surface adjacent said second hole for supporting said spring rod during bending, wherein when said projection is inserted into said recess, said first hole and said second hole line up sufficiently to enable the insertion of a spring rod for aiding in retaining said first handle half in an assembled state with said second handle half.

5,826,341

TREE TRIMMER

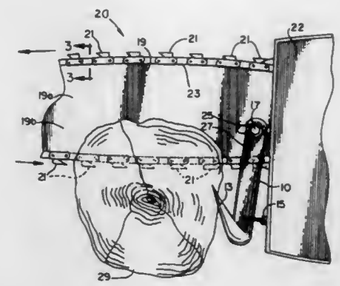
Robert E. Massa, 312 E. 48th St., Tulsa, Okla. 74105-4514

Filed Jul. 10, 1997, Ser. No. 890,012
Int. Cl.[6] B26B *15/00*
U.S. Cl. 30—247 **10 Claims**



1. A tree trimmer, comprising:
an elongated tubular housing,
a pruning mechanism mounted on a first end of the tubular housing, including
a first cutting member fixedly secured on the tubular housing, and

a second cutting member pivotally secured on the first cutting member and in cutting cooperation with the first cutting member,
an operating component positioned within the tubular housing adjacent to and connected to the pruning mechanism, the operating component including
a motor, and
a clutch,
a driving component positioned within the tubular housing connecting the operating component to the pruning mechanism, and
a power cable component positioned within the tubular housing connecting the motor to a source of power with said power cable component further connected circuitably to a power switch positioned near a second end of the tubular housing.

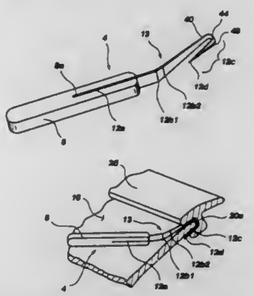


5,826,342

VEHICLE WINDSHIELD REMOVING TOOL

Mark E. Zuro, Salt Lake City, Utah, assignor to Equalizer Industries, Inc., Round Rock, Tex.

Filed Aug. 5, 1996, Ser. No. 692,115
Int. Cl.[6] B26B *3/00*
U.S. Cl. 30—279.2 **8 Claims**



1. A vehicle windshield removing tool comprising
a handle portion for gripping by a user,
a blade having a base portion mounted on the handle portion to extend outwardly therefrom and a cutting portion having a first section extending forwardly from the base portion, a second section curving approximately 90 degrees from the first section, and a third section extending from the second section in a direction opposite the first section, said first, second, and third sections forming an inverted U-shaped terminal end, the first, second and third sections being formed with sharpened side cutting edges,
said handle portion has a longitudinal axis, wherein said base portion is elongate and fitted in the handle portion to be co-linear therewith and extend outwardly from one end thereof,
said base portion of said blade further comprises a first bend spaced-apart from a second bend, with the angle of the first bend being about 20 degrees from the longitudinal axis of the handle portion and the angle of the second bend being about 40 degrees from the longitudinal axis of the handle portion.

5,826,343

CHAIN SAW ATTACHMENT

Russell E. Mollberg, Jr., Palm Beach Gardens, Fla., assignor to Kinetic Stump Cutter, Inc., Palm Beach Gardens, Fla.

Filed Oct. 22, 1996, Ser. No. 735,219
Int. Cl.[6] B27B *17/02*
U.S. Cl. 30—371 **10 Claims**

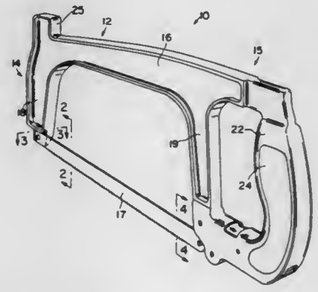
1. An improved power driven chain saw for controlling kickback of the type having a housing, a motor mounted in said housing, a guide bar having a substantially equal lower end, a rail groove extending circumfentially around said guide bar and a chain situated within said rail groove, wherein the improved chain saw comprises means for controlling kickback, said control means comprising a gaff pivotable mounted on said chain saw, said gaff having a distal end portion and a proximal end portion, said distal end portion being in a form of a spike or a hook which penetrates and engages an object to be cut and said distal end portion being positioned at an angle to said proximal end portion, said proximal end portion extending longitudinally and having means for pivotally mounting said gaff on said chain saw said proximal end portion of said gaff having a hole for mounting on a pivot member on said guide bar and that said gaff freely swings about said pivot member, said pivot member comprising a rod having one end attached to said lower end of said guide bar and being positioned above said rail groove on an inward and frontal side of said housing, and said gaff is mounted at an acute angle to said pivot member such that said distal end portion faces forward and upward of said pivot member, whereby said gaff engages said object to be cut and remains therein while said housing and said guide bar are pivoting during a cutting operation.

5,826,344

HACKSAW HAVING CAM-ACTUATED BLADE TENSIONING MECHANISM

Russell D. Phelon, San Juan, Puerto Rico; John D. Jollie, Aiken, S.C., and Robert F. Miller, Martinez, Ga., assignors to R.E. Phelon Company, Inc., Aiken, S.C.

Filed Nov. 13, 1996, Ser. No. 748,338
Int. Cl.[6] B27B *21/02*
U.S. Cl. 30—513 **19 Claims**



1. A hacksaw for use with an elongated blade defining respective first and second mounting holes at opposite ends thereof, said hacksaw comprising:
a frame having a first leg and a second leg spaced apart for maintaining said elongated blade therebetween;
at least one first blade pin located on said first leg for receipt of said first mounting hole thereon;

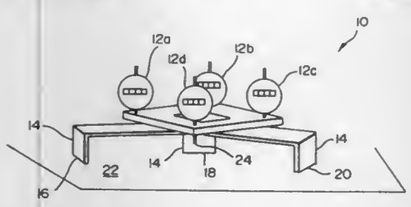
a pin carrier connected to said second leg and including at least one second blade pin for receipt of said second mounting hole thereon, said pin carrier being pivotal such that said second blade pin is movable between a blade release position and a blade securement position;

an actuator member pivotally connected to said second leg and engaging said pin carrier to operatively move said second blade pin between said blade release position and said blade securement position, said actuator member including an elongated lever portion for providing mechanical advantage during movement of said second blade pin from said blade release position to said blade securement position;

a releasable lock mechanism including first and second engaging elements selectively interconnectable to maintain said second blade pin in said blade securement position; and

a release actuator mounted to said frame and pivotal between a release position and an engaging position, and wherein said first and second engaging elements respectively comprise a first engaging finger extending from said lever portion of said actuator member and a second engaging finger extending from said release actuator.

5,826,345
SUSCEPTOR LEVELING AID
Craig G. Hendricks, Sublimity, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.
Filed May 9, 1996, Ser. No. 643,425
Int. Cl.[6] G01C *9/02*
U.S. Cl. 33—365 **20 Claims**



1. An apparatus to be placed on a reference surface for indicating level of a susceptor, the apparatus comprising:

three legs, each leg having a distal end for contacting the reference surface, the legs for supporting the apparatus above the reference surface; and

four level detectors elevated by the three legs above the respective distal ends, each one of the four level detectors having a distal sensing point at which level is sensed, each distal sensing point oriented toward the reference surface; and

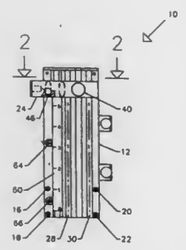
four level indicators, each level indicator for indicating a level sensed by a corresponding level detector;

wherein the susceptor is levelled relative to the reference surface by achieving concurrent contact between the susceptor and each one of the four distal contact points, then adjusting susceptor orientation to cause each level indicator to indicate a common level while the respective distal ends maintain contact with the reference surface.

5,826,346
MEASURING GAGE
Paul J. Reilly, 560 N. Moorpark Rd., No. 150, Thousand Oaks, Calif. 91360
Continuation-in-part of Ser. No. 295,428, Aug. 25, 1994, Pat. No. 5,491,906. This application Feb. 20, 1996, Ser. No. 603,170
Int. Cl.[6] B27G *23/00*
U.S. Cl. 33—640 **22 Claims**

1. A gage comprising:

a base, a support surface on said base;

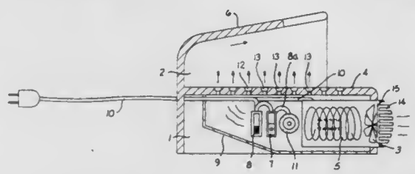


a gage body for securement to said base, said gage body having a length direction, said gage body having a substantially uniform cross section throughout its length direction, said gage body having a face, at least one guide rail on said face, a slot in said gage body sized to removably receive a ruler and means in said gage body for releasably retaining a ruler in said ruler slot, said ruler slot extending lengthwise of said gage body;

means on said base and said gage body for mounting said gage body on said base in any one of a plurality of positions so that said gage body can be supported by said base with respect to said support surface; and

a measuring arm mounted on said guide rail, first and second guide surfaces on said measuring arm and on said gage body, each comprising first and second hemi-cylindrical rails respectively engaging in first and second V-notches so that said measuring arm is movably mounted with respect to said gage body longitudinally of said gage body on said guide rail and means inter-engaging said measuring arm and said gage body for releasably locking said measuring arm with respect to said gage body.

5,826,347
HYGIENIC FOOT DRIER
Nancy Olivares-Gonzalez de Serrano, and Eugenio Serrano-Canseco, both of Jardines Del Prado #1832 Col. Jardines de las Torres, C.P. 64574 Monterrey, Nuevo Leon, Mexico
Filed Jul. 23, 1997, Ser. No. 898,837
Int. Cl.[6] F26B *19/00*
U.S. Cl. 34—202 **6 Claims**



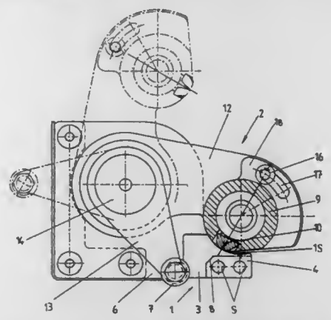
1. A hygienic foot drier comprising in combination:

housing means for encompassing a foot including a hooded foot rest compartment having perforated platform means for receiving foot soles while permitting air to contact the soles of a foot placed upon the platform,

air circulation means for passing air into the hooded compartment through said perforated platform and into the hooded compartment in a pattern for contacting the top, bottom and side skin of a foot, and

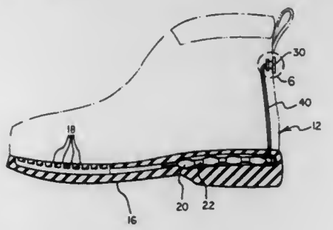
air heating means for circulating warm, dry air through said compartment to contact said bottom, top and side skin of a foot.

5,826,348
DEVICE FOR EXPRESSION OF YARN
Robert Enderlin, Morschwiller-le-Bas, and Didier Thibault, Bur, both of France, assignors to Superba, Mulhouse, France
Filed Oct. 10, 1996, Ser. No. 728,798
Claims priority, application France, Oct. 13, 1995, 95 12194
Int. Cl.[6] D06B *15/09;* **F26B** *5/00*
U.S. Cl. 34—628 **22 Claims**



1. A yarn expression device comprising a comb (**1**) having a plurality of spaced teeth for guiding and expressing individual yarns of a layer of yarn and means (**2**) for blowing compressed air in line with each interval between two teeth (**3**) of said comb (**1**), the air-blowing means (**2**) being present in the form of an elongated manifold (**9**) extending parallel above the comb (**1**) and delivering a flat let through a slot (**10**), said manifold (**9**) being connected to a compressed air supply means via a coupling (**11**), and said air-blowing means (**2**) and the comb (**1**) acting to effect expression of excess moisture from the yarn.

5,826,349
VENILATED SHOE SYSTEM
Chauncey D. Goss, 5930 County Rd. J., Mondovi, Wis. 54755
Filed Mar. 28, 1997, Ser. No. 828,057
Int. Cl.[6] A43B *7/06*
U.S. Cl. 36—3 R **5 Claims**



1. A ventilated shoe system comprising:

an air pumping means positioned within a sole of a shoe, wherein said air pumping means is operated from the stepping motions of a user;

an intake tube connected to said air pumping means, said intake tube being for transporting fresh air to said air pumping means;

an air intake connected to said intake tube opposite of said air pumping means; and

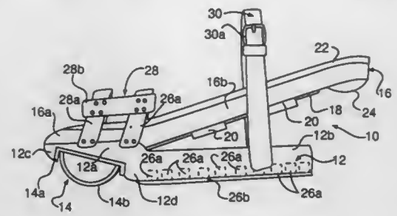
wherein said air pumping means includes

a plurality of resilient encasements arranged into rows extending from a central resilient encasement,

a plurality of check valves, each check valve connected between adjacent aligned resilient encasements within each row of resilient encasements thereby interconnecting said resilient encasements within each row, said plurality of check valves being for allowing unidirectional air flow into said air intake, through said air intake tube and into said central resilient encasement, out of said central resilient encasements through said rows of resilient encasements and into a cavity in said sole of said shoe, and

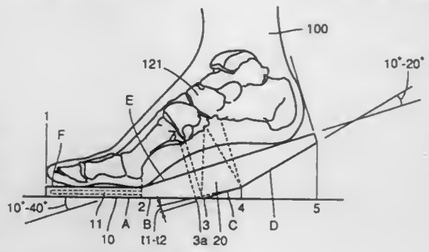
a plurality of apertures projecting into said sole of said shoe into said cavity for allowing air pumped from said resilient encasements into said cavity to escape into said shoe.

5,826,350
SHOE CONSTRUCTION PROVIDING SPRING ACTION
Robert W. Wallerstein, 9782 Tottenham Ct., Los Angeles, Calif. 90210
Filed Jul. 7, 1997, Ser. No. 889,093
Int. Cl.[6] A43B *13/28*
U.S. Cl. 36—7.8 **20 Claims**



20. A shoe comprising a base member including a raised front portion and a rearwardly extending sole portion, a substantially U-shaped spring disposed beneath said raised portion and having transversely extending ends engaging said front portion at respective longitudinally spaced locations, and a spring element affixed to said front portion and including a flexible part overlying, and extending rearwardly beyond, said sole portion of said base member, said flexible part being disposed at an acute, non-zero angle with respect to said sole portion.

5,826,351
SHOE SOLE AND SHOE AND SANDAL INCLUDING THE SOLE
Hiroaki Tsuji, Okayama, Japan, assignor to Keihan Tsusho Co., Ltd., Osaka, Japan
Filed Jun. 10, 1997, Ser. No. 872,074
Claims priority, application Japan, Feb. 25, 1997, 9-041028
Int. Cl.[6] A43B *13/00;13/14*
U.S. Cl. 36—25 R **9 Claims**



1. A shoe sole, comprising:

a toe portion having a first upper surface for supporting toes in a forepart of a foot, and a first bottom surface portion in contact with a plane of walking said toe portion being made of a flexible material; and

a main portion extending continuously from said toe portion said main portion including:

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a second upper surface for supporting the metatarsal bones of said forepart, a middle part and a back part of said foot;

a second bottom surface portion flexibly connected to and substantially coplanar with said first bottom surface portion,

a third bottom surface portion extending continuously from said second bottom surface portion at a first predetermined inclination angle and including a medial side and a lateral side said medial side having a greater thickness than said lateral side and

a fourth bottom surface portion extending continuously from said third bottom surface portion at a second predetermined inclination angle.

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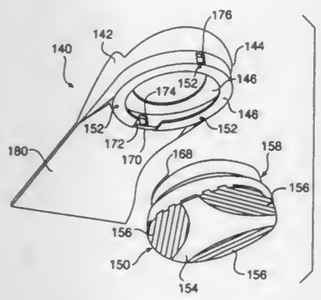
ATHLETIC SHOE WITH IMPROVED SOLE

David F. Meschan, Greensboro, N.C., and Tuan N. Le, Portland, Oreg., assignors to Akeva L.L.C., Greensboro, N.C.

Continuation of Ser. No. 291,945, Aug. 17, 1994, Pat. No. 5,560,126, which is a continuation-in-part of Ser. No. 108,065, Aug. 17, 1993. This application Sep. 30, 1996, Ser. No. 720,438

Int. Cl.[6] A43B *21/36;21/24*

U.S. Cl. 36—42 **32 Claims**



1. A shoe comprising:

an upper having a heel region;

a rear sole connected below said heel region and having a bottom surface, at least a portion of which is ground-engaging, said bottom surface including a substantially planar portion and at least two beveled portions, said beveled portions being positioned about the perimeter of said rear sole and designed to cushion the impact on said shoe during the gait cycle of the user, each of said beveled portions having a maximum linear dimension less than the greatest width of said bottom surface along a line perpendicular to a major axis of said shoe, each of the beveled portions being inclined upwardly in a direction from an interior portion of the bottom surface toward an outer edge of the bottom surface and having an edge coincident with the outer edge, each of said beveled portions having an interior edge convexly curved toward said interior portion along at least a portion of said interior edge; and

means for selectively locking said rear sole in a manner that permits the selective alignment of one of said beveled portions to a position previously occupied by another of said beveled portions, thereby increasing the useful life of said rear sole.

5,826,353

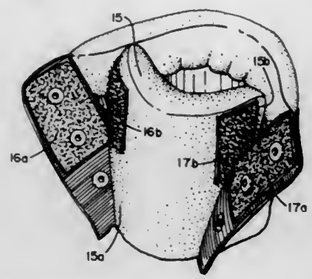
CLOSURE FOR BOOT TONGUE

Clark D. Woznicki, Eau Claire, Wis., assignor to Mason Shoe Manufacturing Co., Chippewa Falls, Wis.

Filed Jan. 13, 1997, Ser. No. 782,111

Int. Cl.[6] A43B *23/26*

U.S. Cl. 36—54 **4 Claims**



1. A boot, comprising:

(a) a tongue; an upper extending above the ankles said upper including oppositely disposed upper portions overlying the tongue;

(b) a pair of hook and loop fasteners operatively interconnecting the tongue and upper portions at upper ends thereof for holding the tongue in place securedly about the leg of a wearer above the ankle while the fit of the boot is secured with a lace after a foot has been inserted therein;

(c) the tongue including oppositely disposed side margins underlying the upper portions, each of said margins being selectively operatively interconnected to its overlying upper portion by one of said fasteners, wherein the tongue includes a lower fixed end and a free upper end and wherein said fasteners are located near the free upper end of the tongue;

(d) the hook and loop fasteners each including a hook portion and a loop portion, one portion being fixed to a side margin of the tongue, and the other portion being fixed to the upper portion overlying the side margin of the tongue, the hook and loop portions being selectively alignable and engageable to hold the tongue to both of the said upper portions; and

(e) the lace interconnecting the upper portions for selectively adjusting the fit of the upper portions over and on the tongue for the comfort of the wearer, wherein the lace interconnects a plurality of spaced eyelets in said upper portions overlying the tongue in positions running from the lower fixed end to the free upper end, and wherein the lace secures the upper portions and tongue in place with a knot tied in the lace at a position above the ankle of the wearer.

5,826,354

BOOT WITH CLOSURE BY TRANSVERSE FLAPS

Guiseppe Garbujo, Montebelluna, Italy, assignor to Salomon S.A., Metz-Tessy, France

Filed Apr. 25, 1997, Ser. No. 847,496

Claims priority, application France, Apr. 26, 1996, 96 05479

Int. Cl.[6] A43B *5/04*

U.S. Cl. 36—117.1 **9 Claims**

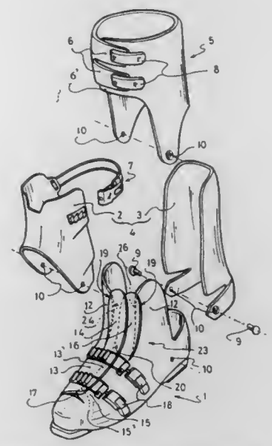
1. A sport boot comprising:

a shell base including a pair of opposed upwardly extending lateral extensions extending upwardly from respective portions of the shell base, said portions corresponding to a wearer's ankle;

an upper attached to said shell base and overlapping said lateral extensions of said shell base;

said shell base including a pair of lateral walls and an upper longitudinally extending opening;

said shell base further including at least one pair of transverse flaps, each of said one pair of transverse flaps transversely extending from a respective one of said pair of lateral walls,



said transverse flaps overlapping and closing said longitudinally extending opening of said shell base;

each of said transverse flaps is at least partially separated from a respective one of said pair of upwardly extending lateral extensions by a respective slit opening upwardly and oriented substantially parallel to said upper longitudinally extending opening of said shell base.

5,826,355

SKI BOOT HAVING A COMBINED CLOSURE AND HEEL-ENGAGING MEMBER

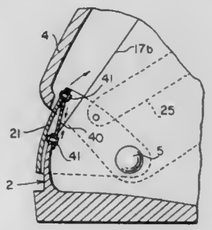
Franco Vaccari, Montebelluna, Italy, assignor to Dolomite S.p.A., Montebelluna, Italy

Continuation of Ser. No. 279,346, Jul. 22, 1994, abandoned. This application Oct. 13, 1995, Ser. No. 542,658

Claims priority, application Italy, Dec. 14, 1993, PD93A0240

Int. Cl.[6] A43B *5/04;5/16*

U.S. Cl. 36—118.1 **14 Claims**



1. An article of sport footwear comprising:

a boot shell having a rearward region wherein a heel area included between respective lateral sides of the shell is located,

a cutout extending at least partway between said lateral sides in the heel area to provide two opposed flaps,

a bootleg associated with the boot shell at said lateral sides, said bootleg having a front opening and a rear portion continuous with opposite sides of said bootleg,

bootleg fastener means including first and second anchor members on the bootleg, and a closure device which can be tensioned in an adjustable manner between said anchor members to close said front opening,

a heel area clamping device including an eave pivotable on said shell at said cutout and extending at least in part between said shell and said rear portion of said bootleg and means for swinging said eave to a working position where it is urged toward a forward region of the shell, wherein said means for swinging said eave are operated directly by said bootleg fastener means,

wherein said means for swinging said eave comprise at least one of said anchor members being associated slidingly with the bootleg, and a tie between said sliding anchor member and said eave for swinging said eave to said working position upon said bootleg fastener means being tightened, and

wherein said sliding anchor member has limited sliding movement on said bootleg such that, upon said bootleg fastener means being tightened, a first actuation of said eave consequently of the sliding movement of said anchor member on the bootleg and a second actuation of said eave consistent with a corresponding tightening of the bootleg take place.

5,826,356

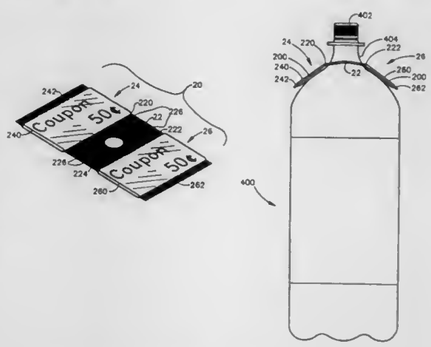
RETAIL PROMOTION DISPLAY AND COUPON SYSTEM FOR FOOD AND BEVERAGE CONTAINERS

James F. Lapp, 1703 Park Ave., Richmond, Va. 23220

Continuation of Ser. No. 427,429, Apr. 24, 1995, abandoned. This application Nov. 14, 1996, Ser. No. 749,183

Int. Cl.[6] G09F *3/00*

U.S. Cl. 40—310 **1 Claim**



1. A coupon delivery system, comprising:

a beverage container that has sides, a bottom part having a cross-sectional area, a top part of substantially the same cross-sectional area as said bottom part, a centrally located neck with a capped spout and said container having a footprint which is the largest horizontal cross-section of said container when said container is upright;

a substantially rectangular coupon packet assembly having two similar opposed ends made of film having:

a central support section with said two ends extending therefrom;

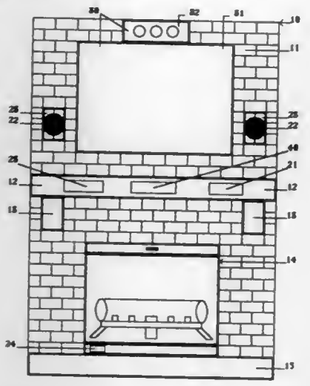
a hole in a central part of said central support section surrounding said centrally located neck of said beverage container with said two ends hanging on opposite sides of said neck;

two generally flat envelopes with said envelopes located at said opposed ends of said coupon packet assembly with said two envelopes and said two ends hanging adjacent to the top part and entirely within said footprint and not extending down said beverage container sides and not adhered to said beverage container; and

a multiplicity of coupons in each of said envelopes.

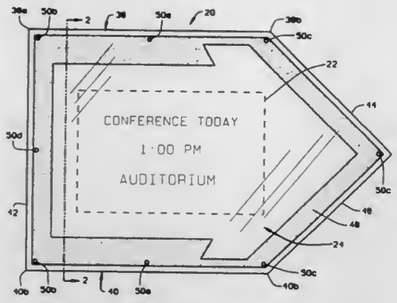
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5,826,357
ENTERTAINMENT AND FIREPLACE ASSEMBLY
Duaine Hechler, 1013 Justice Ct., Florissant, Mo. 63034
Filed Jul. 8, 1996, Ser. No. 675,221
Int. Cl.[6] G09F *19/00*
U.S. Cl. 40—428 **1 Claim**



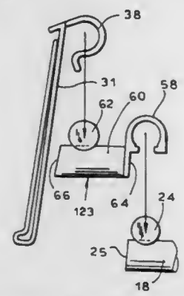
1. An entertainment and fireplace assembly consisting of a smoke-free fireplace further including;
a left side audio speaker disposed in a left side of the fireplace above a mantel;
a left side audio speaker grill disposed on the left side of the fireplace covering the left side audio speaker and matching in appearance of a facade of the fireplace;
a right side audio speaker disposed in a right side of the fireplace above the mantel;
a right side audio speaker grill disposed on the right side of the fireplace covering the right side audio speaker and matching in appearance of the facade of the fireplace;
an audio cassette player/recorder disposed in the mantel;
an audio compact-disc (CD) player/recorder disposed in the mantel;
an overhead television projection system consisting of a television screen disposed centered in an area above the mantel and overhead television projection hardware adaptable to be mounted on a ceiling of a room, in front of the fireplace;
a refillable pump spray time-released mechanism disposed under a firebox to release a scent of "burning-wood";
audio cassettes that are pre-recorded with fireplace sound effects;
audio cassettes that are pre-recorded with fireplace sound effects with "background" music superimposed over the sound effects;
compact-discs (CD's) that are pre-recorded with fireplace sound effects;
compact-discs (CD's) that are pre-recorded with fireplace sound effects with "background" music superimposed over the sound effects.

5,826,358
DIRECTION-INDICATING SIGN HOLDER AND METHOD OF PROVIDING DIRECTIONAL INDICATION
Margaret J. DeSutter, 374 S. Elm Ave., St. Louis, Mo. 63119-3840
Continuation-in-part of Ser. No. 27,898, Mar. 8, 1993, abandoned. This application May 24, 1994, Ser. No. 248,307
Int. Cl.[6] G09F *7/02*
U.S. Cl. 40—611 **18 Claims**



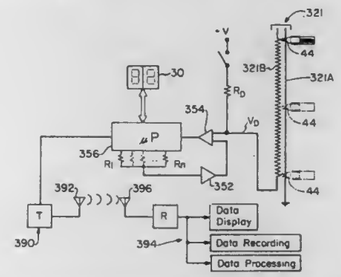
1. A direction-indicating holder for an informational sign for use in directing people to a location associated with information on the sign, the holder comprising:
top and bottom panels secured together to form a sign-receiving envelope between the panels, at least the top panel being transparent so that information on a sign in the envelope is visible, the envelope having an opening therein for introducing and removing a sign from the envelope, the holder having a shape with two converging side edges that indicate a direction, such that the holder can be oriented with the converging side edges indicating a direction toward a location associated with the information on a sign in the envelope.

5,826,359
MERCHANDISE DISPLAY HOOK WITH VIEWING ANGLE ADJUSTMENT FOR PIVOTING LABEL HOLDER
David R. Thalenfeld, Bear Creek; John S. Thalenfeld, Dallas, both of Pa., and Thomas O. Nagel, Blairstown, N.J., assignors to Trion Industries, Inc., Wilkes-Barre, Pa.
Division of Ser. No. 871,238, Jun. 9, 1997. This application Mar. 18, 1998, Ser. No. 40,830
Int. Cl.[6] G09F *3/00*
U.S. Cl. 40—642.01 **6 Claims**



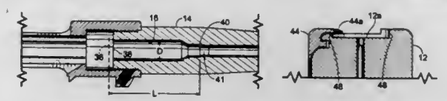
1. A merchandise display hook, comprising
(a) an outwardly extending label support arm having a cross bar affixed transversely thereto;
(b) a pivoting label holder;
(c) an adaptor, mountable on said cross bar, for supporting a label holder, said adaptor comprising:
(i) retaining clip portions adapted to engage said cross bar;
(ii) an alternate cross bar adapted to freely pivotally support said label holder;
(d) said label holder, in the absence of said adaptor, being pivotally mountable on said cross bar at a first supported angular orientation; and
(e) said adaptor being configured, when mounted on said label support arm, to support said label holder in a second supported angular orientation greater than said first supported angular orientation;
(f) whereby the supported angular orientation of said label holder can be adjusted by adding or removing said adaptor from said label support arm.

5,826,360
MAGAZINE FOR A FIREARM INCLUDING A SELF-CONTAINED AMMUNITION COUNTING AND INDICATING SYSTEM
Michael A. Herold, 367 High Grove Blvd., Akron, Ohio 44312, and Mark D. Herold, 3980 Englewood Dr., Stow, Ohio 44224
Continuation-in-part of Ser. No. 580,080, Dec. 20, 1995, Pat. No. 5,642,581. This application Jan. 6, 1997, Ser. No. 778,832
Int. Cl.[6] F41A *9/62*
U.S. Cl. 42—1.02 **17 Claims**



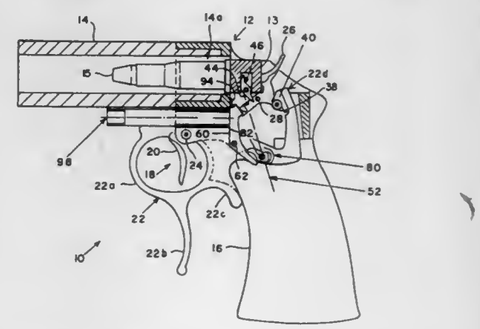
1. An ammunition magazine for a firearm, said magazine comprising:
an upper portion for containing at least one round of ammunition, said upper portion of said magazine including an ammunition follower movably positioned therein for supporting said at least one round of ammunition within said upper portion of said magazine, said upper portion of said magazine also including a follower spring for biasing said follower toward an end of said upper portion of said magazine;
sensing means provided as a part of said ammunition magazine for sensing the position of said follower within said upper portion of said magazine; and,
electronic indicator means provided as a part of said ammunition magazine and connected to said sensing means for indicating to a firearm user information regarding the number of rounds of ammunition present in said upper portion of said magazine based upon the position of said ammunition follower within said upper portion of said magazine,
whereby said ammunition magazine provides a self-contained ammunition counting and display system, independent from a firearm.

5,826,361
SHORT-ACTION CHAMBER AND BOLT ASSEMBLY FOR HIGH POWER FIREARM CARTRIDGE
John R. Jamison, 84784 Christensen Rd., Eugene, Oreg. 97405
Filed Mar. 17, 1997, Ser. No. 818,440
Int. Cl.[6] F41A *3/00*
U.S. Cl. 42—25 **2 Claims**



1. A firearm chamber and bolt assembly comprising a tubular chamber for matingly receiving a tubular cartridge case, and an elongate bolt, having a bolt face, selectively slidable longitudinally in a sliding direction between a retracted unlocked position and an extended locked position for pushing said cartridge case into said chamber and providing a locked bolt face when said bolt is in said locked position, said chamber being capable of withstanding internal gas pressures of at least about 65,000 psi and having a first end, adjacent to said locked bolt face, for insertably receiving said cartridge case and a second end defining a case mouth recess for said cartridge case, said chamber having a first portion of a substantially cylindrical shape adjacent to said first end and a second portion of a narrower substantially cylindrical shape adjacent to said second end, and a frusto-conical portion interconnecting said first portion and said second portion, said chamber defining an overall length measured from said locked bolt face to said second end of said chamber, said first portion having an inner chamber diameter at a location 1.25 inch from said locked bolt face of at least about 0.53 inch, said overall length having a ratio to said inner chamber diameter at said location of no more than about 4.2, said bolt having an extractor adjacent to said bolt face and a channel oriented transversely to said sliding direction of said bolt through which a rim portion of said cartridge, having an outside diameter substantially no less than said inner chamber diameter at said location, is movable transversely to said sliding direction into gripping engagement by said extractor before said cartridge is inserted into said chamber.

5,826,362
FIREARM WITH SAFETY
James D. Lyons, Globe, Ariz., assignor to Dunlyon R & D, Inc., Miami, Ariz.
Filed Jul. 21, 1997, Ser. No. 897,226
Int. Cl.[6] F41A *17/76*
U.S. Cl. 42—70.08 **17 Claims**



1. A firearm comprising:
a striking member movable between a fully cocked position and an uncocked position;
a safety movable between an inactive position and a blocking position in which said safety blocks said striking member from said uncocked position when said striking member is in said fully cocked position;
a biasing member arranged to move said safety into said blocking position in response to movement of said striking member from said uncocked position towards said fully cocked position;
a trigger movable between a rest position and a firing position, said trigger being arranged to move said safety from said blocking position towards said inactive position in response to movement of said trigger from said rest position towards said firing position; and
a sear movable between an inoperative position and an intercepting position in which said sear engages said striking member to prevent movement of said striking member from said fully cocked position towards said uncocked position, said safety being arranged to move said sear from said intercepting position towards said inoperative position as said trigger moves said safety from said blocking position towards said inactive position.

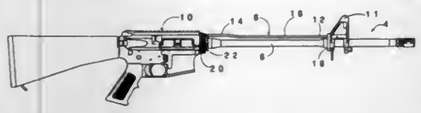
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5,826,363

RAIL ADAPTER HANDGUARD SYSTEMS FOR FIREARMS

Douglas D. Olson, Vero Beach, Fla., assignor to Knights Armament Company, Vero Beach, Fla.

Filed Jul. 10, 1997, Ser. No. 891,141
Int. Cl.[6] F41A *21/00*
U.S. Cl. 42—75.01 **10 Claims**



1. In a handguard attachment for a firearm including a barrel and having a gas tube defined by a front end section and a rear end section integrally joined by a central section extending longitudinally above said barrel, a circular receptor cap fixed to said barrel to encircle said barrel and said front end section of said gas tube, a spring biased slip ring positioned about said barrel rearward of said receptor cap, and a barrel nut carried on said barrel juxtaposed to said slip ring on the side of said slip ring facing said receptor cap, said handguard attachment including a top semicylinderical part defined by a first front end portion and a first back end portion and a bottom semicylinderical part defined by a second front end portion and a second back end portion, said first and second back end portions having back end ledges that engage with said slip ring and said first and second front end portions having front end ledges that engage with said receptor cap to retain said parts about said barrel,

an improved rail adapter system which enables said firearm effectively to support accessory devices which comprises:

an accessory adapter rail extending longitudinally along said top semicylinderical part,

an elongated leaf spring defined by a top side, a bottom side, a fore end, an aft end and an integral central portion, said fore end being slidingly held by said receptor cap, said aft end slidingly positioned in said top semicylinderical part and said bottom side of said central portion slidingly engaging a lateral element fixed within said first front end portion below said adapter rail whereby to bias said top semicylinderical part toward said barrel, and

a rear clamp comprising a channelled body that straddles said rear end section of said gas tube having a stem end and stern end, said stem end being pivoted for movement of said rear clamp in a vertical plane upon a pin carried laterally within said top semicylinderical part, a pair of spaced apart lugs that extend aft from said stern end for engagement with said barrel nut and a screw fastener that extends through said adapter rail and threads into said channelled body whereby tightening of said screw fastener serves to tighten engagement of said lugs with said barrel nut.

5,826,364

SCENTED ANIMAL DECOY KIT WITH CARRYING CASE

David M. Bitting, 205 Basin Hill Rd., Duncannon, Pa. 17020

Filed Nov. 21, 1996, Ser. No. 753,203
Int. Cl.[6] A01M *31/06*
U.S. Cl. 43—2 **7 Claims**

1. A new and improved scented animal decoy kit with carrying case for attracting game animals comprising in combination:

an inflatable structure having a body with the appearance of a deer when inflated, the body having a head member, a rear end, an under belly and four leg members, the body having an air tight compartment housing a plurality of flexible baffles and being inflatable, the under belly having a valve for the allowing the inflation and deflation of the air tight compartment within the body, the air tight compartment being inflated for giving the body of the inflatable structure a form, the



baffles giving the inflated body stability when the air tight compartment is inflated, each of the four leg members having a foot member and a vertical channel extending length wise therein and accessible through the foot member, the rear end having a pile-type fastener member attached thereto, the head member having a chin with a pair of pile-type fastener members attached thereto;

at least four support stands with each stand having a telescoping rod and an anchor stake, each telescoping rod of each support stand being sized for positioning within one of the channels of the leg of the inflatable structure, the telescoping rod having a threaded bottom member, the anchor stake having a generally cylindrical top member with a threaded opening sized for receiving and coupling with the threaded bottom member of the telescoping rod, the four support stands being positioned within the channels and will enable the inflatable structure to stand in an upright position, the telescoping rod of each support stand enabling the user to raise and lower the inflatable structure

a scented insert having an animal aroma;

a tail member having tip portion and a cavity, the tip portion having a pile-type fastener member for coupling with the pile-type fastener member of the rear end of the body, the cavity being sized for receiving the scented insert when the tail is coupled to the rear end of the body;

inflatable antlers having a strap portion, the strap portion having a pair of end portions, each end portion of the strap having a pile-type fastener member for coupling with one of the pair of pile-type fastener members of the chin of the head of the inflatable structure to position the antlers over the head; and

a generally rectangular carrying case having a front face, a rear face and a pair of accordion side panels therebetween, the rear face having a flap interconnected thereto and capable of coupling with the front face, the carrying case being expandable for receiving a deflated structure, the tail and deflated antlers for storage.

5,826,365

PLANAR BOARD WITH TWO-WAY LINE RELEASE

Marvin J. Stroobants, Chilton, Wis., assignor to Brothertown Harbor, Inc., Chilton, Wis.

Filed May 20, 1997, Ser. No. 859,438
Int. Cl.[6] A01K *91/08*
U.S. Cl. 43—4.5 **20 Claims**

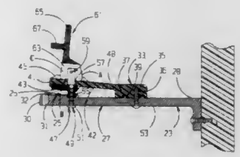
1. A method of trolling for fish comprising the steps of:

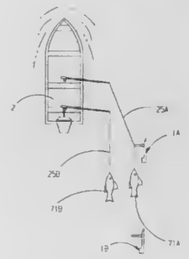
a. securing a first end of a first resilient plate to a planar board, and immovably joining a first end of a second resilient plate to first plate,

b. rotating a cam to a first position and opening the plates;

c. placing the fishing line between the plates;

d. rotating the cam to a second position and closing the plates to clamp the fishing line therebetween;





e. placing the planar board and fishing line in the water; and

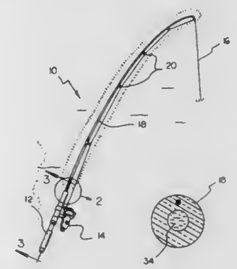
f. pulling the planar board from a boat solely by the fishing line.

5,826,366

ILLUMINATED FISHING ROD

Jeffrey T. Matibe, 512 Westchester Dr., North Huntington, Pa. 15642

Filed Jan. 16, 1997, Ser. No. 786,370
Int. Cl.[6] A01K *87/00*
U.S. Cl. 43—17.5 **2 Claims**



1. An illuminated fishing rod comprising:

a handle having a fishing reel coupled thereto for storing and supplying fishing line, the handle being shaped so as to define a battery cavity extending longitudinally thereinto within which as least one battery can be positioned therein;

a flexible transparent tube projecting collinearly from the handle and including a plurality of line guides coupled thereto, the flexible transparent tube having a cavity with electrodes positioned therein, the electrodes being positionable into electrical communication with the battery;

a free neon gas contained within said cavity of the flexible transparent tube and positioned in electrical communication with the electrodes, whereby energization of the neon gas through the electrodes will result in a generation and transmission of visible light through the flexible transparent tube; and

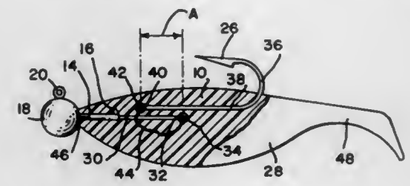
an end cap removably coupled to a lower end of the handle.

5,826,367

FISHING LURE, AND A ROD AND FISH HOOK ASSEMBLY THEREFOR

John J. Murphy, 705 W. Pine St., Lancaster, Wis. 53813

Filed Aug. 20, 1997, Ser. No. 915,241
Int. Cl.[6] A01K *85/00*
U.S. Cl. 43—42.24 **8 Claims**



1. A fishing lure, comprising:

a body; wherein

said body has a leading end, and a trailing end;

a rod having (a) a first portion confined within said body, and (b) a second portion projecting, outwardly, from said leading end;

said first portion has a termination intermediate said leading and trailing ends;

a fish hook having a shank and a barbed end; wherein

said shank is confined within said body, and has a termination disposed intermediate said leading end, and said termination of said first portion of said rod; and

filamentary material intercoupling said terminations.

5,826,368

Patent Not Issued For This Number

5,826,369

CHLOROPHYLL BASED FUEL ADDITIVE FOR REDUCING POLLUTANT EMISSIONS

Frederick L. Jordan, Santa Ana, Calif., assignor to Barto/Jordan Company, Inc., Costa Mesa, Calif.

Continuation-in-part of Ser. No. 163,651, Dec. 7, 1993, abandoned. This application Sep. 23, 1996, Ser. No. 717,844
Int. Cl.[6] C10L *1/18;1/22*
U.S. Cl. 44—308 **17 Claims**

1. A liquid hydrocarbon fuel wherein combustion of said fuel with oxygen produces carbon monoxide and oxides of nitrogen at a given pollutant emission level, wherein the improvement comprises the addition of a fuel additive to said fuel said fuel additive comprising β-carotene consisting essentially of trans β-carotene, chlorophyll, and jojoba oil and being added to said fuel in an amount sufficient to reduce the pollutant emission level of said liquid hydrocarbon fuel.

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APPARATUS FOR USE IN APPLYING LIQUIDS, SUCH AS FOR TREATING PLANTS

Alec Martin Stevens, Queensland, Australia, assignor to Weedbug Pty. Ltd., Brisbane, Australia

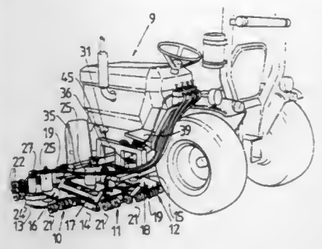
PCT No. PCT/AU95/00293, § 371 Date Nov. 12, 1996, § 102(e) Date Nov. 12, 1996, PCT Pub. No. WO95/31607, PCT Pub. Date Nov. 23, 1995

PCT Filed May 17, 1995, Ser. No. 737,472

Claims priority, application Australia, May 17, 1994, PM5692

Int. Cl.[6] E01H *11/00*; A01M *21/04*

U.S. Cl. 47—1.5 10 Claims



1. Apparatus for use in applying a treating liquid chemical to surfaces at or adjacent a longitudinal channel, said apparatus including:

a frame assembly adapted to be connected to a vehicle and to be raised and lowered in use;

first and second chemical applicator assemblies mounted to said frame assembly, each said applicator assembly having an applicator support housing and wheel means depending therefrom for supporting said applicator support housing on or against the surface to be treated and an applicator head operatively mounted to said applicator support housing for applying said liquid chemical, said first applicator assembly being operatively connected to said frame assembly for pivotal movement about a first longitudinal axis extending in the direction of travel and said second applicator assembly being operatively connected to said frame assembly by link means for orbital movement about a second longitudinal axis wherein said second applicator assembly may move up and down relative to said first applicator assembly from a first disposition in which said second applicator assembly is adjacent said first applicator assembly and lies in the same plane and a second disposition in which said second applicator assembly is above said first applicator assembly, said second applicator assembly being operatively connected to said link means for pivotal movement relative thereto about a third longitudinal axis whereby said first and second applicator assemblies are adapted to be drawn along non-parallel surfaces such that liquid chemical may be applied thereto.

5,826,371

BURNER UNIT PRINCIPALLY FOR FLAME CULTIVATION OF BLUEBERRIES

William Richard Benjamin, 17, Chamberlain St., Amherst, Nova Scotia, Canada, B4H 1J9

Filed Mar. 28, 1995, Ser. No. 411,466

Int. Cl.[6] A01M *15/00*

U.S. Cl. 47—1.44 14 Claims

1. A burner unit suitable for use in the burning of blueberry bushes, comprising:

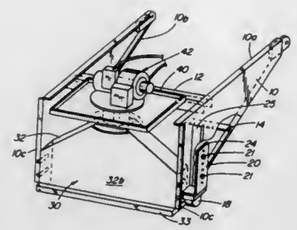
a) a frame having a front end suitable for attachment to a towing vehicle and having a rear end,

b) support means between said front and rear ends of the frame for supporting the frame above the ground,

c) a generally vertically oriented combustion chamber supported above the ground at the rear end of the frame, at least a part of said combustion chamber diverging laterally from an upper end towards a bottom outlet while maintaining a relatively narrow fore-and-aft dimension throughout the combustion chamber height, and such that said bottom outlet has a fore-and-aft dimension less than a quarter the bottom outlet width, and

d) oil burner means mounted at the upper end of said combustion chamber and directed downwardly, the shape of the combustion chamber and the positioning of the burner means being such that flames from the burner means are distributed across the bottom outlet width, and are capable of producing temperatures at ground level suitable for flame cultivation of blueberry bushes, over the whole width of the frame;

wherein said burner means is a single oil burner mounted at a center of the upper end of the combustion chamber, and wherein a heat shield is provided between the combustion chamber and the burner means, this heat shield overlying a major part of the width of the combustion chamber bottom outlet and extending both in front of and behind the chamber.



5,826,372

LAWN EDGING

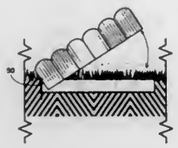
Peter D. Parsons, 1025 NE. 114th, Portland, Oreg. 97220

Filed Aug. 30, 1996, Ser. No. 705,796

Int. Cl.[6] A01G *1/00*

U.S. Cl. 47—33 10 Claims





1. A lawn edging secured to the ground comprising:

(a) a trough having a pair of spaced apart first upright sides;

(b) a tie-down device attached to and extending downwardly from said trough and securing said through to the ground;

(c) a major portion of each of said first upright sides in face-to-face abutment with at least one of said ground and a structure;

(d) said trough being secured to said ground, and interposed between an adjacent lawn and an adjacent said structure;

(e) an insert having a pair of spaced apart second upright sides, at least one of said second upright sides having a height greater than the height of at least one of said first upright sides;

(f) said second upright sides being detachably insertable between said first upright sides of said trough such that at least one of said second upright sides extends above at least one of said first upright sides so that said insert can be detached from said trough to enable said lawn adjacent said trough to be moved;

(g) said second upright sides are detachably engagable between said first upright sides; and

(h) both respective pairs of adjacent said first and second upright sides define major surfaces, said respective pairs of said major surfaces are in face-to-face frictional engagement when said insert is engaged within said trough.

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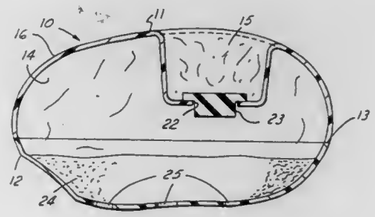
ARTIFICIAL LANDSCAPING BOULDERS

Frances D. Smyth, 31779 Chester, Garden City, Mich. 48135

Filed Feb. 18, 1997, Ser. No. 815,548

Int. Cl.[6] A01G *1/08*

U.S. Cl. 47—33 1 Claim



1. An artificial landscaping boulder which simulates the appearance of a natural boulder comprising a hollow enclosure formed by upper and lower sections, wherein the upper and lower sections cooperate with one another to provide a friction fit, and wherein the boulder includes an integrally molded planting pocket extending inwardly from the exterior of the upper section and having a removable plug to allow for drainage of water.

5,826,374

HYDROPONIC GARDEN APPARATUS

Brian A. Baca, 1001 San Mateo SE., Albuquerque, N. Mex. 87108

Filed Jun. 17, 1996, Ser. No. 665,324

Int. Cl.[6] A01G *31/00*

U.S. Cl. 47—62 16 Claims

6. A hydroponic plant growth apparatus, comprising:

a reservoir;

a distribution chamber operably connected to said reservoir; and

at least one plant growth chamber operably connected to said distribution chamber, said plant growth chamber comprising:

a lower bucket;

a middle bucket, at least a portion of said middle bucket being within said lower bucket, said middle bucket having at least one hole in a lower portion thereof; and

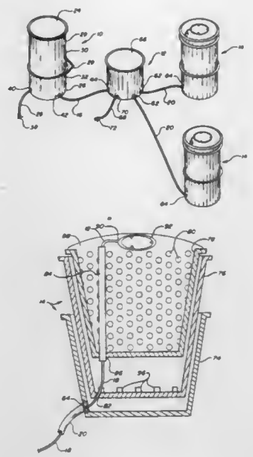
an upper bucket, at least a portion of said upper bucket being within said middle bucket, said upper bucket having at least one hole in a lower portion thereof.

13. A hydroponic plant growth apparatus, comprising:

a reservoir comprising an upper bucket, a lower bucket, and a float valve disposed in said lower bucket, said float valve admitting nutrient solution from said upper bucket of said reservoir to said lower bucket of said reservoir when a level of said nutrient solution in said lower bucket of said reservoir falls below a desired height;

a distribution chamber operably connected to said reservoir; and

at least one plant growth chamber operably connected to said distribution chamber.



15. A hydroponic plant growth apparatus, comprising:

a reservoir;

a distribution chamber operably connected to said reservoir;

at least one plant growth chamber;

a first tube extending between said distribution chamber and said at least one plant growth chamber; and

a second tube extending between said distribution chamber and said at least one plant growth chamber, said second tube being disposed within said first tube.

5,826,375

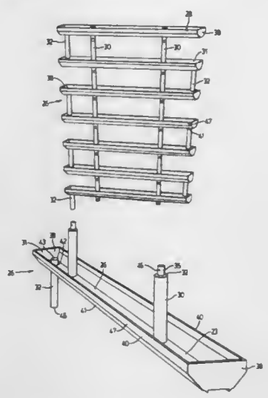
MODULAR PLANTER SYSTEM

Alan Black, 173 Tower Drive, Scarborough, Ontario, Canada, M1R 3P6

Filed Jun. 7, 1996, Ser. No. 660,253

Int. Cl.[6] A01G *9/02*; A47G *7/02*

U.S. Cl. 47—67 21 Claims



1. A modular planter system comprising:

(a) an upper longitudinally extending trough, a lower longitudinally extending trough, and a plurality of intermediately positioned longitudinally extending troughs positioned therebetween, each of said troughs having a top, a bottom surface, first and second opposed longitudinally displaced sides, a drainage aperture and a reservoir for storing water;

(b) a support for positioning said troughs one above another to form a substantially vertically extending series of troughs;

(c) a drainage conduit extending from the bottom of the upper trough and the bottom of each of the intermediately positioned troughs to a position adjacent the reservoir of the next lower trough for connecting in flow communication the drainage aperture of each of said troughs with the reservoir of the immediately lower trough.

8. A kit for assembling at least one modular planter system comprising:

(a) an upper longitudinally extending trough, a lower longitudinally extending trough and a plurality of intermediately positioned longitudinally extending troughs positioned therebetween, each of said troughs having a top, a bottom surface, first and second opposed longitudinally displaced sides, a drainage aperture and a reservoir for storing water;

(b) a support for positioning said troughs one above another to form a substantially vertically extending series of troughs;

(c) a drainage conduit extending from the bottom of the upper trough and the bottom of each of the intermediately positioned troughs to a position adjacent the reservoir of the next lower trough for connecting in flow communication the drainage aperture of each of said troughs with the reservoir of the immediately lower trough.

5,826,376

WINDOW REGULATOR FOR A VEHICLE AND METHOD OF ASSEMBLING THE SAME

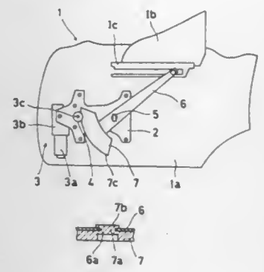
Hiroyuki Yamamoto, Toyota; Koichi Fujimoto, Kariya, and Yukio Isomura, Anjo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Oct. 23, 1996, Ser. No. 734,854

Claims priority, application Japan, Oct. 24, 1995, 7-275574

Int. Cl.[6] E05F *1/00*

U.S. Cl. 49—350 **2 Claims**



1. A window regulator in a vehicle comprising:

a lift arm pivotally mounted on a door panel of a vehicle;

a gear plate including teeth on a periphery thereof and connected to one end of said lift arm;

driving means engaging with said teeth for moving said gear plate and said lift arm; and

a movable rail to which a window glass may be fixed, said movable rail engaging with an other end of said lift arm,

wherein aligned pairs of recesses and projections are formed by deformation of said gear plate, said recesses having a diameter greater than that of said projections, wherein holes are formed in the lift arm, and wherein the projections extend through said holes and have flattened ends so as to connect said gear plate and said lift arm.

5,826,377

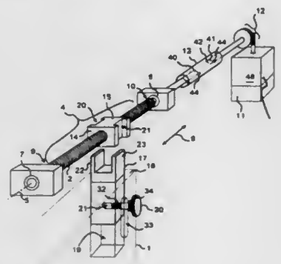
REMOTELY-DRIVEN POWER WINDOW

Anton K. Simson, and Todd A. Simson, both of 13227 Aubrey St., Poway, Calif. 92064

Filed Aug. 29, 1996, Ser. No. 704,025

Int. Cl.[6] E05F *11/34*

U.S. Cl. 49—362 **20 Claims**



1. A powered apparatus for providing translational motion for use with a sliding panel comprises:

a drive screw driven by a motor;

said drive screw having an axis of rotation;

a threaded nut driven by said screw; and,

a coupling member for releasably coupling said nut to said panel, thereby transmitting axial movement of said nut to said panel;

wherein said nut comprises first and second bearing surface portions straddling said axis; and

wherein said coupling member comprises a first end sized and dimensioned to bear against said bearing surface portions and a second end for mounting to said panel.

5,826,378

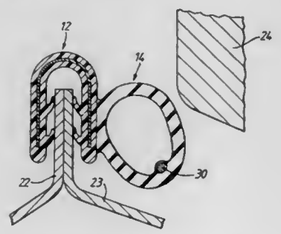
SEALING STRIPS

Gerard Gallas, Nantes, France, assignor to Draftex Industries Limited, Edinburgh, Scotland

Continuation-in-part of Ser. No. 184,561, Jan. 21, 1994, abandoned. This application May 10, 1996, Ser. No. 646,681

Int. Cl.[6] E06B *7/22*

U.S. Cl. 49—498.1 **22 Claims**



1. A closure arrangement for an opening, comprising

a frame of the opening,

a closure member movable towards the frame to close the opening, and

a sealing strip for sealing around at least part of the frame when the opening is closed by the closure member, the sealing strip comprising

longitudinally extending compressible material having a first portion positioned to be compressed between the frame and the closing closure member to seal around said at least part of the frame,

said longitudinally extending compressible material having a second portion positioned so as to be substantially uncompressed between the frame and the closing closure member, and

metallic material carried by said second portion of the compressible material and providing an increase in the mass of the compressible material so as to attenuate acoustic energy tending to pass between the frame and the closed closure member.

5,826,379

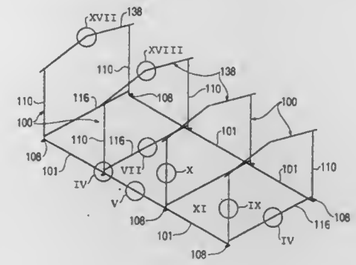
HIGHLY WIND RESISTANT PRE-ASSEMBLED RELOCATABLE BUILDING STRUCTURE

Paul Curry, 540 Park Blvd., Apt. J-54, Marion, Va. 24355

Filed Dec. 30, 1992, Ser. No. 998,673

Int. Cl.[6] E04H *1/00;9/00*

U.S. Cl. 52—79.1 **17 Claims**



1. A pre-assembled, relocatable building structure which is highly resistant to the effect of high velocity winds, which can be transported on transport means in a completed and which can be set on foundation members, comprising:

a metallic skeleton formed of a plurality of pairs of vertically extending metallic column members, longitudinally extending metallic side beam members and laterally extending metallic cross beam members, said side beam and cross beam members being permanently connected to said column members at a level proximate the lower end thereof, said skeleton further including a plurality of angled portions, each of said angled portions being permanently connected to the upper ends of a pair of said column members;

a plurality of horizontally extending anchor pads which are each permanently secured to a bottom of a column member, each anchor pad being formed with a hole through which a bolt which is set in a foundation member and which extends vertically upward, can be inserted, said anchor pads being arranged to seat on said foundation members and to elevate said side beam members so as to define a small clearance between the lower surface of said side beam members and the upper surface of said foundation members;

a floor structure supported on said side and cross beam members;

a wall structure disposed between said vertically extending column members,

a roof structure disposed between said angled portions; encapsulating means for sealing off openings which are defined between panels and into which high velocity winds can force their way and produce pneumatic forces which pry panels away from their positions; and

a plurality of elongate horizontally extending metal plates which are each permanently fixed to the top horizontal surface of a side beam, said metal plates supporting headers and the ends of floor joists which form part of said floor structure.

5,826,380

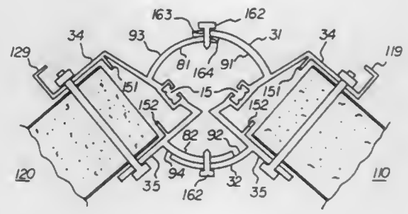
ROOF RIDGE APPARATUS FOR ADJUSTABLE-PITCH ROOF

Michael J. Wolfe, 2408 Navarey St., Safety Harbor, Fla. 34695

Filed Aug. 9, 1996, Ser. No. 695,038

Int. Cl.[6] E04D *13/00*

U.S. Cl. 52—90.1 **16 Claims**



1. Apparatus for fastening and securing two halves of a roof along a ridge wherein the two roof halves may be of adjustable pitches, the apparatus comprising:

a first roof panel receiving member, said first roof panel receiving member further comprising three elongated and generally planar sides, said three sides further comprising planar and parallel upper and lower roof panel surface members, said upper and lower roof panel surface members being parallel with each other and spaced so as to snugly receive the upper and lower surfaces of a roof panel member, and a connecting base member, said base member joining said upper and lower roof panel surface members at an angle of less than ninety degrees with said lower roof panel surface member and slightly greater than ninety degrees with said upper roof panel surface member;

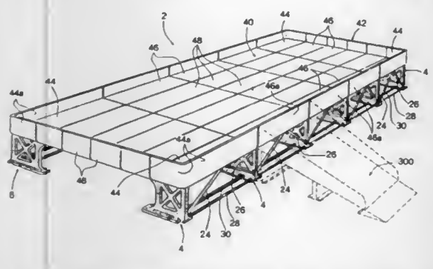
a second roof panel receiving member, said second roof panel receiving member further comprising three generally planar sides, said three sides further comprising planar and parallel upper and lower roof panel surface members, said upper and lower roof panel surface members being parallel with each other and spaced so as to snugly receive the upper and lower surfaces of a roof panel member, and a connecting base member, said base member joining said upper and lower roof panel surface members at an angle of less than ninety degrees with said lower roof panel surface member and slightly greater than ninety degrees with said upper roof panel surface member;

each said upper roof panel surface member including a roof top frame member extending therefrom;

said first roof panel receiving member having an elongated arced rotational guide, said elongated arced rotational guide comprising exterior arced rotational flanges extending from beginning points and directions generally perpendicular to said base member and said lower roof panel surface member of said first roof panel receiving member, respectively and each said exterior arced rotational flanges of the elongated arced rotational guide having inner surfaces which arc through portions of the same circle; and

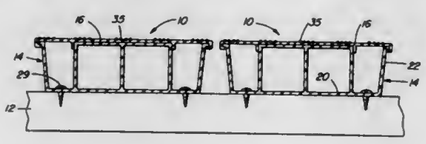
said second roof panel receiving member having an elongated arced rotational guide, said elongated arced rotational guide comprising interior arced rotational flanges extending from beginning points and directions generally perpendicular to said base member and said lower roof panel surface member of said second roof panel receiving member, respectively and each said interior arced rotational flanges of the elongated arced rotational guide having outer surfaces which arc through portions of the same circle and with a circle which is congruent with the inner circular surfaces of said first roof panel receiving member so that said rotational guide of said second roof panel receiving member is slidable and rotatable within the rotational guide of said first roof panel receiving member.

5,826,381
THREE-DIMENSIONAL PLACE-ON TYPE ASSEMBLABLE STRUCTURE
Mitsuo Sasaki, 3-11-12 Yamato-higashi, Yamato-shi, Kanagawa-ken, Japan
Filed Jun. 28, 1996, Ser. No. 670,979
Claims priority, application Japan, Jul. 10, 1995, 7-195787
Int. Cl.[6] E04H 6/42
U.S. Cl. 52—175 3 Claims



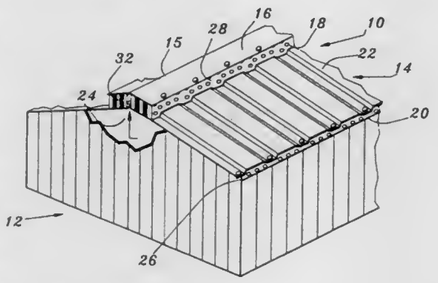
1. A three-dimensional structure dissociably assemblable and placeable on a substantially flat surface, the structure comprising:
a plurality of upright support members each integrally molded from concrete, the upright support members each including a base portion extending horizontally over a predetermined length with a predetermined width for resting on the flat surface; and an upright portion extending substantially vertically upwardly from the base portion, the upright portion having opposite side surfaces defining a widthwise thickness and opposite end surfaces defining a horizontal length, wherein the predetermined width of the base portion is wider than the widthwise thickness of the upright portion,
a beam means transversely connecting the plurality of upright support members, and
a connecting means longitudinally connecting the plurality of upright support members; and
wherein the beam means are each disposed so as to connect together upper end parts of the one end surface of the upright portion of each of the upright support members and the one end surface of the upright portion of another of the upright support members, the former one end surface and the latter one end surface being caused to face each other in the horizontally transverse direction,
horizontally transversely extending horizontal placing surfaces are formed by the upper surfaces of the beam means and the upper surfaces of the upright portions that are connected together by the beam means,
a plurality of floor panel members each substantially rectangular in a plan view and integrally molded from concrete, the floor panel members being connected to the upper surfaces of the beam means and the upper surfaces of the upright portions that are connected together by the beam means, and the floor panel members being adjacent to each other with spacing in the horizontally longitudinal direction,
at horizontally longitudinally opposite end portions of each of the floor panel members are formed a horizontal lower surface to be placed on the corresponding horizontal placing surface, and a flange portion extending downwardly from an inner side edge of the horizontal lower surface, and
the horizontal lower surface of each of the floor panel members is placed on the corresponding horizontal placing surface, a flange portion of each of the floor panel members is positioned to face, with a gap, one corresponding side surface of the upper end part of the upright portion of each of the upright support members, or one corresponding side surface of an upper end part of the beam means.

5,826,382
ELONGATED MEMBER OF EXTRUDED PLASTIC SUITABLE FOR FLOORING, DECKING, SEATING, AND LIKE USES
Glenn R. Elsasser, and Frederick E. C. Wall, both of Winnipeg, Canada, assignors to Western Profiles Limited, Winnipeg, Canada
Filed Dec. 19, 1996, Ser. No. 769,670
Int. Cl.[6] E04F 11/16;15/00
U.S. Cl. 52—181 14 Claims



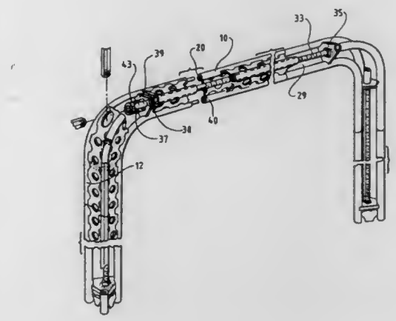
1. An elongated member suitable for flooring, decking, or seating, comprising a top plate formed as an extrusion of plastic material suitable for overlying a support,
wherein said top plate includes ribs constituted by protruding portions of parallel, spaced apart, elongated friction elements co-extruded therewith, said friction elements being formed of plastic having distinctly greater softness or flexibility than a main part of the top plate which is exposed between said friction elements and is suitable for providing a non-slip surface;
and wherein the main parts of the top plate are formed of plastic having a hardness of at least 70 Durometer on the Shore D scale, and the friction elements have a hardness of less than 80 on the Shore A scale.

5,826,383
ROOF CLOSURE VENT SYSTEM
Charles F. Garrison, P.O. Box 55392 222 Peck Rd., Houston, Tex. 77055
Filed Dec. 23, 1996, Ser. No. 777,929
Int. Cl.[6] F24F 7/02
U.S. Cl. 52—198 28 Claims



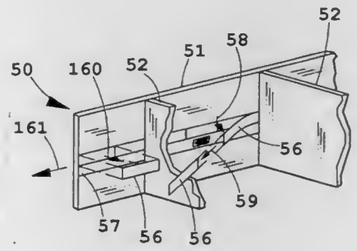
1. A roof closure vent system comprising:
a structure having a sloped metal roof having a ridge slot formed along substantially the length of a roof ridge permitting ventilation from the interior under said roof to the exterior;
a ridge closure vent positioned adjacent each longitudinal side of said ridge slot extending substantially along the length thereof fastened between said roof and a ridge panel;
a first closure member having perforations formed laterally therethrough, said first closure member facing exterior of said structure; and
a mesh mat adjacent said first closure member extending substantially the length thereof.

5,826,384
MODULAR TRUSS SYSTEM
Edward L. O'Neill, Castro Valley, Calif., assignor to Lucasey Manufacturing Company, Oakland, Calif.
Filed Nov. 12, 1996, Ser. No. 748,333
Int. Cl.[6] E04C 5/08
U.S. Cl. 52—223.9 27 Claims



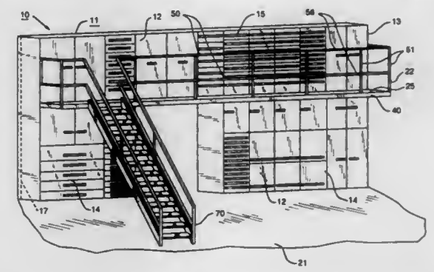
1. A modular truss system comprising:
at least two opposingly located and matingly connectable truss modules;
a plurality of flexible tensional members securingly received by each of said truss modules; and
said flexible tensional members develop a force that biases said truss modules towards one another and to maintain said biasing force during the use of said truss system to increase the load bearing capacity of said truss system.

5,826,385
PARTITION CONSTRUCTION WITH NOVEL REMOVABLE COVERS
Ronald A. Dykstra, Grandville; Russell P. Whitaker, and Michael D. Elsholz, both of Grand Rapids, all of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Mar. 26, 1997, Ser. No. 824,902
Int. Cl.[6] E04C 2/52
U.S. Cl. 52—220.7 36 Claims



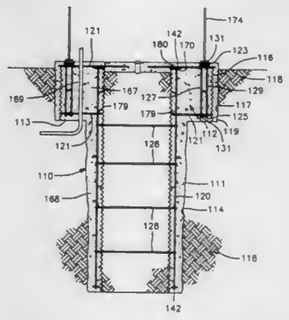
1. A partition construction for subdividing a building space comprising:
a partition frame having an open interior with utilities therein and defining a front side;
a removable cover covering a section of the partition frame; and
a cover support on the partition frame slidably supporting the cover for movement parallel the front side between a closed position covering the open interior and an open position providing access to the utilities in the open interior.

5,826,386
STORAGE STRUCTURE WITH MEZZANINE ACCESS AND METHOD OF ASSEMBLY
Joseph M. Casteel, 255 Lylton Rd., Moon Township, Pa. 15108
Filed May 7, 1997, Ser. No. 852,723
Int. Cl.[6] E04H 6/34; E04B 1/348
U.S. Cl. 52—236.3 18 Claims



1. A storage structure with mezzanine access, the storage structure comprising a row of storage cabinets stacked on top of each other to a predetermined height and thereby providing base and upper storage cabinets, said storage cabinets having internal supporting structural framework including vertical front and back beams and horizontal side beams with the frameworks of said stacked cabinets interconnected and said vertical back beams of the base cabinets secured to an underlying supporting floor, a mezzanine comprising a plurality of spaced horizontally aligned cantilever beams of predetermined length penetrating said storage structure and respectively connected to selected ones of said front and back vertical beams and extending beyond said vertical front beams with overhangs for cantilevered support thereon of a mezzanine deck, and decking supported on said beam overhangs for mezzanine access to said upper storage cabinets.

5,826,387
PIER FOUNDATION UNDER HIGH UNIT COMPRESSION
Allan P. Henderson, 5919 Mohawk Dr., Bakersfield, Calif. 93308, and Miller B. Patrick, 5808 Baywood, Bakersfield, Calif. 93309
Continuation-in-part of Ser. No. 346,935, Nov. 23, 1994, Pat. No. 5,586,417. This application Dec. 24, 1996, Ser. No. 773,053
Int. Cl.[6] E02D 5/38;27/32
U.S. Cl. 52—295 19 Claims



1. In combination, a large tower for support of power lines, street lighting and signals, bridge supports, wind turbines, commercial signs, freeway signs, ski lifts and the like which can be subject to a high torque moment, said tower having a rigid base flange at

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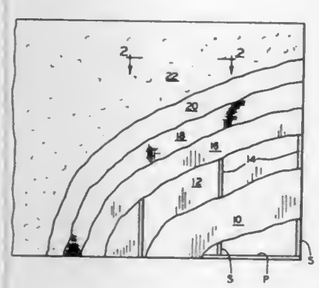
its lower end, and a pier foundation having a generally cylindrical upright structure of cementitious material, a substantial portion of which is embedded in the ground, said upright structure including a diametrically enlarged upper end section having a top and a bottom, said bottom defining a downwardly facing shoulder extending about a lower end portion of said upright structure, said upright structure being under heavy unit compression loading by a first set of upright tension rods disposed in and extending substantially the entire length of said upright structure and generally spaced about a center axis of said upright structure, a second set of upright tension rods disposed in and extending substantially the entire length of said diametrically enlarged upper end section and generally spaced about said center axis, sheathing surrounding substantially the entire length of the rods of said second set to shield said rods against bonding to said cementitious material, said tension rods of said second set including lower ends affixed to an anchor structure adjacent the bottom of said diametrically enlarged upper end section and exposed upper ends slidingly received through openings in said rigid base flange bearing downwardly upon said diametrically enlarged upper end section and a plurality of tensioning elements connected to said upper ends for placing said rods of said second set under heavy tension and said diametrically enlarged upper end section between where the lower ends of said rods of said second set are affixed to said anchor structure and below said rigid base flange, under heavy unit compression loading so that said upright structure will withstand high torque moments imparted to said tower.

5,826,388

COMPOSITE INSULATING DRAINAGE WALL SYSTEM

Michael R. Irving, Adrian, Mich., assignor to K2, Inc., Adrian, Mich.

Filed Jan. 21, 1997, Ser. No. 786,666
Int. Cl.[6] E04B *1/70*
U.S. Cl. 52—302.1 **14 Claims**



1. A composite insulating drainage wall system in combination with a wall substructure, comprising:

a) a support backing provided with an outer surface and an inner surface and engaging the wall substructure;

b) a flexible, conformable, protective sheeting material supported and in contact with the outer surface of said support backing;

c) a layer of insulating material provided with an outer surface and an inner surface in facing relation with the outer surface of said flexible, conformable, protective sheeting material;

d) means disposed between the outer surface of said flexible, conformable, protective sheeting material and the inner surface of said insulating material to produce generally spaced apart drainage conduits for directing the flow of moisture formed in the drainage conduits;

e) a layer of mesh material disposed on the outer surface of said insulating material; and

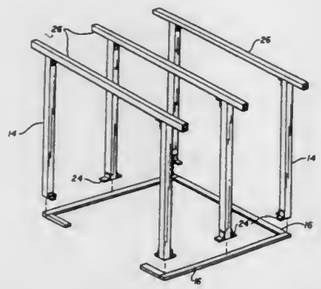
f) a layer of mortar applied over and securely engaging said layer of mesh material, to form an outer surface.

5,826,389

BUILDING MANUFACTURE AND METHOD USING SYNTHETIC POLYMER STRUCTURAL ELEMENTS AND ADHESIVE BONDING

Steven Lynn Siler, 150 Kincaid Rd., Cumberland Gap, Tenn. 37724

Continuation-in-part of Ser. No. 599,408, Nov. 29, 1995, abandoned. This application Jan. 4, 1997, Ser. No. 795,423
Int. Cl.[6] E04C *1/00*
U.S. Cl. 52—309.1 **16 Claims**



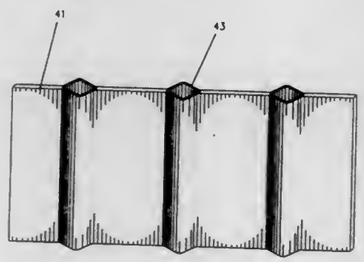
1. A utility building or housing consisting essentially of a plurality of plastic structural elements comprising base plates, stud posts, top plates, roof beams and L-shaped angle clips, wherein the stud posts are fastened to the base plates, top plates and roof beams by means of the L-shaped angle clips and polymer adhesive between the clips and the structural elements.

5,826,390

BUILDING WALL MEMBRANE

Abraham Sacks, Vancouver, Canada, assignor to Sacks Industrial Corp., Vancouver, Canada

Filed May 28, 1996, Ser. No. 654,257
Int. Cl.[6] E04B *1/70*
U.S. Cl. 52—408 **13 Claims**



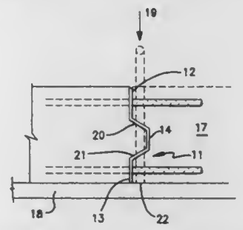
1. A vapour permeable prefabricated membrane for use in an exterior wall of a building, said membrane comprising a sheet of vapour permeable material and a plurality of non-collapsible furring spacers incorporated on said sheet such that when abutting a flat surface in said exterior wall, passageways are formed between said sheet of material and the surface which said spacers abut so as to permit a substantially free flow of moisture in a downwardly direction when in place in said wall.

5,826,391

CONCRETE JOINT AND METHOD

Daniel Charles Underwood, Factory Shed 3, Unit 1, 197 Murarrie Road, Murarrie, Queensland 4172, Australia

Filed Nov. 15, 1996, Ser. No. 749,650
Claims priority, application Australia, Nov. 15, 1995, PN6584
Int. Cl.[6] E01C *11/02*
U.S. Cl. 52—414 **5 Claims**



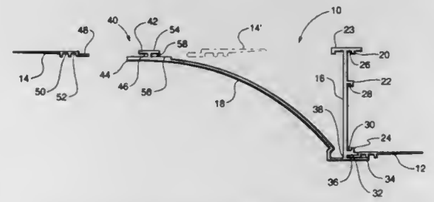
1. In combination with a wooden deck and a slab poured on the deck, an edge formwork for a part of the slab poured on the deck prior to an adjoining part of the slab being poured, the formwork comprising a narrow elongate sheet metal panel having an upper portion, a lower portion and an intermediate portion displaced laterally out of the longitudinal line of the panel, the respective upper and lower portions having holes at spaced intervals along the panel, the upper and lower portions having reinforcing rods projecting through the holes therein and into a space to be occupied by a marginal edge portion of the adjoining slab, and the intermediate section having pairs of spaced aligned holes set at intervals along the panel and offset relative to the reinforcing rods, selected ones of said pairs of holes having respective upright bracing members extending through the intermediate section, each upright bracing member comprising a removable rod including an upper end projecting above the panel and a lower end engaging the deck and having a nail point driven into the wooden deck, the upright bracing member being solid and the nail point comprising a pin held by adhesive in a hole drilled into the upright bracing member, the pin being held to project from the end of the upright bracing member.

5,826,392

TRANSITION MEMBER FOR VARYING CEILING LEVELS

Wesley T. K. Bischel, Lancaster, and Richard D. Stackenwalt, Dallastown, both of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Jun. 13, 1997, Ser. No. 874,290
Int. Cl.[6] E06B *3/70*
U.S. Cl. 52—459 **13 Claims**



1. A transition member between different levels of a ceiling comprising:

a horizontal upper ceiling level;

a horizontal lower ceiling level located below the upper ceiling level;

a vertical section with an upper edge and a lower edge parallel to each other and at least a first rib and a second rib protruding from one side of the vertical section, each rib shaped to form a channel along the vertical section, with the two channels parallel to, separated from, and facing each other, and with the first rib located adjacent to the lower edge of the vertical section with the lower edge of the vertical section located adjacent to the lower ceiling level; and

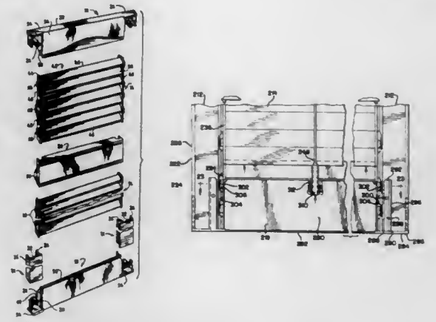
an angular section with an upper and a lower edge, with the lower edge of the angular section attached to the vertical section and protruding upward from where it is attached and away from the vertical section with the upper edge of the angular section located adjacent to the upper ceiling level.

5,826,393

FASTENERLESS MODULAR SHUTTER WITH ADJUSTABLE PANEL SUPPORT MEMBER

John C. Wenzlaff, Wonder Lake; Stephen J. Schreiner, Woodstock; Joseph P. Creasey, McHenry, all of Ill.; Alan MacGowan, Walworth, Wis.; Michael J. Ricard, Prospect Heights, Ill.; LeRoy Pohl, Elkhorn, Wis.; David E. May, Geneva, Ill., and David A. Bures, Bridgewater, N.J., assignors to Selfix, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 414,428, Mar. 31, 1995, abandoned, and a continuation-in-part of Ser. No. 585,490, Jan. 16, 1996, abandoned. This application Mar. 27, 1997, Ser. No. 825,274
Int. Cl.[6] E06B *7/08*
U.S. Cl. 52—473 **66 Claims**



1. A fastenerless modular shutter comprising:

a pair of side rails, a panel member disposed between and secured to said side rails, and end rails secured to said side rails and disposed at either end of said panel member enclosing said panel member;

each of said side rails having a front wall, a generally planar inner wall, and an outer wall, said side rails being spaced apart one from the other with said inner walls facing each other and lying in generally parallel planes;

said panel member having a central portion and a pair of runner portions disposed along the sides thereof, said runner portions being oriented generally parallel to said inner walls of said side rails, each of said runner portions engaging an associated side rail to secure said panel member to each of said side rails; and

said end rails having an end wall portion, and including a pair of locking portions slidably received in an associated side rail, each said locking portion including at least one interferingly, frictionally engaging projection engaging with its said associated side rail to resist disengagement of said end rails from said side rails.

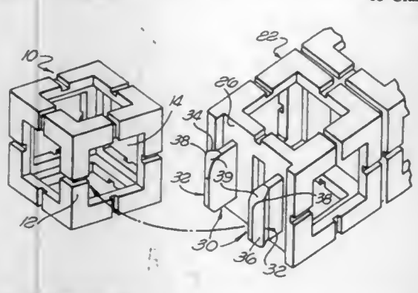
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5,826,394

BASIC BUILDING BLOCKS FOR CONSTRUCTING COMPLEX BUILDING STRUCTURE

William M. Barton, Jr., Encinitas, and Lonnie Pogue, San Diego, both of Calif., assignors to Rokenbok Toy Company, Cardiff, Calif.

Filed Nov. 19, 1996, Ser. No. 752,213
Int. Cl.[6] E04B 2/08;2/18;2/32;2/46
U.S. Cl. 52—592.1 63 Claims



21. In combination,

a hollow block having a configuration of a rectangular prism and having six (6) walls each defining a face of the rectangular prism and each having a particular thickness and at least two particular ones of the walls having openings in such walls,

a plurality of hollow beams each having a configuration of a rectangular prism and each having six (6) walls, each wall defining a face of such rectangular prism and each wall having a particular thickness, two (2) walls in each of the hollow beams having snaps constructed and shaped to extend into the openings in at least the particular ones of the walls in the block for retention by the walls defining such opening,

the snaps in each of the beams being shaped and constructed and being disposed relative to the snaps in the other ones of the beams, with the snaps in the beams being disposed in the openings in the particular ones of the faces of the block, so that none of the snaps in the beams interferes with any of the other snaps in the beams when the snaps are disposed in the openings in the particular ones of the faces in the block,

the openings in the particular ones of the faces in the block communicating with one another.

5,826,395

CONCRETE BLOCK WITH OFFSET LEDGE AND INSTALLATION GUIDE MEANS

Elvin W. Weaver, 225B North King St., Denver, Pa. 17517

Filed Jul. 17, 1997, Ser. No. 895,668
Int. Cl.[6] E04C 2/04
U.S. Cl. 52—606 23 Claims

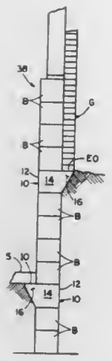
1. A building construction block, comprising:

(a) a body of rigid material having a substantially rectangular-shaped main portion and a substantially wedge-shaped offset portion formed integral with said main portion;

(b) said body also having a pair of opposite side surfaces, a bottom surface, a top surface, a front surface and a rear surface, said top surface and at least one of said pair of opposite vertical side surfaces being defined on both said main and offset portions, said rear and bottom surfaces being defined solely on said main portion, said front surface being defined solely on said offset portion and extending in a generally inclined direction from said bottom surface to said top surface and away from said rear surface;

(c) said top surface of said body having a first part overlying said main portion of said body being adapted to receive and support a first building component upon said main portion;

(d) said top surface of said body having a second part overlying said offset portion of said body being adapted to receive and support a second building component upon said offset portion,



said first part of said top surface having a width greater than a width of said second part of said top surface, said width of said second part of said top surface being between about one-fourth to one-half of said width of said first part of said top surface; and

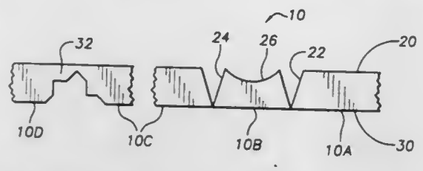
(e) at least one cavity through only said main portion of said body from said top surface to said bottom surface.

5,826,396

DOUBLE-SIDED, SINGLE PASS GROOVING OF COUNTERTOPS AND OTHER BUILDING STRUCTURES

Walter Michaels, 2060 Emery St. #233, La Habra, Calif. 90631

Filed Feb. 27, 1997, Ser. No. 807,573
Int. Cl.[6] E04C 2/30; A47B 13/10
U.S. Cl. 52—631 20 Claims



10. A building structure manufactured from a sheet having:

a first groove in one side of the sheet defined by a surface of the sheet which at least partially defines first and second connected sections, and a second groove in an opposite side of the sheet defined by an opposing surface of the sheet which at least partially defines a third section;

the first and second sections brought together at the first groove after the second groove is formed, to produce a joint defining an angle of less than 150°.

5,826,397

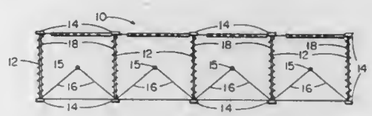
COLLAPSIBLE FRAMEWORK FOR TRADE SHOW DISPLAY

Charles K. Armold, 7410 Dormany Loop Rd., Plant City, Fla. 33565

Filed Mar. 25, 1997, Ser. No. 823,142
Int. Cl.[6] E04H 12/18
U.S. Cl. 52—646 17 Claims

1. A collapsible display system having a front and a back, said display system comprising, in combination:

a plurality of adjacent box units with each having eight corners, said units defined by a plurality of hub members, said corners



of said units having one of said plurality of hub members, and each of said plurality of adjacent units sharing common hub members;

a plurality of diagonal support members connected between said hub members on the front of the display system and respective opposite hub members on the back of the display system, said diagonal support members pivotly coupled to said hub members respectively, and each of said plurality of diagonal support members crossing over another of said plurality of diagonal support members in a scissors-like manner;

a plurality of horizontal support members with each having a pivot means at its midpoint for providing a flexible pivot point, each one of said plurality of horizontal support members disposed between two adjacent hub members of said plurality of hub members respectively and pivotly coupled thereto, each of said plurality of horizontal support members having a length greater than a distance between each of said hub members being connected thereto;

a plurality of shaping members horizontally disposed upon the display system, said shaping members detachably coupled to at least two of said diagonal support members whereby said plurality of shaping members help to form the display system;

a plurality of vertical support members vertically disposed within the display system, said plurality of vertical support members detachably coupled to at least two of said plurality of hub members whereby said plurality of vertical support members help to form the display system; and

a plurality of adjustable stabilizing members, each of said plurality of stabilizing members comprising a telescoping means for adjusting the length of each of said adjustable stabilizing members, each of said adjustable stabilizing members being mounted within the display system such that said adjustable stabilizing members expand the display system as well as prevent the display system from distorting, each one of said stabilizing members being substantially horizontally disposed between two adjacent hub members of said plurality of hub members and detachably coupled to said diagonal support members being pivotly coupled to said hub members respectively.

5,826,398

DEVICE AND METHOD FOR PROTECTING FROM REINFORCEMENT BAR INJURY

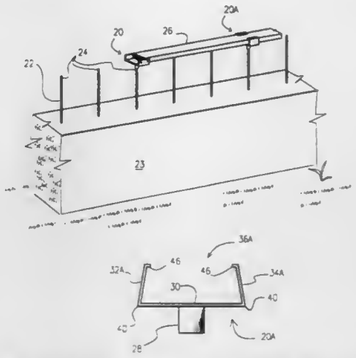
Michael A. Carnicle, 11100 E. Dartmouth Ave., No. 16, Aurora, Colo. 80014

Filed May 22, 1996, Ser. No. 647,428
Int. Cl.[6] E04C 5/16; E04H 17/14
U.S. Cl. 52—698 8 Claims

1. A safety apparatus for forming a temporary barricade and for temporarily covering ends of a plurality of exposed reinforcement bars having ends, the apparatus also serving for preventing injury from contact with the exposed reinforcement bars at a construction site, the apparatus comprising:

a collar of a resilient material, the collar having a

plurality of radial fins of unitary construction with said collar for providing an interference fit between the fins and the ends of the reinforcement bars and allowing temporary attachment of the collar over the ends of the exposed reinforcement bars;



a resilient, unitary saddle shaped portion of one piece construction with said collar, the saddle shaped portion comprising:

a substantially flat portion that is integral with said collar;

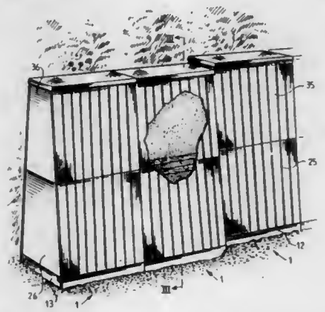
a first side wall and a second side wall, the first side wall and the second side wall being unitary with the substantially flat portion and extending away from the substantially flat portion and away from said collar and converging towards one another so that the fist side wall and the second side wall are furthest from one another near the substantially flat portion, so that when said collar is slipped over the end of the exposed reinforcement bar the collar serves for frictional engagement with the end of the reinforcement bar, and so that the substantially flat portion is held over the end of the reinforcement bar by said collar, and so that a removable bumper means placed between the first side wall and the second side wall and over the substantially flat portion will cover at least one of the ends of the reinforcement bars, and so that a person falling over the end of the reinforcement bar will be protected from impalement with the reinforcement bar by the bumper and so that the person will not be injured by said safety apparatus due to the resiliency of the safety apparatus.

5,826,399

NOISE-REDUCING BARRIER CONSTRUCTION

Staffan Dahl, Renlavsgangen 36, Tyresö, Sweden, 135 35

PCT No. PCT/SE95/00300, § 371 Date Sep. 25, 1996, § 102(e) Date Sep. 25, 1996, PCT Pub. No. WO95/26443, PCT Pub. Date Oct. 5, 1995
PCT Filed Mar. 22, 1995, Ser. No. 700,410
Claims priority, application Sweden, Mar. 25, 1996, 9401019
Int. Cl.[6] E04B 1/00
U.S. Cl. 52—745.1 5 Claims

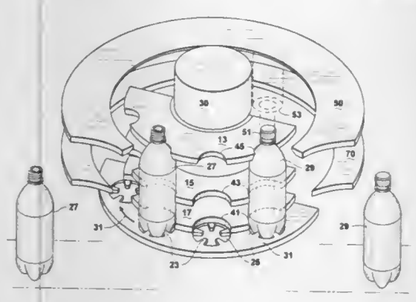


1. A method of building a noise-reducing barrier construction on the ground, wherein box-like construction elements are positioned adjacent to each other in a row and are filled with a sound damping filling material.

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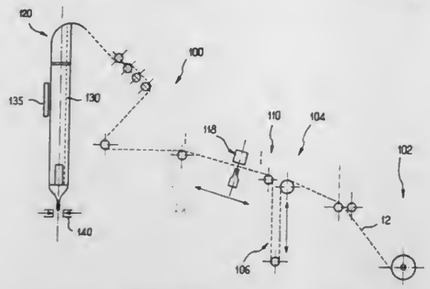
said method comprising providing a gravel bed on the ground,
placing a bottom section of each construction element on the gravel bed, stacking one or more upwardly, inwardly tapering construction element sections of wooden material on top of the bottom section, each upper section and an adjacent underlying construction element section having wooden frames engaging with each other, so that the stacked sections are fixed in position, said upper sections comprising inwardly inclined wall panels, which securely anchored to the wooden frame and adjoining each other horizontally and vertically,
filling said filling material into an upper opening of an uppermost one of said one or more upper construction element sections, and covering said upper opening by a lid made of a water-tight, weather-proof material, so that the barrier construction, including the filling material, is kept dry.

5,826,400
PLASTIC BOTTLE ROTATION RESTRAINT FOR CAPPING MACHINE
Robert A. Martin, and Wendell S. Martin, both of Fort Smith, Ark., assignors to Anderson-Martin Machine Company, Fort Smith, Ark.
Filed Aug. 20, 1997, Ser. No. 917,786
Int. Cl.[6] B65B *7/14*
U.S. Cl. 53—367 **16 Claims**



1. In a capping machine adapted for capping plastic bottles with screw caps, said capping machine having a rotating table and a plurality of capping heads rotating with said table, apparatus to provide restraint for rotation of the bottle without any intrusive knives or pins for grasping the bottle comprising:
a bottle nest including a bottle supporting surface and at least three fingers stationary relative to the table and surface in a radial array positioned on said table under each capping head, at least the radially inward portions of said fingers rising upward between about one-eighth inch to about one-half inch above said bottle supporting surface; and
rotating receivers including bottle receiving recesses respectively located at said capping heads at a level near the bottom of the bottles when resting on said bottle supporting surface;
whereby said receivers cause each bottle to assume a position substantially coaxial with the center of a respective one of said array of fingers to guide each bottle to drop into engagement with the fingers of a bottle nest, thereby restraining rotation of bottles during application of screw caps.

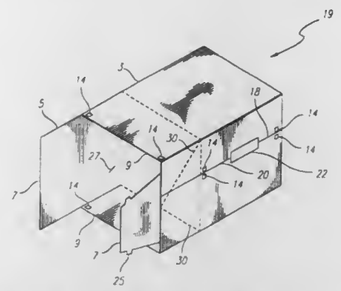
5,826,401
MACHINE AND A METHOD FOR AUTOMATICALLY FORMING, FILLING, AND CLOSING BAGS
Henri Bois, Neuilly-sur-Seine, France, assignor to Flexico-France, Henonville, France
Filed Feb. 27, 1997, Ser. No. 806,377
Claims priority, application France, Feb. 27, 1996, 96 02389
Int. Cl.[6] B65B *61/18;9/08*
U.S. Cl. 53—412 **58 Claims**



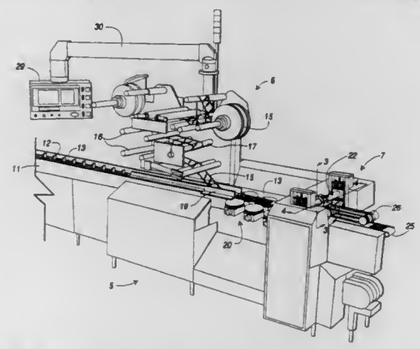
39. A method of manufacturing bags from a flexible film provided with complementary closure ribs, by using an automatic forming, filling, and sealing machine, comprising the steps of:
providing a tubular means for forming flexible film material, having oppositely disposed longitudinally extending edges, into a tubular bag by bringing said oppositely disposed longitudinally extending edges together;
conveying a single sheet of flexible film material from a supply of flexible film material to said tubular forming means so as to permit said tubular forming means to form a tubular bag by bringing said oppositely disposed longitudinally extending edges together;
providing a means for enabling filling of said tubular bag with a product to be introduced into and contained within said bag;
providing a means for sealing said tubular bag, including said longitudinally extending edges of said flexible film material, so as to retain a product, introduced into said tubular bag, within said tubular bag; and
forming at least one fold within said single sheet of flexible film material, at a location which is upstream of said tubular forming means and which is interposed between said supply of flexible film material and said tubular forming means, and prior to said forming of said single sheet of flexible film material into said tubular bag within said tubular forming means, so as to provide at least one gusset within said tubular bag when said single sheet of flexible film material is formed into said tubular bag by said tubular forming means.

5,826,402
PRE-WRAPPED GIFT BOX
Tommy R. Savage, 14100 Montfort Dr. #2248, Dallas, Tex. 75240
Division of Ser. No. 242,476, May 13, 1994, Pat. No. 5,584,429, which is a continuation-in-part of Ser. No. 15,209, Mar. 25, 1993, which is a continuation-in-part of Ser. No. 933,493, Aug. 21, 1992, Pat. No. 5,245,815. This application Sep. 17, 1996, Ser. No. 713,894
Int. Cl.[6] B65B *5/04;43/26;51/06;69/00*
U.S. Cl. 53—449 **4 Claims**

1. The method of making a side loading, top opening prewrapped gift box comprising the steps of:
forming a box substrate having front, bottom, back and top panels in which pairs of panels, the front and bottom panels, the bottom and back panels, and the back and top panels being connected to each other along one edge by a bendable vertical crease and having a pair of front flaps, a pair of bottom flaps, a pair of back flaps and a pair of top flaps, each flap of said pair connected to the front, bottom, back and top panels respectively along one opposing edge by a bendable horizontal crease, said horizontal creases being transverse to said vertical creases;
detachably connecting a front lip, connected to the top panel along one edge by a bendable crease, to a surface of the front panel to form a box tube, said detachably connecting being sufficiently easily detachable to permit convenient top opening of a box formed from said box tube;
adhering decorative paper wrapper about said box tube; and
applying adhesive to the substrate for connecting one of the front, bottom and back flaps of each pair to form a box end during box loading and not connecting the top flap thereto in order to permit the top flap to easily be removed from said box end during top opening by rotating the top panel about the bendable vertical crease connecting the top panel to the back panel.

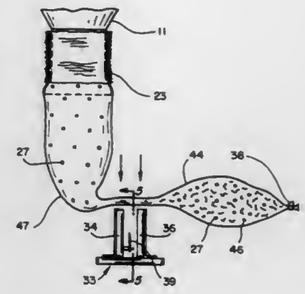


5,826,403
HORIZONTAL FORM, FILL, AND SEAL PACKAGING MACHINE
Charles T. Haley, Bogart, Ga., assignor to Food Machinery Sales, Inc., Athens, Ga.
Division of Ser. No. 545,346, Oct. 17, 1995, Pat. No. 5,678,390. This application Jun. 3, 1997, Ser. No. 867,935
Int. Cl.[6] B65B *9/06;41/12;41/16*
U.S. Cl. 53—450 **17 Claims**



1. A method of loading a roll of flexible packaging film on a packaging machine, the packaging machine having an elongate film spool, and a packaging film forming shoe, the packaging film having a web, the web having a free end, said method comprising the steps of:
passing the roll of packaging film over at least a portion of the film spool;
rotatably mounting the roll of packaging film on the film spool;
moving a film spool support arm, to which the film spool is fastened, from a lowered loading position with respect to the packaging film forming shoe into a raised working position.

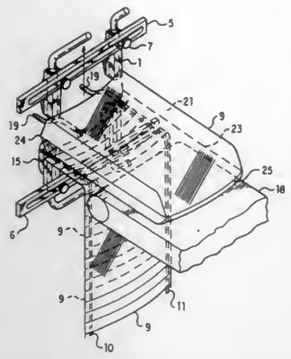
5,826,404
SYSTEM AND METHOD FOR USE OF LOOSE FILL PACKING MATERIALS
Gunter G. Fuss, 932 Peninsula Ave. No. 408, San Mateo, Calif. 94401, and Vladimir Yampolsky, 3330 Brittan Ave. #5, San Carlos, Calif. 94070
Continuation-in-part of Ser. No. 101,499, Aug. 2, 1993, Pat. No. 5,788,078. This application Jun. 28, 1996, Ser. No 673,296
Int. Cl.[6] B65B *9/15;23/00*
U.S. Cl. 53—459 **11 Claims**



1. A system for packaging loose fill packing material in bags for use as cushions in shipping cartons, comprising:
a dispenser having an outlet through which loose fill packing material is discharged;
an elongated length of flexible plastic tubing folded and gathered axially about the outlet to form a coil from which successive sections of the tubing can be pulled and closed at their lower ends to form bags for receiving loose fill material discharged through the outlet;
means for actuating the dispenser to fill a section of the tubing which has been pulled from the coil and closed at its lower end;
means for simultaneously closing the upper end of the filled section and the lower end of the next section pulled from the coil; and
means for severing the filled section from the next successive section after the ends of the two sections have been closed.

5,826,405
METHOD AND APPARATUS FOR OPENING TAPED BAGS
Glenn W. Killinger; Gregory E. McDonald, both of Simpsonville, and Charles C. Zende, Greer, all of S.C., assignors to W. R. Grace & Co.-Conn., Duncan, S.C.
Filed May 16, 1997, Ser. No. 857,277
Int. Cl.[6] B65B *43/30;43/36;43/12;43/52*
U.S. Cl. 53—459 **25 Claims**

1. A method of opening a bag mounted on a tape comprises:
a) providing a bag comprising a first panel, a second panel, a first bag edge, a second bag edge, a bag bottom, and a bag mouth;
b) holding the bag mouth between a first means for vacuumizing and a second means for vacuumizing;
c) moving the first and second means for vacuumizing such that the bag mouth disengages from the tape;
d) activating the first and second means for vacuumizing to draw a vacuum through said means; and



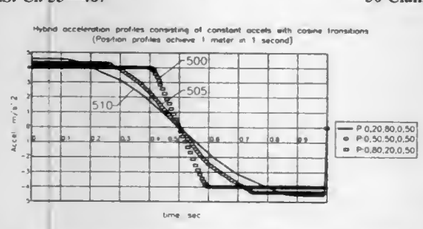
e) further moving the first means for vacuumizing such that the bag mouth opens.

5,826,406

SERVO-CONTROLLED CONVEYOR SYSTEM FOR CARRYING LIQUID FILLED CONTAINERS

Robert D. Massey, Paddock Lake, Wis., assignor to Tetra Laval Holdings & Finance, S.A., Pully, Switzerland

Filed May 1, 1997, Ser. No. 848,888
Int. Cl.[6] B65B *43/52;3/00*
U.S. Cl. 53—467 **30 Claims**



1. A conveyor system for transporting a plurality of liquid-filled containers each having an open top, the conveyor system comprising:

a conveyor for supporting the plurality of liquid-filled containers;

a servomotor connected to drive the conveyor;

a programmable servomotor control system connected to control movement of the servomotor in indexed steps in accordance with a programmed motion profile, the programmed motion profile including a move portion and a dwell portion, the move portion being substantially non-jerk limited.

5,826,407

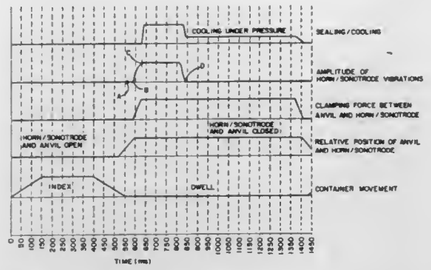
METHOD OF ULTRASONICALLY VIBRATING A WORKPIECE

Peter Giacomelli, Lund, Sweden, and Joe Kotarski, Plainfield, Ind., assignors to Tetra Laval Holdings & Finance, S.A., Pully, Switzerland

Filed Oct. 7, 1997, Ser. No. 946,162
Int. Cl.[6] B65B *51/10*
U.S. Cl. 53—477 **1 Claim**

1. A method for ultrasonically sealing a plurality of top fin panels of a gable top carton on a packaging machine, the method comprising:

transporting the carton on a conveyor by an indexed movement to a filling station, the carton having an open top end to provide access to the interior of the carton;



filling the carton with a product;

providing an ultrasonic sealing station comprising an ultrasonic sonotrode disposed on one side of the conveyor and an anvil disposed opposite the sonotrode on the other side of the conveyor, and a transducer attached to the sonotrode for providing ultrasonic energy thereto, the anvil and sonotrode operably between an open position for receiving a carton and a closed position for sealing a carton;

energizing the transducer;

vibrating the sonotrode subsequent to energizing the transducer, the vibrations increasing in amplitude from a first amplitude at a first point in time to a full amplitude at a second point in time;

transporting the filled carton by the indexed movement to the ultrasonic sealing station, the plurality of top fin panels of carton transported between the anvil and the sonotrode while the anvil and the sonotrode are in an open position;

clamping the plurality of top fin panels between the sonotrode and the anvil immediately prior to the sonotrode vibrating at the full amplitude;

sealing the plurality of top fins by ultrasonic energy to create a top fin of a hermetically sealed carton; and

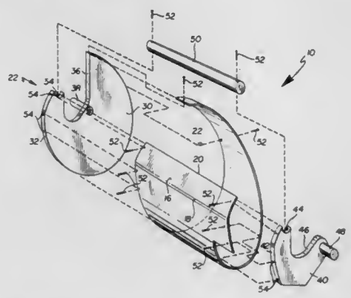
releasing the top fin from the anvil and the sonotrode.

5,826,408

ROTARY FLAP TUCKER FOR A CARTONING MACHINE

Colin P. Ford, Woodstock, Ga., assignor to Riverwood International Corporation, Atlanta, Ga.

Filed May 8, 1997, Ser. No. 853,322
Int. Cl.[6] B65B *7/20*
U.S. Cl. 53—491 **21 Claims**



1. A flap tucker, comprising a generally tubular member, said tubular member having a center axis and a circumferencial wall formed about said center axis, said circumcerential wall having an opening and further having:

(a) an inside surface;

(b) an outside surface

(c) a first end of smaller arc length

(d) a second end of greater arc length;

(e) a first edge forming a border of said opening in said circumferencial wall said first edge advancing in a generally helical manner about said center axis from said first end to said second end; and

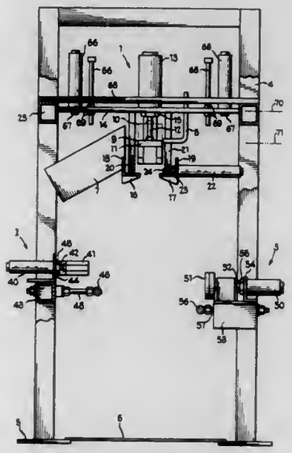
(f) a second edge forming a border of said opening in said circumferencial wall, said second edge generally being parallel to said center axis and extending from said first end to said second end.

5,826,409

METHOD AND APPARATUS FOR REMOVING BOTTLE CAPS FROM BOTTLES

Frank J. Slepicka, Berwyn, and Douglas J. Hidding, Barrington, both of Ill., assignors to Blackhawk Molding Co., Inc., Addison, Ill.

Filed Jun. 11, 1996, Ser. No. 661,924
Int. Cl.[6] B65B *43/26;43/38;43/40*
U.S. Cl. 53—492 **19 Claims**



10. A method of removing bottle caps from liquid-containing bottles, comprising the steps of:

(a) lowering a decapping assembly having an underside, an actuator mounted to the assembly and a set of jaw members, at least one jaw member of the set of jaw members being attached to the actuator and at least one jaw member of the set of jaw members being mounted to the underside of the assembly, over a cap so that said jaw members are positioned on opposite sides of said cap;

(b) activating said actuator thereby gripping said cap with said set of jaw members of said decapping assembly;

(c) pulling said cap up and off of a bottle with said decapping assembly; and

(d) preventing substantial upward movement of said bottle when pulling said cap with said decapping assembly.

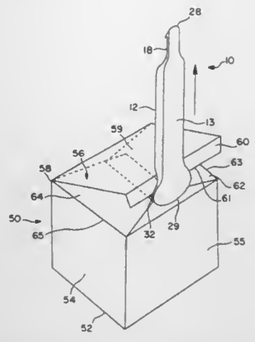
5,826,410

LID LIFTER

Larry A. Galen, 37 Michelle La., St. Peters, Mo. 63376

Division of Ser. No. 848,932, Jun. 12, 1995, Pat. No. 5,568,750. This application Jul. 29, 1996, Ser. No. 688,203
Int. Cl.[6] B65B *43/26*
U.S. Cl. 53—492 **2 Claims**

1. A method of removing an item from a box containing said item, said box having a top with a generally horizontal axis with pivoting top members, said box having side walls and at least one



depending, downwardly extending flap having a lower surface below said top comprising:

providing an opening tool, including a gripping body portion at the mid portion of the tool and having flap engagement portions at opposite distal ends of said tool, with one of said flap engagement portions extending transversely a greater distance than the other flap engaging portion from the mid-portion of the tool;

each of said flap engagement portions having hook means for engaging said depending, downwardly extending flap;

each of said flap engaging portions including a tapered portion near its distal end and a knife edge at the distal end of said tool;

locating a selected distal end portion of said tool between said downwardly extending flap and a wall of said box by placing one of said knife edges between said flap and said container wall;

lowering said tool with said handle below said lower surface of said flap whereby one of said locking members engages said lower surface of said flap;

raising said tool with said handle portion whereby said flap moves vertically from said downwardly extending position into a position out of said box and said top pivots about said axis enabling said top to be pivoted to an open position; pivoting top members extending from side walls upwardly to a completely open position; and

removing said item from said box.

5,826,411

PACKAGING MACHINE FOR PACKAGING DIFFERENT PRODUCTS WITH HEAT-SHRINKING PLASTIC FILM

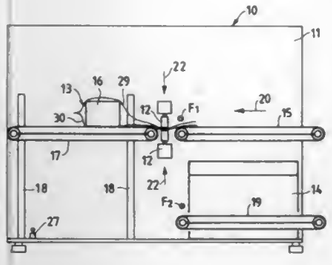
Luciano Butturini, Parabiago, Italy, assignor to Italdibipack S.p.A., Milan, Italy

Filed Feb. 12, 1997, Ser. No. 798,101
Claims priority, application Italy, Feb. 13, 1996, MI96A0265
Int. Cl.[6] B65B *53/02*
U.S. Cl. 53—557 **1 Claim**

1. A packaging machine for packaging a product with heat-shrinking plastic film comprising:

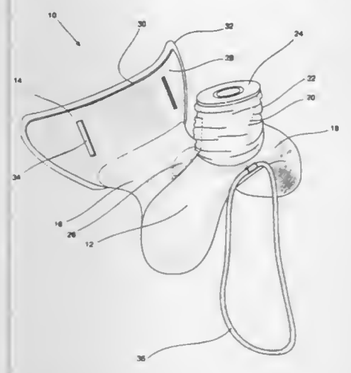
first conveyor means for entry of said product;

means for cutting and sealing said film around said product, said cutting and sealing means receiving said product from first conveyor means and producing from said product a wrapped product;



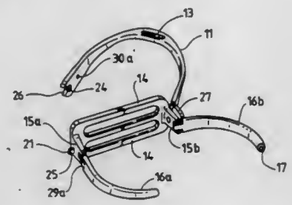
second conveyor means for receiving said wrapped product from said cutting and sealing means.

5,826,412
APPARATUS FOR IMPROVING THE ART OF DALLYING
Howard K. Harrell; Wayne A. Payne, and Charles B. Mitchell, III, all of 3121 Hartsfield Rd., Tallahassee, Fla. 32303
Filed Mar. 15, 1996, Ser. No. 616,220
Int. Cl.[6] A63B *69/00*
U.S. Cl. 54—1 **20 Claims**



1. A dallying apparatus comprising:
a front end having a horn;
a back end;
a middle portion is located between said front end and said back end;
said back end includes a securing means for enabling removable attachment to a user;
said middle portion secures said back end to said front end and said back end extends upwardly and substantially transversally and vertically from a longitudinal axis to provide for said middle portion to be substantially perpendicular from said middle portion and said back end is inwardly convex with respect to said middle portion for providing for said back end to conform to the shape of said user;
said convex back end and said horn are anteiorly located when said securing means is attached to said user, and said horn and said back end are in an upright position and both extend upwardly from said middle portion;
said back end, said middle portion, said front end and said horn form an integral and rigid structure, and
said middle portion is displaced lower than said horn for providing a structure which is suited for dallying.

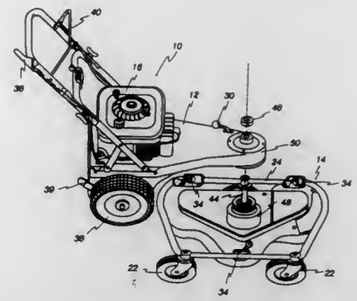
5,826,413
SAFETY STIRRUP
Hayden Gregory Bostock, Moonee Ponds; Ashley Charles James Snook, Fairview Heights, and Peter Zillmer, Smithfield, all of Australia, assignors to Saferider Australia PTY Ltd., Australia
PCT No. PCT/AU95/00332, § 371 Date Feb. 23, 1996, § 102(e) Date Feb. 23, 1996, PCT Pub. No. WO96/00185, PCT Pub. Date Jan. 4, 1996
PCT Filed Jun. 6, 1995, Ser. No. 605,191
Claims priority, application Australia, Jun. 27, 1994, PM 6461
Int. Cl.[6] B68C *3/02*
U.S. Cl. 54—49 **16 Claims**



1. A safety stirrup comprising:
an inverted U-shaped mounting member having means located in the arcuate portion of the U to enable a stirrup strap to be attached thereto;
a foot support pivotally mounted between the extremities of the mounting member when the stirrup is in normal use, wherein the foot support comprises a tread having an extension projecting upwardly from each end of the tread, and a foot upper restraining portion comprising two arms which co-operate together to form a looped configuration extending from the extensions formed on the tread, each said arm being pivotal outwardly from its adjacent projecting extension; and
co-operating engagement means between the foot upper restraining portion and the inverted U-shaped mounting member to retain the foot upper restraining portion in a plane within the inverted U-shaped mounting member when the stirrup is in said normal use and to thereby prevent the arms of the foot upper restraining portion from pivoting outward;
wherein said foot support is releasable from said pivotal mounting at one extremity of said mounting member after pivoting of said foot support from the normal in use arrangement and the other extremity of said mounting member is pivotal outwardly, and wherein said pivoting of the foot support from the normal in use arrangement either enables the arms of the foot upper restraining portion to pivot outwardly or enables said foot support to release from said one extremity of said mounting member, or enables the arms of the foot upper restraining portion to pivot outwardly and said foot support to release from said one extremity of said mounting member.

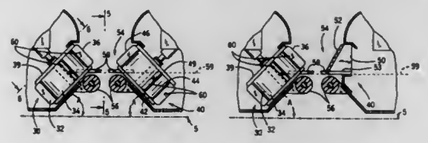
5,826,414
DEVICE FOR CUTTING VEGETATION
Zeno Leaczuk, 2022 Wintergreen, Mount Prospect, Ill. 60056
Filed May 3, 1996, Ser. No. 642,557
Int. Cl.[6] A01D *34/64*
U.S. Cl. 56—14.7 **23 Claims**

9. A device for cutting vegetation, comprising:
a power unit including a source of drive power mounted on a support, and a first pivot connection part carried on the support;
a cutting unit including a frame, a deck carried on the frame, at least one cutting blade rotatably mounted on the deck and a second pivot connection part carried on the frame;
coupling means for coupling the source of drive power to the cutting blade;



said first and said second pivot parts include outer and inner interfitting concentric hubs which are joined together and which cooperate so that the cutting unit is pivotally connected to the power unit about a pivot axis.

5,826,415
CORN GATHERING AND CONVEYING BELT SYSTEM
Aaron T. Becker, Davenport, Iowa, assignor to Case Corporation, Racine, Wis.
Filed Jan. 9, 1997, Ser. No. 781,133
Int. Cl.[6] A01D *45/02*
U.S. Cl. 56—66 **23 Claims**

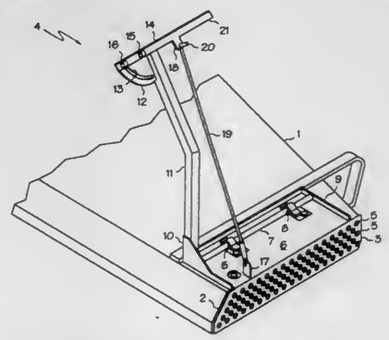


1. A harvesting device for removing a plant portion supported by a respective plant stalk growing upwardly from a surface of an area of soil, the harvesting device comprising:
a frame; and
a plurality of row units mounted on the frame, each of the plurality of row units having a first gatherer and a second gatherer, the first gatherer including a continuous belt, the first and second gatherers each having an upper surface and being mounted to the frame such that the upper surfaces of the first and second gatherers are parallel with respective first and second planes which are non-coincident, each row unit further including a pair of snapping rolls and a pair of stripper plates supported by the frame below the first and second gatherers, the snapping rolls and stripper plates extending along the length of the row unit, the snapping rolls being adapted to pull the plant stalk downward, the skipper plates being adapted to remove the plant portions from the respective plant stalk, the skipper plates cooperating with the first and second gatherers to convey the removed plant portions along the row unit.

5,826,416
LAWN MOWER HAVING A DUAL DISCHARGE SYSTEM
David J. Sugden, Horicon, and Jeffrey O. Neitzel, Mayville, both of Wis., assignors to Scag Power Equipment, Inc., Mayville, Wis.
Continuation-in-part of Ser. No. 458,440, Jun. 2, 1995, abandoned. This application Mar. 7, 1996, Ser. No. 610,585
Int. Cl.[6] A01D *35/22*
U.S. Cl. 56—320.2 **14 Claims**

1. A lawn mower including a cutter assembly, an engine for driving the cutter assembly, a discharge assembly including a blower having an inlet coupled to the cutter assembly and having first and second outlets, said blower communicating with said cutter assembly solely through said inlet, said blower being operative to receive grass clippings at said inlet and for discharging the clippings through one of said outlets, a hopper coupled to the first outlet, a discharge chute coupled to the second outlet, means mounted on the discharge assembly and movable between a first position for covering the first outlet and permitting the free flow of clippings from the inlet through the second outlet to the discharge chute and a second position for covering said second outlet wherein said second outlet is closed and the first outlet is open to permit the free flow of clippings from the inlet through the first outlet to the hopper whereby said mower may be rapidly converted from collection of grass clippings in said hopper to dischgrge through said discharge chute without the use of tools.

5,826,417
OPERATOR CONTROLLED DEFLECTOR PLATE FOR DISCHARGE CHUTE OF RIDING LAWN MOWER
Arthur Leon Evans, Coatesville, Ind., assignor to Magic Circle Corporation, Coatesville, Ind.
Filed Dec. 23, 1996, Ser. No. 789,104
Int. Cl.[6] A01D *75/20*
U.S. Cl. 56—320.2 **1 Claim**



1. A safety device for a riding lawn mower having rotating grass-cutting blades, a seat thereon for the operator of the lawn mower, and a discharge chute having an exit end, said safety device comprising:

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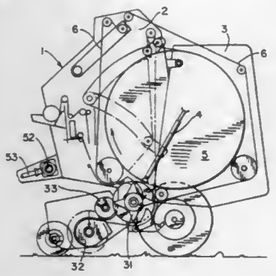
(a) a deflector plate,
(b) first means rotatably mounting said deflector plate to said discharge chute adjacent the exit end thereof,
(c) control means operable by the operator of the lawn mower while seated thereon, said control means comprising:
(i) a post having a first end and a second end,
(ii) said first end of said post being secured to said discharge chute,
(iii) said second end of said post extending upwardly from said first end,
(iv) an operating lever pivotally mounted to said post adjacent the second end thereof, and having a free end,
(v) linkage means having a first end and a second end,
(vi) the first end of said linkage means being pivotally connected to said first means,
(vii) the second end of said linkage means being pivotally connected to said operating lever,
(viii) the free end of said operating lever being positioned adjacent the operator of said lawn mower,
(d) whereby the operator of the lawn mower can, while seated on said lawn mower and without stopping said lawn mower, grasp the free end of said operating lever and pivot said operating lever in one direction to rotate said deflector plate to operative position closing the exit end of said discharge chute or, selectively, in the opposite direction to rotate said deflector plate to inoperative position opening said exit end or, selectively, to a position between operative and inoperative position.

5,826,418

ROUND BALER FOR HARVESTED PRODUCT

Gerhard Clostermeyer, Gütersloh; Heinz Niemerg, and Dirk Esken, both of Harsewinkel, all of Germany, assignors to CLAAS KGaA, Harsewinkel, Germany

Filed Dec. 16, 1996, Ser. No. 766,941
Claims priority, application Germany, Dec. 22, 1995, 195 48 271.9
Int. Cl.[6] A01D *39/00*
U.S. Cl. 56—341 **19 Claims**



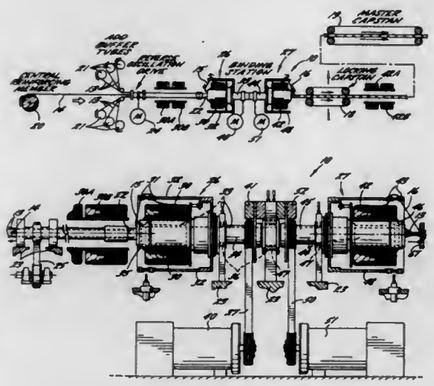
1. A round baler for harvested product, comprising a housing which is swingable for ejection of bales; means forming a pressure chamber said means including walls limiting said pressure chamber at an end side and driven transporting elements limiting said pressure chamber at a peripheral side so as to form a harvested product inlet opening; a drivable transporting rotor arranged near said inlet opening for closing said inlet opening; driving means for driving said transporting elements and said transporting rotor so that both during a formation of a bale and during an ejection of a bale said transporting elements and said transporting rotor are continuously driven, said driving means being formed so that both during the formation of a bale and during a time of the ejection of a bale said driving means drive said transporting elements in a form locking manner, but during the formation of a bale said driving means drive said transporting rotor in a form-locking manner and during a time of the ejection of the bale said driving means drive said transporting rotor frictionally and due to a relatively week frictional connection said transporting rotor is braked for a time during which the bale rests on said rotor and when the bale is released from said transporting rotor a frictional force again fully engages.

5,826,419

APPARATUS AND METHOD FOR MANUFACTURING FIBER OPTIC CABLE

Daniel Louis Shelander, Hickory, N.C., and John Theodore Marcelissen, Beaconfield, Canada, assignors to Tensor Machinery, Ltd., Quebec, Canada

Filed Feb. 5, 1997, Ser. No. 795,813
Int. Cl.[6] D02G *3/36*
U.S. Cl. 57—6 **38 Claims**



1. An apparatus for manufacturing fiber optic cable having a plurality of optical fiber buffer tubes bound by a binder, said apparatus comprising:
a frame;
an oscillator shaft supported on said frame for oscillating movement about a longitudinal axis;
a lay plate carried by said oscillator shaft for oscillating movement with said oscillator shaft, said lay plate having a plurality of openings for receiving and guiding longitudinally advancing buffer tubes into an oscillating lay about said axis;
a first binder head concentric with and surrounding said oscillator shaft, said binder head being mounted for rotation about said axis for winding a first binder around the buffer tubes; and
a second binder head longitudinally offset from said first binder head and concentric with and surrounding said oscillator shaft, said second binder head being mounted for rotation about said axis for winding a second binder around the buffer tubes.

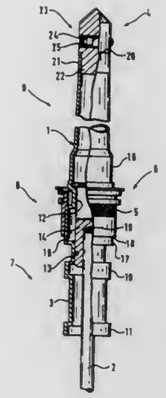
5,826,420

UPPER PART OF A SPINDLE AND METHOD OF MAKING SAME

Gerd Stahlecker, Eislingen/Fils, Germany, assignor to Fritz Stahlecker, Bad Uberkingen, and Hans Stahlecker, Sussen, both of Germany

Filed Dec. 24, 1996, Ser. No. 780,163
Claims priority, application Germany, Jan. 13, 1996, 196 01 035.7
Int. Cl.[6] D01H *7/08*
U.S. Cl. 57—135 **20 Claims**

1. An upper spindle part for a textile spindle for spinning or twisting machines, comprising:



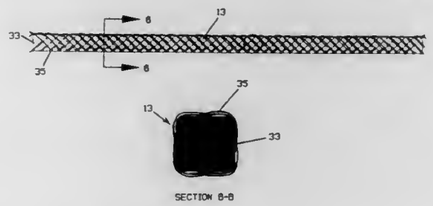
a sleeve made from a thin-walled metal tube, and
a spindle shaft inserted into said sleeve,
wherein the sleeve is cold stretch formed in one piece with a sufficient level of precision dimensioning of a drive wharve and a spindle shaft accommodating internal receiving surface so that further surface treatment of said drive wharve and receiving surface are unnecessary.

5,826,421

FOAM STRING MOP HEAD

Raymond K. Wilcox, Granbury, and Geno J. Guglielmi, Grand Prairie, both of Tex., assignors to GSP Products, Inc., Dallas, Tex.

Filed Apr. 14, 1997, Ser. No. 837,121
Int. Cl.[6] D02G *3/02*
U.S. Cl. 57—210 **12 Claims**



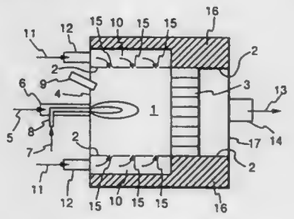
1. A string, comprising:
a) an elongated core made of solid foam, the foam being of the open cell type and being absorbent, the core having a length;
b) a porous covering encircling the core for the length of the core, the covering being formed from at least one filament, the covering having openings therethrough so as to allow access to the core from an environment around the string with portions of the core being exposed to the environment around the string by way of the openings;
c) the string being capable of being stretched in the direction of the length of the core, with the covering having a greater breaking strength than the core.

5,826,422

FUEL REFORMING APPARATUS AND ELECTRIC POWER GENERATING SYSTEM HAVING THE SAME

Kazuhito Koyama; Shigehisa Sugita; Shinya Marushima; Yuji Makino, and Kazuhiro Gonda, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 508,376, Dec. 28, 1995, abandoned. This application Jul. 28, 1997, Ser. No. 901,266
Claims priority, application Japan, Jan. 9, 1995, 7-1019
Int. Cl.[6] F02B *43/00*
U.S. Cl. 60—39.12 **31 Claims**



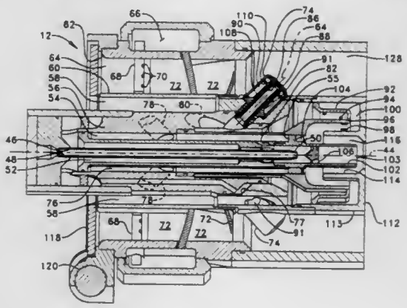
1. A fuel reforming apparatus comprising a first chamber having a reforming catalyst bed inside, and a second chamber for introducing a cooling medium into said first chamber, said second chamber being arranged adjacent to said first chamber.

5,826,423

DUAL FUEL INJECTION METHOD AND APPARATUS WITH MULTIPLE AIR BLAST LIQUID FUEL ATOMIZERS

John F. Lockyer; Gareth W. Oskam, both of San Diego, and Douglas C. Rawlins, Murrieta, all of Calif., assignors to Solar Turbines Incorporated, San Diego, Calif.

Filed Nov. 13, 1996, Ser. No. 751,771
Int. Cl.[6] F02C *3/20;* **F02G** *3/00*
U.S. Cl. 60—39.463 **30 Claims**



15. A dual fuel injector comprising:
a first fuel supply;
a second fuel supply, being a main supply of gaseous fuel; and
a main air passage;
wherein the main air passage includes means for generating vorticity in a flow of air therein and wherein the main supply of gaseous fuel comprises a plurality of gaseous fuel nozzles located upstream of the main air passage vorticity generating means;
said first fuel supply being a main liquid fuel feed line; and
a plurality of main liquid fuel atomizers in fluid communication with the main fuel feed line and the main air passage and located downstream of the main air passage vorticity generating means.

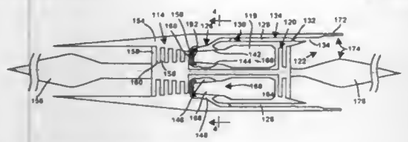
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5,826,424

TURBINE BYPASS ENGINES

Garry W. Klees, 7515 SE. 76th St., Mercer Island, Wash. 98040

Filed Apr. 16, 1992, Ser. No. 869,622
Int. Cl.[6] F02K *3/02*
U.S. Cl. 60—262 14 Claims



1. A supersonic aircraft engine comprising:
a. compressor means for compressing inlet air flow;
b. diffuser means for diffusing the air compressed by the compressor means to subsonic velocities;
c. a combustion chamber in which fuel is mixed with the compressed and diffused air and ignited to produce gaseous flow;
d. turbine means impelled by the gaseous flow for powering the compressor;
e. nozzle means for exhausting the turbine exit flow to produce thrust; and
f. turbine bypass means for bypassing a portion of the compressor exit flow around the turbine, the turbine bypass means comprising means for bypassing primarily boundary layer air flowing within the diffuser, in which:
i. the diffuser means comprises an annular chamber having inner and outer walls; and
ii. the means for bypassing boundary layer air bypass boundary layer air flowing over both the inner and outer walls.

5,826,425

METHOD OF AUTOMATICALLY INITIATING REGENERATION OF A PARTICULATE FILTER OF A DIESEL ENGINE WITH A RAIL INJECTION SYSTEM

Giovanni Maria Rossi Sebastiano, Turin, and Silvio Canale, Collegno, both of Italy, assignors to C.R.F. Societa Consortile per Azioni, Orbassano, Italy

PCT No. PCT/IT95/00124, § 371 Date Jan. 22, 1997, § 102(e) Date Jan. 22, 1997, PCT Pub. No. WO96/03571, PCT Pub. Date Feb. 8, 1996
PCT Filed Jul. 21, 1995, Ser. No. 776,121
Claims priority, application Italy, Jul. 22, 1994, TO94A0606
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—274 20 Claims

1. A method of automatically initiating regeneration of a particulate filter of a diesel engine comprising a main injection phase and an auxiliary post-injection phase including injection of fuel into the engine cylinders during the expansion stroke of the engine, characterized in that both of said main injection phase and said auxiliary post-injection phase are carried out through a common rail injection system, said auxiliary post-injection phase generating post-injected fuel combustion causing a rise in the exhaust gas temperature of the engine.

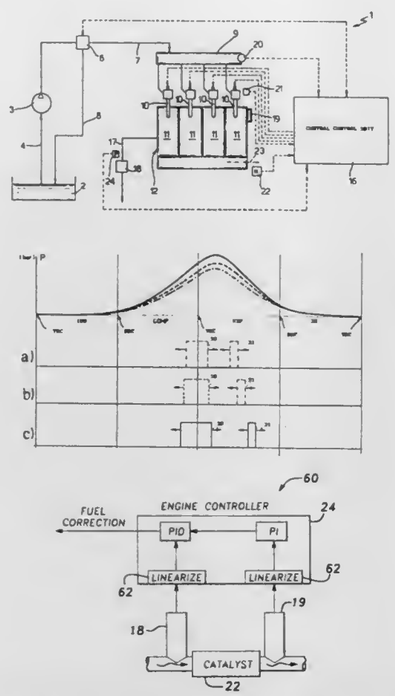
5,826,426

OXYGEN SENSOR LINEARIZATION SYSTEM AND METHOD

Gregory T. Weber, Commerce; Christopher P. Thomas, Bloomfield; Michael T. Vincent, Novi; Michael W. Weglarz, Macomb, and Gary L. Seitz, Chelsea, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Jul. 30, 1997, Ser. No. 902,731
Int. Cl.[6] F01N *3/00*
U.S. Cl. 60—274 19 Claims

1. A method for optimizing performance of an internal combustion engine, comprising:



sensing gases emitted from engine combustion chambers via a first gas sensor;
sensing gases emitted from said engine combustion chambers subsequent to said gases passing through an engine catalytic converter via a second gas sensor;
sensing temperatures of said first and second gas sensors via temperature sensors;
processing signals output from said first and second gas sensors and said temperature sensors to determine if the signals output from the first and second gas sensors include deviations caused by sensor warmup;
linearizing said first and second gas sensors in response to said step of sensing temperatures of said first and second gas sensors if the signals output from the first and second gas sensors include deviations caused by sensor warmup; and
adjusting fuel level input into said engine combustion chambers in response to said step of linearizing said first and second gas sensors.

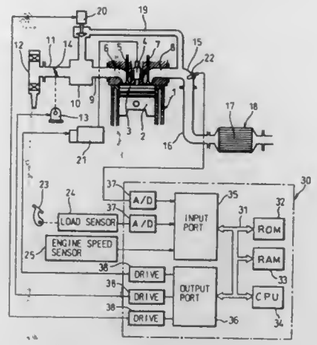
5,826,427

COMPRESSION IGNITION TYPE ENGINE

Hiromichi Yanagihara, Gotenba, and Kiyoshi Kobashi, Mishima, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 18, 1996, Ser. No. 715,399
Claims priority, application Japan, Sep. 20, 1995, 7-241769
Int. Cl.[6] F01N *3/20*
U.S. Cl. 60—276 14 Claims

1. A compression ignition type engine having an exhaust passage, comprising:
an NO_x absorbent arranged in the exhaust passage, said NO_x absorbent absorbing NO_x when an air-fuel ratio of exhaust gas flowing into said NO_x absorbent is lean and releasing the absorbed NO_x when said air-fuel ratio of exhaust gas is one of a rich air-fuel ratio and the stoichiometric air-fuel ratio; and



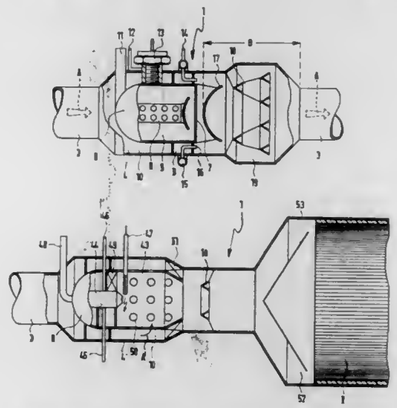
air-fuel ratio control means for normally maintaining the mean value of the air-fuel ratio in a combustion chamber of the engine at a lean air-fuel ratio and changing over said mean value of the air-fuel ratio from a lean air-fuel ratio to one of a rich air-fuel ratio and the stoichiometric air-fuel ratio when NO_x should be released from said NO_x absorbent, a fuel containing oxygen therein being used at least when said mean value of air-fuel ratio is made one of a rich air-fuel ratio and the stoichiometric air-fuel ratio.

5,826,428

BURNER FOR THE THERMAL REGENERATION OF A PARTICLE FILTER IN AN EXHAUST GAS AFTERTREATMENT SYSTEM OF AN INTERNAL COMBUSTION ENGINE, ESPECIALLY A DIESEL ENGINE

Walter Blaschke, Esslingen, Germany, assignor to J. Eberspächer GmbH & Co., Esslingen, Germany

Filed Jan. 23, 1996, Ser. No. 589,880
Claims priority, application Germany, Feb. 9, 1995, 195 04 183.6
Int. Cl.[6] F01N *3/10*
U.S. Cl. 60—303 38 Claims



1. A burner for the thermal regeneration of a particle filter arranged in a tailpipe of an internal combustion engine, the burner comprising:
a tailpipe section of increased diameter;
a vaporizing combustion chamber disposed centrally and coaxially with respect to said section of increased diameter, said vaporizing combustion chamber including a closed, arched flow inlet end in an upstream direction relative to exhaust gas flow and having an opening in a downstream direction, said section of increased diameter cooperating with said vaporizing combustion chamber to define a jacket space comprised of a substantially annular exhaust gas flow passage, disposed around said vaporizing combustion chamber, on a jacket circumference of said vaporizing combustion chamber, said gas flow passage having a substantially constant magnitude from said inlet end to said opening in said downstream direction.

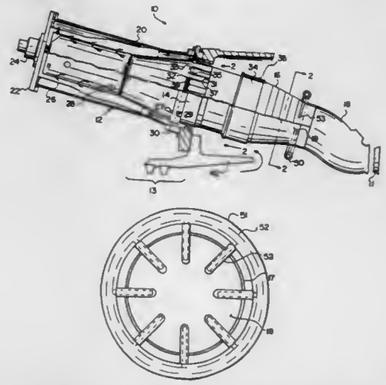
25. A burner for the thermal regeneration of a particle filter arranged in a tailpipe of an internal combustion engine, the burner comprising:
a tailpipe section having a diameter larger than a diameter of the tail pipe;
a combustion chamber disposed in said tail pipe section, said combustion chamber being arranged completely in said tailpipe section, said combustion chamber including a closed, arched flow inlet end in an upstream direction relative to exhaust gas flow, and a downstream end defining an opening, said section of increased diameter cooperating with said combustion chamber to define an annular exhaust gas flow passage disposed around said combustion chamber, and on a jacket circumference of said combustion chamber, said annular exhaust gas flow passage having a substantially constant magnitude from said inlet end to said downstream direction.

5,826,429

CATALYTIC COMBUSTOR WITH LEAN DIRECT INJECTION OF GAS FUEL FOR LOW EMISSIONS COMBUSTION AND METHODS OF OPERATION

Kenneth W. Beebe, Galway; Stephen L. Hung, Waterford, and Martin B. Cutrone, Niskayuna, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

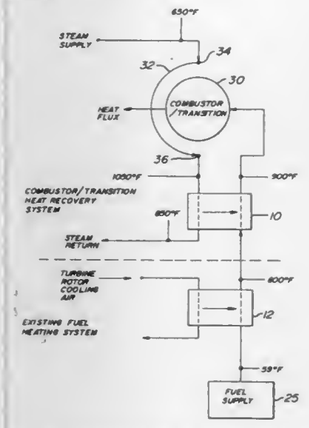
Filed Dec. 22, 1995, Ser. No. 575,809
Int. Cl.[6] F02C *1/00;* F02G *3/00*
U.S. Cl. 60—723 7 Claims



1. A combustor for an industrial gas turbine, comprising:
a combustor housing for combusting fuel and confining a stream of combustion products for flow in a downstream direction, said combustion housing having (i) a diffusion flame combustion zone including a fuel nozzle for introducing fuel into said zone and air admission openings for introducing air into the zone; (ii) a catalytic combustion zone downstream of the diffusion flame combustion zone and including a catalytic reactor bed and a fuel inlet for supplying fuel thereto; (iii) a post-catalytic combustion zone downstream of said catalytic combustion zone including in said post-catalytic combustion zone a nozzle for flowing a fuel/air mixture into said post-catalytic combustion zone; and (iv) a transition piece downstream of said post-catalytic combustion zone between said

post-catalytic combustion zone and a first stage of the gas turbine and in which transition piece secondary fuel oxidation reactions go to completion without substantial formation of NO_x due to short residence time in said transition piece.

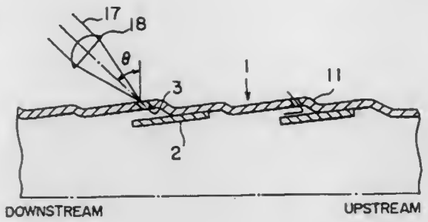
5,826,430
FUEL HEATING SYSTEM USED IN CONJUNCTION WITH STEAM COOLED COMBUSTORS AND TRANSITIONS
David A. Little, Oviedo, Fla., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed Apr. 23, 1996, Ser. No. 636,430
Int. Cl.[6] F02C *7/224*
U.S. Cl. 60—736 **5 Claims**



1. A system for pre-heating fuel in a gas turbine engine, comprising:
a coolant supply;
a component in the turbine engine having a liner such that coolant flowing through said component surrounds said component and absorbs heat, wherein said liner has an inlet in flow communication with said coolant supply and an outlet for coolant to exit the liner; and,
a heat exchanger having a flow path for coolant and a flow path for fuel, wherein said flow path for coolant is in flow communication with the component liner outlet and wherein said flow path for fuel is disposed within the flow path of fuel to the turbine engine combustor, such that heat is transferred from the coolant to the fuel,
wherein said coolant supply provided by a heat recovery steam generator connected to an exhaust of the turbine engine.

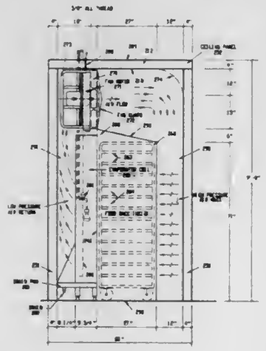
5,826,431
GAS TURBINE MULTI-HOLE FILM COOLED COMBUSTOR LINER AND METHOD OF MANUFACTURE
Yoshinobu Makino, Yokohama; Kiyoshi Yamada, Akishima; Hiroshi Matsui, Soka; Yoshihiro Aburatani, Yokohama; Yamato Kaminaka, Yokohama; Hiroshi Kubo, Yokohama, and Hiroaki Okamoto, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Feb. 5, 1996, Ser. No. 596,827
Claims priority, application Japan, Feb. 6, 1995, 7-017572; Oct. 23, 1995, 7-274312
Int. Cl.[6] F02G *3/00*
U.S. Cl. 60—757 **3 Claims**

1. A multi-hole film-cooled combustor liner for a gas turbine, said combustor liner being mounted on a combustor located between a compressor and the turbine, said combustor liner comprising:



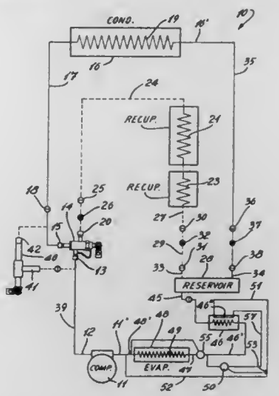
a wavy liner shell, mounted on said combustor, for exposure to heat in a combustion gas passing through said combustor, said liner shell having an inner surface, an outer side, and a plurality of laser drilled film cooling holes for admitting air from the outer side to the inner surface of said liner shell; and
inner ring units, separately attached to the inner surface of said liner shell, for deflecting the air admitted through said cooling holes so as to direct air toward a downstream direction of the combustion gas along the inner surface of the liner shell, thereby maintaining a cooling film,
said cooling holes each having a center axis inclined toward the downstream direction of the combustion gas.

5,826,432
BLAST CHILLER
Baldwin G. Ledbetter, Anaheim, Calif., assignor to El Cold, Inc., Commerce, Calif.
Filed Aug. 18, 1995, Ser. No. 516,536
Int. Cl.[6] F25B *25/00*
U.S. Cl. 62—62 **32 Claims**



1. A blast chiller comprising:
an insulated housing,
a plenum inside said housing, said plenum comprising a first opening and a second opening,
a high pressure cavity located adjacent to said first opening, said plenum comprising a funnel section connecting said plenum to said high pressure cavity whereby air is compressed from said high pressure cavity into said plenum,
a low pressure cavity located adjacent to said second opening, such that air leaving said plenum is decompressed as it enters said low pressure cavity through said second opening,
a motorized fan positioned in an airpath outside of said plenum and between said high pressure cavity and said low pressure cavity, said motorized fan directed to blow air towards said high pressure cavity and to remove air from said low pressure cavity, and
means for reducing the air temperature within said insulated housing.

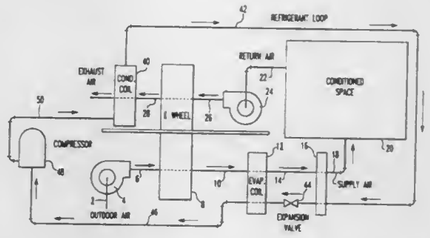
5,826,433
REFRIGERATION SYSTEM WITH HEAT RECLAIM AND EFFICIENCY CONTROL MODULATING VALVE
Serge Dubé, 2595 Bourgogne, St. Lazare, Quebec, Canada, J0P 1V0
Filed Mar. 25, 1997, Ser. No. 824,146
Int. Cl.[6] F25B *41/00;27/00*
U.S. Cl. 62—196.4 **10 Claims**



1. A high-efficiency refrigeration system with total heat reclaim capacity, said system comprising compressor means for compressing a refrigerant gas to a desirable operating pressure, directional valve means to communicate said compressed gas from said compressor to a condenser means for cooling said gas when required or to heat reclaim means to extract heat from said gas for heating air locally, a modulating valve for adjusting the pressure of said refrigerant gas at said compressor means and dependent on outside temperature, a liquid/gas refrigerant reservoir having a first inlet connected directly to an outlet conduit of said condenser means to receive liquid refrigerant gas therefrom, said refrigerant gas reservoir having a second inlet connected directly to an outlet conduit of said heat reclaim means for receiving liquid refrigerant therefrom, and heat exchange means connected between an outlet of said liquid/gas refrigerant reservoir and said evaporator means to cool liquid refrigerant gas from said reservoir to feed said evaporator means, an expansion valve at an outlet of said heat exchanger to maintain said liquid refrigerant at an operating cool temperature, and a gas by-pass line from said outlet of said liquid/gas refrigerant reservoir to a gas inlet of said compressor, said expansion valve having pressure sensing means for sensing the pressure of said gas in said by-pass line.

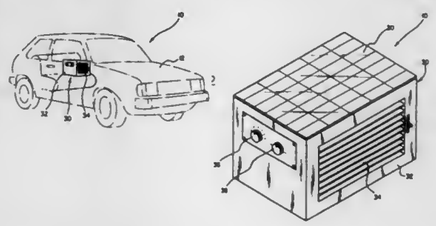
5,826,434
HIGH EFFICIENCY OUTDOOR AIR CONDITIONING SYSTEM
William A. Belding, Danville, Calif., and Spencer K. Goland, Baton Rouge, La., assignors to NovelAire Technologies, L.L.C., Baton Rouge, La.
Filed Jul. 17, 1996, Ser. No. 682,131
Int. Cl.[6] F25D *17/06;23/00*
U.S. Cl. 62—90 **33 Claims**

1. A heat recovery and dehumidifier system for ventilating fresh air to a conditioned space, the system comprised of:
(a) an enthalpy wheel or body for treating air to remove heat and moisture therefrom;
(b) a duct for introducing air to a first segment of said enthalpy wheel or body;
(c) an evaporator coil in communication with said enthalpy wheel or body to receive air having heat and moisture removed therefrom, said evaporator coil further lowering the temperature and moisture of said air to provide chilled air;



(d) a second heat exchanger coil in communication with said evaporator coil to receive chilled air from said evaporator coil, said second heat exchanger coil treating said chilled air to provide conditioned air having the temperature thereof raised after leaving said evaporator coil, said second heat exchanger coil in communication with said space to be conditioned to supply said conditioned air thereto;
(e) means for returning air from said conditioned space to said enthalpy wheel or body thereby providing a return air;
(f) means for passing said return air through a segment of said enthalpy wheel or body to exchange sensible and latent heat from said return air to said enthalpy wheel or body thereby cooling said enthalpy wheel or body and removing moisture therefrom;
(g) means for exhausting said return air to the atmosphere after passing through said enthalpy wheel or body.

5,826,435
SOLAR POWERED VEHICLE AIR CONDITIONER
Jamie Hange, 1980 Three Mile Run Rd., Perkasie, Pa. 18944
Filed Mar. 28, 1997, Ser. No. 828,055
Int. Cl.[6] F25B *27/00*
U.S. Cl. 62—190 **2 Claims**



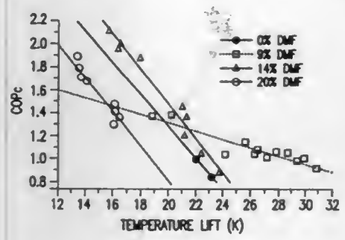
1. A portable air conditioning system for use in a vehicle while the vehicle is not in use, the portable air conditioning system comprising:
a portable air conditioning unit having a housing adapted for easy placement in or removal from a passenger compartment of said vehicle, said housing having a top surface;
a plurality of solar panels positioned on the top surface;
said solar panels being for providing electrical power to said air conditioning unit;
a plurality of vents within said housing, said vents being positioned such that said air conditioning unit forces cooled air out of said housing through said vents;
adjustable directional venting means for urging the cooled air in a selected direction; and
temperature control means for selecting a desired temperature.

5,826,436

ADDITIVE FOR IMPROVING PERFORMANCE AND COOLING CAPACITY OF VAPOR COMPRESSION SYSTEMS

Robert P. Scaringe, Rockledge, and Lawrence R. Grzyll, Merritt Island, both of Fla., assignors to Mainstream Engineering Corporation, Rockledge, Fla.

Filed Sep. 3, 1996, Ser. No. 707,257
Int. Cl.[6] F25D *15/00*
U.S. Cl. 62—114 21 Claims



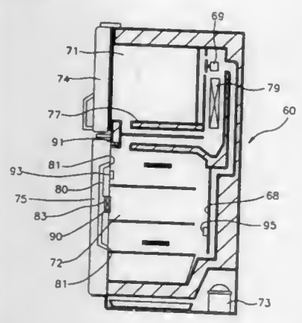
1. A method of using a compound of a type used as an antiabsorbent in two-phase compressor vapor compression system or absorption heat pump system, comprising the step of adding the compound in a predetermined concentration to a single-phase compressor vapor compression system.

5,826,437

REFRIGERATION FOR DISCHARGING COOL AIR FROM A DOOR

Hyung-Kwan Kim, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co. Ltd., Seoul, Rep. of Korea

Filed Jun. 6, 1997, Ser. No. 870,446
Int. Cl.[6] F25D *23/02*
U.S. Cl. 62—186 6 Claims



1. A refrigerator having a cabinet forming a cooling compartment, a door for opening/closing an opening of said cooling compartment, said refrigerator comprising:

a door duct installed inside said door, said door duct being formed with a cool air suction port being disposed at a center area of said door and a plurality of cool air discharging ports being disposed at an upper area and a lower area of said door which are opened at an inner surface of said door; and

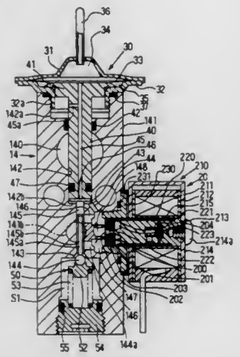
a blowing fan installed at the cool air suction port for supplying cool air in said cooling compartment into said door duct.

5,826,438

EXPANSION VALVE INTEGRATED WITH ELECTROMAGNETIC VALVE AND REFRIGERATION CYCLE EMPLOYING THE SAME

Shigeji Ohishi, Anjo, and Yoshio Miyata, Nagoya, both of Japan, assignors to Denso Corporation, Kariya, Japan

Filed Jun. 30, 1997, Ser. No. 884,758
Claims priority, application Japan, Jul. 1, 1996, 8-171517; Apr. 22, 1997, 9-104583
Int. Cl.[6] F25B *5/00*
U.S. Cl. 62—199 8 Claims



1. An expansion valve integrated with an electromagnetic valve employed in a refrigeration cycle having evaporators connected in parallel, said expansion valve decompressing and expanding refrigerant, said electromagnetic valve opening and closing a refrigeration path of the refrigeration cycle, said expansion valve integrated with said electromagnetic valve comprising:

an expansion valve body for forming an outer shape of said expansion valve, said expansion body having an inlet refrigerant path for introducing high-pressure side refrigerant of the refrigeration cycle, a restriction path for decompressing and expanding the refrigerant introduced from said inlet refrigerant path and an outlet refrigerant path for supplying the refrigerant decompressed and expanded in said restriction path;

a first valve element for adjusting an opening degree of said restriction path; and

a valve element operating mechanism for moving said first valve element; wherein,

said electromagnetic valve is integrally assembled in said expansion valve body and includes a second valve element disposed to open and close said outlet refrigerant path, and

when said second valve element is closed, said valve element operating mechanism operates based on a refrigerant pressure between said second valve element and said restriction path such that said first valve element is closed.

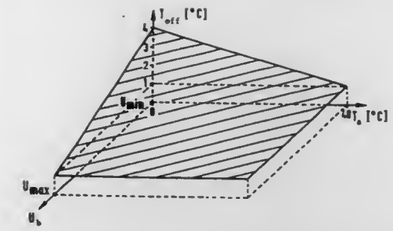
5,826,439

METHOD AND CIRCUIT FOR ON/OFF CONTROL OF THE COMPRESSOR OF A MOTOR VEHICLE AIR CONDITIONER

Wilhelm Baruschke, Wangen; Karl Lochmahr, Vailhingen, and Markus Speer, Sachsenheim, all of Germany, assignors to Behr GmbH & Co., Stuttgart, Germany

Filed Mar. 4, 1996, Ser. No. 610,406
Claims priority, application Germany, Mar. 4, 1995, 195 07 667.2
Int. Cl.[6] F25B *1/00*
U.S. Cl. 62—215 23 Claims

1. A method for on/off control of a compressor of a motor vehicle air conditioner over a whole temperature range, the method comprising the steps of:



shutting-off the compressor when an evaporator temperature measured by an evaporator temperature sensor falls below a presettable shut-off value (T_{off}) which is above 0° C.; and

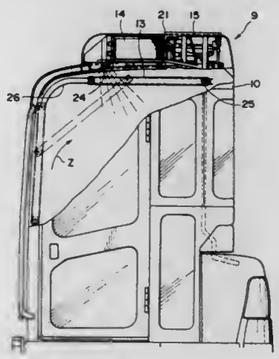
setting the presettable shut-off value (T_{off}) to fall as a continuously differentiable function of at least one of an evaporator blower power (U_b) and a temperature (T_a) of air drawn in by an evaporator blower in the whole temperature range with rising blower power or rising air intake temperature.

5,826,440

CONSTRUCTION MACHINE

Makoto Okada; Hideaki Aoki, and Tokuo Fujii, all of Hiroshima, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed May 27, 1997, Ser. No. 862,923
Claims priority, application Japan, May 30, 1996, 8-160701; May 30, 1996, 8-160703
Int. Cl.[6] B60H *1/32*
U.S. Cl. 62—239 22 Claims



1. A construction machine comprising:

a lower carriage;

a cabin disposed on said lower carriage, said cabin having a ceiling;

an air conditioning means mounted on said ceiling, said air conditioning means comprising a cooler unit for conditioning air present in an interior of said cabin and a condenser for liquefying a gaseous refrigerant by forced cooling;

a conditioned air blow-off port equipped on said cooler unit;

a window hole for opening said conditioned air blow-off port into said cabin, said window hole being formed in said ceiling at a position corresponding to the conditioned air blow-off port;

a front window, said front window being stowed on the underside of said ceiling in an open condition of the front window; and

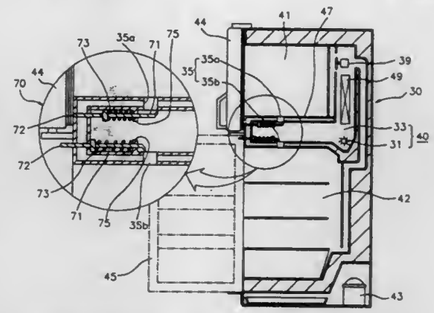
means for preventing said front window from blocking said air blow-off port when said window is stowed.

5,826,441

REFRIGERATOR HAVING A DEVICE FOR GENERATING AIR CURTAINS

Min-Jung Oh, Incheon, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Jun. 6, 1997, Ser. No. 870,443
Int. Cl.[6] A47F *3/04*
U.S. Cl. 62—256 6 Claims



1. A refrigerator having a cabinet forming cooling compartments which are partitioned from each other, and doors mounted on said cooling compartments for opening/closing openings of said cooling compartments respectively, said refrigerator comprising:

a cool air duct having ports opened at areas adjacent to the openings of said cooling compartments respectively;

a blowing fan for discharging air in said cool air duct, by which air curtains for shutting off the openings of said cooling compartments are generated; and

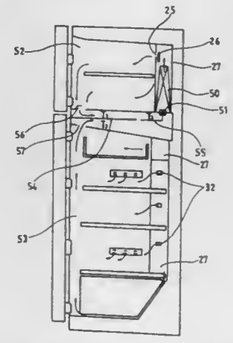
a means for opening/closing the ports corresponding to open doors when said doors are opened, the opening/closing means comprising plates for opening/closing the ports respectively and a means for driving said plates so that the ports are opened and closed corresponding to opening and closing of said doors respectively.

5,826,442

DEFROSTER FOR REFRIGERATORS

Jae-Hee Lee, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

Filed May 30, 1997, Ser. No. 866,066
Claims priority, application Rep. of Korea, May 31, 1996, 1996 18947
Int. Cl.[6] F25B *5/00*
U.S. Cl. 62—283 3 Claims



1. A defroster for refrigerators comprising a prefrosting panel adapted for guiding return air discharged from freezer and refrig-

eration compartments of a refrigerator to an evaporator while causing it to primarily frost on the panel thus reducing the amount of frost on the evaporator and delaying the frosting on the evaporator, and a defrosting heater adapted for selectively defrosting the evaporator, further comprising:

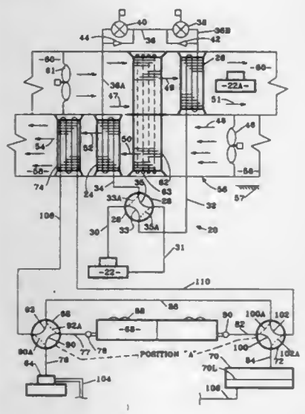
heat conduction panel integrally extending from said defrosting heater and terminating at a position approximate to one end of said prefrosting panel, thus allowing heat of the defrosting heater to be transferred to the prefrosting panel through thermal conduction.

5,826,443

HEAT PUMP WITH HEAT-PIPE ENHANCEMENT AND WITH PRIMARY SYSTEM REHEAT

Roland Ares, 1004 Wedgewood, St. Charles, Mo. 63303, and Ness Lakdawala, 4300 Poirer Blvd., Montreal, Quebec, Canada, H4R 2C5

Filed Dec. 6, 1997, Ser. No. 986,289
Int. Cl.[6] F25B *13/00*
U.S. Cl. 62—324.1 14 Claims



11. A cold air removal and make-up air system for a market space comprising first conduit means for withdrawing cold air from the space, second conduit means for supplying fresh outdoor make-up air to the space;

reversible refrigerating system means for removing heat from one conduit means and supplying heat to the other conduit means, the reversible system having a cooling mode wherein the reversible system cools and dehumidifies the make-up air and heats the cold air from the space, and a heating mode wherein the reversible system further cools the air from the space and heats the make-up air,

and heat transfer means separate from the reversible refrigerating system for transferring heat from the warmer of the air in either conduit means to the air in the other conduit means,

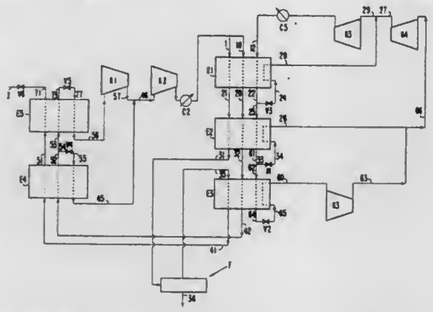
and further providing a second refrigerating system having a primary condenser having an inlet and an outlet and having secondary condenser means for heating the cooled and dehumidified make-up air.

5,826,444

PROCESS AND DEVICE FOR LIQUEFYING A GASEOUS MIXTURE SUCH AS A NATURAL GAS IN TWO STEPS

Pierre Capron, and Alexandre Rojey, both of Rueil Malmaison, France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 30, 1996, Ser. No. 777,063
Claims priority, application France, Dec. 28, 1995, 95 15623
Int. Cl.[6] F25J *3/00*
U.S. Cl. 62—612 21 Claims



1. Process for liquefying a fluid G including a mixture of hydrocarbons comprising the steps of:

a) cooling said fluid G using a cooling mixture M under pressure and temperature conditions selected to obtain, at the end of step a), a condensed single-phase cooling mixture with substantially no vapor phase, wherein the temperature at the end of step a) is below −40° C.,

b) supercooling, expanding and vaporizing said condensed single-phase cooling mixture M from step a) and using said cooling mixture to supercool at least part of said fluid G and to supercool part of said cooling mixture, and

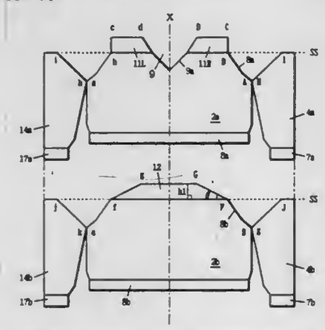
c) expanding said fluid G supercooled in step b) to obtain a liquid phase at low pressure, and wherein the cooling mixture obtained in step a) is expanded to at least two different pressure levels in said process.

5,826,445

KNITTING METHOD ON A FLAT KNITTING MACHINE AND A KNIT FABRIC THUS PRODUCED

Kazuyoshi Okamoto, Nara, Japan, assignor to Shima Seiki Manufacturing Ltd., Wakayama, Japan

Filed Feb. 7, 1997, Ser. No. 796,557
Claims priority, application Japan, Feb. 9, 1996, 8-023514; Feb. 15, 1996, 8-027486
Int. Cl.[6] D04B *7/10*
U.S. Cl. 66—70 14 Claims



1. A knitting method for knitting clothing on a flat knitting machine, said method comprising the steps of:

providing a flat knitting machine having at least a front needle bed and at least a rear needle bed;

knitting a first body of knit clothing with said flat knitting machine, said first body having a first number of courses of stitches at shoulder portions thereof;

knitting a second body of the knit clothing with said flat knitting machine, with a second number of courses of stitches at shoulder portions thereof, said first number of courses of stitches being greater than said second number of courses of stitches, wherein said first body has a length which is longer than a length of said second body, said second body being knit with a neck portion disposed adjacent and above shoulder portions thereof; and

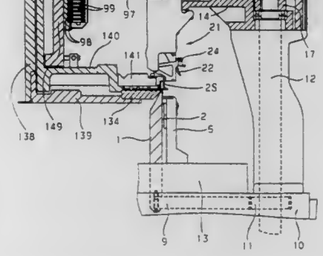
joining the first body and the second body, wherein the first body extends past a shoulder line of the knit clothing, and wherein a fall is formed in the second body from the shoulder portions to the neck portion.

5,826,446

CIRCULAR KNITTING MACHINE HAVING DRIVE SYSTEM FOR YARN FEED DEVICE

Ernst-Dieter Plath, Albstadt, and Harald Rehmann, Dotternhausen, both of Germany, assignors to SPIRA Patententwicklungs-und Beteiligungsgesellschaft mbH, Albstadt, Germany

Division of Ser. No. 622,760, Mar. 27, 1996. This application Apr. 14, 1997, Ser. No. 839,455
Claims priority, application Germany, Mar. 31, 1995, 19511949.5
Int. Cl.[6] D04B *15/58*
U.S. Cl. 66—140 R 3 Claims



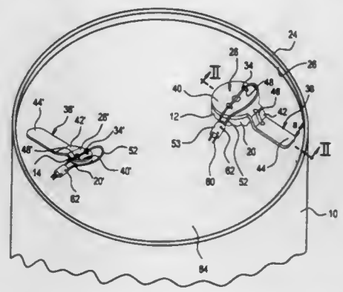
1. A circular knitting machine comprising a needle cylinder and a dial for movably receiving knitting implements; a support for a dial cam box arranged above the dial; a dial driver means arranged above the support; at least one yarn changer; a selector apparatus for said yarn changer; cam tracks for actuating functional parts of said yarn changer; a further support for mounting said yarn changer; and a support ring rotatable relative to said further support for mounting said selector apparatus; said further support and said support ring being arranged between said support and said dial cam box and said support ring being arranged above said further support.

5,826,447

PROCEDURE FOR HANDLING MATERIALS IN DRUMS AND BUNG-PLUG APPARATUS AND METHOD THEREFOR

Michael C. Campbell, 1400 Woodhouse Rd., Virgina Beach, Va. 23454

Filed Dec. 9, 1996, Ser. No. 762,344
Int. Cl.[6] B65D *55/14*
U.S. Cl. 70—164 19 Claims



1. A drum-bung-plug lock apparatus for preventing a bung-plug screwed into a drum bung of a drum having a perimeter raised rim from being removed from the bung, said drum-bung lock apparatus comprising:

at least one arm rigidly attached to said bung plug and extending beyond the rest of said bung plug;

a flat elongated locking plate including an engaging mounting portion having at least one slot therein for receiving said arm and thereby keying rotation of said locking plate to said bung plug when said locking plate is placed in a locking position on said bung-plug so that said locking plate rotates with the bung-plug when said bung-plug is rotated to unscrew said bung-plug from said bung, said locking plate having a locking portion extending radially outwardly from said bung-plug, when said locking plate is in said locking position, and being located to contact an inner surface of said raised rim when said bung-plug is screwed from said bung to thereby prevent the bung-plug from being completely unscrewed from said bung; and

a retaining mechanism for retaining said locking plate on said bung-plug in said locking position;

wherein said locking plate is elongated, having at one end said mounting portion being positioned in a first plane lying on a top surface of said bung-plug when said locking plate is in said locking position and a locking portion being positioned in a second plane, substantially parallel to but offset from said first plane, lying near an end wall of said drum from which said raised rim rises.

5,826,448

AIR BAG AND STEERING LOCK DEVICE

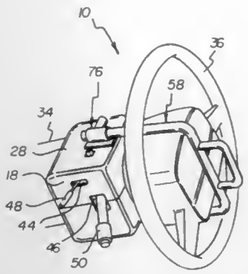
Kenneth L. Graham, 500 J. K. St., Searcy, Ark. 72143

Filed Aug. 15, 1996, Ser. No. 698,352
Int. Cl.[6] B60R *25/02*
U.S. Cl. 70—209 1 Claim

1. An air bag and steering lock device for securing to a steering wheel for the prevention of vehicle theft comprising in combination:

a generally rectangular housing having a top half with a top surface and a bottom half with a bottom surface, the housing having a left side wall and a right side wall, the housing being capable of replacing a covering of a column of a steering wheel, the top half of the housing having a slot, each half having a front wall and a rear wall with each wall having a semi-circular member cut therein, each half of the housing being joined for allowing each semi-circular member to form

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a front opening and a rear opening through each respective wall thereof, the front opening and the rear opening of the housing allows the column to be extended through the housing when positioned therearound;

the left side wall of the housing having an upper opening and a lower opening, the upper opening, when the housing is covering the column will accommodate a light dimmer switch, the lower opening, when the housing is covering the column will accommodate a turn signal, the right side wall of the housing has an opening being smaller than the front opening and the rear opening, the opening of the right side will accommodate a gear shift lever;

a J-bar member with a back bar having a pair of lateral extents projecting in a forward direction therefrom, the back bar having a handle portion fixedly attached thereto and extending rearwardly therefrom, one of the pair of lateral extents having a length greater than a length of another of the lateral extents, the one lateral extent having an interior side with a plurality of catch slots adjacent an end thereof; and

a locking means having a plate member being fixedly attached to the top surface of the top half of the housing, the locking means having a receiving tube attached to the plate, the receiving tube having an cylindrical locking mechanism coupled thereto, the receiving tube being capable of receiving the one lateral extent of the J-bar for locking the J-bar over the steering wheel, the J-bar being lockingly coupled with the receiving tube of the housing when the housing is over the column, the J-bar when positioned over the steering wheel is locked within the locking means by the cylindrical locking mechanism, the cylindrical locking mechanism engages the catch slots for allowing the J-bar to limit the steering wheel's movement and disassembly and removal of an air bag within the steering wheel.

5,826,449

ELECTRICAL IGNITION KEY ASSEMBLY

Alain Dupuis, Jouy le Moutier, and Jacques Laquerbe, Sartrouville, both of France, assignors to The Whitaker Corporation, Wilmington, Del.

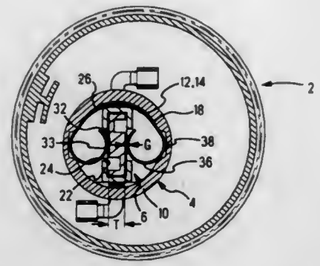
Filed Oct. 29, 1997, Ser. No. 960,065

Claims priority, application Japan, Nov. 12, 1996, 96402412

Int. Cl.[6] E05B *47/00*

U.S. Cl. 70—277 **9 Claims**

1. A key connection assembly comprising a static housing assembly, and a rotatable housing assembly mounted rotatably therein, the rotatable assembly having a key receiving slot and one or more electrical terminals attached to the rotatable housing and having at least one contact surface biasable into the key receiving slot, wherein the terminal further comprises a camming portion engageable against a camming surface provided on the static housing, the contact surface of the terminal positioned out of the key receiving slot when the rotatable assembly is in an Off position, the contact surface biasable into the key receiving slot during rotation of the rotatable assembly by action of the terminal camming portion against the static housing camming wall when the rotatable assembly is rotated to an On position.



5,826,450

LOCKING DEVICE

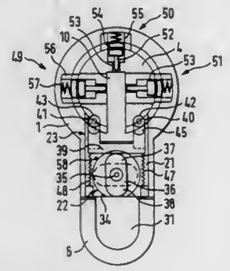
Leonhard Lerchner, Salzburg, Austria, and Hermann Hainzlmaier, Geisenfeld, Germany, assignors to Codatex 1D-Systeme Gesellschaft mbH, St. Leonard, Austria

Filed May 8, 1996, Ser. No. 646,472

Claims priority, application Germany, May 15, 1995, 195 17 728.2

Int. Cl.[6] E05B *49/00*

U.S. Cl. 70—278 **30 Claims**



1. A locking device including:

a key, said key including a data carrier containing identification data, a transmission member connected to said data carrier for broadcasting signals representative of the identification data and a shaft formed with depressions;

a cylinder housing;

a cylinder core rotatably mounted in said cylinder housing, said cylinder core having a key channel for receiving said shaft of said key and being formed with two recesses along an outer circumferential surface of said cylinder core, said recesses being located on opposed sides of said key channel;

a tumbler assembly disposed in said cylinder housing and said cylinder core for preventing rotation of said cylinder core, said tumbler assembly having a plurality of pins that are positioned to extend into said key channel wherein, when said pins are properly seated in said depressions of said shaft of said key, said tumbler assembly allows said cylinder core to rotate;

a blocking element disposed in said cylinder housing that is formed as a stirrup having two legs and a spring positioned to engage said blocking element so as to urge said legs into said recesses of said cylinder core so that when said blocking element is so engaged, said cylinder core is blocked from rotation, said blocking element and said spring being configured so that rotation of said cylinder core causes disengagement of said legs from said recesses;

an eccentric in said cylinder housing having a release position wherein said eccentric is spaced from said blocking element so as to allow said legs to disengage from said recesses of said cylinder core and a blocking position wherein said eccentric is positioned to abut said blocking element to prevent disengagement of said legs from said recesses of said cylinder core and the rotation of said cylinder core;

an actuator disposed in said cylinder housing and connected to said eccentric for moving said eccentric between said release position and said blocking position;

a transponder reading device in said cylinder housing for receiving the signals broadcast by said key and for controlling said actuator in response to the received signals, wherein if the received signals contain predefined identification data, said transponder reading device causes said actuator to move said eccentric from said blocking position to said release position; and

a power supply device in said cylinder housing for energizing said actuator and said transponder reading device.

5,826,451

KEY OPERABLE LOCKING MECHANISM

Brian Arthur Cook, South Melbourne, Australia, assignor to Bacoz Developments Pty Ltd., Victoria, Australia

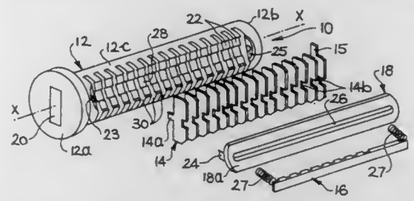
PCT No. PCT/AU95/00394, § 371 Date Dec. 31, 1996, § 102(e) Date Dec. 31, 1996, PCT Pub. No. WO96/01354, PCT Pub. Date Jan. 18, 1996

PCT Filed Jun. 30, 1995, Ser. No. 765,645

Claims priority, application Australia, Jul. 1, 1994, 66135/94

Int. Cl.[6] E05B *27/00*

U.S. Cl. 70—495 **42 Claims**



1. A tumbler assembly, for a key operable locking mechanism, including a plurality of tumblers and means for supporting the tumblers; wherein, with the assembly suitably orientated relative to a three-axis co-ordinate system for which designation of axes as being vertical, lateral and longitudinal is appropriate, the tumblers are mounted in the support means in a series which extends longitudinally in the support means in an arrangement such that each tumbler is able to move to and away from at least one respective active position by substantially linear movement relative to the support means in at least one direction selected from vertical, lateral and longitudinal; wherein the support means has first and second laterally opposite sides and each tumbler is accessible at both the first and second of said sides, at least one tumbler being engageable with a key blade of a suitable key when said blade is present along said first side; and wherein each of said tumblers is accessible at said second side whereby each tumbler is insertable into and removable from the support means at said second side.

5,826,452

METHOD FOR THE MANUFACTURE OF A MACHINE PART WITH EXTERNAL TEETH

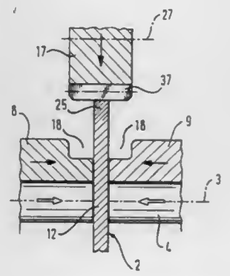
Hans Reichhardt, Ahlen, Germany, assignor to Leico GmbH & Co. Werkzeugmaschinenbau, Ahlen, Germany

Filed Apr. 10, 1997, Ser. No. 834,860

Claims priority, application Germany, May 3, 1996, 196 17 826.6

Int. Cl.[6] B21H *5/02*

U.S. Cl. 72—69 **13 Claims**



1. Method for the manufacture of a machine part with external teeth, particularly a starter ring or a gear part, by spin forming of a circular blank using inductive heating, characterized in that the circular blank is fixed in a spinning device between two chuck jaws, that a radial end region of the circular blank is heated to a predeterminable temperature with an induction device, which surrounds the radial end region, and in one zone is brought into a plastic state, that then tools are positioned on either axial side of the chuck jaws and a gear-cutting roll is radially infed accompanied by the formation of a recess and with an upsetting of the zone of the radial end region in a plastic state to a cylindrical area external teeth are formed on the cylindrical area.

5,826,453

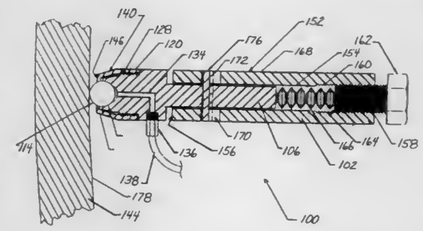
BURNISHING METHOD AND APPARATUS FOR PROVIDING A LAYER OF COMPRESSIVE RESIDUAL STRESS IN THE SURFACE OF A WORKPIECE

Paul S. Prevey, III, Cincinnati, Ohio, assignor to Lambda Research, Inc., Cincinnati, Ohio

Filed Dec. 5, 1996, Ser. No. 761,064

Int. Cl.[6] B21D *31/00*

U.S. Cl. 72—75 **20 Claims**



1. A method of inducing a compressive stress layer on the surface of a workpiece, the method comprising the steps of:

defining a surface area for receiving compressive stress; and

performing a burnishing operation to produce a zone of deformation for inducing a deep layer of compression within the surface of the workpiece having associated cold working of less than about 3.5 percent.

5,826,454

DEVICE FOR FLANGING THE END OF A METAL TUBE

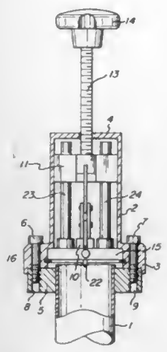
Wolfgang Kohnen, Hannover, Germany, assignor to Alcatel Alsthom Compagnie Generale d'Electricite, France

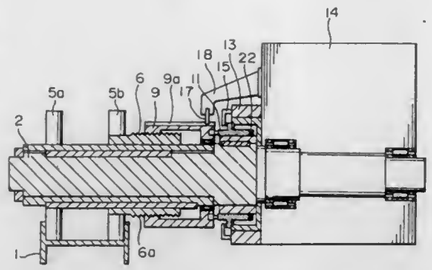
Filed Oct. 2, 1997, Ser. No. 942,662

Claims priority, application Germany, Oct. 18, 1996, 296 18 108.0

Int. Cl.[6] B21D *19/04*

U.S. Cl. 72—117 **5 Claims**





1. A device for flanging the end of a metal tube to achieve a circumferential surface extending outward at right angles from the tube, comprising:

(a) a clamping tool adapted to be attached to the end of the tube;

(b) a cylindrical housing with an open end and a closed end, the closed end having a threaded bore, the cylindrical housing having a flange at the open end thereof for fastening the clamping tool;

(c) a flanging attachment located in the cylindrical housing and rotatable around a longitudinal axis of the housing, the flanging attachment having:

(i) a pin located in the housing and rotatable in a fixed plane around the longitudinal axis of the housing,

(ii) a pressure element fastened for rotation with the pin around the longitudinal axis of the housing and slidable along the pin in a radial direction of the housing,

(iii) a lever mechanism having at least two levers which are linked to each other, the lever mechanism linked at one end to the pressure element, and

(iv) a guide part linked to the other end of the lever mechanism and adapted for movement relative to the pin, whereby movement of the guide part relative to the pin is converted by the lever mechanism into movement of the pressure element in the radial direction of the housing; and

(d) a hand-wheel affixed by a threaded rod to the guide part of the flanging attachment for rotation therewith, the threaded rod threading engaged in the threaded bore in the closed end of the housing.

5,826,455

APPARATUS FOR REFORMING ROLLERS FOR SHAPING ROLLED STEEL

Kazuo Ohmori; Masayuki Okada; Toyohisa Tokumaru; Toru Takeuchi, and Sumihiko Itoh, all of Okayama, Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Sep. 25, 1996, Ser. No. 719,541

Claims priority, application Japan, Sep. 29, 1995, 7-253665; Jan. 31, 1996, 8-015684

Int. Cl.[6] B21D *3/02*; B21B *31/18*

U.S. Cl. 72—164 **2 Claims**

1. A roller straightener for straightening rolled steel sections, comprising:

a main body frame;

a rotating spindle having a pair of ends, one end journaled in said main body, said other spindle end extending in an axial direction away from said frame, said spindle rotatable about a rotation axis parallel to the axial direction;

a sleeve having an outside surface, said sleeve insertably fitted onto said spindle and fixed thereto;

a pair of straightening rolls arranged normal to said rotational axis and parallel to each other, one of said rolls a fixed straightening roll fixed to said sleeve on said end furthest from said frame, the other of said rolls an adjustably movable straightening roll disposed inwardly of said fixed roll, towards said frame, said movable roll attached to a threaded base which encircles said sleeve, said base rotatable about said sleeve and reversably movable in said axial direction;

a nut ring threadably connected to said threads of said base, said nut ring rotatable about said sleeve wherein rotation of said nut ring causes movement and axial adjustment of said movable straightening roll, said nut ring having an outer surface which includes a groove;

a nut ring fixing and releasing mechanism comprising a nut ring fixing pin and a detent, each said detent insertable in the groove of said nut ring engagable with said nut ring, for preventing rotation of said ring and axial movement of said movable roll during spindle operation, said detent mounted to said main body frame, said fixing pin adapted to engage said nut ring only when said movable roll is adjusted, wherein during axial adjustment said detent is disengaged from said nut ring, thereby allowing said nut ring to rotate in response to rotation of said spindle.

5,826,456

METHOD FOR EXTRUSION OF ALUMINUM ALLOY AND ALUMINUM ALLOY MATERIAL OF HIGH STRENGTH AND HIGH TOUGHNESS OBTAINED THEREBY

Masataka Kawazoe; Junichi Nagahora, both of Sendai, and Kenji Higashi, Tondabayashi, all of Japan, assignors to YKK Corporation, Tokyo, and Kenji Higashi, Osaka, both of Japan

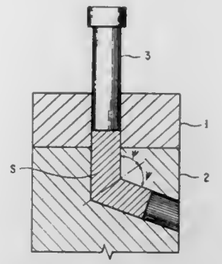
Filed Sep. 13, 1996, Ser. No. 713,844

Claims priority, application Japan, Sep. 14, 1995, 7-261057; Jul. 8, 1996, 8-198324

Int. Cl.[6] B21C *23/00*

U.S. Cl. 72—253.1 **12 Claims**

11. A method for the extrusion of an Al—Mg—Si alloy, which comprises imparting to said alloy in the process of extrusion shear deformation productive of such strain intensity as equals an equivalent elongation of not less than 10,000%, thereby dividing the microstructure of the Al—Mg—Si alloy into crystal grains of an average grain or subgrain diameter of not more than 1 μm and producing a material which possesses a fibrous texture having



elongated crystal grains and which exhibits a tensile strength of not less than 250 MPa and an elongation of not less than 15%, said step of extrusion being carried out at a temperature in the range of from room temperature to 150° C. and wherein said step of extrusion is followed by an additional step of cold working to impart enhanced strength to said material.

5,826,457

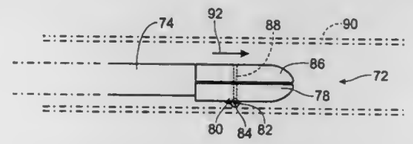
WHEEL FOR MANDREL OF PIPE STRAIGHTENING PRESSES

Allen S. Eagles, 11014 Koerner Rd., Woodburn, Oreg. 97071

Filed Jul. 11, 1997, Ser. No. 891,537

Int. Cl.[6] B21D *39/20*

U.S. Cl. 72—392 **4 Claims**



1. A pipe straightening press comprising a support arm and a mandrel coupled to an end of the support arm, the mandrel comprising an upper jaw and a lower jaw that can be laterally translated with respect to each other, the lower jaw having an outer surface, the mandrel being said to be in its contracted state when the jaws are accordingly close to each other, the mandrel being said to be in its expanded state when the jaws are accordingly far from each other, the mandrel capable of being inserted in a stand alone irrigation pipe and straightening the pipe when the jaws are moved such that the mandrel is changed from its contracted state to its expanded state, the press further comprising:

a wheel coupled to the press in such a way that when the mandrel is in the contracted state the wheel protrudes below the lowest point of the outer surface of the lower jaw and can roll, and when the mandrel is in the expanded state within the pipe the wheel does not protrude below the outer surface of the lower jaw; and

an opening in the outer surface of the lower jaw, and wherein the wheel is coupled to the mandrel in such a way that when the mandrel is in the contracted state, the wheel protrudes through the opening, and when the mandrel is in the expanded state within the pipe, the wheel does not protrude through the opening.

5,826,458

MOISTURE DETECTION METER

Cosmo Little, Cornwall, United Kingdom, assignor to Scapa Group PLC, Blackburn, United Kingdom

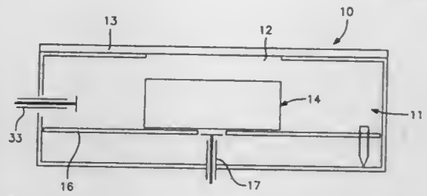
PCT No. PCT/GB95/02366, § 371 Date Apr. 3, 1997, § 102(e) Date Apr. 3, 1997, PCT Pub. No. WO96/11410, PCT Pub. Date Apr. 18, 1996

PCT Filed Oct. 5, 1995, Ser. No. 809,939

Claims priority, application United Kingdom, Oct. 6, 1994, 9420217

Int. Cl.[6] G01R *27/26*; B29C *71/04*; G01N *5/02*; H05B *9/06*

U.S. Cl. 73—73 **12 Claims**



1. A moisture detection meter for measuring moisture content of a water/fiber mixture in a stock disposed above said meter comprising a sensing head having a single chamber which is open in an upwardly direction at an open top thereof, a dielectric resonator member in said chamber and field generation means having an electrical coupling mounted adjacent to the resonator member to generate an oscillating electric field in said chamber, whereby said resonator member and said field can interact to produce at least one field component which is directed out of said open top of said chamber to interact with the stock passing over the sensing head, detection means to detect the frequency of resonance of said field component after interaction with said stock and an indicator device operable to provide an output indicative of a moisture content of said stock.

5,826,459

REMAINING FUEL AMOUNT MEASURING APPARATUS FOR A FUEL TANK

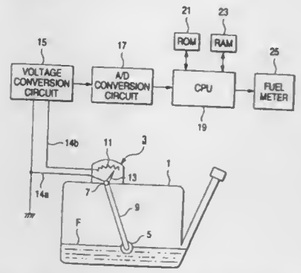
Ichiro Kataoka, and Shinji Narama, both of Shizuoka, Japan, assignors to Yazaki Corporation, Tokyo, Japan

Filed Apr. 3, 1997, Ser. No. 833,050

Claims priority, application Japan, Apr. 19, 1996, 8-098503

Int. Cl.[6] G01F *23/30*

U.S. Cl. 73—290 R **7 Claims**



1. A remaining fuel amount measuring apparatus for a fuel tank, comprising:

detecting means for detecting an amount of fuel remaining in the fuel tank to output remaining fuel amount data;

block data storage means for capturing the remaining fuel amount data outputted from said detecting means at prescribed periods and compiling the captured remaining fuel amount data into blocks each composed of a prescribed number of data to be successively stored;

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simple average computing means for computing a simple average for each block on the basis of the block data stored in said block data storage means;

weighted average computing means for computing a weighted average by further averaging the simple averages of a plurality of blocks on the basis of the simple average for a newest block and that for at least one past block computed by said simple average computing means; and

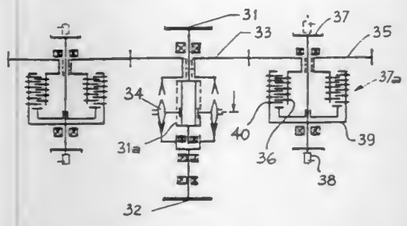
remaining fuel amount outputting means for converting the weighted average computed by said weighted average computing means into a remaining fuel amount to be outputted.

5,826,460

INTERMEDIATE TOTAL POWER TAKEOFF FOR TRUCKS AND SELF-PROPELLED MACHINES FOR VARIOUS OPERATIONS

Giovanni Soncina, and Renato Soncina, both of Roe' Volciano, Italy, assignors to OMSI Trasmissioni S.p.A., Roe' Volciano, Italy

Filed Jul. 2, 1996, Ser. No. 674,752
Claims priority, application Italy, Jul. 3, 1995, BS95A0065
Int. Cl.[6] B60K *25/06*
U.S. Cl. 74—15.88 **15 Claims**



1. A total power takeoff, positionable between a transmission and a differential gear of a self-propelled vehicle and drivable by the transmission of the vehicle, the takeoff comprising:

a body having an inlet shaft and having a splined part;

an outlet shaft, which is disconnected from said inlet shaft;

a clutch ring, which rotates with and slides on said splined part, said clutch ring being movable between a position of connection with, to a position of disconnection from, said outlet shaft;

a central driving gear mounted on said inlet shaft;

a driven gear for driving a shaft of a corresponding user, said central driving gear driving said driven gears;

clutch means arranged inside said body for connecting said driven gear to, and for driving of, said shaft of a corresponding user, said clutch means connecting and disconnecting said driven gear and said shaft of a corresponding user without stopping said inlet shaft, after said clutch ring has been disconnected from said outlet shaft.

5,826,461

CAMSHAFT ASSEMBLY AND METHOD OF MAKING THE SAME

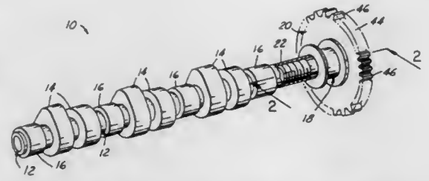
Roy G. Kaywood, Jackson, and John M. Yost, Horton, both of Mich., assignors to Kaywood Products Corporation, Jackson, Mich.

Filed Jan. 22, 1996, Ser. No. 589,297
Int. Cl.[6] F01L *1/04*
U.S. Cl. 74—567 **7 Claims**

1. A camshaft assembly for an engine comprising,

a hollow tubular elongate shaft,

a plurality of cam lobe and bearing journal elements each having an axial opening therethrough sized for being received and positioned along said shaft prior to mechanical expansion



thereof, said elements being oriented and positioned along said shaft in a predetermined spaced apart relationship,

said cam elements each being further rotationally oriented in a predetermined angular alignment relative to one another,

at least one radial thrust bearing element having an axial open therethrough also sized for being received on said shaft prior to mechanical expansion there and being located nearest one end of said shaft and further having an annular radially protruding thrust bearing surface,

said elements being secured to said shaft by mechanical expansion of said shaft into an interface relationship with said openings in said elements,

internal threads formed within and adjacent said one end of said shaft,

a cam timing gear or sprocket having an axial through-bore means sized to telescopically fit onto the outside surface of said shaft after said mechanical expansion thereof, said gear or sprocket having an annular radial thrust bearing surface juxtaposed to said thrust bearing surface of said radial thrust bearing element,

an externally threaded fastener means passing through said through-bore means and securing said cam timing gear or sprocket to said one end of said shaft by said fastener means engaging said cam timing gear or sprocket and by external threads of said fastener means mechanically engaging said shaft internal threads with said cam timing gear or sprocket axial through-bore means telescopically assembled onto said shaft one end, and

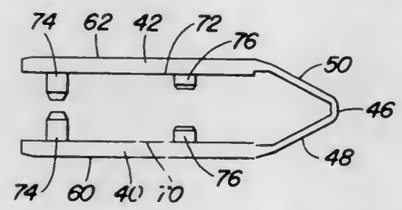
cooperative interengaging recess and projection means disposed on said one end of said shaft and on said cam timing gear or sprocket operable to accurately align said cam timing gear or sprocket in a predetermined rotational angular orientation with said cam lobe elements on said shaft.

5,826,462

PLASTIC SLIDER PAD FOR GEARBOX SHIFT FORK

Helmut Schaefer, Ketsch, Germany, assignor to Deere & Company, Moline, Ill.

Filed Oct. 8, 1996, Ser. No. 727,815
Claims priority, application Germany, Oct. 27, 1995, 195 39 967.6
Int. Cl.[6] F16H *63/32;* **G05G** *3/00*
U.S. Cl. 74—473.37 **15 Claims**



1. A removable plastic slider pad to be slid onto a gearbox shift fork for shifting a rotating shift sleeve, said plastic slider pad comprising:

a. two side legs generally oriented parallel to each other and adapted for being slid onto side surfaces of the gearbox shift fork;

b. connecting means for connecting the side legs to each other, said connecting means extending beyond a distal end of the shift fork generally tangentially with respect to a direction of rotation of the shift sleeve, said connecting means overlapping the distal end of the shift fork; and

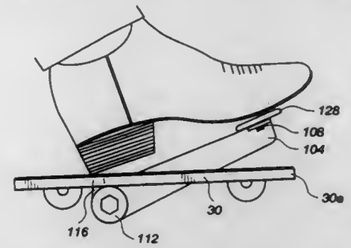
c. said side legs having outer slider surfaces for transmitting force between the gearbox shift fork and the shift sleeve, said outer slider surfaces covering at least partially the side surfaces of the gearbox shift fork.

5,826,463

BRAKE FOR MOTORCYCLES HAVING FOOT BOARDS

Brant Monson, 3875 N. Cove Dr., Provo, Utah 84604

Filed Dec. 11, 1996, Ser. No. 763,516
Int. Cl.[6] B62L *3/04;* **G05G** *1/14*
U.S. Cl. 74—512 **19 Claims**



1. A brake lever assembly for motorcycles having foot boards, the brake lever assembly comprising:

a brake pad arm having a first end configured for attachment to a brake pad and a second end configured for attachment to a motorcycle; and

a brake actuator arm having a first end configured for attachment to a braking mechanism and a second end, connected to the brake pad arm, configured for attachment to a motorcycle;

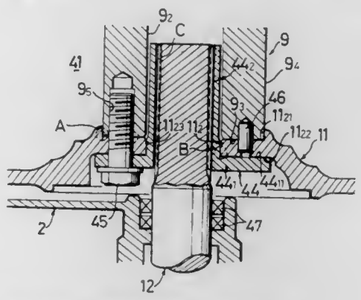
wherein the brake pad arm and the brake actuator arm are offset at an angle between 50 and 65 degrees.

5,826,464

SYSTEM FOR OUTPUTTING POWER FROM A CRANKSHAFT

Masaki Tsunoda, and Koji Koishikawa, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaishl, Tokyo, Japan

Filed Sep. 27, 1995, Ser. No. 534,451
Claims priority, application Japan, Sep. 27, 1994, 6-231157; Sep. 29, 1994, 6-235618
Int. Cl.[6] G05G *1/00*
U.S. Cl. 74—572 **17 Claims**



1. A system for outputting power comprising:

a crankshaft having an end;

a flywheel;

a spline piece, wherein said flywheel and said spline piece are coaxially coupled to said end of said crankshaft to permit power to be output through said spline piece,

wherein a first side of said flywheel is facet-fitted to an outer periphery of said end of said crankshaft, and said spline piece has a flange portion superposed on a second side of said flywheel, said spline piece being facet-fitted to an inner peripheral surface of said flywheel and said spline piece having a spline-coupling portion which extends from said flange portion away from said crankshaft; and

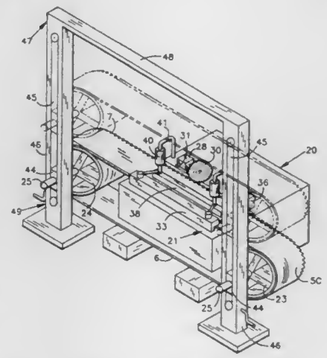
at least one bolt for commonly fastening said flange portions of said flywheel and said spline piece to said end of said crankshaft.

5,826,465

BAND SAW BLADE MANUFACTURING METHOD

Benno Iseli, Schotz, Switzerland, assignor to Iseli & Co. AG, Switzerland

PCT No. PCT/EP95/01230, § 371 Date Dec. 16, 1996, § 102(e) Date Dec. 16, 1996, PCT Pub. No. WO95/26850, PCT Pub. Date Oct. 12, 1995
PCT Filed Apr. 3, 1995, Ser. No. 722,253
Claims priority, application United Kingdom, Apr. 5, 1994, 9406628
Int. Cl.[6] B23D *63/12*
U.S. Cl. 76—112 **8 Claims**



1. A method of handling a band saw for finishing saw teeth of the band saw, comprising the steps of: mounting the band saw upon a pair of rotatable supports positionally adjustable relative to each other to accommodate mounting and unloading different lengths of band saw, positioning said supports in a generally horizontal arrangement; raising the rotatable supports and a band saw carried thereby to such level with respect to a work position so that a lower length of the band saw is presented to said work position; advancing the supports and the thus mounted band saw to the work position at which the band saw can be subjected to at least one finishing operation; and effecting finishing operations comprising executing sharpening operations on at least one working face of each of the teeth of the band saw.

5,826,466

MULTI-PURPOSE HAMMER

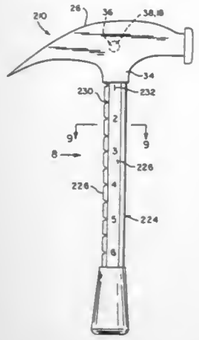
Edward Weissbach, P.O. Box 805, Riverhead, N.Y. 11901

Filed May 5, 1997, Ser. No. 851,209
Int. Cl.[6] B25D *1/00*
U.S. Cl. 81—26 **4 Claims**

1. A multi-purpose hammer, comprising:

a) a handle;

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b) a bead extending generally perpendicularly from said handle, at an end thereof; said head having a claw portion for removing nails, an anvil portion for driving nails, and an intermediate portion extending from said claw portion of said head to said anvil portion of said head and securingly receiving said end of said handle; said intermediate portion of said head having a pair of surfaces thereon being flat, opposing each other, and extending generally in direction of said handle;

c) holding means associated with said head for holding a nail; said holding means including one surface of said pair of surfaces of said intermediate portion of said head having therein a pair of dimples being spaced-apart, aligned generally in direction of said handle, and sized to receive a head of the nail so as to allow the head of the nail to rest in one dimple of said pair of dimples in said one surface of said pair of surfaces of said intermediate portion of said head, with the nail extending generally perpendicularly outwardly therefrom, with one hand of a user wrapping around said intermediate portion of said head, with a palm of the one hand of the user abutting snugly against another surface of said pair of surfaces of said intermediate portion of said head, and with fingers of the one hand of the user extending over said intermediate portion of said head onto said one surface of said pair of surfaces of said intermediate portion of said head and straddling the nail and maintaining the head of the nail in said one dimple of said pair of dimples in said one surface of said pair of surfaces of said intermediate portion of said head, so that by merely swinging the one arm of the user in direction of the nail, enough force is created to start the nail into a surface; said pair of dimples in said one surface of said pair of surfaces of said intermediate portion of said head allows placement of the head of the nail in which ever dimple of said pair of dimples in said one surface of said pair of surfaces of said intermediate portion of said head is comfortable for size of the one hand of the user; said handle having a first face extending generally in direction of another surface of said pair of surfaces of said intermediate portion of said head; said handle further having a second face extending perpendicularly from said first face of said handle; said second face of said handle having a plurality of grooves therein being V-shaped, laterally-oriented, longitudinally spaced-apart in 0.5" increments, and starting 1" from said one dimple of said pair of dimples in said one surface of said pair of surfaces of said intermediate portion of said head; and

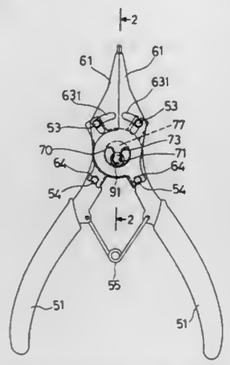
d) a striking surface for striking the nail in a restricted area; said striking surface being forged on said another surface of said pair of surfaces of said intermediate portion of said head so as to allow the nail to be driven when space available is too small to drive the nail with said anvil portion of said head.

5,826,467

EAST SHIFT SNAP RING PLIERS

Hsin Te Huang, No. 11, 35th Road, Gong Yeh Chu, Taichung, Taiwan

Filed Apr. 21, 1997, Ser. No. 837,554
Int. Cl.[6] B25B *7/12*
U.S. Cl. 81—302 **7 Claims**



1. A snap ring pliers for engaging with different retaining rings, said pliers comprising:

a pair of handles including an upper portion pivotally coupled together at a hub, said hub including an aperture, said handles each including an upper pin arranged above said aperture and each including a lower pin arranged below said aperture,

a pair of jaws including a lower portion pivotally coupled together at a shaft, said shaft being slidably engaged in said aperture and adapted to be moved between an upper position and a lower position, said jaws each including a bottom portion having a notch for engaging with said lower pin and each including a middle portion having a guide channel for engaging with said upper pin, said guide channels each including an upper curved slot and a lower curved slot for engaging with said upper pins, and

means for positioning said shaft in said lower position and for allowing said shaft to be moved to said upper position,

said notches being engaged with said lower pins for allowing said jaws to be moved away from each other when said shaft is positioned in said lower position and when said handles are moved toward each other, and said notches being disengaged from said lower pins and said upper pins being engaged with said lower curved slots of said jaws for allowing said jaws to be moved toward each other when said shaft is positioned in said upper position and when said handles are moved toward each other.

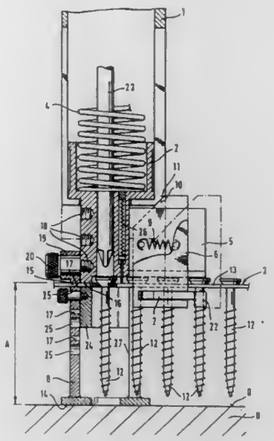
5,826,468

TRANSPORTING DEVICE FOR A STRIP-SHAPED MAGAZINE FEEDING ATTACHMENT FOR SCREWS

Gerd Daubinger, München, Germany, and Hendrik A. van Egeraat, Örebro, Sweden, assignors to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Jun. 24, 1996, Ser. No. 669,658
Claims priority, application Germany, Jun. 23, 1995, 195 22 815.4
Int. Cl.[6] B25B *23/04*
U.S. Cl. 81—434 **2 Claims**

1. A transporting device for use with a screw driving apparatus including a strip-shaped magazine feeding attachment (**3**) for screws (**12**), a housing (**1**) for the screw driving apparatus having a front end facing in a screw setting direction, a guiding element (**2**) mounted in and extending axially outwardly in the screw-setting direction from the front end of said housing, said guiding element (**2**) being displacable relative to said housing (**1**) parallel to the



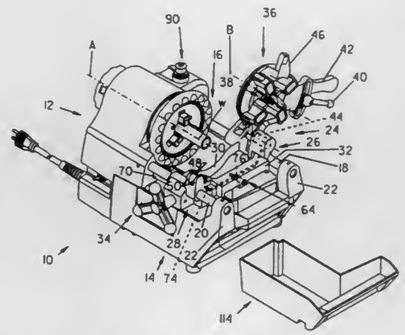
screw setting direction counter to the force of a first spring (**4**), a stop element (**8**) extending in the screw-setting direction ahead of the front end of said housing (**1**) and having a stop surface (**14**) at a front end thereof in the screw setting direction spaced axially outwardly from said guiding element (**2**), a transporting channel (**15**) for said magazine feeding attachment (**3**) for screws extending substantially perpendicularly to the screw-setting direction, said stop element (**8**) being at least partially coextensive with said guiding element (**2**) and being displacable in the screw-setting direction relative to said guiding element, said transporting channel (**15**) having first and second surfaces extending substantially perpendicularly to the screw-setting direction and said first and second surfaces being formed by parts of said guiding element (**2**) and of the said stop element (**8**), said transporting channel (**15**) being formed by stop surfaces (**17**) on said stop element (**8**) facing opposite to the screw-setting direction and by a front end surface (**16**) of said guiding element (**2**) spaced axially outwardly from said front end of said housing and facing in the screw setting direction wherein a distance (A) between the front end surface (**16**) of said guiding element (**2**) and said stop surface (**14**) of said stop element (**8**) can be step wise adjusted whereby said stop element (**8**) has a hole (**19**) therethrough adjacent a trailing end thereof in the setting direction, and said guiding element (**2**) has a number of holes (**18**) therein spaced apart in the setting direction, a fastening element (**20**) extending through said hole (**19**) in said stop element (**8**) into one of said holes (**18**) in said guiding element (**2**) for the stepwise adjustment, and said stop element (**8**) has a number of through holes (**25**) spaced apart in the setting direction along with an adjacent said stop surface (**17**) facing opposite to the screw-setting direction associated with each said through hole (**25**) and spaced from an inside surface of the associated through hole opposite to the setting direction, a clamping element (**24**) located within said stop element (**8**) and interacting with the leading end surface (**16**) of said guiding element (**2**), said clamping element (**24**) is axially fixable in axially stepped locations with said through holes (**25**) in said stop element so that an end surface of said clamping element (**24**) facing opposite of the setting direction is in the same plane with said stop surface (**17**) associated with said through holes (**25**) of said stop element (**24**) to which said clamping element is fixed.

5,826,469

THREADING MACHINE COOLANT SYSTEM AND METHOD OF COOLING

Donald A. Haradem, Avon, Ohio, assignor to Emerson Electric Company, St. Louis, Mo.

Filed Oct. 6, 1997, Ser. No. 944,775
Int. Cl.[6] B23G *1/02*
U.S. Cl. 82—1.11 **37 Claims**



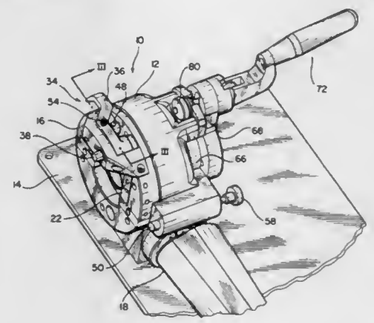
1. A method of cooling a workpiece during a thread cutting operation comprising, providing an oil free liquid coolant which will vaporize at a frictional temperature of a workpiece which is generated by relative rotational thread cutting interengagement between a workpiece and thread cutting tool means, moving a thread cutting tool and workpiece in thread cutting interengagement to generate said frictional temperature, and dispensing said coolant onto said workpiece at a rate for said coolant to completely evaporate and cool the workpiece to a temperature no greater than 230° F.

5,826,470

CAM OPERATED QUICK RETURN FEED CONTROL FOR LATHE MACHINE TOOL

Clement Tremblay, Citrus Heights, Calif., assignor to TRI Tool Inc., Rancho Cordova, Calif.

Filed Jul. 9, 1996, Ser. No. 677,225
Int. Cl.[6] B23B *3/26*
U.S. Cl. 82—113 **11 Claims**



1. A cam-actuated feed control for a machine tool including a relatively fixed housing, a rotary head carrying a radially movable tool bit holder attached to the housing and rotatable about a

longitudinal axis of rotation to drive the tool bit holder in rotation about the axis in a cutting plane with said tool bit holder movable in feed directions towards and away from said axis, said housing including a workpiece holder for holding a workpiece fixed relative to the longitudinal axis of rotation of the rotary head, wherein the feed control comprises:

a cam actuator arm movably mounted on the rotary head for cyclic movement;

a rotationally mounted cam element carried by the rotary head and connected to said cam actuator arm through a one-way clutch device such that cyclic motion of the cam actuator arm in opposite directions is transmitted to the cam element as periodic unidirectional rotation through said one-way clutch device;

said cam element being associated with the tool bit holder such that the periodic unidirectional rotation of the cam element causes periodic motion of the tool bit holder in a tool feed direction toward the axis of rotation; and

a tool bit holder biasing device arranged to resiliently urge the tool bit holder towards a retracted position away from the rotational axis and in driving relationship with the cam element.

5,826,471

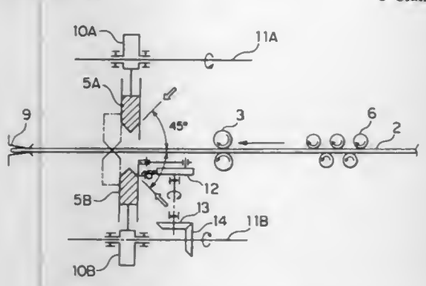
CUTTING METHOD FOR COIL CONDUCTOR

Mikio Iguchi, Himeji, Japan, assignor to Mitsubishi Denki Kabushika Kaisha, Tokyo, Japan

Division of Ser. No. 496,755, Jun. 29, 1995, Pat. No. 5,664,472. This application May 12, 1997, Ser. No. 854,676

Int. Cl.[6] B26D *3/16;5/20*

U.S. Cl. 83—51 **5 Claims**



1. A method for cutting a coil conductor, comprising the ordered steps of:

a) linearly infeeding a coil conductor by a predetermined amount,

b) halting the coil conductor;

c) feeding linearly reciprocable cutting edges disposed on opposite sides of the coil conductor in a downstream direction, and

d) simultaneously with step c), moving the cutting edges inwardly, towards each other, to cut the halted coil conductor, thereby preventing the cutting edges from push-camming an end of the coil conductor being severed in an upstream direction.

5,826,472

METHOD AND APPARATUS FOR PROCESSING A WIRE

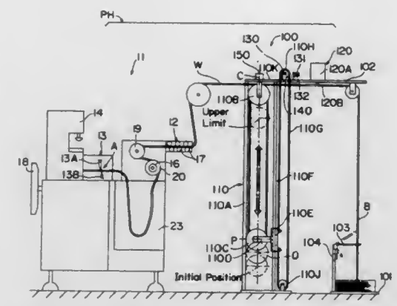
Yoshikazu Tamura, and Yoshinori Yamashita, both of Kanazawa, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Sep. 12, 1996, Ser. No. 713,238

Claims priority, application Japan, Oct. 19, 1995, 7-271503

Int. Cl.[6] B23Q *15/20*

U.S. Cl. 83—72 **10 Claims**



1. A wire processing apparatus comprising:

a pass line (PH) having an upstream end (B) in proximity to a supply of wire (W) and a downstream end, said pass line (PH) defining a length (R) between said upstream and downstream ends for accommodating the wire (W),

a prefeeder (**120**) for feeding the wire (W) into the pass line (PH),

a cutting apparatus (**11**) for cutting the wire (W) in a cutting position (A) at the downstream end on the pass line (PH),

a feeding unit (**12**) in proximity to the downstream end of the pass line (PH) for feeding the wire (W) to the cutting position (A),

an accumulator (**110**) which is disposed in the pass line (PH) between the prefeeder (**120**) and the feeding unit (**12**), said accumulator (**110**) including means for adjustably accumulating a selected amount of the wire (W) to change the length (R) of the pass line (PH),

a detector (**103**, **104**) for detecting during wire processing whether there is any prefeeder stop cause which requires the prefeeder (**120**) to be stopped, and

a controlling unit (**40**) for stopping the prefeeder (**120**) in response to a detection of a prefeeder stop cause by the detector (**103**, **104**) and causing the feeding unit (**12**) to feed the wire (W) from the accumulator (**110**) to the cutting apparatus (**11**) to continue operation of the cutting apparatus (**11**) by shortening the length (R) of the pass line (PH) while the operation of the prefeeder (**120**) is interrupted.

5,826,473

DEVICE FOR CUTTING A WIRE LAID ON A SUBSTRATE

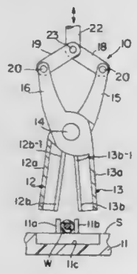
Yuuji Saka; Nori Inoue; Takahiro Onizuka; Yoshito Oka, and Hideo Matsuoka, all of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Sep. 3, 1996, Ser. No. 707,030

Claims priority, application Japan, Aug. 31, 1995, 7-223684

Int. Cl.[6] B26D *7/06*

U.S. Cl. 83—100 **4 Claims**



1. A device adapted to cut wire on a substrate having a plurality of separate electrical circuits thereon, wherein at least one continuous wire is laid on said substrate and said separate circuits are formed by cutting said wire at at least one desired location along its length, said substrate comprising

a wire surface constituting a portion of said substrate surface, said wire surface being arranged in a predetermined pattern corresponding to said circuits, a recess below said wire surface at said location, a scrap portion of said wire to be cut and removed over said recess, said recess being wider than a diameter of said wire and adapted to receive a cutter on either side of said wire,

said device comprising at least a first cutter and a second cutter movable toward and away from each other, said first cutter adapted for placement in said recess on one side of said wire, said second cutter adapted for placement in said recess on another side of said wire at a point opposed to said first cutter,

wherein each of said first cutter and said second cutter comprises a pair of cutting blades spaced apart along a longitudinal axis of said wire a distance substantially equal to a distance between ends of said scrap portion.

5,826,474

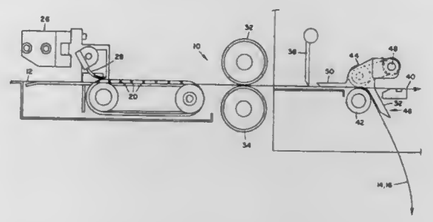
TRIM STRIP DEFLECTOR

Linda A. Howard, Brookfield, and Edward M. Ifkovits, New Fairfield, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 418,347, Apr. 7, 1995, abandoned. This application Feb. 11, 1997, Ser. No. 798,670

Int. Cl.[6] B26D *1/03*

U.S. Cl. 83—105 **5 Claims**



1. Apparatus for dividing a continuous web having a central portion and side portions adjacent said central portion, said side portions having perforated, marginal strips, into discrete sheets and removing said marginal strips, comprising:

a pair of timing belts having a plurality of teeth for engaging and moving the perforated, marginal strips of the continuous web along a feed path;

a pair of stationary, slitter knives located downstream of the engaging and moving means for separating the marginal strips from the central portion of the web;

cutting means for dividing the central portion of the web into discrete sheets;

at least one inner drive roller mounted below the central portion of the web along the feed path;

a pair of deflectors located downstream of the cutting means for advancing the central portion of the web and for guiding the severed, marginal portions below the feed path, each of the deflectors having an upstream, horizontal leg, a downstream, angled leg forming an obtuse angle with the horizontal leg and extending below the feed path, and an outer driven roller engaging the feed path;

a pair of outer drive rollers located beneath the outer driven rollers, wherein each outer drive roller and each outer driven roller engages the marginal strip, wherein the severed, marginal strips are guided along and under the horizontal legs of the deflectors, between the outer drive rollers and the outer driven rollers of the deflectors and along the angled legs of the deflectors; and at least one inner drive roller located beneath the inner driven roller, wherein the at one inner drive and driven roller engage the central portion of the web, whereby the associated discrete sheets of the central portion of the web are conveyed along the feed path and away from the deflectors.

5,826,475

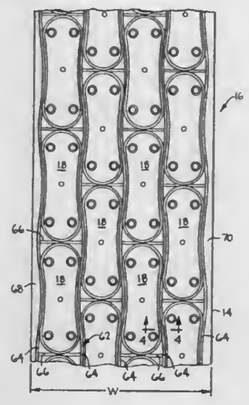
KNIFE SHAFT ASSEMBLY

Stefan Alojzy Mysliwiec, Kaukauna, Wis., assignor to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation of Ser. No. 667,579, Jun. 21, 1996, abandoned. This application Sep. 12, 1997, Ser. No. 928,892

Int. Cl.[6] B26D *7/18;* **B26F** *1/38*

U.S. Cl. 83—116 **20 Claims**



1. A knife shaft assembly comprising:

a) a rotatable die shaft having an outer circumference and having a defined width;

b) at least two die cutting inserts mounted on said outer circumference of said die shaft, each of said die cutting inserts having a first surface and a knife formed about the periphery of said first surface, said knife having a cutting edge and a sidewall aligned at an angle of between 20° to about 50° relative to said cutting edge, and each die cutting insert being adjacently aligned to another die cutting insert and having a portion of said respective cutting edge spaced within 0.5 inches of a portion of said cutting edge of said adjacently aligned die cutting insert; and

c) grid work means for preventing buildup of material waste between said adjacently aligned die cutting inserts, said grid work means comprising a grid work of continuous compressible band members and transverse members positioned completely exterior to the peripheries of said die cutting inserts and forming a substantially rectangular grid work band outside of each one of said die cutting insert peripheries, said compressible band members not extending laterally beyond an adjacent one of said die cutting inserts more than about 0.1 inches and said compressible band members having a thickness of between about 0.01 inches to about 0.5 inches.

5,826,476

APPARATUS FOR TRIMMING FOLDED PRINTED PRODUCTS, SUCH AS NEWSPAPERS, PERIODICALS, BROCHURES AND THE LIKE

Jacques Meier, Hinterer Engelstein, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

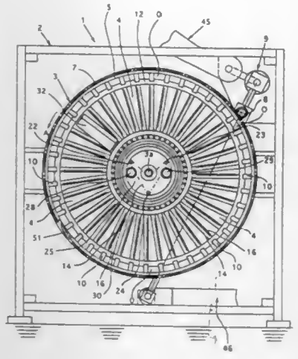
Filed Jul. 9, 1996, Ser. No. 678,521

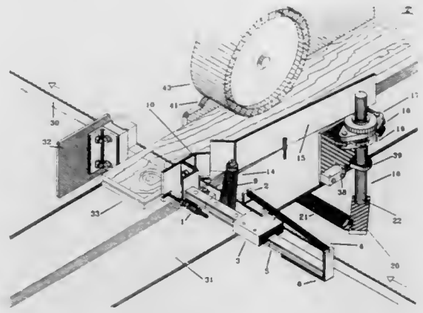
Claims priority, application Switzerland, Jul. 11, 1995, 02019/95

Int. Cl.[6] B26D *7/02;7/06;1/12;1/62*

U.S. Cl. 83—155 **16 Claims**

1. An apparatus for trimming folded printed products on at least one side border parallel to a fold edge, said apparatus comprising a plurality of receiving compartments which are driven in rotation along a rotary path, said compartments are open on at least a first side extending transversely with respect to a direction of rotation for receiving the printed products which are to be trimmed, said





apparatus including a feed conveyor for feeding the printed products to the receiving compartments and a removal conveyor for transporting the trimmed printed products, said receiving compartments comprising a support upon which the fold edge of the printed products introduced into the compartment contact and a controllable clamping device for clamping the printed products during a cutting operation, said receiving compartments further comprising, on said first open side, a cutter element which moves along therewith and interacts with a stationary cutter element for trimming a side border parallel to the fold edge, said plurality of receiving compartments each comprising a controllable displacement device which acts on an associated printed product of said printed products in an associated receiving compartment of said plurality of receiving compartments and means for moving each displacement device in a predetermined direction, wherein each displacement device is moveable from an initial position to a first operating position wherein said at least one side border is trimmed and, further, to a second operating position, wherein the product which has been trimmed is removed from the associated compartment, wherein the displacement device acts on the associated printed product located in the associated receiving compartment during movement from the initial position into the first operating position wherein the printed product is moved away from the support into a cutting position for trimming of the side border parallel to the fold edge and continuously acts on the printed product during subsequent movement in the same direction from the first operating position into the second operating position wherein the trimmed printed product is moved into a discharge position, in which the removal conveyor receives the printed products.

5,826,477

COMBINATION GUIDE AND SAWDUST REMOVER

Clarence R. Brewer, Sr., P.O. Box 150, Central City, Ky. 42330

Filed Dec. 8, 1995, Ser. No. 569,788

Int. Cl.[6] B26D *3/08*

U.S. Cl. 83—168 **6 Claims**

1. A device for automatically adjusting band saw blade guides according to widths of material being sawn by a band saw so as to minimize unsupported blade spans comprising a saw guide fixed to a band saw frame and a slide shoe assembly which includes a slide, a slide shoe mounted on the slide, at least one blade guide mounted on the slide, and a means of urging the slide shoe against the material being sawn, which in turn biases the material being sawn against a reference surface, wherein said slide shoe assembly is slideable within a mount that is a part of a band saw framework.

5,826,478

NOZZLE FOR SUPPLYING A LIQUID TO A ROTATING TOOL

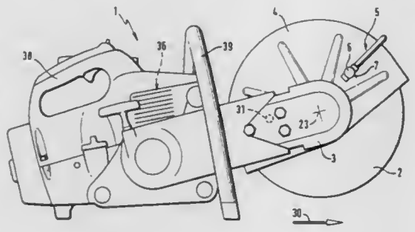
Gerhard Zerrer, Korb, Germany, assignor to Andreas Stihl AG & Co., Waiblingen, Germany

Filed Dec. 6, 1996, Ser. No. 761,650

Claims priority, application Germany, Dec. 6, 1995, 195 45 416.2

Int. Cl.[6] B26D *7/08;* **B24B** *55/02;23/02;* **B05B** *1/00*

U.S. Cl. 83—169 **5 Claims**



1. A nozzle for supplying a liquid to a rotating tool of a cutter, said nozzle comprising:

a nozzle body;

a hose connector connected to said nozzle body for supplying a liquid to said nozzle;

said nozzle body having a fastening portion for mounting said nozzle in a receiving opening of a protective cover wall;

a radially expandable clamping member positioned on said fastening portion for engaging the receiving opening;

said clamping member is a spreader ring slipped onto said nozzle body and consisting of an elastic material;

a screw threaded into said nozzle body for axially loading said spreader ring;

a nozzle housing axially clamped between said sleeve and a head of said screw;

a securing member for preventing rotation of said nozzle in the receiving opening, wherein said nozzle body has a radial bore and wherein said securing member is inserted into said radial bore and supported at said nozzle housing.

5,826,479

CUTTING DEVICE

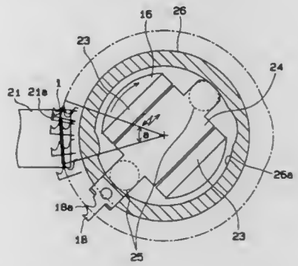
Takayuki Suzuki, Nagoya; Yoshimitsu Yamaguchi, Chita-gun, and Masahiro Asano, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 285,102, Aug. 3, 1994, abandoned. This application Sep. 12, 1996, Ser. No. 712,799

Claims priority, application Japan, Aug. 3, 1993, 5-212256

Int. Cl.[6] B26D *1/56*

U.S. Cl. 83—318 **15 Claims**



9. A cutting device, comprising:

a first slider disposed along said workpiece and mounted for reciprocating motion at the speed of said workpiece;

a rotary slider mounted with respect to said first slider so as to be rotatable in a direction perpendicular to the direction of the reciprocating motion of said first slider, as well as to be driven to rotate by means of said servomotor in accordance with the speed of said workpiece;

a male blade attached to said rotary slider and having a wedge-shaped blade tip;

a pair of female blades disposed proximate said male blade and having a hole through which said workpiece is passed;

an internal positive cam having a substantially circular cam surface on an inner wall thereof; and

a pair of cam followers journaled a fixed distance apart on said rotary slider such that both of said cam followers continuously contact with and slide over said cam surface,

said cam surface having opposed deviations such that said male blade moves perpendicular to said workpiece and cuts a center of said workpiece linearly.

5,826,480

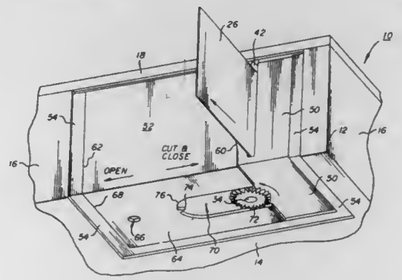
EXTERNALLY DRIVEABLE CASSETTE WITH KNIFE FOR CUTTING PHOLOSENSITIVE MATERIAL AND LATCHING CASSETTE DRIVE

Jeffrey Charles Robertson, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1996, Ser. No. 607,895

Int. Cl.[6] B26D *7/00*

U.S. Cl. 83—649 **13 Claims**



1. A cassette for light-sensitive web material, comprising:

a hollow cassette housing having a first exit slit;

means, located within said housing, for rotatably supporting a roll of photosensitive web material;

means, located within said housing, for engaging a leading end of a web material to drive the web material through said first exit slit;

a knife blade adjacent said first exit slit, said knife blade having a cutting edge extended at an acute angle to said first exit slit;

means for slidably mounting said knife blade for movement between a first position in which said first exit slit is open, and a second position in which both the web material has been cut by said cutting edge and said first exit slit has been closed by said knife blade to prevent entry of light into said housing through said first exit slit; and

means, operatively associated with said knife blade, for preventing operation of said means for engaging when said knife blade is in said second position.

5,826,481

DEVICE FOR CUTTING PLYWOOD VENEER

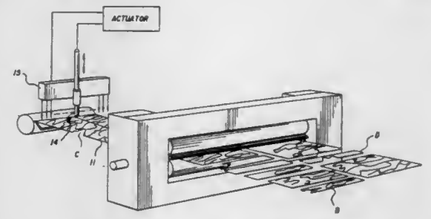
Kari Sintonen, Aumakatu 16, SF-15700 Lahti, Finland

Continuation-in-part of Ser. No. 253,231, Jun. 2, 1994, abandoned, which is a continuation of Ser. No. 78,188, Jun. 22, 1993, abandoned. This application Feb. 29, 1996, Ser. No. 610,131

Claims priority, application Finland, Jun. 26, 1991, 913111; Mar. 27, 1992, PCT/FI92/00091

Int. Cl.[6] B26D *1/12*

U.S. Cl. 83—664 **2 Claims**



1. A knife assembly for a veneer cutting apparatus, the knife assembly comprising an elongated shaft having two opposite free ends for supporting the shaft on a frame construction of the veneer cutting apparatus, and two blade elements rotatably supported on the shaft between the free ends of the shaft, said blade elements each having a cutting blade projecting in a plane of the shaft, each of the blades having at least one cutting edge parallel to the shaft, wherein each of the cutting blade being rotatable on the shaft independent of rotation of the other cutting blade element, said blade elements forming a contiguous blade extending across the shaft when in unison with each other.

5,826,482

HYDRAULIC ACTUATOR

Alexander William Rowe, Johannesburg, South Africa, assignor to Vector Hydraulics Incorporated, Geneva, Switzerland

Filed Nov. 27, 1996, Ser. No. 757,510

Int. Cl.[6] F01B *7/18;* **F01L** *25/02*

U.S. Cl. 91—235 **19 Claims**

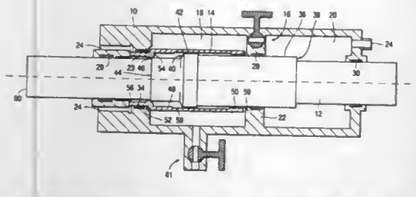
4. A hydraulic actuator comprising:

a housing;

a first chamber in the housing;

a hydraulic fluid inlet connected to the first chamber;

an elongated piston reciprocable in the first chamber, wherein the piston has a central zone with diametrical steps of reduced diameter on either side of the central zone to define drive and return piston areas exposed to hydraulic fluid under pressure to cycle the piston during operation of the actuator;



a reciprocable sleeve surrounding the piston, the sleeve being spaced from the piston to form a second chamber between the sleeve and the piston,

wherein the housing includes a first valve seat that defines, with a first surface of the sleeve, a fluid exhaust valve for the second chamber, the exhaust valve having an exhaust port that is opened and closed by reciprocating the sleeve away from and onto the seat respectively, and a second valve seat that surrounds the piston to define, with a second surface of the sleeve, an inlet valve for the second chamber, which inlet valve opens and closes fluid communication between the first and second chambers by reciprocating the sleeve,

wherein the housing includes a bore through which a portion of the sleeve sealingly reciprocates and continuously seals the exhaust valve from the first chamber,

wherein the piston and the sleeve are configured to interact during cycling and generate hydraulic fluid pressure changes in the second chamber, during travel of the piston in a first direction, to move the sleeve and open the inlet valve and close the exhaust valve to decelerate the piston and then accelerate the piston in a second direction, which is opposite the first direction, and during travel of the piston in the second direction, to move the sleeve and close the inlet valve and open the exhaust valve to decelerate the piston in the second direction and then accelerate the piston in the first direction, and

wherein the first chamber is divided into first and second chamber sections by a partition wall through which the central zone of the piston is sealingly reciprocable, with the first chamber section housing a portion of the piston including the drive area, the second chamber section housing a portion of the sleeve projecting from the bore; and

a start/stop valve arrangement.

5,826,483

HYDRAULIC HEAVY EQUIPMENT

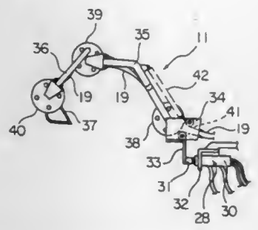
Mitsuhiro Koseki, Tokyo, Japan, assignor to Kabushiki Kaisha F.F.C., Tokyo, Japan

Filed Jul. 24, 1997, Ser. No. 899,756

Claims priority, application Japan, Jul. 26, 1996, 8-197695; Nov. 21, 1996, 8-311019

Int. Cl.[6] F15B *13/16*

U.S. Cl. 91—361 **17 Claims**



1. Hydraulic heavy equipment comprising:

a heavy equipment body;

a working device having a plurality of working side pivoting members pivotably connected to each other, mounted on said heavy equipment body;

hydraulic cylinders which cause said working side pivoting members pivot;

a hydraulic circuit section for operating said hydraulic cylinders, said hydraulic circuit section having switching valves for switching over the operating direction of said hydraulic cylinders;

an operating device having a plurality of operating side pivoting members which correspond to said working side pivoting members and are pivotably connected to each other;

control valves for controlling said switching valves by being operated by said operating device; and

transmitting means for transmitting pivoting of said working side pivoting members and bringing the control valves corresponding to said working side pivoting members back to a neutral state.

5,826,484

BOOSTER EQUIPPED WITH AN ADAPTIVE-FLOWRATE DIRECT AIR INLET

Jean Pierre Gautier, and Ulysse Verbo, both of Aulnay-Sous-Bois, France, assignors to Bosch Systems de Freinage, Drancy, France

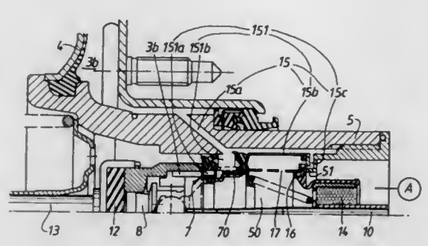
PCT No. PCT/FR96/00281, § 371 Date Mar. 8, 1996, § 102(e) Date Mar. 8, 1996, PCT Pub. No. WO96/29220, PCT Pub. Date Sep. 26, 1996

PCT Filed Feb. 22, 1996, Ser. No. 596,351

Claims priority, application France, Mar. 17, 1995, 95 03099

Int. Cl.[6] F15B *9/10*

U.S. Cl. 91—376 R **4 Claims**



1. Pneumatic brake booster using first and second sources of air pressure (D, A) delivering first and second respective and different pressures, this booster comprising a rigid casing (**3**) divided by at least one leaktight moving partition (**4**) into at least two chambers (**3***a*, **3***b*), the first (**3***a*) of which is connected to the first source (D), and the second (**3***b*) of which can be connected selectively, by means of a valve (**7**), to either one of the two sources (D, A), it being possible for the moving partition to be urged by a difference in pressure brought about by an actuation of the valve, between the pressures supplied to the chambers, in order to drive along an at least partially cylindrical pneumatic piston (**5**) sliding in leaktight fashion in the casing and bearing the valve (**7**), the inside of this piston and the valve (**7**) being separated from the second source by a purification filter (**14**), characterized in that it further includes at least one first air intake path (**15**) formed by a passage (**15***a*, **15***b*, **15***c*) which causes the second chamber (**3***b*) to communicate with the second source of pressure (A), avoiding passing through the filter (**14**) and the valve (**7**); shut-off means (**16**, **51**) with selective opening installed on the first air intake path (**15**) between the second source of pressure (A) and the inside (**50**) of the piston; and elastic means (**17**) which are sensitive to a drop in pressure between the inside (**50**) of the piston and the second source of pressure (A) in order to allow selectively the opening of the shut-off means (**16**, **51**) when this drop in pressure exceeds a given threshold.

5,826,485

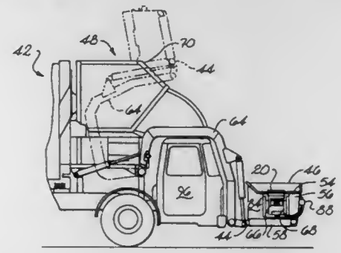
RESIDENTAL REFUSE COLLECTION CART LIFTER WITH UNIVERSAL FEATURE

Jimmy O. Bayne, and Michael J. Susil, both of Simpsonville, S.C., assignors to Bayne Machine Works, Inc., Simpsonville, S.C.

Division of Ser. No. 459,749, Jun. 2, 1995, which is a division of Ser. No. 267,777, Jun. 28, 1994, Pat. No. 5,447,405, which is a division of Ser. No. 979,153, Nov. 23, 1992, Pat. No. 5,333,984, which is a continuation-in-part of Ser. No. 903,078, Jun. 22, 1992, Pat. No. 5,308,211, Continuation-in-part of Ser. No. 903,078. This application Oct. 23, 1996, Ser. No. 735,614

Int. Cl.[6] B65F *3/02;* **F15B** *15/22*

U.S. Cl. 91—405 **27 Claims**



1. A piston responsive variable valving system for operation with a fluid activated piston movably received within a cylinder, said system comprising:

fluid port means associated with one end of a cylinder for conducting fluid in alternate directions in the cylinder for driven movement of the piston therein;

fluid flow rate regulating means received within said fluid port means for establishing one of at least two different fluid flow rates for fluid conducted therethrough so as to drive the piston, under a given load condition, at two different corresponding speeds within the cylinder, said regulating means including a movable actuation member, movement of which between respective first and second positions thereof respectively and correspondingly selects said different fluid flow rates; and

biasing means, for biasing said movable actuation member into said first position thereof protruding into the cylinder and in the travel path of the piston movably received therein so as to select a corresponding first fluid flow rate through operation of said regulating means, and for permitting said movable actuation member to be moved into said second position thereof responsive to engagement with the piston so as to select a corresponding second fluid flow rate through operation of said regulating means; and

wherein said valving system comprises part of drive means for a lifting apparatus comprising a hydraulically actuated lifter mounted on a relatively larger front end load container box adapted to be carried on a refuse collection vehicle for subsequent emptying of the container box contents into a refuse receiving part of the vehicle.

5,826,486

HYDRAULIC CIRCUIT

Yoshiyuki Shimada, Kobe, Japan, assignor to Shin Caterpillar Mitsubishi Ltd., Japan

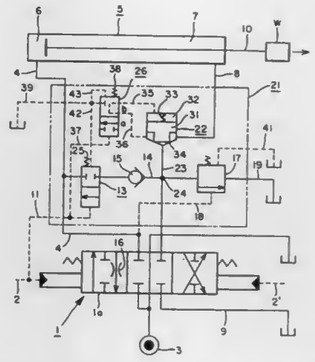
Filed Mar. 24, 1997, Ser. No. 822,056

Claims priority, application Japan, Sep. 20, 1996, 8-249639

Int. Cl.[6] F15B *11/08*

U.S. Cl. 91—436 **4 Claims**

1. An hydraulic circuit for recycling a portion of a working fluid from a rod chamber of a hydraulic actuator, through a recycle selector valve, to a head chamber of said hydraulic actuator, said hydraulic circuit including:



fluid supply means for supplying a flow of said working fluid to said hydraulic actuator;

a control valve for controlling flow of said working fluid between said fluid supply means and said hydraulic actuator, said control valve being operable between first and second positions, wherein said hydraulic actuator is, respectively, extended and retracted, and a neutral position, wherein said hydraulic actuator is held substantially immobile; and

a drift reduction valve operable, when said control valve is in said neutral position, to bar flow of said working fluid between said rod chamber of said hydraulic actuator and said recycle selector valve.

5,826,487

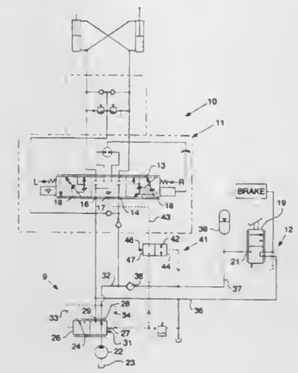
PRESSURE CONTROL FOR A PAIR OF PARALLEL HYDRAULIC CIRCUITS

Michael A. A'Hearn, Shorewood, Ill., assignor to Caterpillar Inc., Peoria, Ill.

Filed Feb. 20, 1997, Ser. No. 803,347

Int. Cl.[6] F15B *11/00*

U.S. Cl. 91—516 **8 Claims**



1. A pressure control for a hydraulic system having a tank, a pump connected to the tank, a first pressure compensated hydraulic circuit, and a second hydraulic circuit, the first circuit including a conduit and a flow control valve connected to the conduit and having a neutral flow blocking position, and the second circuit being connected to the first conduit in parallel with the first hydraulic circuit and including a second conduit connected to the first conduit and a pressure control valve connected to the second conduit to control pressure in the second hydraulic circuit, the pressure control comprising:

an unloader valve connected to the pump and having first and second ends, a priority flow port connected to the first conduit and communicating with the first end, an excess flow port communicating with the tank, and a spring disposed at the second end biasing the unloader valve to a priority flow position with a force sufficient to maintain the pressure in the priority flow port above a first predetermined minimum level, the unloader valve being biased toward an unloading position in opposition to the spring force by a pressure generated force at the second end;

a check valve disposed between the first and second conduits; and

valve means for controlling the pressure at the second end of the unloader valve in response to pressure in the second conduit so that pressure in the second conduit is maintained above a second predetermined level that is greater than the first predetermined level.

5,826,488

SWASH PLATE ANGLE CHANGING APPARATUS FOR A PISTON PUMP/MOTOR OF SWASH PLATE TYPE

Mitsuru Arai; Hideki Kado; Sadao Nunotani; Koichi Morita; Mitsuru Oshiro, and Seita Hayashi, all of Tochigi, Japan, assignors to Komatsu Ltd., Tokyo, Japan

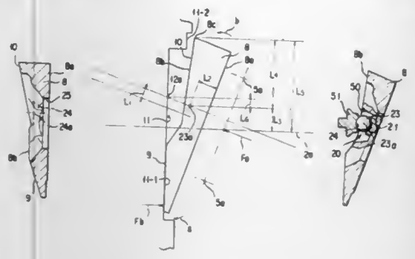
PCT No. PCT/JP95/02136, § 371 Date Apr. 14, 1997, § 102(e) Date Apr. 14, 1997, PCT Pub. No. WO96/12107, PCT Pub. Date Apr. 25, 1996

PCT Filed Oct. 18, 1995, Ser. No. 817,812

Claims priority, application Japan, Oct. 18, 1994, 6-252256

Int. Cl.[6] F01B *3/00*; F04B *1/22*

U.S. Cl. 92—12.2 **3 Claims**



1. In a piston pump/motor of swash plate type which comprises: a cylinder block that is disposed in a casing so as to be rotatable jointly with a shaft therein; a plurality of pistons each of which is slidably inserted in said cylinder block parallel to said shaft; and a swash plate that is swingably attached to said casing for guiding said plurality of pistons on a front surface thereof in a circumferential direction of said cylinder block while changing a displacement of each of said pistons by changing an inclination thereof, a swash plate angle changing apparatus for the piston pump/motor of swash plate type,

in which

said swash plate has a rear surface that is formed with a first contact surface and a second contact surface which make an angle between them; said casing is formed with a swash plate support surface which is perpendicular to said shaft and with which said first contact surface and said second contact surface are each adapted to contact; said casing is provided with a swash plate angle changing piston; said swash plate is adapted to be swung by a force resultant from thrust forces of said pistons in the direction of said swash plate to a first position whereby said first contact surface makes a contact with said swash plate support surface to yield a large angle of said swash plate and also to be swung by a thrust force of said swash plate angle changing piston to a position whereby said second contact surface makes a contact with said swash plate support surface to yield a small angle of said swash plate; and said swash plate has a center of swing that is located closer to said front surface than said rear surface of said swash plate.

5,826,489

Patent Not Issued For This Number

5,826,490

COMPRESSOR, IN PARTICULAR FOR AIR-CONDITIONING SYSTEMS IN VEHICLES

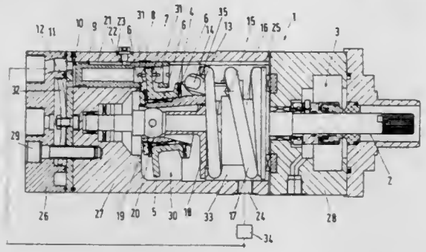
Per Johan Madsen, Nordborg; Harry Stentoft Nissen, Sønderborg; Jens Simonsen, Nordborg; Stig Helmer Jørgensen, Nordborg, and Jørgen Holst, Sydals, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed May 21, 1997, Ser. No. 859,991

Claims priority, application Germany, May 24, 1996, 196 21 174.3

Int. Cl.[6] F01B *3/00*

U.S. Cl. 92—71 **16 Claims**



1. Compressor for air-conditioning systems, having at least one piston movable in a cylinder, a drive shaft and a wobble plate arrangement between the piston and the drive shaft, wherein the wobble plate arrangement comprises a swash plate on which a wobble plate is rotatably mounted, and a bearing mounted in the piston, the wobble plate extending into the bearing to allow movement of the wobble plate relative to the piston in the circumferential direction.

5,826,491

SEALING ARRANGEMENT ON A PISTON-CYLINDER UNIT

Anton Stelger, Hornstrasse 28, CH-8308 Illnau, Switzerland

PCT No. PCT/CH95/00259, § 371 Date Jul. 10, 1996, § 102(e) Date Jul. 10, 1996, PCT Pub. No. WO96/15368, PCT Pub. Date May 23, 1996

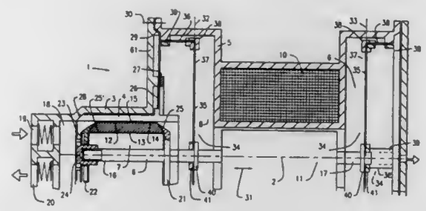
PCT Filed Nov. 9, 1995, Ser. No. 669,503

Claims priority, application Switzerland, Nov. 14, 1994, 03 392/94

Int. Cl.[6] F01B *3/10*

U.S. Cl. 92—155 **12 Claims**

1. Sealing arrangement on a piston-cylinder unit with a piston (**7**) longitudinally movable in a cylinder (**3**) with a cylinder liner (**4**) in the direction of a central axis (**2**), with a piston casing (**13**) and a contact-free gap seal (**12**) between the cylinder liner (**4**) and the piston casing (**13**), for sealing liquid or gaseous medium under excess pressure, wherein the piston-cylinder unit is installed in a housing (**5**), characterized in that the piston (**7**) is rigidly connected to two multipart guides (**8,9**; **50**) disposed at a distance to each other in the direction of the central axis (**2**) and fastened on said housing (**5**), first long parts (**35**) of said guides (**8,9**;**50**) are movable within limits in the direction of the central axis (**2**), and



elastically guide the piston (**7**) in the direction of the central axis (**2**), second short parts (**36**) of said guides extending substantially parallel to the axis (**2**), the first parts of said guides (**8,9**; **50**) being at right angles to the central axis (**2**) and being more rigid by at least a factor of 100 than in the direction of the central axis (**2**), and maintain the piston (**7**) precisely centrally to the central axis (**2**), the piston (**7**) and the cylinder (**3**) being composed of several components (**13**,**21**,**22** or **3**,**4**) and a component forming the cylinder liner (**4**) and a component forming the piston casing (**13**) being reciprocally and elastically clamped in centering surfaces (**25**,**28**), and relative to the central axis (**2**) all components of the piston (**7**) and the cylinder (**3**) are centered free of radical play, the piston casing (**13**) and the cylinder liner (**4**) which oppose each other in regions (**14**,**15**) of the gap seal (**12**) comprise essentially smooth lateral surfaces (**14**,**15**), and said regions of the cylinder (**3**) and the piston (**7**) are formed of materials which have a linear thermal coefficient of expansion which is smaller at least by a factor of four than that of nonalloyed steel.

5,826,492

APPARATUS FOR EXTRACTING A SUBSTANCE CONTAINED IN A SACHET

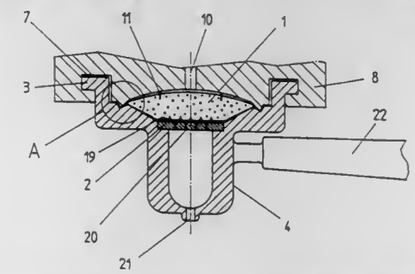
Olivier Fond, Yverdon; Gérard Lavanchy, Prilly; Jean-Pierre Pleisch; Jacques Schaeffer, both of Chardonne, and Alfred Yoakim, La Tour-de-Peilz, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 178,325, Jan. 11, 1994, Pat. No. 5,649,472. This application Feb. 29, 1996, Ser. No. 608,662

Claims priority, application European Pat. Off., Jul. 20, 1992, 92112364

Int. Cl.[6] A47J *31/00*

U.S. Cl. 99—295 **17 Claims**



1. An apparatus for extracting, with water under pressure, a comestible substance contained in a sachet package comprising:

a first member and a second member wherein

the first member comprises a base, a wall surface and a wall rim wherein the wall surface extends laterally from the base to the rim to define a first member cavity and wherein the base contains holes therethrough for flow of an extract from the cavity through the base and comprises a surface and raised portions wherein the raised portions extend from the base surface into the first member cavity for tearing a sachet sheet positioned adjacent and deformed under pressure against the raised portions;

the second member comprises a wall surface and an edge wherein the wall surface defines a second member cavity and extends to the edge; and

the first member and second member are configured so that upon bringing the first member rim and the second member edge together, the first and second member cavities form a chamber confined by the wall surfaces and base and each of the cavities define substantially one-half of the chamber for containing sheets of a sachet which extend to a sachet edge and contain a comestible substance for preparation of a beverage and so that the first member rim and the second member edge are configured to grip the sachet edge and to provide fluid-tightness and so that upon bringing the rim and edge together to grip the sachet edge and to provide fluid-tightness, the rim and edge stretch the sachet;

a chassis and chassis mounting affixed with the first member and second member so that the first and second members are mounted to the chassis about an axis so that movement of one member relative to the other is through a plane transverse to the axis and so that upon movement about the axis one member to the other, the first member rim and the second member edge are brought together to form the chamber, grip the sachet edge, provide fluid-tightness and stretch the sachet;

means which extend from the second member into the second member cavity for, upon the bringing of the first member rim and second member edge together, perforating a sheet of a sachet which contains a comestible substance for preparation of a beverage to obtain a perforated sachet and for introducing water for extracting the substance contained in the perforated sachet; and

fastening means integral with each of the first and second members and comprising a lever which extends from one of the first and second members to the other member for, upon the first and second members being together, rigidly fastening the first and second members together to form the chamber, grip the sachet edge, provide fluid-tightness and stretch the sachet.

5,826,493

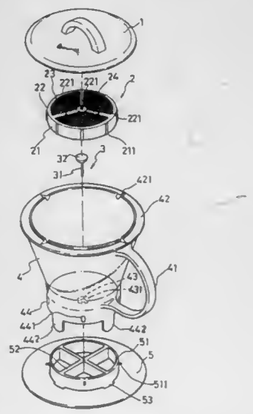
INFUSION COFFEE MAKER

Yu-Mei Tien Lin, Taipei, Taiwan, assignor to Peo-Wu Tien

Filed Nov. 4, 1997, Ser. No. 963,805

Int. Cl.[6] A47J *31/02*

U.S. Cl. 99—306 **3 Claims**



1. An infusion coffee maker, comprising:

a drip cup, being substantially conical in shape and having a bottom side, said bottom side being conical and having a through hole in the center thereof, said drip cup further having a extended wall extending from the periphery of said bottom

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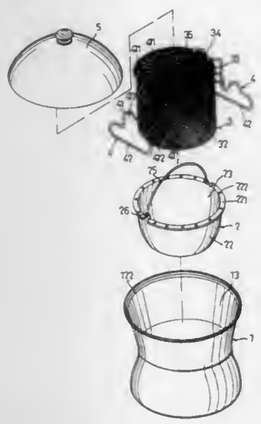
side, said extended wall being circumferentially provided with a plurality of spaced, vertically elongated holes and having a plurality of spaced legs extending from the bottom end thereof;

a filter assembly, including an annular body, a support frame connected to said annular body, and a mesh element mounted on said annular body and said support frame, said annular body being provided with a plurality of ribs on the outer periphery thereof;

a retaining plate, including a ferrule of a diameter slightly smaller than that of the extended wall, a positioning rib element disposed within said ferrule such that rib portions of said positioning rib element are integrally connected to the inner peripbery of said ferrule, said positioning rib element having a hole in the center, said ferrule having a plurality of retaining posts on the outer periphery, and said retaining plate further having a plurality of slots for receiving said legs of said drip cup; and

a stop, including a stem portion and a hemispherical portion, said stem portion being inserted through said through hole of said drip cup into said hole of said positioning rib element, whereby said ferrule is fitted within a space defined said extended wall at the bottom of said drip cup and retained therein by means of said retaining posts engaging said elongated hole such that when said drip cup is placed on a planar surface, said ferrule, of its own weight, slips downwardly along said elongated holes and said stop closes said through hole of said drip cup, the pressure of a liquid poured into said drip cup exerting a pressure on said hemispherical portion of said stop so that liquid leakage is avoid, said retaining plate or said positioning rib element being caused to move upwardly when said drip cup is placed on top of a container so that said stop disengages from said through hole of said drip cup to allow discharge of the liquid inside said drip cup into the container below.

5,826,494
COOKING DEVICE
Chung-Che Wang, No. 50, Sec. 5, An-Ho Rd., Tainan City, Taiwan
Filed Aug. 26, 1997, Ser. No. 920,072
Int. Cl.[6] A47J *27/00;27/04;36/06;36/12*
U.S. Cl. 99—340 **4 Claims**



1. A cooking device comprising:

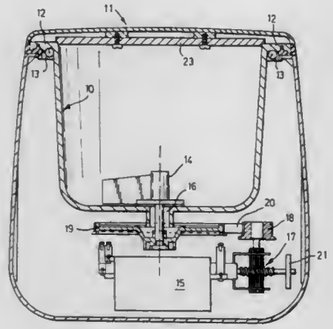
a container having a base plate and a surrounding wall extending from said base plate, said base plate and said surrounding wall cooperatively confining a receiving space, said surrounding wall having an upper end portion and an inwardly protruding middle section;

a collecting pan disposed removably in said container, said collecting pan having a base plate and a surrounding wall that includes a curving lower section connected to said base plate and a top end formed with a horizontal outward extension, said outward extension being provided with a plurality of vent holes, said outward extension being capable of resting on said inwardly protruding middle section of said container such that said base plate of said collecting pan defines a first clearance with said base plate of said container and such that said surrounding wall of said collecting pan defines a second clearance with said surrounding wall of said container when said collecting pan is disposed in said container;

a strainer member disposed removably in said container, said strainer member having a base part and a peripheral part extending upwardly from said base part, said base part being capable of resting on said curving lower section of said surrounding wall of said collecting pan such that said base part forms a third clearance with said base plate of said collecting pan when said strainer member is extended into said collecting pan while said collecting pan is disposed in said container; and

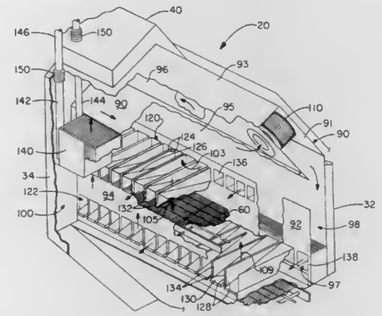
a cover disposed removably on said upper end portion of said surrounding wall of said container.

5,826,495
BREADMAKER
Jimmy Siu Yim Yung, and John Duncan McNair, both of Hong Kong, Hong Kong, assignors to Chiaphua Industries Limited, New Territories, Hong Kong
Filed Feb. 24, 1997, Ser. No. 805,369
Int. Cl.[6] A21B *1/00;* **A21D** *8/00;* **A47J** *27/00;37/01*
U.S. Cl. 99—348 **8 Claims**



1. An electric breadmaker comprising a container for receiving bread mix which is sealingly mounted to a top of a housing, heating means arranged to heat the outer surface of the container for heating bread mix in the container, a paddle in the bottom of the container for connection to a mechanical drive that extends through a central aperture therein into the housing, and an electric motor arranged to be coupled to the mechanical drive for rotating the paddle, including lifting means for selectively raising a bread loaf to aid removal of a finished loaf of bread from the container.

5,826,496
COOKING OVEN
Bruce C. Jara, Amherst, Ohio, assignor to Stein, Inc., Sandusky, Ohio
Filed Jul. 23, 1996, Ser. No. 685,340
Int. Cl.[6] A47J *37/04;* **F24C** *15/32*
U.S. Cl. 99—443 C **15 Claims**



1. A food processing apparatus for treatment of food products, said apparatus comprising:

(a) a housing having an inlet and an outlet, said housing enclosing a chamber;

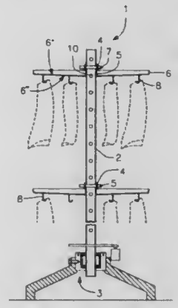
(b) a conveyor extending from said inlet end to said outlet end for conveying of food products thereon;

(c) means for circulating a gas in said housing;

(d) means for treating said gas as it is circulated; and

(e) a plurality of gas distributors positioned adjacent said conveyor and with adjacent distributors forming a transverse slot therebetween, said plurality of distributors forming a plurality of said axially spaced slots for directing said gas through said plurality of slots toward said conveyor and food positioned thereon wherein said plurality of gas distributors are positioned in axially spaced relationship with one another, each distributor comprising a pair of longitudinally spaced plates and a diagonally extending deflector plate, wherein adjacent vertical plates of adjacent distributors are spaced close together to form a narrow slot therebetween.

5,826,497
DEVICE FOR ROASTING MEAT AND FOR SUPPORTING MEAT DURING ROASTING THEREOF
Cecilia Basso, Vidt 1923, Buenos Aires, Argentina, 1425
Filed Jul. 8, 1996, Ser. No. 676,437
Claims priority, application Argentina, Jul. 7, 1995, 332689
Int. Cl.[6] A47J *37/00*
U.S. Cl. 99—446 **9 Claims**



1. A device for cooking meat, comprising:

means for supporting the meat during cooking;

means for guiding oils ad juices liberated during the cooking; and

a heat source positioned in relation to said means for supporting the meat, wherein

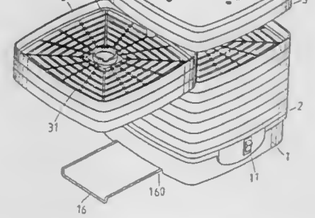
the device comprises:

at least one vertically disposed hollow column having multiple perforations, a lower end of which column is connected to anchoring means which can be connected to means for imparting rotational movement, and

at least one plate disposed on said hollow column, which plate has a fastening bushing with perforations, wherein

the perforations of the column and of the bushing associated with each plate are of two types, one type which serves, along with fastener means, for fastening of said at least one plate to the hollow column, and the other type which serves for passage of oils and juices collected by said at least one plate onto the hollow column and through the interior of said column to the discharged when said other type of perforations in the column are aligned with said other type of perforations of the plates; wherein each of the plates has a slightly concave configuration, and wherein hooks for holding the meat to be roasted are provided on a bottom face of said at least one plate.

5,826,498
STRUCTURE OF AN APPARATUS FOR DEHYDRATING FRUITS, VEGETABLES AND FOODS
Johnson Su, P.O. Box 82-144, Taipei, Taiwan
Filed Dec. 8, 1997, Ser. No. 986,829
Int. Cl.[6] A23B *4/04;* **F26B** *23/06;25/18*
U.S. Cl. 99—476 **1 Claim**



1. An apparatus for dehydrating fruits, vegetables and foods comprising:

a stand having a recess, a blowing chamber having a top formed with a plurality of perforations, a fan chamber under said blowing chamber and communicated with said blowing chamber, and a tubular member close to a vertical inner wall of said recess;

an electric motor fixedly mounted within said recess of said stand;

a fan fitted within said fan chamber and drivingly connected with said electric motor;

a base having a center hole fitted over said blowing chamber and a tubular portion close to an edge of said base;

a plurality of trays each having a tubular portion aligned with said tubular portion of said base;

a cover adapted to fit on an uppermost one of said trays and provided with a plurality of holes;

an axle extending through said tubular member of said stand and said tubular portion of said trays and including a lower rod, an intermediate rod, and an upper rod, said lower rod having an externally threaded upper end and an internally threaded lower end engaged with said tubular member of said stand, said intermediate rod having an externally threaded upper end and an internally threaded lower end engaged with said exter-

nally threaded upper end of said lower rod, said upper rod having an internally threaded end engaged with said externally threaded upper end of said intermediate rod; and

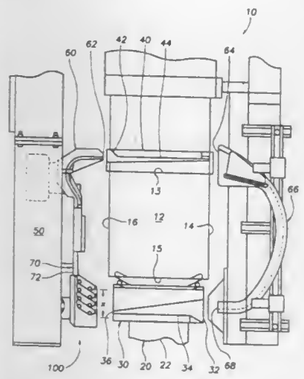
a leg frame telescopically mounted on a bottom of said stand.

5,826,499

BALING AND STRAPPING MACHINE WITH STRAP CAPTURING AND DEFLECTION APPARATUS AND METHOD THEREFOR

Robert E. Bullington, Lake Zurich, Ill., assignor to Illinois Tool Works Inc., Glenview, Ill.

Filed Jul. 14, 1997, Ser. No. 891,889
Int. Cl.[6] B65B *13/06*
U.S. Cl. 100—3 **14 Claims**



12. A method for feeding strap about a load in a baling and strapping machine having a strap chute portion with a strap inlet, a movable platen with a range of variable positioning, a channel disposed through the movable platen, the channel is non-parallel to the strap chute portion, the method comprising:

capturing strap fed from a strap outlet of the channel through the movable platen in one of a plurality of at least two substantially parallel strap inlet passages adjacent the movable platen along the range of variable positioning of the movable platen;

deflecting the strap captured by the one of the plurality of strap inlet passages into a strap outlet passage with a bottom surface portion of the strap inlet passage at an angle relative to the channel through the movable platen; and

feeding the strap from the strap outlet passage into the strap chute portion.

5,826,500

APPARATUS FOR TREATING OIL-BEARING MATERIAL

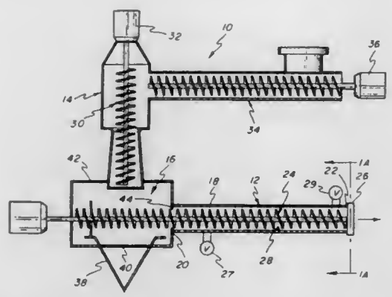
Timothy G. Kemper, Piqua, Ohio, assignor to The French Oil Mill Machinery Co., Ltd., Piqua, Ohio

Division of Ser. No. 502,836, Jul. 14, 1995, Pat. No. 5,685,218. This application Jul. 11, 1997, Ser. No. 893,836
Int. Cl.[6] B30B *9/14;11/24*
U.S. Cl. 100—73 **12 Claims**

1. An apparatus for conditioning oil bearing material from an upstream entry end to a downstream discharge end of said apparatus, comprising:

(a) chamber means located at said upstream end defining a high pressure region for maintaining a pressure of about 500–2,000 psi therein;

(b) an extruder located downstream from said chamber means said extruder comprising transport means (c) for transporting



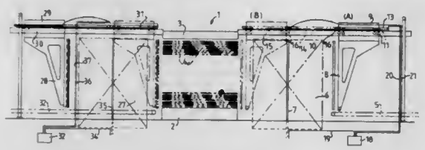
said oil bearing material from said high pressure region to said downstream discharge end of said apparatus.

5,826,501

SYSTEM AT A MULTI-STAGE PRESS

Sixten Gjervaldsäter, Skärholmen, Sweden, assignor to Sunds Defibrator Industries AB, Sweden

Filed May 21, 1997, Ser. No. 861,396
Claims priority, application Sweden, May 22, 1996, 9601953
Int. Cl.[6] B30B *15/30*
U.S. Cl. 100—196 **9 Claims**



1. Apparatus for pressing fibrous material board carried by a plurality of transport plates in a multi-stage press comprising a vertically movable loading elevator for receiving said plurality of transport plates carrying said fibrous material, said loading elevator including a plurality of stages for receiving said plurality of transport plates, a pusher for moving said plurality of transport plates from said loading elevator to said press, and a hydraulic drive system for vertically driving said loading elevator and for driving said pusher between said loading elevator and said press, whereby both said loading elevator and said pusher are hydraulically driven by the same hydraulic drive system.

5,826,502

DEVICE FOR THE REMOVAL OF LIQUID FROM CANNED FOOD PRODUCTS

Bruce B. Wade, 3540 NW 35th Way, Lauderdale Lakes, Fla. 33309

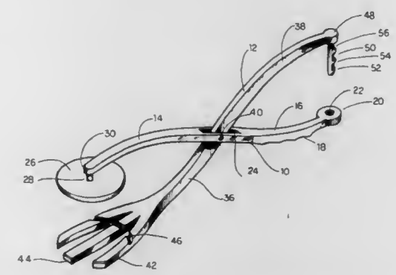
Filed May 5, 1997, Ser. No. 851,241
Int. Cl.[6] B30B *7/00*
U.S. Cl. 100—234 **4 Claims**

1. A device for expelling liquid surrounding solid food in a can of a type having a lid arrange to be severed to effect the opening of the can, the device comprising:

(a) a first member having a convex part and a concave part, said member including a slot at a region of transition between said convex and concave parts;

(b) lid engagement means, including magnet means at a lower surface thereof, said lid engagement means dependent from a free end of said concave part of said first member;

(c) a second member having a concave part and a convex part, said member pivotally secured to said first member at a fulcrum point passing through said slot of said first member at



a region of transition of said second member between said concave and convex parts thereof; and

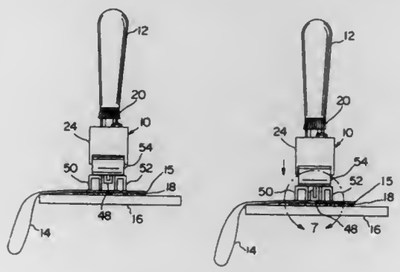
(d) can base engagement means integrally dependent from a free end of said convex part of said second member opposite to said lid engagement means of said first member.

5,826,503

HEAT SEALING APPARATUS FOR PLASTIC BAGS

Harold D. Hutchinson, Oxnard, Calif., assignor to Harwil Corporation, Oxnard, Calif.

Filed Jul. 10, 1996, Ser. No. 677,535
Int. Cl.[6] B30B *15/34*
U.S. Cl. 100—320 **9 Claims**



1. A heat sealing apparatus for plastic materials comprising;

a T-shaped heating element having an upper planar surface and a flange perpendicular to the planar portion forming a heating edge;

a resilient planar heater covering the upper planar surface of the T-shaped heating element;

clamp means firmly clamping said resilient planar heater on top of the T-shaped heating element;

said resilient planar heater having an embedded heating wire shaped and spaced to provide uniform heating of said T-shaped heating element;

a housing covering said T-shaped heating element and said resilient planar heater;

a handle on said housing for pressing said heating apparatus downward against a surface;

a pair of rails mounted on either side of said heating edge forming a slot through which said heating edge may pass;

biasing means biasing said rails over and beyond the end of said heating edge to maintain said heating edge in a retracted position until ready to use;

means connecting said resilient planar heater to electrical power to heat said heating element and heating edge;

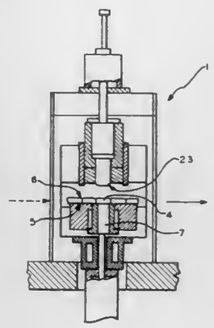
whereby when said heat sealing apparatus is pressed downward on a plastic material placed on a surface, said heating edge passes through said slot between said rails and heats and seals said plastic material.

5,826,504

METHOD OF MAKING A PRECIOUS METAL PENDANT RESEMBLING A LICENSE PLATE AND A PRODUCT BY THAT PROCESS

Dikran Elmassian, P.O. Box 5001, 720 Forest Green Dr., Manrovia, Calif. 91017-5001

Filed Apr. 7, 1997, Ser. No. 833,493
Int. Cl.[6] A44C *27/00*
U.S. Cl. 101—32 **7 Claims**



1. A process comprising:

providing a press having at least one die which forms the negative image of one face of a license plate of sufficiently small size to be used as an element of jewelry;

providing a generally planar blank having an upper and a lower surface, and comprised of a precious metal selected from the group consisting of: gold, silver, platinum, palladium, vanadium and combinations thereof;

impressing said at least one die on said blank with said press sufficient to emboss a positive image of said license plate on at least one surface;

cutting three holes in said blank; and,

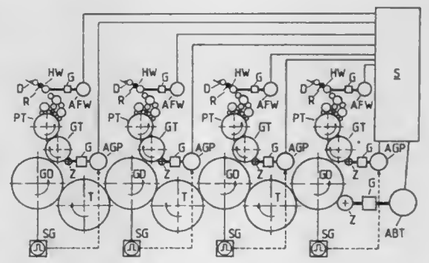
soldering a bail loop into at least one of said holes.

5,826,505

DRIVE FOR A PRINTING PRESS

Albrecht Volz, Rodermark; Joachim Blumor, Hainburg; Holger Wiese, Obertshausen; Klaus-Peter Reichardt, Bad Vilbel, and Helmut Schild, Steinbach/Ts, all of Germany, assignors to MAN Roland Druckmaschinen AG, Germany

Filed Jun. 11, 1997, Ser. No. 872,693
Claims priority, application Germany, Jun. 11, 1996, 196 23 224.4
Int. Cl.[6] B41F *5/10*
U.S. Cl. 101—183 **18 Claims**



1. A drive system for a sheet-fed offset printing press having a plurality of printing units, each unit having at least one printing

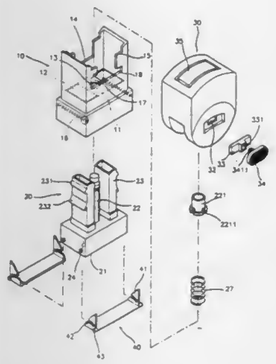
cylinder and one sheet transfer cylinder, a gear train interconnecting the sheet transfer cylinders of the units, the drive comprising: at least one sheet transfer drive driving the gear train; a plurality of printing cylinder drives; at least one of the printing cylinder drives coupled to drive a respective one of the printing cylinders in each respective printing unit mechanically independently from the gear train; and means for controlling the sheet transfer drive and the plurality of printing unit cylinder drives in a prescribable fashion.

5,826,506

STRUCTURE OF A STAMP

Chang Yi Lin, 56, Min Sheng Street, Fengyuan, Taichung, Taiwan

Filed Dec. 2, 1996, Ser. No. 759,251
Int. Cl.[6] B41F *31/00*
U.S. Cl. 101—327 **5 Claims**



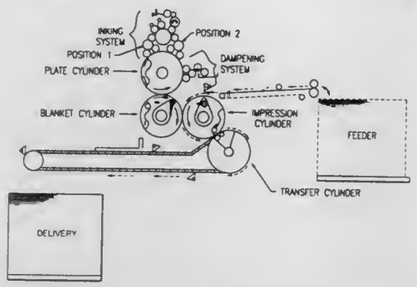
1. An improved structure of a stamp comprising:
a main body, a stamp body, a press cover and a pair of rotating lids, the stamp body having lateral sides and an ink compartment and a cylindrical rod, the bottom of the stamp body having a stamping surface and two protrusion rods on each lateral side of the stamp body, the ink compartment having a protrusion piece and a blockage protrusion on the outer lateral side, the stamp body being encased inside the main body, the main body having a surface with a few holes, the inner side of the press cover having a block piece for attaching to the ink compartment of the stamp body for moving together, a spring, the cylindrical rod of the staamp body encased by the spring, a sliding switch , the press cover having an opening for the slding switch to go through, a blockage piece, the back of the sliding switch being attracted to the blockage piece, each rotating lid having a sliding through at each side and a center rod at each vertical end, the bottom inner side of the main body having a protrusion device, the device having a position through at each end and on the upper opposite side for attracting to the center rod of the rotating lid, the blockage piece of the sliding switch being movable to the upper side of the main body to prevent the press cover from moving downwards, the center rod of the rotating lid being attracted to the position through of the protrusion device of the main body and thus rotatable by the vertical movement of the stamp body.

5,826,507

METHOD FOR MEASURING THE AMOUNT OF FOUNTAIN SOLUTION IN OFFSET LITHOGRAPHY PRINTING

Peter Yong Woon Lim, Suffolk, Va., assignor to Union Camp Corporation, Wayne, N.J.

Filed May 22, 1997, Ser. No. 862,098
Int. Cl.[6] B41F *31/00*
U.S. Cl. 101—350.1 **17 Claims**



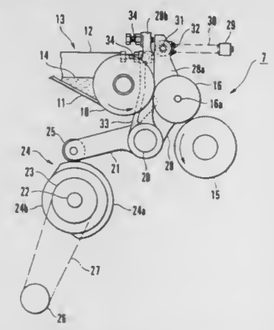
1. A method of determining the amount of a fountain solution employed in an offset lithography printing system comprising:
a) adding a detectable quantity of at least one detectable substance into the fountain solution;
b) transferring a portion of the fountain solution to at least one target selected from the group consisting of ink rollers and the image and non-image areas of a printed paper;
c) measuring the amount of said detectable substance in said at least one target; and
d) determining the amount of fountain solution in said at least one target as a function of the amount of the detectable substance measured in said at least one target.

5,826,508

INKING APPARATUS FOR PRINTING PRESS

Tatsuo Komori, Ibaragi, Japan, assignor to Komori Corporation, Tokyo, Japan

Filed Jul. 29, 1997, Ser. No. 902,500
Claims priority, application Japan, Jul. 31, 1996, 8-201768
Int. Cl.[6] B41F *31/06;31/14;31/15*
U.S. Cl. 101—350.3 **7 Claims**



1. An inking apparatus for a printing press, comprising:
an ink supplying unit having an ink fountain for storing an ink and an ink fountain roller having a circumferential surface on which a film of the ink supplied from said ink fountain is formed, said ink supplying unit being adapted to supply the ink on said circumferential surface of said ink fountain roller to an ink transfer line for a plate cylinder;

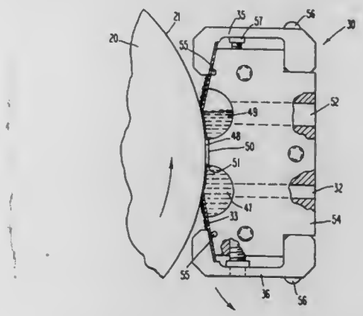
an ink form roller for supplying the ink, supplied from said ink supplying unit through said ink transfer line, to a plate mounted on said plate cylinder;
an oscillating roller disposed along said ink transfer line between said ink fountain roller and said ink form roller;
an ink ductor roller disposed between an upstream-side roller in an ink transfer direction to receive the ink and a downstream-side roller in the ink transfer direction to transfer the ink; and
moving means for moving said oscillator roller axially through a reciprocal period and for moving said ink ductor roller between said upstream-side roller and said downstream-side roller through a reciprocal period and
wherein said moving means ensures that the number of axially reciprocal periods of said oscillating roller is different than the number of reciprocal periods of said ink ductor roller.

5,826,509

PRINTING COATING HEAD DEVICE

P. Kenneth Deneka, 243 Provinceline Rd., Allentown, N.J. 08501

Filed Oct. 18, 1995, Ser. No. 544,844
Int. Cl.[6] B41F *31/04;31/08*
U.S. Cl. 101—366 **3 Claims**



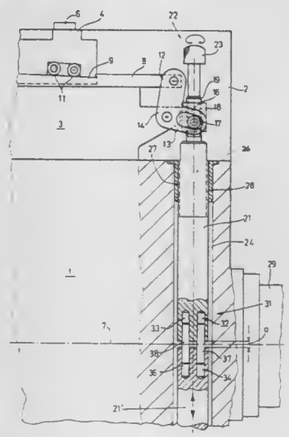
1. A coating head device for coating an engraved surface on a coating cylinder of a printing press comprising:
(a) a main body having a longitudinal cavity for liquid, open to said coating cylinder and having a sealing means to substantially seal said main body to said coating cylinder said cavity having an injection zone providing for a liquid pressurizing zone within a portion of said cavity in said main body;
(b) said main body having means to provide liquid to said supply chamber;
(c) said main body having means to exhaust said liquid and air from an outlet section; and
(d) said sealing means including at least a pair of doctor blades and end seals disposed on said main body to seal said coating head against said coating cylinder whereby liquid supplied by said means to provide liquid may be substantially kept from leaking from an interface created by said coating head,and said coating cylinder;
wherein the doctor blades are held in place by flexible clamps attached to said main body, said flexible clamps comprising:
(a) a lower leg held rigidly to said main body by at least one fastener;
(b) a flexible side wall having a first and a second end, said first end integral to said lower leg;
(c) a vise portion having a first and a second end, said first end integral to said second end of said flexible side wall, said second end disposed such that a slight interference is created between said second end and said main body such that said flexible side wall deflects outward when said flexible clamp is installed on said main body by said fastener; and
(d) a plurality of leveraging bolts having a flat head and a threaded portion, said threaded portion disposed in said main body and said flat head in contact with said flexible clamp;
whereby when said leveraging bolt is turned in one direction, said vise portion of said flexible clamp is displaced outwardly from said main body whereby a corresponding doctor blade is no longer held rigidly and when said leveraging bolt is turned in another direction, said vise portion of said flexible clamp is displaced inwardly until said second end of said vise portion contacts said doctor blade such that said blade is held rigidly in position.

5,826,510

ADJUSTMENT DEVICE FOR ADJUSTING THE HEIGHT OF GRIPPER IMPACT BARS DISPOSED DIAMETRICALLY OPPOSITE ONE ANOTHER ON SHEET-GUIDING CYLINDER OF A PRINTING PRESS

Rudi Haupenthal, Epfenbach, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Dec. 17, 1997, Ser. No. 991,894
Int. Cl.[6] B41F *27/12*
U.S. Cl. 101—415.1 **6 Claims**



1. In a sheet-guiding cylinder for a printing press having two diametrically opposing gripper bars disposed at the cylinder circumference and made up of gripper shafts, grippers and gripper impact strips, an adjustment device for adjusting the height of the gripper impact strips, comprising respective adjusting shafts provided for the gripper impact strips, a coupling connecting said adjusting shafts to one another and compensating for an axial adjusting movement of said adjusting shafts, and an actuating element actuatable from the cylinder circumference for adjusting the height of the gripper impact strip at at least one of the gripper bars.

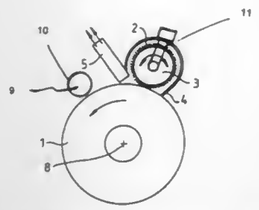
5,826,511

DEVICE FOR CLEANING DIRECTLY IMAGED PRINTING FORMS IN A PRINTING PRESS

Dieter Schmitt, Sandhausen, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 13, 1997, Ser. No. 782,096
Claims priority, application Germany, Jan. 12, 1996, 196 00 844.1
Int. Cl.[6] B41F *35/00*
U.S. Cl. 101—425 **8 Claims**

1. A device for cleaning silicone particles and other residues from directly imaged printing forms of a printing form cylinder in



a printing presswithout the use of alcolol or other chemicals, comprising a cleaning element extending parallel to an axis of the printing form cylinder and movable substantially radially against the printing form cylinder, said cleaning element having a cleaning surface with which it is engageable with the printing form, said cleaning surface being formed with a soft nonwoven fleece of fine microfibers of plastic material.

5,826,512

ALUMINUM PLANOGRAPHIC PRINTING PLATE WITH CONVEXLY CURVED CORNER

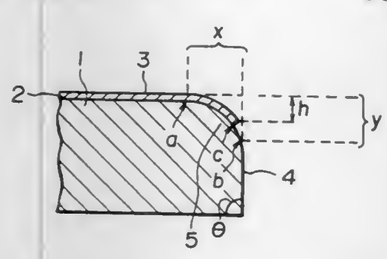
Kenji Niegawa; Shinichi Bunya, and Naohide Ogita, all of Hasaki-machi, Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan

Filed Jun. 4, 1996, Ser. No. 659,008

Claims priority, application Japan, Jun. 7, 1995, 7-140401; Jun. 7, 1995, 7-140402

Int. Cl.[6] B41N *1/08*

U.S. Cl. 101—454 **6 Claims**



1. An aluminum planographic printing plate comprising an aluminum support and a hydrophilic layer disposed at least on one surface thereof,

a corner defined with a surface having the hydrophilic layer and an end face of the aluminum support being constituted only with a convexly curved surface, a portion of said convexly curved surface being covered with said hydrophilic layer, and a vertical distance between an end portion of the hydrophilic layer and a flat surface of the hydrophilic layer being 10 to 60 μm.

5,826,513

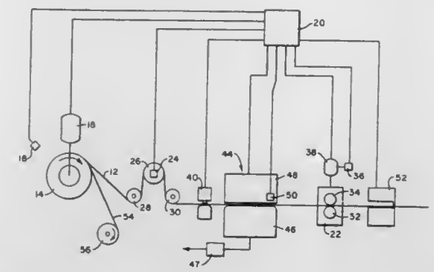
METHOD AND APPARATUS FOR PUNCHING AND IMAGING A CONTINUOUS WEB

Howard A. Fromson, 49 Main St., Stonington, Conn. 06378; William J. Rozell, Vernon, Conn., and Paul C. Schunk, East Longmeadow, Mass., assignors to Howard A. Fromson, Stonington, Conn.

Filed Oct. 21, 1997, Ser. No. 955,041

Int. Cl.[6] G03F *7/20*

U.S. Cl. 101—463.1 **17 Claims**



1. Apparatus for serially punching and imaging a planar imageable continuous web material and subsequently cutting said web into individual sheets for the production of punched and imaged separate plates comprising:

a. means for periodically advancing said continuous web material from a source through said apparatus in steps of a desired plate length;

b. punching means for punching registration holes in said web material at intervals corresponding to said desired plate length;

c. an imaging station following said punching means including means for producing an image on a portion of said imageable web material located in said imaging station;

d. cutting means for cutting said imaged web material into separate imaged plates of said desired length; and

e. means for positioning said web material in said imaging station comprising means for sensing said registration holes.

5,826,514

INTRODUCED IN WETTING SYSTEMS FOR OFFSET PRINTING AND A MECHANISM FOR THEIR APPLICATION

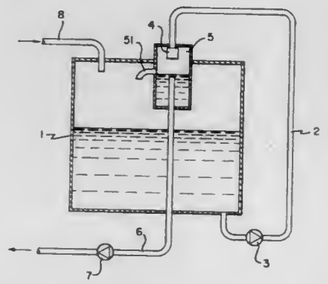
Gerardo Antonio Romero Salvo, Zarsgaza, Spain, assignor to Technicas Especiales de Oxigenacion, S.L., Barcelona, Spain

Filed Oct. 8, 1996, Ser. No. 727,243

Claims priority, application Spain, Oct. 19, 1995, 9502031

Int. Cl.[6] B41M *1/00*

U.S. Cl. 101—483 **5 Claims**



1. A method for wetting an offset printing plate with an aqueous solution which has a high free oxygen content, which comprises:

preparing an aqueous solution by admixing water and an additive, said additive comprising propanotriol, sodium citrate, glacial acetic acid, 1-ascorbic acid, and sodium metaphosphate;

adsorbing oxygen to said aqueous solution to provide said aqueous solution with a high content of free oxygen, wherein layers of vapor are formed on the surface said aqueous solution;

providing a printing plate; and

wetting said printing plate with said free oxygen-containing aqueous solution.

5,826,515

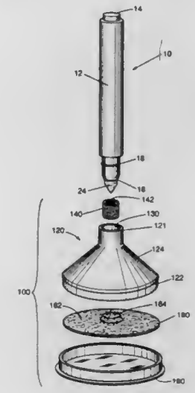
STAMPING DEVICE

Albert W. Frable, Bangor, and Duane L. Hyrowich, Easton, both of Pa., assignors to Binney & Smith Inc., Easton, Pa.

Filed Jan. 29, 1997, Ser. No. 790,705

Int. Cl.[6] B41K *1/42; B41F 5/00*

U.S. Cl. 101—483 **31 Claims**



1. A stamping device for imprinting images on an external object with ink from a writing instrument, the stamping device comprising, in combination:

a housing having a first end, a second end, and a passageway therebetween, the passageway having first and second ends which correspond to the first and second ends of the housing, respectively, the first end of the passageway adapted to receive a marking nib of a writing instrument;

an image nib attached to the second end of the housing, the image nib including an outwardly projecting face portion with at least one raised image formed thereon; and

a transfer medium disposed at least partially within the passageway of the housing and positioned for communication with the image nib, the transfer medium also positioned for communication with a marking nib of a writing instrument when a marking nib is received by first end of the passageway, the transfer medium transferring ink from a marking nib of a writing instrument to the image nib when a marking nib is received by the first end of the passageway, the image nib adapted to transfer an inked reproduction of said at least one raised image to an external object when the image nib is saturated with ink and the outwardly projecting face portion of the image nib is pressed against the external object.

5,826,516

SQUEEGEE FOR SCREEN PRINTING AND ITS PRODUCTION METHOD

Hiroshi Shimazu; Yoshihiro Kobayashi, and Eiji Sakata, all of Fukuoka-ken, Japan, assignors to Kyushu Hitachi Maxell, Ltd., Fukuoka-ken, Japan

Division of Ser. No. 764,625, Dec. 11, 1996, Pat. No. 5,775,219. This application Dec. 18, 1997, Ser. No. 992,912

Claims priority, application Japan, Dec. 13, 1995, 7-347262; Dec. 14, 1995, 7-348067

Int. Cl.[6] C25D *1/00*

U.S. Cl. 101—483 **7 Claims**

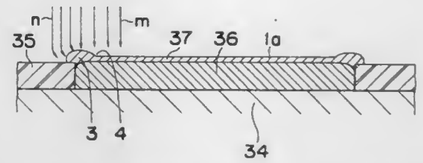
1. A method for producing a squeegee body of a squeegee for screen printing of solder paste, comprising the steps of:

forming a resist film on a surface of an electrically conductive base member so as to expose a portion of the surface of the base member corresponding to a shape of the squeegee body;

wherein the portion of the surface of the base member is curved convexly orthogonally to a longitudinal direction of the squeegee body such that a squeegeeing face of the squeegee body is curved convexly orthogonally to the longitudinal direction of the squeegee body;

electrodepositing metal on the portion of the surface of the base member; and

separating the electrodeposited metal from the base member.



5,826,517

BOGIE COUPLING SYSTEM FOR CONVERTIBLE RAILWAY-RAILROAD VEHICLE

Ernest J. Larson, Jr., 7480 W. Shore Dr., Edina, Minn. 55435, and Roger D. Sims, Munster, Ind., assignors to Ernest J. Larson, Jr., Edina, Minn.

PCT No. PCT/US94/08929, § 371 Date Mar. 17, 1997, § 102(e) Date Mar. 17, 1997, PCT Pub. No. WO96/05094, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 8, 1994, Ser. No. 392,953

Int. Cl.[6] B61D *3/18; B61F 3/12*

U.S. Cl. 105—4.3 **28 Claims**



1. A vehicle comprising a first bogie for coupling a first and a second convertible roadway-railway trailer and for supporting the trailers for transportation over a railway, said bogie comprising:

a frame having a forward end and a rearward end;

a single axle railway wheel assembly mounted on the frame for supporting the frame for motion on the railway;

a bogie rigid coupling mechanism located on the forward end of the frame constructed and arranged for releasably and rigidly coupling the bogie to the first trailer, such that when the bogie is rigidly coupled to the first trailer, the bogie is in a fixed position relative to the first trailer and can support the first trailer; and

a bogie pivot coupling mechanism located on the rearward end of the frame constructed and arranged for releasably and pivotally coupling the bogie to the second trailer, such that when the bogie is pivotally coupled to the second trailer, the bogie can pivot relative to the second trailer and can support the second trailer.

5,826,518

HIGH VELOCITY INTEGRATED FLUE GAS TREATMENT SCRUBBING SYSTEM

Pervaje A. Bhat, North Canton; Dennis W. Johnson, Barberton, and Robert B. Myers, Norton, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Feb. 13, 1996, Ser. No. 600,707

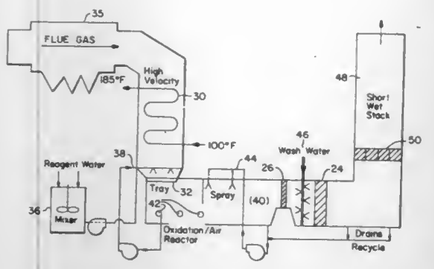
Int. Cl.[6] F23J *3/00*

U.S. Cl. 110—216 **6 Claims**

1. A flue gas heat recovery and pollutant removal system, comprising:

an electrostatic precipitator situated to receive a high velocity flue gas flow and remove particulate therefrom;

a condensing heat exchanger assembly located to have high velocity flue gas flow downward therethrough, said condensing heat exchanger assembly being located downstream from



said electrostatic precipitator and connected thereto, said condensing heat exchanger assembly lowering a temperature of the high velocity flue gas to below its dew point;

a plurality of nozzles for spraying reagent and water into the high velocity flue gas, said nozzles being situated below said condensing heat exchanger assembly;

a sieve tray positioned beneath said nozzles for receiving spray therefrom and condensate from said condensing heat exchanger assembly;

a horizontal cleaning chamber located downstream from said tray, said horizontal cleaning chamber having a second series of spray nozzles for spraying liquid reagent into the high velocity flue gas to remove pollutants therefrom, said horizontal cleaning chamber further having a plurality of oxidation air holes therein, said horizontal cleaning chamber further including spray wash water nozzles located downstream from said second series of spray nozzles;

at least one mist eliminator located in said horizontal cleaning chamber downstream of said second series of spray nozzles to remove any liquid droplets in the flue gas; and

a short wet stack exhaust connected to said horizontal cleaning chamber for exhausting the treated flue gas.

5,826,519

HEARTH BED AND A FURNACE WITH A PARTICLE HEARTH BED

Shigeru Saitoh, 169, Dai, Obamamachi, Iwaki-shi Fukushima 974, Japan

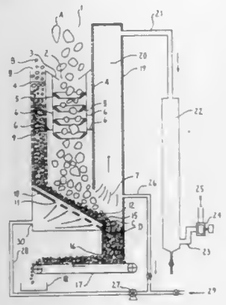
PCT No. PCT/JP94/01447, § 371 Date Apr. 7, 1995, § 102(e) Date Apr. 7, 1995, PCT Pub. No. WO95/06844, PCT Pub. Date Mar. 9, 1995

PCT Filed Feb. 9, 1994, Ser. No. 411,608

Claims priority, application Japan, Sep. 3, 1993, 5-242170

Int. Cl.[6] F23G *5/00*

U.S. Cl. 110—248 **2 Claims**



1. A hearth particle bed furnace comprising means for introducing a material to be burned; means for introducing hearth particles provided adjacent to said means for introducing a material to be burned; an inclined surface provided underneath said means for introducing hearth particles; means for introducing hearth particles onto said inclined surface; a layer of hearth particles flowing down said inclined surface and forming a sloped hearth particle bed having a slope angle equal to the angle of repose of the hearth particles; means for introducing the material to be burned onto the sloped hearth particle bed; means for combusting the material to be burned and form a combustion mixture comprising the hearth particles and a combustion residue from the material to be burned; at least one channel member provided above said inclined surface; air inlet means provided in said inclined surface for promoting combustion of the material to be burned; and a plurality of air flow redistribution apertures provided in sides of said at least one channel member for redistributing air flow through said sloped hearth particle bed.

5,826,520

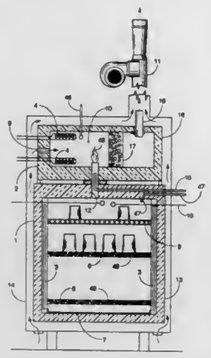
APPARATUS AND PROCESS FOR HIGH TEMPERATURE CLEANING OF ORGANIC CONTAMINANTS FROM FRAGILE PARTS IN A SELF-INERTING ATMOSPHERE AT BELOW THE TEMPERATURE OF COMBUSTION

Kenneth R. Mainord, Dallas, Tex., assignor to Tempyrox Company, Inc., Dallas, Tex.

Filed Jul. 30, 1996, Ser. No. 688,383

Int. Cl.[6] F23B *7/00;5/00;* **B09B** *3/00*

U.S. Cl. 110—342 **10 Claims**



1. Apparatus for organic (contaminates) contaminants from fragile parts by pyrolysis in a self-inerting atmosphere, said self-inerting atmosphere not supporting combustion, and by oxidization below the temperature of combustion for said contaminants, with means for removing smoke and fumes from effluent gases, said apparatus comprising:

a. a first chamber with an atmosphere within said chamber; said atmosphere comprising oxygen; a second chamber communicating with said first chamber; means for substantially sealing said first chamber against inflow of air; means for controlling the temperature of said first chamber and maintaining said temperature of said first chamber at a controlled temperature below said temperature of combustion and within a range of about 800 to 1000 degrees F.; means for moving gases out of said first chamber and into said second chamber;

b. means for self-inerting said atmosphere within said first chamber at said controlled temperature, said self-inerting atmosphere not supporting combustion;

c. means for pyrolytically decomposing said organic contaminants in said self-inerting atmosphere at said controlled temperature into:

carbonized residue; and

gases;

d. means for oxidizing said carbonized residue in said first chamber into gases and ashes at said controlled temperature;

e. means in said second chamber for burning and catalytically oxidizing smoke and fumes from said gases moved from said first chamber and into said second chamber; and

f. means for exhausting said gases moved from said first chamber and into said second chamber after said burning and oxidizing.

9. In an electrically heated cleaning chamber which cleans organic contaminants from fragile parts by pyrolysis and by oxidization at below the temperature of combustion for said contaminants, a process for achieving and maintaining self-inertness of the atmosphere in said cleaning chamber during said pyrolysis said cleaning chamber preventing fires, explosions, and difficult-to-control temperature variations, said process comprising the following steps:

a. providing an apparatus comprising: a cleaning chamber with an atmosphere within said chamber; said atmosphere comprising oxygen; means for substantially sealing said cleaning chamber against inflow of air; and means for controlling the temperature of said cleaning chamber and maintaining said temperature of said first chamber, at a controlled temperature below said temperature of combustion and within a range of about 800 to 1000 degrees F.;

b. incorporating into said cleaning chamber means for self-inerting said atmosphere within said cleaning chamber at said controlled temperature, said self-inerting atmosphere not supporting combustion:

c. incorporating catalytic media in said cleaning chamber which accelerates consumption of said oxygen initially present in said atmosphere and in any air which may infiltrate said chamber;

d. placing said parts to be cleaned into said cleaning chamber; and substantially sealing said chamber against inflow of air;

e. controlling, and maintaining the temperature of said atmosphere containing said parts to be cleaned in said cleaning chamber at said controlled temperature;

f. pyrolytically decomposing said organic contaminants to be cleaned from said parts into carbonized residue and gases containing pyrolysis smoke and fumes;

g. during said pyrolytically decomposing, allowing said atmosphere in said cleaning chamber to accomplish said self-inerting, said self-inerting atmosphere not supporting combustion at said controlled temperatures, said self-inerting of said atmosphere being accomplished by allowing said oxygen initially present in said atmosphere in said chamber and in said any air infiltrate said chamber to catalytically combine with said pyrolysis smoke and fumes produced in said cleaning chamber during said decomposing;

h. moving said pyrolysis gases from said cleaning chamber;

i. using instrumentation well known in the art, determining when said decomposing into said pyrolysis smoke and gases has ceased and all said pyrolysis smoke and gases have been moved from said cleaning chamber;

j. after said decomposing into said pyrolysis smoke and gases has ceased, and while continuing to maintain said cleaning chamber at said controlled temperatures, injecting compressed air into said cleaning chamber, oxidizing said carbonized into gases and ashes at said controlled temperature, thereby completing said cleaning process.

5,826,521

METHOD FOR REDUCING THE EMISSIONS PRODUCED BY INCINERATING WASTE

Bernd Schumann; Matthias Teller, both of Berlin, and Herbert März, Fellbach, all of Germany, assignors to SBW Sonderabfallentsorgung Badenwurttemberg GmbH, Fellbach, Germany

PCT No. PCT/EP94/01101, § 371 Date Dec. 6, 1995, § 102(e) Date Dec. 6, 1995, PCT Pub. No. WO94/24484, PCT Pub. Date Oct. 27, 1994

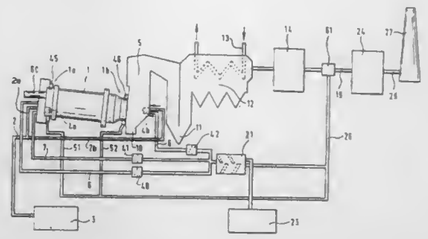
PCT Filed Apr. 9, 1994, Ser. No. 532,580

Claims priority, application Germany, Apr. 22, 1993, 43 13 102.6

Int. Cl.[6] F23J *11/00*

U.S. Cl. 110—345 **15 Claims**

1. A method for reducing emissions during the incineration of waste in an incinerator installation including a combustion chamber, return means downstream of the combustion chamber for returning a portion of a flue gas to the combustion chamber in a continuous cycle, and a flue gas purification installation, the method comprising the steps of:



situating the flue gas purification installation between the combustion chamber and the return means;

producing a flue gas containing dust, chlorine compounds, sulfur dioxide and heavy metals in the course of incineration;

removing a substantial part of the dust, the chlorine compounds, heavy metal and sulfur dioxide from the flue gas in the flue gas purification installation generating thereby a substantially purified flue gas; and

admixing a portion of the substantially purified flue gas with pure oxygen to generate synthetic air in the ratio of 4:1 to 1:1, wherein combustion takes place in the combustion chamber using the synthetic air while excluding ambient air.

5,826,522

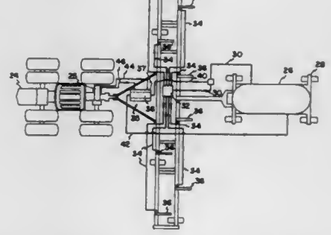
SYSTEM FOR APPLYING ANHYDROUS AMMONIA

Michael J. Anders; Burr Anders, and Brian J. Wenthold, all of Blue Earth, Minn., assignors to AG Systems, Inc., Hutchinson, Minn.

Filed Aug. 26, 1996, Ser. No. 703,392

Int. Cl.[6] A01C *23/02*

U.S. Cl. 111—119 **11 Claims**



10. A method for maintaining pressure within a tank containing anhydrous ammonia, the method comprising the steps of:

circulating some of the anhydrous ammonia from the tank through a pressurization chamber;

heating the anhydrous ammonia within the pressurization chamber;

returning the heated anhydrous ammonia to the tank, wherein the beated anhydrous ammonia maintains fluid pressure within the tank.

5,826,523

BRUSH FOR AIR SEEDER METERING SYSTEM

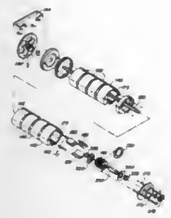
David Walter Gregor, Davenport, Iowa, assignor to Deere & Company, Moline, Ill.

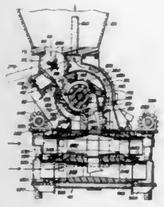
Filed Aug. 18, 1997, Ser. No. 912,474

Int. Cl.[6] A01C *7/00*

U.S. Cl. 111—181 **7 Claims**

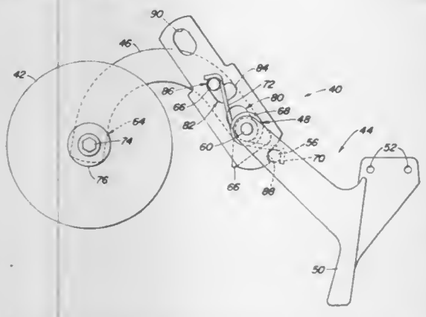
1. A metering system for metering product in an air seeder having a product tank and a pneumatic distribution system, said metering system comprising:





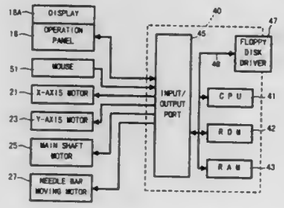
a meter casing having an inner wall, an inlet coupled to the product tank and an outlet coupled to the pneumatic distribution system;
a meter roller rotatably mounted in the casing;
a plurality of open volumes between the meter and the inner wall of the casing connecting the inlet and the outlet, said plurality of open volumes including a product path for metering product from the inlet to the outlet and an air diversion path for permitting air flow from the pneumatic distribution system to the product tank;
a meter brush having a base mounted in the meter casing within the air diversion path; and
a plurality of bristles mounted to the base and extending between the base and the meter roller in the air diversion path for substantially preventing product from passing between the outlet and the inlet along the air diversion path.

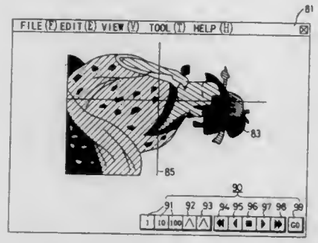
5,826,524
SEED FORMING WHEEL SUPPORT HAVING A LOCKUP LINK
Alfred Dean Yoder, Geneseo, Ill., assignor to Deere & Company, Moline, Ill.
Filed Oct. 16, 1996, Ser. No. 731,474
Int. Cl.[6] A01C *5/00*
U.S. Cl. 111—194 **12 Claims**



1. A support for a seed firming wheel of an agricultural planter, the support comprising:
a frame member having a mounting assembly for mounting the frame member to an agricultural planter, the frame member is also provided with a pivot assembly;
a link is pivotally mounted to the pivot assembly of the frame member;
the seed firming wheel is rotatively mounted to the link for firming seeds in a seed planting furrow; and
a lockup link for locking the seed firming wheel in a non-working position relative to the agricultural planter, the lockup link extends between the frame member and the link.

5,826,525
SEWING MACHINE HAVING DISPLAY MEANS
Atsuya Hayakawa, Chita, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Jul. 29, 1997, Ser. No. 902,075
Claims priority, application Japan, Nov. 20, 1996, 8-309571
Int. Cl.[6] D05B *21/00;69/36;* **D05C** *9/06*
U.S. Cl. 112—102.5 **20 Claims**

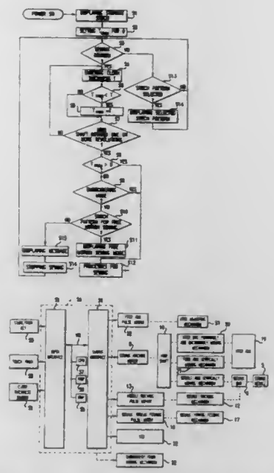




1. A sewing machine, comprising:
a head which drives a needle to form a stitch on a material;
a material mover which moves the material relative to the head;
a sewing controller which controls the head and the material mover based on sewing data and performs sewing on the material according to the sewing data;
a display unit which displays the sewing data as an image;
an indicator which indicates an arbitrary point on the image displayed by the display unit; and
a movement controller which relatively moves the material by controlling the material mover without causing the needle to vertically move so that a stitch position defined by the head is moved to the point indicated by the indicator.

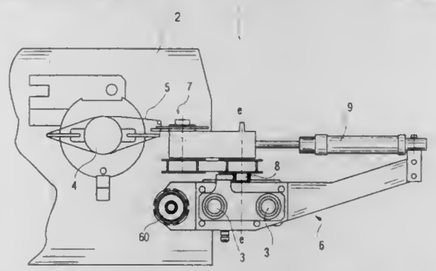
5,826,526
SEWING MACHINE
Shintaro Tomita, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan
Filed Nov. 18, 1997, Ser. No. 972,743
Claims priority, application Japan, Nov. 19, 1996, 8-308511
Int. Cl.[6] D05C *5/02;* **D05B** *11/00;21/00*
U.S. Cl. 112—102.5 **14 Claims**

1. A sewing machine comprising:
a machine main body including a bed;
stitch selecting means for selecting at least one of a number of stitch patterns;
sewing means for executing a sewing operation;



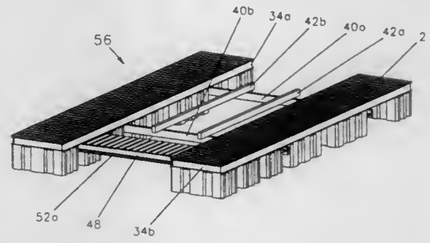
control means for controlling the sewing means so that the sewing means executes the sewing operation on a workpiece cloth based on the stitch pattern selected by the stitch selecting means;
a feed dog provided in the bed of the main body to be displaced between positions above and below a top face of the bed in a normal state, thereby feeding the workpiece cloth;
switching means for switching the feed dog between the normal state and a drop feed state in which the feed dog remains at the position below the top face of the bed;
feed dog position judging means for judging whether the feed dog is in the drop feed state;
stitch pattern judging means for judging, when the feed dog is in the drop feed state, whether the stitch pattern selected by the stitch selecting means is suitable for formation of stitches in the drop feed state of the feed dog; and
informing means for informing results of judgment by the stitch pattern judging means.

5,826,527
APPARATUS FOR TREATING KNITTED TUBULAR ARTICLES, ESPECIALLY STOCKINGS
Pier Lorenzo Migliorini, Terranuova Bracciolini, Italy, assignor to Matec S.R.L., Scandicci, Italy
Filed Apr. 2, 1997, Ser. No. 832,501
Claims priority, application Italy, Apr. 4, 1996, FI96A0072
Int. Cl.[6] D05B *21/00*
U.S. Cl. 112—470.15 **4 Claims**



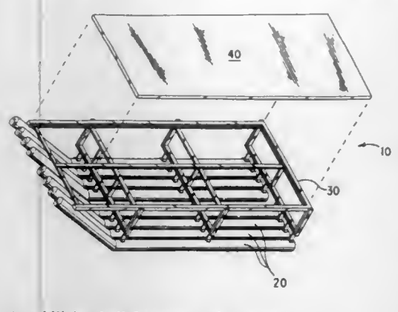
1. An apparatus for treating knitted tubular articles in association with a hose for supporting the knitted tubular articles, a toe-sewing machine and a station for the unloading of articles, the apparatus comprising:
a stationary basic structure connected solidly to a fixed part of the toe-sewing machine, said stationary basic structure being located upstream of the station for the unloading of articles, said stationary basic structure including two guiding rods parallel to each other and substantially parallel to the hose for supporting the articles;
a carriage having cutting means with a blade-counterblade unit, said guiding rods of said stationary basic structure forming a guiding body for said carriage wherein through movement of said carriage along a direction of said guiding rods a longitudinal cutting of the article fitted over the hose is provided for a predetermined length corresponding to the carriage travel.

5,826,528
FLOATING BOAT LIFT WITH RETRACTING WALKWAY
John J. Jancsek, 11849 Madison St. NE., Blaine, Minn. 55434
Filed Feb. 3, 1997, Ser. No. 794,626
Int. Cl.[6] B63C *1/02*
U.S. Cl. 114—45 **18 Claims**



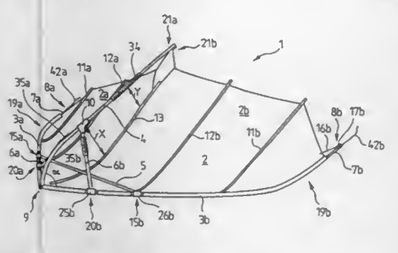
1. A boat lift, comprising:
a frame having spaced apart first and second support members;
a lift bar extending between the first and second support members;
a first linkage, including:
a pair of spaced apart first upper bars, each pivotably attached to the first support member;
a first cross member pivotably attached to the first upper bars such that the first upper bars are maintained in a generally parallel relation; and
a pair of spaced apart first lower bars pivotably attached to the first upper bars;
a second linkage including:
a pair of spaced apart second upper bars, each pivotably attached to the second support member;
a second cross member pivotably attached to the second upper bars such that the second upper bars are maintained in a generally parallel relation; and
a pair of spaced apart second lower bars pivotably attached to the second upper bars;
wherein the first and second lower bars are pivotably connected to the lift bar such that the lower bars are maintained in a generally parallel relation;
wherein the first upper bars extend in a one of outwardly and inwardly direction from the first support member and the second upper bars extend in the other of outwardly and inwardly direction from the second support member;
a connection link pivotably connected to and extending between the first and second linkages and generally parallel to the lift bar; and
a stabilizer extending between the first and second support members.

5,826,529
STABILIZING HULL FOR WATERCRAFT
James Edward Ely, 63 Ray Rd., Moonville Community, Piedmont, S.C. 29673-8119
Filed May 19, 1997, Ser. No. 858,448
Int. Cl.[6] B63B *1/00*
U.S. Cl. 114—61 **19 Claims**



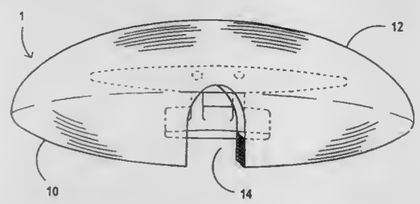
1. A stabilizing hull for watercraft comprising:
a predetermined number of parallel pontoons;
a frame comprising two side longitudinal struts having L-shaped cross sections, a front lateral strut, a rear lateral strut assembly, at least two central lateral strut assemblies, and a central longitudinal strut; and
each said rear and at least two central lateral strut assemblies comprising a top lateral strut, a bottom lateral strut, a reinforcing bottom lateral strut, at least three vertical struts, and two reinforcing vertical struts.

5,826,530
WING SAIL
Sami Tuurna, and Carl-Magnus Fogelholm, both of Espoo, Finland, assignors to OY Skywings AB, Espoo, Finland
PCT No. PCT/FI94/00361, § 371 Date Feb. 20, 1996, § 102(e) Date Feb. 20, 1996, PCT Pub. No. WO95/05973, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 19, 1994, Ser. No. 596,341
Claims priority, application Finland, Aug. 20, 1993, 933666
Int. Cl.[6] B63H *9/06*
U.S. Cl. 114—102 **17 Claims**



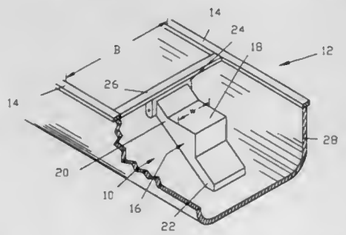
1. A handheld wing sail comprising:
a sailcloth (**2**) supported on frame members (**3***a*, **3***b*, **4**, **5**, **6***a*, **6***b*, **7***a*, **7***b*), the frame members comprising two mast tubes (**3***a* and **3***b*) positioned in a V shape defining a nose angle (α) and opposite respective tips (**14***a*), a boom (**4**) located in the area between the mast tubes, the boom being curved at the symmetry plane of the wing sail and connected to each mast tube (**3***a* and **3***b*) by supporting tubes (**6***a*, **6***b*), which are at one end fastened to the boom (**4**) by a connection member (**10**) and at the opposite end to the respective mast tubes (**3***a* and **3***b*) by connection means (**20***a*, **20***b*), and a traverse tube (**5**) joining the mast tubes (**3***a*, **3***b*) together and fastened to the mast tubes by connection pieces (**15***a*, **15***b*), wherein the mast tubes (**3***a*, **3***b*) and the boom (**4**) are connected to each other by a nose link (**9**), which comprises a threadlike connection member (**37**), which is made of flexible but substantially non-stretchable material for making it possible to change the nose angel (α) and to fold the mast tubes (**3***a*, **3***b*) toward the boom (**4**), whereby to bring the wing sail into a folded position for turning the mast tubes (**3***a*, **3***b*) and the boom (**4**) freely in different directions when the wing sail is in the folded position and, thus, ready for transport, the tips (**14***a*) of the mast tubes (**3***a*, **3***b*) have, at tips (**19***a*, **19***b*) of the sailcloth (**2**), flexible antenna portions (**7***a*, **7***b*) to which are connected tightening means (**8***a*, **8***b*) for keeping the wing sail taut during sailing, the boom (**4**) is curved in such a way that its maximum distance (X) from the sailcloth (**2**) is 25 to 50 cm at the symmetry plane of the wing sail, and the distance between the connection member (**10**) and the nose link (**9**) is 20 to 50% of the boom (**4**) length.

5,826,531
MOORING CLEAT COVER
Richard A. Havnaer, Jr., Myrtle Beach, S.C., assignor to Richard Alan Havnaer, Jr., Myrtle Beach, S.C.
Filed Jan. 23, 1995, Ser. No. 376,354
Int. Cl.[6] B63B *21/04*
U.S. Cl. 114—218 **7 Claims**



1. A cleat cover removably attached to a cleat, comprising:
a) a unitary body having a side portion, the body further having an internal wall defining an aperture dimensioned to receive a cleat therein, the side portion defining an opening in communication with the aperture, the opening dimensioned to receive a portion of a rope therethrough;
b) a ligature having a first end and a second end, the first end attached to the internal wall of the body, the second end adapted to be attached to the cleat; and
c) a rope contacting member attached to the body adjacent the opening, the rope contacting member adapted to contact the rope to prevent wear of the body.

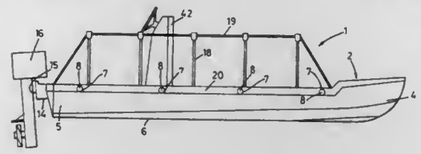
5,826,532
BOAT SEAT
Alf J. Elvestad, P.O. Box 700, Enfield, N.H. 03748
Filed Mar. 29, 1996, Ser. No. 624,948
Int. Cl.[6] B63B *35/00*
U.S. Cl. 114—347 **37 Claims**



1. A canoe seat for a canoe having gunwales stabilized by thwarts, the canoe having a shell with a beam B, the canoe comprising:

a brace having a brace first end region, which is connected to the boat, and a brace second end region, which is supported on the shell of the boat;
a connector attached to said brace first end region and to one of the thwarts, said connector providing a pivotable connection of said brace first end region to one of the thwarts of the canoe;
a platform which is pivotably mounted with respect to said brace for support of the operator, said platform having a width W which is less than the beam B of the shell; and
means for maintaining said platform in a substantially horizontal position for supporting the operator, where said platform is substantially parallel to the gunwales, and an inclined position for supporting the operator, where said platform is inclined with respect to the gunwales.

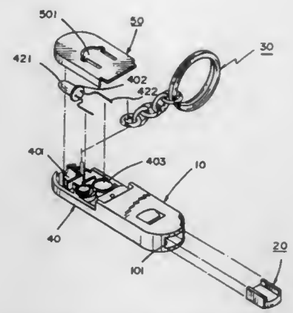
5,826,533
TWIN-HULLED BOAT
James Edward Stangroom, S. Yorks, and John George Clancy, Sheffield, both of England, assignors to Silky Limited, S. Yorks, United Kingdom
Filed Dec. 20, 1996, Ser. No. 765,507
Claims priority, application United Kingdom, Jun. 29, 1994, 9413017
Int. Cl.[6] B63B *7/04*
U.S. Cl. 114—352 **25 Claims**



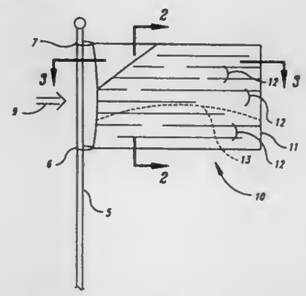
1. A twin-hulled boat (**1**) constructed from three individual parts being two parallel, relatively narrow and relatively long hulls (**2**) each individually connected, at releasable joints (**13,9**), to a central, rigid bridge section (**3**), and separable, upon release of the joints (**13,9**) into three individual parts, with each hull (**2**) having a bow section (**4**) and a stern section (**5**), and with the hulls (**2**) having virtually flat bottoms (**6**) apart from the bow sections (**4**), wherein said releasable joints are two-part metal-to-metal friction joints with one-part (**13**) of each of said joints located within, and a lateral side of, said central bridge section (**3**), and the other part (**9**) of each of said joints located at inner gunwales (**21**) of each hull (**2**), with, for each of said joints, individual independent, screw incorporating means (**26**),(**24**),(**27**),(**29**), (**33**) operable on both parts (**13,9**) of each joint to urge the parts (**13,9**) of each said joint together into tight frictional engagement with one another.

5,826,534
WHISTLE
King-Lin Huang, No.5, Kuang-Cheng Street, Pan-Chiao, Taipei, Taiwan
Filed Feb. 11, 1997, Ser. No. 798,553
Int. Cl.[6] B06B *13/00*
U.S. Cl. 116—137 R **4 Claims**

1. A whistle comprising:
a) a main body in the form of a hollow rectangular-shaped rod including a front end defining an air opening and a side having a slot formed therethrough, the slot having a front edge, the main body being entirely injection molded from a plastic material;
b) a plug in the form of a sheet member including a front end, a rear end and an upper surface, the plug being sized for inserting into and snugly fitting within the air opening of the body to position the front end of the plug adjacent the front edge of the slot, the upper surface of the plug including a groove extending from the front end to the rear end of the plug and defining a gap with an inner surface of the main body forming the air opening, the plug being entirely injection molded from a plastic material; and
c) wherein when a user blows into the air opening of the main body, the air passes through the gap and is accelerated out through the slot to form a whirling air flow that vibrates an air column formed in the air opening, thereby inducing consonance and creating a whistling sound.



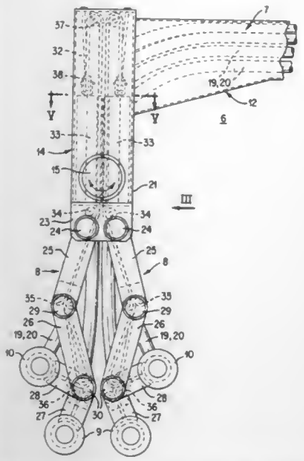
5,826,535
TETHERED DISPLAY DEVICE
Matthew H. Shaw, 7114 - 17th Ave. SW., Seattle, Wash. 98106
Filed Jun. 25, 1996, Ser. No. 674,651
Int. Cl.[6] G09F *17/00*
U.S. Cl. 116—173 **22 Claims**



1. A display device comprising at least two vertical panels connected at a top seam and a bottom seam, the panels and seams defining therebetween a plurality of tubular channels, and further comprising at least one soft wing-like airfoil horizontally disposed between the two vertical panels, the airfoil defining in part at least one of the tubular channels, the airfoil being curved such that a mid portion thereof is closer to the top seam than the end portions thereof.

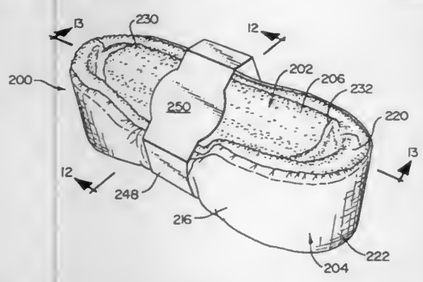
5,826,536
CONSTRUCTION INCLUDING AN IMPLEMENT FOR MILKING ANIMALS
Cornelis van der Lely, 7 Brüschenrain, CH-6300 Zug, Switzerland, and Karel van den Berg, 5, Boterbloemstraat, 2971 BR Bleskensgraaft, Netherlands
Filed Nov. 7, 1995, Ser. No. 551,844
Claims priority, application Netherlands, Mar. 25, 1994, 9400471; Mar. 29, 1994, 9400495
Int. Cl.[6] A01J *5/017*
U.S. Cl. 119—14.02 **35 Claims**

1. An apparatus for automatically milking animals, such as cows, comprising a milking robot which is provided with teat cups,



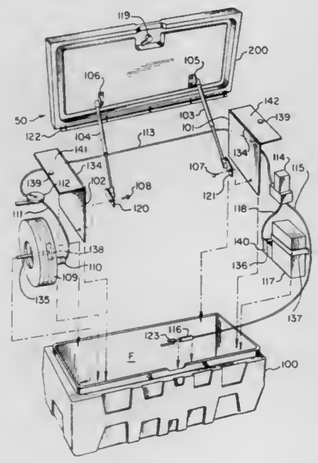
a robot arm having movable arms, at least one of said teat cups being movably connected by one of said movable arms to said robot arm, said one teat cup being capable of free movement within limits in respect to said movable arms and being connected to said one movable arm by an elongated flexible element, and said elongated flexible element comprising a means for pulling said teat cup into a rigid connection with said movable arm.

5,826,537
COLLAPSIBLE PET BED
Eric W. Heilborn, 2216 I St., Bellingham, Wash. 98225
Continuation of Ser. No. 491,786, Jun. 19, 1995, Pat. No. 5,588,393. This application Dec. 31, 1996, Ser. No. 777,582
Int. Cl.[6] A01K *1/035*
U.S. Cl. 119—28.5 **4 Claims**



1. A pet bed which is collapsible as a unit for packaging, said bed comprising:
a resiliently flexible cushion portion which is generally flat when in an expanded configuration and which has lengthwise and crosswise axes; and
an upright, resiliently flexible wall portion mounted to said cushion portion so as to at least partially surround an edge of said cushion portion when said cushion portion is in said expanded configuration;
said edge of said cushion portion being substantially free from fixed attachment to a lower edge of said wall portion at first and second ends of said lengthwise axis, so that as first and second sides of said wall portion are pushed together along said crosswise axis of said cushion portion, said cushion portion moves upwardly relative to said wall portion at said ends of said lengthwise axis so as to permit said cushion portion to fold along said lengthwise axis to a collapsed configuration in which two halves of said cushion portion are substantially parallel to and sandwiched between said first and second sides of said wall portion for compact packaging.

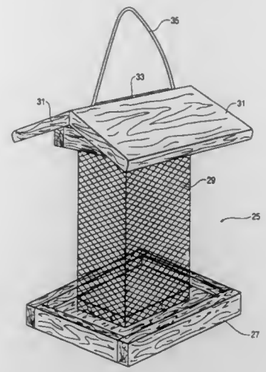
5,826,538
ANIMAL FEEDER
Lorenzo Roybal, Erie, Colo., assignor to Never Late, Inc., Erie, Colo.
Filed Feb. 20, 1996, Ser. No. 602,502
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—51.12 **19 Claims**



1. An animal feeder comprising:
a box having an open top;
a lid covering the open top and having an open and a closed position;
a spring means functioning to bias said lid in the open position;
a latch means functioning to hold said lid in the closed position;
a tube connecting an air reservoir to a solenoid to an air piston and to the latch means;
a power means functioning to energize said solenoid; and
a timer means functioning to actuate said solenoid, thereby charging said air piston with air, releasing said latch means, and permitting the spring means to bias the lid in the open position.

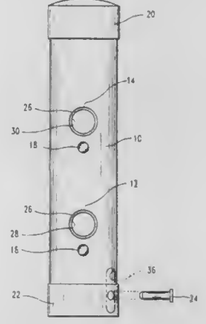
5,826,539
EXPANDED MESH BIRD FEEDER
Dan A. Bloedorn, 1500 A. Wisconsin Ave., New Holstein, Wis. 53061
Filed Jul. 12, 1996, Ser. No. 679,049
Int. Cl.[6] A01K *39/01*
U.S. Cl. 119—52.2 **6 Claims**

1. A bird feeder, comprising:
a feed-containing body having at least a bottom and a side, wherein at least a portion of the body comprises expanded mesh, and wherein the body comprises a plurality of wood



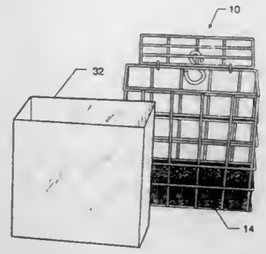
pieces, the wood pieces having grooves formed therein, and the expanded mesh being inserted in the grooves.

5,826,540
SQUIRREL RESISTANT BIRD FEEDER
Thomas L. Bridges, 46 Cottekill Rd., Cottekill, N.Y. 12419
Filed Aug. 4, 1997, Ser. No. 905,383
Int. Cl.[6] A01K *5/00*
U.S. Cl. 119—52.3 **22 Claims**



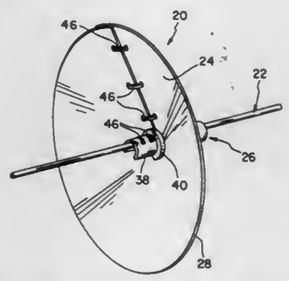
1. A readily reloadable bird feeder resistant to squirrel marauding comprising
an inner container for holding bird seed and open at the top for receiving bird seed and having
a side opening for enabling bird access to the seed and
a structure comprising a rod engaging at its lower end the container for mounting the container on a support,
a relatively-movable guard element surrounding the container and having a removable cover at its upper end slidably engaging the rod and having
a side opening for alignment with the container's side opening to enable bird access through the aligned openings to the seed,
and a mechanism biasing the guard element to a position in which its side opening is aligned with the container side opening.

5,826,541
GELATIN-PLASTIC FOAM WIRE CAGE BIRD FEEDER AND PROCESS
Judd R. Wilkins, 281 Littletown Quarter, Williamsburg, Va. 23185
Filed Dec. 4, 1997, Ser. No. 984,912
Int. Cl.[6] A01K *39/01*
U.S. Cl. 119—57.8 **12 Claims**



1. A bird feeder comprising:
a wire cage forming an open mesh enclosure;
said open mesh enclosure including a top, a bottom, and four side wall portions;
means permitting opening and closing of said open mesh enclosure;
a porous foam plastic disk positioned within said wire cage and disposed on and covering the bottom portion thereof;
a solidified gel structure disposed on said porous foam plastic disk and substantially filling said open mesh enclosure;
said solidified gel structure containing a quantity of bird seed completely embedded therein;
means on said wire cage forming an exterior perch for supporting birds in a position to feed on the bird seed embedded in said solidified gel structure; and
means on said wire cage to facilitate suspension thereof from an overhead structure.

5,826,542
SQUIRREL BAFFLE
Danny T. Allen, 4714 Highwood Dr., Fort Wayne, Ind. 46815, and Kirt A. Daenens, 6323 Fine Meadows La., Fort Wayne, Ind. 46835
Filed Oct. 15, 1997, Ser. No. 950,893
Int. Cl.[6] A01K *129/00*
U.S. Cl. 119—57.9 **20 Claims**



1. A squirrel baffle assembly mountable on an elongate element, the elongate element extending in a longitudinal direction, said baffle assembly comprising:
a sleeve member substantially encircling a longitudinally extending portion of the elongate element, said sleeve member having a longitudinally extending opening whereby the elongate member is laterally receivable within said sleeve member;

first and second laterally extending exterior surfaces disposed on said sleeve, said lateral surfaces defining a groove therebetween; and

a baffle member having an outer perimeter, an inner opening, and a slit extending from said inner opening to said outer perimeter (whereby) the elongate element is laterally receivable in said inner opening through said slit, portions of said baffle member adjacent opposite sides of said slit being attachable together, whereby attachment of said baffle portions adjacent opposite slit sides closes said inner opening about said sleeve member and disposes a radial inner portion of said baffle member between said first and second laterally extending surfaces to thereby secure said baffle member to said sleeve member.

5,826,543

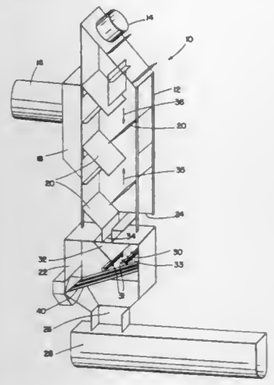
CLUMPABLE ANIMAL LITTER CONTAINING A DUST REDUCING AGENT

Marvin L. Raymond, Cape Girardeau; Phillip B. Greene, Scott City, and Thomas M. Harrison, Cape Girardeau, all of Mo., assignors to Ralston Purina Company, St. Louis, Mo.

Filed Jan. 20, 1995, Ser. No. 375,860

Int. Cl.[6] A01K *1/015*

U.S. Cl. 119—173 **18 Claims**



1. A substantially reduced dusting litter composition capable of agglomerating upon contact with a liquid that is deposited in the composition to facilitate removal of the liquid from a container containing the litter composition, comprising:

a sodium montmorillonite clay; and

fibrillatable polytetrafluoroethylene resin distributed on said clay in an amount sufficient to retain dust particles on said clay.

5,826,544

Patent Not Issued For This Number

5,826,545

ANIMAL CAGING SYSTEM

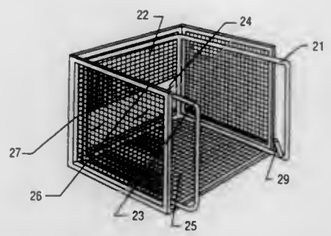
John T. Steffes, Olney; Joseph M. Erwin, Gaithersburg, and John C. Landon, Potomac, all of Md., assignors to Diagnon Corporation, Rockville, Md.

Filed Sep. 18, 1995, Ser. No. 529,494

Int. Cl.[6] A01K *3/00*

U.S. Cl. 119—473 **23 Claims**

1. An apparatus for housing animals, comprising a modular caging unit comprising a chamber defined by a



(a) a front surface, a rear surface, a top surface, a bottom surface and two side surfaces; and

(b) two self-storing side access panels positioned at the rear of said chamber, wherein said front surface and said side access panels permit access to the interior of said chamber.

5,826,546

METHOD FOR SHAMPOOING A PET USING A FOAM-DISPENSED PET SHAMPOO COMPOSITION

Kenneth R. Epstein, Dayton, Ohio, assignor to MiracleCorp of Australia, Dayton, Ohio

Filed Apr. 23, 1997, Ser. No. 839,146

Int. Cl.[6] A01K *29/00;* **A61K** *7/075*

U.S. Cl. 119—651 **11 Claims**

1. A method for shampooing a fur or hair-bearing pet, said method comprising:

providing a foamable shampoo composition in a dispenser, said dispenser including a mixing chamber for mixing said shampoo composition with air, thereby generating a foam;

dispensing said foam from said dispenser through a nozzle;

applying, said foam to the hair or fur of said pet;

rubbing said foam into the fur or hair of said pet; and

drying said pet wherein said method is conducted without wetting the fur or hair of the pet with water other than the water in the foamable shampoo composition.

5,826,547

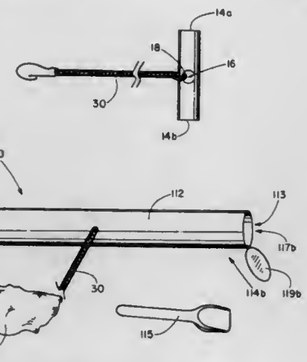
LEASH

Anna Gajewska, 19921 Sheffield La., Huntington Beach, Calif. 92646-4025

Filed May 6, 1997, Ser. No. 852,090

Int. Cl.[6] A01K *27/00*

U.S. Cl. 119—795 **4 Claims**



1. A handle for a dog leash, comprising:

said handle having a cylinder shape with an axial length in the approximate range of 10 to 12 inches;

said handle having a diameter of approximately ¾ of an inch;

said handle being made of a solid material; and

said handle including a means for embedding the dog leash through a center of said handle.

5,826,548

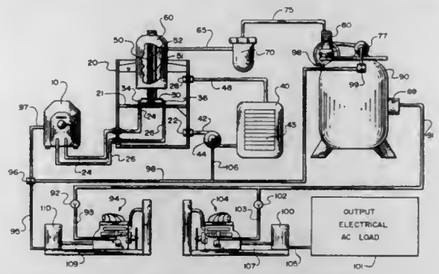
POWER GENERATION WITHOUT HARMFUL EMISSIONS

William H. Richardson, Jr., 1496 Giles St., Palm Bay, Fla. 32907

Division of Ser. No. 162,342, Dec. 2, 1993, Pat. No. 5,435,274, which is a continuation-in-part of Ser. No. 854,938, Mar. 20, 1992, which is a continuation-in-part of Ser. No. 613,094, Nov. 15, 1990, abandoned. This application May 26, 1995, Ser. No. 451,454

Int. Cl.[6] F02B *43/08*

U.S. Cl. 123—3 **8 Claims**



1. Electrical power generating system, comprising

fuel combustion means adapted to intake air and air-combustible fuel and to combust the fuel with the air and in so doing to emit water and carbon dioxide and to actuate associated motive means adapted to drive interconnected electrical generating means;

motive means associated with the fuel combustion means and actuated by the combustion thereof to drive the generating means;

electrical generating means mechanically connected to the motive means and thereby adapted to be driven thereby to generate electrical power as the output of the generating means; and

fuel-evolving means adapted to provide the combustion means with fuel comprising hydrogen in major part and carbon monoxide in substantial minor part, air-combustible without harmful emissions.

5,826,549

TANDEM FAN FOR MOTOR-VEHICLE RADIATORS

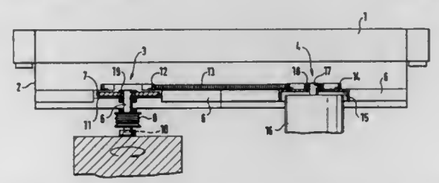
Hans Martin, Stuttgart, Germany, assignor to Behr GmbH & Co., Stuttgart, Germany

Filed Nov. 14, 1996, Ser. No. 749,927

Claims priority, application Germany, Dec. 6, 1995, 195 45 390.5

Int. Cl.[6] F01P *7/02*

U.S. Cl. 123—41.11 **6 Claims**



1. A tandem fan for a radiator of a motor driven vehicle, comprising: two fan impellers having respective belt pulleys, said fan impellers having respective axes of rotation arranged parallel to one another, and the respective belt pulleys being coupled to one another by a common belt; an electric motor for driving said common belt; a fluid friction clutch for driving one of the two fan impellers, the fluid friction clutch being driven via a first overrunning clutch by the vehicle motor; and a second overrunning clutch arranged between the electric motor and its respective belt pulley; wherein electric motor is coaxial with one of the two fan impellers and wherein the other fan impeller is coaxial with the fluid friction clutch.

5,826,550

INTERNAL COMBUSTION ENGINE

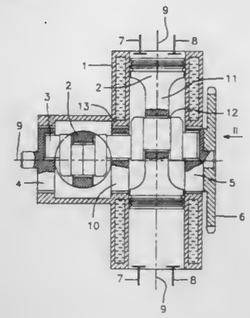
Dražen Paut, Ivana Gundulića 28, Split, Croatia, 21000

Filed Oct. 16, 1996, Ser. No. 733,083

Claims priority, application Croatia, Oct. 16, 1995, P950518A

Int. Cl.[6] F02B *75/24*

U.S. Cl. 123—55.5 **9 Claims**



1. Internal combustion engine comprising

an engine block housing at least two reciprocating pistons each being provided in a cylinder comprising at least an inlet valve and an exhaust valve and a respective piston axis of the pistons being located in spaced parallel planes,

said pistons being coupled with a crankshaft, said crankshaft being coupled with a drive shaft and an operating shaft,

the at least two pistons being arranged in cylinders placed at an angle of 90° C. to each other,

the crankshaft being coupled eccentrically with extensions of the pistons, said extensions being integral with the pistons and protruding from the pistons in a direction opposite to a piston surface,

two adjusting cylinders including at least partly a common cylinder wall having a common opening with a bearing having the crankshaft eccentrically mounted in the bearing, and

the drive shaft and the operating shaft being coupled with the crankshaft with a same eccentricity as the eccentric mounting of the crankshaft in the bearing so that crankshaft portions mounted in the drive shaft, the bearing and the operating shaft are aligned along a common longitudinal axis.

5,826,551

PROCESS AND DEVICE FOR CONTROLLING THE LIFT OF AN INTERNAL COMBUSTION ENGINE VALVE

Willem Nicolaas Janse van Vuuren, Tabb, Va., assignor to Siemens Automotive S.A., Toulouse Cedex, France

PCT No. PCT/EP94/03606, § 371 Date May 6, 1996, § 102(e) Date May 6, 1996, PCT Pub. No. WO95/12751, PCT Pub. Date May 11, 1995

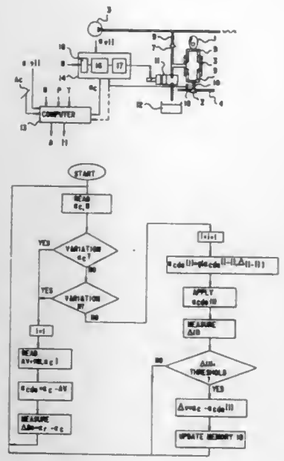
PCT Filed Nov. 2, 1994, Ser. No. 640,927

Claims priority, application France, Nov. 5, 1993, 93 13186

Int. Cl.[6] F01L *9/02;13/00*

U.S. Cl. 123—90.12 **14 Claims**

1. A method of controlling a lift of a valve in an internal combustion engine cylinder, which comprises:



continuously calculating a set-point position for an event related to a valve of an internal combustion engine cylinder;

upon the detection of a change in the set-point position to a new set-point or a change in the engine speed:

a) controlling a mechanism for triggering the event in open loop as a function of the new set-point during at least the first engine cycle following the detection of the set-point change; and

b) controlling the mechanism in closed loop for adjusting to the new set-point during subsequent engine cycles.

5,826,552

VARIABLE VALVE TIMING DEVICE

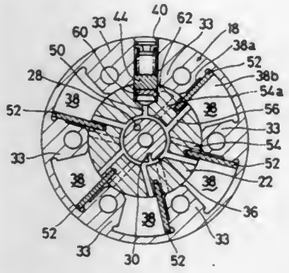
Yuji Noguchi; Kongo Aoki, both of Toyota, and Katsuhiko Eguchi, Kariya, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi-pref., Japan

Filed Dec. 11, 1997, Ser. No. 988,668

Claims priority, application Japan, Dec. 12, 1996, 8-332527

Int. Cl.[6] F01L *1/344*

U.S. Cl. 123—90.17 **7 Claims**



1. A variable valve timing device comprising:

a rotation shaft for opening and closing a valve;

a rotation transmitting member rotatably mounted on the rotation shaft;

a vane connected to one of the rotation shaft and the rotation transmitting member, the rotational shaft and the rotational transmitting member defining therebetween a pressure chamber which is divided into an advance angle space and a delay angle space by the vane being extended into the pressure chamber;

a first passage being in fluid communication with the advance angle space for supplying and discharging a fluid therein and therefrom, respectively;

a second passage being in fluid communication with the delay angle space for supplying and discharging the fluid therein and therefrom, respectively,

one of the rotation shaft and the rotation transmitting member being formed therein with a retracting bore, and

the other of the rotation shaft and the rotation transmitting member being formed therein with a receiving bore;

locking valve fitted in the retracting bore;

a spring accommodated in the retracting bore and continually urging the locking valve outside the retracting bore,

the other of the rotation shaft and the rotation transmitting member being formed therein with a third fluid passage, the receiving bore having a bottom connected with the third fluid passage and being formed to receive the locking valve when the receiving bore is brought into alignment with the retracting bore;

a piston fitted in the receiving bore and a fourth fluid passage means extending to a boundary portion between the piston and the locking valve when the receiving bore is in alignment with the retracting bore.

5,826,553

AIR INTAKE DEVICE FOR AN INTERNAL COMBUSTION ENGINE

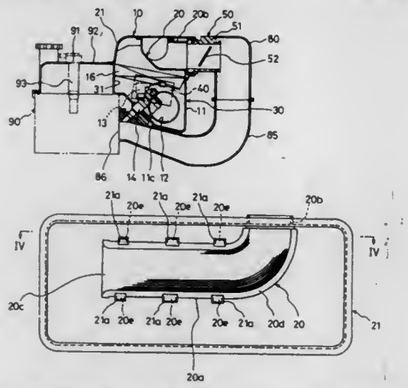
Toshiaki Nakayama, Nishikamo-gun; Shuya Mikami, Kariya; Yoshitaka Nishio, Nagoya; Akihide Yamaguchi, Kariya, and Masao Ino, Toyota, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 579,606, Dec. 26, 1995, Pat. No. 5,575,247. This application May 19, 1997, Ser. No. 858,566

Claims priority, application Japan, Feb. 1, 1995, 7-15242; Jun. 7, 1995, 7-140644

Int. Cl.[6] F02M *31/20*

U.S. Cl. 123—184.42 **9 Claims**



1. An air intake device for an internal combustion engine having a plurality of engine cylinders, a plurality of air intake pipes connected to said engine cylinders, a throttle and a surge tank connected between said throttle and said intake pipes, said air intake device comprising:

a case having an inlet disposed at a lower portion thereof, an outlet disposed at a higher portion thereof, a space connected between said inlet and said outlet; and

a filter element disposed detachably in said case to partition said space into an upper space connected to said outlet and a lower space connected to said inlet, wherein

said outlet comprises a duct member for maintaining sufficient low speed torque disposed integrally with an upper portion of said case and connected between said upper space and said throttle.

5,826,554

PRESSURE RELIEF MEANS FOR A THIN WALL, AIR INTAKE PIPE FOR AN INTERNAL COMBUSTION ENGINE

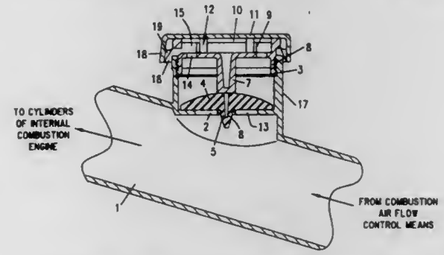
Hans-Ulrich Kühnel, Mönchengladbach, and Franz Dellen, Willich, both of Germany, assignors to Pierburg AG, Neuss, Germany

Filed Jun. 27, 1997, Ser. No. 884,521

Claims priority, application Germany, Jun. 27, 1996, 196 25 768.9

Int. Cl.[6] F02P *5/10*; **F02B** *75/26*

U.S. Cl. 123—184.54 **9 Claims**



1. A thin wall air intake pipe for supplying combustion air from a flow control means to a cylinder of an internal combustion engine, said air intake pipe comprising a segment having an opening therein and a valve means in said opening including a valve member responsive to pressure in the air intake pipe to open said valve means and provide connection of said air intake pipe to ambient atmosphere when the pressure in the air intake pipe reaches a predetermined value, said valve means comprising a socket connected to said segment of said air intake pipe, said valve member comprising an elastomer, umbrella valve including a central stem engaged in said segment of said pipe, said socket including a retaining finger engaging said umbrella valve to hold the stem in said segment of the pipe.

5,826,555

STARTER DEVICE

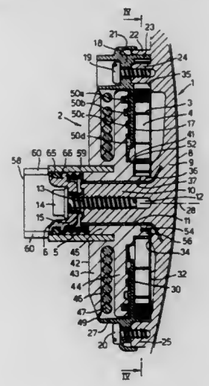
Tore Aronsson, Mölndal, and Ove Donnerdal, Partille, both of Sweden, assignors to Aktiebolaget Electrolux(publ)., Sweden

Filed Jun. 24, 1997, Ser. No. 881,790

Claims priority, application Sweden, Jun. 26, 1996, 9602519

Int. Cl.[6] F02N *3/02*

U.S. Cl. 123—185.3 **20 Claims**



1. Starter device for an internal combustion engine, comprising a unit (1) which is fixed relative to the engine,

a movable unit (2) which is rotatable relative to the fixed unit about an axis of rotation (28),

included in the movable unit (2) a cord drum (42) with a starter cord (47) and a driver device (58) for direct or indirect rotation of the engine shaft on rotation of the cord drum by pulling the starter cord,

a return spring chamber (4) accommodating a return spring (3) arranged to be tensioned when the movable unit is rotated by pulling the starter cord and subsequently, by resilience, to return the cord drum to its initial position, and also

at least one bearing between said fixed and movable units (2, 1), characterized by

at least one axially acting spring member (5) for pressing the movable unit in the axial direction against a member (36) forming part of the fixed unit, and also

at least one sealing member (65, 40, 41) between the environment and at least one of said return spring chamber and said bearing.

5,826,556

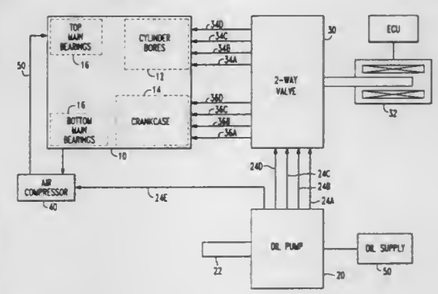
ENGINE LUBRICATION CIRCUIT WITH ALTERNATING LUBRICATION PATHS

Mark A. Ruman, Fond du Lac, and George D. Idzikowski, Lomira, both of Wis., assignors to Brunswick Corporation, Lake Forest, Ill.

Filed Apr. 24, 1997, Ser. No. 847,294

Int. Cl.[6] F01M *1/00*

U.S. Cl. 123—196 W **16 Claims**



1. A lubrication system for an internal combustion engine, comprising:

a lubricant pump;

a valve having an inlet connected in fluid communication with said lubricant pump for receiving lubricant from said pump, said valve having a first outlet and a second outlet, said first outlet being connected in fluid communication with a crankcase region of said engine, said second outlet being connected in fluid communication with a cylinder wall opening of said engine, said internal combustion engine being a marine engine;

a controller for causing said valve to direct all of said lubricant from said inlet sequentially to said first and second outlets based on a duty cycle which is determined as a function of a preselected engine parameter; and

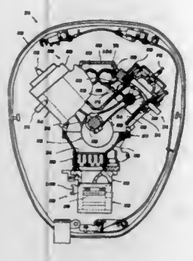
an air compressor connected in fluid communication with said lubricant pump for receiving said lubricant therefrom, said air compressor providing a flow of air to said engine, said air compressor having an inlet to receive oil from a drain conduit of said engine.

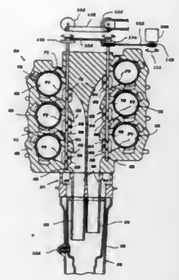
5,826,557

OPERATION CONTROL SYSTEM FOR DIRECT INJECTION 2 CYCLE ENGINE

Yu Motoyama, and Akihiko Ohokubo, both of Iwata, Japan, assignors to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Sep. 22, 1997, Ser. No. 934,531
Claims priority, application Japan, Sep. 20, 1996, 8-250573
Int. Cl.[6] F02D *41/00*
U.S. Cl. 123—198 F 17 Claims





1. A multiple cylinder, two-cycle, crankcase compression, internal combustion engine comprised of an engine body defining at least two combustion chambers, a crankcase chamber associated with each of said combustion chambers, scavenge passage means extending from said crankcase chamber to the respective of said combustion chambers and communicating therewith through a scavenge port opened and closed by a piston reciprocating in the respective combustion chamber, an exhaust port formed in each of said combustion chambers and opened and closed by the reciprocation of said piston for discharging exhaust gasses therefrom, an exhaust system for discharging exhaust gasses from said exhaust ports to the atmosphere comprised of an exhaust manifold having a plurality of branch passages, each extending from a respective one of said exhaust ports to a common collector section, said common collection section communicating with the atmosphere, combustion control means for delivering and igniting a combustible charge in each of said combustion chambers, means for controlling the speed of said engine during at least one running range by periodically disabling the combustion in at least one of said combustion chambers, exhaust control valve means in said exhaust system for controlling the effective flow area therethrough, means for controlling the position of said exhaust control valve means during cylinder disabling for precluding cooler gasses from the disabled combustion chamber from entering an operating combustion chamber through its exhaust port.

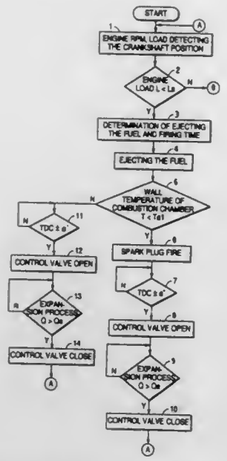
5,826,558

CONTROL UNIT FOR HIGH-COMPRESSION RATIO ENGINES USING VAPORIZING FUELS

Hideo Kawamura, Kanagawa, Japan, assignor to Isuzu Ceramics Research Institute Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 695,706, Aug. 12, 1996, abandoned, which is a continuation of Ser. No. 541,450, Oct. 10, 1995, abandoned, which is a continuation of Ser. No. 150,805, Nov. 12, 1993, abandoned. This application Jan. 9, 1997, Ser. No. 781,043
Claims priority, application Japan, Nov. 11, 1992, 4-326056; Nov. 11, 1992, 4-326057
Int. Cl.[6] F02B *19/02*
U.S. Cl. 123—292 11 Claims

1. A control unit for high-compression-ratio engines using vaporizing fuels comprising:
a control valve which opens and closes a path between a main combustion chamber and a subcombustion chamber in which precombustion takes place;
means for maintaining high temperature in the inner wall of the subcombustion chamber;
an injection nozzle which injects volatile liquid fuel into the subcombustion chamber;
a spark plug which is installed in the subcombustion chamber and ignites the injected fuel; and
control means for opening and closing of the control valve said control means controlling the control valve to open at the initial stage of the expansion stroke according to die condition of the load applied to the engine, and to close between die final stage of the expansion stoke and the beginning of the exhaust stroke.

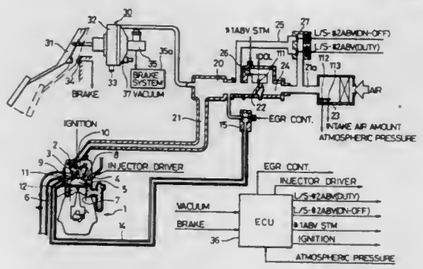


5,826,559

LEAN-BURN INTERNAL COMBUSTION ENGINE

Kazuhiro Ichimoto, Nagoya; Katsuhiko Miyamoto, Funai-gun; Shogo Omori, Okazaki; Hitoshi Kamura, Kyoto, and Atsuyoshi Kojima, Toyota, all of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1997, Ser. No. 883,373
Claims priority, application Japan, Jun. 28, 1996, 8-169614; Apr. 30, 1997, 9-112823
Int. Cl.[6] F02B *17/00*
U.S. Cl. 123—295 6 Claims



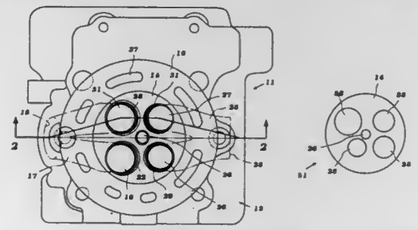
1. A lean-burn internal combustion engine including an engine body having an air intake system and adapted for a lean combustion operation, an intake air amount control mechanism provided in the air intake system for adjusting an amount of intake air supplied to the engine body, a vacuum actuator operable with use of a vacuum taken out of the air intake system downstream of the intake air amount control mechanism, and combustion control means for operating the engine body to effect the lean combustion in accordance with an operating state of the engine body, comprising:
operating state detecting means for detecting an operating state of the engine body;
vacuum reduction detecting means for detecting vacuum information relating to a vacuum which acts on the vacuum actuator and for detecting a reduction in the vacuum based on the vacuum information; and
vacuum securing means for controlling the intake air amount control mechanism so as to secure the vacuum by decreasing the amount of intake air to decrease air-fuel ratio when said vacuum reduction detecting means detects a reduction in the vacuum at a time of the lean combustion operation of the engine body.

5,826,560

ENGINE COMBUSTION CHAMBER AND METHOD OF OPERATION

Takeshi Ito, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jun. 25, 1996, Ser. No. 673,664
Claims priority, application Japan, Jun. 27, 1995, 7-160857
Int. Cl.[6] F01L *9/02*
U.S. Cl. 123—315 11 Claims



1. An internal combustion engine having a combustion chamber, an intake passage arrangement for supplying an intake charge to said combustion chamber including at least one intake valve an exhaust passage arrangement for discharging an exhaust charge from said combustion chamber, said exhaust passage arrangement being comprised of at least two exhaust ports and exhaust valves for controlling the flow through said exhaust ports, operating means for operating said intake and said exhaust valves, and means embodied in said operating means for restricting the opening of one of said exhaust valves under low-speed, low-load conditions and for opening said intake valve during the opening of at least one of said exhaust valves.

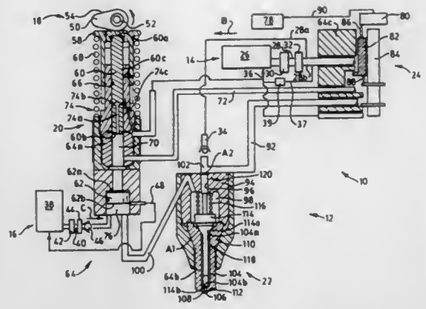
5,826,561

METHOD AND APPARATUS FOR INJECTING FUEL USING CONTROL FLUID TO CONTROL THE INJECTION'S PRESSURE AND TIME

David C. Mack, Pontiac, and Michael E. Moncelle, Bloomington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Dec. 10, 1996, Ser. No. 762,504
Int. Cl.[6] F02M *7/00*
U.S. Cl. 123—446 69 Claims

1. An electronically-controlled fuel injection system comprising:
fluid supply means for supplying fluid and having a drain passage;
fuel supply means for supplying fuel and having a drain passage;
a housing;
a plunger disposed in and cooperating with said housing to form a pumping chamber, said plunger being selectively movable between a first position and a second position, said pumping chamber selectively communicating with said fluid supply means;
a fuel pressurization member disposed in and cooperating with said housing to form an injection chamber, said fuel pressurization member being moveable between a first and a second position in response to pressure in said pumping chamber, said injection chamber selectively communicating with said fuel supply means;
means for injecting fuel into a combustion chamber including a check control chamber, at least one fuel injection orifice, and a check having a first end portion and a second end portion and being moveable between a first and a second position, said first end portion, when said check occupies its first and second positions, selectively closes and opens fluid communication between the injection chamber and the fuel injection orifice, said second end portion being in fluid communication with the check control chamber, said check control chamber being selectively communicatable with the fluid drain passage and said pumping chamber;
a check control valve movable between a first position and a second position, said first position providing fluid communication between said check control chamber and said pumping chamber and blocking fluid communication between said check control chamber and the fluid drain passage, said second position providing fluid communication between the fluid drain passage and said check control chamber and blocking fluid communication between said pumping chamber and said check control chamber; and,
a pressure control valve movable between a first position and a second position to selectively, respectively, open and close fluid communication between said pumping chamber and the fluid supply means.



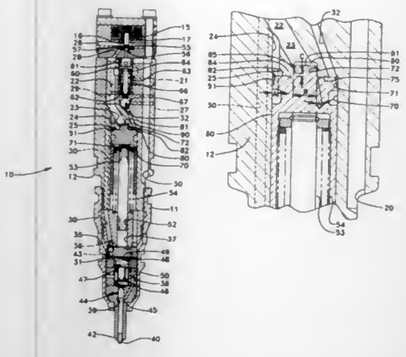
5,826,562

PISTON AND BARRELL ASSEMBLY WITH STEPPED TOP AND HYDRAULICALLY-ACTUATED FUEL INJECTOR UTILIZING SAME

Shikui K. Chen, Peoria, and Gregory W. Hefler, Chillicothe, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Continuation-in-part of Ser. No. 707,804, Aug. 30, 1996, Pat. No. 5,687,693, which is a continuation-in-part of Ser. No. 668,552, Jun. 21, 1996, Pat. No. 5,697,342, which is a continuation-in-part of Ser. No. 489,660, Jun. 12, 1995, Pat. No. 5,673,669, which is a continuation of Ser. No. 283,232, Jul. 29, 1994, Pat. No. 5,463,996. This application Dec. 13, 1996, Ser. No. 768,014
Int. Cl.[6] F02M *7/00*; F15B *15/22*
U.S. Cl. 123—446 20 Claims

1. A hydraulically actuated piston and barrel assembly comprising:
a barrel defining an actuation fluid cavity and a piston bore, which includes an upper bore and a lower bore;
a piston with a stepped top being slidably received in said piston bore and moveable between a retracted position and an advanced position;
said stepped top of said piston including a first area that is separate from a second area;



said first area and said upper bore defining an upper cavity connected to said actuation fluid cavity through a relatively unrestricted flow area when said piston is in said retracted position;

said second area and said lower bore defining a lower cavity connected to said actuation fluid cavity through a relatively restricted flow area when said piston is in said retracted position;

said first area being exposed to fluid pressure in said upper cavity and said second area being exposed to fluid pressure in said lower cavity when said piston begins moving from said retracted position toward said advanced position; and

one of said piston or said barrel further defining a restricted passage connecting said actuation fluid cavity to said lower cavity, and said restricted passage includes said restricted flow area.

5,826,563

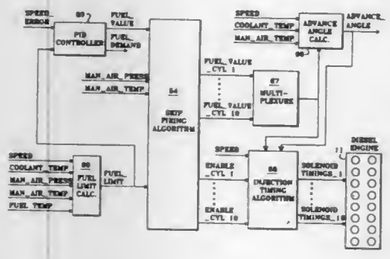
DIESEL ENGINE CYLINDER SKIP FIRING SYSTEM

Sagar Arvindbhai Patel, and Rocco Volpe, Jr., both of Erie, Pa., assignors to General Electric Company, Erie, Pa.

Filed Jul. 28, 1997, Ser. No. 901,747

Int. Cl.[6] F02D *17/02*

U.S. Cl. 123—481 **20 Claims**



1. A method of selectively operating a high-horsepower diesel engine in a skip firing mode under low power conditions, the engine having a plurality of individually controllable, fuel injected cylinders, the method comprising the steps of:

sensing low horsepower and low fuel demand operation of the engine; and

selecting a skip firing pattern of cylinders to be fired during each revolution of the engine shaft based upon the sensed fuel demand and engine horsepower, the selected pattern changing the cylinders fired during any one revolution of the engine shaft so that all cylinders are fired within a preselected number of shaft revolutions.

5,826,564

FUEL INJECTION CONTROL APPARATUS AND METHOD FOR ENGINE

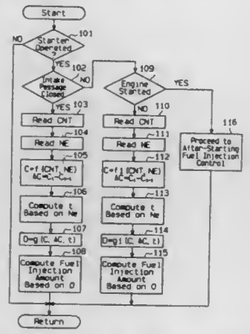
Naohide Fuwa, and Hiroshi Tanaka, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jun. 9, 1997, Ser. No. 871,822

Claims priority, application Japan, Jun. 10, 1996, 8-147122

Int. Cl.[6] F02D *41/06*

U.S. Cl. 123—491 **18 Claims**



1. An apparatus for supplying fuel to a cylinder of an internal combustion engine, the apparatus comprising:

a crankshaft;

a starter for cranking the crankshaft to start the engine;

an intake passage connected to the cylinder for introducing air to the cylinder;

an intake valve for cyclically opening and closing the cylinder;

an injector for injecting fuel to the intake passage when the intake valve is open;

an intake control valve positioned in the intake passage, the intake control valve serving to selectively allow and restrict the air flow in the intake passage;

a determiner for determining whether engine cranking has been started;

a measuring means for measuring a time period starting from the initiation of cranking of the engine;

a first controller for controlling the position of the intake control valve to adjust the amount of air flow into the cylinder, wherein said first controller controls the intake control valve to decrease the pressure in the intake passage when it is determined that cranking has been started;

a first computer for computing the pressure in the intake passage at a location adjacent to the injector based on the measured time, wherein the first computer further computes an amount of fuel to be injected based on the computed pressure; and

a second controller for controlling the injector to inject the computed amount of fuel.

5,826,565

INTERNAL COMBUSTION ENGINE WITH EXTERNALLY SUPPLIED IGNITION AND DIRECT INJECTION

Martin Mueller, Moglingen, and Uwe Maienberg, Stuttgart, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE96/01352, § 371 Date Aug. 8, 1997, § 102(e) Date Aug. 8, 1997, PCT Pub. No. WO97/23721, PCT Pub. Date Jul. 3, 1997

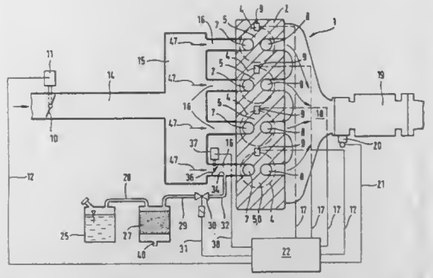
PCT Filed Jul. 24, 1996, Ser. No. 875,943

Claims priority, application Germany, Dec. 21, 1995, 195 47 916.5

Int. Cl.[6] F02B *23/10*

U.S. Cl. 123—520 **18 Claims**

1. An internal combustion engine with externally supplied ignition and direct injection, comprising an intake tube, at least two combustion chambers with at least one inlet valve and at least one



outlet valve per combustion chamber, a fuel injection valve that injects fuel directly into the combustion chamber, an air supply line to the at least one inlet valve of each combustion chamber, air in said supply line that flows from the intake tube is controlled by a throttle mechanism, wherein evaporated fuel from a fuel vapor retention system of a fuel tank of the engine is supplied to the air downstream of the throttle mechanism, the introduction of the evaporated fuel from the fuel vapor retention system into the supply line (**16**) is carried out in at least one combustion chamber (**5**) of the engine (**1**) in which the number of combustion chambers supplied with fuel is at least one less than a total number of combustion chambers of the engine.

5,826,566

EVAPORATIVE FUEL-PROCESSING SYSTEM FOR INTERNAL COMBUSTION ENGINES

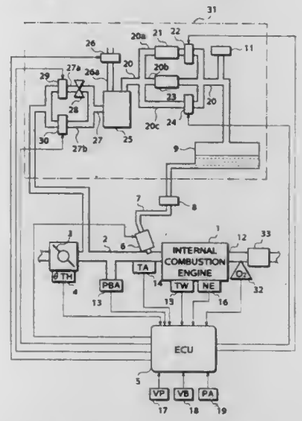
Takashi Isobe, and Takashi Yamaguchi, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 24, 1997, Ser. No. 881,504

Claims priority, application Japan, Jul. 26, 1996, 8-214116

Int. Cl.[6] F02M *33/02*

U.S. Cl. 123—520 **5 Claims**



1. In an evaporative fuel-processing system for an internal combustion engine having a fuel tank, said engine being installed in a vehicle, said evaporative fuel-processing system including an evaporative emission control system having a canister for adsorbing evaporative fuel generated in said fuel tank, a passage extending between said fuel tank and said canister, a pressure-regulating valve arranged across said passage, for regulating pressure within said fuel tank to a predetermined value, and pressure-detecting means for detecting pressure within said fuel tank, and abnormality-determining means for determining whether said evaporative emission control system is abnormal, based on said pressure within said fuel tank detected by said pressure-detecting means over a predetermined time period after starting of said engine, the improvement wherein:

said abnormality-determining means executes abnormality determination of said evaporative emission control system when a traveling distance of said vehicle assumed after starting of said engine exceeds a predetermined value.

5,826,567

TWO-STROKE INTERNAL COMBUSTION ENGINE

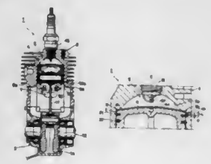
Yukio Sakaguchi, Saitama; Noboru Nagai, Tokyo; Shigeru Sato, Saitama, and Yasuharu Sato, Tokyo, all of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed Apr. 10, 1997, Ser. No. 827,650

Claims priority, application Japan, Apr. 16, 1996, 8-094452

Int. Cl.[6] F02B *19/16*

U.S. Cl. 123—666 **2 Claims**



1. A two-stroke internal combustion engine comprising:

a cylinder having a squish-dome-type combustion chamber comprising a bell-bottom hemispherical main surface and an annular skirt-like squish band whose width is less than or equal to 7% of cylinder diameter, for minimized THC exhaust from the engine;

a spark plug disposed for igniting a combustible mixture in the combustion chamber, having a spark point which is located substantially centrally in the combustion chamber; and

a piston slidably disposed in the cylinder, having a plurality of piston rings retained in grooves in the piston.

5,826,568

BALL PITCHING APPARATUS

William Van Ross, Jr., Garland, Tex., assignor to Dallas Metal Fabricators, Inc., Dallas, Tex.

Filed May 13, 1997, Ser. No. 855,458

Int. Cl.[6] F41B *4/00*

U.S. Cl. 124—6 **24 Claims**

1. Ball pitching apparatus for propelling a ball comprising:

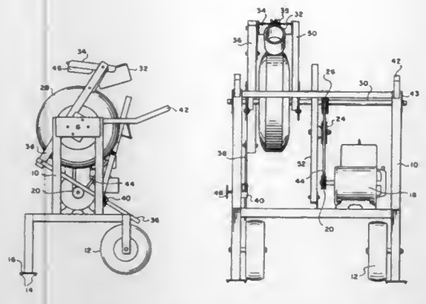
a body;

a ball propelling wheel having an outer periphery, said wheel being rotatably mounted on an axle secured to said body and said wheel lying along a plane perpendicular to said axle;

a stand-alone power source mounted on said body and engageable with said axle for rotating said propelling wheel;

a clutch adjustably mounted on said body for reciprocating engaging and disengaging said ball propelling wheel from said stand alone power source, wherein said clutch comprises an idler pulley attached thereto and coupled between said stand alone power source and said propelling wheel;

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a pivot arm having a distal end, a median portion and proximal end, said median portion being pivotally secured to said axle, said pivot arm depending parallel to said plane of said propelling wheel;

a propulsion alignment means secured to said distal end of said pivot arm, said propulsion alignment means being positioned on said pivot arm to provide a defined clearance interposed between said propulsion alignment means and said outer periphery of said propelling wheel;

a feeder for receiving a ball therein and for directing a ball to said defined clearance, wherein said feeder is demountably attached to said propulsion alignment means; and

adjustment means attached to said proximal end of said pivot arm for securing a position of said pivot arm relative to said propelling wheel, said position of said pivot arm controlling an angle of incidence formed by said feeder and said outer periphery of said propelling wheel.

5,826,569

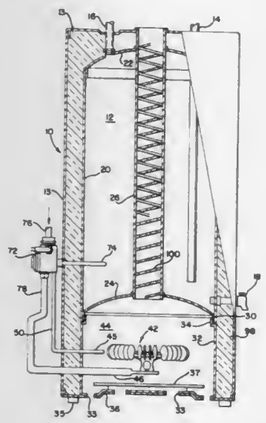
LOW NO_x WATER HEATER WITH FINNED BURNER

Daniel Voorhis, Gray, Tenn., assignor to American Water Heater Company, Johnson City, Tenn.

Filed Oct. 4, 1996, Ser. No. 725,771

Int. Cl.[6] F24H *1/00*

U.S. Cl. 126—361 **21 Claims**



1. A low No_x water heater burner comprising:

a burner body having opposed upper and lower surfaces forming a fuel chamber, said burner body including a plurality of burner ports about its periphery,

a multiplicity of spaced apart substantially vertical energy absorbing fins connected substantially vertical to at least one of said surfaces and extending outward of the periphery of said burner body, said burner ports each having an axis and said fins being located adjacent opposite sides of said burner ports, substantially parallel to the axis of a burner port and extending outwardly of a burner port to absorb energy directly from the burner flames to lower flame temperature without restricting air flow, thereby reducing No_x emissions.

5,826,570

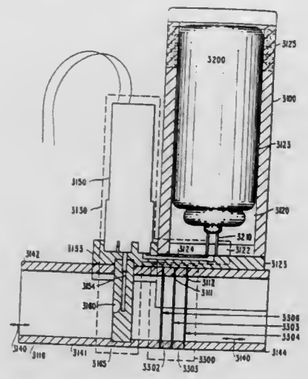
DELIVERY OF AEROSOL MEDICATIONS FOR INSPIRATION

David E. Goodman, Brookline, and Reid M. Rubsamen, Boston, both of Mass., assignors to Aradigm Corporation, Hayward, Calif.

Continuation of Ser. No. 457,148, Jun. 1, 1995, abandoned, which is a continuation of Ser. No. 353,162, Dec. 9, 1994, Pat. No. 5,542,410, which is a continuation of Ser. No. 664,758, Mar. 5, 1991, Pat. No. 5,404,871. This application Apr. 23, 1997, Ser. No. 847,327

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.14 **11 Claims**



6. A hand held device for delivering an aerosolized medication to a patient for inspiration, comprising:

a tube forming a flow path from an open end to a mouth end;

a canister comprising

a cylindrical container having a valved opening therein which valve prevents release of container contents until actuated;

a pressurized formulation of a pharmaceutically active drug and pharmaceutically acceptable carrier in the container;

a resistor having a set resistance value wherein the resistor identifies the pharmaceutically active drug;

a nozzle for releasing and aerosolizing medication from the canister to the open end of the tube;

a flow transducer for measuring the patient's breath flow through the tube;

a microprocessor for calculating a medication delivery point based on information from the flow transducer; and

an actuating mechanism which initiates release of medication through the nozzle and into the tube upon receipt of a signal sent after the microprocessor has determined that the patient's breath flow is at the delivery point.

5,826,571

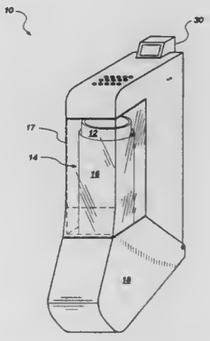
DEVICE FOR USE WITH METERED DOSE INHALERS (MDIS)

Robert A. Casper, Raleigh; Frank A. Leith, and David L. Gardner, both of Chapel Hill, all of N.C., assignors to Innovative Devices, LLC, Raleigh, N.C.

Filed Jun. 6, 1996, Ser. No. 659,723

Int. Cl.[6] A61M *11/00*

U.S. Cl. 128—200.23 **18 Claims**



1. A device for use with a metered dose inhaler, the metered dose inhaler having a body with a nozzle block disposed therein, and an aerosol canister disposed in the body and movable relative to the nozzle block to dispense medicament from the metered dose inhaler, said device comprising:

a housing having a space therein configured for insertion, holding and removal of the metered dose inhaler from the space, said space communicating with an opening for dispensing of medicament from the metered dose inhaler therethrough;

means for automatically activating the metered dose inhaler by moving the canister relative to the body in response to inhalation of a user through said opening to vent the metered dose inhaler wherein a dose of medicament is dispensed therefrom; and

return means for automatically deactivating the vented metered dose inhaler to an unvented position where medicament is no longer dispensed therefrom wherein said return means acts in response to said means for automatically activating the metered dose inhaler.

5,826,572

Patent Not Issued For This Number

5,826,573

GAS FLOW CONTROL ELEMENT

Holger Stegmann, Lübeck, and Eckhard Riggert, Ratekau, both of Germany, assignors to Drägerwerk AG, Lübeck, Germany

Filed May 14, 1997, Ser. No. 856,130

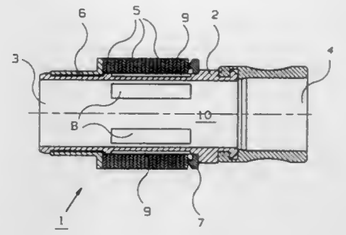
Claims priority, application Germany, Nov. 7, 1996, 196 45 941.9

Int. Cl.[6] A61M *16/00*; A62B *7/00*; B01D *19/00*; F01M *7/08*

U.S. Cl. 128—200.24 **19 Claims**

1. A gas flow control element, comprising:

a gas-permeable section through which excess gas flows to an outside of said gas-permeable section from an interior space of the gas flow control element, said gas-permeable section including individual disks lying one adjacent to another, said individual disks having flow channels, wherein said flow channels are radially extending, groove-like depressions in a surface of said individual disks.



5,826,574

Patent Not Issued For This Number

5,826,575

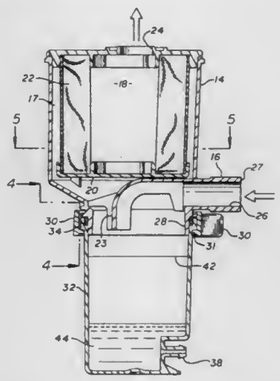
EXHALATION CONDENSATE COLLECTION SYSTEM FOR A PATIENT VENTILATOR

Suresh Lall, Escondido, Calif., assignor to Nellcor Puritan Bennett, Incorporated, Pleasanton, Calif.

Filed Mar. 13, 1997, Ser. No. 816,719

Int. Cl.[6] A61M *16/00*

U.S. Cl. 128—205.12 **22 Claims**



1. An exhalation condensate collection system for a patient ventilator having a ventilator airway for supplying breathing gas to a patient, comprising:

a collector vial adapted to be removably attached to the ventilator airway for receiving fluid condensate from breathing gas, said collector vial having a drain port for removal of fluid condensate from said collector vial; and

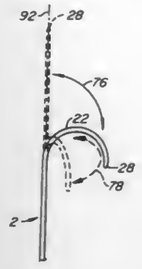
an exhalation filter an inlet adapted to be connected to the ventilator airway for receiving breathing gas from the ventilator airway and in fluid communication with the collector vial, said exhalation filter including a filter housing, and a rotatable locking ring mounted to said filter housing for securing said fluid collector vial to the filter housing, said filter housing including a baffle in the inlet side of said filter housing to deflect the flow of exhaled gas away from said filter and into said collector vial.

5,826,576

ELECTROPHYSIOLOGY CATHETER WITH MULTIFUNCTION WIRE AND METHOD FOR MAKING

Scott H. West, Tracy, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Aug. 8, 1996, Ser. No. 694,363
Int. Cl.[6] A61N 1/05
U.S. Cl. 128—642 23 Claims



1. An electrophysiology catheter comprising:
a handle comprising first, second and third manipulators;
a hollow, flexible catheter shaft extending from the handle;
the catheter shaft comprising a main portion having a distal end and a tip portion, the tip portion comprising a proximal end adjacent the main portion distal end and a distal end;
an electrode carried by the tip portion;
an electrical conductor extending through the catheter shaft from the electrode to the handle;
a multifunction element extending along the catheter shaft, said multifunction element having a proximal end and a distal end, wherein the multifunction element proximal end is operably coupled to the second and third manipulators;
said second manipulator constructed to selectively slide said multifunction element longitudinally, so to position said multifunction element distal end at a chosen location;
said third manipulator constructed to selectively torque the multifunction element proximal end;
a radial deflection element having a proximal end, terminating at the handle and operably coupled to the first manipulator, and a distal end, connected to a position along the tip portion, so that actuation of the first manipulator causing longitudinal movement of the radial deflection element causes radial deflection of the tip portion distal end;
said multifunction element having a stiffness which changes the radial bending curvature of the catheter depending on the chosen location of the multifunction element, so that the shape of said radial deflection is affected by said chosen location of said multifunction element distal end;
said tip portion comprising a lateral deflection lumen housing said multifunction element distal end for longitudinal sliding movement therein;
said lateral deflection lumen and said multifunction element distal end comprising interfering torquing surfaces so that torquing said multifunction element by said third manipulator causes said interfering torquing surfaces to engage and causes lateral deflection of said tip portion distal end.

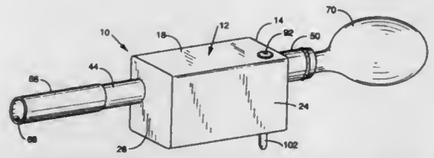
5,826,577

BREATH GAS ANALYSIS MODULE

William J. Perroz, Jr., Parks Township, and William P. Spohn, Gibsonia, both of Pa., assignors to Bacharach, Inc., Pittsburgh, Pa.

Filed Jan. 30, 1996, Ser. No. 593,564
Int. Cl.[6] A61B 5/08
U.S. Cl. 128—719 23 Claims

1. A breath gas analysis module for supplying a sample gas to a gas detector, said module comprising:



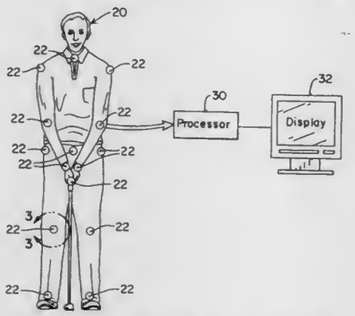
a) a manifold having a body defining a chamber therein, the chamber including a main passage extending through the manifold body, an outlet passage extending into the manifold body from an outlet end at a base of the manifold body and toward said main passage, and a metering orifice extending between and in fluid communication with the main passage and an interior end of the outlet passage;
b) an inlet tube attached to the manifold body at one end of the main passage and defining an internal passage in fluid communication with the main passage;
c) a collection tube attached to the manifold body at another end of the main passage and defining an internal passage in fluid communication with the main passage; tube internal passage and oriented to permit fluid flow into, but
d) a resilient gas reservoir attached to a free end of the collection tube opposite an end thereof attached to the manifold body, the resilient gas reservoir defining a storage chamber therein which is in fluid communication with the collection tube internal passage; and
e) a check valve in said module between the metering orifice and a free end of the inlet tube opposite the main passage body and oriented to permit fluid flow into, but no back flow from, the main passage and the resilient gas reservoir when the outlet end of the outlet passage is closed.

5,826,578

MOTION MEASUREMENT APPARATUS

Donald B. Curchod, 1023 Los Trancos, Portola Valley, Calif. 94028

Filed May 26, 1994, Ser. No. 250,152
Int. Cl.[6] A61B 5/103
U.S. Cl. 128—782 51 Claims



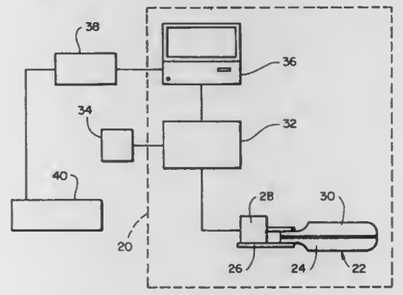
1. An apparatus for measuring and visually displaying a golfer's body movement while performing a golf swing comprising:
sensing means coupled to a golfer for quantitatively detecting movement of said golfer's body and a golf club while performing a golf swing, and for generating signals indicative of said movement of said golfer's body and said golf club while performing said golf swing, said sensing means further comprising;
sensors coupled to said golfer's body at joints of said golfer's body which are moved while said golfer performs said golf swing, said sensors coupled to said joints of said golfer's body such that said sensors quantitatively measure the movement of said joints while said golfer performs said golf swing, said sensors coupled to said golfer's joints such that said sensors do not interfere with said movement of said golfer's joints while said golfer performs said golf swing,
processing means for receiving and processing said signals generated by said sensing means, said processing means further including;
memory means for receiving and storing sample signals corresponding to sample movement of a sample golfer's body when said sample golfer performs said golf swing, and
display means coupled to said processing means for receiving said processed signals and said sample signals from said processing means and graphically displaying at least one image representing said movement of said golfer's body and said golf club which occurred while said golfer performed said golf swing.

5,826,579

REMOTE-CONTROLLED MANDIBULAR POSITIONING DEVICE AND METHOD OF USING THE DEVICE

John E. Remmers; Eric A. Hajduk; Ronald S. Platt, all of Calgary, and Alan A. Lowe, Vancouver, all of Canada, assignors to University Technologies International, Inc., Calgary, Canada

Filed Oct. 25, 1996, Ser. No. 736,900
Int. Cl.[6] A61F 5/56
U.S. Cl. 128—848 31 Claims



1. A method for determining mandibular displacement effective in treating obstructive sleep apnea in a sleeping patient, comprising:
providing the patient with a remotely-controlled adjustable mandibular displacement device;
detecting evidence of obstruction of the sleeping patient's airway; and
displacing the sleeping patient's mandible while the patient is asleep with a remote unit which sends a signal to a first unit which relays a signal to the remotely-controlled adjustable mandibular displacement device until the evidence of obstruction of the sleeping patient's airway is reduced below a predetermined value or eliminated.

5,826,580

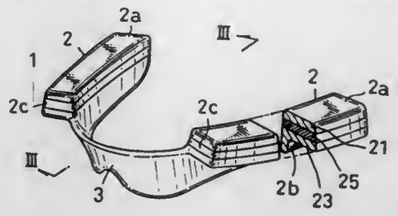
Patent Not Issued For This Number

5,826,581

ATHLETE'S MOLAR PROTECTOR

Nobutaka Yoshida, 2-9-18, Nihonbashi, Chuoku, Osaka, Japan

Filed May 1, 1997, Ser. No. 848,884
Claims priority, application Japan, Aug. 8, 1996, 8-227832
Int. Cl.[6] A61C 5/12
U.S. Cl. 128—859 6 Claims



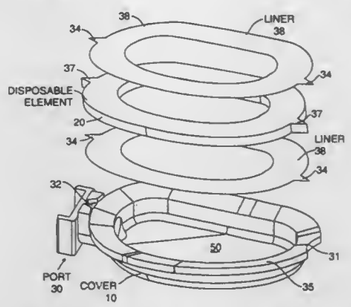
1. A molar protector comprising a pair of right and left molar protecting portions each having top and bottom faces complementary to the occlusal faces of the corresponding superior and inferior maxillary molars and a connecting portion bridging said molar protecting portions,
said connecting portion being configured to be a thin-walled arcuate portion fitting to the posterior surface of the anterior teeth of the lower jaw,
said top and bottom faces being respectively formed as planes having somewhat larger contours than those of said occlusal faces,
each of said molar protecting portions comprising a top layer, a bottom layer, and an intermediate layer interposed between said top and bottom layers,
said top layer and bottom layer being respectively made of an easily softenable material, the softening point of which is higher than human body temperature and lower than the boiling point of water, such as a thermoplastic resin, and
said intermediate layer being made of an elastic, hardly softenable material which does not soften at temperatures below the boiling point of water, such as elastomer, silicone rubber, synthetic rubber, silicone resin, or high-temperature thermoplastic resin.

5,826,582

EAR PHONE ASSEMBLY FOR USE WITH A HEARING SCREENER

Neil J. Sheehan, Palo Alto, and Robert T. Stone, Sunnyvale, both of Calif., assignors to Natus Medical Inc., San Carlos, Calif.

Filed May 22, 1997, Ser. No. 861,724
Int. Cl.[6] A61F 11/00
U.S. Cl. 128—864 36 Claims

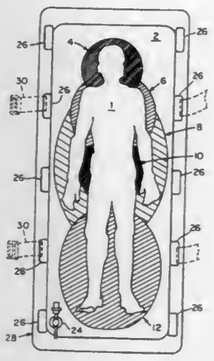


1. An ear phone assembly for use with a transducer for hearing screening comprising:

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a reusable cover having a first end, a second end and a cavity;
a disposable element having a first side and a first adhesive on the first side to secure releasably the disposable element first side to the reusable cover; and
a port adapted to receive a transducer in communication with the cavity.

5,826,583
EMERGENCY SPINAL IMMOBILIZATION AND EXTRICATION DEVICE
Stephen P. Wood, 29 Normandy Rd., Lexington, Mass. 02173
Filed Oct. 11, 1996, Ser. No. 728,775
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—869 **1 Claim**



1. An emergency spinal immobilization and extrication device comprising:
a gasproof flexible container, further comprising a plurality of flexible sub-containers in the shape of a human body, each sub-container filled with a plurality of deformable and resilient particles each sub-container containing perforations sufficiently small that the gas but not the particles, may travel freely from any sub-container to another, wherein the densities of particles in the sub-containers are approximately proportional to the weight of that portion of the human body resting upon the sub-container;
means attached to the container, for inflating and deflating the container with a gas;
a rigid baseplate beneath the container supporting the container, said baseplate containing hand-holes for lifting the device,
side pieces attached to the base plate, and
a top cover slideably mounted to the side pieces, enclosing the container therein, so that a trauma victim may be first placed on the inflated container by rescuers, and then the container deflated, thereby causing the victim to be securely supported by the particles as they cling together in the absence of the gas, and allowing the victim to be lifted and transported by the rescuers without causing additional trauma.

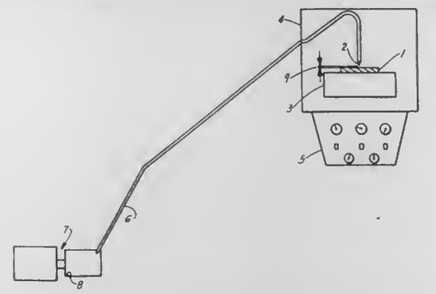
5,826,584
DEVICES FOR OCCLUDING CHANNELS IN LIVING MAMMALS
Edward E. Schmitt, 2344 Columbia St., Palo Alto, Calif. 94306
Division of Ser. No. 939,110, Sep. 2, 1992, Pat. No. 5,469,867. This application Oct. 4, 1995, Ser. No. 539,168
Int. Cl.[6] A64B *19/00*
U.S. Cl. 128—898 **19 Claims**

1. A channel occluding unit for occluding a channel having a maximum temperature T_L in a living mammal, the unit comprising an injecting device; and
a thermoplastic, biocompatible, non-immunogenic occluding composition in the injecting device, the composition,
(a) having a melting point which is
(i) below 50° C. and
(ii) such that the composition is flowable at a temperature which does not damage the channel,
(b) having a freezing point which is
(i) above 30° C. and
(ii) such that the composition is non flowable at T_L,
(c) comprising a thermoplastic polymer, and
(d) being injectable, while it is flowable, from the device into the channel, to form a plug which occludes the channel and which can be removed from the channel by heating to a temperature at which the composition is flowable.

5,826,585
METHOD FOR DIAGNOSIS OF INCONTINENCE OF CORTICOCEREBRAL ORIGIN BY NEUROLOGIC EXAMINATION
Emil H. Franssen, 595 Main St., #1102, New York, N.Y. 10044, and Barry Reisberg, 20 Waterside Plz., #7K, New York, N.Y. 10010
Filed May 24, 1996, Ser. No. 653,130
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 **2 Claims**

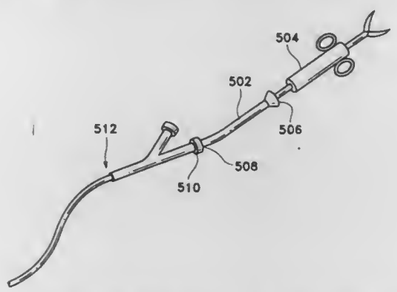
1. The method for diagnosing incontinence resulting from failure of cortical regulating mechanisms for voluntary control of discharge of urinary bladder and anorectum, and for distinguishing incontinence resulting from failure of cortical regulatory control mechanisms from incontinence caused by mechanisms other than failure of regulatory cortical mechanisms comprising:
(a) selecting from a system for diagnosis and staging of dementia by neurologic examination 14 individual reflexes which are the 4 deep tendon reflexes, the plantar response, the muscle tone, the tactile sucking reflex, the visual sucking reflex, the hand grasp, the foot grasp, the rooting reflex, the snout reflex, the glabella blink reflex, and the palmomental reflex, the magnitude of which is gauged on a 7-point rating scale for neurologic examination, a group of 4 neurologic reflex measures, which are the tactile sucking reflex, the hand grasp reflex, also called the palmar grasp, the foot grasp reflex, also called the plantar grasp, and the plantar response for the purpose of diagnosing incontinence directly caused by failing regulatory cortical control mechanisms for the urinary bladder and anorectum resulting from neurodegenerative process;
(b) determining the presence of said 4 reflexes which are the tactile sucking reflex, the hand grasp reflex, also called the palmar grasp, the foot grasp reflex, also called the plantar grasp, and the plantar response as a defined magnitude of activity as measured on said 7-point rating scale for neurologic examination that is a score of equal to or greater than 5;
(c) developing a new neurologic measurement from a specific combination of individual quantified reflex measurements comprising a combination of said 4 neurologic reflex measures; and,
(d) using said quantified individual neurologic reflex measurements and said combination of neurologic quantified measurement of a defined magnitude of activity as measured on said rating scale for neurologic examination to determine presence of incontinence directly caused by failure of regulating cortical mechanisms for the urinary bladder and anorectum resulting from the neurodegenerative process.

5,826,586
METHODS FOR PRODUCING MEDICAL IMPLANTS WITH ROUGHENED, PARTICULATE-FREE SURFACES
Ajit K. Mishra, Memphis; James A. Davidson, Germantown, and Mark A. Hamby, Bartlett, all of Tenn., assignors to Smith & Nephew, Inc., Memphis, Tenn.
Continuation of Ser. No. 475,893, Jun. 7, 1995, abandoned, which is a division of Ser. No. 405,898, Mar. 17, 1995, abandoned. This application Jan. 21, 1997, Ser. No. 787,656
Int. Cl.[6] A61B *19/00;* **A61F** *2/02*
U.S. Cl. 128—898 **7 Claims**



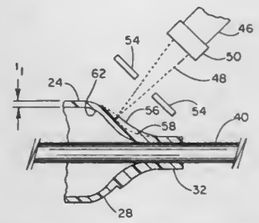
1. A method of producing a medical implant having a roughened outer surface suitable for the attachment of tissue, bone, cells or bone cement, the method comprising the step of:
(a) blasting at least a portion of an outer surface of an implant with a biocompatible liquid free of particulate matter, at a pressure sufficient to produce a roughened outer surface having a roughness profile and a sufficient average surface roughness capable of facilitating the attachment of tissue, bone, cells or bone cement to outer surface of said implant;
(b) said roughness profile including peaks and valleys about a mean line on the outer surface of said implant, the outer surface of said implant having an average surface roughness of from about 150 micro-inches to about 300 micro-inches wherein said roughened outer surface promotes adhesion of said tissue, bone, cells, or bone cement, introduces residual compression stresses and improves fatigue strength of said medical implant.

5,826,587
ULTRASOFT EMBOLISM COILS AND PROCESS FOR USING THEM
Alejandro Berenstein, New York, N.Y., and Ivan Sepetka, Red City, Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.
Division of Ser. No. 978,320, Nov. 18, 1992, Pat. No. 5,690,666. This application May 28, 1997, Ser. No. 864,317
Int. Cl.[6] A61B *19/00*
U.S. Cl. 128—898 **18 Claims**



1. A process for the introduction of a flexible, vaso-occlusive device comprising a radiopaque coil or braid having an outside diameter less than about 0.010 inches into a human body comprising the steps of advancing a catheter having a lumen and a distal end into the human vasculature until it reaches a selected site within that vasculature, introducing the flexible, vaso-occlusive device into the catheter lumen, and hydraulically impelling the device though the lumen and out the distal end.

5,826,588
LASER ABLATION OF ANGIOPLASTY CATHETERS AND BALLOONS
Michael R. Forman, St. Paul, Minn., assignor to Schneider (USA) Inc., Minneapolis, Minn.
Division of Ser. No. 582,371, Jan. 11, 1996, Pat. No. 5,733,301. This application Oct. 23, 1997, Ser. No. 956,963
Int. Cl.[6] A61B *19/00;* **A61M** *29/00*
U.S. Cl. 128—898 **23 Claims**



14. A process for selectively shaping a body insertable device including a polymeric balloon dilatation catheter (**18**,**100**,**106**) and a dilatation balloon (**20**,**98**) bonded in fluid tight fashion to a distal end region of the catheter, the dilatation balloon having a medial section (**24**) with a nominal wall thickness and a nominal diameter when the balloon is expanded, proximal and distal end mounting sections (**30**,**32**) bonded to the catheter, and proximal and distal tapered sections (**26**,**28**) between the medial section and the proximal and distal end mounting sections, respectively, each of the tapered sections having a gradient of increasing wall thickness in the direction from the medial section toward the associated end mounting section: said process for selectively shaping the device including:
directing an excimer laser beam (**48**,**68**,**88**) onto the device to irradiate an exterior surface of the device at a fluence within the range of about 100–800 mJ/cm^2, to ablatively remove polymeric material from the device at selected locations including the tapered sections at least proximate the end mounting sections.

5,826,589
ASH RECEPTACLE FOR A GOLF CART
Varoujan Obanian, 15110 Philip Lee Rd., Chantilly, Va. 20151
Filed May 5, 1997, Ser. No. 851,096
Int. Cl.[6] A24F *19/02*
U.S. Cl. 131—242 **14 Claims**



1. An ash receptacle for attachment to a golf cart, comprising;

a hollow, outer body member having a generally flat rear surface and a curved front surface, said hollow outer body member being adapted for attachment to a golf cart, said outer body member also having a pair of vertical peripheral side walls extending between said generally flat rear surface and said curved front surface;

a removable insert fitting inside said hollow outer body member, said insert having a lip sitting on top of said outer body member, said insert having a top surface for receiving ashes and a pair of insert vertical peripheral side walls dimensioned and configured to cooperate in close fit with both said outer body member vertical peripheral side walls;

a cover rotably mounted to said outer body member at pivot points, said pivot points being located on said outer body member vertical peripheral side walls between said curved front surface and said generally flat rear surface, said cover being rotable between a first, closed position overlying said insert and a second position, whereby when said cover is in said first, closed position said cover covers said top surface of said removable insert and when said cover is in said second, open position, said cover is disposed entirely below said top surface of said removable insert and said top surface of said removable insert is accessible and entirely exposed from above for removal of said insert.

5,826,590

METHOD AND PLANT FOR TREATING TOBACCO STEMS FOR THE PRODUCTION OF CUT TOBACCO

Wolfgang Metzner, Hamburg; Bernd Spallek, Syke, and Arno Weiss, Norderstedt, all of Germany, assignors to Brown & Williamson Tobacco Corp., Louisville, Ky.

Filed Sep. 24, 1997, Ser. No. 937,112

Claims priority, application European Pat. Off., Sep. 26, 1996, 96 115 458.0; Nov. 14, 1996, 196 47 147.8

Int. Cl.[6] A24B *5/00*

U.S. Cl. 131—290 **17 Claims**



1. A method of treating tobacco stems for the production of cut tobacco for smokable articles, comprising:

a) saucing uncut stems to a moisture content of approximately 45% at the maximum,

b) overdrying the sauced stems to a moisture content of less than approximately 12%, and

c) remoistening the overdried stems for a subsequent stem process.

5,826,591

Patent Not Issued For This Number

5,826,592

CONTROL OF CIGARETTE SMOKE CHEMISTRY

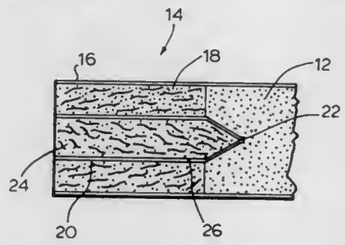
Warren A. Brackmann, Collins, Mo., assignor to Rothmans, Benson & Hedges Inc. et al., North York, Canada

Division of Ser. No. 185,860, Jul. 7, 1994, abandoned. This application Jun. 1, 1995, Ser. No. 457,320

Claims priority, application United Kingdom, Aug. 8, 1991, 9117118

Int. Cl.[6] A24B *3/00*

U.S. Cl. 131—339 **9 Claims**



1. A cigarette smoke filter element, which comprises:

an outer elongate cylinder of tobacco smoke filter material,

an inner elongate cylinder of microfine fibres, said inner elongate cylinder having at least one opening therethrough immediately adjacent only the upstream end of the filter element to permit preferential passage of cigarette smoke from the outer cylinder through said at least one opening to said axial flow path during initial smoking of a cigarette to which the filter element is attached,

an axial cigarette smoke path located radially inwardly of said cylinder of microfine fibers,

said outer elongate cylinder of smoke filter material having a greater resistance to the flow of cigarette smoke therethrough than said axial flow path, and

tobacco smoke flow path directing means located at the upstream end of said filter element in the intended direction of flow of cigarette smoke thereto for directing cigarette smoke from a cigarette to which the filter element is attached, only into said outer cylinder of tobacco smoke filter material.

5,826,593

HAIR RETAINER

Joan M. Haubrich, 2165 Hillcrest Dr., Duluth, Minn. 55811

Filed May 15, 1997, Ser. No. 857,094

Int. Cl.[6] A45D *24/04*

U.S. Cl. 132—128 **6 Claims**



1. A decorative hair retainer comprising:

(a) an endless cloth tube having an outer peripheral surface and an inner closed passageway;

(b) an endless elastic band located within said inner closed passageway of said endless cloth tube;

(c) a first comb positioned on said outer peripheral surface of said endless cloth tube; and

(d) a second comb positioned approximately 180° from said first comb on said outer peripheral surface of said endless cloth tube.

5,826,594

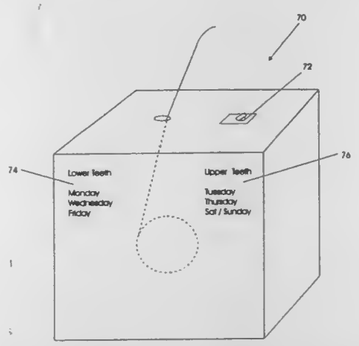
FLOSS DISPENSER WITH MEMORY AID FOR FLOSSING UPPER AND LOWER TEETH IN SEPARATE SESSIONS AND METHOD

David C. Sokal, 209 E. Jackson St., Mebane, N.C. 27302

Filed Jan. 15, 1997, Ser. No. 783,765

Int. Cl.[6] A61C *15/00*

U.S. Cl. 132—200 **22 Claims**



21. A method for flossing a person's teeth in an ongoing program of oral hygiene suitable for the general population comprising alternating the flossing of a first half of the teeth with the other half of the teeth in separate flossing sessions.

5,826,595

METHOD OF DRYING ONE'S HAIR

Teri J. Ramm, and Robert P. Ramm, both of 12700 Eaton Cir., Leawood, Kans. 66209

Filed Jan. 5, 1998, Ser. No. 2,601

Int. Cl.[6] A45D *24/00*

U.S. Cl. 132—200 **7 Claims**



1. A method of drying a person's hair comprising the steps of:

(a) donning a form-fitting hand covering on at least one hand of a person, said covering being moisture absorbent;

(b) repeatedly running said covering through a person's hair in order to absorb moisture therefrom and dry the hair; and

(c) during step (b) directing hot air from a hair dryer onto both the wet hair in the vicinity of said covering and onto said covering in order for the hot air to dry the hair and in order to dry said covering for maintaining the moisture absorbency thereof so that the hot air and covering cooperate to speed the drying of the person's hair.

5,826,596

AERATED FABRIC TAPE FOR THE PRODUCTION OF SELF-ADHERING HAIR-CURLERS AND HAIR-CURLERS PRODUCED FROM SUCH TAPE

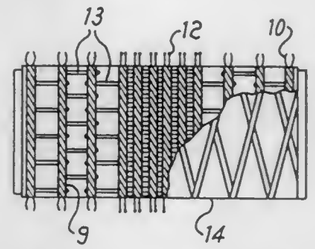
Gemma Brenn-Albertoni, Via C. Ghiringhelli 55, Bellinzona, CH-6500, Switzerland

Filed Jan. 10, 1997, Ser. No. 781,208

Claims priority, application Switzerland, Jan. 13, 1996, 00101/96

Int. Cl.[6] A45D *2/14*

U.S. Cl. 132—262 **19 Claims**



14. A self-adhering flexible hair-curler, comprising:

a tubular support to which is affixed a portion of an aerated fabric tape wherein the tape comprises primary and secondary groups of warp threads (**9** and **11**) carrying filament-like elements (**10**, **12**, **15**, **17**, **18**, **19**) to hold and set the hair, and weft threads (**8**) connecting the groups of warp threads, wherein each group of primary warp threads (**9**) are seperated from the next group of warp threads (**9**, **11**) by a distance of from 2 to 10 mm;

wherein the weft threads (**8**) extending between the primary groups of warp threads (**9**) and the adjacent secondary groups of warp threads (**11**) are connected for mutual movement toward or away from the primary (**9**) and secondary groups (**11**) of warp threads when the tape is subjected to transverse flexing.

5,826,597

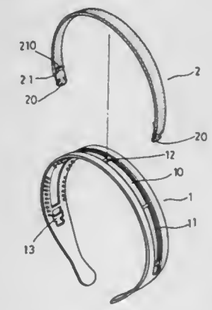
HAIR BAND MADE WITH TWO DIFFERENTLY COLORED PIECES

Chi-Hsiung Chou, P.O. Box 90, Tainan City, Taiwan

Filed Sep. 10, 1997, Ser. No. 926,688

Int. Cl.[6] A45D *8/14*

U.S. Cl. 132—273 **2 Claims**



1. A hair band made of two differently colored pieces comprising:

a body having a center lengthwise long hole extending substantially therein and said center lengthwise long hole having two ends, a lengthwise grooved edge formed in two lengthwise sides of said center lengthwise long hole, a plurality of

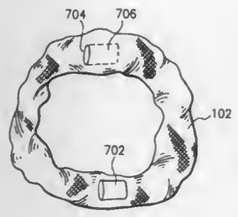
bridges formed between said two lengthwise grooved edges said bridges being equidistantly spaced apart from one another such that each end of said center lengthwise long hole has a bridge, spaced from, and adjacent thereto, and an engaging recess formed in an inner surface near each of the two ends of the center lengthwise hole; and

a decorative strip fitting in said center lengthwise long hole of said body and engaging said two lengthwise grooved edges and lying on said bridges of said body, said decorative strip having two opposite ends each engaging a respective one of said two engaging recesses of said body and a stop ridge on an inside of each of said ends; each stop ridge engaging a side of the bridge adjacent to the respective end of said center lengthwise long hole.

5,826,598
SCENTED HAIR ACCESSORY

Katharine E. Meeban, 18 Obtuse Rd., Newtown, Conn. 06470

Continuation of Ser. No. 529,659, Sep. 18, 1995, abandoned.
This application Jul. 15, 1997, Ser. No. 892,850
Int. Cl.[6] A45D *8/12*
U.S. Cl. 132—275 **15 Claims**



1. A scented hair accessory device comprising:

a substantially tubular housing having a first and a second terminal end joined together to define an inner circumferential area, the entire length of the tubular housing consisting essentially of a substantially uniform cross-sectional diameter, the tubular housing being substantially flexible and resiliently expandable about the inner circumferential area; and

scenting material located within the tubular housing, the scenting material having a scent emanating therefrom, wherein at least a portion of the tubular housing is porous, thereby allowing the scent emanating from the scenting material to escape therefrom.

5,826,599
DENTAL FINGER TOOTHBRUSH

Bill R. Adams, P.O. Box 601, 30B-3C, Pendleton, Ind. 46064

Filed Apr. 3, 1997, Ser. No. 831,888
Int. Cl.[6] A45D *44/18*
U.S. Cl. 132—308 **20 Claims**

1. A dental finger toothbrush comprising:

a substantially tubular finger device having an opened end to receive a finger and an opposed closed end whereby said finger device can be mounted onto the finger by a placement of the finger through said opened end;



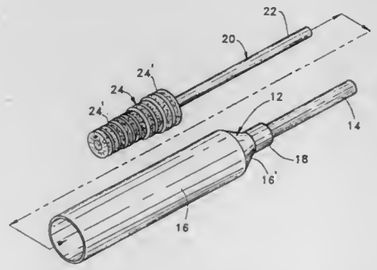
a cleaning head; and

an inside platform coupled to said cleaning head with a portion of said finger device disposed between said coupling.

5,826,600
DISPOSABLE DRY-HANDLE MASCARA APPLICATOR ASSEMBLY

John P. Rowe, Antioch, and Darrell W. Van Dyke, Libertyville, both of Ill., assignors to National Healthcare Products, Ltd., Antioch, Ill.

Filed Sep. 29, 1997, Ser. No. 904,803
Int. Cl.[6] A45D *40/24*
U.S. Cl. 132—317 **16 Claims**



1. In an applicator assembly comprising an outer casing having a first casing-section and a second casing-section, and a frangible section interconnecting said first and second casing-sections at which said first and second casing-sections may be broken away from each other, and applicator means contained in said casing, said applicator means comprising an applicator end-portion for applying a substance, and a handle portion extending from said applicator end-portion, the improvement comprising:

said applicator end-portion comprising mascara-applicator means for applying mascara to eyelashes;

said second casing-section comprising a reduced inner-diameter section spaced from said frangible section interconnecting said first and second casing-sections the inner diameter of said reduced inner-diameter section being less than the outer diameter of said mascara-applicator means, whereby, after said first and second casing sections have been broken apart at said frangible section. said applicator end-portion may be pulled through said reduced inner-diameter section of said second casing section for wiping off excess mascara therefrom.

5,826,601
TREATING LIQUID REPLACING METHOD, SUBSTRATE TREATING METHOD AND SUBSTRATE TREATING APPARATUS

Yusuke Muraoka, Shiga, and Tutomu Takeuchi, Kyoto, both of Japan, assignors to Dainippon Screen Mfg., Co., Kyoto, Japan

Filed Mar. 26, 1996, Ser. No. 622,117
Claims priority, application Japan, Mar. 30, 1995, 7-100126
Int. Cl.[6] C03C *23/00;* **B08B** *5/00;3/00;9/20*
U.S. Cl. 134—2 **12 Claims**

1. A substrate treating apparatus having a treating bath for treating a substrate, said apparatus comprising:

upper treating liquid supply means for supplying a treating liquid to an upper position of said treating bath;

upper treating liquid discharge means for discharging a treating liquid from said upper position of said treating bath;

lower treating liquid supply means for supplying a treating liquid to a lower position of said treating bath;

lower treating liquid discharge means for discharging a treating liquid from said lower position of said treating bath; and

treating liquid replacing means for discharging a first treating liquid in said treating bath from said lower position of said treating bath by said lower treating liquid discharge means while supplying a second treating liquid to said upper position of said treating bath by said upper treating liquid supply means, said first treating liquid being discharged and said second treating liquid being supplied by maintaining a balance between a quantity of said first treating liquid discharged and a quantity of said second treating liquid supplied, thereby replacing said first treating liquid with said second treating liquid.

5,826,602
PROCESS AND APPARATUS FOR FLUSHING CARBON DEPOSITS AND CONTAMINANTS FROM THE FUEL AND AIR INTAKE SYSTEMS OF AN INTERNAL COMBUSTION ENGINE

We-Yu Chen, 3708 Avalon Blvd., Los Angeles, Calif. 90011

Filed Apr. 30, 1996, Ser. No. 643,122
Int. Cl.[6] B08B *7/00;3/00;* **F23J** *1/00;* **F02B** *77/00*
U.S. Cl. 134—20 **9 Claims**

1. A method for removing carbon deposits from an internal combustion engine having a fuel supply system for supplying fuel from a fuel source and an air intake system, the method comprising the steps of:

introducing a mixture of fuel and a first cleaning agent through said fuel supply system while the engine operates;

simultaneously introducing a second cleaning agent into said air intake system;

discontinuing the introduction of said first and second cleaning agents; and

operating the engine at one or more speeds to flush out carbon deposits.

5,826,603
BLIND WASHING DEVICE

Robert J. Mellein, 410 Churcb Rd., #58, Ojai, Calif. 93023

Filed Aug. 29, 1996, Ser. No. 704,139
Int. Cl.[6] B08B *3/04;9/00*
U.S. Cl. 134—85 **6 Claims**

1. An improved blind washing device comprising:

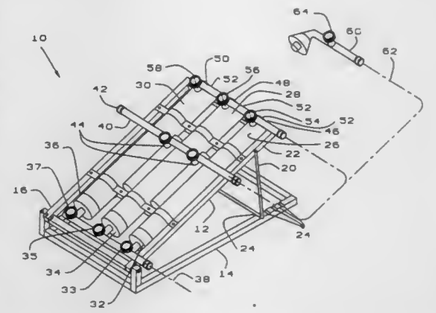
a frame,

a plurality of open-ended tubes secured to and supported by said frame,

closure means for selectably closing said tubes,

means for elevating one end of said tubes,

a first hose connected to and in fluid communication with each of said plurality of open-ended tubes for selectably delivering fluid into said tubes, and



an outlet drain and filter means connected to each of said tubes to drain fluid from said tubes.

5,826,604
STANDING UMBRELLA

Hans-Jorg Hartmann, Dachsweg 1, D-85598 Baldbam, Germany

Filed Oct. 18, 1996, Ser. No. 733,755
Claims priority, application Germany, Feb. 8, 1996, 196 04 599.1
Int. Cl.[6] A45B *25/02*
U.S. Cl. 135—27 **17 Claims**



1. A standing umbrella comprising

(a) an upright pole having an upper end and a lower end that may be anchored to a support,

(b) a top extending in a horizontal plane and affixed to the upper end of the upright pole,

(c) a slide member displaceable mounted on the upright pole,

(d) at least four tensioning struts having free outer ends and inner ends linked to the slide member at respective pivots,

(e) a flexible cover affixed to the tensioning struts,

(f) flexible carrier elements associated with the tensioning struts and extending between contact points at the top and the tensioning struts,

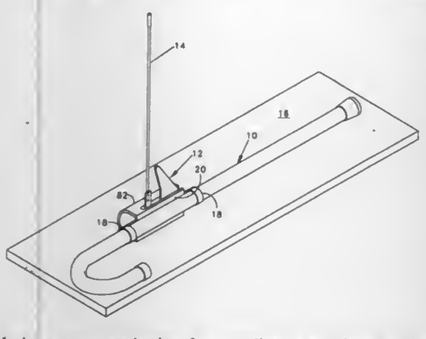
(1) displacement of the slide member towards the lower end of the upright pole moving the tensioning struts into positions in which they almost extend perpendicularly to the upright pole, diametrically opposite ones of the tensioning struts enclosing an angle of less than 180°, whereby the umbrella is opened, and displacement of the slide member towards the upper end of the upright pole causing the umbrella to be closed,

(2) the contact points of the flexible carrier elements at the top having a maximum distance from the pivots of the associated tensioning struts in a horizontal direction whereby the force required for the displacement is reduced, and

(3) diametrically opposite ones of the flexible carrier elements being connected to form a unit extending over the top and being held and guided by the top, and

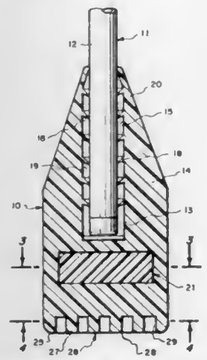
(g) a flexible member extending between the tensioning struts and affixed thereto for limiting the opening movement of the tensioning struts.

5,826,605
IMPACT RESPONSIVE EXTENDIBLE ARM PICK-UP FOR WALKING CANE OR THE LIKE
William W. Hilton, 6717 NW. 58 Ct., Tamarac, Fla. 33321
Filed Mar. 26, 1997, Ser. No. 824,499
Int. Cl.[6] A45B *3/00*
U.S. Cl. 135—66 27 Claims



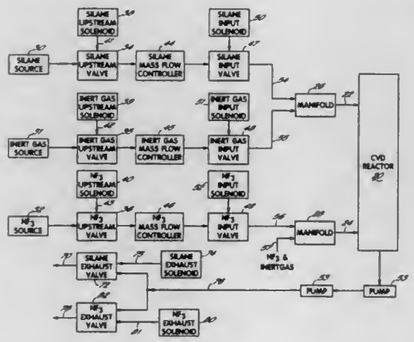
1. An actuator mechanism for extending an arm from an elongated walking appliance responsive to said walking appliance falling to a surface to enable said appliance to be retrieved without requiring bending over by the user comprising:
at least one extendible arm means provided on said actuator mechanism; and
actuating means for extending said at least one extendible arm from said actuator mechanism in a direction upwardly and away from the surface upon which said walking appliance has fallen, said actuating means disposed for extending said extendible arm in response to impact of said actuator mechanism with said surface upon which said actuating mechanism has fallen.

5,826,606
CANE TIP
Ronald K. Davenport, 5511 Verano Pl., Irvine, Calif. 92612
Filed Sep. 29, 1997, Ser. No. 939,318
Int. Cl.[6] A45B *9/04*
U.S. Cl. 135—82 2 Claims



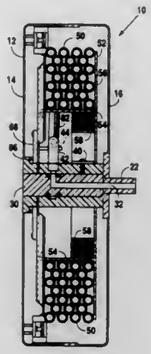
1. A cane tip for installation on the lower end of a cane shaft having a body with a bore for receiving the lower end of said cane tip, said body incorporating a receptacle adjacent the lower extremity thereof, said receptacle having a plurality of radial openings communicating with the exterior of said body; and a shock-absorbing capsule located in said receptacle and having a plurality of radial arcuate segments protruding through said openings.

5,826,607
DUAL EXHAUST CONTROLLER
Paul L. Knutson, and Benjamin Garcia Rodriguez, both of San Antonio, Tex., assignors to Sony Corporation, Park Ridge, N.J., and Sony Electronics Inc., Tokyo, Japan
Filed Nov. 25, 1996, Ser. No. 758,163
Int. Cl.[6] F16K *11/22*
U.S. Cl. 137—1 10 Claims



1. An apparatus for controlling the flow of exhaust gases from a chamber comprising:
a plurality of sources of gases;
a plurality of gas input valves, each of the plurality of gas input valves being connected between one of the plurality of sources of gases and the chamber, and each gas input valve being selectively moved to open and closed positions to initiate and terminate, respectively, a flow of its respective gas to the chamber;
at least one pump having an inlet fluidly connected to the chamber for exhausting the gases from the chamber;
a plurality of gas exhaust valves connected to an outlet of the pump, each gas exhaust valve being selectively moved to open and close positions to initiate and terminate, respectively, a flow of gas from the chamber; and
a controller providing
a first gas supply signal commanding open and close positions of a first gas input valve,
other gas supply signals commanding open and close positions of other gas input valves,
the controller having
a first circuit for opening a first gas exhaust valve and closing other gas exhaust valves in response to the other gas supply signals commanding the other gas input valves to close, and
a second circuit causing the first gas input valve to open in response to the simultaneous occurrences of
the first gas supply signal commanding the first gas input valve to open, and
the open position of the first gas exhaust valve, and
the closed position of the other gas exhaust valves.

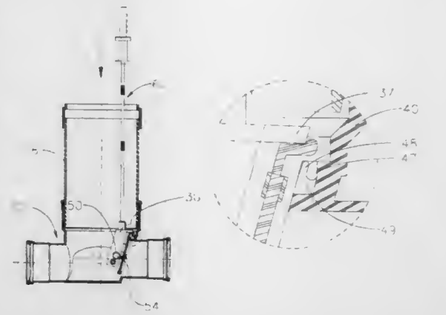
5,826,608
RETRACTABLE TUBING REEL AND METHOD OF USE THEREOF
Elton Joe Pierce, 5526 Yeager Ct., Indianapolis, Ind. 46237
Continuation of Ser. No. 276,207, Jul. 18, 1994, Pat. No. 5,392,808. This application Feb. 21, 1995, Ser. No. 392,556
Int. Cl.[6] B65H *75/34*
U.S. Cl. 137—15 17 Claims



11. A method for replacing fluid flow conduit in a retracting tubing reel used in the delivery of therapeutic gas to a patient, said method comprising the steps of:
providing a retracting tubing reel, wherein said tubing reel comprises:
a housing having at least two casing members that when mated together form an encasement for at least a portion of said retracting tubing reel;
said casing members being releasably couplable to each other so that when each is disengaged from the other an interior of said housing is exposed;
a flexible flow conduit for providing delivery of therapeutic gas therethrough;
said flexible flow conduit being retractable into a coiled orientation within said housing and being releasably couplable to said housing;
retracting said flow conduit into said housing thereby forming a flow conduit coil within said housing;
disengaging said flow conduit from said housing; and
removing said flow conduit coil from said retracting tubing reel while in the coiled orientation.

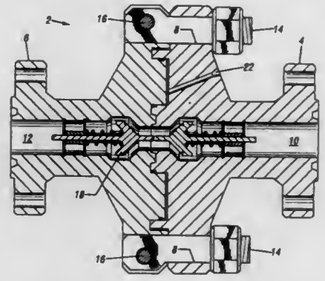
5,826,609
SEWER INSPECTION CHAMBER WITH BACK-FLOW PREVENTION VALVE AND METHOD AND APPARATUS FOR INSTALLING VALVE IN SEWER INSPECTION CHAMBER
Leon B. Watts, Surrey, Canada, assignor to Le-Ron Plastics Inc., Surrey, Canada
Filed Apr. 11, 1997, Ser. No. 843,660
Int. Cl.[6] F16L *55/18*
U.S. Cl. 137—15 5 Claims

1. A method for installing a flap valve valve member in an inspection chamber in a sanitary sewer system, the method comprising the steps of:
(a) providing a valve member comprising a transverse pin, a flap member attached to the pin and a handle member projecting from a central location on the flap member;
(b) attaching the valve member to a holder on an installation tool comprising an elongated shaft, the holder comprising means for holding the handle member and a tab adjacent the pin;
(c) lowering the valve member through an access port on the inspection chamber with the installation tool;
(d) aligning the pin with a clip in the inspection chamber;



(e) hammering the installation tool downwardly to cause the tab to press the pin into engagement in the clip; and
(f) removing the installation tool.

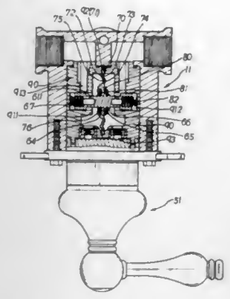
5,826,610
BREAKAWAY COUPLING DEVICE
James Bodhaine, Houston, Tex., assignor to Vita International, Inc., Houston, Tex.
Continuation-in-part of Ser. No. 643,370, May 6, 1996, Pat. No. 5,699,822. This application May 5, 1997, Ser. No. 851,047
Int. Cl.[6] F16L *29/00*
U.S. Cl. 137—68.15 16 Claims



12. A method for separating a coupling device said method comprising:
providing a coupling device having male valve body and a female valve body being complementary to said male valve body, said male and female valve bodies forming a cavity for receiving a check valve, said female valve body further defining a hydraulic port;
providing a check valve;
aligning said male valve body and said female valve body using guide pins that intersect the male valve body and the female valve body;
attaching said male valve body to said female valve body using tie bolts;
positioning shear pins through the tie bolts;
separating said male valve body from said female valve body; and
engaging said check valve so that fluid flow is stopped.

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5,826,611
PRESSURE BALANCER STRUCTURE FOR WATER PASSAGE OF COMBINATION FAUCET
Hsi-Chia Ko, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Taipei, Taiwan
Filed Nov. 20, 1996, Ser. No. 752,520
Int. Cl.[6] G05D *11/16*
U.S. Cl. 137—100 **1 Claim**



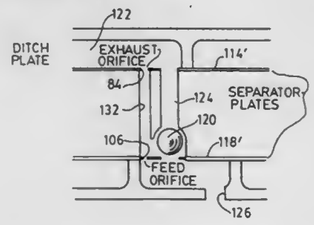
1. A pressure balancer structure for water passage of combination faucet, comprising a faucet body, a balancing rod, a balancing membrane, an auxiliary fitting ring, a C-shaped latch ring, two auxiliary springs, two balancer housings and a controlling knob, the balancing rod including a small diameter section and a hot and a cold water guiding posts respectively disposed at two ends of the small diameter section, a periphery of the balancing membrane being disposed with an engaging flange and the center of the balancing membrane being formed with a through hole, the balancer housing being disposed with chambers on opposite inner sides, the outer periphery of the chamber being formed with an annular groove, the front end face of the balancer housing being disposed with a water outlet communicated with the chamber, said structure being characterized in that:

a stopper disk is disposed at middle section near the hot water guiding post and a higher and a lower flanges are disposed near the cold water guiding post, a stepped socket being disposed at each end of the balancing rod, each end of the small diameter section being disposed with a pressure adjusting orifice communicated with the small step of the stepped socket;

the balancing membrane is made of rubber material and has a waved cross-section, a loop of large adjustment flange being disposed on hot water pressurized face and spaced from inner side of the engaging flange by a certain distance, the back face (cold water pressurized face) of the large adjustment flange being formed with a loop of large adjustment groove correspondingly, the cold water pressurized face of the balancing membrane being disposed with a loop of small adjustment flange which is spaced from the inner side of the large adjustment groove by a certain distance, the back face (hot water pressurized face) of the large adjustment flange being formed with a loop of small adjustment groove correspondingly, the hot water pressurized face of the balancing membrane being disposed with a close loop of flange which is spaced from the inner side of the small adjustment groove by a certain distance to define an inner annular groove; and

a rear edge of interior of the chamber of the balancer housing has a projecting body extending forward to middle section with an arch tail section, the inner side of the arch tail section being disposed with a circular sink, the inner wall of the circular sink being disposed with a transverse water inlet communicated with the water inlet disposed on rear end face of the balancer housing, whereby when assembled, the cold water guiding post of the balancing rod, lower flange and higher flange are sequentially quickly pressed and passed through the central hole of the balancing mambrane by the resilience of the rubber material, the inner annular groove defined by the close flange of the balancing membrane being fitted between the stopper disk and the higher flange of the balancing rod, the auxiliary fitting ring being then fitted around the cold water guiding post and lower flange of the balancing rod and fitted onto the higher flange and attached to the cold water pressurized face of the balancing membrane, the C-shaped latch ring being latched between the higher and lower flanges of the balancing rod so as to restrict the auxiliary fitting ring from detachment, the auxiliary springs being fitted on the large steps of the stepped sockets of the balancing rod and the then balancing rod together with the balancing membrane being positioned between the two balancer housings, whereby the hot water guiding post and cold water guiding post are respectively fitted into the circular sinks of the balancer housings, whereby it is ensured that the balancing rod and the balancing membrane can smoothly perform pressure balancing operation and the balancing membrane can be stably secured on the balancing rod, the balancing membrane being planely concaved toward the hot or cold water pressurized face so that the balancing rod can be concentrically axially accurately displaced.

5,826,612
ORIFICE SCHEDULING BALL CHECK VALVE
Eldon Lamar Goates, Westland, Mich., assignor to Ford Global Technologies, Inc., Dearborn, Mich.
Filed Aug. 31, 1992, Ser. No. 937,265
Int. Cl.[6] F16K *17/18*
U.S. Cl. 137—110 **3 Claims**



1. A device for controlling flow in a circuit supplying fluid to an hydraulically actuated component, comprising:

a source of fluid pressure connected to the component;

accumulator means communicating with the pressure source for storing and discharging fluid;

a first line connecting the pressure source and component to the accumulator, having first and second orifices arranged in series;

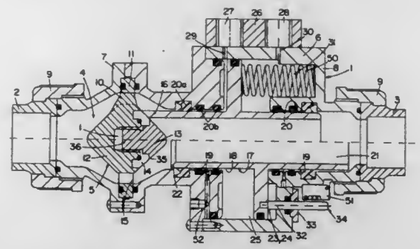
a second line arranged in parallel with the first line between the pressure source and accumulator;

check valve means located in the second line for closing flow in the second line past the check valve means and directing flow to a position in the first line between the first and second orifices.

5,826,613
FLOW CONTROL VALVE
Adelbert Schalk, Wutoschingen-Horheim, Germany, assignor to Georg Fischer Rohrleitungssysteme AG, Switzerland
Continuation of Ser. No. 374,633, Jan. 18, 1995, abandoned. This application Feb. 28, 1997, Ser. No. 807,251
Claims priority, application Switzerland, May 19, 1993, 01 524/93
Int. Cl.[6] F16K *1/12;3/26;37/00*
U.S. Cl. 137—219 **6 Claims**

1. A valve which allows for two-direction flow comprises:

a housing, said housing defining an axial flow channel and a cylinder chamber wherein the cylinder chamber is a lateral extension of the axial flow channel;



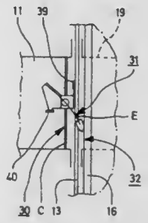
a reciprocal hollow closure member disposed within said axial flow channel, said closure member having piston means mounted thereon and received in said cylinder chamber for reciprocating said closure member;

seal means mounted on said housing defining said axial flow channel on either side of said cylinder chamber for sealingly mounting said closure member in said axial flow channel and at the same time sealing said cylinder chamber from said axial flow channel;

a stationary flow control means having substantially identical opposed flow impact surface configurations which allows for two-directional substantially linear flow within said axial flow channel under substantially similar conditions wherein the flow control means is arranged within the axial flow channel, so as to allow for a substantially constant flow characteristic gradient at all positions of the closure member between 5% and 100% open, said flow control means having a recess for receiving a flow impact means, said flow impact means having (1) a stem portion received within said recess, (2) a conical shaped impact surface of desired configuration to obtain desired flow characteristics and (3) an annular conical packing sealing surface adjacent said impact surface; and

drive means for displacing said piston means and correspondingly said closure member in an axial direction for selectively sealing and unsealing said closure member on said packing sealing surface of said flow control means.

5,826,614
DEVICE FOR AUTOMATIC CLOSING OF CUT-OFF THROTTLE AT HOSE REELS
Hans Thorbjörn Engström, Helsingborg, Sweden, assignor to AB. Ph. Nederman & Co., Helsingborg, Sweden
PCT No. PCT/SE95/00883, § 371 Date Feb. 3, 1997, § 102(e) Date Feb. 3, 1997, PCT Pub. No. WO96/05001, PCT Pub. Date Feb. 22, 1996
PCT Filed Jul. 24, 1995, Ser. No. 776,696
Claims priority, application Sweden, Aug. 11, 1994, 9402681
Int. Cl.[6] B65H *75/34*
U.S. Cl. 137—355.19 **15 Claims**



1. An apparatus for extracting gases comprising:

a hose reel including a rotatable reeling drum;

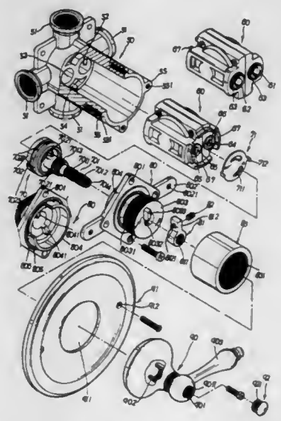
a suction hose which may be wound on and unwound off said rotatable reeling drum;

a cut-off throttle through which gas flows from said suction hose to an extraction system when the cut-off throttle is in an open position and through which the flow of gas from the suction hose to the extraction system is prevented when the throttle is in a closed position;

a pivoting means to pivot said cut off throttle to the open position and the closed position; and

a position changing device mounted to said reeling drum cooperating with said pivoting means to open said cut-off throttle during initial rotation of said reeling drum in a direction of unwinding said suction hose and closing said cut-off throttle within a first revolution of said reeling drum in a direction of winding of said suction hose.

5,826,615
WALL TYPE COMBINATION FAUCET STRUCTURE
Hsi-Chia Ko, Changhua Hsien, Taiwan, assignor to Chung Cheng Faucet Co., Ltd., Taipei, Taiwan
Filed Nov. 20, 1996, Ser. No. 752,523
Int. Cl.[6] F16K *11/085*
U.S. Cl. 137—454.6 **1 Claim**



1. A wall type combination faucet structure comprising a faucet body, a balancer, a controlling valve, a water inlet plate, a cover member, a temperature setting sleeve, an adjustment bolt, a thread sleeve, a handle knob, a large decorative cap and a small decorative cap, an upper, lower, left and right sides of rear end of the faucet body being respectively disposed with four pipe lines, a bottom of the interior of the faucet body being disposed with a small diameter cold water inlet and a large diameter hot water inlet, a water outlet being disposed on lower side between the cold and hot water inlets, a front end of the balancer being disposed with a cold water outlet and a hot water outlet, a water sealing pad being disposed on outer periphery of each of the cold and hot water outlet, a middle section of the valve stem of the controlling valve being disposed a fitting section formed with multiple axial restricting ribs, a temperature setting projection extending from the periphery of the temperature setting sleeve, the temperature setting projection being formed with a thread hole on lateral side, a head section of the handle knob being formed with a stepped hole, a front section of a large diameter step of the stepped hole being formed with inner thread and a handle extending from lateral side of the head section, the large decorative cap being formed with a central hole and two through holes on two sides thereof, the small decorative cap being disposed with a hollow thread rod extending from rear end thereof, said combination faucet structure being characterized in that:

an upper, lower, left and right sides of the faucet body are respectively disposed with four locking columns each of which is formed with a thread hole;

the balancer has a cross-like pattern, the rear end thereof being disposed with a small diameter cold water inlet column and a

large diameter hot water inlet column each having an annular groove along outer periphery in which a water sealing ring is inserted, four sides of the front end near the edges of the balancer being respectively disposed with four arch projecting walls;

a front section of the valve stem of the controlling valve is disposed with a fitting section formed with multiple axial restricting ribs, a pair of water sealing rings being fitted around the rear section of the valve stem, a head section of the valve stem being disposed with a thread socket, a rear end of the valve stem being connected with a cold/hot combination chamber a top face of which is disposed with two opposite restricting blocks, two opposite slots being formed on the periphery of the chamber, two opposite notches being formed on rear end of the valve stem;

an end face of the water inlet plate being disposed with two opposite banana-shaped water inlets, a periphery of the water inlet plate being disposed with two opposite latch legs;

an upper, lower, left and right ends of the cover member are respectively disposed four through holes, a left and right ends of the cover member being respectively disposed with two locking plates each of which is formed with a thread hole, a front end of the cover member being disposed with a large locking column formed with outer thread and a central hole, an annular flange being disposed on rear end of the cover member and an annular groove being disposed along the outer periphery of the flange, a water sealing ring being fitted in the annular groove, a large, a middle and a small diameter stepped socket being disposed in the flange, two opposite projecting blocks being disposed on the face of the middle diameter step;

the temperature setting sleeve is formed with a central fitting hole the inner wall of which is formed with multiple restricting ribs;

the thread sleeve has two open ends and the inner diameter thereof is substantially equal to that of the large locking column of the cover member, the thread sleeve being formed with inner thread; and

a rear end of the handle knob is disposed with a fitting column the inner wall of which is formed with multiple restricting ribs, whereby the cold water inlet column and hot water inlet column of the balancer are respectively inserted into the cold water inlet and hot water inlet of the faucet body so as to locate the balancer without displacement and ensure the no leakage will take place at the adjoining portion between the balancer and the faucet body, the valve stem being forward passed through the central through hole of the large locking column of the cover member, the restricting blocks of the controlling valve being interlacedly positioned between the two projecting blocks of the cover member, whereby the valve stem of the controlling valve can be rotated between the projecting blocks of the cover member within 0 degree to 135 degrees to accurately adjust the necessary water temperature, the open end of the faucet body being covered by the cover member with the annular flange of the cover member fitted in the annular groove defined by the arch projecting walls and the inner edge face of the faucet body and slightly higher than the open end edge of the faucet body, screws being respectively passed through the through holes of the cover member and screwed into the thread holes of the locking columns of the faucet body, the water sealing ring inserted in the annular groove of the cover member abutting against the open end edge of the faucet body and the annular flange abutting against the balancer to abut against the water sealing rings of the cold and hot water inlet columns around the cold and hot water inlets so as to ensure that no leakage will take place at the adjoining portions between the cover member and the faucet body and the balancer and the faucet body, in the case that the cavity of the wall is too deep or insufficiently deep, the thread sleeve being screwed along the locking column into or out of the cavity so as to retain and balance the handle knob.

5,826,616

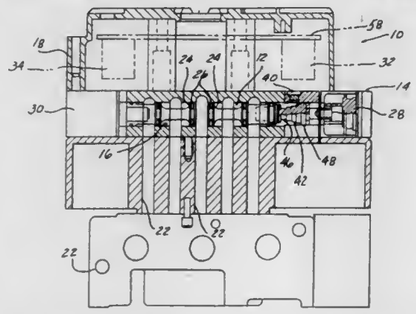
VALVE SPOOL POSITION DETECTOR APPARATUS

Michael J. Golden, Sterling Heights, Mich., assignor to ISI Norgren, Inc., Anoka, Minn.

Filed Nov. 19, 1996, Ser. No. 752,045

Int. Cl.[6] E03B *7/07*

U.S. Cl. 137—554 **20 Claims**



15. In an apparatus having a first member axially moveable between first and second positions relative to a stationary second member, the improvement comprising:

a plurality of axially spaced, distinct targets carried on the first member, each target corresponding to one of the at least first and second positions of the first member; and

means, carried on the second member and having a detection field, for detecting a distinct measurable characteristic of each target within the detection field as the first member shifts between the at least first and second positions.

5,826,617

WATER SINK SYSTEM

Naum Pokhis, 1132 S. Doheny Dr., #303, Los Angeles, Calif. 90035

Filed Jan. 11, 1996, Ser. No. 587,105

Int. Cl.[6] F16K *51/00*

U.S. Cl. 137—556.3 **4 Claims**



1. A water sink system, comprising two knobs each turnable to adjust hot water and cold water correspondingly; and means for turning knobs to a predetermined angle so that a water from a mixing device connected with both said knobs flows with a desired temperature, said means including a scale formed as a disc and provided with a plurality of lines with numbers, and a central opening so as to be placed on an outer surface of a sink, and a pointer arranged in a bushing extending through said central opening of said scale and located inside a handle, so that by turning of the handle said pointer is turned relative to said scale, said pointer being mounted on a springy strip which is springily retained in said bushing.

5,826,618

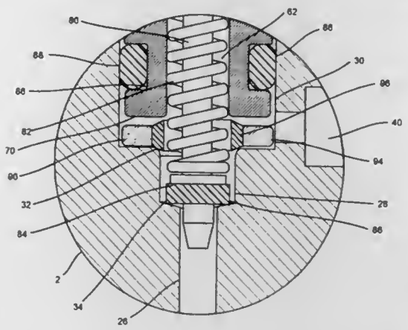
BONDED ELASTOMER SEAL VALVE ASSEMBLY

Gilbert Roland Farnham, Sycamore, Ill., assignor to Cooper Industries, Inc.

Filed May 16, 1997, Ser. No. 857,405

Int. Cl.[6] F16K *15/00*

U.S. Cl. 137—614.2 **12 Claims**



12. A valve for regulating a flow of pressurized fuel, comprising:

a valve body having a bore extending axially therethrough, the bore including an inlet section, a central section with a counterbore, and a valve needle section, the valve needle section having a greater diameter than the counterbore of the central section, wherein at a juncture between the counterbore and the valve needle section a valve seat is defined, the valve body further having an outlet passage communicating with the valve needle section and extending from the valve needle section outward to form an outlet on an outer surface of the valve body;

a valve needle movably disposed in the valve needle section, the valve needle having an end face and having an axial recess opening on the end face;

a pin disposed in the axial recess and having a portion including a head extending from the valve needle;

a spring disposed in the axial recess and acting on an inner surface of the axial recess and the pin head to bias the pin away from the recess, the counterbore of the central section providing a seat for the pin head;

a bonded seal ring loosely disposed between the end face of the valve needle and the valve seat, the pin and spring extending through a hole in the ring; and,

means for positioning the valve needle at a selectable axial position in the valve needle portion of the bore, including a closed position with the end face of the valve needle pressing the bonded seal ring to the valve seat and an open position permitting gas passage from the central gas bore to the outlet passage.

5,826,619

IRRIGATION CONTROL BOX OF SIMPLIFIED USAGE WITH PRESET PROGRAMS

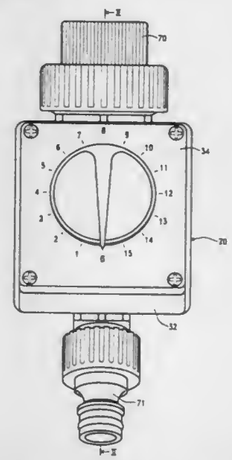
Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Flume Veneto, Italy

Filed Jun. 7, 1996, Ser. No. 659,891

Claims priority, application Italy, Jun. 15, 1995, MI95 A 001282

Int. Cl.[6] G06F *15/46*

U.S. Cl. 137—624.11 **7 Claims**



1. An irrigation control box comprising an electronic control unit that controls opening and closing of a solenoid valve that intercepts a flow of irrigation liquid, said electronic control unit comprising a memory in which a plurality of predefined distinct irrigation programs are memorized, said control box further comprising a control panel on which a rotary switch is arranged that can be positioned in a plurality of distinct angular positions, in each of which the rotary switch controls the electronic control unit to cause the selective activation of a respective one of said memorized irrigation programs.

5,826,620

Patent Not Issued For This Number

5,826,621

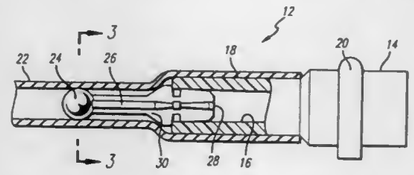
VALVE APPARATUS

Gilbert F. Jemmott, San Marcos, Calif., assignor to Alaris Medical Systems, Inc., San Diego, Calif.

Filed Aug. 5, 1996, Ser. No. 692,503

Int. Cl.[6] F16K *15/14*

U.S. Cl. 137—853 **40 Claims**



1. A valve for use with an IV set subject to a head pressure and a pumping pressure, wherein said pumping pressure is higher than said head pressure, comprising:

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a housing having formed therein a bore for conducting fluid therethrough;

resiliently deformable tubing attached to said housing so as to be in fluid communication with said bore, said tubing having an inner and an outer diameter; and

a sealing element comprising a spherical sealing surface, said sealing element being affixed to said housing by a stem that is fixedly received within said bore such that said sealing surface is positioned within said tubing and wherein said sealing surface is dimensioned to engage said tubing and maintain a seal when said tubing is subjected to an internal pressure below a cracking pressure wherein said cracking pressure is greater than said head pressure and less than said pumping pressure;

wherein said stem has an outer surface containing a longitudinal groove having a depth such that fluid may flow around the stem.

5,826,622

LIQUID FLOW PATH SELECTION DEVICE

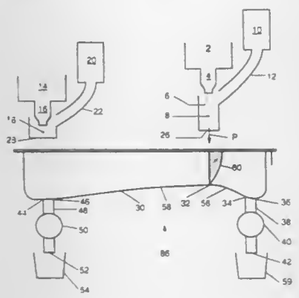
Petrus Josephus Carolus Piscaer, Rotterdam, Netherlands, assignor to Sara Lee/DE N.V., Utrecht, Netherlands

Filed Dec. 2, 1996, Ser. No. 756,890

Claims priority, application Netherlands, Nov. 30, 1995, 1001798

Int. Cl.[6] F16K *11/02*

U.S. Cl. 137—875 **20 Claims**



1. A liquid flow path selection device comprising a feed channel and a housing which, at least on an inner side of the housing, forms a first and a second continuation channel located downstream of the feed channel, wherein the device further comprises a flexible, sheet-shaped selection element having a first and a second side, opposite each other, wherein at least a portion of the selection element forms a partition between the first and the second continuation channel, the selection element is connected to the housing along at least a portion of its circumferential edge, and wherein the selection element and the housing have such dimensions relative to each other that the selection element is movable between a first and a second extreme position in such a manner that in a first extreme position of the selection element, the first side forms a concave surface guiding a flow of liquid from the feed channel into the first continuation channel and in a second extreme position of the selection element, the second side forms a concave surface guiding a flow of liquid from the feed channel into the second continuation channel.

5,826,623

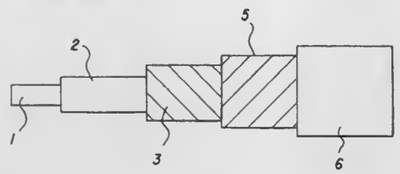
HIGH PRESSURE HOSE FOR REFRIGERANT

Koji Akiyoshi, Kasugai; Noriaki Imaeda, Komaki, and Tetsuya Arima, Kasugai, all of Japan, assignors to Tokai Rubber Industries, Ltd., Komaki, Japan

Continuation-in-part of Ser. No. 638,930, Apr. 26, 1996, abandoned. This application Dec. 3, 1996, Ser. No. 760,136

Int. Cl.[6] F16L *11/10*

U.S. Cl. 138—126 **5 Claims**



1. A high pressure hose for refrigerant comprising:

an internal resin tube;

an inner rubber layer, which is applied to an outer circumference of the internal resin tube;

a first reinforcing layer comprising first splicing yarn, which is formed by spirally winding said first splicing yarn around an outer circumference of the inner rubber layer in a spiral braid density A of not less than 50% and less than 90%;

a second reinforcing layer comprising second splicing yarn, which is formed by spirally winding said second splicing yarn in the opposite direction to the first splicing yarn around and directly upon an outer circumference of the first reinforcing layer in a spiral braid density B of not less than 50% and less than 90%; and,

an outer rubber layer, which is applied to an outer circumference of the second reinforcing layer,

wherein the second splicing yarn forming the second reinforcing layer has a number more than that of the first splicing yarn forming the first reinforcing layer, whereby the spiral braid density A of the first reinforcing layer and the spiral braid density B of the second reinforcing layer are similar in not more than 4% difference, and the spiral braid density B of the second reinforcing layer is higher than the spiral braid density A of the first reinforcing layer.

5,826,624

PROCESS AND DEVICE FOR PARALLELING A TRANSPORT CARRIAGE

Helmut Graser, Riederich, Germany, assignor to Genkinger Hebe- und Foerderchnik GmbH, Germany

PCT No. PCT/EP94/00527, § 371 Date Nov. 9, 1995, § 102(e) Date Nov. 9, 1995, PCT Pub. No. WO94/20659, PCT Pub. Date Sep. 15, 1994

PCT Filed Feb. 24, 1994, Ser. No. 522,303

Claims priority, application Germany, Mar. 3, 1993, 43 06 493.0

Int. Cl.[6] D03J *1/00;* **D02H** *13/38*

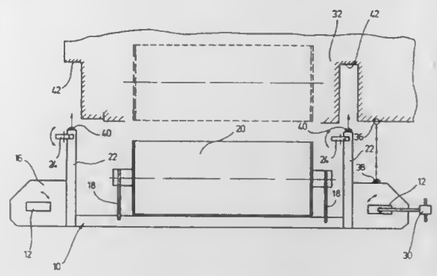
U.S. Cl. 139—1 R **17 Claims**

1. A process for aligning a transport carriage for a cloth/yarn roller in front of a weaving machine, said process including the steps of:

providing a transport carriage having two longitudinally spaced wheels that are steerable:

positioning at least one of said steerable wheels of said transport carriage so that said at least one steerable wheel is aligned in a transverse direction to the weaving machine;

measuring the distance between said transport carriage and the weaving machine with two non-contact sensors that are attached to said transport carriage at longitudinally spaced apart locations, each said non-contact sensor measuring the distance between said non-contact sensor and a separate reference surface on the weaving machine; and



selectively actuating said steerable wheels of said transport carriage based on said distance measurements made by said non-contact sensors so as to position said transport carriage in parallel alignment with the weaving machine.

5,826,625

HEALD FRAME LINEAR DRIVE ARRANGEMENT

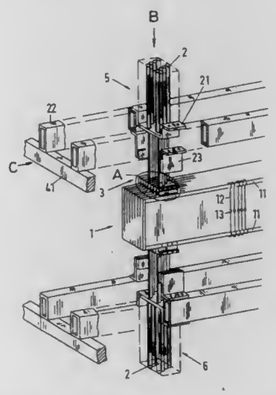
Robert Bucher, Frick, Switzerland, assignor to Sulzer Rueti AG, Rueti, Switzerland

Filed Apr. 16, 1997, Ser. No. 840,828

Claims priority, application European Pat. Off., Aug. 23, 1996, 96810560

Int. Cl.[6] D03C *5/00;13/00*

U.S. Cl. 139—55.1 **14 Claims**



1. An arrangement for the formation of a shed, the arrangement comprising heald frames which are arranged parallel to and spaced with respect to one another and which contain two heald slide bars and healds arranged between them, linear drives in order to move the heald flames up and down, and coupling means in order to releasably connect the heald frames to the linear drives, wherein the linear drives at the two heald slide bars are arranged at fixed spatial positions in their longitudinal extent and at a distance from one another on the side of the heald slide bars remote from the healds; and in that the heald frames, the coupling means as well as the linear drives in each case are positioned together in groups, with the linear drives being arranged transversely to the longitudinal extent of the heald frames in a staggered fashion.

5,826,626

WEFT THREAD MONITORING SYSTEM IN A CIRCULAR SHUTTLE LOOM

Franz Starlinger Huemer, Wien, Austria, assignor to Starlinger & Co. Gesellschaft mbH, Wein, Austria

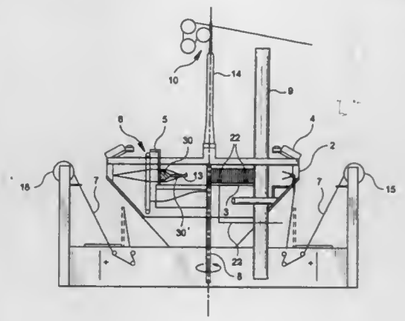
PCT No. PCT/AT95/00183, § 371 Date Mar. 5, 1997, § 102(e) Date Mar. 5, 1997, PCT Pub. No. WO96/12839, PCT Pub. Date May 2, 1996

PCT Filed Sep. 19, 1995, Ser. No. 793,808

Claims priority, application Switzerland, Oct. 20, 1994, 3150/94

Int. Cl.[6] D03D *51/34;37/00*

U.S. Cl. 139—371 **14 Claims**



1. A circular loom having a device for monitoring wefts, said circular loom comprising:

a weaving shed;

a circular reed located in said weaving shed and forming a circular path;

a plurality of weaving shuttles which rotate along said circular path;

a plurality of bobbins associated with said weaving shuttles, each of the wefts being wound off from a respective one of said plurality of bobbins and being delivered to a fabric edge of a woven hose;

a scanner which monitors the wefts in order to generate an electronic control signal in case of a weft fault, said scanner including:

a magnetic sensor which generates said electronic control signal and which is stationarily arranged in a zone of said circular path of said plurality of weaving shuttles;

a plurality of permanent magnets which are associated with and carried by said plurality of weaving shuttles,

a plurality of pivoting levers on which said plurality of permanent magnets are arranged; and

a plurality of return springs configured to move said plurality of pivoting levers,

wherein said plurality of pivoting levers are deflected by the wefts being drawn-off against an effect of said plurality of return springs and said plurality of permanent magnets are held outside of an operative connection with said magnetic sensor, and when in case of a weft fault said effect of said plurality of return springs causes at least one of said plurality of permanent magnets to displace to an end position of said plurality of permanent magnets producing said operative connection of at least one of said plurality of permanent magnets with said magnetic sensor for generating said electric control signal.

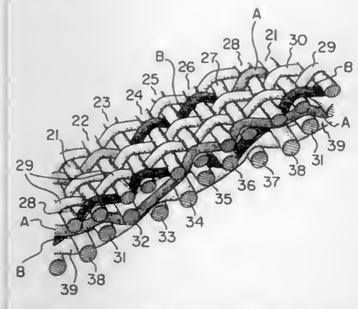
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5,826,627

COMPOSITE PAPERMAKING FABRIC WITH PAIRED WEFT BINDING YARNS

Ronald H. Seabrook, Stittsville; Dale B. Johnson, Ottawa; Derek G. Chaplin, Kanata, and Rex Barrett, Peachtree, all of Canada, assignors to JWI Ltd., Kanata, Canada

Filed Feb. 27, 1997, Ser. No. 807,629
Int. Cl.[6] D03D *11/00;13/00*
U.S. Cl. 139—383 A **23 Claims**



1. A composite forming fabric comprising in combination a paper side layer having a paper side surface, a machine side layer, and a plurality of pairs of first and second members which together comprise pairs of intrinsic weft binder yarns which bind together the paper side layer and the machine side layer, wherein:

(i) the paper side layer and the machine side layer each comprise warp yarns and weft yarns woven together in a repeating pattern, and the paper side layer and the machine side layer together are woven in at least 12 sheds;

(ii) in the paper side surface of the paper side layer the repeating pattern provides a weft yarn path in which the paper side layer weft yarn floats over 1, 2 or 3 consecutive paper side layer warp yarns;

(iii) each of the pairs of intrinsic weft binder yarns occupy one unbroken weft path in the paper side layer;

(iv) in the paper side layer the weave pattern of the unbroken weft path occupied by a pair of intrinsic weft binder yarns is the same, or different, to the weave pattern of the weft path occupied by the immediately adjacent paper side layer weft yarns; and

(v) the number of warp yarns in the paper side layer is equal to the number of warp yarns in the machine side layer; and wherein the pairs of intrinsic weft binder yarns are woven such that:

(a) in a first segment of the unbroken weft path:

(1) the first member of the pair interweaves with a first group of warps to occupy a first part of the unbroken weft path in the paper side surface of the paper side layer;

(2) the first member of the pair floats over 1, 2 or 3 consecutive paper side layer warp yarns; and

(3) the second member of the pair interweaves with at least one warp yarn in the machine side layer;

(b) in an immediately following second segment of the unbroken weft path:

(1) the second member of the pair interweaves with a second group of warps to occupy a second part of the unbroken weft path in the paper side surface of the paper side layer;

(2) the second member of the pair floats over 1, 2 or 3 consecutive paper side layer warp yarns; and

(3) the first member of the pair interweave with at least one warp yarn in the machine side layer;

(c) the first and second segments are of equal or unequal length;

(d) the unbroken weft path in the paper side surface of the paper side layer occupied in turn by the first and the second member of each pair of intrinsic weft binder yarns in the paper side layer has a single repeat pattern; and

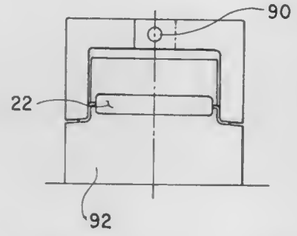
(e) in the unbroken weft path in the paper side surface of the paper side layer occupied in turn by the first and second members of each pair of intrinsic weft binder yarns, each succeeding segment is separated in the paper side surface of the paper side layer by at least one paper side layer warp yarn.

5,826,628

FORM TOOLING AND METHOD OF FORMING SEMICONDUCTOR PACKAGE LEADS

Ernest J. Hamilton, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Division of Ser. No. 590,773, Jan. 24, 1996, Pat. No. 5,673,730. This application Jun. 6, 1997, Ser. No. 870,887
Int. Cl.[6] B21F *45/00*
U.S. Cl. 140—105 **23 Claims**



1. A method for use in forming one or more leads of a semiconductor package, the method comprising the steps of:

providing a die;

providing a punch operatively aligned with the die, at least one of the die and punch having at least one diamond-like carbon coated surface;

aligning one or more leads of the semiconductor package between the die and punch; and

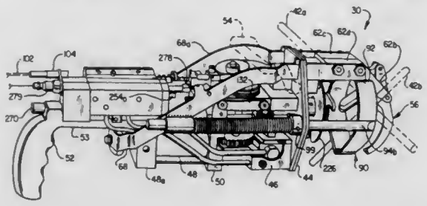
moving at least one of the die and punch relative to the other to form at least one of the one or more leads by contact of the diamond-like carbon coated surface with the at least one lead.

5,826,629

PNEUMATIC WIRE TYING APPARATUS

Joe E. West, Meridian, Tex., assignor to John E. Burford, Austin, Tex.

Filed Jan. 17, 1997, Ser. No. 783,945
Int. Cl.[6] B21F *15/04*
U.S. Cl. 140—119 **49 Claims**



1. Apparatus for tying a length of wire into a loop by twisting opposed ends of the length of wire around each other, said apparatus comprising:

a rotatable wire twist member including opposed hook portions engageable with opposite ends of said length of wire for twisting said opposite ends around each other to form at least one helical wrap;

motor means operable to be drivably connected to said twist member;

a wire guide member disposed adjacent to said twist member for guiding said length of wire into a position to be engaged by said twist member;

a wire feed mechanism operable to feed a length of wire to said wire guide member for engagement by said twist member; and

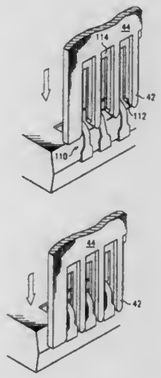
a wire holder and drag member disposed adjacent to said twist member wherein said twist member is disposed between said wire holder and said guide member, and said twist member is rotatable relative to said wire holder and said guide member, respectively, said wire holder comprising a plate supported on said apparatus and including opposed slots formed therein for receiving opposite ends of said length of wire, respectively, and engageable with said opposite ends of said length of wire for holding and tensioning said opposite ends when said opposite ends are twisted together by said twist member.

5,826,630

J-LEAD CONDITIONING METHOD AND APPARATUS

Troy D. Moore, Garland, and Dennis M. Botkin, Seagoville, both of Tex., assignors to Semiconductor Technologies & Instruments, Inc., Dallas, Tex.

Filed Sep. 24, 1997, Ser. No. 936,860
Int. Cl.[6] B21F *1/02*
U.S. Cl. 140—147 **12 Claims**



1. A method for correcting a bowed-in condition existing on at least one J-lead of an electronic device package comprising a plurality of J-leads, the method comprising the steps of:

inserting between a bowed-in J-lead and the electronic device package a tool having a plurality of graduating thickness comb-like teeth, the graduating thickness comb-like teeth graduating from a minimum thickness to a maximum thickness, said minimum thickness for permitting the graduating thickness to be inserted into a minimal space separating the bowed-in J-lead from the electronic device package, the maximum thickness at least equaling the thickness of a desired spacing for the bowed-in lead from the electronic device package; and

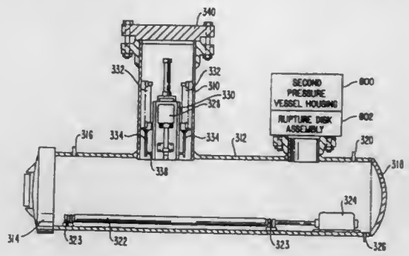
engaging the bowed-in J-lead with the graduating width edge of the tool for moving the bowed-in J-lead from a bowed-in position to a desired aligned position by causing the graduating thickness comb-like teeth to move along and between the electronic device package and the bowed-in J-lead for imparting a wedging force that separates the bowed-in J-lead from the electronic device package, thereby conditioning the bowed-in J-lead.

5,826,631

CYLINDER RUPTURE VESSEL

Jeffrey W. Gold, Atlanta, Ga., and Dan A. Nickens, Orlando, Fla., assignors to Earth Resources Corporation, Ocoee, Fla.

Continuation of Ser. No. 290,562, Aug. 15, 1994, Pat. No. 5,499,665, which is a continuation of Ser. No. 11,865, Feb. 1, 1993, Pat. No. 5,337,793, which is a continuation of Ser. No. 873,481, Feb. 20, 1992, Pat. No. 5,186,219, which is a continuation of Ser. No. 489,234, Mar. 6, 1990, abandoned, which is a continuation of Ser. No. 57,083, Jun. 3, 1987, Pat. No. 4,944,333, which is a continuation-in-part of Ser. No. 669,537, Nov. 8, 1984, Pat. No. 4,690,180. This application Oct. 20, 1995, Ser. No. 546,296
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—1 **2 Claims**



1. A system for accessing the contents of a container comprising:

a first enclosed chamber for receiving and supporting said container to permit access to contents of said container in a controlled environment;

a second enclosed chamber; and

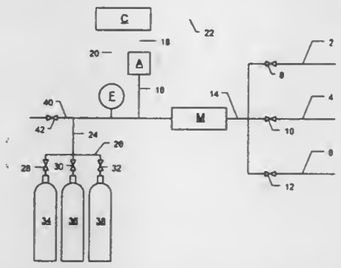
a seal disposed between the first enclosed chamber and the second enclosed chamber to permit selective fluid communication between the first and second enclosed chambers based upon the pressure within the first enclosed chamber to control the total effective volume of the controlled environment.

5,826,632

DYNAMIC GAS CYLINDER FILLING PROCESS

André Mické, Summit, N.J., and Lesli B. Cosey, West Chicago, Ill., assignors to The BOC Group, Inc., New Providence, N.J.

Filed May 30, 1997, Ser. No. 866,753
Int. Cl.[6] B65B *1/04;3/04*
U.S. Cl. 141—9 **18 Claims**



1. A method of delivering a quantity of gas mixture having a selected composition through conduit means comprising the steps:

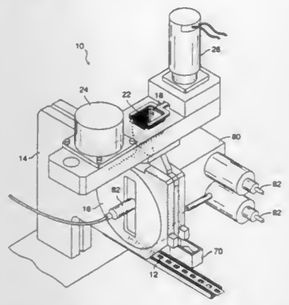
(a) establishing flow of a uniformly blended mixture of two or more gases past a given point in said conduit means;

(b) periodically measuring the rate of flow of gas mixture passing said given point;

(c) periodically determining the instantaneous concentration of each gas in said gas mixture passing said given point;

(d) periodically determining the composition of the accumulated quantity of gas mixture that has passed said point using data obtained in steps (b) and (c); and
(e) periodically adjusting the rate of flow through said conduit means of at least one of said two or more gases in a manner that will reduce the difference between the determined composition and the selected composition.

5,826,633
POWDER FILLING SYSTEMS, APPARATUS AND METHODS
Derrick J. Parks, San Carlos; Michael J. Rocchio, Hayward; Kyle Naydo, Sunnyvale; Dennis E. Wightman, Cupertino, and Adrian E. Smith, Belmont, all of Calif., assignors to Inhale Therapeutic Systems, Palo Alto, Calif.
Filed Apr. 26, 1996, Ser. No. 638,515
Int. Cl.[6] B65B *1/04*
U.S. Cl. 141—18 **68 Claims**



26. An apparatus for transporting powder having fine particles into at least one receptacle, said apparatus comprising: a hopper which is adapted to receive and hold the powder;
means for fluidizing the powder by agitation to aerate and separate the fine particles;
means positioned below the hopper and the fluidizing means for allowing at least a portion of the fluidized fine particles to fall mechanically unassisted through a convergent flow path and into a metering chamber; and
means for ejecting the captured powder from the metering chamber and into the receptacle.

5,826,634

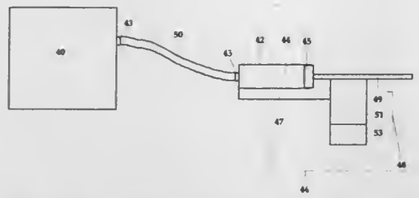
Patent Not Issued For This Number

5,826,635

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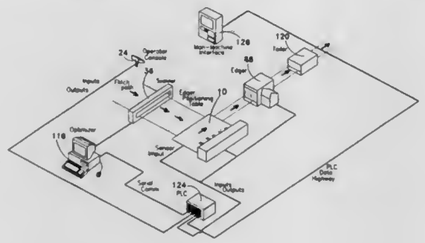
5,826,636
METHOD AND APPARATUS FOR CHARGING PRESSURIZED SYSTEMS
Phil Trigiani, 4280 Claypine Rise, Mississauga, Ontario, Canada, L4W 2G3
Filed Sep. 18, 1996, Ser. No. 710,486
Int. Cl.[6] B65B *3/04*
U.S. Cl. 141—382 **2 Claims**

1. A method of charging a closed, pressurizable fluid system with a fluid dye comprising the steps:



a) sealably and releasably connecting to said system a closed, unpressurized container containing a predetermined amount of said dye, said system and said container combining to form a closed binary system, said container being a cylindrical cartridge received within a cartridge receiver having cartridge gripping means and piston driving means, said cartridge having two ends, a first open end which connects to said system, and a second open end having a piston sealably disposed therein, said system and said container being sealably and releasably connected by a charging conduit having two ends, a first end sealably secured to said first open end of said cartridge, and a second end sealably connected to said system;
b) mechanically forcing said dye out of said container into said fluid system via displacement by said piston being driven down the cartridge by said piston driving means, said piston driving means comprising:
i) a squeezable handle assembly;
ii) a ratcheted piston driving rod; and
iii) a double pawl mechanism functionally coupling said handle assembly with said driving rod so that squeezing said handle drives the rod into said piston and down the length of said cartridge; and
c) disconnecting said container from said system.

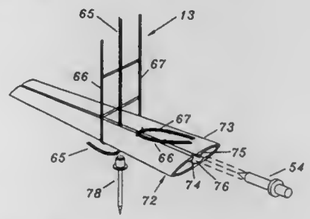
5,826,637
METHOD AND APPARATUS FOR MULTIPLE FEEDING OF FLITCHES TO A BOARD EDGER
William R. Newnes, and Steven W. Michell, both of Salmon Arm, Canada, assignors to Newnes Machine Ltd., Salmon Arm, Canada
Filed Oct. 25, 1996, Ser. No. 736,657
Int. Cl.[6] B27B *1/00*
U.S. Cl. 144—382 **14 Claims**



1. An apparatus for feeding of flitches to a board edger comprising:
a sequencing transfer for transferring a first flitch into abutting relation against a first stop means so as to orient said first flitch longitudinally in a first direction;
a first positioner for grasping said first flitch and transferring said first flitch in a second direction perpendicular to said first direction from said abutting relation against said first stop means onto means for feeding said board edger, wherein said means for feeding said board edger comprises first and second edger feeders, said first and second edger feeders adjacent and generally parallel to each other;

a programmable logic controller for optimized selective controlling of said sequencing transfer, said first positioner and said first and second edger feeders,
(a) so as to transfer said first flitch onto said first edger feeder or onto said second edger feeder, according to a determination by said programmable logic controller if said first flitch is narrow enough to be carried by said first edger feeder or said second edger feeder, and
(b) so as to transfer said first flitch onto both said first edger feeder and said second edger feeder if said first flitch is wide enough to be carried on both said first edger feeder and said second edger feeder.

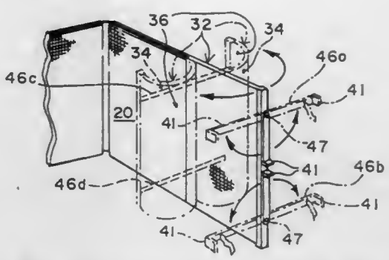
5,826,638
BETWEEN THE GLASS VENETIAN BLINDS
Ralph Jelic, Valencia, Pa., assignor to International Window Fashions, L.L.C., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 720,184, Sep. 25, 1996, Pat. No. 5,699,845. This application Sep. 22, 1997, Ser. No. 934,795
Int. Cl.[6] A47H *1/00*
U.S. Cl. 160—107 **22 Claims**



1. A window blind of the type having a headrail, a bottom rail, a plurality of lift cords extending from the headrail to the bottom rail, a plurality of slats between the bottom rail and the headrail, and a plurality of ladders on which the slats rest, each ladder having a pair of spaced apart rails, each lift cord being substantially coplanar with the rails of a ladder, wherein the bottom rail comprises:
a. an elongated body having a top attached along a front edge and along a back edge to a bottom, the top having at least one opening through which the lift cords pass and the bottom having a hole for each ladder wherein the rails of a ladder and all lift cords coplanar with that ladder pass through the hole for that ladder; and
b. a rivet passing through each hole retaining the rails and lift cords passing through that hole by frictionally engaging the rails and lift cords with said hole.

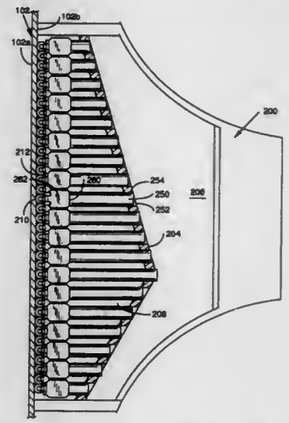
5,826,639
REVERSIBLE ARCUATE PANEL DEVICE
Melvin M. Miller, Bloomington, Ind., assignor to Channel-Kor System Inc., Bloomington, Ind.
Continuation-in-part of Ser. No. 358,806, Dec. 13, 1994, abandoned, which is a continuation-in-part of Ser. No. 88,069, Jul. 6, 1993, abandoned. This application Sep. 12, 1997, Ser. No. 944,050
Int. Cl.[6] A47G *5/00*
U.S. Cl. 160—135 **23 Claims**

1. An improved arcuate portable display panel section having a pair of opposing first and second vertical supports, a three layer panel being interconnected between said first and second vertical supports, wherein the improvement comprises:
said panel having a first layer which comprises a display surface, an intermediate layer and a third layer which comprises an alternative display surface so as to form first and second display surface, wherein said display panel incorporates a



fastening system which is capable of biasing said panel in an arcuate stance in a first plane so as to expose said first display surface and said fastening system is capable of biasing said panel in an arcuate stance in a second plane when said panel is rotated 180 degrees so as to expose said second display surface.

5,826,640
COOLING SYSTEM FOR A BELT CASTER AND ASSOCIATED METHODS
Wilhelm F. Lauener, Gerlafingen/SO, Switzerland, assignor to Larex A.G., Solothurn, Switzerland
Division of Ser. No. 567,178, Jan. 11, 1996, Pat. No. 5,671,801. This application Apr. 16, 1997, Ser. No. 843,528
Int. Cl.[6] B22D *11/06;11/124*
U.S. Cl. 164—481 **14 Claims**



1. A method for a substantially vertical belt caster including at least one movable belt that passes through a casting zone where molten metal is cast into a metal product, said cooling system including (i) a plurality of rollers rotatably mounted on a plurality of bearing blocks; (ii) a plurality of nozzles arranged in said bearing blocks between said rollers to deliver coolant under pressure to said belt to cool the belt and to keep it in contact with said molten metal as it solidifies into said metal product, (iii) means for removing substantially all of said delivered coolant from said belt before said belt exits said casting zone; and (iv) means for adjusting the pressure of said coolant delivered to said belt along the length of said casting zone.

10. A method of casting molten metal into a metal product, said method comprising;
providing a substantially vertical belt caster that defines a mold in a casting zone for casting said molten metal into said metal product, said caster including a movable belt having a cooling surface and a casting surface opposite said cooling surface;
passing said belt through a casting zone including said mold;

delivering a coolant under pressure to said cooling surface of said belt through a plurality of nozzles disposed between a plurality of rollers and arranged in bearing blocks on which said rollers are rotatable mounted to maintain contact of the belt with said solidifying molten metal, said rollers arranged to limit movement of said belt towards said nozzles;

varying the pressure of said coolant delivered to said cooling box chamber along the length of said cooling face for said belt to maintain contact of the belt with said solidifying molten metal,

removing sid coolant from said cooling surface of said belt after said coolant has been delivered thereto so that substantially all of said delivered coolant is removed from said cooling surface before said belt exits said casting zone;

introducing said molten metal into said mold; and

solidifying said molten metal in said mold into said metal product.

5,826,641

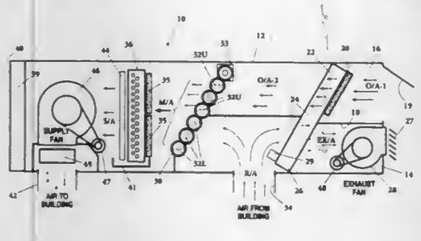
AIR CONDITIONER WITH HEAT WHEEL

Henry C. Bierwirth, and Stephen J. Pargeter, both of Tulsa, Okla., assignors to Aaon, Inc., Tulsa, Okla.

Continuation-in-part of Ser. No. 330,330, Oct. 27, 1994, abandoned. This application Oct. 3, 1997, Ser. No. 943,461

Int. Cl.[6] F25D *17/06;* **F25B** *29/00*

U.S. Cl. 165—48.1 **4 Claims**



1. An air conditioning device consisting of:

a heat wheel being rotatably provided within a device, a first portion of the heat wheel being provided in an air intake duct of the device and a second portion of the heat wheel being provided in a separate air exhaust duct of the device so that outside air entering the device passes through the first portion and exhaust air exiting the device passes through the second portion, said heat wheel transferring both sensible and latent heat between the outside air and the exhaust air such that sensible heat is transferred from a warmer stream of air to a cooler stream of air and latent heat is transferred from a wetter stream of air to a dryer stream of air;

a single mixing damper being provided within said device adjacent an evaporator and between said heat wheel and said evaporator, said mixing damper forming the innermost extensions of said air intake duct and said air exhaust duct, a return air duct being provided in the air exhaust duct between the mixing damper and the heat wheel;

a supply fan provided within said device adjacent said evaporator for blowing supply air throughout the interior of a building via a building supply air duct;

an auxiliary heater provided within said device adjacent said supply fan for heating the supply air.

5,826,642

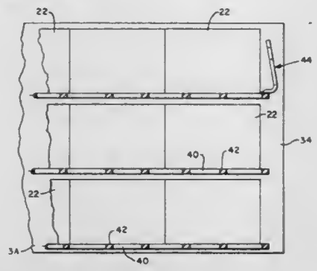
ROTARY REGENERATIVE HEAT EXCHANGER

Mark E. Brophy, Wellsville, N.Y., assignor to ABB Air Preheater, Inc., Wellsville, N.Y.

Filed Feb. 11, 1998, Ser. No. 22,175

Int. Cl.[6] F28F *7/00*

U.S. Cl. 165—76 **2 Claims**



1. A method for removing heat exchange baskets radially through the side of the rotor of a rotary regenerative air preheater wherein said baskets are supported on support gratings in said rotor and wherein said baskets have a lower outer edge and wherein said baskets include a member extending across at least said lower outer edge, said method comprising the steps of:

a. providing a removal tool comprising a lever portion and a hook portion, said removal tool including a beveled edge on said hook portion;

b. inserting said beveled edge on said hook portion between one of said baskets and said support grating;

c. forcing said hook portion under said one basket whereby said one basket is lifted above said support grating;

d. rotating said lever portion of said removal tool downward whereby said hook portion engages said member extending across said lower outer edge of said basket; and

e. pulling radially outward on said removal tool and thereby removing said basket out from the side of said rotor.

5,826,643

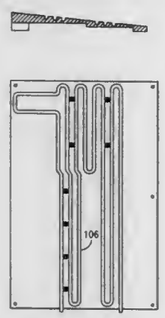
METHOD OF COOLING ELECTRONIC DEVICES USING A TUBE IN PLATE HEAT SINK

George Tipton Galyon, Fishkill; Randall Gail Kemink, and Roger Ray Schmidt, both of Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 7, 1996, Ser. No. 660,248

Int. Cl.[6] H05K *7/20*

U.S. Cl. 165—80.4 **27 Claims**



1. A method for cooling electronic devices in an electronic assembly, said assembly having at least one board housing electronic modules, steps of which comprises:

shaping a light weight plate as to compliment the geometric arrangement of said board having said modules;

providing channels selectively in said plate at locations where said board and modules require maximum heat dissipation;

placing a plurality of heat dissipator coolant passage tubes in said channels, said coolant passage tubes being of a different material than said plate;

shaping said plate specifically to cater to height and size configurations of all modules in a manner so that the underside surface of said plate in contact with any modules has a step like structure;

cooling said electronic assembly through thermal contact between a coolant provided in said passage tubes and said electronic assembly.

5,826,644

Patent Not Issued For This Number

5,826,645

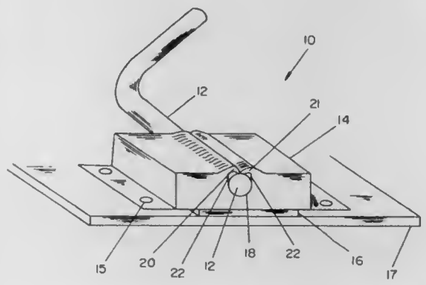
INTEGRATED CIRCUIT HEAT SINK WITH ROTATABLE HEAT PIPE

George A. Meyer, IV, Conestoga, and Jerome E. Toth, Hatboro, both of Pa., assignors to Thermal Corp., Georgetown, Del.

Filed Apr. 23, 1997, Ser. No. 844,811

Int. Cl.[6] F28D *15/00*

U.S. Cl. 165—104.33 **7 Claims**



1. An apparatus for removing heat from an integrated circuit comprising:

a heat conductive structure;

a groove with sides extending below a surface of the heat conductive structure;

a heat pipe placed into the groove, wherein the heat pipe is dimensioned to have clearance space between an outer surface of the heat pipe and the sides of the groove;

tabs formed at the junction of the groove and the surface into which the groove is formed, wherein the tabs extending above the surface are permanently deformed by being bent over toward each other and into contact with the heat pipe; and

heat conductive filler material occupying the space in the groove between the heat pipe and the sides of the groove.

5,826,646

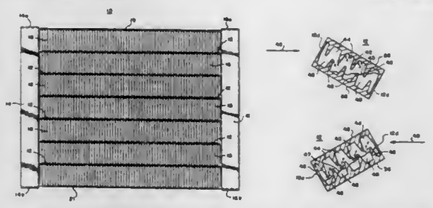
FLAT-TUBED HEAT EXCHANGER

Young L. Bae, and Michael E. Heidenreich, both of Grenada, Miss., assignors to Heatcraft Inc., Grenada, Miss.

Continuation of Ser. No. 548,582, Oct. 26, 1995, abandoned. This application Jul. 2, 1997, Ser. No. 887,092

Int. Cl.[6] F28B *1/06;* **F28D** *1/053;* **F28F** *3/12*

U.S. Cl. 165—110 **20 Claims**



1. In a cooling system, a heat exchanger for condensing a vapor compression refrigerant in said heat exchanger by transferring heat from the refrigerant to an external fluid flowing through said heat exchanger, said heat exchanger comprising:

a pair of spaced headers, one of said headers having a refrigerant inlet and one of said headers having a refrigerant outlet; and

an elongated tube of non-circular cross-section extending between said headers and in fluid communication therewith at respective opposed ends of said tube, said tube having opposed top and bottom portions and opposed first and second sides, said top portion having a plurality of first grooves in parallel array extending in a first direction toward said first side and at a first oblique angle with respect to a central longitudinal axis of said tube, said bottom portion having a plurality of second grooves in parallel array extending in a second direction toward said second side and at a second oblique angle with respect to said central longitudinal axis, said first grooves being in crossing relationship with said second grooves to define a cross-hatched pattern of channels to accommodate refrigerant flow through said tube, said tube being tilted about the central longitudinal axis thereof such that said first side is higher than said second side, whereby separation between refrigerant in a vapor state and refrigerant in a liquid state is enhanced within said tube, said first side being a leading side of said tube such that the external fluid flowing through said heat exchanger first encounters said first side.

8. In a cooling system, a heat exchanger for evaporating a vapor compression refrigerant in said heat exchanger by transferring heat to the refrigerant from an external fluid flowing through said heat exchanger, said heat exchanger comprising:

a pair of spaced headers, one of said headers having a refrigerant inlet and one of said headers having a refrigerant outlet; and

an elongated tube of non-circular cross-section extending between said headers and in fluid communication therewith at respective opposed ends of said tube, said tube having opposed top and bottom portions and opposed first and second sides, said top portion having a plurality of first grooves in parallel array extending in a first direction toward said first side and at a first oblique angle with respect to a central longitudinal axis of said tube, said bottom portion having a plurality of second grooves in parallel array extending in a second direction toward said second side and at a second oblique angle with respect to said central longitudinal axis, said first grooves being in crossing relationship with said second grooves to define a cross-hatched pattern of channels to accommodate refrigerant flow through said tube, said tube being tilted about the central longitudinal axis thereof such that said second side is higher than said first side, whereby mixing between refrigerant in a vapor state and refrigerant in

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a liquid state is enhanced within said tube, said second side being a leading side of said tube such that the external fluid flowing through said heat exchanger first encounters said second side.

5,826,647

HEAT EXCHANGER

Wolfgang Engelhardt, Oberkasseler Strabe 64, D-40545 Dusseldorf, Germany, and Massimo Colombo, Montevecchia, Italy, assignors to Wolfgang Engelhardt, Germany

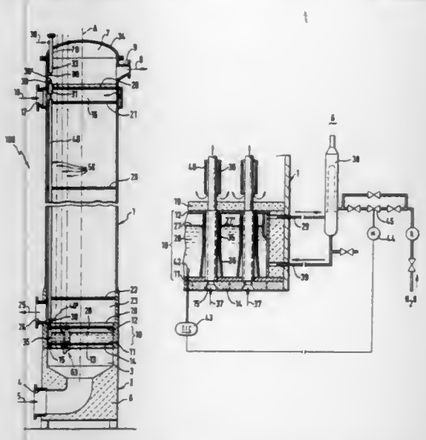
PCT No. PCT/DE95/00147, § 371 Date Jul. 3, 1996, § 102(e) Date Jul. 3, 1996, PCT Pub. No. WO95/22037, PCT Pub. Date Aug. 17, 1995

PCT Filed Feb. 6, 1995, Ser. No. 682,790

Claims priority, application Germany, Feb. 9, 1994, 44 04 068.7

Int. Cl.[6] F28F *19/00;* **F28D** *7/10;15/02*

U.S. Cl. 165—134.1 **25 Claims**



1. A heat exchanger for cooling process gases having finely-dispersed solid particles at high temperatures between 800° and 1200° for producing carbon black said heat exchanger including a housing, a bundle of pipes within said housing having opposite ends and extending parallel to one another and closely together for carrying the process gases through the housing, at least first and second pipe headers arranged near the ends of the pipes, transverse thereto and filling the cross section of the housing, the pipes passing axially through said headers in a sealing manner and terminating in open ends, a process gas intake chamber configured at a first end of the housing axially outside of the first pipe header, a process gas outlet chamber configured at a second end of the housing axially outside the second pipe header an intake for a fluid cooling medium that is disposed near the second pipe header, and an outlet for the fluid cooling medium near the first pipe header, wherein the first pipe header is in the form of a double walled pipe header having a first pipe header wall portion and a second pipe header wall portion through which the ends of the pipes pass and in which a cooling medium is present, the improvement comprising a boiling water cooling action being produced in the double walled pipe header, said double walled pipe header being arranged horizontally and partially filled with water creating a steam chamber above said water, said steam chamber being connected to an external condenser with the condensate being fed back into the double walled pipe header.

5,826,648

LAMINATED TYPE HEAT EXCHANGER

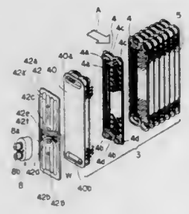
Masahiro Shimoya, and Eiichi Torigoe, both of Kariya, Japan, assignors to Denso Corporation, Kariya, Japan

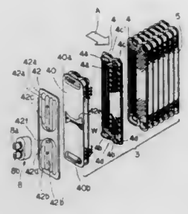
Filed Dec. 12, 1996, Ser. No. 766,172

Claims priority, application Japan, Dec. 19, 1995, 7-330701

Int. Cl.[6] F28D *1/03*

U.S. Cl. 165—153 **18 Claims**





1. A laminated type heat exchanger comprising:

a heat exchanging portion formed by laminating a plurality of thin metal plates in which a longitudinal fluid passage having an inlet portion and an outlet portion is formed for heat exchanging between an inside fluid flowing inside said fluid passage and an outside fluid flowing outside said fluid passage, said thin metal plates including a side plate disposed on an end portion of said heat exchanging portion in a laminated direction thereof; and

an end plate having two protrusions and a joining portion between said two protrusions, said end plate being joined to said side plate at said joining portion thereof in said laminated direction of said thin metal plates, said two protrusions facing each other via said joining portion and communicating respectively with said inlet portion and said outlet portion;

wherein at least one of said joining portion and said side plate includes a hole extending between said two protrusions, said hole extending transverse to said longitudinal fluid passage, said hole communicating with an environment outside of the laminated type heat exchanger.

5,826,649

EVAPORATOR, CONDENSER FOR A HEAT PUMP

Terry L. Chapp, New Berlin; C. James Rogers, and William Markusen, both of Racine, all of Wis., assignors to Modine Manufacturing Co., Racine, Wis.

Filed Jan. 24, 1997, Ser. No. 788,525

Int. Cl.[6] F28F *9/26*

U.S. Cl. 165—174 **14 Claims**

12. A heat exchanger comprising:

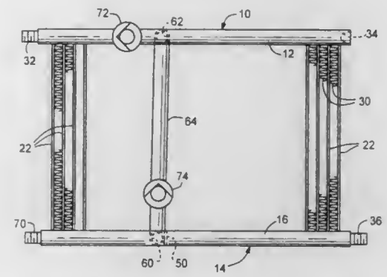
first and second curved, generally congruent tubular headers;

one of said headers being an upper header;

the other of said headers being vertically spaced below but aligned with said upper header and defining a lower header;

a first row of elongated tube slots in said upper header and opening downwardly toward said lower header;

a second row of elongated tube slots in said lower header and opening upwardly toward said upper header;



each tube slot in said first row having a corresponding tube slot in said second row;

corresponding tube slots in said rows being aligned with one another;

elongated, straight, flattened tubes extending between said headers in parallel with each other;

said tubes each having first ends received in corresponding slots in said first row;

said tubes having second ends opposite said first ends and received in corresponding slots in said second row,

a first port for refrigerant in one of said headers;

a second port for refrigerant in one of said headers:

first and second flow restrictions in said first and second headers respectively;

said first port being in said first header and said second port being in said second header; and

a jumper tube interconnecting said headers from a location on said first header on the side of said first flow restriction remote from said first port to a location on said second header on the side of said second flow restriction remote from said second port.

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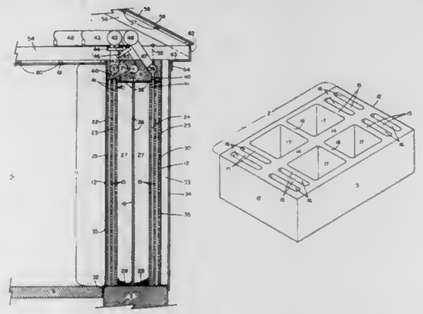
DEVICES AND METHODS FOR UTILIZATION OF INTERMITTENTLY AVAILABLE ELECTRIC ENERGY FOR HEATING AND COOLING OF HABITABLE STRUCTURES

Leonard J. Keller, 1501 N. Cedar St., Bonham, Tex. 75418; Austin N. Stanton, deceased, late of Bonham, Tex., and by Lina Mae Maddox, executor, 14120 Kleberg Rd., Dallas, Tex. 75253-5301

Filed Oct. 2, 1997, Ser. No. 942,535

Int. Cl.[6] F25B *29/00*

U.S. Cl. 165—236 **17 Claims**



1. Devices for utilization of intermittently available electric energy and effecting energy production, storage, retrieval and use for maintaining comfortable temperatures inside habitable structures, said devices comprising:

a habitable structure having thick exterior energy storage walls for storing energy, as heat or cold, within an energy storage medium of permeable concrete and energy storage gravel contained within central portions of individual wall segments of said energy storage walls and allowing retrieval of said energy, as said heat or said cold, from said energy storage medium as it is needed, electrical air heating and air cooling equipment for use in heating or cooling of system air which serves as the heat transfer medium, air blowers for pressurizing said system air, air ducts and air valves for moving said system air through said heating and cooling equipment, said air ducts, said air blowers, said air valves, and said energy storage medium, allowing control of the direction of flow of said system air and its pressures and velocities, as said system air is moved in closed-circuit for storing said energy as said heat or said cold, and for retrieving and using said energy as said heat or said cold, for maintaining control of the temperatures inside said habitable structures,

energy storage blocks made of said permeable concrete, forming said energy storage walls, said energy storage blocks having physical dimensions including a width (equal to the thickness of said energy storage wall), a height, and a length (equal to the length occupied by said energy storage block in said energy storage wall),

said energy storage blocks have parallel end plates, the width thereof defining the thickness of said energy storage walls, said energy storage blocks have parallel side plates, the length thereof defining the length along the wall occupied by said energy storage blocks, (the terms conform to the accepted manner of showing concrete block dimensions as width, height and length, in that order), said energy storage blocks also having parallel tops and bottoms which are planar (or flat), within reasonable tolerance to facilitate stacking,

said energy storage blocks have internal webs, at right angles to said end plates, and forming two pairs of in-line air slots, just inside each of said side plates, the innermost of said internal webs separate the innermost of said air slots from storage compartments in the central portion of said energy storage blocks, said storage compartments are separated from one another by a central web, said storage compartments are filled with clean, sized, energy storage gravel, after being installed in said energy storage wall of said habitable structure, said energy storage gravel and said permeable concrete of said energy storage blocks comprising said energy storage medium, for storing energy as said heat or said cold, and allowing the retrieval and use of said heat or said cold,

said energy storage walls of said habitable structures comprised of wall segments, which extend from a foundation below to a cap beam above, and extend between openings for doors and windows and between openings for said doors or said windows and corner columns, which are fitted against the ends of two of said wall segments at each corner of said habitable structure, said wall segments contain four planar arrays of said pairs of said air slots, said planar arrays extending from said foundation below to said cap beam above, being in a plane extending from end to end of each said wall segment, said planar arrays being denominated first, second, third and fourth air plenums, beginning with said first air plenum being nearest the interior wall plate of said energy storage wall, and said fourth air plenum being nearest the exterior wall plate of said energy storage wall, all of said air plenums being closed by said foundation at their bottom, by said cap beam above, and by the end plates of said energy storage blocks at both ends of said wall segments, said fourth air plenum being used as a dead air-space insulation, to reduce the movement of said heat or said cold to the outside environment, said interior wall plates and said exterior wall plates are formed by said side plates of said energy storage blocks,

one or more layers of stucco or mortar cement and an outer layer of fibrous mastic cement coating form a seal coating for all exposed surfaces of said permeable concrete of each said wall segment, said seal coatings extend upward onto the sides of said cap beams at the top, outward onto ledges of said foundation at the bottom, across end faces of said wall segments, and outward underneath said cap beams in said win-

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dow openings and said door openings, to form a sealed system and to minimize or prevent the escape of said system air, confining the movement of said system air to air manifold tubes and air inlet/outlet tubes inside said cap beams, and also preventing the intake of ambient air into said system air, when the pressures of said system air are low, at some points within the closed-circuit air handling system, said system air being forced by pressure differentials to flow horizontally through said energy storage medium to store said energy as heat or cold and to retrieve said energy as heat of cold, when needed to control temperatures inside said habitable structure,

said cap beams are made of impermeable concrete, and one or more said cap beams extend the length of each said energy storage wall of said habitable structure, said cap beams support and anchor the roof structure, from the tops of said energy storage walls, bridge over said door openings and said window openings, and have longitudinal air channels on the bottom thereof, which match up with said first, said second and said third air plenums in said energy storage walls, said energy storage walls having said storage compartments therein, said cap beams containing a first said air manifold tube positioned between the interior side of said cap beam and the longitudinal centerline of said cap beam, a second said air manifold tube at or near the center of said cap beam, and a third said air manifold tube positioned between the center of said cap beam and the exterior side of said cap beam, the three said air mainfold tubes are positioned with their centerlines on or near a horizontal plane on or near the center of said cap beam,

the bottom side of each said cap beam having first, second and third narrow longitudinal air channels, each of said first, second and third air channels being connected with the respectively numbered said air plenum, each of said first, second and third air channels being connected at frequent intervals with respectively numbered said air manifold tubes by spiles (small tubes), to insure that uniform air pressures exist in said air plenums at points along the length of said cap beam, with first, second, and third said air inlet/outlet tubes being connected to respectively numbered said air manifold tubes and located near the longitudinal center of said cap beams, extending upward, allowing their connection to said air ducts above said cap beams, said first air inlet/outlet tubes contain first air valves and said second air inlet/outlet tubes contain second air valves, said first air inlet/outlet tubes and said second air inlet/outlet tubes are connected with first said air ducts, said third air inlet/outlet tubes are connected with second said air ducts,

said energy storage walls are capped by one or more of said cap beams, the ends of said air manifold tubes extend a short distance beyond the ends of said cap beams, to match up with said air manifold tubes of adjacent said cap beams, and to provide a gap between ends of said cap beams, and between ends of said cap beams and corner cap blocks located above corner columns at the corners of said habitable structure, the spaces left between said cap beams by joining the ends of said air manifold tubes, and the spaces between said cap beams and said corner cap blocks effected by extension of the ends of said air manifold tubes, are filled with impermeable concrete mortar to form air-tight seals and to maintain the alignment of said cap beams in said energy storage walls,

one tension rod extends the full length of each of said energy storage walls, and is passed through said second air manifold tube, which is nearest the center of said cap beam, and through small holes in the ends of said second air manifold tubes of said in-line cap beams, and through horizontal holes near the centers of said corner cap blocks, said tension rods are tightened to provide compressive stress in said cap beams, and to bind the tops of said energy storage walls firmly at all the corners of said habitable structures, ends of said first and said third air manifold tubes, which fit against said corner cap blocks, being plugged to prevent air passage, two said air blowers, oriented to move air in opposite directions, being used to allow reversing the flow of said system air, thereby eliminating the need for flow-reversing valves and ducts for this purpose, variable-speed blower drive motors may be used to allow for better control of pressures and flow rates of said system air,

the slab floor of impermeable, reinforced concrete is separated from said foundation by concrete expansion-joint material, ceiling joists and rafters of steel are supported by and fastened to said cap beams, and insulating materials may be installed between said ceiling joists, insulating materials are used on the outer surfaces of said energy storage walls, and contained between steel framing members, to minimize energy losses to the outside environment, and wall covering (siding), of any selected type or style may be used to complete the construction of said habitable structure, with multiple-pane thermal windows also being used to minimize energy losses.

5,826,651

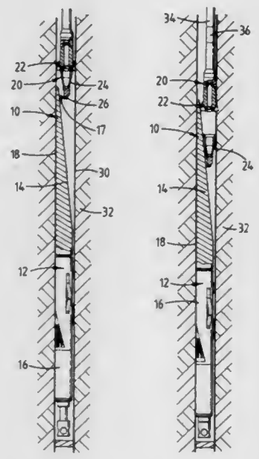
WELLBORE SINGLE TRIP MILLING

Mark H. Lee, Spring; Thurman B. Carter, Houston; William A. Blizzard, Jr., Houston, and Richard M. Ward, Houston, all of Tex., assignors to Weatherford/Lamb, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 673,791, Jun. 27, 1996, abandoned, which is a continuation-in-part of Ser. No. 210,697, Mar. 18, 1994, Pat. No. 5,429,187, and a division of Ser. No. 414,201, Mar. 31, 1995, Pat. No. 5,531,271, which is a continuation-in-part of Ser. No. 300,917, Sep. 6, 1994, Pat. No. 5,425,417, which is a continuation-in-part of Ser. No. 225,384, Apr. 4, 1994, Pat. No. 5,409,060, which is a continuation-in-part of Ser. No. 119,813, Sep. 10, 1993, Pat. No. 5,452,759. This application Jul. 30, 1996, Ser. No. 688,651

Int. Cl.[6] **E21B** *7/08;29/06*

U.S. Cl. 166—117.6 **9 Claims**



1. A milling system for milling an opening in a hollow tubular in a wellbore, the milling system comprising

milling apparatus, the milling apparatus disposable with respect to a whipstock in the tubular in the wellbore, and

a nose member releasably secured to the milling apparatus, the nose member disposed exteriorly of the whipstock and releasably secured to the whipstock with a shearable member, the nose member disposed between the milling apparatus and the whipstock, the nose member and shearable member disposed so that upon release of the nose member from the milling apparatus the nose member is separable entirely apart from and beneath the milling apparatus.

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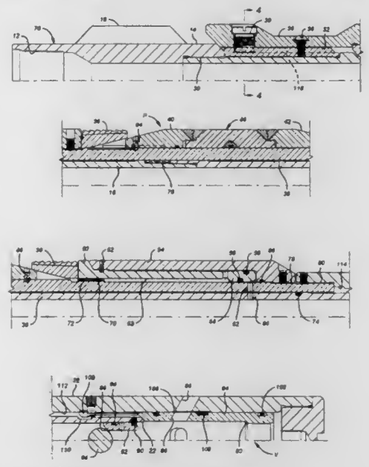
HYDRAULIC SETTING TOOL

William T. Tapp, Yorktown, Tex., assignor to Baker Hughes Incorporated, Houston, Tex.

Filed Apr. 8, 1997, Ser. No. 826,840

Int. Cl.[6] **E21B** *23/06;34/12*

U.S. Cl. 166—120 **17 Claims**



1. A packer-setting assembly, comprising:

a packer having a body which further comprises slips and a sealing element and a setting mechanism;

a setting tool selectively insertable into said packer body for transmission of an hydraulic force therethrough to actuate said setting mechanism on said packer body;

said packer body comprises a valve;

said setting tool is connected to said packer body by a J-slot assembly wherein in a first position, said setting tool is attached to said packer body with said valve in one position;

whereupon manipulation of said setting tool moves said valve into another position and releases said setting tool from said packer body.

5,826,653

PHASED ARRAY APPROACH TO RETRIEVE GASES, LIQUIDS, OR SOLIDS FROM SUBAQUEOUS GEOLOGIC OR MAN-MADE FORMATIONS

Timothy M. Rynne, Long Beach; John F. Spadaro, Huntington Beach; Joe L. Iovenitti, Pleasant Hill; John P. Dering, Lakewood, and Donald G. Hill, Walnut Creek, all of Calif., assignors to Scientific Applications & Research Associates, Inc., Huntington Beach, Calif.

Filed Aug. 2, 1996, Ser. No. 691,602

Int. Cl.[6] **B09C** *1/00;* **E21B** *43/25;43/30*

U.S. Cl. 166—245 **13 Claims**

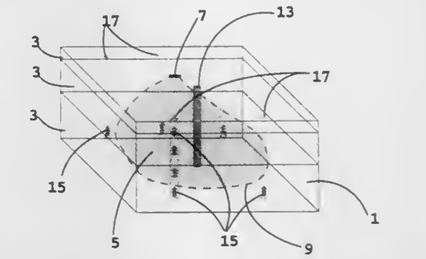
1. A method of enhancing the retrieval of recoverable materials including gas, liquid, and/or solid-phase natural and manmade materials including organic, inorganic, radio nuclides and metal contaminants, water, oil, mineral solutions and natural gas, from an identified region within the earth comprising the steps of:

a) determining the size of the region containing said recoverable materials;

b) sinking at least one recovery well in the region to recover the materials of interest;

c) locating a plurality of broadcast wells about the region to form broadcast stations;

d) establishing multiple sources of acoustical energy in an array about and spaced-apart from said recovery well under the surface of the earth in said broadcast wells;



e) directing an acoustic excitation of identical frequencies from said sources into the region of the materials to be recovered, said excitation in the form of controllable waveforms; and,

f) controlling the phase, frequency, power, and duration of said waveforms from said sources to increase the intensity of acoustical excitation in the region of the materials to be recovered to change the recovery of the materials.

5,826,654

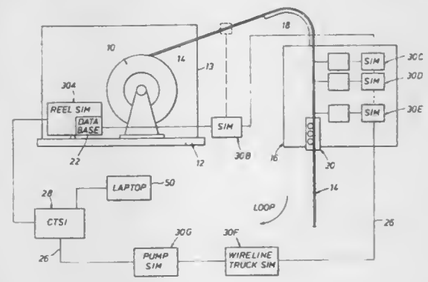
MEASURING RECORDING AND RETRIEVING DATA ON COILED TUBING SYSTEM

Sarmad Adnan, Alvin, and Roger W. McBride, Sugar Land, both of Tex., assignors to Schlumberger Technology Corp., Houston, Tex.

Filed Jan. 24, 1997, Ser. No. 787,320

Int. Cl.[6] **E21B** *47/00*

U.S. Cl. 166—250.01 **15 Claims**



1. An assembly including,

a structure on which coiled tubing is mounted, said coiled tubing arranged and designed for oil and gas well operations, and

memory means disposed on said structure on which is recorded a database of predetermined operating characteristics of said coiled tubing.

5,826,655

METHOD FOR ENHANCED RECOVERY OF VISCOUS OIL DEPOSITS

Dennis M. Snow, Parker, Colo., and Tim A. O'Connell, Bakersfield, Calif., assignors to Texaco Inc, White Plains, N.Y.

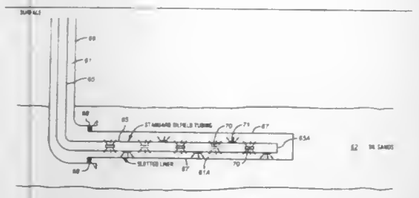
Filed Apr. 25, 1996, Ser. No. 637,311

Int. Cl.[6] **E21B** *43/24*

U.S. Cl. 166—272.3 **7 Claims**

5. A method for producing heavy viscous crude oil from a production earth formation having a sandstone characteristic and being saturated with heavy viscous crude oil, comprising the steps of:

drilling a well borehole from the surface of the earth vertically to a point above the upper boundary of said production



formation and then deviating said borehole in a horizontal direction into and penetrating said production formation horizontally for a predetermined distance;

lining the horizontal extent of said borehole with a production liner over substantially its entire length;

delivering live steam for a predetermined time from the surface of the earth via a tubing string into the horizontal extent of said borehole substantially uniformly along said horizontal extent or a desired portion without live steam impinging directly on said production liner; and

producing heavy viscous crude via said tubing string after delivery of steam for said predetermined time has completed.

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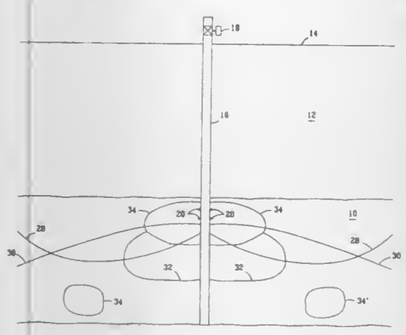
METHOD FOR RECOVERING WATERFLOOD RESIDUAL OIL

Patrick L. McGuire, Eagle River, and Joseph L. Anders, Anchorage, both of Ak., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed May 3, 1996, Ser. No. 642,743

Int. Cl.[6] E21B *43/25*

U.S. Cl. 166—305.1 **17 Claims**



1. A method for recovering waterflood residual oil from a waterflooded oil-bearing subterranean formation penetrated from an earth surface by at least one production well used for production of oil and water during the waterflood the method comprising:

a. injecting an oil miscible solvent into a waterflood residual oil-bearing lower portion of the oil-bearing subterranean formation through the production well completed for injection of the oil miscible solvent into the lower portion of the oil-bearing formation;

b. continuing the injection of the oil miscible solvent into the lower portion of the oil-bearing formation for a period of time equal to at least one week;

c. recompleting the production well for production of quantities of the oil miscible solvent and quantities of waterflood residual oil from an upper portion of the oil-bearing formation; and

d. producing quantities of the oil miscible solvent and the waterflood residual oil from the upper portion of the oil-bearing formation through the recompleted production well.

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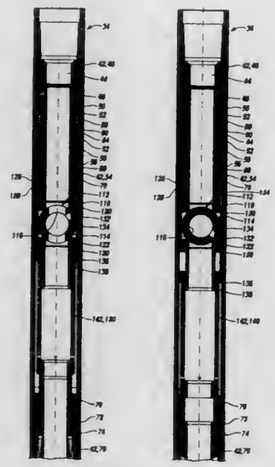
SELECTIVELY LOCKING OPEN A DOWNHOLE TESTER VALVE

Paul D. Ringgenberg, Carrollton, Tex., assignor to Halliburton Energy Services, Inc., Dallas, Tex.

Filed Jan. 23, 1997, Ser. No. 788,071

Int. Cl.[6] E21B *34/10*

U.S. Cl. 166—336 **23 Claims**



1. A downhole tool apparatus comprising:

a housing;

an operating assembly disposed in said housing; and

a mandrel axially movable in said housing to engage and operate said operating assembly, said mandrel rotatably movable in said housing to selectively lock said mandrel axially relative to said housing.

5,826,658

RISER FILL-UP VALVE

Larry Keith Harthorn; Tan Hoon Kiang; Goi Kim Kok; See Teck Kiat; Lee Yew Huat, and Tan Hock Lye, all of Singapore, Singapore, assignors to ABB Vetco Gray Inc., Houston, Tex.

Filed Jul. 11, 1996, Ser. No. 678,337

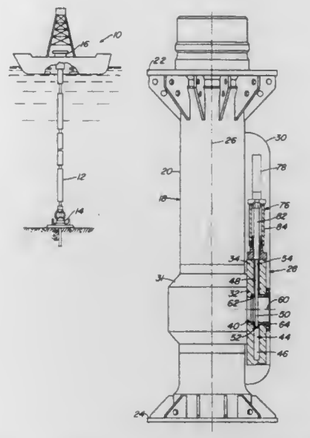
Int. Cl.[6] E21B *17/01;33/038;34/06*

U.S. Cl. 166—339 **14 Claims**

7. A fill-up valve and riser joint combination for a riser formed from sections of pipe, the riser being connected at one end to a subsea wellhead and at the other end to a platform of an offshore oil or gas well, the fill-up valve mounting along an exterior of the riser and having a profile that allows passage of the riser and fill-up valve through confined areas, the fill-up valve and riser joint combination comprising:

a riser joint having a generally cylindrical midsection and a mounting flange located on at least one end of the midsection for mounting to the sections of pipe forming the riser, the midsection forming a portion of the riser and defining an interior thereof; and

a gate valve mounted to midsection of the riser joint, the gate valve occupying a position extending circumferentially less than the entire circumference of the midsection, the gate valve



having a flow passage in communication with the interior of the midsection to allow the inflow of sea water into the riser.

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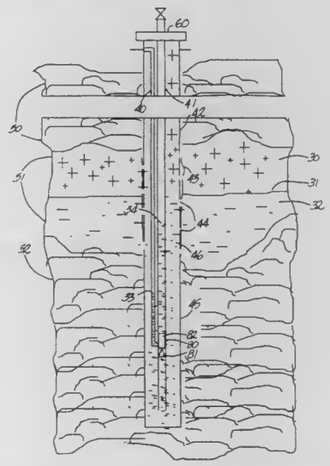
LIQUID LEVEL DETECTION FOR ARTIFICIAL LIFT SYSTEM CONTROL

Michael D. Hershberger, 1605 Tyler Rd., Kalkaska, Mich. 49646

Continuation of Ser. No. 660,052, May 31, 1996, Pat. No. 5,634,522. This application May 22, 1997, Ser. No. 862,078

Int. Cl.[6] E21B *43/00*

U.S. Cl. 166—372 **24 Claims**



1. In a method of producing gas from a gas and liquid containing underground stratum in which a well bore extends between a ground surface and the underground stratum and the well bore has a casing and a production tube defining an annulus through which the gas from the underground stratum passes and is collected at the ground surface through a production line connected to the annulus, the production tube extending from the ground surface and into fluid communication with the gas and liquid containing stratum and through which the liquid is collected from the well bore and removed to the ground surface by the step of artificially raising the liquid in the production tube to the ground surface by injecting a volume of gas into a bottom portion of the production tube through a side string tube to thereby release the gas from the gas and liquid containing underground stratum to the casing and production line, and wherein the side string tube extends from the ground surface downwardly through the annulus and below a level of liquid in the well bore, the side string tube being in fluid communication with the production tube, the improvement comprising the steps of:

reiteratively measuring the level of liquid in the well bore by: a) injecting a relatively small amount of gas into the side string tube to clear any liquid that may be present in the side string tube; b) reiteratively detecting the pressure in the side string tube; c) reiteratively detecting the pressure in the production tube; and d) computing the differential pressure between the detected side string pressure and the detected production tube pressure;

comparing the measured level with a predetermined value representative of a desired level of liquid in the well bore;

controlling the step of artificially raising the liquid in the production tube by initiating the injection of a volume of gas into the side string tube when the measured level of liquid reaches the predetermined value;

measuring the time in which the liquid in the production tube is artificially raised to the ground surface;

comparing the measured time of liquid rise with a predetermined liquid rise time; and

adjusting the volume of gas injected into the production tube during a subsequent gas lift injection cycle until the measured time of liquid rise is substantially equal to the predetermined liquid rise time.

5,826,660

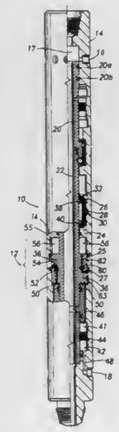
DUAL ACTION VALVE INCLUDING A BUILT IN HYDRAULIC CIRCUIT

Gary L. Rytlewski, League City, Tex., assignor to Schlumberger Technology Corporation, Sugar Land, Tex.

Filed Jun. 18, 1996, Ser. No. 665,614

Int. Cl.[6] E21B *34/10*

U.S. Cl. 166—373 **22 Claims**



10. A method of operating an valve adapted to be disposed in a wellbore, comprising the steps of:

(a) receiving a pressure in a first port and moving a mandrel of said valve when the pressure received in the first port is greater than a pressure existing in an inside annular space of said valve by an amount approximately equal to a predetermined value;

(b) changing a condition of said valve from a first condition to a second condition when the mandrel is moved in response to the moving step (a);

(c) propagating a medium in a hydraulic circuit from a storage chamber to said inside annular space of said valve when said mandrel is moved in response to the moving step (a) and said condition of said valve is changed to said second condition in response to the changing step (b); and

(d) changing said condition of said valve from said second condition to said first condition when said pressure in said inside annular space of said valve is greater than said pressure in said first port by an amount approximately equal to said predetermined value.

5,826,661

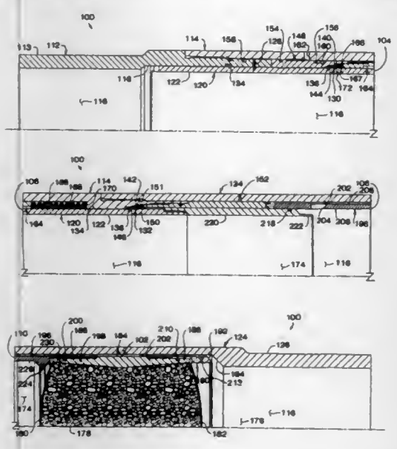
LINEAR INDEXING APPARATUS AND METHODS OF USING SAME

Charles D. Parker, Colleyville; Perry C. Shy, Southlake; Rennie L. Dickson, Carrollton; Leo G. Collins, Lewisville, and John C. Gano, Carrollton, all of Tex., assignors to Halliburton Energy Services, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 561,754, Nov. 22, 1995, Pat. No. 5,685,372, which is a continuation of Ser. No. 236,436, May 2, 1994, Pat. No. 5,479,986. This application Jun. 20, 1996, Ser. No. 667,305

Int. Cl.[6] E21B *34/14*

U.S. Cl. 166—386 **72 Claims**



1. Apparatus disposable within a subterranean wellbore, comprising:

a generally tubular first member having an axially extending bore internally formed thereon;

a generally tubular second member having an outer side surface, the second tubular member being axially slidingly received within the bore;

a first slip member, the first slip member grippingly engaging one of the first and second tubular members and preventing displacement of the one of the first and second tubular members relative to the other of the first and second tubular members in a first axial direction but permitting displacement of the one of the first and second tubular members relative to the other of the first and second tubular members in a second axial direction opposite to the first axial direction; and

a second slip member axially spaced apart from the first slip member, the second slip member grippingly engaging the one of the first and second tubular members and restricting displacement of the one of the first and second tubular members relative to the other of the first and second tubular members in the first axial direction, but permitting displacement of the one of the first and second tubular members relative to the other of the first and second tubular members in the second axial direction.

5,826,662

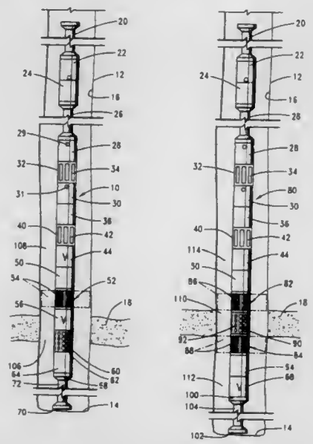
APPARATUS FOR TESTING AND SAMPLING OPEN-HOLE OIL AND GAS WELLS

Harold K. Beck, Copper Canyon; Paul D. Ringgenberg, Carrollton, both of Tex.; Roger L. Schultz, Stillwater, Okla., and Rodney R. Setliff, Corinth, Tex., assignors to Halliburton Energy Services, Inc., Dallas, Tex.

Filed Feb. 3, 1997, Ser. No. 792,744

Int. Cl.[6] E21B *33/12*

U.S. Cl. 166—387 **42 Claims**



1. A method of servicing an open-hole well, comprising the steps of:

(a) running a well tool into the well, said tool comprising:

a surge chamber;

a closure valve in communication with said surge chamber, said closure valve having a normally closed position and comprising an opener which when actuated initiates a predetermined time delay and automatically opens said closure valve after said predetermined time delay; and

a packer having a packer element engagable with an inner surface of said well adjacent to a zone of interest in said well;

(b) activating said tool such that:

said packer element is sealingly engaged with said inner surface of said well; and

said opener is actuated substantially simultaneously with the setting of said packer; and

(c) after said closure valve is opened by said opener, flowing fluid from said zone through the open closure valve into said surge chamber.

5,826,663

SYSTEM FOR FIGHTING FIRES

Göran Sundholm, Ilmari Kiannon kuja 3, FIN-04310 Tuusula, Finland

PCT No. PCT/FI94/00025, § 371 Date Jul. 21, 1995, § 102(e) Date Jul. 21, 1995, PCT Pub. No. WO94/16770, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 21, 1994, Ser. No. 492,034

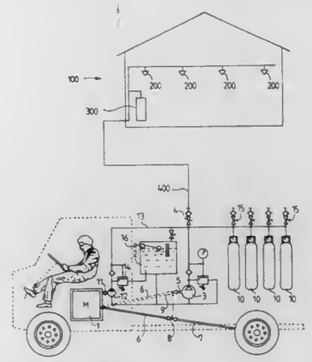
Claims priority, application Finland, Jan. 21, 1993, 930233

Int. Cl.[6] A62C *27/00*

U.S. Cl. 169—24 **9 Claims**

1. A system for fighting a fire, the system comprising:

delivery means (**200**) in a unit (**100**) for delivering high pressure extinguishing liquid into the unit as fog-like small droplets, whereby to fight a fire in the unit;



first supply means (**300**) comprising an accumulated energy device in the unit for first supplying the high pressure extinguishing liquid to the delivery means; and

a fire truck having final supply means comprising a tank (**2**) for the extinguishing liquid, a high pressure pump (**3**) and connecting means (**400**) for connecting the tank via the high pressure pump to the delivery means and finally supplying the high pressure extinguishing liquid thereto;

wherein:

the high pressure pump (**3**) has a drive shaft (**5**), and

the fire truck has a drive engine and a cardan shaft (**6**) from the drive engine (**1**): and

further comprising:

coupling means for coupling the drive shaft to the cardan shaft; and

intermediate supply means comprising at least one hydraulic accumulator (**10**) in the fire truck coupled to the delivery means for supplying the high pressure extinguishing liquid to the delivery means intermediate the first and final supply means.

5,826,664

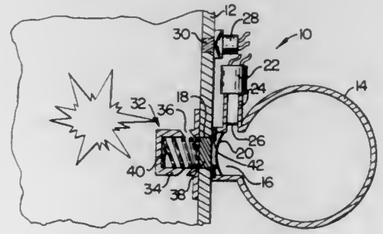
ACTIVE FIRE AND EXPLOSION SUPPRESSION SYSTEM EMPLOYING A RECLOSEABLE VALVE

Steven Dallas Richardson, St. Louis, Mo., assignor to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Dec. 20, 1996, Ser. No. 771,168

Int. Cl.[6] A62C *35/08*

U.S. Cl. 169—46 **20 Claims**



19. A system for suppressing a fire or explosion within a structure, the system comprising:

a container for housing a suppressant medium under pressure, said container defining an opening, said container being mounted to a wall of the structure such that the opening of said container is in fluid communication with a predefined opening in the wall;

actuation means, operably connected to said container, for initiating a reaction of the suppressant medium to increase the pressure within said container; and

a reclosable valve mounted to the wall for repeatedly closing the predefined opening in the wall, wherein said valve has an open position in which fluid communication is established between said container and the structure, and wherein said valve has a closed position in which the predefined opening in the wall is sealed;

wherein said actuation means initiates the reaction of the suppressant medium in response to the fire or explosion within the structure so as to move said reclosable valve from the closed position to the open position such that the suppressant medium enters the structure via the predefined opening in the wall and suppresses the fire or explosion.

5,826,665

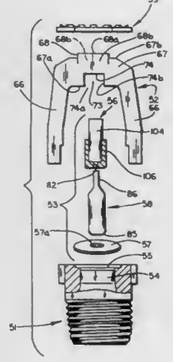
SPRINKLER HEAD WITH STAMPED TRIGGER-MOUNTING ELEMENTS

Perin E. Truax, 329 144th Ave., Caledonia, Mich. 49316, and James G. Retzloff, 4773 Grandwoods Dr., Lansing, Mich. 48917

Continuation-in-part of Ser. No. 335,645, Nov. 8, 1994, Pat. No. 5,628,367. This application May 9, 1997, Ser. No. 853,789

Int. Cl.[6] A62C *37/14*

U.S. Cl. 169—38 **28 Claims**



1. A mounting element for mounting a thermally activated triggering member in a sprinkler head assembly, the sprinkler head assembly including a base being and a frame, the base being for connecting to a pressurized source of water, the frame being secured to the base, and the thermally activated triggering member being supported between the base and the frame, said mounting element comprising:

a central base having a first face and a second face and including a seat for supporting the triggering member; and

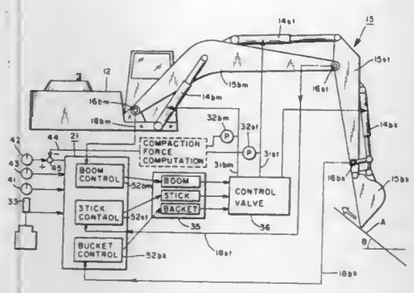
a tubular member extending from said first face of said central base and for spacing said central from the frame, and said tubular member having a pair of extended portions forming a saddle-shaped configuration for straddling and cooperatively engaging the frame.

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5,826,666
APPARATUS AND METHOD FOR CONTROLLING A CONTRUCTION MACHINE

Shoji Tozawa, Kobe, and Tomoaki Ono, Takasago, both of Japan, assignors to Shin Caterpillar Mitsubishi, Ltd., Japan

Filed Sep. 11, 1996, Ser. No. 712,435
Claims priority, application Japan, Feb. 21, 1996, 8-034033; Feb. 21, 1996, 8-034034
Int. Cl.[6] F16D *31/02;* **G06F** *15/20*
U.S. Cl. 172—7 **20 Claims**

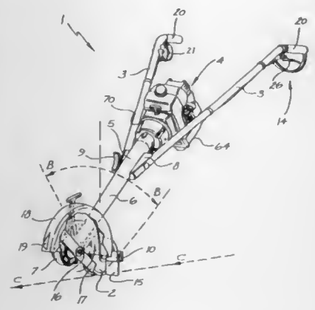


1. A control method for controlling a piece of construction equipment that has a position-sensing feedback control system to track respective positions of an actuator that controls positions of an end effector, comprising the steps of:
generating a target value for an actual force-load acting on said actuator generated in response to a forcing of said end effector against a working material;
detecting said actual force-load acting on said actuator; and
modifying a control signal of said feedback control system responsively to a result of said step of detecting and said target value.

5,826,667
LAWN EDGER

John Arthur Notaras, 6 Carrington Avenue, Strathfield NSW 2135, Australia, and Angelo Lambrinos Notaras, 86 Victoria Road, Bellevue Hill NSW 2023, Australia

Filed Jun. 6, 1994, Ser. No. 254,231
Claims priority, application Australia, Sep. 6, 1993, PL9298
Int. Cl.[6] A01D *53/14*
U.S. Cl. 172—15 **20 Claims**

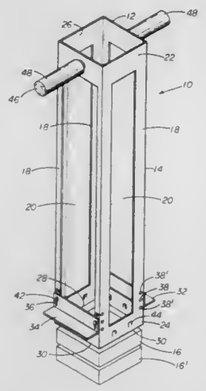


1. A powered lawn edger steerable by a walking operator in the manner of a wheelbarrow, the edger comprising:
a. an elongated frame having handle means attached thereto adjacent one end thereof and having a ground engaging wheel means attached thereto adjacent the other end thereof, said ground engaging wheel means being below said frame with substantially the entire ground engaging wheel means lying below said frame;
b. a cutting device mounted adjacent said other end of said frame forward of said ground engaging wheel means, said cutting device being rotatable about a horizontal axis;
c. height adjustment means connected to said frame for increasing the height or decreasing the height of said frame relative to the ground;
d. a power unit mounted on said frame;
e. an enclosed power train interconnecting said power unit and said cutting device for rotating said cutting device; and
f. said ground engaging wheel means, said cutting device, said power unit, and said power train being positioned on said frame such that the center of gravity of the entire edger, in use, lies within a substantially vertical plane intermediate said ground engaging wheel means and said handle means and passing through said ground engaging wheel means, whereby said handle means can be manipulated by the operator to twist said frame about a longitudinal axis to laterally tilt said cutting device from its vertical plane of rotation.

5,826,668
SQUARE CUT TURF PLUGGING TOOL WITH ADJUSTABLE CUT DEPTH

John Kosmalski, 7836 Bethel Church Rd., Saline, Mich. 48176

Filed Nov. 24, 1996, Ser. No. 755,637
Int. Cl.[6] A01B *45/04*
U.S. Cl. 172—19 **11 Claims**

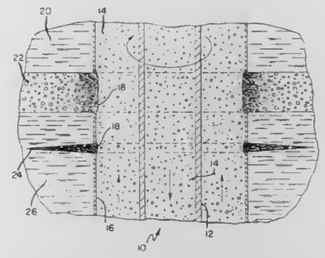


1. A portable turf cutting and removing device comprising a vertical frame square in plan view extending the entire height of the device, said vertical frame having a plurality of parallel vertical members forming sides, an upper end and a lower end each joining the parallel vertical members together to form a rectangular parallelepiped from the upper end to the lower end, the parallel vertical members providing a plurality of vertical openings therein, an open bottom, the open bottom and lower end forming cutting edges in a square configuration and adjustable stop means attacked to the vertical frame near at least one cutting edge of the lower end of the frame.

5,826,669
DRILLING FLUID LOSS PREVENTION AND LUBRICATION ADDITIVE

Peter L. Zaleski, Willow Springs; David J. Derwin, Des Plaines, both of Ill.; Donald J. Weintritt, Lafayette, La., and George W. Russell, Tinley Park, Ill., assignors to Superior Graphite Co., Chicago, Ill.

Filed Dec. 10, 1996, Ser. No. 763,201
Int. Cl.[6] C09K *7/02;7/06;* **E21B** *33/138*
U.S. Cl. 175—72 **23 Claims**



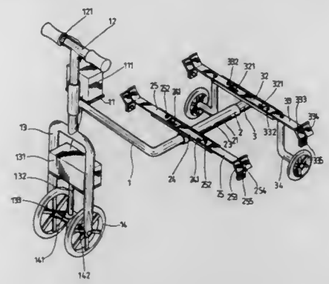
1. A method of improving the properties of a well drilling fluid comprising the step of adding to the drilling fluid resilient graphitic carbon particles having a size of larger than about +200 mesh.

18. A method of controlling the loss of drilling fluid from an oil well borehole into subterranean formations penetrated by a drill bit comprising adding resilient graphitic carbon particles of larger than about +200 mesh to the borehole.

5,826,670
DETACHABLE PROPULSIVE DEVICE FOR WHEELCHAIR

Huang Shun Nan, No. 32, Nei-Hsi Chou, Nei-Hsi Tsun, Shui-Shang Village, Chia-I Hsien, Taiwan

Filed Aug. 15, 1996, Ser. No. 698,181
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—15 **6 Claims**

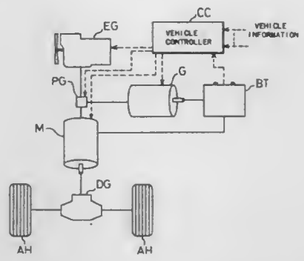


1. A detachable propulsive device for a wheelchair having a bottom frame, including first and second substantially parallel spaced apart side members thereof, said propulsive device, comprising:
a skeleton frame having a front end and a rear end
drive means mounted at said front end of said skeleton frame, said drive means including a motor, a power source powering said motor, and a set of front wheels driven by said motor,
steering means mounted at said front end of said skeleton frame for directionally controlling said set of front wheels, said steering means comprising a handle, and a rotatable wheel mount extending downward from said handle and supporting said set of front wheels thereon,
dimensional adjusting unit mounted at said rear end of said skeleton frame, said dimensional adjusting unit comprising a length adjusting mechanism; and, a width adjusting mechanism, and first and second pairs of clips coupled to said dimensional adjusting unit;
said length adjusting mechanism including:
(a) first and second telescopic sliding hollow tubes,
(b) first fastening means securing said first and second tubes in telescopic interrelationship, said first hollow tube being installed at said rear end of said skeleton frame, and
(c) a pair of U-shaped cross sliding rails, each of said cross sliding rails being secured to a respective one of said first and second telescopic sliding hollow tubes substantially perpendicularly thereto;
said width adjusting mechanism including:
(a) a pair of sliding arms coupled to each of said U-shaped cross sliding rails, each said sliding arms engaging a respective one of said U-shaped cross sliding rail at opposing ends thereof, each of said sliding arms having an inner end slidingly engaged within a respective one of said U-shaped cross sliding rails and an outer end thereof, and
(b) second fastening means securing each said pair of sliding arms in a selected position with respect to a respective one of said U-shaped cross sliding rails, said outer end of each of said sliding arms carrying a respective one of said first and second pairs of clips, one of said pairs of clips being a V-shaped retaining clip and the other of said pairs of clips being a floating clip attached to said V-shaped retaining clip in a swinging arrangement therewith;
said first and second pairs of said clips engaging the first and second side members of the bottom frame of the wheelchair and holding the side members enveloped between said V-shaped retaining clip and said floating clip to thereby attach said propulsive device to said wheelchair.

5,826,671
APPARATUS FOR CONTROLLING HYBRID VEHICLE AND METHOD OF THE SAME

Koichi Nakae, and Kiyoo Hirose, both of Susono, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 12, 1996, Ser. No. 766,473
Claims priority, application Japan, Dec. 27, 1995, 7-352569
Int. Cl.[6] B60K *6/00*
U.S. Cl. 180—85.2 **14 Claims**



1. An apparatus for controlling a vehicle which has an internal combustion engine for combusting a fuel ingested from an intake manifold and a motor mounted thereon and controls operation of said internal combustion engine and said motor in order to drive wheels by means of at least either one of said internal combustion engine and said motor, said apparatus comprising:
stop condition detecting means for detecting that a condition to stop the operation of said internal combustion engine is fulfilled;

determination means for determining whether said internal combustion engine being operated is in an unstable state, in which a quantity of the fuel adhering to a wall surface is varied unstably; and

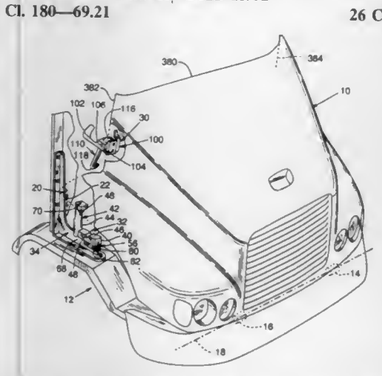
continuous driving means for forcing said internal combustion, engine to continue its operation in case that said determination means determines that said internal combustion engine is in the unstable state, even when said stop condition detecting means detects that the condition to stop the operation of said internal combustion engine is fulfilled.

5,826,672

HOOD LATCH ASSEMBLY FOR A VEHICLE

Dean Holter, Portland, and Thomas A. Leslie, Tigard, both of Oreg., assignors to Freightliner Corporation, Portland, Oreg.

Filed May 6, 1996, Ser. No. 642,926
Int. Cl.[6] B62D *25/12*
U.S. Cl. 180—69.21 **26 Claims**



14. A latch catch for a vehicle having a hood which is movable between open and closed positions, the latch catch being engagable by a hood latch for latching the hood in a closed position, the latch catch comprising:

a catch body;

a latch engaging portion comprising a resilient material and projecting upwardly from the catch body into a position for engagement by the hood latch at a location above the catch body;

the catch body including a hood engaging surface which is positioned to engage the hood at a location below the latch engaging portion when the hood is in a hood closed position; and

the catch body also including a catch mount, whereby the latch catch may be coupled by the catch mount to the vehicle.

5,826,673

HYBRID ELECTRIC PROPULSION SYSTEM USING A DUAL SHAFT TURBINE ENGINE

Bradford Bates, Ann Arbor; Richard C. Belaire, Whitmore Lake, and Craig Hammann Stephan, Ann Arbor, all of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

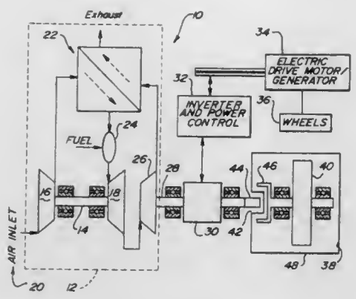
Continuation of Ser. No. 551,261, Oct. 31, 1995, Pat. No. 5,762,156, and Ser. No. 551,262, Oct. 31, 1995, Pat. No. 5,584,174. This application Nov. 26, 1997, Ser. No. 978,258
Int. Cl.[6] B60K *6/00*
U.S. Cl. 180—165 **12 Claims**

1. A hybrid electric propulsion system for a vehicle comprising:

an electric drive motor;

a generator supplying electric current to said motor;

a flywheel;



a vacuum containment vessel enclosing said flywheel; and

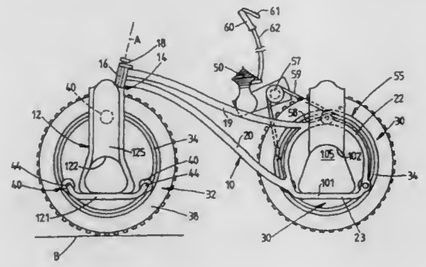
a dual shaft turbine engine, said engine having a compressor and a gasifier coupled to a first shaft and a power turbine, said flywheel and said generator coupled to a second shaft, said first and second shafts being uncoupled and exhaust gases from said gasifier cause said power turbine to rotate, whereby said rotating power turbine turns said generator and flywheel.

5,826,674

WHEELED VEHICLE

Grant Taylor, 71 Neurum Street, Coolum Beach, Queensland, 4753, Australia

PCT No. PCT/AU93/00544, § 371 Date Jul. 15, 1996, § 102(e) Date Jul. 15, 1996, PCT Pub. No. WO94/09872, PCT Pub. Date May 11, 1994
PCT Filed Oct. 22, 1993, Ser. No. 633,756
Claims priority, application Australia, Oct. 23, 1992, PL 5448; Jul. 14, 1993, PL 9939
Int. Cl.[6] B62D *61/02*
U.S. Cl. 180—219 **19 Claims**



7. A wheeled vehicle including:

a frame;

two substantially in-line ring-shaped wheels;

internal wheel support means coupled to the frame and bearing on internal rim portions of the wheels so as to rotatably couple the wheels to the frame; and

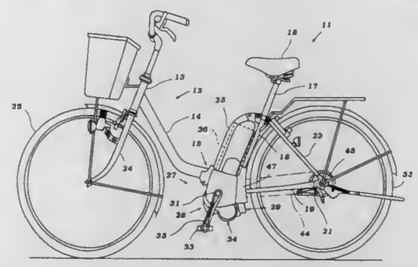
a pair of foot support members coupled to the frame and extending through the ring-shaped wheels, the foot support members being adapted to support the feet of a user while respective feet of the user extend axially through respective ones of the ring-shaped wheels.

5,826,675

ELECTRIC MOTOR ASSISTED VEHICLE

Satoshi Yamamoto, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 7, 1997, Ser. No. 888,575
Claims priority, application Japan, Jul. 5, 1996, 8-176229
Int. Cl.[6] B60K *1/00*
U.S. Cl. 180—220 **11 Claims**



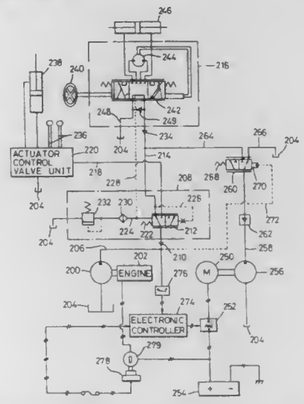
1. A security system for an electric motor assisted manually powered vehicle, said system comprising a power unit having a manual force input and an electric motor force input, a transmission for driving an output for propelling a vehicle from said inputs, and a controller for controlling the operation of said electric motor for controlling the amount of electric motor assist, said controller being programmed with certain identifying information, and a security unit for controlling the communication of electric power to said controller, said security unit having information which must be matched with information in said controller in order for said controller to be operative to effect electric power assist.

5,826,676

FAILSAFE HYDRAULIC STEERING SYSTEM FOR USE IN AN INDUSTRIAL VEHICLE

Hyun Gie Ko, Namdong-gu, Rep. of Korea, assignor to Daewoo Heavy Industries, Ltd., Incheon, Rep. of Korea

Filed Sep. 19, 1996, Ser. No. 716,115
Claims priority, application Rep. of Korea, Sep. 19, 1995, 1995-30777
Int. Cl.[6] B62D *5/06*
U.S. Cl. 180—403 **6 Claims**



1. A failsafe hydraulic steering system for use in an industrial vehicle having an engine, a fluid reservoir, a steering valve unit, an actuator control valve unit, a main fluid pump driven by the engine for pumping a fluid in the reservoir to feed pressure fluid to the steering valve unit and the actuator control valve unit and a priority valve for enabling the pressure fluid to be first supplied to the steering valve unit, wherein the improvement comprises:

an electric motor;

a power supply selectively connected to the electric motor for supplying electric current to the electric motor;

an auxiliary fluid pump driven by the electric motor to produce emergency steering fluid to be fed to the steering valve unit;

a power supply control for disconnecting the electric motor from the power supply while the main pump produces the pressure fluid and for connecting the electric motor to the power supply when no pressure fluid is discharged from the main pump; and

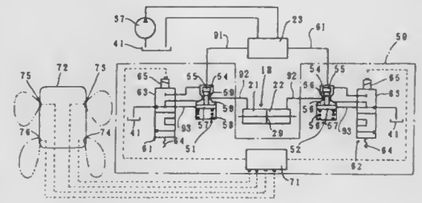
a directional control valve shiftable between a first operative position wherein the auxiliary pump is in communication with the reservoir and a second operative position wherein the auxiliary pump comes into communication with the steering valve unit to direct the emergency steering fluid to the steering valve unit.

5,826,677

VEHICLE STEERING DEVICE

Katsutoshi Nishizaki, Nabari; Yoshihiro Goto, Kashiwara; Tomoyasu Kada, Higashiosaka; Shiro Nakano, Osaka, and Yoshinobu Shimizu, Sakai, all of Japan, assignors to Koyo Seiko Co., Ltd., Osaka, Japan

Filed Apr. 8, 1996, Ser. No. 629,396
Claims priority, application Japan, Apr. 18, 1995, 7-117868; Nov. 10, 1995, 7-317210
Int. Cl.[6] B60R *21/00*
U.S. Cl. 180—421 **14 Claims**



1. A vehicle steering device, comprising:

means for inhibiting the driver's steering;

means for releasing the steering inhibition;

means for detecting an obstacle calling for application of steering inhibition;

means for issuing a signal following detection of the obstacle; and

means for switching the steering device itself between a first mode in which it is possible to inhibit steering and a second mode in which the steering inhibition is released, in response to issuance and cancellation of the signals, regardless of whether the vehicle is being steered or not.

5,826,678

FIRE ESCAPE PARACHUTE

Yu-Li Yu, No. 223, Hou-Chu-Wei St., Sanchung, Taipei Hsien, Taiwan

Filed May 8, 1997, Ser. No. 852,953
Int. Cl.[6] A62B *5/00*
U.S. Cl. 182—3 **1 Claim**

1. A fire escape parachute, comprising:

a parachute structure;

a handle;

a central shaft connecting to said parachute structure on an upper end thereof and said handle of an opposing end;

a bolt coupled to said handle having a fixing ring on one end thereof and a fixing hole formed through an opposing end of said bolt;

a safety belt, said safety belt having two ends, one of said two ends being buckled to said fixing ring and the other end of said safety belt being buckled to said fixing hole; and,

a plurality of reinforcing ropes, each said reinforcing rope having a first end buckled to said fixing ring;

said parachute member including:

a main runner and an upper runner spaced from said main runner slidingly disposed on said central shaft;

a plurality of top ribs extending radially from said upper end of said central shaft, each of said top ribs having inner and outer ends, said inner ends of said top ribs being coupled to said upper end of said central shaft;

a plurality of reinforcing ribs, each said reinforcing rib being coupled between said upper runner and said outer end of a respective one of said top ribs;

a plurality of stretcher ribs, each of said stretcher ribs being coupled between said main runner and a respective one of said top ribs between said inner and outer ends thereof; and,

a fabric enveloping said plurality of top ribs;

each of said reinforcing ropes having a second end buckled to said outer end of a respective one of said plurality of top ribs, thereby reinforcing said parachute member for withstanding reversing forces applied thereto.

5,826,679

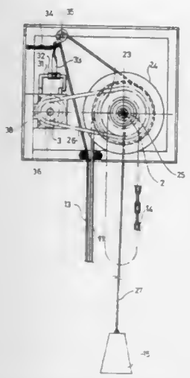
EMERGENCY ESCAPE DEVICE FOR BUILDINGS

Muh-Tsuen Chern, 22-17, Tay Kang, Tay Kang Village, Leou Ying Shiang, Tainan Hsien, Taiwan

Filed Oct. 7, 1997, Ser. No. 946,246

Int. Cl.[6] A62B *1/02*

U.S. Cl. 182—238 **5 Claims**



1. An emergency escape device for buildings, comprising:

a rotatably supported axle,

a reel mounted on the shaft to rotate therewith,

a string wound around the axle and having a first end securely attached to the axle and a second end, a weight means being securely attached to the second end of the string,

a cable wound around the reel and having a free end, the cable having a winding direction opposite to that of the string,

a basket securely attached to the free end of the cable and having a weight smaller than that of the weight means,

a hydraulic pump including a fluid path and an output shaft, a control valve being mounted to the fluid path for controlling opening and closing of the fluid path to thereby control rotational movement of the output shaft,

a transmission member for transmitting rotational movement of the output shaft to the axle,

a rod mounted to the control valve for actuating the control valve, and

a pull string having an end attached to the rod and a second end located adjacent to the basket for manually actuating the rod.

5,826,680

BILL HANDLING SYSTEM IN A GAMING HOUSE

Takatoshi Takemoto, and Kazunari Kawashima, both of Tokyo, Japan, assignors to Kabushiki Kaisha Ace Denken, Japan

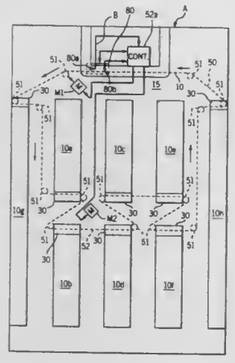
PCT No. PCT/JP93/00653, § 371 Date Nov. 18, 1994, § 102(e) Date Nov. 18, 1994, PCT Pub. No. WO93/23828, PCT Pub. Date Nov. 25, 1993

PCT Filed May 19, 1993, Ser. No. 343,431

Claims priority, application Japan, May 19, 1992, 4-126454

Int. Cl.[6] G06F *7/04*

U.S. Cl. 186—37 **12 Claims**



8. A stacker, for taking in bills sent from game play support machines and temporarily holding them, then discharging the bills outside of said stacker, installed in a gaming house containing a plurality of gaming machines, for players to play games, and a plurality of game play support machines, for players to make payment required to play games with the gaming machines, each game play support machine having a mechanism for taking in bills for the payment, said stacker comprising:

a cassette for storing bills with the bills stacked;

cassette transport means for moving the cassette between a storage position at which bills are loaded into the cassette and a discharge position at which bills are discharged to the outside of said stacker;

a bill transport mechanism for taking in bills from the game play support machines and transporting the bills to the storage position;

a storage mechanism for storing bills transported by means of said bill transport mechanism in the cassette with the bills stacked, at the storage position;

a transfer mechanism for discharging the bills stored in the cassette with the bills stacked, at the discharge position;

a sensor for sensing whether or not an external cassette into which the bills are to be discharged at the discharge position is empty; and

a control system for causing said transfer mechanism to discharge bills at the discharge position when an output signal of said sensor indicates that the external cassette is empty.

5,826,681

DISK BRAKE ASSEMBLY WITH PISTON RETRACTION SEAL

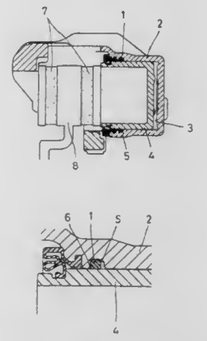
Atsushi Kubo, and Atsuo Matsumoto, both of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Aug. 28, 1996, Ser. No. 704,246

Claims priority, application Japan, Sep. 1, 1995, 7-225461

Int. Cl.[6] F16D *55/02*

U.S. Cl. 188—71.8 **5 Claims**



1. A disk brake assembly, comprising:

a caliper formed with a cylinder, said cylinder having an inner surface;

a brake piston mounted in said cylinder, said brake piston having an outer periphery and an end on which fluid pressure can act; and

a piston retracting means for retracting said piston in said cylinder, said piston retracting means comprising a seal groove in said inner surface of said cylinder, said seal groove comprising an edge remote from the end of said brake piston on which fluid pressure can act, said edge having a chamfer, and a rubber piston seal fitted in said seal groove so as to be pressed against the outer periphery of said brake piston, forming a liquid tight seal of the space between said cylinder and said brake piston, said piston seal having an inner diameter portion having an inner peripheral surface and an outer diameter portion, and said seal groove having a depth;

wherein said piston seal is deformable from an original shape and is adapted to be pulled at said inner diameter portion thereof by said brake piston and resiliently deformed until said piston seal fills a gap defined by said chamfer when said brake piston is advanced to press a brake pad against a brake disk, and to resiliently move back to return to the original shape while retracting said piston when fluid pressure is released, and wherein said piston seal has said outer diameter portion thereof fitted in said seal groove such that 25–70% of the depth of said seal groove has said piston seal fitted therein with substantially no axial gap between said seal groove and said seal.

5,826,682

DISK BRAKE ASSEMBLY FOR WHEEL OF A TRAILER

Bernhardt P. Goettker, Escondido, Calif., assignor to Unique Functional Products, San Marcos, Calif.

Filed Aug. 30, 1996, Ser. No. 706,437

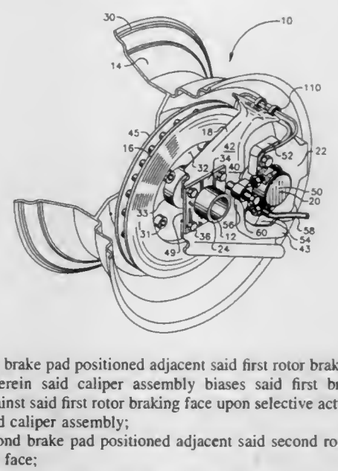
Int. Cl.[6] F16D *65/14;65/38*

U.S. Cl. 188—72.4 **19 Claims**

1. A disk brake assembly comprising:

a rotor having a first rotor braking face and a second rotor braking face;

a caliper assembly positioned proximal to said first rotor braking face;



a first brake pad positioned adjacent said first rotor braking face, wherein said caliper assembly biases said first brake pad against said first rotor braking face upon selective actuation of said caliper assembly;

a second brake pad positioned adjacent said second rotor braking face;

a clamping arm connected to said caliper assembly, wherein said clamping arm biases said second brake pad against said second rotor braking face upon selective actuation of said caliper assembly and wherein said clamping arm substantially flexes relative to said rotor to dampen a bias response of said first and second brake pads against said first and second rotor braking faces;

a mounting bracket having a first guide surface and a second guide surface for guiding slidable movement of said first and second brake pads wherein said first and second guide surfaces are positioned adjacent said first and second brake pads;

a first sleeve positioned on said first guide surface and a second sleeve positioned on said second guide surface; and

a support strap connected to said first and second guide surfaces, wherein said support strap divides said first and second guide surfaces each into a first portion and a second portion.

5,826,683

MAGNETOSTRICTIVE BRAKE

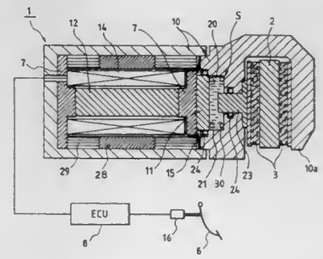
Yukio Murata, Saitama, and Hajime Yamada, 1709-5, Wakasato, Nagano-shi, Nagano, both of Japan, assignors to Akebono Brake Industry Co., Ltd., Tokyo; Akebono Research and Development Centre Ltd., Hanyu, and Hajime Yamada, Nagano, all of Japan

Filed Jan. 28, 1997, Ser. No. 789,267

Claims priority, application Japan, Jan. 29, 1996, 8-012983; Apr. 24, 1996, 8-102774

Int. Cl.[6] B60L *7/00;* **F16D** *55/08*

U.S. Cl. 188—161 **14 Claims**



1. A magnetostrictive brake comprising:

an electrically-driven actuator for moving friction materials back and forth toward a rotary member so as to obtain braking force by pressing said friction materials against said rotary

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member, said actuator including a magnetostrictive element whose length varies with magnetostriction when a magnetic field is applied thereto so as to obtain the braking force of pressing said friction materials and an electromagnetic coil for applying the magnetic field to said magnetostrictive element in proportion to an input voltage;

a control unit for controlling the voltage that is input to said electromagnetic coil in accordance with an operation of a brake operating part so as to controll an operation of said actuator; and

bias magnetic field applying means for applying a bias magnetic field to said magnetostrictive element during a non-operation of the brake.

5,826,684

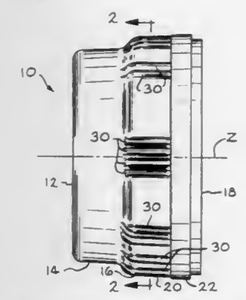
BRAKE DRUM HAVING RIBS ON DRUM OUTER SURFACE

Larry B. Hester, Dayton, Ohio, assignor to Dayton Walther Corporation, Dayton, Ohio

Filed Dec. 6, 1996, Ser. No. 762,104

Int. Cl.[6] F16D *65/10*

U.S. Cl. 188—218 R **12 Claims**



1. A brake drum adapted for use in a drum brake assembly comprising:

a generally closed outer end, an opened inner end, and a generally axially extending cylindrical main body defining a brake drum axis and connecting said closed outer end to said opened inner end, said cylindrical main body including only twenty-seven axially extending raised ribs provided on an outer surface thereof, said twenty-seven raised ribs defining a plurality of groups of at least one raised rib circumferentially spaced on said outer surface in a predetermined pattern, said plurality of groups including a first group of five spaced apart raised ribs, a second group of one raised rib, a third group of two spaced apart raised ribs, a fourth group of two spaced apart raised ribs, a fifth group of four spaced apart raised ribs, a sixth group of one raised rib, a seventh group of two spaced apart raised ribs, an eighth group of one raised rib, a ninth group of four spaced apart raised ribs, a tenth group of two spaced apart raised ribs, an eleventh group of two spaced apart raised ribs, and a twelfth group of one raised rib.

5,826,685

COOLING SPOKE ARRANGEMENT FOR A BRAKE DISC

Thomas H. Engle, Clayton, N.Y., assignor to Westinghouse Air Brake Company, Wilmerding, Pa.

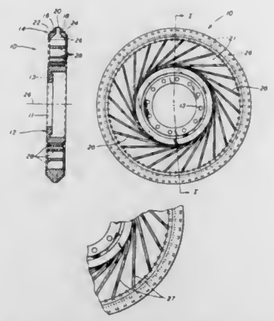
Filed Nov. 12, 1996, Ser. No. 745,429

Int. Cl.[6] F16D *65/78*

U.S. Cl. 188—264 A **17 Claims**

1. A brake disc having at least a portion axisymmetric about an axis, said brake disc for attachment to rotating machinery for retardation of such rotating machinery, said brake disc comprising:

(a) a hub portion for attachment to such rotating machinery;



(b) a rim portion having a first annular portion and a second annular portion, said first annular portion and said second annular portion spaced apart axially, at least one opening between said first annular portion and said second annular portion, said first annular portion having a first friction surface axisymmetric about said axis, said first friction surface for contact with a brake shoe, said second annular portion having a second friction surface axisymmetric about said axis, said second friction surface for contact with a brake shoe, said first friction surface and said second friction surface sloped in opposition to one another, and

(c) a plurality of substantially straight spokes being disposed in an intermediate range of radii between an outer radius of said hub portion and an inner radius of said rim portion, each of said spokes being connected to said hub portion and to said rim portion, said spokes being inclined relative to radial lines from said axis, said brake disc being generally open in said intermediate range of radii, with open space for airflow generally surrounding said spokes.

5,826,686

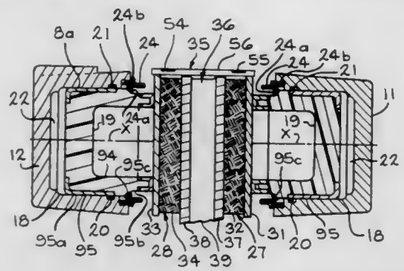
PISTON WITH MOISTURE-PROTECTIVE OUTER COVER FOR USE IN DISC BRAKE ASSEMBLY

Russell E. Rike, Spring Valley, Ohio, assignor to Dayton Walther Corporation, Dayton, Ohio

Continuation of Ser. No. 575,411, Dec. 20, 1995, abandoned. This application Apr. 7, 1997, Ser. No. 834,587

Int. Cl.[6] F16D *65/38*

U.S. Cl. 188—264 G **12 Claims**



1. A piston adapted for use in a brake assembly comprising:

a hollow body defining an axis and including an open end and a closed end, the body defining an inner surface and an outer surface extending axially between the open end and the closed end, the body being formed from a first material;

a first cover formed from a second material and integrally molded about portions of the outer surface and the closed end of the body, the first cover including an outer side wall and an end wall, the outer side wall of the first cover extending axially inwardly toward the open end along a portion of the outer surface of the body, and the end wall of the first cover extending radially inwardly along not more than a portion of the closed end of the body; and

a generally annular second cover formed from the second material and positioned about the open end of the body, the second cover including an end wall, an inner side wall, and an outer side wall, the end wall of the second cover extending about the open end of the body, and the inner and outer side walls of the second cover extending axially inwardly toward the closed end along a portion of the inner and outer surfaces of the body, wherein the first cover is spaced apart from the second cover.

5,826,687

ANTI-ROLL VEHICULAR SUSPENSION SYSTEM AND A HYDRAULIC ROTARY ACTUATOR SYSTEM IN AN ANTI-ROLL VEHICULAR SUSPENSION SYSTEM

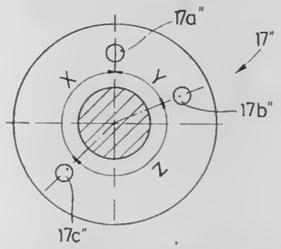
Jörg Büngeler, Rheinberg; Manfred Berwind, Gadbeim-Ottendorf; Thomas Göppner, Salz; Thomas John, Alitzbeim; Horst Oppitz, Dittelbrunn; Bernhard Schmitt, Wasserlosen, and Ulrich Walz, Wipfeld, all of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Dec. 21, 1994, Ser. No. 360,434

Claims priority, application Germany, Dec. 21, 1993, 43 43 580.7

Int. Cl.[6] B60G *21/05*

U.S. Cl. 188—296 **8 Claims**



1. A method of assembling a vehicular suspension system, said vehicular suspension system comprising a hydraulic rotary actuator, said hydraulic rotary actuator comprising a body; said body comprising a first member and a second member; at least one of said first member and said second member being rotatable, about an axis of rotation, with respect to the other of said first member and said second member by hydraulic fluid under pressure; a first stabilizer bar, said first stabilizer bar having a first end and a second end; said first end of said first stabilizer bar for being connected to a first wheel assembly of a motor vehicle; a second stabilizer bar, said second stabilizer bar having a first end and a second end; said first end of said second stabilizer bar for being connected to a second wheel assembly of a motor vehicle; apparatus to hydraulically control said rotary actuator; a first hydraulic line connecting said rotary actuator to said control apparatus, said first hydraulic line having a first end and a second end; a second hydraulic line connecting said rotary actuator to said control apparatus, said second hydraulic line having a first end and a second end; a first connecting apparatus, connecting said second end of said first stabilizer bar to said rotary actuator; a second connecting apparatus, connecting said second end of said second stabilizer bar to said rotary actuator; said first connecting apparatus comprising: a first coupling member, said first coupling member having a first configuration; and first apparatus to receive said first coupling member, said first receiving apparatus being configured for solely accepting said first configuration of said first coupling member; said second connecting apparatus comprising: a second coupling member, said second coupling member having a second configuration; and second apparatus to receive said second coupling member, said second receiving apparatus being configured for solely accepting said second configuration of said second coupling member, to prevent incorrect insertion of said first coupling member into said second receiving apparatus, and to prevent incorrect insertion of said second coupling member into said first receiving apparatus; said method comprising the steps of:

connecting said first end of said first stabilizer bar to a first wheel assembly of a motor vehicle;

connecting said first end of said second stabilizer bar to a second wheel assembly of a motor vehicle;

connecting said rotary actuator to said control apparatus with said first hydraulic line;

connecting said rotary actuator to said control apparatus with said second hydraulic line;

connecting said second end of said first stabilizer bar to said rotary actuator by:

inserting said first coupling member having said first configuration into said first receiving apparatus; and

solely accepting said first configuration of said first coupling member with said first receiving apparatus; connecting said second end of said second stabilizer bar to said rotary actuator by:

inserting said second coupling member having said second configuration into said second receiving apparatus; and

solely accepting said second configuration of said second coupling member with said second receiving apparatus and preventing incorrect insertion of said first coupling member into said second receiving apparatus and preventing incorrect insertion of said second coupling member into said first receiving apparatus.

5,826,688

TORSION DAMPER FOR A LOCKING CLUTCH AND A LOCKING CLUTCH INCLUDING SUCH A TORSION DAMPER

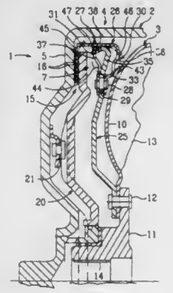
Rabah Arhab, St. Brice sous Forêt, and Luc Thevenon, Paris, both of France, assignors to Valeo, Paris, France

Filed Sep. 18, 1996, Ser. No. 715,411

Claims priority, application France, Sep. 19, 1995, 95 10960

Int. Cl.[6] F16D *3/14*

U.S. Cl. 192—3.29 **4 Claims**



1. Torsion damper for a locking clutch able to act between the driving element and the driven element of a hydrokinetic coupling device, having two coaxial parts able to move with respect to each other and counter to circumferentially acting springs, namely an input part provided with a guide washer and an output part provided with a web, in which the guide washer has a holding portion and bearing portions bordering on circumferentially extending apertures receiving the springs, to respectively hold the springs and enable them to bear, while the web also has bearing portions to enable the springs to bear, wherein the guide washer consists of two parts, a first part and a second part, assembled by crimping, and in that the first part retains the springs on the outside, and

wherein the first part is an annular part whose section along a plane passing through the axis is in the overall shape of an inverted L with a transverse lateral wall extended on its external part by a skirt extending axially and by the fact that

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the second part is in the shape of a ring extending transversely the second part is provided at its external periphery with circumferentially extending slots through which there pass axial lugs on the skirt of the first part, and the axial lugs are provided at their end with fingers narrower than the axial lugs and defining steps which are crimped to fix the first and second parts together.

5,826,689

CLUTCH COVER AND CLUTCH COMPRISING SUCH A COVER

Jean-Claude Bochot, Claye-Souilly, France, assignor to Valeo, Paris, France

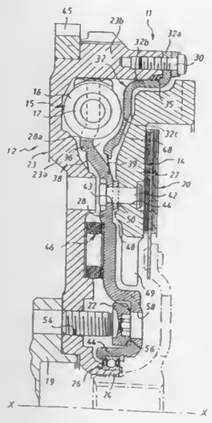
PCT No. PCT/FR95/01124, § 371 Date Apr. 29, 1996, § 102(e) Date Apr. 29, 1996, PCT Pub. No. WO96/07037, PCT Pub. Date Mar. 7, 1996

PCT Filed Aug. 25, 1995, Ser. No. 637,660

Claims priority, application France, Aug. 29, 1994, 94 10375

Int. Cl.[6] F16F *15/12;* F16D *13/60*

U.S. Cl. 192—70.17 6 Claims



1. A torsion damper for a clutch having a reaction plate and a friction wheel, the torsion damper comprising: two coaxial masses (**12**, **14**) mounted for circumferential movement of one with respect to the other against the action of circumferentially acting resilient means (**16**, **17**), namely, respectively, a first mass (**12**) comprising a first platen (**23**) adapted to be fixed to a driving shaft, and a second mass (**14**) comprising an annular second platen (**27**) adapted to constitute the reaction plate of the clutch and offering a friction surface to the clutch friction wheel of said clutch, and a disc (**28**) fixed to the annular second platen (**27**) in facing relationship with the first mass by means of fastening means (**42**), the disc (**28**) constituting a damper plate for actuation of the resilient means, wherein the first mass (**12**) is configured with a hub (**24**) which is equipped with a bearing (**26**) for permitting rotation of the second mass, and wherein an axial spacing means (**50**) is interposed between the second platen (**27**) and the damper plate (**28**) around each fastening means, characterised in that the damper plate (**28**) is of press-formed metal plate and is extended radially inwardly with respect to the spacing means by a cylindrical sleeve (**44**), in that the bearing (**26**) is fitted between the cylindrical sleeve (**44**) and the hub (**24**), and in that an annular ventilation space (**48**) is defined, firstly between the second platen (**27**) and the damper plate (**28**) in its radially innermost part, and secondly, between the second platen (**27**) and the first mass (**12**) in its radially outermost part.

5,826,690

PROCESS FOR THE ASSEMBLY OF A LOCKING CLUTCH FOR A HYDROKINETIC COUPLING DEVICE, ESPECIALLY FOR A MOTOR VEHICLE, A CORRESPONDING LOCKING CLUTCH AND A HYDROKINETIC COUPLING DEVICE COMPRISING SUCH A LOCKING CLUTCH

Daniel Maingaud, Le Plessis Bouchard, and Rabah Arhab, St Brice Sous Foret, both of France, assignors to Valeo, Paris Cedex, France

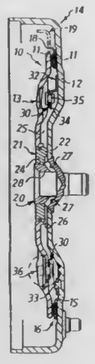
PCT No. PCT/FR95/01442, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO96/14526, PCT Pub. Date May 17, 1996

PCT Filed Nov. 3, 1995, Ser. No. 649,726

Claims priority, application France, Nov. 4, 1994, 94 13205

Int. Cl.[6] F16H *45/02;* F16D *13/68*

U.S. Cl. 192—70.18 13 Claims



1. A method for the assembly of a locking clutch for a hydrokinetic coupling device having at least one friction lining disposed axially between a fixed wall and a piston and movably mounted axially in relation thereto, for the rotational attachment of the piston to the fixed wall, with tongues substantially extended tangentially at a circumference of the assembly, in which the tongues are coupled to the fixed wall at one of the tongue ends and to the piston at the other of the tongue ends,

comprising the steps of coupling the tongues to the piston, passing attachment means having two portions for the tongues through the tongues and the piston, fixing the first portion to the tongues on the side thereof opposite the piston, and clinching the second portion with the first portion, on the other side of the piston.

4. A locking clutch assembly for a hydrokinetic coupling device, comprising at least one friction lining disposed axially between a fixed wall and a piston, the piston is movably mounted axially in relation to the fixed wall and is rotationally connected thereto by tongues substantially extended tangentially at a circumference of the assembly, attachment means for coupling the tongues to the piston, the attachment means generally passing through the tongues and the piston and having a first portion, which acts on the side of the tongues opposite the piston, and a second portion acting on the side of the piston opposite the tongues in clinched engagement with the first portion,

wherein the first portion of the attachment means coupling the tongues to the piston is attached to these tongues independently of the second portion.

5,826,691

CLUTCH COVER ASSEMBLY HAVING A DIAPHRAGM SPRING AND A SECONDARY BIASING SPRING WORKING IN TANDEM

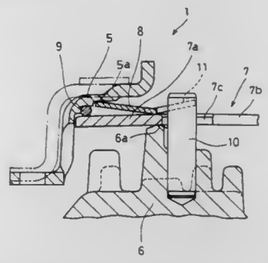
Masaaki Asada, Ibaraki; Toshiya Kosumi, Kadoma; Hideyuki Imanaka, Moriguchi, and Hiroshi Mizukami, Neyagawa, all of Japan, assignors to EXEDY Corporation, Neyagawa, Japan

Filed Mar. 5, 1997, Ser. No. 811,996

Claims priority, application Japan, Mar. 8, 1996, 8-051554; Jun. 13, 1996, 8-152482

Int. Cl.[6] F16D *13/71*

U.S. Cl. 192—89.24 2 Claims



1. A clutch cover assembly for engaging and dis-engaging a clutch disc from a flywheel, comprising:

a clutch cover configured for connection to a flywheel;

a pressure plate disposed within said clutch cover;

a diaphragm spring having an annular spring portion, an outer circumferential portion thereof being supported by a portion of said clutch cover, an inner circumferential portion of said annular spring portion biasing said pressure plate toward the flywheel, and said diaphragm spring having a plurality of lever portions extending radially inwardly from said annular spring portion, wherein a plurality of holes are formed in said diaphragm spring, one of said holes formed between each adjacent pair of said lever portions;

a plurality of pins extending in a generally axial direction from a surface of said pressure plate toward said clutch cover, each of said pins extending through a corresponding one of said holes in said diaphragm spring; and

a conical spring disposed between said diaphragm spring and an inner surface of said clutch cover, an inner circumferential portion of said conical spring biasing an inner circumferential portion of said annular spring portion toward said pressure plate, and said inner circumferential portion of said conical spring being formed with a plurality of engagement portions which engage said pins such that said conical spring and said diaphragm spring are circumferentially constrained with respect to said pressure plate.

5,826,692

DEVICE FOR TRANSFERRING PLATES BETWEEN A DRIVE CHAIN AND WORKSTATIONS

Roger Blanc, Le Pin, France, assignor to Etablissements Actis, Le Pin, France

Filed Jun. 30, 1995, Ser. No. 497,475

Claims priority, application France, Jul. 4, 1994, 94 08441

Int. Cl.[6] B65G *37/02;43/08*

U.S. Cl. 198—346.1 7 Claims

1. A device for transferring plates supporting articles or objects in the course of manufacture or processing, between an endless drive chain on which these plates rest and are driven by an adherence effect, and workstations where operations or processes are carried out on these articles or objects, which comprises, for a workstation situated on one side of the drive chain, at least one guide track for the plates, extending perpendicularly to the direction of travel of the chain, and for each track a transverse drive member which interacts with a complementary part formed on each plate, the transverse drive member being able to travel in terms of translation, under the action of operating means, between a position close to the drive chain and a position remote from said chain but close to a machine or an operator performing an operation or a process on the articles or objects borne by the plates, said plates traveling from said drive chain to said guide track in a single horizontal plane, means being provided for controlling the position of the plates especially at the intersection of the chain and of the or each guide track;

wherein the or each guide track consists of a pair of guides, perpendicular to the chain and borne by a horizontal bed, the separation between the two guides of one same pair being substantially equal to the length of a plate; and

wherein the transverse drive member is coupled, through a slot in the bed extending between the two guides parallel thereto, to a ram located underneath the bed.

5,826,693

MAGAZINE ARRANGEMENT

Anders Andersen, Solbjerg, Denmark, assignor to Maskinfabrikken Hojvang APS, Solbjerg, Denmark

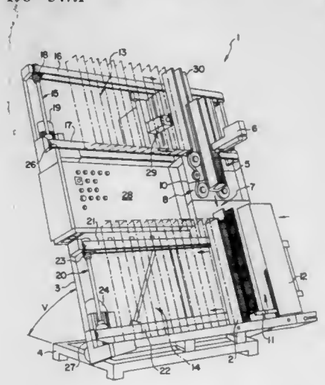
PCT No. PCT/DK95/00228, § 371 Date Feb. 19, 1997, § 102(e) Date Feb. 19, 1997, PCT Pub. No. WO95/34493, PCT Pub. Date Dec. 21, 1995

PCT Filed Jun. 7, 1995, Ser. No. 750,579

Claims priority, application Denmark, Jun. 14, 1994, 0675/94

Int. Cl.[6] B65G *1/00*

U.S. Cl. 198—347.1 12 Claims



1. A magazine arrangement, comprising a plurality of elongated cassettes each having an open front side and a back side, said cassettes being adapted to accommodate a stack of flat objects, and a conveying apparatus for: (a) carrying the cassettes lengthwise in a first path past a charge and/or discharge unit which charges or discharges said flat objects to or from the open sides of said

cassettes; (b) carrying the cassettes laterally in a second path towards or away from one end of said first path; and (c) carrying the cassettes laterally in a third path towards or away from the opposite end of said first path, wherein each of said paths includes an inclined support for supporting the back sides of cassettes carried in said paths.

5,826,694

SYSTEM FOR TAKING CLUTCH HUB AND SLEEVE INTO/OUT OF A CLEARANCE MEASURING SYSTEM

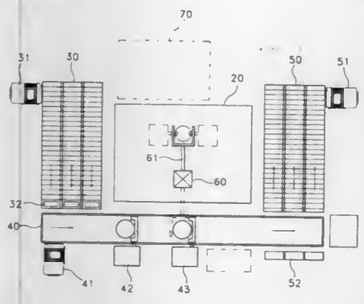
Hong-Song Kim, Kunp'O, Rep. of Korea, assignor to KIA Motors Corporation, Seoul, Rep. of Korea

Filed Oct. 2, 1996, Ser. No. 725,686

Claims priority, application Rep. of Korea, Aug. 28, 1996, 96-36200

Int. Cl.[6] B65G *47/00*

U.S. Cl. 198—346.2 **1 Claim**



1. A system for taking a clutch hub and a sleeve into/out of a measuring system for measuring a clearance between the hub and the sleeve, the system comprising:

a taking-in chain conveyer having at least one stopper which stops an operation of a taking-in motor while contacting the clutch hub and the sleeve, the taking-in chain conveyer being disposed along a side of the clearance measuring system;

a main chain conveyer having first and second main stoppers, the main chain conveyer being connected to a final end of the taking-in chain conveyer and disposed along a front side of the clearance measuring system;

a clamping mechanism for clamping the clutch hub and the sleeve, stopped by the second main stopper, and which takes the clutch hub and the sleeve into/out of the clearance measuring system;

a taking-out chain conveyer having a taking-out stopper pusher which, when the clutch hub and the sleeve go thorough a measuring process, transmits the clutch hub and the sleeve to the taking-out chain conveyer, the taking-out chain conveyer being connected orthogonally to a final end of the main chain conveyer; and

a main controller for controlling the operation of the elements successively.

5,826,695

CONVEYOR

Jacobus M. Van Den Goor, Nuenen, Netherlands, assignor to Vanderlande Industries Nederland B.V., Veghel, Netherlands

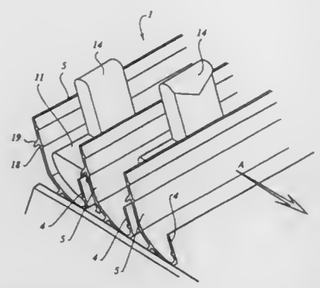
Filed Jan. 3, 1997, Ser. No. 779,238

Claims priority, application Netherlands, Jan. 12, 1996, 1002087

Int. Cl.[6] B65G *47/34*

U.S. Cl. 198—370.02 **7 Claims**

1. A conveyor comprising a frame and an endless drivable conveying element, which is provided with carriers extending transversely to the intended direction of movement of the conveying element during operation, which carriers are coupled to at least one endless flexible coupling member, while at least a few carriers support pusher elements, which pusher elements are connected to guide-means, which are capable of co-operation with guide rails supported by the frame, all this in such a manner that a pusher element can be moved in the longitudinal direction of the associated carrier in one or more selected places along said intended direction of movement during operation and whereby, seen in cross-sectional view, a carrier comprises two upwardly extending legs bounding a recess having a U-shaped or V-shaped section and being open at its upper side, which legs are interconnected by a connecting piece forming the bottom of said recess, while one leg of a carrier extends over a greater height than the other leg of said carrier and the greater height leg of a carrier is provided with a wing which extends over the upper end of the smaller height leg of an adjacent carrier.



5,826,696

APPARATUS FOR SEPARATING SMALL ARTICLES

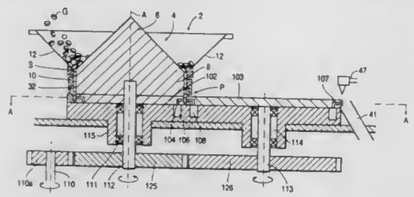
Michael Rupp, Pforzheim; Werner Schiffer, München; Gyula Varhaniovsky, Pfinztal; Thomas Kirchner, Karlsruhe, and Nikolaus Asteriadis, Baltmannsweiler, all of Germany, assignors to Walter Grassle GmbH, Pfinztal-Sollingen, Germany

Filed Aug. 10, 1995, Ser. No. 513,238

Claims priority, application Germany, Aug. 11, 1994, 44 28 452.7; Mar. 31, 1995, 195 11 948.7

Int. Cl.[6] B65G *29/00*

U.S. Cl. 198—392 **25 Claims**



1. An apparatus for separating small articles comprising:

a rotatably mounted separating device which rotates about a vertical axis and having symmetry about the vertical axis, the device having an upper substantially conical feed section and a base extending below the conical feed section;

an outer section spaced from the base by a dimension at least equal to a thickness of the small articles and surrounding the base, the spacing of the outer section from the base defining a slot through which the small articles pass vertically;

a part of the base being divided into a plurality of spaced apart individual shafts disposed circumferentially about the base for receiving the small articles from the slot, the shafts having a dimension at least equal to the thickness of the small articles with adjacent shafts being separated by ribs between the shafts disposed circumferentially about the base;

hold back members associated with the individual shafts, each hold back member selectively blocking passage of the small articles from each shaft when disposed in a first position in the shaft and permitting the articles to pass through the shaft when disposed in second position outside the shaft, the hold back members comprising springs which, without external influence, are positioned in the first position; and

magnets associated with springs, each spring being selectively magnetically linked with the associated spring, each magnet upon being magnetically linked with the associated spring positioning the associated spring in the second position to permit the small articles to pass through the associated shaft.

5,826,697

PARTS ARRANGER

Hiroyuki Mochizuki, Osaka; Yoshimichi Ishii, Neyagawa, and Ryoichi Kamatani, Hirakata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Japan

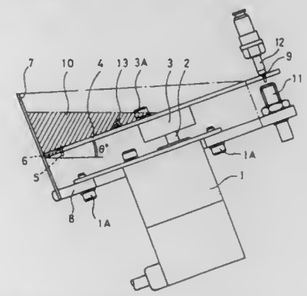
PCT No. PCT/JP96/02059, § 371 Date May 14, 1997, § 102(e) Date May 14, 1997, PCT Pub. No. WO97/05048, PCT Pub. Date Feb. 13, 1997

PCT Filed Jul. 22, 1996, Ser. No. 809,579

Claims priority, application Japan, Jul. 25, 1995, 7-188902; Sep. 25, 1995, 7-245716

Int. Cl.[6] B65G *47/24*

U.S. Cl. 198—392 **9 Claims**



1. A parts arranger comprising:

a rotating disk which has part accommodating holes for accommodating parts disposed in a circumferential row or a plurality of concentric rows and is supported in a condition inclined at a predetermined angle relative to a horizontal plane; and

a circumference guide which is disposed perpendicularly to a surface of said rotating disk,

characterized in that

said parts arranger comprises a driving source which rotatingly drives said rotating disk at a predetermined angle in a normal direction and then at a predetermined angle in a reverse direction.

5,826,698

APPARATUS FOR SEPARATING TANGLED COIL SPRINGS

Masaaki Sawada, Fuji, Japan, assignor to Jatco Corporation, Fuji, Japan

Filed Jul. 30, 1996, Ser. No. 689,136

Claims priority, application Japan, Aug. 1, 1995, 7-213929

Int. Cl.[6] B65G *47/12*

U.S. Cl. 198—443 **15 Claims**

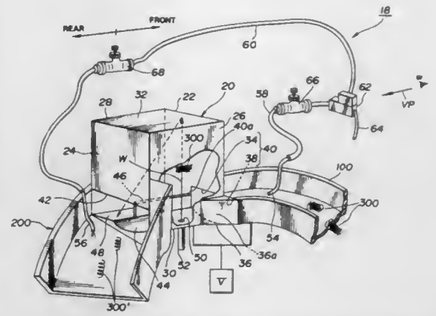
11. A spring untangling apparatus for separating tangled coil springs, comprising:

a structure having a lower wall, a collision wall vertically spaced from the lower wall, an inlet wall extending from one side of the lower wall and having an inlet opening, and an outlet wall extending from a side opposite the one side of the lower wall and having an outlet opening, the lower wall having a groove extending in a direction between the inlet wall and the outlet wall and being configured to align clusters of the tangled coil springs introduced into the inlet opening;

a guide associated with the inlet opening for controllably introducing the tangled coil springs into the structure;

a vibratory device for vibrating at least the lower wall to advance the coil springs into the inlet opening; and

a first air jet nozzle positioned in the groove, wherein an air jet exiting the nozzle is adapted to propel the coil spring upwardly and collide each tangled clustered coil springs against the collision wall to untangle them.



5,826,699

GOODS STORAGE AND CONVEYOR SYSTEM

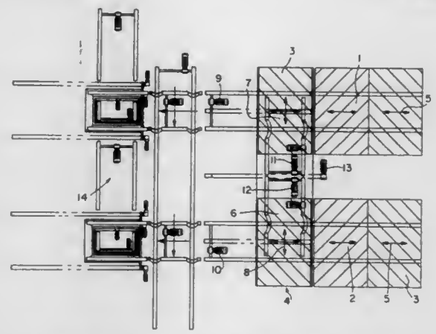
Carlos Trauten, Nerotal 2, Wörrstadt, Germany, 55286

PCT No. PCT/DE94/00924, § 371 Date Apr. 15, 1996, § 102(e) Date Apr. 15, 1996, PCT Pub. No. WO95/05330, PCT Pub. Date Feb. 23, 1995

PCT Filed Aug. 11, 1994, Ser. No. 596,192

Int. Cl.[6] B65G *047/54*

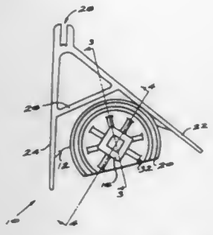
U.S. Cl. 198—463.3 **13 Claims**



1. A storage and conveyor system for goods (3) comprising two horizontal main conveyor tracks (1, 2) running parallel to each other and being adapted to convey goods selectively in opposite main conveying directions, ends of said two horizontal main conveyor tracks (1, 2) lie substantially aligned with each other, a horizontal cross conveyor track (6) located at each of said main conveyor track ends, each said cross conveyor track (6) defining cross conveying directions substantially at right angles to said main conveying directions of the main conveyor tracks (1, 2), the cross conveyor tracks (6) each including at least two track sections (7, 8), located one behind the other in the cross conveying direction of the cross conveyor track (6), means for raising and lowering each said two track sections (7, 8) independently to thereby sepa-

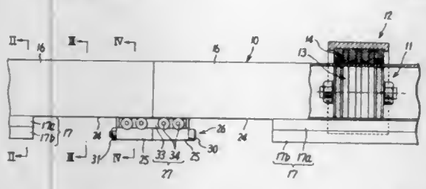
rately vertically raise and lower goods (3) for continuous transport of the goods (3) from one main conveyor track (1 or 2) to another main conveyor track (2 or 1), and means for moving each cross conveyor track (6) in the main conveying directions of the main conveyor tracks (1, 2) independently of the raising and lowering motion of the two track sections (7, 8).

5,826,700
CONVEYOR BELT SCRAPER
Arend Jacobus Brink, Witbank, South Africa, assignor to SLIC Trading Company Limited, Douglas, Isle of Man
Filed Jul. 30, 1997, Ser. No. 902,840
Claims priority, application South Africa, Aug. 1, 1996, 96/6526
Int. Cl.[6] B65G *45/16*
U.S. Cl. 198—499 **10 Claims**



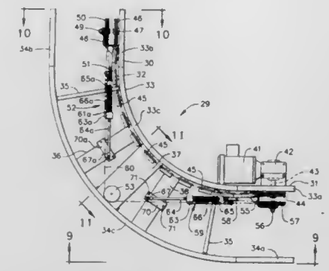
4. A conveyor belt scraper comprising a bracket formed with two arms extending in opposing directions, and two base pieces which are respectively engageable with the arms, the base pieces and the bracket including sealing formations that comprise interengaged rib and groove formations which provide a labyrinth-type seal.

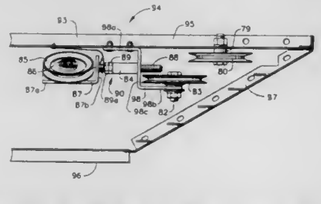
5,826,701
CONVEYOR GUIDE RAILS
Shinya Miura, Yawara-mura, Japan, assignor to SMC Corporation, Tokyo, Japan
Filed Jun. 13, 1996, Ser. No. 661,328
Claims priority, application Japan, Jul. 13, 1995, 7-200457
Int. Cl.[6] B65G *35/00*
U.S. Cl. 198—619 **7 Claims**



1. In a conveyor comprising a hollow guide rail doubling as a cylinder tube, a piston slidably fitted in the guide rail, a moving element slidably fitted over the guide rail, and magnet couplings magnetically connecting the piston and moving element, the improvement that:
the guide rail comprises multiple tubular members that are joined together in such a manner that the inner and outer surfaces thereof lie flush enough to offer no obstacle to the movement of the piston and moving element;
each tubular member has a continuous axially extending fitting and reinforcing rib, a coupling rib provided as an extension of said rib at the butt end of the tubular member, and a rib-less part provided between the rib and the coupling rib to decrease the rigidity of the tubular member; and
adjoining tubular members are joined together end to end by fastening together the coupling ribs thereon.

5,826,702
TAKE-UP SYSTEM FOR THE DRIVE BELT OF A LIVE ROLLER CONVEYOR
Roger A. Gibson, Cincinnati, and James W. Halsey, Forest Park, both of Ohio, assignors to The Buschman Company, Cincinnati, Ohio
Filed Jul. 16, 1996, Ser. No. 682,018
Int. Cl.[6] B65G *13/02*
U.S. Cl. 198—787 **28 Claims**

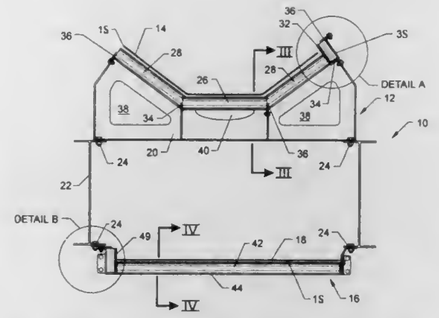




1. A drive belt system for driving the rollers of a live roller conveyor segment comprising a pair of uniformly spaced, first and second side frames supporting said live rollers, said drive belt system, comprising an elongated continuous drive belt having at least one first surface, a first sheave mounted adjacent one end of said first side frame, a second sheave mounted adjacent the other end of said first side frame, a plurality rotatable idler supports mounted on and substantially evenly spaced along said first side frame between said first and second sheaves, said drive belt having an upper flight extending about and between said first and second sheaves and being supported by said rotatable idler supports and being maintained thereby in frictional engagement with said conveyor rollers to power said conveyor rollers, said drive belt having a lower flight extending between said first and second sheaves, a third sheave and a fourth sheave, said return flight passing thereabout to form a first approximately planar loop in said return flight, at least one of said third and fourth sheaves comprising an adjustable take up sheave, said drive belt contacting all of said sheaves with said at least one first surface.

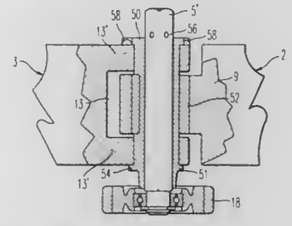
5,826,703
MOTIONLESS CONVEYOR BELT IDLER SYSTEM
William H. Altemus, Jr., Gloucester, and Ray V. Rodgers, III, Urbanna, both of Va., assignors to B.R. Products, LLC, Gloucester, Va.
Filed Oct. 31, 1996, Ser. No. 739,880
Int. Cl.[6] B65G *15/08*
U.S. Cl. 198—823 **15 Claims**

2. A motionless conveyor belt idler system for replacing conventional idler systems having a plurality of fixed belt support stations each of which comprises:



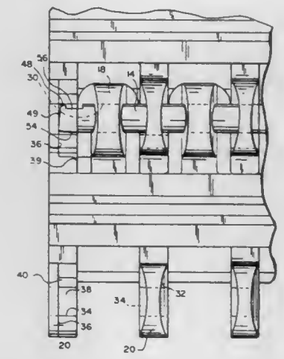
fixed, straight low friction support means for slideably supporting the center section of the product side of a conveyor belt and disposed perpendicularly to the direction of belt travel;
fixed, straight low friction support means for slideably supporting and forming both outer sections of the product side of a conveyor belt into a trough and disposed perpendicularly to the direction of belt travel;
fixed, straight low friction support means for slideably supporting the return side of a conveyor belt and disposed perpendicularly to the direction of belt travel;
means for replacing said fixed, straight low friction support means while said conveyor belt remains loaded with product; and
fixed, straight low friction edge guide means at each support station for slideably maintaining the travel of the conveyor belt product side and return side in alinement with said fixed belt support stations.

5,826,704
CONVEYOR
Jacobus M. Van Den Goor, SH Nuenen, Netherlands, assignor to Vanderlande Industries Nederland B.V., Veghel, Netherlands
Division of Ser. No. 584,267, Jan. 11, 1996, Pat. No. 5,667,054.
This application Apr. 22, 1997, Ser. No. 837,851
Claims priority, application Netherlands, Jan. 30, 1995, 9500161
Int. Cl.[6] B65G *17/06*
U.S. Cl. 198—851 **2 Claims**



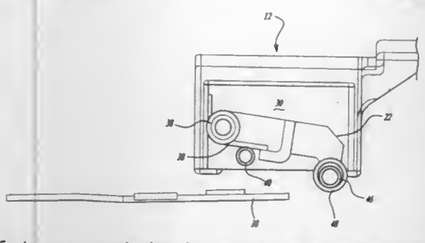
1. A conveyor, which comprises:
at least one flexible elongated transporter, which includes a plurality of links, wherein two of said links are pivotable about a pivot axis with respect to each other; and
a mechanism interconnecting said links, which includes an eccentric mechanism, said interconnecting mechanism being pivotable about a pivot pin into one of a plurality of positions wherein said eccentric mechanism comprises an out-of-round pin, which is positioned in a corresponding out-of-round passage formed in at least one sleeve interconnecting said links, a first part of said sleeve having a round circumference positioned eccentrically with respect to a central axis position of said pin and being accommodated in a corresponding round hole formed in a first link of said links, a second part of the sleeve having a round circumference extending concentrically around the central axis portion of said pin and positioned in a corresponding hole formed in a second link of said links.

5,826,705
CONVEYOR BELT ASSEMBLY WITH HEADED RETENTION SHAFT
Earl A. Ramsey, Sinking Spring, and Jeffrey E. DeLair, Wyomissing, both of Pa., assignors to Omni Manufacturing Co., Reading, Pa.
Filed Nov. 25, 1996, Ser. No. 755,599
Int. Cl.[6] B65G *17/06*
U.S. Cl. 198—853 **19 Claims**



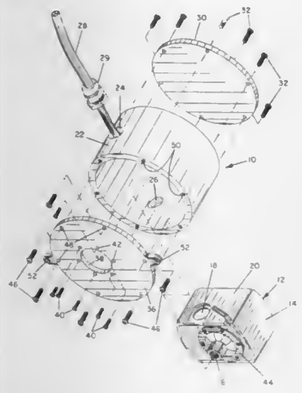
1. A conveyor belt, comprising:
a plurality of links each with forward and rearward laterally spaced projections, the rearward projections of each link being interdigitated with the forward projections of an adjacent link, the interdigitated projections having laterally extending and aligned holes;
a plurality of link shafts, each link shaft passing through the aligned holes of the forward and rearward projections of adjacent links for pivotally securing the links to one another, at least one of said link shafts having a headed end having an overall diameter dimension in excess of the diameter of said holes and disposed in a recess between laterally spaced next adjacent projections of at least a pair of adjacent links;
said headed shaft end including first and second axially spaced retainer sections each said retainer section having a projecting portion and an inset portion such that at each axial location of said first and second retainer sections at least the projecting portion extends outwardly of the peripheral confines of the shaft;
each of the forward projections has side faces each with angularly related planar surfaces, a first planar surface of each side face extending from a top portion of the link toward a bottom portion of the link and forming an obtuse angle with a second planar surface extending from said first planar surface toward the bottom portion of the link, the first and second planar surfaces on each side of each forward projection extending toward one another from the top to the bottom portions of the link, whereby top portions of each forward projection are wider than bottom portions of said forward links;
said trailing projections each having sides tapered inwardly toward one another from the top to the bottom portions of the link.

5,826,706
CONTACT MECHANISM FOR A SWITCH
Vladimir G. Karasik, Walled Lake, Mich., assignor to UT Automotive Dearborn, Inc., Dearborn, Mich.
Filed May 30, 1997, Ser. No. 865,662
Int. Cl.[6] H01H *1/06*
U.S. Cl. 200—277 **10 Claims**



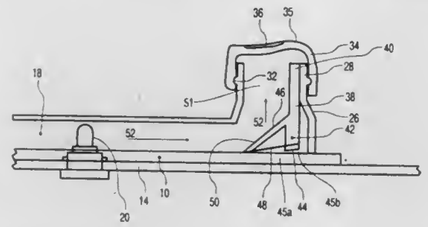
5. A contact mechanism for use with an incomplete circuit terminating in at least two spaced stationary contacts, said contact mechanism comprising:
a housing;
a torsion spring;
a carriage including
a compression contact spring;
a first retainer for supporting said torsion spring, said first retainer being movably engaged with said housing; and
a second retainer for supporting said compression contact spring in rolling engagement therewith; said first retainer being movably attached to said second retainer; and
said torsion spring engaging said housing, said torsion spring for forcing said compression contact spring to exert contact pressure against the stationary contacts; said compression contact spring having a circuit closed position where said compression contact spring does not electrically join the stationary contacts; and a circuit open position where said compression contact spring electrically joins the stationary contacts.

5,826,707
PROTECTIVE HOUSING FOR WATER PRESSURE SWITCH
Warren E. Williams, Bradenton, Fla., assignor to W. E. Williams Enterprises, Inc., Bradenton, Fla.
Filed Mar. 14, 1997, Ser. No. 814,985
Int. Cl.[6] H01H *9/04*
U.S. Cl. 200—302.1 **5 Claims**



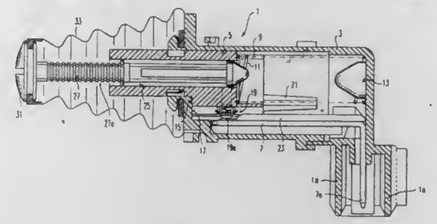
1. A protective housing for a pump control switch comprising:
a cylindrical, metallic body member having opposed open ends forming flat annular surfaces,
a first metallic cover plate having an outer edge and a flat annular sealing surface adjacent said edge of said first cover plate complementary to one of said flat annular surfaces,
a second metallic cover plate having a an outer edge and a flat annular sealing surface adjacent said edge of said second cover plate complementary to the other of said flat annular surfaces,
fastening means detachably connecting said cover plates in tight relation to said body member,
a switch adapted to have a connection to a conduit communicating with a source of water, said conduit passing through an opening formed in said second cover plate,
an annular metallic surface on said switch surrounding said connection to said conduit and being complementary to a flat annular surface on said second cover plate surrounding said opening in said second cover plate, and
additional fastening means for holding said surfaces on said switch and surrounding said opening in tightly fitting relation with each other to position said switch within said body member.

5,826,708
BACKLIGHTED DOME SWITCH ASSEMBLY
Ronald Kenneth Finlay, Ajax, Canada, assignor to Invotronics Manufacturing, Scarborough, Canada
Filed Jan. 29, 1997, Ser. No. 790,211
Int. Cl.[6] H01H *9/00*
U.S. Cl. 200—314 **26 Claims**



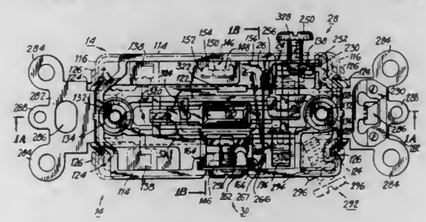
1. A dome switch assembly comprising:
a printed circuit board having an upper face carrying a pair of spaced apart electrical contacts; and
a dome member mounted on said printed circuit board, said dome member comprising:
a hollow chimney structure having a substantially rigid upper portion terminating in an opening formed at a top end thereof, a collapsible portion connected to said upper portion and arranged to deform when said upper portion is depressed, and a substantially rigid lower portion connected to said collapsible portion;
a contact post having a first end fixed to said upper portion and a second end provided with electrical contact forming means; and
a reflector fixed to said contact post and arranged to deflect light arriving from a first direction, said light being deflected through a passage formed in said hollow chimney structure and towards said opening,
wherein
said contact post and electrical contact forming means are arranged to electrically connect said pair of spaced apart electrical contacts, when said upper portion is depressed.

5,826,709
SELF-ADJUSTING PLUNGER SWITCH
Hans-Ulrich Jacob, Stockach-Wahlwies, Germany, assignor to TRW Fahrzeugelektrik GmbH & Co. KG, Germany
Filed Jan. 28, 1997, Ser. No. 790,001
Claims priority, application Germany, Jan. 29, 1996, 196 03 135.4
Int. Cl.[6] H01H *13/70*
U.S. Cl. 200—345 **27 Claims**



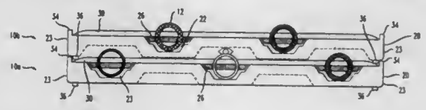
21. A self-adjusting plunger switch comprising:
a housing carrying at least one contact;
an actuation element guided in said housing for actuation of said at least one contact;
a resilient element in said housing biasing said actuation element outwardly of said housing toward an inoperative position;
said actuating element including a plunger and a slider and including therebetween a first arresting means and a second arresting means for allowing axial adjustment between said plunger and said slider while permitting rotational movement of said plunger around its longitudinal axis to obtain an arrest of an adjustment position between said plunger and said slider;
the plunger further including a zone and having a substantially circular cross-section with at least one flattened longitudinal side which in the adjustment position cooperates with the at least one resilient arm and the slider including an axial recess and wherein the first arresting means is provided at said zone and the second arresting means is in the slider, the first and second arresting means including cooperating stop elements which form a locking mechanism; and,
the second arresting means having at least one resilient arm adapted to engage the first arresting means.

5,826,710
ROCKER-TYPE ELECTRICAL SWITCH
Stephen R. Kurek, Rego Park, N.Y., and David Schroeder, El Paso, Tex., assignors to Leviton Manufacturing Co., Inc., Little Neck, N.Y.
Continuation of Ser. No. 604,595, Feb. 21, 1996, Pat. No. 5,630,502, which is a continuation of Ser. No. 521,696, Aug. 31, 1995, Pat. No. 5,595,289, which is a continuation of Ser. No. 373,687, Jan. 17, 1995, Pat. No. 5,500,498, which is a continuation of Ser. No. 976,073, Nov. 13, 1992, Pat. No. 5,382,768. This application Jan. 17, 1997, Ser. No. 784,509
Int. Cl.[6] H01H *21/82*
U.S. Cl. 200—559 **3 Claims**



1. An electrical rocker switch comprising:
a) a switch housing;
b) a manually movable rocker cover mounted on said housing;
c) actuator means having a first end and a second end, said actuator means attached to said rocker cover at said first end and movable in response to the movement of said rocker cover;
d) slider means comprised wholly of insulating material coupled to and adjacent said second end of said actuator means and responsive to movement of said actuator means to move in one of two opposite directions along a common linear axis;
e) a fixed terminal assembly mounted in said housing and having a fixed contact thereon;
f) a movable brush assembly mounted in said housing comprising a resilient brush arm fixed to said housing at a first end and having a movable contact on said resilient brush arm at a second end, said resilient brush arm being biased to bring said movable contact on said resilient brush arm into mating position with said fixed contact of said fixed assembly to thereby electrically close said switch and said resilient brush arm being movable by said slider means to disengage said movable contact on said resilient brush arm from said fixed contact of said fixed terminal assembly to thereby open said switch;
e) a cam spring positioned adjacent to said second end of said actuator means, said second end of said actuator means engaging said cam spring to aid in the control of the movement of said actuator means;
f) a rocker cover frame in which said rocker cover is mounted and which is matable with said switch housing;
g) said rocker cover frame has at each end thereof a pair of inwardly facing load bearing stops against the tops of which said rocker cover can abut when said rocker is pressed; and
h) resilient pads adjacent said load bearing stops to cushion said rocker cover at the ends of its travel as it is manually moved between its two set positions.

5,826,711
JEWELRY DISPLAY AND STORAGE TRAY
Joseph Ovadia, 109 Longhill Rd., Little Falls, N.J. 07424
Filed May 28, 1997, Ser. No. 864,193
Int. Cl.[6] B65D *85/02*
U.S. Cl. 206—6.1 **20 Claims**



1. A jewelry display and storage tray, comprising:
a tray member having an upper face and a lower face, said tray member having a plurality of recesses extending from said upper surface in a downward direction for accommodating items of jewelry when said tray member is oriented in a substantially horizontal direction, said upper face further including a sunken channel extending around at least one of said recesses to a position below said upper face;
a middle layer configured to be received within said channel so that said middle layer lies substantially within said sunken channel flush with said upper face of said tray member, said layer having a plurality of slits therethrough, said slits corresponding to said recesses in said tray member to provide access to said recesses for receiving said items of jewelry; and
an upper face pad overlaying said upper face of said tray member, said upper face pad including a plurality of openings, each of said openings corresponding with one of said downwardly extending recesses of said tray member to provide access to said recesses for receiving said items of jewelry.
13. A jewelry display and storage tray configured to be stacked upon like trays, comprising:
a tray member having an upper face and a lower face, said tray member having a plurality of recesses extending from said

upper surface in a downward direction for accommodating items of jewelry when said tray member is oriented in a substantially horizontal direction, said tray member having a continuous sidewall extending about the periphery of said tray member, said upper face further including a sunken channel extending around at least one of said recesses to a position below said upper face;

a middle layer configured to be received within said channel so that said middle layer is positioned within said sunken channel such that said middle layer lies substantially flush with said upper face of said tray member, said layer having a plurality of slits therethrough, said slits corresponding to said recesses in said tray member to provide access to said recesses for receiving said items of jewelry; and

an upper face pad overlaying said upper face of said tray member, said upper face pad including a plurality of openings, each of said openings corresponding with one of said downwardly extending recesses of said tray member to provide access to said recesses for receiving said items of jewelry.

5,826,712

BASE PLATE FOR A BOTTLE PACKAGE

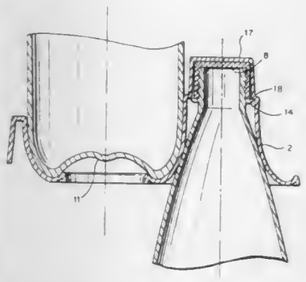
Veijo Aikio, Vantaa, Finland, assignor to Oy Hartwall Ab, Helsinki, Finland

Continuation-in-part of Ser. No. 397,249, Apr. 28, 1995, Pat. No. 5,673,792. This application Oct. 6, 1997, Ser. No. 944,469

Claims priority, application Finland, Sep. 29, 1992, 924377

Int. Cl.[6] B65D *21/02*

U.S. Cl. 206—203 **3 Claims**



1. A base plate for use in a bottle package where bottles are placed upright in a plurality of superposed layers between which layers the base plate is located;

said base plate being of substantially rectangular shape having on a first surface, bottle neck-shaped seats and on a second surface, cup-like seats;

the dimensions and shape of said cup-like seats substantially conforming to the shape of a socket in the bottle bottom portion, and the cup-like seats including a centrally projecting continuous tapered protuberance having a frusto-conical shape for preventing tilting of a bottle;

said bottle neck-shaped seats having stepped inner surfaces for centering a bottle neck portion and for engaging a flange in the bottle neck portion so that the plate rests on flanges of the bottles in a bottle layer; and

the neck-shaped seats being arranged between the cup-like seats.

5,826,713

FLUID VESSEL

Seizo Sunago, Hyogo; Osamu Takahata, Osaka; Akira Kagayama, Nara; Hitoshi Futagawa, Shiga; Tetsuji Miyamoto, Osaka, and Mitsuo Murakami, Hyogo, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., and Nissho Corporation, both of Osaka, Japan

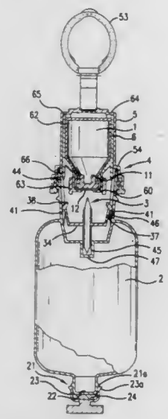
PCT No. PCT/JP95/02215, § 371 Date Apr. 30, 1997, § 102(e) Date Apr. 30, 1997, PCT Pub. No. WO96/13241, PCT Pub. Date May 9, 1996

PCT Filed Oct. 27, 1995, Ser. No. 817,649

Claims priority, application Japan, Oct. 31, 1994, 6-267069

Int. Cl.[6] B65D *25/08*

U.S. Cl. 206—222 **18 Claims**



1. A fluid vessel, comprising:

a drug vessel with a mouth portion sealed with a penetrable plug;

a vial guide which holds the drug vessel;

a flexible solvent vessel having, on end portions thereof, a drug solution outlet port and a communication port to the drug vessel, and having a tubular guide portion concentrically surrounding the communication port;

a communication means for communicating an inside of the solvent vessel and an inside of the drug vessel, the communication means being housed in the guide portion of the solvent vessel so that the communication means is capable of sliding in upward and downward directions; and

a cap for housing the vial guide and for rotatably sealing an opening of the guide portion,

wherein a drug vessel push-down means for moving down the drug vessel in cooperation is disposed on an inner wall of the cap, an inner wall of the guide portion, and the vial guide, and

wherein the fluid vessel further includes a communication sequence control mechanism for controlling a communication sequence so that, when the cap is rotated, the vial guide is moved down, without rotating, by the drug vessel push-down means, and the communication means first pierces through the plug of the drug vessel held by the vial guide, and then pierces through a thin film of the communication port of the solvent vessel by its downward movement accompanied by the communication means, and communicates the drug vessel with the solvent vessel,

wherein a lower end of the guide portion is embedded in the solvent vessel and the communication port is formed in the lower end.

5,826,714

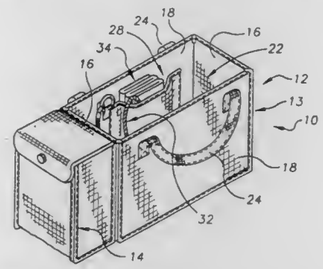
INFANT CARE BAG

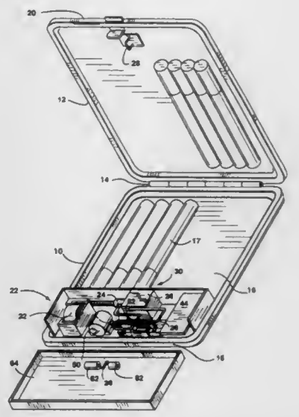
Melissa A. Martin, 3895 County Rd., 26, Blountsville, Ala. 35031

Filed Aug. 25, 1997, Ser. No. 918,049

Int. Cl.[6] B65D *69/00;77/00*

U.S. Cl. 206—232 **20 Claims**





1. An infant care bag comprising:

primary bag assembly; and

at least one detachable formula case assembly that is detachably securable to said primary bag assembly;

said primary bag assembly including a diaper bag, an accordion fold safety care folder, a number of safety instruction/first-aid cards and a flexible safety card tether;

said diaper bag including handles, a diaper compartment and a safety card storage pocket formed therein;

said accordion fold safety card folder being sized to fit within said safety card storage pocket when in a folded configuration and including a number of safety card sleeves sized to receive therein one of said number of safety instruction/first-aid cards;

each of said safety instruction/first-aid cards being positioned within a safety card sleeve of said accordion fold safety card folder;

said flexible safety card tether being secured between said accordion foil safety card folder and said diaper bag;

said at least one detachable formula case assembly being detachably securable to said diaper bag;

each detachable formula case assembly having a case member and a removable anti-bacterial formula bottle enclosure;

said case member defining a formula enclosure receiving chamber and having a case cover flap positionable in a manner to block access into said formula enclosure receiving chamber;

said removable anti-bacterial formula bottle enclosure being constructed from an anti-bacterial plastic and sized to fit within said formula enclosure receiving chamber of said detachable formula case;

said anti-bacterial formula enclosure including a top section and a bottom section;

said top section including a top receiving cavity;

said bottom section of said removable anti-bacterial formula bottle enclosure including a bottom receiving cavity.

5,826,715

TIME-LOCKED CIGARETTE CASE

David Milton Thompson, 26 Finch Place, Hamilton, Ontario, Canada, L9A 5C3

Filed Mar. 12, 1997, Ser. No. 814,896

Int. Cl.[6] B65D *55/02*

U.S. Cl. 206—261 **3 Claims**

1. A time-locked cigarette case having:

first and second body portions hingedly connected at one end thereof for movement about a transverse axis between open and closed positions, said first and second body portions forming a cigarette storing chamber when in the closed position,

said first and second body portions having ends opposite to said one ends provided with time-controlled locking mechanism,

said time-controlled locking mechanism including transversely-movable first and second latch rods carried by the first body portion and a latch retainer carried by the second body portion for receiving the first or second latch rods to retain the body portions in a locked closed position,

said time-controlled locking mechanism also including an electrical timing assembly carried by the first body portion,

said electrical timing assembly including a battery replaceable from the exterior of the first body portion, a solenoid unit slidably mounted on the first body portion for transverse sliding movement between a normal position and a jolt-induced position, said solenoid unit having a coil part, an armature part slidably moveable therein and a permanent magnet normally retaining the armature part in one position in the coil part,

said locking mechanism also having a resilient stop normally urging the solenoid unit to the normal position,

the first latch rod being carried by one of the coil and armature parts of the solenoid unit, and the second latch rod being carried by the other of the coil and armature parts of the solenoid unit,

said electrical timing assembly also including a manually adjustable time delay circuit powered by the battery and connected to the solenoid unit,

said first latch rod being moveable from an open position to a closed position, when the first and second body portions have been moved to the closed position from an open position, wherein the first latch rod is in engagement with the latch retainer and the permanent magnet retains the armature part in said one position in the coil part,

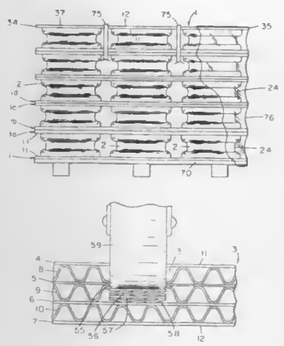
said second latch rod being positioned to move into engagement with the latch retainer, if a jolt is applied to the cigarette case when in the closed condition to cause the first latch rod to move out of engagement with the latch retainer, with said movement of the first lateral rod causing sliding movement of the solenoid unit to the jolt-induced position with consequent movement of the second latch rod into engagement with the latch retainer, thereby preventing the case from being opened,

said resilient stop subsequently returning the solenoid unit to the normal position, thereby releasing the second latch rod from the latch retainer and returning the first latch rod into engagement with the latch retainer, and

the electrical timing assembly operating to move the armature part out of the coil part of the solenoid unit against the retaining force of the permanent magnet, upon expiry of the manually-adjusted time delay after closing of the case and movement of the first latch rod to the closed position, to move the first latch rod out of engagement with the latch retainer without movement of the second latch rod, whereby the case can be opened.

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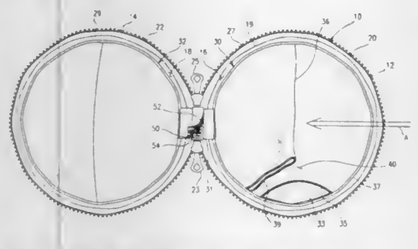
5,826,716
WHEEL SEPARATOR AND METHOD
LaVerne S. Wilson, Lansing, Mich., assignor to Hayes Lemmerz International, Inc., Romulus, Mich.
Continuation of Ser. No. 558,969, Nov. 13, 1995, abandoned. This application Oct. 13, 1997, Ser. No. 999,668
Int. Cl.[6] B65D *85/02*
U.S. Cl. 206—304 **25 Claims**



1. A wheel separator for packaging vehicle wheels each vehicle wheel having a wheel rim portion and a wheel disc portion comprising:

a multi-ply panel of corrugated fiberboard having at least three liner sheets separated by at least two filler layers which define opposite panel faces oriented in a mutually parallel relationship, one of said panel faces being generally flat with a plurality of annularly shaped grooves formed therein arranged in a predetermined spaced apart pattern, each of said grooves extending through at least two of said liner sheets and at least one of said filler layers, each of said grooves defining a groove base comprising an annular ring cut from an exterior one of said liner sheets associated with said one panel face and being supported by the remaining other said liner sheets and said filler layers to abuttingly support the wheel rim portions thereon, and each of said grooves defining a groove lateral width which is generally commensurate with a thickness defined by the associated wheel rim portions to closely receive the same therebetween for positively preventing adjacent vehicle wheels from laterally contacting each other and preventing axial rotation of the vehicle wheels with respect to said panel to avoid cutting vertically through said wheel separator.

5,826,717
COMPACT DISK CASE WITH STACKABLE SLEEVES
Ezra D. Eskandry, 1925 Brickell Ave., D901, Miami, Fla. 33129
Filed Jul. 31, 1997, Ser. No. 904,399
Int. Cl.[6] B65D *85/57*; **B60R** *7/00*
U.S. Cl. 206—308.1 **9 Claims**



1. A carrying case for compact disks comprising:

an outer enclosure defined by two clam-shell members, each clam-shell member having an interfacing edge which mates with a corresponding interfacing edge on the other clam-shell member and means for closing said interfacing edges together when said clam-shell members are closed to form said outer enclosure, said clam-shell members hinged together along a portion of said respective interfacing edges;

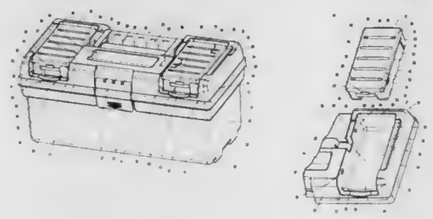
a plurality of compact disk carrying plates grouped into n pairs of plates by n hinges;

each of n hinges which connect a respective pair of said plates together establishing a progressively increasing span distance between said respective connected plates and defining minimum, intermediate and maximum spans between said respective connected plates;

a maximum span plate hinge disposed proximate the clam-shell member hinge, a minimum span plate hinge adapted to be closed on itself such that its respective connected plates are proximally facing and intermediate span plate hinges disposed internediate said maximum and minimum span plate hinges when said disk carrying plates are disposed in said outer enclosure; and

an overlay locking member disposed at said clam-shell hinge and adapted to be overlaid atop said n hinges when said plates are disposed in said clam-shell members.

5,826,718
TOOL BOX WITH BIN-CARRYING COVER
Richard B. Ahern, Jr., Akron; David A. Houk, Jr., Norton, and John Travers, Parma, all of Ohio, assignors to Rubbermaid Incorporated, Wooster, Ohio
Filed Jun. 20, 1997, Ser. No. 879,985
Int. Cl.[6] B65D *85/28*
U.S. Cl. 206—372 **23 Claims**



1. A storage container comprising a base portion having an open top, a cover for closing the open top, at least one socket formed in said cover and having an upper open access area, and a bin being snapped into said socket by passing said bin downwardly through said access area so that said cover engages said bin.

5,826,719
TOOL BOX HAVING A DRAWER
Kuen Jen Chen, No. 6, Lane 609, Sec. 1, Chong San Road, Da Chia Town, Taichung Hsien, Taiwan
Filed Jun. 9, 1997, Ser. No. 868,825
Int. Cl.[6] B65D *85/28*
U.S. Cl. 206—373 **3 Claims**

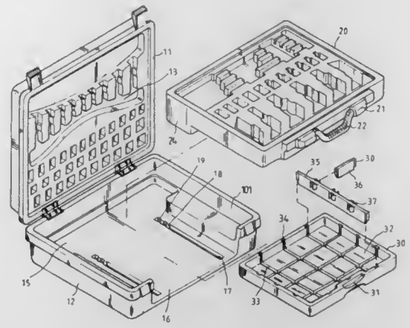
1. A tool box comprising:

a base including an opening and an upper space communicating with each other, said base including at least one channel,

a cover pivotally coupled to said base for forming said tool box,

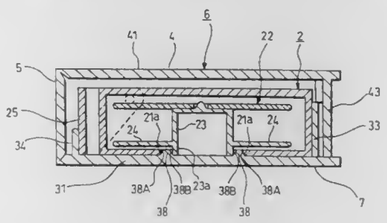
an insert engaged in said upper space of said base, and

a drawer slidably engaged in said opening of said base for allowing said drawer to be pulled outward of said base, said drawer including at least one protrusion slidably engaged in said at least one channel of said base for guiding a movement of said drawer relative to said base,



said base including at least one bulge extended inward of said channel for forming a depression and for engaging with said protrusion of said drawer and for positioning said drawer to said base.

5,826,720
STORAGE CASE FOR MAGNETIC TAPE CASSETTE
Kiyoo Morita, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Japan
Filed May 14, 1996, Ser. No. 645,660
Claims priority, application Japan, May 15, 1995, 7-138930
Int. Cl.[6] B65D *85/67*
U.S. Cl. 206—387.1 **11 Claims**



1. A magnetic tape storage system comprising:

a magnetic tape cassette having a casing for housing a pair of tape reels, a pair of openings with rims formed on a bottom of the casing, the pair of rotatable tape reels each positioned within the casing at a respective one of the openings, each of the tape reels having an annular rib formed on a bottom of the tape reel, each of the annular ribs and respective rim of the casing defining an annular groove;

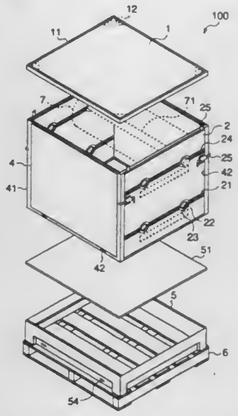
a storage case for storing the magnetic tape cassette, the storage case comprising:

a main body including a bottom plate and a peripheral wall projecting perpendicularly from the top plate and overlapping at least part of the peripheral wall of the main body;

a joining member with a hinge for joining the main body and the closure member whereby the main body and closure member are opened and closed freely to store the magnetic tape cassette in the space; and

a pair of projections formed on the bottom plate, each projection positioned on the bottom plate to frictionally fit in a respective one of the annular grooves to prevent substantial relative movement of the magnetic tape cassette and the tape reels.

5,826,721
ROLLED ARTICLE STORING AND TRANSPORTING CONTAINER
Kazuo Fujimoto, Tokuyama, and Takahiko Koike, Tokyo, both of Japan, assignors to Zeon Kasei Co., Ltd., Tokyo, Japan
Filed May 22, 1997, Ser. No. 861,789
Claims priority, application Japan, May 24, 1996, 8-151863
Int. Cl.[6] B65D *85/66*; *19/00*
U.S. Cl. 206—389 **7 Claims**



1. A container for storing articles carried by rod-like members, comprising:

a bottom frame;

a bottom panel set horizontally in said bottom frame;

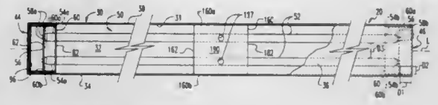
side panels removably supported and held upright on said bottom panel at two opposed sides of said bottom frame;

partition panels removably supported and held upright on said bottom panel at other two sides of said bottom frame, orthogonal to the afore-mentioned two opposed sides;

a cover member laid on the top end parts of said side panels and said partition panels held upright on the bottom frame;

wherein each of said partition panels is vertically divided into at least two parts at meeting edges which are along a along division line, and support holes are formed in the meeting edges for holding end parts of said rod-like members, along said division lines.

5,826,722
LAMP PACKAGING
Bob Phillips, Indianapolis, Ind., assignor to ETS, Inc., Indianapolis, Ind.
Filed Feb. 7, 1997, Ser. No. 797,493
Int. Cl.[6] B65D *85/42*
U.S. Cl. 206—419 **32 Claims**



1. An apparatus, comprising:

a number of elongate tubular lamps oriented along a longitudinal axis, said lamps each having a first end opposite a second end along said axis, said number of lamps being at least three;

a first space configured to engage said first end of each of said lamps to maintain spacing therebetween;

a second spacer configured to engage said second end of each of said lamps to maintain spacing therebetween; and

a third spacer positioned between said first and second spacers, said third spacer including a first wall defining a first number

of openings and a second wall defining a second number of openings, said first and second openings being paired to define a number of passages each receiving a corresponding one of said lamps therethrough to space apart said lamps in cooperation with said first and second spacers and provide a packagable lamp set, said third spacer including a handle graspable from an exposed side of said third spacer to lift and carry said set;

wherein said lamps each include a first pair of conductive pins extending along said axis at said first end, said first spacer includes a first pair of spaced apart walls, said first spacer defines a first number of opening pairs each configured to receive said first end of a corresponding one of said lamps, said first opening pairs each have a first aperture defined through a first one of said first pair of spaced apart walls and sized to permit said corresponding one of said lamps to slide therethrough, and a second aperture defined through a second one of said first pair of spaced apart walls and sized to permit said first pair of pins of said corresponding one of said lamps to extend therethrough and engage said first end of said corresponding one of said lamps in a bearing relationship with said first spacer.

5,826,723

IMPACT RESISTANT WRAPPING SYSTEM

Zoltan Kazmer Jaszai, Minato-ku, Japan, assignor to Burlington Consolidated Limited Incorporation, Dublin, Ireland

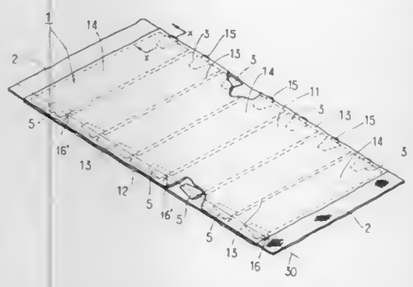
PCT No. PCT/JP94/01826, § 371 Date Apr. 17, 1996, § 102(e) Date Apr. 17, 1996, PCT Pub. No. WO95/11838, PCT Pub. Date May 4, 1995

PCT Filed Oct. 28, 1994, Ser. No. 632,401

Claims priority, application Japan, Oct. 28, 1993, 5-271066

Int. Cl.[6] B65D *81/00*

U.S. Cl. 206—522 **20 Claims**



1. An impact resistant wrapping system, comprising:

flexible wall members together forming a wrapping body sheet, said flexible wall members having gas barrier properties;

a plurality of wall chambers formed between said flexible wall members;

at least one intake tap in said wrapping body sheet that is capable of injecting gas into said plurality of wall chambers; and

a plurality of exhaust taps in said wrapping body capable of releasing gas from said wall chambers, said plurality of exhaust taps being arranged along at least one line that crosses a plurality of said wall chambers such that an exhaust pipe can be inserted into said exhaust taps, adjacent ones of said plurality of wall chambers can be communicated with one another, and an outermost one of said plurality of wall chambers can be communicated with the outside of said wrapping body sheet, through said plurality of exhaust taps;

wherein said inlet and exhaust taps are formed of flat tubes.

5,826,724

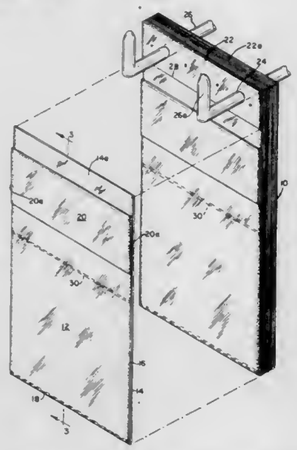
DOUBLE PERFORATION EASY TEAR-OFF BAG

Terry D. Gebhardt, Longview, Tex., assignor to TC Manufacturing Co., Inc., Evanston, Ill.

Filed May 6, 1997, Ser. No. 851,782

Int. Cl.[6] B65D *30/00*

U.S. Cl. 206—554 **7 Claims**



7. A plastic bag designed to be joined through its rear wall to a header comprising:

a) a front wall and a rear wall joined together at their sides and bottom to provide said bag;

b) a first perforation in said rear wall adjacent said header;

c) a second perforation in said front and rear walls below the top of said bag;

d) said second perforation being so constructed that the force necessary to rupture said second perforation is greater than the force necessary to rupture said first perforation.

5,826,725

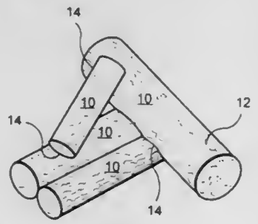
MOLDED BIODEGRADABLE PACKAGING

Richard Ross Hornstein, Saddle River, and Grady F. Landrum, Morristown, both of N.J., assignors to Norel, Little Ferry, N.J.

Continuation of Ser. No. 550,933, Oct. 31, 1995, Pat. No. 5,623,815. This application Dec. 19, 1996, Ser. No. 770,085

Int. Cl.[6] B65B *55/20;23/00*

U.S. Cl. 206—584 **2 Claims**



1. A package, which comprises;

A. an outer container having a bottom and a sidewall;

B. at least one article disposed within the container, spaced from the bottom and from the sidewall; and

C. a plurality of randomly placed nuggets, said nuggets being defined at least in part by an exposed surface of a gelatinized starch material, filling the space between the article and the container bottom and sidewall, said plurality of nuggets being adhered together by retrogradation of gelatinized starch at points of contact with exposed surfaces of adjacent nuggets to form a unitary, single cushion between the article and the container bottom and sidewalls, said cushion being frangible and easily broken up and disposed of.

5,826,726

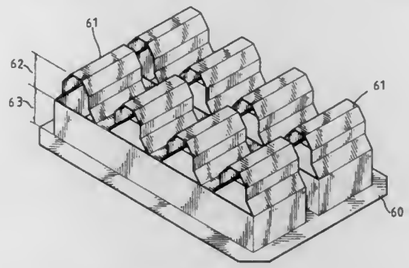
PULP MOLD AND MOLDING MEANS FOR MANUFACTURING THE SAME

Chun-Tse Yang, 10, Alley 1, Lane 3, Wen-Chien Road, Niao-Sung Hsiang, Kaohsiung County, Taiwan

Filed Jul. 2, 1996, Ser. No. 673,080

Int. Cl.[6] B65D *81/127*

U.S. Cl. 206—586 **2 Claims**



1. A molded pulp container for an article, comprising:

a first joining member having parallel opposite sides defining a plane;

first terrace members respectively having first sides connected to the opposite sides of the first joining member and projecting from the plane of the first joining member at opposite oblique angles to opposite sides of the first terrace members;

central members respectively having first sides connected to the opposite sides of the first terrace members and projecting generally perpendicularly to the plane of the first joining member to opposite sides of the central members;

second terrace members respectively having first sides connected to the opposite sides of the central members and projecting relative to the plane of the joining member at opposite oblique angles to opposite sides of the second terrace members; and

second joining members respectively having first sides connected to the opposite sides of the second terrace members and projecting generally parallel to opposite sides, whereby the opposite sides of the second joining members are respectively connectable to opposite sides of second terrace members of other molded pulp containers for other articles,

wherein all the members are made of molded pulp.

5,826,727

SHIPPING AND DISPLAY CONTAINER FOR MOTORIZED IMPLEMENT

Ronald A. Fraser, Chandler, Ariz., assignor to Ryobi North America Inc.

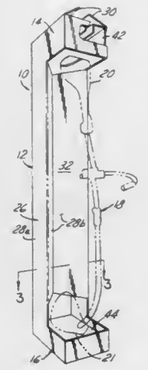
Continuation of Ser. No. 611,379, Mar. 5, 1996, abandoned, which is a continuation of Ser. No. 279,657, Jul. 25, 1994, Pat. No. 5,495,937, which is a continuation-in-part of Ser. No. 6,375, Jan. 19, 1993, Pat. No. 5,332,085. This application Apr. 29, 1997, Ser. No. 841,054

Int. Cl.[6] B65D *5/50;71/08*

U.S. Cl. 206—763 **25 Claims**

1. A point-of-sale display and access arrangement comprising:

a substantially fully assembled motorized implement having a housing with a motor therein and an elongate member extending from the housing;



a folded-up display carton having a top portion, a bottom portion and a body portion connecting the top and bottom portions formed from a single continuous piece of material and having a retainer, at least one of the top and bottom portions having the retainer disposed therein with the retainer providing structural support to that portion and the retainer holding a portion of the motorized implement;

the body portion having a rear panel and a pair of side panels which at least partially define a channel, each side panel including a first side section and a second side section, the first side sections extending generally perpendicularly from the rear panel and the second side section of one of the side panels extending from the first side section to interlockingly engage the other of the side panels;

the top portion is contiguous with the side panels of the body portion and has a pair of side sections extending outwardly from the rear panel and a face section extending between the side sections of the first portion and spaced from the rear panel;

the bottom portion is contiguous with the side panels of the body portion and has a pair of side sections extending outwardly from the rear panel beyond the first side sections and a face section extending between and perpendicular to the side sections of the bottom portion and spaced from the rear panel, the bottom portion adapted for supporting the motorized implement in a generally vertical orientation when the bottom portion is placed upon a flat horizontal surface;

wherein the arrangement may be oriented in an upright position with the bottom portion resting upon a horizontal surface and the top portion being maintained vertically thereabove so that the motorized implement may be displayed; and

wherein the elongate member lies adjacent the channel between the top and bottom portions so that the elongate member is displayed, the motorized implement is tactilely accessible at the point of sale and the arrangement of the carton and motorized implement can be carried in a generally horizontal fashion by using the motorized implement as a handle to carry the arrangement to a cash register and ultimately to a consumer's final destination.

5,826,728

CONTAINER AND BLANK FOR MAKING SAME

Phil B. Sheffer, Thomasville, Pa., assignor to Pack 'N Stack, Inc., Philadelphia, Pa.

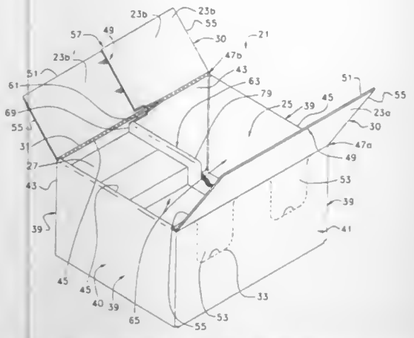
Filed Mar. 7, 1997, Ser. No. 814,732

Int. Cl.[6] B65D *5/486*

U.S. Cl. 206—774 **13 Claims**

1. A shipping and display container comprising a plurality of panels positioned to form a bottom, a top, and walls extending between the top and bottom to define a contained space, the walls

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extending generally upwardly from the bottom when the container is resting thereon, the walls including first and second, opposite walls;

the top comprising first and second flaps, each of the flaps having one side connected to a respective one of the first and second walls, the flaps extending from the walls and terminating in edge portions, the flaps being outwardly foldable to access the contained space;

means for securing the edge portions relative to each other when the carton is closed for shipping;

the first wall having a removable section integrally connected to the first flap along a first weakened line;

the second flap removably connected to the second wall along a second weakened line;

whereby the top is separated from the first and second walls when the removable section is separated from the first wall and when the second flap is removed from the second wall;

wherein the edge portions terminate in opposing flap edges, the securing means comprising tape adhered to the edge portions and extending between the opposing flap edges;

wherein the plurality of panels is formed from an integral blank of sheet material; and,

further comprising a partition comprising at least one of the panels terminating in opposite transverse edges, the container further comprising at least one partition flap defined integrally with said one of the panels and located at one of the transverse edges, the flap being foldable along an axis substantially parallel to said one of the transverse edges, the flap, when folded, having first and second tabs extending in substantially opposite directions and generally outwardly from a plane coincident with the panel.

5,826,729

CABINET OR CD STORAGE RACK WITH INDIVIDUAL COMPARTMENTS

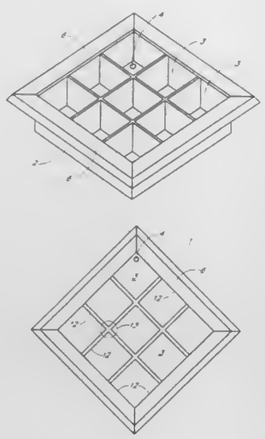
Cornelis Oosterom, NL-4225 PH, Noordeloos, Noordzijde 36, Netherlands

Filed Sep. 18, 1996, Ser. No. 716,489
Int. Cl.[6] A47F *7/00*
U.S. Cl. 211—40 **18 Claims**

1. A storage rack for cassettes, comprising:

an outer, shallow, box-like housing having an open front face and four side walls joined at corners with an uppermost corner located above the remaining corners relative to a vertical axis;

a plurality of partitions placed within the housing and defining a plurality of compartments within the housing and open to said front face, the partitions being provided in rows perpendicular to one another to provide a crossing pattern and define generally diamond-shaped compartments so that cassettes placed within the compartments are tilted, the compartments being sized to correspond to dimensions of the CD cassettes in order to receive CD cassettes side-by-side in each compartment so that the CD cassettes, due to their own weight, are in a tilted arrangement when placed in the compartments; and



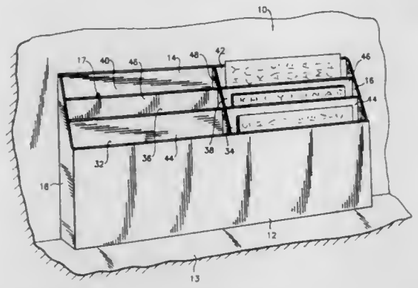
a frame extending along and outwardly from the periphery of the open front face of the housing.

5,826,730

FILE FOLDER ORGANIZER

David M. Stravitz, 16 Park Ave. Suite 14A, New York, N.Y. 10016

Filed Nov. 7, 1996, Ser. No. 746,218
Int. Cl.[6] A47F *1/04*
U.S. Cl. 211—55 **6 Claims**



1. A file folder organizer comprising:

a front wall extending in a lengthwise direction of the file folder organizer, and said front wall having a lower edge and an upper edge, said front wall having opposite side portions which are spaced apart in said lengthwise direction;

a rear wall extending in said lengthwise direction and having a lower edge and an upper edge, said rear wall having opposite side portions which are spaced apart in said lengthwise direction;

spaced apart side walls extending in a depthwise direction perpendicular to said lengthwise direction and integrally connected with respective opposite side portions of both of said front wall and said rear wall in order to connect said front wall and said rear wall together in parallel, spaced apart relation such that the lower edge of said rear wall is raised relative to the lower edge of said front wall and the upper edge of said rear wall is raised relative to the upper edge of said front wall, and lower edges of said side walls and the lower edges of said front wall are substantially coplanar so as to support said file folder organizer on a horizontal surface in a vertical orientation thereof, each said side wall being formed as a flat wall having a flat exterior surface without any flanges extending outwardly therefrom in a direction other than said depthwise direction;

a bottom wall integrally connecting the lower edge of said front wall to the lower edge of said rear wall, said bottom wall having a plurality of steps of different heights, said steps being parallel and offset from each other in a heightwise direction of said organizer and in a depthwise direction of said organizer, said bottom wall being at least partially enclosed by and integrally connected to said side walls so that said side walls hide said steps of said bottom wall;

at least one dividing wall for dividing an area bounded by said front wall, said rear wall and said side walls into a plurality of compartments, at least two of said compartments being closed at a bottom thereof by different steps of said bottom wall so as to provide a staggered relation to said compartments, said at least one dividing wall being integrally connected to said side walls, said at least one dividing wall including at least one lengthwise wall parallel to said front and rear walls and positioned therebetween, and each said dividing wall having a first section that connects together adjacent steps and a second section integrally formed with said first section, said second section of each said dividing wall extending from said first section of a same dividing wall to a height much greater than a height of a rearwardmost step connected therewith, with the height of each second section being much greater than a height of said first section and such that an upper edge of each dividing wall is adjacent upper edges of said spaced apart side walls, and each said dividing wall extending for an entire length of each respective compartment;

said side walls, said front wall, said at least one dividing wall and said rear wall all extending upward from said bottom wall by a substantially large distance so as to create deep compartments for storage of file folders therein; and

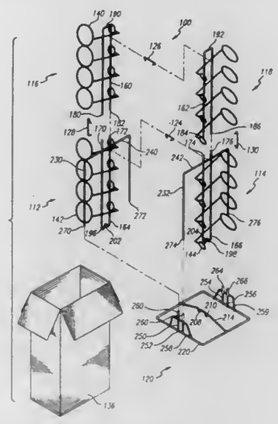
wherein said file folder organizer is an integral, unitary, one-piece molded construction.

5,826,731

KNOCK-DOWN BOTTLE RACK

Shahriar Dardashti, c/o Atlantic Representations, Inc., P.O. Box 2399, Santa Fe Springs, Calif. 90670

Filed Mar. 11, 1996, Ser. No. 614,964
Int. Cl.[6] A47B *73/00*
U.S. Cl. 211—74 **65 Claims**



1. A knock-down bottle rack, comprising:

a base assembly;

a first panel attachable to and detachable from said base assembly, said first panel including a plurality of bottle first holders; and

a second panel attachable to said base assembly in a generally parallel orientation to said first panel when attached to said base assembly, said second panel being detachable from said base assembly, said second panel including a plurality of bottle second holders;

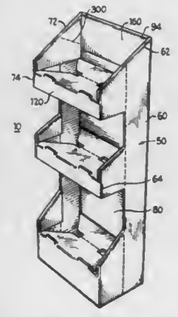
wherein said first panel includes an elongate upwardly-facing U-shaped member to which said first holders are directly affixed, and a wider downwardly-disposed wider U-shaped member having a top cross-piece to which said upwardly-facing U-shaped member is affixed and having downward ends releasably attachable to said base assembly.

5,826,732

COLLAPSIBLE POINT-OF-PURCHASE DISPLAY APPARATUS

Linda Ragsdale, Old Hickory, Tenn., assignor to Stone Container Corporation, Chicago, Ill.

Filed Feb. 6, 1996, Ser. No. 596,083
Int. Cl.[6] A47F *5/10*
U.S. Cl. 211—149 **19 Claims**



1. A point-of-purchase display apparatus for displaying goods positionable thereon, said display apparatus having a longitudinal axis and being articulable from a substantially flat, collapsed configuration of foldable material to a substantially rigid, upright three dimensional display configuration with minimal fabrication effort, while enabling facilitated, efficient shipment of said display apparatus in a minimum profile orientation while in said collapsed configuration, said display apparatus comprising:

at least one collapsible shelf having a shelf fold substantially perpendicular to a line parallel to said longitudinal axis so as to be capable of being deployed from a folded orientation in said collapsed configuration to a substantially unfolded horizontal deployed position in said display configuration,

frame means for supporting the respective portions of said at least one shelf, said frame means including at least one back panel, a first side panel, and a second side panel, said longitudinal axis extending along the height thereof,

each of said back and said first and second side panels having an interior surface, an exterior surface, a top edge, a bottom edge, and two side edges with each of said first and second side panels operably attached to and emanating from the opposite side edges of said back panel, at respective back panel folds thereat,

at least one of said at least one back and said first and second side panels having at least one frame panel fold therein substantially parallel to said longitudinal axis, said at least one frame panel fold co-operating with said shelf fold in each of said at least one shelf to enable said point of purchase display apparatus to be deployable from said substantially flat, collapsible configuration to said substantially rigid, upright display configuration,

said at least one collapsible shelf being operably attached to at least one of said at least one back panel and said first and second side panels with at least one of said at least one shelf

being automatically deployed into its substantially unfolded horizontal position, as a function of the deploying of said at least one back and said first and second panels to obviate the need for independently repositioning said at least one shelf at a point of purchase location,

at least one of said at least one back and said first and second side panels including rigidity means for reinforcing the point of purchase display apparatus in said display configuration, to preclude said apparatus from undesirably recollapsing to its collapsed configuration along said shelf fold of said at least one shelf and said frame panel fold of said at least one back panel, and said first and second side panels;

at least one front panel, said front panel operably attached to one of said side edges of each of said first and second side panels, opposite said side edges operably attached to said side edges of said back panel, the lowermost of said at least one front panel, in combination with the lowermost of said at least one back panel and first and second side panels, defines a base region;

said base region further including at least one base flap operably attached to said lower edge of at least one of said back panel and said first and second side panels, said at least one base flap perpendicularly foldable relative to said base region of said first and second side panels to enhance the stability of said point of purchase display apparatus upon deployment.

5,826,733

Patent Not Issued For This Number

5,826,734

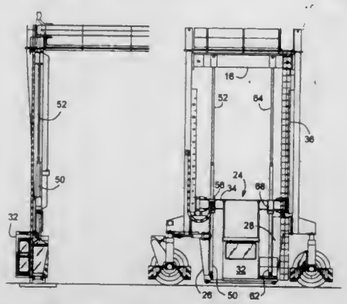
VARIABLE ELEVATING CABIN

James A. Baumann, Orland Park; Myron Glickman, Arlington Heights; John J. Lanigan, Jr., New Lenox; John J. Lanigan, Sr., Orland Park, and Daniel B. Zakula, Mokena, all of Ill., assignors to Mi-Jack Products, Inc., Hazel Crest, Ill.

Filed Oct. 9, 1996, Ser. No. 728,081

Int. Cl.[6] B66C *17/20*

U.S. Cl. 212—291 **28 Claims**



1. A crane and lift apparatus including

a pair of laterally disposed portal frames including forward and rearward corner columns for supporting a work load,

at least one wheel secured to each of said columns for movement of said apparatus,

at least one upper frame beam for connecting one each of said forward and said rearward corner columns,

upper transverse girders for connecting respective forward corner columns and respective rearward corner columns of said pair of portal frames,

a spreader deployed from said upper transverse girders for at least lateral movement of said work load therealong,

power drive and control means for selectively moving said crane and lift apparatus along ground level, including

a single cabin deployed for movement throughout a substantial vertical range between one of said forward columns and a tandemly associated rearward column, said cabin having a cabin floor,

at least one vertically movable horizontal cabin support mechanism connected to said single cabin and extending between one of said forward corner columns and its associated rearward corner column for raising and lowering said single cabin from ground level to the top of the apparatus,

first and second double rod cylinder means secured to said single cabin for selective raising and lowering thereof,

each of said first and second double rod cylinder means has a lower end secured respectively to said first and second downwardly extending elements and an upper end secured to said upper frame beam, said single cabin deployed between said first and second double rod cylinder means for vertical movement therealong,

a connector assembly extending between an inside lower portion of one of said pair of forward columns and an inside portion of its associated rearward columns,

said connector assembly comprising a first element extending downwardly from and secured to said inside portion of said forward column and having a lower end portion positioned beneath said cabin floor when said cabin is in its lowermost position within said range of movement,

said connector assembly comprising a second element extending downwardly from and secured to said inside portion of said

rearward column and having a lower end portion positioned beneath said cabin floor when said cabin is in its lowermost position within said range of movement, and

a tie bar having a first end removably joined to said lower end portion of said first element and a second end removably joined to said lower end portion of said second element,

whereby said cabin lies above said tie bar and beneath said upper frame beam when said cabin is within its range of movement and whereby an operator positioned in said single cabin has available substantially unlimited sight lines of observation to control the raising and lowering of said work load between ground level and the top of the apparatus.

5,826,735

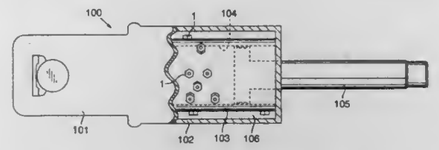
RAILCAR CUSHION DEVICE VALVING SYSTEMS

Glen L. Litten, Springfield, Oreg., assignor to Emerald Rail Technologies, LLC, Springfield, Oreg.

Continuation-in-part of Ser. No. 692,172, Aug. 5, 1996, and a continuation-in-part of Ser. No. 714,550, Sep. 16, 1996. This application Nov. 12, 1996, Ser. No. 744,493

Int. Cl.[6] B61G *9/16*

U.S. Cl. 213—43 **14 Claims**



1. A spike control valve for a hydraulic impact cushioning device having a piston slidingly received within a cylinder containing hydraulic fluid under a pressure, the cylinder having a plurality of apertures for controlling the flow of the hydraulic fluid out of the cylinder when an impact force is applied to the piston, the spike control valve comprising:

a valve body having a cylinder wall defining a flow passage extending from a passage inlet to a passage outlet;

a first valve seat formed in the cylinder wall near the passage inlet;

a second valve seat formed in the cylinder wall near the passage outlet;

a valve control element slidingly received in the flow passage between the first and second valve seats, the valve control element having a first seat engaging portion and a second seat engaging portion, the valve control element sliding within the flow passage between a first position in which the first seat engaging portion seats against the first valve seat to obstruct hydraulic fluid flow into the flow passage from the passage inlet and a second position in which the second seat engaging portion seats against the second valve seat to obstruct hydraulic fluid flow out of the flow passage via the passage outlet, the valve control element further having recess portions that are recessed relative to the cylinder wall to permit hydraulic fluid flow through the flow passage when the valve control element is between the first and second positions; and

a bias element exerting a bias force against the valve control element to urge the valve control element towards the first position whereby a spike in hydraulic fluid pressure at the passage inlet in excess of a spike pressure threshold causes a transient hydraulic fluid flow through the flow passage as the valve control element moves from the first position to the second position.

5,826,736

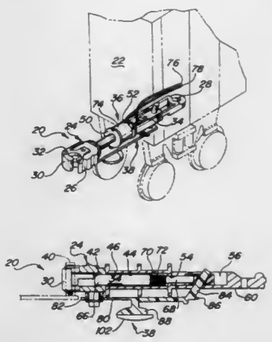
COUPLER ARM ASSEMBLY WITH DISTINCT UNCOUPLING DEVICES

Michael G. Weber, Rochester Hills, Mich., assignor to Lionel LLC, Chesterfield, Mich.

Filed Apr. 2, 1997, Ser. No. 832,584

Int. Cl.[6] B61G *5/00*

U.S. Cl. 213—75 A **20 Claims**



1. A coupler arm assembly comprising:

a coupler frame extending along a longitudinal axis with a coupler head and a channel, a hollow housing defined between said coupler head and said channel;

a knuckle pivotally connected to said coupler head and movable between a coupled position and an uncoupled position;

a core pin received in said hollow housing, a first end of said core pin selectively engaging said knuckle and a second end of said core pin extending away from said hollow housing and parallel to said channel; and

two distinct uncoupling devices for moving said knuckle from said engaged position to said uncoupling position.

5,826,737

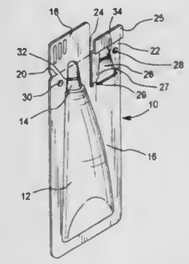
THERMOFORMED RECLOSABLE CONTAINER

Issac Zakensberg, Scotch Plains, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Feb. 5, 1997, Ser. No. 795,490

Int. Cl.[6] B65D *1/02*

U.S. Cl. 215—47 **17 Claims**



1. A reclosable container comprising a container body, a planar border at least partially surrounding said container body said container body sealed at one end and having an openable dispensing means at another end; a first breakaway means disposed above said dispensing means and closing said dispensing means; a hinged closure means laterally adjacent said dispensing means and attached to said container body by a hinge, said hinged closure means having an upper portion and a lower portion, said upper portion offset from said lower portion and connected to said lower

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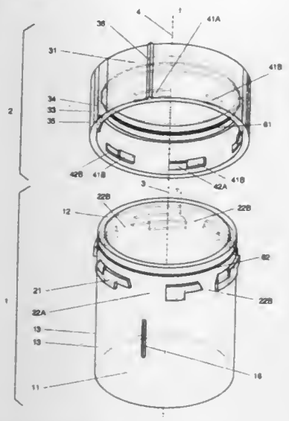
portion by a lateral groove, said hinged closure means rotating on said hinge to overlap and reclose said dispensing means after said first breakaway means has been removed.

5,826,738

CHILD-RESTRAINT COMBINATION OF A CONTAINER AND A ONE-PIECE CLOSURE

Do Le Minh, 2718 Ashwood Cir., Fullerton, Calif. 92635-2800

Continuation of Ser. No. 462,197, Jun. 5, 1995, abandoned.
This application Jun. 24, 1997, Ser. No. 968,464
Int. Cl.[6] A61J *1/00*
U.S. Cl. 215—206
8 Claims



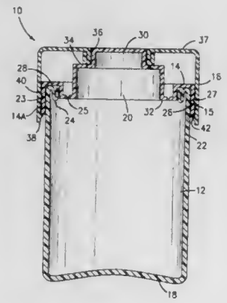
1. A child-restraint combination comprising:
(a) a container, said container having a container central axis, said container having a type-A groove, said container having a type-B groove,
(b) a closure, said closure having a type-A lug, said closure having a type-B lug, said type-A lug having a type-A maximum width, said type-B lug having a type-B maximum width, said type-B maximum width being different to said type-A maximum width,
(c) locking means, said closure having a locking relative position with respect to said container, said closure being in said locking relative position with respect to said container when said type-A lug is inside said type-B groove, said locking means preventing pulling said closure away from said container when said closure is in said locking relative position with respect to said container, said locking means preventing rotating said closure with respect to said container when said closure is in said locking relative position with respect to said container.
(d) opening means permitting separating said closure from said container when said closure is in said locking relative position with respect to said container, said opening means preserving the general shape of said container,
(i) said closure having a first relative axial position with respect to said container, said opening means permitting moving said closure from said locking relative position with respect to said container to said first relative axial position with respect to said container by permitting pushing said closure toward said container when said closure is in said locking relative position with respect to said container,
(ii) said opening means permitting rotating said closure by any angle with respect to said container as long as said closure remains in said first relative axial position with respect to said container,
(iii) said closure having a first relative rotational position with respect to said container, said closure being in said first relative rotational position with respect to said container when said type-A lug can be moved into said type-A groove in a direction generally parallel to said container central axis, said opening means permitting rotating said closure to said first relative rotational position with respect to said container as long as said closure remains in said first relative axial position with respect to said container,
(iv) said opening means permitting moving said type-A lug to said type-A groove,
(v) said opening means permitting separating said closure from said container when said type-A lug is inside said type-A groove.

5,826,739

CUP AND CLOSURE

Emery I. Valyi, Katonah, N.Y., assignor to The Elizabeth and Sandor Valyi Foundation, Inc., New York, N.Y.

Division of Ser. No. 465,438, Jun. 5, 1995, Pat. No. 5,661,889, which is a continuation-in-part of Ser. No. 372,021, Jan. 12, 1995, Pat. No. 5,673,807. This application Feb. 21, 1997, Ser. No. 804,229
Int. Cl.[6] B65D *17/28;53/00*
U.S. Cl. 215—253
9 Claims



1. A container and closure assembly comprising:
a container including a bottom portion and an encircling wall extending therefrom and defining a body portion, wherein the body portion has an open end defined by a rim;
a removable closure including a removable cap liner extending over said open end of said container and a removable cap over and surrounding the cap liner for sealably engaging the container at its open end in a manner which retains fluids in the container;
a folded portion integral with said rim and engaging said cap liner, wherein the cap liner extends completely over said folded portion,
whereby internal pressure in said container causes the folded portion to firmly engage said closure due to deformation of said folded portion.

5,826,740

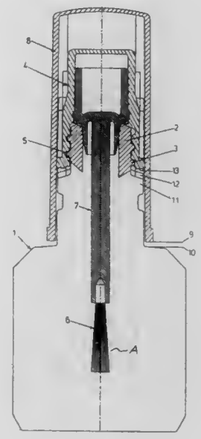
Patent Not Issued For This Number

5,826,741

RESERVOIR HAVING A SCREW CAP FOR NAIL ENAMEL, MASCARA OR THE LIKE

Norbert Dumler, Ansbach, and Günter Bachmann, Neuendettelsau, both of Germany, assignors to Georg Karl Geka-Brush GmbH, Bechhofen Waizendorf, Germany

PCT No. PCT/EP95/00182, § 371 Date Jul. 26, 1996, § 102(e) Date Jul. 26, 1996, PCT Pub. No. WO95/20528, PCT Pub. Date Aug. 3, 1995
PCT Filed Jan. 19, 1995, Ser. No. 682,700
Claims priority, application Germany, Jan. 27, 1994, 44 02 227.1
Int. Cl.[6] A45D *29/11;* B65D *23/12;41/04*
U.S. Cl. 215—321
6 Claims



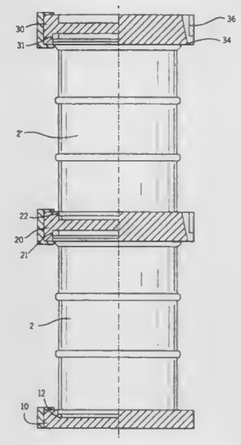
1. A cosmetic container comprising:
a reservoir (**1**) and a screw cap (**4**), the screw cap including an external thread (**5**) and the reservoir including a mating internal thread (**3**) on a neck thereof, the internal and external threads being disposed at a thread pitch (α), the neck being disposed at an upper end of the reservoir;
(a) the neck including an annular collar (**11**) having a base surface and an upper side, the upper side of the annular collar including an upper surface varying in height as a function of circumferential angle;
the upper surface including at least one projection (**12**) on the upper side which extends over a certain circumferential angle (β1, β2) around the collar, the projection including in cylindrical cross-section a projection contour including a plateau region running approximately parallel to the base surface,
wherein a first end of the plateau region includes a projection stop inclination (**17**) and a rounded region of transition towards the plateau region (**19**) and wherein a second end of the plateau region includes a projection stop shoulder (**20**) that is approximately perpendicular to the plateau region;
(b) the screw cap including a lower edge, the lower edge including a lower surface varying in height as a function of circumferential angle;
the lower surface including at least one recess (**14**) having a recess contour which approximately corresponds to the projection contour and which extends over about the same certain circumferential angle;
the recess including a stop inclination;
the lower edge extending upwards toward the recess stop inclination at an inclination angle (Γ) in a direction of the thread pitch, the inclination angle being slightly smaller than the thread pitch (α).

5,826,742

DEVICE AND METHOD FOR THE TRANSPORT OF HAZARDOUS GOODS RECEPTACLES IN CONTAINERS

Friedbelm Hermann Timpert, Sonnenhang 18, D-21335 Luneberg, Germany, assignor to Friedhelm Hermann Timpert, Luneberg, Germany

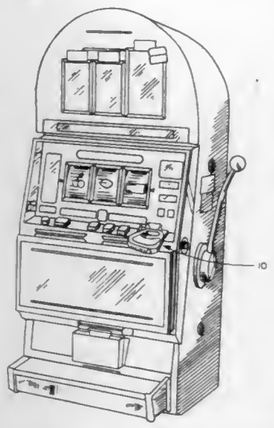
PCT No. PCT/EP95/02266, § 371 Date Mar. 12, 1997, § 102(e) Date Mar. 12, 1997, PCT Pub. No. WO95/34490, PCT Pub. Date Dec. 21, 1995
PCT Filed Jun. 12, 1995, Ser. No. 750,813
Claims priority, application Germany, Jun. 13, 1994, 44 22 004.9
Int. Cl.[6] B65D *21/02*
U.S. Cl. 220—23.6
14 Claims



1. Transport device for hazardous goods receptacles, with an ISO container receiving the hazardous goods receptacles and means for securing the loads of the hazardous goods receptacles within the container, wherein the load-securing means comprises: a first receiving surface completely filling the bottom surface of the container (**1**) with openings (**12**) each for receiving with a precise fit a lower region of a hazardous goods receptacle (**2**), and a second receiving surface which completely fills an intermediate surface, parallel to the bottom surface, of the container and which has openings (**21**) each for receiving with a precise fit an upper region of a hazardous goods receptacle (**2**) fitted onto the first receiving surface, characterized in that
the first receiving surface is formed by a plurality of separate first preshaped parts (**10**) which are movable one against the other and which abut one against the other and, at the edges of the first receiving surface, are supported by the container walls,
the second receiving surface is formed by a plurality of separate second preshaped parts (**20**) which are movable one against the other and which abut one against the other and, at the edges of the second receiving surface, are supported by the container walls
wherein the first and second preshaped parts (**10**, **20**) have recesses (**24**) at their edges by which cavities open to the top are formed into which wedges can be inserted between adjoining preshaped parts (**10**, **20**).

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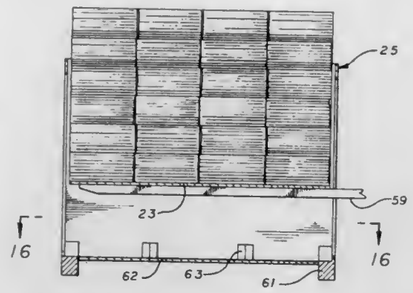
5,826,743
TRAY FOR SLOT MACHINE GAMING DEVICE
Bruce R. Baird, 617 St. Dunstans Rd., Baltimore, Md. 21212
Filed Jun. 17, 1997, Ser. No. 877,765
Int. Cl.[6] A45C *11/28*
U.S. Cl. 220—480 **1 Claim**



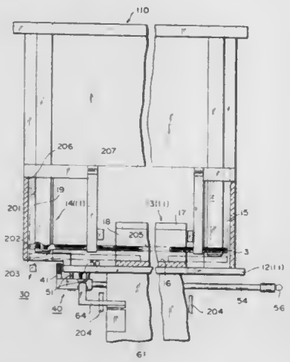
1. In a tray removably mounted on a slot machine adjacent to the coin-depositing slot thereof, wherein the slot machine has a wall member, and wherein the tray has a back wall, the improvement comprising the back wall of the tray having a depending lip, the tray having a front portion, a back portion and a peripheral wall formed with sloping sides down to the upper surface of the tray, such that coins in the tray may be easily slidably removed therefrom, the tray having a first side which is substantially perpendicular to the back portion and further having a second side which is angled with respect to the back portion, such that the front portion of the tray is wider than the rear portion thereof, the tray further having a bottom surface provided with first and second spaced-apart supports depending therefrom, wherein the first support is near the front portion of the tray, and wherein the second support is intermediate the front and back portions of the tray, a threaded rod carried by the first and second supports and threadably received within one of the supports, the threaded rod having a front end and a rear end, a handle carried by the front end of the threaded rod, and a clamp carried by the rear end of the threaded rod, such that the wall member of the slot machine is rigidly clamped between the clamp on the rear end of the threaded rod and the lip depending from the back wall of the tray.

5,826,744
BULK HANDLING APPARATUS
Richard E. Kwasniewski, Fountain Valley; Jose Salinas, Jr., Irvine; Philip Medina, Woodcrest; Edward McLaughlin, Santa Ana; Randall Wienke, South Pasadena; Vernon Bundy, Orange; Klaus Kurz, Monterey Park; Lawrence Foster, Perris, and Gary Fain, Irvine, all of Calif., assignors to Los Angeles Times, a division of Times Mirror Company
Division of Ser. No. 650,918, May 17, 1996, Pat. No. 5,769,600. This application Oct. 11, 1996, Ser. No. 730,680
Int. Cl.[6] B65D *19/38*
U.S. Cl. 220—625 **8 Claims**

1. A container for holding a plurality of stacked articles, comprising:
four side walls, said side walls defining an interior and a bottom of said container;
a board horizontally disposed and vertically moveable within said interior, said board having a bottom surface;
supports positioned on said side walls near said bottom of said container such that said board rests on said supports and said bottom surface of said board is above said bottom of said container when said board is at its lowest position in said container; and
at least two vertical openings defined in one of said side walls, said vertical openings having a bottom edge extending to below said bottom surface of said board at its lowest position, thereby defining a gap between said bottom surface of said board and said bottom edge of said vertical openings for insertion of a lifting tool through said one of said side walls to raise said board at its lowest position.



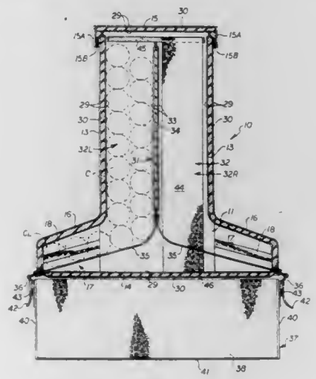
5,826,745
STOCKER FOR FLAT HEALDS
Kazunori Kuroyanagi, Inasa-gun, Japan, assignor to Hamamatsu Photonics K.K., Hamamatsu, Japan
Filed Dec. 20, 1996, Ser. No. 770,112
Claims priority, application Japan, Dec. 20, 1995, 7-331875
Int. Cl.[6] B65H *3/00*
U.S. Cl. 221—40 **5 Claims**



1. A stocker for flat healds, which, in order to selectively discharge an arbitrary flat heald out of a lot of flat healds juxtaposed, is arranged to stock a lot of said flat healds, said stocker comprising:
a housing within which said flat healds, oriented horizontally, are stacked vertically, said housing having a heald refilling aperture provided at a top portion thereof and a heald drawing opening provided at a lower portion thereof for discharging a lowermost of the flat healds stacked within said housing,
wherein said housing comprises:
a ring receiving frame at a front portion of said housing, said ring receiving frame being open at lower end thereof and at an upper end thereof;
a frame body having a bottom plate and a heald receiving channel, a top surface of said bottom plate defining a bottom surface of said heald receiving channel; and

a base for supporting the frame body and said ring receiving frame,
wherein the bottom surface of said heald receiving channel and a top surface of said base are spaced by a thickness of said bottom plate of said frame body.

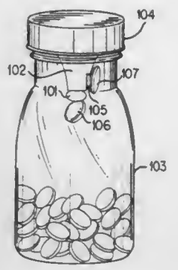
5,826,746
BACKPACK DISPENSING SYSTEM FOR PACKAGED GOODS
William O. Ash, Jr., 2537 S. Gessner, No. 216, Houston, Tex. 77063
Continuation-in-part of Ser. No. 409,741, Mar. 23, 1995, Pat. No. 5,611,457. This application Mar. 17, 1997, Ser. No. 819,638
Int. Cl.[6] A01C *00/00*
U.S. Cl. 221—185 **17 Claims**



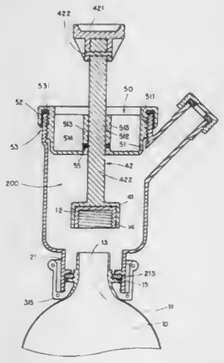
1. A backpack to be worn on the back of a person for transporting and dispensing packaged goods comprising:
a backpack having an adjustable shoulder harness adapted to receive two shoulders of a person and having a back wall, front wall, opposed side walls, and a bottom wall defining a generally rectangular storage compartment configured to hold a plurality of packaged goods in a vertically descendable disposition;
an opening at a top end of said backpack for placing a plurality of said packaged goods into said storage compartment;
at least one access opening disposed at a lower end of said backpack through which a lowermost one of said packaged goods may pass; and
support means in said storage compartment having a lower portion extending laterally outward said storage compartment disposed adjacent to said at least one access opening and configured to support a lowermost one of said packaged goods in a position accessible to a hand of the person wearing said backpack for the manual removal of said lowermost one of said packaged goods.

5,826,747
APPARATUS AND METHOD FOR DISPENSING PILLS
Gerard M. Bohler, R.D. 2 Box 528, Pine Grove, Pa. 17963
Filed Dec. 16, 1996, Ser. No. 766,949
Int. Cl.[6] B23Q *7/04*
U.S. Cl. 221—210 **16 Claims**

1. An apparatus for dispensing pills, comprising
(a) a bottle;
(b) a cap for sealing said bottle, said cap having an inside surface provided with an adhesive area that releasably fixes a pill when the pill contacts said adhesive area, wherein said adhesive area is covered by a tab, said tab being removable from said adhesive area without removing a substantial amount of adhesive from said adhesive area when said tab is removed from said adhesive area.



5,826,748
CLOSED ISOBARIC DISPENSER FOR CARBONATED LIQUID
Zide Qian, and Benyu Qian, both of 4750 E. Templeton St., Unit 1210, Los Angeles, Calif. 90032
Continuation-in-part of Ser. No. 396,384, Feb. 28, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 585,967
Int. Cl.[6] G01F *11/28*
U.S. Cl. 222—1 **22 Claims**



1. A method of dispensing carbonated liquid and preserving the compressed carbon dioxide content thereof, which comprises the steps of:
(a) mounting a closed isobaric dispenser onto a holder opening, which is secured with a cap in airtight manner, of a carbonated liquid containing holder, in which said dispenser has a cap opener, a sealed outlet access and an airtight closed chamber that said cap is positioned therein;
(b) unlocking and removing said cap to open said holder opening by means of said cap opener within said airtight closed chamber of said dispenser;
(c) pouring said carbonated liquid in said carbonated liquid containing holder to said airtight closed chamber;
(d) resecuring said cap of said carbonated liquid containing holder to said holder opening by means of said cap opener within said airtight closed chamber;
(e) unsealing said outlet access and dispensing said carbonated liquid in said airtight closed chamber through said outlet access; and
(f) resealing said outlet access of said airtight closed chamber of said dispenser.

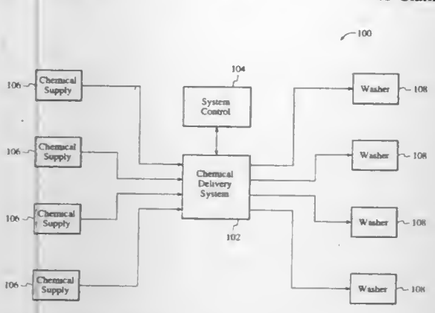
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5,826,749

MULTIPLEXED SYSTEM FOR DISPENSING MULTIPLE CHEMICALS TO MULTIPLE DESTINATIONS

David R. Howland, Aptos; Stephen G. Hosking, and Henry W. Cassady, both of Santa Cruz, all of Calif., assignors to Nova Controls, Santa Cruz, Calif.

Filed Feb. 22, 1996, Ser. No. 605,561
Int. Cl.[6] B67B 7/00
U.S. Cl. 222—1 48 Claims



1. A method for dispensing liquids in a system having a first transport means including a pump, a reservoir of chemicals, a collapsible input tube one end of which is in fluid communication with said reservoir, with said remaining end having an aperture in fluid communication with said pump, a chemical flow tube coupled to a water flow tube, with said water flow tube being in fluid communication with a supply of water, said method comprising the steps of:

selectively placing said reservoir in fluid communication with said pump;

transporting a chemical flow from said input tube through said chemical transport means under force of said pump;

transporting a flow of water from said supply of water through said water flow tube;

combining said chemical flow and said flow of water to form a diluted chemical solution; and

transporting said diluted chemical solution through a solution flow tube to a system output tube.

14. A liquid chemical dispensing system for use with a plurality of liquid chemical containers, said system comprising:

a first fluid transport means;

a plurality of system input tubes;

an input multiplexer coupling said plurality of system input tubes to said first transport means, said input multiplexer operatively coupling a selected system input tube to said first transport means, said input multiplexer including a plurality of first multiplexer tubes, at least a portion of each of said first multiplexer tubes capable of being pinched in order to restrict a flow of a chemical in said tube, a plurality of pinchers, each of said pinchers coupled to a corresponding first multiplexer tube, and pinchers pinching said corresponding first multiplexer tube if said corresponding first multiplexer tube is not selected; and a flow enabler coupled to a pincher corresponding to a selected first multiplexer tube, with each of said pinchers including a spring mechanism, said spring mechanism for establishing a force on said corresponding first multiplexer tube thereby pinching said first multiplexer tube;

a water supply; and

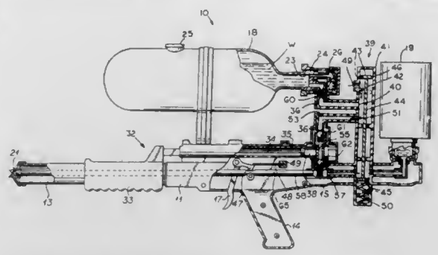
a second fluid transport means coupled to said water supply and to said first fluid transport means, wherein an output of said second fluid transport means comprises a solution of said selected liquid chemical and said water.

5,826,750

TOY WATER GUN WITH FLUID SELECTION CONTROL VALVE

Lonnie G. Johnson, Smyrna, Ga., assignor to Johnson Research & Development Corporation, Inc., Atlanta, Ga.

Filed Jan. 8, 1997, Ser. No. 780,627
Int. Cl.[6] A63H 3/18
U.S. Cl. 222—79 20 Claims



1. A toy water gun comprising:

a pump for drawing liquids and gases;

a storage reservoir adapted to hold liquid, said storage reservoir being in fluid communication with said pump;

a pressure tank adapted to hold liquid and gas, said pressure tank being in fluid communication with said pump;

control valve means for selectively controlling the drawing by said pump of gases from ambience or liquid from said storage tank and depositing the same into said pressure tank;

conduit means for conveying liquid from said pressure tank to ambience; and

control means for controlling the flow of liquid through said conduit means,

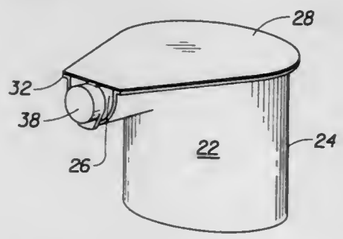
whereby the control valve means controls the pressure created by compressed air within the pressure tank by controlling whether the pump draws gases into the pressure tank for pressurization of liquid therein or liquids from the storage tank into the pressure tank.

5,826,751

REPLACEABLE FLUID-CONTAINING BAG AND NOZZLE FOR HIGH VISCOSITY FLUID DISPENSER

Robert E. Stahley, Middletown, and Dana P. Gruenbacher, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Division of Ser. No. 641,609, May 1, 1996. This application Oct. 17, 1997, Ser. No. 953,524
Int. Cl.[6] B65D 35/29
U.S. Cl. 222—92 9 Claims



1. A reclosable flexible bag cartridge for containing a fluid comprising:

a) a nozzle having a substantially flat surface and a continuous outer portion adjacent said top surface, said nozzle also having an orifice extending therethrough, said orifice having an orifice axis, an outermost end, and a reclosable closure located at said outermost end;

b) a thermoformed bag having an inside, a sidewall, a bottom, and a flanged end, said bag open at said flanged end, said flanged end having a flange extending substantially radially outward from said sidewall, said flange being continuous and in a plane except a nozzle-fitting portion whereat said flange is shaped to wrap around said continuous outer portion of said nozzle, said flange at said nozzle-fitting portion being bonded to said continuous outer portion of said nozzle such that said top surface of said nozzle resides substantially within said plane of said flange; and

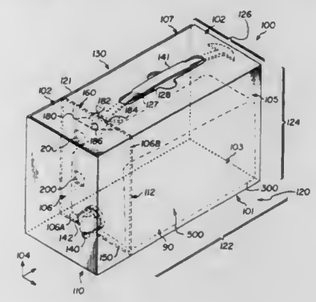
c) a substantially flat piece of film bonded to said flange and to said top surface of said nozzle such that said cartridge is sealed closed by said piece of film, said orifice in said nozzle providing exclusive fluid communication with said inside of said bag.

5,826,752

FLUID DESPENSING AND SHIPPING CONTAINER SYSTEM AND METHODS

Scott Latimer, 2914 Santa Anna, Dallas, Tex. 75228

Filed May 23, 1995, Ser. No. 447,482
Int. Cl.[6] B65D 35/00
U.S. Cl. 222—105 42 Claims



1. An apparatus for containing and dispensing a fluid comprising:

(a) a collapsible container forming an interior volume to store varying amounts of said fluid, said collapsible container having a dispensing apparatus that selectively permits dispensing of said fluid from said collapsible container;

(b) a main housing forming an enclosed cavity to house said collapsible container, said main housing having a first surface with a first opening therein, said dispensing apparatus seated in said first opening, said first surface having a perimeter, said main housing comprised of corrugated cardboard material, said first surface having a single layer; and

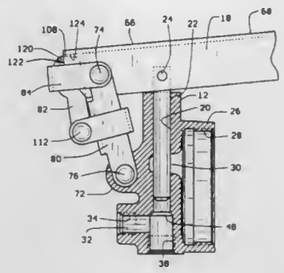
(c) a protective housing to protect said dispensing apparatus seated in said first opening of said first surface of said main housing, said protective housing having a perimeter edge that selectively joins with said perimeter of said first surface of said main housing, said protective housing comprised of corrugated cardboard material, said protective housing and said main housing formed out of a single sheet of corrugated cardboard material, said protective housing removably affixed to said main housing via said perimeter edge of said protective housing and said perimeter of said first surface of said main housing.

5,826,753

GREASE GUN LOCKING MECHANISM

Kenneth L. Fehlig, Chesterfield, and Kurt M. Pfitzinger, Ballwin, both of Mo., assignors to McNeil (OHIO) Corporation, St. Paul, Minn.

Filed Nov. 4, 1997, Ser. No. 964,449
Int. Cl.[6] B67B 5/00
U.S. Cl. 222—153.13 18 Claims



1. A liquid dispenser comprising:

a body having a discharge spout, an interior chamber for containing a supply of liquid, a pump that is operated to pump liquid in the interior chamber out of the body through the discharge spout, and a handle mounted to the pump that is movable between charge and discharge positions of the handle relative to the body to operate the pump;

a lock mechanism mounted on the body for movement between a lock position and an unlock position of the lock mechanism relative to the body, where in the lock position the lock mechanism prevents the handle from moving to its charge position relative to the body and in the unlock position the lock mechanism permits the handle to move to its charge position relative to the body;

the pump has a pump rod that projects from the body and the handle is mounted to the pump rod intermediate first and second sections of the handle;

the lock mechanism engages the handle first section when the lock mechanism is in its lock position; and

the handle first section has a length and the handle second section has a length that is longer than the length of the handle first section.

5,826,754

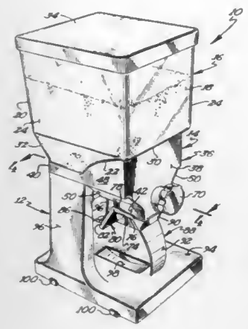
BULK DISPENSER FOR COMESTIBLES

Romeo M. Isbaya, Glenview, and Steven J. Danemayer, Oak Park, both of Ill., assignors to General Mills, Inc., Minneapolis, Minn.

Filed Jun. 10, 1996, Ser. No. 660,956
Int. Cl.[6] B67D 5/06
U.S. Cl. 222—185.1 17 Claims

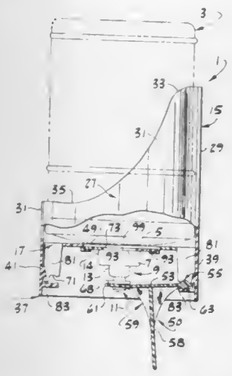
1. Dispenser for comestibles comprising, in combination: a dispenser unit having a bottom including a discharge opening; a door pivotably mounted to the dispenser unit about an axis, with the door having a shape and size for closing the discharge opening in a closed position; and a counterweight fixed to the door without relative movement, located on the opposite side of the axis than the discharge opening, and extending from the door at an angle at least

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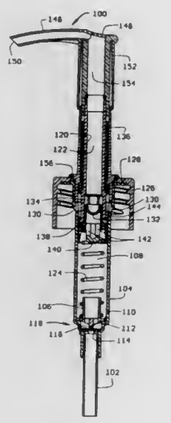
equal to and preferably greater than 90°, with the counterweight biasing the door to pivot about the axis to the closed position.

5,826,755
LIQUID DISPENSER WITH SELECTABLY ATTACHABLE ACTUATOR
Wayne D. Burd, High Ridge, Mo., assignor to Koller Enterprises, Inc., Fenton, Mo.
Continuation-in-part of Ser. No. 574,260, Dec. 18, 1995, abandoned. This application Aug. 7, 1996, Ser. No. 695,228
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—309 **21 Claims**



1. A dispenser for dispensing charges of a liquid from a container having a neck and a mouth at the end of the neck and having means at the mouth operable with the container in an inverted position for dispensing a charge of the liquid, said dispenser comprising:
- a container holder for being mounted on a wall at one side of the holder constituting the back of the holder having a bottom with an opening therein for holding a container in an inverted position with its neck extending down through the opening; and
- means having a member for being selectively pushed by hand toward the back of the holder or pulled by hand toward the front of the holder for actuating said dispensing means;
- said actuating means being selectively engageable with said dispensing means and with said holder in a first position for pushing said member toward the back of the holder to actuate said dispensing means and in a second position for pulling said member toward the front to actuate said dispensing means.

5,826,756
WATER SHIELD FOR PUMP DISPENSER
Donald D. Foster, St. Charles, Mo., assignor to Continental Sprayers International, Inc., St. Peters, Mo.
Continuation-in-part of Ser. No. 612,667, Mar. 8, 1996, Pat. No. 5,725,128. This application Jul. 11, 1997, Ser. No. 891,540
Int. Cl.[6] B65D *88/54*
U.S. Cl. 222—321.3 **20 Claims**



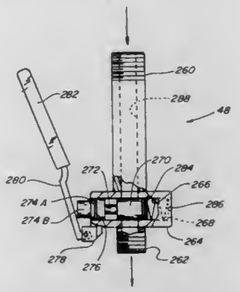
1. A manually operated liquid dispenser for dispensing liquid from a container, the dispenser comprising:
- a pump chamber;
- a dip tube in communication with the pump chamber;
- a plunger mounted on the pump chamber for reciprocating movement between a charge and discharge position of the plunger relative to the pump chamber;
- a first sleeve mounted stationary relative to the pump chamber and surrounding the plunger; and
- a second sleeve mounted stationary relative to the plunger for reciprocating movement therewith, the second sleeve telescoping with the first sleeve in response to the plunger reciprocating between the charge and discharge positions.

11. A method of shielding liquid in a liquid dispenser from dilution and contamination of the liquid, the dispenser having a dip tube communicating with a pump chamber, a plunger mounted on the pump chamber for reciprocating movement between a charge and a discharge position of the plunger relative to the pump chamber, and a pump actuating element mounted to the plunger, the method comprising:
- fixing a first sleeve to the pump chamber so that the first sleeve surrounds the plunger;
- fixing a second sleeve to the plunger so that the second sleeve is telescoped with the first sleeve when the plunger is in the discharge position and when the plunger is in the charge position.

5,826,757

Patent Not Issued For This Number

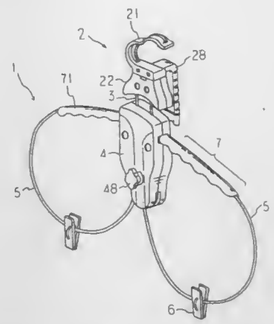
5,826,758
BAKERY MIX FLOW CONTROL NOZZLE
Brian K. McArthur, and David A. McArthur, both of Arnold, Mo., assignors to Unifiller Systems Inc., Richmond, Canada Division of Ser. No. 307,187, Sep. 16, 1994, Pat. No. 5,634,574.
This application May 9, 1997, Ser. No. 853,533
Int. Cl.[6] B67D *5/00;* **F16K** *1/00*
U.S. Cl. 222—511 **2 Claims**



1. A flow control nozzle for dispensing bakery mix material, said nozzle comprising:
- an elongated tubular member having a first end, a second end, and a flow channel formed therein which extends from said first end to said second end, and an outlet at said second end, wherein the first end is connected to a source of bakery mix material;
- a cross member having a channel in flow communication with said flow channel of said elongated tubular member;
- a plunger slidably disposed in said cross member channel, said plunger including an actuating portion and being slidable from a flow blocking position to a position in which the bakery mix material is allowed to flow from said tubular member outlet;
- a handle for contacting said actuating portion of said plunger to control movement of said plunger;
- means for substantially maintaining said plunger in said cross member channel wherein said means for substantially maintaining said plunger in said cross member channel comprises an L-shaped bracket, said bracket being removably attached to the cross member by threaded attachment means which extends through said bracket.

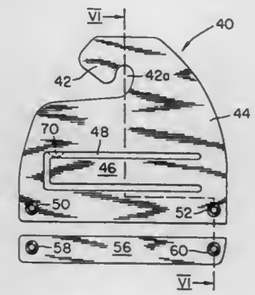
5,826,759
HANGER
Yasuhiro Obsugi, Hiroshima, Japan, assignor to NKG Co., Ltd., Hiroshima, Japan
Filed Mar. 5, 1997, Ser. No. 812,408
Claims priority, application Japan, Mar. 6, 1996, 8-049342; Jul. 17, 1996, 8-187860
Int. Cl.[6] A47G *25/42;25/40;25/46;25/14*
U.S. Cl. 223—85 **15 Claims**

1. A hanger comprising:
- a hanger part formed of two loops of flexible material, each having a first and second end, for suspending an object to be hung;
- a supporting part through which extends an end extension of variable length of each of said loops, each extension including the first end of the respective loop said supporting part being movable relative to said end extensions, each of said second ends being fixed thereto; and
- a suspending part to which the first end of each of said loops is fixedly connected at a variable distance from said supporting part,
- substantially the entirety of each loop between the end extension and second end being flexible,



the dimensions of said loops being changed by varying the length of said loop extending parts between said supporting part and said suspending part.

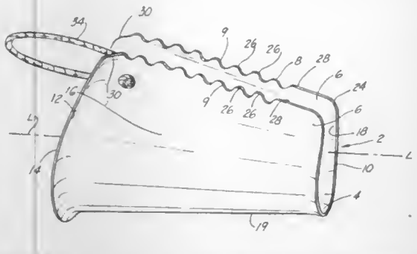
5,826,760
GARMENT HANGER
Chester Kolton, Westfield, and Stuart S. Spater, Livingston, both of N.J., assignors to B&G Plastics, Inc., Newark, N.J.
Filed Jul. 1, 1997, Ser. No. 886,679
Int. Cl.[6] A47G *25/34;25/14*
U.S. Cl. 223—85 **4 Claims**



1. A kit of parts for assembling a garment hanger comprising:
(a) a first one-piece member having a hook portion for said receipt of a display rod and a main portion depending from said hook portion and defining an opening therethrough, a garment support member disposed in said main portion opening and movable relative to said first member; and
(b) a second one-piece member being securable to a lower part of said main portion of said first member and configured when so secured to define with said main portion of said first member a slot below said main portion opening.

5,826,761
ANTI-EMBOLISM STOCKING AID
Barbara L. Basaj, Milwaukee, Wis., assignor to Smith & Nephew, Inc., Memphis, Tenn.
Filed Dec. 16, 1996, Ser. No. 767,548
Int. Cl.[6] A47G *25/90*
U.S. Cl. 223—112 **16 Claims**

1. Apparatus for facilitating the donning of a compressive medical stocking comprising:
- a) an elongated channel member having a curved base, upwardly extending side walls and opposite open ends defining a substantially U-shaped transverse cross section along its length;



b) the first of said open ends being the toe end and adapted to receive thereover a compressive medical stocking and the second of said ends being the heel end, the U-shaped cross section at said heel and being a much greater area than at said toe and;

c) said U-shaped channel member having a width and depth to substantially receive therein a foot of a wearer by whom said stocking will be donned;

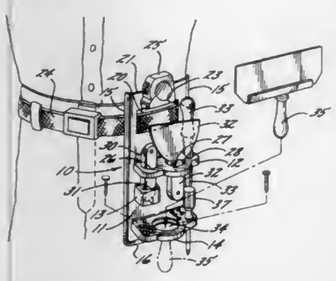
d) said upwardly extending side walls each terminating in a longitudinally extending edge containing an irregular, generally serrated segment positioned along substantially the full length of each said edge intermediate the ends of said side walls;

e) said serrations of said segment being adapted with rounded peaks and valleys forming a slidable surface for receiving said compressive medical stocking thereover,

f) said channel member being composed of a material having a thickness that gives said channel member a stiffness so that it substantially retains its U-shaped transverse cross section along its length when a compressive medical stocking is fully disposed thereon; and

g) a handle device attached to said side walls adjacent said heel end and near the longitudinal edges, that is adopted to pull said elongated channel member over said foot and upwardly on the leg of said individual so that said compressive medical stocking is progressively pulled off of said side walls over said serrated segments, one segment at a time as the stocking pays out from the toe end and is thereby donned by said foot and leg.

5,826,762
TOOL SCABBARD
Loy J. Dellinger, 7707 Dellinger Rd., Denver, N.C. 28037
Filed Sep. 5, 1995, Ser. No. 496,361
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—270 **2 Claims**



1. A tool scabbard to depend in a substantially vertical plane from a workman's belt and configured to carry for easy accessibility the variety of tools a workman routinely uses, the tool scabbard comprising a rigid base with an inner surface, an outer surface, a top edge, a bottom edge and opposed side edges and a stiffening flange extending around the edges of the base below the top edge, wherein the improvement comprises:

(a) the base including a body portion with displaced portions of the base that extend inwardly and outwardly relative to the plane of the body portion,

(b) one displaced portion of the base extending inwardly and transversely across the body portion in downwardly spaced relation to the upper edge of the base,

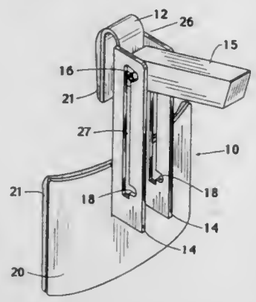
(c) the base having transversely spaced openings at opposite ends of the inwardly displaced portion of the base to receive a workman's belt threaded through the openings and extending across the inwardly displaced portion of the base,

(d) a plurality of the displaced portions of the base extending outwardly and transversely across the body portion and in downwardly spaced relation to the inwardly displaced portion of the base,

(i) each of the said plurality of outwardly displaced portions of the base including an upper wall and a lower wall and

(ii) at least some of the upper walls and lower walls having openings in registry with each other, whereby selected tools may extend through registered openings for support.

5,826,763
APPARATUS FOR ENABLING THE TRANSPORTING OF UNWIELDY LOADS
Christopher K. Roberts, 4038 E. 27th St., Tulsa, Okla. 74114
Continuation-in-part of Ser. No. 700,235, Aug. 20, 1996, abandoned. This application Sep. 12, 1997, Ser. No. 928,693
Int. Cl.[6] A45F *5/00*
U.S. Cl. 224—270 **3 Claims**



1. A device for assisting in carrying unwieldy loads, said device comprising first and second members held together by a pin about which said second member is pivotal, said device first member being a longitudinal frame designed to be worn about a belt in vertical alignment with the body of a wearer and the second member being a foldable platform storable in said longitudinal frame;

said frame comprises a C-channel with a top end, a bottom end, a back, and two sides wherein said sides are parallel to each other and extend outwardly from opposing vertical edges of said back, said sides each having a longitudinal slit opening along a vertical axis of said side with one or more small slots extending away from the longitudinal slit opening and away from said back of said C-channel, said one or more small slots being located along the slit opening at any convenient position except at the very bottom of said longitudinal slit opening;

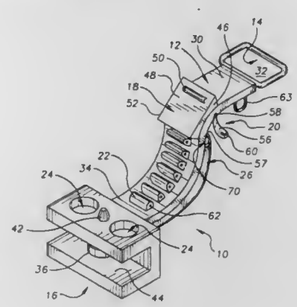
said second member comprising a beam member of a size to fit conformably inside the C-channel, said beam member having a front, a back, two sides, a top end, and a bottom end, said beam member having a hole through it near said bottom end through which said pin is inserted, said pin being a spring pin and extending outward at both sides of said beam member and through said slit openings in said sides of said C-channel, each of said beam member's top end and bottom end being at an angle which slopes away from a plane defined by the surface of said back or said front of said beam member, said

beam member resting in essentially a vertical first position aligned with the vertical axes of said sides of said C-channel in which it is stored in said C-channel and held in place by said pin, said pin being movable along said vertical slit openings onto one of said slots in each of said sides of said C-channel wherein said beam member is then capable of rotating outward from said C-channel about said pin and coming to a rest second position when said bottom end of said beam member is flush against the back of said C-channel, in said second position, said beam member will be nearly perpendicular to the frame, thus forming a platform upon which unwieldy loads may be rested;

said back of said C-channel further having an extension which extends from the top end thereof, said extension forming an inverted U-shaped loop engageable with the belt of a wearer such that the device may be slipped over the belt of the wearer; and

said bottom end of said C-channel having a slightly curved plate attached to and extending therefrom, said curved plate curved to fit conformably to the body of the wearer to provide a means to keep the device from shifting its position along the belt of the wearer when attached thereto.

5,826,764
EXTENSION BAR WITH GOLF BALL DISPENSER FOR HAND-DRAWN GOLF CARTS
Cedric E. Beckham, 639 Rawlins, Lancaster, Tex. 75146
Filed Aug. 27, 1997, Ser. No. 918,115
Int. Cl.[6] B60R *11/00*
U.S. Cl. 224—274 **18 Claims**



1. An extension bar for hand-drawn golf carts comprising:

an S-shaped bar member having a substantially rectangular cross-sectional shape and an upper and lower surface;

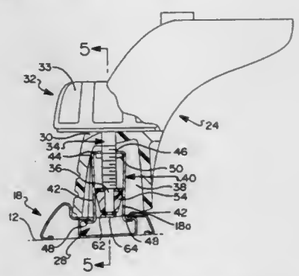
a handle member attached to a first end of said S-shaped bar member;

an interconnect mechanism attached to a second end of said S-shaped bar member, said interconnect mechanism including a clamp fitting having a curved contact surface, said clamp fitting being rotatably connected to a screw member;

a flexible golf glove holding strap assembly including a strap member, mounted at a first strap end to said S-shaped bar member, having a first section of hook and pile fastener secured to a second strap end thereof, and a second section of hook and pile fastener secured to said S-shaped bar member; and

a golf ball dispensing assembly including a curved transparent ball chute mounted to said lower surface of said S-shaped member and having an insertion aperture for inserting golf balls into said ball chute and a dispensing aperture for dispensing balls from said ball chute, said dispensing aperture being blocked by a resilient dispensing flap that is deflectable by a user to allow a golf ball to pass through said dispensing aperture and having sufficient resilience to return to a position blocking said dispensing aperture when released.

5,826,765
LOAD BAR FOR AUTOMOBILE LUGGAGE CARRIER
Artur K. Rak, Rochester Hills, and John S. Cucheran, Lake Orion, both of Mich., assignors to JAC Products, Inc., Ann Arbor, Mich.
Continuation-in-part of Ser. No. 622,589, Jun. 12, 1996, abandoned. This application Jul. 9, 1997, Ser. No. 881,598
Int. Cl.[6] B60R *9/00*
U.S. Cl. 224—321 **22 Claims**



1. A vehicle article carrier for supporting articles elevationally above an outer body surface of the vehicle, said vehicle article carrier comprising:

a pair of slats positioned generally parallel to one another and adapted to be fixedly secured to said outer body surface of said vehicle, each said slat having a channel extending at least a portion of the length thereof;

a cross bar having a length sufficient to span between said slats when said slats are adapted to be fixedly secured to said outer body vehicle surface;

a pair of bracket members secured to said cross bar to support said cross bar above said outer body surface;

each said bracket member including:

a manually rotatable actuating member;

a locking member operably associated with said actuating member for movement generally linearly towards and away from said outer body surface of said vehicle as said actuating member is rotated in unlocking and locking directions, respectively; said locking member including a pair of flexible arm portions;

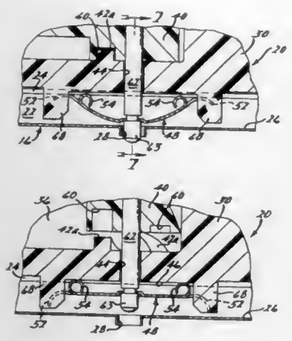
a spreader member positioned between said arm portions of said locking member and disposed within said bracket member so as to be maintained generally stationary when said actuating member is rotated in said locking and unlocking directions, said spreader member operating to cammingly urge said arm portions apart from one another as said locking member is caused to be moved generally linearly by rotation of said actuating member in said locking direction, and allowing said arm portions to return to a position closely adjacent one another as said locking member is moved linearly in response to rotation of said actuating member in said unlocking direction.

5,826,766
VEHICLE ARTICLE CARRIER
Jeffrey M. Aftanas, Sterling Heights, Mich., assignor to JAC Products, Inc., Ann Arbor, Mich.
Continuation-in-part of Ser. No. 838,710, Apr. 9, 1997, abandoned, and a continuation-in-part of Ser. No. 818,493, Mar. 14, 1997, abandoned. This application Aug. 14, 1997, Ser. No. 911,377
Int. Cl.[6] B60R *9/045*
U.S. Cl. 224—321 **30 Claims**

1. A vehicle article carrier for transporting articles above an outer body surface of a vehicle, said apparatus comprising:

a pair of slats adapted to be fixedly secured to said outer body surface generally parallel to one another, each of said slats including a longitudinally extending channel;

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at least one cross bar having a length sufficient to span the distance between said slats when said slats are fixedly secured to said outer body surface; and

a bracket member disposed at each outermost end portion of said cross bar, each said bracket member including:

a housing;

an actuating member for urging said bracket member between locked and unlocked positions;

a flexible locking plate operably secured to said actuating member and having dimensions permitting it to slide freely within said channel of an associated one of said slats;

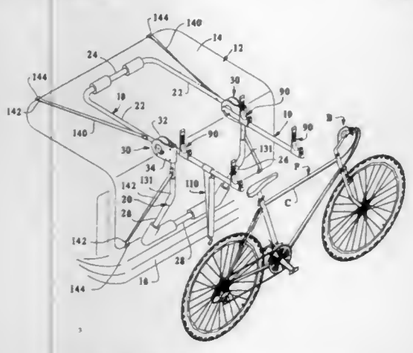
said flexible locking plate further having first and second ends residing within said channel when said flexible locking plate is in said locked and unlocked positions, a portion of said flexible locking plate between said first and second ends abutting a lower surface of said housing when said flexible locking plate is in said unlocked position; and

said locking plate being operable to be flexed into and out of clamping engagement with said channel of an associated one of said slats by movement of said actuating member between said locked and unlocked positions respectively.

5,826,767
BICYCLE CARRIER ADAPTED TO BE MOUNTED ON THE BACK OF A VEHICLE

Thomas A. Chimenti, New Canaan, Conn.; Daniel K. Ng, Somers, and Raymond R. Raaber, Tuckahoe, both of N.Y., assignors to Industri AB Thule, Hillerstorp, Sweden

Division of Ser. No. 829,282, Feb. 3, 1992, Pat. No. 5,211,323. This application Feb. 19, 1993, Ser. No. 19,700
Int. Cl.[6] B60R *9/10*
U.S. Cl. 224—324 **3 Claims**



1. A bicycle carrier adapted to be mounted on the rear of a vehicle comprising:

a mounting frame;

securing means for securing said mounting frame to a rear of a vehicle;

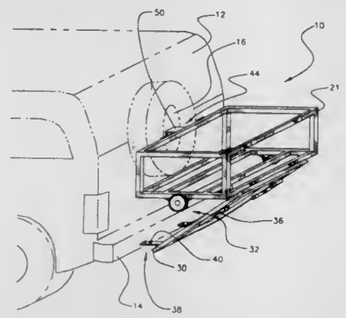
a pair of bicycle supporting arms projecting rearwardly from said mounting frame; and

at least one cradle mounted on each of said supporting arms for cradling a bicycle frame, each of said cradles comprised of a flexible material and including a base mounted on a respective supporting arm, and a retaining strap, said base forming a bicycle-engaging surface and including first fastening means, said strap being of one-piece construction with said base and normally extending upwardly from said base to permit a bicycle to be inserted onto said bicycle-engaging surface, said strap being flexible to be bent across said bicycle-engaging surface to retain a bicycle frame thereon, said strap including second fastening means engageable with said first fastening means for fastening said strap in its bicycle frame-retaining position.

5,826,768
VEHICLE MOUNTED CART

Douglas D. Gamulo, 2832 Ipolani St., Pukalani, Hl. 96768

Filed Sep. 30, 1997, Ser. No. 940,498
Int. Cl.[6] B60R *11/00*
U.S. Cl. 224—486 **4 Claims**



1. A vehicle mounted cart comprising, in combination:

a vehicle with a rear bumper and a spare tire mount situated on a rear face thereof, the spare tire mount including a plurality of threaded bolts fixedly coupled to the vehicle and extending rearwardly therefrom;

a frame with a rectilinear configuration having a rectangular top extent, a rectangular bottom extent and a plurality of peripheral extents mounted between corners of the top extent and bottom extent such that the top extent resides directly above the bottom extent to define an interior space, the frame further including a plurality of spaced parallel floor bars integrally coupled between short parallel sides of the bottom extent in parallel with long parallel sides thereof thereby defining a floor;

a handle support having a rectangular configuration with a pair of short parallel end portions and a pair of long parallel side portions, one of the short parallel end portions being pivotally mounted to one of the long parallel sides of the bottom extent of the frame;

a pair of wheel assemblies each including a V-shaped axle mount coupled to the short parallel sides of the bottom extent of the frame each with a wheel rotatably coupled thereto;

a pair of generally U-shaped connector bars each having a pair of ends removably coupled between a central extent of the corresponding long parallel side portion of the handle support and the top extent of the frame;

a first vehicle mounting assembly including a pair of rectangular strips each having a first end coupled to a bottom surface of the bumper of the vehicle with a linear bar coupled between

second ends of the strips in parallel relationship with the bumper, the linear bar adapted to be removably coupled to the handle support;

a second vehicle mounting assembly including an inverted L-shaped plate with a vertical extent mounted to the bolts of the vehicle and a horizontal extent extending rearwardly therefrom;

a quick release mechanism including a latch hingably coupled to the top extent of the frame opposite the handle support for being removably coupled to the horizontal extent of the second vehicle mounting assembly;

a kick stand having an L-shaped configuration pivotally mounted to the bottom extent of the frame adjacent the coupling of the frame with the handle support;

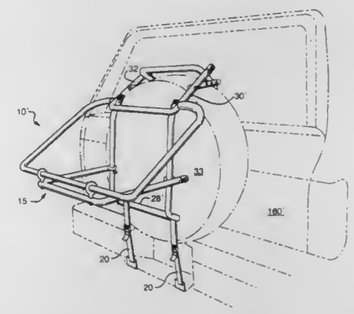
whereby in a first mode of operation, the U-shaped connector bars are removed and the handle support pivoted to reside below the frame and coupled to the first mounting assembly and the quick release mechanism coupled to the second mount assembly such that various items may be stored within the frame;

whereby in a second mode of operation, the handle support is removed from the first vehicle mounting assembly and the U-shaped connector bars are connected between the frame and the handle support such that the handle support extends upwardly and outwardly from the frame and the quick release mechanism is removed from the second vehicle mounting assembly thereby allowing use of the frame as a cart.

5,826,769
MULTI-PURPOSE FOLDING CARRIER

Alexander R. Allen; Christopher B. Allen; Gordon R. Allen, and Richard A. Allen, all of 29 Devens St., Concord, Mass. 01742

Filed Nov. 26, 1996, Ser. No. 756,701
Int. Cl.[6] B60R *9/06*
U.S. Cl. 224—497 **14 Claims**



1. A folding carrier mountable on a motor vehicle, said carrier comprising:

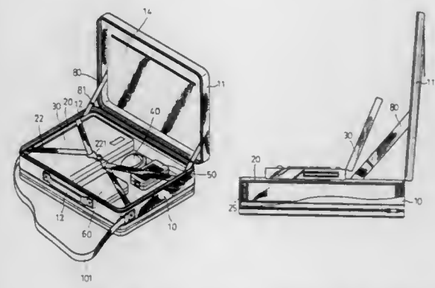
a frame having a plurality of vehicle engagement members adapted to supportably engage the motor vehicle, said vehicle engagement members including at least an upper foot member means movably disposed on said frame, said upper foot member means being selectively movable between an operative extended position and a collapsed storage position; and

a cage rotatably and slidably disposed on said frame, said cage being selectively movable between an operative extended position and a collapsed storage position, said cage being adapted to supportably receive and restrain cargo placed therein when said cage is disposed in said operative extended position.

5,826,770
CARRYING BAG FOR A NOTEBOOK COMPUTER AND PERIPHERALS

Yao Tang Chuang, P.O. Box 82-144, Taipei, Taiwan

Filed Jul. 8, 1997, Ser. No. 889,846
Int. Cl.[6] A45C *3/02*
U.S. Cl. 224—607 **5 Claims**



1. A carrying bag for a notebook computer and peripherals comprising:

a rectangular case provided with a handle, a shoulder strap, and two positioning straps **22**, said straps having two engageable connectors **221**;

a cover having one side connected with one side of said rectangular case and three sides sealably connected with said rectangular case by a zipper;

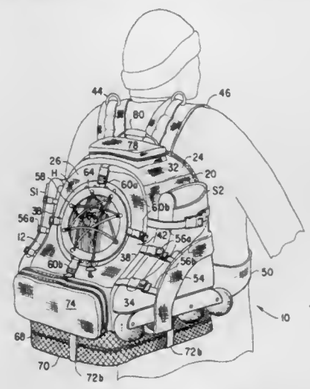
a pair of supporting straps connected between said rectangular case and said cover, each of said supporting straps having an inner side provided with a seam at an intermediate portion thereof; and

a rectangular tray having four vertical side walls and a bottom wall, said rectangular tray being dimensioned to fit into said rectangular case.

5,826,771
BACK PACK FOR IN LINE SKATES

Stephen Peng, 500 W. Flagler St., Miami, Fla. 33130

Filed Feb. 26, 1997, Ser. No. 806,687
Int. Cl.[6] A45F *3/04*
U.S. Cl. 224—651 **18 Claims**



1. A back pack for in-line skates, comprising:

a large central compartment having an accessible internal volume defined by a front wall, a first and an opposite second side wall, a bottom wall, a top wall opposite said bottom wall, and a rear wall opposite said front wall;

said central compartment including a pair of spaced apart adjustable shoulder straps extending from said top wall adjacent said front wall to said bottom wall adjacent said front wall;

each said side wall including means for removably securing and externally carrying a single skate thereon, said means for securing and carrying a skate on each said side wall comprises a fixed first and second lower skate support strap extending respectively from said first and said second side wall adjacent said forward wall, downwardly and rearwardly across each respective said side wall to said first and said second side wall adjacent said bottom wall, and a plurality of openable and adjustable skate securing straps each having a first end extending from said first and said second side wall adjacent said rear wall and an opposite second end, for securing the skates externally to said back pack; and

said rear wall including means for removably securing and externally carrying a helmet thereon.

5,826,772

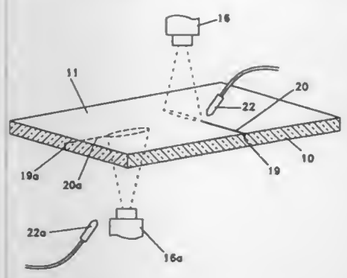
METHOD AND APPARATUS FOR BREAKING BRITTLE MATERIALS

James A. Ariglio, Painted Post, and Harry Menegus, Beaver Dams, both of N.Y., assignors to Corning Incorporated, Corning, N.Y.

Continuation of Ser. No. 521,616, Aug. 31, 1995, abandoned. This application Mar. 3, 1997, Ser. No. 810,480

Int. Cl.[6] B26F *3/00*

U.S. Cl. 225—2 **7 Claims**



1. A method for breaking a sheet of brittle material comprising the steps of:

providing a monolithic sheet of brittle material selected from the group consisting of glass, ceramic, or glass-ceramic, said sheet having a first and second major surface;

moving at least one laser across said first and second major surfaces of the sheet to form a first vent crack in a first path on the first major surface of the sheet and a second vent crack in a second path on the second major surface of the sheet, said first path crossing said second path at an angle, each of said first and second vent cracks extending only partially into said sheet; and

breaking the sheet along said first and second vent cracks to form four smaller sheets of said brittle material, whereby forming of the vent cracks on opposite sides prevents self-healing of either of said vent cracks.

5,826,773

ROPE MATERIAL TRANSFER STRUCTURE

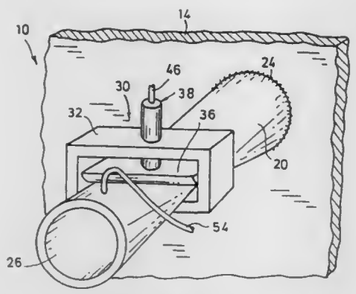
Siegfried Straemke, Fichtenhain 6, 52538 Selfkant, Germany

Filed Jan. 31, 1997, Ser. No. 791,326

Int. Cl.[6] B65H *23/18;* **C23C** *16/00*

U.S. Cl. 226—39 **13 Claims**

1. A rope material transfer structure comprising a closed treatment room (**205**) in which a treatment atmosphere prevails, pulling devices (**206–210, 213–218**) by which rope material (**200**) is pulled



through said treatment room (**205**), at least one chamber (**201**) through which rope material (**200**) travels both towards said treatment room (**205**) and away from said treatment room (**205**) through passages having locks (**220, 221**), said locks (**220, 221**) being elastic tubular passage elements (**16, 116**) through which the rope material (**210**) is pulled, and said elastic tubular passage elements (**16, 116**) being variable in cross-section through deformation into substantial sealing relationship with the rope material (**200**).

5,826,774

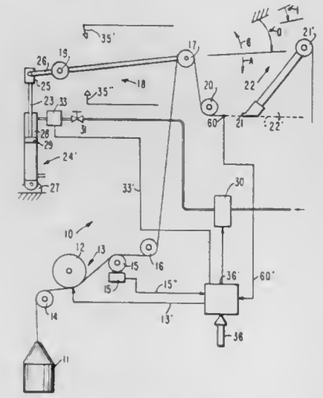
WIRE TENSIONER FOR DYNAMO-ELECTRIC MACHINE COIL WINDER

Gastone Dell'Aglio, Scandicci; Rossano Galassi, and Federico Sbalchiero, both of Florence, all of Italy, assignors to Axis USA, Inc., Tampa, Fla.

Filed May 8, 1997, Ser. No. 853,371

Int. Cl.[6] B65H *26/00;23/00;59/10*

U.S. Cl. 226—44 **13 Claims**



1. Apparatus for tensioning wire passing along a path from a wire source to a wire dispenser in a coil winding machine comprising:

a take-up member for contacting the wire between the source and the dispenser and being movable to change the length of the path of the wire between the source and the dispenser;

a pneumatic actuator for applying a force to said take-up member to influence the position of said take-up member, said force being influenced by pneumatic pressure in said actuator;

at least one sensor for sensing a predetermined operating parameter of said coil winding machine;

a controller for receiving signals from said at least one sensor and for producing control signals in response thereto for controlling said pneumatic system; and

a pneumatic system for controlling the pneumatic pressure in said actuator in response to said control signals.

5,826,775

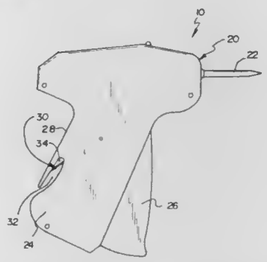
SOCK CLIP SYSTEM

Linda Mooney, 214 Briar Rd., Rogersville, Mo. 65742, and Lynette Jennings, 103 Secluded La., Nixa, Mo. 65714

Filed May 8, 1997, Ser. No. 853,360

Int. Cl.[6] B65C *7/00*

U.S. Cl. 227—67 **6 Claims**



1. A Sock Clip System comprising:

a clip inserting mechanism having a handle, a needle and a lever pivotally secured to said handle for inserting a resilient clip through said needle into a pair of clothing for securing said pair of clothing;

said handle has a rear side opposite of said lever; and

a cutting means attached to said rear side of said handle for cutting said resilient clip for separating said pair of clothing for utilization by a user.

5,826,776

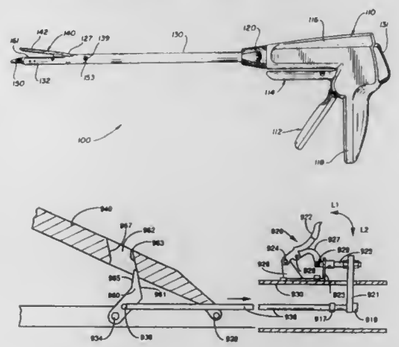
SURGICAL INSTRUMENT

Dale R. Schulze, Lebanon; Joseph Paraschac, Cincinnati; William D. Fox, New Richmond, all of Ohio; Michael E. Setser, Burlington, Ky.; Kenneth S. Wales, Mason, and Mark S. Zeiner, Milford, both of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Division of Ser. No. 359,107, Dec. 19, 1994. This application Oct. 2, 1996, Ser. No. 724,739

Int. Cl.[6] A61B *17/068*

U.S. Cl. 227—176.1 **3 Claims**



1. A surgical instrument for applying one or more surgical fasteners to tissue, comprising a fastener applying assembly, a handle, and a shaft connecting the handle to the fastener applying assembly;

said fastener applying assembly including fastener holding means for holding one or more said surgical fasteners, driver means for driving said surgical fasteners into the tissue, means for forming said surgical fasteners about the tissue including an anvil, and closure means for closing said anvil and said fastener holding means with respect to one another and for clamping tissue therebetween;

said instrument further including means for actuating said closure means, said handle further including means for actuating said drive means and firing said surgical fasteners into the tissue, said handle being mounted to the proximal end of said shaft;

said closure means including pivot means for pivotally connecting said anvil at the proximal end thereof with respect to said fastener holding means;

said closure means further including wedge means slideably received by an inclined slot in said anvil;

said closure means further including means for sliding said wedge means with respect to said inclined slot, whereby said wedge means pivots said anvil to an open position about said pivot means when said wedge means is slid in a first direction with respect to said inclined slot, and said wedge means pivots said anvil to a closed position about said pivot means when said wedge means is slid in a second direction with respect to said slot.

5,826,777

ANVIL FOR SURGICAL STAPLER

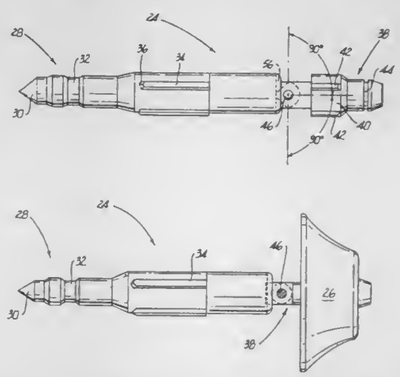
David T. Green, Westport; Henry Bolanos, East Norwalk; Henry R. Sienkiewicz, Stamford, all of Conn., and Patrick Leahy, Dublin, Ireland, assignors to United States Surgical Corporation, Norwalk, Conn.

Continuation of Ser. No. 950,435, Sep. 23, 1992, Pat. No. 5,344,059, which is a continuation-in-part of Ser. No. 886,040, May 19, 1992, Pat. No. 5,314,435. This application Aug. 25, 1994, Ser. No. 296,201

The portion of the term of this patent subsequent to Sep. 23, 2012, has been disclaimed.

Int. Cl.[6] A61B *17/115*

U.S. Cl. 227—179.1 **16 Claims**

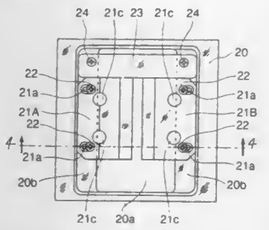


1. A surgical stapling apparatus having an elongate shaft, a handle assembly connected to a proximal end of the elongate shaft, a fastener retainer connected to a distal end of the elongate shaft, the fastener retainer having a circular array of fasteners, and an anvil assembly detachably mountable to a distal end of the apparatus, the anvil assembly having an anvil rod having a proximal end portion having a longitudinal axis, a distal end portion and a substantially circular anvil head mounted to the distal end portion of the anvil rod, the improvement comprising:

the anvil rod distal end portion being pivotally secured to the anvil rod proximal portion, wherein the anvil rod distal end

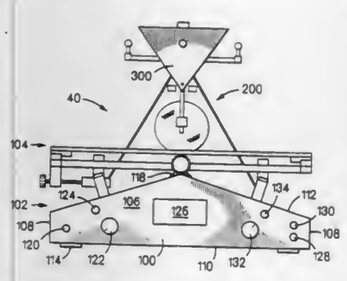
portion is pivotable from a first position to a second position relative to the longitudinal axis of the anvil rod proximal end portion.

5,826,778
CLAMPING MECHANISM FOR A BONDING APPARATUS
Koji Sato, Akishima; Junichi Ide, Fuchu, and Yukitaka Sonoda, Tachikawa, all of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan
Filed Nov. 22, 1996, Ser. No. 754,978
Claims priority, application Japan, Nov. 24, 1995, 7-329521
Int. Cl.[6] H01L *21/60*
U.S. Cl. 228—44.7 **5 Claims**



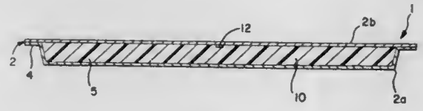
1. A clamping mechanism for a bonding apparatus in which a tab tape is clamped from above and below by an upper clamper and a lower clamper, wherein said upper clamper and lower clamper are respectively split into two parts on short sides of lead patterns formed on said tab tape and are respectively fastened to an upper clamper holding plate and a lower clamper holding plate so that gaps between facing surfaces of respective parts of said clampers are adjustable.

5,826,779
WARM AIR BATH FOR REWORKING CIRCUIT BOARDS
David C. Jacks, 394 Lincoln, Pomona, Calif. 91767, and Randall R. Walston, 22533 S. Vermont Ave. #53, Torrance, Calif. 90502
Continuation of Ser. No. 390,755, Feb. 17, 1995, Pat. No. 5,639,011, which is a continuation-in-part of Ser. No. 382,890, Feb. 2, 1995, abandoned. This application Jun. 13, 1997, Ser. No. 874,836
Int. Cl.[6] B23K *3/047*
U.S. Cl. 228—42 **20 Claims**



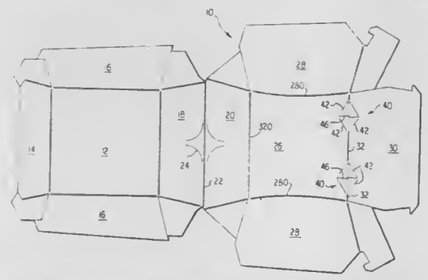
1. A base for use in working a circuit board, comprising:
power circuitry being electrical circuitry to receive power from an alternating current source;
a self-contained cabinet having a top wall having a perforated heat vent;
a heating element and a fan mounted in the base and coupled to receive power from the power circuitry through fan control circuitry controlling operation of the heating element and fan, the heating element and fan being mounted adjacent to the heat vent and being operable to provide a flow of air warmed by the heating element through the perforated heat vent to warm a circuit board evenly.

5,826,780
VACUUM INSULATION PANEL AND METHOD FOR MANUFACTURING
Timothy A. Neeser, Savage; Bruce E. Lyman, Northfield, both of Minn., and Stanley J. Rusek, Jr., Newark, Ohio, assignors to MVE, Inc, Bloomington, Minn.
Division of Ser. No. 271,163, Jul. 6, 1994, abandoned. This application Mar. 19, 1996, Ser. No. 618,173
Int. Cl.[6] B23K *31/02*
U.S. Cl. 228—217 **17 Claims**



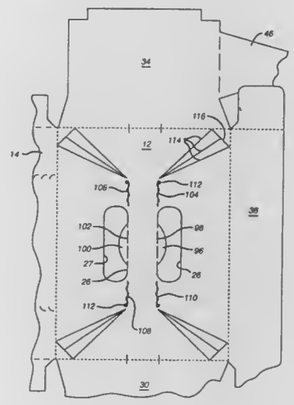
1. A method for manufacturing a vacuum panel comprising the steps of:
a) forming a jacket of metal defining an interior space and an opening communicating with the interior space;
b) filling the interior space with a glass wool insulating media of a density sufficient to oppose the atmospheric force on the jacket after evacuation of the interior space;
c) locating a brazing material adjacent the opening;
d) preheating the panel at atmospheric pressure to reduce the air density in said interior space, expel moisture and increase the velocity of the gas molecules in the interior space thereby to facilitate their evacuation;
e) promptly, after step d), placing the panel in a vacuum chamber to evacuate the interior space; and
f) melting the brazing material in the vacuum chamber to seal the opening while maintaining the vacuum.

5,826,781
IDENTIFICATION BUTTON FOR PAPERBOARD CONTAINER
Kurt D. Jensen, Lebanon, Ohio, assignor to International Paper Company, Purchase, N.Y.
Filed Jun. 26, 1997, Ser. No. 883,426
Int. Cl.[6] B65P *5/42*
U.S. Cl. 229—114 **9 Claims**



1. A paperboard carton construction of the type having a pair of intersecting, exterior panels whose intersection defines an edge of the container, a contents indicating button intersected by said edge, said button having a periphery defined by a plurality of fold lines each of which is partially cut through said intersecting paperboard panels, said button including a full cut line extending completely through said intersecting paperboard panels.

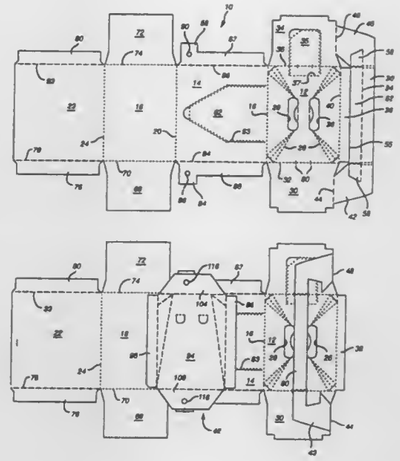
5,826,782
CARTON AND A HANDLE THEREFOR
James T. Stout, Ellijay, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Jun. 10, 1997, Ser. No. 871,927
Int. Cl.[6] B65D *5/468*
U.S. Cl. 229—117.13 **6 Claims**



1. A carton formed from sheet material for containers such as cans or bottles, comprising:
a top wall having opposed side edges and opposed end edges;
a pair of side walls, one of the side walls connected to each said side edge of said top wall;
a bottom wall connected between said side walls to complete a tubular structure;
a notional strip defined along said top wall, having notional side edges, and extending between said end edges and having a width less than the distance between said side edges;
a pair of hand apertures, each having at least one aperture edge, defined in said top panel and disposed along opposite sides of said notional strip with at least a portion of said aperture edges disposed generally along said notional side edges;
a preformed tear line extending along one of said notional side edges from substantially adjacent said aperture toward one of said top panel end edges but terminating at a termination point disposed remotely therefrom; and
at least one score line defined in said top panel and extending generally from said termination point to an adjacent corner of said top panel.

5,826,783
TWO-TIER CAN PACKAGE HAVING DIVIDER PANEL AND METHOD OF FORMING THE SAME
James T. Stout, Ellijay, Ga., assignor to The Mead Corporation, Dayton, Ohio
Filed Jun. 9, 1997, Ser. No. 871,651
Int. Cl.[6] B65D *5/49*
U.S. Cl. 229—120.32 **6 Claims**

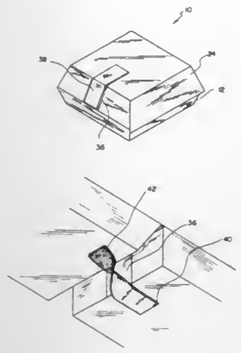
1. A collapsed carton for subsequent setup to receive articles to be packaged therein, comprising:
top and bottom panels and a pair of side panels, said panels being interconnected to form a collapsed tubular structure having a pair of ends:



end closure flaps connected at and extending from opposite side edges of each of said side panels disposed so as to extend across said tubular axis at each of said tubular ends when said carton is set up;
a divider panel disposed within the interior of said tubular structure between and substantially parallel to said top and bottom panels, said divider panel having opposed divider panel side edges and opposed divider panel end edges;
a pair of glue flaps, each foldably connected to one of said divider panel side edges, each of said glue flaps being secured to an inner surface of one of said side panels to retain said divider panel within said tubular structure;
at least one divider end flap foldably connected to one of said divider panel end edges, said divider end flap being disposed to extend from said divider panel substantially adjacent said end closure flaps;
a first aperture defined through said one divider end flap; and
a second aperture defined through one of said end closure flaps at one of said tubular ends to coincide with said first aperture when said carton is collapsed.

5,826,784
FAST FOOD BOX TRAY
James J. Wojcik, 7214 Lamplite Ct., Cincinnati, Ohio 45244-4110
Filed Dec. 4, 1997, Ser. No. 985,325
Int. Cl.[6] B65D *5/42*
U.S. Cl. 229—125 **6 Claims**

1. A fast food box tray for preventing spills when placed in a user's lap comprising, in combination:
a bottom tray having an open upper end, a closed bottom end, a front wall, a back wall and opposed side walls;
a top tray having a closed upper end, an open bottom end, a front wall, a back wall and opposed side walls, a lower edge of the open bottom end at the back wall foldably secured to an upper edge of the open upper end of the bottom tray at the back wall thereof, the back wall of the top tray having a vertically disposed semi-adherent strip extending between the closed upper end and the open bottom end of the top tray; and
a tape portion extendable between the closed upper end of the top tray and the closed bottom end of the bottom tray in an open orientation, the tape portion including a fixed portion and a releasable portion, the fixed portion fixedly secured to the closed upper end of the top tray, the releasable portion



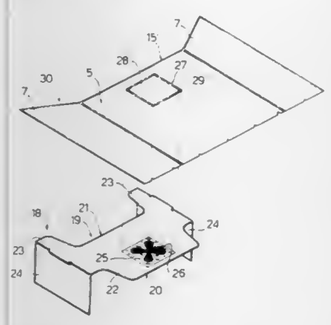
removably adhering to the semi-adherent strip of the back wall of the top tray in a closed orientation whereby the releasable portion can be peeled off of the semi-adherent strip and secured to the closed bottom end of the bottom tray whereby the top tray and the bottom tray are disposed on the same plane.

5,826,785

RIGID HINGED-LID PACKET FOR LONG ELEMENTS

Bruno Belvederi, S. Martino di Monte S. Pietro, and Fiorenzo Draghetti, Medicina, both of Italy, assignors to G.D. S.p.A.

Filed Jun. 5, 1998, Ser. No. 92,262
Claims priority, application Italy, Jun. 6, 1997, BO97A0341
Int. Cl.[6] B65D *5/42*
U.S. Cl. 229—162 **7 Claims**



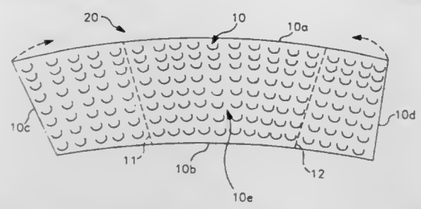
1. A rigid hinged-lid packet for long elements, the packet comprising a cup-shaped container, which in turn comprises a front surface, a rear surface and two side surfaces defining the open end of the container; an inner frame having a front portion and two side portions, these being attached to the front and side surfaces, the inner frame comprising a first portion positioned inside the container and a second portion protruding from the open end; and a cup-shaped lid, this being hinged at a rear edge of the open end so that the lid rotates between a position in which the container is open and a position in which it is closed; the packet being characterized in that the front surface has a window, this being designed to show a given zone of said first portion of the inner frame.

5,826,786

CUP HOLDER SLEEVE IN PRE-ASSEMBLED FLAT-FOLDED FORM

James Dickert, 1657 Old Oak Pl., Darien, Ill. 60651

Filed Mar. 6, 1996, Ser. No. 611,722
Int. Cl.[6] B65D *3/22*
U.S. Cl. 229—403 **7 Claims**



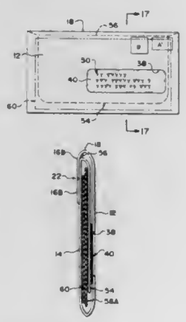
1. A cup holder sleeve comprising a flat, elongated paperboard band having
a) a top and a bottom edge in arcuate form which are concentric to and in parallel with each other;
b) a first and a second side edge at opposite ends of said elongated band; and
c) a first and a second fold line scored into the band, said fold lines are spaced apart from each other at respective intermediate positions of the band tapering toward each other wherein at least one of said tapering fold lines forms a four sided polygon with said top and bottom edge and one of said side edges in which the bottom edge is longer than the top edge;
wherein the opposite ends of said band are folded flat at said first and second fold lines such that said first and second side edges overlap each other, and said first and second side edges are adhered together with adhesive applied at mutually overlapping surfaces thereof, said band thereby being pre-assembled and flat-folded so that it can be stored compactly and easily opened by a squeezing motion.

5,826,787

TWO-WAY MAILER ENVELOPE

Simon Christopher Turner, New Westminster, Canada, assignor to Fraser Envelopes Ltd., British Columbia, Canada

Continuation of Ser. No. 334,734, Nov. 4, 1994, abandoned.
This application May 17, 1996, Ser. No. 651,206
Int. Cl.[6] B65D *27/06;27/04*
U.S. Cl. 229—303 **2 Claims**



1. An envelope, comprising:
(a) a front face;
(b) a rear face joined to said front face to form a pocket having an opening between adjacent edges of said front and rear faces;
(c) a first flap joined to said front face edge and foldable to overlap a portion of said rear face;

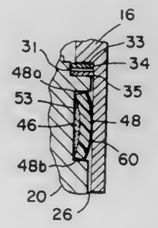
(d) a first adhesive region on said first flap positioned to overlie a first part of said rear face portion when said first flap is folded to overlap said portion;
(e) a second adhesive region on a second part of said rear face portion;
(f) a line of weakness extending across said first flap, said line of weakness positioned between and separating said first and second parts of said rear face portion when said first flap is folded to overlap said portion;
(g) an address aperture in said front face; and,
(h) a second flap having a pre-printed return address and joined to said rear face edge and foldable from a first position outside of said pocket to a second position disposed within said pocket wherein, in said second position, said return address is aligned with said address aperture so that said return address on said second flap is visible through said address aperture.

5,826,788

HANDLE ASSEMBLY FOR ROTATABLE STEM

John C. Redding, Oostburg, Wis., assignor to Kohler Co., Kohler, Wis.

Filed Jan. 25, 1996, Ser. No. 591,067
Int. Cl.[6] F16K *35/00*
U.S. Cl. 251—355 **5 Claims**



1. A handle assembly for use in turning a rotatable stem, comprising:
a bonnet having an axial bore;
a stem drive member rotatably mounted in the axial bore of the bonnet;
a handle connected to the stem drive member for rotating the stem drive member and thus the stem;
at least one compartment formed on a radially outward surface of the stem drive member; and
a bearing positioned in the compartment for contact with both the drive member and an interior surface of the bonnet, the bearing being a C-clip that is arcuate in vertical cross section such that the clip is radially compressed and axially extended, the bearing defining a cavity between the C-clip and the drive member.

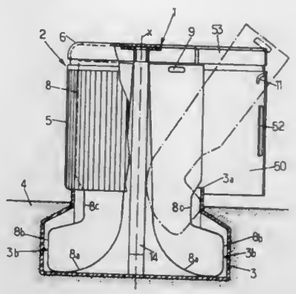
5,826,789

LITTER BIN

Jean-François Decaux, Londres, England, and Jean-Charles Decaux, Madrid, Spain, assignors to Jean-Claude Decaux, Neuilly Sur Seine, France

Filed Jul. 8, 1996, Ser. No. 676,805
Claims priority, application France, Jun. 13, 1996, 96 07356
Int. Cl.[6] B65D *91/00*
U.S. Cl. 232—43.2 **19 Claims**

1. A litter bin comprising a hollow chest fixed to the ground and presenting a side wall and a top that is open in part for receiving waste, the chest containing waste-collection means and being capable of opening to enable waste to be removed,



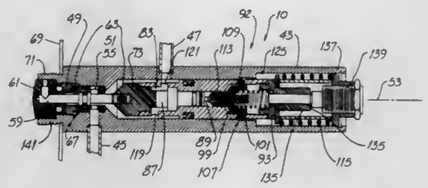
wherein the waste-collection means comprise a plurality of upwardly open inserts each having an inside volume lying in a range of 30 liters to 100 liters, the top of the chest having a plurality of waste-receiving openings disposed over respective ones of the inserts, the litter bin being shaped, when the chest is open, so as to enable all the inserts to be extracted manually in succession by a single operator for the purpose of emptying said inserts, each insert having a bottom which is situated beneath ground level, and the side wall of the chest having a moving panel which defines at least one lateral access opening disposed and shaped so as to allow at least one insert to pass therethrough, with said lateral access opening having a bottom edge which is situated at a height of less than 80 cm above the bottom of the insert.

5,826,790

TEMPERATURE-SENSITIVE SHUTOFF VALVE

Scott E. Raether, Oconomowoc, and John C. Schadt, Watertown, both of Wis., assignors to Sentry Equipment Corp., Oconomowoc, Wis.

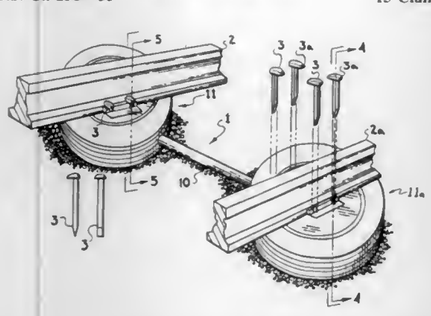
Filed Jul. 17, 1997, Ser. No. 895,887
Int. Cl.[6] G05D *23/12*
U.S. Cl. 236—48 R **15 Claims**



1. A temperature-actuated shutoff valve for handling fluids and including:
a housing extending along an axis and having a single inlet port and a single outlet port axially spaced from the inlet port;
a valve seat is fixed in the housing axially intermediate the ports;
a valve body axially slidable in the housing and mounted for movement in a first direction from a flow-permitting first position spaced from the seat to a flow-blocking second position against the seat, the valve body including a fluid flow path in flow communication with the ports when the valve body is in the first position;
a valving member mounted for coincident movement with the valve body;
a latching mechanism coupled to the valving member for retaining such member in the first position when the temperature of the liquid is below a shutoff temperature; and
an actuator coupled to the latching mechanism and moving in a second direction to position the valving member against the seat when the temperature of the fluid is above the shutoff temperature.

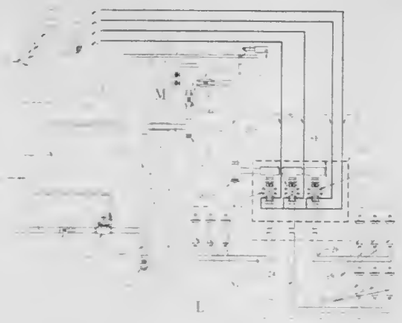
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5,826,791
PROCESS FOR MANUFACTURING A RAILROAD RAIL SUPPORT
Amos W. Broughton, 5645 Persimmon Ave., Temple City, Calif. 91780
Filed Nov. 3, 1995, Ser. No. 553,020
Int. Cl.[6] E01B *3/46*
U.S. Cl. 238—35 13 Claims



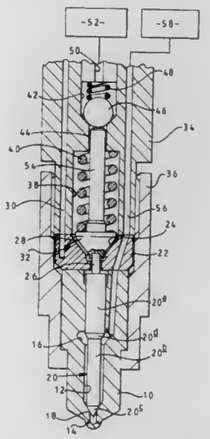
1. A process for manufacturing a railroad rail support (**1**) including the steps of:
securing a bottom steel plate (**65**) of a concrete matrix mold (**68**) in a generally horizontal plane, said bottom steel plate having a pair of parallel elongated slots (**64***b*, **64***c*) approximately the width of a railroad spike and spaced apart approximately the width of the bottom flange of a railroad rail;
attaching a circular mold spacer plate (**63**) on said bottom steel plate, said circular mold spacer plate having a diameter approximately the diameter of a rubber tire rim bead (**7**, **9**), said circular mold spacer plate having a pair of parallel elongated slots (**64**, **64***a*) matching the width and spacing of the slots in the bottom steel plate;
forming a plurality of elongated tubular channels (**30**) into a general V-shape comprising a first vertical portion (**32**) and a second sloping portion (**37**);
said vertical portions of the tubular channel disposed into apertures in a first top plate (**12**) of a rail support means (**21**) in a parallel pattern spaced apart approximately the width of the bottom flange of a railroad rail and matching the parallel slots (**64**, **64***a*) in the mold spacer plate (**63**);
placing a plurality of railroad rail guides (**66**) on the top plate (**12**), said rail guides configured to match and enter the parallel slots (**64**, **64***a*) in the mold spacer plate, and said guides being interrupted at the tubular channels (**30**);
placing a vertically-disposed attachment member (**150**) between the top plate (**12**) and a transverse tube including a female threaded member (**40**) whereby said female threaded member is positioned at a radial distance of approximately the radius of a rubber tire (**4**);
pivotally attaching a plurality of handles (**61**) in a radial pattern on the bottom steel plate (**65**) and disposed about the circular mold spacer plate (**63**) to form a manufacturing jig assembly;
securing the first top plate (**12**) onto the circular mold spacer plate (**63**) with the railroad rail guides (**66**, **66***a*) extending into the parallel slots (**64**, **64***a*, **64***b*, **64***c*);
positioning a first rubber tire (**4**) to form part of said concrete matrix mold (**68**) with the top tire rim bead (**7**) adjacent the circumference of the circular mold spacer plate (**63**) with the female threaded member (**40**) extending through a hole (**41**) in the tire circumferential tread (**5**) and with the top sidewall (**6**) against the bottom steel plate (**65**);
engaging the handles (**61**) with the tire bottom rim bead (**9**), lifting said bottom rim bead and flexing the bottom tire sidewall (**8**) to axially separate the top and bottom rim beads approximately to the height of the open ends (**60**) of the tubular channels (**30**);
pouring a concrete matrix into the interior of the first rubber tire (**4**) and the rail support means (**21**) to form a first contiguous rail support (**11**);
positioning a second rubber tire (**4**) to form part of said concrete matrix mold;
engaging the handles (**61**) with the second tire bottom rim bead (**9**), lifting said bottom rim bead and flexing the bottom tire sidewall (**8**) to axially separate the top and bottom rim beads approximately to the height of the open ends (**60**) of the tubular channels (**30**);
pouring a concrete matrix into the interior of the second rubber tire (**4**) and the rail support means (**21**) to form a second contiguous rail support **11***a*; and
threadably engaging an elongated horizontal steel tube (**47**) into the respective female threaded members (**40**) to position the first and second rail supports at approximately the distance between a pair of railroad rails.

5,826,792
AUTOMATIC CONTROL INCORPORATED WITHIN LAWN WATERING SYSTEMS
Lawrence J. Hasslinger, 1515 N. 105th St., Omaha, Nebr. 68114
Continuation of Ser. No. 341,647, Nov. 17, 1994, abandoned.
This application May 30, 1997, Ser. No. 865,710
Int. Cl.[6] A01G *25/16*; B05B *12/10*
U.S. Cl. 239—69 7 Claims



1. In combination:
a building structure having a water supply line therein;
a sprinkler water line operatively fluidly connected to said water supply line and extending outwardly from said building structure;
at least one water sprinkler connected to said sprinkler water line;
at least one electrically operated sprinkler control valve interposed in said sprinkler water outside of said building structure for controlling the flow of water to said water sprinkler;
an electrically operated sprinkler control assembly operatively connected to said sprinkler control valve for controlling the operation of said sprinkler control valve;
an electrically controlled first water control valve interposed in said water supply line in said building structure for controlling the flow of water form said water supply line to said sprinkler water line;
an electrically operated control assembly electrically connected to said first water control valve for controlling the operation of said first water control valve;
an air temperature sensing unit positioned outwardly of said building structure electrically connected to said control assembly and being adapted to turn off said first water control valve, through said control assembly, when the air temperature outwardly of said building structure drops to a predetermined temperature and adapted to turn on said water control valve, through said control assembly, when the air temperature outwardly of said building structure rises to a predetermined temperature subsequent to said water control valve having been turned off by a drop in the air temperature;
a backflow assembly interposed in said sprinkler water line outwardly of said building structure, between said first water control valve and said sprinkler control valve; and
a pressure operated drain valve interposed in said sprinkler water line, outwardly of the building structure, between the first water control valve and the backflow assembly.

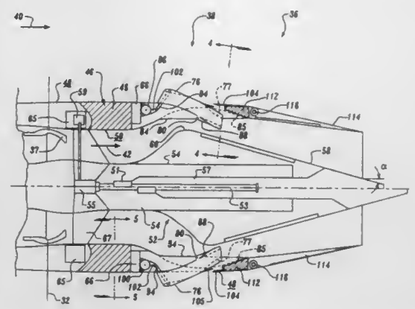
5,826,793
TWO RATE FUEL INJECTOR
James Martin Anderton Askew, Gloucestershire, England, assignor to Lucas Industries, plc, England
Filed Oct. 30, 1996, Ser. No. 739,546
Int. Cl.[6] F02M *47/00*
U.S. Cl. 239—124 8 Claims



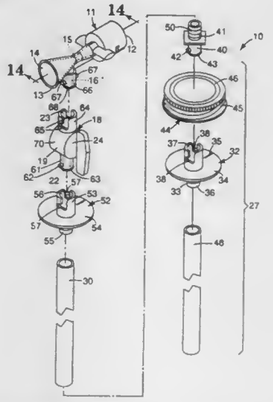
1. An injector comprising a valve element engageable with an injector seating, the valve element being resiliently biased into engagement with the injector seating, the valve element including a thrust surface arranged, in use, to have high pressure fuel applied thereto to lift the valve element from the injector seating, and stop means arranged to restrict movement of the valve element away from the injector seating, wherein the stop means comprises a second valve member engageable with a valve seating and arranged to have high pressure fluid applied thereto, the second valve member being movable away from the valve seating under the influence of the valve element against the action of the high pressure fluid, in use, the second valve member controlling fluid flow to the valve element along a path independent of a fuel supply path whereby fuel is supplied towards the injector seating.

5,826,794
AIRCRAFT SCOOP EJECTOR NOZZLE
Peter K. C. Rudolph, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.
Filed Feb. 28, 1997, Ser. No. 807,547
Int. Cl.[6] B63H *25/46*
U.S. Cl. 239—265.17 23 Claims

1. A noise suppression exhaust nozzle for an intermediate bypass ratio aircraft engine, the nozzle comprising:
(a) an axisymmetric outer structure having interior sidewalls and a centerbody located within the sidewalls, the area between the centerbody and the sidewalls defining a convergent-divergent exhaust duct for passage of nozzle exhaust;
(b) a plurality of scoop ejectors positioned within the nozzle outer structure; each scoop ejector having a forward inlet, an aft outlet, and a passage therebetween; the scoop ejectors being rotatably connected to the outer structure at a location approximately midway along the longitudinal length of the ejector; and
(c) an actuation mechanism for rotating the scoop ejectors between open and closed positions, the rotation of the ejectors to the open position causing the inlet to extend into airflow exterior to the nozzle and the outlet to extend into the duct, whereby aspirated air is induced into each open scoop ejector, the aspirated air combining with engine exhaust.



5,826,795
SPRAY ASSEMBLY
Lowell W. Holland, St. Paul Park; Alan G. McKown, Oakdale; Constantin I. Ruta, White Bear Lake, and Robert M. Petrie, Plymouth, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Filed Aug. 19, 1996, Ser. No. 699,413
Int. Cl.[6] B05B *7/30*
U.S. Cl. 239—318 12 Claims



1. A spray assembly comprising:
a spray nozzle having an inlet end adapted to be coupled to a source of air under pressure, an outlet end, a through passageway between said ends, said through passageway having a portion of reduced passageway diameter between said ends, a suction passageway intersecting said through passageway adjacent said portion of reduced passageway diameter;
a valve comprising
a valve body attached to said spray nozzle, said valve body having a socket and having separate inlet and outlet passageways, said inlet and outlet passageways having spaced ends communicating with said socket, and said outlet passageway communicating between said socket and said suction passageway.

a moveable member mounted in the socket in said valve body for movement between open and closed positions through intermediate positions between said open and closed positions, said moveable member having a connectable passageway having opposite ends adapted to connect between the ends of said inlet and outlet passageways with pairs of said ends in communication in said open and intermediate positions, to be spaced from at least one of the ends of said inlet and outlet passageways in said closed position so that in said closed position said moveable member blocks communication between said inlet and outlet passageways in said valve body, and adapted to have decreasing portions of the areas of said pairs of said ends in communication during movement of said moveable member through said intermediate positions from said open position toward said closed position;

a reservoir adapter having a through opening adapted to engage a reservoir containing a liquid coating material to be sprayed with the liquid coating material at the through opening; and

a flexible hose having a through opening connected between the reservoir adapter and the valve body with the through opening in the hose communicating between the through opening in the adapter and the inlet passageway in the valve body.

5,826,796

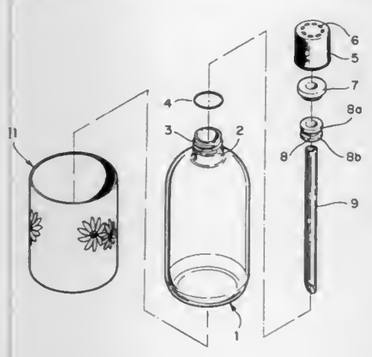
MULTI-DIRECTIONAL DEFENSIVE SPRAP CONTAINER

Kenneth J. McDonald, 4063 Vine La., Naples, Fla. 34112

Filed Sep. 8, 1997, Ser. No. 924,899

Int. Cl.[6] B05B *1/34*

U.S. Cl. 239—327 **5 Claims**



1. A multi-directional defensive spray container having a defensive fluid therein including a squeezable bottle having a neck with screw threads thereon, a rubber grommet having an evacuation tube contained therein being placed within and in contact with the interior wall of the neck of said bottle and tightly held therein, a rubber washer being placed over the opening of said neck, a screw cap having interior threads therein matching said threads on said neck of said bottle, said cap having a multiple of holes in its top face, said screw cap being screwed over the neck of said bottle until intimate contact is made with the top of said washer, expelling means effected by the application of an external force to the walls of said squeezable bottle.

5,826,797

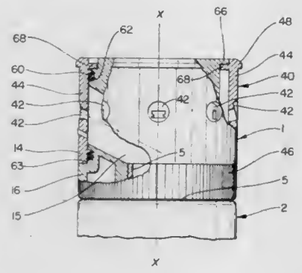
OPERATIONALLY CHANGEABLE MULTIPLE NOZZLES SPRINKLER

Carl L. C. Kah, III, 1640 Australian Ave., Riviera Beach, Fla. 33404

Filed Mar. 16, 1995, Ser. No. 405,033

Int. Cl.[6] A61C *31/02*

U.S. Cl. 239—394 **19 Claims**



1. A sprinkler having a rotatable nozzle housing; an output shaft mechanically connected to said rotatable nozzle housing for rotating said nozzle housing, a manually adjustable rotatable sleeve having an inner surface and a plurality of circumferentially spaced orifices; said rotatable sleeve is slidably installed around the nozzle housing and being in rotational relationship therewith and thereto; sealing means surrounding the discharge end of a water passage formed in said nozzle housing; said sealing means including a seal member surrounding the discharge end of the water passage and dimensioned to continuously bear against said inner surface to provide a sealed connection to the pressurized water passage of the nozzle housing, wherein said rotatable sleeve is selectively positioned to align one of said plurality of orifices with said discharge end of the water passage for distributing water outwardly from said sprinkler, and means for retaining said nozzle selection sleeve in place.

5,826,798

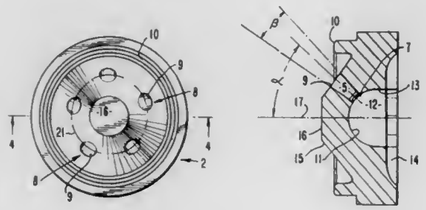
ATOMIZER WITH ARRAY OF DISCHARGE HOLES TO PROVIDE IMPROVED COMBUSTION EFFICIENCY AND PROCESS

Edmund S. Schindler, Kirfield, and John P. Guarco, Wolcott, both of Conn., assignors to Todd Combustion, Shelton, Conn.

Filed Oct. 1, 1996, Ser. No. 724,442

Int. Cl.[6] B05B *7/10;* **F23D** *11/38*

U.S. Cl. 239—403 **17 Claims**



1. In an atomizer having a whirling chamber and holes for discharge of fluid from the whirling chamber, the improvement comprising locating a plurality of the holes a distance from the whirling chamber centerline wherein the distance of each hole from the centerline of the whirling chamber is greater than 400/512 times the diameter of the whirling chamber.

5,826,799

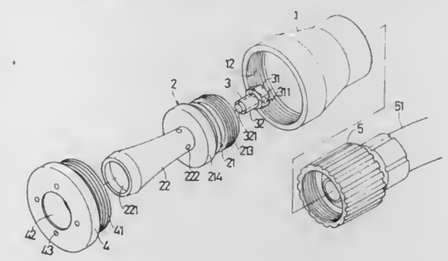
SPRINKLING HEAD STRUCTURE

Paul Hsieh, No. 78, Lane 234, Sec. 3, Chang-Nan Road, Chang-Hua City, Taiwan

Filed Dec. 3, 1996, Ser. No. 758,363

Int. Cl.[6] B05B *1/30;* **E03C** *1/08*

U.S. Cl. 239—428.5 **6 Claims**



1. A sprinkling head structure comprising:

a housing which is hollow, having a first and a second open ends, the first end being disposed with an inward extending flange, while the second end being disposed with inner thread;

a valve seat located in the housing and disposed with a connecting section abutting against the flange and extending into the first end of the housing, the connecting section being formed with an opening, the valve seat being further disposed with a spout section axially extending from the connecting section, the connecting section being formed with a shaft hole communicated with an axial trumpet-shaped water discharging passage of the spout section, the connecting section being further formed with outer thread and an annular stopper section abutting against the flange of the housing, an air chamber being defined between the spout section and the housing, the spout section being disposed with air vents communicating the air chamber with the water discharging passage;

a water valve disposed in the shaft hole of the connecting section and formed with internal passages communicated with the water discharging passage of the spout section; and

a cap member formed with outer thread screwed in the inner thread of the second end of the housing, the cap member being formed with an axial opening through which the spout section protrudes outside, an end face of the cap member being formed with multiple through holes.

5,826,800

VENTURI CLEANING SYSTEM WITH TWO ADJUSTABLE VENTURI GROOVES

Karl Reither, Freiheitsstrasse 45, Trolsdorf, Germany, 53842

PCT No. PCT/DE94/00959, § 371 Date Mar. 11, 1996, § 102(e) Date Mar. 11, 1996, PCT Pub. No. WO95/07747, PCT Pub. Date Mar. 23, 1995

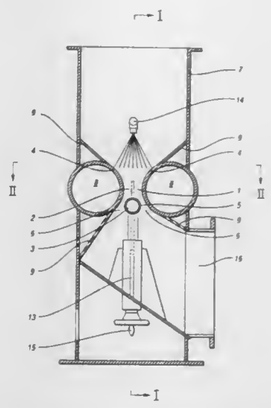
PCT Filed Aug. 19, 1994, Ser. No. 605,218

Claims priority, application Germany, Sep. 15, 1993, 43 81 301.9

Int. Cl.[6] B05B *1/26*

U.S. Cl. 239—505 **17 Claims**

1. Differential pressure cleaner comprising a venturi channel which converges in the direction of flow to a minimum cross-section and then is provided with diverging side walls (**4**), wherein a throttle (**1**) formed thereby displays in its minimum cross-section a shape of a substantially rectangular slot (**2**), a displacement body (**3**) having an outer wall (**5**), the displacement body (**3**) being arranged downstream of the slot (**2**) extending over the entire length of the slot (**2**) and mounted in such a way so as to be movable towards and away from the slot (**2**), two substantially parallel venturi grooves (**6**) arranged between the diverging side walls (**4**) of the throttle (**1**) and the outer wall (**5**) of the displacement body (**3**), the cross-sections of the two venturi grooves (**6**) being adjustable by moving the displacement body (**3**), and at least one cleaning fluid feed device fitted over the throttle (**1**), characterized in that the venturi channel is formed by a flow pipe (**7**) and that two transverse pipes (**8**) are arranged in the flow pipe (**7**) to form the throttle (**1**).



5,826,801

FUEL INJECTION VALVE FOR ENHANCING PENETRATION SPRAY OF INJECTED FUEL IN AN INTERNAL COMBUSTION ENGINE

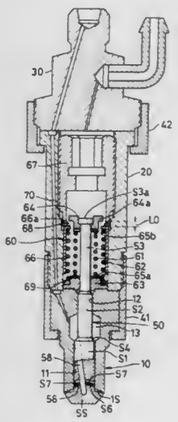
Mitsuaki Kobayashi, and Fumitsugu Yoshizu, both of Saitama-ken, Japan, assignors to Zexel Corporation, Tokyo, Japan

Filed Jan. 31, 1996, Ser. No. 594,755

Claims priority, application Japan, Feb. 20, 1995, 7-055077

Int. Cl.[6] F02M *61/08*

U.S. Cl. 239—533.4 **2 Claims**



1. A fuel injection nozzle comprising:

(a) a nozzle body extending axially, having a guide hole opening at a lower end thereof, and a fuel pool chamber disposed at an upper location of said guide hole;

(b) a poppet valve including a stem axially slidably received in said guide hole of said nozzle body, and a valve portion formed on a lower end of said stem and having a diameter larger than that of said stem, said valve portion being faced with the lower end of said nozzle body, said stem being provided with a plurality of first injection ports and a plurality

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of second injection ports formed in an area in the vicinity of said valve portion, each injection port having a first end and a second end, said first ends of said first and second injection ports being open at an outer peripheral surface of said stem and said second ends being in communication with said fuel pool chamber through a fuel passageway formed in said stem, said first ends of said first injection ports being spacedly circumferentially aligned, said first ends of said second injection ports being likewise generally spacedly circumferentially aligned, said first ends of said second injection ports being located downwardly of said first ends of said second injection ports, said first ends of said first and second injection ports being generally axially aligned, and wherein an axis of said first injection port and an axis of said second injection port extend in generally parallel relation; and

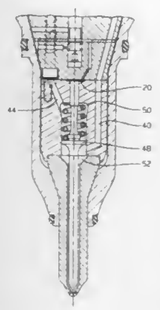
(c) a first and a second spring, said poppet valve being normally upwardly biased by said first spring, so that said valve portion sits on the lower end of said nozzle body, when said valve portion being in a sitting-state, said first and second injection ports being blocked with a peripheral wall of said nozzle body which defines said guide hole, when a fuel pressure, which is higher than a first pressure level but lower than a second pressure level, is supplied to said fuel pool chamber, said poppet valve being moved downwardly against said first spring, thereby opening said first injection ports to inject fuel from said first injection ports, in this case said poppet valve being prevented from being lifted more than a predetermined lift amount by said second spring so that said second injection ports are closed, when a fuel pressure, which is higher than said second pressure level, is supplied, said poppet valve being moved downwardly extending said predetermined lift amount against both of said first and second springs so that not only first injection ports but also said second injection ports are opened and fuel are injected from both of said first and second injection ports.

5,826,802

DAMPED CHECK VALVE FOR FLUID INJECTOR SYSTEM

Michael D. Anderson, Metamora, and Mark F. Sommars, Sparland, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 17, 1995, Ser. No. 559,231
Int. Cl.[6] F02M *47/02*
U.S. Cl. 239—533.8 **17 Claims**



1. A fuel injector nozzle including a check stop, a check sleeve, and a nozzle tip defining a pressure control chamber, an injection chamber, at least one injection orifice, a movable direct-operated check disposed within said nozzle tip and being operable to selectively engage a check seat to control fluid communication between the injection chamber and the fuel injection orifice, a pressure control valve to control the movement of said check, the improvement comprising:

the check including an end positioned in said pressure control chamber and a hilt disposed within said injection chamber and being of a construction suitable to divide said injection chamber into a lower hilt chamber and an upper hilt chamber that are different from said pressure control chamber, and said upper hilt chamber being a closed volume above said hilt;

a high pressure fuel passage communicating high pressure fuel to the lower hilt chamber, whereby the stresses on the check seat are lowered when said check engages said check seat; and

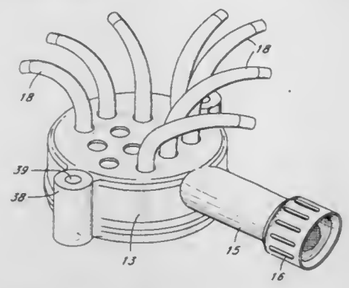
wherein the pressure within said lower hilt chamber decreases as said check moves from a closed position where said check engeages said check seat towards an open position where said check in spaced apart from said check seat and the pressure within the upper bilt chamber increases as said check moves from said closed position toward said open position.

5,826,803

LAWN AND GARDEN SPRINKLER WITH BENDABLE TUBES

Randy J. Cooper, 12273 Circula Panorama, Santa Ana, Calif. 92705

Continuation of Ser. No. 394,716, Feb. 27, 1995, abandoned. This application May 12, 1997, Ser. No. 854,524
Int. Cl.[6] B05B *1/14*
U.S. Cl. 239—556 **13 Claims**



1. A lawn and garden sprinkler comprising:

a manifold including means for attachment to a source of water under pressure, said manifold having a base, a side wall and an upper wall;

a plurality of bendable tube assemblies extending upwardly from said manifold, each said bendable tube assembly having an entrance end affixed to said upper wall of said manifold, an exit end which includes means for directing a flow of water therefrom, a flexible tube having an inner conduit, a ductile wire in said inner conduit thereof, and an outer surface;

means for maintaining said plurality of bendable tube assemblies in a fixed, bent configuration which remains in about a stationary position when water is flowing therethrough;

wherein at least one pair of said plurality of bendable tube assemblies includes a single ductile wire having a first and a second end with the first end in one of said pair and the second end is in the other of said pair.

5,826,804

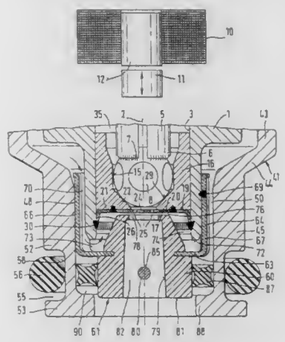
DEVICE FOR THE INJECTION OF A FUEL/GAS MIXTURE

Ferdinand Reiter, Markgroeningen; Heinz-Martin Krause, Ditzingen; Juergen Buchholz, Lauffen, and Roland Beilhardt, Korntal-Muenchingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Feb. 12, 1996, Ser. No. 599,836
Claims priority, application Germany, Feb. 21, 1995, 195 05 886.0
Int. Cl.[6] B05B *1/30;* **F02M** *51/00*
U.S. Cl. 239—585.1 **28 Claims**

1. An injection valve for injecting a fuel/gas mixture, the valve having a longitudinal axis and a downstream end, the valve comprising:

a movable valve closing body;



a valve seat body being arranged at the downstream end of the valve and having a valve seat face cooperating with the valve closing body, at least one injection orifice being arranged downstream of the valve seat face; and

a multipart treatment attachment arranged at the downstream end of the valve, the attachment including a gas containment part, which includes a metal, and an insert body, which includes a plastic, the insert body extending downstream of the injection orifice and having a mixture injection orifice, the fuel/gas mixture being injected through the mixture injection orifice, the insert body further having an additional orifice, the additional orifice being inside the insert body, adjoining the mixture injection orifice, and widening at least partially in a downstream direction, the gas containment part being fixedly connected to the insert body and to the downstream end of the valve;

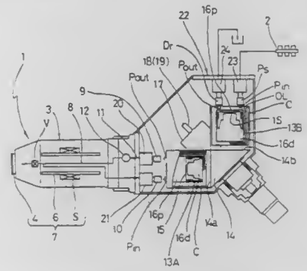
wherein the gas containment part is bowl-shaped, and the insert body is at least partially conical-shaped.

5,826,805

ELECTROSTATIC COATING MACHINE

Tomoyasu Ito, Seto; Touichi Watanabe, Yokohama; Yasuo Ishiguro, Nagoya, and Kengo Honma, Tokai, all of Japan, assignors to Trinity Industrial Corporation, Tokyo, Japan

Filed Feb. 28, 1997, Ser. No. 808,450
Claims priority, application Japan, Feb. 29, 1996, 8-042504
Int. Cl.[6] B05B *5/025;15/02*
U.S. Cl. 239—691 **4 Claims**



1. An electrostatic coating machine for conducting electrostatic coating by supplying a paint, while applying a high voltage to an atomizing mechanism (7) disposed to a machine body (3), said machine comprising;

at least two paint tanks (13A, 13B) for pushing out a paint by a pressure of a hydraulic fluid attached to a rotary base (14), while being electrically insulated from each other, and disposed such that they can be positioned to a coating position opposed to the machine body (3) by the rotation of the rotary base (14),

a paint connector (9) in communication with the atomizing mechanism (7) and provided to the machine body (3) at a position for engaging a paint outlet (Pout) of the paint tank (13A, 13B) positioned to a coating position, and

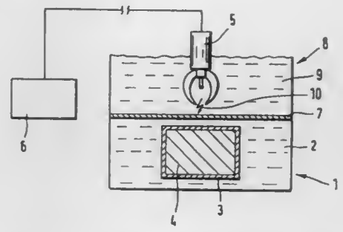
a paint charging attachment (22) being electrically insulated from the machine body (3) and comprising a paint supply port (Ps) for supplying a cleaning fluid and a paint of each color to the paint tank (13B, 13A) and a drain recovery port (Dr) for recovering drains discharged from the paint tank (13B, 13A), said paint supply port (Ps) and said drain recovery port (Dr) being positioned at a paint charging position opposed to and engaged with the paint inlet (Pin) and the paint outlet (Pout) of the paint tank (13B, 13A) when the other tank (13A, 13B) is positioned to the coating position.

5,826,806

METHOD AND ARRANGEMENT FOR BREAKING UP MATERIALS IN METALLIC CASINGS

Juergen Hofmann, Salzwedel, Germany, assignor to TZN Forschungs-und Entwicklungszentrum Unterluess GmbH, Unterluess, Germany

Filed Dec. 6, 1996, Ser. No. 761,554
Claims priority, application Germany, Dec. 7, 1995, 195 45 579.7
Int. Cl.[6] B02C *19/18*
U.S. Cl. 241—1 **7 Claims**



1. A method for separating a material disposed inside a metal casing from the metal casing, comprising the steps of:

providing a composite including the metal casing and the material disposed inside the metal casing;

arranging an electrode system distinct from the metal casing inside a liquid;

generating a high energy pulse on the electrode system through spark discharge in the liquid thereby generating a pressure pulse; and

separating the material disposed in the metal casing from the metal casing by effecting an absorption of the pressure pulse by the composite thereby breaking up the material.

5,826,807

METHOD AND APPARATUS FOR COMMINUTING OF SOLID PARTICLES

Ernest Csendes, 514 Marquette St., Pacific Palisades, Calif. 90272

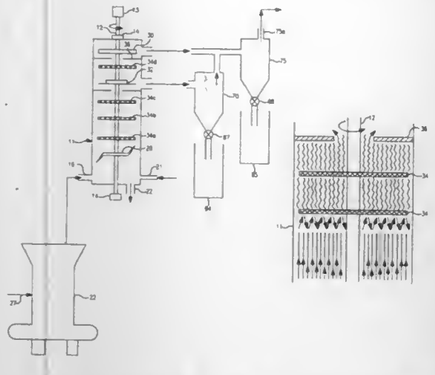
Continuation-in-part of Ser. No. 423,326, Apr. 17, 1995, Pat. No. 5,695,130. This application Dec. 8, 1997, Ser. No. 987,092
Int. Cl.[6] B02C *19/12;23/24*
U.S. Cl. 241—19 **11 Claims**

11. A method for further comminuting particles already comminuted to a super fine state comprising the steps of:

vertically and upwardly feeding said particles into a pressurized high velocity gas stream located in a vessel unobstructed by rotating circular plates;

driving said particles and said high velocity gas stream vertically upward so that they are suspended in said vessel;

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forming vertical spiral gas vortexes and cavitation in the high velocity compressed gases in said vessel;

driving said particles through said high velocity vertical spiral gas vortexes to effect super fine comminution thereof; and

feeding the super fine comminuted particles into a cyclone to separate said particles from the high velocity pressurized gas stream.

5,826,808

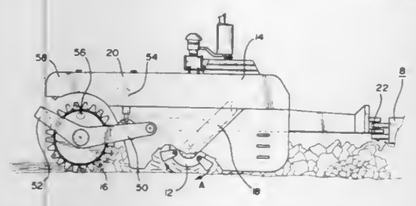
MOBILE COMPACTOR, PULVERIZER AND CUTTING APPARATUS AND METHOD THEREFOR

Enrico Giovanardi, 1435 N. Hayden Rd., Scottsdale, Ariz. 85257

Continuation-in-part of Ser. No. 623,870, Mar. 29, 1996, Pat. No. 5,683,042. This application Jul. 7, 1997, Ser. No. 888,713

Int. Cl.[6] B02C *13/04;21/02*

U.S. Cl. 241—27 **30 Claims**



16. A method for compacting and cutting waste and soil comprising the steps of:

providing a substantially horizontal main shaft located within a housing;

providing a first shaft receiving member and a second shaft receiving member located within said housing;

rotatably connecting a first end of said main shaft to said first shaft receiving member located in a first wall of said housing and rotatably connecting a second end of said main shaft to said second shaft receiving member located in a second wall of said housing, said first and second walls of said housing being opposite each other;

providing a plurality of spacing members displaced at substantially equal distances along said main shaft, said plurality of spacing members including a first spacing member located substantially at said first end of said main shaft, a second spacing member located substantially at said second end of said main shaft, and a plurality of spacing members located between said first spacing member and said second spacing member;

providing at least two openings through each of said plurality of spacing members displaced substantially equal distances from each other and aligning said openings through each of said plurality of spacing members with corresponding said at least two openings in each other of said plurality of spacing members;

providing at least two shafts displaced parallel to said main shaft, each of said shafts passing through said aligned openings in said plurality of spacing members;

providing a plurality of compacting members rotatably connected to each of said two shafts;

providing a compacting drum assembly operatively attached to said apparatus rearward of said main shaft;

transporting said apparatus across a surface of a landfill;

rotating said main shaft to bring said compacting members into contact with said surface of said landfill for pulverizing said surface of said landfill and thereafter compacting said landfill with said compacting drum assembly.

5,826,809

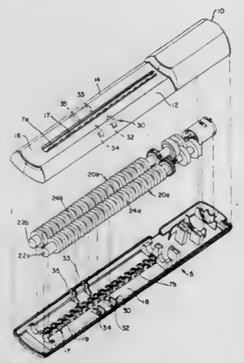
SUPPORT FOR CUTTING CYLINDERS IN A PAPER SHREDDER

Bruce R. Kroger, West Chicago, Ill., assignor to Fellowes Manufacturing Company, Itasca, Ill.

Filed Apr. 30, 1997, Ser. No. 847,159

Int. Cl.[6] B02C *4/08*

U.S. Cl. 241—167 **19 Claims**



10. A shredder comprising:

a housing having a top wall, a bottom wall, a first side wall, and a second side wall;

a first cutting cylinder having a first cutting shaft;

a second cutting cylinder having a second cutting shaft;

a stripper positioned along a cutting path between the first and second cutting cylinders; and

a support integral with the housing, the support having a first rib extending outward from at least one wall of the housing toward the first cutting shaft and a second rib extending outward from at least one wall of the housing toward the second cutting shaft.

5,826,810

FEEDER MEANS FOR A FORAGE HARVESTER

Adrianus Naaktgeboren, Varsenare, and Dirk Johan Desnijder, Wondelgem, both of Belgium, assignors to New Holland North America, Inc., New Holland, Pa.

Filed Mar. 26, 1997, Ser. No. 827,082

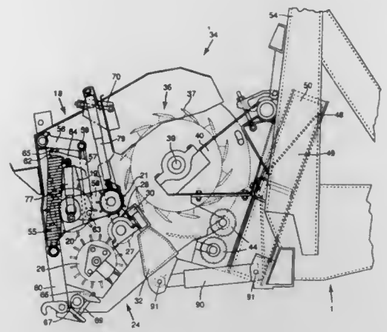
Claims priority, application United Kingdom, Mar. 27, 1996, 9606404

Int. Cl.[6] B02C *18/22*

U.S. Cl. 241—222 **12 Claims**

1. A forage harvester, comprising

a main frame,



cutterhead frame means mounted thereto and enclosing a rotatable cutterhead, operable to comminute crop material,

feeder means, mounted in said cutterhead frame means and operable to convey crop material rearwardly towards said cutterhead along a crop feeding path, and

a load structure including, a load arm having a pivot point which is movable to said cutterhead frame means, and a connection point at which the load arm is linked to a movable portion of said feeder means, and resilient means acting on said load arm for forcing said movable portion towards said crop feeding path, the improvement comprising

said resilient means are linked to said load arm at a load point distant from said pivot point for simultaneous generation of a moment about said pivot point, which moment forces said movable portion rearwardly towards said cutterhead.

5,826,811

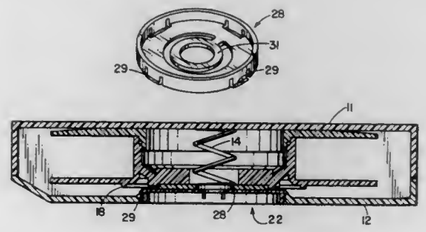
METHOD AND APPARATUS FOR SECURING A REEL IN A CARTRIDGE

Hartvig E. Melbye, Boulder, and David T. Hoge, Westminster, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Jul. 29, 1996, Ser. No. 681,561

Int. Cl.[6] B65D *85/575*

U.S. Cl. 242—345.2 **12 Claims**



1. In a magnetic tape cartridge having an upper portion and a lower portion, said cartridge including a reel movably mounted between said upper portion and said lower portion, said reel including magnetic tape wound thereon, said cartridge further including a spring located between said reel and said upper portion, said lower cartridge portion including an access opening, a method for preventing damage to said magnetic tape comprising the step of removably mounting a plug in said access opening said plug including a lip portion, said step of removably mounting including inserting said lip portion between said reel and said lower portion such that said reel is biased against said upper portion.

5,826,812

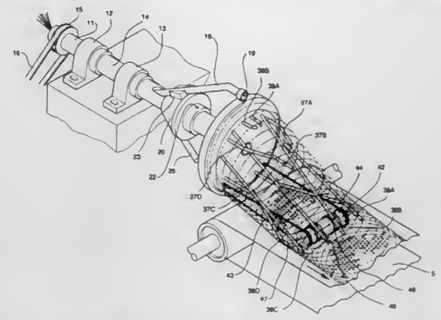
COILER APPARATUS AND METHOD

Edward Lowe Hand, Belmont, N.C., assignor to Belmont Textile Machinery Co., Inc., Belmont, N.C.

Filed Jan. 8, 1997, Ser. No. 780,458

Int. Cl.[6] B21C *47/24;47/14*

U.S. Cl. 242—363 **18 Claims**



9. A coiler apparatus for forming flat coils of textile strands from an upstream strand supply and depositing them on a moving conveyor belt for transport downstream to a strand processing station, comprising:

(a) a coil-former for forming the strand into an upright, circular coil on a downstream-facing annular, tapered coil-forming surface;

(b) a coil-doffer for removing a lower portion of said coil from said coil-forming surface and moving it onto said conveyor belt at a first rate of travel and for removing an upper portion of said coil from said coil-forming surface and moving it onto said conveyor belt at a second rate of travel which is different than said first rate of travel whereby the difference in rate of travel between the upper and lower portions of the coil alters the shape of the coil from circular on said coil-forming surface to oval on said conveyor.

5,826,813

SEAT BELT RETRACTOR

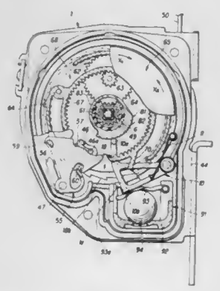
Ganta Hibata, Kanagawa, Japan, assignor to NSK Ltd., Tokyo, Japan

Filed May 23, 1997, Ser. No. 862,266

Claims priority, application Japan, May 24, 1996, 8-151914

Int. Cl.[6] B60R *22/405;22/41*

U.S. Cl. 242—383.1 **17 Claims**



1. A seat belt retractor having an emergency lock mechanism for locking a winding shaft so as not to rotate in a webbing drawing out direction at the time of an emergency, comprising:

a base;

a winding shaft rotatably supported by said base;

a lock mechanism for locking the winding shaft so as not to rotate in the webbing drawing out direction at the time of an emergency, said lock mechanism comprising,

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a rachet wheel rotatably supported relative to said winding shaft,

a lock arm supported by the rachet wheel and movable between a first position engageable with said base and a second position unengageable with said base, and

a lock member for blocking the winding shaft from rotating in the webbing drawing out direction by coupling said winding shaft to said base when said rachet wheel rotates relative to said winding shaft; and

regulating members for blocking said lock arm located at said second position from moving to said first position by engaging with said lock arm when said webbing is wound around said winding shaft by a predetermined amount or more.

5,826,814

SAFETY DEVICE FOR THE MANOEUVRING AND AUXILIARY WINCHING OF SELF-PROPELLED VEHICLES USED ON STEEP SLOPES

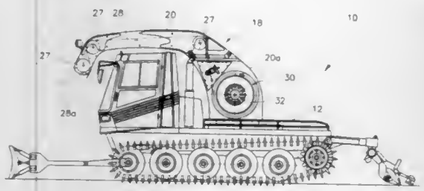
De Vettor Gianfranco, Busche, Italy, assignor to MDP Meccanica del Piave Spa, Longarone, Italy

Filed Sep. 3, 1996, Ser. No. 706,842

Claims priority, application Italy, Jul. 9, 1995, TV950047 U

Int. Cl.[6] B65H *75/40*

U.S. Cl. 242—403 **4 Claims**



1. Safety device for the manoeuvering and auxiliary winching of self-propelled vehicles used on steep slopes, of the type comprising a manoeuvering arm (**20**) associated with a vehicle freely rotatable around a rotation axis essentially perpendicular to a plane in which said vehicle (**10**) lies, a winding roller (**32**) operated by drive means for winding a winching cable (**28**) one end of which is fixed to the top of a slope to be travelled up, wherein said winding roller (**32**) of the winching cable (**28**) is disposed on the manoeuvering arm (**20**).

5,826,815

METHOD AND APPARATUS FOR DETERMINING A VALUE OF SLIPPAGE IN THE WINDING OF A YARN PACKAGE

Ferdinand Hermanns, Erkelenz; Andreas Krüger, Mönchengladbach, both of Germany, and Urs Meyer, Zürich, Switzerland, assignors to W. Schlafhorst AG & Co., Monchen -Gladbach, Germany

Filed Jun. 26, 1997, Ser. No. 882,797

Claims priority, application Germany, Jun. 26, 1996, 196 25 510.4

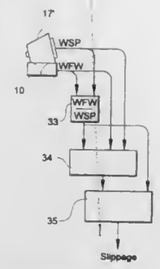
Int. Cl.[6] B65H *54/38;54/40*

U.S. Cl. 242—477.8 **11 Claims**

1. A method for determining a value of slippage generated between a friction roller and a yarn package during a winding process at a winding station of a textile winding machine, comprising:

accelerating and decelerating a friction roller that drives a yarn package being wound so that slippage occurs between the friction roller and the entire surface of the yarn package during an acceleration phase and no slippage occurs between the friction roller and part of the surface of the yarn package during a deceleration phase;

detecting a value representative of the angular velocity of the friction roller at least once in said acceleration phase and at least once in said deceleration phase;



detecting a value representative of the angular velocity of the yarn package in said acceleration phase and in said deceleration phase;

estimating a yarn package radius during said acceleration phase from a mathematical progression based upon said values detected in said deceleration phase;

calculating a distorted yarn package radius based upon the fixed radius of the friction roller and based upon said values detected in said acceleration phase; and

comparing the estimated yarn package radius with the calculated distorted yarn package radius to determine a value of slippage.

11. A winding station of a textile winding machine for producing yarn packages, comprising:

a friction roller for controlling the winding of yarn onto a yarn package and a drive motor for controlling acceleration of the friction roller resulting in slippage between the friction roller and the entire surface of a yarn package and for controlling deceleration of the friction roller resulting in no slippage between the friction roller and at least part of the surface of the yarn package;

a first sensor that detects a period of the yarn package;

a second sensor that detects a period of the friction roller; and

a control and evaluation device in communication with said sensors including:

a quotient former that calculates a ratio between the angular velocities of said friction roller and a yarn package based upon detected periods of a yarn package and said friction roller,

a linear filter that evaluates a progression of the yarn package radius in at least one deceleration phase for estimating the yarn package radius in an acceleration phase based upon the calculated ratio and the detected angular velocities in the deceleration phase, and

a subtraction device for comparing the estimated yarn package radius in the acceleration phase with the calculated yarn package radius in the acceleration phase to determine a value of slippage.

5,826,816

APPARATUS FOR ATTACHING FILM ON TO A SPOOL IN A CARTRIDGE AND WINDING THE FILM ON THE SPOOL

Takuji Yamaguchi, Wakayama, Japan, assignor to Noritsu Koki Co., Ltd., Wakayama-ken, Japan

Filed Oct. 23, 1996, Ser. No. 735,720

Claims priority, application Japan, Oct. 25, 1995, 7-278035; Oct. 25, 1995, 7-278036; Oct. 25, 1995, 7-278037; Oct. 25, 1995, 7-278038; Oct. 25, 1995, 7-278039

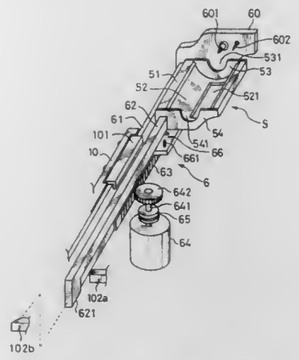
Int. Cl.[6] B65H *19/28*

U.S. Cl. 242—532.6 **40 Claims**

1. A film winding apparatus adapted for winding a film onto a spool disposed within a cartridge, said film winding apparatus comprising:

an apparatus housing;

a film winder provided in said apparatus housing for turning the spool housed in the cartridge to wind the film around the spool;



a film inlet located on one side of said apparatus housing;

a film feeder for feeding film inserted into said film inlet toward said film winder;

a cartridge mount having a cartridge loading position disposed outside of said apparatus housing on another side of said apparatus housing such that the cartridge can be loaded on and unloaded from said cartridge mount from outside of said apparatus housing; and

a transporter for conveying said cartridge mount along a linear path from the cartridge loading position to a film loading position inside of said housing next to said film winder where the film winder winds the film on the spool in the cartridge loaded on said cartridge mount in the film loading position, said transporter conveying said cartridge mount from said film loading position back to said cartridge loading position after the film has been wound on the spool in the cartridge.

5,826,817

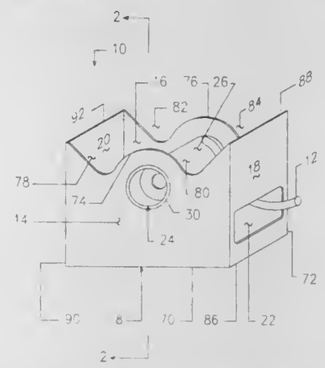
SELF DISPENSING AND STORAGE DEVICE FOR FLEXIBLE TUBING

William J. Selby, 1530 West Dr., Stoughton, Mass. 02072

Filed Jun. 16, 1997, Ser. No. 876,631

Int. Cl.[6] B65D *83/00;* **B65H** *55/00*

U.S. Cl. 242—588.6 **6 Claims**



1. A device for storing and dispensing flexible tubing comprising:

(a) a first side wall comprising a bottom edge and a top edge, said first side wall further comprising a first recess area extending from said top edge;

(b) a second side wall comprising a bottom edge and a top edge, said second side wall further comprising a first recess area extending from said top edge;

(c) a front end wall comprising a slot formed therein, said front end wall comprising a bottom edge and a top edge, said top edge of said front wall being higher than said first recess area of said first side wall and said first recess area of said second side wall;

(d) a rear end wall, said rear wall comprising a bottom edge and a top edge, said top edge of said rear end wall being higher than said first recess area of said first side wall and said first recess area of said second side wall;

(e) a spool assembly engaged with said first and second side walls;

(f) a flexible tubular member having first and second end portions and a median portion, said median portion of said flexible tubular member being wrapped about said spool member and said first end portion of said flexible tubular member being passed through said slot of said front end wall; and

(g) a cover removably disposed about said first and second side walls, said front end wall and said rear end wall.

5,826,818

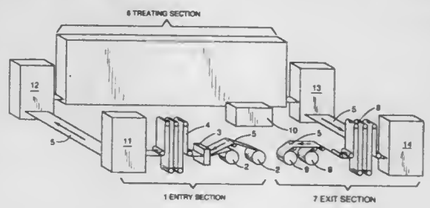
COMPACT STRIP PROCESSING FACILITY

Alain Douaud, Pittsburgh, Pa., assignor to Kvaerner U.S. Inc., Pittsburgh, Pa.

Filed Jun. 30, 1997, Ser. No. 886,104

Int. Cl.[6] B65H *23/32;* **B21B** *41/02*

U.S. Cl. 242—615.21 **17 Claims**



1. A compact facility is of reduced installation, operation and maintenance cost for treating an elongated flexible cold rolled metal strip including a strip entry section, a strip treating section, and a strip exit section, the improvement which comprises a strip entry section which is disposed in a line spaced side-by-side from and parallel to the strip treating section, a first strip turning device disposed at the exit of the strip entry section for receiving and turning the strip approximately 90° from the line of the strip entry section in a direction toward the strip treating section, and a second turning device disposed in front of the strip treating section for receiving and turning the strip from the first strip turning device approximately 90° for entry of the strip into the strip treating section.

5,826,819

WEAPON SYSTEM EMPLOYING A TRANSPONDER BOMB AND GUIDANCE METHOD THEREOF

Stephen C. Oxford, Los Angeles, Calif., assignor to Raytheon Company, Lexington, Mass.

Filed Jun. 27, 1997, Ser. No. 883,941

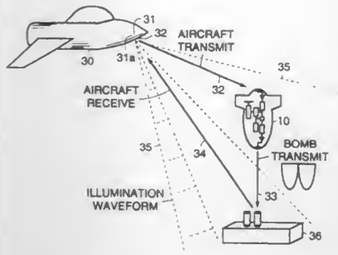
Int. Cl.[6] F41G *7/00;* **G01S** *13/00*

U.S. Cl. 244—3.14 **10 Claims**

1. A weapon system for guiding a bomb to a target, said system comprising: a transponder bomb comprising:

transponder means for receiving an illumination signal, for frequency shifting the illumination signal, and for retransmitting the frequency shifted illumination signal at the target, said frequency shifted illumination signal has a null at a center of its signal pattern;

a data link for receiving a guidance correction signal;



a processor coupled to the data link for processing the guidance correction signal to produce control signals to guide the bomb; and

fin actuation means coupled to the processor for guiding the bomb toward the target in response to the control signals produced by the processor; and

a launch aircraft for launching the bomb that comprises:

a radar for generating the illumination signal, which signal is transmitted at the launched bomb and at the target; and

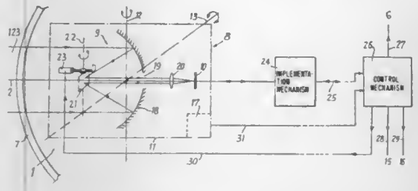
receiver means for processing return signals from the target derived from the illumination signal transmitted by the radar and from the frequency shifted illumination signal retransmitted by the transponder bomb to compute a guidance correction signal, and wherein the guidance correction signal is transmitted to the bomb and is processed thereby to correct the bomb's descent trajectory to the target.

5,826,820

HOMING DEVICE SYSTEM FOR MISSILE

Pascal Dubois, Chatenay Malabry, and Jérôme Maffert, Versailles, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed May 15, 1987, Ser. No. 67,660
Int. Cl.[6] **F41G** *7/00*; **F42B** *10/00*; **G01J** *5/02*; **G02B** *26/08*
U.S. Cl. 244—3.16 **6 Claims**



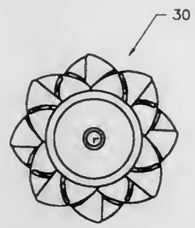
1. A system for guiding a missile to a target, the misssile moving without rotation about an axis thereof, the system comprising optical means for producing optical images of a landscape in which the missile moves, conversion means for converting the optical images into electrical signals, the conversion means including at least one linear array of photosensitive elements arranged orthogonally to the axis of the missile, scanning means including first and second scanner means for scanning the at least one linear array of photosensitive elements in a scanning direction orthogonal to the at least one linear array, the optical means and the conversion means being gyroscopically stabilized with respect to other portions of the missile, and target detecting means responsive to the electric signals from the conversion means for detecting the target and for controlling a field of scanning and a pace of scanning executed by the scanning means, the target detection means being arranged for enabling scanning by the first scanner means for oscillating at least the optical means about a first axis extending parallel to the at least one array before target detection so as to effect scanning over a large scan field and at a small pace of scanning, and after target detection, the target detection means enabling scanning by the second scanner means for oscillating at least a part of the optical means about a second axis extending parallel to the at least one array so as to effect scanning over a smaller scanning field and at a greater scanning pace than before target detection, and thereby enabling guidance of the missile to the target.

5,826,821

DRAG CONTROL MODULE FOR RANGE CORRECTION OF A SPIN STABIL

Fred J. Brandon, Aberdeen, and Michael S. L. Hollis, Abingdon, both of Md., assignors to The United States of America as represented by the Secretary of The Army, Washington, D.C.

Filed Aug. 4, 1997, Ser. No. 912,970
Int. Cl.[6] **F42B** *10/50*
U.S. Cl. 244—3.27 **4 Claims**



1. A device to control the range of trajectory of a spin stabilized projectile comprising:

a drag producing module located in the forward portion of said projectile;

said module comprising a plurality of arcuate surfaces extendable outward from said module in an iris shape so as to slow said projectile during flight;

wherein the outward extendable motion of said arcuate surfaces is controlled by the translation of a splined shaft within said module.

5,826,822

SYSTEM AND METHOD FOR PROVIDING CYCLIC AND COLLECTIVE PITCH CONTROL IN A ROTARY WING AIRCRAFT

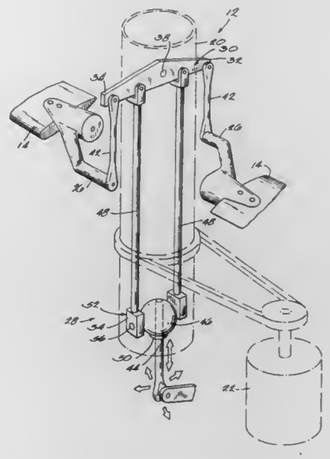
Rehm N. Rehm, 11653 N. Pinehurst Cir., Mequon, Wis. 53092

Filed Apr. 19, 1996, Ser. No. 634,970
Int. Cl.[6] **B64C** *27/605*
U.S. Cl. 244—17.25 **13 Claims**

1. A cyclic control for a rotary wing aircraft having rotor blades and pitch link rods coupled to the rotor blades, the cyclic control being operative to vertically displace the pitch link rods of the rotary wing aircraft, said cyclic control comprising:

an angularly displaceable control shaft;

a control hub comprising a substantially spherical member having an outer peripheral portion mounted for rotation around the control shaft, the control shaft extending substantially diametrically through said spherical member;



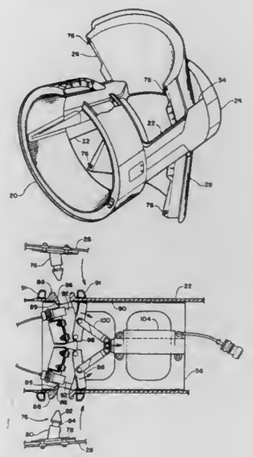
means for angularly displacing the control shaft; and, means for coupling the outer peripheral portion of the control hub to the pitch link rods.

5,826,823

ACTUATOR AND SAFETY LOCK SYSTEM FOR PIVOTING DOOR THRUST REVERSER FOR AIRCRAFT JET ENGINE

Dennis E. Lymons, El Cajon, and Michael R. Aten, San Diego, both of Calif., assignors to Rohr, Inc., Chula Vista, Calif.

Filed Feb. 7, 1996, Ser. No. 597,761
Int. Cl.[6] **B64D** *33/04*
U.S. Cl. 244—110 B **21 Claims**



1. An actuator and safety lock system for a pivoting door thrust reverser for an aircraft jet engine having at least two pivoting thrust reverser doors and comprising:

an annular fixed structure secured to the aft end of an aircraft jet engine and cooperating with at least two thrust reverser doors, when the doors are secured in a stowed position, to provide an exit nozzle for the jet engine;

the annular fixed structure including two spaced opposed longitudinally extending side beams, each of which side beam has an interior cavity, with the opposed arcuate thrust reverser doors being pivotally secured at their aft ends to said side beams;

a hydraulic actuator positioned within the cavity of each side beam and having a tubular main body that is provided with a central longitudinally extending guide rod upon which a carriage means is reciprocally positioned for movement between a door stowed position and a door deployed position;

over center link means hingedly secured to each carriage and to an aft portion of each thrust reverser door;

at least one lock member carried at a corner of the forward edge of each thrust reverser door, and

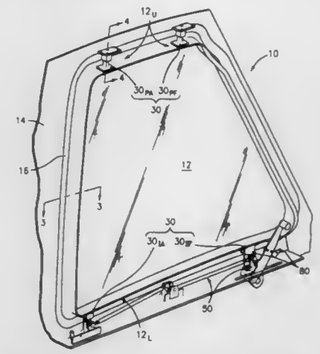
actuateable lock means positioned on a side beam of the fixed structure and cooperating with said at least one lock member to releasably lock a thrust reverser door in its stowed position.

5,826,824

EMERGENCY EGRESS SYSTEM FOR AIRCRAFT

Randall J. Martin, Middletown, and Thomas J. Toner, Milford, both of Conn., assignors to Sikorsky Aircraft Corporation, Stratford, Conn.

Filed Nov. 8, 1996, Ser. No. 745,351
Int. Cl.[6] **B64C** *1/14*
U.S. Cl. 244—129.3 **13 Claims**



1. An emergency egress system (**1**) for facilitating emergency egress of passengers/crewmembers from an aircraft (**4**), comprising:

an egress panel (**12**) defining a peripheral edge (12_E);

a panel frame (**14**) disposed about said egress panel (**12**) and defining a peripheral edge (14_E);

a weather strip (**16**) defining back-to-back channels (**18**), said channels (**18**) engaging said peripheral edges (12_E, 14_E) of said egress panel (**12**) and said panel frame (**14**) with said peripheral edges (12_E, 14_E) of said egress panel (**12**) and said panel frame (**14**) each being received within a respective one of said back-to-back channels (**18**), said weather strip (**16**), furthermore, providing in-plane support of said egress panel (**12**) relative to said panel frame (**14**) in a normal operating mode;

a plurality of retention devices (**30**) disposed about the periphery of said egress panel (**12**) for laterally retaining said egress panel (**12**) with respect to said panel frame (**14**) in said normal operating mode;

cam means (**80**) operative to sequentially disengage, firstly, at least one of said retention devices (**30**) and actuate, secondly, said cam means (**80**) such that said at least one of said retention devices is released before camming action begins, in an emergency operating mode;

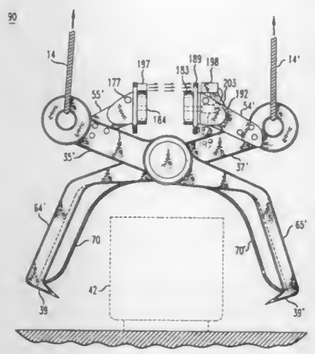
whereby, following actuation, a passenger/crewmember may detach said egress panel (**12**) from said panel frame (**14**).

5,826,825

AUTOMATICALLY ACTUATED CARGO AND PERSONNEL SNATCHING APPARATUS WITH DISTANCE SENSOS, MAGNETS AND PIVOT PINS FOR ASSISTANCE

Edwin Zenith Gabriel, 91 Mt. Tabor Way, Ocean Grove, N.J. 07756

Continuation-in-part of Ser. No. 289,744, Apr. 12, 1994, abandoned. This application Sep. 13, 1996, Ser. No. 712,591
Int. Cl.[6] B64D 9/00
U.S. Cl. 244—137.1 18 Claims



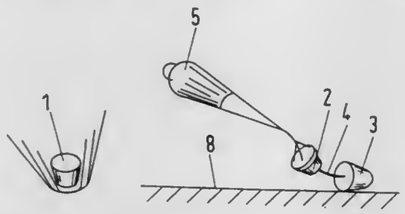
1. A lightweight load-lifting apparatus for suspension from a helicopter, in the hover mode, for accommodating a load, such as a person, an inanimate cargo having a surface, and the like, consisting of two elongated halves each with an unbendable knee, each elongated half being held together by a main pivot pin, each elongated half including an upper portion and a lower portion, said knee existing in said lower portion, each upper portion being configured for use with at least one hoist cable; the lower portion of each elongated half having an inwardly projecting extension at its bottom, each inwardly projecting extension having an end, and each elongated half having an inside wall surface; at least one cushion being attached along each of said inside wall surface; each said upper portion having a bar inwardly extending from an inside surface, each bar having a hammerhead, with a face, extending toward the other, the hammerheads when abutting, receiving the major structural compressive stresses imposed by the horizontal components of said hoist cables, when supporting said cargo; a remotely-controlled means for selectively controlling the lower portions of said halves between a closed position and a fully spread apart position; securing means for helping to keep said load in place on each of said extension, thus helping to provide positive secure retention, for the load being either retrieved or rescued; each said upper portion having a weight on top, and each said upper portion having considerably less width than said lower portion, each said weight assisting in said lower portion's separation at said apparatus' touchdown; the improvement being that each hammerhead includes a face which swivels about a pivot pin automatically by the force of gravity, such that no matter what the separation between the upper portions, the hammerhead face is always perpendicular to the horizontal, in order that the two faces of the hammerheads have a maximum attraction or repulsion to each other, said repulsion needed to separate the lower portions as much as possible when about to scoop up a load.

5,826,826

LANDING PROCESS FOR PAYLOADS FROM AEROSPACE MISSIONS

Jürgen Euskirchen, Waidhofen; Jürgen Starke, Ottobrunn; Peter Nikolaus Keerl, Oberpframmern; Silvio Yasar Ovadya, Taufkirchen, and Roland Behr, Neuried, all of Germany, assignors to Daimler-Benz Aerospace AG, Ottobrunn, Germany

Filed Feb. 20, 1997, Ser. No. 804,973
Claims priority, application Germany, Mar. 16, 1996, 196 10 370.3
Int. Cl.[6] B64D 1/12
U.S. Cl. 244—137.3 13 Claims



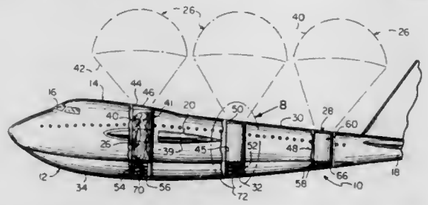
1. A landing process for payloads from aerospace mission, the process comprising the steps of:
providing a payload including physically delicate and physically stressable elements;
deploying a steerable gliding body at a sufficient altitude within the atmosphere, said payload being carried by said steerable gliding body, said payload and said gliding body comprising a landing unit;
filling the gliding body during said step of deploying at least partly with a gas or gas mixture of a density lower than that of the surrounding atmosphere to establish an aerostatic lift of said filled gliding body at a value that is lower than a weight of said landing unit;
dividing said payload in the atmosphere into a body containing the delicate elements and a body containing the stressable elements;
suspending the body with the stressable elements on at least one pulling element at a spaced location under said body with the delicate elements; and
returning the payload, carried by said steerable gliding body accurately to the surface of the earth including bringing said body with the stressable elements into contact with the ground and maintaining said body with the delicate elements aerostatically suspended for at least a certain time after said body with the stressable elements has come into contact with the ground.

5,826,827

AIR-CHUTE SAFETY SYSTEM

Richard Coyaso, and Levaina Coyaso, both of P.O. Box 10459, Hilo, Hi. 96721

Filed May 5, 1997, Ser. No. 851,571
Int. Cl.[6] B64C 25/56; B64D 17/22;45/04
U.S. Cl. 244—139 11 Claims



1. An air-chute safety system for an aircraft having a fuselage with a cockpit and a tail end, and a pair of wings with engines, said system comprising:

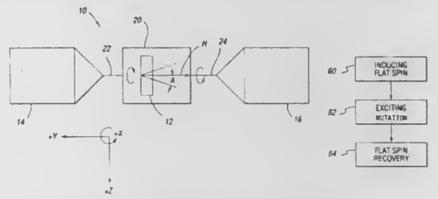
a) a plurality of drag parachutes stored in and deployed from the tail end of the fuselage, in conjunction with an aerodynamic braking apparatus in the aircraft, which will shut down the engines during an emergency when in flight, so that the aircraft will slow down;
b) a plurality of top parachutes;
c) means for storing each of said top parachutes in vertical spaced apart relationships below a top surface of the fuselage between the cockpit and tail end thereof;
d) means for deploying each of said top parachutes from above a bottom surface of the fuselage and below each of said storing means, through the top surface of the fuselage, after said drag parachutes are deployed, so that the aircraft will slowly and safely float down to the earth;
e) a plurality of wing parachutes stored in and deployed from the wings, so as to stabilize the aircraft when it slowly and safely floats down to the earth, wherein
each said drag parachute, top parachutes and wing parachute includes:
i) a canopy fabricated out of a strong, lightweight, fireproof material; and
ii) a plurality of shroud lines extending from said canopy;
each of said storing means includes:
i) the fuselage having an opening in the top surface with a compartment extending to the bottom surface thereof;
ii) a hatch removably affixed to the top surface of the fuselage over said opening;
iii) a cylindrical canister having an open top end and an open bottom end, whereby said cylindrical canister is retained in said compartment directly under said hatch in the fuselage;
iv) a parachute foundation holder disposed into said cylindrical canister, whereby said canopy of said top parachute is packed into said cylindrical canister with said shroud lines connected to said parachute foundation holder;
v) a base member mounted to the interior of the bottom surface of the fuselage within said compartment; and
vi) a plurality of elastic cords extending between said base member and said parachute foundation holder; and
said parachute foundation holder includes:
i) a top crossbar;
ii) a middle vertical rod affixed at a first end to said top crossbar; and
iii) a bottom crossbar affixed to a second end of said middle vertical rod opposite from said top crossbar, so as to form a generally I-shaped configuration.

5,826,828

SUN/EARTH ACQUISITION WITHOUT THRUSTERS

Richard A. Fowell, Culver City, and John F. Yocum, Jr., Rancho Palos Verdes, both of Calif., assignors to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Feb. 5, 1996, Ser. No. 597,083
Int. Cl.[6] B64G 1/24
U.S. Cl. 244—164 11 Claims



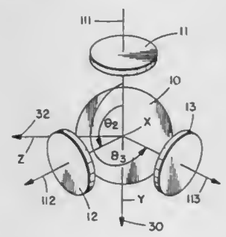
1. A method for satellite acquisition comprising:
nulling the momentum of the satellite, wherein the satellite has a pitch axis,
spinning a momentum wheel in the satellite, wherein the momentum wheel has a spin axis,
absorbing residual momentum,
fixing at least one solar panel on the sun,
slewing about a vector substantially perpendicular to a sun line aimed at the sun,
slewing around said sun line,
slewing around a line aimed at the Earth until the pitch axis is equatorial normal, and
terminating a pitch rate,
wherein at least one of the slewing steps is performed in a state of near-zero momentum using slews transverse to the spin axis of the momentum wheel when the satellite has a near-zero momentum dual spin configuration, and wherein the momentum wheel is gimbaled off to produce a body transverse rate, then coned at a body spin rate to keep the body transverse rate fixed in inertial space.

5,826,829

SPACECRAFT CONTROL SYSTEM WITH A TRIHEDRAL MOMENTUM BIAS WHEEL CONFIGURATION

Thomas Joseph Holmes, Portola Valley, Calif., assignor to Space Systems/Loral Inc., Palo Alto, Calif.

Filed Jul. 15, 1996, Ser. No. 679,575
Int. Cl.[6] B64G 1/28
U.S. Cl. 244—165 21 Claims



1. An active attitude control system for a spacecraft having first, second, and third mutually perpendicular axes comprising:
a plurality of reaction wheels mounted on the spacecraft and rotatable on spin axes in a fixed configuration for together maintaining full three-axis control of the spacecraft to a predetermined attitude; and
a momentum wheel rotatable about said first axis for maintaining gyroscopic stiffness of the spacecraft in space about said first axis; and
means for providing, in the event of a failure of said momentum wheel, said reaction wheels with a combined angular momentum sufficient to maintain the gyroscopic stiffness lost by the failure of said momentum wheel while maintaining full three-axis control of the spacecraft to a predetermined attitude.

5,826,830

DUAL-HALF SYSTEM, FULL TORQUE REACTION CONTROL THRUSTER CONFIGURATION FOR THREE-AXIS STABILIZED SPACECRAFT

David K. Abernethy, Los Angeles, Calif., assignor to Hughes Electronics Corporation, El Segundo, Calif.

Filed Dec. 22, 1995, Ser. No. 577,594
Int. Cl.[6] B64G 1/26
U.S. Cl. 244—169 19 Claims

1. A three axis body stabilized spacecraft comprising:
a spacecraft body having a first axis of symmetry, X, a second axis of symmetry, Y, and a third axis of symmetry, Z;
a first thruster aligned along a first line parallel to said Z-axis;
a second thruster aligned along a first line parallel to said X-axis;
a third thruster aligned along a second line parallel to said Z-axis;

a fourth thruster aligned along a second line parallel to said X-axis,

wherein said first, second, third, and fourth aligned thrusters provide thrust and positive and negative torque about each of said X, Y and Z axes, and

wherein said first, second, third and fourth thrusters are located only at an aft end of said spacecraft body; and

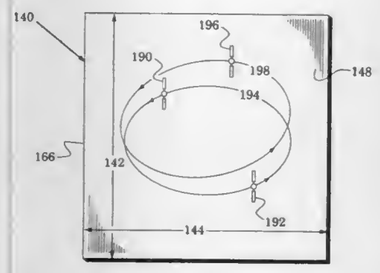
a control system in electrical contact with said first, second, third and fourth thrusters, wherein said control system controls the activation and deactivation of said first, second, third and fourth thrusters so that the attitude and orbital velocity of said spacecraft can be controlled by the torque and thrust of only said first, second, third and fourth thrusters wherein said first line parallel to said Z-axis and said first line parallel to said X-axis intersect one another at a first point of intersection.

5,826,831

SATELLITE CO-LOCATION METHODS

Bernard M. Anzel, El Segundo, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Aug. 22, 1996, Ser. No. 701,513
Int. Cl.[6] B64G *1/26*
U.S. Cl. 244—169 **10 Claims**



1. A method of co-locating a plurality of satellites in a geosynchronous orbital box which has normal, radial and tangential dimensions wherein each of said satellites has a north-south axis, a center of mass and an anti-nadir face, said method comprising the steps of:

dividing said orbital box along at least one radially-oriented plane to form a plurality of orbital sub-boxes; and

station keeping at least one of said satellites within each of said orbital sub-boxes by performing the following steps for each of said satellites:

a) positioning a northwest thruster, a northeast thruster, a southwest thruster and a southeast thruster in the regions respectively of a northwest, a northeast a southwest and a southeast corner of said anti-nadir face with each thruster directed at said center of mass;

b) canting said northwest thruster and said northeast thruster away from said anti-nadir face with respect to said north-south axis;

c) canting said southwest thruster and said southeast thruster away from said anti-nadir face with respect to said north-south axis;

d) slewing said northwest thruster and said southwest thruster in a west direction about said north-south axis;

e) slewing said northeast thruster and said southeast thruster in an east direction about said north-south axis;

f) firing said northeast thruster and said northwest thruster in the region of an orbit ascending node;

g) firing said southwest thruster and said southeast thruster in the region of an orbit descending node; and

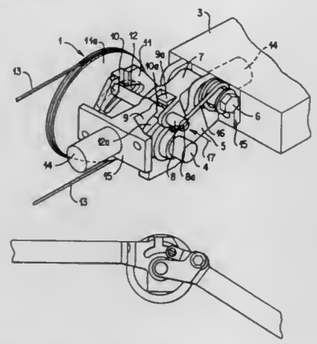
h) selecting a firing duration for each of said firing steps to be sufficient to maintain that satellite within its respective sub-box wherein said firing duration includes a required tangential velocity change ΔV_{DT} to control drift errors, a required normal velocity change ΔV_{IN} to control inclination errors, a required tangential velocity change ΔV_{ET} to control eccentricity errors along a first axis connecting said orbit ascending mode and said orbit descending node and a required radial velocity change ΔV_{ER} to control eccentricity errors along a second axis which is orthogonal to said first axis.

5,826,832

DEVICE FOR UNFOLDING TWO PANELS FOR SOLAR GENERATORS

Walter Stich, Miesbach, and Axel Stöckle, Immenstaad, both of Germany, assignors to Daimler-Benz Aerospace AG, Germany

Filed Mar. 17, 1997, Ser. No. 819,722
Claims priority, application Germany, Mar. 15, 1996, 196 10 297.9
Int. Cl.[6] B64G *1/44*
U.S. Cl. 244—173 **6 Claims**



1. Apparatus for unfolding satellite solar panels which are connected with one another by an articulated axle which in turn is connected with actuating devices for unfolding the panels by way of a tension device gearing provided with cable pulleys, wherein said apparatus includes an uncoupling mechanism, operative after unfolding of one panel **3** by swivelling it about the articulated axle **4**, for uncoupling the articulated axle **4** from the tension device gearing, whereby the unfoldable panel **3** and other panels connected by way of the tension device gearing can be swivelled relative to each other.

5,826,833

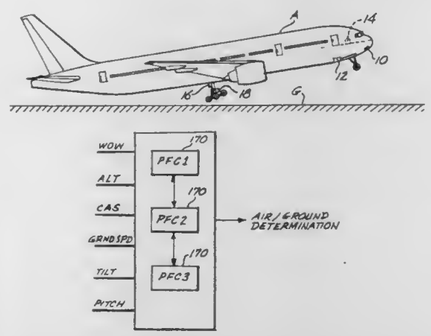
SYSTEM FOR PROVIDING AN AIR/GROUND SIGNAL TO AIRCRAFT FLIGHT CONTROL SYSTEMS

Monte R. Evans, Federal Way; Kioumars Najmabadi, Bellevue; Edward E. Coleman, Lake Forest Park, and Leo L. Engstrom, Jr., Lynnwood, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed May 15, 1995, Ser. No. 441,282
Int. Cl.[6] B64C *13/16*
U.S. Cl. 244—183 **20 Claims**

1. A method of supplying a signal to a flight control system of an aircraft to indicate whether the aircraft is in the air or on the ground which method comprises:

receiving several different signals each of which provides a conclusion of whether the aircraft is in the air or on the ground, the several different conclusion signals including at least three different signals of the following group: WOW, TILT-UNTILT, airspeed, ground speed, Mach number, altitude and pitch;



evaluating the conclusion signals to determine which conclusion signals are in agreement as to whether the aircraft is in the air or on the ground;

automatically supplying an in-air output if, for any one of a plurality of different predetermined combinations of the conclusions, each conclusion is that the aircraft is in the air; and

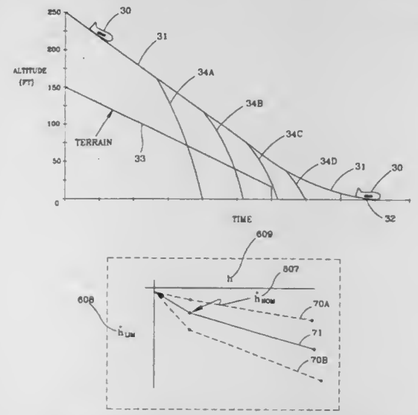
automatically supplying an on-ground output if, for any one of a plurality of different predetermined combinations of the conclusions, each conclusion is that the aircraft is on the ground.

5,826,834

SELF ADAPTIVE LIMITER FOR AUTOMATIC CONTROL OF APPROACH AND LANDING

William F. Potter, and Byron F. Birkedahl, both of Glendale, Ariz., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Oct. 19, 1994, Ser. No. 325,836
Int. Cl.[6] G05D *1/06*
U.S. Cl. 244—195 **21 Claims**



1. A fail operational flight control system for controlling the flight path of an aircraft within 18 miles of a destination runway, said control system in communication with aircraft systems providing vertical speed data, horizontal speed data, altitude data, and pitch data representative of said aircraft, said control system comprising:

a) a self adaptive pitch-limit computation apparatus, said pitch-limit computation apparatus having,

1) angle computing means for computing an estimated flight path angle,

2) averaging means for computing a nominal flight path angle from said estimated flight path angle,

3) vertical speed means for computing nominal vertical speed from said nominal flight path angle and said horizontal speed data, and,

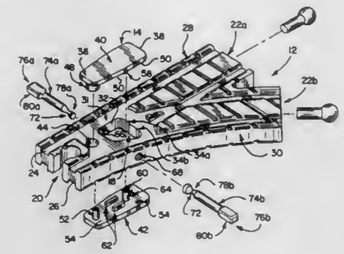
4) vertical speed limit means for computing a vertical speed limit from said nominal vertical speed.

5,826,835

TOY VEHICLE SWITCH TRACK

Roy V. Wilson, Arcade, N.Y.; Donald E. Tobt, Wheaton, and Jeffrey H. Katz, Chicago, both of Ill., assignors to Learning Curve International, L.L.C., Chicago, Ill.

Filed Nov. 24, 1997, Ser. No. 977,461
Int. Cl.[6] A63H *19/32*
U.S. Cl. 246—415 A **20 Claims**



1. A toy vehicle switch track, comprising:

a junction element having an incoming track joined at an intersection to a plurality of outgoing tracks;

a pivotable switching mechanism positioned at the intersection; and,

an activator bar having a first end and a second end, the activator bar passing through the junction element from a first junction element edge to a second junction element edge and engaging a portion of the pivotable switching mechanism wherein the activator bar is used to selectively position the pivotable switching mechanism between the plurality of outgoing tracks, the first end and the second end comprising a first handle and a second handle, respectively, wherein when in a first position, the first handle engages the first junction element edge, and when in a second position, the second handle engages the second junction element edge.

5,826,836

SELF-ALIGNED RETAINING CLIP FOR AUTOMOTIVE COMPONENTS

Kevin Gallichan, London, and Reginald Cook, Essex, both of United Kingdom, assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Feb. 19, 1997, Ser. No. 801,233
Claims priority, application United Kingdom, Feb. 20, 1996, 9603500
Int. Cl.[6] G12B *9/00*
U.S. Cl. 248—27.3 **13 Claims**

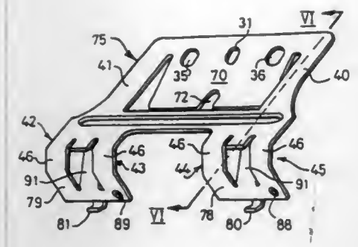
1. A component for being retained and aligned within an aperture in a motor vehicle dashboard, comprising:

a front plate having a rear face for contacting an outer surface of said dashboard when said component is retained therein, said rear face providing a reference surface;

a side surface received through said aperture during mounting of said component to said dashboard; and

a spring clip mounted to said side surface, said spring clip comprising:

a base having a mounting section for affixing said clip to said side surface of said component;



a ramp section with a shoulder for a sprung engagement of said component against an inner surface of the dashboard;

an alignment surface having a fixed relationship with said shoulder; and

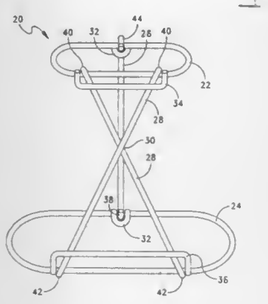
attachment means for joining said mounting section to said side surface of said component and simultaneously pretensioning said ramp section to enhance the sprung engagement and pulling said alignment surface forward against said reference surface of said front plate to align said shoulder with respect to said front plate.

5,826,837

SANDBAG FILLING AND SUPPORT APPARATUS AND METHOD

Christopher P. Moineau, and James D. Scerra, both of Marlboro, Mass., assignors to Automatic Specialties, Inc., Marlboro, Mass.

Filed Dec. 9, 1996, Ser. No. 762,397
Int. Cl.[6] A63B *55/04*
U.S. Cl. 248—97 **15 Claims**



1. A bag holder apparatus to facilitate the filling of a bag having an open end with material, which bag holder apparatus moves between a collapsible, generally flat non-use position and an upright, assembled use position for supporting and filling purposes and which bag holder comprises:

a) a peripheral bottom wire element to form a bottom base stand for the apparatus;

b) a peripheral top wire element spaced apart from and generally directly above the bottom wire element and having about the same dimensions of the open end of the bag to be filled and smaller in dimensions than the bottom wire element;

c) a spaced apart top cross wire support element having spaced apart top ends and spaced apart bottom ends, the top ends and bottom ends hingedly secured respectively to said top wire element and said bottom wire element;

d) a single wire support element spaced apart generally opposite the cross wire support element and having a top end and a bottom end, each end hingedly secured respectively to said top and bottom peripheral wire elements, and at least one of which said single wire top or bottom ends are removably snap fastened; and

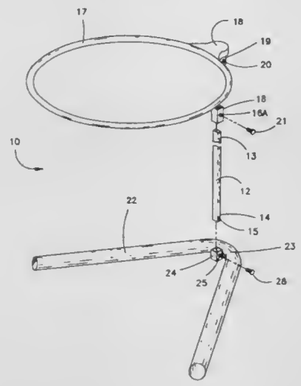
e) retaining means to retain the crossed wire support element and to support the apparatus in the upright use position.

5,826,838

TRASH BAG STAND

Errol H. Forbes, 105-03 223 St., Queens Village, N.Y. 11429

Filed Sep. 29, 1997, Ser. No. 939,239
Int. Cl.[6] A63B *55/04*
U.S. Cl. 248—97 **3 Claims**



1. A bag support which holds a bag in an upright position and maintains the bag in an open position comprising:

an upstanding support rod having a top end and a bottom end, the bottom end having an internal horizontal bore extending completely through the rod,

a rod cap on the top of the support rod, the cap being cube shaped with an open top, the cap having a threaded bore through one side,

a circular ring to hold the bag which is folded radially outward over the ring, the ring having an extension on the same plane as the circular ring,

a rectangular appendage protruding from the extension perpendicular to the circular ring, the appendage is sized to fit into the rod cap, the appendage having an internal bore lining up with the threaded bore of the cap;

a first thumb screw to enter the threaded bore of the cap and the internal bore of the appendage to support the ring in an upright horizontal position;

a u-shaped base having an elbow area;

a rod seat fixed to the elbow area of the base, the rod seat being cube shaped with an open top to accommodate the rod, and the seat having a threaded bore on one side which lines up with the internal horizontal bore of the rod;

a second thumb screw to enter the threaded bore of the rod seat and the internal horizontal bore of the rod to support the rod and the circular ring,

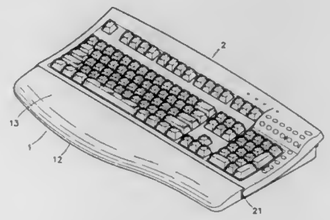
means to secure the bag over the circular ring in an open and upright position.

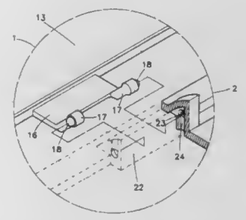
5,826,839

KEYBOARD WITH WRIST SUPPORT

Frank Chen, 2F, No. 2, Alley 10, Lane 131, Sec. 1, Chung Jen Rd., Peitou, Taipei, Taiwan

Filed Feb. 12, 1997, Ser. No. 797,923
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **9 Claims**





1. A keyboard with wrist support, comprising:

the wrist support having a plurality of connecting plates at a rear end surface thereof, said connecting plates each being provided with a pair of connecting arms, each of said connecting arms being provided with a pin shaft;

the keyboard, a bottom of a front end surface of said keyboard being provided with a plurality of connecting slots at locations corresponding to said connecting plates of said wrist support, a side wall of said connecting slots defining pin holes at locations corresponding to said pin shaft provided on each of said connecting arms, each pin shaft being pivotally received in one of said pin holes of said connecting slots of said keyboard; and

a sliding slot disposed below each pin hole of said keyboard for guiding said pin shaft into said pin hole.

5,826,840

COMPUTER KEYBOARD SUPPORT

Je-Ho Yun, 481-7, Beom-eo 3-dung, Suseon-gu Taegu, Rep. of Korea

Filed Sep. 9, 1996, Ser. No. 711,245
Claims priority, application Rep. of Korea, Sep. 7, 1995, 1995-24496; Jan. 25, 1996, 1996-1150
Int. Cl.[6] B68G *5/00*
U.S. Cl. 248—118 **20 Claims**

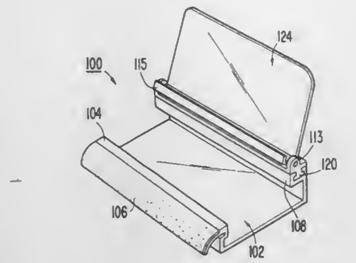
1. A computer keyboard support comprising:

a main body;

a hand rest installed at a front of the main body;

a catch installed at a back of the main body and having a guide formed thereon;

a carriage cooperating with the guide of the catch; and



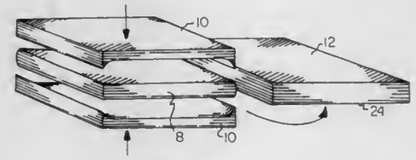
a paper holder board cooperating with the catch, so that the paper holder board can turn freely and move to the left or right in a horizontal direction.

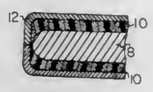
5,826,841

THERAPEUTIC ELBOW SUPPORT SYSTEM

Joseph S. Lavore, 6492 Sugar Tree Dr., Spring Hill, Fla. 34607

Filed Mar. 18, 1997, Ser. No. 819,287
Int. Cl.[6] A61F *7/00*
U.S. Cl. 248—118 **17 Claims**





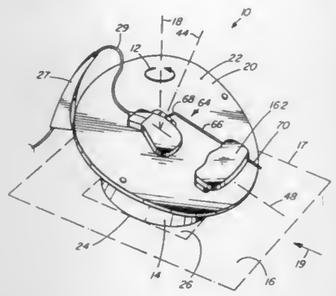
1. A repetitive strain injury prevention and therapeutic system capable of providing both elevated and cool temperatures to body parts which must be kept in unvarying positions for prolonged periods of time, said system comprising a four-piece assembly consisting of a gel-pack, an upper foam layers an outer envelope and a lower foam layer, each of said foam layers having perimeter edges downwardly depending therefrom, said perimeter edges being sufficiently sized so that when said perimeter edges from one of said foam layers are placed adjacent to said perimeter edges from the other of said foam layers said perimeter edges form a cavity slightly larger than said gel-pack, said gel-pack being positioned within said cavity and completely encompassed thereby during use with said gel-pack substantially filling said cavity, said outer envelope also having sufficient dimension to contain said gel-pack and said foam layers with said foam layers substantially filling said outer envelope, said outer envelope being made from non-abrading material and having an opening therethrough sized for convenient removal of said foam layers and said gel-pack so that said gel-pack can be independently heated and cooled for prevention and therapeutic use, said outer envelope also comprising fastening means adjacent to said opening for closing said opening sufficiently for secure retention of said foam layers and said gel-pack within said outer envelope during use, said gel-pack comprising a gel material capable of being both heated and chilled, said gel material being able to maintain hot and cold temperatures for extended periods of time, and said gel material being able to become chilled without becoming hardened so that said system can both prevent and treat cumulative trauma involving the pain, muscle spasm, and inflammation of joints associated with repetitive strain injury.

5,826,842

ERGONOMIC COMPUTER MOUSE WORKSTATION

Michael Herbert Paulse, and Randy Wayne Hoffman, both of Vancouver, Canada, assignors to OR Computer Keyboards Ltd., North Vancouver, Canada

Filed Jan. 13, 1995, Ser. No. 372,134
Int. Cl.[6] B43L *15/00*
U.S. Cl. 248—118.1 22 Claims



1. An apparatus comprising:

a) a base operable to rest on a surface defining a reference plane having a normal surface axis extending perpendicular thereto, said base having a support surface disposed at an angle to said reference plane;

b) a platform secured to said base such that said support surface supports said platform, said platform having a work surface operable to support a computer mouse, said work surface lying in a working plane and being disposed at an angle to said reference plane;

c) a pivot pin extending perpendicularly to said support surface for rotatably securing said platform to said base such that said base is rotatable relative to the platform and such that a normal axis extending perpendicular to the work surface revolves around said normal surface axis as said base is rotated such that said work surface acquires varying degrees of longitudinal and transverse inclination and is positionable at an angular orientation relative to said reference plane, to provide a slope to said work surface; and

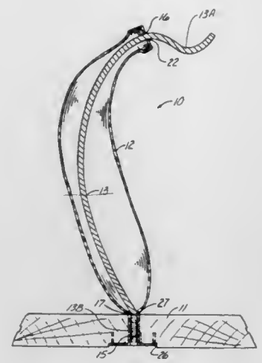
d) a rotation limiter for limiting rotational movement of said base within a movement range, said rotation limiter including at least one opening in said support surface and at least one cooperating projection extending from said platform and received in said opening, said opening including first and second spaced apart stop walls for interfering with said projection to confine movement of said projection between said first and second stop walls.

5,826,843

BANANA HANGER

Michael O. Sturm, 10849 NW. 103rd Ct., Granger, Iowa 50109

Filed Mar. 24, 1997, Ser. No. 822,799
Int. Cl.[6] F16M *11/00*
U.S. Cl. 248—176.1 6 Claims



6. A banana hanger comprising:

a base member having a hole therethrough, said base having a top and a bottom;

a hollow imitation banana said banana having a top and a bottom end having an opening in the top and an opening in the bottom;

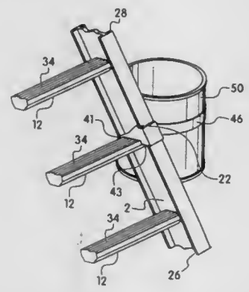
a rod having a curved portion extending through said banana, said rod having a banana and top and bottom ends extending through said openings in the top and bottom of the banana, hanging hook on the top end thereof outside of the banana, said bottom end being disposed in said hole in the base.

5,826,844

BUCKET BRACKETS

James E. Purdy, 18 Temple Ave., Hudson, Mass. 01749

Filed May 13, 1996, Ser. No. 645,417
Int. Cl.[6] E06C *7/14*
U.S. Cl. 248—210 7 Claims



1. A device for holding a vessel to a ladder, the device comprising:

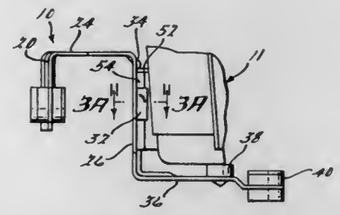
a U-shaped bracket having a center segment interconnecting an inner segment and an outer segment, the outer segment approximately parallel to the inner segment, a flexible strap for engagement with the outside of various sized vessels, the outer segment having an attachment means for engagement with the flexible strap, a notch located near the intersection of the outer segment and center segment, the notch for retaining the bracket on a ladder rail, the inner segment having a locking projection located diagonally across the center segment from the notch near the intersection of the center segment and inner segment for retaining the bracket on the ladder.

5,826,845

SUPPORT STRUCTURE FOR A RESERVOIR IN A MOTOR VEHICLE

Denice Lounsbury, Novi; Casimir Barnosky, Waterford; Ulderico Padovini, Utica; Bernita Grigsby, Detroit, and Ronald Huszarik, Clawson, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 19, 1996, Ser. No. 751,803
Int. Cl.[6] A47B *96/06*
U.S. Cl. 248—224.61 9 Claims



1. In a motor vehicle having a vehicle body and a reservoir and an improved support structure for supporting the reservoir in the motor vehicle, comprising:

a mounting face for mounting to the vehicle body of the motor vehicle;

a positioning face extending outwardly from said mounting face;

a receiving face extending outwardly from said positioning face and including an opening having opposed sides with each forming an outwardly extending flange for receiving an engaging member positioned on an exterior surface of the reservoir; and

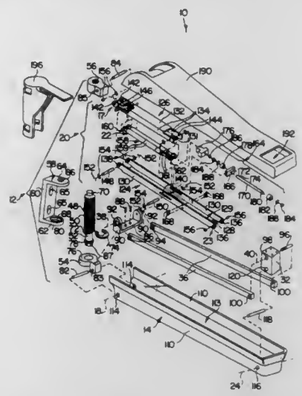
said mounting face and said positioning face and said receiving face being unitary and integral as one-piece.

5,826,846

MONITOR ARM WITH CONSTANT COUNTERBALANCE

Michael Buccieri, Greenfield, Ind.; Teddy L. Johnson, Palm Bay, Fla.; John W. Ruehl, Shelbyville, and John D. Vogel, Columbus, both of Ind., assignors to Hill-Rom, Inc., Batesville, Ind.

Filed Jun. 28, 1996, Ser. No. 671,609
Int. Cl.[6] E04G *3/02*
U.S. Cl. 248—280.11 31 Claims



1. An arm mechanism for supporting an object relative to a support structure, the arm mechanism comprising:

a mounting assembly adapted to be coupled to the support structure,

a first arm having a first end pivotably coupled to the mounting assembly for pivoting movement about a generally horizontal first pivot axis between a lowered position and a raised position,

support member coupled to the first arm for pivoting movement about a generally horizontal second pivot axis that is spaced from the first pivot axis, the support member being adapted to be coupled to the object,

a second arm coupled to the mounting assembly for pivoting movement about a generally horizontal fifth pivot axis that is vertically spaced from the first pivot axis, the second arm being coupled to the support member for pivoting movement about a generally horizontal fourth pivot axis that is vertically spaced from the second pivot axis, and

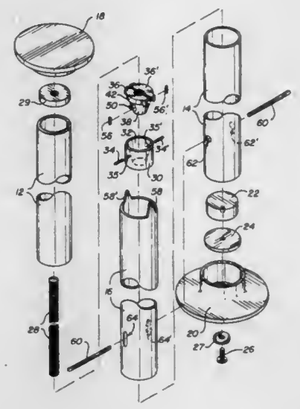
a counterbalancer configured to counterbalance the weight of the object and the weight of the arm mechanism so that the first arm automatically remains stationary upon placement of the first arm in a desired position between the raised position and the lowered position, the counterbalancer being pivotably coupled to the mounting assembly for pivoting movement about a third pivot axis that is vertically spaced from the first and fifth pivot axes and that is continuously vertically aligned with and above the first and fifth pivot axes, the counterbalancer being pivotably coupled to the first arm for pivoting movement about the second pivot axis, the counterbalancer including a force-providing element inclined with respect to the first arm and inclined with respect to the second arm.

5,826,847

TELESCOPING POLE WITH QUICK LENGTH ADJUSTMENT

Stanley H. Warner, 1700 W. Onondaga St., Syracuse, N.Y. 13204, and Terry P. Warner, 84 Green St., Port Byron, N.Y. 13140

Filed Jun. 30, 1997, Ser. No. 885,289
Int. Cl.[6] A47F *5/00*
U.S. Cl. 248—354.1 19 Claims



1. A pole assembly of selectively adjustable axial length comprising:

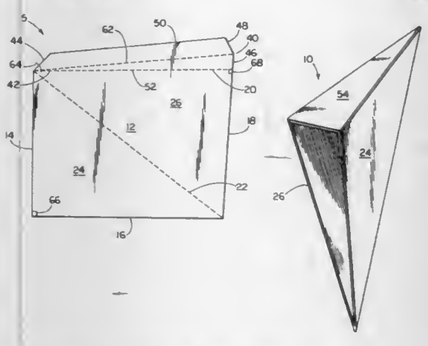
a) first and second, elongated, hollow rods arranged for coaxial, telescoping, relative, axial movement;

b) an elongated, externally threaded member fixedly attached at one end to said first rod and extending axially thereof into said second rod;

c) an internally threaded nut positioned within said second rod and having threads matable with said threaded member said nut having a central axis and a plurality of sections selectively movable radially with respect to said central axis; and

d) means for selectively placing said internally threaded nut in and out of threaded engagement with said threaded member, whereby the overall length of said pole assembly may be adjusted by said relative, axial movement of said first and second rods linearly and rotationally when said internally threaded nut is out of and in threaded engagement, respectively, with said threaded member.

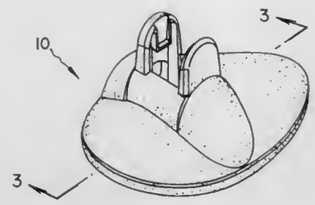
5,826,848
COVER FOR BRACKET
Deborah Ann Cekosh, 18020 Westside Hwy. SW., Vashon Island, Wash. 98070
Filed Jun. 30, 1997, Ser. No. 885,488
Int. Cl.[6] A47B *95/00*
U.S. Cl. 248—345.1 **22 Claims**



1. A cover for a bracket, the cover comprising:
a generally triangular first panel of flexible sheet material having a first edge, a second edge adjacent to the first edge, a substantially right angle defined between the first edge and the second edge and a third edge defined along a hypotenuse of the first panel;
a generally triangular second panel of flexible sheet material having a first edge, a second edge adjacent to the first edge, a substantially right angle defined between the first edge and the second edge and a third edge defined along a hypotenuse of the second panel, the third edge of the second panel hingedly connecting the third edge of the first panel along a first fold line;
a generally triangular third panel of flexible sheet material having a first edge, the first edge of the third panel hingedly connecting the first edge of the second panel along a second fold line, a second edge of the third panel adjacent to the first edge thereof, and a third edge of the third panel adjacent to both the first edge and the second edge thereof, the first edge and the second edge of the third panel forming an acute therebetween, the third edge of the third panel positioned adjacent and parallel to the first edge of the first panel; and means for attaching the third edge of the panel to the first of the first panel.

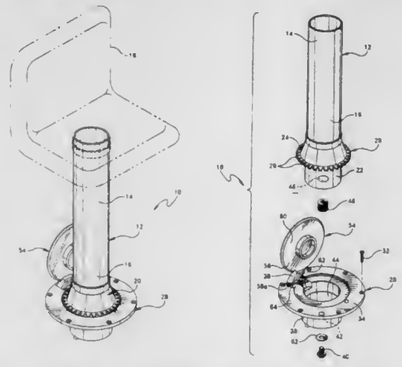
5,826,849
BASE FOR A TETHERED DIGITAL CAMERA
Glenn W. Johnson, Webster, and Nelson D. Hozman, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 27, 1997, Ser. No. 884,397
Int. Cl.[6] A47B *91/00*
U.S. Cl. 248—346.06 **11 Claims**

1. A base assembly for supporting a camera on a supporting surface relative to vertical and horizontal orientations thereof, said base assembly comprising:



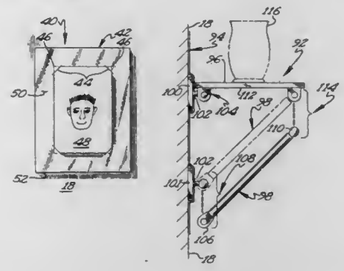
a weighted base having a frictional surface for contacting the supporting surface and constraining the camera relative to the horizontal orientation;
a pivoting member having means for connecting to the camera, said pivoting member having a pivot axis about which the camera can swivel relative to the base assembly;
a frictional pad assembly positioned between the weighted base and the pivoting member, said frictional pad assembly including a frictional pad formed around at least part of a spring element; and
means for urging the pivoting member against the frictional pad assembly so as to provide sufficient friction between the frictional pad and the pivoting member to constrain rotational motion of the camera in the vertical orientation.

5,826,850
ROTATABLE AND TRANSFERABLE STANCHION ASSEMBLY HAVING A RELEASABLE LOCK
Howard G. Goldsmith, South Kingstown, R.I., assignor to Chem-Tainer Industries, Inc., North Babylon, N.Y.
Filed Feb. 12, 1997, Ser. No. 798,801
Int. Cl.[6] A47B *91/00*
U.S. Cl. 248—415 **14 Claims**



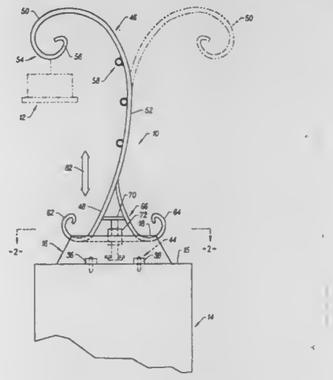
1. A rotatable and transferable stanchion assembly comprising:
an elongate body having an upper end portion adapted to receive and secure thereto an accessory, and a lower end portion;
a cap mounted on the lower end portion of the body and having a lower portion with an outer external surface;
a location plate adapted to be fastened to a flat surface, said plate having a socket formed therein shaped for receiving the lower portion of the cap;
cap securing means for securing the cap to the location plate in such a position that the lower portion of the cap is disposed within the socket of the location plate, said body and cap being adapted to rotate relative to said location plate; and
locking means for rotatably locking the elongate body and cap in place with respect to the location plate at a desired angle of rotation.

5,826,851
PLASTIC MOUNTING MEMBRANE USING ELECTROSTATIC ATTRACTION
Dominic S. Arbisi, 13001 Berkshire Dr., Minnetonka, Minn. 55343
Filed May 31, 1996, Ser. No. 655,848
Int. Cl.[6] A47F *1/14*
U.S. Cl. 248—466 **17 Claims**



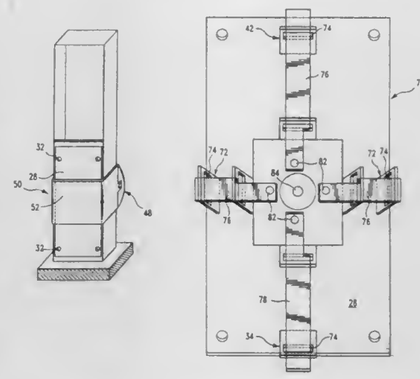
1. A removable shelf and mounting unit for electrostatic mounting to a non-porous surface, said shelf and mounting unit comprising:
a sheet of electrostatically charged material having at least one opening therein; and
a shelf having a mounting plate, said mounting plate adapted to engage said opening and be held therein by said sheet.

5,826,852
BIRD FEEDER SUPPORT
Richard H. McKeown, 13 Benedita Ct., Moraga, Calif. 94556
Filed Jun. 17, 1996, Ser. No. 662,999
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—519 **10 Claims**



1. A surface mounted support for a bird feeder comprising:
a. a base member, said base member including fastening means for fixing said base member to said surface, said base member further comprising a open channel;
b. an arm, said arm including a first end portion, a second end portion, and an intermediate portion connecting said first end portion to said second end portion; said arm first end portion including at least one flange extending in a certain direction;
c. mounting means for selectively holding said flange in said open channel in one direction and another opposite direction to support said arm, said intermediate portion and said second end portion extending outwardly from said base member, said mounting means permitting lifting of said flange from said open channel and reentry of said flange into said open channel to selectively hold said flange in said open channel in one direction and another opposite direction; and
d. holding means for connecting said bird feeder to said arm when said flange lies in said open channel in one direction or in said another opposite direction.

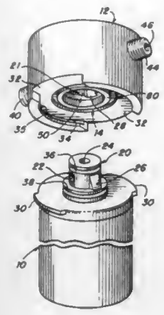
5,826,853
POST PROTECTOR
Salvatore Anello, Fishkill, and Albert F. Diaz, Lynbrook, both of N.Y., assignors to Sandt Technology, Ltd., Marlboro, N.Y.
Filed Aug. 26, 1996, Ser. No. 703,060
Int. Cl.[6] F16M *13/00*
U.S. Cl. 248—552 **20 Claims**



1. In an apparatus for protecting against vandalism the powering and communication wiring in the bottom of a public payphone pedestal having an upper opening for receiving a telephone and a bottom opening for accessing the wiring for maintenance purposes and surrounded by a rim bearing an edge and an outside surface, a tough plate for closing off said bottom opening and engaging via its inside surface the outside surface of the rim, a bracket mounted on the bottom side of the inside surface of said plate for engaging the rim of said opening when the plate inside surface engages the outside surface of the rim to prevent movement of the plate towards that bottom side, another bracket mounted on the upper side of the inside surface of the plate for fitting against the edge of the rim when the plate inside surface engages the outside surface of the rim to prevent movement of the plate towards that upper side, and a mechanism for holding the inside surface of the plate against the outside surface of the rim to prevent lateral sidewise and outward movement of the plate.

5,826,854
FLUID ROUTING SYSTEM
Bruce C. Janvrin, Coralville, and Lyle J. Berkenbosch, Marion, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa
Filed Jun. 7, 1996, Ser. No. 660,132
Int. Cl.[6] F16L *37/28*
U.S. Cl. 251—149.9 **35 Claims**

1. A system for filtering fluid within a fluid line, said filtration system comprising:
a housing having an internal chamber, an inlet port for receiving said fluid, an outlet port for dispensing said fluid, an inlet channel connecting said inlet port to said internal chamber, and an outlet channel connecting said internal chamber to said outlet port;



a block disposed within said internal chamber of said housing and having a first and second position, said block having an internal cavity, an exterior surface, an inlet passageway connecting said internal cavity with said exterior surface, and an outlet passageway connecting said internal cavity with said exterior surface;

a removable filter with at least a portion positioned within said internal cavity of said block, having an inlet aperture and an outlet aperture, said inlet passageway of said block being aligned with both said inlet channel of said housing and said inlet aperture of said filter, and said outlet passageway of said block being aligned with said outlet channel of said housing for permitting flow of said fluid through said block and into said filter when said block is in said first position, and said inlet passageway of said block being misaligned with both said inlet channel of said housing and said inlet aperture of said filter, and said outlet passageway of said block being misaligned with both said outlet channel of said housing and said outlet aperture of said filter for prohibiting flow of said fluid into said block when said block is in said second position;

said inlet passageway and said outlet passageway of said block being oriented to retain said fluid therein when said filter is removed.

5,826,855

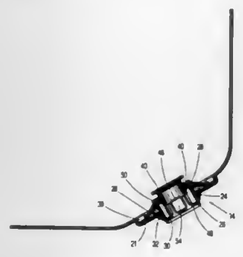
PLUG FOR SWIMMING POOL

Larry C. Dick, Kent, Ohio, assignor to The Little Tikes Company, Hudson, Ohio

Filed May 6, 1996, Ser. No. 643,582

Int. Cl.[6] F16K *51/00;* **E04H** *4/00*

U.S. Cl. 251—144 **20 Claims**



1. A plug that inserts into and is retained within a reservoir panel aperture, comprising:

a cylindrical plug base member having sidewalls extending from a first member end to a second member end and an axial passageway extending through the member from the first end to the second end, the member having a diameter dimensioned for close receipt within the aperture, and

the member having a first flared skirt of elastomeric flexible material composition that extends outward from the first end toward the second end and diametrically collapses from an expanded configuration to allow insertion of the first end of the plug base member through the panel aperture, and the first skirt opens thereafter into the expanded configuration and has a terminal edge that abuts against an opposite surface of the panel to prevent retraction of the plug base member from the aperture; and

a second flared skirt of elastomeric flexible material composition that extends outwardly from the second end toward the first end and comprises a terminal edge that abuts against a proximate surface of the panel to prevent passage of the plug base member through the aperture; and

a cylindrical plunger member closely receivable within an inward end of the passageway and reciprocally moving therein between a relatively extended position partially removed from the base member passageway and a relatively retracted position, the plunger member having at least one portal that admits liquid from the reservoir into the plug base member passageway in the extended position and that closes to prevent reservoir liquid from entering the plug base member passageway in the retracted position.

5,826,856

TAP FITTING WITH BELLOWS-TYPE SEAL

Heinz-Juergen Ruckert, Grossniedesheim; Alois Illy, Limburgerhof, and Hans-Georg Stock, Ludwigshafen, all of Germany, assignors to KSB Aktiengesellschaft, Frankenthal, Germany

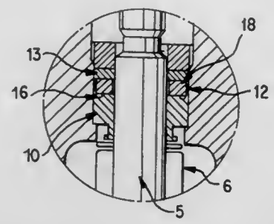
PCT No. PCT/EP95/02860, § 371 Date Feb. 18, 1997, § 102(e) Date Feb. 18, 1997, PCT Pub. No. WO96/06295, PCT Pub. Date Feb. 29, 1996

PCT Filed Jul. 20, 1995, Ser. No. 793,072

Claims priority, application Germany, Aug. 18, 1994, 44 29 300.3

Int. Cl.[6] F16K *31/00*

U.S. Cl. 251—335.3 **9 Claims**



1. A tap fitting comprising a housing with a neck, a spindle arranged in the housing, a closing element arranged on the spindle, a spindle lead-through opening in the housing, a bellows arranged to seal the spindle lead-through opening, one end of said bellows adjacent the housing being connected in a sealed manner to a sleeve surrounding the spindle, said sleeve extending into the housing and being arranged therein in sealing contact with the housing, and a clamping element for holding the sleeve, wherein said sleeve has an annular space on an end face remote from the bellows, said space being arranged such that it is separated from the housing neck by a thin wall, and said clamping element being pressed into said annular space.

5,826,857

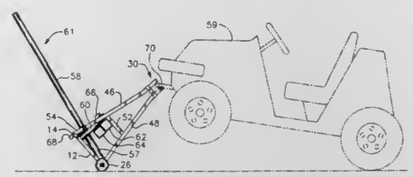
LIGHT VEHICLE SERVICE STAND

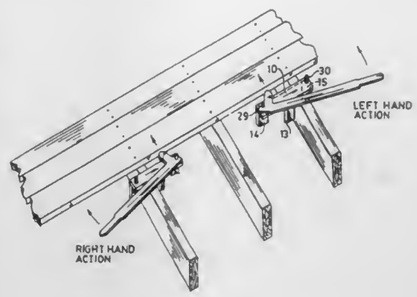
Billy M. Brack, 4312 Berkley Dr., Tampa, Fla. 33610, and Roscoe L. Love, 1612 Sunnyhills Dr., Brandon, Fla. 33510

Filed Mar. 3, 1997, Ser. No. 810,298

Int. Cl.[6] B66F *3/00*

U.S. Cl. 254—8 R **8 Claims**





1. A commercial mower or other light vehicle service stand, comprising:

a cradle means adapted to cradle a lifting bar fixedly secured to a preselected end of a light vehicle;

a base member disposed in vertically spaced relation to said cradle means;

a first pair of rigid leg members disposed in interconnecting relation between a first end of said cradle means and a first end of said base means;

a second pair of rigid leg members disposed in interconnecting relation between a second end of said cradle means and a second end of said base means;

said first and second pair of rigid leg members being laterally disposed with respect to one another;

said base member having a forward edge, a rearward edge, and a pair of laterally spaced apart sides;

an axle means mounted to said rearward edge of said base member;

a wheel means including a wheel rotatably mounted to each end of said axle means;

an elongate handle formed independently of said service stand;

a handle-engaging means mounted to said service stand; and

said handle-engaging means including a transversely disposed rigid plate secured to said first and second pairs of rigid leg members in interconnecting relation therewith, an aperture formed in said rigid plate, and a longitudinally disposed handle-receiving tube having a forward end disposed in registration with said aperture and a rearward end secured to said base plate;

whereby a preselected end of a light vehicle is lifted by first engaging said lifting bar with said cradle means with said wheel means in rotatable engagement with a support surface and with said base means being disposed substantially vertically with respect to said support surface, and next by bringing said base into substantially parallel relation to said support surface by manually pulling down on a free end of said elongate handle and advancing said wheel means under said light vehicle while said elongate handle is engaged to said handle-engaging means.

5,826,858

CARPENTRY TOOL

Robert A. Gordon, 109 Hilhurst La., Rochester, N.Y. 14617

Filed Dec. 6, 1996, Ser. No. 761,501

Int. Cl.[6] B66F *3/00*

U.S. Cl. 254—17 **5 Claims**

1. A carpentry tool which comprises an elongated body member having upper and lower flat faces, a pivot means at or near one end of the upper face of the body member, three clamping lugs extending from the lower face, two of said lugs being at opposite ends of the body member and on the same longitudinal edge thereof, the third lug being one the opposite edge and positioned approximately midway between the ends of the body member said body member having pivot means at each end thereof on its upper face, a cam lever having a handle end and a cam end pivot means positioned at its cam end in engagement with one of the pivot means of the body member, extending from the cam lever at or near the cam end a cam means for applying force against a board resting on a joist when the cam lever is rotated about the pivot means.

5,826,859

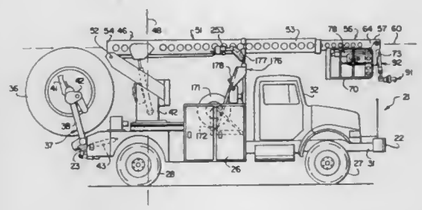
METHOD FOR PLACING AERIAL CABLE

Leon Kononov, Denver, Colo., and Robert A. Young, Clayton, Calif., assignors to Mobile Tool International, Inc., Westminster, Colo.

Division of Ser. No. 216,179, Mar. 22, 1994, Pat. No. 5,522,584, Continuation-in-part of Ser. No. 122,721, Sep. 15, 1993, Pat. No. 5,452,879. This application Jun. 3, 1996, Ser. No. 659,080

Int. Cl.[6] E21C *29/16*

U.S. Cl. 254—134.3 R **20 Claims**

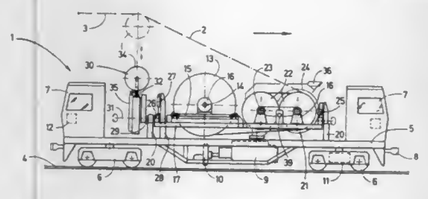


1. In a method for placing aerial cable with a wheeled platform a boom structure provided with an outer end having opposite first and second sides, a worker's platform adapted to carry a worker and a fairlead assembly adapted to receive the cable carried by the outer end, a boom support structure carrying the boom structure and rotatably mounted on the wheeled platform for rotation about a vertical axis, the boom structure and the boom support structure being constructed to permit the worker's platform to be moved toward and away from the wheeled platform, raised and lowered with respect to the wheeled platform and rotated with respect to the wheeled platform, the steps of placing cable so that the cable exiting the fairlead assembly is disposed at a first angle relative to the cable entering the fairlead assembly, moving the worker's platform to the first side of the outer end so that a worker in the worker's platform is outside the first angle, placing cable so that the cable exiting the fairlead assembly is disposed at a second angle relative to the cable entering the fairlead assembly whereby a worker in the worker's platform on the first side of the outer end is disposed in the second angle, moving the worker's platform underneath the fairlead assembly to the second side of the outer end so that a worker in the worker's platform is outside the second angle.

5,826,860
MACHINE FOR LAYING AN OVERHEAD LINE OF A TRACK

Josef Theurer, Vienna, and Leopold Rudolf Gruber, Scheibbs, both of Austria, assignors to Franz Plasser Bahnbaumaschinen-Iodustriegesellschaft m.b.H., Vienna, Austria

Filed Oct. 17, 1996, Ser. No. 733,283
Claims priority, application Austria, Dec. 1, 1995, 1968/95
Int. Cl.[6] H02G *1/02*
U.S. Cl. 254—134.3 R **8 Claims**

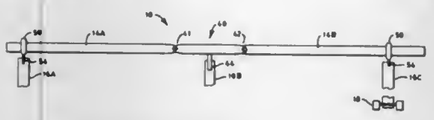


1. A machine for laying an elongated flexible element of an overhead line extending above a track, the elongated flexible element being a catenary cable or a trolley wire, which comprises
(a) machine frame extending in a longitudinal direction and supported on undercarriages for mobility along the track,
(b) a storage drum mounted on the machine frame and carrying a reel of the elongated flexible element to be paid out from the storage drum,
(c) a guide device for the paid-out elongated flexible element comprising
(1) a guide roller arranged to be engaged by the paid-out elongated flexible element and
(2) a drive for vertically adjusting the guide device,
(3) the guide device being pivotal about a horizontal axis extending in the longitudinal direction, and
(d) a drive for pivoting the guide device about the horizontal axis.

5,826,861
GUARD RAIL SYSTEM FOR LOADING FLAT BED TRUCKS

Donald S. Indge, Belmont, and William R. Straker, Acton, both of Mass., assignors to W.R. Grace & Co.-Conn., New York, N.Y.

Filed Jan. 21, 1997, Ser. No. 787,501
Int. Cl.[6] E04H *17/00*
U.S. Cl. 256—1 **8 Claims**

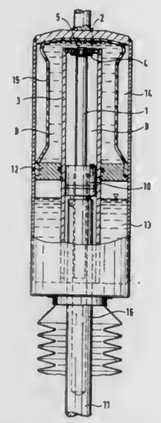


1. A guard rail system comprising:
a moveable frame structure comprising at least one guard rail member having a generally elongated body;
at least two hinged supportive frame members spaced apart from each other and connected to said guard rail member;
at least two axis hinge mounts spaced apart from each other for hingedly connecting said at least two hinged supportive frame members to a base or floor, whereby said moveable frame structure can be moved between retracted and extended positions;
means for positioning said at least one guard rail member between retracted and extended positions;
and a gimbal bearing member operative to permit at least partial rotation of said at least one guard rail member and one of said hinged supportive frame members with respect to each other, said gimbal bearing member further comprising a bearing sleeve member to permit slidable engagement of said guard rail member with respect to said hinged supportive frame member.

5,826,862
SELF-PUMPING HYDROPNEUMATIC SHOCK ABSORBING STRUT WITH INTERNAL LEVEL REGULATION

Hubert Beck, Eitorf-Keuenhof, Germany, assignor to Fichtel & Sachs AG, Eitorf, Germany

Filed Dec. 6, 1996, Ser. No. 760,882
Claims priority, application Germany, Dec. 7, 1995, 195 45 662.9
Int. Cl.[6] B60G *17/00*
U.S. Cl. 267—64.17 **12 Claims**



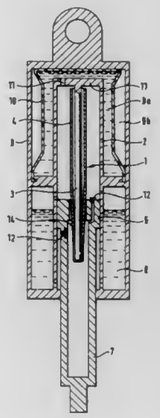
1. A shock absorbing strut for a motor vehicle comprising:
a first end and a second end;
a longitudinal axis extending from said first end to said second end;
a work cylinder defining a chamber therein, said work cylinder containing a damping fluid;
said first end of said strut comprising a structure to connect said strut to a first part of a motor vehicle;
said second end of said strut comprising a structure to connect said strut to a second part of a motor vehicle;
a hollow piston rod having a cavity disposed therein;
said cavity being substantially cylindrical and being disposed substantially along the longitudinal axis;
said hollow piston rod sealingly projecting into said work cylinder and being axially displaceable within said work cylinder;
a piston being affixed to said piston rod;
said piston being slidingly disposed within said work cylinder to sealingly divide said chamber into first and second chambers;
a gas cushion disposed about said work cylinder;
said gas cushion being disposed adjacent said first chamber;
said work cylinder having an end wall;
said end wall being disposed at said first end of said strut;
said end wall being substantially transverse to the longitudinal axis;
a pump rod;
said pump rod extending into said cavity of said hollow piston rod;
a structure to fasten said pump rod to said end wall of said work cylinder;
said fastening structure being configured and disposed to provide a recess to provide space for a fluid and thus provide play between said pump rod and said end wall of said work cylinder;

said fastening structure being configured and disposed to allow said pump rod to move at least one of axially, radially and angularly with respect to said first end of said work cylinder;
said fastening structure comprising a biasing structure to elastically bias said pump rod with respect to said end wall;
said biasing structure comprising at least one elastic washer;
said at least one elastic washer being disposed adjacent said end wall;
said fastening structure comprising a journal;
said end wall comprising a hole disposed therethrough;
said journal being disposed through said hole in said end wall;
said journal being disposed to fasten said pump rod to said end wall;
said end wall comprising a recess to receive said pump rod;
said recess being disposed substantially along the longitudinal axis;
said recess being disposed about a portion of said hole through said end wall;
said pump rod having an outer diameter, said outer diameter being substantially transverse to the longitudinal axis;
said recess having a conical shape;
said recess having a diameter;
said hole through said end wall having a diameter;
said diameter of said recess being greater than said diameter of said hole through said end wall; and
said diameter of said recess being greater than said outer diameter of said pump rod.

5,826,863
SELF-PUMPING HYDROPNEUMATIC SHOCK ABSORBING STRUT WITH INTERNAL LEVEL REGULATION

Hubert Beck, Eitorf-Keuenhof, Germany, assignor to Fichtel & Sachs AG, Eitorf, Germany

Filed Dec. 19, 1996, Ser. No. 769,663
Claims priority, application Germany, Dec. 20, 1995, 195 47 536.4
Int. Cl.[6] B60G *17/044*
U.S. Cl. 267—64.17 **20 Claims**

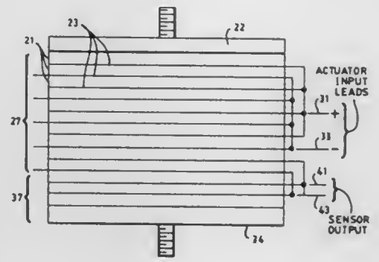


1. A self-pumping hydropneumatic shock absorbing strut with internal level regulation comprising:
a first end and a second end;
a cylinder defining a chamber therein, said cylinder containing a damping fluid;
said cylinder being disposed between said first end and said second end;
said first end comprising first means for connecting said shock absorbing strut to a first part of a motor vehicle;
said second end comprising second means for connecting said shock absorbing strut to a second part of a motor vehicle;
a piston rod sealingly projecting into said cylinder and being axially displaceable within said cylinder;
said piston rod comprising a hollow portion disposed therein;
a piston disposed on said piston rod;
said piston being slidingly disposed within said cylinder to sealingly divide said chamber into first and second chambers;
pump means for pumping said damping medium from said second chamber into said first chamber;
said pump means comprising:
a pump rod; and
a pump chamber;
said pump rod comprising first and second pump rod portions;
said second pump rod portion being coaxially disposed about said first pump rod portion;
said second pump rod portion having a section;
said section of said second pump rod portion having an internal diameter;
said first pump rod portion having an external diameter;
said internal diameter of said section being greater than said external diameter of said first pump rod portion to provide a radial clearance between said first and second pump rod portions along a substantial portion of said pump rod;
said first pump rod portion having a first end and a second end;
said first end of said first pump rod portion being fastened to said cylinder;
said second pump rod portion having a first end and a second end; and
said second end of said second pump rod portion being non-detachably fastened to said first pump rod portion a substantial distance from said first end of said first pump rod portion.

5,826,864
ACTIVE VIBRATION MOUNT

James E. Barger, Winchester, Mass., assignor to GTE Internetworking Incorporated, Cambridge, Mass.

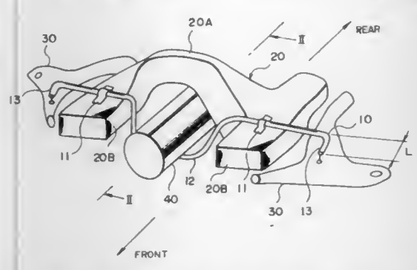
Filed Feb. 26, 1997, Ser. No. 806,779
Int. Cl.[6] F16M *1/00*
U.S. Cl. 267—136 **19 Claims**



1. An electro-active vibration mount comprising
a plurality of layers of an electro-strictive material;
a plurality of electrodes interleaved with said plurality of electro-strictive material layers;
wherein a first grouping of said plurality of layers and electrodes is adapted to reduce vibrating energy being transmitted through said mount over a preselectable band of frequencies while said mount supports a static load; and
wherein a second grouping comprising at least one of said plurality of layers and at least two of said plurality of electrodes is adapted to provide an output representative of a force being applied to said at least one layer.

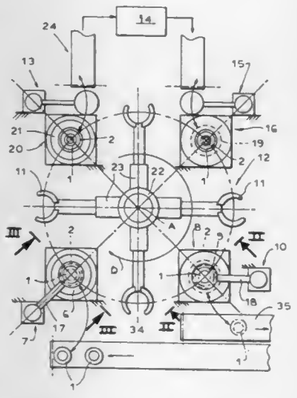
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5,826,865
FRONT WHEEL STABILIZER FOR FOUR WHEEL DRIVE VEHICLE
Junso Ichiba, Sagamihara, and Yoshiaki Yoshimoto, Atsugi, both of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa, Japan
Filed Jul. 16, 1997, Ser. No. 895,563
Claims priority, application Japan, Jul. 16, 1996, 8-186262
Int. Cl.[6] B60G *21/04*; **B62D** *9/02*
U.S. Cl. 267—188 **4 Claims**



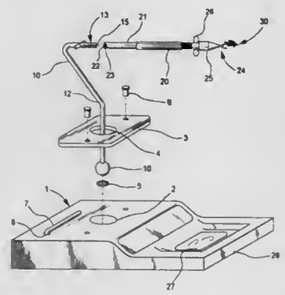
1. A stabilizer for connecting first and second suspension arms supporting first and second wheels of a vehicle, the suspension arms being supported by a cross-member and a pair of front and back members joined to both ends of the cross-member and a transfer for distributing engine drive torque being disposed underneath the cross-member, said stabilizer comprising:
a member having a middle portion for passing underneath the transfer.

5,826,866
SYSTEM FOR HOLDING A THIN-WALLED WORKPIECE DURING MACHINING
Manfred G. Becker, Novi; Peter C. Dinardi, Livonia; Kenneth J. Sprenger, Lake Orion, and Timothy S. Guitar, Clinton Township, all of Mich., assignors to Ernst Thielenhaus KG, Wuppertal, Germany
Filed Feb. 3, 1997, Ser. No. 794,735
Int. Cl.[6] B25B *1/00*
U.S. Cl. 269—7 **11 Claims**



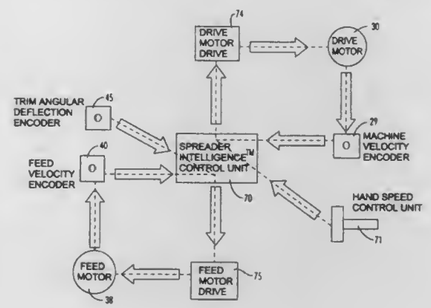
1. A workpiece-holding apparatus comprising:
a plurality of holders each containing a body of a metal having a melting point between 45° C. and 140° C. and a negative expansion coefficient;
means at a heating station for heating each of the holders to melt the respective bodies;
means at a cooling station for cooling the holders to solidify the respective bodies of metal;
input feed means for imbedding an end of an unmachined workpiece in the molten body of metal of a one of the holders in the cooling station prior to solidification of the molten body, whereby when the molten body solidifies it solidly captures the unmachined workpiece imbedded therein;
first transport means for conveying the holders one after the other from the cooling station into a machine where the respective imbedded workpieces are machined and thence from the machine to the heating station;
output feed means for lifting the machined workpieces one after the other out of the respective molten bodies in the heating station after melting of the respective bodies in the respective holders therein; and
second transport means for recirculating the holders with the respective molten metal bodies one at a time from the heating station to the cooling station.

5,826,867
MECHANICAL FLY TYING DEVICE
Stanley M. Roby, 866 Roosevelt St., Hazleton, Pa. 18201
Filed Jan. 29, 1997, Ser. No. 788,452
Int. Cl.[6] B25B *1/22*
U.S. Cl. 269—75 **3 Claims**



1. A mechanical vise for the holding of fish hooks and providing compound articulation thereof while tying imitation insect patterns by application of fly tying materials thereto for use in the sport of fly fishing comprising:
a. a base of weight sufficient to hold the vise in place;
b. a socket defined in the base;
c. tension means inserted into the socket;
d. a shaft with three sections, a bottom ball section sized proportionately smaller than the socket, a middle offset section and a top horizontal section, the ball section inserted into the socket;
e. means for retaining the ball section in the socket thereby engaging the tension means;
f. a pin mounted into the top horizontal section;
g. an adjustable and removable chuck which holds the fish hook;
h. means for slidingly mounting the chuck to the top horizontal section;
i. means for engaging the means the means for slidingly mounting the chuck of to the pin;
j. means mounted on the chuck for holding the material being applied to the fish hook;
k. means for holding a supply of fish hooks by magnetic action, said means attached to the base;
whereby a fish hook can be held in a fixed position to allow for material to be applied thereto to create an imitation insect pattern thereon.

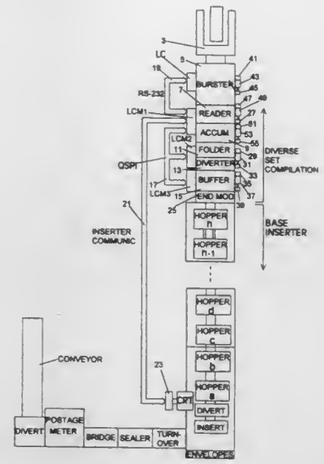
5,826,868
CONTROL SYSTEM FOR A CLOTH SPREADING MACHINE
Michael Dale Russell, Cookeville; David Alan Berezov, and Jiakun Wu, both of Nashville, all of Tenn., assignors to Saber Industries, Inc., Nashville, Tenn.
Filed Dec. 26, 1995, Ser. No. 578,036
Int. Cl.[6] B65H *29/46*
U.S. Cl. 270—30.12 **28 Claims**



1. A control system for a material spreading machine that includes a drive mechanism for driving the machine along the top of a spreading table and a feed mechanism for feeding material from a roll mounted on the machine while the machine moves along the table, the control system comprising:
a. spread parameter data input means to receive spread parameter data selected by a user of the machine, the spread parameter data including length of the spread and a number of plies of the material to be laid on the table during a planned spread;
b. machine trajectory processor means for storing a machine velocity trajectory plan, the machine velocity trajectory plan including a sequence of electrical signals representing predetermined machine velocities at multiple periodic timing intervals during the planned spread;
c. machine velocity sensor means for monitoring actual machine velocity at each of the periodic timing intervals while the machine is moving along the table during the planned spread, and for generating electrical machine velocity signals corresponding to the actual machine velocity;
d. machine velocity control means for controlling the machine velocity during the planned spread in accordance with the machine trajectory plan, the machine velocity control means operatively connected to the drive mechanism and to the machine trajectory processor means, and responsive to the machine velocity signals whereby the machine velocity control means can adjust the actual machine velocity to correct a monitored deviation from the pre-determined machine velocity.

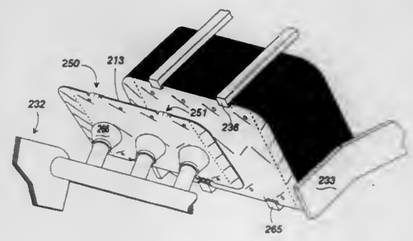
5,826,869
HIGH THROUGHPUT DOCUMENT-PROCESSING MACHINE HAVING DYNAMIC SPEED CONTROL
David Nyffenegger, Raleigh, N.C., and Glen Allen Nester, Pottstown, Pa., assignors to Bell & Howell Phillipsburg Company, Allentown, Pa.
Continuation of Ser. No. 544,911, Oct. 18, 1995, abandoned. This application Jan. 16, 1996, Ser. No. 586,271
Int. Cl.[6] B65H *39/00*
U.S. Cl. 270—52.02 **16 Claims**

1. A high-speed document-processing machine, comprising:
sheet-supplying means for supplying a seriatim stream of sheets;
accumulator means for accumulating the stream of sheets into sets;



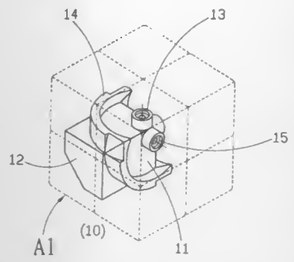
reader means for reading a mark on a document and decoding the mark to obtain information regarding the set to which the document belongs;
buffer means for storing accumulated sets; and,
means for gradually increasing and decreasing a speed at which the sheet-supplying means operates based upon the state of one or more variables affecting the speed at which downstream devices can process sheets.

5,826,870
DIVIDER SHEET FOR STACKED PRODUCTS AND METHOD OF SUPPLYING PLANAR ARTICLES
Gary Vulgamore, and Kevin T. May, both of Marietta, Ga., assignors to Riverwood International Corporation, Atlanta, Ga.
Continuation-in-part of Ser. No. 192,888, Feb. 4, 1994, Pat. No. 5,447,299. This application Jun. 2, 1995, Ser. No. 458,140
Int. Cl.[6] B65H *5/00*
U.S. Cl. 271—1 **21 Claims**



1. A sheet for being removably supported in a supply magazine having retaining means for engaging said sheet, said sheet being substantially planar and having a first side and a second side opposing said first side, a first edge defined adjacent said first and second sides, said sheet including a retaining means engaging area defined along said first edge, said retaining means engaging area including a tab defined by spaced slits cut into said sheet inwardly from said first edge, said sheet further having an indentation in said first side and a corresponding ridge in said second side.

5,826,871
TWO-LAYER INTELLECTUAL CUBE
Chen Sen Li, No. 25, Lane 169, Cheng-Ho Rd., Been-Shang Village, San-Min Area, Kaohsiung City, Taiwan
Filed Dec. 23, 1997, Ser. No. 997,372
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—153 S **12 Claims**



1. A two-layer intellectual cube comprised apparently of eight smaller movable blocks and having six sides facing to different orientations, each of said sides being divided vertically and horizontally into four smaller movable surfaces, by changeability of orientation by rotation of said smaller movable blocks, each of said sides having various possibilities of combination of said smaller movable surfaces, said cube is characterized in that:

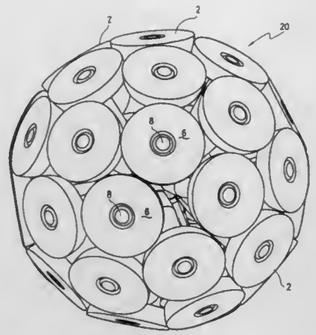
when in assembling, the interior portion of one of said eight smaller movable blocks is taken as a reference smaller block which has a triangular axle seat extending from an inner end thereof, said triangular axle seat is provided on the corner formed by three surfaces thereof with three mandrels which are perpendicular to one another and are located toward three different orientations, taking each of said mandrels as a center, an arciform raised rail is provided on the wider area of every one of said three surfaces of said triangular axle seat, said mandrels are pivotally provided each with a rotatable block, a receiving space is formed between every said rotatable block and the corresponding one of said raised rails to separate a plurality of outer and inner slidable blocks, so that said outer and inner slidable blocks can be displaced revolvingly about a corresponding one of said mandrels along a track of said corresponding raised rail, in which, each said outer slidable block is provided on an outer end thereof with a seat block, and when an outer housing block is provided on each of said eight smaller movable blocks, said two-layer intellectual square cube is completed.

5,826,872
SPHERICAL PUZZLE GAME AND METHOD
Albert J. Hall, 2985 SW. 136th Ave., Davie, Fla. 33330
Filed Oct. 2, 1997, Ser. No. 942,911
Int. Cl.[6] A63F *9/08*
U.S. Cl. 273—156 **7 Claims**

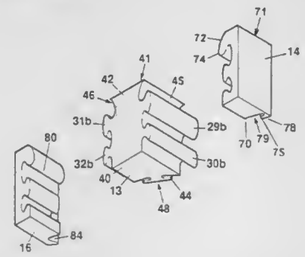
1. A puzzle comprising:

a plurality of individual puzzle pieces, each puzzle piece having a base member of a predetermined shape, said shape being a truncated cone having a beveled surface disposed on an outer circular perimeter, and an elongated spindle member disposed substantially perpendicular to a center of said base member, said spindle member having at least a portion being metal disposed at an end distal from said base member, and further including a beveled surface adjacent said metal portion;

a magnet for magnetically capturing each of said plurality of individual puzzle pieces, said metal portion of each of said spindle members being magnetically connectable to said magnet, each of said base members being distal to said magnet and adjacent each other for forming a preselected three-dimensional shape, wherein said preselected three-dimensional shape is a sphere.



5,826,873
THREE DIMENSIONAL PUZZLES
Giovanni Lavermicocca, New South Wales, Australia, assignor to Interlock Marketing Pty. Ltd., Balmoral, Australia
Filed Dec. 13, 1996, Ser. No. 750,766
Int. Cl.[6] A63F *9/12*
U.S. Cl. 273—157 R **12 Claims**



1. A three dimensional puzzle consisting of n components, where n is at least four, which must be coupled together in a single predetermined sequence, each m^{th} component, where m is from 3 to (n−1) inclusive, being for coupling to an assembly consisting of the first to (m−1) components inclusive, each of the first to $(m-1)^{th}$ components having been assembled in sequential order, said m^{th} component having:

a first engagement surface; and

a second engagement surface;

said first engagement surface being complementary to a complementary engagement surface of said assembly, said complementary engagement surface being formed by second engagement surfaces of at least two of the previously coupled together (m−1) components;

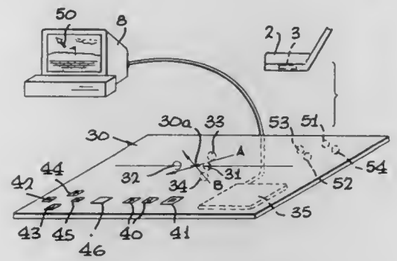
said second engagement surface of each component and a portion of the surface of the assembly defining an engagement surface complementary to a first engagement surface of an (m+1) component to be coupled;

wherein each of said components must be coupled to previously coupled components in a predetermined order;

wherein none of the first to $(m-1)^{th}$ components of the assembly can be uncoupled from each other until said m^{th} component is first uncoupled from said previously coupled (m−1) components; and

wherein said (m+1) component cannot be coupled to an assembly of m components until said m^{th} component is coupled to said previously coupled (m−1) components.

5,826,874
MAGNETIC GOLF CLUB SWING SENSOR AND GOLF SIMULATOR
Murray Teitell, Manhattan Beach; David G. Pelka, Westchester, both of Calif., and Mathiew Bais, Southlake, Tex., assignors to VR Sports, Inc., Manhattan Beach, Calif.
Continuation-in-part of Ser. No. 745,740, Nov. 12, 1996, Pat. No. 5,728,006. This application Jan. 31, 1997, Ser. No. 791,329
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—225 **15 Claims**



1. A golf game system for sensing the swing of a golf club, and providing information about the swing of said golf club to a personal computer running a golf game software package, comprising:

a flexible magnetic strip adhesively attached to an end surface of said golf club;

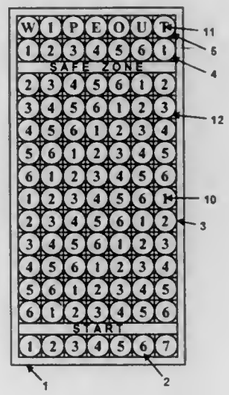
at least two magnetic sensing means for detecting information about motion of said golf club by sensing velocity and path of said magnetic strip;

electronic circuit means for converting the information from said pair of magnetic sensing means into signals that are input into said personal computer;

a golf mat incorporating said magnetic sensing means or said electronic circuit means, or both said magnetic sensing means and said electronic circuit means, within said mat;

a computer cable for transmitting information from said electronic circuit means to said personal computer.

5,826,875
WIPEOUT BOARD GAME
Edward L. Kardel, 19-B Pond Ave., Newport, R.I. 02840
Filed Jan. 24, 1997, Ser. No. 788,193
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—243 **2 Claims**



1. A game apparatus comprising:

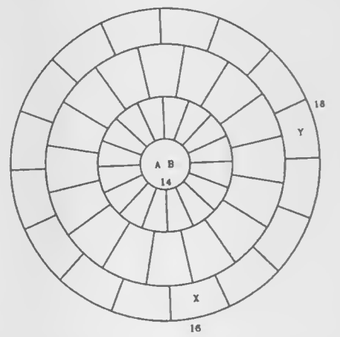
a plurality of game boards, one for each player, with each said game board having a starting line at a bottom and a finish line at a top thereof and a plurality of spaces extending from said starting line to said finish line forming a plurality of columns with each space in each column being numbered sequentially such that a first space of each column begins with a different sequential number and with each game board further having a safe zone designated below the finish line;

a plurality of playing pieces for each player equal to the number of columns on a players game board and a die to control the movement of the playing pieces wherein the playing pieces are to be moved vertically up the game board according to a roll of the die;

a plurality of poker chips; and

wherein a first player to move all of his playing pieces to the finish line is the winner and receives a reward and the poker chips are used to pay a penalty for any and all players having a playing piece on a numbered space equal to a number according to a roll of a die by an opposing player.

5,826,876
FIELD OR BOARD GAME AND METHOD OF PLAY
Marcus L. Wagner, 10214 Angora Dr., Alexandria, Va. 22314
Filed Apr. 7, 1997, Ser. No. 826,671
Int. Cl.[6] A63F *3/00;* **A63B** *67/00*
U.S. Cl. 273—244 **11 Claims**



9. In a board game played on a substantially flat playing surface having a playing area on which two teams of player pieces oppose each other, said playing area being divided into multiple concentric circles having multiple spaces indicated thereon, one of said teams being offensive and the other of said teams being defensive, said number of offensive players and defensive players on each side is two, wherein the method of playing comprises the steps of:

a. Dividing said offensive team in two, wherein one of said offensive players acts as a carrier and the other of said players acts as an escort;

b. Positioning said defensive players in the center circle of said playing area;

c. Positioning said offensive players on the outside circle of said playing area;

d. Moving said carrier at least one space in any direction;

e. Moving a first defensive player at least one space in any direction;

f. Moving said escort at least one space in any direction;

g. Moving the second defensive player at least one space in any direction;

h. Continuing the sequence of play in steps d through g until a predetermined triggering event occurs.

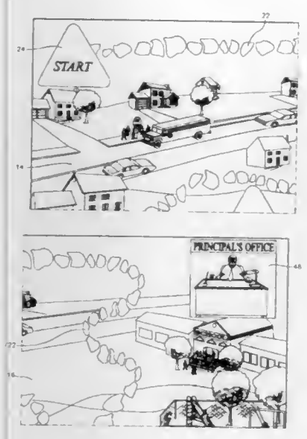
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5,826,877

METHOD OF PLAYING A SAFETY FIRST BOARD GAME

Lauren B. Glassman, 36 Old Phillips Hill Rd., New City, N.Y. 10956

Filed Jun. 23, 1997, Ser. No. 880,553
Int. Cl.[6] A63F *3/00;9/18*
U.S. Cl. 273—249 1 Claim



1. A method of playing a safety board game for preparing children for dealings with dangerous situations comprising, in combination the step of:

providing a game board divided into four sections, the four sections including a first section, a second section, a third section and a fourth section, the game board having a path of travel divided into a plurality of location extending between the sections, wherein each section constitutes a quadrant of the game board, the path of travel having a starting point on the first section and a finishing point on the fourth section and the location marked to resemble stepping stones, the first section being designated a bus stop and neighborhood section, the second section being designated a school section, the third section being designated a shopping mall section, the fourth section being designated a playground and fire safety section and a location marked "The Principal" located at an area remote from the path of travel;

providing a plurality of game pieces, each of the game pieces resembling a small child for movement around the path of travel;

providing a numbered spinning wheel for determining movement around the path of travel, wherein the spinning wheel includes a plurality of children seated in a circular configuration each of which having a number printed thereon;

providing six sets of question cards corresponding to the, four sections of the game board, a first set of questions relating to situations occurring at a bus stop and having a first color same as that of the first section, a second set of questions relating to situations occurring in a neighborhood and having the first color, a third set of questions relating to situations occurring at school and having a second color same as that of the second section, a fourth set of questions relating to situations related to fire safety and having a third color same as that of the fourth section, a fifth set of questions relating to situations on a playground and having the third color, a sixth set of questions relating to situations occurring at a shopping mall and having a fourth color same as that of the third section;

providing a set of parent cards having questions thereon relating to when a parent was a child, wherein the questions relate to the parent's life, past, present and future, whereby the child directs the questions to the parent;

starting the game by each of a plurality of players selecting a game piece;

each player taking a turn by spinning the numbered spinning wheel and advancing their game piece around the path of travel to a next location according to the number selected on the spinning wheel;

picking up one of the question cards pertaining to the section of the game board presently being occupied;

returning to a previous location until a next turn if a question is not answered correctly;

spinning the numbered wheel again and advancing to a next location at the next turn of each player when a question is answered correctly;

moving a player to the remote location marked "The Principal" upon answering a question incorrectly while in the second section and the third section and the player remaining in the location marked "The Principal" until the player's next turn, the player remaining in the location marked "The Principal" if the player continues to answer questions incorrectly on the player's subsequent turns, the player leaving the location marked "The Principal" and continuing advancement around the path of travel when the player answers a question correctly; and

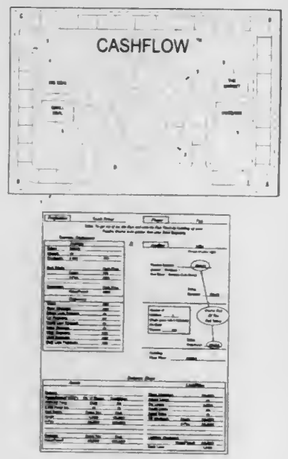
declaring as a winner a player who reaches the finishing point.

5,826,878

APPARATUS AND METHOD OF PLAYING A BOARD GAME FOR TEACHING FUNDAMENTAL ASPECTS OF PERSONAL FINANCE, INVESTING AND ACCOUNTING

Robert T. Kiyosaki, Phoenix, and Rolf H. Parta, Glendale, both of Ariz., assignors to Cashflow Technologies Incorporated, Reno, Nev.

Filed Nov. 14, 1996, Ser. No. 748,886
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—256 31 Claims



1. A game for teaching financial skills to players, said game comprising:

A) a set of individual financial statements for distribution, one each of said individual financial statements to each player, at the beginning of a game;

B) indicia carried by the individual financial statement associated with each player, the indicia of a financial statement assigning a specified initial periodic income and specified initial periodic expenses ascribed to the associated player, the financial statement reflecting periodic income, passive income, expenses, assets and liabilities of the player and being selectively revisable by the associated player to reflect the effects of game events, said periodic income corresponding to an income from a profession, said passive income corresponding to income from interest, dividends, real estate and businesses;

C) indicia of a first set of events comprises indicia of opportunities to participate in specified transactions which include receiving interest, dividends, real estate and businesses, said indicia of a first set of events applicable to players having passive income less than a predetermined percentage of the player's expenses, each of said first set of events potentially affecting at least one of the periodic income, passive income, expenses, assets and liabilities of the player;

D) indicia of a second set of events applicable to players having achieved passive income greater than a predetermined percentage of the player's expenses, each of said second set of events potentially affecting at least one of the periodic income, passive income, expenses, assets and liabilities of the player; and

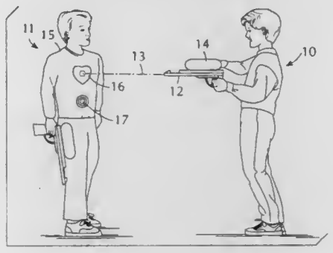
E) means for pseudo-randomly designating, in turn, a respective particular game event from the first set of events for each respective player who currently has passive income less than a predetermined percentage of the player's expenses, and a respective particular game event from the second set of events for each respective player who has previously achieved a passive income greater than a predetermined percentage of the player's expenses.

5,826,879

SHOOTER AND FABRIC TARGET WATER GUN GAME

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Feb. 23, 1998, Ser. No. 27,923
Int. Cl.[6] A63B *67/00;* F41J *5/00*
U.S. Cl. 273—349 7 Claims



1. A mock battle game for children comprising:

A. a shooter-player provided with a water gun which projects when triggered by the player a beam of water in a direction in which the gun is aimed; and

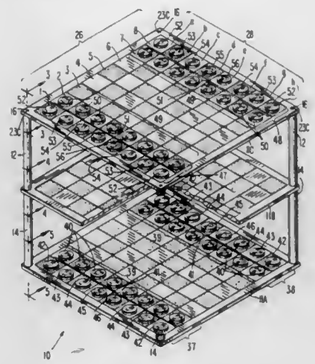
B. a target-player wearing a fabric garment which when any portion thereof is made wet by the beam impinging thereon, the wet portion then changes color to indicate a hit, said fabric garment being provided with a normally opaque outer layer having a distinctive color, and an inner layer having a different distinctive color, said normally opaque outer layer being rendered translucent when wet, whereby when a portion of the outer layer is made wet by the water beam impinging thereon and rendered translucent, the color of a corresponding portion of the inner layer is exposed which contrasts with the color of the outer layer surrounding the wet portion thereof.

5,826,880

MULTI-LEVEL CHESS GAME WITH ADDITIONAL CHESS PIECES

Stephen R. Cooper, P.O. Box 476, Riverside, Conn. 06878-0476

Filed Jul. 18, 1996, Ser. No. 685,193
Int. Cl.[6] A63F *3/02*
U.S. Cl. 273—261 74 Claims



1. A multi-level chess game apparatus for three-dimensional play, comprising:

an odd-numbered plurality of chessboards;

means for arranging said plurality of chessboards in vertical spaced relation to one another;

a pair of conventional sets of standard chess pieces, each member of said pair having means for visual differentiation from the other member of said pair, each of said conventional sets of standard chess pieces comprising eight conventional protective pieces and eight conventional royalty pieces, said eight conventional protective pieces comprising eight pawns and said eight conventional royalty pieces comprising two knights, two bishops, two rooks, a queen and a king, said conventional sets of standard chess pieces being initially positioned opposite one another in standard fashion on the first of said plurality of chessboards; and

at least one pair of supplemental sets of additional chess pieces, each member of said at least one pair having means for visual differentiation from the other member of said at least one pair, the number of said supplemental sets of additional chess pieces being an even number that is one integer less than the number of said plurality of chessboards, each of said supplemental sets of additional chess pieces consisting of eight additional protective pieces and eight additional royalty pieces, each pair of said at least one pair of supplemental sets of additional chess pieces being initially positioned in standard fashion such that one member of each said pair is positioned opposite the other member of said pair on an odd-numbered one of said chessboards other than the first of said plurality of chessboards.

5,826,881

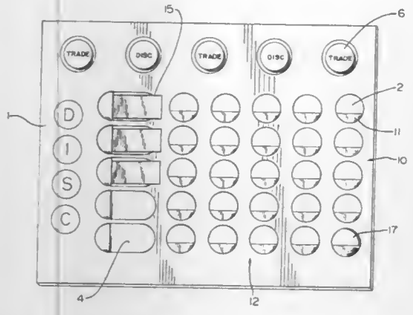
DISCONNECTION WORD GAME

Dorothy B. Osterman, 2885 Columbia Rd.; Marlene Dunivan, 2785 Columbia Rd., both of Gordonsville, Va. 22942, and Dawn O. Hierholzer, 5252 Ellisville Dr., Louisa, Va. 23093

Filed Nov. 22, 1996, Ser. No. 754,899
Int. Cl.[6] A63F *3/00*
U.S. Cl. 273—299 1 Claim

1. A method for playing a word association game among 2 or more players, said method comprising the following steps:

a. allocating to each player a game board, said game board having a series of rows and columns, each of said rows having a subject space at one side thereof;



b. providing subject cards to each of said players; each of said cards having a subject word indicated on said card, said subject word chosen from a group of such subject words;

c. each said player associating each of said subject spaces on his said game board with a subject card;

d. each of said players drawing link disks from a group of link discs, each of said link disks having at least one word on said link disk;

e. each player associating one or more of said link discs with a subject card on said game board by placing said link discs onto an open space in one of said rows that is aligned with a given subject card;

f. further play comprising each of said players taking a turn in an assigned order;

g. each of said turns comprising: picking an action card from a group of said action cards and doing such action, if possible; said action cards having commands including the commands of: losing a turn, drawing one or more action cards, picking link disks from said group of link disks and associating said link disks with said subject cards in the manner of step e, and indicating a mandatory trade;

h. during the game allowing each player the option of designating certain unplayed link discs to be played in front of him and designated a trade disk; said trade discs may be exchanged with those link disks of another player at the option of each player; said trade disks must be exchanged with those of another player at the option of the player designating said trade disks if so indicated by an action card drawn by a player with designated trade disks;

i. declaring a winner when one player has filled his said game board with link disks and at least one half of the other players agreeing with each and every word association formed between said link disks and said subject words; in the event that at least one half of the players dispute a given association said player must remove all of those link disks in that row that contains said disputed association and return said link disks to said group of said link disks.

5,826,882

SLOT CABINET AND BASE UNIT THEREFOR

Daniel E. Ward, Boulder, Colo., assignor to Vector Slot Machine Company, L.L.C., Boulder, Colo.

Filed Nov. 12, 1996, Ser. No. 745,690

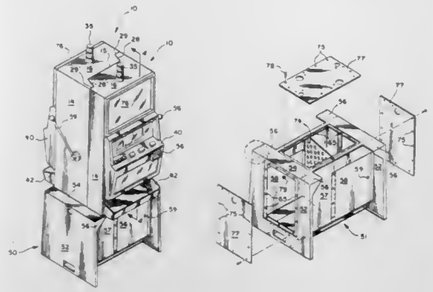
Int. Cl.[6] A63F *9/00*

U.S. Cl. 273—309 **28 Claims**

20. A base unit for mounting a gaming machine thereon, said base unit comprising:

means for forming a central opening including at least one wall;

an access door mounted to said at least one wall;



a bottom member connected to said forming means; and

a trap door mounted to said bottom member.

5,826,883

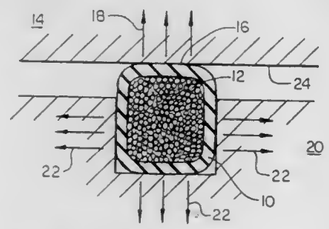
SEALING RING WITH DEFORMABLE TUBULAR SHEATH FILLED WITH PERMANENT MAGNETIC GRANULES AND METHOD OF MAKING THE SAME

Chahee P. Cho; William P. Krol, Jr., both of Portsmouth, and Antonio M. Amaral, East Providence, all of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 16, 1996, Ser. No. 715,263

Int. Cl.[6] F16J *15/53*

U.S. Cl. 277—80 **15 Claims**



1. A sealing ring comprising:

an endless tubular body made of a material having elastomeric properties and forming an enclosed chamber therein;

granules of permanent magnet material and powdered non-magnetic material disposed in said chamber and wherein said granules of permanent magnetic material are embedded in random fashion in said powdered material; and

said body being deformable by said granules when said granules are subjected to a magnetic force.

5,826,884

TRACK JOINT SEALING ASSEMBLY FOR SEALING A TRACK JOINT HAVING CERAMIC AND ELASTOMERIC SEAL PORTIONS

Peter W. Anderton; Michael H. Haselkorn, both of Peoria; William A. Holt, Dunlap; Jerry A. Metz, Morton; Daniel L. Mikrut, Peoria; Kenneth R. Watts, Washington, and Harry M. Yousefnia, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

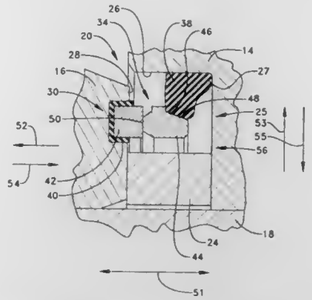
Filed Jul. 30, 1996, Ser. No. 690,630

Int. Cl.[6] B62D *55/21;* **F16J** *15/34*

U.S. Cl. 277—85 **13 Claims**

1. A track seal assembly adapted to seal a track joint, comprising:

a track link;



a bushing having and end face and a counter bore defined in said end face;

a first ceramic seal member positioned within the counter bore defined by said bushing;

a second ceramic seal member;

a first elastomeric member positioned between said counter bore and said first ceramic seal member;

a second elastomeric member secured to said track link and being adapted to contact the second ceramic seal member to urge, said second ceramic seal member into contact with said first ceramic seal member so as to form a seal interface therebetween.

5,826,885

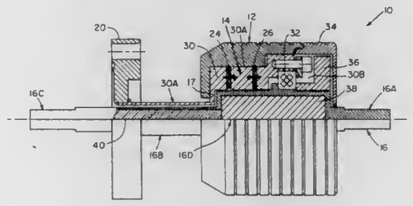
MAGNETIC FLUID SEALING DEVICE

Walter Helgeland, Quechee, Vt., assignor to Rigaku/USA, Inc., Danvers, Mass.

Filed Oct. 2, 1996, Ser. No. 720,634

Int. Cl.[6] F16J *15/43*

U.S. Cl. 277—302 **22 Claims**



1. A magnetic fluid sealing device comprising:

a) a housing;

b) an axially extending shaft rotatably mounted in said housing and wherein one end of the shaft is adapted to be disposed at a low pressure environment and another end at a high pressure environment;

c) a pole piece and magnets radially encircling said shaft;

d) a magnetic fluid seal enclosing said shaft for magnetic sealing of any gaps between the shaft and the pole piece;

e) a mounting means nearest the low pressure environment for mounting the device to a fixture, and wherein an integral section of the pole piece extends to the mounting means coaxially of the shaft forming with the pole piece a static vacum tight envelope between the low pressure environment and the high pressure environment, except for said gaps which are sealed by said magnetic seal.

5,826,886

WALL FEEDTHROUGH FITTING

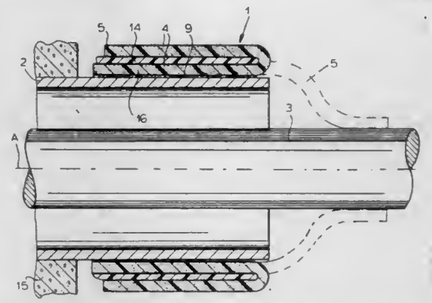
Werner Hauff, Ballmertshofen; Gerhard Gauland, Heidenheim, and Ernst Seifried, Kleinaitingen, all of Germany, assignors to Hauff-Technik GmbH & Co. KG, Herbrechtingen, Germany

Filed Dec. 27, 1996, Ser. No. 774,904

Claims priority, application Germany, Jan. 11, 1996, 196 00 751.8; Feb. 3, 1996, 196 03 914.2

Int. Cl.[6] F16L *21/02*

U.S. Cl. 277—314 **13 Claims**



1. In combination with an anchored guide tube centered on an axis and a conduit passing axially through the tube, a feedthrough fitting comprising:

a flexible and shrinkable sleeve having an inner portion secured to an outer surface of the guide tube at an end thereof and an outer portion folded back over the inner portion and forming an annular fold generally at the tube end; and

means for facilitating sliding of the outer portion on the inner portion from a storage position folded back over and lying on the inner portion and a use position extending outward past the tube end away from the inner portion.

5,826,887

SEALING DEVICE

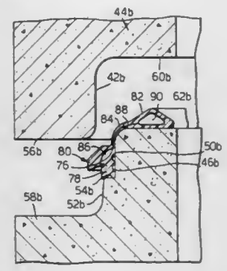
Wieland Neumann, Mönchengladbach; Helmut Mehl, Weilburg, both of Germany; Bent Holmen, Bröndeslev, Denmark; Ulf Nilsson, Värnamo, Sweden; Elvir Cavka, Värnamo, Sweden; Sören Forsberg, Värnamo, Sweden; Kennet Ekholm, Forsheda, Sweden; Mika Leppimäki, Bor, Sweden, and Joakim Andersson, Anderstorp, Sweden, assignors to Forsheda AB, Forsheda, Sweden

Filed Nov. 27, 1996, Ser. No. 757,381

Claims priority, application Sweden, Dec. 27, 1995, 9504699

Int. Cl.[6] F16L *17/10*

U.S. Cl. 277—605 **13 Claims**



1. A sealing device for sealing a space established by connecting two sealing surfaces, each surface positioned on one of two elements, into a position facing each other, said device comprising: a

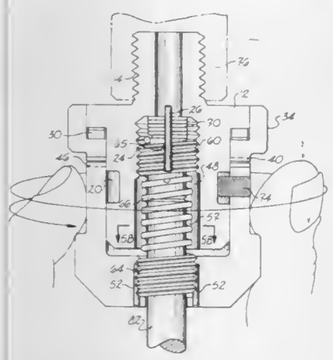
sealing body consisting of elastic material and adapted at the connection of the sealing surfaces to take a position in the space, in which said sealing body contacts the sealing surfaces; and an activating device for forcing said sealing body positioned in the space against the sealing surfaces when the activating device is activated, said activating device being automatically activated as a consequence of its engaging at least one surface of at least one of the elements on which the sealing surfaces are positioned during the connection of the sealing surfaces with each other.

5,826,888

QUICK RELEASE CHUCK DEVICE

Mark V. Weaver, Clemson, and Mark S. Hart, Central, both of S.C., assignors to Power Tool Holders Incorporated, Wilmington, Del.

Filed Oct. 24, 1996, Ser. No. 740,098
Int. Cl.[6] B23B *31/117*
U.S. Cl. 279—23.1 **13 Claims**



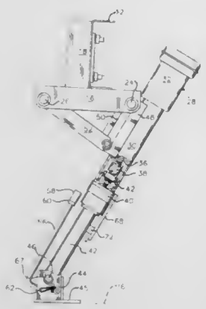
1. A quick release chuck device, comprising:
a body member, and means for attaching said body member to a drive spindle:
a first longitudinal recess defined in said body member;
a sleeve member rotatably mounted on said body member, said sleeve member comprising a longitudinal passage axially aligned with said first longitudinal recess;
a resilient coiled member having a first end non-rotatably attached to said body member in said first recess, and a second end non-rotatably attached to said sleeve member in said longitudinal passage, said coiled member defining an inner diameter bore for receipt of a tool shank therein;
a rotational position releasable locking mechanism operably configured relative to said body member and said sleeve member to releasably lock said sleeve member in a rotated position relative to said body member against an opposing rotational force of said coiled member;
whereby said coiled member constricts and reduces said inner diameter bore and grips upon a tool shank inserted therein as said sleeve member is rotated relative to said body member against said opposing rotational force of said coiled member; and
a blank member disposed in said inner diameter bore of said coiled member to prevent overtorquing of said coiled member when a tool shank is not inserted into said bore, said blank member axially movable within said bore upon insertion of a tool shank therein.

5,826,889

RECREATIONAL VEHICLE ELECTRICALLY OPERATED LEVELER AND STABILIZERS

Edward J. Eden, Jackson, Mich., assignor to Barker Manufacturing Co., Inc., Battle Creek, Mich.

Filed Dec. 5, 1996, Ser. No. 938,037
Int. Cl.[6] B06S *9/00*
U.S. Cl. 280—6.153 **7 Claims**



1. A vehicle leveler and stabilizer comprising, in combination, a mounting bracket adapted to be attached to a vehicle, first and second spaced pivots mounted on said bracket, an elongated reversible extender unit mounted on said first pivot pivotal between storage and operative positions, a third pivot mounted on said extender unit movable toward and away from said first pivot between first and second positions, a rigid link interconnecting said second and third pivots whereby movement of said third pivot to said second position pivots said unit to said operative position and movement of said third pivot to said first position pivots said unit to said storage position, said third pivot being in an over-center relationship to said first and second pivots when in said second position to lock said unit in said operative position, said extender unit having an extendable and retractable element having an outer end, a foot defined on said outer end, and third pivot release means selectively releasing said third pivot from its over-center relationship to said first and second pivots.

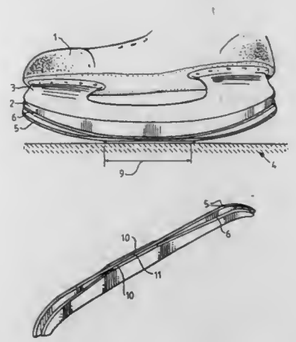
5,826,890

ICE SKATE BLADE

Jerker Swande, Stockholm, Sweden, assignor to Orebroskenan Aktiebolag, Orebro, Sweden

PCT No. PCT/SE94/01101, § 371 Date Jun. 3, 1996, § 102(e) Date Jun. 3, 1996, PCT Pub. No. WO95/15199, PCT Pub. Date Jun. 8, 1995
PCT Filed Nov. 18, 1994, Ser. No. 646,335
Claims priority, application Sweden, Dec. 3, 1993, 9304036
Int. Cl.[6] A63C *1/34*
U.S. Cl. 280—11.18 **21 Claims**

1. An ice-skate blade, comprising:
a) a single blade comprising a sharp-edged main runner (**5**) flanked by a pair of sharp-edged side-runners (**6**) disposed on opposite sides of the main runner,
b) wherein:
i) the single blade defines in succession, in a longitudinal direction of the blade, a front zone, a central glide zone (**8**; **9**), and a rear zone,
ii) in the central glide zone the runners are disposed at substantially the same level, and



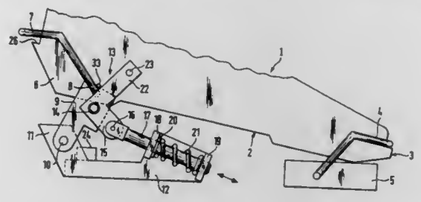
iii) the side-runners in the front and rear zones are disposed at a higher level than the main runner, so as to grip the ice only when the blade is tilted.

5,826,891

SNOWBOARD BINDING

Stephan Albrecht, Bad Wiessee, Germany, assignor to F2 International Ges.m.b.H., Krems, Austria

Filed Jul. 13, 1995, Ser. No. 502,281
Claims priority, application Germany, Jul. 13, 1994, 44 24 737.0
Int. Cl.[6] A63C *9/18*
U.S. Cl. 280—14.2 **12 Claims**



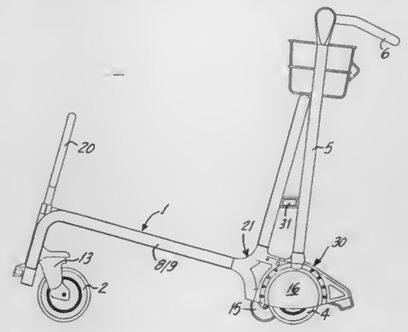
1. A snowboard binding adapted for releasably binding a boot to a snowboard, the binding being capable of movement between a closed position in which the boot is secured in the binding and an open position in which the boot can be released from the binding, comprising:
a front bracket for partially overlapping a sole of the boot at its toe and a heel bracket for partially overlapping the sole of the boot at its heel, one of said brackets being fastened on two sides to a pivoting lever that can be moved relative to a binding component affixed to the snowboard;
a first drag bearing, by means of which the pivoting lever is fastened onto the binding component;
a second drag bearing that connects the pivoting lever to a closing lever; and
a third drag bearing that connects the closing lever to a spring piston so that said closing lever pivotably connects said pivoting lever to one end of the spring piston, the spring piston being capable of exerting a spring force along its longitudinal axis;
wherein in the open position, said first, second and third drag bearings are arranged such that they define a first triangle, with the second drag bearing lying above the first and the third drag bearings;
wherein during the course of movement from the open position to the closed position said drag bearings lie on a straight line that defines a dead center position; and
wherein in the closed position of the binding, the three drag bearings define a second triangle, with the second drag bearing lying below a connecting line between the first and the third drag bearings; and
a limit stop for limiting movement of the spring piston.

5,826,892

PUSH LUGGAGE CART

Wolfgang Kratzenberg, Schauenburg, and Siegfried Stein, Vellmar, both of Germany, assignors to Expresso Deutschland Transportgerate GmbH, Kassel, Germany

Filed May 14, 1996, Ser. No. 645,947
Claims priority, application Germany, Feb. 20, 1996, 296 02 974 U
Int. Cl.[6] B62D *39/00*
U.S. Cl. 280—33.997 **5 Claims**



1. A push luggage cart, comprising:
a rigid load-bearing frame defining a longitudinal luggage-carrying surface inclined in a direction opposite to a forward movement direction of the cart;
a front steering roller pivotable about a vertical axis and two rear support rollers rotatable about rigid axles for supporting the frame on the ground;
two upright bars for supporting a push handle extending substantially along an entire width of the cart; and
means for supporting the frame on the front steering roller and the rear support rollers, the supporting means comprising a front connection part and two rear connection parts all having connection members,
wherein the frame includes hollow profile connection sections form-lockingly engaging the connection members of the front and rear connection parts,
wherein the push luggage cart further comprises a rear luggage supporting stirrup having a downwardly opening U-shaped form, and
wherein the cart further comprises two support elements for supporting respective stirrup bars against respective upright bars, each support element having a support member form-lockingly engaging in longitudinal grooves of a hollow profile section forming a stirrup leg and a hollow profile section forming a respective upright bar.

5,826,893

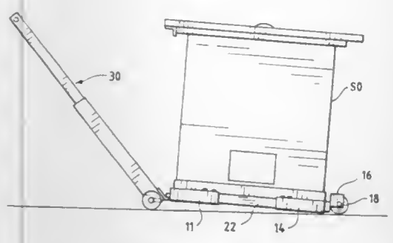
MACHINERY MOVER

Gordon E. Snoeyenbos, Decatur, Ill., assignor to Vega Enterprises, Inc., Decatur, Ill.

Filed Jul. 11, 1997, Ser. No. 891,659
Int. Cl.[6] B62D *33/08*
U.S. Cl. 280—43 **12 Claims**

1. An apparatus for manually moving heavy machinery having a rectangular base that rests on a floor, the apparatus comprising:
(a) a rectangular frame adapted to be used in a substantially horizontal position, the frame comprising:

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(i) four two-sided corner sections; each section having an exterior surface , a top surface defining an upper horizontal plane, and a bottom surface defining a lower horizontal plane; each section detachably telescoping with the rest of the frame and having a locking means for securing it to the rest of the frame so that the size of the frame is variable and so that the frame is easily assembled and disassembled; each section having a platform in the lower horizontal plane and below the upper horizontal plane; the platform extending between the bottom surfaces of the two sides of the section and being adapted for supporting heavy machinery and for resting flush upon a flat floor; and

(ii) two frame wheels mounted to and along the exterior surface of one side of the frame, each frame wheel having a rotational axis, each frame wheel being positioned with its rotational axis parallel to the side of the frame along which it is mounted, each frame wheel being positioned so that it contacts the floor in the lower horizontal plane; and

(b) a handle having an elongated pole portion adapted to be used in a substantially vertical position with a top end and a bottom end, the handle having a hand grip at the top end and having two handle wheels at the bottom end, each handle wheel having a rotational axis, each handle wheel having the same rotational axis, the handle also having a hook member extending from the bottom end in a direction perpendicular to that of the pole portion and perpendicular to the rotational axis of the two handle wheels, which hook member is adapted to engage the frame.

5,826,894

ALIGNMENT CAM POSITION LIMITER

David A. McDonald, Lake Orion; Roman T. Kogut, Sterling Heights, and Darryl B. Smith, Highland, all of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed Nov. 20, 1997, Ser. No. 975,124

Int. Cl.[6] B62D *17/00*

U.S. Cl. 280—86.756 **10 Claims**

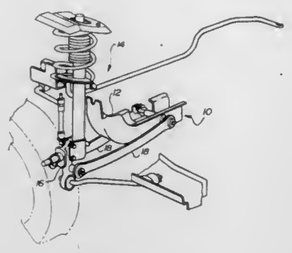
1. A cam assembly, comprising:

a hollow sleeve having a bore formed therethrough;

an engagement surface provided in said bore and defining a radial constriction therein;

a shaft extending through said sleeve; and

a cam finger rotatably mounted on said shaft and interposed between said shaft and said sleeve and axially spaced from said radial constriction, such that rotation of said finger



around said shaft is limited by engagement of said shaft against said engagement surface.

5,826,895

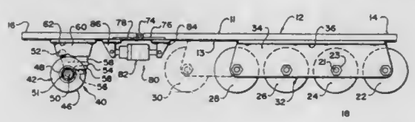
IN-LINE SKATEBOARD

Athol George Bradfield, Box 48226, Vancouver, British Columbia, Canada, V7X 1N8

Continuation of Ser. No. 561,336, Nov. 21, 1995, Pat. No. 5,707,068. This application Oct. 22, 1997, Ser. No. 955,740

Int. Cl.[6] A63C *17/04*

U.S. Cl. 280—87.042 **20 Claims**



1. A skateboard for traversing a riding surface and adapted to support both feet of a user comprising:

a board having a front end, a rear end, a top side, a bottom side, a left side, a right side, a front portion, a rear portion, and a median longitudinal axis running from the front end to the rear end between the left and right sides, the front and rear portions of the board being pivotal relative to each other about a transverse axis extending through an intermediate transverse portion of the board;

a plurality of in-line wheels rotatably mounted on the bottom side of the board, along the front portion of the board, the in-line wheels being longitudinally disposed along the median longitudinal axis of the board, the in-line wheels each having an inner portion positioned closer to the median longitudinal axis of the board than a laterally disposed outer portion of the wheel, the circumference of the inner portion being greater than the circumference of the outer portion;

a pair of rear wheels rotatably mounted about an axis of rotation positioned below the bottom side of the rear portion of the board and rearwardly of the in-line wheels, the rear wheels being disposed below the left and right sides of the board; and,

a rear wheel assembly steerably mounting the pair of rear wheels to the rear portion of the board, the rear wheel assembly being mounted to the bottom side of the board by a pivoting member and a support member, the pivoting member being pivotably mounted to the bottom side of the board rearwardly of the support member, the support member being fixed to the bottom side of the board, the axis of rotation of the rear wheels being rotatable about the support member in the plane

of the riding surface, the rear wheel assembly being operatively coupled to the rear portion of the board so that when the board is moving along the riding surface, tilting the left side of the board downwards causes the rear wheels to steer the board to turn to the left, and tilting the right side of the board downwards causes the rear wheels to steer the board to turn to the right.

5,826,896

WHEEL SUSPENSION FOR A MOTOR VEHICLE HAVING A WHEEL GUIDING LEAF SPRING

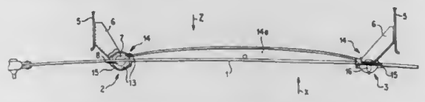
Hans-Uwe Baumann, Stuttgart, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Germany

Filed Sep. 13, 1996, Ser. No. 713,428

Claims priority, application Germany, Sep. 13, 1995, 195 33 803.0

Int. Cl.[6] B60G *11/02*

U.S. Cl. 280—124.171 **12 Claims**



1. A wheel suspension arrangement for a motor vehicle comprising:

a wheel guiding leaf spring adapted to be connected on a vehicle body and arranged transversely thereto, free ends of said leaf spring being connectable to a wheel carrier;

substantially flat surface portions of said leaf spring being secured to said vehicle by pairs of semicylindrical tension elements situated transversely on said leaf spring on opposite sides of a vertical longitudinal center plane of the vehicle, each pair of semicylindrical tension elements comprising first and second semicylindrical tension elements disposed on a substantially flat surface portion of said leaf spring; and

said semicylindrical tension elements being arranged in surrounding bearing bushes by means of oppositely disposed receiving devices.

5,826,897

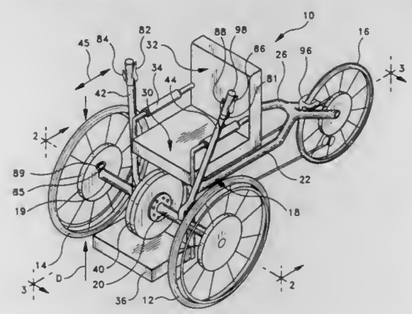
MANUALLY POWERED VEHICLE HAVING A FLYWHEEL ASSISTED DRIVE

David L. Beard, 449-1 Centerhill Rd., Upper Black Eddy, Pa. 18972

Filed Jan. 11, 1996, Ser. No. 584,104

Int. Cl.[6] B62M *1/04*

U.S. Cl. 280—250.1 **14 Claims**



12. A wheelchair comprising;

a frame;

a seat coupled to said frame;

at least three wheels supporting said frame, wherein at least one of said at least three wheels is a drive wheel;

a flywheel supported by said frame, wherein said flywheel is capable of rotating independently of said drive wheel for storing rotational momentum;

at least one rowing lever accessible from said seat and selectively coupled to said flywheel, for manually rotating said flywheel; and

a mechanism for selectively coupling said flywheel to said drive wheel, wherein rotational momentum stored by said flywheel is selectively transferred to said drive wheel.

5,826,898

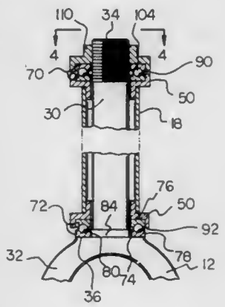
MODULAR STEERING HEADSET FOR USE ON A BICYCLE

Robert L. Fortier, 502 W. Blum, Alvin, and Dennis Quick, 200 Dominick Park Dr., Apt. 222, Houston, both of Tex. 77511

Filed Dec. 4, 1995, Ser. No. 567,111

Int. Cl.[6] B62K *21/18*

U.S. Cl. 280—279 **1 Claim**



1. A modular steering headset for allowing a front fork of a bicycle frame to be rotatably coupled to a frame comprising, in combination:

a rigid metal head tube securable to a forward extent of the bicycle frame, the head tube having a central longitudinal axis, a circular interior cross section, an upper end with an upper opening, an upper end edge bounding the upper opening, a lower end with a lower opening, a lower end edge bounding the lower opening, and a smooth interior surface;

a rigid metal front fork having a tubular upper extent and a bifurcated lower extent with the upper extent slidably rotatably inserted within the lower end of the tube and terminated at a threaded upper end and with the lower extent having a flat annular upper abutment edge formed thereon and a pair of spaced and downwardly extending tines that are securable to a front wheel of the bicycle, wherein the abutment edge is contained in a plane that is orthogonal to a central axis of the upper extent;

a pair of rigid metal cups, each cup having a central axis, a tubular inboard portion with a smooth outer surface and a smooth inboard surface, a tubular outboard portion of a diameter greater than that of the inboard portion and having a smooth inner surface, and an annular intermediate portion perpendicularly extended therebetween, each cup having an upper extent with an L-shaped cross-section integral with a lower extent having an inverted L-shaped cross-section, and with one of the cups having its inboard portion fixedly press-fit into the upper opening of the head tube and the other cup having its inboard portion fixedly press-fit into the lower opening of the head tube, and wherein the central axes of the cups are aligned with the central axis of the head tube, the outer surface of each inboard portion of each cup is positioned in facing contact with the inner surface of the head tube, the outer surface of each cup is in facing spaced opposition to the

upper extent of the front fork, and the intermediate portion of each of the cups is positioned in facing contact with the associated end edge of the head tube;

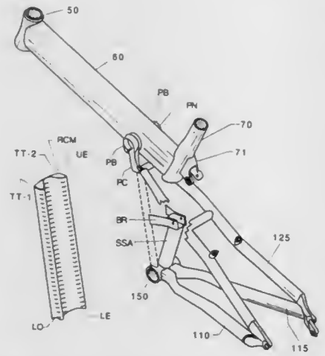
an upper pair and a lower pair of rigid metal annular raceways, each raceway having a fixed inner diameter, a fixed outer diameter, a smooth planar inboard surface, a smooth planar outboard surface, a smooth outboard edge interconnecting the surface at an outer extent thereof, a smooth inboard edge interconnection the surfaces at an inner extent thereof, and a circular groove with a concave cross section formed on a central potion of the inboard surface, wherein one of the raceways of the lower pair is fixedly press-fit around the upper extent of the front fork with its outboard surface positioned in facing contact with the abutment edge and the other raceway of the lower pair is slidably disposed around the upper extent of the front fork and fixedly press-fit within a lower cup. and wherein one of the raceways of the upper pair is slidably disposed around the upper extent of the front fork and press-fit within an upper cup and the other raceway of the upper pair is slidably disposed around the upper extent of the front fork, and wherein the inboard surfaces of the upper raceways are positioned in facing opposition to create an upper annular channel therebetween and the inboard surface of the lower raceways are positioned in facing opposition to create a lower annular channel therebetween;

a pair of bearing cages, each bearing cage formed of a flat rigid metal ring with a circular arrangement of rollable rigid spaced metal ball bearings secured thereto and projection outwards therefrom and with one of the bearing cages disposed around the upper extent of the front fork and positioned between the upper pair of raceways with its bearing positioned within the upper channel, and with the other bearing cage disposed around the upper extent of the front fork and positioned within the lower pair of raceways with its bearings positioned within the lower channel; and

a rigid metal adjusting nut threadably coupled to the upper end of the front fork, the nut having a tubular upper portion, a tubular lower portion of a diameter greater than the upper portion, and an intermediate portion perpendicularly extended therebetween, the nut having an upper extent with an L-shaped cross-section integral with a lower portion having an inverted L-shaped cross-section, and with the nut placed in facing contact with the outboard surface of the uppermost raceway of the upper pair and tightened to place the rings of the bearing cages in contact between the associated inboard surfaces of the raceways thereby allowing rollable movement of the bearings within the channels and rotatably coupling the front fork to the head tube

wherein each cup's L-shaped cross-section fully supports the entire underside surface of one of each pair of annular raceways, where each said underside surface lies in a plane orthogonal to a longitudinal axis of the head tube.

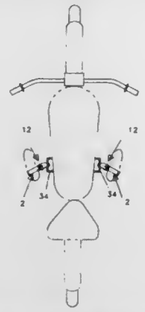
5,826,899
HIGH PERFORMANCE SUSPENSION BICYCLE FRAMESET
Gary D. Klein, and Darrell W. Voss, both of Chehalis, Wash., assignors to Klein Bicycle Corporation, Chehalis, Wash.
Filed Jul. 3, 1996, Ser. No. 675,089
Int. Cl.[6] B62K *1/00*
U.S. Cl. 280—284 **11 Claims**



1. In a bicycle frameset having a front frame portion and a rear triangle swing arm portion, said front frame portion having a forward end and a trailing end, a head tube mounted on said forward end and a seat tube mounted on said trailing end, said rear triangle swing arm portion having a bottom bracket for receiving a crank assembly, said bottom bracket having a shaped external surface portion, a pair of dropouts for receiving a rear wheel assembly, a pair of chainstay members secured to said bottom bracket and extending in a rearward direction and secured to said dropouts, respectively, a pair of seatstay members having upper and lower ends, means securing said lower ends to said dropouts, respectively, and pivot means pivotally connecting said rear triangle swing arm portion to said front frame portion, the improvement comprising:

a rigid channel member having a pair of spaced channel legs joined by an integral base, said rigid channel member having upper and lower ends, said lower end having a shaped edge which is shaped complementary to the shape of the external surface of said bottom bracket, and means fixedly securing said lower end to said bottom bracket with said shaped edge in congruence with said shaped external surface portion, said pivot means pivotally securing said rear triangle swing arm portion to said front frame portion at the upper end of said rigid channel member.

5,826,900
VEHICLE FOOT PEG
Robert Steele, P.O. Box 151, Nemo, S. Dak. 57759-0151
Filed Sep. 10, 1996, Ser. No. 711,979
Int. Cl.[6] B62J *25/00*
U.S. Cl. 280—291 **4 Claims**



1. A vehicle foot peg in combination with a vehicle; the vehicle having a plane which is vertical and through the longitudinal axis of the vehicle and having a plurality of foot peg mounting brackets on either side of the vehicle comprising:

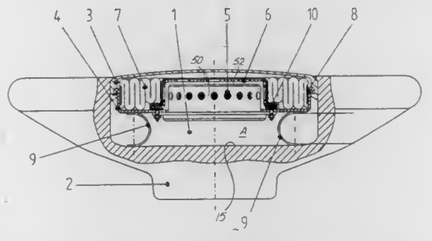
(a) a clevis having two vertical faces, an inner face and an outer face; the outer face being at an angle from the inner face such that said inner face is parallel with the plane of the vehicle and said outer face forms an acute angle with the plane of the vehicle measured from the rear of the vehicle;

(b) a peg having a longitudinal axis; and having two vertical faces, an inner face, and an outer face;

(c) means for attaching the peg to said clevis such that the longitudinal axis of said peg is perpendicular to said outer face of said clevis and said inner face of said peg is in proximity and parallel to said outer face of said clevis; and

(d) means for attaching said clevis to the foot peg mounting brackets of the vehicle; whereby the vehicle foot peg may be attached to a vehicle and a person riding upon the vehicle may rest the feet upon the vehicle foot peg with the toes angled slightly outward.

5,826,901
AIRBAG SYSTEM FOR VEHICLE
Heinz-Dieter Adomeit, Berlin, Germany, assignor to Petri AG, Aschaffenburg, Germany
Continuation of Ser. No. 516,845, Aug. 18, 1995, abandoned. This application Jun. 5, 1997, Ser. No. 869,402
Claims priority, application Germany, Aug. 19, 1994, 44 30 588.5
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **10 Claims**



1. An airbag system for use in a vehicle which protects an occupant of the vehicle in the event of an impact on the vehicle, the airbag system comprising:

an airbag module comprising an airbag and a gas generator for inflating the airbag; and

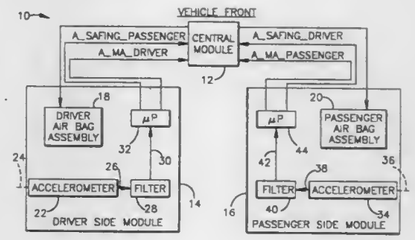
at least one plastically deformable members, which is U-shaped in cross-section, connected with the airbag module for restraining movement of the airbag module away from the vehicle occupant in the absence of either an impact force acting on the airbag system or ignition of the gas generator, wherein said at least one plastically deformable member is responsive to ignition of the gas generator for enabling at least a portion of the airbag module to translate away from the vehicle occupant, whereby the inflation of the airbag does not injure the vehicle occupant, and further preventing airbag recoil after such translation.

5,826,902
METHOD AND APPARATUS FOR SENSING IMPACT CRASH CONDITIONS WITH SAFING FUNCTION
Chek Peng Foo, Ann Arbor; Huahn Fern Yeh, Novi, and Roger A. McCurdy, Troy, all of Mich., assignors to TRW Inc., Lyndhurst, Ohio
Continuation-in-part of Ser. No. 490,175, Jun. 15, 1995. This application Jan. 22, 1996, Ser. No. 589,846
Int. Cl.[6] B60R *21/32*
U.S. Cl. 280—735 **9 Claims**

1. An apparatus for controlling an actuatable restraint, comprising:

first acceleration sensing means having an axis of sensitivity and mounted to a vehicle at a first side location for providing a discriminating crash acceleration signal when a sideways crash acceleration of the vehicle is sensed in a first direction;

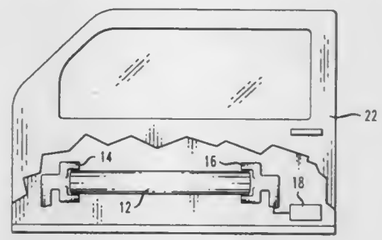
second acceleration sensing means having an axis of sensitivity and mounted to a second side location of the vehicle spaced apart from and substantially opposite said first side location for providing a safing crash acceleration signal when crash acceleration is sensed in said first direction;



third acceleration sensing means having an axis of sensitivity and mounted to the vehicle at a third location of the vehicle spaced apart from and substantially between said first and second side locations for providing a safing crash acceleration signal when crash acceleration is sensed in said first direction; and

means for actuating said actuatable restraint when said first crash sensing means provides said discriminating crash acceleration signal and when either said second or said third crash sensing means provides its associated safing crash acceleration signal.

5,826,903
AIR BAG DEPLOYMENT TRIGGER SENSOR WITH SACRIFICIAL WAVEGUIDE
Norman H. Schiller, and Chantal G. Schiller, both of 163-16 Willets Point Blvd., Whitestone, N.Y. 11357
Filed Feb. 14, 1997, Ser. No. 800,478
Int. Cl.[6] B06R *21/32*
U.S. Cl. 280—735 **29 Claims**



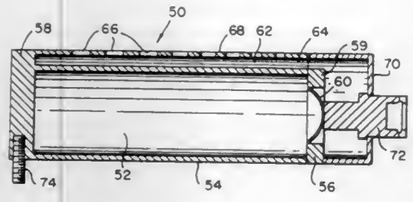
1. An air bag triggering device, which comprises:

a rigid optical waveguide disposed within the body of a vehicle for carrying optical rays;

sensor means coupled to said optical waveguide, said sensor means triggering an air bag system when said optical waveguide breaks.

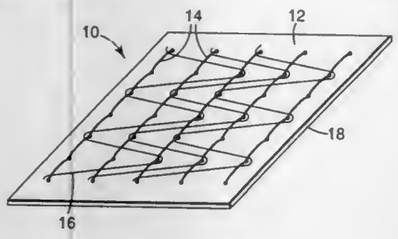
5,826,904
DIRECTIONAL COMPRESSED GAS INFLATOR
Kelly D. Ellis, Roy; Daniel G. Minert, Clearfield; Davin G. Saderholm, Salt Lake City, and Brian M. Shaklik, Fruit Heights, all of Utah, assignors to Morton International, Inc., Chicago, Ill.
Filed Jun. 10, 1996, Ser. No. 664,995
Int. Cl.[6] B60R *21/26*
U.S. Cl. 280—737 **19 Claims**

1. An inflator suitable for use in a passive restraint airbag system, comprising:



(a) an elongated storage chamber for pressurized fluid extending between a first end and a second end and having an openable discharge means at said first end;
(b) an exhaust manifold chamber extending along a single side of said storage chamber between said first end and said second end and having an open first end located adjacent said first end of said storage chamber;
(c) a cap structure enclosing both the first end of said storage chamber and the open first end of said exhaust manifold chamber;
(d) an initiator means operable to open said discharge means, and
(e) a plurality of exhaust ports located along the longitudinal extension of said exhaust manifold chamber.

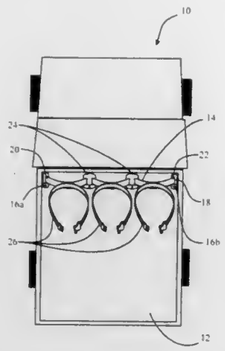
5,826,905
LOW PERMEABILITY INFLATABLE RESTRAINT FABRIC
Miroslav Tochacek, Woodbury, Minn.; Roger A. Brekken, Farmington Hills, Mich., and Paul E. Hansen, Lake Elmo, Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.
Continuation of Ser. No. 430,002, Apr. 27, 1995, Pat. No. 5,692,777. This application Apr. 15, 1997, Ser. No. 839,242
Int. Cl.[6] B60R *21/20*
U.S. Cl. 280—743.1 **35 Claims**



1. A stitch-bonded fabric suitable for use in an airbag, said fabric i) having first and second major surfaces, ii) comprising a thermoplastic base web and a two-bar warp knit structure having stitching threads stitched through said thermoplastic base web, iii) having a Mullen burst strength of at least about 1.7 MPa as measured by TEST METHOD A, and iv) having a permeability of less than about 5 $cm^3/sec/cm^2$ as measured by TEST METHOD B.

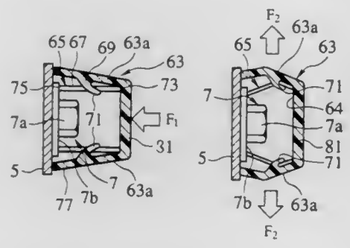
5,826,906
TRUCK BED SAFETY SEATBELT
Mark Steven Drop, Sr., P.O. Box 2941, Covina, Calif. 91722
Continuation-in-part of Ser. No. 546,985, Oct. 23, 1995, abandoned. This application Mar. 6, 1997, Ser. No. 812,444
Int. Cl.[6] B60R *22/00*
U.S. Cl. 280—801.1 **20 Claims**

1. In a truck having a bed apparatus for securing passengers to, said bed further having a bottom, comprising:



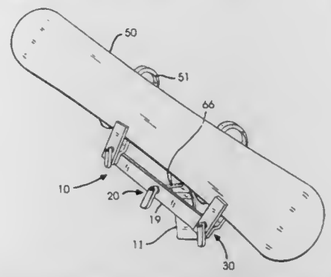
at least two corner mounting brackets attached to said bed;
at least one central mounting bracket attached to said bed, between said corner brackets;
a main strap, having a first end attached to one of said at least two corner mounting brackets, a middle portion attached to at least one of said central mounting brackets, and a second end attached to another of said at least two corner mounting brackets; and
at least one securing strap, each having a first end attachable to a second end and a middle portion attached to said main strap.

5,826,907
VEHICLE ENERGY ABSORBING STRUCTURE
Kenichi Saito; Tetsuo Maki; Satoru Yoshikawa, and Satoru Ichikawa, all of Kanagawa-ken, Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan
Filed Feb. 20, 1997, Ser. No. 802,519
Claims priority, application Japan, Feb. 20, 1996, 8-032354
Int. Cl.[6] B60R *22/00*
U.S. Cl. 280—808 **12 Claims**



1. A vehicle energy absorbing structure comprising:
a hard member having a portion facing a compartment;
a cover having a substantially U-shaped section for covering the compartment side of said hard member; and
an energy absorbing member interposed between said cover and said hard member, said energy absorbing member adapted to be subjected to plastic deformation for absorbing a shock energy; and
wherein said cover includes therein a trigger means for providing a momentum for plastic deformation of said energy absorbing member as a result of the deformation of the cover under a pressure load not less than a predetermined value exerted on said cover.

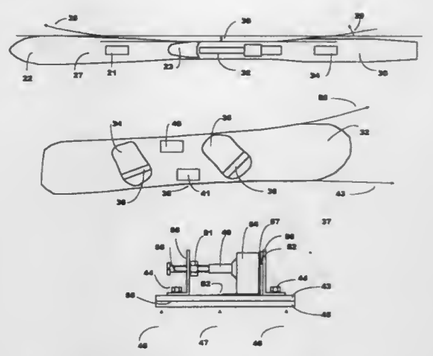
5,826,908
SNOWBOARD MOUNTING APPARATUS
Anthony R. L. McBride, 18456 65th Avenue, Surrey, British Columbia, Canada, V3S 8T1
Filed Jul. 3, 1997, Ser. No. 888,228
Int. Cl.[6] A63C *11/14*
U.S. Cl. 280—814 **6 Claims**



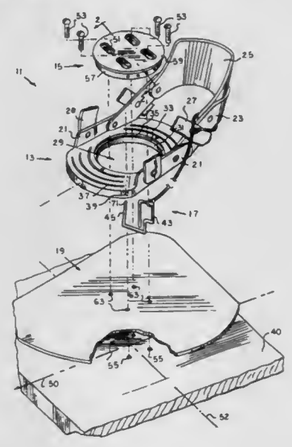
1. A Snowboard Mounting Apparatus for mounting a snowboard or similar article to a supporting surface comprising:
a mounting frame;
a mounting plate having two ends and a raised section intermediate the ends, the mounting plate further comprising a plurality of bores formed therethrough for accepting a plurality of mounting screws, the raised section further comprising a threaded bore disposed therethrough for threadingly accepting a threaded first end of a shaft, the shaft having a threaded second end threadingly engageable to a threaded bore formed in the mounting frame;
at least one jaw having a lower portion fixedly attached to the mounting frame along a lower portion frame section, the jaw further comprising a means for hingedly attaching the lower portion to an upper portion such that the upper portion is rotatable relative to the lower portion, and a spring disposed around a bolt and between the lower portion and the upper portion, the bolt extending perpendicularly through a plurality of apertures formed in the mounting frame, lower portion frame section and the upper portion and having a threaded end for threadingly engaging a nut, the threaded end further comprising an aperture formed therethrough for receiving a padlock;
wherein the lower portion further comprises an angled section and a clamping section, the angled section being intermediate the lower portion frame section and the clamping section and extending downwardly from the lower portion frame section relative to the upper portion and terminating at the clamping section, the clamping section having a plane parallel to a plane of the lower portion frame section; and
wherein the clamping section further comprises a first rubber pad fixedly attached to an inner surface and the upper portion further comprises a second rubber pad fixedly attached to a lower surface in aligned relationship with the first rubber pad.

5,826,909
RELOCATABLE ELECTRONIC SKI CAMBER SENSOR
Karl D. Brommer, Hampton Falls; Thomas G. Hebert, Merrimack, and Peter J. Schibly, Litchfield, all of N.H., assignors to Mountain Dynamics, Inc., Hampton Falls, N.H.
Filed Sep. 20, 1996, Ser. No. 717,272
Int. Cl.[6] A63C *5/06*
U.S. Cl. 280—602 **11 Claims**

1. A device for sensing an amount of bend of a ski or similar sports equipment having a bendable planar surface, comprising:
first and second lever means adapted to extend generally perpendicularly from the planar surface when the device is affixed to the planar surface;
means for removeably affixing the first and second lever means to the planar surface and thereupon for maintaining each of the first and second lever means generally perpendicular to the planar surface during bending thereof;
a force sensitive resistor affixed to the first lever means;
a resilient compressible element adapted to apply varying amounts of compressive force from the second lever means to the force sensitive resistor in response to bending of the planar surface and relative movement between the first and second levers; and
means responsive to the force sensitive resistor for indicating when the device has sensed a predetermined amount of bend.



5,826,910
SWIVELABLE SNOWBOARD BINDINGS
Richard A. Ricks, P.O. Box 1066, Pittsburg, Calif. 94565, and Paul R. Scherer, 1955 Webster St., San Francisco, Calif. 94115
Filed Dec. 9, 1996, Ser. No. 763,554
Int. Cl.[6] A63C *9/08*
U.S. Cl. 280—618 **19 Claims**



1. Bindings assembly for a snowboard, the snowboard having an upper surface and a longitudinal axis, for elective rotational adjustment of said bindings with respect to said longitudinal axis, said bindings assembly including:
a. rotatable bindings having a bottom, a perimeter edge, a front, and rear and an upper portion adapted for releasably supporting a boot, and having a central circular opening with an inner edge portion;

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b. a hold-down disk adapted for being stationarily affixed to said snowboard, and having edge means for slidably engaging said plate opening edge portion to hold said plate against upward movement form said disk and to mount the plate for rotation about an axis normal to said snowboard, and a plurality of spaced-apart recesses along said disk edge means; and

c. locking means mounted in said plate and including a locking element having a locking end and mounted for reciprocal movement, and said plate being rotatable to bring said element into alignment with selected ones of said recesses, said locking end shaped to make locking engagement within said recesses, whereby said locking element is releasably engagable in a selected recess to hold said plate stationarily against rotation relative to said disk.

5,826,911

Patent Not Issued For This Number

5,826,912

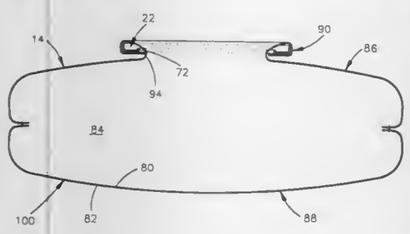
Patent Not Issued For This Number

5,826,913

AIR BAG WITH RETAINING RING

Vincent J. Mramor, Chandler, Ariz., assignor to TRW Inc., Lyndhurst, Ohio

Filed Oct. 25, 1996, Ser. No. 740,263
Int. Cl.[6] B60R *21/16*
U.S. Cl. 280—728.2 **16 Claims**



1. A vehicle safety apparatus for use with an inflation fluid source, said apparatus comprising:

an inflatable vehicle occupant protection device having a mouth portion and having a body portion extending from said mouth portion, said mouth portion having a first opening;

a retaining ring for connecting said inflatable device with the inflation fluid source, said retaining ring having a second opening;

said inflatable device and said retaining ring having a first condition with said retaining ring disposed inside said inflatable device;

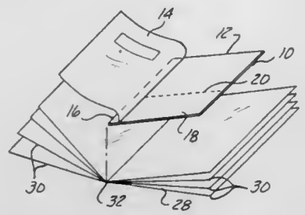
said inflatable device and said retaining ring having a second condition in which said body portion of said inflatable device is inverted and extends through the first opening in said mouth portion, said mouth portion being wrapped around said retaining ring and extending through the second opening in said retaining ring.

5,826,914

PERIODICAL INSERT HAVING COMPOSITE STRUCTURE

Peter R. Hudetz, Plainfield, Ill., assignor to Solar Communications, Inc., Naperville, Ill.

Filed Sep. 17, 1996, Ser. No. 715,026
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—61 **24 Claims**



1. A composite insert for a publication comprising:

a first planar portion having a first edge and being of a thickness meeting applicable postal authority regulations prescribing the required thickness of postcards;

said first planar portion having on its planar face a plurality of perforations defining a detachable area that is of a size and shape suitable for use as a postcard;

a second planar portion that is less thick than said first planar portion and has a second edge; and

an adhesive ribbon located along said first edge;

wherein said second planar portion is superimposed on the face of said first planar portion with said first and second edges aligned so that said adhesive ribbon is sandwiched between said first and second edges to join said first and second planar portions; and

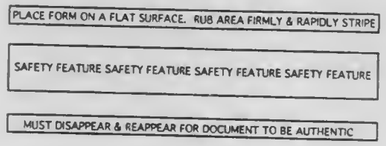
wherein said first and second edges as joined by said adhesive form a unitary binding edge.

5,826,915

METHOD OF USING THERMOCHROMIC MATERIAL ON SECURITY DOCUMENTS AND PRODUCT

Vance P. Gregory, Jr., Wheaton, Ill., assignor to Wallace Computer Services, Inc., Lisle, Ill.

Continuation-in-part of Ser. No. 390,032, Feb. 17, 1995. This application May 1, 1995, Ser. No. 432,612
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—67 **13 Claims**



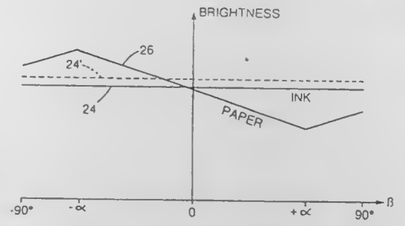
1. A method of assuring originality of security document comprising the steps of providing a substrate having a spot of thermochromic material thereon capable of undergoing a reversible color change upon exposure to heat, associating alpha instructional information with said spot, printing security information on said substrate by a first party, transferring possession of said substrate so as to afford the opportunity of enabling said document and information thereon to be reproduced on a second substrate by a second party, noting said information by a third party in privity with said first party and subjecting said second substrate to heat to determine whether the document is original or authentic.

5,826,916

VISUAL VALIDATION MARK FOR BANK CHECKS AND OTHER SECURITY DOCUMENTS

George K. Phillips, Paso Robles, Calif., assignor to Verify First Technologies, Inc., Paso Robles, Calif.

Continuation of Ser. No. 291,873, Aug. 17, 1994, Pat. No. 5,695,220, which is a continuation of Ser. No. 24,675, Apr. 1, 1993, Pat. No. 5,344,192. This application Dec. 9, 1997, Ser. No. 987,909
Int. Cl.[6] B42D *15/00*
U.S. Cl. 283—91 **16 Claims**



1. A counterfeit-resistant document comprising:

a substrate comprising a non-patterned portion; and

a coating covering said non-patterned portion of said substrate, said coating having a thickness and said coating having a color that matches the color of said non-patterned portion of said substrate, such that said coating is not readily ascertainable by the unaided eye when viewed from an angle approximately perpendicular to the surface of said substrate, said coating having more uniform directional reflective properties than said non-patterned portion of said substrate, such that said coating is readily ascertainable by the unaided eye when viewed from an angle different from said angle approximately perpendicular to the surface of said substrate.

5,826,917

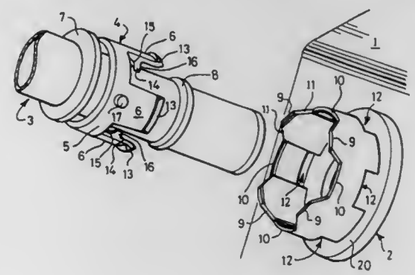
Patent Not Issued For This Number

5,826,918

FUEL TANK CONNECTOR

David T. Bowles, Bicknacre, and Ronald P. Pardy, Tiptree, both of United Kingdom, assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Filed Jan. 9, 1997, Ser. No. 780,891
Int. Cl.[6] F16L *37/26*
U.S. Cl. 285—24 **15 Claims**



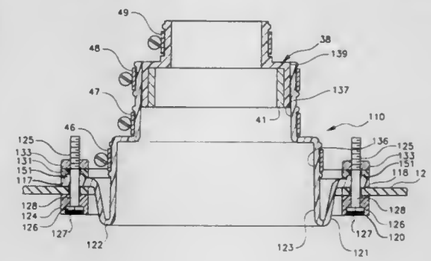
1. A connector for connecting a fuel filler pipe (**3**) to a fuel tank (**1**), the connector comprising a generally tubular sealing housing (**2**) for attachment to a fuel tank (**1**) and a retention collar (**4**) for engagement with the housing (**2**) and for retention of the filler pipe (**3**), the housing (**2**) having a passage therethrough with sealing means (**60,61**) for making a seal with the filler pipe (**3**) and the collar (**4**) having engagement means (**13,55**) for engaging with an engagement feature (**12,39**) of the housing (**2**) and having retention means (**5,14,16**) for retaining a filler pipe (**3**) having a retention feature (**7,8**), with the housing (**2**) having a number of guide channels (**38**) therein for receiving the engagement means (**13,55**) and guiding the engagement means (**13,55**) to the engagement feature (**12,39**) wherein the collar (**4**) may be engaged with the housing (**2**) by relative axial movement in a one-way press-fit engagement, said guide channels (**38**) having entrances formed from crenellations (**9,10,11**) around the end of the generally tubular housing (**2**), the crenellations having bases (**10**) and sides (**11**), which are aligned with the guide channels (**38**), and tops (**9**), which are aligned between the guide channels (**38**).

5,826,919

FLEXIBLE PENETRATION FITTING

Sergio M. Bravo, Los Alamitos, and Don K. Mukai, Pasadena, both of Calif., assignors to S. Bravo Systems, Inc., Buena Park, Calif.

Continuation-in-part of Ser. No. 714,471, Sep. 16, 1996, abandoned. This application Jul. 8, 1997, Ser. No. 889,900
Int. Cl.[6] F16L *3/04*
U.S. Cl. 285—139.2 **5 Claims**



1. A penetration fitting for forming a seal between a pipeline and a wall having an inside surface and an outside surface, the penetration fitting comprising:

a backing ring comprising a ring portion and a plurality of studs extending from the ring portion, the backing ring for placement against the outside surface of the wall and the studs for extending through the wall, the studs including a first smooth shoulder portion proximate the ring portion and a second threaded portion distal the ring portion;

a flexible boot comprising:

a sleeve for receiving the pipeline; and

a sealing flange including a first face for placement against the inside surface of the wall, a second face opposite the first face, a plurality of apertures extending between the first and second faces for receiving the plurality of studs, and a plurality of lips extending circumferentially around each aperture;

a clamp for sealing the sleeve of the flexible boot to the pipeline;

a compression ring defining a plurality of holes for receiving the plurality of studs, each hole including a counter bore for mating with the lips of the sealing flange; and

a plurality of nuts for cooperating with the studs to press the sealing flange between the compression ring and the inside surface of the wall.

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5,826,920

CONDUIT COUPLING

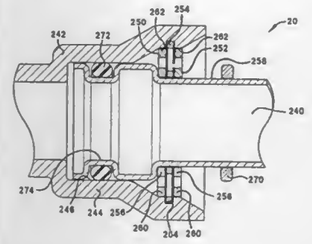
Donald D. Bartholomew, Mt. Clemens, Mich., assignor to Proprietary Technology, Inc., Bloomfield Hills, Mich.

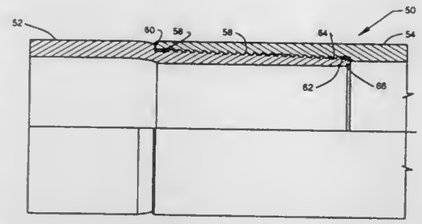
PCT No. PCT/US93/11622, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/14879, PCT Pub. Date Jun. 1, 1995

PCT Filed Nov. 29, 1993, Ser. No. 649,646

Int. Cl.[6] F61L *37/08*

U.S. Cl. 285—305 **20 Claims**





1. A conduit coupling for use in communicating a fluid media therethrough comprising:

a female preassembly having a receptacle with a cylindrical inside surface thereof defining a bore extending therethrough, said bore further defining a longitudinal axis centrally thereralong;

a male preassembly including a male conduit having a cylindrical cross sectional shape, an exterior surface, and a distal edge thereto, said male conduit further having a first expanded diametral portion located closest to said distal edge and a second expanded diametral portion displaced longitudinally therealong, said first and second expanded diametral portions separated by a nominal diametral portion longitudinally therebetween;

said male preassembly including means for sealing externally surrounding said nominal diametral portion of said male conduit therearound;

said male preassembly further including a fastener having a first attachment section thereof attachable to said male conduit adjacent to said second expanded diametral portion thereof opposite from said distal edge thereacross, said fastener further having a second attachment section thereof attachable to said female member thereagainst;

said male preassembly being at least partially insertable within said receptacle bore such that said exterior surface of said male conduit at said first and second expanded diametral portions thereof are in registry with said receptacle inside surface thereagainst, said sealing means substantially preventing said fluid media from passing between said exterior surface of said male conduit and said inside surface of said female member; and

said fastener coupling a predetermined portion of said male conduit within said female member so as to prevent inadvertent longitudinal disassembly therefrom.

5,826,921

THREADED PIPE JOINT

Brown J. Woolley, P.O. Box 1249, Kilgore, Tex. 75662

Continuation of Ser. No. 545,422, Oct. 19, 1995, abandoned, which is a continuation of Ser. No. 331,141, Aug. 15, 1994, abandoned, which is a continuation of Ser. No. 120,841, Sep. 10, 1993, abandoned, which is a continuation of Ser. No. 796,811, Nov. 25, 1991, abandoned. This application Dec. 27, 1996, Ser. No. 777,194

Int. Cl.[6] F16L *15/00*

U.S. Cl. 285—334 **1 Claim**

1. A joint for tubular members comprising:

a first tubular member having an external diameter, an internal diameter, an elongated body portion, an integral pin-end portion with external hook threads and an external shoulder facing said integral pin-end portion and dividing said body portion of said tubular member from said integral pin-end portion of said tubular member;

a second tubular member having an external diameter, an internal diameter, an elongated body portion, an integral box-end portion with internal hook threads adapted to matingly engage said external hook threads on said integral pin-end portion, and an internal shoulder facing said integral box-end portion, and dividing said integral box-end portion from said body of said second tubular member;

said integral pin-end portion of said first tubular member being swaged over a distance from said pin-end portion into said external shoulder to provide a reduced internal diameter therealong providing an increased wall thickness for said integral pin-end portion and said shoulder portion of said first tubular member, said reduced internal diameter extending from an end of said integral pin-end member to, and terminating substantially at, said external shoulder, wherein no portion of said first tubular member in said reduced internal diameter portion has a thickness that is greater than the thickness along the length of said elongated body portion of said first tubular member; and

said external diameters of said first and second tubular members forming a substantially flush surface when said first and second tubular members are threadedly engaged to make up said joint.

5,826,922

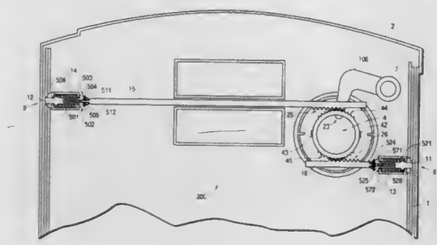
ROTARY LATCH FOR A COMPUTER HOUSING

Glenn Alan Wernig, San Jose, Calif., assignor to Silicon Graphics, Inc., Mountain View, Calif.

Filed Mar. 13, 1997, Ser. No. 815,636

Int. Cl.[6] E05C *1/06*

U.S. Cl. 292—39 **19 Claims**



1. An enclosure for a computer comprising:

a computer housing.

a bezel removably coupled to said computer housing;

a first rail having a first set of gears on one end and having a first latch at its other end, said first rail attached to said housing and said set of gears disposed such that said first latch may move within a limited range;

a second rail having a set of gears on one end and having a second latch at its other end, said second rail secured to said bezel and said gears of said second rail disposed such that said second rail may move within a limited range; and

a rotary knob disposed within an opening in said bezel, said rotary knob having a set of rotary gears disposed therein, said set of rotary gears meshing with said first set of gears and said second set of gears such that, said rotary knob may be rotated so as to move said first rail and said second rail such that said first latch and said second latch may project from said bezel so as to secure said bezel to said housing.

5,826,923

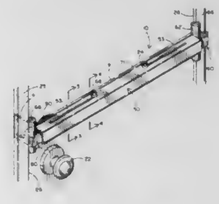
SECURITY APPARATUS FOR HINGED DOOR

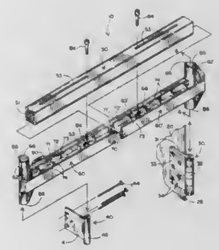
Gary J. Bethurem, 36332 Via Alamo, San Juan Capistrano, Calif. 92675

Filed Nov. 14, 1996, Ser. No. 749,821

Int. Cl.[6] E05C *19/18*

U.S. Cl. 292—259 R **10 Claims**





10. A security apparatus for a door that is surrounded by and pivotally connected to a door frame, said security apparatus preventing the door from rotating relative to the door fame from a closed position to an open position and comprising:

a hollow elongated support member including a wall having opposite ends and a longitudinal slot located between said opposite ends;

first and second telescoping members surrounded by and moving reciprocally through the respective opposite ends of said support member to adjust the length of said security apparatus, each of said first and second telescoping members having a pair of parallel aligned ribs and a space running between said ribs to form a guide channel, a portion of said wall disposed within said guide channel so that said telescoping members are slidably coupled to said support member at said guide channels of said telescoping members; and

means adapted to connect said security apparatus to the door frame so that said support members and said first and second telescoping members extend laterally across the door.

5,826,924

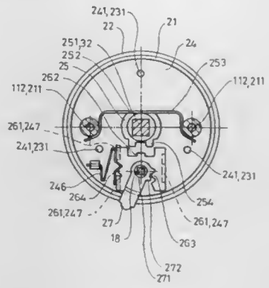
LOCK ASSEMBLY WITH EMERGENT FORCIBLE UNLATCHING FROM OUTSIDE

Chao-Ming Huang, Kaohsiung Hsien, Taiwan, assignor to Taiwan Fu Hsing Industry Co., Ltd, Taiwan

Filed Jul. 25, 1997, Ser. No. 900,287

Int. Cl.[6] E05B *13/00*

U.S. Cl. 292—359 **5 Claims**



1. A lock assembly, comprising:

an inner handle assembly comprising:

a first base plate (**11**) adapted to be secured to an inner side of a door plate,

a first handle (**12**) mounted to the first base plate (**11**) to rotate therewith,

a first mounting plate (**14**) secured to the first base plate (**11**) and including a first slot means (**147**) defined therein,

a returning plate (**15**),

a first control plate (**16**) slidably engaged with the first slot means (**147**) of the first mounting plate (**14**) and including a first toothed structure (**166**),

a linking plate (**17**) mounted to the first control plate (**16**) and including a second toothed structure (**172**) to engage with the first toothed structure (**166**), wherein rotational movement of the linking plate (**17**) along the first slot means (**147**) causes rectilinear movement of the first control plate (**16**) and wherein rectilinear movement of the first control plate (**16**) along the first slot means (**147**) causes rotational movement of the linking plate (**17**), thereby causing the first control plate (**16**) to move between a first latched position which engages with the returning plate (**15**) and a second unlatched position which disengages from the returning plate (**15**),

a first axle rod (**31**) extended through the returning plate (**15**), the first mounting plate (**14**), and the first base plate (**11**) to rotate therewith and including a first end secured to the first handle (**12**) to rotate therewith and a second end,

an outer handle assembly comprising:

a second base plate (**21**) adapted to be secured to an outer side of the door plate,

a second handle (**22**) mounted to the second base plate (**21**) to rotate therewith,

a second mounting plate (**24**) secured to the second base plate (**21**) and including a second slot means (**247**) defined therein,

a restraining plate (**25**) including a third toothed structure (**254**),

a second control plate (**26**) slidably engaged with the second slot means (**247**) of the second mounting plate (**24**) and including a fourth toothed structure (**262**) to releasably engage with the third toothed structure (**254**) and a fifth tooted structure (**263**),

a latching plate (**27**) including a first end mounted to the second control plate (**26**) and including a sixth toothed structure (**272**) to engage with the fifth toothed structure (**263**) and a second operative end, wherein rotational movement of the latching plate (**27**) causes rectilinear movement of the second control plate (**26**), thereby causing the second control plate (**26**) to move between a first latched position

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in which the third toothed structure (**254**) engages with the fourth toothed structure (**262**) to prevent rotational movement of the restraining plate (**25**) and a second unlatched position in which the third toothed structure (**254**) disengages from the fourth toothed structure (**262**) to allow rotational movement of the restraining plate (**25**),

a second axle rod (**32**) extended through the restraining plate (**25**), the second mounting plate (**24**), and the second base plate (**21**) to rotate therewith and including a first end secured to the second handle (**22**) to rotate therewith and a second end connected to the second end of the first axle rod,

a latch assembly (**3**) including a latch (**35**) actuatable upon rotation of the first axle rod (**31**) and the second axle rod (**32**), and

a linking rod (**18**) extended through the linking plate (**17**), the first mounting plate (**14**), the first base plate (**14**), the latching assembly (**3**), the latching plate (**27**), the second mounting plate (**24**), and the second base plate (**21**) to rotate therewith,

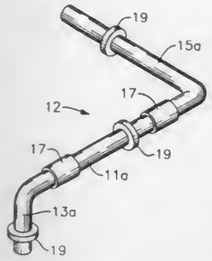
whereby when the first control plate (**16**) is moved from the first latched position to the second unlatched position thereof, the second control plate (**26**) is moved to the second unlatched position thereof and the second handle (**22**) is not rotatable, and when either one of the first handle (**12**) and the latching plate (**27**) is rotated, the first control plate (**16**) and the second control plate (**26**) are moved to the first latched positions thereof.

5,826,925

DEVICE FOR ALIGNING OBJECTS

Donald R. Marx, 9450 Harbor Greens Way, #A-507, Seminole, Fla. 33776

Filed Oct. 4, 1996, Ser. No. 726,881
Int. Cl.[6] B25J *1/04*
U.S. Cl. 294—1.1 **1 Claim**



1. A device that provides means for aligning a plurality of objects having a plurality of differing heights that are supported by a first horizontally disposed support means that is disposed in parallel, vertically spaced relation to a second horizontally disposed support means where said first and second support means are vertically spaced apart by a predetermined distance that is greater than a maximum height of said differing heights, said predetermined distance being a clearance space, comprising:

an elongated arm of predetermined length having a distal end and a proximal end;

a handle means disposed at the proximal end of the elongated arm in perpendicular, coplanar relation thereto;

an extension means disposed at the distal end of the elongated arm in perpendicular, coplanar relation thereto;

whereby said device is grasped by said handle means, positioned in a horizontal plane, inserted through said clearance space in a first direction, rotated until said extension means is positioned rearwardly of at least one of said objects of said plurality of objects, and displaced in a second direction opposite to said first direction to displace at least one of said objects in said second direction;

whereby said device is then again displaced in said first direction, moved laterally until said extension means is positioned rearwardly of at least a second of said objects of said plurality of objects, and displaced again in said second direction to displace at least said second of said objects; and

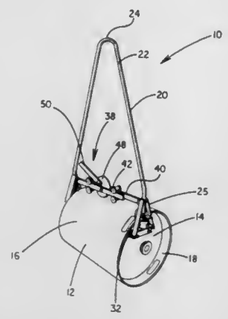
whereby said procedure is repeated until all of said objects have been brought into alignment with one another.

5,826,926

KEG ROLLER

Jeff Levey, and James Neilson, both of 10 Cornton Rd, Bridge Of Allan, Stirling, Scotland, FK9 4DB

Filed Nov. 13, 1997, Ser. No. 970,016
Int. Cl.[6] B65G *7/00*
U.S. Cl. 294—4 **6 Claims**



2. A keg roller for use with a keg with a pair of circular faces and a cylindrical periphery formed therebetween, the keg having a pair of peripheral lips mounted to a periphery of both circular faces and defining an extension of the cylindrical periphery, the keg roller comprising:

a handle with a pair of ends; and

a pair of roller assemblies each mounted to an associated one of the ends of the handle, wherein the roller assemblies are adapted to rotatably engage the keg;

wherein the handle is capable of allowing the ends to be biased outwardly and further included is a cam for separating the ends of the handle via the rotation of an arm extending radially from the cam, wherein the cam is mounted between a pair of connector strips which are in turn mounted between the ends of the handle.

5,826,927

HAND-HELD MATERIAL CARRIER

Loren L. Long, 2067 Quail Canyon Ct., Hayward, Calif. 94542

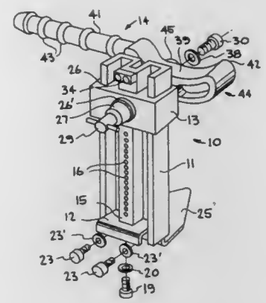
Filed Sep. 22, 1997, Ser. No. 936,470
Int. Cl.[6] B25G *7/12*
U.S. Cl. 294—15 **20 Claims**

1. A carrier for materials, comprising:

a vertically extending riser shaft,

a foot member connected to one end of said riser shaft,

a housing adjustably mounted on said riser shaft,



said housing including an opening having a configuration substantially corresponding to a cross-section of said riser shaft, said riser shaft extending through said opening in said housing,

means for adjustably mounting said housing along a length of said riser shaft, and

a handle pivotably mounted on said housing,

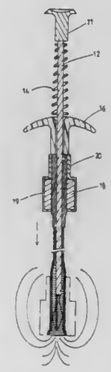
whereby pivotal movement of said handle is adapted to pinch material in said carrier enabling transport thereof.

5,826,928

MULTIFUNCTIONAL DEVICE FOR CATCHING AND HOLDING AN OBJECT

Chen Shui Shang, 199 Su Mau Road, Ho Mei Township, Chan Hua Hsien, Taiwan

Filed Nov. 4, 1997, Ser. No. 963,844
Claims priority, application China, Nov. 13, 1996, 96243440
Int. Cl.[6] B25J *1/02;15/06*
U.S. Cl. 294—24 **1 Claim**



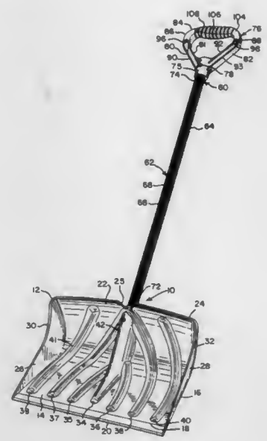
1. A device for catching and holding an object, said device comprising a rod body provided at a top end thereof with a button and at a bottom end thereof with a plurality of elastic claw pieces, said rod body further provided sequentially with a compression spring and a flexible sleeve provided at a top thereof with a handle body and at a bottom thereof with a receiving portion; wherein said flexible sleeve is provided with a magnetic element slidably fitted thereover, said magnetic element sheathed by a jacket extending to form a locating body capable of locating at a bottom of said handle body or a protruded edge of said receiving portion of said flexible sleeve.

5,826,929

COMBO SNOW REMOVAL TOOL

Thomas A. Tisbo, Barrington Hills; Stephen P. Whitehead, Elgin, and Lyle Rosine, Aurora, all of Ill., assignors to Suncast Corporation, Batavia, Ill.

Filed Aug. 8, 1996, Ser. No. 693,485
Int. Cl.[6] E01H *5/02*
U.S. Cl. 294—54.5 **10 Claims**



1. A combo snow tool for manually pushing and shoveling snow, comprising:

a curved combination snow blade of impact-resistant plastic having a concave front surface for engaging snow and a convex back surface, said curved snow blade having a lower portion providing a leading edge and an upper portion providing a trailing edge, and said blade having ribs extending between said lower portion and said upper portion for enhancing the structural strength of said curved combination blade;

a ribbed handle assembly for manually maneuvering said blade, comprising

an elongated tubular manually grippable shaft providing a ribbed handle of impact-resistant plastic connected to said curved blade, said ribbed handle having an axis and a set of elongated circumferential ribs providing raised convex ridges, said circumferential ribs being separated by elongated grooves extending substantially parallel to said axis towards said blade, and said circumferential ribs cooperating with said elongated grooves for enhancing gripping of said combo snow tool;

a generally D-shaped plastic handgrip connected to said ribbed handle at a location spaced from said curved blade, said ribbed handle extending between and secured to said handgrip and said curved blade, said handgrip having flared sides converging toward said ribbed handle and a bight providing a manually grippable portion extending between and integrally connecting said flared sides;

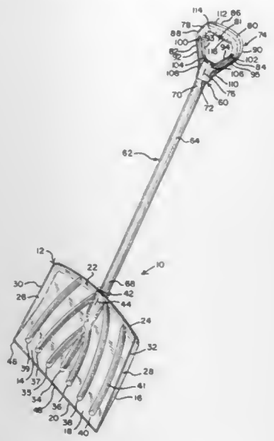
said flared sides of said handgrip have raised flanges comprising inner and outer converging ribs for enhancing the structural strength of said handgrip;

said manually grippable portion of said handgrip having a textured convex upper surface with an array of raised convex textured pads separated by aliquotly spaced arcuate grooves for facilitating gripping of said handgrip, and

said manually grippable portion of said handgrip having a ribbed convex lower surface extending integrally downwardly from said textured upper surface of said handgrip, said ribbed lower surface having aliquotly spaced, convex finger-gripping ribs for enhancing the structural strength of said handgrip and for facilitating gripping of said bight.

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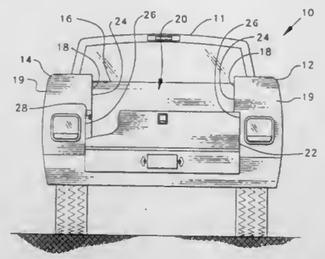
5,826,930
CHILD'S SNOW REMOVAL TOOL
Stephen P. Whitehead, Elgin, and Lyle Rosine, Aurora, both of Ill., assignors to Suncast Corporation, Batavia, Ill.
Filed Oct. 7, 1996, Ser. No. 726,982
Int. Cl.[6] E01H *5/02*
U.S. Cl. 294—54.5 **9 Claims**



1. A child's snow tool, comprising:
a snow blade;
a handle assembly comprising a plastic handle operatively connected to said snow blade and a handgrip operatively connected to said handle;
said plastic handle comprising an annular tubular shaft with a lower blade-connecting end and an upper handgrip-connecting end;
said snow blade having ribs and forming a socket for receiving the lower blade-connecting end of said annular tubular shaft;
said handgrip comprising a generally D-shaped plastic handgrip having a female socket for receiving the upper handgrip-connecting end of said annular tubular shaft, said handgrip having flared sides connected to said female socket and a crossbar extending between and connected to said flared sides, each of said flared sides having substantially parallel front and back flanges and a generally H-shaped cross-sectional configuration, said crossbar having a curved front face and a back with crossbar flanges, crossbar ribs extending between and connecting said crossbar flanges, and side ribs extending between and connecting the back flanges of said flared sides.

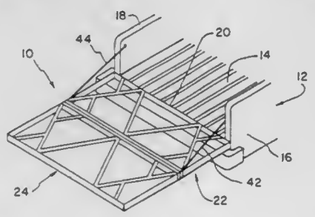
5,826,931
TRUCK BODY
Dan Perlman, Auburn; Richard Gordon, Shillington; Jack O'Donnell, Lancaster; William Rahn, Reading; Lynn Gordon, and Jim DeTemple, both of Schillington, all of Pa., assignors to Reading Body Works, Inc., Shillington, Pa.
Division of Ser. No. 688,505, Jul. 30, 1996. This application Feb. 20, 1997, Ser. No. 803,268
Int. Cl.[6] B62D *33/03*
U.S. Cl. 296—37.6 **3 Claims**

1. A truck body, comprising:
(a) enclosures on each side of said truck body, each of said enclosures having an inner wall, a forward wall, and a rear wall;
(b) a central forward wall joining said enclosure forward walls;
(c) a central cargo area intermediate said inner walls and said central forward wall, having a horizontal cargo bed; and



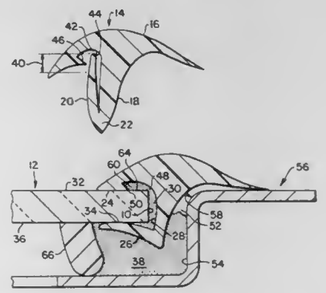
(d) a tailgate at the rear of said cargo area, said tailgate being generally rectangular and upright in a closed position, rotatably mounted on each side thereof near the bottom thereof to said inner walls, and detachably latchable near the top thereof to said inner walls;
wherein said inner walls have upper and lower sections, the horizontal distance between opposite portions of said upper sections being less than the horizontal distance between opposite portions of said lower sections; and wherein said tailgate is latchable to said lower sections of said inner walls.

5,826,932
CARGO BED EXTENSION
Steve DeSimone, #1 Ibis Rd., Hilton Head Island, S.C. 29928
Filed Feb. 20, 1996, Ser. No. 603,281
Int. Cl.[6] B62D *25/00*
U.S. Cl. 296—57.1 **10 Claims**



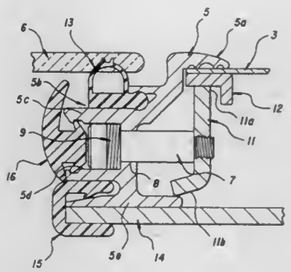
1. A bed extension for a vehicle including a bed and first and second side walls on opposite sides of said bed, said first and second side walls extending to a predetermined vertical height above said bed, said bed having an end extending across a rear portion of said vehicle, said bed extension being pivotably movable between a stowed position perpendicular to said bed and a deployed position coplanar with said bed, said bed extension comprising:
a first member having a base edge, an oppositely-disposed distal edge, opposing lateral edges oriented transverse to said base and distal edges, and a truss arrangement comprising trusses oriented obliquely to said base, distal and lateral edges, said first member having a height as measured between said base and distal edges thereof, said first member having a width as measured between said lateral edges thereof, said base edge being pivotably attached to said end of said bed such that said first member is pivotable between said stowed position and said deployed position where said first member is substantially coplanar with said bed of said vehicle;
a second member having a base edge, an oppositely-disposed distal edge, opposing lateral edges oriented transverse to said base and distal edges of said second member, and a truss arrangement comprising trusses oriented obliquely to said base, distal and lateral edges, said second member having a height as measured between said base and distal edges thereof, said second member having a width as measured between said lateral edges thereof, said base edge of said second member being pivotably attached to said distal edge of said first member such that said second member is pivotable between said deployed position in which said second member is coplanar with said first member and said stowed position in which said second member overlays said first member such that said second member is stored within said side walls of said bed and said first member in said stowed position; and
means for supporting said bed extension, said supporting means having one end attached to said lateral edges of said first member and an opposite end attached to said first and second side walls of said vehicle;
wherein when said bed extension is in said stowed position said heights of said first and second members are not greater than said vertical height of said first and second side walls of said bed, such that said bed extension does not project above said first and second side walls when in said stowed position and said bed extension provides support for cargo carried by said bed that extends beyond said bed when said bed extension is in said deployed position.

5,826,933
AUTO GRIPPER MOLDING WITH MECHANICAL INTERLOCK
Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570
Filed Feb. 9, 1996, Ser. No. 599,059
Int. Cl.[6] B60J *10/02*
U.S. Cl. 296—93 **1 Claim**



1. For installation about a peripheral edge of an auto windshield a gripper molding of a type having a cross sectional shape formed by an upper crown, a first leg depending from said crown, and a second leg connected to extend from a free end of said first leg in parallel relation to said crown, said crown and first and second legs cooperating to bound a windshield peripheral edge-gripping compartment to receive in inserted relation therein said auto windshield peripheral edge, the improvements to said gripper molding for providing a mechanical interlock between said windshield peripheral edge and said gripper molding comprising said second leg modified to extend from said connection to said first leg in parallel relation to said first leg and sized to exceed in length the size of said depending length of said first leg, a surface in said crown in facing relation to said windshield peripheral edge-gripping compartment having wall means bounding a notch of a selected cross sectional shape and located to receive in projected relation therein said size-exceeding length portion of said second leg, said second leg being adapted to be urged through a pivotal traverse from said notch to an operative position beneath said windshield peripheral edge effective to grippingly engage said auto windshield peripheral edge in inserted position in said windshield peripheral edge-gripping compartment, and said notch wall means including an angularly inclined wall inclined in the direction of a corner of said windshield peripheral edge and having an operative position in contact inwardly of an outer surface of said windshield forming a plane of said corner of said windshield peripheral edge, and urethane deposited in said notch, whereby said urethane is effective to harden in bonded relation to said windshield outer surface and also above said notch inclined wall to thereby contribute to providing a mechanical interlock between said windshield peripheral edge and said gripper molding.

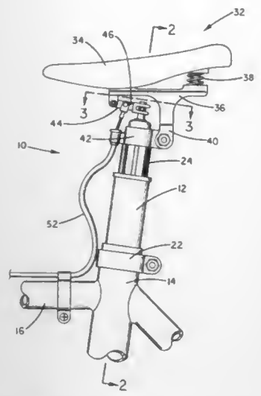
5,826,934
CAM-ACTUATED VEHICLE SUNROOF, AND METHOD OF INSTALLING THE SAME
Ronald E. Wooten, Nuevo, Calif., assignor to Stretch Forming Corporation, Murrieta, Calif.
Filed Oct. 25, 1996, Ser. No. 736,662
Int. Cl.[6] B60J *7/00*
U.S. Cl. 296—216.07 **19 Claims**



1. A vehicle sunroof frame configured to be mounted in an opening a roof of a vehicle, said vehicle sunroof frame comprising:
a sunroof frame means for supporting a sunroof panel therein, said sunroof frame means having an outer periphery which essentially corresponds to a periphery of an opening in the vehicle roof, said sunroof frame means including a support portion configured to be inserted in the opening, and a lip portion configured to engage an outer surface of an edge of the opening;
at least one rotating cam means rotatably disposed on said support portion of said frame means, said rotating cam means comprising a cam member disposed on a rotatable shaft, said cam member and said rotatable shaft being rotatable to exert a force against an inner surface of the edge of the opening thereby clamping the edge of the vehicle roof between the lip of the frame means and the rotating means,
wherein said rotatable shaft penetrates said support portion of said frame means, and has said cam member fixedly disposed on an end thereof, said rotatable shaft being rotatable along an axis which is substantially parallel to a plane of the vehicle roof.

5,826,935
AUTOMATIC BICYCLE SEAT ADJUSTER
Renato J. DeFreitas, 40 Waters Road, Kingston Upon Thames, Surrey, United Kingdom, KT1 3LP
Filed Nov. 19, 1997, Ser. No. 974,049
Int. Cl.[6] B62D *1/00*
U.S. Cl. 297—215.13 **5 Claims**

2. A new automatic bicycle seat adjuster for adjusting a bicycle seat's height while riding comprising, in combination:
a support tube slidably receivable within an existing seat support tube of a bicycle frame, the support tube having a generally elongated and cylindrical configuration with an open upper end and a closed lower end;
a gas cylinder received within the support tube, the gas cylinder having a lower end secured to the closed lower end of the support tube, the gas cylinder having a release valve extending upwardly from an upper end thereof with the release valve positioned outwardly of the open upper end of the support tube;



a bicycle seat adjustably secured with respect to the gas cylinder; and

a release lever coupled with respect to the release valve of the gas cylinder.

5,826,936

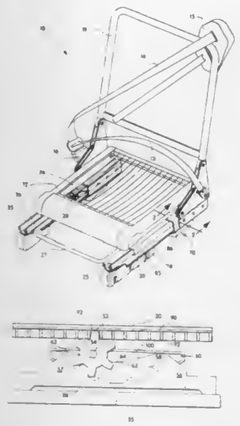
VEHICLE SEAT ASSEMBLY WITH INERTIA LATCH

Joseph John Scordato, Elkhart, Ind.; Dale E. Lyons, Cassopolis, Mich.; Christopher George Pasternak, Mishawaka, Ind., and Ruben Hernandez, Roscoe, Ill., assignors to Excel Industries, Inc., Elkhart, Ind.

Continuation of Ser. No. 821,670, Mar. 19, 1997, abandoned. This application Nov. 6, 1997, Ser. No. 965,575

Int. Cl.[6] B60N *2/42*

U.S. Cl. 297—216.1 **20 Claims**



1. A seat track assembly for a motor vehicle comprising, in combination:

an upper track sub-assembly comprising an upper track;

a lower track sub-assembly comprising a lower track and a stop, the upper track being slidable over a principal load bearing surface of the lower track;

a positive engagement inertia latch comprising a gear free of the principal load bearing surface and mounted for longitudinal travel in response to longitudinal acceleration relative to the lower track sub-assembly, the inertia latch having a latching condition in which the gear is in an engagement position engaging the upper track sub-assembly and the stop, and the inertia latch resists longitudinal movement of the upper track sub-assembly relative to the lower track sub-assembly, and a non-latching condition in which the gear is in a non-engagement position not engaging the stop; and

a base attached to the lower track sub-assembly, wherein the base comprises a contoured surface forming a valley and a pair of sloped walls extending longitudinally fore-and-aft of the valley, and the gear has an axle which is positioned on the contoured surface.

5,826,937

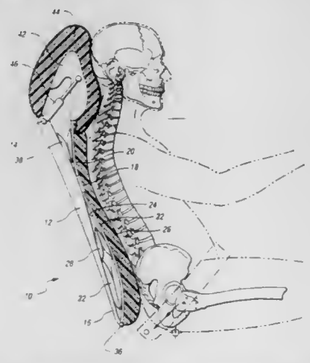
PNEUMATIC ENERGY ABSORBING SEAT ASSEMBLY

Andrew J. Massara, Vargön, Sweden, assignor to Lear Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 787,677, Jan. 23, 1997, abandoned. This application May 9, 1997, Ser. No. 853,436

Int. Cl.[6] A47C *4/54*

U.S. Cl. 297—284.6 **8 Claims**



1. A vehicle seat back assembly adapted for attachment to a seat back shell, comprising:

a bracket adapted for attachment to the seat back shell, said bracket having a bracket slot formed therethrough;

a flexible plate adapted for positioning adjacent the seat back shell and having a portion slidably received within said bracket slot;

at least one thoracic bladder and at least one lumbar bladder positioned against the flexible plate, wherein said bracket slot is positioned between the thoracic bladder and lumbar bladder;

a trim cover attached to the flexible plate; and

a cushion disposed within the trim cover.

5,826,938

VEHICLE SEAT WITH SIDE AIR BAG ASSEMBLY

Hitoshi Yanase, Toyota; Hisaaki Kato, Anjyo; Masanori Oyabu, Toyota; Yasunori Hasegawa, Kasugai, and Mitsuyoshi Ohno, Toyota, all of Japan, assignors to Araco Kabushiki Kaisha, and Toyota Jodosha Kabushiki Kaisha, both of Aichi-ken, Japan

Filed Oct. 9, 1996, Ser. No. 728,492

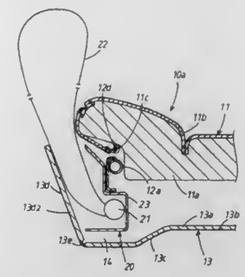
Claims priority, application Japan, Oct. 11, 1995, 7-263239

Int. Cl.[6] B60R *21/22*

U.S. Cl. 297—216.13 **11 Claims**

1. A vehicle seat equipped with a side air bag assembly, the side air bag assembly comprising:

an air bag assembled in a folded condition within a side cavity formed in one side face of a back rest of the vehicle seat, said back rest having a front face, at least one said side face and a rear face, said side cavity extending in a vertical direction; and



a rear attachment board mounted on a support frame of said back rest and having a back portion forming the rear face of said back rest and a side portion covering said side cavity and the air bag in said side cavity, wherein

the side portion of said rear attachment board is formed as a door operatively connected to open outwardly in a lateral direction when receiving a thrusting force caused by inflation of said air bag and

the back portion of said rear attachment board is mounted on said support frame so as to be fixedly spaced from a rear face of a cushion of said back rest, said cushion being attached to said support frame forming at least front face of said back rest.

5,826,939

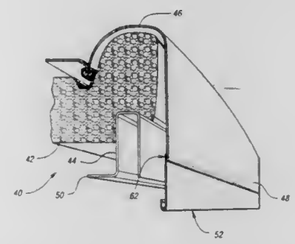
METHOD AND APPARATUS FOR ATTACHING A TRIM COVER TO A SEAT FRAME

Michael T. Beyer, Walled Lake, Mich., assignor to Lear Corporation, Southfield, Mich.

Filed Aug. 13, 1997, Ser. No. 910,725

Int. Cl.[6] A47C *27/00*

U.S. Cl. 297—218.3 **6 Claims**



1. An apparatus for attaching a trim cover to an attachment feature in a vehicle, comprising:

a retainer having first and second co-extruded portions, said first portion being adapted for attachment to the trim cover and said second portion being adapted to engage the attachment feature;

wherein said first portion comprises a relatively flexible material to facilitate flexing for attachment;

wherein said second portion comprises a relatively rigid material to facilitate rigid engagement with the attachment feature; and

wherein said second portion comprises a substantially J-shaped cross-section with a hook portion configured for engagement with the attachment feature.

5,826,940

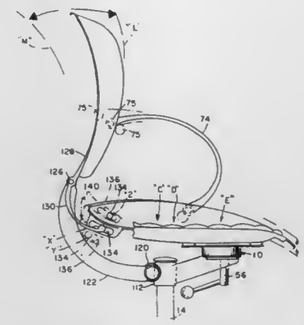
REACTIVE MULTI-POSITION CHAIR

Dewey Hodgdon, 48 Forster Rd., Manchester, Mass. 01944

Continuation-in-part of Ser. No. 562,915, Nov. 27, 1995. This application May 28, 1996, Ser. No. 654,418

Int. Cl.[6] A47C *3/00*

U.S. Cl. 297—303.1 **2 Claims**



1. A multi-position chair assembly permitting the support and comfort of a user thereof, in a plurality of sitting positions, comprising:

a lower chair support panel attached to an adjustable tilt support mechanism, which adjustable tilt support mechanism is carried by a vertically maintained hub; and

a frame attached to said hub for supporting a chair back support panel;

said back support panel being pivotably attached to said frame to permit tilting of said back support panel relative to the center of gravity of a user of said chair assembly with respect to said adjustable tilt support mechanism under said lower support panel;

said lower support panel and said back support panel being connected by a single pair of slidable pivotable linkages which effects pivoting of said back support panel about a horizontal axis when said lower support panel is tilted about said adjustable tilt support mechanism;

said back support panel including a lowermost member having a carrier pin extending transversely from each corner thereof, and said lower support panel having a frame with a slot therein adjacent its rearward edge, each said carrier pin being in a cammed slidable linkage relationship with said slot to effect said single slidable pivotable linkage correction between said lower panel and said back support panel; and

an arm rest disposed on each side of said chair assembly, said arm rest being pivotably connected at an upper end thereof, to said back support panel, and being pivotably connected at a lower end thereof, to said lower support panel, to permit limited articulation between said back and lower support panels and said arm rests.

5,826,941

ADJUSTABLE FOOT REST

David L. Olsen, 9 Orchard La., Wolcott, Conn. 06716

Filed May 19, 1997, Ser. No. 858,454

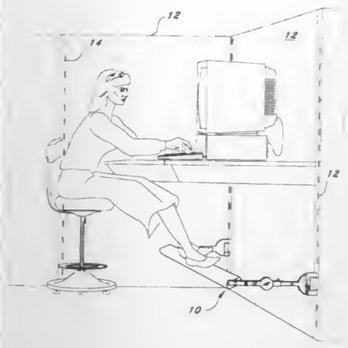
Int. Cl.[6] A47C *16/02*

U.S. Cl. 297—423.39 **4 Claims**

1. An adjustable foot rest for use in an environment having substantially vertical, bracket mounting channels, the adjustable foot rest comprising:

first and second support arms adapted to be secured to the bracket mounting channels, each said support arm comprising:

(1) an inner portion having opposed ends, one of said ends having a first toothed member and the other of said ends



having a claw for removably securing each said support arm to the bracket mounting channels, said claw including a fixed tooth, a slidably adjustable articular tooth opposite said fixed tooth and an adjustment knob for adjustably securing said articular tooth; and

(2) an outer portion having opposed ends, one of said ends having a second toothed member articulately connected to said first toothed member, there further being a threaded pin connecting said first and second toothed members, said outer portion being axially rotatable about said threaded pin; and

a foot supporting and resting member connected to the other of said ends on said outer portions of said first and second support arms.

5,826,942

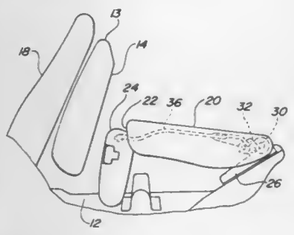
VEHICLE SEAT ASSEMBLY WITH ADJUSTABLE HEADREST COUPLED TO SEAT BACK LATCH

Mark Sutton, Westland; Donald Cannell, Walled Lake; Joseph F. Prosniewski, Browntown Township, and John W. Green, Brooklyn, all of Mich., assignors to Hoover Universal, Inc., Plymouth, Mich.

Filed Jan. 23, 1997, Ser. No. 787,625

Int. Cl.[6] B60N 2/02

U.S. Cl. 297—378.12 **6 Claims**



1. A vehicle seat assembly comprising:

a generally horizontal seat cushion having a rear end;

a seat back including a backrest with lower and upper ends having a use position extending upwardly from the rear end of the seat and against which a seat occupant rests their torso, the seat back further including a headrest mounted at the upper end of the backrest, the headrest having a use position extending upwardly from the upper end of the backrest, the backrest being movable from its use position to a stored position;

means for vertically adjusting the use position of the headrest relative to the backrest;

a releasable seat back latch for holding the backrest in its upwardly extending use position;

the headrest being movable mounted to the backrest for movement relative to the backrest from its upwardly extending use position to a lower stored position; and

releasable coupling means operably associated with the headrest and the seat back latch for coupling the headrest to the seat back latch and for releasing the seat back latch in response to movement of the headrest from its use position to its stored position, the coupling means being released when the headrest is vertically moved above its lowermost vertical position and only being coupled when the headrest is in the lowermost vertical position relative to the backrest whereby the seat back latch is released upon movement of the headrest to its stored position to enable the seat back to be moved to its stored position.

5,826,943

Patent Not Issued For This Number

5,826,944

CONNECTOR FORMATION BETWEEN SEAT AREAS OF A MOTOR VEHICLE SEAT

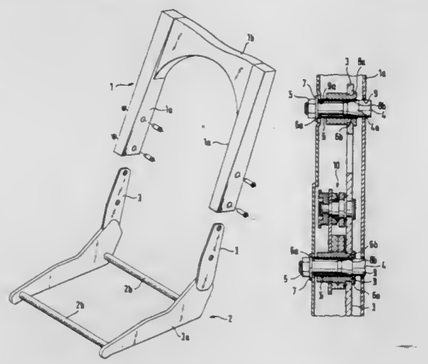
Wilfried Beneker, Sulingen, and Carsten Reith, Niedernwöhren, both of Germany, assignors to Bertrand Faure Sitztechnik GmbH & Co. KG, Stadthagen, Germany

Filed Mar. 13, 1997, Ser. No. 816,881

Claims priority, application Germany, Mar. 19, 1996, 196 10 826.8

Int. Cl.[6] A47C 7/00

U.S. Cl. 297—440.2 **13 Claims**



1. An apparatus for connecting first seat areas and second seat areas extending substantially parallel with each other, each of said first seat areas corresponding to one of said second seat areas for connection thereto, said apparatus comprising:

a receiving bore fixed on one of said first and second seat areas;

a threaded stem having a conical spreading area, said threaded stem penetrating at least one corresponding set of first and second seat areas crosswise through said receiving bore and bearing a nut on an end opposite of said conical spreading area, said threaded stem being freely moveable axially on one end; and

a spread bushing encompassing said threaded stem such that when said threaded stem is tightened by means of said nut, said spread bushing spreads outward over said conical spreading area whereby a face of said spread bushing rests firmly against one of said seat areas, an inner contour of said spread bushing rests firmly against said conical spreading, and an outer periphery of said spread bushing rests firmly against an inner wall of said receiving bore.

5,826,945

BENCH SEAT SYSTEM FOR MOTOR VEHICLES ESPECIALLY FOR SMALL VANS

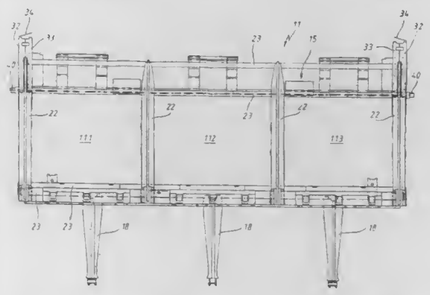
Helmut Siebler; Georgios Tsilchorozidis, both of Stuttgart; Dieter Mankiewicz, Lohr; Ulrich-Jürgen Mampe, Lohr; Norbert Kübert, Lohr; Wolfgang Kroner, Flörsbachtal, and Gerd Ponath, Lohr, all of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany

Filed Jan. 23, 1996, Ser. No. 589,065

Claims priority, application Germany, Jan. 23, 1995, 195 01 743.9

Int. Cl.[6] A47C 7/02

U.S. Cl. 297—452.18 **50 Claims**



1. A modular bench seat system for passenger vans comprising:

at least one seat bench having a plurality of adjacent passenger seats,

a plurality of L-shaped pillars which in use are disposed at respective opposite lateral sides of respective ones of said seat benches, each said L-shaped pillar including a long leg forming a substantially vertically extending seat back support and a short leg forming a substantially horizontally extending seat cushion support,

a plurality of cross tubes for connecting said L-shaped pillars together, said cross tubes including at least one lower cross tube extending through a plurality of respective ones of said short legs and at least one upper cross tube extending through a plurality of respective ones of said long legs and over said plurality of adjacent passenger seats,

and a plurality of seat feet for supportably connecting some of said cross tubes to a vehicle floor at a position intermediate respective pairs of said L-shaped pillars,

wherein said L-shaped pillars and said cross tubes are configured to permit adjustment of said pillars along the length of the cross tubes to accommodate modular assembly of differently configured seat benches utilizing standard L-shaped pillars and cross tubes.

5,826,946

VEHICLE SEAT SUPPORT PANEL

Bryon R. Matthews, Grand Blanc; Ed Dishner, Davison, and Michael E. Rhoads, Shelby Township, all of Mich., assignors to Lear Corp., Southfield, Mich.

Filed Oct. 30, 1997, Ser. No. 961,337

Int. Cl.[6] A47C 7/02

U.S. Cl. 297—452.57 **13 Claims**

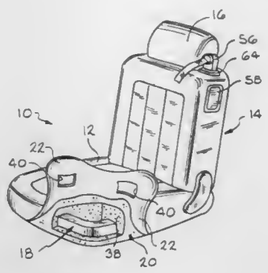
1. A vehicle seat assembly comprising:

a substantially horizontal seat bottom defining an occupant sitting area;

a substantially upright seat back defining an occupant back support;

each of said seat bottom and said seat back including a rigid frame supporting a resilient foam cushion encased by a trim cover material;

at least one of said seat bottom and said seat back having a cutaway section defining a void space in said foam cushion and a plurality of apertures in said trim cover material;



a rigid support panel secured to one of said frames, said panel seated in said cutaway section of said frame to fill said void space in said foam cushion between said trim cover material and said frame; and

said support panel having first and second openings for providing rigid passageways through said apertures in said trim cover material and said openings in said support panel to provide access to said frame.

5,826,947

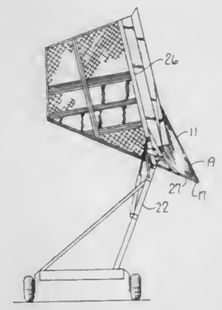
FOLD-OUT CHUTE EXTENSION FOR A SHUTTLE DUMPING TRANSPORT VEHICLE FOR HARVESTED COTTON

Donald F. Hornung, Dodge City, and Thomas A. Klenke, Spearville, both of Kans., assignors to Crust Buster/Speed King, Inc., Dodge City, Kans.

Filed Apr. 10, 1997, Ser. No. 833,936

Int. Cl.[6] B60P 01/16;01/36

U.S. Cl. 298—7 **3 Claims**



2. A vehicle for transporting and dumping loads of particulate material comprising:

a. a vehicle frame having spaced, ground engaging wheels extending therefrom, and angularly upstanding spaced frame members projecting upward from said vehicle frame;

b. a dump basket operative to contain said loads of particulate material therein, said dump basket situated between said spaced frame members and having spaced end walls, a first side wall, and a dump side wall, said spaced end walls, said first side wall and said dump side walls each having respective upper edges, the respective junctures of said upper edges forming spaced, upper corners, said dump basket having hinge connections to said frame members at said upper corners of said upper edges of said end walls and said dump side wall for upward rotation, tilting and dumping of said loads of particulate material of said dump basket;

c. a drop chute extension swingably connected to said dump basket by hinges and extending along said upper edge of said dump side wall; and

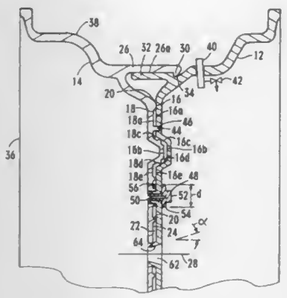
d. a top arm and a bottom arm extending between said basket and said chute extension for causing the swinging of said chute extension about said hinges and retraction and extension of said chute extension relative to the dump basket;
e. said top arm being affixed at a first end to the chute extension and at a second end to a pivot plate;
f. said lower arm being affixed at an upper end to the pivot plate and at a lower end to a post of the vehicle;
g. said pivot plate being affixed to a horizontal frame member; and
h. said pivot plate being affixed to said horizontal frame member with a bracket, said bracket mounted to said horizontal frame member and having a post that detachably mates with an aperture of said pivot plate to hold said pivot plate in place on said horizontal frame member with means for affixure.

5,826,948

TWO-PIECE PLASTIC WHEEL FOR LIGHTWEIGHT AUTOMOBILES

Del C. Schroeder, Bloomfield Hills, and John G. Argeropoulos, Sterling Heights, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 542,495, Oct. 13, 1995, abandoned. This application Apr. 3, 1997, Ser. No. 832,134
Int. Cl.[6] B60B *3/08;5/02*
U.S. Cl. 301—64.7 **5 Claims**



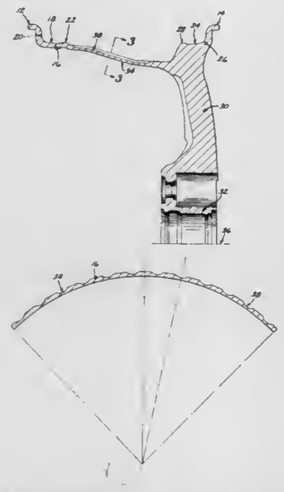
1. A wheel for a motor vehicle, comprising:
an outboard unitary plastic wheel rim defining an inboard-oriented engagement surface and an inner shear ring, said inboard-oriented engagement surface including a first disc-shaped engagement ring defining a first plane, a second disc-shaped engagement ring defining a second plane, and an annular ramp surface extending therebetween;
an inboard unitary plastic wheel rim defining an outboard-oriented engagement surface and an outer shear ring, said outboard-oriented engagement surface including a first disc-shaped engagement ring defining a first plane, a second disc-shaped engagement ring defining a second plane, and an annular ramp surface extending therebetween, said inner and outer shear rings defining a peripheral adhesive surface parallel and circumferential to an axis of the wheel; and
at least one spacer integrally formed on at least one of said first engagement rings such that said first engagement ring of said outboard unitary plastic wheel rim is substantially closely spaced from said first engagement ring of said inboard unitary plastic wheel rim.

5,826,949

VEHICLE WHEEL HAVING WEIGHT-REDUCING RIM

Andrea Bortoloni, 35027 Noventa Padovana, Padova, Italy

Continuation of Ser. No. 641,881, May 2, 1996, abandoned. This application Nov. 12, 1997, Ser. No. 969,109
Int. Cl.[6] B60B *21/02*
U.S. Cl. 301—97 **5 Claims**



1. A generally cylindrical rim component of an automotive wheel having a tire-facing side and a brake-facing side, wherein said rim has a cantilevered edge supported from a spider extending radially outwardly from a central hub, comprising:
a smooth-faced tire seating surface circumferentially disposed near said edge of said rim; and
an intermediate section extending between said tire seating surface and said spider for structurally supporting said surface, such section having formed its tire-facing side a repeating pattern of thickness variations so as to define axially extending ridges.

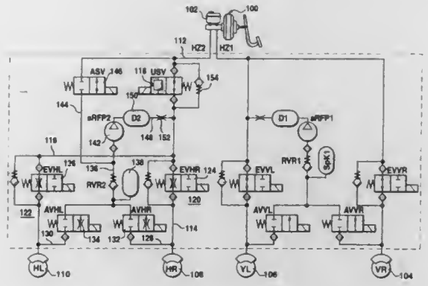
5,826,950

METHOD AND APPARATUS FOR CONTROLLING THE BRAKE SYSTEM OF A VEHICLE

Wolf-Dieter Jonner, Schmidhausen; Helmut Pueschel, Marbach, and Guenther Schmidt, Tauberbischofsheim, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Sep. 11, 1996, Ser. No. 712,204
Claims priority, application Germany, Oct. 7, 1995, 195 37 439.8
Int. Cl.[6] B06T *8/34*
U.S. Cl. 303—113.2 **15 Claims**

1. Method for controlling brakes at the driven wheels of a vehicle, said method comprising
providing a reservoir containing a pressure medium, pressure generating means for transmitting pressure from the reservoir to the brakes of the driven wheels via said medium, said pressure generating means having an inlet, a master cylinder connected with a first line communicating with the wheel brakes and a second line communicating with the inlet of said pressure generating means, first control valve means in said first line between the master cylinder and the wheel brakes, second control valve means in said second line between the master cylinder and the intake side of the pressure generating means, and brake valve means assigned to each driven wheel,
determining when drive slip occurs at at least one of the driven wheels,



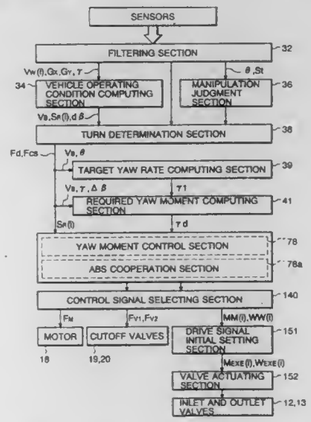
initiating a slip control cycle responsive to a determination of drive slip being present,
actuating the pressure generating means and opening the second control valve means in the second line between the master cylinder and the intake side of the pressure generating means during said slip control cycle so that the second control valve means is kept open during the entire slip control cycle,
controlling the pressure at the brake of one driven wheel by actuating said first control valve means in said first line between the master cylinder and the wheel brakes in order to reduce the drive slip at said wheel, and
controlling the pressure at the brakes of another driven wheel by additionally actuating said brake valve means when the pressure at said other wheel is to be different from the pressure applied at said one wheel.

5,826,951

TURN CONTROL APPARATUS FOR A VEHICLE

Yoshiaki Sano, Minato-ku, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP96/01287, § 371 Date Jan. 15, 1997, § 102(e) Date Jan. 15, 1997, PCT Pub. No. WO96/36514, PCT Pub. Date Nov. 21, 1996
PCT Filed May 15, 1996, Ser. No. 765,789
Claims priority, application Japan, May 16, 1995, 7/141229
Int. Cl.[6] B60T *8/64*
U.S. Cl. 303—146 **10 Claims**



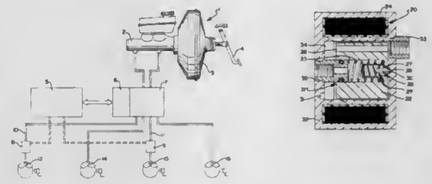
1. A turn control apparatus for a vehicle, comprising:
a critical braking detection unit which detects braking of the vehicle to a critical extent by a brake pedal;
a first selection unit which selects two target wheels to be controlled as first target wheels according to a turning condition of the vehicle when the vehicle turns while being braked;
a first braking control unit which controls a turn behavior of the vehicle by increasing the braking force of one first target wheel and decreasing the braking force of the other first target wheel, thereby giving one of turning and restoration moments to the vehicle;
a second selecting unit which selects one wheel as a second target wheel from the wheels other than the first target wheels according to a vehicle turn direction when the vehicle is being braked by the brake pedal according to the critical extent and when the vehicle turns; and
a second braking control unit which decreases the braking force of the second target wheel when braking forces of the first target wheels are being controlled by said first braking control unit.

5,826,952

BRAKE SYSTEM FOR AUTOMOTIVE VEHICLES

Hans-Jorg Feigel, Rosbach; Ulrich Neumann, Robdorf, and Lothar Schiel, Hofheim, all of Germany, assignors to ITT Automotive Europe GmbH, Frankfurt, Germany

PCT No. PCT/EP94/03427, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996, PCT Pub. No. WO95/11147, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 18, 1994, Ser. No. 632,448
Claims priority, application Germany, Oct. 19, 1993, 43 35 676.1
Int. Cl.[6] B60T *8/36*
U.S. Cl. 303—119.2 **7 Claims**



1. A brake system for automotive vehicles comprising:
a pedal-operable pressure generator connected to wheel brake cylinders;
a first actuator unit hydraulically connected between the pressure generator and a first wheel brake cylinder and configured to permit shutting off the hydraulic connections and being selectively actuatable independent of the pressure generator and having a first cylinder-and-piston assembly and a first electromagnetic actuator accommodated in a first housing and in which the piston is an armature of the first actuator;
a second actuator unit hydraulically connected between the pressure generator and a second wheel brake cylinder and configured to permit shutting off the hydraulic connections and being selectively actuatable independent of the pressure generator and having a second cylinder-and-piston assembly and a second electromagnetic actuator accommodated in a second housing and in which the piston is an armature of the second actuator;
wherein the piston in the cylinder-and-piston assembly of the first and the second actuator units is hollow and is sealedly guided on a cylindrical outlet port and defines in the housing a hydraulic annular chamber to which the hydraulic pressure of the pressure generator can be applied, and
an electronic controller electrically connected with the first and second actuator units and providing control signals to actuate the actuator units wherein, on simultaneous actuation of the pressure generator and at least one of the first and the second actuator units, the force resulted from the pressure build-up in the pressure generator is added to the external actuating force generated by the respective at least one actuator and applied to the piston of the cylinder-and-piston assembly of the respective at least one actuator;

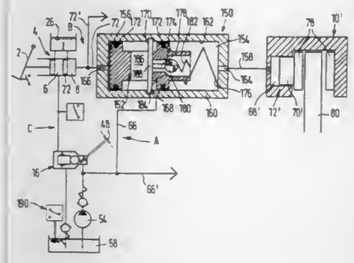
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wherein the respective at least one actuator is an electromagnet whose armature is the piston of the cylinder-and-piston assembly of the respective at least one actuator.

5,826,953
HYDRAULIC BRAKING SYSTEM ESPECIALLY FOR MOTOR VEHICLES

Wilhelm Heubner, Kaltenbrunn, Germany, assignor to Fahrzeugtechnik Ebern GmbH, Germany

Division of Ser. No. 707,886, Sep. 9, 1996, Pat. No. 5,700,067. This application Jul. 28, 1997, Ser. No. 901,716
Claims priority, application Germany, Sep. 12, 1995, 195 33 481.7; May 8, 1996, 196 18 489.4
Int. Cl.[6] B60T *13/12*; **F16D** *55/224*
U.S. Cl. 303—122.13 **10 Claims**

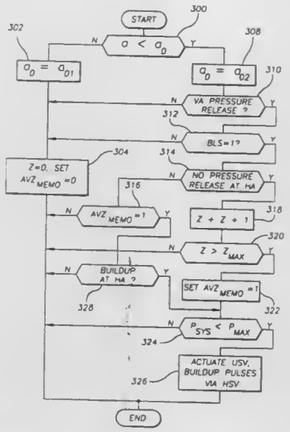


1. A hydraulic braking system, especially for motor vehicles, comprising:
an actuating device;
a master cylinder connected to said actuating device, said master cylinder including a first pressure chamber and a second pressure chamber;
a flow control valve having a regulating cross-section, through which flows a pressure medium during servo-force braking, hydraulically connected to said first pressure chamber so that said first pressure chamber hydraulically controls said flow control valve by adjusting the regulating cross-section to produce a defined dynamic pressure to produce a braking force;
a brake application element including a piston/cylinder arrangement connected to said flow control valve;
a separator piston/cylinder arrangement having a servo-pressure chamber connected hydraulically to said flow control valve; and
an actuating pressure chamber separated from said servo-pressure chamber by a separator piston, said actuating pressure chamber being hydraulically connected to said second pressure chamber of said master cylinder to apply a braking force to said brake application element through said separator piston if said servo-force braking fails.

5,826,954
METHOD AND APPARATUS FOR CONTROLLING THE BRAKE SYSTEM OF A VEHICLE

Johannes Schmitt, and Ulrich Goennenwein, both of Deutsch, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 25, 1996, Ser. No. 736,760
Claims priority, application Germany, Nov. 8, 1995, 195 41 601.5
Int. Cl.[6] B60T *13/00*
U.S. Cl. 303—186 **12 Claims**



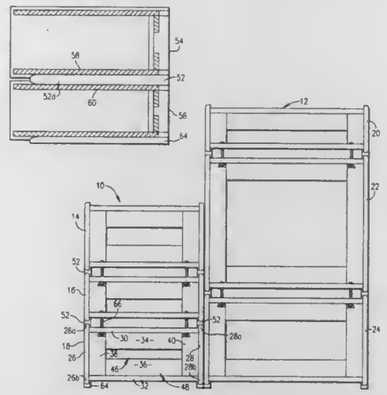
1. Method for controlling the brake system of a vehicle comprising front and rear axles with wheels thereon, front axle brakes, rear axle brakes, and means for translating a driver's braking command into a braking force at the front axle and a braking force at the rear axle according to a predetermined braking force distribution, said method comprising:
determining deceleration of the vehicle.
detecting whether at least one wheel on the front axle is exhibiting a locking tendency,
specifying a braking force at the rear axle according to the predetermined braking force distribution and the driver's command when the vehicle deceleration is below a predetermined threshold value or when no locking tendency in the front axle wheels is detected, and
increasing the braking force at the rear axle independent of the predetermined braking force distribution and the driver's command when the vehicle deceleration is greater than the predetermined threshold value and when a locking tendency is detected in any front axle wheel.

5,826,955
MODULAR CABINETRY

Karen L. Sanders, 307 Woodlawn Pl., Lawrence, Kans. 66049; Denzel W. Gibbens, Tonganozie, Kans., and Thomas A. Thiel, Center Sandwich, N.H., assignors to Karen L. Sanders, Lawrence, Kans.

Filed Jan. 22, 1997, Ser. No. 787,365
Int. Cl.[6] F16B *12/00*
U.S. Cl. 312—111 **23 Claims**

1. Modular cabinetry comprising:
a plurality of interchangeably stackable units, each including at least one upwardly projecting top flange and at least one downwardly projecting bottom flange such that adjacent stacked units present a set of cooperating flanges comprising a bottom flange of the upper unit and a top flange of the lower unit; and
at least one coupling member including a pair of oppositely facing grooves for receiving the set of flanges when the member is interposed between stacked units so as to restrict relative shifting of the units,
each of said units having a pair of vertically spaced top and bottom panels and a rear boundary from which the top and bottom panels extend,
each of said units including at least one upright brace extending between said top and bottom panels adjacent the rear boundary of the unit,

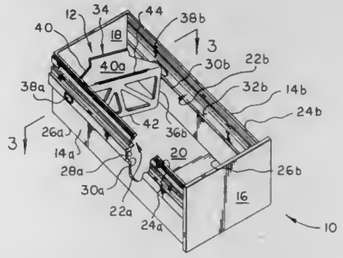


said top and bottom panels including at least one open slot adjacent the rear boundary of the unit, with the slot being vertically aligned with said at least one upright brace.

5,826,956
FOLLOWER FOR FILE DRAWER

Allen Norton, Salamanca, N.Y., assignor to Signore, Incorporated, Ellicottville, N.Y.

Filed Sep. 26, 1997, Ser. No. 938,870
Int. Cl.[6] B65D *25/04*
U.S. Cl. 312—183 **8 Claims**

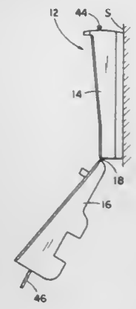


6. In the combination of a file drawer provided with a pair of spaced-apart vertical side walls having guide channels extending lengthwise thereof intermediate front and rear ends of said file drawer; and a follower having a body portion sized to be received within said file drawer with a pair of spaced side edges thereof arranged adjacent said side walls and a pair of guide members upstanding from said body portion adjacent said side edges and sized and arranged for receipt within said guide channels and for movement lengthwise thereof, said guide members engage with said guide channels to define a forward tilted position of said follower within said file drawer, wherein items stored within said file drawer intermediate said follower and said front end in engagement with said body portion tend to tilt said follower to assume said forward tilted position, the improvement comprising in combination:
a mounting opening means extending through one of said side walls in alignment with said guide channel thereof, said opening means being sized and arranged to permit at least a portion of one of guide members to be projected outwardly therethrough when said follower is disposed in a rearwardly tilted position to permit removable insertion of said follower within said file drawer, and said portion of said one guide member is misaligned with said opening means when said follower is in said forward tilted position, so as to prevent removal of said follower from said file drawer when said follower is disposed in said forward tilted position.

5,826,957
HOUSING WITH MULTIPLE FIXED DECLINATION ADJUSTMENT POSITIONS AND LIVING HINGE CONNECTIONS

Joseph V. DeBartolo, Jr., North Stonington; John R. Baldwin, Newtown, and Thomas J. Vigorito, Fairfield, all of Conn., assignors to Hubbell Incorporated, Orange, Conn.

Filed Feb. 25, 1997, Ser. No. 805,710
Int. Cl.[6] A41F *5/08*
U.S. Cl. 312—326 **24 Claims**



1. A housing for enclosing operative components of a motion detection system, said housing comprising:
(a) a base having a pair of spaced opposite end portions and a back portion extending between said opposite end portions and adapted for attachment to a support surface;
(b) a cover having a pair of spaced opposite end portions and a front portion extending between said opposite end portions, said cover and base having predetermined configurations that permit telescoping of said cover and base with one another into a closed condition;
(c) primary hinge means for pivotally connecting one of said end portions of said cover to one of said end portions of said base such that said cover and base can undergo relative movement toward and away from one another between said closed condition and an opened condition wherein said cover and base are angularly displaced from one another; and
(d) latch means for releasably securing the other of said end portions of said cover to the other of said end portions of said base so as to provide said cover and base in said closed condition at different fixed telescoped positions relative to one another with said front portion of said cover correspondingly disposed at different fixed declination adjustment positions relative to a reference plane, said latch means including
(i) a protuberance ~~formed on~~ and projecting outwardly from said other end portion of one of said base and cover; and
(ii) an elongated strap having a pair of opposite ends and a plurality of apertures formed in said strap at different locations between said opposite ends of said strap corresponding to said different fixed telescoped positions of said cover and base relative to one another and thus to said different fixed declination adjustment portions of said front portion of said cover relative to said reference plane.

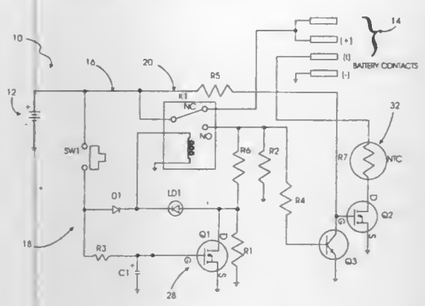
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5,826,958

APPARATUS FOR AUTOMATICALLY CONDITIONING RECHARGEABLE BATTERIES

Asher Avitan, Granada Hills, Calif., assignor to Ora Electronics, Inc., Chatsworth, Calif.

Filed Dec. 15, 1995, Ser. No. 573,290
Int. Cl.[6] H02J 7/00
U.S. Cl. 320—40 25 Claims



1. A circuit for conditioning a battery having a casing and battery charging terminals for charging the battery from an external power source, and further having an internal temperature sensing safety alarm circuit, said conditioning circuit contained within the battery casing and comprising:

discharging means for discharging the electrical charge of a battery;

switching means coupled to the internal temperature sensing safety alarm circuit and the battery charging terminals and to said discharging means for automatically selecting between a first state disabling the internal temperature sensitive safety alarm circuit and the battery charging terminals from providing charging access to the battery and coupling said discharging means to the battery for discharging the battery as long as the battery voltage is above a predetermined voltage level, and a second state enabling the internal temperature sensitive safety alarm circuit and disconnecting said discharging means from the battery whenever the battery voltage is at or below said predetermined voltage level and enabling the battery charging terminals for providing charging access to the battery.

5,826,959

PROJECTION IMAGE DISPLAY APPARATUS

Naruhiko Atsuchi, Nakakoma-gun, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 7, 1997, Ser. No. 852,379
Claims priority, application Japan, May 9, 1996, 8-139534
Int. Cl.[6] G03B 21/28
U.S. Cl. 353—20 13 Claims

1. A projection image display apparatus comprising:

a light source for generating at least three light components of blue, green and red;

a first dichroic mirror for receiving the light coming from said light source, transmitting said blue light component and reflecting said green and red light components;

a second dichroic mirror, oriented substantially in parallel with said first dichroic mirror, for receiving said green and red light components reflected at said first dichroic mirror and for reflecting said green light component and transmitting said red light component;

a third dichroic mirror, oriented substantially in parallel with said first dichroic mirror, for receiving said blue light components having transmitted through said first dichroic mirror, and for reflecting said blue light component;

a first polarization beam splitter having an operative surface substantially perpendicular to said second dichroic mirror, for reflecting a predetermined polarized light component of said red light component having transmitted through said second dichroic mirror;

a red reflection liquid crystal device for receiving light coming from said first polarization beam splitter and reflecting polarized light with a plane of polarization rotated in accordance with an image signal corresponding to a red color;

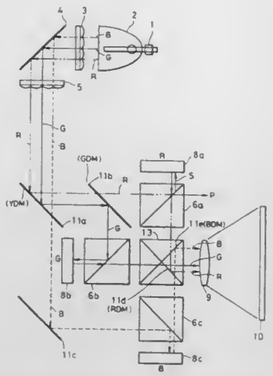
a second polarization beam splitter having an operative surface substantially perpendicular to said second dichroic mirror, for reflecting a predetermined polarized light component of said green light component reflected at said second dichroic mirror;

a green reflection liquid crystal device for receiving light coming from said second polarization beam splitter and reflecting polarized light with a plane of polarization rotated in accordance with an image signal corresponding to a green color;

a third polarization beam splitter having an operating surface substantially parallel to said third dichroic mirror, for reflecting a predetermined polarized light component of said blue light component reflected at said third dichroic mirror;

a blue reflection liquid crystal device for receiving light coming from said third polarization beam splitter and reflecting polarized light with a plane of polarization rotated in accordance with an image signal corresponding to a blue color;

a cross prism including a fourth dichroic mirror, oriented substantially perpendicularly to said operative surfaces of said first and second polarization beam splitters and substantially in parallel with said operative surface of said third polarization beam splitter, for reflecting said red light component and transmitting said green and blue light components, and a fifth dichroic mirror, so oriented as to cross said fourth dichroic mirror, for reflecting said blue light component and transmitting said green and red light components, said cross prism synthesizing said red, green and blue light components emitted from said red, green and blue reflection liquid crystal devices and having passed through said first, second and third polarization beam splitters and emitting resultant synthesized light; and



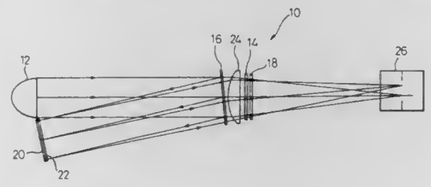
a projection optical system for receiving said synthesized light from said cross prism.

5,826,960

PROTECTION TYPE DISPLAY DEVICE WITH POLARIZED LIGHT REFLECTING MIRROR AND POLARIZED LIGHT SOURCE

Takeshi Gotoh; Tetsuya Kobayashi; Mari Sugawara, and Toshihiro Suzuki, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jul. 10, 1997, Ser. No. 889,973
Claims priority, application Japan, Dec. 27, 1996, 8-351357
Int. Cl.[6] G03B 21/14
U.S. Cl. 353—20 25 Claims



1. A display device comprising:

a light source;

a light valve;

a polarizer arranged between said light source and said light valve, said polarizer allowing a first polarized light to pass therethrough and a second polarized light to be reflected thereby;

an analyzer arranged to receive a light passing through said light valve;

at least one mirror arranged such that the second polarized light reflected by said polarizer is reflected to the polarizer by said at least one mirror;

a polarization rotating element arranged between said polarizer and said at least one mirror;

said polarizer being inclined to an optical axis passing through said light source and said light valve so that an angle between a light beam traveling from said light source to said polarizer and a light beam traveling from said polarizer to said at least one mirror is smaller than 90 degrees; and

said at least one mirror being arranged on the side of said light source from a plane of said polarizer, whereby the first polarized light emitting from said light source to the polarizer can pass through said polarizer, and the second polarized light emitting from said light source and reflected by said polarizer is reflected by said at least one mirror to said polarizer, has a vibrating plane rotated by the polarization rotating element and can pass through said polarizer.

5,826,961

REAR PROJECTOR EMPLOYING AN IMAGE DISPLAY

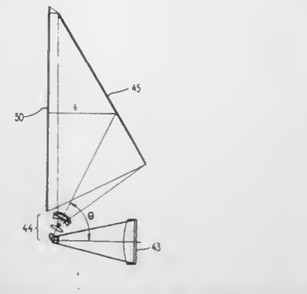
Dong-ha Kim, Suwon; Chang-wan Hong, Anyang, and Han-il Ko, Suwon, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Oct. 20, 1995, Ser. No. 546,133
Claims priority, application Rep. of Korea, Nov. 25, 1994, 94-31226
Int. Cl.[6] G03B 21/28
U.S. Cl. 353—74 7 Claims

1. A self-contained, rear projector comprising:

a light source for emitting light along a path;

first light pathway changing means for altering the path of the light emitted from said light source and transmitting a path-altered light;



an image displaying device which receives the path-altered light from said first light pathway changing means, said image displaying device comprising a polymer dispersion liquid crystal panel;

a projection lens for altering the pathway of the light which has passed through said image displaying device by a predetermined angle, said projection lens having an f-number of greater than 8.0;

second light pathway changing means for reflecting the light which has passed through said projection lens along a predetermined pathway; and

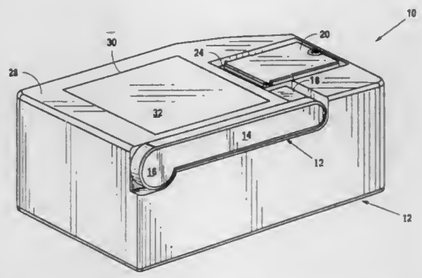
a screen having a rear surface and a front viewing surface and being located in the predetermined pathway of the light reflected from said second light pathway changing means, such that said rear surface of said screen receives the light reflected from said second light pathway changing means and a displayed image is formed on said front viewing surface of said screen.

5,826,962

LCD INTEGRATED/OVERHEAD PROJECTOR

Ernesto M. Rodriguez, Jr., Roundrock, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 30, 1997, Ser. No. 846,434
Int. Cl.[6] G03B 21/14
U.S. Cl. 353—82 20 Claims



19. An LCD integrated overhead projector comprising:

a housing;

a light source mounted in the housing;

a reflector mounted adjacent the light source;

first condenser means for projecting a first light beam reflected from the light source by the reflector, the first light beam being projected to exit the housing in a first direction through a means for collimating the beam, through an LCD image display screen mounted in the housing and to a projection surface;

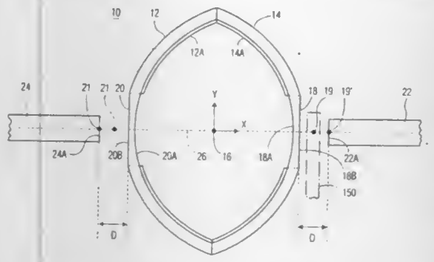
second condenser means for projecting a second beam of light from the light source, the second beam being projected to exit the housing in a second direction substantially normal to the

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first direction through a means for collimating the beam, to an overhead projector mounted on the housing and to the projection surface; and

means connected to the housing and movable to a position for selectively blocking the second beam of light from projecting to the overhead projector.

5,826,963
LOW ANGLE, DUAL PORT LIGHT COUPLING ARRANGEMENT
William J. Cassarly; John M. Davenport, both of Lyndhurst, and Richard L. Hansler, Pepper Pike, all of Ohio, assignors to General Electric Company, Schenectady, N.Y.
Filed Feb. 27, 1996, Ser. No. 607,529
Int. Cl.[6] F21V *13/12*
U.S. Cl. 362—32 **16 Claims**



1. A compact coupling arrangement between a light source and a plurality of light distribution harnesses, said arrangement comprising:

(a) a plurality of reflector members arranged around said light source with respective focal points of said reflector members positioned substantially coincident with said light source so as to receive light from said source and reflect said light away from said source;

(b) a plurality of light coupling members, each having an inlet and an outlet surface for receiving light originating from said light source and transmitting light, respectively; and

(c) a plurality of light distribution harnesses for respectively receiving light from said light coupling members;

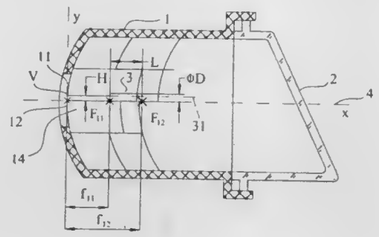
(d) said light coupling members each comprising a lens having a negative curvature in at least one direction generally transverse to an optical axis therethrough, for receiving light at a first angular distribution and transmitting light at a reduced angular distribution; and

(e) at least one reflector member being ellipsoidal in shape so as to have a major axis and a pair of foci, with the ratio of said major axis to the separation between said foci being between about 2.0 and 3.0.

5,826,964
HEADLAMP WITH COMPLEX REFLECTOR
Milan Cejnek, and Dana Pekárková, both of Nový Jicín, Czech Rep., assignors to Autopal s.r.o., Novy Jicin, Czech Rep.
Filed Jan. 22, 1997, Ser. No. 787,590
Claims priority, application Czech Rep., Jan. 29, 1996, 257-96
Int. Cl.[6] B60Q *1/00*; **F21V** *7/00*
U.S. Cl. 362—61 **7 Claims**

1. A headlamp for a motor vehicle, the headlamp comprising:

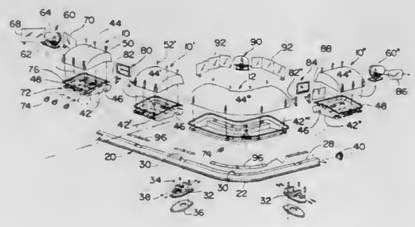
a reflector formed by upper and bottom paraboloidal segments each having spread elements formed by parabolic cylinders on a horizontal forming axis, a first focal distance of the upper paraboloidal segment being shorter than a second focal distance of the bottom paraboloidal segment;



a refractor positioned opposite the reflector; and

a light source having a light source length and a light source diameter, the light source located between the refractor and the reflector.

5,826,965
MODULAR LIGHT BAR
Harold W. Lyons, Killingworth, Conn., assignor to Whelen Engineering Company, Inc., Chester, Conn.
Filed Aug. 21, 1996, Ser. No. 701,163
Int. Cl.[6] B60Q *1/00*
U.S. Cl. 362—74 **31 Claims**



1. A modular vehicular lightbar comprising:

a support member for supporting a plurality of light modules, said support member comprising an elongated tubular mounting rail having upper and lower portions, said upper and lower rail portions extending the length of said rail and having different cross-sectional shapes;

foot means for affixing said rail to an exterior surface of a vehicle, said foot means comprising at least two spacially displaced mounting feet disposed between said rail and the surface, each of said feet defining an open-sided slot, said rail lower portion being received in said slots and engaged by said feet; and

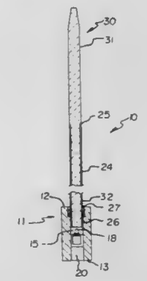
a plurality of light modules, said modules being positioned along and at least in part supported from said rail, each of said light modules comprising:

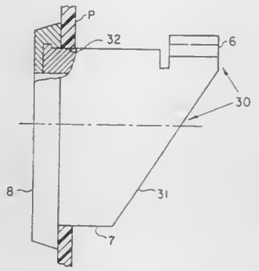
a base, said base including at least a bottom wall and first and second opposing side walls, said bottom wall including an external open-sided base channel which extends between said first and second side walls, said base channel being generally complementary in cross-sectional shape to the cross-sectional shape of said upper portion of said mounting rail, said base channel engaging said rail upper portion;

a light transmissive lens affixed to said base, said lens cooperating with said base to define a chamber therebetween; and

at least one light emitter disposed within said chamber, said light emitter being affixed to said base such that at least a portion of the light emitted thereby passes through said lens.

5,826,966
LIGHTED BUMPER GUIDE
John Schwing, 2100 Fox Trail, Sioux Falls, S. Dak. 57103-6329
Filed Mar. 17, 1998, Ser. No. 40,037
Int. Cl.[6] B60Q *1/26*
U.S. Cl. 362—82 **11 Claims**





a rear end portion on the illuminating sleeve, a light source for illuminating said rear end portion wherein the invention comprises a rear face, and an opaque mask for the rear face of the illuminating sleeve to attenuate light transmission through the rear face.

1. A lighted bumper guide adapted for attachment to a bumper of a vehicle, said lighted bumper guide comprising:

a base having a top, a bottom, and a side, said base being adapted for attachment to a bumper;

said top of said base having a primary bore therein;

said primary bore having upper and lower portions, said upper and lower portions of said primary bore being generally cylindrical and each having a diameter, said diameter of said upper portion of said primary bore being greater than said diameter of said lower portion of said primary bore, said upper and lower portions of said primary bore forming an annular shoulder therebetween;

a light source being provided in said lower portion of said primary bore;

an elongate tubular rod having a lumen, and opposite upper and lower ends;

said rod having an annular gasket extending therearound, said gasket being positioned towards said lower end of said rod;

said lower end of said rod being inserted into said primary bore of said base, said gasket being inserted into said upper portion of said primary bore such that said gasket rests on said shoulder defined between said upper and lower portions of said primary bore;

an elongate fiber optic filament having opposite first and second ends, a lens portion and an elongate portion, said lens portion being located towards said first end of said fiber optic filament, said elongate portion being located towards said second end of said fiber optic filament;

said elongate portion of said fiber optic filament being provided in said lumen of said rod, said second end of said fiber optic filament being positioned adjacent said lower end of said rod; and

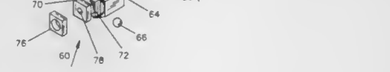
said lens portion of said fiber optic filament being upwardly extended from said upper end of said rod.

5,826,967
ILLUMINATING SLEEVE FOR A CIGAR LIGHTER, IN PARTICULAR FOR A MOTOR VEHICLE
Daniel Mathieu, Mazamet, France, assignor to Valeo Vision, Bobigny Cedex, France
PCT No. PCT/FR95/01629, § 371 Date Oct. 7, 1996, § 102(e) Date Oct. 7, 1996, PCT Pub. No. WO96/17749, PCT Pub. Date Jun. 13, 1996
PCT Filed Dec. 7, 1995, Ser. No. 687,469
Claims priority, application France, Dec. 8, 1994, 94 14897
Int. Cl.[6] F21V *33/00*
U.S. Cl. 362—92 **6 Claims**

1. An illuminating sleeve for a cigar lighter, in particular for a motor vehicle, including a front face in the form of a collar portion,

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5,826,968
SOCKET WRENCH WITH ILLUMINATION
Stephen L. Brantley, and Tim S. Moore, both of Las Vegas, Nev., assignors to J.S. Products, Inc., Las Vegas, Nev.
Filed Mar. 12, 1998, Ser. No. 42,207
Int. Cl.[6] B25B *23/18*
U.S. Cl. 362—119 **6 Claims**



1. A socket extension comprising:

a) a hollow socket body;

b) at least one battery mounted inside the hollow socket body;

c) a light assembly mounted partially inside the hollow socket body adjacent to the battery, the light assembly comprising;

1) a flat light mounting disk;

2) a bulb holder attached to a first side of the light mounting disk;

3) a bulb attached to the bulb holder;

4) a flat spring mounting disk attached to a second side of the light mounting disk; and

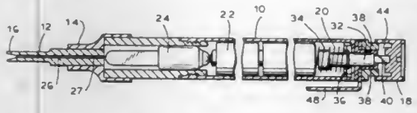
5) a spring attached to the spring mounting disk; and

d) a socket tool mounting element positioned partially inside the hollow extension body and surrounding a portion of the light assembly, the socket tool mounting element comprising:

1) a body sized to press fit into the hollow extension body and securely held therein by means of at least one ball and detent assembly; and

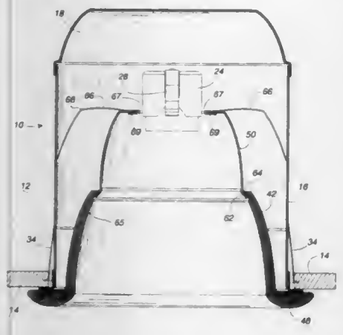
2) a socket tool connection head joined to the body, the socket tool connection head including an annular channel therein with an O-ring mounted in the annular channel.

5,826,969
ILLUMINATING SCREW DRIVER
Donald Nevin, 3 Clearmeadow Ct., Woodbury, N.Y. 11797
Filed Sep. 2, 1997, Ser. No. 922,099
Int. Cl.[6] F21V *8/00*
U.S. Cl. 362—120 13 Claims



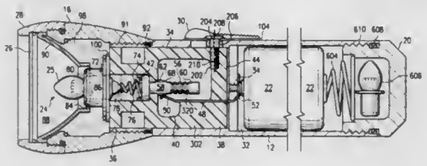
1. An illuminating screw driver comprising a handle, a shaft mounted on said handle, said handle comprising a wall defining a cavity, illuminating means, means for energizing said illuminating means, said energizing means and said illuminating means being situated within said handle cavity, means adapted when actuated for electrically connecting said energizing means and said illuminating means, said shaft comprising a screw engaging end and a channel extending from said handle through said screw engaging end, said channel guiding light from said illuminating means along said shaft to an area proximate said screw engaging end, said screw engaging end comprising a blade.

5,826,970
LIGHT TRANSMISSIVE TRIM PLATE FOR RECESSED LIGHTING FIXTURE
Bruce A. Keller, Biscayne Park, Fla.; Stephen L. Smoak, Marietta, Ga., and Ivano Ferro, Resana, Italy, assignors to Effetre U.S.A., North Miami, Fla.
Filed Dec. 17, 1996, Ser. No. 768,899
Int. Cl.[6] F21S *13/02*
U.S. Cl. 362—147 6 Claims



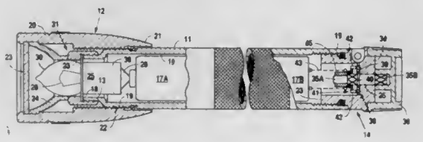
1. A light-transmissive trim plate and mounting apparatus for being received in a recessed lighting fixture installed in a space over a ceiling and having a light bulb which being operated for light communicates light through the trim plate for providing an ornamental illuminative effect around a perimeter of an opening in the ceiling for the recessed lighting fixture, comprising:
- a translucent light-transmissive trim plate defined by a frustroconical cup having a first open end and a second open end with a flange extending laterally around the first open end and defining a perimeter ring conforming in shape to an opening of a recessed lighting fixture; and
- means for supporting said trim plate in said recessed lighting fixture, whereby said trim ring, being engaged to said recessed lighting fixture with said frustroconical cup extending partially into said lighting fixture, covers a gap between said recessed lighting fixture and said ceiling while receiving light from the light bulb through the cup thereby providing an ornamental illuminative appearance around the perimeter of the opening in the ceiling during operation of the fixture.

5,826,971
SLIDE FOCUS FLASHLIGHT
Gary W. Kibler, Flower Mound, Tex., assignor to Nordic Lights, Inc., Fort Worth, Tex.
Filed Jul. 24, 1996, Ser. No. 687,157
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—188 29 Claims



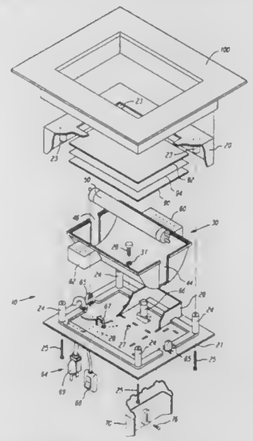
1. A flashlight comprising:
- a flashlight body having a cavity therein and further having an actuator-receiving opening through a portion of the flashlight body;
- a reflector for reflecting light, the reflector disposed within the cavity;
- a lamp for producing light when energized, the lamp disposed within the cavity;
- a housing assembly disposed within the cavity and moveable therein, the housing assembly comprising a housing;
- an actuator extending into the actuator-receiving opening and coupled to the housing;
- the lamp and reflector associated with the housing assembly whereby movement of the housing assembly allows relative movement of the lamp and the reflector to allow focusing of light from the lamp when an operator causes the actuator to move; and
- a biasing member for urging the housing and the actuator away from the reflector.

5,826,972
ELECTRIC TORCH
Si Fu Chiu, Unit 10, 19th Floor, Technology Plaza, 29-35 Sha Tsui Road, Tsuen Wan, New Territories, Hong Kong
Filed Dec. 17, 1996, Ser. No. 767,674
Claims priority, application United Kingdom, Dec. 27, 1995, 9526537
Int. Cl.[6] F21L *7/00*
U.S. Cl. 362—188 9 Claims



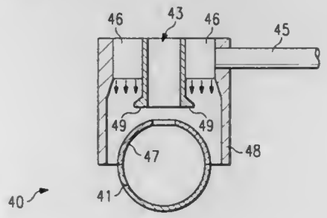
1. An electric torch comprising:
- an electrically-conducting elongate body for accommodating a battery cell and having an open front end to provide a rimmed, annular seat of reduced cross-sectional size;
- an end piece releasably connected onto a body front end;
- a hollow reflector disposed within said end piece; and
- a light bulb having an electrically-conducting body sitting within said seat and a glass envelope entering into said reflector for light reflection, said light bulb having an annular flange engaging said rim of said seat for direct electrical contact with said seat.

5,826,973
ILLUMINATED DISPLAY WITH UNIFORM LUMINANCE
John M. Melzian, 32308 Sea Raven Dr., Rancho Palos Verdes, Calif. 90275; Kenneth A. Zuckerman; Margaret S. Zuckerman, both of 2 El Portal, Palos Verdes Peninsula, Calif. 90274, and Daniel A. Schwartz, 6270 Parima St., Long Beach, Calif. 90803
Filed Sep. 14, 1995, Ser. No. 528,504
Int. Cl.[6] F21V *7/12*
U.S. Cl. 362—297 15 Claims



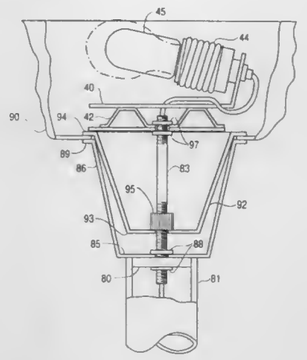
1. An illuminated display, comprising:
- at least one light source; and
- a reflector structure facing said light source, said reflector structure including an image plane oriented to receive direct light from said light source and reflected light from said reflector structure, said reflector structure also including alternating curved and straight sections forming a continuous reflective surface which terminates in straight sections intersecting said image plane to provide said reflected light such that said reflected light combines in said image plane with direct light from said light source to impart uniform luminance on said image plane.

5,826,974
SPHERICAL ILLUMINATOR
Charles H. Anderson, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 337,588, Nov. 10, 1994, Pat. No. 5,613,753. This application Jul. 31, 1996, Ser. No. 688,919
Int. Cl.[6] F21V *9/04*
U.S. Cl. 362—307 3 Claims



1. A spherical illuminator for shadowless illumination of an object under inspection, comprising:
- a diffuser having a substantially hemispherical, concave surface such that it forms an inner viewer area, said diffuser providing transmitted illumination from a light source mounted outside of said diffuser, wherein said diffuser transmits light from substantially all of the area of its inner surface;
- a reflector having a substantially hemispherical surface that is concave and that opposes the concave inner surface of said diffuser, forming a cavity said reflector providing reflected illumination from substantially all of its inner surface;
- wherein one of said diffuser for said reflector has an aperture for permitting said object in said cavity to be viewed.

5,826,975
CONVERTIBLE HALOGEN INCANDESCENT LAMP
Paul Hsieh, and Shiela Hsieh, both of 18 Tiara, Irvine, Calif. 92614
Filed Apr. 4, 1997, Ser. No. 835,141
Int. Cl.[6] F21S *1/12*
U.S. Cl. 362—414 11 Claims



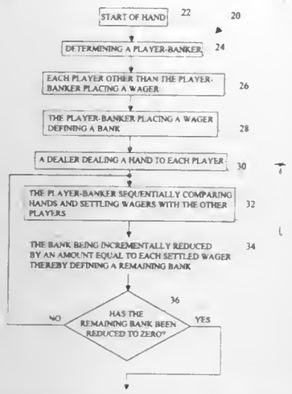
1. A lamp comprising
- a base;
- a pole attached to and resting on said base and extending upwardly therefrom;
- a shade having a central opening;
- a neck assembly supported at an upper end of said pole comprising means for supporting said shade; and
- light source means for emitting light toward said shade, said light source means comprising a socket assembly supported on said pole top for receiving a screw-base bulb;
- said means for supporting said shade comprising
  - an outer neck member having a central axis, a first annular bottom plate, a first upper annular support ring and means interconnecting said first annular bottom plate and said upper annular support ring,
  - means for mounting said outer neck member on said upper end of said pole;
  - an inner neck member having a second annular bottom plate, a second upper annular ring and means for interconnecting said second bottom plate and said second upper annular ring, said inner neck member having a central axis aligned with said central axis of said outer neck member and having an axial length between said second bottom plate and said ring less than said second annular of said outer an axial length neck member,
  - an externally threaded body passing through said first and second bottom plates, and
  - nut means for threadedly engaging said threaded body and urging said first and second bottom plates toward each other with said first and second rings engaging opposite surfaces of said shade adjacent said central opening thereof.

5,826,976

BANKING METHOD FOR WAGERING GAMES

John Skratulia, 11402 Howard St., Whittier, Calif. 90601

Filed Nov. 13, 1995, Ser. No. 557,365
Int. Cl.[6] A63F 1/00
U.S. Cl. 364—412 18 Claims



1. An improved banking method for existing wagering games which include a player-banker who sequentially plays against a plurality of other players, the existing wagering games including the steps of:

each player other than the player-banker placing a wager;

the player-banker placing a wager defining a bank;

a dealer dealing a hand to each player;

the player-banker sequentially comparing hands and settling said wagers with the plurality of other players;

said bank being incrementally reduced by an amount equal to each said settled wager thereby defining a remaining bank;

at some point during play, said remaining bank being reduced to zero so that said wagers of all the players cannot be settled;

said improved banking method comprising:

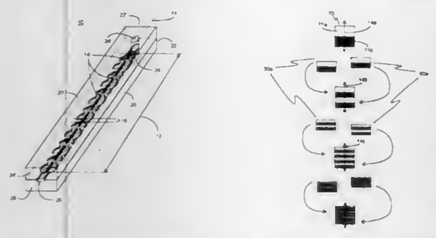
a secondary player-banker replacing the player banker and sequentially continuing to compare hands and settle wagers.

5,826,977

METHOD FOR MIXING LAMINAR AND TURBULENT FLOW STREAMS

James E. Fowler, Watertown, Mass., and Paul K. Hsei, Huntington Beach, Calif., assignors to Nova Biomedical Corporation, Waltham, Mass.

Division of Ser. No. 702,967, Aug. 26, 1996. This application Apr. 21, 1998, Ser. No. 63,966
Int. Cl.[6] B01F 5/06
U.S. Cl. 366—348 11 Claims



1. A method of mixing two or more fluidic substances comprising:

a) dividing an initial flow stream of two or more fluidic substances into two or more flow streams;

b) moving each of said two or more flow streams into separate flow paths;

c) changing the shape of each of said two or more flow streams while moving through said separate flow paths in preparation for layering and re-combining said two or more flow stream to each other;

d) layering said two or more flow streams to each other creating a unified flow stream, wherein the shape of said unified flow stream has the same shape as said initial flow stream;

e) maintaining the combined cross-sectional area of said two or more flow streams equal to the cross-sectional area of said initial flow stream during the steps of dividing shaping and layering; and

f) repeating said steps of dividing, changing and layering at least one or more times.

5,826,978

DEVICE AND METHOD FOR CONTROLLING PRESSURE IN A FLOWING VISCOUS MASS WITHIN A SYSTEM FOR PROCESSING CELLULOSE SOLUTIONS

Stefan Zikeli, Regau; Friedrich Ecker, Timelkam; Ernst Rauch, Schörfling, and Arnold Nigsch, Vöcklabruck, all of Austria, assignors to Lenzing Aktiengesellschaft, Lenzing, Austria

Filed Jun. 6, 1995, Ser. No. 471,567
Claims priority, application Austria, Aug. 10, 1994, 1560/94
Int. Cl.[6] B01F 5/00; B28B 3/20;17/00
U.S. Cl. 366—176.4 11 Claims



1. A device for controlling pressure in a flowing viscous mass, comprising:

an inlet pipe through which the mass flows into the device, the inlet pipe having an outer surface;

a guiding element including a chamber having a receiving capacity for the mass flowing from said inlet;

a piston having an aperture, the piston being movable within said guiding element, the receiving capacity of said guiding element being varied by moving said piston;

a receptacle attached to said aperture at said piston and joined to said inlet such that the flowing mass passes from said inlet through said receptacle and through said aperture of piston into said guiding element; and

an outlet into which said guiding element leads and whereby the flowing mass is discharged from the device, wherein said inlet, said guiding element and said receptacle are designed in a pipe-shape and said receptacle telescopically sliding over the outer surface of said inlet pipe when said piston is moving.

5,826,979

WASTE MATERIAL PROCESSING APPARATUS AND METHOD

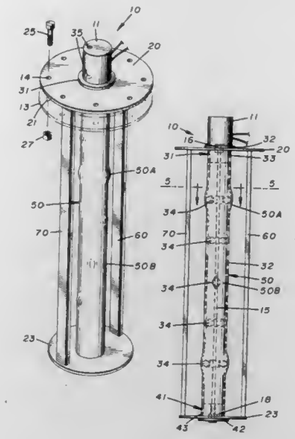
Milton K. Foss, 81 W. Vancouver Dr., Port Townsend, Wash. 98368

Continuation-in-part of Ser. No. 697,538, Aug. 26, 1996, abandoned. This application Sep. 4, 1997, Ser. No. 923,171
Int. Cl.[6] B01F 5/10
U.S. Cl. 366—242 3 Claims

1. A waste material processing apparatus, comprising;

a. a processing tank capable of holding waste material;

b. an agitator disposed inside said processing tank, said agitator including an elongated shaft having a longitudinal axis and opposite proximal and distal ends;



c. a rotating means attached between said processing tank and said proximal end of said elongated shaft;

d. a flexible hose coaxially aligned over said elongated shaft, said hose being fixed and sealed at its opposite ends to prevent waste material from entering therein, said flexible hose having an inside surface and being sufficiently flexible so that said flexible hose may collapse inward when disposed over said elongated shaft and in said processing tank filled with waste material;

e. at least two lateral arms attached to said elongated shaft, each said lateral arm having a longitudinal axis, two opposite ends, and being longitudinally spaced apart on said elongated shaft; and,

f. a rotatable wheel attached to each said opposite end of each said lateral arm, each said wheel being attached so that its axis of rotation is transversely aligned with said longitudinal axis of said lateral arm, said wheels being of a sufficient size to contact said inside surface of said hose and force said hose outward when said elongated shaft is rotated.

5,826,980

NON-CONTACT THERMOMETER

Katsumi Kouzu, Hyogo; Shigehiro Yoshiuchi, Osaka; Koji Oike, Hyogo; Masaaki Matsui, and Kazuto Kume, both of Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Aug. 28, 1996, Ser. No. 704,184
Claims priority, application Japan, Aug. 29, 1995, 7-220047
Int. Cl.[6] G01J 5/08;5/04; G01K 3/06
U.S. Cl. 374—124 6 Claims

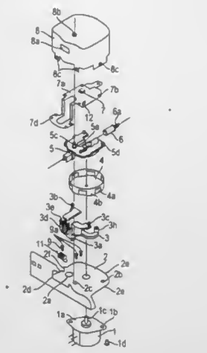
6. A non-contact thermometer comprising:

a stepping motor mounted on a unit base, said stepping motor being rotatable in one direction in adjustable step rotational angles and in a reverse direction to a predetermined reference position, wherein said motor having the step rotational angles adjusts its steps of rotation during a period of temperature measurement;

a cylindrical chopping drum rotated by said stepping motor, said cylindrical chopping drum provided with opening slits;

a pyroelectric infrared sensor having a tip end for detecting infrared rays radiated from an object to be measured and passing through said opening slits of said cylindrical chopping drum;

a swing arm having a cam follower located on said cylindrical chopping drum so that they rotate in conjunction with said cylindrical chopping drum;



a sensor holder for holding said pyroelectric infrared sensor, said sensor holder being attached to said swing arm, and said sensor holder being located inside of said cylindrical chopping drum;

a detector for detecting temperatures of said pyroelectric infrared sensor, said detector being affixed to said sensor holder; and

a shield case that contains said cylindrical chopping drum, pyroelectric infrared sensor, swing arm and sensor holder, and has a window for receiving infrared rays from an object to be measured,

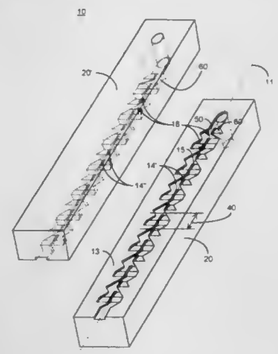
wherein said pyroelectric infrared sensor detects the temperatures of the object at a plurality of points in conjunction with the rotation of the swing arm.

5,826,981

APPARATUS FOR MIXING LAMINAR AND TURBULENT FLOW STREAMS

James E. Fowler, Watertown, Mass., and Paul K. Hsei, Huntington Beach, Calif., assignors to Nova Biomedical Corporation, Waltham, Mass.

Filed Aug. 26, 1996, Ser. No. 702,967
Int. Cl.[6] B01F 5/06
U.S. Cl. 366—337 10 Claims



1. A static mixer comprising:

a) a first conduit for receiving an initial fluid stream wherein said initial fluid stream includes at least one fluid; and

b) at least two mixing segments connected in series with said first conduit, each of said mixing segments comprising:

at least one splitting component;

at least two flow branches connected to said at least one splitting component, each of said at least two flow branches having an inlet with a first cross-sectional shape, an outlet with a second cross-sectional shape and a middle portion

with a transitional cross-sectional shape to control a change in cross-sectional shape between said inlet and said outlet; and

a second conduit connected to said at least two flow branches wherein each of said outlets of said at least two flow branches converge at said second conduit in a layered, spaced relationship to each other.

5,826,982

TEMPERATURE SENSING MODULE

Jörg Schieferdecker, Wiesbaden; Reiner Quad, Taunusstein, and Mischa Schulze, Strausberg, all of Germany, assignors to Heimann Optoelectronics GmbH, Wiesbaden, Germany

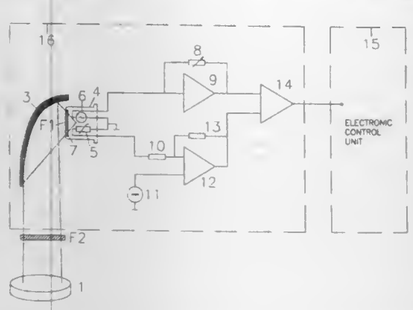
PCT No. PCT/EP94/03041, § 371 Date Jun. 14, 1996, § 102(e) Date Jun. 14, 1996, PCT Pub. No. WO95/08251, PCT Pub. Date Mar. 23, 1995

PCT Filed Sep. 12, 1994, Ser. No. 617,847

Claims priority, application Germany, Sep. 16, 1993, 43 31 574.7

Int. Cl.[6] G01K *13/00;* **G01J** *5/08;5/16*

U.S. Cl. 374—149 **11 Claims**



1. Sensor module comprising a concave mirror having a focal point, and a sensor element located at the focal point, the sensor element producing an output signal, wherein the sensor element comprises a thermopile and a temperature reference element located in the immediate vicinity of the thermopile so that the thermopile and the temperature reference element are illuminated by the same radiation reflected from the concave mirror, the thermopile and the temperature reference element producing respective output signals, wherein the output signal of the sensor element is to be transformed into a temperature signal in an evaluation circuit; wherein

the sensor module further comprises a first pre-amplifier, that is capable of being calibrated for amplifying the output signal from the thermopile;

a second pre-amplifier amplifying the output signal from the temperature reference element; and

a third pre-amplifier connected between output terminals of the first and the second pre-amplifiers to serve as a difference amplifier to form a difference in signal between output signals of the first pre-amplifier and the second pre-amplifier, an output signal of the third pre-amplifier serving as the output signal of the sensor element.

5,826,983

THERMOMECHANICAL ANALYZER EQUIPPED WITH A THERMOGRAVIMETRY FUNCTION

Nobutaka Nakamura, and Yoshiharu Sugano, both of Chiba, Japan, assignors to Seiko Instruments Inc., Chiba, Japan

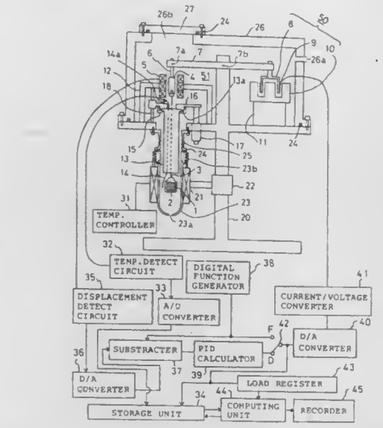
Filed Jul. 10, 1996, Ser. No. 678,045

Claims priority, application Japan, Jul. 11, 1995, 7-175095

Int. Cl.[6] G01N *25/00;25/16*

U.S. Cl. 374—14 **10 Claims**

1. A thermal analyzer comprising:



a heating furnace for heating a sample by a prescribed temperature program;

a temperature detector placed in the vicinity of the sample for detecting a temperature of the sample;

sample supporting means for supporting the sample;

a displacement detector placed in a portion of the sample supporting means for detecting displacement of the sample supporting means;

a load applying instrument for applying an external force to the sample via the sample supporting means;

a control computing element for supplying to the load applying instrument a signal for controlling the external force applied from the load applying instrument to the sample so as to make the displacement of the sample supporting means zero based on an output signal from the displacement detector;

a switch included in the control computing element for switching the control computing element to output to the load applying instrument a signal for controlling the external force applied from the load applying instrument to the sample to a predetermined value;

processing circuitry for processing the signal supplied from the control computing element and the signal from the displacement detector to obtain thermogravimetry data and thermomechanical analysis data respectively, and

a storage instrument responsive to the processing circuitry for storing the thermogravimetry data indicative of the signal supplied from the control computing element for controlling the external force applied from the load applying instrument to the sample so as to make the displacement of the sample supporting means zero at a first position of the switch and storing the thermomechanical analysis data indicative of the signal from the displacement detector at a second position of the switch.

5,826,984

METHOD AND APPARATUS FOR THE OPTICAL MEASUREMENT OF THE TEMPERATURE OF A GASEOUS MIXTURE

Henri Fima, Malissard, France, assignor to Sextant Avionique, Meudon La Foret, France

Filed Dec. 6, 1994, Ser. No. 354,132

Claims priority, application France, Dec. 10, 1993, 93 14855

Int. Cl.[6] G01K *11/20;* **G01N** *21/64*

U.S. Cl. 374—161 **16 Claims**

10. A method for the optical determination of the temperature of a gaseous mixture, comprising:

measuring the ratio of intensity of fluorescence of two lines of the emission spectrum of a gas of said mixture, whereof the molecules of the gaseous mixture have previously been excited in the infrared range at two different energy states;

deducing from this ratio the ratio of the populations of said states; and

deducing said temperature from said ratio of populations.

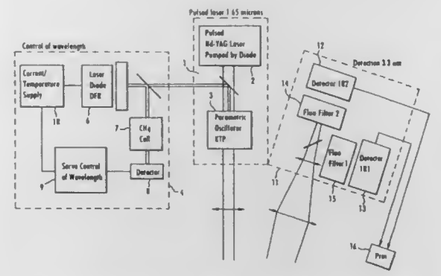
15. An apparatus for optically measuring the temperature of a gaseous mixture, which apparatus comprises:

a laser able to excite the molecules of a gas of said mixture in the infrared range from a first to a second vibrational level and allowing rotational relaxation of molecules between different rotational sub-levels;

detection means for measuring the intensity of fluorescence of two lines of the emission spectrum of said gas from two rotational sub-levels of said second vibrational level;

means for deducing a ratio of populations of different energy states from a ratio of the intensities;

and calculation means for determining said temperature from said ratio of populations.



5,826,985

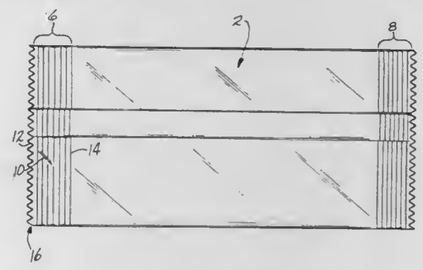
CHILD-RESISTANT TEAR-OPEN SYNTHETIC RESIN BAG

Frank C. Goodman, Smyrna, Ga.; Robert T. Seeley, Brookfield Center, and Robert J. Dempsey, Trumbull, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jul. 10, 1995, Ser. No. 500,421

Int. Cl.[6] B65D *27/36*

U.S. Cl. 383—200 **2 Claims**



1. A tear-open bag for containing a flowable material, said bag being formed with a non-tearable, heat-sealable chlorine-stable synthetic resin, said bag comprising opposite end portions at least one of which is closed by means of an expanded planar heat seal joint, said bag being formed with angled corners at opposite sides of said heat seal joint, and an elongated tear-propagating slit extending through said heat seal joint and not extending to the edges of the bag, said slit being wholly contained within said heat seal joint, and said slit being oriented relative to one of said corners so as to be operable, when manually stressed, to propagate a tear line in the bag which is oblique relative to said one corner so that said one corner can be manually torn away from the remainder of the bag and thereby form a pouring spout in the bag.

5,826,986

WHEEL BEARING ASSEMBLY

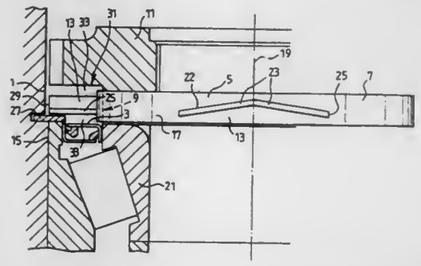
David Paul Adkins, Coventry, and Mark Stuart Ford, Nuneaton, both of United Kingdom, assignors to Jaguar Cars, Ltd., Whitley Coventry, England

Filed Jul. 30, 1997, Ser. No. 902,990

Claims priority, application United Kingdom, Aug. 1, 1996, 9616247; Dec. 12, 1996, 9625849

Int. Cl.[6] F16C *17/10*

U.S. Cl. 384—472 **5 Claims**



1. An improved grease-expelling wheel bearing assembly, comprising:

the assembly housing;

a rotor nut having a mounting shaft portion;

a grease-expelling wheel bearing seal having an outwardly directed surface;

a grease distributor having a collar for mounting about the shaft of the rotor nut, at least one grease spreading blade extending radially outward from the collar towards the assembly housing, rotation of the collar and blade causing grease expelled from the bearing seal to be spread on said surface of the seal and allowing grease to contact the rotor nut.

5,826,987

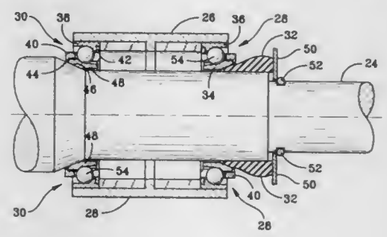
MOUNTING OF A SHAFT WITHIN A HOUSING

Michael D. Beaman, Torrington, Conn., assignor to The Torrington Company, Torrington, Conn.

Continuation-in-part of Ser. No. 833,108, Apr. 4, 1987, abandoned. This application Jul. 22, 1997, Ser. No. 898,233

Int. Cl.[6] F16C *27/00*

U.S. Cl. 384—517 **11 Claims**



1. An assembly comprising:

a housing;

an angular contact bearing having bearing balls between a bearing outer ring and a bearing inner ring, the bearing outer ring being mounted within the housing, the bearing inner ring having a central annular aperture;

a shaft located concentrically within the central annular aperture of the bearing inner ring such that an annular space is provided between the bearing inner ring and the shaft;

stop means mounted on the shaft; and

a mounting ring, formed of elastomeric polymer, having a portion located within the annular space between the bearing

inner ring and the shaft, the mounting ring being compressed axially between the bearing inner ring and the stop means such that the mounting ring is resiliently spread radially outwardly and a preload is exerted on the bearing balls.

7. A method of mounting a shaft within a housing, the method comprising:

mounting an angular contact bearing within the housing, the angular contact bearing having bearing balls between a bearing outer ring and a bearing inner ring, the annular contact bearing having an axis;

positioning a shaft within the bearing inner ring such that an annular space is provided between the bearing inner ring and the shaft;

positioning a mounting ring formed of elastomeric polymer over the shaft and against the bearing inner ring such that a portion of the mounting ring is within the annular space between the bearing inner ring and the shaft, thereby centering the shaft within the bearing inner ring and reducing radial free play of the shaft with respect to the bearing inner ring; and

compressing the mounting ring axially, against the bearing inner ring, such that the mounting ring deforms and resiliently spreads radially outwardly and provides a preload on the bearing balls.

5,826,988

CAGE FOR NEEDLE ROLLER BEARINGS AND METHOD OF PRODUCING SAME

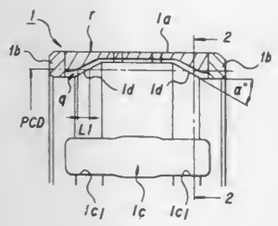
Taichiro Furukawa, Hamamatsu, and Kyouzi Maeda, Iwata, both of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Dec. 26, 1996, Ser. No. 773,350

Claims priority, application Japan, Dec. 28, 1995, 7-343493; Jun. 28, 1996, 8-170030

Int. Cl.[6] F16C *33/46*

U.S. Cl. 384—572 **4 Claims**



1. A cage for needle roller bearings, comprising an annular body having a thin-walled portion in a center of said cage along an axial direction, thick-walled portions on both axial sides of said thin-walled portion, a plurality of pockets punched over a region extending from said thin-walled portion to each of said thick-walled portions, and guide surfaces for guiding needle rollers, wherein said guide surfaces of said pockets comprise shearing surfaces formed at both sides of each of said pockets in a circumferential direction in said thick-walled portions of said cage, said shearing surfaces being disposed on inner sides, in a radial direction, of those portions of said pockets intersecting with a pitch circle of said cage, and wherein a breaking surface is disposed at an outer side, in said radial direction, of said pockets.

5,826,989

COMPOUND BALL BEARING

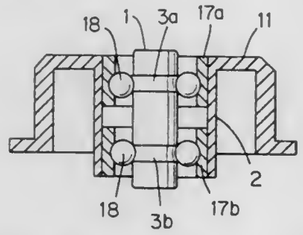
Rikuro Obara, and Katashi Tatsuno, both of Nagano-ken, Japan, assignors to Minebea Kabushiki-Kaisha, Nagano-ken, Japan

Division of Ser. No. 131,400, Oct. 5, 1993, Pat. No. 5,560,717. This application Jun. 6, 1996, Ser. No. 659,478

Claims priority, application Japan, Oct. 7, 1992, 4-293858; Nov. 9, 1992, 4-323646

Int. Cl.[6] F16C *19/10*

U.S. Cl. 384—613 **3 Claims**



1. A compound ball bearing comprising a bearing body including a spindle and a sleeve surrounding said spindle, and balls provided between double-row inner races formed in double-row outer rings fitted as a pair in said sleeve and corresponding double-row outer races formed in said spindle, wherein a hub for a motor is molded as a one-piece molding with said sleeve.

5,826,990

METHOD AND DEVICE FOR LIMITING A NUMBER OF TIMES EACH PRINT HAMMER IS DRIVEN DURING A PREDETERMINED PERIOD OF TIME

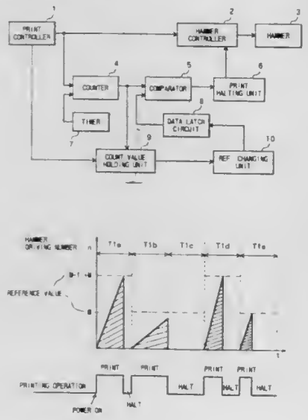
Toshiyuki Suzuki; Masami Iwama; Kohichi Yageta, and Mitsuru Kawakami, all of Hitachinaka, Japan, assignors to Hitachi Koki Co., Ltd., Tokyo, Japan

Filed Sep. 19, 1997, Ser. No. 933,967

Claims priority, application Japan, Sep. 19, 1996, 8-247596

Int. Cl.[6] B41J *29/38*

U.S. Cl. 400—124.13 **13 Claims**



1. A printer comprising:

a plurality of print hammers that are selectively driven in accordance with print data, thereby making an impression of dot on a print medium;

a counter, provided for each of said plurality of print hammers, that counts a number of times a print hammer is driven;

a timer that repeatedly measures a predetermined period of time;

reference value changing means for changing a reference value based on the number of times the print hammer is driven during a previous print phase defined by the predetermined period of time measured by said timer immediately before measuring a present print phase that is also defined by the predetermined period of time measured by said timer wherein the reference value represents an allowable number the print hammer can be driven during each of successive print phases; and

print halting means for halting driving of the print hammer when a number of times the print hammer is driven during the present print phase has reached the reference value changed by said reference value changing means, driving of the print hammer being halted until expiration of the present print phase.

5,826,991

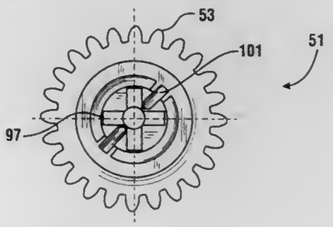
PRINTER APPARATUS FOR AUTOMATED BANKING MACHINE

Tuyen Van Pham, Massillon, and Thomas S. Mason, Canton, both of Ohio, assignors to InterBold, North Canton, Ohio

Filed Jan. 19, 1996, Ser. No. 588,967

Int. Cl.[6] B41J *35/28;* **F16D** *9/00*

U.S. Cl. 400—207 **2 Claims**



1. A printer apparatus comprising:

a print media movably supported on a cartridge;

a drive post movably supported on the cartridge, the drive post in operative engagement with the print media such that in an operational condition rotational movement of the drive post causes movement of the print media;

the drive post including an axially extending recess bounded by a generally annular wall, a pair of generally radially extending and generally opposed tabs in supporting connection with the annular wall and extending inwardly in the recess, whereby the tabs are adapted to operatively engage a ribbon drive shaft such that rotation of the ribbon drive shaft rotates the ribbon drive post by engagably moving the tabs, and wherein in response to the drive post presenting a resistance greater than a predetermined resistance to rotation the tabs deform sufficiently to enable the ribbon drive shaft to rotate relative to the ribbon drive post within the annular recess.

5,826,992

ERGONOMIC KEYBOARD WITH WRIST SUPPORT

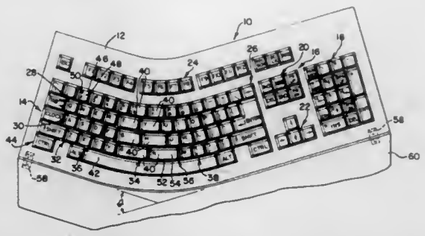
Herman Camacho, North Hollywood, and Robert Granadino, Pasadena, both of Calif., assignors to Metamdrfyx, L.L.C., Pasadena, Calif.

Continuation of Ser. No. 331,688, Oct. 31, 1994, Pat. No. 5,553,953, which is a continuation of Ser. No. 17,106, Feb. 12, 1993, Pat. No. 5,360,280, which is a continuation-in-part of Ser. No. 886,061, May 19, 1992, abandoned, and a continuation-in-part of Ser. No. 900,080, Jun. 17, 1992, abandoned. This application Sep. 9, 1996, Ser. No. 711,179

Int. Cl.[6] B41J *5/10*

U.S. Cl. 400—489 **22 Claims**

1. An ergonomic keyboard supportable on an underlying support surface, said keyboard comprising:



a housing having a top surface and a bottom surface, a front edge closest to a user and a rear edge;

said housing including a wrist support on said top surface extending along said front edge;

a plurality of keys on said top surface, said keys being arranged in multiple parallel rows, at least one row being an unbroken row comprised of a central arcuate portion, a left portion and a right portion, said left and right portions extending from said central arcuate portion in a straight line to the ends of said unbroken row, said arcuate portion being convex to the front edge of the keyboard; and

at least one support leg attached to and extending from said keyboard housing to said support surface for elevating said wrist support relative to said support surface.

5,826,993

APPARATUS HAVING A ROLLER FOR DRIVING A RECORD CARRIER AND HAVING A PRINTING DEVICE, WHICH ARE MOVABLE RELATIVE TO ONE ANOTHER

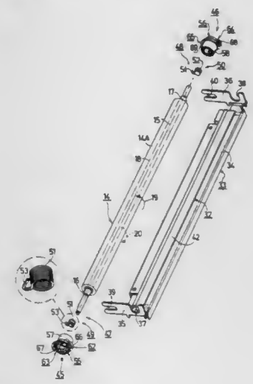
Martin Landler, Bad Vöslau, and Johann Veigl, Vienna, both of Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 18, 1997, Ser. No. 896,758

Claims priority, application European Pat. Off., Jul. 22, 1996, 96890128

Int. Cl.[6] B41J *19/76*

U.S. Cl. 400—569 **10 Claims**



1. An apparatus comprising

a roller for driving a record carrier, which roller is rotatable about a roller axis and is connected to at least one shaft section, and

a motor which can be operated in a first direction of rotation and in a second direction of rotation, which is opposite thereto, and which when operated in the first direction of rotation can drive the roller for driving a record carrier, and

a printing device which extends substantially parallel to the roller and which has a contact surface held in engagement with the circumferential surface of the roller in one operating

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mode of the apparatus and spaced from the circumferential surface of the roller by a given distance in another operating mode of the apparatus, and

at least one actuating device which is rotatably mounted on the shaft section connected to the roller and by means of which the printing device and the roller are movable relative to one another in a direction transversely to the roller axis, and

drive means for driving the actuating device, which drive means can be driven by the motor and by means of which the printing device and the actuating device is drivable when the motor operates in the second direction of rotation, in order to move the printing device and the roller relative to one another,

characterized in that the at least one shaft section connected to the roller forms a part of the drive means, and the drive means further comprise a unidirectional coupling arranged adjacent the actuating device and drivable via the shaft section, which coupling forms a drive transmission between the shaft section and the actuating device in the second direction of rotation of the motor.

5,826,994

TAPE PRINTING APPARATUS

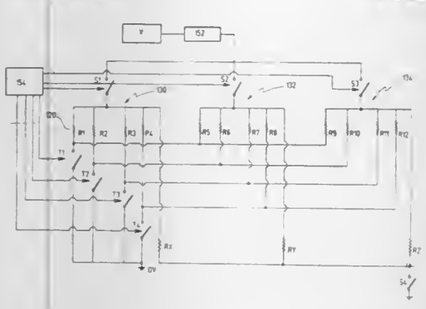
Mathew Richard Palmer, Cottenham, United Kingdom, assignor to Esselte NV, Sint-Niklaas, Belgium

Filed Aug. 16, 1996, Ser. No. 698,625

Claims priority, application United Kingdom, Aug. 25, 1995, 9517487; Nov. 1, 1995, 9522339

Int. Cl.[6] B41J *2/355;2/36*

U.S. Cl. 400—615.2 **20 Claims**



1. A tape printing device comprising:

a print head comprising a set of selectively activatable printing elements arranged generally along a longitudinal axis of said print head;

means for causing relative movement between an image receiving tape and said print head to print an image on said image receiving tape in the form of a plurality of contiguous columns of pixels; and

control circuitry controlling said print head, said control circuitry generating a plurality of printing cycles for each of said plurality of contiguous columns of pixels to be printed, wherein each of selected pixels in each of said plurality of contiguous columns of pixels is printed by activation of a corresponding one of said printing elements by substantially uniform application of electrical energy thereto successively during each of said plurality of printing cycles at contiguous but non-overlapping locations on said image receiving tape in order to reduce peak current transmitted required by printing elements.

5,826,995

CASSETTE FOR A THERMAL PRINTER

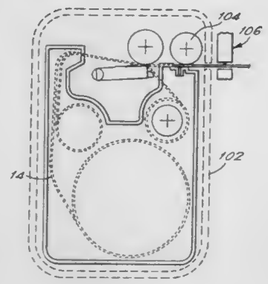
Robert Charles Lewis Day, Cambridge, and Richard William Ware, Welwyn Garden City, both of United Kingdom, assignors to Esselte N.V., St. Niklaas, Belgium

Division of Ser. No. 470,657, Jun. 6, 1995, Pat. No. 5,658,083, which is a continuation of Ser. No. 266,828, Jun. 27, 1994. This application Mar. 5, 1997, Ser. No. 810,789

Claims priority, application United Kingdom, Jul. 12, 1993, 9314386

Int. Cl.[6] B41J *15/04*

U.S. Cl. 400—615.2 **7 Claims**



1. A tape holding case for a thermal printer, said tape holding case holding at least a supply of image receiving tape and having an outlet through which the image receiving tape can be fed out, the tape holding case having a wall portion adjacent the outlet, wherein the wall portion is configured and dimensioned to cooperate with an output roller of a printing device into which the tape holding case is inserted, with the wall portion and roller both contacting the tape so that rotation of the roller slides the tape against the wall portion to feed the tape out of the tape holding case.

5,826,996

TOP LOADING APPARATUS FOR A PRINTER

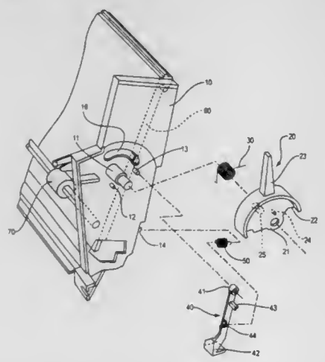
Yong-hyun Lee, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 8, 1996, Ser. No. 689,434

Claims priority, application Rep. of Korea, Aug. 9, 1995, 95-20553

Int. Cl.[6] B41J *13/10*

U.S. Cl. 400—642 **2 Claims**



2. A top loading apparatus for use in a sheet feeding system for a printer having a frame, said apparatus comprising:

a lever rotatably mounted on the frame for movement within a predetermined angular range from a first position to a second position;

a torsion spring having one arm fixed to the frame and another arm fixed to said lever for exerting a restoring force on said lever to return to said first position when said lever is moved manually to said second position and released;

a finger having a fixed end rotatably mounted to the frame by a finger pivot pin provided on the frame and a free end movable within a predetermined angular range in response to movement of said lever for enabling sheet loading, wherein said finger comprises a pushing protrusion integrally formed adjacent to said fixed end for engaging said lever which is adapted to bear against said pushing protrusion to thereby move said free end; and

a biasing member linking said finger to the frame and biasing said finger in a first position and for exerting a restoring force on said finger to return to said first position concurrent with the return of said lever to its first position.

5,826,997

POP-EYE PEN AND CANDY HOLDER

Thomas J. Coleman, 19170 Paddock Pl., Abingdon, Va. 24211; William K. Schlotter, IV, 117 Wateredge La., Fredericksburg, Va. 22406; Princess Ann Coleman, 19170 Paddock Pl., Abingdon, Va. 24211, and Ann M. Schlotter, 117 Wateredge La., Fredericksburg, Va. 22406

Filed Apr. 29, 1997, Ser. No. 848,222

Int. Cl.[6] B43K *29/00*

U.S. Cl. 401—52 **9 Claims**



1. A pop-eye pen and lollipop holder which comprises,

a main body,

said main body housing a ballpoint pen,

said ballpoint pen having a writing point for extending from one end of said main body,

a plastic eyeball assembly seated on an upper end of said main body,

means for securing said plastic eyeball assembly on said upper end of said main body,

means extending from said upper end of said main body for holding one end of a lollipop stick;

a holder socket secured to said upper end of said main body in which said plastic eyeball assembly is seated; and,

said means for securing said plastic eyeball assembly is a plastic tube which is wrapped about said plastic eyeball assembly and said socket.

5,826,998

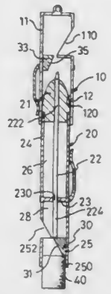
WRITING UTENSIL STRUCTURE WITH PLURAL WHISTLES

Chung-Chen Shih, No. 815, Sec. 2, Changshui Rd., Tachu Li, Hsihu Cben, Changhua Hsien, Taiwan

Filed Sep. 15, 1997, Ser. No. 929,503

Int. Cl.[6] B43K *29/00*

U.S. Cl. 401—52 **7 Claims**



1. A writing utensil structure comprising:

a cylindrical body (**20**) including an upper end portion (**24**) and a lower end portion (**25**) defining a first sound emitting nozzle (**250**), a spacer (**23**) fixedly mounted in an inner wall of a mediate portion of said cylindrical body (**20**) for closing said cylindrical body (**20**), thereby defining an upper chamber (**26**) and a lower chamber (**28**) communicating with said first sound emitting nozzle (**250**), a first sound diffusing nozzle (**252**) defined through an outer wall of said lower end portion (**25**) of said cylindrical body (**20**) and communicating between said lower chamber (**28**) and said first sound emitting nozzle (**250**);

a first sound guiding wedge (**30**) fixedly mounted in an inner wall of said lower end portion (**25**) of said cylindrical body (**20**) and located diametrically opposite to said first sound diffusing nozzle (**252**);

a cylindrical end cap (**10**) removably mounted on said upper end portion (**24**) of said cylindrical body (**20**) and including an upper end portion (**11**) and a lower end portion (**12**) defining a second sound emitting nozzle (**120**), and a second sound diffusing nozzle (**110**) defined through an outer wall of said upper end portion (**11**) of said end cap (**10**); and

a second sound guiding wedge (**33**) fixedly mounted in an inner wall of a mediate portion of said end cap (**10**) and located diametrically opposite to said second sound diffusing nozzle (**110**).

5,826,999

MECHANICAL PENCIL

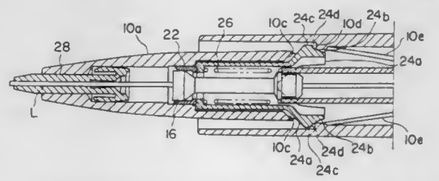
Shuhei Kageyama, Kawagoe, Japan, assignor to Kotobuki & Co., Ltd., Kyoto, Japan

Filed Jan. 11, 1996, Ser. No. 587,856

Claims priority, application Japan, Jan. 19, 1995, 7-006213

Int. Cl.[6] B43K *21/02;21/16;21/22*

U.S. Cl. 401—54 **7 Claims**



1. A mechanical pencil comprising; an outer barrel; a lead pipe inserted in said outer barrel; a chuck mounted on a front end of

said lead pipe; a chuck ring disposed around said chuck; an axially slidable sleeve in contact with a rear end of said chuck ring; a biasing spring interposed between said axially slidable sleeve and said lead pipe; said axially slidable sleeve having a plurality of radially extending flexible portions; a plurality of stop holes formed in said outer sleeve; projecting means on said plurality of radially extending flexible portions engaging said stop holes; said projecting means having an inclined portion abutting a rear end of said stop holes; whereby excessive force on an end of a lead projecting from said mechanical pencil causes said axially slidable sleeve to move backward cushioning the force on said lead to prevent damage.

5,827,000

WRITING INSTRUMENT

Neville Edgar Andrews, Horsham, England, assignor to Parker Pen Products, Isleworth, England

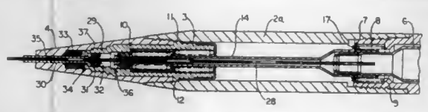
PCT No. PCT/GB95/00796, § 371 Date Nov. 20, 1996, § 102(e) Date Nov. 20, 1996, PCT Pub. No. WO95/27626, PCT Pub. Date Oct. 19, 1995

PCT Filed Apr. 6, 1995, Ser. No. 718,410

Claims priority, application United Kingdom, Apr. 7, 1994, 9406837

Int. Cl.[6] A43K *21/22*

U.S. Cl. 401—65 **9 Claims**



1. A modular lead advancing mechanism for a writing instrument, characterized in that the modular advancing mechanism is receivable as an integral unit in a writing instrument and includes means for feeding a pencil lead from a writing instrument having the advancing mechanism contained therein, and force transmitting means for transmitting a force from an element of a writing instrument to operate said feeding means, the mechanism further including an outer sleeve having the lead feeding means disposed therein, said sleeve comprising an outwardly extending external flange forming a surface for supporting said mechanism in a writing instrument structure, the force transmitting means including lead guide means slidably movable within the outer sleeve, the means for feeding a pencil lead including a clutch fixed to or integral with the lead guide means and a clutch band disposed about said clutch, and in that resilient means is disposed between said clutch band and said lead guide means to tighten said clutch around a pencil lead when the lead is located in the clutch.

5,827,001

BRUSH HAVING DISPLACEMENT MEMBER FORCING MATERIAL INTO BRISTLES

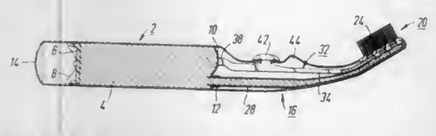
Said Taghavi-Khanghah, Newcastle Upon Tyne, England, assignor to Veresk Biosystems Ltd., United Kingdom

Filed Mar. 19, 1996, Ser. No. 617,893

Claims priority, application United Kingdom, Sep. 23, 1993, 9319686

Int. Cl.[6] A45D *40/00;* **A46B** *11/02*

U.S. Cl. 401—145 **12 Claims**



1. A brush comprising a hollow body portion, a head mounted adjacent one end of said body portion and including a plurality of bristles thereon, at least one opening in the head feeding to said bristles, a container of paste connected to the other end of the body portion, said container having a piston at one end defining a lower limit of paste in the container, and a displacement member within the other end of the container defining an upper limit of paste within the container, movement of the displacement member towards the one end of the container causing feeding paste from the other end of the container through the hollow body portion towards the head, and a control means, mounted in said body portion and movable between a first position and a second position, such that when said control means moves from said first position to said second position, said control means provides simultaneous opening of the at least one opening in the head and flow of paste from the hollow body and onto the bristles of the brush, said body portion including at least one opening, the at least one opening in the body portion and the at least one opening in the head being disposed in substantially parallel planes and said at least one opening in the head being closed in the first position of the control means, said flow from the hollow body portion to the head being in a direction perpendicular to the plane of the at least one opening in the head and by way of the at least one opening in the body portion.

5,827,002

LIQUID APPLICATOR

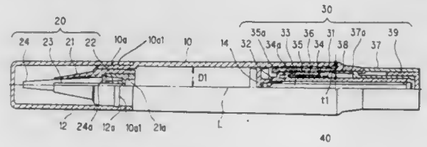
Nobuyuki Nakajima, Takasaki, Japan, assignor to Mitsubishi Pencil Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 28, 1997, Ser. No. 929,344

Claims priority, application Japan, Sep. 9, 1996, 8-238088

Int. Cl.[6] A46B *11/02*

U.S. Cl. 401—174 **5 Claims**



1. A liquid applicator comprising:

an applicator portion attached to the front end of a barrel;

a piston fitted in the barrel so as to be able to slide in the axial direction whilst maintaining liquid hermetic contact with the barrel; and

a pushing means for pushing the piston toward the applicator portion so as to send the liquid stored between the piston and applicator portion to the applicator portion, wherein the pushing means comprises:

a barrel joint fixed in the rear interior of the barrel so that it cannot move in both the rotary and axial directions;

a threaded piece having a threaded bore in the center thereof and fixed in the interior surface of the barrel joint so that it cannot move in both the rotary and axial directions;

a threaded shaft screw-fitted through the threaded bore of the screw piece and having a front end projected forwards from the barrel joint, joined to the center of the piston;

a delivering member of a cylindrical shape, loosely inserted through the barrel joint in the rear of the threaded piece, having a hollow which allows the threaded shaft to pass therethrough movably in the axial direction and rotating integrally with the threaded shaft;

a cam part of a serrated shape, formed at one end of the delivering member;

a cylindrical spring receiver fitted inside the barrel joint in such a manner that it can move in the axial direction but cannot move in the rotational direction;

a rotary handle fitted in the rear interior of the barrel joint in such a manner that it cannot move in the axial direction and can move in the rotational direction while it can move in both the axial and rotational directions with respect to the threaded shaft; and

a ratchet mechanism for allowing the delivering member to rotate in only a particular rotational direction, the ratchet mechanism composed of a pair of serrated cam parts which are provided for the spring receiver and the delivering member on their opposing faces so as to be able to become engaged and disengaged with each other and a spring which urges the cam surface of the spring receiver against the cam surface of the delivering member, said liquid applicator being characterized in that as the delivering member and the threaded shaft are rotated together with the rotary handle in a particular rotational direction, the threaded shaft moves forwards in the axial direction so as to push the piston toward the applicator portion.

5,827,003

RING BINDER WITH ALIGNMENT BLADE TONGUES

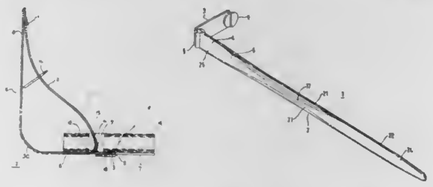
Winfried Konig, Berlin, Germany, assignor to Off Data GmbH, Berlin, Germany

Filed Jul. 26, 1996, Ser. No. 690,336

Claims priority, application Germany, Jul. 29, 1995, 195 27 872.0

Int. Cl.[6] B42F *3/00;13/10*

U.S. Cl. 402—13 **9 Claims**



1. A ring binder with alignment blade tongues, comprising:

one upper and one lower cover blank joined by a flexible rear blank;

at least two aligning tongues extending from the lower cover blank to the upper cover blank for retaining perforated paper sheets having

i) a root section;

ii) a central section connected with said root section, and having a smaller width than said root section;

iii) a tip section connected to said central section;

iv) an articulated portion disposed in the region of the lower cover blank which functions as a leaf spring;

U-shaped brackets located on said upper cover blank, wherein said aligning tongues feed through said U-shaped brackets;

a tie section of U-shaped cross section attached substantially perpendicular to said root section on said aligning tongues;

legs having a free end located on the tie section; and

flanges extending outwardly from the free end of the legs wherein one of the flanges integrally formed by the tongues has a reduced cross section in the lower portion of the aligning tongues.

5,827,004

SLIDING LOOSE LEAF BINDER

Dong Chan Kim, 465 S. Madison Ave. #118, Pasadena, Calif. 91101

Filed Jan. 30, 1997, Ser. No. 791,359

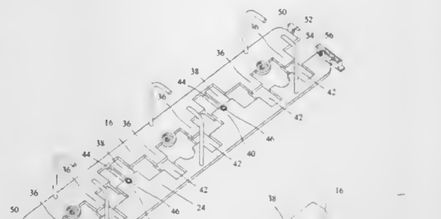
Int. Cl.[6] B42F *3/02*

U.S. Cl. 402—46 **15 Claims**

1. A sliding loose leaf binder comprised of:

a. a fixed part comprising:

i. a flat elongated first base member having a plurality of mounting apertures, a plurality of first top members of mating tracks, and a plurality of first bottom members of mating tracks;



ii. a plurality of first ring elements fixedly attached to said first base member; and

iii. first elements of releasable locking means on each lower and upper end of said first base member; and

b. a movable part comprising:

i. a flat elongated second base member having a plurality of second top members of mating tracks, and a plurality of second bottom members of mating tracks;

ii. a plurality of second ring elements fixedly attached to said second base member; and

iii. second elements of releasable locking means on each lower and upper end of said second base member;

wherein the mating tracks of the fixed part and the movable part are shaped to complement each other.

5,827,005

ELBOW JOINT ASSEMBLY

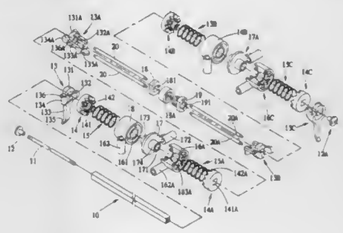
Yang-Ting Liu, No. 76-1, Lin 4, Shang-Kuan Li, Yuan Li Town, Miao Li Hsien, Taiwan

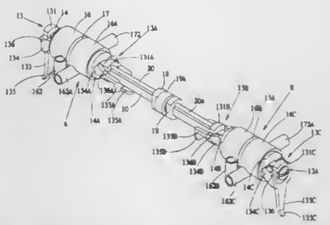
Filed May 19, 1997, Ser. No. 857,688

Claims priority, application Taiwan, Feb. 18, 1997, 86202558

Int. Cl.[6] B25G *3/18*

U.S. Cl. 403—322.1 **4 Claims**





1. An elbow joint assembly comprising a polygonal hollow shaft having a screw rod throughly inserted therein, two cap nuts fixedly mounted on two opposite ends of said shaft, an elbow joint

mounted on said shaft and moved between said locating blocks, said elbow joint comprising:

a fixed elbow mounted around and moved axially along said shaft and prohibited from rotary motion relative to said shaft, said fixed elbow comprising two extension tubes raised from two opposite sides thereof and respectively sleeved onto said shaft, and a locating barrel raised from the periphery perpendicular to said shaft and adapted for securing to a locating rod of a mechanism;

two movable elbows respectively mounted around the extension tubes of said fixed elbow and turned about them, each of said movable elbows having a respective barrel raised from the periphery perpendicular to said shaft and adapted for holding a respective rod, and a respective toothed portion at an outer side;

two constraint blocks respectively mount around and moved axially along said shaft and prohibited from rotary motion relative to said shaft, said constraint blocks having a respective toothed portion at an inner side respectively forced into engagement with the toothed portions of said movable elbows;

two spring elements respectively mounted around said shaft and retained between said movable elbows and said constraint blocks to force them apart; and

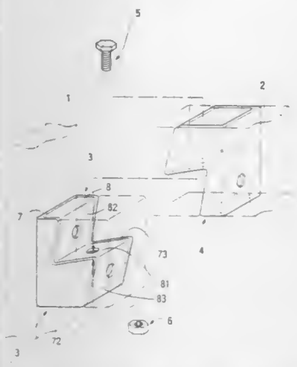
two cam levers respectively mounted on said shaft and stopped between said constraint blocks and said locating blocks, and turned between a first position in which said constraint blocks are forced into engagement with said movable elbows, causing said movable elbows and said fixed elbow to be firmly retained in position, and a second position in which said constraint blocks are released from said movable elbows, for permitting said movable elbows to be respectively turned about said shaft to a desired angle.

5,827,006

JOINT STRUCTURE FOR STRUCTURAL MEMBERS

Juichi Hoshino, No. 2453-8 Kuragano-cho, Takasaki-shi, Gunma-ken 37-12, Japan

Division of Ser. No. 672,223, Jul. 5, 1996, Pat. No. 5,688,069.
This application Jun. 17, 1997, Ser. No. 877,642
Int. Cl.[6] F16B *9/02*
U.S. Cl. 403—340 **11 Claims**



1. A joint for joining together two members, comprising:

a substantially hollow first half including a first u-shaped element and a first piece having a first contacting surface, a second contacting surface that extends from an edge of the first contacting surface at an acute angle, and a third contacting surface that extends from a second edge of the second contacting surface;

a substantially hollow second half including a second u-shaped element and a second piece having a first contacted surface, a second contacted surface that extends from an edge of the first contacted surface at an acute angle, and a third contacted surface that extends from a second edge of the second contacted surface;

the first and second halves being configured so that the angles between the first, second, and third contacting surfaces correspond to the angles between the first, second, and third contacted surfaces so that the first, second, and third contacting surfaces fit closely against the first, second, and third contacted surfaces when the first and second halves are connected together;

the first u-shaped element connected to the first piece and the second u-shaped element connected to the second piece;

the first u-shaped element including means for attaching the first half to one of the two members;

the second u-shaped element including means for attaching the second half to a second of the two members; and

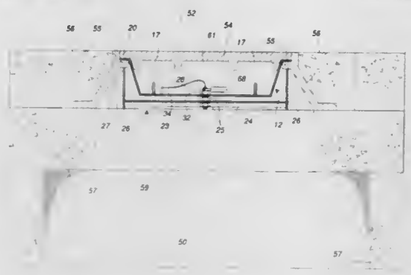
means for connecting the first half to the second half.

5,827,007

ENTRANCE-DETERRING CAP FOR MANHOLE OPENINGS

David L. Barton, 19 Wiltshire Dr., Avondale Estates, Ga. 30002, and Patrick Scott Kelly, 50 Blackberry La., Covington, Ga. 30209

Filed Jun. 17, 1996, Ser. No. 665,287
Int. Cl.[6] E02D *29/14*
U.S. Cl. 404—25 **9 Claims**



7. A method of deterring entrance through a manhole opening, comprising the steps of:

(a) positioning an annular pan on an upper surface of a frame in a manhole opening, the annular pan having a skirt extending from a bottom with an annular flange extending laterally from a distal edge of the skirt, the flange supporting the pan on the frame, with a support member hanging below the pan in the manhole opening coupled by an elongate flexible strand to the pan; and

(b) locking the pan to the frame by engaging the support member to the pan, the support member having a pair of plates that extend upwardly to bear forcibly on a lower surface of the frame when the support member is engaged to the pan.

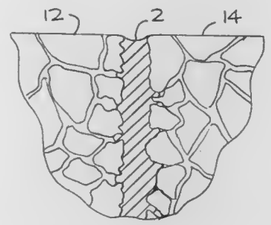
5,827,008

PAVEMENT SEALING PRODUCT AND METHOD

Gerald R. Smith, #10—1925 Indian River Crescent, North Vancouver, B.C. V7G 2P7, Canada; Robert G. Gascoyne, 2713 Country Woods Dr., Surrey, B.C. V4A 9P8, Canada, and Dieter Paul Sontowski, 230—8th Ave., New Westminster, B.C. V3L 1Y2, Canada

Filed Jun. 23, 1995, Ser. No. 494,007
Int. Cl.[6] E01C *11/02*
U.S. Cl. 404—47 **20 Claims**

20. A pavement repair structure for sealing joints between generally vertical surfaces, comprising:



a thermoplastic adhesive medium; and

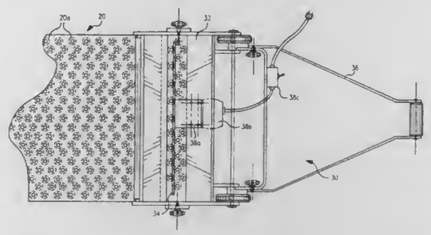
a reinforcing layer having a thickness greater than 3.5 mm that is impregnated and covered with the adhesive medium to define an elongate strip having an external coating of adhesive medium, the elongate strip being installable between the generally vertical surfaces to be joined such that the external coating forms bonds with the opposite surfaces on the application of heat and the reinforcing layer and impregnating adhesive medium cooperate to allow for repeated contractions and expansions of the joint without separation of the surfaces one from the other.

5,827,009

TACTILE WARNING SURFACE, METHOD, AND APPARATUS

Basil George Kokoletsos, P.O. Box 201, Ridgewood, N.J. 07451-0201

Filed Dec. 28, 1995, Ser. No. 579,808
Int. Cl.[6] E01C *15/00;19/50*
U.S. Cl. 404—75 **3 Claims**



1. A method for installing a tactile warning surface on an existing substrate comprising the steps of:

(a) placing a mold sheet of a given thickness over an area of a substrate on which the tactile warning surface is to be installed, said mold sheet having an array of mold apertures formed therein which extend through the thickness of the mold sheet and have a shape corresponding to tactile elements to be injected and cured therein;

(b) injecting a composite material in a semi-liquid state under pressure into the apertures of the mold sheet so as to fill the apertures from the substrate surface up to the thickness of the mold sheet;

(c) allowing the injected composite material to cure and harden within the mold apertures on the substrate surface; and

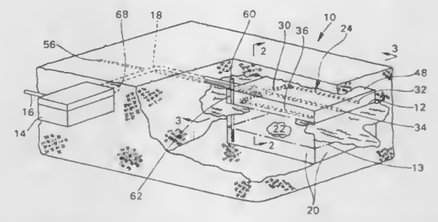
(d) peeling the mold sheet away from the tactile elements hardened on the substrate surface wherein said injecting step is performed using an injecting machine having a hopper with walls forming an upright volume for receiving the semi-liquid composite material therein and an access slot at a lowermost portion thereof for releasing semi-liquid composite material below into the mold apertures in the mold sheet.

5,827,010

ON-SITE SEWAGE TREATMENT AND DISPOSAL SYSTEM

Alan F. Hassett, Berwyn, Pa., assignor to The English Oak Partnership, L.P., Berwyn, Pa.

Filed Mar. 20, 1997, Ser. No. 822,252
Int. Cl.[6] B09B *3/00*
U.S. Cl. 405—36 **20 Claims**



1. An on-site sewage treatment and disposal system for areas having a ground water level above a minimum depth below grade comprising:

a perimeter barrier arranged around a selected subterraneal volume;

a drainage pipe adapted to receive fluid, the drainage pipe being at least partially located within the selected subterraneal volume inside the perimeter barrier;

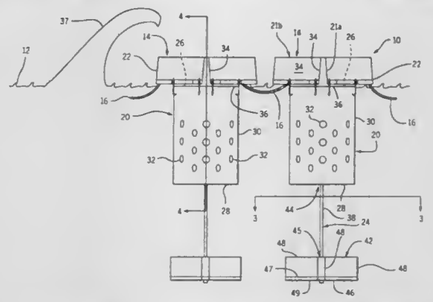
a pump having a gas intake and a discharge side which discharges gas at a pressure greater than atmospheric pressure, the discharge side of the pump being in fluid communication with the selected subterraneal volume to lower the ground water level within the perimeter barrier to a level at or below the minimum depth below grade.

5,827,011

WAVE SUPPRESSION SYSTEM

Dirk C. Kann, 531-1/2 S. River Park Dr., Guttenberg, Iowa 52052

Filed Dec. 23, 1996, Ser. No. 779,987
Int. Cl.[6] E02B *3/06;3/04*
U.S. Cl. 405—27 **20 Claims**



1. A wave suppression member for suppressing waves along a water surface, the member comprising:

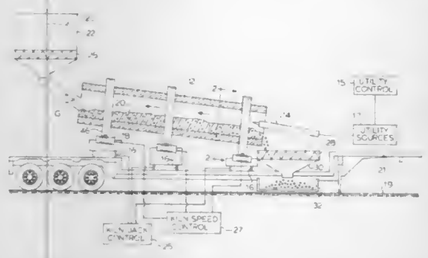
a hollow cylinder having a top defining an opening, a continuous sidewall extending from the top and having a plurality of perforations therethrough;

a flotation member coupled to the top of the cylinder for buoyantly supporting the top of the cylinder at the water surface; and

a bottom surface within the continuous sidewall and within the cylinder opposite to and facing the opening, the bottom surface having a surface area adapted to cooperate with the sidewall so and to be able to support and contain ballast

material thereabove within the cylinder and to resist movement of water out of and into the cylinder past the bottom surface such that both upward and downward movement of the cylinder is resisted.

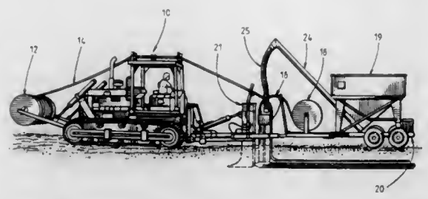
5,827,012
THERMAL PLASMA CONVERSION OF LOCAL SOILS INTO CONSTRUCTION MATERIALS
Louis J. Circeo, Jr., 4245 Navajo Trail, Atlanta, Ga. 30319
Filed Jan. 6, 1997, Ser. No. 778,603
Int. Cl.[6] E02D *19/14*; F23G *5/00*
U.S. Cl. 405—131 10 Claims



1. A method of converting a quantity of weak soil being unsuitable for use as a foundation material into a plurality of smaller quantities of soil each differing from said quantity of weak soil by being suitable as a foundation material, comprising the steps of:
(a) defining a first quantity of weak soil being unsuitable for use as a foundation material;
(b) separating a second quantity of weak soil from said first quantity of weak soil;
(c) disintegrating said second quantity of weak soil to ensure a loose particulate condition thereof,
(d) moving said second quantity of weak soil while in a loose particulate condition through an angularly positionable, internally heated, rotating drum for a selected residence time to cause said second quantity of weak soil to be heated and thus achieve a first degree of strength so as to be suitable as a foundation material;
(e) separating a third quantity of weak soil from said first quantity of weak soil;
(f) disintegrating said third quantity of weak soil to ensure a loose particulate condition thereof; and
(g) moving said third quantity of weak soil while in a loose particulate condition through said angularly positionable, internally heated, rotating drum for a selected time to cause said third quantity of weak soil to achieve a second degree of strength that is different than the first degree of strength achieved by said second quantity of soil and to be suitable as a foundation material.

5,827,013
UNDERGROUND CABLE ANODE INSTALLMENT SYSTEM
Herbert L. Fluharty; Scot P. Fluharty; John W. Fluharty, II, all of Mt. Pleasant, Mich., and Daniel P. Werner, Missouri City, Tex., assignors to Mears/CPG, Rosebush, Mich.
Continuation of Ser. No. 701,090, Aug. 21, 1996, which is a continuation of Ser. No. 285,415, Aug. 3, 1994, abandoned. This application Aug. 11, 1997, Ser. No. 909,413
Int. Cl.[6] F16L *1/00*; H02G *9/00*
U.S. Cl. 405—180 16 Claims

1. An apparatus for underground installation of a linear anode, comprising:
a plow for providing a substantially horizontal tunnel to receive the linear anode; and



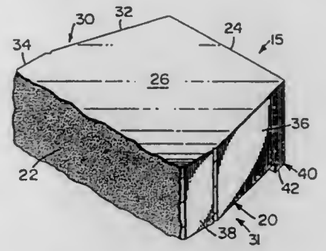
a chute for delivering a granular cathodic material to the tunnel around the linear anode, said chute being dimensioned to receive the linear anode and granular cathodic material simultaneously.

5,827,014
FRICTION ROCK STABILIZER
Theodore Daniel Swemmer, Cape Town, South Africa, assignor to Hugotek (Proprietary) Limited, Pretoria, South Africa
Filed Feb. 4, 1997, Ser. No. 794,054
Int. Cl.[6] E21D *21/00*
U.S. Cl. 405—259.3 9 Claims



1. A friction rock stabilizer comprising:
an elongated tendon tube made from a resilient metal, said elongated tendon tube being generally circular in cross-section and having opposed upper and lower ends, said upper and lower ends being spaced apart by a central portion, said elongated tendon tube being reduced in cross-sectional dimension over a portion of its length toward said lower end of said tube;
a slot having opposed slot edges which are spaced from each other over at least said central portion of said tube, said slot extending over at least said central portion of said tube to enable at least said central portion of said tube to be reduced in cross-sectional dimension by movement of said slot edges together against said resilience of said tube; and
a radially extending washer support stop which is located generally at said lower end of said tube, said washer support stop being circumferentially continuous about said tube and including an upper domed surface facing said central portion of said tube, said upper domed surface of said washer support stop having a dimension transverse to said elongated tube which is significantly greater than an outer diameter of said central portion of said tube, said washer support stop upper domed surface being engageable by a holed face washer which is slidable over said central portion of said tube and which is angularly receivable on said upper domed surface for supporting a face washer on said friction rock stabilizer.

5,827,015
COMPOSITE MASONRY BLOCK
Michael E. Woolford, Lake Elmo, Minn., and Dick J. Sievert, New Richmond, Wis., assignors to Anchor Wall Systems, Inc., Minneapolis, Minn.
Continuation of Ser. No. 675,572, Jul. 3, 1996, which is a continuation of Ser. No. 469,795, Jun. 6, 1995, Pat. No. 5,589,124, which is a continuation of Ser. No. 157,830, Nov. 24, 1993, which is a division of Ser. No. 651,322, Feb. 6, 1991, Pat. No. 5,294,216, which is a division of Ser. No. 534,831, Jun. 7, 1990, Pat. No. 5,062,610, which is a continuation-in-part of Ser. No. 413,400, Sep. 27, 1989, which is a continuation-in-part of Ser. No. 413,050, Sep. 27, 1989, abandoned. This application Sep. 2, 1997, Ser. No. 921,481
Int. Cl.[6] E02D *29/02*
U.S. Cl. 405—286 51 Claims

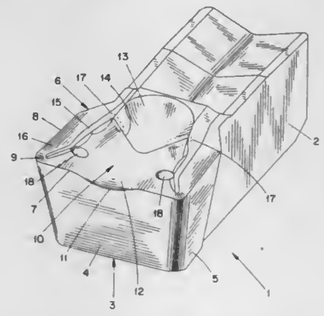


1. A composite masonry block comprising:
a) a block body, said block body comprising a front surface and a back surface, said front surface and said back surface being substantially parallel to each other and separated by a distance comprising the depth of the block, a generally planar upper surface and a generally planar lower surface, said upper surface and said lower surface being substantially parallel to each other and separated by a distance comprising the height of the block, said lower surface having a smaller area than said upper surface, and opposed first and second sidewall surfaces, said sidewall surfaces adjoining said block upper and lower surfaces, each of said first and second sidewall surfaces comprising a first part and a second part, said sidewall surface first parts extending from said block front surface towards said block back surface, and intersecting the front surface at an angle of ninety degrees or less, said sidewall surface second parts joining their respective sidewall surface first parts and said block back surface, each sidewall surface second part intersecting the back surface at an angle of less than ninety degrees; and
b) a flange extending from the block back surface past the height of the block, said flange comprising a setback surface and a locking surface, said setback surface extending from the lower rear edge of the flange towards said block front surface to adjoin said flange locking surface, said locking surface extending below the plane of said block lower surface;
c) wherein the top surface and the sidewall surfaces are generally solid and continuous across their entire extents.

5,827,016
OCTAGONAL MILLING INSERT WITH ANTI-RATTLE CONFIGURATION AND STRENGTHENED CUTTING EDGES
Bengt Nils Gustav Strand, Fagersta, Sweden, assignor to Seco Tools AB, Fagersta, Sweden
Filed Jun. 20, 1996, Ser. No. 668,258
Int. Cl.[6] B23B *27/08*
U.S. Cl. 407—115 16 Claims

1. A milling insert including a generally octagonal body having a top face defining a rake face, a bottom face, and an edge face extending between said top and bottom faces; a transition between said top face and edge face forming eight cutting edges; adjacent pairs of said cutting edges forming cutting corners; said edge face including upper and lower portions; said upper portion defining a clearance face forming an angle of at least 20 degrees with a plane oriented parallel to a center axis of the body; said edge face including a lateral shoulder forming a step situated between said top and bottom faces for dividing said edge face into said upper and lower portions and forming a corner defining a fracture zone for guiding, away from said bottom face, a propagating fracture emanating from an upper portion of said body, wherein said shoulder is not parallel to and forms an angle with a line extending perpendicular to a center axis of said body.

5,827,017
CHIPFORMING METAL CUTTING INSERT WITH RIDGES FOR SQUEEZING A CHIP
Pär Tägström, and Jan Lundström, both of Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden
Filed Nov. 22, 1996, Ser. No. 755,743
Claims priority, application Sweden, Nov. 23, 1995, 9504174
Int. Cl.[6] B23B *27/22*
U.S. Cl. 407—116 10 Claims



1. A cutting insert for chipforming cutting of metallic workpieces, comprising a rear shaft part and a cutting head situated at a front longitudinal end of the rear shaft part, the cutting head comprising:
a top side;
a bottom side;
a front relief surface extending between the top and bottom sides and forming a main cutting edge at its intersection with the top side;
lateral relief surfaces extending between the top and bottom sides, each lateral relief surface forming a side cutting edge at its intersection with the top side;
two laterally spaced, upstanding ridges disposed on the top side, each ridge extending generally in a longitudinal direction; and
a chipbreaker pit formed in the top side between the two ridges, the pit comprising front and rear intersecting portions defining an intersection edge therebetween, the pit front portion intersecting the main cutting edge to form a depression therein, whereby the pit defines a guide for a rearwardly traveling chip;

upper portions of the ridges disposed in a vicinity of the intersection edge being rearwardly convergent and forming, together with the intersection edge, a squeezing zone for squeezing a rearwardly traveling chip;

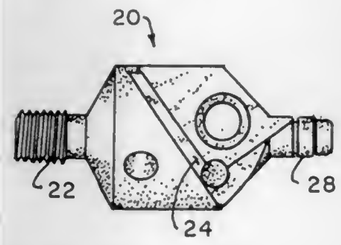
the pit front portion including two laterally spaced burls situated in a proximity of respective ones of the ridges.

5,827,018

COUNTERSINK CUTTERS HAVING A FREE-SPINNING PILOT

Thomas O. Blankenship, O'Fallon, and David L. Fritsche, St. Charles, both of Mo., assignors to McDonnell Douglas, St. Louis, Mo.

Filed Oct. 30, 1996, Ser. No. 739,161
Int. Cl.[6] B23B *51/10*
U.S. Cl. 408—82 **2 Claims**



1. A countersink cutting tool, comprising:

a cylindrical axial elongated body having a cylindrical cutting surface having a diameter thereon disposed to cut material with the rotation of the cylindrical body;

a shank section at one end of the cylindrical body wherein the shank section is generally disposed to be mounted within a hand held drill equipped with a precision depth stop or automated machine tool;

a front non-cutting section of the cylindrical body having a diameter less than the diameter of the cylindrical cutting section, the diameter of the non-cutting section being coated with a dry film lubricant wherein the non-cutting section acts as a guide for the cylindrical body; and

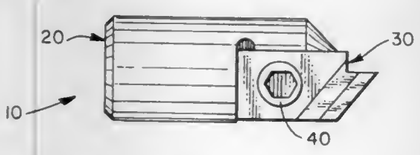
a cylindrical spindle section having an inside diameter coated with a dry film lubricant and an outside diameter, said spindle being axially mounted upon the cylindrical non-cutting section wherein the cylindrical non-cutting section is freely rotatable within the spindle.

5,827,019

SELF-CALIBRATING COUNTERSINK TOOL

William J. Morrissey, Waterbury, Conn., assignor to Century Tool & Design, Inc., Milldale, Conn.

Continuation-in-part of Ser. No. 70,746, Apr. 8, 1997. This application Sep. 17, 1997, Ser. No. 932,906
Int. Cl.[6] B23B *51/00*
U.S. Cl. 408—227 **13 Claims**



1. A countersink tool comprising:

a reusable insert-holder having opposing first and second ends, an axis-defining shank portion disposed at said first end, and an insert-receiving notch disposed at said second end and being capable of receiving a selectively attachable insert;

a selectively attachable insert having a tapered cutting-edge which terminates in an apex and a notch-mating portion which is complementary in shape to said insert-receiving notch so that when said insert is in mating engagement with said holder, said notch-mating portion of said insert mates with said insert-receiving notch of said holder whereby said cutting-edge of said insert is disposed forwardly of said second end of said holder and defines a pre-determined angle relative to said axis and said apex is disposed on said axis; and

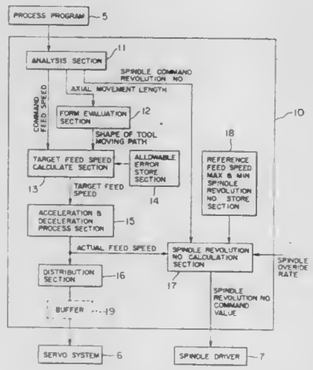
affixation means for affixing said insert to said holder such that said insert is in mating engagement with said holder.

5,827,020

NUMERICAL CONTROL APPARATUS

Jun Fujita, Mishima; Koichi Kikuchi; Koichi Kato, both of Numazu; Hironobu Ohara, Tagata-Gun; Hiromasa Suzuki, Fuji, and Kanji Atsumi, Suntou-Gun, all of Japan, assignors to Toshiba Kikai Kabushiki Kaisha, Tokyo-To, Japan

Filed Jul. 11, 1996, Ser. No. 678,185
Claims priority, application Japan, Jul. 11, 1995, 7-175277
Int. Cl.[6] B23C *1/16*
U.S. Cl. 409—80 **11 Claims**



1. A numerical control apparatus for controlling a machine tool for machining a free curved surface of a workpiece, comprising:

tool feed speed deciding means for obtaining tool feed speed on the basis of a shape of a tool moving path commanded by a machining program; and

spindle revolution number control means for changing a revolution number of a spindle according to the decided tool feed speed,

wherein said tool feed speed deciding means includes

analyzing means for analyzing the machining program,

tool moving path shape deciding means for obtaining the shape of the tool moving path,

target tool feed speed calculating means for calculating a target tool feed speed in an allowable range decided on the basis of the shape of the tool moving path obtained by said tool moving path shape deciding means, and

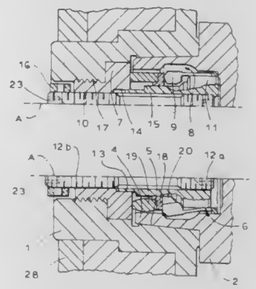
an acceleration and deceleration processing section for calculating an actual tool feed speed on the basis of the target tool feed speed so that a change position in outer shape between blocks for constituting the workpiece can be connected smoothly.

5,827,021

RELEASABLE TOOL-HOLDER MOUNT FOR MACHINING SPINDLE

Klaus-Dieter Klement, St.Mauri-Strasse 1, D-52428 Jülich, Germany

Filed Dec. 20, 1996, Ser. No. 771,767
Claims priority, application Germany, Jan. 3, 1996, 196 00 089.0
Int. Cl.[6] B23D *7/00*
U.S. Cl. 409—231 **20 Claims**



1. In combination with a driven part of a tool and a drive tart of a drive spindle rotatable about an axis, a mount comprising:

a tubular extension projecting axially forward from one of the parts and formed centered on the axis with a radially inwardly projecting collar, the other part being formed with a recess complementarily engageable axially over the tubular extension;

a retaining element in the tubular extension and having a plurality of does deflectable radially between an outer blocking position axially behind the collar and an inner position radially rearward of the collar;

an actuating member in the retaining element in the tubular extension and having a camming edge engageable forward with the dogs;

means including interengaging coupling formations between the member and the other part for inhibiting rotation of the member relative to the other part while permitting axial displacement of the member relative to the parts between a rear position clear of the dogs with same in the inner position and a front position pressing the dogs outward into the outer position;

an actuating rod centered on the axis and having a rear end formed with a screwthread threaded into the actuating member and a front end formed with a screwthread threaded into the other part, the screwthreads of the rod being of opposite hand, whereby rotation of the rod about the axis in one direction displaces the member forward toward its front position and opposite rotation displaces the member rearward toward its rear position; and

spring means braced axially between the other part and the retaining element for urging same axially rearward, the spring means including

a ring centered on the axis and engaged axially backward with the dogs, and

an annular spring centered on the axis and braced axially between the ring and a rearwardly directed face of the other part.

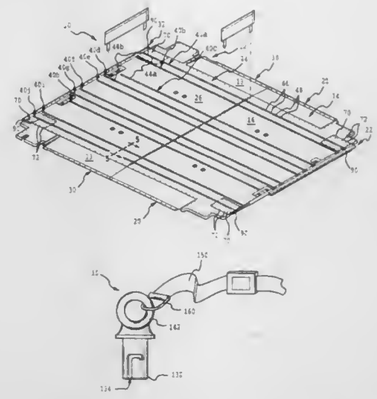
5,827,022

TIERDOWN FLOORING SYSTEM FOR A PATIENT TRANSPORT AIRCRAFT

Ernest Peter Tovani, Englewood, Colo., assignor to Air Methods Corporation, Englewood, Colo.

Filed Jun. 10, 1996, Ser. No. 660,878
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—78 **2 Claims**

1. A support system for use in a transport aircraft said support system comprising:



first and second support members having first and second widths, respectively, wherein said first width is different than said second width;

a floor platform having top and bottom surfaces laterally displaced side edges and longitudinally displaced front and back edges said floor platform positionable within the transport aircraft;

a plurality of tracks located about said top surface of said floor platform, wherein at least three of said plurality of said tracks are in a fixed position relative to each other upon installation of said floor platform into the transport aircraft, said at least three tracks providing at least two track pairs, wherein in said fixed position relative to each other only a first of said track pairs comprising only a first and a second of said plurality of tracks is spaced to supportably receive said first support member having said first width and only a second of said track pairs comprising only said first and a third of said plurality of tracks is spaced to supportably receive said second support member having said second width, wherein upon installation of said floor platform into the transport aircraft each of said first and second support members is supportably mountable to said floor platform free from repositioning of said plurality of tracks;

at least one access cover, interconnectable to said floor platform, for covering at least one opening in said floor platform; and

at least one access cover track located about a top surface of said access cover, wherein said access cover track is adapted to receive one of said first and second support members and is substantially coincident with one of said plurality of tracks located about said floor platform.

5,827,023

TRUCKBED TIE DOWN SYSTEM

William S. Stull, 1399 Hidden Springs Dr., Corona, Calif. 91721

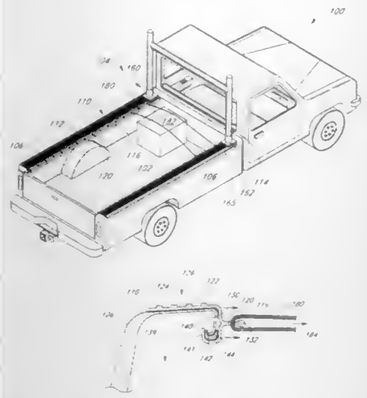
Filed Oct. 30, 1995, Ser. No. 550,209
Int. Cl.[6] B60P *7/08*
U.S. Cl. 410—110 **16 Claims**

1. A securing rail apparatus for securing cargo in the bed of a vehicle wherein said bed has at least one sidewall comprising:

a rail mounting member having a first surface that is configured to be positioned flushly against an upper surface of a sidewall of a cargo bed of a vehicle, so that said first surface of said rail mounting member extends along said upper surface of said side wall of said vehicle, said first surface having a plurality of ribs defining indentations therebetween;

a hook member connected to said rail mounting member wherein said hook member is configured to hook around a lip of said sidewall of said vehicle to securely retain said rail mounting member to said sidewall of said vehicle; and

a plurality of mounting points disposed along said rail mounting member so as to be spaced along the length of said rail



mounting member, wherein said plurality of mounting points are configured to receive securing devices that secure cargo within said bed of said vehicle, said hook member sized and configured to prevent detachment of said hook member from said sidewall in response to an upward force on the rail mounting member;

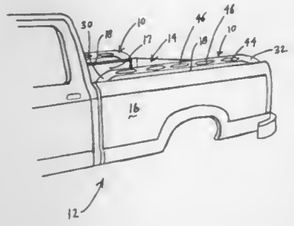
a first upper mounting assembly that engages with said plurality of ribs so that said upper mounting assembly supports a vertical member configured to be connected to a light bar or an overhead rack, the first upper mounting assembly comprising:

a mounting plate having a plurality of teeth formed on a bottom surface, wherein said plurality of teeth define indentations and said teeth and indentations of said mounting plate engage with said ribs and indentations on said rail mounting member so as to support said vertical member in a fixed vertical orientation above said bed of said vehicle;

a securing member attached to said mounting plate so as to be positioned adjacent at least one of said plurality of mounting points disposed along said rail mounting member; and

a fastener that couples said securing member attached to said mounting plate to said at least one of said plurality of mounting points disposed along said rail mounting member to securely mount said upper mounting assembly to said rail mounting member when said rail mounting member is mounted on said sidewall of said vehicle.

5,827,024
TIE-DOWN RAIL FOR TRUCK BED
Bobby E. Davenport, 317 Becklea Dr., Madison, Tenn. 37115
Filed May 23, 1996, Ser. No. 652,382
Int. Cl.[6] B60P *7/06*
U.S. Cl. 410—110 **23 Claims**



1. A tie-down rail for a truck bed including spaced apart sidewalls, the sidewalls each having a top ledge, to tie down-rail comprising:

an elongated tubular body having a substantially circular cross-section, and a hollow interior,

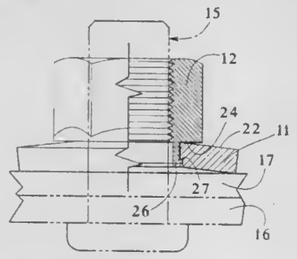
the body further comprising open ends extending angularly downward and adapted to rest on the ledge of the sidewall;

anchoring means contained within the ends of the rail for securing the rail to the ledge;

at least one fastener received within a bore formed in the top surface of the rail for operatively engaging the anchoring means, the rail and the top ledge; and

the at least one flange projects into the interior of the rail from an inner surface.

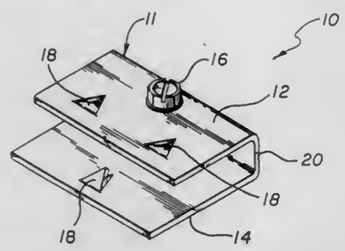
5,827,025
LUG NUT DISC SPRING ASSEMBLY
Arne Henriksen, Hawthorn Woods, Ill., assignor to Seventy-Five and Associates, Ltd., Schaumburg, Ill.
Filed Dec. 8, 1997, Ser. No. 986,425
Int. Cl.[6] F16B *3/02;43/00*
U.S. Cl. 411—11 **23 Claims**



1. A self-tensioning, disc spring assembly comprising:

a non-flat circular disc spring having an outer diameter, and an inner diameter defining a center hole, the center hole accommodating an annular insert, the annular insert comprising zinc, wherein the disc spring has a height greater at the inner diameter than at the outer diameter and wherein the ring is resiliently compressible such that it can be flattened when compressed by a nut tightened to a preselected torque and returned to its original shape after use.

5,827,026
ATTACHMENT DEVICE
Tony J. Patti, 13920 Mt. McClellan Blvd. #B, Reno, Nev. 89506
Filed Jun. 27, 1997, Ser. No. 884,185
Int. Cl.[6] F16B *37/02;37/04*
U.S. Cl. 411—174 **14 Claims**



1. An attachment device for attaching a first object to a second object, the first object having an upper and lower surface and an edge, the attachment device comprising:

(A) a bolt for providing a compressive force;

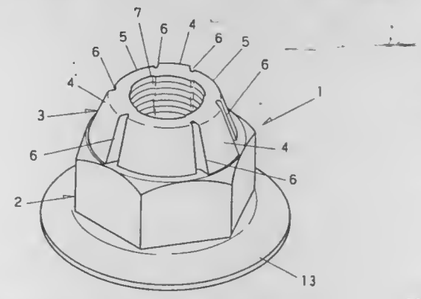
(B) a nut for engaging said bolt, said nut having an upper member for abutting the edge of the first object; and

(C) a body for gripping the first object, said body having a substantially U-shaped cross-section, said body comprising:

(a) an upper portion for abutting the upper surface, said upper portion having a hole for receiving said bolt; and

(b) a lower portion for abutting the lower surface, at least one nut hole for receiving said upper member of said nut, wherein said upper member of said nut extends through said nut hole and abuts the edge of the first object when the first object is between said upper and lower portions.

5,827,027
NUT FREE FROM INADVERTENT LOOSENING AND A METHOD OF MAKING SAME
Katuhiko Wakabayashi, Osaka, Japan, assignor to Hard Lock Kogyo Co., Osaka, Japan
Filed Jun. 6, 1997, Ser. No. 870,400
Int. Cl.[6] F16B *37/04*
U.S. Cl. 411—283 **14 Claims**



1. A nut free from inadvertent loosening comprising:

an internally threaded bore formed through the nut around a central axis thereof;

a base engageable with a driver;

an annular lug integral with and extending upwardly from the base;

the annular lug being coaxial with the base and providing an upper zone of the internally threaded bore; and

a plurality of generally upright grooves formed in an outer peripheral surface of the annular lug at angular intervals so as to divide the annular lug into a plurality of wall segments having radii and each interposed between one of the upright grooves and the next, said grooves not intersecting said internally threaded bore,

wherein at least one of the wall segments is depressed centripetally to reduce its radius, with the other segments remaining undepressed, and said at least one depressed wall segment alternates with said undepressed wall segments.

5,827,028
ELECTRICAL CONNECTION TERMINAL ASSEMBLY AND TILT WASHER
E. Grant Swick, 28W629 Stearns Rd., Bartlett, Ill. 60103-6528
Continuation-in-part of Ser. No. 155,387, Nov. 22, 1993, Pat. No. 5,470,183. This application Nov. 21, 1995, Ser. No. 561,439
Int. Cl.[6] F16B *33/00;39/24;* **H01R** *4/44;11/01*
U.S. Cl. 411—368 **9 Claims**

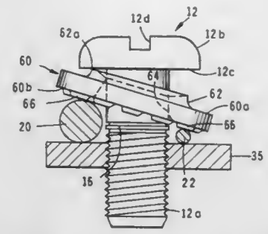
1. A connector assembly to which electrical wires can be detachably connected comprising:

(a) a threaded member having a shank portion and a head portion, said shank portion having a longitudinal axis and said head portion having a generally flat undersurface;

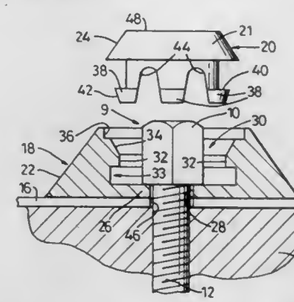
(b) a clamping plate including a non-rectangular shaped body portion having first and second spaced apart surfaces and a centrally disposed aperture for receiving said shank portion of said threaded member, said body portion being pivotable generally about the longitudinal axis of said shank portion of said threaded member;

(c) screw head engaging means provided on at least one of said first and second surfaces of said clamping plate for engaging the undersurface of said head portion of said threaded member said screw head engaging means comprising a generally annular shaped protuberance which is substantially angular in cross section and terminates in a screw head engaging apex for engaging said undersurface of said head portion of said threaded member as said clamping plate tilts; and

(d) gripping means provided on at least one of said first and second surfaces of said clamping plate for gripping a wire placed proximate said clamping plate said gripping means comprising a gripping protuberance having a wire engaging ridge comprising a generally circular shaped, upstanding gripping ridge which terminates in a sharp, wire engaging edge.



5,827,029
SECURITY CAP FOR FASTENER DEVICES
Philip Denman, c/o Detroit International Limited Unit 24, Signal Way Industrial Estate, Old Town, Swindon, Wiltshire, United Kingdom, SN3 1PD
Filed Jul. 10, 1997, Ser. No. 889,983
Claims priority, application United Kingdom, Jul. 12, 1996, 9614707
Int. Cl.[6] A47G *3/00*
U.S. Cl. 411—373 **9 Claims**



1. In combination with a fastener having a head element and a shank element, a device for restricting access to the head element of said fastener with the access restricting device comprising first and second parts, and wherein:

(a) said first part includes attachment means adapted to be captive between the head element of the fastener and a member in which the shank element of the fastener is received, the said first part further defining a recess in which the head element is accommodated;

(b) said second part being dimensioned to be slidingly received in the recess formed idn the first part to close the recess, without engaging the head element;

(c) the said first and second parts having formations which cooperate when the second part is sufficiently inserted into the

recess formed in the first part to prevent withdrawal of the second part from engagement with the first part, whereby to prevent access to the fastener;

(d) said first part comprising a frustroconical external surface which, in use, tapers in a direction away from a member to which the device is secured; and wherein the second part has a frustroconical surface with an apex angle which is substantially the same as that of the frustroconical surface of the said first part.

5,827,030

THREAD FORMING JOINING ELEMENTS

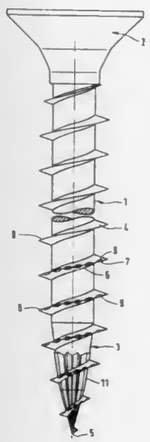
Robert Dicke, Ennepetal, Germany, assignor to A-Z Ausrustung und Zubehor GmbH & Co., KG, Germany

Filed Sep. 5, 1996, Ser. No. 707,641

Claims priority, application Germany, Sep. 6, 1995, 195 32 874.4

Int. Cl.[6] F16B *25/00*

U.S. Cl. 411—387 **9 Claims**



1. A self-drilling screw intended for use in soft fibrous material and comprising:

a screw bead (**2**);

the screw head connected to a screw shaft (**1**) with a core diameter;

the screw shaft having a screw tip (**3**) with a circumferential surface which is tapered from the screw shaft (**1**) to a point (**5**);

at least one thread (**4**) that extends over at least part of the screw shaft (**1**) to the point (**5**) of the screw tip (**3**);

at least one friction edge region (**11**) the whole of which is located within the region of the screw tip (**3**), the friction edge region being oriented in the axial direction of the screw; and

the friction edge region being formed by a rib that begins at the point (**5**) of the screw tip (**3**) and that extends at least over a height of one lead of the thread (**4**) on the circumferential surface of the screw tip (**3**);

whereby the friction edge region cuts said material so that the point (**5**) can immediately catch to generate axial force during screwing-in of the screw.

5,827,031

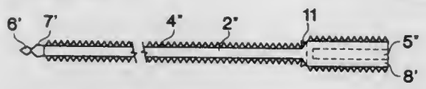
SELF STARTING FINISHING SCREW AND DRIVER TOOL

Gregory T. Swallow, 307 Croydon La., Manchester, Mo. 63021

Filed May 14, 1997, Ser. No. 855,628

Int. Cl.[6] F16B *25/00;35/04;35/06*

U.S. Cl. 411—387 **3 Claims**



1. A threaded fastener comprising:

a shaft having a length, a diameter and a circumference,

said shaft having a reduced diameter portion at one end,

said shaft having a means for engaging a tool on another end,

said shaft having screw threads extending along the complete length thereof, and

wherein said reduced diameter portion of said shaft has a pair of diamond shaped portions,

one of said diamond shaped portions being smaller than the other.

5,827,032

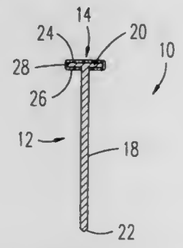
WEATHERPROOF FASTENING ASSEMBLY

James R. Howard, 4300 Dover Ave., Independence, Mo. 64055

Filed Aug. 5, 1997, Ser. No. 906,458

Int. Cl.[6] F16B *15/02;19/00;33/00*

U.S. Cl. 411—480 **6 Claims**



1. A weatherproof fastening assembly comprising:

a fastening device including an elongated shank and a head on one end of the shank; and

a cover formed of water-tight material positioned over the head of the fastening device for sealing the head from water and air to prevent the head from rusting when the fastening device is driven into an object, the cover including

a circular top wall,

a circular bottom wall spaced from the top wall, and

an annular side wall interconnecting the top and bottom walls and defining a hollow head-receiving chamber therebetween,

the bottom wall having a hole therein that can be slipped over the head of the fastening device so that the cover can be positioned over the head of the fastening device.

5,827,033

CASE MAKING DIES AND SYSTEMS, AND METHODS OF ADJUSTMENT, ALIGNMENT AND USE THEREOF

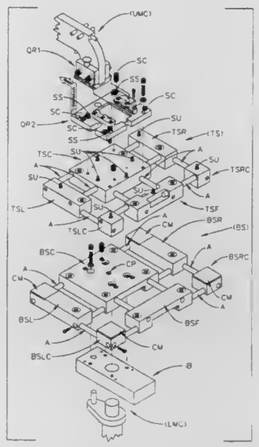
Richard L. Feldman, Waverly, Nebr., assignor to James D. Welch, Omaha, Nebr., A Part Interest

Filed Jun. 6, 1996, Ser. No. 659,752

Int. Cl.[6] B42C *7/00*

U.S. Cl. 412—3 **29 Claims**

19. A method for aligning top and bottom dies in a system so that facing surfaces of said top and bottom dies make essentially



uniform contact with one another when caused to make contact with one another by operation of said system, comprising the steps of:

a. providing a system comprising means for connecting a top die and a bottom die therein such that in use facing surfaces of said top and bottom dies can be caused to come into essentially uniform contact with one another, said system comprising means for causing said top and bottom dies to reversibly approach and contact one another; which system further comprises well forming elements, which well forming elements can be adjusted so as to provide a well of overall dimensions just in excess of the overall outer dimensions of said bottom die, and which well forming elements further provide extendable/retractable fingers which can be caused to project from and retract into said well forming elements as desired by a user;

b. providing a bottom die to said system which bottom die comprises a bottom die central pivot means such that said bottom die central pivot means contacts an underlying surface of said system, which bottom die further comprises means for securing a position of said bottom die when it has been appropriately caused to pivot about said bottom die central pivot means, into an aligned position;

c. causing said bottom die and well forming elements to be adjusted so that the well forming elements are separated by a distance which allows said bottom die to be lowered thereinto when said extendable/retractable fingers are retracted into said well forming elements but not when they are extended;

d. causing said extendable/retractable fingers to be retracted into said well forming elements;

e. causing said bottom die to be lowered into said well formed by said well forming elements to a point where an upper surface thereof is below the location at which said extendable/retractable fingers are located, and causing said extendable/retractable fingers to be extended above said upper surface of said bottom die;

f. causing said bottom die to rise so that edges of an upper surface thereof makes contact with lower extents of said extended fingers, and so that said bottom die pivots about said bottom die central pivot means such that essentially uniform contact between edges of said upper surface of said bottom die and the lower extents of said extended fingers is achieved;

g. operating the means for securing a position of said bottom die when it has been appropriately caused to pivot about said bottom die central pivot means, into an aligned position, to secure said bottom die in the position achieved in step f.

5,827,034

PUNCH/BINDING MACHINE

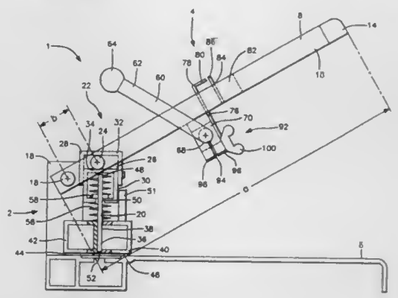
Friedrich von Rohrscheidt, 2210 Walhala Dr., Richmond, Va. 22336

Filed Feb. 8, 1996, Ser. No. 598,682

Claims priority, application Germany, Feb. 16, 1995, 195 05 191.2

Int. Cl.[6] B42B *9/00*

U.S. Cl. 412—40 **15 Claims**



1. A punch/binding machine comprising a punching mechanism for punching a stack of sheets to form a plurality of holes adjacent an edge of the sheets and a binding mechanism for binding the sheets with a plastic binder having a longitudinal spine and a plurality of extendible curled fingers forming loops to bind the sheets to the plastic binder, said curled fingers being spreadable to open the loops, the machine further comprising,

a base member having a plurality of pillars upstanding therefrom;

a punching handle pivotally connected with said pillars for angularly rotating said punching handle in directions toward and away from said base member, said punching handle including a depressing means for applying linear movement to a punching die within said punching mechanism, said punching mechanism mounted upon said base member adjacent said pillars, said punching mechanism including a punching die for punching holes within a stack of sheets, wherein rotation of said punching handle in a direction towards said base number causes said depressing means to linearly move said punching die toward said base member to punch holes within the stack of sheets;

a binding handle pivotally connected with said punching handle for angularly rotating said binding handle with respect to said punching handle, said binding handle connected with a first spreading member for spreading open the loops of the plastic binder;

a second spreading member connected with said punching handle adjacent said first spreading member for retaining the plastic binder, wherein rotation of said binding handle causes said first spreading member to move in a direction away from said second spreading member to open the loops of the plastic binder.

5,827,035

LEAD FRAME PUSHER DEVICE

Shigeru Fuke, Musashino, and Eiji Kikuchi, Musashimurayama, both of Japan, assignors to Kabushiki Kaisha Shinkawa, Tokyo, Japan

Filed Aug. 2, 1996, Ser. No. 691,543

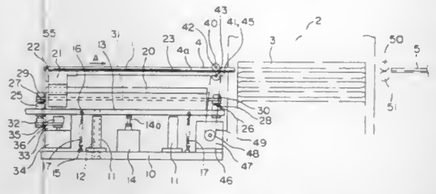
Claims priority, application Japan, Aug. 4, 1995, 7-218342

Int. Cl.[6] B65G *1/06*

U.S. Cl. 414—417 **10 Claims**

1. A lead frame pusher device comprising: a pair of supply guide rails and a pair of discharge guide rails installed respectively on a front and a rear side of a magazine, which is raised and lowered by

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an elevator means, so that lead frames are fed into and fed out of said magazine via said guide rails, said lead frame pusher device further comprising:

a pusher mount installed between said pair of supply guide rails for being moved along said supply guide rails,

a pusher mount driving means for driving said pusher mount along said supply guide rails,

a first pusher means provided on said pusher mount and projecting upward from said pusher mount for coming into contact with said lead frames,

a second pusher means provided on said pusher mount and extending toward said magazine below said first pusher means for coming into contact with said lead frames, and

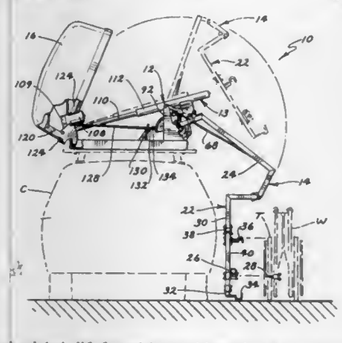
a means for raising and lowering said pusher mount which moves said pusher mount upward and downward so that said first and second pusher means are alternately positioned at a conveying path level of said pair of supply guide rails.

5,827,036

WHEELCHAIR LIFT

Paul Steffes, and Kenneth S. Eberts, both of Dickinson, N. Dak., assignors to Tip Top Mobility, Inc., Minot, N. Dak.

Filed Mar. 28, 1996, Ser. No. 623,354
Int. Cl.[6] B60R *9/00*
U.S. Cl. 414—462 **30 Claims**



1. A wheelchair lift for raising and lowering a wheelchair to and from a storage area on the roof of a vehicle and storing the wheelchair therein, the vehicle being equipped with a support assembly to which is mounted the wheelchair lift, comprising:

a supporting frame attachable to the support assembly for maintaining the wheelchair lift in position on the roof of the vehicle, said supporting frame having a proximate side and a distal side;

a lifting assembly hingedly attached to said proximate side of said supporting frame;

an extension assembly pivotally attached to said lifting assembly, the wheelchair being releasably attachable to said extension assembly;

drive means for motivating said lifting assembly;

motor means engageable with said drive means for motivating said drive means;

a rigid hood hingedly attached to said distal side of said supporting frame said rigid hood being movable between an open position and a closed position;

a hinge assembly fixedly attached to said rigid hood and pivotally attached to said supporting frame;

a hood control linkage for raising and lowering said rigid hood as said lifting assembly is motivated by said drive means; and

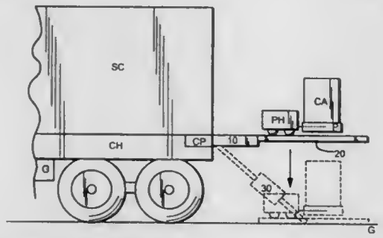
a hood control disk having a peripheral surface for cooperating with said hood control linkage for raising and lowering said rigid hood.

5,827,037

DISTRIBUTION CHASSIS

Marvin L. Wilson, Jr., 44-291B Kaneohe Bay Dr., Kaneohe, Hi. 96744

Filed Aug. 27, 1996, Ser. No. 703,861
Int. Cl.[6] B60P *1/26*
U.S. Cl. 414—556 **15 Claims**



1. A device, comprising:

a chassis having a rear end, said chassis being adapted for receiving a detachable shipping container with an interior floor and also having walls and ceiling, whereby the interior floor of a container mounted on said chassis is elevated to a container floor height;

a platform extension extending rearwardly from said rear end by a platform depth and defining a platform height, wherein said platform height is approximately equal to said container floor height;

a moveable liftgate having a liftgate depth movable from a raised position abutting against and coplanar with said platform extension and a lowered position at ground level; and

a lifting apparatus operatively connected to said liftgate whereby said liftage can be lowered to said lowered position and raised to said raised position;

wherein said platform depth is between approximately 2 feet and approximately 5 feet, whereby said platform depth is great enough that a pallet handler can maneuver outside said container on said platform extension and said liftgate; and

wherein said liftgate depth is between approximately 4 feet and approximately 7 feet, whereby said liftgate death is great enough for said liftgate to accommodate said pallet handler carrying a pallet.

5,827,038

AUGER BUCKET

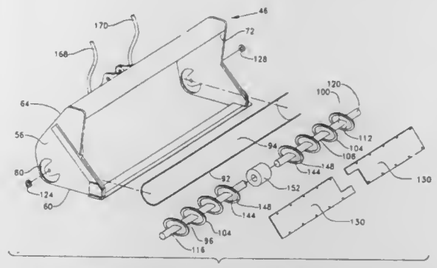
William M. Barden, Raleigh, N.C., assignor to Caterpillar Inc., Peoria, Ill.

Filed Mar. 5, 1997, Ser. No. 811,854
Int. Cl.[6] E02F *3/00*
U.S. Cl. 414—725 **7 Claims**

1. A bucket assembly for use with a construction machine having a pair of articulated arms, comprising:

a bucket pivotably attachable to an end of each of the pair of articulated arms, the bucket having a front wall and a rear wall spaced from the front wall to define an inner chamber therebetween for receiving material with the inner chamber defining first and second openings therethrough,

an auger assembly secured within the inner chamber of the bucket, the auger assembly having a tubular housing with first



and second substantially sealed end portions encapsulating respectively the first and second openings in the bucket and an intermediate portion defining a receiving passage in communication with the first and second end portions and a rotatable auger supported within the tubular housing at the first and second end portions;

means mounted within the bucket for transmitting power to the rotatable auger; and

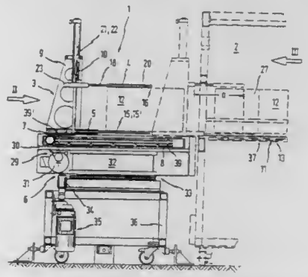
the rotatable auger having a blade portion being operatively associated with the transmitting means for rotation in a first direction to move the material toward the first end portion and for rotation in a second direction to move the material toward the second end portion.

5,827,039

APPARATUS FOR HANDLING A STACK OF SHEET-LIKE PRODUCTS

Hagen Gämmerler, Ichoring 44, D-82057 Icking, Germany

PCT No. PCT/EP95/03099, § 371 Date Jan. 31, 1997, § 102(e) Date Jan. 31, 1997, PCT Pub. No. WO96/04194, PCT Pub. Date Feb. 15, 1996
PCT Filed Aug. 3, 1995, Ser. No. 776,820
Claims priority, application Germany, Aug. 4, 1994, 44 27 703.2
Int. Cl.[6] B65G *47/90*
U.S. Cl. 414—744.6 **12 Claims**



1. Apparatus for handling a stack of sheet-like products, the apparatus comprising:

a rotary table having a central axis of rotation extending vertically therethrough on which at least two gripper devices are arranged which each have an upper gripper unit and a lower gripper unit vertically below the upper gripper unit; and

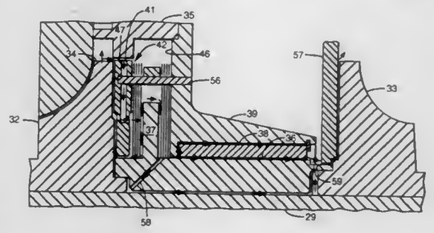
a carriage for each gripper device and an associated linear horizontal carriage guide of the rotary table for supporting the carriages for linear movement therealong for shifting of the devices in a linear direction that is transverse to the table axis forwardly and backwardly for linearly sliding the lower gripper unit under the product stack for supporting the stack for linear movement with the device supported by the units thereof, and for linearly sliding the lower gripper unit out from under the stack so that the stack is not supported by the units.

5,827,040

HYDROSTATIC AUGMENTATION OF A COMPLIANT FOIL HYDRODYNAMIC FLUID FILM THRUST BEARING

Robert W. Bosley, Cerritos, and Ronald F. Miller, Marina del Rey, both of Calif., assignors to Capstone Turbine Corporation, Tarzana, Calif.

Filed Jun. 14, 1996, Ser. No. 662,250
Int. Cl.[6] F01D *3/04*
U.S. Cl. 415—106 **53 Claims**



1. A hydrostatic augmentation system for a bilateral compliant foil hydrodynamic fluid film thrust bearing used in a turbomachine, said turbomachine having a compressor and a turbine on a common bearing rotor rotatably supported by a compliant foil hydrodynamic fluid film journal bearing and a bilateral compliant foil hydrodynamic fluid film thrust bearing acting upon a bearing rotor thrust disk, said hydrostatic augmentation system comprising:

means to deliver bleed air from said compressor to the compressor side of said bilateral compliant foil hydrodynamic fluid film thrust bearing, said bearing having a fluid foil member and a spring foil member; and

orifice means in said fluid foil member of said compressor side bilateral compliant foil hydrodynamic fluid film thrust bearing to deliver bleed air against the bearing rotor thrust disk to augment the thrust force applied by the hydrodynamic thrust bearing to the compressor side of said bearing rotor thrust disk.

52. A method of hydrostatically augmenting a bilateral compliant foil hydrodynamic fluid film thrust bearing on a turbomachine having a compressor and a turbine on a common shaft rotatably supported by a compliant foil hydrodynamic fluid film journal bearing on a bearing rotor and a bilateral compliant foil hydrodynamic fluid film thrust bearing on a bearing rotor thrust disk, comprising the steps of:

delivering bleed air from said compressor to the compressor side of said bilateral compliant foil hydrodynamic fluid film thrust bearing having a fluid foil member and a spring foil member; and

augmenting the thrust force applied to the compressor side of said bearing rotor thrust disk with bleed air through flow control orifices in said compressor side of said bilateral compliant foil hydrodynamic fluid film thrust bearing.

5,827,041

PUMP AND SEAL ARRANGEMENT TO PREVENT LEAKAGE DUE TO FLUID BOILING AND CAVITATION

Frank J. Charhut, 139 Riverside Dr., Northfield, Ill. 60093

Filed Mar. 25, 1996, Ser. No. 620,835
Int. Cl.[6] F04D *29/12;29/16*
U.S. Cl. 415—112 **8 Claims**

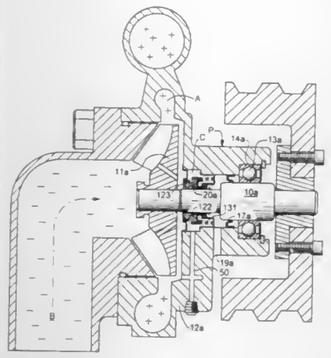
5. In an operable fluid pump having a pump body defining a pump cavity and a pump shaft rotating on a bearing in a bearing chamber, said pump when operating having

a seal arranged in said pump body on said shaft and having fluid adjacent said seal within said cavity,

a chamber substantially enclosing said seal,

a first zone for high pressure pump discharge fluid, and

a second zone for low pressure pump inlet fluid, the improvement comprising



a third zone of intermediate pressure fluid in said seal chamber, said third zone having fluid flow therein sufficient to keep said fluid adjacent said seal below the vapor pressure point of said fluid,

said third zone being formed by providing a passage tapped into said pump body.

5,827,042

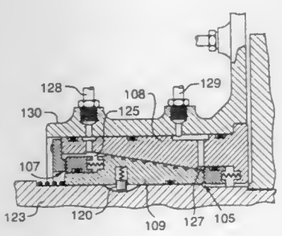
SEAL/BEARING ASSEMBLY

Thomas W. Ramsay, Kitchener, Canada, assignor to A. W. Chesterton Co., Stoneham, Mass.

Filed Dec. 19, 1996, Ser. No. 770,044

Int. Cl.[6] F04D *29/10*

U.S. Cl. 415—112 **49 Claims**



1. Apparatus for a rotating shaft, comprising a stator component, and a rotor component adapted for rotation about the axis of rotation of the shaft, wherein:

the rotor and the stator components are formed with complementary tapered bearing-surfaces coaxially disposed about the axis;

the bearing-surfaces of the rotor and stator components are so arranged as to sweep each other in a hydro-dynamic-bearing relationship, over an area termed the bearing area, upon rotation of the rotor;

one of the bearing-surfaces is formed with a continuous spiral groove, which extends in a spiral configuration along and around the bearing-surface, over the bearing area;

the spiral-groove comprises several turns extending over the bearing-surface, the arrangement thereof being such as to leave lands between adjacent turns of the spiral-groove;

the apparatus is so structured that the spiral-groove has an entry-mouth and an exit-mouth;

apparatus is so structured as to define an entry-chamber and an exit-chamber, being chambers which are in fluid-conveying-communication with the entry-mouth and the exit-mouth respectively;

the apparatus includes a means for receiving a barrier-liquid from a source of barrier-liquid, and for conveying the barrier-liquid to the entry-chamber;

the apparatus is so structured that the fit of the bearing-surfaces ensures the establishment and the continuance, during rotation, of a hydro-dynamic film between the bearing-surfaces.

5,827,043

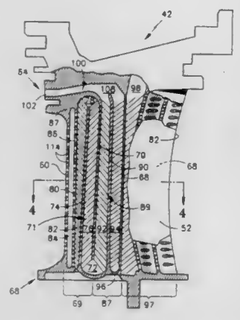
COOLABLE AIRFOIL

Takao Fukuda, East Hartford; Francis R. Price, Glastonbury; Conan P. Cook, Tolland; Richard W. Hoff, Glastonbury, and Irwin D. Singer, Hartford, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 27, 1997, Ser. No. 883,925

Int. Cl.[6] F01D *9/06*

U.S. Cl. 415—115 **12 Claims**



1. A coolable airfoil for gas turbine engines having a first end, a second end, a leading edge disposed between the first end and the second end, a trailing edge disposed between the first end and the second end, a suction side wall extending from the leading edge to the trailing edge, a pressure side wall joined to the suction side wall at the leading edge and the trailing edge and spaced from the suction side wall to form a cavity therebetween, a leading edge region which extends chordwisely rearwardly from the leading edge, a midchord region rearwardly adjacent the leading edge region, a trailing edge region rearwardly adjacent the midchord region, said coolable airfoil characterized by:

a first supply passage extending spanwisely in the midchord region, the passage being in flow communication with one of said edge regions,

a second purge passage rearwardly of the first passage and extending spanwisely in the midchord region, the second passage having a purge hole in the second end in flow communication with the exterior of the airfoil,

a duct which extends in the chordwise direction in the first end and adapts the airfoil to receive cooling air flow from a source of cooling air, the duct being in flow communication with said first supply passage and said second purge passage,

wherein under operative conditions the duct adapts the airfoil to receive cooling air having particulates of various sizes and directs the flow chordwisely such that momentum effects direct the flow of a first portion of cooling air and particulates past the first supply passage, into the rear purge passage and out through the purge hole and a larger flow of cooling air into the first supply passage to provide cooling air into said edge regions of the airfoil.

5,827,044

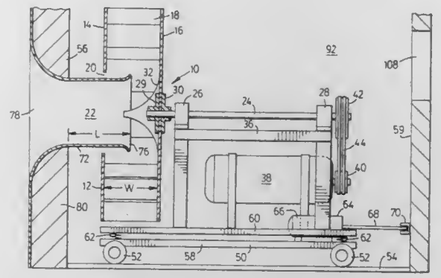
FAN SYSTEM WITH VARIABLE AIR VOLUME CONTROL

Muammer Yazici, 195 Berry Rd., Etobicoke, Ontario, Canada, M8Y 1X2; Werner Richarz, 70 Roxborough La., Thornhill, Ontario, Canada, L4J 4S9, and George William Donald Wallace, 102 Stanley Ave., Apt. 1, Etobicoke, Ontario, Canada, M8V 1N9

Filed Mar. 26, 1997, Ser. No. 824,663

Int. Cl.[6] F04D *29/44;29/46*

U.S. Cl. 415—132 **17 Claims**



1. A plenum fan apparatus for an air supplying and ventilating system, said apparatus comprising:

a plenum housing including vertical sidewalls, one of said sidewalls having an air inlet opening provided therein, said sidewalls also having one or more air outlets formed therein;

a centrifugal fan rotor located in said housing and having front and rear sidewalls and a number of blades extending between and connecting said sidewalls, the front sidewall having a central opening formed therein for receiving air from said air inlet opening into the fan rotor;

a power drive system connected to said rear sidewall of the fan rotor for rotating said fan rotor;

a supporting device on which said rotor and drive system are mounted, said supporting device being linearly movable in said housing and having a horizontal base frame on which wheels are rotatable mounted; and

an actuator for moving said supporting device either forwardly or rearwardly, in order to control the volume of air flowing through said fan rotor and into said housing;

wherein said air inlet opening is formed by an air inlet member having a cylindrical, rearward extension and said inlet member projects into said fan rotor when said fan rotor is moved to a forward position by said supporting device and said actuator.

5,827,045

THERMALLY LOADED BLADE FOR A TURBOMACHINE

Alexander Beeck, Endingen, Switzerland, assignor to Asea Brown Boveri AG, Baden, Germany

Filed Mar. 31, 1997, Ser. No. 828,541

Claims priority, application Germany, May 2, 1996, 196 17 556.9

Int. Cl.[6] F01D *5/18*

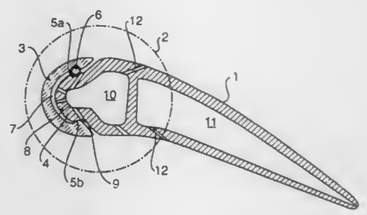
U.S. Cl. 416—96 A **13 Claims**

1. A thermally loaded blade for a turbomachine, said blade comprising:

a rear section;

a front section including a head stage against which flow occurs and a front edge made from a ceramic materials; and

elastic means for forming a frictional connection between at least one part of the head stage and said front edge, said elastic means providing both a rigid connection capable of withstanding turbine forces and a flexible contact capable of accommodating different thermal expansions of said front edge and said blade.



5,827,046

TRANSVERSE FAN, METHOD OF MANUFACTURING THE SAME AND APPARATUS THEREFOR

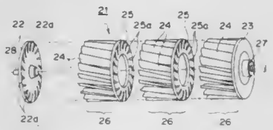
Satoru Konno; Akira Nagamori; Hirohumi Horino; Tsutomu Hirose; Yoshio Ikeda, and Yoichiro Kobayashi, all of Fuji, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

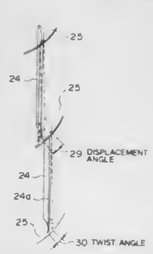
Division of Ser. No. 382,097, Jan. 31, 1995, abandoned. This application May 10, 1996, Ser. No. 644,122

Claims priority, application Japan, Aug. 9, 1994, 6-187575

Int. Cl.[6] B63H *1/26*

U.S. Cl. 416—178 **10 Claims**





1. A transverse fan comprising:

a pair of annularly shaped end plates;

a plurality of blades, each with a first end and a second end opposite the first end, annularly disposed between said end plates, said blades linearly extending longitudinally, and each of said blades having an inclination of a predetermined angle relative to a direction of rotation thereof; and

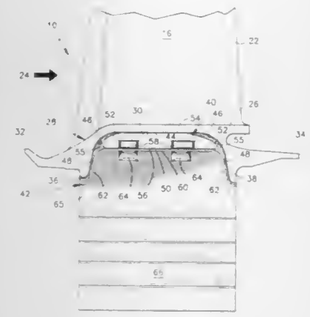
a plurality of annularly shaped partition plates disposed between said end plates, each of said partition plates having a first side to which the first ends of said blades are integrally secured and extend forward with an inclination at a predetermined angle to form a plurality of axially stacked multi-blade impellers,

wherein each of said partition plates has a second side to which the second ends of the blades extending from the first side of the adjacent partition plate are connected, and

wherein one of said end plates has a side to which the second ends of the blades extending from the first side of the partition plate adjacent to the one end plate are connected and the other of said end plates has a side to which the first ends of the blades are secured and the second ends of the blades extending from said other end plate are connected to the second side

of the partition plate adjacent to said other end plate, said other end plate being provided with a boss portion adapted to be secured to a rotation shaft for rotating the transverse fan.

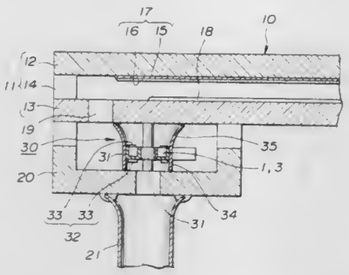
5,827,047
TURBINE BLADE DAMPER AND SEAL
Michael Gonsor, Hebron; Sanford E. Kelley, III, Vernon, and David P. Houston, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.
Filed Jun. 27, 1996, Ser. No. 671,462
Int. Cl.[6] F01D *5/10*
U.S. Cl. 416—193 A **53 Claims**



1. A rigid vibration damper for use with two adjacent turbine rotor blades in a gas turbine engine, each turbine rotor blade having an airfoil portion, a platform, a neck, and a root, the blade platforms each having a radially outer surface, and a radially inner surface connected by the blade neck to the blade root, the radially inner surface having a damping portion a sealing portion radially inward of the damping portion, and a transition portion disposed between the damping and the sealing portions, the rigid damper comprising:
   a main body having a damping surface adapted to contact the damping portion of the radially inner surface of each blade platform and to provide a friction force on the damping portions; and
   at least one end axially extended from said main body, and adapted to clear the transition and the sealing portions of the radially inner surfaces of each blade platform.
2. The damper of claim 1 wherein said at least one end is free.

5,827,048
GETTER SUPPORT
Takeshi Tonegawa; Akira Kadowaki; Gentaro Tanaka; Shigeo Itoh, and Yuuichi Kogure, all of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan
Filed Oct. 29, 1996, Ser. No. 739,293
Claims priority, application Japan, Oct. 31, 1995, 7-283451
Int. Cl.[6] H01J *9/39*
U.S. Cl. 417—48 **2 Claims**

1. A getter support for supporting a getter of an annular shape in a vacuum envelope, comprising:
   a holding section for holding the getter thereon;
   first support legs provided on said holding section in a manner to downwardly extend therefrom; and
   second support legs provided on said holding section in a manner to upwardly extend therefrom;

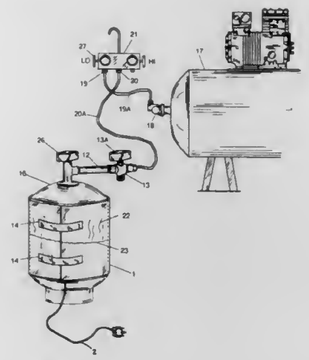


said second support legs each being formed so as to exhibit elasticity.

5,827,049
BI-TURBOJETS POLYPHASIC PUMP WITH AXIAL THRUST CANCELLATION
Yvon Castel, Croissy sur Seine, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France
Continuation of Ser. No. 445,779, May 22, 1995, abandoned.
This application Nov. 25, 1996, Ser. No. 758,171
Claims priority, application France, May 20, 1994, 94 06300
Int. Cl.[6] F04F *5/00*
U.S. Cl. 417—171 **21 Claims**

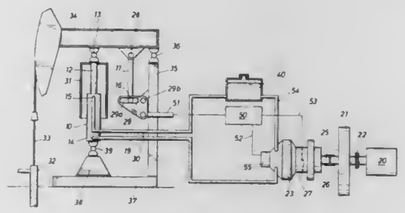
1. A pumping device producing direct energy exchange between a working fluid and a primary fluid or pumped fluid with the primary or pumped fluid being a polyphasic fluid comprising at least a gaseous phase and a liquid phase comprising:
   a piece rotatable about an axis having a least first and second means for propelling the working fluid, the piece being connected to a pipe for feeding the working fluid under pressure, a fixed housing positioned around the piece to define a mixing space for the working fluid and the polyphasic fluid, the piece having at least one port for feeding the polyphasic fluid into the mixing space, the first means ejecting a first jet of the working fluid from a stationary longitudinal position relative to the axis with at least part of the working fluid of the first jet being ejected in a first direction parallel to the axis and the second means ejecting a second jet of the working fluid from a stationary longitudinal position relative to the axis with at least part of the working fluid of the second jet being ejected in a second direction parallel to the axis and away from said first direction so that thrust along the axis induced by the first jet emitting the working fluid in the first direction cancels at least part of the thrust induced by the second jet emitting the working fluid in the second direction.

5,827,050
JUG HEAT PAK
Gregory W. Price, 8357 Kavanagh Rd., Baltimore, Md. 21222
Filed Aug. 7, 1996, Ser. No. 689,498
Int. Cl.[6] F04B *19/24;* **F25B** *45/00;* **H05B** *3/34;* **F24H** *1/18*
U.S. Cl. 417—207 **14 Claims**



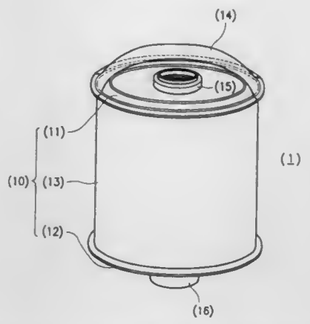
6. Apparatus for facilitating the transfer of a refrigerant gas from a portable cylinder to a compressor, comprising:
   (a) a heating jacket;
   (b) one or more adjustable holders attached to said heating jacket; and
   (c) a pressure relief valve, a pressure gauge, and a hose connector releasably attached to said heating jacket.

5,827,051
REGENERATIVE HYDRAULIC POWER TRANSMISSION FOR DOWN-HOLE PUMP
Norris Edward Smith, Lufkin, Tex., assignor to Air-Go Windmill, Inc., Lufkin, Tex.
Filed Dec. 13, 1995, Ser. No. 572,197
Int. Cl.[6] F04B *47/04*
U.S. Cl. 417—904 **12 Claims**



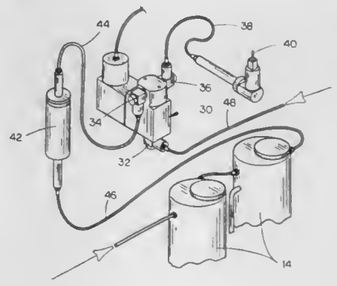
1. A hydraulic power transmission for subsurface pumps, comprising:
   a power source;
   a single reversible hydraulic pump in a single open-loop hydraulic circuit powered at least in part by said power source to cause said subsurface pump to upstroke; and,
   an inertial assist for said power source, including means for gathering energy from the downstroke of said subsurface pump and means for utilizing energy gathered during the downstroke to power at least in part the upstroke of said subsurface pump.

5,827,052
AIR PUMP
Kenneth Wang, Taipei, Taiwan, assignor to Team Worldwide Corporation, Taiwan
Filed Dec. 2, 1996, Ser. No. 756,904
Int. Cl.[6] F04B *43/08*
U.S. Cl. 417—478 **6 Claims**



2. An air pump for inflating an inflatable product, the air pump comprising:
   a hollow pump body having an interior and an exterior;
   the pump body having air located in the interior;
   the pump body including flexible sides, a first stiff end and a second stiff end opposite to the first stiff end;
   an air outlet provided on the pump body to discharge the air in the interior when the pump body is pressed;
   at least one pulling member attached to the first stiff end of the pump body in order to restore the shape of the pressed pump body by pulling the pulling member; and
   an air inlet provided on the pump body to suck outside air into the pump body when the first stiff end is pulled by the pulling member to restore the pressed pump body shape; wherein:
   the pump body is received in the inflatable body and the pulling member is kept outside an inflatable body; and
   a weight movably provided between the first stiff end and the second stiff end.

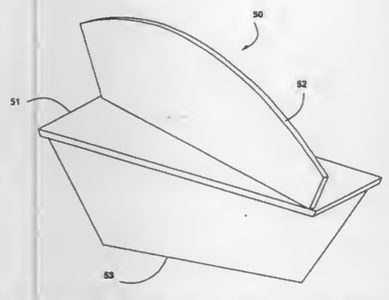
5,827,053
POSITIVE FLOW PURGE SYSTEM FOR MICROFLAME TORCH
Larry J. Costa, 54201 Ash Rd., Osceola, Ind. 46561
Filed Jul. 25, 1997, Ser. No. 900,980
Int. Cl.[6] F23D *11/38*
U.S. Cl. 431—121 **3 Claims**



1. In combination:
   a source of combustible gas;
   a source of non-combustible gas;

a gas valve having first and second gas inlets and a gas outlet;
said gas valve being movable between "on" and "off" positions;
a first gas line connecting said source of combustible gas to said first gas inlet;
a second gas line connecting said source of non-combustible gas to said second gas inlet;
a micro-flame nozzle tip;
a third gas line connecting said gas outlet to said nozzle tip;
and a flash back arrestor imposed in said first gas line between said source of combustible gas and said first gas inlet;
said gas valve permitting the non-combustible gas to flow to the nozzle tip so that the flame at said nozzle tip will be extinguished when said gas valve is moved from its said "on" position to its said "off" position.

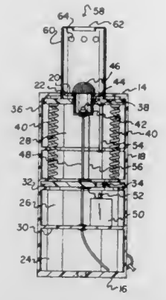
5,827,054
COMPOUND BURNER VANE
Hamid Sarv, Canton; Jeffrey A. LaRose, Stow; Albert D. LaRue, Uniontown, and Peter W. Waanders, Wadsworth, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Jan. 11, 1996, Ser. No. 584,785
Int. Cl.[6] F23C *7/00*
U.S. Cl. 431—184 **18 Claims**



1. A multi-piece vane for use in a secondary air passage of a fossil fuel-fired burner, comprising:
a platelike, rectangular-shaped rail element having an outer and an inner face, such that when the vane is used in the secondary air passage the outer face is directed toward an outer wall of the secondary air passage and the inner face is directed toward an inner wall of the secondary air passage;
a platelike outer vane element which has a base edge, leading and trailing edges and an outer edge, and which is fastened at the outer vane base edge to the outer face of the rail element; and
a platelike inner vane element which also has a base edge, leading and trailing edges and an outer edge, and which is fastened at the inner vane base edge to the inner face of the rail element.

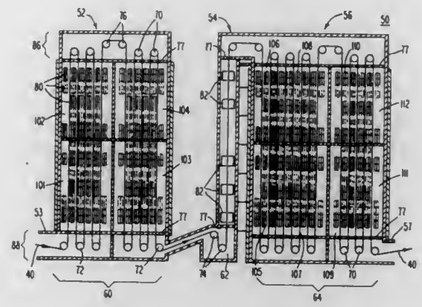
5,827,055
BUTANE LOCK DE-ICER
Norman Rice, 6118 Ridge Rd., Florence, Ky. 41042
Filed Jul. 21, 1997, Ser. No. 897,892
Int. Cl.[6] F23Q *7/12*
U.S. Cl. 431—255 **6 Claims**

1. A butane lock de-icer comprising:
a cylindrical container having a top end, a bottom end and a cylindrical side wall therebetween, the top end having an opening therethrough with a circular recess disposed around the opening, the cylindrical container having a hollow interior defined by a lower chamber, an intermediate chamber and an upper chamber, the lower chamber and the intermediate chamber being separated by a lower support plate, the intermediate chamber and the upper chamber being separated by an intermediate support plate, the intermediate support plate having an aperture therethrough, the lower chamber holding an amount of butane therein;
a sliding support plate slidably disposed within the upper chamber of the cylindrical container, the sliding support plate having an aperture therethrough in alignment with the opening in the top end of the container, the sliding support plate having a pair of springs extending downwardly therefrom to couple with the intermediate support plate;
a flame system including a flame housing secured within the opening in the top end of the housing, the flame system includes a flame nozzle disposed within the flame housing, the flame housing having a pair of coils extending upwardly therefrom, a propane hose extending from the flame nozzle downwardly in the lower chamber for being in fluid communication with the butane therein;
an ignition system including an ignition switch secured to the lower support plate of the cylindrical container, the ignition switch having an activation switch disposed on an upper end thereof disposed below the aperture through the intermediate support plate, the ignition system including a switch arm extending downwardly from the sliding support plate disposed above the aperture through the intermediate support plate, the ignition system including a wire extending between the ignition switch and the fuel nozzle;
a lock receiving receptacle coupled with respect to the top end of the cylindrical container, the lock receiving receptacle including a cylindrical shield having an open lower end extending through the circular recess through the top end of the container and secured to the sliding support plate, the cylindrical shield having an opening through an upper end thereof adapted for coupling with a keyhole of an automobile, the cylindrical shield having a plurality of air vents therethrough; and
a safety switch extending inwardly of the cylindrical container disposed below the sliding support plate, the safety switch including an interior portion extending below the sliding support plate in a disengaged orientation and retracting inwardly within the safety switch in an engaged orientation.

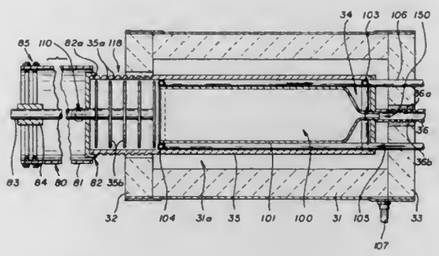


5,827,056
DEVICE AND METHOD FOR IMPROVING STRIP TRACKING IN A CONTINUOUS HEATING FURNACE
David S. Rohrbaugh, Sellersville, and Steven R. Peterson, Huntingdon Valley, both of Pa., assignors to Drever Company, Huntingdon Valley, Pa.
Filed Jan. 9, 1997, Ser. No. 780,807
Int. Cl.[6] F26B *13/08*
U.S. Cl. 432—8 **18 Claims**

1. A method of optimizing the tracking of a metal strip traveling over a plurality of crowned rolls in a continuous heating system designed to track a design strip having a design strip temperature profile comprising attaining an actual strip temperature profile in the metal strip that approximately coincides with the design strip temperature profile, wherein the attaining step further comprises the steps of:
a) inputting metal strip variables of length, width, thickness, strip speed through the heating system, initial strip temperature, final strip temperature, or a combination thereof;
b) inputting heating system variables of an actual heating system temperature profile of the heating system;
c) measuring at least a portion of the metal strip variables and at least a portion of the heating system variables with instrumentation;
d) generating variable signals therefrom;
e) transmitting variable signals to a control system;
f) directing the control system to access a thermal model and a design strip temperature profile model; and
g) directing the operation of the heating system based on the metal strip variables, the heating system variables, the thermal model and the design strip temperature profile model with the control system.

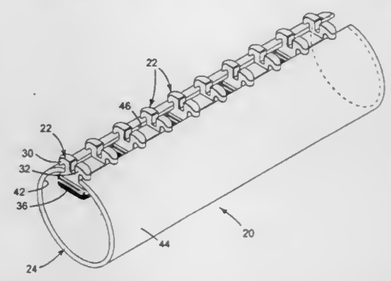


5,827,057
VACUUM FURNACE METHOD AND APPARATUS
Steven B. Cress, 31 Lakefront Dr.—Box 30, Glenbrook, Nev. 89413
Filed Jul. 10, 1995, Ser. No. 499,824
Int. Cl.[6] F27B *5/04;* **F27D** *15/02;5/00*
U.S. Cl. 432—205 **4 Claims**



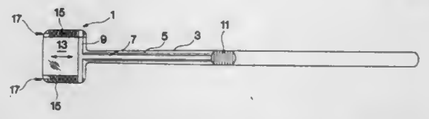
1. The method of dissipating heat along the throat of a vacuum furnace chamber comprising: forming a number of grooves about the outer diameter of a throat, which is an extension of the chamber, which grooves radiate heat because of their reduced diameter.

5,827,058
CARRIER FOR SUPPORTING ORTHODONTIC BRACKETS
John S. Kelly, Arcadia; Russell A. Jordan, Rancho Cucamonga, and Randall E. Adam, Sierra Madre, all of Calif., assignors to Minnesota Mining & Manufacturing Co., St. Paul, Minn.
Filed Oct. 8, 1997, Ser. No. 947,095
Int. Cl.[6] A61C *3/00*
U.S. Cl. 433—9 **28 Claims**



1. An assembly including:
an orthodontic bracket having a base, a body extending from said base and at least two opposed tiewings extending away from said body, said base and at least one of said tiewings extending past said body in a gingival direction and presenting a gingival recess, said base and at least one other of said tiewings extending past said body in an occlusal direction and presenting an occlusal recess; and
a carrier having a tubular member with a pair of arms extending toward each other, each of said arms having an outer end section, said outer end sections being spaced apart from each other and presenting a channel therebetween, said bracket being located in said channel and being supported by said arms with one of said outer end sections extending into said occlusal recess and the other of said outer end sections extending into said gingival recess.

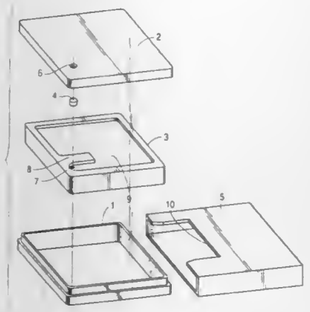
5,827,059
EZ WIPE DENTAL MIRROR
Robert Steven Nykaza, 130 Huntington Pl, Colorado Springs, Colo. 80906
Filed Oct. 7, 1997, Ser. No. 944,770
Int. Cl.[6] A61B *1/24*
U.S. Cl. 433—30 **5 Claims**



1. A dental instrument having a mirrored surface comprising:
a dental instrument having a head with an exposed mirrored reflecting surface thereon and an attached extending handheld handle;
a wiper assembly mounted on said reflecting surface and having an extending attached handle member fixed thereto with an internal slidable member, said wiper assembly being actuated by sliding the handle's slidable member to move the wiper assembly over the head's mirrored surface; and
wiper assembly biasing means mounted in the dental instrument's head to normally maintain the wiper assembly in a first position until such biasing means is overcome by the manual action of a user on the slidable member to move the assembly over the mirrored surface.

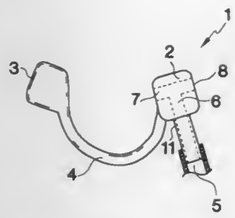
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5,827,060
DISPENSER FOR MARKER DISKS
Constantin Zdarsky, Palm Beach, Fla., assignor to Vereinigte Dentalwerke Antaeos Beutelrock Zipperer Zdarsky Ehrler GmbH & Co. KG, Germany
Filed Jul. 5, 1996, Ser. No. 675,908
Claims priority, application Germany, May 31, 1996, 196 22 033.5
Int. Cl.[6] A61G *15/00*
U.S. Cl. 433—77 12 Claims



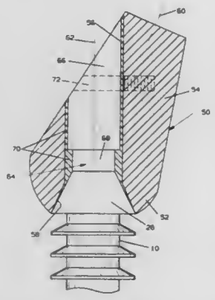
1. A dispenser for marker disks comprising:
a base including a recess for storing a plurality of marker disks, the recess having a bottom surface;
a cover for covering the recess and releasably engaging the base;
a puncture aperture disposed in the bottom surface of the recess;
an access aperture in the cover for providing access to the recess, the access aperture being sized to allow through-movement of the marker disks, the access aperture disposed such that when the cover releasably engages the base, the access aperture is adjacent the puncture aperture;
a guide for guiding one marker disk adjacent the access aperture;
an insertion case having a first wall, the insertion case configured to receive the base and cover such that the first wall covers the access aperture.

5,827,061
DENTAL BITE BLOCK WITH ASPIRATOR TIPS
Phillip M. Goodman, 534 Sugarbrook Tr., Bellbrook, Ohio 45305
Filed May 2, 1997, Ser. No. 850,755
Int. Cl.[6] A61C *17/06*
U.S. Cl. 433—93 5 Claims



1. A dental bite block instrument for removing saliva from the mouth of a patient comprising:
a bite block having a curved center portion and an occlusal resting means attached to each end of said curved center section,
at least one of said occlusal resting means being hollow,
a first port means for attaching a lingual saliva ejector on said at least one occlusal resting means,
a second port means for attaching a buccal saliva ejector on said at least one occlusal resting means,
a third port means for attaching a vacuum tube to said at least one occlusal resting means,
said first, second and third port means communicating with each other.

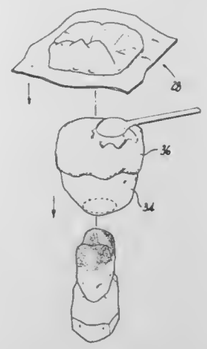
5,827,062
DENTAL IMPLANT ABUTMENT APPARATUS
Thomas D. Driskell, Westerville, Ohio, and Vincent J. Morgan, Boston, Mass., assignors to Diro, Inc., Boston, Mass.
Filed Nov. 6, 1996, Ser. No. 744,330
Int. Cl.[6] A61C *8/00*
U.S. Cl. 433—173 15 Claims



1. A dental implant system comrising a generally elongated root member having first and second ends, an opening formed in the first end and a shoulder formed at the first end circumscribing the opening, an abutment member having a basal end with a smooth curved outer surface area and a crown mounting portion extending therefrom, a bore extending from the crown mounting portion through the basal end, a root member shoulder receiving seat formed at the basal end of the bore, the seat having a surface generally conforming to the shoulder of the root member, a non-circular surface formed in at least a portion of the bore adjacent the shoulder receiving seat, an abutment mounting post having a shank extending from a head portion, the head portion having a non-circular configuration matching that of the non-circular surface of the bore, the shank lockably received in the opening in the root member in any selected angular orientation and the root member shoulder receiving seat of the abutment member received on the shoulder of the root member with the head portion received in the bore at the non-circular surface, and locking means to lock the abutment member to the abutment mounting post whereby the abutment member can be placed on the shoulder of the root member with the head portion of the abutment mounting post received in the bore at the non-circular surface and the abutment member and post adjusted to any selected angular orientation and then being locked in the opening in the root member with the abutment member and head portion in the selected angular orientation.

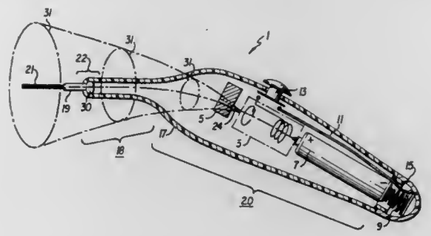
5,827,063
METHOD OF MAKING DENTAL RESTORATION EMPLOYING PREFORMS
Jean Greenstein, 5339 Lindley Ave., Apt. 303, Tarzana, Calif. 91356
Filed Apr. 7, 1997, Ser. No. 835,225
Int. Cl.[6] A61C *11/00*
U.S. Cl. 433—213 9 Claims

1. A method of making a dental restoration which comprises:
providing a preform of a tooth structure;
appending the preform to a model of a prepared tooth to form a temporary model of a natural tooth;
taking an impression of the temporary model to form an index;
cutting back the temporary model to form a base;



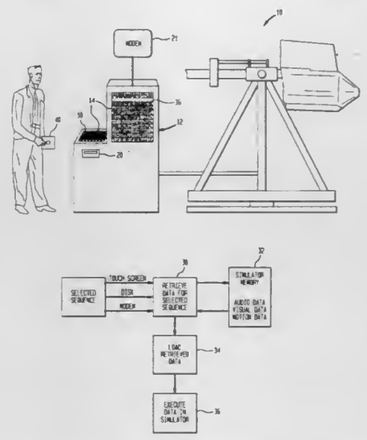
reproducing the base in body porcelain or resin;
building up incisal porcelain or resin on the base;
pressing the index down on the incisal porcelain or resin and hardening the incisal porcelain or resin to provide the dental restoration.

5,827,064
ORBITALLY OR RECIPROCALLY VIBRATING METHOD FOR INTERPROXIMAL PLAQUE REMOVAL
Robert T. Bock, Brewster, N.Y., assignor to Sonex International Corp., Brewster, N.Y.
Continuation-in-part of Ser. No. 705,766, Aug. 30, 1996, Pat. No. 5,738,575. This application Jun. 10, 1997, Ser. No. 872,291
Int. Cl.[6] A61C *15/00*
U.S. Cl. 433—216 3 Claims



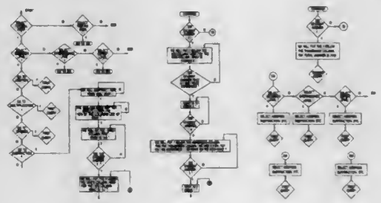
1. The method of facilitating the removal of plaque from the periodontal pockets of the dental anatomy defined by the external surfaces of the necks and roots of teeth and the internal surfaces of the gum separated from said necks and said roots of teeth comprising, inserting at least one bristle tuft into said periodontal pocket, inducing reciprocal vibration of said bristle tuft about the longitudinal axis of said bristle tuft of sufficiently high intensity to cause removal of said plaque from the said neck and root surfaces of teeth and said internal surfaces of gum by the friction generated between the cylindrical surfaces of said bristles and said plaque covering said neck and said root surfaces of teeth and said internal surface of gum by said reciprocal vibration of said bristle tufts.

5,827,065
MOTION SIMULATOR OPERATING SYSTEM AND METHOD
Frank McClintic, 1575 Priscilla Ct., Toms River, N.J. 08752
Filed Dec. 5, 1996, Ser. No. 760,485
Int. Cl.[6] A63G *31/02*
U.S. Cl. 434—29 20 Claims



1. A system for programming and controlling a motion simulator, comprising:
memory containing a selection of different preprogrammed maneuvers capable of being simulated by the motion simulator;
an interface for selecting sequences from said selection of different preprogrammed maneuvers;
assembly means for assembling said selected sequences into an assembled ride of preprogrammed maneuvers;
transfer means for transferring said assembled ride of preprogrammed maneuvers to the motion simulator; wherein said assembled ride of preprogrammed maneuvers instructs the motion simulator to simulate said assembled ride of preprogrammed maneuvers.

5,827,066
METHODS OF TEACHING MATHEMATICS TO DISABLED STUDENTS
Ted Henter, Henter-Joyce, Inc., 2100 62nd Ave. North, St. Petersburg, Fla. 33702
Continuation of Ser. No. 401,976, Mar. 10, 1995, abandoned. This application Jan. 29, 1997, Ser. No. 789,403
Int. Cl.[6] G09B *19/02;5/00;1/00*
U.S. Cl. 434—188 8 Claims



1. A method of teaching mathematics to a student with a disability, said method utilizing a computer including processing means, memory means, input means, output means and a program stored

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in said memory means, said program including a plurality of problem area modules for instruction, said method comprising the steps of:

using an interactive process to output a plurality of queries to the student, said plurality of queries being output one at a time;

selecting a predetermined one of two different modes of teaching of said interactive process, a first predetermined mode of teaching being a tutorial mode for initial learning of a concept by the student, said tutorial mode including a step of describing spatial layout of the numbers in rows and columns so as to teach the student to solve a mathematical problem by moving from right to left in the columns of numbers in order that the problem may be solved in a manner similar to that typically taught to non-disabled students, a second predetermined mode of teaching being a testing mode for testing whether the student comprehended the concept in the first mode;

selecting a predetermined one of three skill levels of said plurality of queries, a first skill level being a beginner level, a second skill level being an intermediate level and a third skill level being an expert level;

selecting a predetermined one of a plurality of problem area modules for instruction, said problem area modules comprising a plurality of problems for solution in the basic mathematical skills including addition, subtraction, multiplication, division, calculus and geometry;

outputting an initial query to the student for response, said initial query being a subpart of a first mathematical problem in said predetermined, selected one of said plurality of problem area modules, wherein said outputting step includes the use of said output means, wherein said output means includes a speech synthesizer for a student who is blind or vision-impaired and a refreshable Braille display for a student who is blind and deaf;

responding to said initial query by inputting an answer via said input means to said subpart of said first mathematical problem;

indicating whether said input answer was correct or incorrect, without the use of an arithmetic logic unit or calculator;

outputting a second query via said output means, wherein said second query represents, a second subpart of said first mathematical problem if said input answer was correct or a reiteration of said first subpart of said first mathematical problem to the student for response if said input answer was incorrect;

repeating said responding, indicating and outputting steps until the student correctly solves the first mathematical problem;

outputting a second-level query via said output means to the student for response, said second-level query being a subpart of a second mathematical problem in said predetermined, selected one of said plurality of problem areas; and

repeating said outputting, responding, indicating and repeating steps until all of said plurality of problems for solution in said selected problem area module have been solved.

5,827,067

METHOD AND APPARATUS FOR EDUCATING MATHEMATICAL FUNCTIONS

Irma Maritza Perez, 176 Montgomery St., Bloomfield, N.J. 07003

Filed Apr. 21, 1997, Ser. No. 843,748
Int. Cl.[6] G09B *23/02*
U.S. Cl. 434—208 **20 Claims**

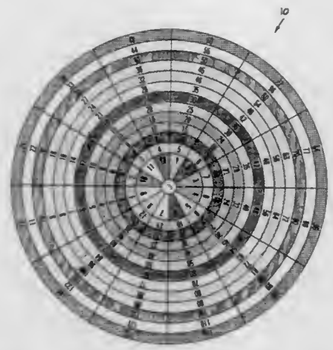
1. A method comprising the steps of:

providing a plurality of first numerical sequences, each numeral within each of said first numerical sequence being identified by a common indicia and each of the plurality of first numerical sequences having different indicia;

providing a second numerical sequence of numerals;

providing a third numerical sequence, each numeral in the third numerical sequence having an indicia corresponding to the common and different indicia of the first numerical sequence;

wherein each of the numerals of the plurality of the first, second and third numerical sequences is arranged as respective radial



segments in concentric circles, each concentric circle having the common indicia and wherein each numeral differs by a whole integer and at least two radial segments of the numerical sequences are in abutting relationship;

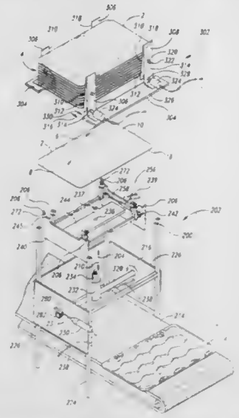
aligning a selected numeral from each of the second and third numerical sequences whereby when the numeral of the first numerical sequence is a mathematical function of the numerals of the second and third numerical sequences the indicia of the third sequence is the same as the indicia of the first sequence.

5,827,068

FRUIT PACKAGING TRAY USABLE WITH A DENESTING APPARATUS

Russel E. Sims, Yakima, Wash., assignor to Michelson Packaging Co., Yakima, Wash.

Filed Dec. 31, 1996, Ser. No. 775,667
Int. Cl.[6] A01F *25/14*; **B65D** *1/36*
U.S. Cl. 414—795.6 **23 Claims**



19. A fruit packing tray for holding fruit, the tray being usable with a tray denesting apparatus having picking members adapted to releasably engage the tray, comprising:

a base having a plurality of fruit retaining cups formed therein; and

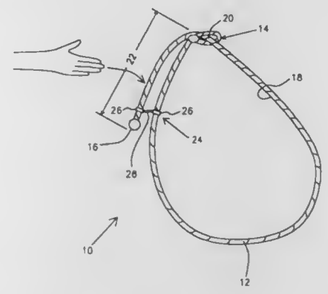
picking-member-receiving portions positioned separate and independent from all the fruit retaining cups, each of the picking-member-receiving portions being shaped and sized to releasably receive a respective one of the picking members therein to allow the tray denesting apparatus to releasably engage the tray.

5,827,069

ROPING TRAINING DEVICE

Pete R. Mauricio, 2203 Guerrero St., Laredo, Tex. 78043

Filed Dec. 1, 1997, Ser. No. 980,552
Int. Cl.[6] A01K *15/00*
U.S. Cl. 434—225 **1 Claim**



1. A training rope for use in learning or practicing roping comprising:

a length of rope at a distal end of which is formed a hondo, a proximal length of said rope extending through an eye of said hondo to define, on one side of said hondo, a loop segment of said rope, and on the other side of said hondo a spoke segment of said rope;

a hobble attaching a proximally situated first segment of said spoke segment of said rope to an adjacent second segment of said loop segment of said rope, said hobble having a first rope clasp for securely engaging said first segment of said rope, a second rope clasp configured for securely engaging said second segment of said rope, and a clasp bridge extending between said first and said second rope clasps, said clasp bridge being formed of a length of material with elastic properties.

5,827,070

SYSTEM AND METHODS FOR COMPUTER BASED TESTING

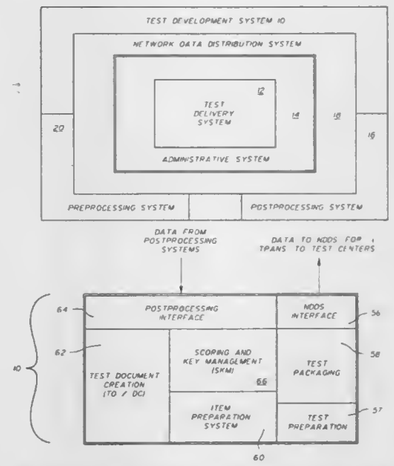
Roger C. Kershaw, Hopewell; Frank J. Romano, Yardville; Leonard C. Swanson, Hopewell, and William C. Ward, Jr., Hopewell, all of N.J., assignors to Educational Testing Service, Princeton, N.J.

Division of Ser. No. 82,058, Jun. 22, 1993, Pat. No. 5,565,316, which is a continuation-in-part of Ser. No. 958,997, Oct. 9, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 485,628
Int. Cl.[6] G09B *3/00*
U.S. Cl. 434—322 **33 Claims**

1. A data distribution system for use with a computer based testing (CBT) system, said CBT system delivering at least one computerized test to at least one examinee and said data distribution system processing information related to each said delivery, wherein the CBT system supports a plurality of program-specific tests, and said CBT system having a designated post processing system for scoring each examinee's responses for each program-specific test, each said post processing system providing a definition file defining specific information said post processing system requires and a format in which said specific information is to be provided, the data distribution system comprising:

an examinee performance database having examinee performance records indicative of responses provided by each examinee during each said delivery;

a file processing component interfaced with said examinee performance database for receiving transmission files generated by said CBT system and having data indicative of said information, said file processing component generating from said



data at least one said examinee performance record for at least some of said deliveries and updating said examinee performance database with each said examinee performance record so generated; and

a format post processing component interfaced with each post processing system and to said examinee performance database, said format post processing component retrieving at least some examinee performance records from said examinee performance file database and formatting said retrieved examinee performance records based on said definition file.

25. A method of delivering a computerized test for standardized testing using a computer based testing (CBT) system having at least one workstation at which test questions are presented to examinees and operable to accept responses from examinees, wherein the standardized test comprises a session script defining the sequence of tasks to be performed in delivering the computerized test to an examinee by a data distribution system of the CBT system, the method comprising the steps of:

reading, by the examinee's workstation, the session script to identify the delivery units to be delivered and the order in which said delivery units are to be presented at the examinee's workstation, wherein the delivery units includes at least one of general information screens, tutorial units, break units, data collection units, scoring and reporting units, and testing units; and

invoking, by the data distribution system, each delivery units in the order specified by said session script.

5,827,071

METHOD, COMPUTER PROGRAM PRODUCT, AND SYSTEM FOR TEACHING OR REINFORCING INFORMATION WITHOUT REQUIRING USER INITIATION OF A LEARNING SEQUENCE

Steven Michael Sorensen, and Kim Linette Sorensen, both of 1953 N. 690 East, Orem, Utah 84057

Filed Aug. 26, 1996, Ser. No. 703,348
Int. Cl.[6] G09B *7/00*
U.S. Cl. 434—323 **30 Claims**

1. In a computer-based environment perceived through at least one sensory means by a user, a method of teaching comprising the steps of:

creating at least one learning frame directed toward the user about a subject matter; and

presenting according to a user-configured schedule independent of the environment the learning frame onto the sensory means while the user is interacting with the environment without requiring user initiation, the subject matter of the learning



frame being substantially unrelated to what the user has been perceiving in the environment and is not integrated with the environment, so as not to disrupt the user in any substantial way from interacting with the environment.

21. In a computer-based environment perceived through a visual display means by a user, the visual display means operationally connected to a computer, a computer program product for integrated instruction comprising:

a computer usable medium having computer readable program code means embodied in said medium for causing at least one learning frame to become integrated in the environment, said computer readable program code means comprising

program code means for causing the computer to create at least one learning frame directed toward the user about a subject matter; and

program code means for causing the computer to present according to a user-configured schedule independent of the environment the learning frame onto the display means while the user is interacting with the environment without requiring user initiation, the subject matter of the learning frame being substantially unrelated to what the user has been perceiving in the environment and is not integrated with the environment, so as not to disrupt the user in any substantial way from interacting with the environment.

26. In a computer-based environment perceived through a display means by a user, a system of teaching comprising:

a storage means operationally connected to the CPU;

a display means operationally connected to the CPU;

means for creating at least one learning frame directed toward the user about a subject matter; and

means for presenting according to a user-configured schedule independent of the environment the learning frame onto the display means while the user is interacting with the environment without requiring user initiation, the subject matter of the learning frame being substantially unrelated to what the user has been perceiving in the environment and is not integrated with the environment, so as not to disrupt the user in any substantial way from interacting with the environment.

5,827,072

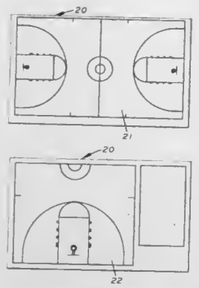
GRAPHIC, SPORTS-RELATED INSTRUCTION BOARD

David J. Neufer, 5228 View Point Dr. NW., Gig Harbor, Wash. 98335, and Stephen Bressler, 21706 SE. 32nd Pl., Issaquah, Wash. 98029

Continuation of Ser. No. 613,742, Feb. 21, 1996, abandoned. This application Aug. 29, 1997, Ser. No. 920,380

Int. Cl.[6] B43L *1/00*

U.S. Cl. 434—416 **13 Claims**



6. A sport-related instruction board, comprising:

a) a board structure made of transparent material, said board structure having a top surface and a bottom surface;

b) a display panel disposed and permanently sealed inside said board structure, said display panel having a top surface and a bottom surface, said top surface having a realistic, sport-related, first graphic surface printed thereon and said bottom surface having a realistic, sport-related, second graphic surface printed thereon;

c) said first graphic surface being a basketball court; and,

d. said second graphic surface being a smaller portion of said basketball court.

5,827,073

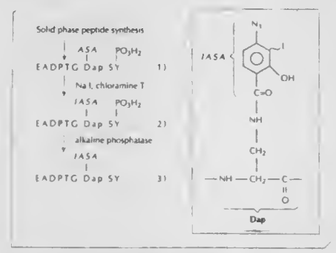
PHOTOREACTIVE PEPTIDE DERIVATIVES

Immanuel Luescher; Fabienee Anjuere; Andreas Layer; Pedro Romero, and Jean-Charles Cerottini, all of Epalinges, Switzerland, assignors to Ludwig Institute for Cancer Research, New York, N.Y.

Filed Jul. 5, 1995, Ser. No. 498,461

Int. Cl.[6] C07K *1/13;* **G01N** *33/534;33/566*

U.S. Cl. 435—7.24 **14 Claims**



1. A method of producing a synthetic photoreactive peptide, comprising radioiodinating a peptide which contains a photoreactively labelled amino acid selected from the group consisting of 2,3-[4-azidosalicyloyl]-diaminopropionic acid and 3-azidophenyl-3'-oxy-2-amino-L-propionic acid and derivatives thereof at said photoreactively labelled amino acid, said photoreactively labelled amino acid being positioned in said peptide such that said photoreactively labelled amino acid does not change the ability of said peptide to bind with a major histocompatibility (MHC) molecule.

5,827,074

END MOUNTING TERMINATOR FOR BACKPLANES

John Elmer Gatti, Scottsdale, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

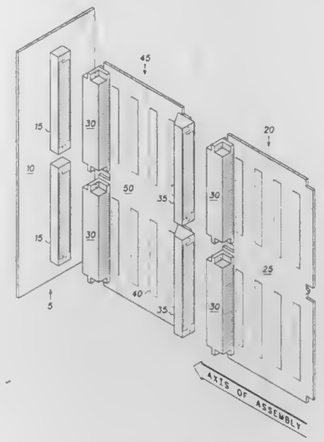
Filed Nov. 1, 1993, Ser. No. 146,664

Int. Cl.[6] H05K *1/12*

U.S. Cl. 439—61 **8 Claims**

1. A backplane system comprising:

a backplane comprising a circuit board having multiple connectors located at the surface of the circuit board for receiving removable payload assemblies therein which payload assemblies are perpendicular to said surface of the circuit board,



said circuit board further having at least one connector mounted to the end thereof in which the receiving portion of said at least one connector is located in a plane that is parallel to said surface of said circuit board: and

a terminator assembly separate from said backplane and having at least one connector which mates to said at least one connector of said backplane in said plane parallel to said surface of the circuit board wherein said backplane can be removably installed to said terminator assembly without disturbing said payload assemblies.

5,827,075

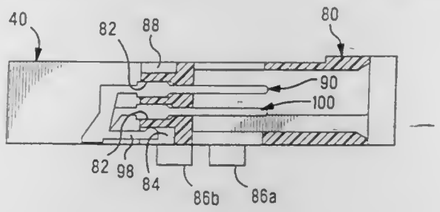
ASSEMBLY OF AN ELECTRICAL CONNECTOR AND EJECTOR UNIT FOR CONNECTING IC CARDS TO PRINTED CIRCUIT BOARDS

Takashi Futatsugi, Tokyo, and Ikuo Enomoto, Machida, both of Japan, assignors to The Whitaker Corporation, Wilmington, Del.

Division of Ser. No. 118,373, Sep. 8, 1993, Pat. No. 5,503,564. This application Feb. 20, 1996, Ser. No. 604,062

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—79 **2 Claims**



1. An electrical connector for surface mounting onto a circuit board, comprising:

an insulating housing having upper and lower rows of contact retaining openings; and

upper row and lower row contacts made by stamping from a metal sheet, each of said contacts having a horizontal contact section disposed in said insulating housing, a retaining section secured in a respective one of said contact retaining openings and a planar termination section extending downwardly toward a board engaging surface outside a rear surface of said housing, said termination section having a connection portion at said board engaging surface for electrical connection to a respective conductive area on the circuit board;

said termination section including a support leg extending therefrom proximate said board engaging surface, said leg extending substantially parallel to said board and toward said housing, said leg having a free end adapted to engage a locking section within said housing thereby assuring precise positioning of said termination section:

wherein said upper and lower row contacts are essentially identical except in the length of the termination sections reaching the conductive areas on the circuit board.

5,827,076

TERMINATION PLATE FOR CONNECTOR

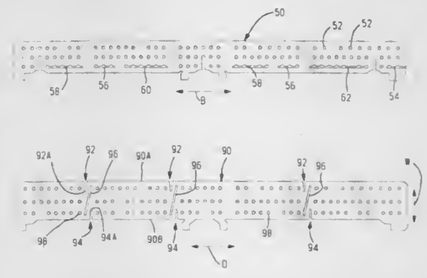
Ping Chen, Nagoya, Japan, assignor to The Whitaker Corporation, Wilmington, Del.

Filed Jun. 6, 1996, Ser. No. 659,735

Claims priority, application Japan, Jul. 25, 1995, 7-189038

Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—79 **6 Claims**



1. A termination plate for use on an electrical connector having a housing in which electrical contacts having contact sections and termination sections are secured, the termination sections adapted to be connected to conductive areas on a circuit board, the termination plate comprising:

an elongated dielectric member having rows of through holes extending therealong at spaced intervals through which the termination sections extend; and

first slots in said dielectric member at different locations therealong, the first slots extending along an inner edge of said dielectric member connecting together at least two through holes, second slots in said dielectric member at spaced locations extending inwardly from the inner edge, the first and second slots providing compensation when the termination plate with termination sections of the contacts are disposed therein and the circuit board is subjected to temperature variations thereby preventing soldered connections of the termination sections to the conductive areas from cracking and disrupting such connections.

5,827,077

PRINTED CIRCUIT BOARD CONNECTOR WITH ALIGNMENT FEATURE

Eiji Fukuda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed May 28, 1997, Ser. No. 864,675

Claims priority, application Japan, May 28, 1996, 8-133581

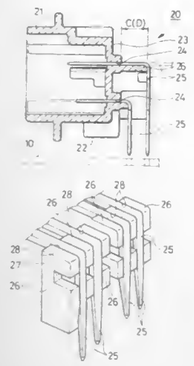
Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—79 **4 Claims**

1. A printed circuit board connector to be mounted at a predetermined position on a printed circuit board, comprising:

a housing to be fitted to a mating connector;

a plurality of conductive terminals having one end portion projecting into an interior of said housing so as to be con-



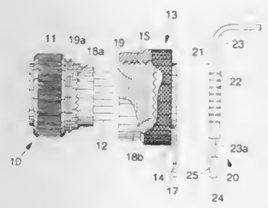
nected to the mating connector, and another end portion projecting outwardly from said housing;

alignment correction ribs formed integrally on an outer surface of said housing in corresponding relation to said conductive terminals; and

an alignment correction guide groove, formed between any two adjacent ones of said alignment correction ribs, for fittingly receiving one of said conductive terminals,

wherein said alignment correction ribs and said alignment correction guide groove position said conductive terminals in both the longitudinal and lateral directions.

5,827,078
CONNECTOR ACCESSORIES, ELECTRICAL, BACKSHELL, GROUNDING, FLEX CABLES
Christopher L. Simonian, 901 Stewarton Way, Glendale, Calif. 91207
Filed Dec. 20, 1996, Ser. No. 771,759
Int. Cl.[6] H01R *4/66;13/62*
U.S. Cl. 439—95 **11 Claims**



1. A connector comprising:

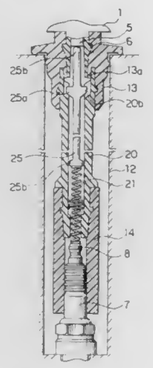
a connector shell having a plurality of connector pins;

a backshell comprising a ground contact flange having a slot therein, and wherein the ground contact flange is free to rotate around an axis of the backshell;

a coupling nut that is captivated by the ground contact flange for securing the backshell to the connector shell; and

a rigid/flex cable comprising a rigid portion having a plurality of vias therein to which the connector pins are electrically connected, a flexible portion that extends from the rigid portion that is used to connect to an electrical component through circuit traces, and a grounding tab connected to the rigid portion by a short piece of flexible cable, and wherein the grounding tab has an opening therein that mates with the slot in the ground contact flange.

5,827,079
ELECTRIC CONNECTION MEMBER, IGNITION APPARATUS FOR INTERNAL COMBUSTION ENGINE AND MANUFACTURING METHOD THEREOF
Shigemi Murata, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 605,864, Feb. 23, 1996, Pat. No. 5,679,012. This application Jul. 17, 1997, Ser. No. 896,167
Claims priority, application Japan, Apr. 13, 1995, 7-088069
Int. Cl.[6] H01R *13/44*
U.S. Cl. 439—125 **2 Claims**



1. An ignition apparatus for internal combustion engine, comprising:

an ignition coil for generating a high-tension voltage at an ignition timing of said internal combustion engine;

an ignition plug for igniting said internal combustion engine by said high-tension voltage; and

an electric connection member for electrically connecting said ignition coil to said ignition plug,

wherein said electric connection member comprises: cylindrical insulating adaptor means defining a cavity extending therethrough and mechanically connected between said ignition coil and said ignition plug while electrically insulated therefrom; and conductor means slidably inserted into said cavity for electrically connecting said ignition coil and said ignition plug, and said conductor means is composed of a coil spring and a contact member and in electric contact with said coil spring, said contact member comprising a slender sheet-shaped conductor having a locking means.

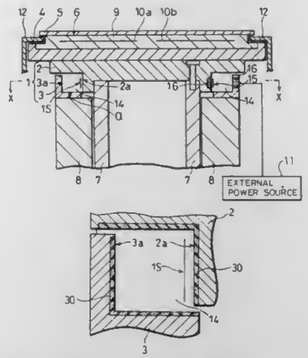
5,827,080
ROTARY SECTION CURRENT TRANSMITTING MECHANISM
Yoshihiro Tanaka, and Takashi Nogami, both of Kyoto, Japan, assignors to Nissin Electric Co., Ltd., Kyoto, Japan
Filed Jun. 13, 1996, Ser. No. 662,510
Claims priority, application Japan, Jun. 13, 1995, 7-146518
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—164 **58 Claims**

1. A rotary section current transmitting mechanism, comprises:

an inner member having an outer wall whose cross-sectional shape is circular;

an outer member provided around said inner member with separation from said inner member by ring-shaped space so as to form concentric circles with said inner member, and having an inner wall whose cross-sectional shape is circular; and

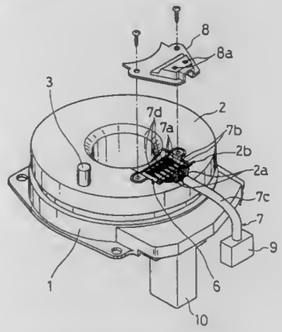
a flexible belt accommodated in the ring-shaped space, ends of said belt being fixed respectively to the outer wall of said inner member and to the inner wall of said outer member so as to extend in the same direction through the ring-shaped space, a curved part of said belt existing between said ends,



wherein at least one of said inner and outer members is provided so as to be capable of rotating forward and backward within a limited angle, and said belt has at least one conductor provided on a film-shaped insulating material that serves as a base, and

further wherein a wall insulating part made of insulating material is provided on a wall of said inner member and/or on a wall of said outer member which are walls facing the ring-shaped space.

5,827,081
ROTARY CONNECTOR APPARATUS
Takashi Sakamaki, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan
Continuation-in-part of Ser. No. 444,040, May 18, 1995, Pat. No. 5,645,441. This application Feb. 20, 1997, Ser. No. 803,515
Claims priority, application Japan, Mar. 1, 1996, 8-071368
Int. Cl.[6] H01R *35/04*
U.S. Cl. 439—164 **13 Claims**



1. A rotary connector apparatus comprising:

a stator housing (**1**);

a rotor housing (**2**) mounted rotatably on said stator housing (**1**);

a flexible cable (**4**) received in a spiral formation within a space formed between said stator housing (**1**) and said rotor housing (**2**);

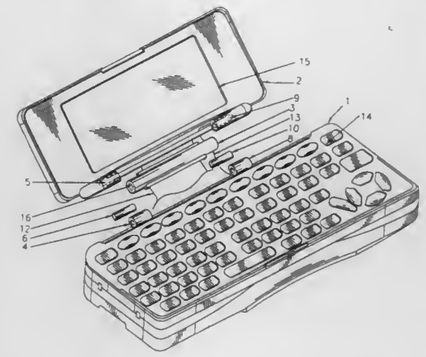
a terminal (**5**) electrically connected to an electric wire (**4***a*) exposed from said flexible cable (**4**);

a supporter (**6**) molded with said terminal (**5**) and fixed on at least one of said stator housing (**1**) and said rotor housing (**2**); and

a harness (**7**, **12**) connected to said terminal (**5**);

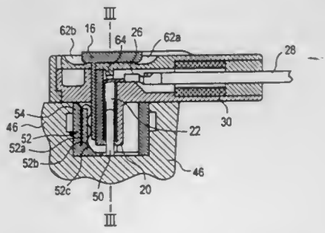
wherein said supporter (**6**, **11**) has a holding portion (**6***b*, **11***a*) for holding an end point of said harness (**7**, **12**).

5,827,082
HINGED DEVICE
Pasi Laine, Tampere, Finland, assignor to Nokia Mobile Phones, Ltd., Helsinki, Finland
Filed Dec. 12, 1996, Ser. No. 763,931
Claims priority, application Finland, Dec. 22, 1995, 956225
Int. Cl.[6] H01R *3/00*
U.S. Cl. 439—165 **10 Claims**



1. A device comprising a base part (**1**), a pivoting part (**2**) pivoting through a given slewing angle α relative to said base part, and a hinge structure comprising a first pair of hinges (**4**, **5**, **6**) and a second pair of hinges (**8**, **9**, **10**), the hinge structure being used to pivotally mount the pivoting part on the base part, and electric connection means (**12**, **13**) between the base part and the pivoting part, characterised in that a connecting piece (**3**) is provided between the first pair of hinges (**4**, **5**, **6**) and the second pair of hinges (**8**, **9**, **10**), said connecting piece pivoting through a given slewing angle β, the electric connection means (**12**, **13**) having been taken through the connecting piece, and the connecting piece being adapted to partly pivot along with the pivoting part (**2**), the slewing angle β of the connecting piece being smaller than the slewing angle α of the pivoting part.

5,827,083
ELECTRICAL CONNECTOR
Claus Dullin, Ilsfeld, Germany, assignor to Amphenol-Tuchel Electronics GmbH, Heilbronn, Germany
Continuation of Ser. No. 584,385, Jan. 11, 1996, abandoned. This application Oct. 27, 1997, Ser. No. 958,212
Claims priority, application Germany, Jan. 14, 1995, 195 00 959.2
Int. Cl.[6] H01R *29/00*
U.S. Cl. 439—188 **13 Claims**



1. In an electrical connector, comprising:

a housing for accommodating electrical cables and contact springs connected to the cables, the contact springs being arranged to engage contact pins of an associated socket when the housing is attached to the socket:

spring locking arms on the housing for attaching the housing to the socket, said spring locking arms being arranged to flex is a first direction which enables them to pass into the socket during attachment of the housing to the socket;

a locking element which, after insertion in a corresponding housing opening, secures the locking arms against unintentional release and, in a locking position, releases a short-circuiting link between the contact pins of the socket,

the improvement wherein the locking element has a U-shape, the U-shape including locking element arms and a connecting limb, the two locking element arms being positioned adjacent the spring locking arms so as to prevent movement of the spring locking arms when in the locked position, and the connecting limb being positioned between the short-circuiting link and the contacts when the locking element is in the locked position to release the short-circuiting link after insertion of the locking element into the corresponding housing opening.

5,827,084

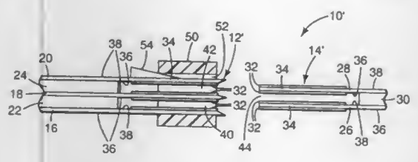
ELECTRICAL CONNECTOR ASSEMBLY WITH INTERLEAVED MULTILAYER STRUCTURE AND FABRICATION METHOD

Rolf W. Biernath, Maplewood, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 839,280, Apr. 17, 1997, Pat. No. 5,741,148, which is a continuation of Ser. No. 346,735, Nov. 30, 1994, abandoned. This application Feb. 2, 1998, Ser. No. 17,388

Int. Cl.[6] H05K *3/00*

U.S. Cl. 439—262 **7 Claims**



1. A method for fabricating a plurality of electrical connector assemblies, the method comprising the steps of:

forming a plurality of first connector structures by a plurality of steps including:

providing a first connector layer,

forming a plurality of conductive contact surfaces in each of a plurality of regions of said first connector layer, and

separating sections of said first connector layer to form said plurality of said first connector structures, each of said sections including one of said regions of said first connector layer; and

forming a plurality of second connector structures by a plurality of steps including:

providing a second connector and a third connector layer, each of said second and third connector layers including a material capable of resilient deformation;

forming a plurality of conductive contact surfaces in each of a plurality of regions of said second connector layer,

forming a plurality of conductive contact surfaces in each of a plurality of regions of said third connector layers,

providing a plurality of separation layers,

placing said separation layers between said second and third connector layers to form a stacked structure, said second and third layers defining a gap therebetween substantially coplanar with said plurality of separation layers, and

separating sections of said stacked structure, each of said sections forming one of said plurality of second connector structures, and each of said sections including one of said regions of said second connector layer, one of said regions of said third connector layer, and a portion of one of said separation layers,

wherein said first connector layer is oriented to engage said gap upon engagement of said first connector structure and said second connector structure, thereby coupling at least some of the conductive contact surfaces of said first connector layer to at least some of the conductive contact surfaces of said second and third connector layers.

5,827,085

ELECTRICAL CONNECTOR AND METAL LATCH THEREOF

Akihiro Yodogawa, Fujisawa, Japan, assignor to Berg Techology, Inc., Reno, Nev.

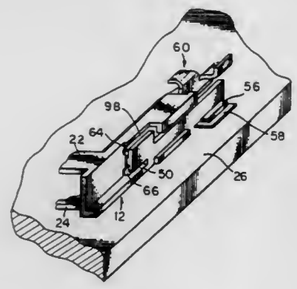
PCT No. PCT/US95/03661, § 371 Date Sep. 6, 1996, § 102(e) Date Sep. 6, 1996, PCT Pub. No. WO95/26580, PCT Pub. Date Oct. 5, 1995

PCT Filed Mar. 22, 1995, Ser. No. 702,644

Claims priority, application Japan, Mar. 25, 1994, 6-055762

Int. Cl.[6] H01R *13/62*

U.S. Cl. 439—326 **15 Claims**



1. An electrical connector for connecting a first circuit board to a second circuit board through a plurality of contact terminals, comprising:

an integrally molded non-conductive housing, the housing including an elongated opening being provided with the plurality of contact terminals and being adapted to receive the second circuit board, a restricting wall for restricting a rotation of the second circuit board when the second circuit board is inserted in the opening, and attachment posts respectively mounted at one and the other end portions of the opening, each attachment post being provided with a slot defined by four walls to have a rectangular cross section, wherein a main wall of the four walls, located nearer to the corresponding one end portion of the opening than the other three walls and opposed to the corresponding one end portion of the opening, has an engaging projection projecting in the slot with gaps being produced between the engaging projection and two walls located on both sides of the main wall; and

a pair of metal latches attached to the housing, each latch being formed of one piece of metal and including a substantially planar fork portion shaped to be secured in said slot and engaged with the engaging projection, an arm portion extending from the fork portion along the main wall, a latch portion extending from the arm portion and shaped to engage with and hold the second circuit board in a predetermined position when the second circuit board is inserted in the opening of the housing, and a releasing portion arranged near to the latch portion and selectively allowing disengagement of the second circuit board, wherein the fork portion of the metal latch has a wedge-shaped portion which bites the engaging projection in the slot of the attachment post of the housing.

5,827,086

HALF-FITTING PREVENTION CONNECTOR

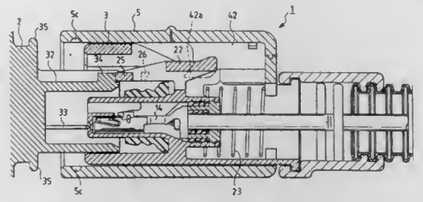
Masaru Fukuda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Feb. 5, 1997, Ser. No. 795,785

Claims priority, application Japan, Feb. 8, 1996, 8-022653

Int. Cl.[6] H01R *13/627*

U.S. Cl. 439—357 **7 Claims**



1. A half-fitting prevention connector comprising:

a housing having an electrical terminal therein;

a resilient member mounted on said housing;

a lock member disposed in said housing for retaining engagement with a retaining projection disposed on a mating connector, said lock member pivoting as said mating connector is inserted into said housing in an insertion direction, said lock member having lock release projections formed respectively on opposite sides thereof; and

a cover member slidably fitted on said housing and covering said housing over an entire periphery thereof, said cover member having cover lock release ribs formed on an inner surface thereof for abutting against said lock release projections which pivotally move said lock member as said cover member slides in the insertion direction of said mating connector during insertion of said mating connector into said housing,

wherein said resilient member urges said cover member in a direction opposite to the insertion direction of said mating connector.

5,827,087

ELECTRICAL CONNECTOR FOR CABLES OF DIFFERENT GAUGES

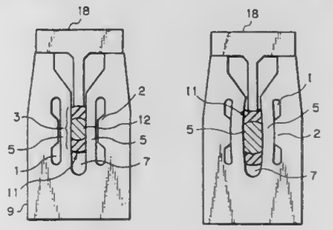
Shuji Yamasaki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 19, 1997, Ser. No. 808,953

Claims priority, application Japan, Feb. 21, 1996, 8-033889

Int. Cl.[6] H01R *4/24*

U.S. Cl. 439—395 **6 Claims**



1. A cable connector comprising:

a single flat metal plate;

a notch formed in said metal plate and comprising

an inlet portion extending from one edge of said metal plate, and open at said one edge sufficiently wide to receive a cable consisting of a core and an insulating covering, and sequentially reduced in width for guiding said cable,

a slit-like cutting portion extending from said inlet portion in one direction and having a width for cutting said covering up to said core, and

a U-shaped slit having a contact portion extending from said cutting portion to terminate at an end of said U-shaped slit, for penetrating and electrically contacting said core at opposite edges of said slit;

a pair of parallel elongated holes formed in said metal plate at opposite sides of said slit and extending along said slit so as to define respective intervening beam portions between said contact portion and said elongated holes; and

a pair of lugs each protruding from one of opposite edges of the respective elongated hole toward the other edge;

wherein when the cable is pushed into said notch, said respective beam portions deform to thereby cause the respective lug and the respective facing edge to abut against each other.

5,827,088

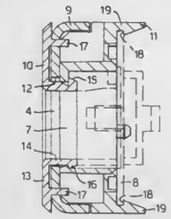
SOCKET MOUNTING SYSTEM

Richard Weatherley, 23 Tenter Rd., Moulton Park Industrial Estate, Northampton, NN3 1AX, United Kingdom

Filed Feb. 26, 1997, Ser. No. 807,879

Int. Cl.[6] H01R *13/60*

U.S. Cl. 439—540.1 **5 Claims**



1. A socket mounting system comprising a mounting panel having an aperture therein; a first clip component having a face portion which, in use, lies on an obverse side of the mounting panel; a second clip component having a socket clip portion; a socket releasably secured to the second clip component by means of the socket clip portion, the socket having a portion which is presented to the aperture in the mounting panel for receiving a plug inserted from the obverse side of the mounting panel; and interengaging latches on the first and second clip components for latching the first clip component to the second clip component, the latches being mutually engageable and disengageable prior to mounting of the socket by the socket clip portion, but being locked against disengagement by the socket when the socket is mounted on the socket clip portion.

5,827,089

BOARD LOCK FOR ELECTRICAL CONNECTOR

Hoy Smith Beck, Jr., Lexington, N.C., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation of Ser. No. 437,339, May 9, 1995, abandoned. This application Nov. 4, 1996, Ser. No. 743,569

Int. Cl.[6] H01R *13/73*

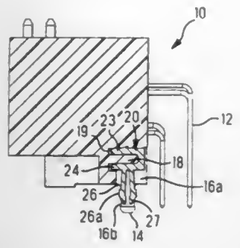
U.S. Cl. 439—567 **16 Claims**

1. A board lock member for use with an electrical connector, comprising:

a generally flat body portion comprising an upper arm and a lower arm with a space therebetween;

a pair of deflectable legs which extend from said lower arm in an axial direction;

said upper and lower arms extend in a direction which is generally transverse to said axial direction of said deflectable legs, said upper and lower arms comprise respective first ends which are connected by a web section, and each of said upper and lower arms comprise respective second ends, said second ends comprise free ends which are substantially coextensive



in said transverse direction, said upper and lower arms thereby define a hook-shaped configuration for attaching the board lock to said electrical connector, said upper arm having a retention member.

5,827,090

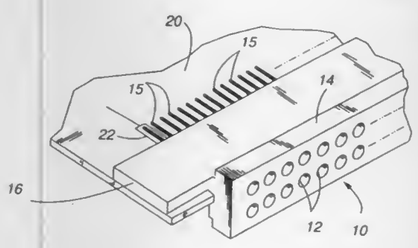
SIDE MOUNT STRAIN RELIEF FOR PCMCIA CONNECTOR

David B. Knighton, Longmont, Colo., assignor to Maxtor Corporation, Longmont, Colo.

Continuation of Ser. No. 279,633, Jul. 22, 1994, abandoned. This application Feb. 29, 1996, Ser. No. 609,088

Int. Cl.[6] H01R *13/74*

U.S. Cl. 439—571 **12 Claims**



1. A hard disk drive, comprising:

a housing;

a disk within said housing;

a spin motor that rotates said disk;

an actuator arm assembly operatively coupled to said disk;

a printed circuit board mounted to said housing and containing a surface pad;

an electronic device mounted to said printed circuit board; and

an electrical connector that is coupled to said printed circuit board, said electrical connector including:

(a) a body, said body having first and second ends and first and second sides, wherein a center of said body is located midway between said first and second ends,

(b) an electrical contact extending from said first end of said body and

(c) first and second locating pins, wherein said first and second locating pins are located proximate to said first and second sides, respectively, and each of said locating pins penetrates said board at only a single location in said board, said first and second locating pins being offset towards said second end from said center of said electrical connector body, wherein said electrical contact is biased into contact with said surface pad.

5,827,091

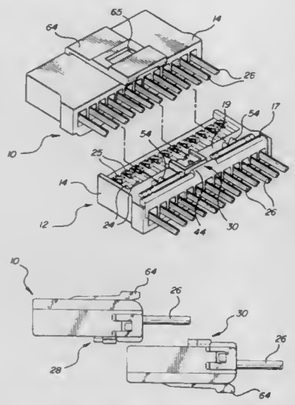
METHOD OF TRANSPORTING A WIRING HARNESS

Curt M. Briski, Westland, and Mark S. Grant, Livonia, both of Mich., assignors to Yazaki Corporation, Tokyo, Japan

Continuation of Ser. No. 549,971, Dec. 26, 1995, Pat. No. 5,681,185. This application May 15, 1997, Ser. No. 856,903

Int. Cl.[6] H01R *13/40*

U.S. Cl. 439—594 **4 Claims**



1. A method of transporting a multiple conductor wiring harness having at least two multiple conductor-terminating connectors, each connector comprising a connector body having a surface at which a plurality of metal contacts are substantially exposed, the method comprising the steps of:

(a) arranging a pair of said connectors with said surfaces in juxtaposed relationship;

(b) establishing multi-point mechanical interconnection between the connector bodies of said juxtaposed pair;

(c) transporting the harness; and, thereafter

(d) disconnecting the juxtaposed connector bodies from one another so that each connector can be mated with a corresponding electrical component.

5,827,092

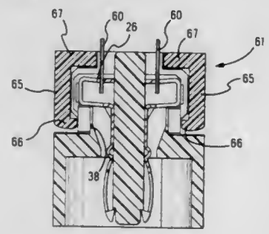
FILTERED ELECTRICAL ADAPTER AND CONNECTOR

Steven Eric Minich, Glen Rock, Pa., assignor to The Whitaker Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 710,471, Sep. 13, 1996. This application Jun. 25, 1997, Ser. No. 882,249

Int. Cl.[6] H01R *13/66*

U.S. Cl. 439—620 **35 Claims**



1. A filtered electrical connector comprising a plurality of contact terminals comprising contacts held in an insulative housing, the contact further comprises a contact pin and a conductive plate perpendicular to the mating direction of the connector and in electrical communication with said contact pin, the housing further comprising a collar parallel to and spaced away from said conductive plate creating a recess between said conductive plate and said collar, at least one filter element having two electrodes, the filter element disposed in said recess between said collar and one of said conductive plates wherein one of said two electrodes is electrically connected to said conductive plate, the connector further comprising a conductive shield, and the other one of said two electrodes engages said shield.

5,827,093

CONNECTOR COVER RETAINING STRUCTURE

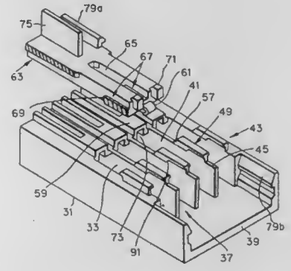
Toshiaki Okabe, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan

Filed Dec. 3, 1996, Ser. No. 759,957

Claims priority, application Japan, Dec. 5, 1995, 7-316759

Int. Cl.[6] H01R *13/436*

U.S. Cl. 439—752 **5 Claims**



1. A connector cover retaining structure comprising:

a housing;

terminal receiving chambers formed in said housing and separated from one another by side walls;

an upper open portion formed in said housing to expose said terminal receiving chambers;

a cover mounted on said housing through a hinge so as to close said upper open portion;

projected portions formed respectively on said side walls, each of said projected portions having a retaining portion; and

retaining pawls formed respectively on said cover and retainingly engaged respectively with the retaining portions of said projected portions when said cover is closed to close said upper open portion,

wherein said retaining pawls are formed in retaining grooves on the underside of said cover and said retaining portions are formed on the lower portion of said projected portions.

5,827,094

CONNECTOR FOR HEAVY CURRENT SUBSTRATE

Eiichi Aizawa, and Shinobu Saito, both of Tsuru, Japan, assignors to Aikawa Press Industry Co., Ltd., Japan

Filed May 19, 1997, Ser. No. 858,495

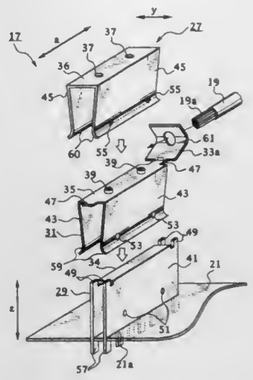
Int. Cl.[6] H01R *9/09*

U.S. Cl. 439—857 **10 Claims**

1. A connector for a heavy current substrate in which a power source wire for passing the heavy current is connected to a substrate, comprising:

a male terminal which is flexibly formed by a pair of side walls to be directly attached to said substrate and a base wall, so that the section thereof is generally U-shaped; and

a female terminal which is flexibly formed so as to be integrated with a pair of elastic side walls for holding said male terminal therebetween and a base wall in which a connecting portion to be connected to said power source wire is extended.



5,827,095

MOUNT STRUCTURE FOR SUPPORTING AN ELECTRIC APPARATUS ON A GROUND BASE

Juhani Mantere, Tuusula, Finland, assignor to ABB Industry Oy, Helsinki, Finland

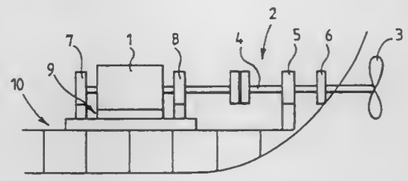
PCT No. PCT/FI96/00209, § 371 Date Oct. 8, 1997, § 102(e) Date Oct. 8, 1997, PCT Pub. No. WO96/33092, PCT Pub. Date Oct. 24, 1996

PCT Filed Apr. 18, 1996, Ser. No. 930,758

Claims priority, application Finland, Apr. 19, 1995, 951860

Int. Cl.[6] B63H *21/30*

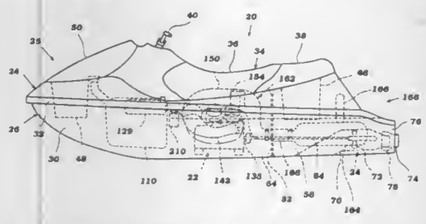
U.S. Cl. 440—6 **11 Claims**



1. A mount structure (**9**) for supporting an electric apparatus (**1**) comprising a rotor and a stator frame, such an electric apparatus being preferably a marine engine rotating a propeller, on a ground base (**10**, **10"**), such as a hull of ship, said mount structure (**9**) comprising at least one vibration damping unit (**12**, **13**, **12"**), which comprises a vibration damping rail (**15–18**, **15"**, **16"**), which is arranged to receive and damp vibration of the electric apparatus (**1**) and which is secured to the stator frame (**11**, **11"**), spacing means (**39– 41**, **39"** and **42–44**, **43"**) being attached to the vibration damping rail (**15–18**, **15"**, **16"**) for securing it at a distance from the stator frame (**11**, **11"**) and at a distance from the ground base (**10**, **10"**), and relieving means (**55**, **55'**, **55"**) constituting material weakening being provided in the vibration damping rail (**15–18**, **15"**, **16"**) to increase the elasticity of the vibration damping rail in such a manner that the vibration damping rail yields significantly in two directions, which are at right angles to each other, one direction being parallel to the upper surface of the vibration damping rail and the other direction being transverse to the longitudinal

direction of the vibration damping rail, characterized in that the mount structure (9) comprises at least two elastic vibration damping units (12, 13, 12"), which both comprise at least two elastic vibration damping rails (15–18, 15", 16"), which are spaced apart in the vertical direction, the upper vibration damping rail (15, 17, 15") being secured to the stator frame (11, 11") at a distance from it and the lower vibration damping rail (16, 18, 16") being secured to the ground base (10, 10") at a distance from it, and the upper and the lower vibration damping rail (15–18, 15", 16") being secured to each other, the upper and the lower vibration damping rail being thus arranged to receive and damp the vibration of the electric apparatus (1).

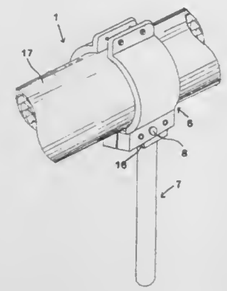
5,827,096
WATERCRAFT EXHAUST CONTROL
Shigeharu Mineo, Iwata, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Japan
Filed Apr. 17, 1997, Ser. No. 847,830
Claims priority, application Japan, Apr. 18, 1996, 8-097160
Int. Cl.[6] B63H *21/32*
U.S. Cl. 440—89 **25 Claims**



1. An exhaust control system for a watercraft powered by an internal combustion engine, the watercraft having a hull having a deck section and a lower section berebelow, said deck and lower sections defining an internal chamber, said deck section having an access opening therein leading to said internal chamber, said access opening having an outer edge and selectively covered with a seat, said hull having at least one wall, said engine mounted to said hull in said internal chamber, said engine having a body with at least one combustion chamber with an exhaust passage leading through said body therefrom, said exhaust control system including an exhaust valve for controlling the flow of exhaust through said passage, said valve including a valve body movably mounted with respect to said engine and having a portion for blocking at least a portion of said exhaust passage, and means for moving said body, said means for moving including an actuator positioned at a location on said wall of said hull which is positioned outside of said outer edge of said access opening.

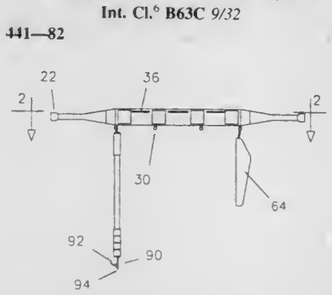
5,827,097
OARLOCK
Kunio Ando, 3-39-34 Kita, Kunitachi-shi, Tokyo, Japan
Filed Nov. 12, 1997, Ser. No. 967,897
Int. Cl.[6] B63H *16/06*
U.S. Cl. 440—106 **4 Claims**

1. An oarlock used for holding an oar to row a boat, comprising:
an oar supporting member formed of one clamping plate shaped into a cylindrical oar holder part and a rectangular lower part, said rectangular lower part having a bottom with a rectangular opening, and side walls facing each other, each of said side walls having a through-hole, said rectangular opening defining edges therearound in the bottom of the rectangular lower part,
a pivot part formed of a top portion and a pivot, said top portion having a through hole and passing through said rectangular opening when the oar supporting member and the pivot part are assembled, and



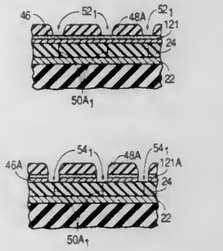
a bolt for attaching the oar supporting member and the pivot part together and passing through the through-holes of the oar supporting member and the through hole of the pivot part, said oar supporting member being pivotally movable about an axis of the bolt, said top portion having side edges hitting the respective edges of the rectangular opening when the oar held in the oar supporting member is moved within a predetermined angle with respect to a horizontal axis of the boat.

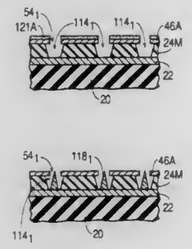
5,827,098
COLD WEATHER LIFE SAVING DEVICE
Alan D. Cunningham, #Hordal Rd., Yellowknife, N.T., Canada, X1A-3E1
Filed May 19, 1997, Ser. No. 858,724
Int. Cl.[6] B63C *9/32*
U.S. Cl. 441—82 **6 Claims**



1. A cold weather life saving device, comprising:
(A) an elongate belt body, having a tubular center portion;
(B) a plurality of flotation devices carried at evenly spaced intervals within the center portion of the elongate belt;
(C) at least one storage pouch, defined within the center portion in a space between two of the plurality of flotation devices, the at least one storage pouch having a releasably fastenable opening thereby allowing the secure storage of survival supplies;
(D) at least one utility ring, carried by the elongate belt; and
(E) a telescoping pole, carried by one of the at least one utility ring, having a plurality of segments and associated locking means for transforming the telescoping pole between a shortened storage configuration and an extended usable configuration, and having an end piece carried by one of the plurality of segments.

5,827,099
USE OF EARLY FORMED LIFT-OFF LAYER IN FABRICATING GATED ELECTRON-EMITTING DEVICES
Christopher J. Spindt, Menlo Park; John M. Macaulay, Palo Alto; Robert M. Duboc, Jr., Menlo Park, all of Calif., and Peter C. Searson, Baltimore, Md., assignors to Candescent Technologies Corporation, San Jose, Calif.
Continuation of Ser. No. 269,229, Jun. 29, 1994, Pat. No. 5,564,959, which is a continuation-in-part of Ser. No. 118,490, Sep. 8, 1993, Pat. No. 5,462,467, and a continuation-in-part of Ser. No. 158,102, Nov. 24, 1993, Pat. No. 5,559,389. This application Dec. 7, 1995, Ser. No. 568,885
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **18 Claims**

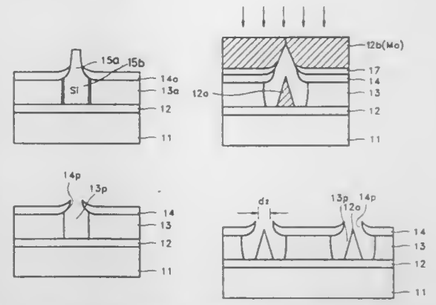




1. A method comprising the steps of:
creating a structure in which an electrically insulating layer lies over a lower electrically non-insulating region, an electrically non-insulating gate layer lies over the insulating layer, a lift-off layer lies over the gate layer, and a further layer lies over the lift-off layer;
providing a multiplicity of apertures through the further layer;
etching the lift-off layer through the apertures to form corresponding lift-off openings through the lift-off layer;
etching the gate layer through the lift-off openings to form corresponding gate openings through the gate layer;
etching the insulating layer through the gate openings to form corresponding dielectric open spaces through the insulating layer;
forming a like multiplicity of electron-emissive elements over the lower non-insulating region such that each electron-emissive element contacts the lower non-insulating region through a corresponding one of the dielectric open spaces, electrically non-insulating material being deposited over the lift-off layer and into the dielectric open spaces so as to form at least part of each electron-emissive element; and
removing the lift-off layer so as to substantially remove any of the non-insulating material accumulated over the lift-off layer.

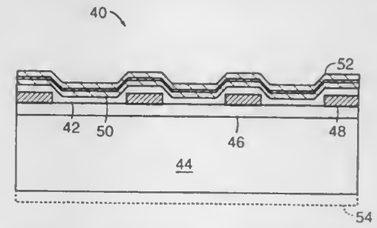
5,827,100
METHOD FOR MANUFACTURING FIELD EMISSION DEVICE
Jong-min Kim, Seoul, Rep. of Korea, assignor to Samsung Display Devices Co., Ltd., Suwon, Rep. of Korea
Filed Oct. 10, 1996, Ser. No. 731,150
Claims priority, application Rep. of Korea, Nov. 14, 1995, 95-41246
Int. Cl.[6] H01J *9/02*
U.S. Cl. 445—24 **10 Claims**

1. A method for manufacturing a field emission device, comprising the steps of:
forming a cathode on a substrate;
forming a semiconductor material layer on said cathode;
forming a mask on said semiconductor material layer;
etching said semiconductor material layer to form a plurality of tips on said cathode, each of said plurality of tips having an upper portion and a lower portion;



depositing an insulating material on said cathode to form an insulating layer;
depositing a first metal on said insulating layer in a slanted angle direction to form a gate electrode having a protruded edge portion;
removing said mask and said plurality of tips to form a plurality of holes;
depositing a second metal on said gate electrode to form a plurality of micro-tips in said plurality of holes; and
removing said second metal from said gate electrode.

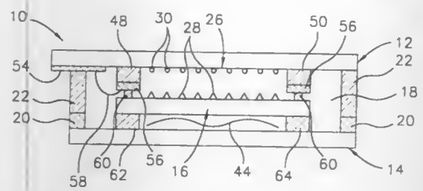
5,827,101
ANODE FOR FLAT PANEL DISPLAY
David A. Cathey, Boise; Charles M. Watkins, Meridian, and James J. Hofmann, Boise, all of Id., assignors to Micron Display Technology, Inc., Boise, Id.
Division of Ser. No. 781,830, Jan. 10, 1997. This application Mar. 17, 1998, Ser. No. 40,129
Int. Cl.[6] H01J *29/18;29/32*
U.S. Cl. 445—24 **24 Claims**



1. A method of making an anode for a field emission display, the method comprising:
disposing a transparent reflectance reducing intermediate layer on a transparent substrate;
disposing a grille on the intermediate layer with the grille defining a pattern of open regions on the intermediate layer;
disposing a conductive layer over the grille and intermediate layer; and
disposing a phosphor layer on the conductive layer.

5,827,102
LOW TEMPERATURE METHOD FOR EVACUATING AND SEALING FIELD EMISSION DISPLAYS
Charles M. Watkins, Boise, and Danny Dynka, Meridan, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Filed May 13, 1996, Ser. No. 645,059
Int. Cl.[6] H01J *9/26*
U.S. Cl. 445—25 **16 Claims**

1. A method for evacuating and sealing a field emission display package, comprising:



providing a first plate and a second plate;

applying a seal material to the first plate, the seal material comprising indium;

placing the second plate on the seal material to form a space at least partially defined by the seal material, the first plate, and the second plate;

evacuating the space through a flow path provided by non-conformance of the seal material to surfaces on the first or second plates; and

heating the seal material during the evacuating step to a temperature of about 125° C. to 150° C.

5,827,103

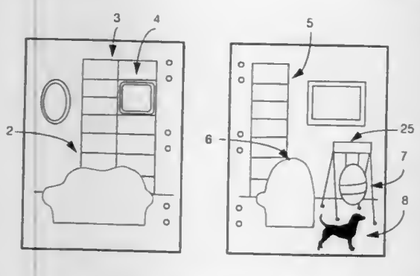
DOLLHOUSE ACTIVITY BOOK

Sharon A. Carter, Carrollton, Tex., assignor to Sharon Carter, Weatherford, Tex.

Filed Mar. 6, 1997, Ser. No. 812,149

Int. Cl.[6] A63H *33/38*; B42D *3/12*

U.S. Cl. 446—71 **1 Claim**



1. A dollhouse activity book comprising: A front cover; a back cover; a plurality of pages disposed between said front cover and said back cover; each of said pages having indicia representative of a room of a house; a plurality of separate figures shaped and designed with indicia which is associated with said indicia representative of a room of a house for each of said plurality of pages; each of said pages having two sides, each of said sides including at least one pocket, configured and arranged to receive one of said plurality of separate figures therein; some of said plurality of pages further including a strap, said strap comprising a strip of material attached to said page at two ends and adapted to receive and secure one of said separate figures between said page and said strap; and wherein each of said pockets and said strips are designed as an integral part of said indicia representative of a room of a house and wherein each of said separate figures are designed and dimensioned to be received within said pockets and said straps such that they correspond to the representation of the room of the respective page.

5,827,104

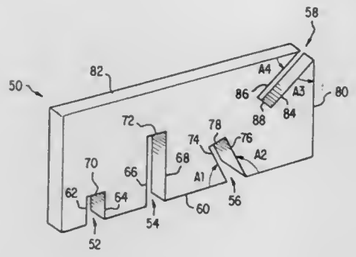
CONSTRUCTIONAL TOY PIECES

Yu Zheng, Covina, Calif., assignor to Patent Category Corporation, Monrovia, Calif.

Continuation-in-part of Ser. No. 584,519, Jan. 11, 1996, Pat. No. 5,605,486. This application Jun. 24, 1996, Ser. No. 669,253

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—114 **18 Claims**



1. An object including a first puzzle piece comprising:

a body having a first outer side edge and a second outer side edge;

a plurality of joints positioned along the first and second outer side edges, each joint having a substantially U-shaped mortise defined by a first side wall, a second side wall, and a straight bottom edge that connects the first and second side walls, with the bottom edge of at least one joint having a width which is different from the width of the bottom edge of the other joints; and

wherein the first puzzle piece comprises a corner connecting the first and second outer side edges, and a corner joint provided at the corner, the corner joint having a substantially U-shaped mortise defined by a first side wall, a second side wall and a bottom edge, with the first side wall of the corner joint extending from the bottom edge to the first outer side edge, and the second side wall of the corner joint extending from the bottom edge to the second outer side edge.

5,827,105

UNIT TOY SYSTEM

Norbert Felgenhauer, Zirndorf; Wolfgang Görlich, Erlangen, and Peter Dziemballa, Cadolzburg, all of Germany, assignors to Geobra Brandstätter GmbH & Co. KG, Zirndorf, Germany

Filed Jan. 22, 1996, Ser. No. 589,634

Claims priority, application Germany, Jan. 23, 1995, 195 01 742.0

Int. Cl.[6] A63H *33/06;33/04*

U.S. Cl. 446—120 **6 Claims**

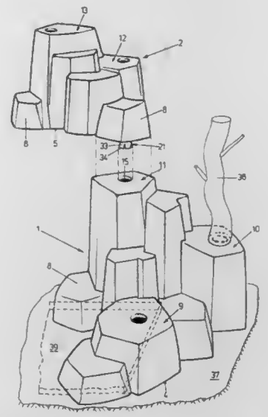
1. A unit toy system having a plurality of at least partially differing landscape units (1, 2, 3) comprising the following features:

each unit of the landscape units (1, 2, 3) has a base plane (4, 5, 6),

each unit of the landscape units (1, 2, 3) has a least one bearing area (9 to 14) for the base plane (4, 5, 6) of another landscape unit of said landscape units (2, 3, 1), some of the landscape units (1, 2) having at least two of said bearing area (9 to 13),

each said bearing area (9 to 14) has a vertical distance na from each respective base plane (4, 5, 6), which corresponds to an integral multiple n of a vertical modular dimension a, n=1, 2, 3, . . . applying,

a member (15) of an interlocking arrangement is formed on each said bearing area (9 to 14), and



at least one locking element (21) complementary to the member located on the respective bearing area (9 to 14) is provided in the vicinity of each said base plane (4, 5, 6),

wherein a locking aperture (15) is formed in each bearing area (9 to 14),

wherein each of said locking element (21) has a snap-in locking element (33) complementary to the locking aperture (15), and

wherein each of said locking element (21) is pivotable from a first position in which said locking element does not project beyond the base plane (4, 5, 6) into a second position in which the snap-in locking element (33) projects through the base plane (4, 5, 6).

5,827,106

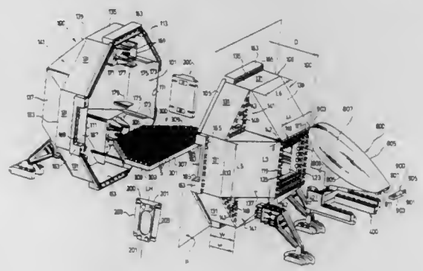
TOY CONSTRUCTION PIECE AND KIT THEREOF

Jean-Philippe Crepeau, Montreal; Jean-Christophe Doyon, Verdun; Christian Lemire, Montreal, and Real Lanoix, Laval, all of Canada, assignors to Ritvik Holdings Inc., Quebec, Canada

Filed Jan. 22, 1997, Ser. No. 787,568

Int. Cl.[6] A63H *33/08*

U.S. Cl. 446—128 **36 Claims**



1. A toy construction piece for use with standard toy construction blocks,

each of said standard blocks having a given width and a given length and a top on which extends at least one row of at least one upwardly projecting peg, each of said at least one peg having a center, each of said standard blocks also having a bottom provided with means cooperating with said at least one peg of another standard block for releasably interlocking said standard block on top of said another standard block, wherein the width of each of said standard blocks is an integer multiple of a distance d and said length is another integer multiple of said distance d, and wherein said upwardly projecting peg is centered within a square of length d such that when said standard block has more than one row of more than one peg, the longitudinal and transverse distance between the centers of each pair of adjacent pegs is equal to d,

said toy construction piece being in the form of a half-shell with an inside surface and an outside surface, said toy construction piece comprising:

a bottom portion lying in a plane P, said bottom portion having a periphery and including a bottom portion edge, said bottom portion edge having a first and second pair of parallel sides of length L1 and L2, respectively, said first pair of parallel sides being perpendicular to said second pair of parallel sides, said bottom portion being provided with means cooperating with the pegs of the standard blocks for releasably interlocking one or more of said standard blocks on said bottom portion of said toy construction piece;

a top portion having a border, four corners and a rectangular opening therein, said top portion lying in a plane parallel to the plane P at a perpendicular distance D from said plane P, said border having a third and fourth pairs of parallel sides of length L3 and L4, respectively, said third pair of parallel sides being parallel to the first pair of parallel sides while said fourth pair of parallel sides is parallel to the second pair of parallel sides, said border having a top surface and an inner surface, the border of said top portion being provided with at least one row of outwardly projecting pegs identical to those of the toy construction blocks, the longitudinal distance between every a pair of pegs of said border being equal to d, said border including a peg at each corner;

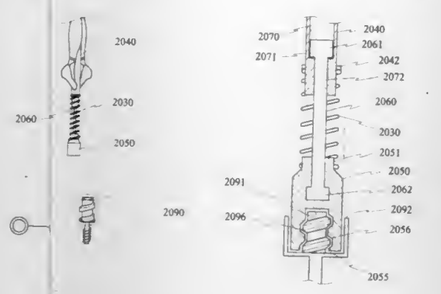
a bottom wall portion extending along the periphery of the bottom portion and towards said top portion, said bottom wall portion having a width W smaller than said distance D and having a fifth and sixth pairs of parallel sides of length L5 and L6, respectively, said fifth pair of parallel sides being parallel to the first and third pairs of parallel sides while said sixth pair of parallel sides is parallel to the second and fourth pairs of parallel sides;

a first and second pairs of top wall portions, wherein said first pair of top wall portions has one top wall portion extending from one side of the fifth pair of parallel sides to the corresponding side of the third pair of parallel sides, said first pair of top wall portions also having another top wall portion extending from the other side of the fifth pair of parallel sides to the corresponding side of the third pair of parallel sides, and where said second pair of top wall portions has one top portion extending from one side of the sixth pair of parallel sides to the corresponding side of the fourth pair of parallel sides, said second pair of top wall portions also having another top wall portion extending from the other side of the sixth pair of parallel sides to the corresponding side of the fourth pair of parallel sides, said first and second pairs of top wall portions forming together a generally rectangular pyramidal shape and defining four generally dihedral recesses between the four adjacent top wall portions respectively, each of said dihedral recesses having a top bounded by said top portion and a bottom in the form of a flat surface lying in a plane parallel to the plane P at a distance w from said plane P, said flat surface extending perpendicularly inwardly from said bottom wall portion and having edges and an inside surface;

wherein said flat surfaces are each provided with at least one row of at least one outwardly projecting peg identical to those of the toy construction blocks, the longitudinal distance between one peg and an adjacent peg of said at least one row being equal to d, the transverse distance between said one peg and said adjacent peg being equal to d and the distance between every peg adjacent to one of said edges and said one edge being equal at least to ½d.

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5,827,107
SPINNING DANCING TOP
James Bears, 8870 Cicero Dr., Boynton Beach, Fla. 33437, and Chee-Yin Lu, 7817 LaGuardia Dr., Plano, Tex. 75025
Filed Jan. 28, 1997, Ser. No. 787,767
Int. Cl.[6] A63H *1/08;1/00;27/127*
U.S. Cl. 446—263 5 Claims



1. A spinning toy comprising

a spinning body capable of spinning like a top about an axis of rotation and having a bottom having a central region adjacent the axis of rotation;

spring means fastened to the spinning body and extending below a point at or near the central region of the spinning body, the spring means aligned generally with the axis of rotation of the spinning body to absorb compressive force in the direction of the axis of rotation of the toy;

foot means attached to a bottom end of the spring means and located below the spring means when the toy is in use, the foot means having a bottom end having a flat circular rim around its periphery to permit the toy to roll upon a surface when the spinning body is spinning, the diameter of the flat circular rim being sufficiently large to permit the foot of the spinning body to roll upon the rim as it spins thereby causing the toy to move laterally when in use;

a generally circular, vertical extending bore in the bottom surface of the foot means, the bore having a first helical thread formed therein;

a hand-operated launcher means for spinning the spinning body and launching it onto the surface, the launcher means comprising

a launcher body adapted to be held in a hand of a user,

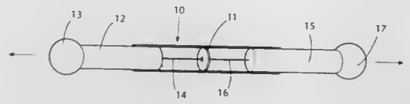
a spindle means vertically mounted in the launcher body, capable of rotation about its vertical axis and having an upper end accessible through an opening in a top surface of the launcher body and extending relatively close to or protruding slightly above the top surface of the launcher body,

a pull-string wrapped around the spindle means so that pulling on the pull-string causes the spindle means to rotate about its vertical axis,

a second helical thread located at the upper end of the spindle means and adapted to thread loosely into the first helical thread within the vertically extending bore in the foot means,

whereby when the pull-string is pulled causing the spindle means to rotate, the first helical thread securely engages the second helical thread, causing the foot means and thereby the spinning toy to rotate, and when the spindle means stops rotating the foot will continue to rotate, due to the angular momentu the first helical thread to unthread itself from the second helical thread, and thereby tending to cause the foot means and thus the spinning top to rise out of the launcher.

5,827,108
VARIABLE-LENGTH TWIRLABLE BATON
Donald Spector, 380 Mountain Rd., Union City, N.J. 07080
Filed Dec. 23, 1997, Ser. No. 996,766
Int. Cl.[6] A63H *33/00*
U.S. Cl. 446—266 7 Claims



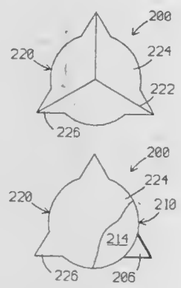
1. A baton of variable length useable by a drum major or other user capable of twirling the baton, said baton comprising:

A. an open-ended cylindrical main tube that can be grasped by the user, said tube being divided into opposing half-sections by a transverse beam;

B. a pair of cylindrical rods telescoped within the respective half-sections of the tube, each rod being slidable in its half section and having a weighted mass secured to an outer end of the rod whereby the length of the baton is determined by the distance between the weighted masses; and

C. stretchable means connecting an inner end of each rod to the beam whereby when the baton is twirled by the user, the resultant centrifugal forces acting on the weighted masses cause the rods to advance outwardly with respect to the half-sections of the tube to lengthen the baton.

5,827,109
METHOD AND APPARATUS FOR AMUSING YOUNG CHILDREN
Mark A. Krull, 1705 E. Ridge Ct., Northfield, Minn. 55057
Filed May 23, 1997, Ser. No. 863,055
Int. Cl.[6] A63H *33/18;* A63B *37/12;37/02*
U.S. Cl. 446—373 11 Claims

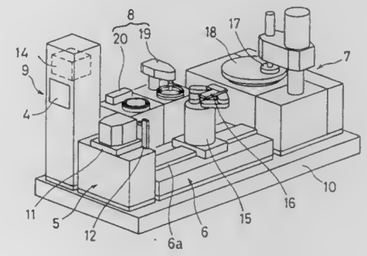


1. A toy ball, comprising:

a core having a shape which substantially resembles a first geometric solid; and

a flexible cloth housing predisposed to assume a shape which substantially resembles a second geometric solid, wherein one of said first geometric solid and said second geometric solid is bounded by curved surfaces, and the other of said first geometric solid and said second geometric solid is bounded by all planar surfaces, and said core is enclosed within said housing, and first peripherally distributed portions of said housing bear against said core, and second peripherally distributed portions of said housing are spaced apart from said core and cooperate therewith to define gaps therebetween.

5,827,110
POLISHING FACILITY
Hiromi Yajima, Yokohama; Yukio Imoto, Zama; Shoichi Kodama; Riichiro Aoki, both of Tokyo; Takashi Omichi, Fujisawa; Toyomi Nishi, Yokohama, and Tetsuji Togawa, Fujisawa, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan, and Ebara Corporation, Tokyo, Japan
Filed Dec. 28, 1995, Ser. No. 580,312
Claims priority, application Japan, Dec. 28, 1994, 6-339165; Dec. 28, 1994, 6-339166; Dec. 28, 1994, 6-339167
Int. Cl.[6] B24B *7/22;51/00*
U.S. Cl. 451—5 21 Claims



1. A modular polishing facility for polishing workpieces, said facility comprising:

a load/unload function module for receipt of a cassette for workpieces to be polished;

a transport function module for moving workpieces within said facility;

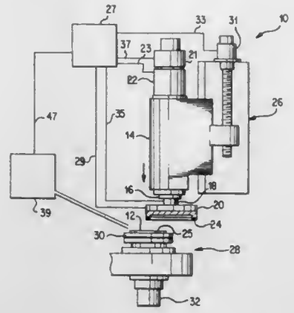
a polishing function module for polishing workpieces;

a cleaning function module for cleaning workpieces;

a control function module for controlling said facility;

each of said transport function module, said polishing function module and said cleaning function module including a driver for driving a motor, an electrical terminal for supplying electrical power to said driver, a conversion interface for control signals for said driver, and a communications terminal for receiving control signals; and

said control function module including a power source for supplying electrical power to each of said load/unload function module, said transport function module, said polishing function module and said cleaning function module through an electrical terminal, a computer for generating command signals, an electrical input terminal for receiving input of external electrical power, and an operation panel for inputting commands for said facility.



signals from the pressure sensor and change the feed rate of the grinding wheel in response to the pressure signal.

5,827,112
METHOD AND APPARATUS FOR GRINDING WAFERS
Michael B. Ball, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Dec. 15, 1997, Ser. No. 990,616
Int. Cl.[6] B24B *49/18*
U.S. Cl. 451—21 18 Claims

1. A method for dressing a grinding wheel comprising the steps of:

moving a grinding wheel into contact with the wafer;

grinding the wafer;

receiving a signal indicative of a need to sharpen the grinding wheel; and

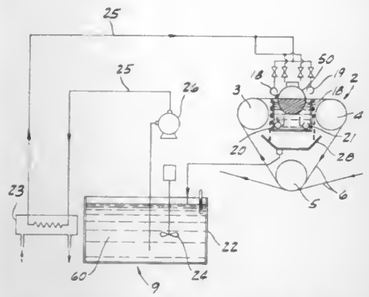
controlling the release of wheel dressing to a contact area between the grinding wheel and wafer in response to the signal.

5,827,111
METHOD AND APPARATUS FOR GRINDING WAFERS
Michael B. Ball, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.
Filed Dec. 15, 1997, Ser. No. 990,986
Int. Cl.[6] B24B *49/02*
U.S. Cl. 451—14 20 Claims

1. A wafer grinding machine comprising a grinding wheel having a grinding portion and at least one pressure sensor and being movable at a predetermined feed rate, the pressure sensor being disposed adjacent the grinding portion, and a controller coupled to the pressure sensor, the controller being adapted to receive pressure

5,827,113
CUTTING MACHINE
Kiyohito Okuno; Sadahiko Itoh, and Hisashi Horii, all of Ohtsu, Japan, assignors to MEMC Electric Materials, Inc., St. Peters, Mo.
Filed Sep. 20, 1996, Ser. No. 710,655
Claims priority, application Japan, Sep. 22, 1995, 7-269505
Int. Cl.[6] B24B *1/00;* B24C *1/00*
U.S. Cl. 451—36 3 Claims

1. A method for cutting a work piece using a cutting machine having a wire mounted on rollers for movement of the wire to cut the work piece, the wire including a cutting reach which is positioned for contacting the work piece to cut the work piece, the method comprising the steps of:



providing a container of working fluid having an upper level in the container disposed below, but in closely spaced relation with the cutting reach of the wire;

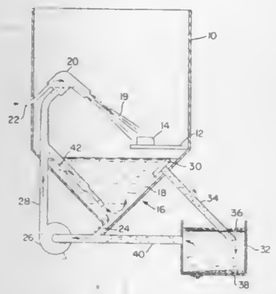
deflecting at least a portion of the cutting reach of the wires downwardly into immersion within the working fluid by effecting relative movement between the work piece and the wire to bring the work piece into contact with the cutting reach of the wire whereby working fluid is continuously supplied to the work piece where the work piece is being cut by the wire.

5,827,114

SLURRY BLASTING PROCESS

Benny S. Yam, Holmdel, and Andrew Logan, Jr., East Windsor, both of N.J., assignors to Church & Dwight Co., Inc., Princeton, N.J.

Filed Sep. 25, 1996, Ser. No. 719,463
Int. Cl.[6] B24B *3/00*
U.S. Cl. 451—75 **23 Claims**



1. A process for blast cleaning comprising: subjecting a work surface to a blast stream comprising a slurry of a carrier liquid and a particulate abrasive material, and a pressurized air stream to atomize the slurry, the process further comprising maintaining an air to slurry mass ratio of generally at least about 0.05.

5,827,115

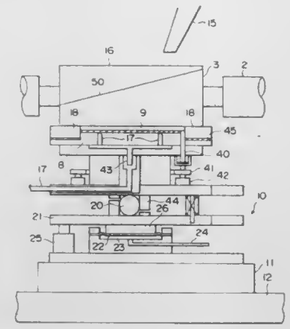
POLISHING APPARATUS

Noburu Shimizu, Yokohama, Japan, assignor to Ebara Corporation, Tokyo, Japan

Filed Jul. 19, 1996, Ser. No. 684,941
Claims priority, application Japan, Jul. 19, 1995, 7-205216; Jul. 19, 1995, 7-205217
Int. Cl.[6] B24B *7/00*
U.S. Cl. 451—123 **6 Claims**

1. A polishing apparatus comprising:

a rotatable drum provided on a surface thereof with a polishing pad;



a stand to support a workpiece to be polished;

pressing means for pressing said drum to a surface of the workpiece;

reciprocating means for reciprocating one of said stand or said drum so that said drum contacts an entire surface of the workpiece;

rotating means for rotating said stand;

supplying means for delivering an abrasive liquid including abrasive grains to said polishing pad; and

controlling means for controlling said reciprocating means and said rotating means so as to obtain a relationship:

$$V/\omega > L$$

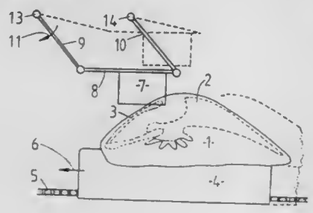
in which V represents velocity of relative reciprocation between said drum and the workpiece supported on said stand to polish the entire surface of the workpiece, ω represents rotational angular velocity of the workpiece supported on said stand, and L represents a distance from a rotational center of the workpiece supported on said stand to a point on the workpiece furthest from said rotational center.

5,827,116

APPARATUS FOR FILLETING THE BREAST PIECE OF SLAUGHTERED POULTRY

Gert-Jan Al, and Maarten Bakker, both of Oostzaan, Netherlands, assignors to Machinefabriek Meyn B.V., Oostzaa, Netherlands

Filed Apr. 8, 1997, Ser. No. 827,921
Claims priority, application Netherlands, Apr. 10, 1996, 1002831
Int. Cl.[6] A22C *21/00*
U.S. Cl. 452—170 **10 Claims**



1. An apparatus for filleting the breast piece of slaughtered poultry wherein the breast piece includes at least the sternum and wishbone defined by both clavicles, said apparatus comprising:

means for supporting and conveying the breast piece in a conveying direction along a conveying path;

means for cutting loose breast meat from the sternum and wishbone of the breast piece;

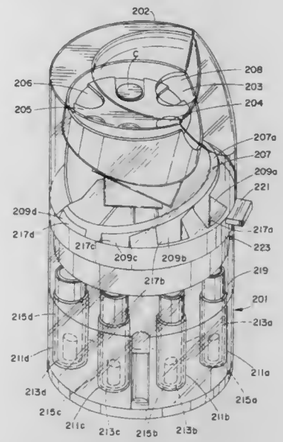
said means for cutting loose further comprising a substantially V-shaped cutting device and means for driving said cutting device synchronously with said breast piece along at least a portion of said conveying path and for engaging said breast piece with said cutting device to separate the breast meat adjacent the wishbone.

5,827,117

COIN SORTER AND PACKAGER

Robert L. Naas, Skaneateles, N.Y., assignor to Mag-Nif Incorporated, Mentor, Ohio

Filed May 13, 1996, Ser. No. 645,106
Int. Cl.[6] G07D *3/08*
U.S. Cl. 453—9 **30 Claims**



5. A device for stacking coins, comprising:

at least one coin stacking well, wherein said coin stacking well further comprises a coin wrapper holder, said coin wrapper holder comprising a ledge at one end, said ledge defining at least one slot extending through the ledge.

5,827,118

CLEAN STORAGE UNIT AIR FLOW SYSTEM

Roy P. Johnson, Yacolt, and Donald L. Wilkinson, Camas, both of Wash., assignors to Seh America, Inc., Vancouver, Wash.

Filed Aug. 28, 1996, Ser. No. 704,269
Int. Cl.[6] F24F *3/16*
U.S. Cl. 454—187 **15 Claims**

11. A storage system for storing clean room articles, said system comprising in combination:

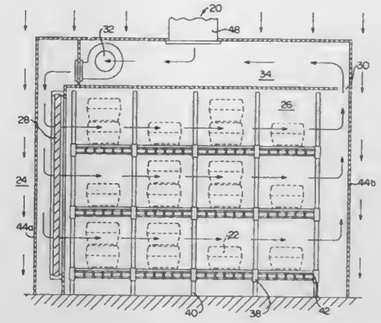
(a) a clean room;

(b) an enclosed storage compartment having a plurality of doors, said storage compartment accessible from said clean room via any one of said doors, said compartment having horizontally spaced first and second sides;

(c) first air-filtering means at said first side;

(d) air exhaust means at said second side;

(e) horizontal flow means for forcing air through said first air-filtering means to said air exhaust means; and



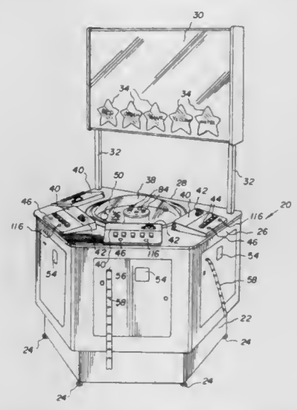
(f) a shelving system within said compartment, said shelving system being directly accessible from said clean room through any one of said plurality of doors.

5,827,119

ROTATABLE PLAYING SURFACE GAME

Lauran Bromley, Northbrook, Ill., assignor to Bromley Incorporated, Northbrook, Ill.

Filed Aug. 14, 1996, Ser. No. 689,783
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—7 **48 Claims**



1. An amusement game machine having a rotatable playing surface comprising:

(a) a housing having a transparent cover;

(b) a segmented substantially circular rotatable playing surface;

(c) a race surrounding said segmented substantially circular rotatable playing surface;

(d) a rotatable object;

(e) means for rotating said substantially circular rotatable playing surface;

(f) mechanical means for accelerating said rotatable object with sufficient energy to maintain said rotatable object in said race under centrifugal force for a predetermined period of time;

(g) means for stopping the rotation of said substantially circular playing surface while said rotatable object is in said race;

(h) a sensor for indicating position of said rotatable object on said segmented substantially circular rotatable playing surface; and

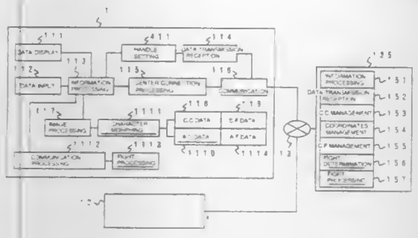
(i) a microprocessor for actuating said means for rotating and said means for stopping the rotation of said substantially circular rotatable playing surface.

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5,827,120
NETWORK GAME SYSTEM HAVING COMMUNICATION CHARACTERS FOR CONVERSATION CHANGING INTO ACTION CHARACTERS FOR ACTION GAMING

Misao Kikuchi; Yasushi Kitagawa; Shuji Oba; Tadayuki Tahara; Makoto Urano; Masura Watanabe; Makiko Furuno, all of Kawasaki; Hisayoshi Hayasaka, Sendai; Kiyotaka Yago, Sendai, and Yoshinori Saito, Sendai, all of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Jul. 8, 1996, Ser. No. 676,453
Claims priority, application Japan, Dec. 14, 1995, 7-326117
Int. Cl.[6] A63F *9/22*
U.S. Cl. 463—40 8 Claims



1. A network game system having a communication service mode in which a plurality of communication characters are displayed on display means of terminal apparatuses connected to a network and a conversation is performed between the communication characters, and an action game service mode in which a plurality of action characters are displayed on the display means and a game is played between the action characters, said network game system comprising:

a terminal apparatus comprising:

display means;

input means;

communication character data that can be selectively displayed on the display means to perform a conversation with other subscribers through network communication;

communication field data commonly used by subscribers who receive a communication service;

action character data that can be selectively displayed on the display means to perform an action game with another subscriber through network communication;

action field data commonly used by subscribers who receive an action game service; and

character transforming means for transforming the communication character to the action character; and

a host computer for managing communication character data of a subscriber, position data of the communication character, and the communication field data in accordance with an operation that is input through the terminal apparatus,

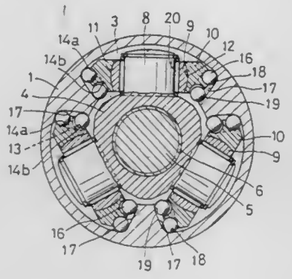
wherein when the terminal apparatus of a subscriber selects one of the communication characters and one of the action characters, establishes connection to the host computer, and designates a desired communication field, the host computer recognizes that a current mode is the communication service mode and sends, to the terminal apparatus of the subscriber, communication character data of other subscribers existing in the designated communication field and corresponding coordinates data, and the communication character operated by the subscriber and the communication characters operated by the other subscribers are displayed on the display means of each of the terminal apparatuses of the subscriber and the other subscribers in the same communication field, whereby a conversation between the displayed communication characters is enabled based on data that is inputted through the input means, and

wherein when the terminal apparatus of the subscriber expresses, through the input means, an intention of playing a game with any of the other subscribers existing in the same communication field, the terminal apparatus of the subscriber recognizes transition to the action game service mode and transforms communication character to the previously selected action character by activating the character transforming means.

5,827,121
HOMOKINETIC UNIVERSAL JOINT HAVING STRAIGHT RECIRCULATING BALL PATHS IN FLAT SIDE SURFACES OF TRACK GROOVES

Hiromichi Bando, Iwata; Tetsuro Kadota, Iwata-gun, and Takeshi Kohara, Iwata, all of Japan, assignors to NTN Corporation, Osaka, Japan

Filed Dec. 23, 1994, Ser. No. 363,236
Int. Cl.[6] F16D *3/205*
U.S. Cl. 464—111 4 Claims



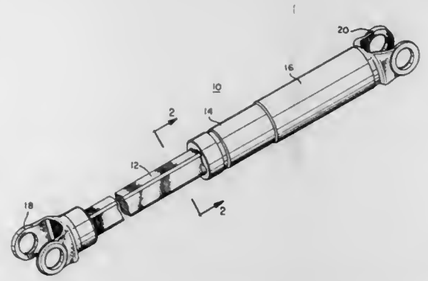
1. A homokinetic universal joint comprising an outer ring formed with three axial track grooves in inner peripheral surface thereof, a tripod member having three trunnions, each inserted in a respective one of said track groove and a guide block supported on each of said trunnions so as to be axially slidable with respect to said trunnion and so as for said trunnion to be pivotable with respect to said guide block, each of said guide blocks being formed with a ball circulation groove in each side thereof, each of said ball circulation grooves having an elliptical shape and comprising a straight load-bearing path and a straight non-load-bearing path, both extending parallel to the axis of said outer ring, and semicircular paths connecting said straight paths together at ends thereof, and a plurality of balls accommodated in each of said ball circulation grooves so that said plurality of balls roll and circulate therein, each of said track grooves being formed with a pair of flat side surfaces extending radially inward and facing the sides of said respective guide block and a circumferential surface connecting said side flat surfaces and a load bearing path at the intersection of the flat side surface and the circumferential surface, said bearing path of the track groove includes a pair of arcuate ball raceways smoothly connecting with said flat side surfaces for guiding said balls in said ball circulation groove while they are moving in said load-bearing path.

5,827,122
RADIAL FREE MOTION DRIVELINE

Bradley S. Kurian, Perkiomenville, Pa., assignor to Neapco, Inc., Pottstown, Pa.

Filed Jun. 6, 1997, Ser. No. 870,999
Int. Cl.[6] F16D *3/06;* F16C *3/03*
U.S. Cl. 464—162 4 Claims

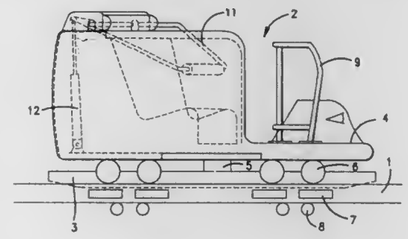
1. An adjustable length telescoping radial free motion driveline having a driven end and a driving end comprising an elongated shaft having a predetermined external cross-sectional configuration, an elongated sleeve having a predetermined internal cross-sectional configuration complimentary to the external configuration of said shaft, said internal configuration of said sleeve being larger than the external configuration of said shaft to permit said shaft and said sleeve to telescope with respect to each other, said internal configuration of said sleeve being shaped to permit said shaft to rotate through a predetermined angle with respect to said sleeve and thereafter to rotate with said sleeve, said shaft having an external substantially square cross-sectional configuration including four sides and two pairs of diagonally opposite arcuate corners located on a circle having a first diameter, said sleeve having an internal substantially square cross-sectional configuration including two pairs of diagonally opposite arcuate corners located on a circle having a second diameter larger than said first diameter, a pair of flat surfaces interconnecting said arcuate corners of said sleeve, each pair of said flat surfaces extending inwardly toward the center of said sleeve, each side of said shaft engaging a corresponding one of said flat surfaces in each pair when said shaft is rotated through said predetermined angle, whereby a fixed amount of radial free motion corresponding to said predetermined angle is provided between said shaft and said sleeve to compensate for any misalignment between a driving means and a driven means to which the driven end and driving end of said driveline are to be connected and after connection permitting the driveline to elongate or shorten while maintaining a fixed radial alignment.



5,827,123
CAROUSEL FOR CARNIVALS AND AMUSEMENT PARKS

Gilles Reverchon, Samois, France, assignor to Gaston Reverchon Industries, Paris, France

Filed Dec. 9, 1996, Ser. No. 762,059
Claims priority, application France, Dec. 8, 1995, 95 14535
Int. Cl.[6] A63G *1/48*
U.S. Cl. 472—43 18 Claims

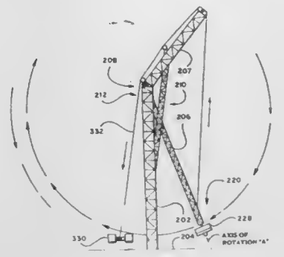


1. In a carousel for carnivals and amusement parks comprising a loading and unloading station (**10**) for passengers in vehicles (**2**) moving about the path of a railway (**1**), said vehicles (**2**) being constituted by a rolling platform (**3**) and a nacelle (**4**) accommodating the passengers, the nacelle (**4**) being constituted by a passenger compartment independent of the rolling platform (**3**) and mounted pivotally on said rolling platform (**3**); the improvement wherein each said vehicles (**2**) comprises means adapted to limit the pivoting of the nacelle (**4**) and to return the nacelle toward a stable forward position with the passengers facing in the direction of movement of the vehicle (**2**).

5,827,124
ROCKING BOOM AMUSEMENT RIDE

Mark A. Kleimeyer, Panama City Beach, Fla., and Stat Cochron, Wisconsin Dells, Wis., assignors to SkyMax, Inc., Celebration, Fla.

Division of Ser. No. 556,612, Nov. 13, 1995, Pat. No. 5,658,201. This application May 8, 1997, Ser. No. 853,330
Int. Cl.[6] A63G *1/08*
U.S. Cl. 472—45 22 Claims



1. An amusement ride comprising:

a tower extending above a support surface;

an elongated boom pivotably attached to the top end of said tower, said boom having an extended end and a shorter end;

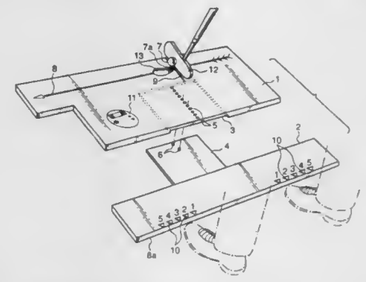
a passenger carriage attached to said extended end of said boom; and

a movable counterweight attached to said shorter end of said boom, said movable counterweight comprising first and second storage tanks, a counterweight fluid, and means for moving said counterweight fluid from said first storage tank to said second storage tank.

5,827,125
GOLF PUTTING PRACTICE DEVICE

Do W. Lee, 1808 Daeyeon-Dong, Daeyeonsamikbeach Apt. 105-1103, Nam-Ku, Pusan, Rep. of Korea

Filed May 7, 1997, Ser. No. 852,863
Claims priority, application Rep. of Korea, Dec. 31, 1996, 1996-68699
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—139 10 Claims



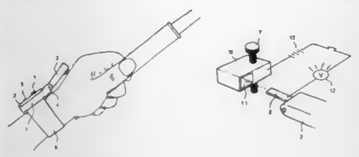
1. A golf putting practice device comprising:

a stroke panel and a stance panel, said stance panel adjustably connected to said stroke panel so that said panels are spaced apart in a predetermined relationship.

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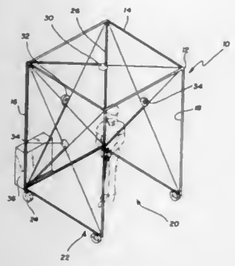
a ball-bell resiliently mounted on the stroke panel and an aperture provided in said stroke panel, in front of said ball-bell, whereby when the ball-bell is struck by a putting stroke the ball-bell makes a bell-like sound as it is pushed into the aperture, thereby not interfering with the follow-through of the putting stroke.

5,827,126
GOLF PUTTING PRACTICE DEVICE
Do W. Lee, 1808 Daeyeon-Dong, Daeyeonsamikbeach Apt. 105-1103, Nam-Ku, Pusan, Rep. of Korea
Filed May 7, 1997, Ser. No. 852,598
Claims priority, application Rep. of Korea, Dec. 31, 1996, 1996-82500
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—213 **7 Claims**



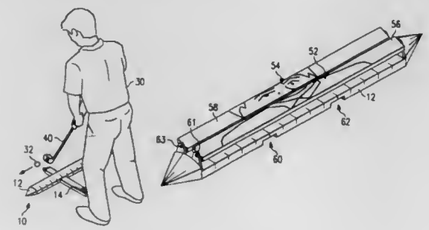
1. A golf putting practice device which is adapted to be worn on the wrist of the user, which comprises:
a housing containing an alarm system including a sensor;
an operating lever pivotally connected to said housing and biased in a predetermined neutral position;
a switch lever fixed at one end to said operating lever in said neutral position and extending into said housing in close proximity to said sensor, whereby when the operating lever and associated switch lever are moved from the neutral position, as a result of a bending of the wrist, the switch lever engages the sensor which activates the alarm system which signals the bending defect in the putting stroke.

5,827,127
GOLF SWING RECORDING SYSTEM
Malcolm Firth, 16 Gate House Rd., Fort Lauderdale, Fla. 33308
Filed Oct. 30, 1997, Ser. No. 960,980
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—266 **4 Claims**



1. A new golf swing recording system for allowing a golfer to visualize their swing from various angles comprising, in combination:
a frame member having a generally rectangular configuration, the frame member including a top wall, a rear wall, opposed side walls, an open front and an open bottom, the open bottom having wheels disposed on four corners thereof, the top wall, the rear wall and the opposed side walls each having diagonal interconnected cross members, the frame member being dimensioned for receiving a club swinging golfer therein;
four video cameras secured to the diagonal interconnected cross members of the frame member, the four video cameras including a top camera secured to the top wall, a rear camera secured to the rear wall and two opposed side cameras secured to the opposed side walls; and
a video recorder secured to the rear wall of the frame member, the video recorder being in communication with the four video cameras, the video recorder having four tape recording portions corresponding with the four video cameras for recording on tapes positioned therein.

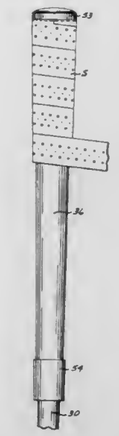
5,827,128
GOLF STROKE ALIGNMENT TOOL
Neil Finch, La Quinta, and Bob DuPaix, Roseville, both of Calif., assignors to Neil Finch, Inc., La Quinta, Calif.
Filed Sep. 19, 1997, Ser. No. 934,403
Int. Cl.[6] A63B *69/36*
U.S. Cl. 473—267 **21 Claims**



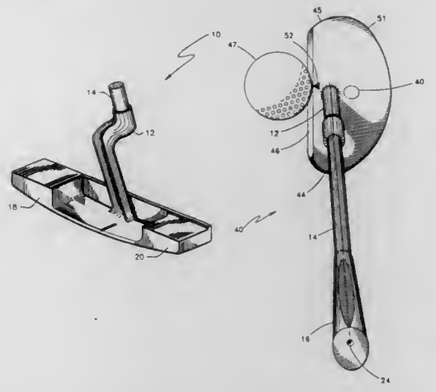
1. A golf-swing improvement device comprising:
a first member;
a second member parallely alignable with a target line that a desired golf ball path should follow;
a tensioning member for selectively engaging and securing the first and second members to each other and at a right-angle configuration with each other; and
two mirrors pivotally connected to the second member so that the two mirrors can rotate each on an axis parallel with the other and parallel with the target line, thereby allowing a golfer to simultaneously view two different body portions.

5,827,129
GRIP FOR GOLF CLUB SHAFTS
Ben Huang, 16652 Gemini La., Huntington Beach, Calif. 92647
Division of Ser. No. 632,578, Apr. 15, 1996, Pat. No. 5,671,923, which is a continuation-in-part of Ser. No. 595,445, Feb. 26, 1996, abandoned, which is a continuation-in-part of Ser. No. 507,575, Jul. 26, 1995, abandoned, which is a continuation-in-part of Ser. No. 58,313, May 3, 1993, Pat. No. 5,695,418, which is a continuation-in-part of Ser. No. 953,190, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 890,383, May 26, 1992, abandoned, which is a continuation-in-part of Ser. No. 637,931, Jan. 14, 1991, abandoned. This application May 14, 1997, Ser. No. 857,210
Int. Cl.[6] A63B *53/14*
U.S. Cl. 473—301 **4 Claims**

1. A slip-on golf club grip, comprising:
a strip consisting of an open-pored felt layer having an inner surface and an outer surface, and a closed pore polyurethane layer having its inner surface bonded to the outer surface of the felt layer, with the pores of such polyurethane layer extending generally normal to the longitudinal axis of the strip, and with the felt layer providing strength for the polyurethane layer while the polyurethane layer both absorbs shocks and provides tackiness so as to inhibit slippage of a user's hand relative to the shaft;
a resilient sleeve, with the upper end of the sleeve being formed with a cap and the lower end of the sleeve being formed with a reinforcing cylinder; and
the strip being spirally wrapped about the sleeve between the bottom of the cap and the top of the reinforcing cylinder.

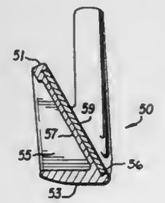


5,827,130
TAIL HEAVY GOLF PUTTER
Rafael F. Jimenez, 312 Spring St., Richland, Wash. 99352, and Gregory L. Jimenez, 7706 Swanson Dr., NW., Gig Harbor, Wash. 98335
Continuation-in-part of Ser. No. 447,051, Dec. 7, 1989, abandoned. This application Nov. 2, 1995, Ser. No. 556,804
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—313 **3 Claims**



1. A golf putter comprising:
A. an elongate shaft (**14**) including a longitudinal center line defining a shaft axis (**24**), a putter head rigidly connected to one end of the shaft (**14**) by means of a hosel (**12**), hand grip means (**16**) at the other end of the shaft (**14**); a putter head toe section and a tail section longitudinally spaced from said shaft axis (**24**); said putter head having at least one semi-vertical flat face; said shaft (**14**) being upwardly inclined toward the tail section to define an instantaneous swing axis (**9**) perpendicular to the longitudinal shaft axis (**24**) thereby spacing the swing axis a greater distance from the toe section than the distance between the swing axis and the tail section for moving the toe section at a velocity greater than the tail section during translational and rotational motion of the putter as it strikes a golf ball;
B. the golf putter head includes a bottom surface defining a sole extending smoothly between the toe end of the putter head and the tail end of the putter head, said sole being curved longitudinally and transversely; the shaft (**14**) connected to the golf putter head wherein the static force moment of the tail section is 0.1% to 15% greater than the static force moment of the toe section relative to the shaft axis (**24**), said shaft axis (**24**) being located substantially equally spaced from said toe section and tail section.

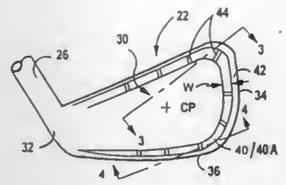
5,827,131
LAMINATED LIGHTWEIGHT INSERTS FOR GOLF CLUB HEADS
Steven J. Mahaffey, Hampden, Mass., and Daniel A. Melanson, Avon, Conn., assignors to Lisco, Inc., Tampa, Fla.
Filed Apr. 24, 1996, Ser. No. 637,029
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—342 **12 Claims**



1. A golf club head, comprising
(a) a striking face area containing a recess;
(b) an insert secured within said recess, an outer surface of said insert being substantially flush with a non-recessed portion of said striking face area; and
(c) said insert comprising a laminate including a pair of outer layers and at least one inner layer, said outer surface being arranged on one of said insert outer layers, said outer layers being formed of a different material having higher strength to weight characteristics than said at least one inner layer.

5,827,132
PERIMETER WEIGHTED GOLF CLUBS
Jeffrey Vincent Bamber, Cincinnati, Ohio, assignor to Pelican Golf, Inc., Cincinnati, Ohio
Continuation of Ser. No. 637,860, Apr. 25, 1996, Pat. No. 5,669,830, which is a continuation of Ser. No. 394,695, Feb. 24, 1995, Pat. No. 5,540,437, which is a continuation-in-part of Ser. No. 213,622, Mar. 15, 1994, Pat. No. 5,419,560. This application Mar. 8, 1997, Ser. No. 814,939
Int. Cl.[6] A63B *53/04*
U.S. Cl. 473—350 **17 Claims**

1. A golf club head comprising:



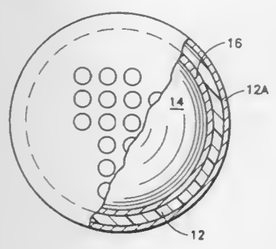
a body having a heel end, a toe end, a center of gravity, a front face arranged for impact with a golf ball, a center of percussion, a back face disposed rearwardly of said front face, and a perimeter weighting element protruding rearwardly away from said front face defining a cavity in said back face, said cavity having a bottom surface;

said perimeter weighting element including a top rail and a sole, said top rail extending between said body heel and toe ends along an upper portion of said body, and said sole extending between said body heel and toe ends along a lower portion of said body;

said back face having a region of reduced thickness outboard of said center of percussion, and

a plurality of ribs comprising five or more ribs disposed in said region of reduced thickness, each of said ribs having an outer end that extends toward said perimeter weighting element, wherein the outer ends of at least some of said ribs merge with said perimeter weighting element.

5,827,133
REDUCED SPIN GOLF BALL
Dale U. Chang, 2900 Sun Bittern Ct., Windermere, Fla. 34786
Filed Apr. 25, 1997, Ser. No. 845,444
Int. Cl.[6] A63B *37/12;37/14*
U.S. Cl. 473—370 **10 Claims**



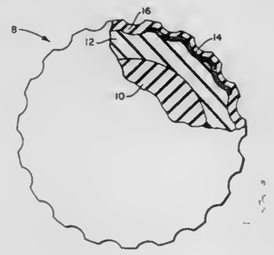
1. A golf ball comprising:

an inner core;

an outer cover tightly encompassing said core and having a plurality of uniformly distributed dimples on an outer surface thereof; and

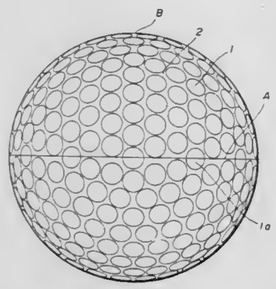
a lubricant film between said core and cover to allow said cover to slip with respect to said core.

5,827,134
UV-TREATED GOLF BALL
Michael J. Sullivan, Chicopee; Thomas Kennedy, Wilbraham, both of Mass., and Viktor Keller, Colchester, Conn., assignors to Lisco, Inc., Tampa, Fla.
Continuation-in-part of Ser. No. 502,914, Jul. 17, 1995, Pat. No. 5,580,323, which is a division of Ser. No. 195,561, Feb. 14, 1994, Pat. No. 5,456,954, which is a continuation of Ser. No. 933,533, Aug. 24, 1992, abandoned, and a continuation-in-part of Ser. No. 529,361, Sep. 18, 1995. This application Nov. 27, 1996, Ser. No. 753,704
Int. Cl.[6] B05D *3/06;* **A63B** *37/14;37/12*
U.S. Cl. 473—372 **20 Claims**



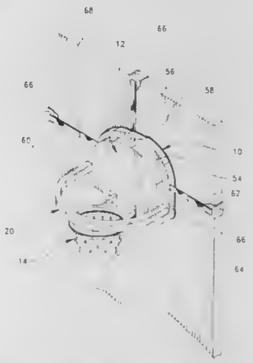
18. A game ball having a UV-light-exposure-modified outer surface, an indicia formed on the outer surface comprising a UV curable ink, and a top coat firmly adhered directly to the UV-light-exposure-modified outer surface.

5,827,135
GOLF BALL
Hirotaka Shimosaka; Keisuke Ihara; Michio Inoue, and Atuki Kasasima, all of Chichibu, Japan, assignors to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed Jun. 21, 1996, Ser. No. 667,470
Claims priority, application Japan, Jun. 23, 1995, 7-180977
Int. Cl.[6] A63B *37/14*
U.S. Cl. 473—379 **10 Claims**



1. A golf ball having a multiplicity of dimples of the same size arranged thereon and an equator, wherein 6 to 12 dimples are arranged along the equator and centered at the equator, and the remaining dimples are arranged such that a great circle does not intersect the dimples at all does not exist and a space where a dimple of the same size as said dimples can be formed is not left between the dimples.

5,827,136
BASKETBALL BACKBOARD AND HOOP ASSEMBLY INCLUDING AN ENLARGED SECONDARY TRAINING RIM
Jeffrey T. Halter, and Michael A. Moore, both of Cincinnati, Ohio, assignors to Hasbro, Inc., Pawtucket, R.I.
Filed Oct. 1, 1997, Ser. No. 941,956
Int. Cl.[6] A63B *63/08;69/00*
U.S. Cl. 473—447 **20 Claims**



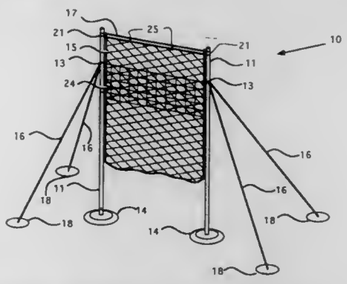
1. A basketball backboard and hoop assembly comprising:

a backboard;

a hoop including a primary rim which is attached to the backboard; and

an enlarged secondary rim pivotably attached to the backboard for movement between an operative position wherein the secondary rim is located above the hoop in substantially parallel relation to the primary rim, and a storage position generally parallel to the backboard, said secondary rim being operative for funneling balls downwardly into the primary rim.

5,827,137
PORTABLE VOLLEYBALL PRACTICE APPARATUS
Edmund S. Ishino, 6676 W. Leawood Dr., Littleton, Colo. 80123
Filed May 6, 1997, Ser. No. 852,140
Int. Cl.[6] A63B *69/00*
U.S. Cl. 473—459 **13 Claims**



1. A portable volleyball practice apparatus comprising:

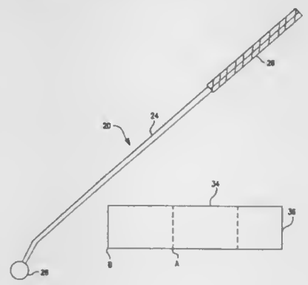
a) two vertical support members placed apart and extending above the height of a volleyball playing net,

b) a means for supporting said vertical support members on a flat surface,

c) a surface means for impeding a propelled volleyball with opposing ends attached near the top of each vertical support member and,

d) a strap means for maintaining said vertical support members upright, connected to the upper section of each said vertical supporting member and opposing end anchored at an angle to said flat surface.

5,827,138
BALL GAME AND BAT FOR USE THEREWITH
Ramsay M. Barrett, 97 Coburn Ave., Worcester, Mass. 01604
Filed Oct. 25, 1996, Ser. No. 738,010
Int. Cl.[6] A63B *71/00*
U.S. Cl. 473—470 **8 Claims**



1. A game apparatus, said game apparatus comprising:

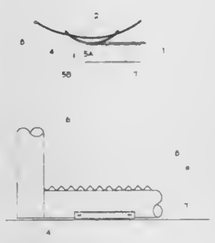
a bat, said bat having a shaft, a handle at one end thereof and a drive head at the opposite end of said shaft, said shaft includes a bend near said head and wherein said head includes two flat surfaces on opposite sides of said head;

a game ball;

a first set of balls;

a second set of balls, such that the first and second sets of balls each have the same number of balls in the respective sets, and wherein the first set of balls are of a different color than the second set of balls, said game is played on a court having demarcations locating a minimum and maximum distance that said game ball must initially be hit.

5,827,139
ROLLER HOCKEY NET FASTENING DEVICE
Paul Joseph DeCanio, Brentwood, and Gary Eddie DeCanio, Centereach, both of N.Y., assignors to Paul J. DeCanio, Brentwood, N.Y.
Filed Feb. 4, 1997, Ser. No. 795,021
Int. Cl.[6] A63B *63/00*
U.S. Cl. 473—478 **2 Claims**



1. A device for removably fastening a roller hockey net to a desired location which comprises:

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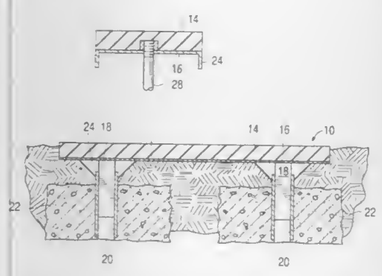
A. A body structure including part of the first end surface of a first concave shoe member which is perpendicular to the length of the body structure and is adjacent to a second concave shoe member which is perpendicular to the length of the body structure, which there between the concave shoe members is the plate member which on the bottom surface has male VELCRO permanently attached to there on,

B. said concave shoe members comprise a U like shaped element having a diameter which is larger then that of the hockey net and having holes located at the top of the concave shoe members which allows the quick ties to protrude through to allow the device to be fastened to the hockey net,

C. said plate member comprises a rectangular shaped element having the said concave shoe member part of the first end surface and the said concave shoe member on the second end surface, which on the opposite side of the plate member is the said male VELCRO permanently attached there on which allows the device to be removably fastened to the female VELCRO which is permanently attached to the roller surface,

D. whereby the device is attached to the hockey net by engagement of the said concave shoe members with the hockey net bottom surface which the said quick ties are tightened with a securing force, the said plate member bottom surface which has the said male VELCRO permanently attached is installed to the desired location by engagement of the said male VELCRO and female VELCRO which is permanently attached to the roller surface to a desired location.

5,827,140
REMOVABLE PITCHING RUBBER
Ronald W. Bartoli, Penn Valley, Calif., assignor to Schutt Manufacturing Co., Inc., Litchfield, Ill.
Filed Apr. 25, 1997, Ser. No. 847,502
Int. Cl.[6] A63B *71/00*
U.S. Cl. 473—497 **2 Claims**



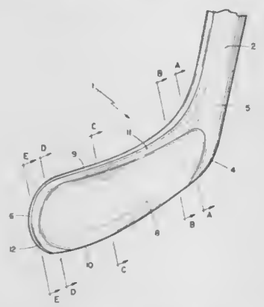
1. A removable pitching rubber adapted to be firmly but removably mounted in the ground, comprising:

a pitching pad secured to a rigid metal plate, the pad and the plate being of similar length and width,

at least two longitudinally spaced metal stanchions extending downwardly from the plate and adapted to be removably received in prearranged ground anchors embedded in the ground to provide a stationary, removable mount for the pitching rubber, and wherein

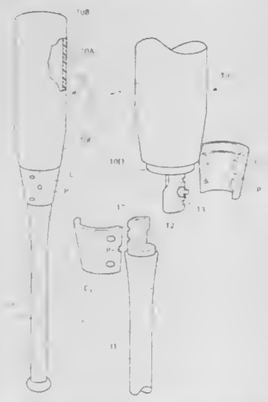
the metal plate is formed with a downwardly turned lip at each longitudinal edge, the lips when the rubber is installed penetrating the ground and stabilizing the rubber at the edges thereof.

5,827,141
STICK BLADE
Roderick Lukey, 5 Ramey St., St. Catharines, Ontario, Canada, L2N 2K2, and Tony Napolitano, 87 Lakeport Road, St. Catharines, Ontario, Canada, L2N 4P9
Filed Dec. 19, 1996, Ser. No. 769,876
Int. Cl.[6] A63B *59/12*
U.S. Cl. 473—563 **8 Claims**



1. A blade for a hockey stick, said blade having front and rear surfaces and top, first side, second side and bottom edges, wherein the first side edge of said blade is adapted for connection of a shaft to the blade adjacent the juncture of the first side edge and said top edge, the front surface of said blade is a generally smooth concave surface and said rear surface is generally convex, said front and rear surfaces tapering towards said second side edge, a perimeter ridge provided only on the back surface of said blade, said perimeter ridge extending up said second side edge, along said top edge and down said first side edge but not along the bottom edge of the blade.

5,827,142
AIR-PRESSURIZED BASEBALL BAT
Mark Rappaport, 4999 Smith Canyon Ct., San Diego, Calif. 92130
Filed Feb. 6, 1995, Ser. No. 383,996
Int. Cl.[6] A63B *59/06*
U.S. Cl. 473—567 **4 Claims**



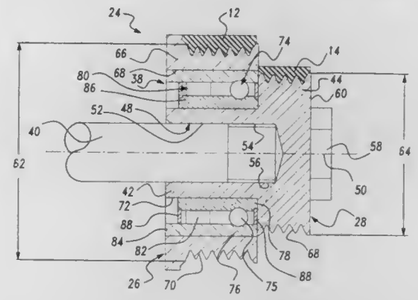
1. A light-weight, air-pressurized baseball bat useable by children to strike an oncoming ball so that it is driven a relatively great distance; said bat comprising:

A. a striker section defined by a shell of thin, flexible synthetic plastic film material to create an enclosed envelope impermeable to air having a shape and size similar to that of a striker section of a conventional baseball bat, said shell being provided with a one-way valve through which air is injected to produce in the envelope a compressed air charge well above atmospheric pressure whereby the charge of compressed air acts as a pneumatic spring and said shell acts as a taut spring-loaded trampoline sheet thereby causing a ball impinging thereon to rebound and be driven a relatively great distance;

B. a handle section; and

C. a coupler joining the handle section to the striker section to complete the bat, said valve being formed by a rubber plug which is penetrable by a hypodermic needle to inject compressed air in said envelope, said shell being provided at a lower end with a half neck in which the valve is installed.

5,827,143
TWO BELT OVER-RUNNING CLUTCH PULLEY
Russell E. Monahan, Ann Arbor; Jonathan M. Adler, Ypsilanti; Randall King, Ann Arbor, and Scott A. Wojan, Novi, all of Mich., assignors to NTN Corporation, Osaka, Japan
Filed Jun. 4, 1997, Ser. No. 869,199
Int. Cl.[6] F16H *7/02;9/00*
U.S. Cl. 474—73 **26 Claims**



1. A variable speed drive device for mounting to a rotatable shaft and being driven by first and second belts, said device comprising:

a first pulley of a first diameter, said first pulley including first belt engaging means for engaging the first belt, said first pulley also including shaft mounting means for mounting said first pulley to the shaft, said shaft mounting means laterally extending off of said first belt engaging means;

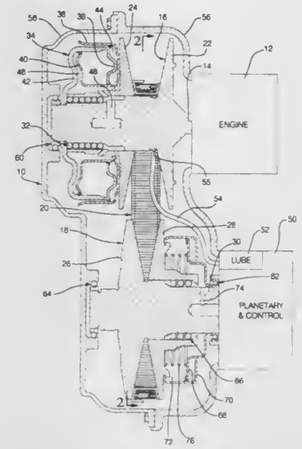
a second pulley of a second diameter, said second pulley including second belt engaging means for engaging the second belt, said second pulley located radially outward of said shaft mounting means;

a bearing positioned between said second pulley and said shaft mounting means, said bearing rotatably mounting said second pulley to said first pulley;

a clutch mechanism positioned between said second pulley and said shaft mounting means, said clutch mechanism engaging when said second pulley is rotating at a rate greater than said first pulley, said clutch mechanism thereby permitting one-way rotation of said second pulley relative to said first pulley; and

whereby said first pulley drives the shaft at a first speed when the first pulley is rotating faster than the second pulley and the second pulley driving said shaft at a second speed when the second pulley is attempting to rotate faster than the first pulley.

5,827,144
POWER TRANSMISSION WITH FLEXIBLE DRIVE MEMBER
Paul Dwight Stevenson, Ann Arbor, Mich., assignor to General Motors Corporation, Detroit, Mich.
Filed Feb. 18, 1997, Ser. No. 801,428
Int. Cl.[6] F16G *5/00*
U.S. Cl. 474—201 **3 Claims**



1. A flexible drive mechanism comprising:

first and second sheave assemblies rotatably mounted on spaced shafts in a housing, each sheave having spaced frictional drive surfaces;

means for supplying lubrication liquid to at least one of said drive surfaces;

a plurality of block members selectively frictionally engaging said frictional drive surfaces;

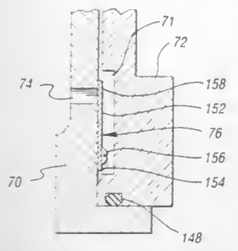
a chain assembly having pivotally connected rigid links supporting said block members, encircling a portion of said first and second sheave assemblies for transmitting power therebetween, said chain assembly having a tension side and a non-tension side and maintaining said block members in frictional engagement with said friction drive surfaces of said sheave assemblies during power transmission to provide a compression loading of said block members extending along said chain on the non-tension side in a column to transmit power between said sheave assemblies;

said rigid pivotally connected links of said chain assembly frictionally engaging an inner portion of said block members when said block members are engaged with said sheave assemblies and said rigid links being subjected to a tension force on the tension side of said chain assembly between said sheave assemblies to transmit power therebetween; and

said block members and said chain cooperating to transmit power between said sheave assemblies simultaneously through said compression loading and said tension force.

5,827,145
HYDRAULIC COUPLING HAVING SUPPLEMENTAL ACTUATION
Murat N. Okcuoglu, Santa Barbara, Calif., assignor to ASHA Corporation, Santa Barbara, Calif.
Filed Mar. 17, 1997, Ser. No. 819,848
Int. Cl.[6] F16H *48/26*
U.S. Cl. 475—88 **12 Claims**

1. A hydraulic coupling for use with a vehicle drivetrain within a housing thereof containing hydraulic fluid to rotatively couple a pair of rotary members about a rotational axis, the hydraulic coupling comprising: a casing of a hollow construction that is



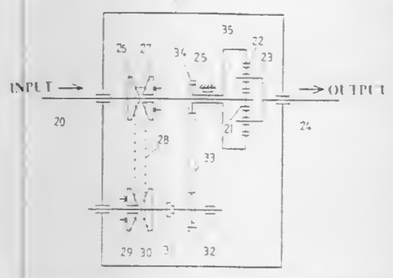
rotatable within the housing about the rotational axis; a hydraulic pump located within the casing along the rotational axis and including a toothed impeller rotatively connected to one of the rotary members and having external teeth; the hydraulic pump also including an internal ring gear mounted by the casing for rotation eccentrically with respect to the toothed impeller and including internal teeth of a number one more than the impeller teeth and in a meshing relationship therewith to provide a pumping action upon relative rotation between the casing and the toothed impeller as the pair of rotary members rotate relative to each other; an inlet port through which hydraulic fluid is pumped from the housing into the casing by the hydraulic pump; a clutch including a piston chamber located within the casing and having an actuating piston that is received within the piston chamber and actuatable by pressurized hydraulic fluid to engage the clutch and couple the two rotary members to each other; the casing including a transfer port through which the pressurized hydraulic fluid is pumped from the hydraulic pump to the piston chamber; the casing also including an outlet port through which pressurized hydraulic fluid flows from the piston chamber; a control valve including a valve element movable between an open position spaced from the outlet port and a closed position that generally closes the outlet port when the pumped fluid reaches a predetermined pressure to thereby further increase the pressure of the pressurized hydraulic fluid and actuate the piston and engage the clutch to thereby rotatively couple the pair of rotary members to each other; and a supplemental pressurized hydraulic fluid supply for feeding pressurized hydraulic fluid into the inlet port of the casing to the pump independent of pumping action of the pump.

5,827,146

DUAL TRANSMISSION FOR MOTORCYCLES

Hong-Sen Yan, Tainan, and Kuen-Bao Sheu, Chang Hua Hsien, both of Taiwan, assignors to Kwang Yang Motor Co., Ltd., Kaohsiung, Taiwan

Filed Jan. 18, 1996, Ser. No. 588,333
Int. Cl.[6] F16H *37/02*
U.S. Cl. 475—210 **11 Claims**



1. A dual transmission coupled between a power input shaft and power output shaft of a motorcycle for providing a fixed gear ratio transmission mode and a power split continuously variable transmission mode, said dual transmission comprising:

a shell having a first axle and a second axle on the inside;

a belt transmission mechanism capable of continuously changing speed ratio, said belt transmission mechanism comprising a first belt wheel set mounted on said first axle, a second belt wheel set mounted on said second axle, and a belt mounted on said first belt wheel set and said second belt wheel set;

a planetary gear mechanism mounted on one of said first axle and said second axle, said planetary gear mechanism comprising an internal gear, a sun gear, at least two planet gears meshed between said internal gear and said sun gear, and a planet gear arm connected between said planet gears and coupled to said power output shaft;

lock means disposed adjacent to said planetary gear mechanism and controlled to lock a gear of said planetary gear mechanism;

a gear set consisting of a first gear and a second gear respectively mounted on said first axle and said second axle and coupled by a chain, one of the gears of said gear set being connected with the internal gear of said planetary gear mechanism; and

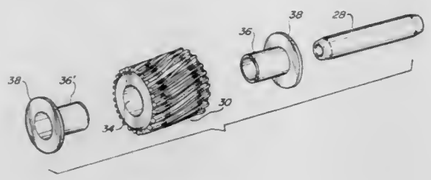
a first clutch means disposed between said second belt wheel set and said second gear and controlled to couple said second belt wheel set to said second gear so that when the motorcycle is initially started, output power is transmitted through the planetary gear mechanism to an output shaft and when in a high speed mode, output power is transmitted by the operation of the first clutch means and the lock means in two routes, respectively, through the planetary gear mechanism and the belt transmission mechanism.

5,827,147

PLANETARY GEAR HAVING A CERAMIC TUBULAR SLEEVE AS BEARING MEANS

Matthew M. Stewart, 9794 Country Oaks Dr., Ft. Myers, Fla. 33912

Filed May 14, 1997, Ser. No. 856,124
Int. Cl.[6] F16H *1/28;* **F16C** *32/06*
U.S. Cl. 475—331 **4 Claims**



1. A planetary gear assembly for a transmission comprising:

a carrier having two spaced apart plates,

a plurality of cylindrical axles extending between and secured to said plates, said axles being spaced apart and parallel to each other,

a gear having an inner cylindrical surface and coaxially disposed around each said axle,

mean for rotatably mounting each said gear to its associated axle,

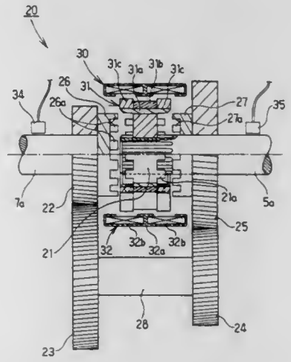
said rotatable mounting means comprising a tubular cylindrical sleeve disposed between at least one axle and said inner cylindrical surface of its associated gear, said sleeve being constructed of a ceramic material.

5,827,148

VARIABLE SPEED DRIVE UNIT FOR ELECTRIC VEHICLE AND VARIABLE SPEED DRIVING METHOD

Takeshi Seto; Akihito Uetake; Tatsuya Shimoda, all of Nagano; Masao Ono, Kanagawa; Masatoshi Fukuda, Kanagawa, and Satoshi Yamazaki, Kanagawa, all of Japan, assignors to Seiko Epson Corporation, and Tokyo R & D Co., Ltd., both of Tokyo, Japan

Filed Jan. 21, 1997, Ser. No. 785,319
Claims priority, application Japan, Jan. 23, 1996, 8-008977
Int. Cl.[6] H02P *17/00*
U.S. Cl. 477—15 **2 Claims**



1. A variable speed driving method for an electric vehicle provided with an electric motor for propelling, a motor drive circuit for controlling the drive power of the motor, and a control circuit section for outputting an operation command to the motor drive circuit, comprising the steps of:

providing a transmission apparatus which engages or disengages a drive shaft which receives the drive force from the propelling motor and a driven shaft which is interconnected with propelling wheels by an electromagnetic clutch, wherein said electromagnetic clutch comprised of a first clutch interconnected with the drive shaft, a second clutch having a rotational speed different from the first clutch, and an output side clutch interconnected with the driven shaft;

releasing an operation command to said motor drive circuit at a time of shifting gears to release clutch engagement,

reissuing an operation command to said motor drive circuit to increase the rotational speed of said first or second clutch slightly higher than the rotational speed of the output side clutch, and

engaging said first or second clutch with the output side clutch.

5,827,149

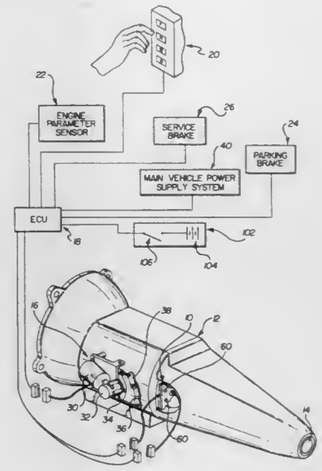
ELECTRICALLY OPERATED PARK LOCK FOR AUTOMATIC TRANSMISSION

Edward E. Sponable, Novi, Mich., assignor to Hi-Lex Corporation, Battle Creek, Mich.

Filed Jul. 30, 1996, Ser. No. 689,029
Int. Cl.[6] B60K *41/26;* **F16H** *57/10*
U.S. Cl. 477—92 **16 Claims**

1. A transmission lock actuator for use with an automotive vehicle automatic transmission of the type having a plurality of gear ranges, shift actuator means for shifting the transmission between gear ranges, an output shaft, and locking means movable between a first position wherein the locking means inhibits rotation of the output shaft and a second position wherein the locking means does not inhibit rotation of the output shaft, the transmission lock actuator characterized in that:

the transmission lock actuator is mechanically independent of the shift actuator means and comprises electric drive means



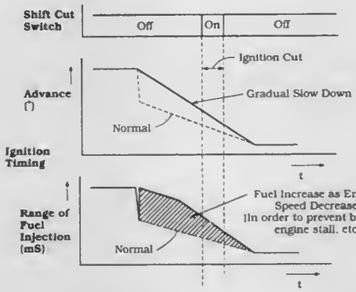
energizable to move the locking means between the first and second positions.

5,827,150

ENGINE CONTROL HAVING SHIFT ASSIST WITH FUEL INJECTED DURING IGNITION CUTOFF WHILE SHIFTING

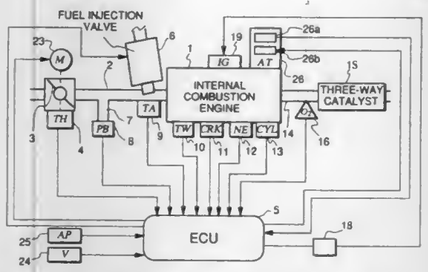
Kyoji Mukumoto, Hamamatsu, Japan, assignor to Yamaha Hatsudoki Kabushiki Kaisha, Iwata, Japan

Filed Jul. 22, 1996, Ser. No. 681,164
Claims priority, application Japan, Jul. 27, 1995, 7-191347
Int. Cl.[6] F02N *9/00;* **F16H** *59/68*
U.S. Cl. 477—101 **22 Claims**



1. A marine propulsion system including a multi-cylinder spark-ignited internal combustion engine, a propulsion device for propelling an associated watercraft, a change-speed transmission for interconnecting said engine to said propulsion device for driving said propulsion device at varying ratios, shift control means for effecting shifting of said change-speed transmission, a plurality of fuel injectors for supplying fuel to the cylinders of said engine, a control system for controlling the timing and duration of fuel injection by said fuel injectors and the timing of firing of spark plugs of said engine, means for sensing the force applied to said shift control means, and means for interrupting the ignition of at least some of said spark plugs for disabling the firing of the cylinders associated with the interrupted spark plugs when more than a predetermined force is exerted to shift control means and for continuing the injection of fuel to the disabled cylinders by said fuel injectors when the ignition of the spark plugs is interrupted.

5,827,151
CONTROL SYSTEM FOR INTERNAL COMBUSTION ENGINES FOR VEHICLES
Kazutomo Sawamura; Akira Kato; Yoshiharu Saito, and Kenichiro Ishii, all of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 24, 1997, Ser. No. 845,397
Claims priority, application Japan, Apr. 26, 1996, 8-131406
Int. Cl.[6] F02D *41/04*
U.S. Cl. 477—109 **9 Claims**



1. A control system for an internal combustion engine for a vehicle having an accelerator pedal, said engine having an automatic transmission, the control system being operable during gear shifting of said automatic transmission, for changing output torque of said engine to reduce a shock generated during said gear shifting, comprising:

engine output torque-increasing means operable during gear shifting of said automatic transmission upon stepping-on of said accelerator pedal in which a change gear ratio of said automatic transmission is to be increased, for increasing said output torque of said engine by a first predetermined amount based on an operating condition of said vehicle when an increase occurs in rotational speed of said engine due to said gear shifting;

engine output torque-decreasing means operable after said output torque of said engine is increased by said first predetermined amount, for decreasing said output torque of said engine by a second predetermined amount based on said operating condition of said vehicle; and

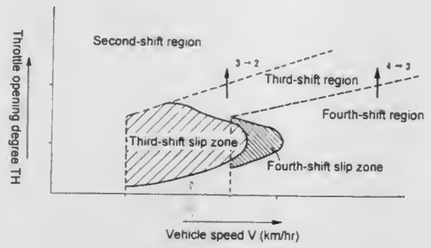
engine output torque-recovering means operable after said output torque of said engine is decreased by said second predetermined amount, for progressively recovering said output torque of said engine to a value assumed upon completion of said gear shifting.

5,827,152
CONTROL SYSTEM FOR AUTOMTIC TRANSMISSION FOR VEHICLE
Yoichi Sato, and Tatsuya Yamakita, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 515,639, Aug. 16, 1995, abandoned. This application Nov. 14, 1997, Ser. No. 970,538
Claims priority, application Japan, Aug. 23, 1994, 6-198136
Int. Cl.[6] F16H *61/12*
U.S. Cl. 477—132 **2 Claims**

1. A control system for an automatic transmission for a vehicle, for performing shifting by selectively bringing any of a plurality of hydraulically engaged elements into an engaged state, based upon an operational state of the vehicle, said control system comprising:

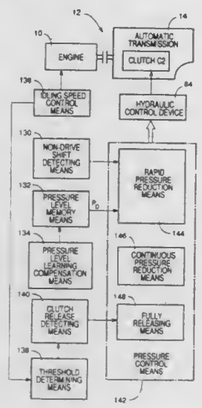
a slip detecting means for detecting slipping of a selected hydraulically engaged element during a non-shifting state of the automatic transmission;

a determining means for determining one of said hydraulically engaged elements which has a driving force transmitting capacity larger than the driving force transmitting capacity of said selected hydraulically engaged element, for establishing a shift stage which is always lower than the shift stage established by said selected hydraulically engaged element in which slipping is detected; and



a switching means for switching said selected hydraulically engaged element to the hydraulically engaged element determined by said determining means, to bring the determined hydraulically engaged element into its engaged state, when slipping is detected in said selected hydraulically engaged element by said slip detecting means.

5,827,153
APPARATUS FOR REDUCING PRESSURE OF FRICTIONAL COUPLING DEVICE OF VEHICLE AUTOMATIC TRANSMISSION UPON SHIFTING TO NON-DRIVE POSITION
Hideki Yasue, Toyota, and Hiromichi Kimura, Okazaki, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan
Filed Jun. 27, 1997, Ser. No. 883,899
Claims priority, application Japan, Jul. 3, 1996, 8-173456
Int. Cl.[6] F16H *61/06;61/08*
U.S. Cl. 477—155 **7 Claims**



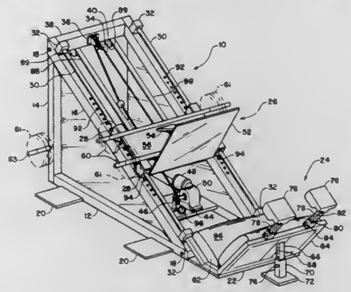
1. An apparatus for controlling an automatic transmission of a motor vehicle which is shifted to a non-drive position with a releasing action of a hydraulically operated frictional coupling clutch upon operation of a manually operated member from a drive position to a non-drive position, said apparatus comprising:

non-drive shift detecting means for detecting a non-drive shifting operation of said manually operated member from said drive position to said non-drive position;

rapid pressure reduction means, operated upon detection of said non-drive shifting operation by said non-drive shift detecting means, for rapidly reducing a pressure of said hydraulically operated frictional coupling device to a predetermined pressure level; and

continuous pressure reduction means for continuously reducing the pressure of said frictional coupling device from said predetermined pressure level at a predetermined reduction rate.

5,827,154
CONCENTRIC/ECCENTRIC EXERCISE APPARATUS
Jonathan C. Gill, 3505 Camino Del Rio South, No. 220, San Diego, Calif. 92108
Filed Jul. 8, 1996, Ser. No. 676,473
Int. Cl.[6] A63B *23/04*
U.S. Cl. 482—9 **19 Claims**



1. Concentric/eccentric fitness and rehabilitation apparatus which comprises:

a base;

a structure secured to said base at a lower end and having an elevated upper end;

a seat at said lower end for supporting a user;

a weighted carriage for movement along said structure and engagable by a user;

carriage movement means comprising an idler pulley secured at said upper end, a powered spool mounted in said apparatus and a cable secured to said carriage and extending over said idler pulley to said powered spool;

means for rotating said powered spool in either direction comprising a control lever movable between an upward carriage movement position, a carriage stopped position and a downward carriage movement position and spring means for moving said control lever to said carriage stopped position when released by a user;

control means including means for selectively rotating said powered spool to move said carriage upwardly or downwardly along said structure at a predetermined speed,

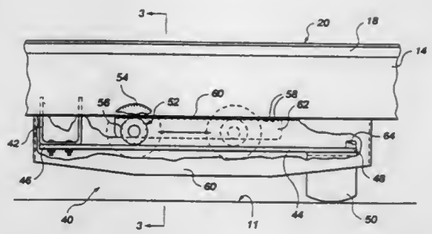
means for stopping downward movement of said carriage at a predetermined limit; and

safety means for stopping carriage downward movement in the event of downward speed beyond a predetermined rate.

5,827,155
RESILIENTLY MOUNTED TREADMILL
Jon F. Jensen, Providence, and William T. Dalebout, Logan, both of Utah, assignors to ICON Health & Fitness, Inc., Logan, Utah
Continuation of Ser. No. 13,748, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 884,609, May 15, 1992, Pat. No. 5,279,528, which is a continuation of Ser. No. 659,512, Feb. 21, 1991, abandoned. This application Sep. 9, 1994, Ser. No. 303,434
Int. Cl.[6] A63B *22/02*
U.S. Cl. 482—54 **22 Claims**

1. A stationary treadmill having a portion thereof resiliently supported above a surface upon which said treadmill rests during exercise by a user, said stationary treadmill comprising:

a longitudinally extending frame supporting an endless belt trained about a pair of rollers, said endless belt including an upper stretch;

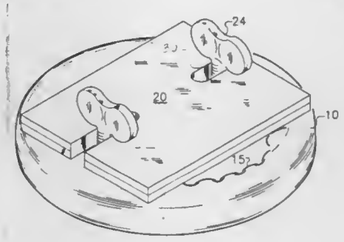


leaf spring means having one end thereof secured to a portion of said frame and a second unsecured end for flexibly, resiliently supporting a portion of said frame above said surface, said leaf spring means being flexible from a first undeflected position and a second deflected position spaced from said first undeflected position, said leaf spring means extending substantially horizontally with respect to the portion of said frame where said one end of said leaf spring means is secured, the use of said treadmill during said exercise by a user causing said leaf spring means to flex from said first undeflected position to said second deflected position;

a foot means secured to said second unsecured end of said leaf spring means extending substantially downwardly therefrom for supporting said leaf spring means above said surface; and

wherein said leaf spring means and said foot means secured to said second unsecured end of said leaf spring means resiliently support said portion of said treadmill on said surface during said exercise by a user.

5,827,156
UNIVERSAL EXERCISE SYSTEM
John Barrett, 3 Leo La., Naugatuck, Conn. 06770
Filed Jan. 23, 1996, Ser. No. 589,919
Int. Cl.[6] A63B *21/075*
U.S. Cl. 482—93 **10 Claims**



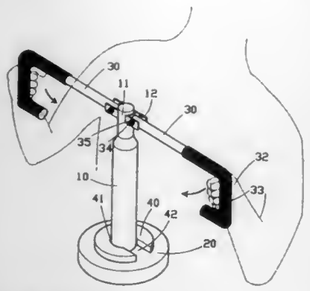
1. A universal exercise device comprising:

a) a handle member comprising an open frame defining a pair of hand grips on opposite sides thereof for gripping with both hands;

b) a pair of threaded fasteners operatively connected to the open frame on opposite sides thereof for connecting a weight bar transversely across the open frame between the hand grips; and

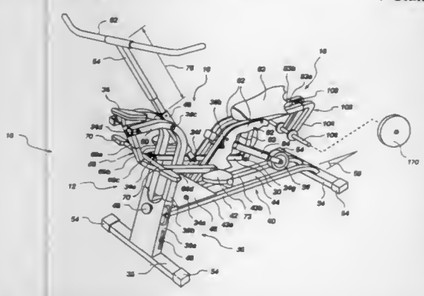
c) a weight bar having a pair of open-ended slots at opposite ends thereof for engaging a respective one of the threaded fasteners such that the weight bar may be connected and disconnected from the handle member without separating the threaded fasteners completely from the open frame.

5,827,157
ARM MUSCLE EXERCISER
Te-Yuan Lee, No. 35, Guo-ling, Chung-Li City, Tao-Yuan Hsien, Taiwan
Filed Sep. 30, 1997, Ser. No. 944,098
Int. Cl.[6] A63B *21/075*
U.S. Cl. 482—93 **3 Claims**



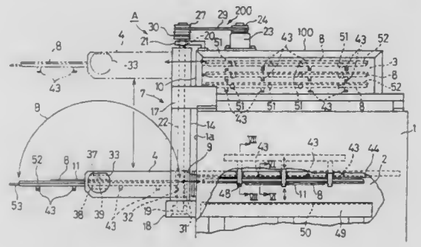
1. An arm muscle exerciser, comprising:
a main stand having a top end and a bottom end, said main stand including a smaller diameter section extending a predetermined length thereof at said top end of said main stand,
a base plate, said bottom end of said main stand being secured to said base plate,
at least one weigh disk removably positioned over said base plate;
a pair of spaced substantially parallel pivot axles respectively positioned symmetrically on opposing sides of said smaller diameter section of said main stand; and,
a pair of handles, each of said pair of said handles pivoting about a respective one of said pair of said pivot axles symmetrically.

5,827,158
GLIDER RESISTANCE APPARATUS
Jeremy Drecksel, 4646 S. Quail Park Dr., Holladay, Utah 84117
Filed Feb. 8, 1996, Ser. No. 598,459
Int. Cl.[6] A63B *69/06*
U.S. Cl. 482—96 **7 Claims**



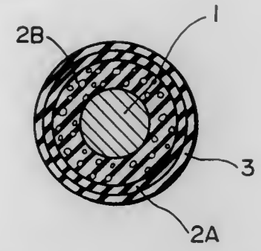
1. A glider adaptable to aerobic and anaerobic exercising by a user, the glider comprising:
a principal frame positionable on a surface, the frame comprising a runway between a front end and a back end;
a moveable assembly comprising:
a first beam, said beam having first and second ends and being pivotably connected proximate a first end thereof to the front end of the principal frame, to allow pivotal movement of the second end of the first beam upwardly in an arcuate path,
a seat attached to the second end of the first beam to move rigidly and arcuately with the first beam upon pivoting,
a first lever, having upper and lower ends, moveable with respect to the principal frame and resisted by a first resistance corresponding to the weight of a user, leveraged by the moveable assembly, the first lever being pivotably connected proximate the upper end thereof to the first beam, being adapted at the lower end to translate along the runway, and having a connector intermediate the upper and lower ends;
a second lever having proximal and distal ends, said lever having an actuator proximate the proximal end thereof for operation by a user, the second lever being pivotably connected proximate the distal end to the principal frame at a first pivot, and having a drag link pivotally connected between the second lever, at a location spaced from the first pivot, and the connector the first lever; and
a rack, the rack being adapted to selectively receive deadweights and being rigidly connected proximate the end of the first beam to pivot therewith about a single, common center of rotation, for resisting motion of the moveable assembly.

5,827,159
COMBINATION TOOL CHANGER AND STORAGE DEVICE FOR DIE CUTTER
Hiroshi Adachi, c/o Sanwa Machine Co., Ltd., 8-3, Kyomachibori 2-chome, Nishi-ku, Osaka-shi, Osaka 550, Japan
Filed May 13, 1997, Ser. No. 855,536
Claims priority, application Japan, May 15, 1996, 8-146714
Int. Cl.[6] B23Q *3/155*
U.S. Cl. 483—29 **9 Claims**



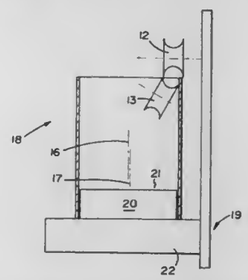
1. A combination tool exchanger and storage device adapted to be fitted to a die cutter for exchanging and storing a plurality of profiled cutter dies each usable to cut a sheet-like material by urging the sheet-like material against a selected one of the profiled cutter dies retained within a cutter die mounting chamber of the die cutter, said combination tool exchanger and storage device comprising:
a retaining arm means for holding one of the profiled cutter dies so as to confront a first entrance leading to the cutter die mounting chamber and for sliding the profiled cutter die horizontally towards the cutter die mounting chamber;
a cutter die storage chamber disposed above or below the die cutter; and
an elevating means for selectively driving the retaining arm means between a first position aligned with the first entrance leading to the cutter mounting chamber and a second position aligned with a second entrance leading to the cutter die storage chamber.

5,827,160
SEMICONDUCTIVE SILICONE RUBBER ROLLER THEREOF
Tsuneo Ohki; Shuji Oguchi, and Masahiro Ikeda, all of Saitama-ken, Japan, assignors to Shin-Etsu Polymer Co., Ltd., Tokyo, Japan
Filed Mar. 14, 1997, Ser. No. 818,017
Claims priority, application Japan, Mar. 19, 1996, 8-062334
Int. Cl.[6] B23P *15/00*
U.S. Cl. 492—56 **1 Claim**



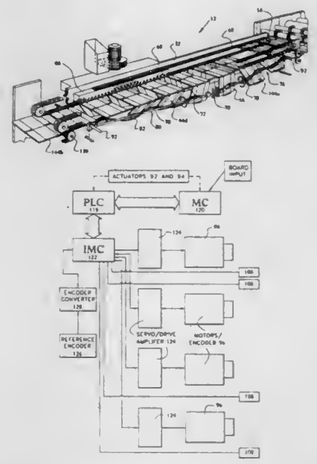
1. In a rubber roller consisting of a core mandrel of a rigid electroconductive material and a tubular layer of a cured silicone rubber on and around the core mandrel, of which the silicone rubber has a volume resistivity in the range from 1×10^4 to 1×10^9 ohm·cm, the improvement which comprises having the outer surface of the silicone rubber layer subjected to irradiation with ultraviolet light having principal wavelengths of 253.7 nm and 184.9 nm in an ultraviolet irradiation dose in the range from 1.2 to 76 J/cm^2 relative to the energy of the ultraviolet light of 253.7 nm wavelength to form an ultraviolet-hardened surface layer having such a surface roughness that the irregularity amplitude Rz is at least 8 μm and the average irregularity distance Sm is not exceeding 50 μm.

5,827,161
PROCESS FOR THE FABRICATION OF A KRAFT PAPER DRUM AND MEANS FOR IMPLEMENTING THIS PROCESS
Pascal Petit, Villeneuve d' Ascq, France, assignor to Georges Petit, S.A., Tourcoing, France
Filed Jul. 12, 1996, Ser. No. 678,589
Claims priority, application France, Jul. 12, 1995, 95 08687
Int. Cl.[6] B31B *1/90*
U.S. Cl. 493—102 **9 Claims**



1. A process for fabricating a drum made of kraft paper comprising forming a sheet of kraft paper into a cylindrical tube, having open opposite ends sealing a first end of the tube with a disk (**3A**) to form a bottom **3**) of the drum, forming a second end of the tube to receive a lid (**4**) thereon, wherein said step of sealing said first end of the tube includes rolling said first end through more than 360 degrees around a central axis to form a rolled edge at the bottom of the tube so as to strengthen structural integrity of the rolled edge and assist in preventing unrolling of the rolled edge, placing the disk (**3A**) which constitutes the bottom at a lower extent of said rolled edge, placing an adjustable retaining collar (**10**) over said rolled edge and said disk, and tightening said collar about said rolled edge and said disk so as to clamp the disk (**3A**) onto the tube.

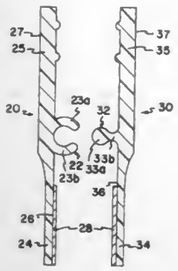
5,827,162
FOLDER/GLUER MACHINE FOR PAPERBOARD BLANKS
Ephraim Rubin, Philadelphia, Pa., and Raymond P. Lemore, Mt. Holly, N.J., assignors to The Langston Corporation
Filed Jan. 2, 1997, Ser. No. 778,323
Int. Cl.[6] B31B *1/26;1/36*
U.S. Cl. 493—178 **13 Claims**



11. A device for folding paperboard blanks comprising:
folding rails for supporting the blanks traveling through the device, the folding rails defining a path of travel for the blanks;
a conveyor for conveying the blanks through the device;
an operator side elongated helix folding assembly rotatably supported at each end;
a drive side elongated helix folding assembly rotatably supported at each end;
each helix folding assembly having a servo motor connected to it for rotating the helix folding assembly about a longitudinal axis, each servo motor comprising a resolver; and
an incremental motion controller which determines and stores the rotational position of the helix folding assemblies from data obtained from the servo motor resolvers.

5,827,163
METHOD MAKING A CLOSURE ARRANGEMENT FOR ATTACHMENT TO OUTSIDE OF A BAG
Catherine E. Kettner, Appleton, Wis., assignor to Reynolds Consumer Products, Inc., Appleton, Wis.
Division of Ser. No. 712,917, Sep. 12, 1996, Pat. No. 5,749,658.
This application Nov. 3, 1997, Ser. No. 963,382
Int. Cl.[6] B65D *33/16*
U.S. Cl. 493—211 **2 Claims**

1. A method of manufacturing a zipper closure arrangement for a polymeric bag having first and second opposing films defining an interior surface and an exterior surface, the method comprising:



extruding first and second base strips such that the base strips are laterally spaced from each other, each of the base strips having an inner surface, an outer surface, associated first and second closure profiles, and a flange portion, the flange portions having a first thickness less then a second thickness of the respective base strips above the flange portions, wherein each of the first and second closure profiles are positioned on the inner surfaces of each of the associated first and second base strips and above each of the flange portions and configured to interlock with one another above the bag films; and

coextruding a heat-setting sealant compound to the inner surface of each of the flange portions for permanently adhering the inner surfaces of each of the flange portions to exterior surfaces of the polymeric bag at a point below each of the closure profiles.

5,827,164

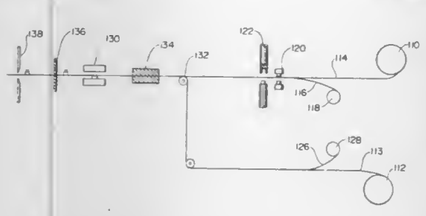
METHOD AND APPARATUS FOR MAKING BAG-IN-BOX BAG

Mladomir Tomic, Appleton, Wis., assignor to Reynolds Consumer Products, Inc., Appleton, Wis.

Division of Ser. No. 876,142, Jun. 13, 1997, Pat. No. 5,743,435, which is a continuation of Ser. No. 678,020, Jul. 10, 1996, abandoned. This application Oct. 28, 1997, Ser. No. 959,553

Int. Cl.[6] B65D *35/08;35/56*

U.S. Cl. 493—213 **11 Claims**



1. A method for making a collapsible bag having a first and a second plurality of ribs on oppositely disposed first and second inner bag panel sections such that when the collapsible bag collapses while dispensing liquid the first and second inner bag panel sections are prevented from sealing off liquid in an enclosed region of the collapsible bag, comprising the steps of:

providing a first film of a polymeric material;

providing a second film of a polymeric material having a first plurality of ribs thereon;

aligning the second film with the first film;

punching a hole into the first and second films for receiving a liquid dispensing spout in each subsequently formed collapsible bag;

providing a third film of a polymeric material;

providing a fourth film of a polymeric material having a second plurality of ribs thereon:

aligning the first, second, third and fourth films together;

sealing the first, second, third and fourth films together to form respective first and second bag side seals and respective top and bottom bag edge seals such that the second film defines the first inner bag panel section having the first plurality of ribs and the fourth film defines the second inner bag panel section having the second plurality of ribs; and

cutting along one of the seals to create a plurality of individual bags having said hole for receiving said dispensing spout and having said first plurality of ribs on said first inner bag panel section oppositely disposed from said second plurality of ribs on said second inner bag panel section such that when the collapsible bag collapses while dispensing liquid said first and second plurality of ribs do not interlock with one another and said first and second inner bag panel sections are prevented from sealing off liquid in an enclosed region of the collapsible bag.

5,827,165

DEVICE FOR PULLING OPEN CONTINUOUSLY CROSS-CONVEYED TUBE SECTIONS FOR THE PURPOSE OF FORMING BOTTOMS IN THE MANUFACTURE OF SACKS

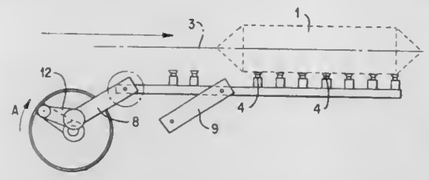
Fritz Achelpohl, Lienen; Rüdiger Duwendag, and Joachim Witzke, both of Lengerich, all of Germany, assignors to Windmöller & Hölscher, Lengerich/Westf., Germany

Filed Oct. 10, 1996, Ser. No. 727,965

Claims priority, application Germany, Oct. 27, 1995, 195 40 150.6

Int. Cl.[6] B31B *1/80*

U.S. Cl. 493—256 **6 Claims**



1. A device for pulling open continuously cross-conveyed tube sections for forming bottoms during manufacture of sacks comprising:

a pair of support tubes connected to vacuum sources by lines,

parallel and rotatable connecting rods, each of said support tubes coupling two of said parallel and rotatable connecting rods,

a row of radial suction units with which said support tubes are equipped,

a crank connected to a shaft of one of said parallel connecting rods, and

a roll supported by said crank and sliding in a rotatable radial guide, the guide being offset relative to a rotation axis of the one of said parallel connecting rods such that an essentially translational movement, corresponding to a conveyance speed, is superimposed on opening movement of the row of suction units,

wherein the radial guide is formed in a curved shape so as to extend a time of uniform motion of the suction units and the tube sections.

5,827,166

DEVICE FOR JOINING STRIPS OF A FLEXIBLE MATERIAL

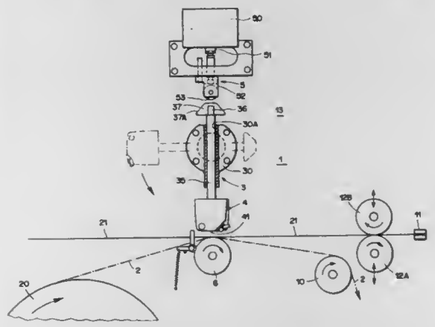
Jean Cestonaro, Marin, France, and Jean-Luc Mathon, St.-Blaise, Switzerland, assignors to Philip Morris Incorporated, New York, N.Y.

Filed Dec. 14, 1994, Ser. No. 355,937

Claims priority, application European Pat. Off., Dec. 16, 1993, 93810887; Dec. 16, 1993, 93810888

Int. Cl.[6] B65H *19/18;19/20*

U.S. Cl. 493—344 **13 Claims**



1. An apparatus for joining a portion of length of a first strip of a flexible material to a portion of length of a second strip of flexible material, the two strips traveling at an equivalent velocity in the same direction along approximately parallel paths and being in contact one on the other while on a peripheral surface sector of a join roller, the device comprising:

a rotatable striking arm rotating in a circular path having a direction of rotation and positioned such that the velocity of the first and second strips is tangential to the circular path in the direction of the circular path, said striking arm having a rotary support, a hollow rotation shaft, and at least one rod adapted to slide radially within the hollow of said rotary support,

a radially extensible hammer fixed to one end of the rod and including a striking surface, said hammer, over a portion of the circular path of rotation of said striking arm, presenting said striking surface in immediate contacting proximity to the two strips on the join roller travelling at the same tangential speed as the velocity of the first and second strips, and

a radial displacement means for selectively maintaining the location of the hammer and for extending the hammer, said radial displacement means comprising a spring for normally biasing the hammer in a retracted position, and a cam fixed to a second end of the rod opposite the first end, said cam being connected to a jack,

whereby the jack displaces the rod and hammer to move the hammer to a radially extended position and the two strips over their respective portions of length between said striking surface and the join roller are compressed with contacting force by radial extension of the hammer to form joined portions.

5,827,167

THREE-PIECE WOUND GOLF BALL

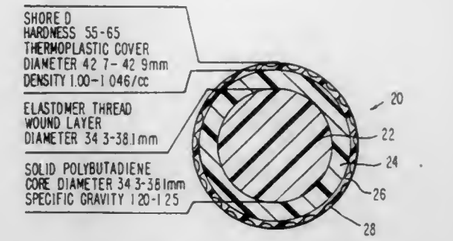
Quintus E. Dougan, Fort Worth, Tex., and Daniel J. Cahill, Fairview Park, Ohio, assignors to Ben Hogan Company, Richmond, Va.

Filed Apr. 10, 1997, Ser. No. 837,234

Int. Cl.[6] A63B *37/06;37/12;37/14*

U.S. Cl. 473—356 **9 Claims**

1. A three-piece wound golf ball having improved characteristics of moment of inertia, initial spin and total flight distance with minimal dispersion, the ball comprising:



a solid center core portion which is substantially spherical, is composed mainly of polybutadiene having a core diameter of 1.35–1.50 inches (34.3–38.1 mm),a specific gravity of 1.23–1.24; and a Shore D durometer hardness of 55–75 and a compression of 59–75 on an Atti compression tester;

an intermediate thread-wound portion wound with an elastomeric thread material upon said core portion to a diameter of 1.540–1.600 inches (39.1–40.6 mm), said thread having an elongation of 800–1000%, a tensile strength of 4000–5000 psi, and a rectangular cross-section configuration of 0.0625(+/−0.002) inch×0.024(+/−0.006) inch; and

a cover portion formed of a thermoplastic material having a flexural modulus of 5,000–10,000 psi, and a Shore D durometer hardness of 55–65, said cover having multiple dimples provided therein occupying 70–80% of the surface area of the ball, the dimples having a total volume of 400–500 mm^3; the ball baving an outside diameter of 1.680–1.688 inch (42.7–42.9 mm), a weight of 44.5 to 45.9 grams, a density of 1.090–1.118 g/cm^3, and an Atti compression reading of 85+/−15 points.

5,827,168

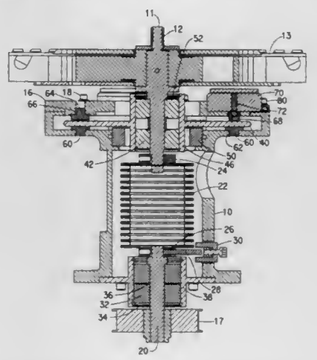
APPARATUS FOR STABILIZING A CENTRIFUGE ROTOR

Gary Wayne Howell, Elkton, Md., assignor to Dade Behring Inc., Deerfield, Ill.

Continuation of Ser. No. 640,391, Apr. 30, 1996, abandoned. This application Oct. 1, 1997, Ser. No. 944,062

Int. Cl.[6] B04B *9/00;13/00*

U.S. Cl. 494—7 **1 Claim**



1. An apparatus for accommodating vibrations in a centrifuge comprising:

a rotor having a center of mass;

an upper drive shaft having an vertical axis, the shaft adapted for mounting and rotating the rotor;

a lower drive shaft connected to a source of rotation;

a flexible coupling for flexibly connecting the upper drive shaft to the lower drive shaft, said flexible coupling adapted to

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permit relative lateral motion between the upper drive shaft and the lower drive shaft;

a disk having lower sides and upper sides rotationally attached to the shaft using disk bearings;

sliding bearings positioned adjacent to the lower and upper sides of the disk and adapted to restrain movement of either side of the disk in an axial direction without appreciably affecting radial rotor motion;

damping bearings positioned against the upper side of the disk; and

means to sense radial displacement of the disk and means responsive to the radial displacement exceeding a predetermined value, said responsive means adapted to position the damping bearings against the upper side of the disk, thereby to damp vibrations of the disk.

5,827,169

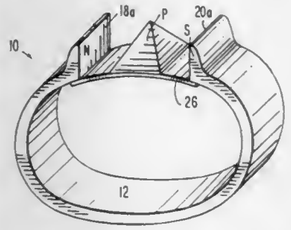
Patent Not Issued For This Number

5,827,170

THERAPEUTIC MAGNETIC VORTEX ORNAMENT AND DEVICE

Emile Gebran, 108-22 Queens Blvd., Forest Hills, N.Y. 11375

Filed Dec. 26, 1996, Ser. No. 774,145
Int. Cl.[6] A61N *1/00*
U.S. Cl. 600—15 **20 Claims**



1. A magnetic vortex device for generating a magnetic vortex to be applied to the human body in order to treat ailments or diseases, comprising:

a frame,

magnetic field generating means arranged in connection with said frame for generating a magnetic field, said generating means comprising at least one magnetized or magnetizable member arranged to have first and second opposed portions separated from one another to define a space therebetween, said first and second portions being polarized or polarizeable such that said first portion has an opposite polarity than said second portion whereby magnetic flux lines extend between said first and second portions to generate the magnetic field,

interceptor means for intercepting at least a portion of the magnetic flux lines extending between said first and second portions and preventing that portion of the magnetic flux lines from passing in a direct line between said first and second portions, and

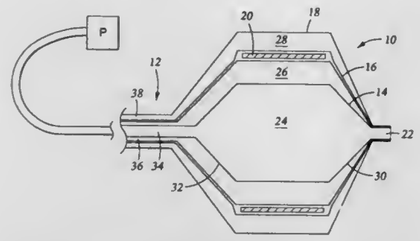
support means for supporting said interceptor means in a position between said first and second portions.

5,827,171

INTRAVASCULAR CIRCULATORY ASSIST DEVICE

John D. Dobak, III, and Kambiz Ghaerzadeh, both of San Diego, Calif., assignors to Momentum Medical, Inc., San Jose, Calif.

Filed Oct. 31, 1996, Ser. No. 740,657
Int. Cl.[6] A61B *19/00*
U.S. Cl. 600—16 **53 Claims**



1. A circulatory assist device, comprising:

a flexible tubular catheter, said catheter being sized for insertion into a vascular system of a patient;

an expandable inner balloon attached to said catheter, said inner balloon being disposable in the vascular system of the patient, with said catheter;

an expandable outer balloon attached to said catheter, said outer balloon substantially surrounding said inner balloon;

an expansion mechanism disposed near said outer balloon, said expansion mechanism being selectively expandable to expand said outer balloon and hold said outer balloon in said expanded state;

a two-way control fluid flow device connected in flow communication with a control space between said inner balloon and said outer balloon, whereby selective removal of a control fluid from said control space with said control fluid flow device causes said inner balloon to expand, and whereby selective introduction of a control fluid into said control space with said control fluid flow device causes said inner balloon to collapse; and

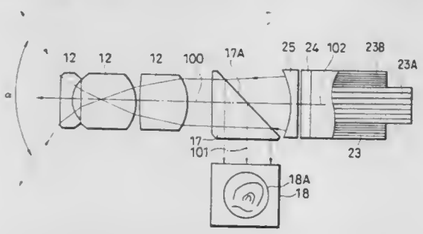
at least one port in said inner balloon, said port being exposable to vascular fluid, said port being capable of allowing flow of vascular fluid into said inner balloon when said inner balloon expands, and said port being capable of allowing flow of vascular fluid out of said inner balloon when said inner balloon collapses.

5,827,172

OPTICAL SYSTEM FOR ELECTRONIC ENDOSCOPES

Kazuaki Takahashi, and Yuichi Torii, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Sep. 16, 1997, Ser. No. 931,769
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—176 **5 Claims**



1. An optical system for electronic endoscopes comprising:

an objective optical system for capturing an image of an object to be observed;

an optical path coupling optical element disposed on a rear side of said objective optical system and treated so as to be half transmissive for forming a reflecting optical path in which rays in a direction along an optical axis of said objective optical system are flexed nearly at a right angle and a straight travelling optical path through which rays in the direction along the optical axis of said objective optical system travel straight;

an image pickup device optically connected to either one of the reflecting optical path and the straight travelling optical path formed by said optical path coupling optical element; and

a light guide which is optically connected to the other optical path and composed of optical fibers.

5,827,173

PRENATAL AUDIO COMMUNICATION DEVICE

Christine M. Lindsay, 13202 S. 86th E. Ave., Bixby, Okla. 74008

Filed Aug. 19, 1996, Ser. No. 699,565
Int. Cl.[6] G01K *11/00*
U.S. Cl. 600—28 **17 Claims**

1. A device for transferring sound waves from an external source to the abdomen of a pregnant woman comprising:

a receiving chamber having an inlet port for accepting the sound waves to be transmitted, an outlet port and a substantially rigid wall contoured to facilitate transfer of the sound waves from said inlet port to said outlet port;

a megaphone having a sound wave inlet port and a planar sound wave outlet port, said planar outlet port having a substantially flat flange thereabout flush with said planar outlet port;

a flexible tube defining a discrete pneumatic sound conducting path connecting said receiver outlet port and said megaphone inlet port; and

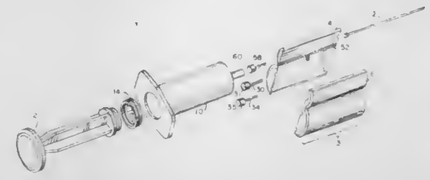
means connected to said megaphone for securing said flange against the abdomen of the pregnant woman.

5,827,174

BIOLOGICAL SPECIMAN CONTAINMENT AND INCUBATION POUCH

William Alexander Reuss, Jr., 4901 Lea Ann Way, Louisville, Ky. 40219; William Charles Mers Kelly, 1112 Glen Kegley Dr., Xenia, Ohio 45385, and David Young Pheups, 904 Shady Ln., Anchorage, Ky. 40223

Continuation-in-part of Ser. No. 534,051, Sep. 26, 1995, Pat. No. 5,681,742. This application Jun. 17, 1997, Ser. No. 877,523
Int. Cl.[6] A61B *17/43*
U.S. Cl. 600—33 **10 Claims**



1. A closed sterile in-vitro fertilization system to provide incubation for an oocyte comprising:

a pouch having a flexible front and a flexible back wall joined at their outer peripheries;

a first and a second segregated chamber arranged in said pouch;

an entry port in each of said chambers through said wall of said pouch;

a vacuum means arranged with respect to said first chamber, to permit direct aspiration of an oocyte from an ovary into said chamber; and

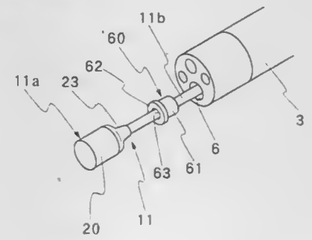
an entry conduit between said first and said second chambers, to permit an oocyte to be transferred therebetween.

5,827,175

ENDOSCOPICALLY INSERTING ULTRASOUND PROBE

Toshizumi Tanaka, Omiya, Japan, assignor to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Sep. 29, 1997, Ser. No. 939,697
Claims priority, application Japan, Sep. 30, 1996, 8-276903; Sep. 30, 1996, 8-276904
Int. Cl.[6] A61B *1/00*
U.S. Cl. 600—104 **12 Claims**



1. In endoscopically inserting ultrasound probe adapted to be placed in an instrument channel within an elongated insertion rod of an endoscope at the time of insertion into a body cavity, and having a probe head housing an ultrasound transducer at the fore distal end of an elongated flexible cord member with a connector section in a proximal end portion thereof for connection to a probe controller unit:

an endoscopically inserting ultrasound probe, comprising:

a probe head having an outside diameter larger than the inside diameter of an instrument channel within an endoscopic insertion rod; and

an elongated flexible cord member having an outside diameter smaller than the inside diameter of endoscopic instrument

channel, including a connector section provided at the proximal end of said flexible cord member;

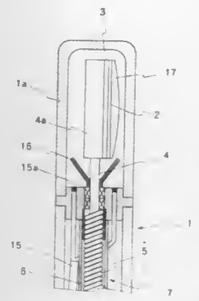
said ultrasound probe being placed in the endoscopic instrument channel inversely through an exit opening of the instrument channel at the fore distal end of the endoscopic insertion rod and from said connector section at the proximal end of said flexible cord member.

5,827,176

ENDOSCOPIC IMAGING SYSTEM WITH ROTATING PHOTOELECTRIC LINE SENSOR

Toshizumi Tanaka, and Kazuhiro Yamanaka, both of Omiya, Japan, assignors to Fuji Photo Optical Co., Ltd., Omiya, Japan

Filed Feb. 10, 1997, Ser. No. 797,119
Claims priority, application Japan, Feb. 13, 1996, 8-048398
Int. Cl.[6] A61B *1/05*
U.S. Cl. 600—109 **5 Claims**



1. An endoscopic imaging system for producing a flatly deployed expansion image of a tubular body cavity, comprising:

a photoelectric line sensor rotatably mounted within a distal end portion and aligned in a row with an axial direction of an endoscopic insertion instrument for picking up a series of slit images around inner periphery of a generally tubular intracavitary wall sequentially at predetermined angular positions and within an axial range of said line sensor; and

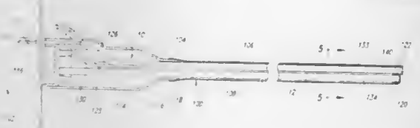
an expansion image generating means arranged to produce a frame of picture signals for a flatly deployed expansion image of said intracavitary wall on the basis of picture signals of said series of slit images sequentially received from said image sensor.

5,827,177

ENDOSCOPE SHEATH ASSEMBLY WITH ISOLATING FABRIC SLEEVE

Katsumi Oneda, Alpine, N.J., and E. Paul Harhen, Duxbury, Mass., assignors to Vision-Sciences, Inc., Natick, Mass.

Filed Feb. 18, 1997, Ser. No. 801,744
Int. Cl.[6] A61B *1/04*
U.S. Cl. 600—121 **29 Claims**



1. An endoscope sheath assembly usable with an elongated, flexible endoscope having an articulatable insertion tube, the assembly comprising:

an endoscope sheath having an endoscope tube having an open proximal end for receiving the endoscope insertion tube and closed distal end, the endoscope tube adapted to isolate at least a portion of the insertion tube from an external environment when the insertion tube is positioned within the endoscope tube;

first and second working channels extending through a portion of the endoscope tube and terminating adjacent to the closed distal end of the endoscope tube, the first and second working channels being positionable generally adjacent to the insertion tube when the insertion tube is within the endoscope sheath; and

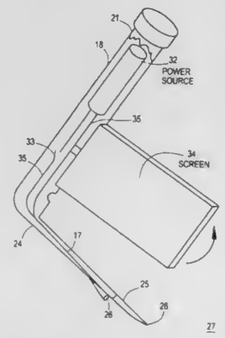
an isolating sleeve positioned in the endoscope tube and surrounding a portion of each of the first and second working channels to isolate the first and second working channels from the endoscope tube, the isolating sleeve having first and second sleeve lumens formed therein, a portion of the first working channel extending through the first sleeve lumen and a portion of the second working channel extending through the second sleeve lumen, the first and second working channels each being axially movable within the respective first and second sleeve lumens relative to each other upon articulation of the insertion tube.

5,827,178

LARYNGOSCOPE FOR USE IN TRACHEA INTUBATION

Jonathan Berall, 173 Columbia Heights, Brooklyn, N.Y. 11201

Filed Jan. 2, 1997, Ser. No. 778,079
Int. Cl.[6] A61B *1/26*
U.S. Cl. 600—185 **16 Claims**



1. A laryngoscope comprising:

a handle and a blade, with the blade having a proximal end connected to the handle and a distal end projecting laterally therefrom;

camera means mounted on the blade in the vicinity of the distal end for observing a visual field; and

display means operatively connected to said camera means for displaying the visual field at a preselected location.

5,827,179

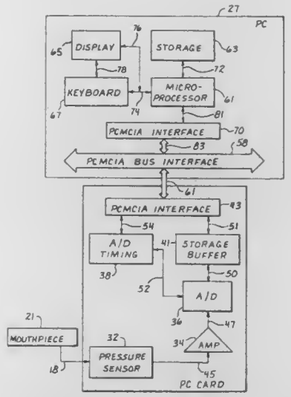
PERSONAL COMPUTER CARD FOR COLLECTION FOR REAL-TIME BIOLOGICAL DATA

Patrick A. Lichter, Plymouth, and Spencer J. Lien, Medina, both of Minn., assignors to QRS Diagnostic, LLC, Plymouth, Minn.

Filed Feb. 28, 1997, Ser. No. 810,632
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—300 **26 Claims**

6. A portable biological data collection device, comprising:

a portable computer card housing;



a biological data receiver coupled to the portable computer card housing, the biological data receiver being adapted to receive biological data and to output the biological data;

signal-conditioning circuitry operatively coupled to the biological data receiver, the signal-conditioning circuitry being adapted to receive the biological data from the biological data receiver and to convert the biological data into digitized biological data; and

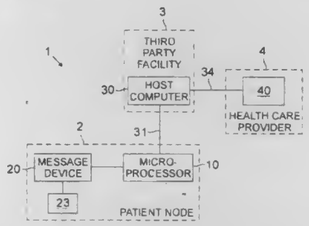
a portable computer card interface disposed within the portable computer card housing, the portable computer card interface being adapted to communicate with a host computer and to relay the digitized biological data to the host computer an a real-time basis as the biological data is converted by the signal conditioning circuitry.

5,827,180

METHOD AND APPARATUS FOR A PERSONAL HEALTH NETWORK

David F. Goodman, San Francisco, Calif., assignor to LifeMasters Supported SelfCare, So. San Francisco

Continuation of Ser. No. 518,783, Aug. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 334,936, Nov. 7, 1994, abandoned. This application Nov. 26, 1997, Ser. No. 978,892
Int. Cl.[6] A61N *5/04*
U.S. Cl. 600—300 **25 Claims**



1. A method for providing a customized out-patent management system comprising:

(a) providing a central station facility with a medical treatment plan specific to a patient, said medical treatment plan comprising a schedule of at least one patient self-directed activity to occur at a corresponding time of action;

(b) determining an occurrence of said time of action within said central station facility;

(c) providing a messaging device associated with said patient wherein said messaging device is equipped with bi-directional communications capability;

(d) providing said messaging device with an event indicator having an active state and an inactive state, the active state corresponding to an indicator of the at least one patient self-directed activity;

(e) transmitting a wireless signal to said messaging device in response to an occurrence of said time of action;

(f) receiving said wireless signal at the messaging device; and

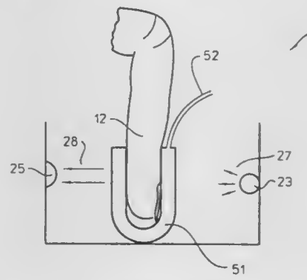
(g) placing the event indicator in the active state in response to said received wireless signal to prompt the at least one patient self-directed activity.

5,827,181

NONINVASIVE BLOOD CHEMISTRY MEASUREMENT METHOD AND SYSTEM

J. Fleming Dias, Palo Alto, and Ganapati R. Mauze, Sunnyvale, both of Calif., assignors to Hewlett-Packard Co., Palo Alto, Calif.

Continuation of Ser. No. 526,127, Apr. 7, 1995, abandoned. This application Mar. 7, 1997, Ser. No. 813,733
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—322 **1 Claim**



1. An apparatus for isolating measurement attributes of blood in a human body part for a noninvasive blood chemistry measurement, comprising:

a light source for illuminating the body part;

a light sensor for receiving light transmitted through the body part and for converting the received light into an electrical signal;

means for applying positive pressure to the body part for decreasing blood volume in the body part; wherein the means for applying positive pressure includes a transparent plate positioned on one side of the body part, a transparent stop positioned on an opposite side of the body part and means for varying the distance between the plate and the stop; and

means for applying negative pressure to the body part for increasing blood volume in the body part.

5,827,182

MULTIPLE LED SETS IN OXIMETRY SENSORS

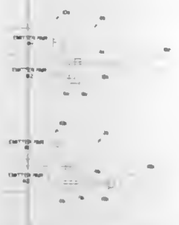
Dena Raley, Louisville, and Robert Nichols, Thornton, both of Colo., assignors to Ohmeda Inc., Liberty Corner, N.J.

Filed Mar. 31, 1997, Ser. No. 829,258
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—323 **23 Claims**

1. A sensor adaptable to first and second oximeter processing and display units, the sensor comprising:

(a) measuring means for providing a signal that is a function of an unabsorbed portion of radiation passed by blood, said signal being employable to determine the oxygen saturation of blood, the measuring means comprising:

(i) emitting means for irradiating said blood, comprising a plurality of emitters for providing radiation, each of the plurality of emitters providing a spectral content; and



(ii) detecting means for detecting the unabsorbed portion of radiation passed by the blood; and

(b) connecting means for connecting the measuring means with one of said first and second oximeter processing and display units such that, in a first mode when said measuring means is connected to said first oximeter processing and display unit, a first set of emitters is activated to produce a first set of spectral contents associated with the first set of emitters and, in a second mode when said measuring means is connected to said second oximeter processing and display unit, a second set of emitters is activated to produce a second set of spectral contents associated with the second set of emitters, wherein each of the first and second emitter sets includes at least two of the plurality of emitters and the first and second spectral content sets are different.

5,827,183

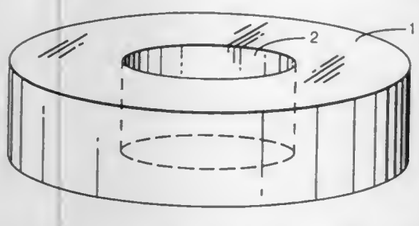
METHOD OF MEASURING CHEMICAL CONCENTRATION IONTOPHORETICALLY USING IMPERMEABLE MASK

Ronald T. Kurnik, Foster City; Janet Tamada, Belmont, and Michael Tierney, San Jose, all of Calif., assignors to Cygnus, Inc., Redwood City, Calif.

Division of Ser. No. 527,061, Sep. 12, 1995, Pat. No. 5,735,273. This application Oct. 29, 1997, Ser. No. 959,599

Int. Cl.[6] A61N *1/30*

U.S. Cl. 600—345 **13 Claims**



1. A method of measuring a concentration of a chemical present in a bloodstream of a mammalian subject, comprising the steps of:

contacting a mammalian subject's skin with a sensor assembly comprising;

a) an ionically conductive material in contact with the skin;

b) a working electrode in contact with the ionically conductive material the working electrode having a catalytic surface; and

c) a mask having an opening therein wherein the mask is positioned between the skin and the working electrode;

transporting a chemical through the skin and ionically conductive material whereby the mask blocks flow to the catalytic surface except for flow substantially axial to the catalytic surface;

monitoring an electrical signal generated at the working electrode by catalytic conversion into an electric signal at the catalytic surface of the working electrode;

wherein the electrical signal generated at the working electrode over a given period of time is correlated with a concentration of chemical present in the bloodstream of the mammalian subject.

5,827,184

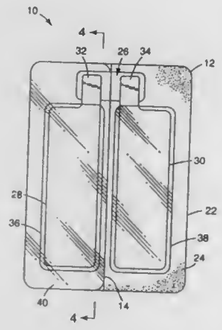
SELF-PACKAGING BIOELECTRODES

Samuel G. Netherly, Afton, Minn., and Scott A. Burton, Essex Junction, Vt., assignors to Minnesota Mining And Manufacturing Company, St. Paul, Minn.

Filed Dec. 29, 1995, Ser. No. 580,654

Int. Cl.[6] A61B *5/04*

U.S. Cl. 600—372 **14 Claims**



1. A bioelectrode, comprising:

a backing;

a conductive layer adjacent to the backing; and

a layer of conductive adhesive adjacent to the conductive layer; wherein

the bioelectrode is placed in a first configuration wherein the backing forms a sealed protective enclosure for the layer of conductive adhesive, and is adapted to have a second configuration wherein the layer of conductive adhesive is exposed for use in contacting the body of a patient.

5,827,185

Patent Not Issued For This Number

5,827,186

METHOD AND PDT PROBE FOR MINIMIZING CT AND MRI IMAGE ARTIFACTS

James C. Chen, Bellevue, Wash., and Brent Wiscombe, Mesa, Ariz., assignors to Light Sciences Limited Partnership, Issaquah, Wash.

Filed Apr. 11, 1997, Ser. No. 827,832

Int. Cl.[6] A61B *5/05*

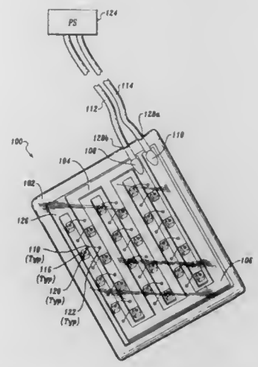
U.S. Cl. 600—407 **26 Claims**

1. An implantable probe for use in administering a medical therapy to an internal treatment site within a patient's body, and for minimizing imaging artifacts in images produced to evaluate a condition of the internal treatment site, comprising:

(a) a non-metallic insulating base;

(b) a plurality of non-metallic conductive traces supported by the base, adapted to couple to a power supply to convey an electrical current supplied by the power supply; and

(c) a non-metallic electronic component supported by the base and coupled to the conductive traces, said non-metallic electronic component being energized by the electrical current conveyed by the plurality of non-metallic conductive traces to produce the medical therapy, said implantable probe being thus configured to remain disposed at the treatment site when the treatment site is imaged, without causing an imaging artifact that would obscure the treatment site in said images.



5,827,187

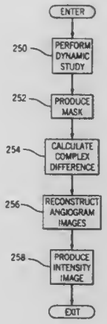
DYNAMIC MR DIGITAL SUBTRACTION ANGIOGRAPHY WITH COMPLEX SUBTRACTION

Yi Wang, and Richard L. Ehman, both of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Oct. 30, 1996, Ser. No. 739,534

Int. Cl.[6] A61B *5/055*

U.S. Cl. 600—419 **7 Claims**



1. A method for producing an image of a patient with an MRI system, the steps comprising:

a) injecting a contrast agent into the patient

b) acquiring complex NMR data using the MRI system to form a plurality of temporal data sets depicting the patient over a period of time during which the contrast agent affects the NMR data being acquired, each temporal data set containing a plurality of complex values;

c) producing a mask data set containing a plurality of complex values derived from the acquired temporal data sets;

d) producing a complex difference data set by calculating the complex difference between the complex values in the mask data set and the corresponding complex values in one of the temporal data sets; and

e) producing an angiogram image from the complex difference data set.

5,827,188

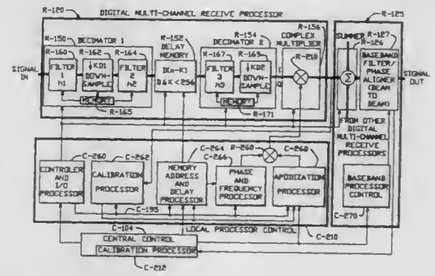
METHOD AND APPARATUS FOR RECEIVE BEAMFORMER SYSTEM

J. Nelson Wright, Menlo Park; Christopher R. Cole, Cupertino, and Albert Gee, Los Altos, all of Calif., assignors to Acuson Corporation, Mountain View, Calif.

Division of Ser. No. 432,615, May 2, 1995, Pat. No. 5,685,308, which is a continuation-in-part of Ser. No. 286,658, Aug. 5, 1994, abandoned. This application Jan. 24, 1997, Ser. No. 788,206

Int. Cl.[6] A61B *8/00*

U.S. Cl. 600—447 **33 Claims**



1. An ultrasound receive beamformer comprising:

an adjustable resolution digital processor for processing a signal which is used to construct N receive beams, where N is a variable positive integer;

said digital processor comprising means for adjusting resolution of said signal as a function of N in order to utilize overall digital processing capability of the digital processor.

5,827,189

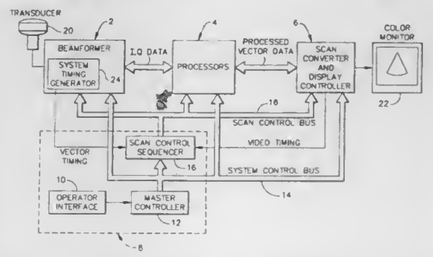
METHOD AND APPARATUS FOR PREVENTING AXIAL SPATIAL ALIASING IN ULTRASOUND IMAGER HAVING COMPLEX SIGNAL DETECTOR

Larry Y. L. Mo, Waukesha; Theodore Lauer Rhyne, Whitefish Bay; Steven C. Miller; Christopher J. Gilling, both of Pewaukee; Kok-Hwee Ng, Elkhorn, and John E. Mahony, Whitefish Bay, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 30, 1996, Ser. No. 777,564

Int. Cl.[6] A61B *8/06*

U.S. Cl. 600—454 **20 Claims**



1. A method of operating an ultrasound imaging system having a transducer array, comprising the steps of:

transmitting a multiplicity of ultrasound transmit beams from said transducer array in a plane intersecting a mass of ultrasound scatterers, each of said transmit beams having a respective steering angle and a respective focal point; and

for each respective transmit beam, performing the following steps:

acquiring first and second basebanded complex signals from a portion of said respective transmit beam reflected by said

ultrasound scatterers back to and detected by said transducer array, said first basebanded complex signal consisting of a first stream of acquired samples processed at a predetermined sampling rate and said second basebanded complex signal consisting of a second stream of acquired samples processed at said predetermined sampling rate;

interpolating said acquired samples of said first stream to form a first multiplicity of interpolated samples which are interleaved between said acquired samples of said first stream, said first stream of acquired samples and said first multiplicity of interpolated samples forming a third stream of samples having a sampling rate greater than said predetermined sampling rate;

interpolating said acquired samples of said second stream to form a second multiplicity of interpolated samples which are interleaved between said acquired samples of said second stream, said second stream of acquired samples and said second multiplicity of interpolated samples forming a fourth stream of samples having a sampling rate greater than said predetermined sampling rate; and

forming the envelope of said first and second basebanded complex signals by operating on said samples of said third and fourth streams, and further comprising the step of:

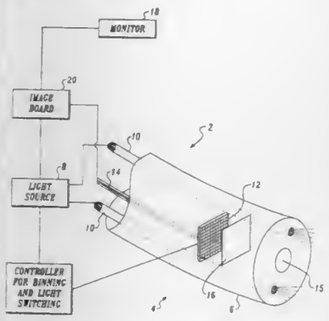
displaying an image frame which is a function of said envelopes derived from said multiplicity of transmit beams.

5,827,190

ENDOSCOPE HAVING AN INTEGRATED CCD SENSOR

Branko Palcic; Calum MacAulay; Stephen Lam, and Bruno Jaggi, all of Vancouver, Canada, assignors to Xillix Technologies Corp., Richmond, Canada

Division of Ser. No. 218,662, Mar. 28, 1994, Pat. No. 5,590,660. This application Aug. 19, 1996, Ser. No. 699,607
Int. Cl.[6] H61B *6/00*
U.S. Cl. 600—476 **21 Claims**



1. Endoscope apparatus for imaging tissue within a body comprising:

a probe having an inner end to be located within the body near the tissue under examination and an outer end to extend outside the body;

a light source at the outer end of the probe for generating light that includes excitation light to cause the tissue to produce autofluorescence light having an intensity that is different for healthy tissue than for diseased tissue, the probe conveying the excitation light from the outer end to the inner end to illuminate the tissue;

image sensing means at the inner end of the probe to detect the autofluorescence light and produce an image of the tissue under examination on a single channel, the image sensing means having a light sensitivity that can be increased to produce low resolution images at low autofluorescence light intensities and decreased to produce higher resolution images at other light intensities;

a filter disposed between the imaging sensing means and the tissue under for filtering out the excitation light from the light that reaches the image sensing means; and

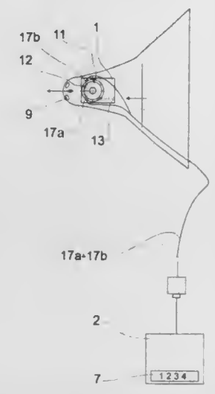
a display connected to receive a filtered image produced by the image sensing means and for displaying the filtered image in such a manner as to delineate diseased and normal tissue.

5,827,191

METHOD AND A DEVICE FOR MONITORING MILK VOLUME DURING BREAST FEEDING

Haim Rosenfeld, 1/6 Hatotchan St., Jerusalem, Israel

Filed Sep. 30, 1996, Ser. No. 724,514
Claims priority, application Israel, Sep. 28, 1995, 115456
Int. Cl.[6] A61B *6/00*
U.S. Cl. 600—476 **21 Claims**



12. A device for real time monitoring of a volume of milk during breast feeding, comprising:

(a) a flexible elastic nipple cover shaped in the form of a nipple and including holes positionable above a breast nipple during use;

(b) a micro measurement volume sensor positioned to measure the milk volume passing through a space between the nipple and the cover, said volume sensor being attached to the cover at a bottom side thereof above the nipple;

(c) a data interpretation unit connected to the volume sensor for counting, integrating, normalizing, and interpreting an output of the volume sensor into a volumetric equivalent for milk;

(d) a data display monitor connected to receive volumetric equivalent data from said data interpretation unit to display milk volume data of the milk measured.

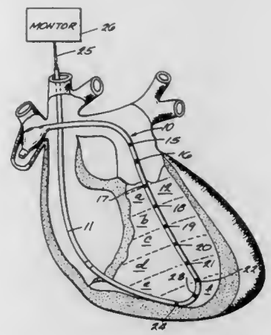
5,827,192

METHOD OF DETERMINING THE CONDUCTIVITY OF BLOOD

Balakrishnan Gopakumaran, Cleveland, Ohio; Peter K. Osborn, West Allis, Wis., and John H. Petre, Cleveland Heights, Ohio, assignors to Cleveland Clinic Foundation, Cleveland, Ohio, and Marquette Medical Systems, Milwaukee, Wis.

Filed Aug. 21, 1996, Ser. No. 701,177
Int. Cl.[6] A61B *5/02*
U.S. Cl. 600—481 **6 Claims**

1. In a process of determining cardiac volume by the conductance catheter method, the improvement comprising a method of determining the absolute electrical conductivity of blood as a part of said process comprising the steps of positioning in the ventricle of a mammalian heart a catheter comprising an elongate body



having an outer surface and a plurality of spaced electrodes disposed on its outer surface, determining which pair of adjacent electrodes of the plurality of electrodes is optimally positioned to determine resistivity of the blood in the ventricle and selecting the pair of electrodes, applying a current of known magnitude to the selected pair of electrodes, measuring the voltage between the selected pair of electrodes and determining the absolute conductivity of the blood from the expression:

$$S=IKc/V$$

where

I=the applied current,

V=the measured voltage, and

Kc=a calibration ratio dependent upon electrode geometry and spacing.

5,827,193

Patent Not Issued For This Number

5,827,194

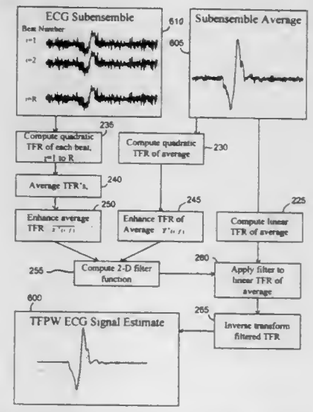
Patent Not Issued For This Number

5,827,195

ELECTROCARDIOGRAM NOISE REDUCTION USING MULTI-DIMENSIONAL FILTERING

Paul Lander, Lincoln, Mass., assignor to Cambridge Heart, Inc., Bedford, Mass.

Filed May 9, 1997, Ser. No. 853,914
Int. Cl.[6] A61B *5/0402;5/0452*
U.S. Cl. 600—509 **37 Claims**



1. A method for reducing noise from an ECG signal representative of activity of the heart of a patient, the method comprising:

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altering a physiologic condition of a patient using non-surgical techniques to stress the heart of the patient;

receiving an ECG signal representative of activity of the heart of the patient whose physiologic condition is altered, the ECG signal including a sequence of beats;

selecting a collection of beats from the ECG signal;

transforming the collection of beats into a multi-dimensional representation; and

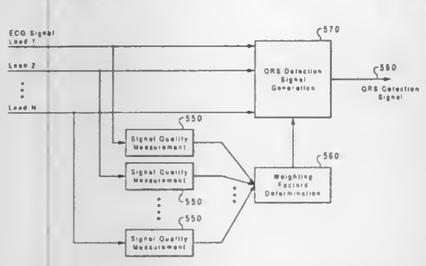
applying a multi-dimensional filter function to the multi-dimensional representation to enhance a signal-to-noise ratio of the collection of beats.

5,827,196

METHOD AND SYSTEM FOR PROVIDING CHARACTERIZATIONS OF WAVEFORM REPRESENTATIONS OF HEART FUNCTION

Cheuw Lee Yeo, Andover, and Jyh-yun J. Wang, Newton, both of Mass., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 15, 1997, Ser. No. 893,115
Int. Cl.[6] A61B *5/0402*
U.S. Cl. 600—509 **24 Claims**



16. A system for providing highly accurate characterizations of waveform representations of heart function, where such waveform representations are derived from electrocardiographic measurements, said system comprising:

means for measuring one or more signals indicative of heart function;

means for calculating a signal quality index for each of said measured one or more signals indicative of heart function;

means for calculating one or more weighting factors dependent upon said calculated signal quality index for each of said one or more measured signals indicative of heart function; and

means for creating a waveform representation comprised of each of said one or more measured signals indicative of heart function multiplied by said calculated weighting factor corresponding to said each of said one or more measured signals indicative of heart function.

5,827,197

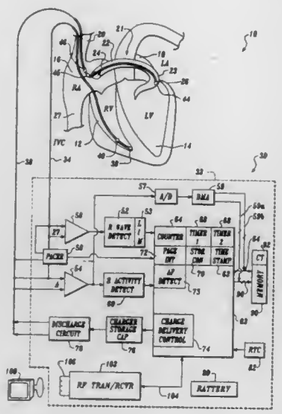
SYSTEM FOR DETECTING ATRIAL FIBRILLATION NOTWITHSTANDING HIGH AND VARIABLE VENTRICULAR RATES

Joseph M. Bocek, Seattle; David P. Finch, Bothell; Phillip D. Foshee, Jr., Woodinville, and Jaeho Kim, Redmond, all of Wash., assignors to InControl, Inc., Redmond, Wash.

Filed Nov. 14, 1997, Ser. No. 970,879
Int. Cl.[6] A61N *1/39*
U.S. Cl. 600—518 **25 Claims**

1. A system for detecting an atrial arrhythmia of a heart, said system comprising:

sensing means adapted to be associated with the atria of a heart for sensing electrical activity of the heart during at least one cardiac cycle of the heart and providing a cardiac signal;



a detector for detecting a cardiac interval associated with the at least one cardiac cycle;

a timer for timing the duration of the cardiac interval; and

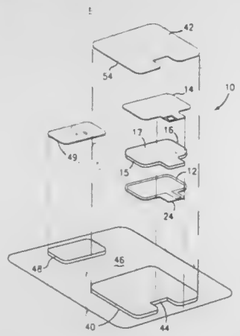
analyzing means for analyzing the cardiac signal to detect the atrial arrhythmia of the heart, the analyzing means analyzing the cardiac signal provided by the sensing means during the at least one cardiac cycle when the cardiac interval is greater in duration than a preselected duration.

5,827,198

LOW-COST, DISPOSABLE, POLYMER-BASED, DIFFERENTIAL OUTPUT FLEXURE SENSOR AND METHOD OF FABRICATING SAME

James J. Kassal, East Lyme, Conn., assignor to Flowscan, Inc., Mill Valley, Calif.

Filed Nov. 21, 1996, Ser. No. 754,761
Int. Cl.[6] A61B *7/04*
U.S. Cl. 600—528 **20 Claims**



17. A sensor element for use in an acoustic sensor comprising:

means for sensing acoustic energy;

said sensing means including a main portion and a connecting tab portion adjacent one side of said main portion;

a first electrically conductive area on a first surface of said connecting tab portion;

a second electrically conductive area covering substantially all of a first surface of said main portion and extending on to said first surface of said tab portion;

said first and second electrically conductive areas being separated from each other; and

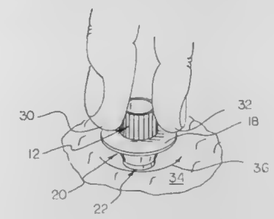
a third electrically conductive area on a second surface of said main portion, said third electrically conductive area further covering a portion of a second surface of said tab portion, wherein said first and third electrically conductive areas are electrically connected.

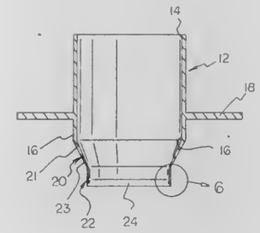
5,827,199

BIOPSY PUNCH APPARATUS

A. Melvin Alexander, 1 E. Chase St. #1010, Baltimore, Md. 21202

Filed Jun. 24, 1996, Ser. No. 668,776
Int. Cl.[6] A61B *10/00*
U.S. Cl. 600—564 **2 Claims**





1. A biopsy punch apparatus, comprising:

a hollow handle, the hollow handle being substantially cylindrical and being of a first diameter, the hollow handle having a handle top end and a handle bottom end;

a hollow transition member which has a transition member top end and a transition member bottom end, wherein the transition member top end is connected to the handle bottom end, the transition member bottom end extending away from the hollow handle and tapering to a second diameter at the transition member bottom end which is substantially less than the first diameter, the transition member bottom end being concentrically positioned relative to the handle bottom end;

a hollow cutting blade, the cutting blade being substantially cylindrical in shape, the cutting blade having a cutting blade top end spaced from a cutting blade bottom end, the cutting blade top end being connected to the transition member bottom end, with the cutting blade bottom end being shaped to define a cutting edge, the cutting blade top end and cutting blade bottom end both being of the second diameter, whereby the handle can be manually rotated to cause the cutting blade to cut tissue into a cylindrically-shaped section;

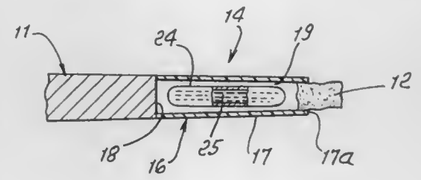
wherein there are no obstructions within an interior of the hollow handle, an interior of the hollow transition member and an interior of the hollow cutting blade, whereby the cutting edge of the cutting blade bottom end can be seen through the hollow handle and whereby the cutting blade can be engaged against tissue to cut a cylindrical sample of tissue which can pass freely through the hollow cutting blade, the hollow transition member and the hollow handle for removal from the handle top end of the hollow handle of the biopsy punch apparatus once a base of the cylindrical sample of tissue is separated from surrounding tissue.

5,827,200

METHOD AND APPARATUS FOR DETECTING AMINE PRODUCING ORGANISMS IN THE VAGINA

James C. Caillouette, 685 Oak Knoll Cir., Pasadena, Calif. 91106

Filed Jan. 27, 1997, Ser. No. 789,484
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—584 **36 Claims**



1. In the method of detecting pathogenic bacteria in the vagina, the steps that include

a) providing an elongated assembly including an elongated carrier and a flexible outer container supported on the carrier,

b) providing a vaginal moisture absorbing swab at one end of the assembly to communicate with the interior of said outer container,

c) providing a frangible inner container protectively located within the outer container, and providing a flowable aqueous alkaline fluid reactant within the inner container,

d) exerting pressure on the outer container sufficient to rupture the inner container, thereby releasing said reactant into the interior of the outer container to enable reactant fluid flow to said swab, for reaction with bacteria containing vaginal moisture absorbed into the swab,

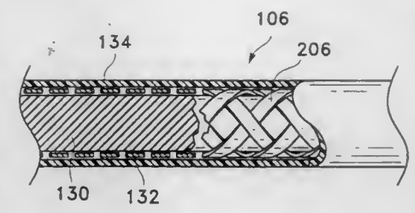
e) whereby a gaseous product of said reaction may be detected, by characteristic odor.

5,827,201

MICRO-BRAIDED GUIDEWIRE

Gene Samson, Milpitas, and Kim Nguyen, San Jose, both of Calif., assignors to Target Therapeutics, Inc., Fremont, Calif.

Filed Jul. 26, 1996, Ser. No. 686,887
Int. Cl.[6] A61B *5/00*
U.S. Cl. 600—585 **65 Claims**



1. A guidewire suitable for guiding a catheter within a body lumen, comprising:

a) an elongated flexible wire core having a proximal section, a middle section, a distal end section,

b) a coil covering at least a portion of said distal end section and bonded to said end section distally with an adhesive,

c) a tubular super-elastic alloy braid covering at least a portion of said middle section and bonded to said wire core in at least two locations with an adhesive, and

d) a polymeric layer covering extending at least over said middle section and said distal end section.

5,827,202

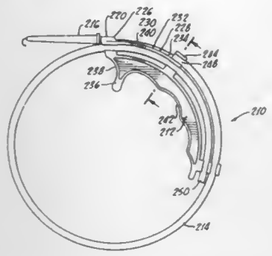
GUIDE WIRE DISPENSER APPARATUS AND METHOD

Manoucher Miraki; Robert Pecor, both of Aliso Viejo; Donald E. Bobo, Jr., Santa Ana; Ryszard Cieslak, Vista, and Dennis Workman, Anaheim, all of Calif., assignors to Baxter International Inc., Deerfield, Ill.

Continuation-in-part of Ser. No. 662,748, Jun. 10, 1996. This application Mar. 24, 1997, Ser. No. 822,890

Int. Cl.[6] A61B *5/00*

U.S. Cl. 600—585 **31 Claims**



1. A guide wire dispenser adapted for introducing a guide wire into the body using one hand, said hand having an index finger, a thumb for friction contact with said guide wire to provide thumb-controlled dispensing of said guide wire and three remaining fingers for gripping said guide wire dispenser, said guide wire dispenser comprising:

a) a trigger grip handle comprising:

a handle body comprising a wire dispensing nozzle having a wire dispensing conduit located therethrough, said wire dispensing nozzle comprising a proximally located head portion from which said guide wire is dispensed and a distally located rear portion into which said guide wire is received, a thumb platform connected integrally to said rear portion of said dispensing nozzle and extending distally therefrom, said thumb platform comprising a forward section, middle section and rearward section;

a trigger finger grip surface which is located on said trigger grip handle below said forward section of said thumb platform, said trigger finger grip surface being shaped to receive the index finger of said single hand used to introduce said guide wire into said body;

a handle grip surface which is located distally of said trigger finger grip surface, said handle grip surface being shaped to receive said remaining three fingers; and

b) a guide wire storage housing comprising a proximal end located at the rearward section of said thumb platform, a coiled central portion for containing a guide wire, and a distal end, said proximal end being located so as to provide introduction of a guide wire onto said thumb platform, and wherein a portion of said coiled central portion is attached to said trigger grip handle between the handle body and the trigger finger grip and handle grip surfaces so that in use, the thumb of the user is positioned outside of said coiled central portion over the thumb platform and the fingers are positioned in the trigger finger grip and handle grip surfaces inside of said coiled central portion.

5,827,203

ULTRASOUND SYSTEM AND METHOD FOR MYOCARDIAL REVASCULARIZATION

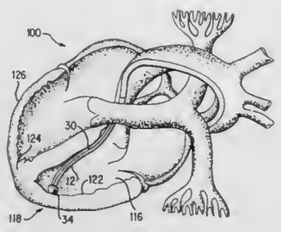
Henry Nita, 26051 Malaga La., Mission Viejo, Calif. 92692

Filed Apr. 21, 1997, Ser. No. 840,972

Int. Cl.[6] A61B *17/22*

U.S. Cl. 601—2 **22 Claims**

1. A method of improving the circulation of blood to the muscle of the heart of a patient, comprising the steps of:



(a) inserting a guidable elongated flexible ultrasound device into a patient's vasculature, the ultrasound device having a blunt distal head;

(b) guiding the blunt distal head a distal end of the ultrasound device to an area of interest within the patient's heart to which increased blood flow is desired; and

(c) applying ultrasonic energy via the blunt distal head to healthy tissue at the area of interest.

5,827,204

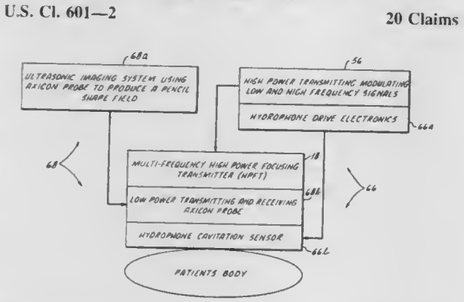
MEDICAL NONINVASIVE OPERATIONS USING FOCUSED MODULATED HIGH POWER ULTRASOUND

Willem Grandia, 919 Sunset Dr., Costa Mesa, Calif. 92627, and Yoseph Bar-Cohen, 3721 Fuchsia St., Seal Beach, Calif. 90740

Continuation of Ser. No. 756,351, Nov. 26, 1996, abandoned. This application May 27, 1997, Ser. No. 863,162

Int. Cl.[6] A61N *7/00*

U.S. Cl. 601—2 **20 Claims**



1. Noninvasive surgical apparatus for affecting a medical target in a living being by destruction of undesired tissue or coagulation of blood, said apparatus comprising:

low frequency ultrasound means, including a low frequency ultrasound signal, for controlling growth of cavitation microbubbles in a medical target region, said low frequency ultrasound signal having an amplitude below a cavitation threshold of the target region,

means for superimposing at least one high frequency ultrasound signal onto the low frequency signal in order to produce a modulated ultrasound signal having an amplitude that exceeds said cavitation threshold, said modulated signal having a focal zone of a size determined by the high frequency signal; and

means for positioning the focal zone of the modulated signal into the medical target region in order to cause vaporous cavitation therein.

5,827,205

FOOT VIBRATOR MASSAGER HAVING A PAIR OF SOLINOIDS

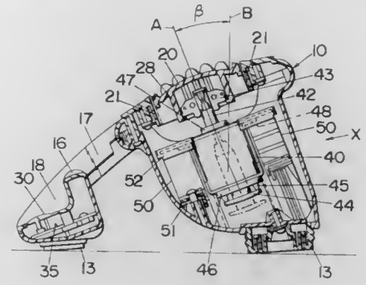
Hironori Iwamoto, Sakata-gun, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Sep. 12, 1996, Ser. No. 713,032

Claims priority, application Japan, Oct. 26, 1995, 7-279448

Int. Cl.[6] A61H *1/00;23/02*

U.S. Cl. 601—78 **16 Claims**



1. A foot massager comprising:

a housing formed with an inclined top wall extending from a front lower end to a rear upper end of said housing;

a pair of applicators for receiving thereon feet of a user, said applicators being supported to said inclined top wall to be movable in a massage direction perpendicular to a general outer surface of said inclined top wall;

a pair of solenoids mounted within the housing, each solenoid having a plunger of which longitudinal axis is aligned with said massage direction, said plunger connected at an upper end thereof with said applicator and being attracted by repetitive energization of said solenoid to periodically move the applicator upward along said massage direction from a depressed position where said applicator is depressed by the foot of the user, thereby giving a tapping massage action to the foot, wherein said plunger includes means for reducing noises or vibrations thereof with said plunger impinging against elastic stoppers extending from each of said solenoids and wherein said means for reducing noises or vibrations includes a flange, formed at a lower end of said plunger, which is engageable with said elastic stopper projecting on the lower end of said solenoid; and

a control section provided on a lower portion of said inclined top wall adjacent to said front lower end of said housing and having a switch for actuating said solenoid, wherein

said applicators are disposed in an upper portion of said top wall adjacent to said rear upper end of said housing, and

a heel stopper projects between said applicators and said control section to bear the heels of the user when the feet are placed on said applicators.

5,827,206

DRY HYDROMASSAGE CHAIR

Paul Lunter, Clearwater, Fla., assignor to JTL Enterprises, Inc.

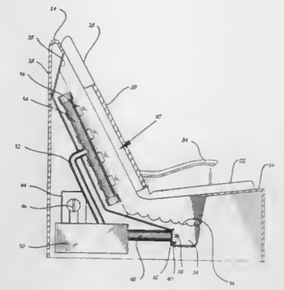
Filed Oct. 21, 1996, Ser. No. 734,294

Int. Cl.[6] A61H *9/00*

U.S. Cl. 601—148 **20 Claims**

1. A chair for performing dry hydro-massage on a user in a seated position, comprising:

a chair body for supporting a user in a seated position having a seat portion for supporting a user's lower body and a seat back for supporting a user's upper body, said seat back including a seat back support surface defining an elongate opening disposed approximately in the center of said seat back and surrounded at the top and sides by said seat back



support surface, said opening oriented to extend centrally along a user's spinal area when seated on said chair body;

a membrane attached to said chair body in covering relation with said opening;

a fluid reservoir in fluid communication with said chair body;

means for directing a stream of fluid against said membrane for dry hydro-massage along the spinal area of a user seated on said chair body; and

a circulation system for circulating fluid between said reservoir and said means for directing a stream of fluid against said membrane.

5,827,207

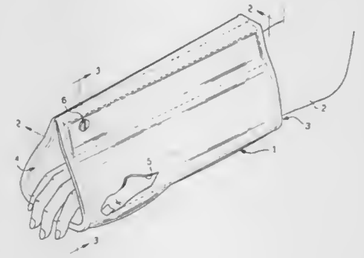
NIGHT SPLINT

Ian MacMorran, 2017 First Ave., San Diego, Calif. 92101

Filed Jul. 31, 1995, Ser. No. 509,491

Int. Cl.[6] A61F *5/00*

U.S. Cl. 602—5 **10 Claims**



1. A hand, wrist and forearm splint for minimizing the effects of carpal tunnel syndrome such that the hand and wrist joint of a user may recover from stress injury by periods of therapeutic immobilization, comprising:

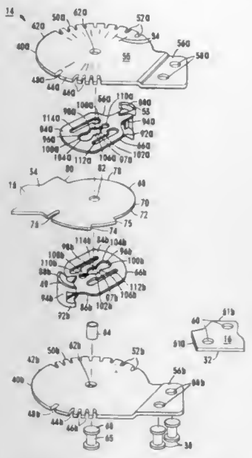
a soft-sided construction with an inner fabric shell and an outer fabric shell, said inner and outer shells joined to form a compartment substantially filled with resilient volumetric material, said construction being formed to enclose a generally tubular space corresponding to the shape of the forearm and extended and fitted to closely restrain the wrist, hand, and forearm of a user, said tubular shape having an open entry end and a terminating end,

means for stiffening said soft-sided construction longitudinally, said means being positioned in a top portion of said shell, and

a semi-spherical ball of resilient material contained within the fabric shell at a position corresponding to the palm during use such that the hand rests on the ball and the wrist is constrained to a neutral resting position.

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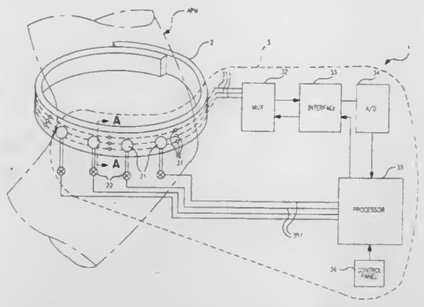
5,827,208
HINGE FOR AN ORTHOPEDIC BRACE HAVING A SELECTIVELY POSITIONABLE STOP TO LIMIT ROTATION
Bradley R. Mason, Olivenhain, and Jeffrey T. Mason, Escondido, both of Calif., assignors to Breg, Inc., Vista, Calif.
Continuation-in-part of Ser. No. 563,659, Nov. 28, 1995, Pat. No. 5,672,152. This application Jul. 1, 1997, Ser. No. 886,608
Int. Cl.[6] A61E *5/00*
U.S. Cl. 602—16 **23 Claims**



23. A hinge for an orthopedic brace comprising:
a first member having a first peripheral edge;
a second member having a second peripheral edge;
a pivotal connector connecting said first and second members;
a first notch and a second notch formed in said first peripheral edge at a spaced apart interval;
a limiting face formed in said second member;
a rotation adjustment member having a stop retainer and a stop mounted to said stop retainer, wherein said stop is selectively positionable in said notch and engageable with said limiting face upon rotation of said second member relative to said first member and wherein said stop retainer has an aperture including a widened section to receive said pivotal connector when said hinge is in a rotation mode and a narrowed section having an unexpanded width narrower than the width of said pivotal connector to retain said pivotal connector in said widened section when said hinge is in said rotation mode and having an expanded width substantially equal to the width of said pivotal connector to receive said pivotal connector when said hinge is in a transition mode or an adjustment mode.

5,827,209
INTELLIGENT BODY SUPPORT
Clifford M. Gross, Roslyn, N.Y., assignor to BCAM International, Inc., Melville, N.Y.
Continuation of Ser. No. 312,093, Sep. 23, 1994, abandoned. This application Nov. 25, 1996, Ser. No. 755,199
Int. Cl.[6] A61F *5/00; A61B 5/10*
U.S. Cl. 602—19 **12 Claims**

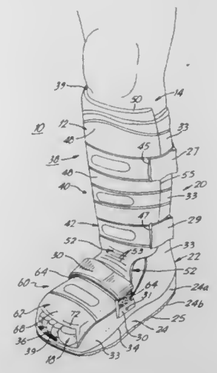
1. An apparatus for automatically monitoring and controlling a relative level of movement within a body joint, comprising:
a joint support configured for contact with at least a portion of the body joint, the support comprising;
at least one inflatable bladder configured to apply variable pressures to predetermined areas of the body joint;
a plurality of sensors, integrally placed on a plurality of predetermined locations of the joint support and in contact with predetermined positions on the body joint, said sensors being configured to monitor movement of the body joint in the region of said predetermined locations over a variety of angular orientations with respect to said support through a range of motion of the body joint;
said sensors being further configured for establishing and sending an electronic signal representing said monitored movement of the body joint;
a processor electronically connected to said sensors, said processor configured to receive and convert said electronic signals from said sensors into a joint movement value, compare said joint movement value to predetermined joint movement values selected such that the body joint is supported through a range of motion of the body joint; and
a pressure control device connected to said processor and said at least one inflatable bladder, said pressure control device adjusting pressure within said at least one inflatable bladder to substantially maintain said predetermined joint movement value.



12. A method of automatically controlling a relative level of motion in a body joint, utilizing a joint support being placeable in contact with the body joint, the support exerting a pressure against the body joint during movement of the body joint, the support being automatically adjustable to vary the pressure; the method comprising:
(a) establishing an upper limit of desired motion and a lower limit of desired motion for the body joint during movement of the body joint;
(b) creating an acceptable range of motion for the body joint bounded by the upper limit and the lower limit;
(c) making a measurement of signals from a plurality of sensors distributed within the joint support across the body joint, the signals being representative of the movement of the body joint at a specific time;
(d) processing the signals to form a data value representative of the position of the body joint at the specific time;
(e) determining whether the position of the body joint, as represented by the data value, is within the acceptable range of motion; and
(f) if the data value does not represent an acceptable position of the body joint, automatically adjusting the pressure such that movement of the body joint is within the range of motion.

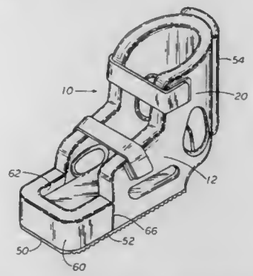
5,827,210
ORTHOPEDIC CAST WALKER BOOT
Morris Antar, New York, N.Y., and Victor M. Nunes, Cumberland, R.I., assignors to Comed Inc., New York, N.Y., and Johnson & Johnson Professional, Inc., New Brunswick, N.J.
Filed Apr. 1, 1996, Ser. No. 625,165
Int. Cl.[6] A61F *5/01*
U.S. Cl. 602—23 **13 Claims**

1. An orthopedic cast walker boot, comprising:
a) tubular enclosure formed of a semi-flexible material having a first section member for covering the rear of the calf, ankle, heel and sole of the foot;



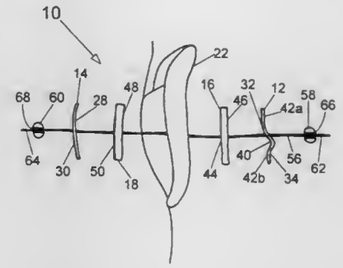
b) a second section member for interfitting with said first section member; said second section member having an upper front section for covering the shin area of the leg, and a lower front section for covering the top area of the foot;
c) said upper and lower front sections being integrally connected by a pliable and flexible intermediate front connecting section having multiple joints; said multiple joints providing a non-rigid, flexible connection for conforming said front sections to the user's shin, foot and ankle areas;
d) said intermediate front connecting section being narrower than and more pliable and flexible than said upper and lower front sections;
e) fastening means for fastening and enclosing said first and second section members to form said tubular enclosure about the leg, the ankle and the foot of the wearer; and
f) traction means adhesively attached to the bottom surface of said first section member.

5,827,211
ANKLE-FOOT-HEEL PROTECTIVE ORTHOTIC BOOT
Daniel J. Sellinger, 708 Leona Dr., Ann Arbor, Mich. 48103
Filed Dec. 18, 1996, Ser. No. 769,300
Int. Cl.[6] A61F *5/00*
U.S. Cl. 602—27 **13 Claims**



1. An orthotic device fittable about an appendage having bony protuberances, the device comprising a body having an outside and a first opening thereinto, the body having a second opening thereinto, and the body having a third opening thereinto, the first opening intersecting the second opening to fit about the appendage placed in the openings, the third opening intersecting the intersection of the first opening and the second opening, and the third opening being formed to surround a heel of a foot on the appendage,
and the body having at least one aperture disposed between the outside of the body and one of the first and second openings, the aperture located on the body to surround a bony protuberance of the appendage, and the aperture having walls, the walls of the aperture being tapered between the opening and the outside of the body.

5,827,212
SPLINTING DEVICE FOR AURICULAR HEMATOMA
J. Richard Gaskill, 55 Church St., #1202, Los Gatos, Calif. 95030
Filed Oct. 22, 1997, Ser. No. 955,775
Int. Cl.[6] A63F *13/00; 11/00; 13/12*
U.S. Cl. 602—53 **3 Claims**

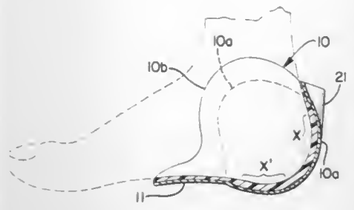


1. A splinting device for auricular hematoma, comprising:
a pair of backing members, each of said backing members being relatively rigid but also sufficiently malleable to be generally conformable to a portion of the major topographical features of an external ear, each said backing member having opposing first and second faces and a generally centrally located aperture;
a pair of soft, conformable pressure pads, each said pressure pad having first and second sides and an aperture, the second sides in engagement with the first faces of said backing members, the first sides being engageable with opposing sides of the ear, the aperture of each said pressure pad being in substantial axial alignment with the aperture of a corresponding said backing member;
a wire element passable through the apertures of said backing members and said pressure pads being adapted to pass through and surgically piece the ear;
holdfast means for securing said wire element in a tensioned manner to sandwichedly compress the ear between said backing members and;
said holdfast means includes at least one retaining element clamped upon an end of said wire element; and said retaining element is a lead, split-shot fishing weight.

5,827,213
HEEL AND ELBOW DRESSING
Ole R. Jensen, 646 Orangeburg Rd., River Vale, N.J. 07675, assignor to Ole R. Jensen, Northvale, N.J.
Filed Oct. 19, 1995, Ser. No. 545,252
Int. Cl.[6] A61F *13/00*
U.S. Cl. 602—62 **27 Claims**

1. A generally planar wound dressing for application to joint surfaces such as the heel and elbow, the dressing comprising:
an adhesive layer of soft, pliant, water absorbable and swellable material;
the adhesive layer defining:
at least one central portion;
a border portion surrounding the central portion, the border portion continuous with, and having a thickness substantially less than the central portion; and
at least one generally triangular gusset portion extending from the border portion into the central portion, the gusset por-

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tion comprising an inwardly-extending fold line with sections on each side of the fold line; and

a backing layer of thin, flexible material extending over and secured to one side of the adhesive layer;

whereby the gusset portion may be folded upon itself along the inwardly-extending fold line, the sections of the gusset portion being sealed together by the adhesiveness of the adhesive layer to form an inwardly-extending non-expandable pleat.

5,827,214

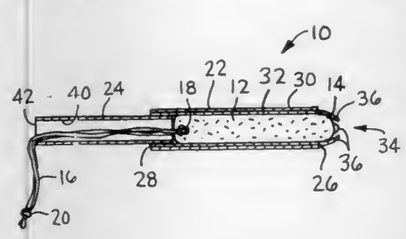
TAMPON APPLICATOR

Donald George Fox, Neenah; Tammy Jo Rentmeester, Appleton, and Steven James Nielsen, Greenville, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Continuation of Ser. No. 582,241, Jan. 3, 1996, abandoned, which is a continuation of Ser. No. 294,169, Aug. 22, 1994, abandoned. This application Oct. 10, 1997, Ser. No. 949,075

Int. Cl.[6] A61F *13/20*

U.S. Cl. 604—14 **17 Claims**



1. A tampon applicator comprising:

a) a straight, elongated cylindrical tube capable of housing an absorbent tampon, said tube having an outside diameter and first and second spaced apart ends, said tube being formed from at least two distinct layers which extend between said first and second ends, said layers including at least one interior layer and an exterior layer with one of said interior layers being a film;

b) a flexible insertion tip integrally formed on said elongated cylindrical tube from said film layer, said flexible insertion tip extending outward from said first end and having a thickness which is less than that of said tube and said flexible tip having an outside diameter which is equal to or less than said outside diameter of said cylindrical tube; and

c) a second member telescopically mounted in said second end of said elongated cylindrical tube, said second member adapted to expel said tampon through said flexible insertion tip as it is pushed into said tube.

5,827,215

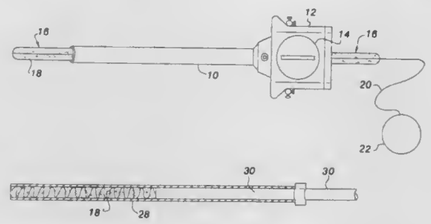
PACKING DEVICE FOR ENDOSCOPIC PROCEDURES

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Continuation of Ser. No. 789,599, Nov. 8, 1991, abandoned, which is a division of Ser. No. 556,081, Jul. 24, 1990, Pat. No. 5,074,840. This application Sep. 24, 1993, Ser. No. 125,881

Int. Cl.[6] A61F *13/15;13/20*

U.S. Cl. 604—15 **13 Claims**



1. In combination, a portal sleeve and a packing device for packing an internal operative site within the body of a patient in an endoscopically performed operative procedure where a narrow portal provides access to the operative site, the combination comprising

an elongate structural portal sleeve for establishing communication with the operative site from externally of the body when said portal sleeve is disposed in the narrow portal, said portal sleeve having a distal end for being disposed within the body, a proximal end for being disposed externally of the body and a lumen between said distal and proximal ends; and

a packing device comprising a delivery tube for being received in said lumen, an elongate strip of absorbent material capable of absorbing fluid, said strip of material having a dry state prior to absorbing fluid and a wet state when fluid is absorbed by said strip of material, said strip of material being rigid and stiff in said dry state and being soft and flexible in said wet state, said strip of material being disposed in said delivery tube in said dry state, and a rod attached to said strip of material and extending externally of the body when said delivery tube is received in said lumen, said rod being movable distally and proximally relative to said portal sleeve while remaining attached to said strip of material to force said strip of material from said tube and said portal sleeve to introduce said strip of material at the operative site and to manipulate said strip of material at the operative site once said strip of material has been forced from said portal sleeve.

5,827,216

METHOD AND APPARATUS FOR ACCESSING THE PERICARDIAL SPACE

Stephen R. Igo, Clear Lake Shores; James W. Meador, Houston, both of Tex., and Ruben Trono, Marion, Ohio, assignors to Cormedics Corp., Clear Lake Shores, Tex.

Filed Jun. 7, 1995, Ser. No. 484,299

Int. Cl.[6] A61N *1/30*

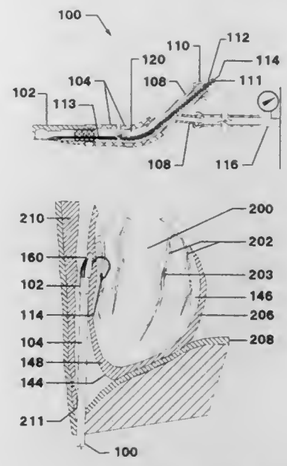
U.S. Cl. 604—21 **38 Claims**

1. A method for accessing a pericardial space, which comprises:

percutaneously inserting the distal portion of a elongated outer tubular body containing a lumen in fluid communication with an aperture in a sidewall adjacent a distal end of said distal portion, and locating such distal portion over the pericardium substantially parallel thereto with the aperture facing the pericardium surface,

applying a vacuum to said tubular body lumen remotely from said distal portion to draw a portion of the pericardium away from the surface of the heart into said aperture in a capture position, and

advancing a piercing element contained in the tubular body adjacent said aperture in a direction substantially parallel to the heart to pierce the pericardium portion captured in said aperture.



5,827,217

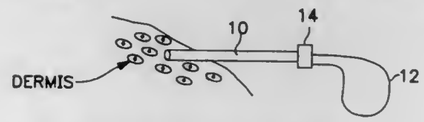
PROCESS AND APPARATUS FOR HARVESTING TISSUE FOR PROCESSING TISSUE AND PROCESS AND APPARATUS FOR RE-INJECTING PROCESSED TISSUE

Frederick H. Silver, 103 Springbrook Dr., Bangor, Pa. 18013, and Ary S. Chernomorsky, 40 Averell Dr., Morris Plains, N.J. 07950

Filed Sep. 4, 1996, Ser. No. 708,307

Int. Cl.[6] A61B *17/00*

U.S. Cl. 604—28 **8 Claims**



1. A process for harvesting tissue, which comprises:

a.) effecting an incision in a host;

b.) introducing a cannula having a diameter of about 0.5 to 4.0 mm and a length of from about 2.5 to 20 cm;

c.) withdrawing a tissue substrate from the host;

d.) admixing a buffer with said tissue substrafe;

e.) removing loose fat or fragmental tissue from the admixture of step d to form processed tissue;

f.) morcellating the processed tissue of step e; and

g.) comminuting the morcellated processed tissue of step f.

5,827,218

SURGICAL SUCTION POOL TIP

John Nguyen, San Jose, and Charles Nelson, Pleasanton, both of Calif., assignors to Stryker Corporation, Kalamazoo, Mich.

Filed Apr. 18, 1996, Ser. No. 634,652

Int. Cl.[6] A61M *1/00*

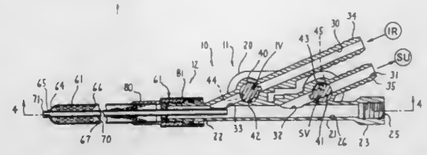
U.S. Cl. 604—30 **15 Claims**

1. A surgical suction tip for minimizing turbulence near sensitive organs during suction by a surgical suction irrigation apparatus, the tip comprising:

an outer tube having a turbulence minimizing distal end portion for communication with a surgical site and means for connecting a proximal end portion thereof to a suction irrigation passage of a suction irrigation handpiece;

an inner tube extending in said outer tube and having an open distal end portion for communication with a surgical site and having means defining an open proximal end portion for connection to a suction irrigation passage of a suction irrigation handpiece;

a flow responsive one way collapsing cone seal interposed between said inner and outer tubes.



5,827,219

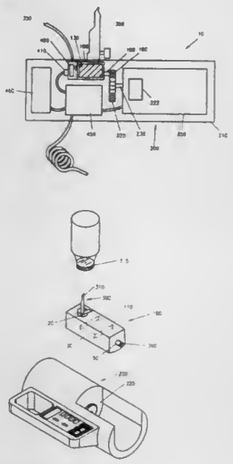
INJECTION SYSTEM AND PUMPING SYSTEM FOR USE THEREIN

Arthur E. Uber, III; Joseph B. Havrilla, both of Pittsburgh, and Alan D. Hirschman, Glenshaw, all of Pa., assignors to Medrad, Inc., Indianola, Pa.

Continuation-in-part of Ser. No. 144,845, Oct. 28, 1993, Pat. No. 5,569,181. This application May 31, 1996, Ser. No. 655,886

Int. Cl.[6] A61M *1/00*

U.S. Cl. 604—30 **28 Claims**



1. A pumping system comprising:

a. a removable pumping unit comprising: a non-deformable chamber comprising at least one inlet port for allowing a liquid medium to enter the chamber and an outlet port through which the liquid medium exits the chamber; a rotary mechanism disposed in the chamber and in fluid contact with the liquid medium, the non-deformable chamber and the rotary mechanism cooperable to pressurize the liquid medium via rotational displacement thereof for pressurized injection into a patient; and a drive connector operatively associated with the rotary mechanism; and

b. a drive housing adapted to receive said removable pumping unit, the drive housing comprising drive means for powering the rotary mechanism, the drive means comprising a drive coupling for removably engaging the drive connector on said removable pumping unit for providing a powered drive to the rotary mechanism;

whereby said removable pumping unit is suitable to be readily removed from connection with the drive means.

5,827,220

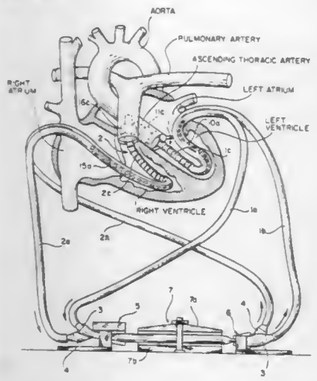
CANNULA SYSTEM FOR A BIVENTRICULAR CARDIC SUPPORT SYSTEM OR A CARDIOPULMONARY BYPASS SYSTEM AND METHOD

Thomas M. Runge, P.O. Box 50045, Austin, Tex. 78763

Division of Ser. No. 641,756, May 2, 1996, Pat. No. 5,688,245. This application Jul. 15, 1997, Ser. No. 892,911

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—49 **2 Claims**



I. A method of inserting a cannulation system into a patient's heart comprising the steps of:

a. selectively accessing the heart via the right or left atrial appendage, or both;

b. placing an echocardiographic transducer on the heart;

c. attaching at least one cannula to a respective intraluminal guidable flexible cable;

d. selectively positively directing and guiding the cannula and associated guide cable through the atrial and ventricles to the pulmonary artery or aorta;

e. continuously visualizing the direction of the cannula and associated guide; and

f. firmly fixing the cannula in the pulmonary artery or aorta.

5,827,221

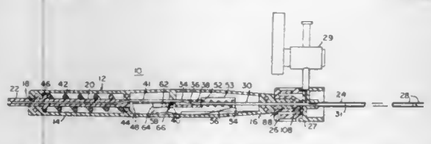
NEEDLE DEVICE

David Y. Phelps, 2815 Stratford Ave., Louisville, Ky. 40207

Continuation of Ser. No. 361,982, Dec. 22, 1994, Pat. No. 5,514,111, which is a division of Ser. No. 57,354, May 3, 1993, Pat. No. 5,376,082, which is a continuation-in-part of Ser. No. 788,253, Nov. 5, 1991, Pat. No. 5,207,647. This application May 6, 1996, Ser. No. 643,470

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—51 **2 Claims**



I. A method of delivering medical treatments to a body comprising the steps of:

advancing into a body space a medical delivery device having an elongated housing with a piercing needle attached at a distal end thereof, said piercing needle being arranged within a hollow catheter member also attached to said housing, said hollow catheter member and said piercing needle having a spring arrangement within said housing connected so as to effect relative movement between said catheter member and said piercing needle during use of said delivery device;

puncturing a body space by said piercing needle which needle extends distally beyond the distal end of said catheter member;

moving said catheter member relative to said piercing needle by action of said spring arrangement in said housing, upon said medical delivery device losing resistance to forward motion in a body being pierced; and

providing an audible indication of loss of resistance to forward motion in a body being pierced, by said delivery device, to the operator of said delivery device.

5,827,222

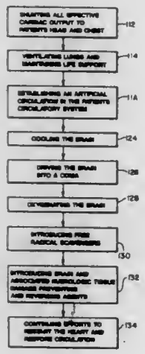
METHOD OF TREATING AT LEAST ONE OF BRAIN AND ASSOCIATED NERVOUS TISSUE INJURY

Ronald M. Klatz, and Robert M. Goldman, both of Chicago, Ill., assignors to Life Resuscitation Technologies, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 383,240, Feb. 3, 1995, Pat. No. 5,584,804, which is a continuation-in-part of Ser. No. 69,916, Jun. 1, 1993, Pat. No. 5,395,314, which is a continuation-in-part of Ser. No. 886,041, May 19, 1992, Pat. No. 5,234,405, which is a division of Ser. No. 595,387, Oct. 10, 1990, Pat. No. 5,149,321. This application Jun. 7, 1995, Ser. No. 484,601

Int. Cl.[6] A61M *21/00*

U.S. Cl. 604—52 **47 Claims**



I. A method of treating at least one of brain and associated nervous tissue injury, comprising the steps of:

a. establishing an artificial circulation in the circulatory system of a patient;

b. driving the brain of the patient into a comatose state;

c. oxygenating the brain by introducing oxygen carrying agents into the artificial circulation; and

d. lowering the brain temperature by introducing cooled fluid to at least one of the brain and associated nervous tissue, said cooled fluid being at a temperature below body temperature;

whereby metabolic rates of at least one of the brain and associated nervous tissue are slowed and said patient remains substantially neurologically intact.

5,827,223

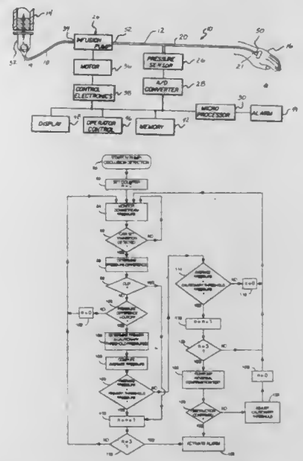
UPSTREAM OCCULSION DETECTION SYSTEM

Robert D. Butterfield, Poway, Calif., assignor to Alaris Medical Systems, Inc., San Diego, Calif.

Filed Aug. 31, 1995, Ser. No. 522,001

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—65 **12 Claims**



I. A method for detecting the condition of a fluid delivery system that includes a fluid line having an upstream end coupled to a fluid supply and a downstream end coupled to a fluid receiver, the delivery system having a flow control means for operating on a fluid chamber to control the flow of the fluid in the fluid line, the method comprising the steps of:

(a) controlling fluid flow through the fluid line at a pumping segment between the upstream and downstream ends;

(b) alternately exposing the pumping segment to fluid pressure at the upstream end of the fluid line and to fluid pressure at the downstream end of the fluid line;

(c) sensing the pressure downstream of the pumping segment and providing a pressure signal;

(d) determining a value corresponding to an average downstream pressure;

(e) comparing said average pressure value to a primary threshold value; and

(f) activating an occlusion alarm in response to the average pressure value being less than said primary threshold value.

5,827,224

PRESSURE APPLYING FLUID TRANSFER MEDICAL DEVICE

Ronald D. Shippert, 4975 S. Albion St., Littleton, Colo. 80121

Continuation-in-part of Ser. No. 561,869, Nov. 22, 1995, Pat. No. 5,713,855. This application May 16, 1996, Ser. No. 649,997

Int. Cl.[6] A61M *31/00*

U.S. Cl. 604—73 **8 Claims**

I. A medical device for applying pressure and absorbing liquid in a nasal cavity having walls, comprising;

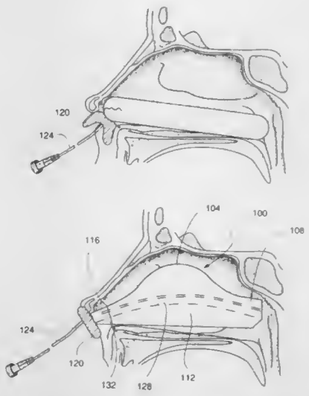
a packing member having a length that includes:

a posterior section having a width and a length;

a body section joined to said posterior section and having dimensions including a height, a width, and a length; and

an anterior section joined to said body section;

a wrap member having a length and being disposed about portions of said anterior section for preventing said anterior section portions from unwantedly adhering to nasal cavity walls, said wrap member length being substantially less than a combined length of said posterior section and body section lengths, and in which said posterior section and said body section remain exposed to the nasal cavity walls and free of contact from said wrap member along substantial portions of said combined length.



5,827,225

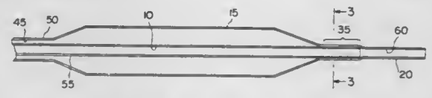
CATHETER FLEXIBLE DISTAL TIP

Sharon Ma Schwab, Encinitas, Calif., assignor to Medtronic, Inc., Minneapolis, Minn.

Continuation of Ser. No. 312,359, Sep. 26, 1994, abandoned. This application Jan. 22, 1997, Ser. No. 787,076

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—96 **5 Claims**



I. A dilatation balloon catheter with a flexible tip comprising:

(a) a catheter body having proximal and distal ends with an outer shaft defining an inflation lumen and an inner guidewire shaft defining a guidewire lumen, the guidewire shaft having a proximal end, a distal end, an inner diameter and an outer diameter, the inner guidewire shaft extending longitudinally through the outer shaft inflation lumen;

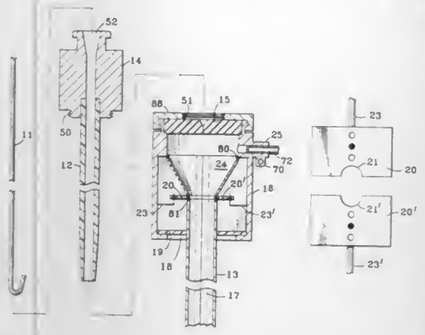
(b) an inflatable balloon mounted at the distal end of the catheter body, the balloon having a distal end and a proximal end, the proximal end of the balloon in fluid communication with the distal end of the inflation lumen and the distal end of the balloon sealingly mounted to the distal end of the inner guidewire shaft to form a distal bond, the distal bond having a proximal end and a distal end; and

(c) a flexible tip defining an inner lumen, the flexible tip having an inner diameter and an outer diameter, the flexible tip being formed from the distal end of the balloon material distally extending beyond the distal end of the guidewire shaft, the inner diameter of the flexible tip being equal to the inner diameter of the guidewire shaft from the proximal end of the balloon to the distal end of the flexible tip, the flexible tip having a proximal end and a distal end, the proximal end of the tip abutting the distal end of the guidewire shaft.

5,827,226

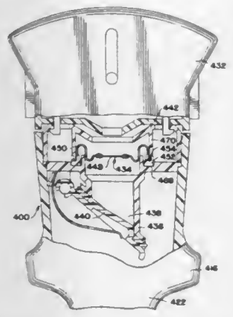
Patent Not Issued For This Number

5,827,227
CATHETER HAVING A RADIALLY ADJUSTABLE SHEATH
Augustin J. DeLago, 11 Pheasant La., Menands, N.Y. 12202
Filed Jul. 17, 1996, Ser. No. 682,326
Int. Cl.[6] A61M *29/00*
U.S. Cl. 604—104 **14 Claims**



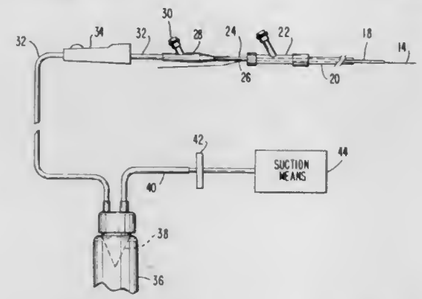
1. A device, for percutaneous access to a patient, including a housing containing a hemostatic valve, said device comprising:
a radially adjustable sheath, operatively attached to said housing;
a flexible expandable funnel-shaped conduit operatively coupled to said radially adjustable sheath within said housing, said conduit being larger than said radially adjustable sheath; and
an adjustment device, attached to said housing, for radially adjusting said sheath, wherein the adjustment device further comprises means for step-wise incremental adjustment of the sheath.

5,827,228
SEAL MEMBERS FOR SURGICAL TROCARS
C. Daniel Rowe, Batavia, Ohio, assignor to Ethicon, Inc.
Continuation of Ser. No. 46,587, Apr. 12, 1993, Pat. No. 5,545,142, which is a continuation-in-part of Ser. No. 779,040, Oct. 18, 1991, Pat. No. 5,209,736. This application Feb. 16, 1996, Ser. No. 569,353
Int. Cl.[6] A61M *39/04*
U.S. Cl. 604—167 **13 Claims**



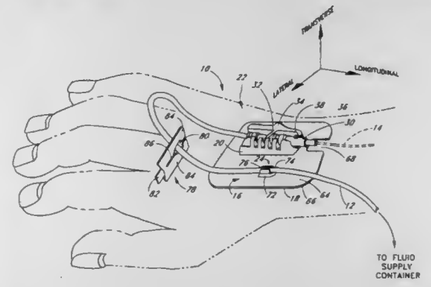
1. A trocar assembly for providing communication into an anatomical cavity, comprising:
(a) a trocar tube defining an interior lumen having an open distal end portion and an open proximal end portion for accommodating axial movement of an elongate instrument of lesser cross-sectional dimension therethrough;
(b) a housing adjoining said proximal end portion of said trocar tube defining a chamber having open distal and proximal end portions that communicate with said lumen and permit axial movement of an elongate instrument therethrough;
(c) an elastomeric seal member positioned in said chamber for sealing said proximal end portion of said chamber, said seal member having a distal surface and a proximal surface, said seal member having an inner section and an outer section, said inner section having an opening formed therein for permitting an elongate instrument to pass therethrough in sealing engagement therewith, said seal member having a corrugated portion formed in said outer section in surrounding relationship with said opening so as to maintain the sealing engagement with an elongate instrument during off-centering of an instrument with respect to said seal member; and
(d) an annular floating ring located immediately adjacent and extending from at least one of said distal and proximal surfaces of said seal member to separate said inner section from said outer section so that off-center movement of an elongate instrument extending through said opening causes lateral movement of said outer section while maintaining said inner section in sealing engagement with the instrument.

5,827,229
PERCUTANEOUS ASPIRATION THROMBECTOMY CATHETER SYSTEM
David C. Auth, Kirkland; Lucas S. Gordon, Redmond, and Lauri J. DeVore, Seattle, all of Wash., assignors to Boston Scientific Corporation Northwest Technology Center, Inc., Redmond, Wash.
Filed May 24, 1995, Ser. No. 449,203
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—171 **2 Claims**



1. A percutaneous aspiration thrombectomy catheter system comprising:
(a) a catheter shaft having proximal and distal ends, designed to be advanced through a hemostasis valve and over a guidewire for placement of its distal end at a point proximal to the thrombus, the catheter shaft defining at least one longitudinally-extending lumen, said catheter having a guidewire retaining means which retains the guidewire within the catheter in a peripheral or non-centered part of the catheter cross-section, the distal tip opening of said catheter being angled back from the guidewire retaining means to allow the catheter to follow the guidewire around tight bends and across restrictions easily; and
(b) suction means in fluid connection with the proximal end of the catheter for providing vacuum down a first catheter lumen to the distal tip, for drawing thrombus into said first lumen,
wherein said first lumen terminates in an angled tip at the distal end, the angled tip opening improving the removal of thrombus adhering to the vessel wall and reducing clogging of the hole with thrombus; wherein the catheter is provided with a second lumen having a distal end and a proximal end as a guidewire retaining means, said second lumen extending proximally from the distal end of the catheter and terminating at a point distal to where the catheter passes through the hemostasis valve; and wherein the proximal end of the second lumen is provided with a slit for a portion of its length from the proximal end toward the distal end to allow for the peeling of the catheter from the guidewire.

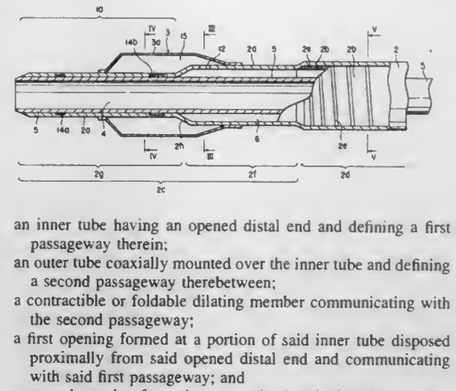
5,827,230
CATHETER ANCHORING SYSTEM
Steven F. Bierman, Del Mar, Calif., assignor to Venetec International, Inc., Mission Viejo, Calif.
Continuation of Ser. No. 223,948, Apr. 6, 1994, Pat. No. 5,598,013, which is a continuation-in-part of Ser. No. 121,942, Sep. 15, 1993, Pat. No. 5,456,671, which is a continuation-in-part of Ser. No. 34,340, Mar. 19, 1993, Pat. No. 5,354,282, which is a continuation-in-part of Ser. No. 695,549, May 3, 1991, Pat. No. 5,314,411, which is a continuation-in-part of Ser. No. 518,964, May 4, 1990, Pat. No. 5,192,273, which is a continuation-in-part of Ser. No. 384,326, Jul. 24, 1989, abandoned. This application Nov. 25, 1996, Ser. No. 753,277
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—174 **22 Claims**



1. An anchoring system for use with a medical article adapted to be secured to the skin of a patient, said medical article including an elongated tubular body and a radially extending member which projects from the tubular body, said anchoring system comprising:
a retainer including first and second channel portions which extend about a longitudinal axis, each channel portion generally having a truncated circular cross-sectional shape with an opening along said longitudinal axis, each channel sized to surround at least a portion of the tubular body of the medical article through an arc of greater than 180° about said longitudinal axis, and at least one lateral slot which extends generally perpendicular to said longitudinal axis and lies between said first and second channel portions, said slot having a longitudinal length so dimensioned to substantially equal the thickness of the radially extending member of said medical article and less than the combined longitudinal lengths of said first and second channels to provide lateral stability of the medical article with the radially extending member positioned within said lateral slot; and
a flexible anchor pad having an adhesive bottom surface and a top surface on which said retainer is mounted, said retainer being positioned on said top surface in a position exposing the openings to said channel portions.

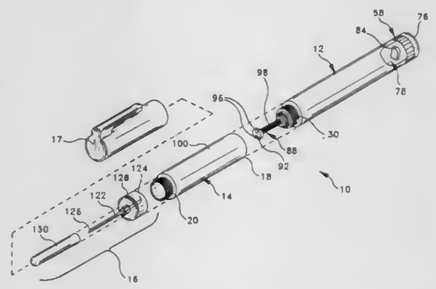
5,827,231
BLOOD VESSEL DILATOR
Kinya Harada, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 5, 1996, Ser. No. 708,748
Claims priority, application Japan, Sep. 5, 1995, 7-254620
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 **22 Claims**

1. A blood vessel dilator comprising:



an inner tube having an opened distal end and defining a first passageway therein;
an outer tube coaxially mounted over the inner tube and defining a second passageway therebetween;
a contractible or foldable dilating member communicating with the second passageway;
a first opening formed at a portion of said inner tube disposed proximally from said opened distal end and communicating with said first passageway; and
a second opening formed at a proximal end of said outer tube and communicating with said second passageway;
wherein said outer tube is composed of a rigid inner tubular component and an outer tubular component covering said inner tubular component, a forward portion of said outer tubular component being extended farther from a distal end of the inner tubular component; a distal end portion of said forward portion of said outer tubular component is diametrically contracted fixing onto an outer peripheral surface of said inner tube and extended near the distal end of the inner tube; an opening for allowing said second passageway to communicate with an interior of said dilating member is formed at a proximal end portion of said forward portion of said outer tubular component; a distal end portion of said dilating member is fixed to a portion of said outer tubular component which is contacted with said inner tube; and a proximal end portion of said dilating member is attached to a portion of said outer tubular component which is located rearward of said opening.

5,827,232
QUICK CONNECT MEDICATION DELIVERY PEN
Lawrence H. Chanoch, Mahwah, and John B. Wilson, Wanaque, both of N.J., assignors to Becton Dickinson and Company, Franklin Lakes, N.J.
Continuation of Ser. No. 263,591, Jun. 22, 1994, abandoned. This application Sep. 29, 1997, Ser. No. 939,964
Int. Cl.[6] A61M *5/00*
U.S. Cl. 604—208 **7 Claims**



1. A medication delivery pen comprising:
a disposable medication-containing cartridge assembly having:
a cartridge with a pierceably sealed distal end and a plunger in sliding fluid tight engagement therein to dispense medication from said cartridge when said plunger slides in a distal direction;

a tab mounted within said cartridge assembly; and

an open proximal end having an array of threads located between said open proximal end and said tab, said tab being located near a distal end of said array of threads; and

a reusable pen body assembly having:

a housing with opposed proximal and distal ends, said distal end having an array of threads dimensioned and having a pitch for threaded engagement with said array of threads at said proximal end of said cartridge assembly;

a lead screw having a proximal end disposed in said housing and a distal end projecting beyond said distal end of said housing for selective engagement with said plunger to push said plunger in said distal direction, said lead screw having an array of threads extending between said proximal end and said distal end of said lead screw and having a pitch substantially equal to said pitch of said array of threads at said distal end of said pen body assembly and at least one anti-rotation groove extending axially along said lead screw for receiving said tab on said cartridge assembly when said cartridge assembly is threaded onto said housing of said pen body to prevent relative rotation between said lead screw and said cartridge assembly, with said lead screw being free to rotate and move in the proximal direction prior to said cartridge assembly being threaded onto said housing of said pen body; and

driver means for moving said lead screw distally in said pen body assembly selected amounts.

5,827,233

PREFILLED SYRINGE

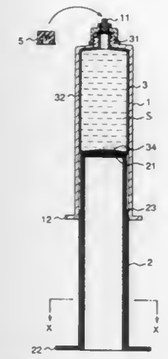
Hitoshi Futagawa, Kusatsu; Mitsuo Murakami, Amagasaki; Masafumi Aramata, Neyagawa; Toshikazu Hirayama, Ohtsu, and Yohji Arifuku, Kusatsu, all of Japan, assignors to Nissno Corporation, Osaka-fu, Japan

Filed Dec. 24, 1996, Ser. No. 772,530

Claims priority, application Japan, Dec. 26, 1995, 7-338448

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—232 **10 Claims**



I. A prefilled syringe comprising:

a barrel having a narrowed distal end and an open proximal end, said narrowed distal end having an annular groove in an inner wall thereof, said narrowed distal end further having engaging means formed in an outer wall thereof;

a plunger inserted into said barrel through the open end thereof and slidably held therein, said plunger having a diameter smaller than an inner diameter of the barrel to form a cylindrical space between said plunger and said barrel;

a tubular container having a mouth at one end and containing a liquid medicament charged therein, said mouth having an annular rib at a distal end thereof, said tubular container being held in said barrel and fixed to said barrel with the mouth of the container inserted into a lumen of said narrowed distal end and with said annular rib engaged with said annular groove in the narrowed distal end of the barrel, said tubular container being adapted to be folded up and squeezed into the cylindrical space between the plunger and the barrel when forcing the plunger into said barrel;

a luer tip member having a luer tip and being engaged with said engaging means formed on the outer wall of the narrowed distal end of the barrel; and

sealing means located between the mouth of said tubular container and the luer tip member for sealing a gap between the mouth of said tubular member and said luer tip member.

5,827,234

DEVICE FOR ADMINISTERING IMPLANTS

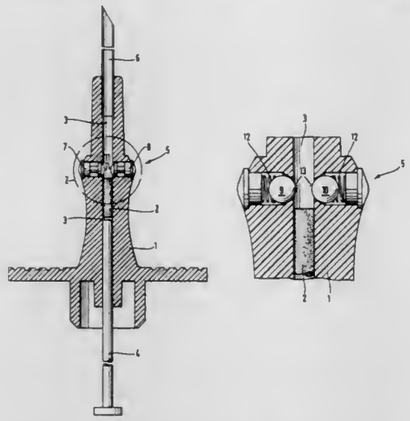
Hans-Joachim Loos, Ginsheim-Gustavsburg; Günter Ziegert, Frankfurt am Main; Horst Pajuok, and Heinrich Pajunk, both of Geisingen, all of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

Continuation of Ser. No. 262,899, Jun. 21, 1994, Pat. No. 5,520,660. This application Dec. 1, 1995, Ser. No. 565,837

Claims priority, application Germany, Jun. 23, 1993, 43 20 754.5

Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—236 **8 Claims**



1. A device for administering implants, comprising:

an active substance container including an injection cannula having an internal channel, a plunger channel coaxial with the internal channel of the cannula, and a plunder movable within the plunger channel; and

a retaining element including a spring-loaded ball biased to at least partially protrude into the plunger channel and displaceable in a direction perpendicular to a longitudinal axis of the plunger channel, for engaging and preventing inadvertent movement of an implant through the plunger channel.

5,827,235

METHOD AND APPARATUS USED TO APPLY TOPICAL MEDICATION

George M. Beaver, 4190 Ridgewood Ave., Port Orange, Fla. 32127

Filed Dec. 23, 1996, Ser. No. 771,521

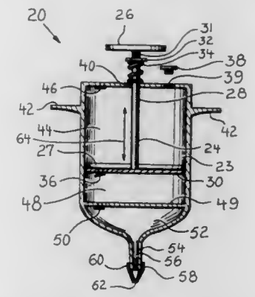
Int. Cl.[6] A61M *5/315*

U.S. Cl. 604—236 **9 Claims**

1. A dispenser for applying topical medication comprising:

a housing comprising a housing top having a normally closed upper reservoir valve and a rod aperture, a housing bore, a stop within said housing bore, and a lower reservoir floor having a normally closed lower reservoir valve; and

a piston assembly comprising a rod slidably disposed within said rod aperture, a piston attached to one end of said rod, and a normally open piston valve disposed on said piston, said piston being sized to reciprocate within said housing bore between said stop and said lower reservoir floor.



5,827,236

INJECTION TOOL AND METHOD OF ITS USE

Toyomi Takahashi, Mitaka, Japan, assignor to Seikagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

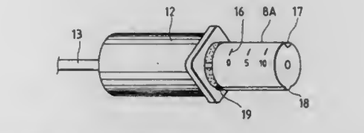
PCT No. PCT/JP93/01638, § 371 Date Mar. 13, 1995, § 102(e) Date Mar. 13, 1995, PCT Pub. No. WO94/11042, PCT Pub. Date May 26, 1994

PCT Filed Nov. 10, 1993, Ser. No. 403,693

Claims priority, application Japan, Nov. 10, 1992, 4-324750; Nov. 10, 1993, 4-324750

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—240 **11 Claims**



1. An injection tool comprising:

an injection device comprising an engagement device, an injection barrel having a distal ends and an injection needle mounted at said distal end;

a piercing hollow needle having a connector portion with a corresponding engagement device for connecting said piercing hollow needle to said injection device and a needle portion that allows said injection needle to be inserted therethrough almost tightly, wherein, upon connecting said connector portion of said piercing hollow needle to said injection device, said engagement device engages with said corresponding engagement device to provide a non-rotating reciprocal relationship therebetween such that said injection needle of said injection device is translatable and non-rotatable within said needle portion of said piercing hollow needle; and

an inner needle having a basal portion tightly fittable into said connector portion of said piercing hollow needle when said connector portion is not connected to said injection device and a solid needle portion, for reinforcing said needle portion of said piercing hollow needle, insertable almost tightly in said needle portion of said piercing hollow needle when said injection needle is not inserted in said needle portion.

5,827,237

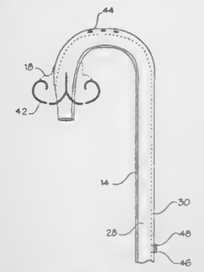
DUAL LUMEN CATHETER WITH CONTROLLED ANTEGRADE AND RETROGRADE FLUID FLOW

John A. Macoviak, Huntington Beach, and Michael Ross, Hillsborough, both of Calif., assignors to Cardeon Corporation, Saratoga, Calif.

Filed Jun. 17, 1996, Ser. No. 664,361

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—246 **29 Claims**



1. A catheter device to regulate fluid flow within a circulatory vessel, comprising:

an elongated catheter body configured to access one of a circulatory vessel or a heart chamber, the elongated catheter body including a proximal end, a distal end, and a first lumen including an open proximal end and a distal end with a port formed proximate the distal end of the first lumen; and

an antegrade valve coupled to an exterior of the catheter body and configured to provide a controllable antegrade flow and a controllable retrograde flow along the exterior of the catheter body, wherein the antegrade valve includes one or more leaflets wherein the antegrade flow is greater than the retrograde flow.

5,827,238

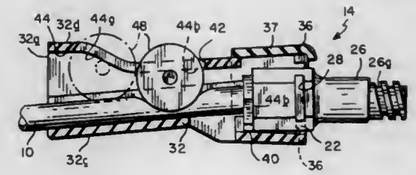
ROLLER CLAMP-CONNECTOR ASSEMBLY

Richard Kelley, Tyngsboro, Mass., assignor to Microwave Medical Systems, Inc., Acton, Mass.

Filed Oct. 30, 1997, Ser. No. 961,356

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—250 **11 Claims**



1. A connector/clamp assembly for a transfer set, said assembly comprising

a tubular inlet connector having a base and a shank extending from the base;

an I.V. tube having one end connected to the base, an opposite end and a lumen extending between said ends;

a housing having opposite ends, a bottom wall and a pair of side walls extending from the bottom wall, said base interfitting with said housing so that said shank extends from one end of

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the housing and the tube extends along the bottom wall to the opposite end of the housing, and

clamping means in the housing opposite the tube, said clamping means being movable within the housing between a first position wherein the clamping means collapses the tube against the housing bottom wall thereby blocking said lumen and a second position wherein the clamping means does not collapse the tube sufficiently to appreciably occlude the lumen said clamping means including means defining a track extending along the housing, and a roller positioned in the housing for rolling along the track, said track having a first segment which spaces the roller from the housing bottom wall a distance no less than the diameter of the tube and a second segment which spaces the roller from said bottom wall a much lesser distance sufficient to collapse the tube and block the lumen.

5,827,239

PROTECTION ASSEMBLY

Jagmohanbir Singh Dillon, Bonython, and William Leonard Mobbs, Wanniassa, both of Australia, assignors to Noble House Group Pty. Ltd., Wanniassa, Australia

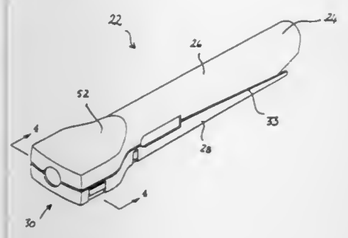
PCT No. PCT/AU95/00119, § 371 Date Sep. 9, 1996, § 102(e) Date Sep. 9, 1996, PCT Pub. No. WO95/24332, PCT Pub. Date Sep. 14, 1995

PCT Filed Mar. 9, 1995, Ser. No. 714,119

Claims priority, application Australia, Mar. 9, 1994, PM4327

Int. Cl.[6] A61M *5/00*

U.S. Cl. 604—263 **9 Claims**



1. A protection assembly for a wing catheter having a plurality of wings, the protection assembly comprising:

a sleeve member adapted to be longitudinally displaced relative to the wing catheter from a needle exposed position to a needle protected position, wherein the sleeve member comprises a pair of submembers adapted to be locked together to form the sleeve member,

the sleeve member further comprising open-ended wing receiving means for receiving the wings of the wing catheter, the open-ended wing receiving means being defined between the locked together sub-members, and

the sleeve member further comprising fixing means for engaging the winged catheter so as to fix the wing catheter in the needle protected position.

5,827,240

Patent Not Issued For This Number

5,827,241

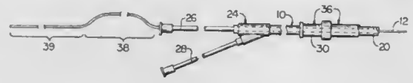
RAPID EXCHANGE GUIDEWIRE MECHANISM

Nareak Douk, Lowell; Richard A. Gambale, Tyngsboro, and William A. Berthiaume, Hudson, all of Mass., assignors to C. R. Bard, Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 479,680

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—280 **19 Claims**



1. An elongate, substantially linear guidewire for use with a catheter, the guidewire comprising a free proximal end that, during use, remains external of the body of a patient into which the guidewire is inserted, a distal end, and a non-linear segment formed in the wire adjacent its proximal end, the non-linear segment including at least one permanent bend having at least a portion thereof displaced transversely from the longitudinal axis of the guidewire by a distance that is substantially greater than the diameter of the guidewire.

5,827,242

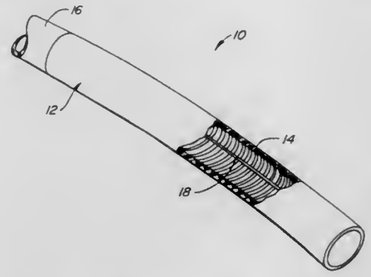
REINFORCED CATHETER BODY AND METHOD FOR ITS FABRICATION

Brett A. Follmer, Santa Clara, and William S. Tremulis, Redwood City, both of Calif., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 21, 1996, Ser. No. 669,256

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **46 Claims**



1. A catheter comprising a tubular body, wherein at least a portion of the tubular body comprises a helical reinforcement element composed of a first polymeric material embedded in a tubular matrix composed of a second polymeric material which is softer than the first polymeric material, wherein the reinforcement element is fused to the polymeric matrix, wherein the risk of delamination is reduced.

5,827,243

COLLAPSIBLE ASPIRATION CATHETER

Aubrey M. Palestrant, 6800 N. 47th St., Paradise Valley, Ariz. 85253

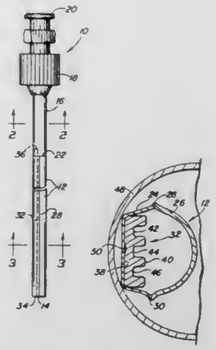
Filed Nov. 29, 1996, Ser. No. 770,372

Int. Cl.[6] A61M *25/00*

U.S. Cl. 604—282 **25 Claims**

1. A substantially collapsible catheter apparatus for providing a passage into a patient's body to infuse fluids therein and/or to aspirate fluids therefrom, said catheter comprising in combination:

a. a catheter tube having a longitudinal axis, said catheter tube having leading and trailing ends and including:



i. a reinforcing wall forming a portion of said catheter tube, said reinforcing wall extending between the leading and trailing ends of said catheter tube and having opposing first and second side edges; and

ii. a flexible strip of material extending along a predetermined length from the leading end of said catheter tube to a point generally proximate the trailing end of said catheter tube and having first and second opposing edges, the first edge of said strip being joined along the first side edge of said reinforcing wall, and the second edge of said strip being joined along the second side edge of said reinforcing wall, wherein said reinforcing wall and said strip enclose a lumen therebetween, said strip being collapsible and non-resistant to lateral deformation;

b. the trailing end of said catheter tube being adapted to receive fluid to be infused into, and to convey fluid aspirated from, a patient's body;

c. the leading end of said catheter tube providing a port through which infused fluid received at the trailing end of said catheter tube can be introduced into a patient's body, and through which aspirated fluid can be removed from a patient's body;

d. said strip expanding away from said reinforcing wall to a generally rounded shape when fluid is infused through said catheter tube into a patient, and said strip being deformable toward said reinforcing wall to a more flattened configuration when infusion is terminated; and

e. said reinforcing wall of said catheter tube including preventing means secured to said reinforcing wall and extending substantially along said predetermined length of said flexible strip of material from the leading end of said catheter tube to a point generally proximate the trailing end of said catheter tube for preventing said strip from entirely sealing said lumen during aspiration of fluid through said lumen.

5,827,244

INTRAVENOUS INFUSION SYSTEM

Conrad H. Boettger, Hesston, Kans., assignor to Via Christi Research Inc., Wichita, Kans.

Division of Ser. No. 475,373, Jun. 7, 1995, which is a continuation of Ser. No. 67,394, May 25, 1993, Pat. No. 5,464,399, which is a continuation of Ser. No. 837,263, Feb. 18, 1992, abandoned. This application Aug. 23, 1996, Ser. No. 701,836

Int. Cl.[6] A61M *25/00*

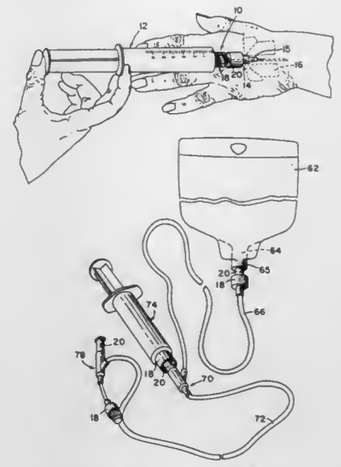
U.S. Cl. 604—283 **6 Claims**

1. A needleless IV infusion system comprising:

a flexible tubular supply line for use in delivering a primary liquid from a source of supply to a patient's vascular system;

a pair of needleless connectors at opposite ends of the line for joining the line with mating needleless components at the source of supply and proximal to the patient, respectively; and

a multiplicity of needleless secondary access ports in the line for providing multiple, selectively usable, secondary sites of access to the patient's vascular system,



each of said secondary access ports comprising:

a hollow body having a primary inlet fixedly joined to an upstream segment of the supply line, a primary outlet fixedly joined to a downstream segment of the supply line, and a secondary inlet communicating with said primary outlet;

a normally closed check valve associated with said secondary inlet for maintaining the secondary inlet closed unless intentionally opened by a device that becomes detachably secured to the body for the purpose of accessing the patient's vascular system through the secondary port; and

releasable locking structure on the body at said secondary inlet for engagement with mating locking structure on the device to detachably secure the device to the body during access to the patient's vascular system through the secondary port,

said locking structure on the body comprising a female luer lock end permanently secured to the body and including a generally cylindrical, annular wall having external threads disposed for meshing engagement with internal threads on the device to be attached to the female luer end,

said check valve including a one-piece, resilient poppet yieldably biased into a closed position and having an actuating stem that projects axially into surrounded relationship with the wall of the female luer end for opening depression by the device attached to the secondary inlet.

5,827,245

TRANSDERMAL THERAPEUTIC SYSTEM COMPRISING THE ACTIVE SUBTANCE 17-β-ESTRADIOL (ANHYDROUS)

Michael Horstmann, Neuwied; Marion Kursawe, Andernach, and Horst Dzekan, Kleinmaischeid, all of Germany, assignors to LTS Lohmann Therapie-Systeme GmbH & Co. KG, Neuwied, Germany

Continuation of Ser. No. 367,356, Mar. 23, 1995, abandoned. This application May 9, 1997, Ser. No. 854,205

Claims priority, application Germany, Jul. 16, 1992, 42 23 360.7

Int. Cl.[6] A61F *13/02;* **A61K** *9/16*

U.S. Cl. 604—307 **15 Claims**



1. A transdermal therapeutic system comprising

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a laminated structure positioned on a backing layer which is substantially impermeable to an active substance and to moisture;

at least one matrix layer within said laminated structure and which contains anhydrous 17-β-estradiol in crystalline form; and

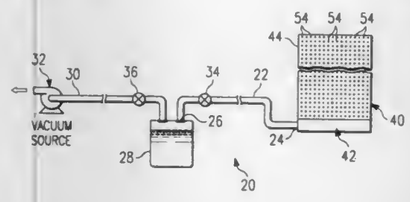
said system, during storage prior to application, is present in combination within a gas-tight, sealed packing material containing a dehydrating water-absorbing substance; and crystals of said anhydrous 17-β-estradiol in the matrix layer are in equilibrium with dissolved 17-β-estradiol, whereby a high concentration of dissolved estradiol is maintained in equilibrium to the crystalline form by gradual dissolution of the crystals owing to constant thermodynamic activity.

5,827,246

VACUUM PAD FOR COLLECTING POTENTIALLY HAZARDOUS FLUIDS

Michael L. Bowen, Arlington, Tex., assignor to Tecnol Medical Products, Inc., Fort Worth, Tex.

Filed Feb. 28, 1996, Ser. No. 608,118
Int. Cl.[6] A61M *1/00*
U.S. Cl. 604—313 **28 Claims**



1. A disposable vacuum pad for use during medical procedures to collect potentially hazardous fluids comprising:

a corrugated panel having edges and an interior volume defined by a first sheet and a second sheet with a plurality of ribs disposed within said interior volume and attached to the first sheet and the second sheet as an integral part thereof;

said ribs defining a plurality of fluid flow channels formed between the first sheet and the second sheet running generally continuously from one said edge to another said edge of said panel;

each said fluid flow channel comprising a plurality of openings formed in the first sheet generally along the length of said channel to allow fluid communication between the exterior of the first sheet and the respective fluid flow channels along the length thereof; and

a manifold coupled with the fluid flow channels to communicate a source of vacuum with the fluid flow channels to draw a potentially hazardous fluid from the exterior of the vacuum pad through the holes in the first sheet, the fluid flow channels and into the manifold.

5,827,247

EXTERNAL INCONTINENCE DEVICE AND VAPOR-ABSORPTIVE ADHESIVE COMPOSITIONS

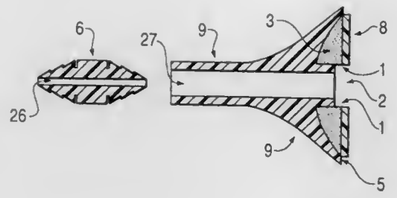
Dennis M. Kay, Tampa, Fla., assignor to Bioderm, Clearwater, Fla.

Continuation-in-part of Ser. No. 747,376, Aug. 20, 1991, Pat. No. 5,263,947. This application Nov. 23, 1993, Ser. No. 156,619
Int. Cl.[6] A61M *1/00*; A61F *5/44*
U.S. Cl. 604—327 **34 Claims**

1. An external incontinence device comprising:

a housing having an outer surface, an inner surface, and an outlet conduit for fluid drainage extending therethrough, said outer surface operably facing away from a para-meatal surface of a patient, said inner surface operably facing towards a para-meatal surface of a patient, said outlet conduit having an external end and an internal end for positioning adjacent a urethral meatus of the patient, said internal end of said outlet conduit extending through a central portion of said inner surface of said housing; and

an adhesive barrier disc having a first surface, a second surface, and a third surface, said first surface being positioned on said inner surface of said housing, said second surface being positioned on an exterior side surface of said internal end of said outlet conduit, and said third surface being disposed for contacting a para-meatal surface of the patient to surround the urethral meatus of the patient, said adhesive barrier disc comprising a biocompatible material that provides an occlusive barrier against microbes and contaminants around the urethral meatus, said biocompatible material being at least one of fluid-permeable, vapor-permeable, and fluid-absorptive.

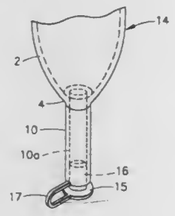


5,827,248

MENSTRUAL CUP

Lou H. Crawford, Cincinnati, Ohio, assignor to The Keeper Co., Inc., Cincinnati, Ohio

Filed Nov. 18, 1993, Ser. No. 154,344
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—328 **14 Claims**



1. A menstrual cup, for use in the vagina comprising a body having a hollow interior, an open upper end and a lower end, said body being of circular transverse cross section throughout its length, an annular exterior rim means surrounding said body adjacent said open upper end for engaging the vagina wall to prevent bypass leakage, an elongated extension on said body projecting from said lower end thereof, said extension comprising a removal device for said menstrual cup, said extension being tubular and having a longitudinal passage therein, said lower body end having an opening providing communication between said hollow interior of said body and said extension passage, means for normally closing said extension passage, said closing means being manually manipulable to an open state for opening said extension passage, whereby said menstrual cup can be drained of fluid without removal from the vagina.

the first and second portions divided by the cut as the first and second portions overlap each other; and

the rear section has a leakage blocking dam including an elasticized sheet having a base end extending along and bonded to the edge of the opening transversely of the bag and a free end adapted to be raised radially of the opening from the base end.

5,827,249

EXTERNAL URINARY CATHETER AND A HOSE CONNECTOR FOR CONNECTION THEREWITH

Thomas Dam Jensen, Helsingør, Denmark, assignor to Coloplast A/S, Denmark

PCT No. PCT/DK95/00234, § 371 Date Dec. 27, 1996, § 102(e) Date Dec. 27, 1996, PCT Pub. No. WO96/00541, PCT Pub. Date Jan. 11, 1996
PCT Filed Jun. 12, 1995, Ser. No. 765,073
Claims priority, application Denmark, Jun. 29, 1994, 0774/94
Int. Cl.[6] A61F *5/44*
U.S. Cl. 604—349 **9 Claims**



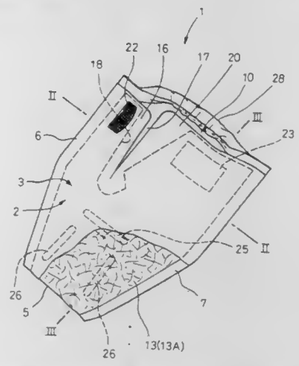
1. An external catheter for remedying male urinary incontinence, comprising a sheath essentially formed as a shaft and a constricted drainage tube part integrated therewith for connection with a hose connector which is connected to a draining hose, characterized in that an end portion of the drainage tube part at the orifice therefore is divided into at least two sections, said sections forming partly cylindrical sections of the wall of the drainage tube part and being separated by means of slits mainly parallel to the axis of the drainage tube part.

5,827,250

URINE-ABSORBENT BAG

Yoshihisa Fujioka, Kagawa-ken, and Norihiko Ishikawa, Ehime-ken, both of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Jan. 22, 1997, Ser. No. 787,484
Claims priority, application Japan, Jan. 31, 1996, 8-015994
Int. Cl.[6] A61F *5/44;13/15*
U.S. Cl. 604—349 **6 Claims**



1. A urine-absorbent bag comprising a front section and a rear section adapted to cover a user's penis, an opening for insertion of the penis into the bag and a bottom opposed to the opening, wherein:

the front section has a cut extending from an edge of the opening toward the bottom of the bag so as to divide the front section in first and second portions, and fastening means for fastening

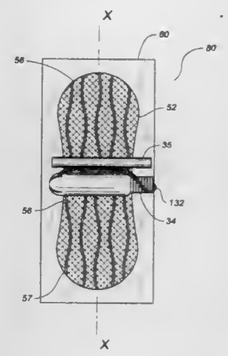
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5,827,251

FEMININE SANITARY PROTECTION PACKAGING ARTICLE AND METHOD

Susan J. Moder, and Richard W. Kubalek, both of Appleton, Wis., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Dec. 18, 1997, Ser. No. 993,025
Int. Cl.[6] A61F *13/15*; B65D *69/00*; A61B *17/06*; A45D *40/00*
U.S. Cl. 604—358 **20 Claims**



1. A feminine sanitary protection package, comprising:

(a) a vaginal insertion device;

(b) a panty liner configured to fit the pudendal region of a woman, said panty liner rolled laterally around said vaginal insertion device to form a laterally rolled combination panty liner and vaginal insertion device; and

(c) a pouch positioned around said laterally rolled vaginal insertion device and panty liner combination, wherein said pouch provides a means for transporting and disposing of said laterally rolled combination panty liner and vaginal insertion device.

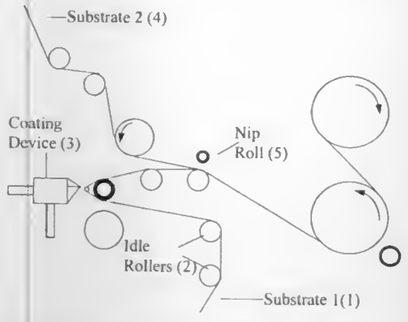
5,827,252

METHOD FOR PRODUCING A CONTINUOUS THERMOPLASTIC COATING AND ARTICLES CONSTRUCTED THEREFROM

Harald Werenicz, Reppenstedt; Thomas Wittkopf, Adendort; Gerhard Voss, Lüneburg; Peter Remmers, Hamburg, all of Germany; Mark G. Katsaros, Mahtomedi, Minn.; Robert Gordon Polance, Vadnais Heights, Minn., and Mark S. Kroll, Arden Hills, Minn., assignors to H.B. Fuller Licensing & Financing, Inc., St. Paul, Minn.

Filed Aug. 29, 1996, Ser. No. 705,578
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—367 **20 Claims**

1. A disposable article comprising at least one permeable substrate layer and at least one fluid impermeable barrier layer, said barrier layer having an area weight of less than 20 g/m^2 substantially adhered to the permeable substrate layer on at least one face,



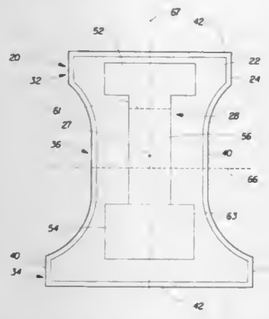
wherein said barrier layer comprises a hot melt adhesive coated as a continuous film.

5,827,253

ABSORBENT ARTICLES COMPRISING A MATERIAL HAVING HIGH FLUX CAPABILITIES

Gerald Alfred Young, Cincinnati, and Gary Dean LaVon, Middletown, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 27, 1997, Ser. No. 826,208
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—369 **30 Claims**



1. An absorbent core having a crotch region, wherein (i) the crotch region has an absorbent capacity of not more than about 40% of the absorbent core's total absorbent capacity and (ii) the crotch region comprises a material having an IF_{10} value of at least about 0.5 g/cm²/min.

5,827,254

ABSORBENT ARTICLE

Liberatore Antonio Trombetta; Dennis Allen Darby, both of Hamilton; Charlene Ann Hinds, Scarborough, and Dhanraj Shantilal Patel, Mississauga, all of Canada, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 13, 1996, Ser. No. 664,044
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—378 **19 Claims**

1. An absorbent article having a pair of end regions, a central region disposed between said end regions having a longitudinal length between about one-fourth to about two-thirds the total longitudinal length of the absorbent article, said central region comprising a pair of spaced apart longitudinal side portions, each longitudinal side portion having a transverse width between about one-eighth to about one-third of the total transverse width of said central region, and a central portion disposed between said longitudinal side portions, said central portion having a transverse width between about one-third to about three-fourths of the total transverse width of said central region, said absorbent article comprising:

a liquid pervious topsheet;

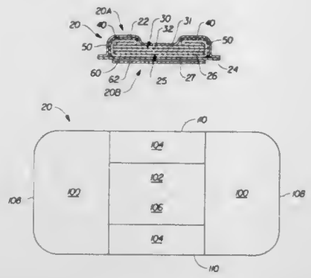
a liquid impervious backsheet joined with said topsheet;

an absorbent core positioned between said topsheet and said backsheet;

an acquisition component positioned between said topsheet and said absorbent core, said acquisition component having a total void volume capacity, said central region providing at least about 50% of said total void volume capacity;

a pair of resilient absorbent members disposed in said longitudinal side portions, said resilient absorbent members arranged in a transversely spaced relation to each other between said acquisition component and said top sheet;

said absorbent article having a total absorptive capacity, said central region providing at least about 50% of said total absorptive capacity, said longitudinal side portions providing at least about 70% of the central region's absorptive capacity.

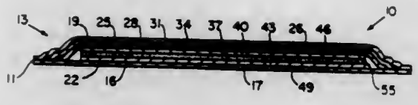


5,827,255

SANITARY NAPKIN COMPRISING AN ABSORBENT CORE HAVING A DENSITY GRADIENT

Sorin Crainic, Jouy-En-Josas, France, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 374,742, Jan. 26, 1995, abandoned. This application Jan. 27, 1997, Ser. No. 791,094
Claims priority, application European Pat. Off., Jul. 27, 1992, 92306825
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—378 **2 Claims**



1. A sanitary napkin, comprising:

a liquid pervious topsheet;

a liquid impervious backsheet attached to the topsheet; and

an absorbent core positioned between the topsheet and the backsheet having

i) a first tissue sheet having capillaries, said first tissue sheet being positioned adjacent to the topsheet and having a density from about 0.01 g/cm³ to about 0.1 g/cm³;

ii) a second tissue sheet having capillaries, said second tissue sheet being positioned adjacent to and below the first tissue sheet and having a density of from about 0.08 g/cm³ to about 0.3 g/cm³, the difference in density between the first and the second tissue sheets being from about 0.01 g/cm³ to about 0.2 g/cm³;

iii) a density gradient formed between the first tissue sheet and the second tissue sheet positioned adjacent to one-another such that fluid impacting the first tissue sheet will be drawn from the first tissue sheet by suction exerted by the smaller capillaries of the lower and more dense second tissue sheet; and

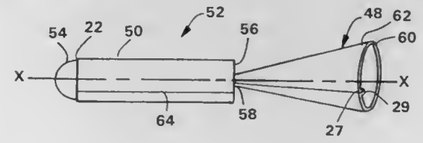
iv) a retention layer positioned between the second tissue sheet and the liquid impervious backsheet, said retention layer storing the fluid drawn by the gradient formed by the first tissue sheet and the second tissue sheet.

5,827,256

TAMPON HAVING A PROTECTIVE FINGER SHEATH AND A METHOD OF FORMING

Tammy Jo Balzar, Menasha, Wis., assignor to Kimberly-Clark Worldwide, Inc, Neenah, Wis.

Continuation-in-part of Ser. No. 426,393, Apr. 21, 1995, abandoned. This application Oct. 11, 1996, Ser. No. 730,540
Int. Cl.[6] A61F *13/15;13/20*
U.S. Cl. 604—385.1 **29 Claims**



1. A tampon comprising:

a) an absorbent having first and second ends and a rectangular configuration; and

b) a cover having an L-shaped configuration including a leg and a foot, said leg having a central longitudinal axis, said cover being aligned with said absorbent such that said foot is aligned adjacent to said second end of said absorbent and both said cover and said absorbent are rolled up along said central longitudinal axis into a cylindrically-shaped softwind which is compressed into an absorbent pledget, said absorbent pledget having a predetermined diameter, an insertion end and a trailing end, and a flexible sheath defined by said foot of said cover extending outward from said trailing end, said flexible sheath sized to receive a user's finger and prevent soiling of the finger during insertion of said absorbent pledget into a body cavity, and said flexible sheath providing means for removing said absorbent pledget from the body cavity.

5,827,257

URINE-ABSORBENT BAG

Yoshihisa Fujioka, Kagawa-ken, and Norihiko Ishikawa, Ehime-ken, both of Japan, assignors to Uni-Charm Corporation, Ehime-ken, Japan

Filed Jan. 22, 1997, Ser. No. 787,478
Claims priority, application Japan, Jan. 31, 1996, 8-015993
Int. Cl.[6] A61F *13/15;5/44*
U.S. Cl. 604—385.1 **8 Claims**

1. A urine-absorbent bag comprising:

a laminate including:

a liquid-permeable inner sheet,

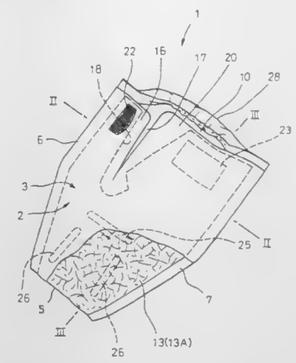
a liquid-impermeable outer sheet, and

a liquid-absorbent core disposed between said inner sheet and said outer sheet;

said laminate defining a front section, a rear section, an opening for insertion of the user's penis into said bag, and a bottom opposed to said opening;

said front section being provided with a generally V-shaped notch extending form an edge of said opening toward said bottom so as to divide an upper portion of said fron section into two opposite regions respectively forming a flap along opposing edges of said notch, and fastening members respectively disposed on said opposite regions and being fastenable together to overlap the flaps on each other and against the user's penis;and

a plurality of grooves disposed in said core, said grooves extending in predetermined directions and formed by locally thinning said core.

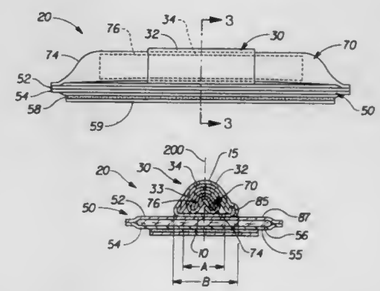


5,827,258

ADJUSTABLE COMPOUND SANITARY NAPKIN

Ronald Ray McFall, West Chester; Nicholas Albert Ahr, and Letha Margory Hines, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jul. 25, 1997, Ser. No. 900,252
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.1 **14 Claims**



1. A compound sanitary napkin having a longitudinal length and a lateral width and comprising:

a acquisition/storage member comprising an absorbent element and an outer cover;

an accumulation member having a pair of opposed end edges and comprising a liquid impervious backsheet and an absorbent core joined to said backsheet; and

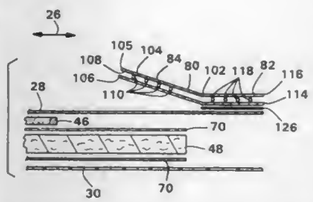
a bearing member overlying said accumulation member, said bearing member having a pair of opposed end edges and connecting said acquisition/storage member to said accumulation member, wherein said acquisition/storage member is slidably connected to said bearing member and one of said end edges of said bearing member is joined to one of said end edges of said accumulation member and the other of said end edges of said bearing member is joined to the other of said end edges of said accumulation member.

5,827,259

ABSORBENT ARTICLE WITH WAIST ELASTIC AND CONTAINMENT SYSTEM

Daniel Richard Laux; Lynn Carol Brud, both of Appleton; Barbara Ann Gossen, Oshkosh; Eric Donald Johnson, Larsen; Cynthia Helen Nordness, Oshkosh; Deborah Lynn Proxmire, Larsen; Mark Louis Robinson, Appleton; Paula Mary Sosalla, Appleton, and Robert Alan Stevens, Appleton, all of Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.

Filed Dec. 18, 1995, Ser. No. 560,524
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 **24 Claims**



1. An absorbent article having a longitudinal length dimension, a lateral cross-dimension, a front waistband portion, a back waistband portion, an intermediate portion which interconnects said front and back waistband portions, and having a pair of laterally opposed, elasticized side margins, said article comprising:
a backsheet layer;
a liquid permeable topsheet layer connected in superposed relation to said backsheet layer;
an absorbent body sandwiched between said topsheet layer and said backsheet layer; and
an elasticized, separately provided waist pocket member connected along at least one end margin of said article, said waist pocket member including an extending flange section and an extending pocket section;
said flange section assembled and attached to at least one of said backsheet and topsheet layers along said at least one end margin of the article; and
said pocket section of said waist pocket member including a substantially fixed edge portion secured to said article, and an elasticized, gathered movable edge portion, said pocket section having
a substantially liquid impermeable pocket barrier layer,
a pocket fabric layer connected in facing relation with said pocket barrier layer, and
a plurality of separate, laterally extending pocket elastic members sandwiched between said pocket barrier layer and said pocket fabric layer to provide an elasticized waist pocket composite which is substantially laterally gathered, wherein said pocket section has a Gurley stiffness value of at least about 5 mg and not more than about 250 mg, as determined about a bending axis aligned substantially parallel to said cross-direction of the article.

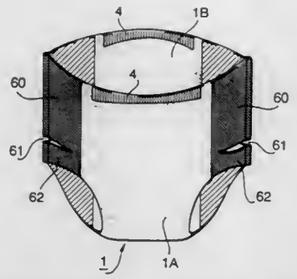
5,827,260

SANITARY ARTICLE WITH IMPROVED FITNESS

Migaku Suzuki, Kanagawa, and Hiroaki Fukui, Saitama, both of Japan, assignors to Japan Absorbent Technology Institute, Tokyo, Japan

Division of Ser. No. 298,131, Aug. 30, 1994, abandoned. This application Aug. 5, 1996, Ser. No. 692,372
Claims priority, application Japan, Sep. 30, 1993, 265449/1993
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—385.2 **3 Claims**

1. A sanitary article comprising:
a main body in the form of a pair of underpants comprising a liquid-impermeable back sheet, a liquid-permeable front sheet and an absorbent material, a waist hole and two leg holes, said main body being divided into a front portion and a rear portion by a line running from said waist hole up to each leg hole;
elastic side members for coupling both side edges of said front portion and both side edges of said rear portion which is opposed thereto;
said side members having an upper portion and a lower portion, and an opening dividing said lower portion from said upper portion
whereby, when the article is worn, said upper portion is closely fitted to the wearer's waist, said lower portion is positioned at the outside of the wearer's leg to form a fixation means comprising a flexible ring closely fitted over the entire circumference of the proximal portion of the wearer's leg together with said upper portion.

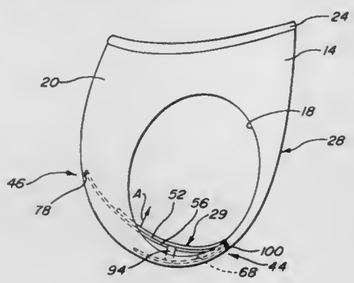


5,827,261

MENSTRUAL SHORTS HAVING IMPROVED FASTENING SYSTEM

Thomas Ward Osborn, III; Deborah Catherine Schmitz, and Nona Jane Redwine, all of 6100 Center Hill Rd., Cincinnati, Ohio 45224

Continuation of Ser. No. 594,509, Jan. 31, 1996, abandoned, which is a continuation of Ser. No. 443,105, May 17, 1995, abandoned, which is a continuation of Ser. No. 355,561, Dec. 13, 1994, abandoned, which is a continuation of Ser. No. 96,152, Jul. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 915,133, Jul. 23, 1992. This application Jun. 19, 1997, Ser. No. 878,502
Int. Cl.[6] A61F *13/15*
U.S. Cl. 604—387 **13 Claims**



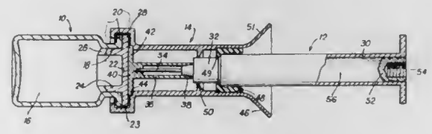
1. A feminine protection system for preventing leakage of menses when said system is worn by a female wearer comprising:
a menstrual short comprising an outer protective layer and an inner gusset layer;
an adjustable catamenial pad assembly connectable to the menstrual short, said catamenial pad assembly comprising front and rear ends, a lifting mechanism an absorbent means attached to said lifting for mechanism absorbing menses, said lifting mechanism comprising a backing sheet positioned below a cinch, the cinch having variable elasticity along its length, said backing sheet and said cinch being attached together at said front end of said catamenial pad assembly to thereby form a flexible hinge;
first fastening means for removably attaching said front end of said catamenial pad assembly to a front attachment location provided on at least one of said inner gusset layer and said outer protective layer, said front attachment location being attached to be located at least anterior to the anus of a female wearer; and
second fastening means for removably attaching said rear end of said catamenial pad assembly to a rear attachment location provided on at least one of said inner gusset layer and said outer protective layer, said rear attachment location being located at a position sufficiently high in the rear portion of the menstrual short to provide upward lift to said catamenial pad assembly;
wherein said front attachment location is adapted to be positioned adjacent the vaginal vestibule and below said rear attachment location such that the positioning of said front attachment location and said rear attachment location of said lifting mechanism provides upward lift to bias said absorbent means of said catamenial pad assembly into the gluteal groove and against the perineum of the female wearing said menstrual short.

5,827,262

SYRINGE DEVICE FOR MIXING TWO COMPOUNDS

Frëdëric Neftel, Lausanne, Switzerland, and Bernard Bouvier, Eragny sur Oise, France, assignors to Debiotech S.A., Lausanne, Switzerland

PCT No. PCT/FR94/01053, § 371 Date Mar. 7, 1996, § 102(e) Date Mar. 7, 1996, PCT Pub. No. WO95/07066, PCT Pub. Date Mar. 16, 1995
PCT Filed Sep. 7, 1994, Ser. No. 617,838
Claims priority, applicatioo France, Sep. 7, 1993, 93 10593; Oct. 15, 1993, 93 12271; Nov. 16, 1993, 93 13627; Dec. 24, 1993, 93 15639; Jan. 26, 1994, 94 00828; Mar. 11, 1994, 94 02844; May 25, 1994, 94 06314
Int. Cl.[6] A61B *19/00*
U.S. Cl. 604—414 **61 Claims**



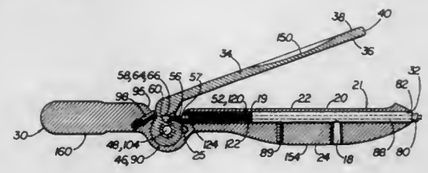
1. A syringe device making it possible to mix two compounds, at least the first of which is liquid, comprising:
a syringe provided with a body having an injection end, the syringe adapted to contain said first compound;
means for guiding the injection end of said syringe body in translation between a first withdrawn storage position and a second inserted active position, said guide means including an inner face, a first end emerging opposite the perforable zone of a stopper capable of closing in leaktight manner the opening of a vial intended to contain the other compound and a second end for receiving the injection end of said syringe, said second end comprising means for providing sufficient linkage between said syringe and said guide means while allowing said translation;
an annular seal surrounding said syringe body and secured to said syringe body and disposed between said body and said guide means and close to the second end of the guide means when the syringe is in its first position, said annular seal having an outer face provided with at least one sealing lip for cooperating with the inner face of the guide means; and
communication means for allowing perforation of said stopper and communication of the internal volume of said syringe with the inside of said vial when the injection end of said syringe is brought into its second position.

5,827,263

SURGICAL INSTRUMENT HANDLE

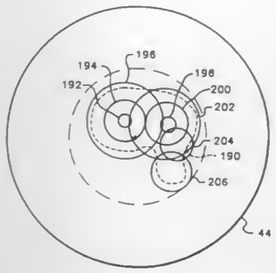
Gregory R. Furnish, Lawrenceville, and W. Michael Hipps, Roswell, both of Ga., assignors to Genzyme Corporation, Framingham, Mass.

Continuation of Ser. No. 540,472, Oct. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 278,632, Jul. 21, 1994, Pat. No. 5,470,328. This application Aug. 19, 1997, Ser. No. 914,525
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—1 **23 Claims**



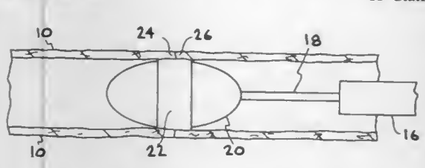
1. A hand-held surgical instrument comprising a handle attached to a tool having at least one articulated member thereon, the handle comprising:
a) an elongated base having a body portion, a top surface, an opposite bottom edge, a first side and an opposite second side, a proximal end and a distal end;
b) an elongated lever having a first surface, an opposite second surface, a front end, a rear end and an actuator arm adjacent the rear end adapted to be projected into the body portion of said base at a predetermined point;
c) means for connecting said actuator arm to said base at the predetermined point to allow said lever to pivot about a transverse axis at the predetermined point between a normally open position and a closed position, wherein said base and said lever are juxtaposed to each other along their length, with said lever extending forward from said connecting means toward the distal end of said base, such that the first surface of said lever is adjacent to the top surface of said body portion along a longitudinal axis thereof when in the closed position;
d) means for actuating the articulated member of said tool, wherein an actuator rod is pivotally connected at a fixed point on the actuator arm of said lever such that moving said lever from the normally open position to the closed position causes said fixed point on the actuator arm to be displaced distally, thereby moving said actuator rod distally and causing movement of the articulated member; and,
e) means for biasing said lever in the normally open position comprising a compression spring having a pre-selected thickness, a first end, a second end and a middle portion longitudinally positioned around said actuator rod within said base, the first end being positioned adjacent said actuator rod and the second end being distally positioned adjacent the base, thereby biasing the actuator rod proximally and biasing said lever in the normally open position.

5,827,264
METHOD OF CONTROLLING APPARATUS FOR MODIFYING THE SURFACE OF THE EYE THROUGH LARGE BEAM LASER POLISHING
Kristian Hohla, Vaterstetten, Germany, assignor to Chiron Technolas GmbH Opthalmologische Systeme, Germany
Division of Ser. No. 338,495, Nov. 16, 1994. This application Jun. 7, 1995, Ser. No. 487,281
Int. Cl.[6] A61N *5/02*
U.S. Cl. 606—5 17 Claims



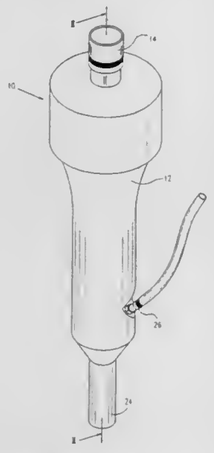
1. A method for controlling a laser system for removing tissue from a region of the cornea that creates a laser spot of a size and with center with a location on a cornea with a perpendicular axis of treatment, comprising the steps of:
(a) setting the spot size to between 10% and 90% of the size of the region; and
(b) moving the spot center location along the cornea to at least one location away from the axis of treatment.

5,827,265
INTRALUMINAL TISSUE WELDING FOR ANASTOMOSIS
Michael Glinsky, Livermore; Richard London, Orinda; George Zimmerman, Lafayette, all of Calif., and Steven Jacques, Portland, Oreg., assignors to Regents of the University of California, Oakland, Calif.
Continuation-in-part of Ser. No. 598,044, Feb. 7, 1996, abandoned. This application Feb. 19, 1997, Ser. No. 801,224
Int. Cl.[6] A61B *17/36;* A61F *2/06*
U.S. Cl. 606—8 15 Claims



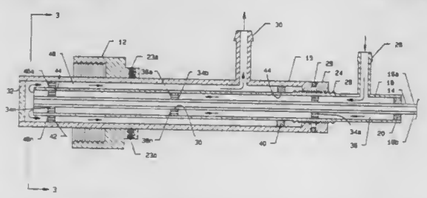
1. A method for intraluminal tissue welding in the anastomosis of a hollow organ, comprising:
providing a retractable catheter assembly including a catheter with at least one inflatable balloon and an optical fiber connected to the catheter, and a deployable biocompatible patch mounted on the balloon;
positioning the catheter assembly in a hollow organ adjacent to sections of the hollow organ to be joined;
positioning at least one balloon between the sections to be joined, inflating the balloon, thereby holding the sections together on the inflated balloon and deploying the patch against the inner wall of the hollow organ where the sections join; and
forming a continuous hollow organ by delivering laser radiation through the optical fiber to the patch to bond the patch to the hollow organ, wherein the laser radiation has a pulse length that is within a factor of two of the time for laser energy to diffuse across a region over which the laser energy is deposited.

5,827,266
SCANNER
Alex Harel, Savion; Yeshayahu Shai Eisenberg, Kiryat Tivon, and Avigdor Shechter, Holon, all of Israel, assignors to Optomedic Medical Technologies, Ltd., Or-Yehuda, Israel
Filed Sep. 30, 1996, Ser. No. 724,079
Claims priority, applicatioo Israel, Oct. 1, 1995, 115477
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—13 13 Claims



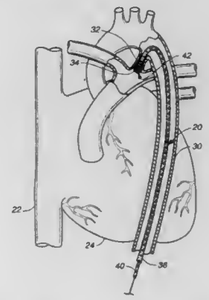
1. A mirrorless scanner comprising:
a hand piece attachable to a source of laser light, said source of laser light producing a laser beam;
a lens mounted in said hand piece operative to receive the laser beam from the source of laser light and to direct said laser beam onto a target; and
a vibrator coupled to said lens for vibrating said lens in at least two dimensions for causing said laser beam to scan across the target.

5,827,267
COOLED MULTI-FIBER MEDICAL CONNECTOR
Steven D. Savage, Brooklyn Center, and Gregory G. Brucker, Minneapolis, both of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Filed Feb. 18, 1992, Ser. No. 836,226
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—16 14 Claims



1. A multi-fiber optical connector housing operatively connecting a distal end of an optical fiber bundle to a laser energy source used in a laser catheter system, comprising:
a. an optical fiber bundle comprising a plurality of optical fibers housed in an inner tube, the optical fiber bundle having a proximal end and a distal end operatively connected to the laser energy source;
b. an outer tube housing a substantial portion of said inner tube and forming a cooling chamber surrounding the optical fibers within the connector housing, the distal end of the optical fiber bundle terminating within the outer tube;
c. a coolant fluid inlet in fluid communication with said cooling chamber;
d. a coolant fluid outlet in fluid communication with said cooling chamber; and
e. a coolant fluid flow path between said coolant fluid inlet and said coolant fluid outlet;
whereby a cooling fluid may be flowed through the cooling chamber to dissipate heat generated by laser energy from the laser energy source which enters the interstitial spaces between the optical fibers at the distal end of the optical fiber bundle the dissipation of the heat preserving the structural integrity and optical alignment of the system.

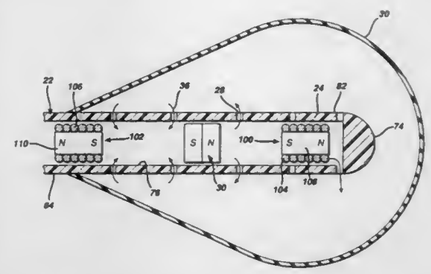
5,827,268
DEVICE FOR THE TREATMENT OF PATENT DUCTUS ARTERIOSUS AND METHOD OF USING THE DEVICE
Michael D. Laufer, Menlo Park, Calif., assignor to Hearten Medical, Inc., Tustin, Calif.
Filed Oct. 30, 1996, Ser. No. 739,820
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—28 23 Claims



1. A method for closing a patent ductus arteriosus of a patient comprising the steps of:
entering the vascular system of the patient;
advancing a catheter having a heating element associated with a distal end portion through the vascular system of the patient into the ductus arteriosus;
positioning the heating element within the ductus arteriosus at a first position;
energizing the heating element to reduce at least a first portion of the ductus arteriosus;
sensing a predetermined parameter; and
automatically decreasing the size of the heating element when the predetermined parameter reaches a preselected value.

5,827,269
HEATED BALLOON HAVING A RECIPROCATING FLUID AGITATOR
Vahid Saadat, Redwood Shores, Calif., assignor to Gynecare, Inc., Menlo Park, Calif.
Filed Dec. 31, 1996, Ser. No. 775,491
Int. Cl.[6] A61F *7/12*
U.S. Cl. 606—28 22 Claims

1. An assembly for heating of tissue, the assembly comprising:

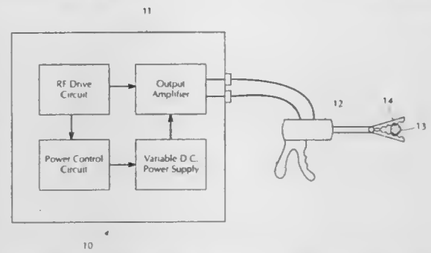


an elongate tubular member having a distal end and a fluid passage, said tubular member having a tubular housing formed proximate the distal end of said tubular member;
an inflatable member sealably affixed proximate the distal end of said tubular member, the tubular housing of said tubular member being disposed within said inflatable member, the tubular housing having a lumen in fluid communication with said inflatable member;
a piston slideably disposed within the lumen of the tubular housing of said tubular member; and
a reciprocating assembly configured to impart periodic longitudinal motion to said piston to cause fluid movement within said inflatable member.

5,827,270

Patent Not Issued For This Number

5,827,271
ENERGY DELIVERY SYSTEM FOR VESSEL SEALING
Steven P. Buysse, Longmont; Jenifer S. Kennedy; S. Wade Lukianow, both of Boulder, and Thomas P. Ryan, Fort Collins, all of Colo., assignors to Valleylab, Boulder, Colo.
Filed Sep. 19, 1995, Ser. No. 530,495
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—40 19 Claims



1. An electrosurgical energy delivery system for sealing interior passageways of vessels of a patient, the system comprising:
a generator capable of delivering electrosurgical power by producing an output voltage and an output current, the generator having means for substantially terminating the power delivery to the surgical tool when the output current drops below approximately 200 milliamperes RMS;
a surgical tool electrically connected to the generator for receiving the electrosurgical power, the surgical tool having electrically conductive members arranged for grasping the vessels of the patient and for transmitting the electrosurgical power thereto, the surgical tool having means for maintaining a closure force between the members sufficient to substantially close the interior passageways, and

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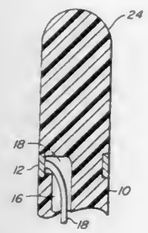
a power control circuit in the generator for automatically sequencing the electrosurgical power delivered to the surgical tool while the output voltage is kept below one-hundred-sixty volts RMS, wherein the sequence includes raising the output current to a maximum amplitude greater than about two amperes RMS while the surgical tool is applying the closure force, thereafter lowering the electrosurgical power to desiccate the vessels without charring, and hereafter terminating the electrosurgical power to the surgical tool.

5,827,272

SIMPLIFIED TORQUING ELECTRODE CATHETER

Peter M. Breining, Palo Alto, and Scott H. West, Tracy, both of Calif., assignors to Medtronic CardioRhythm, San Jose, Calif.

Filed Aug. 7, 1995, Ser. No. 511,823
Int. Cl.[6] A61N *1/00*
U.S. Cl. 606—41 **24 Claims**



1. An electrode catheter comprising:
a handle;
a catheter shaft having an axial lumen, a proximal end and a distal end, the proximal end mounted to the handle;
a plurality of electrodes mounted to the distal end;
a dual purpose wire secured to each of said electrodes in an electrically-conductive manner, each said dual purpose wire having an electrical resistance of no greater than about 0.80 ohm per cm to provide sufficient electrical current carrying capacity and resistivity for an electrophysiology procedure;
said dual purpose wires secured to and extending from the handle, extending through the axial lumen in said catheter shaft and to said electrodes so to act as electrical conductors electrically coupling the handle and the electrodes and to transmit torque from said handle along said dual purpose wires to said distal end of the catheter shaft; and
said catheter shaft and dual purpose wires together having a torsional stiffness of about 0.25 to 1.0 inch-ounce per 110 cm of length when the proximal end of the catheter shaft is rotated about 3 turns to provide a torsional stiffness sufficient to laterally deflect the distal end of the shaft by rotating the proximal end of the shaft.

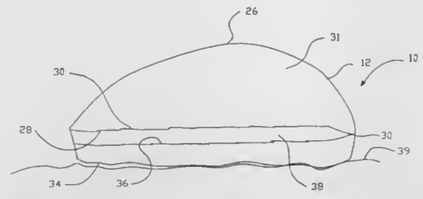
5,827,273

THIN LAYER ABLATION APPARATUS

Stuart D. Edwards, 1681 Austin Ave., Los Altos, Calif. 94024, assignor to Stuart D. Edwards, Los Altos, Calif.

Continuation of Ser. No. 265,459, Jun. 24, 1994, Pat. No. 5,505,730. This application Apr. 5, 1996, Ser. No. 630,925
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—41 **5 Claims**

1. An apparatus for ablating a surface in an organ of a body, the apparatus comprising:
an introducer having a distal portion, a fluid lumen extending through the introducer, and an opening formed at the distal portion and communicating with the fluid lumen;
a plurality of RF electrodes carried by the distal portion of the introducer;



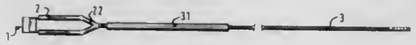
a fluid permeable expandable member expandable to conform to a surface of an organ when positioned adjacent to the surface, the expandable member including a foam portion, at least a portion of the expandable member surrounding the electrodes;
an electrical connector device connecting the plurality of RF electrodes to an RF energy source;
a source of a conductive fluid fluidly coupled to the fluid lumen to permit flow of conductive fluid through the expandable member to cause fluid to create a conductive path between the electrodes and an inner surface of an organ when the distal portion is positioned adjacent the inner surface.

5,827,274

ELECTRODE FOR VAPORIZING TISSUE

Ludwig Bonnet, Knittlingen, and Manfred Boebel, Oetisheim, both of Germany, assignors to Richard Wolf GmbH, Knittlingen, Germany

Filed Jul. 11, 1996, Ser. No. 678,278
Claims priority, application Germany, Jul. 18, 1995, 195 26 242.5
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—41 **8 Claims**



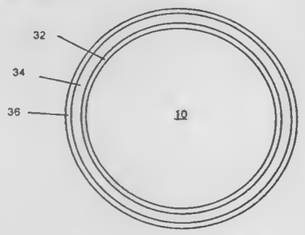
1. An electrode for vaporizing tissue comprising a head (1) supported by at least one externally insulated electrically conducting branch (2), the head (1) being a sector of a solid cylinder (1.3) rigidly fixed to the branch (2) and including parallel projections (1.1) and recesses (1.2) which are oriented generally perpendicularly to an axis of the cylinder.

5,827,275

ELECTRO-SURGICAL INSTRUMENT AND FABRICATION METHOD

James R. Morris, Sedalia, Colo., assignor to MediCor Corporation, Wheeling, Ill.

Continuation-in-part of Ser. No. 943,223, Sep. 9, 1992, Pat. No. 5,562,659. This application Sep. 16, 1996, Ser. No. 718,626
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—41 **15 Claims**



1. An electro-surgical instrument comprising:
(a) a surgical instrument having a roughened stainless steel substrate; and

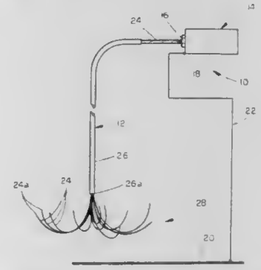
(b) a durable, continuous thermally sprayed ceramic coating on said roughened stainless steel substrate, said coating providing electrical insulative properties to said substrate in the 500 KHZ to 1 MHZ frequency range greater than 3,000 volts/mm and having a metallographic porosity of less than one volume percent; said thermally sprayed ceramic coating having a Young's Modulus of no more than about 30×10^6 pounds per square inch parallel to the coating plane, and a Young's Modulus anisotropy coefficient of at least about 2.

5,827,276

APPARATUS FOR VOLUMETRIC TISSUE ABLATION

Robert F. LeVeen, and Randy Fox, both of Omaha, Nebr., assignors to Board of Regents of Univ of Nebraksa, Lincoln, Nebr.

Continuation of Ser. No. 559,072, Nov. 16, 1995, which is a division of Ser. No. 410,344, Mar. 24, 1995. This application Dec. 12, 1996, Ser. No. 764,058
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—41 **17 Claims**



1. A probe system for penetrating a plurality of electrodes into solid tissue, said probe system comprising:
an elongate member having a proximal end and a distal end;
means for introducing the elongate member through solid tissue; and
at least two solid-tissue-penetrating electrode elements having distal ends reciprocatably attached to the elongate member so that said electrode elements may be advanced into tissue after said elongate member has been introduced through solid tissue to a target site within the tissue, wherein the distal ends of at least some of the electrode elements are shaped so that they assume an outwardly everted configuration as they are axially extended beyond the distal end of the elongate member.

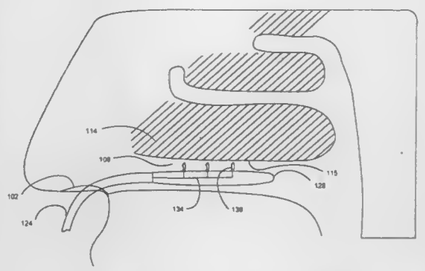
5,827,277

MINIMALLY INVASIVE APPARATUS FOR INTERNAL ABLATION OF TURBINATES

Stuart D. Edwards, Portola Valley, Calif., assignor to Somnus Medical Technologies, Inc., Sunnyvale, Calif.

Continuation-in-part of Ser. No. 754,588, Oct. 19, 1996, and a continuation-in-part of Ser. No. 753,063, Oct. 19, 1996, and a continuation-in-part of Ser. No. 752,076, Oct. 19, 1996, which is a continuation-in-part of Ser. No. 651,796, May 22, 1996, which is a continuation-in-part of Ser. No. 651,798, May 22, 1996, abandoned, which is a continuation-in-part of Ser. No. 265,459, Jun. 24, 1995, Pat. No. 5,505,730. This application Jan. 29, 1997, Ser. No. 790,081
Int. Cl.[6] A61B *17/39*
U.S. Cl. 606—41 **26 Claims**

1. An apparatus for ablating at least a portion of a nasal concha comprising:
a catheter having a distal portion with a length operable for positioning through a nostril of a patient into a nasal meatus adjacent a nasal concha, the catheter further including a catheter longitudinal axis and a catheter side wall; and



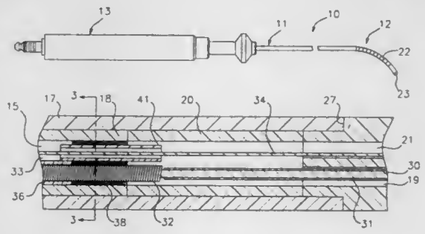
an energy delivery device coupled to the catheter distal portion including one or more energy delivering probes extendable from the catheter distal portion a sufficient distance to be inserted into an interior of the nasal concha to deliver ablative energy therein, wherein the one or more energy delivering probes are extendable from the catheter side wall in a lateral direction relative to the catheter longitudinal axis.

5,827,278

DEFLECTABLE TIP ELECTRODE CATHETER WITH NYLON STIFFENER AND COMPRESSION COIL

Wilton W. Webster, Jr., Baldwin Park, Calif., assignor to Cordis Webster, Inc., Baldwin Park, Calif.

Filed May 20, 1997, Ser. No. 859,599
Int. Cl.[6] A61B *17/36*
U.S. Cl. 606—41 **9 Claims**



1. A deflectable electrode catheter comprising:
a catheter body having proximal and distal ends, a central axis and a central lumen therethrough;
a catheter tip section at the distal end of the catheter body having an off-axis lumen in communication with the central lumen of the catheter body, said tip section carrying at least one electrode;
a puller wire having proximal and distal ends extending through the central lumen of the catheter body and into the off-axis lumen of the catheter tip section, the distal end of the puller wire being fixedly attached to the tip section at a selected location;
a compression coil having proximal and distal ends extending through the central lumen of the catheter body in surrounding relation to the puller wire, said compression coil having an outer diameter less than the inner diameter of the central lumen of the catheter body sufficient to form a space through which electrode lead wires may extend;
a first glue joint fixedly attaching the proximal end of the compression coil to the proximal end of the catheter body, said first glue joint comprising a first tunnel through which electrode lead wires may pass;
a second glue joint fixedly attaching the distal end of the compression coil to the distal end of the catheter body, said

second glue joint comprising a second tunnel through which electrode lead wires may pass;

a control handle comprising means, connected to the puller wire, for reversibly moving the puller wire in a proximal direction relative to the catheter body to thereby cause deflection of the tip section; and

at least one electrode lead wire, each of said at least one electrode lead wire having proximal and distal ends and being associated with one of said at least one electrode carried by the tip section, and each of said at least one electrode lead wire extending through the central lumen of the catheter body in the space between the compression coil and the wall of the central lumen, through each of the first and second tunnels and into a lumen in the tip section, the distal end of each of said at least one electrode lead wire being electrically connected to its associated electrode.

5,827,279

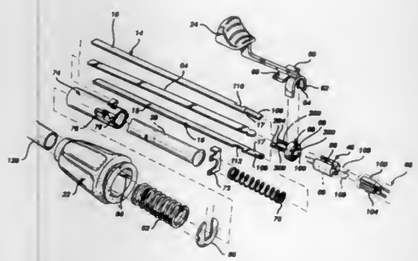
KNIFE COUPLER MECHANISM FOR AN ENDOSCOPIC INSTRUMENT

J. David Hughett, Hamilton, and Rudolph H. Nobis, Mason, both of Ohio, assignors to Ethicon Endo-Surgery, Inc., Cincinnati, Ohio

Filed Dec. 6, 1996, Ser. No. 761,411

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—45 **2 Claims**



1. An electrosurgical instrument comprising:

a handle;

an end effector operatively connected to said handle through an elongated tube;

first wireform conductor means for transmitting electrical current to a first jaw of said end effector, wherein said first wireform conductor means extends from said handle to said jaw through said elongated tube;

second wireform conductor means for transmitting electrical current to a second jaw of said end effector wherein said second wireform conductor means extends from said handle to said jaw through said elongated tube;

a knife means for cutting tissue, said knife means being moveable within said end effector;

button means on said handle for moving said knife means;

a push bar operatively connecting said knife to said button through a coupling means, wherein said first wireform conductor means passes through said coupling means on a first side of said push bar and said second wireform conductor means passes through said coupling means on a second side of said push bar and wherein said coupling means comprises:

a hub;

attachment means adapted to connect said coupling means to said push bar;

a connector disposed within said hub, said connector comprising first and second leg elements, and said attachment means comprising hook sections on said first and second leg elements.

5,827,280

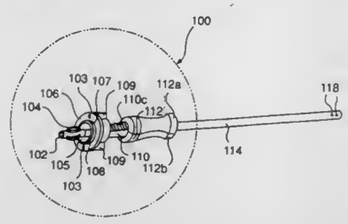
DEVICE FOR LOCKING A PROTECTIVE ENDOSCOPIC ELECTRODE SLEEVE

Paul Sandock, New Hartford, and Lauren Young, Poland, both of N.Y., assignors to ConMed Corporation, Utica, N.Y.

Filed Mar. 19, 1996, Ser. No. 618,205

Int. Cl.[6] A61B *17/36*

U.S. Cl. 606—46 **7 Claims**



1. A locking device for use on an electrode assembly comprising a connector for connecting said electrode assembly to an electrosurgical control handle, an elongated electrode, having a proximal end and a distal end, extending through said connector such that said connector is located at the proximal end of said elongated electrode, and a protective sleeve movable from a proximal or retracted position wherein said electrode is exposed to an distal or extended position wherein said electrode is covered, said locking device comprising:

a locking post extending longitudinally from said connector and surrounding said elongated electrode and including a locking portion; and

a rotatable sleeve grip connected to the proximal end of said sleeve, said sleeve grip surrounding said post for longitudinal movement therealong and being rotatable between an unlocked position wherein said sleeve grip is out of engagement with said locking portion of said post and said sleeve grip is movable longitudinally with respect to said post and a locked position wherein said sleeve grip engages said locking portion of said post and said sleeve grin is restricted from moving longitudinally with respect to said post.

5,827,281

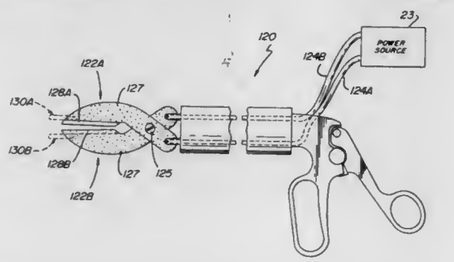
INSULATED SURGICAL SCISSORS

John M. Levin, 412 Fairview Rd., Narbeth, Pa. 19072

Filed Jan. 5, 1996, Ser. No. 583,389

Int. Cl.[6] A61B *17/39*

U.S. Cl. 606—51 **14 Claims**



1. An apparatus for cutting and coagulating tissue during surgery while minimizing electrical and thermal contact of said apparatus with surrounding tissue, said apparatus comprising:

a pair of opposing electrically conductive cutting blades pivotally connected to allow for shearing action of any tissue confined between opposed cutting edges of said cutting blades, said blades having confronting surfaces, said pair of opposing cutting blades being entirely covered with an electrically and thermally insulative material except along corresponding segments of said confronting surfaces;

a power source coupled to at least one of said pair of opposing cutting blades for electrically and thermally energizing at least one of said pair of blades; and

said apparatus including a closed condition wherein said confronting surfaces form overlapping surfaces, said overlapping surfaces including said corresponding segments.

5,827,282

CLAMPING COUPLING

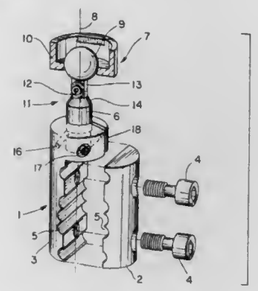
Dietmar Pennig, Cologne, Germany, assignor to Orthofix S.r.1., Italy

Continuation of Ser. No. 327,915, Oct. 24, 1995, abandoned, which is a continuation-in-part of Ser. No. 151,531, Nov. 12, 1993, Pat. No. 5,376,090, which is a continuation of Ser. No. 908,966, Jul. 6. 1992, abandoned. This application Aug. 6, 1997, Ser. No. 907,282

Claims priority, application Germany, Jul. 12, 1991, G 91 08 566.7

Int. Cl.[6] A61F *5/04*

U.S. Cl. 606—54 **5 Claims**



1. As an article of manufacture, an elongate bone-screw clamping coupling having a longitudinal axis and having a rotary joint at one longitudinal end, the rotary joint having ball-joint connection means adapted for selective detachable connection to an external fixator, the ball joint connection means having a shank component extending therefrom, the rotary joint including the shank component and a longitudinal component part with a releasably clampable pivot means therebetween, the rotary joint being in close proximity to the ball-joint connection means so as to allow pivoting movement of the ball-joint connection means.

5,827,283

DEVICE AND METHOD FOR LOCATING TWO BONES INTO A DESIRED RELATIVE POSITION

Jorge Abel Groiso, Arenales 2245, 1° Piso; Horacio Fernando Miscione, Billinghurst 1676 P.B. "C" , both of Buenos Aires, and Ernesto Oscar Muñoz, Laprida 4125, Mar Del Plata, all of Argentina

Filed Mar. 20, 1997, Ser. No. 821,237

Claims priority, application Argentina, Mar. 21, 1996, 335849

Int. Cl.[6] A61B *17/60*

U.S. Cl. 606—57 **19 Claims**

1. A device for locating in a desired position two or more elongated pieces that are in an undesired relative position, by bringing such pieces from the undesired position into the desired position, each piece having at least a pair of pins firmly fixed thereto, which pair of pins is, in turn, firmly retainable in a retaining jaw member, whereby each elongated piece is, fixable to one jaw member, the device comprising:

a support bar,

at least two mounting blocks attached to the bar, the blocks being movable along a longitudinal axis of the bar so as to be movable away from and towards each other,

at least two arms, each of said arms being connectable to one of the elongated pieces which are to be placed in the desired position, each of said arms having a distal end connected to one of the retaining jaw members fixable to one of the pieces, and a proximal end connected to one of the blocks,

first arm driving means connected to said blocks for rotatably moving each of said arms around a longitudinal axis thereof,

second arm driving means connected to at least one block for axially moving the one of said arms connected to said one block,

third arm driving means connected to the blocks for rotatably moving the arms connected to said blocks around respective vertical axes of the blocks,

bar driving means for causing the blocks to move along the longitudinal axis of the bar, and

transverse rotary means in at least one of the arms for moving the retaining jaw member connectable thereto around a longitudinal axis of the elongated piece fixable to the jaw member.

5,827,284

DEVICE FOR EXTERNALLY SECURING FRACTURES

Hans Weigum, Neiderdorf, and Oscar E. Illi, Schwerzenbach, both of Switzerland, assignors to Hans Weigum, Switzerland

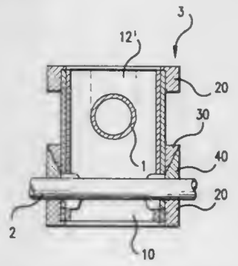
PCT No. PCT/CH95/00189, § 371 Date May 19, 1997, § 102(e) Date May 19, 1997, PCT Pub. No. WO96/07362, PCT Pub. Date Mar. 14, 1996

PCT Filed Sep. 4, 1995, Ser. No. 793,986

Claims priority, application Switzerland, Sep. 7, 1994, 2737/94

Int. Cl.[6] A61B *17/64*

U.S. Cl. 606—59 **13 Claims**



1. In a device for external fixation of a fracture of a bone, the device having a traction/compression rod (**1**), a plurality of bone screws (**2**), a plurality of connecting clamps (**3**) for connecting the bone screws (**2**) and the traction/compression rod (**1**), wherein each of the connecting clamps (**3**) has at least one thread (**11**, **11'**, **11"**) and a support body (**10**, **10'**) with at least two axially offset through-openings (**12**, **13**) passing through the support body (**10**, **10'**), wherein widths of the through-openings (**12**, **13**) are adapted

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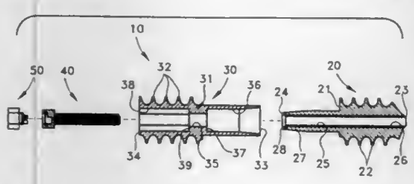
to the traction/compression rod (**1**) passing through one of the through-openings (**12**, **13**) and one of the bone screws (**2**) passing through another of the through-openings (**12**, **13**), the improvement comprising: each of the connecting clamps (**3**) comprising the support body (**10**, **10'**) being pip-shaped and having at least two clamping rings (**20**), each of the clamping rings (**20**) being mateably engageable with the thread on the support body (**10**, **10'**) for respective fixed clamping of the traction/compression rod (**1**) and the bone screw (**2**) with the support body (**10**, **10'**) of the connecting clamp (**3**).

5,827,285

MULTIPIECE INTERFRAGMENTARY FIXATION ASSEMBLY

Dale G. Bramlet, 2044 Brightwaters Blvd., St. Petersburg, Fla. 33703

Continuation-in-part of Ser. No. 576,813, Dec. 21, 1996, abandoned. This application Dec. 12, 1996, Ser. No. 764,265
Int. Cl.[6] A61B *17/00; A61F 5/04*
U.S. Cl. 606—60 **50 Claims**



1. A multipiece interfragmentary fixation assembly for connecting portions of bone across a fracture therebetween, said interfragmentary fixation assembly comprising:
- a first axially elongated fastener defining an elongated axis and having external threading for anchoring said first fastener into a first bone fragment, said first fastener defining an coaxial opening with internal uniformly pitched threading extending along at least a portion of the length thereof;
- a second fastener attachable in non-movable relation with a second bone fragment;
- an elongated connector including a head portion that accommodates a tool and a shank portion having external uniformly pitched threading corresponding to the internal threading of said first fastener, and wherein the shank portion of said connector extends endwise through the second fastener and into threaded engagement with said first fastener while the head portion of said connector operably engages with said second fastener such that rotation of said connector draws the first and second fasteners and thereby the first and second bone fragments into compressive and proper relation relative to each other; and
- a retaining apparatus for preventing said connector from inadvertently rotating relative to said second fastener thereby maintaining the proper compressive relationship between the fasteners and the bone fragments.

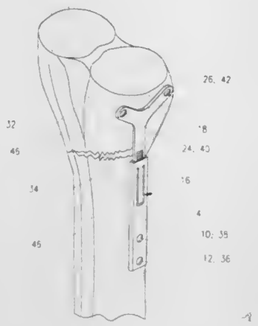
5,827,286

INCREMENTALLY ADJUSTABLE TIBIAL OSTEOTOMY FIXATION DEVICE AND METHOD

Stephen J. Incavo, 55 Butler Dr., South Burlington, Vt. 05403; David L. Churchhill, 131 Main St., Apt. 601, Burlington, Vt. 05401, and Bruce D. Beynnon, 91 Country Club Dr. E., South Burlington, Vt. 05403

Filed Feb. 14, 1997, Ser. No. 801,055
Int. Cl.[6] A61B *17/80*
U.S. Cl. 606—71 **8 Claims**

1. An osteotomy fixation apparatus for performing an osteotomy surgery and treatment, the osteotomy fixation apparatus comprising:



a first plate member having a first end and a second end, and wherein said second end contains an opening therein, said first plate member contains a first aperture for placement of a first bone screw, and wherein said first plate member includes a pawl;

a second plate member having a first section being telescopically received within said opening of said second end of said first plate member and a second section extending from said first section, said second section having a first prong having a second aperture for placement of a second bone screw and a second prong having a third aperture for placement of a third bone screw and wherein said first plate member and said second plate member are in a compressed position;

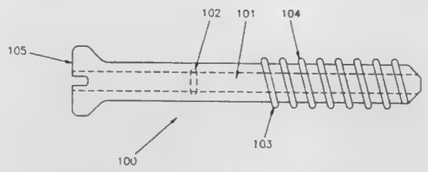
a series of linear teeth formed on said first section of said second plate member, said series of teeth interengaging and configured with said pawl to allow for incremental movement of said first plate relative to said second plate to an extended position, but preventing retraction of said first plate member relative to said second plate member, said series of linear teeth and said pawl being operable after performance of the osteotomy surgery without penetrating the skin.

5,827,287

HIGH STRENGTH INTERNAL BONE FIXATION DEVICES AND PROCESS FOR FORMING SAME

Deger C. Tunc, East Brunswick, N.J., assignor to Howmedica Inc., Del.

Filed Jun. 10, 1996, Ser. No. 661,285
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—76 **17 Claims**



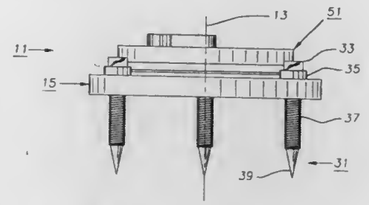
1. A high strength bone fixation device, comprising:
(a) a highly molecularly oriented thermoplastic polymer inner core member;
(b) a thermoplastic polymer outer layer bonded to said inner core member and;
(c) an interfacial layer for improving the interfacial strength between said inner core member and said outer layer, said interfacial layer including at least one of (i) means for mechanically entangling said core member and said outer layer, and (ii) a polymeric bonding layer.

5,827,288

CIRCULAR HOLE FORMING APPARATUS

Ray Umber, and Townsend R. Scantlebury, both of Arlington, Tex., assignors to Midas Rex, L.P., Fort Worth, Tex.

Filed Apr. 10, 1997, Ser. No. 833,928
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—80 **12 Claims**



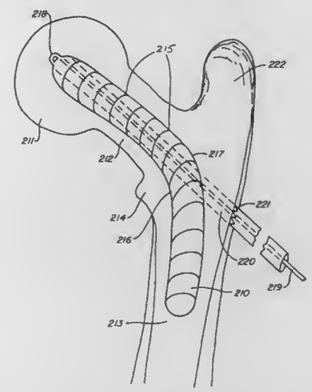
1. A medical device for facilitating the creation of an opening in a skull, comprising in combination:
- a housing having a cylindrical wall;
- a plurality of locators for precisely locating the housing in engagement with the skull;
- a guide member mounted to the housing for rotation relative to the housing about an axis, the guide member having a cylindrical wall which slidingly engages the cylindrical wall of the housing; and
- a hole extending through the guide member for receiving a surgical bone cutting implement, the hole being offset from the axis so that rotating the guide member causes the implement to move through a circular path.

5,827,289

INFLATABLE DEVICE FOR USE IN SURGICAL PROTOCOLS RELATING TO TREATMENT OF FRACTURED OR DISEASED BONES

Mark A. Reiley, 304 Pala Ave., Piedmont, Calif. 94611; Arie Scholten, 4175 Tamayo St., Freemont, Calif. 94536, and Karen D. Talmadge, 2320 Bryant St., Palo Alto, Calif. 94301

Continuation-in-part of Ser. No. 485,394, Jun. 7, 1995, abandoned, which is a continuation-in-part of Ser. No. 188,224, Jan. 26, 1994, abandoned. This application Jun. 5, 1996, Ser. No. 659,678
Int. Cl.[6] A61B *17/56*
U.S. Cl. 606—86 **10 Claims**



1. A device for insertion into a hip bone having an interior volume occupied, at least in part, by cancellous bone, the device comprising

a body having an axis and capable of expansion about the axis from a collapsed geometry, adapted for insertion into the interior volume, and an expanded geometry, adapted for compacting cancellous bone in the interior volume,

a first essentially inelastic band extending along the axis, and

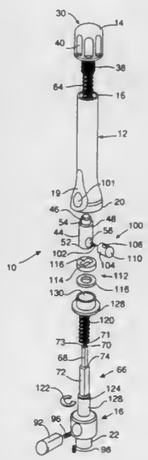
a second essentially inelastic band extending along the axis spaced from the first essentially inelastic band, the first essentially inelastic band and the second essentially inelastic band having different axial lengths to restrain expansion such that the body bend along the axis during expansion.

5,827,290

AUTOMATIC IMPACT DEVICE

Gary W. Bradley, 795 Park La. W., Santa Barbara, Calif. 93108

Continuation-in-part of Ser. No. 735,185, Oct. 25, 1996, Pat. No. 5,735,855. This application Oct. 27, 1997, Ser. No. 958,773
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—86 **19 Claims**



1. An impact tool comprising:
- a body having a first end and a second end and a channel extending therethrough, the channel having a first region extending from the first end to a point intermediate the first and second ends and a second region extending from the second end to the intermediate point, and a transition region extending about the intermediate point;
- calibrating means for calibrating impact force delivered by an implement coupled to the tool;
- coupling means for coupling the implement to the body, the coupling means including a rod extending into the channel, the rod having a shoulder extending about the periphery thereof proximal to an end of the rod;
- impact inducing means for causing the implement to deliver an impact to a desired object with an impact force calibrated by the calibration means, the inducing means comprising a piston slidably retained in the channel, the piston including a first end coupled to the calibration means, a second end configured to receive the rod, and an actuation mechanism configured to releasably engage the end of the rod; and
- return means for causing the rod to be engaged by the actuation mechanism after the implement impacts the object, the return means retaining the rod proximal to the second end of the body to withdraw the rod out of the second end of the piston until the rod is engaged by the actuation mechanism,
- wherein as pressure is applied to the implement by the tool, the impact inducing means is urged toward the first end of the body until the actuation mechanism disengages the rod for

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causing the impact inducing means to propel the rod along the channel until the implement impacts the object.

5,827,291

SUTURE ANCHOR DRIVER WITH SUTURE RETAINER

Joseph Fucci, Palm Harbor, and A. Frank Trott, Largo, both of Fla., assignors to Linvatec Corporation, Largo, Fla.

Filed Nov. 5, 1996, Ser. No. 744,178
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—104 **13 Claims**



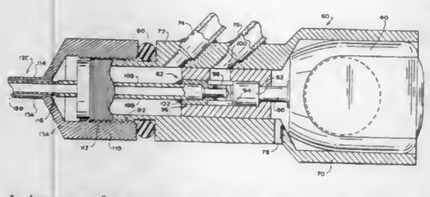
1. A driver for driving a suture anchor having suture attached thereto, the driver comprising:
an elongated shaft having an axis, a proximal end and a distal end;
an anchor receiving means at the distal end of said shaft for receiving a suture anchor to be driven;
means for enabling suture to pass from said distal end to said proximal end of said shaft; and
suture retaining means at the proximal end of said shaft for retaining said suture, said retaining means comprising:
a fixed retention means immovably secured to said shaft for guiding said suture in a predetermined direction, said fixed retention means comprising a radially outwardly extending projection;
a movable compression means for frictionally engaging said suture, said compression means longitudinally movably attached to said shaft;
spring means for urging said compression means toward said fixed retention means to retain suture therebetween.

5,827,292

REMOVAL OF TISSUE

Aziz Yehia Anis, 9540 Firethorne La., Lincoln, Nebr. 68520

Division of Ser. No. 349,383, Dec. 5, 1994, Pat. No. 5,492,528, Continuation of Ser. No. 108,163, Aug. 16, 1993, abandoned, which is a continuation of Ser. No. 759,937, Sep. 16, 1991, abandoned, which is a continuation-in-part of Ser. No. 680,292, Apr. 4, 1991, abandoned, which is a continuation-in-part of Ser. No. 553,975, Jul. 17, 1990, Pat. No. 5,222,959. This application Feb. 12, 1996, Ser. No. 599,682
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—107 **5 Claims**



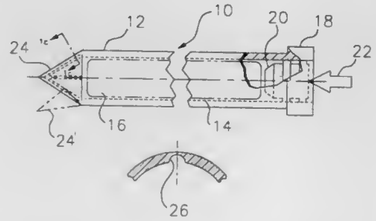
1. Apparatus for removing tissue from a patient comprising:
means for fragmenting and aspirating tissue having an operative tip with an elongated axis and at least one elongated wall member;
said means for fragmenting and aspirating tissue comprising means for repeatedly moving the operative tip under the control of an electrical signal at a low power level and at a velocity above a fragmenting velocity of the tissue and at least at one angle to the tissue;
said at least one elongated wall member curving inwardly toward the elongated axis to form a blunt end portion of the operative tip;
said operative tip having at least one fragmenting edge on said elongated wall member and at least one open space of less than 10 millimeters;
said at least one fragmenting edge extending in the same general direction as the elongated axis wherein said fragmenting edge repeatedly moves as said means for repeatedly moving the operative tip moves the operative tip without being constrained by opposed shear forces between a fragmenting edge and other members of said means for fragmenting and aspirating, such that the at least one fragment edge moves against cataract tissue;
means for introducing irrigating fluid into a capsular wall containing the cataract;
said means for repeatedly, moving including means for moving the at least one fragmenting edge at the velocity greater than the fragmenting velocity;
the operative tip being a hollow cylindrical tube and including slots extending generally in a plane parallel to the longitudinal axis of the operative tip, said slots having a leading, edge and a trailing edge with said leading edge extending to the end of said operative tip and said operative tip including internal walls defining an opening at the end portion of said operative tip.

5,827,293

SUBCUTANEOUS INSERTION DEVICE

James B. Elliott, 2108 Paso Verde Dr., Hacienda Heights, Calif. 91745

Filed May 13, 1996, Ser. No. 645,101
Int. Cl.[6] A61F *9/00*
U.S. Cl. 606—107 **15 Claims**



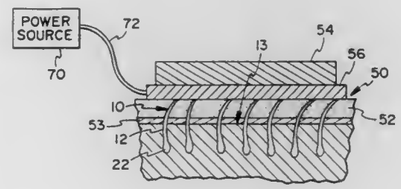
1. An apparatus for insertion of implants comprising:
a substantially cylindrical cartridge having a body with a central bore receiving a substantially cylindrical timed release implant, said cartridge including
a proximal end having a retention shoulder extending radially from an outer surface of the body, said retention shoulder adapted for retention in an insertion tool;
a closure plug received in the bore at the proximal end of the cartridge, said plug sealing the bore and having an exposed surface to engage a plunger rod in said insertion tool, said plunger rod urging the plug through the bore to engage a proximal end of the implant and further urging the implant through the bore;
a distal tip of decreasing diameter from the outer surface of the body, terminating in a point adapted for piercing tissue during insertion into a patient, said tip frangible into a plurality of segments under pressure from a distal end of the implant, thereby allowing the implant to emerge from the cartridge.

5,827,294

METHOD FOR PERMANENT REMOVAL OF MULTIPLE HAIRS WITH HAIR CLAMPING SPRINGS

Thomas L. Mehl, Sr., 1015 Hwy. 337, Old Bronson Rd., Newberry, Fla. 32669

Continuation of Ser. No. 176,561, Dec. 30, 1993, Pat. No. 5,470,332, which is a continuation of Ser. No. 917,662, Jul. 20, 1992, abandoned, which is a continuation of Ser. No. 794,364, Nov. 13, 1991, abandoned, which is a continuation of Ser. No. 454,622, Dec. 21, 1989, abandoned, and Ser. No. 176,561, which is a continuation of Ser. No. 66,261, May 25, 1993, abandoned, which is a continuation of Ser. No. 929,750, Aug. 17, 1992, abandoned, which is a continuation of Ser. No. 707,828, May 30, 1991, abandoned. This application Dec. 18, 1995, Ser. No. 573,643
Int. Cl.[6] A61B *17/50*
U.S. Cl. 606—133 **20 Claims**



1. A method of removing hair comprising the steps of:
a) applying a conductive solution to the skin surface to be treated;
b) applying DC from a power source to the hairs to be removed from the skin for a period of time sufficiently long to induce a chemical reaction in the matrix area of the hairs to be removed;
c) allowing the hairs to remain in the skin for a period of time sufficiently long so that the chemical reaction induced in the step of applying DC continues sufficiently long for destroying the matrix area of the hairs;
d) engaging the treated hairs with at least two coils of a spring and clamping the engaged hairs therebetween;
e) removing the hairs by movement of the spring relative to the skin;
f) removing one of the hairs killed in said step of applying DC; and
g) conducting a litmus paper test to determine the desired length of time required for applying DC in said step of applying DC by touching the matrix area of the removed hair to a wetted piece of litmus paper.

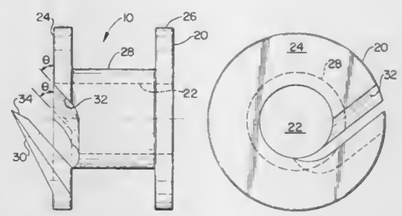
5,827,295

INTEGRAL CUTTING INSTRUMENT AND MYRINGOTOMY TUBE

Eddy H. Del Rio, Royal Palm Beach, and William E. Anspach, III, Stuart, both of Fla., assignors to The Anspach Effort, Inc., Palm Beach Gardens, Fla.

Division of Ser. No. 568,915, Dec. 7, 1995, Pat. No. 5,643,280. This application Feb. 3, 1997, Ser. No. 794,106
Int. Cl.[6] A61F *11/00*
U.S. Cl. 606—109 **3 Claims**

1. A grommet having a main cylindrical body having a radial flange at the proximal end, a distal flange extending radially from the distal end of said cylindrical body and a lumen, the improvement comprising a cutting tang extending from said distal flange and formed integrally therewith for insertion into the tympanic membrane of the ear of a patient, said grommet includes a central axis, said distal flange including a front surface, the cutting tang extending axially from said front surface and a slot angularly disposed in said distal flange relative to the central axis extending from said front surface through said distal flange of said grommet.

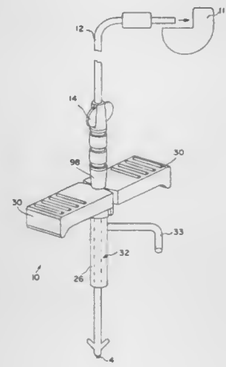


5,827,296

MEDICAL ELECTRICAL LEAD

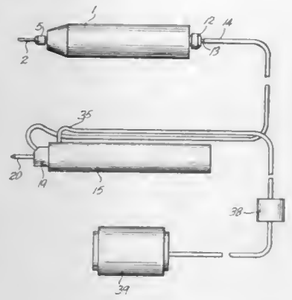
Mary M. Morris, Mounds View, and Peter M. J. Mulier, Stillwater, both of Minn., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Sep. 6, 1996, Ser. No. 706,623
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—129 **12 Claims**



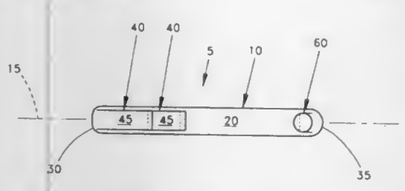
1. A medical electrical lead system comprising
an introducer assembly, the introducer assembly having a handle portion and a sheath portion, the sheath portion attached to the handle portion, the sheath portion having a lumen therethrough, the lumen having a lumen inner diameter, the introducer assembly having means for longitudinally separating the assembly into two corresponding parts;
a medical electrical lead disposed through the introducer assembly, the medical electrical lead having a connector pin, the connector pin coupled to a lead body, the lead body coupled to an electrode, the medical electrical lead further having an anchoring sleeve disposed over the lead body, the anchoring sleeve having a distal end and a proximal end, the distal end having a distal outer diameter, the anchoring sleeve lumen having an annular seal, the annular seal defines a reduced lumen within the sheath lumen, the reduced lumen having a reduced lumen diameter, the lead body having a lead body diameter, the reduced lumen diameter less than the lead body diameter;
characterized in that the distal outer diameter is less than the lumen inner diameter of the sheath portion of the introducer whereby when the distal end of the anchoring sleeve is inserted into the lumen of the sheath portion of the introducer assembly the flow of a fluid through the lumen is impeded.

5,827,297
DEVICE FOR TRANSPLANTING SMALL DIAMETER HAIR GRAFTS
Pascal J. Boudjema, Paris, France, assignor to Medicamat S.A., Malakoff, France
PCT No. PCT/FR93/00955, § 371 Date Mar. 21, 1995, § 102(e) Date Mar. 21, 1995, PCT Pub. No. WO94/07433, PCT Pub. Date Apr. 14, 1994
PCT Filed Sep. 30, 1993, Ser. No. 403,929
Claims priority, application France, Oct. 1, 1992, 92 12105
Int. Cl.[6] A61B *17/50*
U.S. Cl. 606—133 13 Claims



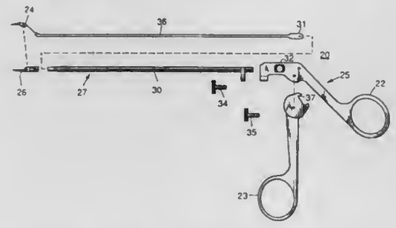
1. A device for transplanting small-diameter hair grafts, comprising: a hand-held cutting instrument, the instrument comprising:
a tool-holding body,
a rotary cylindrical tool comprising a hollow needle having an axial bore extending therethrough, said tool having an opening at an end concentric with the axial bore for cutting out a graft, the opening having a diameter substantially equal to a diameter of the axial bore of the needle,
a motor assembly suitable for driving said tool in rotation with respect to said body, and
means for extracting the graft by sucking up said graft through the axial bore of the needle, said extraction means comprising a container for intermediate storage of the extracted graft and a collector hose for passing the extracted graft from the axial bore of the needle to said container.

5,827,298
SURGICAL FASTENING SYSTEM AND METHOD FOR USING THE SAME
Rickey D. Hart, Plainville, and John T. Rice, Lincoln, both of Mass., assignors to Innovasive Devices, Inc., Marlborough, Mass.
Filed Nov. 17, 1995, Ser. No. 560,111
Int. Cl.[6] A61F *5/00*
U.S. Cl. 606—139 53 Claims



1. A surgical fastener comprising:
a solid shaft of substantially uniform diameter having a distal end and a proximal end;
a bar at said proximal end of said shaft, said bar extending outwardly from said shaft;
said distal end of said shaft being rounded and devoid of a cutting edge and devoid of a penetration point; and
a fin extending outwardly from said shaft proximate said distal end, said fin having a distal edge inclined outwardly and proximally from said shaft and a proximal edge inclined outwardly and proximally from said shaft.

5,827,299
INSERTABLE SUTURE PASSING GRASPING PROBE AND METHODOLOGY FOR USING SAME
Rodger D. Thomason, Los Angeles; James E. Carter, Dana Point; Mark J. Legome, and Neil H. Naves, both of Mission Viejo, all of Calif., assignors to Inlet Medical, Inc, Eden Prairie, Minn.
Continuation-in-part of Ser. No. 139,637, Oct. 19, 1993, Pat. No. 5,507,758, which is a continuation-in-part of Ser. No. 112,585, Aug. 25, 1993, Pat. No. 5,496,335. This application Feb. 28, 1996, Ser. No. 608,297
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—148 44 Claims



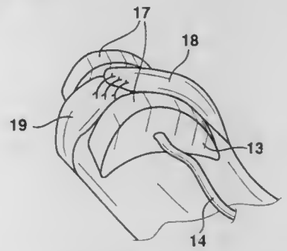
1. A method of suturing comprising the steps of:
(a) grasping suture material with a first means having opposing jaw elements forming a sharp tip point;
(b) inserting said first means for passing said suture through tissue until said first means is seen through the tissue retaining said suture material;
(c) inserting a second means for puncturing the tissue opposite a point of insertion of said first means, said second means having opposing jaw elements forming a sharp tip point;
(d) grasping said suture with said second means;
(e) withdrawing said first means;
(f) pulling said suture by said second means outside the wound; and
(g) fastening one end to the other of said suture to provide securement.

5,827,300
SET OF MEDICAL INSTRUMENTS FOR PLACING AND SHIFTING KNOTS DURING SURGERY
Basim A. Fleega, Theaterplatz 26, D-53117 Bonn, Germany
PCT No. PCT/EP95/00592, § 371 Date Aug. 19, 1996, § 102(e) Date Aug. 19, 1996, PCT Pub. No. WO95/22931, PCT Pub. Date Aug. 31, 1995
PCT Filed Feb. 18, 1995, Ser. No. 693,057
Claims priority, application Germany, Feb. 25, 1994, 44 06 203.6
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—148 5 Claims



1. A set of medical instruments for shifting and placing knots produced by surgical sutures during operations, comprising a cylindrical rod displaceable lengthwise in a cylindrical sleeve, said rod projecting at both ends beyond said sleeve, with said rod having a head end that can be retracted into said sleeve and a handle that can be struck externally at the other end of said sleeve, and said head end of said rod is designed as a knot shifter for shifting and securing a knot produced by means of a suture, and said sleeve end into which said rod can be pulled is designed as a knot cutter with a cutting edge in order to separate suture ends from knots, wherein said rod is designed as a knot shifter with a convexly rounded head end and with two continuous bores extending from the head end to accommodate a suture to a cylindrical jacket surface of the rod and wherein an additional through bore for pulling a suture through is provided in a vicinity of the head end of the rod, said through bore being located transversely with respect to a lengthwise axis of the rod.

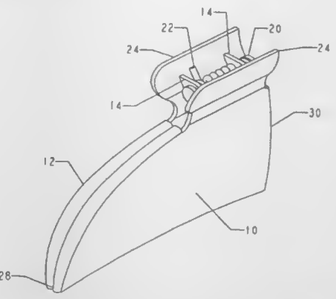
5,827,301
DEVICE AND METHOD FOR INTRAOPERATIVE CALIBRATION OF A FUNDUS FOLD CUFF
Daniel Kalanovic, Tübingen; Gerd Haidle, Baltmannsweiler; Klaus Roth, Ofterdingen, all of Germany; Jacques Kayser, Ellange, Luxembourg, and Gerhard Buess, Tübingen, Germany, assignors to Willy Rüsch AG, Kernen-Rommelshausen, Germany
Filed Feb. 24, 1997, Ser. No. 806,509
Claims priority, application Germany, Feb. 29, 1996, 196 07 575.0
Int. Cl.[6] A61B *17/00*
U.S. Cl. 606—148 11 Claims



1. A device for intraoperative calibration of a fundus fold cuff of a patient being connectable to means for activation of the device and to means for pressure measurement, the device comprising:
an inlet lead having a first end facing away from the patient for connecting to the activation means and a second end facing toward the patient; and
an expandable body for inflating to a predetermined volume, said body having an outer surface that has a convex-shaped seating surface directly surrounded by the fundus fold cuff, said seating surface being sidewardly bordered by two raised humps for fixedly holding the fundus fold cuff in an inflated state of said expandable body, wherein said second inlet lead end connects to said expandable body and to the pressure measurement means for measuring an internal pressure acting on said expandable body.

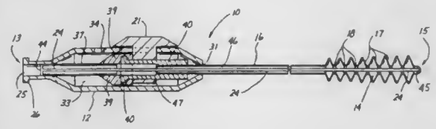
5,827,302
FEMININE GENITAL AREA DEPILATORY AID
Ronald B. Kandarian, 575 Sunset Blvd. Suite 106, Kalispell, Mont. 59901, and Susan M. Cohenour, P.O. Box 235, Kalispell, Mont. 59903
Filed Feb. 11, 1997, Ser. No. 798,559
Int. Cl.[6] A61B *17/04*
U.S. Cl. 606—157 4 Claims

1. A depilatory aid for female external genitalia, comprising in combination:
a pair of clamping arms having opposed sides a first edge with an arcuate portion and second edge, said clamping arms being pivoted at the first edges for motion about a common bilateral plane and adapted at the second edges for clamping engagement with external female genitalia;
spring means biasing the clamping arms to a clamping position;
the second edges of each clamping arm being curved transversely to provide concave second edges and said opposed sides being curved convexly outwardly from the common medial plane intermediate their first and second edges to provide a space between the sides, the second edges of the sides being spacedly adjacent when the clamping arm are closed to provide engagement on female genitalia; and
operating levers extending from the first edges of each clamping arm with the spring means engaging each operating lever.



5,827,303
Patent Not Issued For This Number

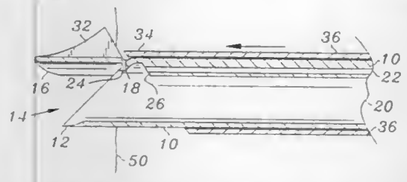
5,827,304
INTRALUMINAL EXTRACTION CATHETER
Charles C. Hart, Huntington Beach, Calif., assignor to Applied Medical Resources Corporation, Laguna Hills, Calif.
Filed Nov. 16, 1995, Ser. No. 559,076
Int. Cl.[6] A61B *17/22*; A61D *1/02*
U.S. Cl. 606—159 18 Claims



1. An expandable intraluminal catheter adapted to remove occlusive material from a body passage, comprising:
an elongate tubular body having a longitudinal axis and a proximal elongate tubular body end axially movable with respect to a distal elongate tubular body end;
a plurality of radially-expandable segments formed from a mesh material and disposed linearly along the longitudinal axis of the elongate tubular body between the proximal tubular body end and the distal elongate tubular body end; and
a fixed element connected to the distal elongate tubular body end and extending proximally through the elongate tubular body and proximal to said proximal elongate tubular body end; and
an actuator coupled to the proximal elongate tubular body end over said fixed element for actuating the plurality of radially-expandable segments by moving the proximal tubular body end relative to the fixed element and the distal tubular body end, to thereby cause each of the plurality of radially-expandable segments to radially expand into semi-rigid enlarged-diameter segments.

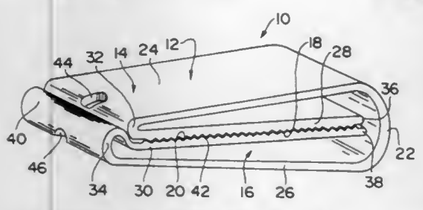
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5,827,305
TISSUE SAMPLING DEVICE
Mark G. Gordon, 615 Orchid, Corona Del Mar, Calif. 92625
Continuation-in-part of Ser. No. 593,532, Jan. 24, 1996. This application Feb. 14, 1997, Ser. No. 801,814
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—159 33 Claims



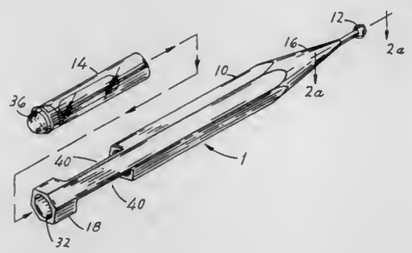
1. A tissue sampling device for retrieving multiple tissue samples from a body, the tissue sampling device comprising:
a) a catheter having proximal and distal ends, the catheter comprising first and second lumens;
b) a tissue collector formed proximate the distal end of the catheter for removing a tissue sample from its in-situ anatomical location and for capturing the tissue sample within the first lumen of the catheter;
c) a passage disposed proximate the distal end of the catheter for providing fluid communication between the first and second lumens, the passage being configured such that fluid flowed distally through the second lumen moves the tissue sample proximally through the first lumen; and
d) wherein moving the tissue sample proximally through the first lumen facilitates collection of a plurality of such tissue samples.

5,827,306
MULTIFUNCTIONAL SPRING CLIPS AND CARTRIDGES AND APPLICATORS THEREFOR
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Continuation of Ser. No. 401,002, Mar. 9, 1995, Pat. No. 5,695,505. This application Jun. 13, 1997, Ser. No. 874,664
Int. Cl.[6] A61B *17/22*
U.S. Cl. 606—159 27 Claims



1. In combination, an elongate applicator and a multifunctional clip for use in endoscopic and open operative procedures, said applicator comprising a longitudinal axis, a proximal end, a distal end carrying forceps including first and second forceps members movable between a closed position and an open position and a handle at said proximal end of said applicator operable to move said forceps members between said open and closed positions, said dip comprising a body having first and second opposed portions, said first opposed portion including a first outer segment and a first inner segment connected with said first outer segment, said second opposed portion including a second outer segment and a second inner segment connected with said second outer segment, a first grasping surface carried by said first inner segment, a second grasping surface carried by said second inner segment, and a base connecting a proximal end of said first outer segment to said proximal end of said second outer segment, said first inner segment extending from a distal end of said first outer segment in the direction of said base, said second inner segment extending from a distal end of said second outer segment in said direction of said base with said inner segments disposed between said outer segments, said first inner segment having a first outwardly facing surface facing said first outer segment and a first inwardly facing surface facing opposite said first outwardly facing surface, said second inner segment having a second outwardly facing surface facing said second outer segment and a second inwardly facing surface facing said first inwardly facing surface such that said first and second inwardly facing surfaces define said first and second grasping surfaces, respectively, said multifunctional clip being biased to a grasping position wherein said first and second grasping surfaces are urged toward one another, said first and second forceps members engaging said distal ends of said first and second outer segments, respectively, with said forceps members in said closed position, said first and second forceps members being movable, with said forceps members in engagement with said distal ends of said outer segments, from said closed position to said open position to move said clip from said grasping position to a receiving position wherein said first and second grasping surfaces are moved away from one another in a direction outwardly of said longitudinal axis to receive a structure therebetween and from said open position toward said closed position to permit said clip to move from said receiving position toward said grasping position due to said bias to grasp the structure between said grasping surfaces.

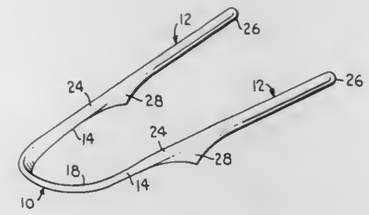
5,827,307
DISPOSABLE HEMOSTATIC CURETTE
Clyde C. Tipton, 230 Colima Ct. #913, Ponte Vedra Beach, Fla. 32082
Filed Jan. 24, 1997, Ser. No. 788,557
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—160 11 Claims



1. A disposable hemostatic curette for removing tissue samples comprising:
a handle having a first end and a second end, said handle having at least one crush window disposed at said second end thereof which creates at least one opening in a wall of said handle;
a scraping implement being disposed at said first end of said handle; and
a crushable applicator being disposed at said second end of said handle.

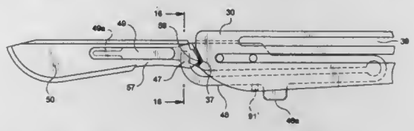
5,827,308
TONGUE SCRAPING APPARATUS
Hemant K. Thakur, Lenexa, Kans., and Robin W. Ream, Independence, Mo., assignors to Beyond 21st Century, Inc., Lenexa, Kans.
Filed Feb. 28, 1997, Ser. No. 810,604
Int. Cl.[6] A61B *17/24*; A61F *9/00*
U.S. Cl. 606—161 13 Claims

1. A tongue scraping apparatus for use in cleaning the upper surface of a user's tongue, the apparatus comprising:



a curved blade presenting a parabolic plan shape and including a relatively sharp lower edge, an opposed, relatively smooth upper edge, opposed front and back faces extending between and connecting the lower and upper edges together, and a pair of proximal ends; and
a pair of elongated handles, each including a distal end connected to one of the proximal ends of the blade, a proximal free end, and a depending thumb press adjacent the distal end of the handle for facilitating gripping of the apparatus,
wherein the center of gravity of the apparatus is offset from the thumb presses in a direction toward the proximal ends of the handles such that the apparatus rests on the proximal ends of the handles and the thumb presses when placed on a horizontal support surface.

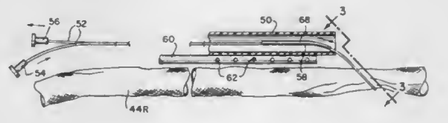
5,827,309
GUARDED SURGICAL SCALPEL WITH SCALPEL BLADE REMOVER
Neil Jolly, Brighton, Mass.; Craig D. Newman, New York, N.Y., and Robert W. Pierce, Wrentham, Mass., assignors to Becton, Dickinson and Company, Franklin Lakes, N.J.
Continuation-in-part of Ser. No. 379,245, Jan. 27, 1995, Pat. No. 5,752,968, Continuation-in-part of Ser. No. 328,996, Oct. 25, 1994, Pat. No. 5,620,454. This application Oct. 19, 1995, Ser. No. 545,488
Int. Cl.[6] A61B *17/32*;*19/00*
U.S. Cl. 606—167 14 Claims



5. A guarded surgical scalpel handle for holding a blade, comprising:
a handle body a guard telescopically received within the handle body for longitudinal movement with respect to the handle body; and
a blade carrier extending from the distal end of the handle body, said blade carrier having a portion adapted to mount a blade, said blade carrier further comprising a cantilever spring arm disposed to move toward and away from the portion of the blade carrier.

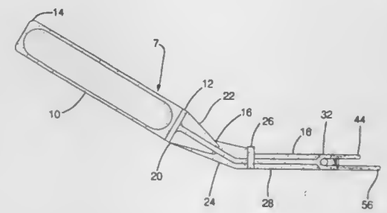
5,827,310
APPARATUS FOR FORMING CUSTOM LENGTH GRAFTS AFTER ENDOLUMINAL INSERTION
Michael Marin, and Ralph Marin, both of New York, N.Y., assignors to Endovascular Systems, Inc., Cross River, N.Y.
Filed Jan. 14, 1997, Ser. No. 783,174
Int. Cl.[6] A61B *17/22*
U.S. Cl. 606—167 15 Claims

1. A device for endoluminally cutting a graft having a wall between inner and outer surfaces thereof, comprising:



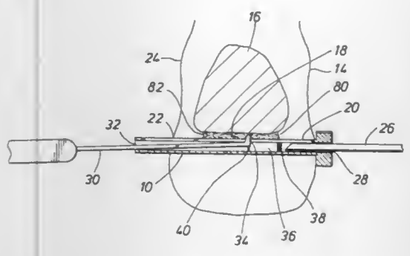
an elongated catheter having cutting means remote from its proximal end for cutting through the wall of the graft to sever the graft endoluminally to a desired length, said cutting means including a portion shaped so that the catheter can be positioned relative to the graft with the graft in close proximity to the cutting means, and
actuator means at the proximal end of the catheter for actuating said cutting means to sever the graft endoluminally.

5,827,311
CARPAL TUNNEL TOME
Brian K. Berelsman, Bourbon, and Daniel E. Williamson, Warsaw, both of Ind., assignors to Biomet Inc, Warsaw, Ind.
Filed May 8, 1997, Ser. No. 852,995
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 20 Claims



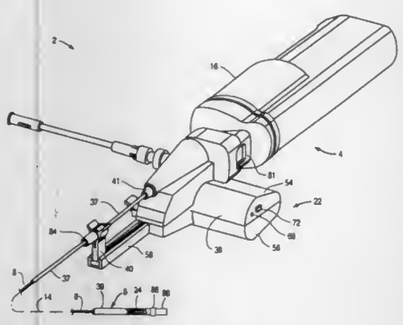
1. A carpal tunnel tome comprising:
a stem having a front end and a rear end;
a cutting head having a front end and a rear end, the rear end of the cutting head being connected to the front end of the stem, the cutting head having a first side and a second side;
a polymeric first fork connected to the cutting head along the front end of the cutting head and extending generally forward from the cutting head, the first fork being generally continuous to the first side of the cutting head;
a polymeric second fork connected to the cutting head along the front end of the cutting head and extending generally forward from the cutting head parallel spaced from the first fork, the second fork being generally continuous to the second side of the cutting head;
a blade, mounted to the cutting head between the two forks with a forward directed cutting edge;
a first fork reinforcement member having a stiffness greater than a stiffness of the first fork, the first fork reinforcement member being connected with the first fork; and
a second fork reinforcement member having a stiffness greater than the stiffness of the second fork, the second fork reinforcement member being connected with the second fork.

5,827,312
MARKED CANNULA
Michael G. Brown, The Woodlands; Perry C. Forrester, Houston; Manuel C. Guyot, and Stephen L. Barrett, both of the Woodlands, all of Tex., assignors to Instratek Incorporated, Houston, Tex.
Continuation of Ser. No. 488,514, Jun. 9, 1995, abandoned. This application Aug. 12, 1997, Ser. No. 909,697
Int. Cl.[6] A61B *17/32*
U.S. Cl. 606—167 **11 Claims**



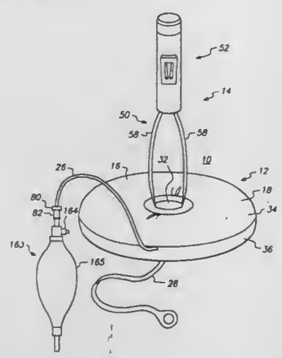
1. A cannula for receiving an endoscope and a surgical instrument, said cannula comprising:
a tubular body having an internal surface defining a longitudinal bore extending through said tubular body for receipt of said endoscope and said surgical instrument, said tubular body having a tubular body wall, said tubular body having a tubular longitudinal axis, said tubular defining an elongate slot through said tubular body wall, said elongate slot being parallel with said tubular longitudinal axis; and
a first indicium disposed at a fixed first position on said internal surface of said longitudinal bore adjacent said elongate slot, said first indicium Permitting the unobstructed receipt of said endoscope for permitting positioning of said surgical instrument at said first position.

5,827,313
DEVICE FOR CONTROLLED LONGITUDINAL MOVEMENT OF AN OPERATIVE ELEMENT WITHIN A CATHETER SHEATH AND METHOD
John H. Ream, San Jose, Calif., assignor to Boston Scientific Corporation, Natick, Mass.
Filed Sep. 27, 1996, Ser. No. 722,325
Int. Cl.[6] A61B *17/32;8/00*
U.S. Cl. 606—171 **21 Claims**



1. A catheter system comprising:
a case;
a catheter assembly, extending from the case, comprising a hollow sheath and a connecting member at least partially housed within the sheath;
the sheath having proximal and distal ends and defining a longitudinal axis;
an operative element;
the connecting member having the operative element secured thereto and a proximal end coupled to the case;
an operative element mover comprising:
a body fixedly mountable to and dismountable from the case;
a sheath anchor movably mounted to the body for movement between first and second positions relative to the body;
the sheath anchor comprising a portion securable to the sheath at a chosen position; and
a sheath anchor drive, carried by the body, operably coupled to the sheath anchor so to move the sheath anchor, and the chosen position of the sheath therewith, between the first and second positions so a longitudinal distance between the chosen position along the sheath and the proximal end of the connecting member changes to cause the longitudinal position of the operative member within the sheath to change.

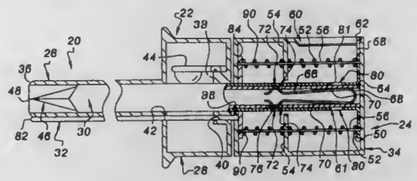
5,827,314
FLEXIBLE LIFTING APPARATUS
John P. Lunsford, San Carlos; Edwin J. Hlavka, Palo Alto; Edmund J. Roschak, Belmont; Daniel T. Wallace, San Francisco; Charles Gresl, Jr.; David B. McCallum, both of San Francisco, and Dana G. Mead, Palo Alto, all of Calif., assignors to Origin Medsystems, Inc., Menlo Park, Calif.
Continuation of Ser. No. 403,458, Mar. 14, 1995, Pat. No. 5,681,341. This application Jun. 4, 1997, Ser. No. 867,873
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—192 **12 Claims**



3. Apparatus for deployment through a laparoscopic incision in a body wall to apply an external lifting force over a large area of the body wall, the apparatus comprising:
a body wall engaging element capable of passing in a packaged state through the laparoscopic incision, and being inflatable to an inflated state in which the body wall engaging element is substantially toroidal, provides a broad lifting face, and bounds a central hole in the body wall engaging element extending through the broad lifting face, the body wall engaging element including an equatorial portion facing into the central hole; and
a flexible lifting element, including:
a flexible portion capable of passing through the laparoscopic incision, the flexible portion being attached to the equatorial portion of the body wall engaging element and positioned leaving the central hole at least partially exposed, and

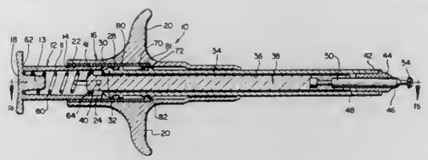
adapter means, connected to part of the flexible portion remote from the equatorial portion of the body wall engaging element, for receiving the external lifting force and for transferring the external lifting force to the flexible portion.

5,827,315
SAFETY PENETRATING INSTRUMENT WITH PENETRATING MEMBER PROTECTED AFTER PENETRATION TO PREDETERMINED DEPTH
InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131
Filed Jan. 4, 1994, Ser. No. 177,616
Int. Cl.[6] A61M *5/20*
U.S. Cl. 606—185 **27 Claims**



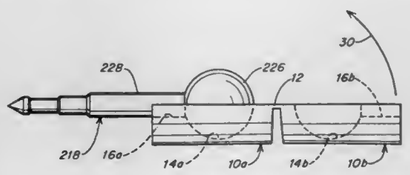
1. A safety penetrating instrument for penetrating an anatomical cavity wall to gain access to an anatomical cavity comprising
a cannula having a distal end for introduction in the anatomical cavity, a proximal end for being disposed externally of the anatomical cavity and a lumen between said distal and proximal ends of said cannula;
a penetrating member disposed in said lumen of said cannula and having a distal end for penetrating the anatomical cavity wall;
protection means for placing said safety penetrating instrument in a protected state where said distal end of said penetrating member is in a protected, non-exposed position: and
trigger means proximally movable during penetration of the anatomical cavity wall for triggering said protection means to place said safety penetrating instrument in said protected state upon said trigger means moving proximally a predetermined distance whereby, when said predetermined proximal distance corresponds to the thickness of the anatomical cavity wall, said safety penetrating instrument will be placed in said protected state when said portal sleeve distal end enters the anatomical cavity.

5,827,316
ROTATING AORTIC PUNCH
Larry Lee Young, Arab, and Rowland W. Kanner, Guntersville, both of Ala., assignors to Atrion Medical Products, Inc., Arab, Ala.
Filed Jun. 5, 1997, Ser. No. 872,761
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—185 **20 Claims**



1. An aortic punch comprising:
a rotatable hollow body member having an end;
a cutter on said end of said hollow body;
a non-rotating member adjacent said hollow body, said hollow body slidable relative to said non-rotating member; and
helical drive structure on said non-rotating member and said hollow body member, said helical drive structure including a helical drive flange on one of said members, said helical drive flange receivable in a slot provided on the other of said members, wherein relative axial movement of said hollow body member relative to said non-rotating member causes said helical drive flange and said slot to interact and move relative to each other causing said hollow body member to rotate relative to said non-rotating member and causing said cutter on said end of said hollow body to rotate.

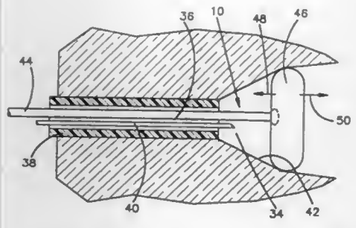
5,827,317
BODY PIERCING HOLDER
Arthur C. Hastings, 31 Malo St., Bass River, Mass. 02664
Filed Apr. 15, 1997, Ser. No. 834,450
Int. Cl.[6] A61B *17/34*
U.S. Cl. 606—188 **2 Claims**



1. A holder and a body piercing pin for use in a body piercing instrument that includes a housing having a bore shaped to receive the holder and a plunger slidable within the bore for engagement with said holder, said holder comprising two symmetrical halves interengaged at one end by a hinge and when folded defining a substantially cylindrical shape sized to slidably fit within a bore of the body piercing instrument and move therethrough when urged by a plunger, said holder when folded defining a cavity with an opening extending axially therefrom at the end opposite the hinge and said body piercing pin having a head shaped and sized to conform with and engage said cavity in fixed relation thereto and with a shaft extending from said head outwardly from said housing through said axial opening.

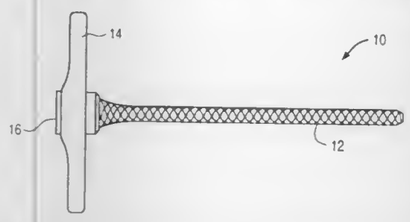
5,827,318
METHOD OF DISSECTING TISSUE LAYERS
Peter M. Bonutti, Effingham, Ill., assignor to General Surgical Innovations, Inc., Cupertino, Calif.
Continuation of Ser. No. 464,144, Jun. 5, 1995, abandoned, which is a division of Ser. No. 419,851, Apr. 10, 1995, abandoned, which is a continuation of Ser. No. 216,097, Mar. 22, 1994, abandoned, which is a continuation of Ser. No. 54,416, Apr. 28, 1993, abandoned, which is a division of Ser. No. 731,534, Jul. 17, 1991, Pat. No. 5,163,949, which is a division of Ser. No. 487,645, Mar. 2, 1990, Pat. No. 5,331,975. This application May 27, 1997, Ser. No. 864,018
Int. Cl.[6] A61B *1/32;* **A61M** *29/02*
U.S. Cl. 606—190 **5 Claims**

1. A method for dissecting a first layer of tissue from a second layer of tissue along a natural tissue plane to create an anatomic space for the performance of a surgical procedure comprising the steps of:
making an incision in a body which incision provides access to a natural tissue plane;
introducing a deflated balloon into the incision and directing it to the location of said natural tissue plane;
inflating the balloon for the purpose of causing substantial dissection of the first layer of tissue from the second layer of tissue along the natural tissue plane; and



dissecting said first layer from said second layer for a substantial distance along said natural tissue plane by exerting force on said layers by inflating said balloon, thereby dissecting and creating said anatomic space.

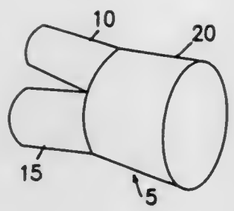
5,827,319
RADIALLY EXPANDABLE ACCESS SYSTEM HAVING DISPOSABLE AND REUSABLE COMPONENTS
John E. Carlson, Mountain View; Robert K. Deckman, San Mateo; Steven P. Masterson, San Francisco; Thomas J. Palermo, San Jose, and Craig K. Tsuji, Santa Clara, all of Calif., assignors to Innerdyne, Inc., Sunnyvale, Calif.
Filed May 20, 1996, Ser. No. 650,387
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—191 **19 Claims**



1. A method for reusing an access system, wherein the access system comprises the following components each of which have been previously used to access a target location in a patient:
a radially expandable sleeve having an axial lumen therethrough;
a cannula including a cannula tube having a proximal end, a distal end, and a lumen therethrough, and a cannula hub attached to the proximal end of the cannula tube and having a removable valve cap thereon; and
an obturator removably receivable in the lumen of the cannula tube, said obturator having a tapered distal end which extends distally from the distal end of the cannula body when the obturator is therein;
wherein the method comprises the steps of:
replacing at least the radially expandable sleeve and the valve cap; and
sterilizing at least one of the other system components and sterilizing or replacing all other components of the system.

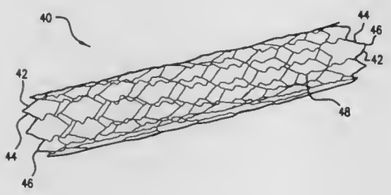
5,827,320
BIFURCATED STENT AND METHOD OF MAKING SAME
Jacob Richter, Tel Aviv, and Gregory Pinchasik, Ramat Hasharon, both of Israel, assignors to Medinol Ltd., Tel Aviv, Israel
Continuation of Ser. No. 642,297, May 3, 1996, abandoned. This application Aug. 14, 1997, Ser. No. 911,606
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—194 **18 Claims**

10. A bifurcated stent, comprising:



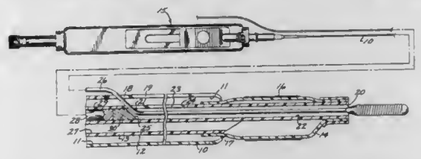
a) a first sheet having a first edge, a second edge, a third edge, and a fourth edge;
b) a second sheet having a first edge, a second edge, a third edge, and a fourth edge;
c) a third sheet having a first edge, a second edge, a third edge, and a fourth edge;
d) said second edge of said first sheet attached to said third edge of said first sheet to form a tubular first leg portion having a proximal end and a distal end;
e) said second edge of said second sheet attached to said third edge of said second sheet to form a tubular second leg portion having a proximal end and a distal end;
f) said second edge of said third sheet attached to said third edge of said third sheet to form a tubular stem portion having a proximal end and a distal end; and
g) said proximal end of said first leg portion and said proximal end of said second leg portion attached to said distal end of said stem portion.

5,827,321
NON-FORESHORTENING INTRALUMINAL PROSTHESIS
Gary S. Roubin, Birmingham, Ala.; Geoffrey Hamilton White, Sydney, Australia; Sriram S. Iyer, Birmingham, Ala.; Russell J. Redmond, Goleta, and Claude A. Vidal, Santa Barbara, both of Calif., assignors to Cornerstone Devices, Inc., San Clemente, Calif.
Filed Feb. 7, 1997, Ser. No. 797,814
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—195 **54 Claims**



1. A stent comprising:
a plurality of annular elements, each annular element having a compressed state and an expanded state, wherein each annular element has a longitudinal dimension which is smaller in the radially expanded state than in the compressed state; and
connecting members connecting adjacent annular elements;
wherein the annular elements and connecting members are made of Nitinol, with each connecting member preset with an elasticity which causes the connecting member to elongate longitudinally when the annular elements are in their expanded state to compensate for the smaller longitudinal dimension of the annular elements in the expanded state.

5,827,322
SHAPE MEMORY LOCKING MECHANISM FOR INTRAVASCULAR STENTS
Michael S. Williams, Chapel Hill, N.C., assignor to Advanced Cardiovascular Systems, Inc., Santa Clara, Calif.
Continuation of Ser. No. 340,612, Nov. 16, 1994, abandoned. This application Sep. 20, 1996, Ser. No. 717,324
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—198 **35 Claims**



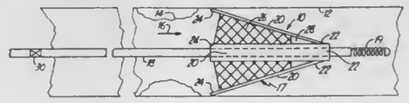
1. An intraluminal stent assembly which is implanted in a body lumen, comprising:
an intraluminal stent formed from a substantially flat sheet and having a first edge and a second edge;
a longitudinal slot in said first edge; and
a plurality of teeth positioned along a third edge and a fourth edge of said stent for interlocking engagement with said longitudinal slot, said plurality of teeth made from a shape memory-retaining material or a superelastic material so that said stent can be rolled into a cylindrical configuration and when expanded to an enlarged diameter said plurality of teeth interlock with said longitudinal slot.

5,827,323
SURGICAL INSTRUMENT FOR ENDOSCOPIC AND GENERAL SURGERY
Charles H. Klieman, 21 Lochmoor La., Newport Beach, Calif. 92660, and John M. Stiggelbout, Sausalito, Calif., assignors to Charles H. Klieman, Whittier, Calif.
Continuation-in-part of Ser. No. 471,988, Jun. 6, 1995, which is a continuation-in-part of Ser. No. 295,352, Aug. 24, 1994, abandoned, which is a continuation of Ser. No. 95,739, Jul. 21, 1993, abandoned. This application Oct. 4, 1996, Ser. No. 729,683
Int. Cl.[6] A61B *17/28*
U.S. Cl. 606—205 **54 Claims**



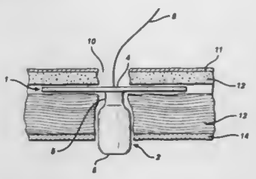
1. A surgical instrument for use in endoscopy comprising:
a tubular barrel with no joints and having a proximal end and a distal end;
an end effector comprising a first working piece and a second working piece, each working piece being pivotally attached directly to the distal end of the tubular barrel, the two working pieces forming an operating angle therebetween;
a handle attached to the proximal end of the tubular barrel, the handle comprising:
an elongated stationary portion permanently fixed in alignment with the longitudinal axis of the tubular barrel, the stationary portion having a grip portion that is grippable by a single hand, wherein the stationary portion has a longitudinal axis that extends at an angle relative to the longitudinal axis of the tubular barrel;
a manually operated actuating control; and
a manually operated pivot control, the actuating and pivot controls being operable by the same hand which grips the grip portion; and
linkage extending through the tubular barrel, the linkage operably connecting the actuating control and the pivot control to the first and second end effector working pieces, wherein in response to the actuating control being operated, the linkage acts on the end effector to alter the operating angle; and
in response to the pivot control being operated, the linkage acts upon both the first and second end effector working pieces to pivot the end effector working pieces simultaneously and in the same direction while maintaining a substantially constant operating angle.

5,827,324
DISTAL PROTECTION DEVICE
Robert L. Cassell, Otsego; John M. K. Daniel, Hopkins, and Thomas V. Ressemann, St. Cloud, all of Minn., assignors to SciMed Life Systems, Inc., Maple Grove, Minn.
Filed Mar. 6, 1997, Ser. No. 813,794
Int. Cl.[6] A61M *29/00*
U.S. Cl. 606—200 **20 Claims**



1. An emboli capturing system for introduction into vasculature to capture emboli in blood flowing in the vasculature, the emboli capturing system comprising:
a guidewire having a longitudinal axis and defining a lumen along at least a portion thereof;
an expandable member coupled to a distal portion of the guidewire and having an interior being in fluid communication with the lumen in the guidewire, the expandable member being configured to receive fluid through the lumen to expand and have fluid removed from the interior thereof to collapse; and
an emboli capturing device operably coupled to the expandable member and configured to deploy radially outwardly relative to the guidewire upon expansion of the expandable member.

5,827,325
IMPLANT IN PARTICULAR FOR THE TROCAR PUNCTURE POINTS
Susanne Landgrebe, Quickborn, and Wieland Knopf, Georgenthal, both of Germany, assignors to Ethicon, Inc., Somerville, N.J.
Continuation of Ser. No. 510,438, Aug. 2, 1995, abandoned, which is a continuation of Ser. No. 204,022, Feb. 28, 1994, abandoned. This application Sep. 13, 1996, Ser. No. 712,941
Claims priority, application Germany, Mar. 1, 1994, 43 06 850.2
Int. Cl.[6] A61B *17/08*
U.S. Cl. 606—213 **11 Claims**



1. An implant, in particular for the closure of trocar puncture points, comprising a flexible, flat base part (1) having a topside and a bottom side and a center and a stopper part (2) that extends from the bottom side (3) of the base part (1) and extends in an essentially perpendicular manner relative to the base part wherein at least one thread (8) is secure to the top side (4) and the base part (1) facing away from the stopper part (2) wherein the stopper part is fixedly mounted to the base part and has a proximal end, a distal end and a distal end face.

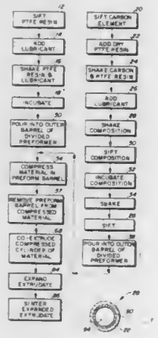
5,827,326
IMPLANTABLE CARDIOVERTER DEFIBRILLATOR HAVING A SMALLER ENERGY STORAGE CAPACITY
Mark W. Kroll, Minnetonka; Theodore P. Adams, Edina; Kenneth M. Anderson, Bloomington, and Charles U. Smith, Minnetonka, all of Minn., assignors to Angeion Corporation, Plymouth, Minn.
Division of Ser. No. 263,257, Jun. 21, 1994, Pat. No. 5,405,363, which is a continuation of Ser. No. 33,632, Mar. 15, 1993, abandoned, which is a continuation-in-part of Ser. No. 910,611, Jul. 8, 1992, Pat. No. 5,241,960, and a continuation-in-part of Ser. No. 835,836, Feb. 18, 1992, Pat. No. 5,431,686, and a continuation-in-part of Ser. No. 953,485, Sep. 29, 1992, abandoned, and a continuation-in-part of Ser. No. 808,722, Dec. 17, 1991, Pat. No. 5,342,399, and a continuation-in-part of Ser. No. 989,532, Dec. 11, 1992, abandoned, and a continuation-in-part of Ser. No. 913,626, Jul. 16, 1992, Pat. No. 5,235,979, and a continuation of Ser. No. 670,188, Mar. 15, 1991, abandoned, and a continuation-in-part of Ser. No. 993,094, Dec. 18, 1992, Pat. No. 5,407,444, and a continuation-in-part of Ser. No. 993,292, Dec. 18, 1992, Pat. No. 5,383,907. This application Mar. 29, 1995, Ser. No. 412,920
Int. Cl.[6] A61N *1/39*
U.S. Cl. 607—5 16 Claims



1. An implantable cardioverter defibrillator for subcutaneous positioning within a pectoral region of a human patient comprising:
a sealed housing structure constructed of a biocompatible material;
one or more connector ports, each connector port disposed in a wall of the housing structure for providing electrical connections between an interior space of the housing structure and a corresponding electrical lead that is implanted within the human patient; and
circuitry disposed within the interior space of the housing structure and operably connected to the connector ports and responsive to a cardiac signal received from the human patient via one or more of the electrical leads to detect an arrhythmia in the cardiac signal and, in response, control delivery of one or more high energy electrical cardioversion/defibrillation countershocks of at least 0.5 joules to the human patient, the circuitry including a battery source of electrical energy having a total energy storage capacity of less than 1.0 amp-hours.

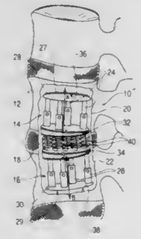
5,827,327
CARBON CONTAINING VASCULAR GRAFT AND METHOD OF MAKING SAME
James M. McHaney, Chandler, and Christopher E. Banas, Mesa, both of Ariz., assignors to IMPRA, Inc., Tempe, Ariz.
Continuation of Ser. No. 311,497, Sep. 23, 1994, abandoned. This application Jan. 3, 1997, Ser. No. 777,006
Int. Cl.[6] A61F *2/06*
U.S. Cl. 623—1 16 Claims

1. A tubular vascular graft, comprising an activated carbon and expanded polytetrafluoroethylene lumenal layer and an expanded polytetrafluoroethylene layer concentrically joined and co-extruded



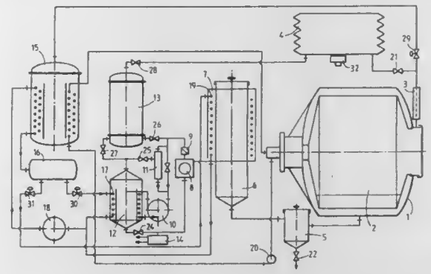
with one another to form an integral activated carbon and expanded polytetrafluoroethylene tubular wall structure wherein the activated carbon and expanded polytetrafluoroethylene lumenal layer further including a bioactive substance loaded therein fluid flow communication with a lumenal surface of the tubular wall structure.

5,827,328
INTERVERTEBRAL PROSTHETIC DEVICE
Glenn R. Buttermann, 1725 Park Ave., Mahtomedi, Minn. 55115
Filed Nov. 22, 1996, Ser. No. 753,334
Int. Cl.[6] A61F *2/44*
U.S. Cl. 623—17 42 Claims



1. An intervertebral prosthetic device for replacement of a nucleus pulposus of an intervertebral disc, comprising:
a first intravertebral fixation member for fixation within a cavity of a first vertebral body, said first fixation member having a bone-contacting surface for positioning against subchondral bone of the first vertebral body; said first fixation member having at least one adjustable member for adjusting the length thereof;
a second intravertebral fixation member for fixation within a cavity of a second vertebral body adjacent the first vertebral body, said second fixation member having a bone-contacting surface for positioning against subchondral bone of the second vertebral body; and
a compressible member for positioning between said first fixation member and said second fixation member, said compressible member having a top plate connected to said first fixation member, a bottom plate connected to said second fixation member, and at least one compressible element therebetween that remains compressible after implantation, said compressible member further having an outer periphery less than or substantially equal to a diameter of the nucleus pulposus of the intervertebral disc.

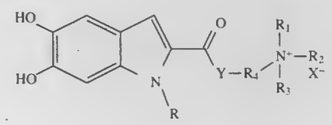
5,827,329
METHOD FOR CLEANING IN A LIQUID MEDIUM FABRICS OF CLOTHES, AND PLANT FOR IMPLEMENTING SUCH METHOD
Andre Champeau, Paris, France, assignor to I.L.S.A., S.P.A., Italy
PCT No. PCT/FR95/00976, § 371 Date Jan. 24, 1997, § 102(e) Date Jan. 24, 1997, PCT Pub. No. WO96/05352, PCT Pub. Date Feb. 22, 1996
PCT Filed Jul. 20, 1995, Ser. No. 776,447
Claims priority, application France, Aug. 9, 1994, 94 09840
Int. Cl.[6] D06F *43/08*
U.S. Cl. 8—142 15 Claims



1. Method for cleaning fabrics or clothing in a liquid medium which comprises the steps of (a) cleaning in the presence of said liquid medium and, subsequently, (b) drying in a vacuum, each step being carried out in an enclosure having a pressure which is lowered from a first pressure at which cleaning is effected to a vacuum value between 1.5×10^3 Pa and 15×10^3 Pa at which drying is effected, steam being injected into said enclosure when the pressure therein reaches the vacuum value, the steam being supplied and introduced into said enclosure from a steam source at a pressure between 0.8×10^4 Pa and 8×10^4 Pa.

5,827,330
SYNTHESIS OF QUARTERNARY MELANIN COMPOUNDS AND THEIR USE AS HAIR DYES OR FOR SKIN TREATMENT
Gottfried Wenke, Woodbridge, Conn., and Giuseppe Prota, Naples, Italy, assignors to Bristol-Myers Squibb Co., New York, N.Y.
Continuation-in-part of Ser. No. 568,057, Dec. 6, 1995, Pat. No. 5,686,084. This application Jun. 13, 1997, Ser. No. 874,154
Int. Cl.[6] A61K *7/13;7/42;* C07D *209/18*
U.S. Cl. 8—423 12 Claims

1. A water soluble cationic polymer obtained by oxidative polymerization of a 5,6-dihydroxyindole carboxylic acid ester or amide of the formula:



(I)

wherein:
Y is —O— or



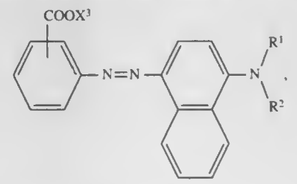
R is hydrogen or a chemically nonreactive substituent,
R_1, R_2, R_3 and R_4 are groups that in combination one with the other quaternize the nitrogen to which they are bonded, and
X is an anion.

5,827,331
ELECTRODE COMPOSITIONS
Jacob Block, Rockville, Md., and Xiyun Fan, Orange, Tex., assignors to W. R. Grace & Co.-Conn., New York, N.Y.
Continuation-in-part of Ser. No. 653,145, May 24, 1996, abandoned. This application Apr. 8, 1997, Ser. No. 835,874
Int. Cl.[6] H01M *4/62*
U.S. Cl. 29—623.5 19 Claims

1. A cathodic electrode composition comprising an alkali metal chalcogenide or mixtures thereof, a solid polymer electrolyte composed of electrolyte salt, solid polymer binder and organic liquid capable of solvating and complexing with the electrolyte salt, and a C_{12} alkyl ester capped oligomer of hexanoic acid that is electrochemically inert.

5,827,332
AZO DYES AND A METHOD OF MAKING A HYDROCARBON USING AN AZO DYE
Georg Zeidler, Dannstadt-Schauernheim; Gerhard Scholz, Ludwigshafen; Claudia Kräh, Mutterstadt; Karin Heidrun Beck, Ludwigshafen, and Udo Mayer, Frankenthal, all of Germany, assignors to BASF Aktienegsellschaft, Ludwigshafen, Germany
PCT No. PCT/EP94/04091, § 371 Date Jun. 6, 1996, § 102(e) Date Jun. 6, 1996, PCT Pub. No. WO95/17483, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 9, 1994, Ser. No. 647,899
Claims priority, application Germany, Dec. 22, 1993, 43 43 823.7
Int. Cl.[6] C10L *1/22;1/04;* C09B *29/095;29/085*
U.S. Cl. 44—328 2 Claims

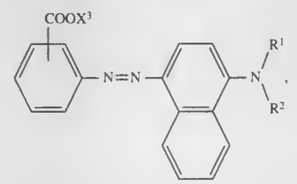
1. A method of marking a hydrocarbon, comprising adding to a hydrocarbon an azo dye of the formula Ib



(Ib)

where
R^1 is hydrogen or C_1–C_{15}-alkyl,
R^2 is C_1–C_{15}-alkyl and
X^3 is hydrogen, C_1–C_{15}-alkyl which is uninterrupted or interrupted by from 1 to 4 ether oxygen atoms or is a radical of the formula LNX^1X^2, where L is C_2–C_8-alkylene and X^1 and X^2 independently of one another are each C_1–C_6-alkyl or, together with the nitrogen atom linking them, form a 5-membered or 6-membered saturated heterocyclic radical which does or does not furthermore contain an oxygen atom in the ring.

2. A hydrocarbon containing one or more azo dyes, as pH-dependent markers, of the formula Ib



(Ib)

where
R^1 is hydrogen or C_1–C_{15}-alkyl,
R^2 is C_1–C_{15}-alkyl and
X^3 is hydrogen, C_1–C_{15}-alkyl which is uninterrupted or interrupted by from 1 to 4 ether oxygen atoms or is a radical of the formula LNX^1X^2, where L is C_2–C^8-alkylene and X^1 and X^2

independently of one another are each C_1–C_6-alkyl or, together with the nitrogen atoms linking them, form a 5-membered or 6-membered saturated heterocyclic radical which does or does not furthermore contain an oxygen atom in the ring.

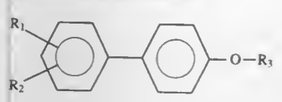
5,827,333

SUBSTITUTED BIPHENYL ETHERS AND FUEL COMPOSITIONS CONTAINING THE SAME

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company LLC, San Francisco, Calif.

Filed Sep. 30, 1997, Ser. No. 940,430
Int. Cl.[6] C10L *1/18*
U.S. Cl. 44—384 29 Claims

1. A compound of the formula:



wherein:

R_1 is hydrogen or hydroxyl;

R_2 is hydroxyl, cyano, nitro, amino, aminomethyl, N-alkylamino or N-alkylaminomethyl wherein the alkyl group contains 1 to about 6 carbon atoms, N,N-dialkylamino or N,N-dialkylaminomethyl wherein each alkyl group independently contains 1 to about 6 carbon atoms,

with the proviso that R_1 and R_2 are ortho relative to each other and meta or para relative to the adjoining phenyl substitutent; and

R_3 is a polyalkyl group having an average molecular weight in the range of about 450 to about 5,000.

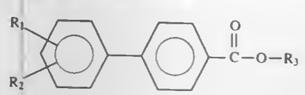
5,827,334

SUBSTITUTED BIPHENYL POLYALKYL ESTERS AND FUEL COMPOSITIONS CONTAINING THE SAME

Richard E. Cherpeck, Cotati, Calif., assignor to Chevron Chemical Company LLC, San Francisco, Calif.

Filed Sep. 30, 1997, Ser. No. 940,846
Int. Cl.[6] C10L *1/18;1/22;* C07C *229/00*
U.S. Cl. 44—388 29 Claims

1. A compound of the formula:



wherein:

R_1 is hydrogen or hydroxyl;

R_2 is hydroxyl, cyano, nitro, amino, aminomethyl, N-alkylamino or N-alkylaminomethyl wherein the alkyl group contains 1 to about 6 carbon atoms, N,N-dialkylamino or N,N-dialkylaminomethyl wherein each alkyl group independently contains 1 to about 6 carbon atoms, with the proviso that R_1 and R_2 are ortho relative to each other and meta or para relative to the adjoining phenyl substitutent; and

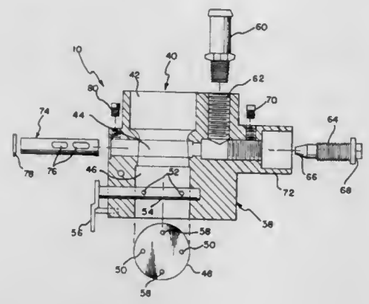
R_3 is a polyalkyl group having an average molecular weight in the range of about 450 to about 5,000.

5,827,335

ENHANCED PERFORMANCE CARBURETOR SYSTEM

Darrell Ward, Sparta, N.C., assignor to Pioneer/Eclipse Corporation, Sparta, N.C.

Filed Nov. 7, 1995, Ser. No. 554,450
Int. Cl.[6] B01F *3/02*
U.S. Cl. 48—180.1 23 Claims



1. Apparatus, comprising:

(a) a propane carburetor;

(b) means for providing propane fuel to said carburetor;

(c) means for providing an airflow through said carburetor;

(d) said carburetor including an air-fuel mixing chamber having an intake port for receiving said airflow, an exhaust port, and a venturi throat between said intake and exhaust ports; and

(e) fuel metering means connected to receive and distribute said propane fuel, said fuel metering means comprising a hollow tube having a single row of apertures located in a sidewall thereof, said tube being positioned transversely across the entire venturi throat with the openings of said row of apertures facing downstream of said airflow.

5,827,336

LIQUEFACTION AND PARTIAL OXIDATION OF PLASTIC MATERIALS

Motasimur Rashid Khan; Christine Cornelia Gorsuch, both of Wappinger Falls, and Stephen Jude DeCanio, Montogomery, all of N.Y., assignors to Texaco Inc., White Plains, N.Y.

PCT No. PCT/US94/11170, § 371 Date Mar. 22, 1996, § 102(e) Date Mar. 22, 1996, PCT Pub. No. WO95/09901, PCT Pub. Date Apr. 13, 1995
Continuation of Ser. No. 130,921, Oct. 4, 1993, abandoned.
This PCT application Sep. 30, 1994, Ser. No. 619,749
Int. Cl.[6] C10J *3/46*
U.S. Cl. 48—197 R 12 Claims

1. A process for the non-hazardous disposal of a solid organic plastic material containing hazardous non-combustible inorganic matter, consisting essentially of:

a) granulating the solid organic plastic material;

b) partially liquefying the granulated plastic material at a temperature of about 400° F. to about 495° F. and a pressure of about 150 psig to about 750 psig while said plastic material is in contact with a pumpable hydrocarbonaceous liquid solvent in the amount of about 1 to 5 parts by weight of said hydrocarbonaceous liquid solvent per part by weight of plastic material, until a pumpable slurry is produced which contains separated inorganic material, unseparated inorganic material, solubilized plastic and unsolubilized plastic;

c) removing the separated inorganic material from said pumpable slurry; and

d) reacting the remainder of the pumpable slurry containing the unseparated inorganic material with a free-oxygen containing gas by partial oxidation to produce a gas comprising CO and H_2, and a nontoxic slag.

5,827,337

ABRASIVE ARTICLES USING WATER AS A TEMPORARY BINDER

Elinor B. Keil, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Division of Ser. No. 510,246, Aug. 2, 1995, Pat. No. 5,658,360.
This application May 8, 1997, Ser. No. 852,988
Int. Cl.[6] C09K *3/14*
U.S. Cl. 51—298 20 Claims

1. An uncured, molded abrasive article comprising:

a. a granular abrasive material uniformly coated with at least one phenol-novolac resin;

b. an effective amount of at least one curing agent; and

c. an amount of water effective to bind the abrasive article prior to curing;

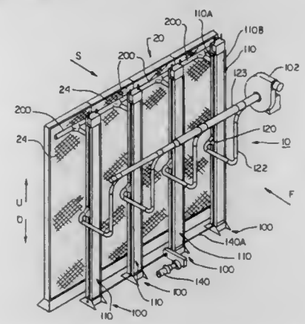
wherein the abrasive article comprises less than 0.5%, by weight, volatile organic chemicals.

5,827,338

FILTER CLEANING SYSTEM INCLUDING BELT MOUNTED EXTENDING NOZZLE

Ivan J. Horvat, Gastonia, N.C., assignor to Carolina Air Filtration, Inc., Gastonia, N.C.

Filed Apr. 3, 1997, Ser. No. 832,037
Int. Cl.[6] B01D *46/04*
U.S. Cl. 55—285 42 Claims



1. An air cleaning apparatus for removing dust and debris from a volume of air, said apparatus comprising:

a) a stationary filter having a dust and debris collecting surface;

b) a cleaning unit comprising:

i) a longitudinally extending duct spaced from said collecting surface a predetermined distance and extending lengthwise along said collecting surface, a lengthwise slot formed in said duct and facing said collecting surface said slot further including a pair of opposed flanges formed along said slot said flanges forming opposing belt receiving cavities within the slot;

ii) a belt in said duct and extending across said slot said belt extending between said flanges and having a pair of spaced apart edge portions each disposed within a respective one of said pair of opposed flanges said duct and said belt defining a plenum, said belt having an opening formed therein adjacent said slot and in fluid communication with said plenum, said belt mounted for movement within said slot such that said opening may be repositioned along the length of said slot; and

iii) a nozzle mounted on said belt for movement therewith and extending outwardly from said belt toward said collecting surface, said nozzle having an inlet adjacent said collecting surface and distal from said belt, said inlet having a width substantially transverse to the length of said slot which is greater than a corresponding width of said opening in said belt, said inlet in fluid communication with said opening and thereby said plenum;

c) drive means for moving said belt along said slot; and

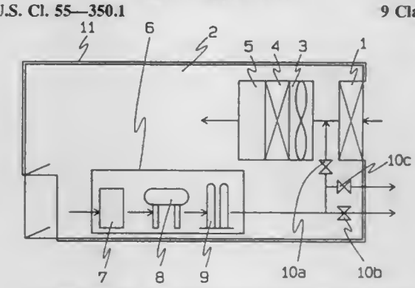
d) a suction source operable to create a vacuum in said plenum and thereby at said inlet of said nozzle, for drawing dust and debris disposed on said collecting surface through said inlet, said nozzle, and said opening, and into said plenum.

5,827,339

APPARATUS FOR GENERATING CHEMICAL-FREE DRY AIR

Hitoshi Nagafune; Takaaki Fukumoto; Hakushi Shibuya, and Koji Ezaki, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Toyko, Japan

Filed Apr. 1, 1997, Ser. No. 829,954
Claims priority, application Japan, Oct. 1, 1996, 8-260448
Int. Cl.[6] B01D *46/00*
U.S. Cl. 55—350.1 9 Claims



1. An apparatus for generating clean dry air, having at least one unit comprising:

a fan filter unit having,

an open air introducing fan,

a chemical filter disposed downstream of said open air introducing fan to remove chemical mists from air introduced by said open air introducing fan, and

a HEPA filter disposed downstream of said open air introducing fan to remove particulate matter of a predetermined micron level from air introduced by said open air introducing fan;

a chamber of closed construction having an entrance at which the fan filter unit is located and to which air passed through the fan filter unit to remove chemical mists and particulate matter is supplied; and

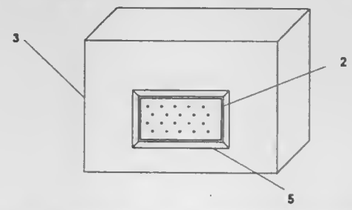
a dry air generating apparatus arranged within the chamber of closed construction downstream of said fan filter unit, for generating dry air from the air supplied to the chamber of closed construction and providing said dry air to outside of the chamber.

5,827,340

FILTER KIT FOR ELECTRONIC EQUIPMENT

Ricardo J. Fiske, 101 S. Spruce St., Unit 205, Escondido, Calif. 92025

Filed Jan. 17, 1997, Ser. No. 784,075
Int. Cl.[6] B01D *46/10*
U.S. Cl. 55—385.6 11 Claims



1. A filter kit for after—market electronic equipment comprising:

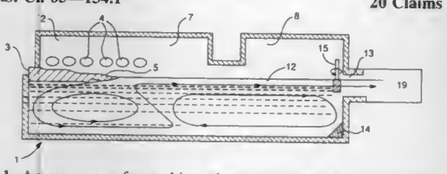
A) a flexible rubbery frame material having a total length of at least two feet, having a generally "U shaped cross section and a width of less than 1½ inches,
B) at least one square foot of air filter material, and
C) attachment means for attaching a frame made of said frame material around an air intake of one said after market electronic equipment,
wherein said flexible rubbery frame material is flexible enough so that when formed into a frame and attached to said electronic equipment, said frame will permit replacement of said air filter material without removal of said flexible rubbery frame material from said electronic device.

5,827,341

METHOD AND APPARATUS FOR MAKING GLASS

Peter James Whitfield, St Helens; Robert Emmett Trevelyan, Wigan; Andrew Michael Keeley, Liverpool, and David Martlew, St Helens, all of United Kingdom, assignors to Pilkington plc, St. Helens, United Kingdom

Filed Oct. 25, 1996, Ser. No. 738,053
Claims priority, application United Kingdom, Oct. 28, 1995, 9522123
Int. Cl.[6] C03B *5/16;5/18*
U.S. Cl. 65—134.1 **20 Claims**



1. An apparatus for making glass comprising feed means for supplying a glass-making composition; melting zone receiving said composition from said feed means for melting said composition to form molten glass, said melting zone including an outlet for said molten glass; refining zone receiving said molten glass from said outlet of said melting zone for refining said molten glass to remove inhomogeneities therefrom to form refined molten glass, said refining zone including an outlet for said refined molten glass; conditioning zone receiving said refined molten glass from said refining zone for cooling said refined molten glass to form conditioned glass, said conditioning zone including an outlet for an upper portion of said conditioned glass; a float canal, having a narrower width than said conditioning zone and a bottom at a depth generally corresponding to said upper portion of said conditioned glass, receiving said conditioned glass from said outlet of said conditioning zone, said float canal including an outlet for said received glass; and a float tank receiving said glass from said outlet of said float canal; and stirring means disposed in said conditioning zone adjacent said outlet of said conditioning zone.

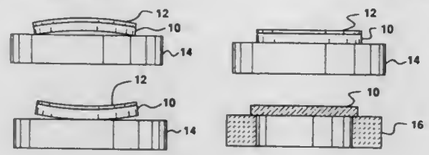
10. A method of making glass in a float glass furnace comprising the steps of:
(a) feeding a glass composition to said furnace;
(b) melting said glass composition in a melting zone of said furnace to form molten glass;
(c) transferring said molten glass from said melting zone to a refining zone of said furnace;
(d) refining said molten glass in said refining zone to remove bubbles therefrom to form refined molten glass;
(e) transferring said refined molten glass from said refining zone to a conditioning zone of said furnace;
(f) cooling said refined molten glass in said conditioning zone to form cooled glass;
(g) transferring said cooled glass from an exit from said conditioning zone to an entrance to a float canal having a narrower width than said conditioning zone and stirring said cooled glass with stirring means in the conditioning zone in the region of said exit from said conditioning zone such that all glass entering said float canal has improved homogeneity and is fully attenuated over its entire width of entry to said float canal.

5,827,342

TREATMENT OF GLASS SUBSTRATES TO COMPENSATE FOR WARPAGE AND DISTORTION

Alain Marcel Jean Beguin, Vulaines Sur Seine, France; Heather Boek; Richard Orr Maschmeyer, both of Corning, N.Y., and Denis M. Trouchet, Quincy Sous Senart, France, assignors to Corning Incorporated, Corning, N.Y.

Filed Apr. 4, 1997, Ser. No. 834,517
Int. Cl.[6] C03C *17/00;25/02;* **C03B** *23/00;21/00*
U.S. Cl. 65—60.5 **8 Claims**



1. A method for forming a substantially flat planar lightwave optical circuit which comprises:
a. providing a silica substrate;
b. forming a layer of a plurality of oxide compounds on said substrate;
c. sintering said oxide layer to form a glassy lightguiding layer over said silica substrate;
d. forming an optical circuit into said glassy layer by conventional photolithography and etching;
e. heating the structure formed in step (d) above to an elevated temperature for a time sufficient to flatten said structure to a final warpage of about 40 microns or less; and
f. cladding the surface formed in step (e) above with an overlaying glass layer having an index of refraction substantially equal to that of the substrate.

5,827,343

PROCESS FOR CHANGING THE BEND OF ANODICALLY BONDED FLAT COMPOSITE BODIES MADE OF GLASS AND METAL OR SEMICONDUCTOR MATERIALS

Heinrich Engelke, Schneppelwiese 1, D-31073 Grueneplan, Germany, and Michael Harz, Jänschwalder Strasse 16, D-03048 Cottbus, Germany

PCT No. PCT/EP95/03825, § 371 Date Oct. 6, 1997, § 102(e) Date Oct. 6, 1997, PCT Pub. No. WO96/11806, PCT Pub. Date Apr. 25, 1996
PCT Filed Sep. 27, 1995, Ser. No. 836,068
Claims priority, application Germany, Oct. 13, 1994, 44 36 561.6
Int. Cl.[6] C03B *23/00*
U.S. Cl. 65—102 **7 Claims**



1. A method for changing the flexion of an anodically-bonded planar composite of predetermined glass and metal or semiconductor materials, comprising the steps of:
a) anodically bonding said predetermined glass with said metal or said semiconductor material as rapidly as possible, wherein after anodically bonding said glass has an unbonded surface, said composite being convexly curved when viewed from said unbonded glass side; then
b) immediately cooling said anodically bonded composite; and then
c) subjecting said anodically bonded and cooled composite to an additional heating to a temperature range of 250° C. to 10° C. below the glass transition temperature of the glass of the composite to achieve a change in flexion for said convexly curved shape to a flat planar shape by heating alone.

5,827,344

METHOD OF MAKING GLASS

Kenneth Melvin Fyles, Lancashire; Helen Louise Eaves, Cheshire, and Thomas Gordon Cochrane, Lancashire, all of United Kingdom, assignors to Pilkington PLC, St. Helens, United Kingdom

Filed Jan. 21, 1997, Ser. No. 786,568
Claims priority, application United Kingdom, Jan. 30, 1996, 01780/96
Int. Cl.[6] C03B *5/26;5/16;5/18;5/28*
U.S. Cl. 65—134.1 **16 Claims**

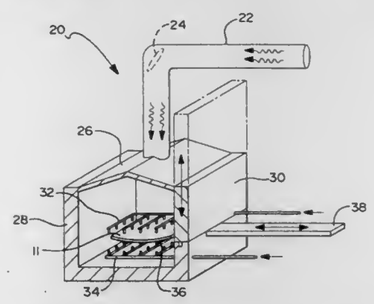
1. A method for making different glasses, which comprises:
(1) supplying a glass making composition to a glass making furnace and forming a first glass; and
(2) changing the glass making composition that is being supplied to the glass making furnace by interchanging iron oxide and alkaline earth metal oxide in the composition so that the density of the glass produced after said change in glass making composition is within 0.01 g/cm^3 of the density of the glass produced before said change in glass making composition to form a second glass.

5,827,345

METHOD FOR HEATING, FORMING AND TEMPERING A GLASS SHEET

Premakaran Tucker Boaz, Livonia, and Gary W. Sitzman, Walled Lake, both of Mich., assignors to Ford Global Technologies, Inc., Dearborn, Mich.

Continuation of Ser. No. 524,493, Sep. 7, 1995, abandoned. This application Nov. 12, 1997, Ser. No. 969,090
Int. Cl.[6] C03B *23/02;27/00*
U.S. Cl. 65—104 **16 Claims**



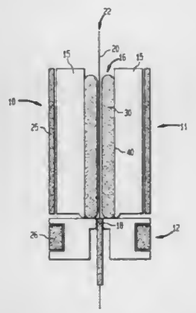
1. A method for heating, forming and tempering a glass sheet, said method comprising the steps of:
placing at least one glass sheet on a fixture having a predetermined curvature;
heating the at least one glass sheet to at least a first predetermined temperature;
columnating microwave energy;
applying a curtain of the columnated microwave energy having a frequency of two to forty gigahertz to the at least one glass sheet to heat the at least one glass sheet to at least a second predetermined temperature greater than said first predetermined temperature;
forming the at least one glass sheet to the predetermined curvature of the fixture; and
cooling an outer surface of the at least one glass sheet to at least a third predetermined temperature to temper the at least one glass sheet.

5,827,346

METHOD OF MAKING CORE HOLES IN CAST OPTICAL FIBER PREFORMS BY DRAWING A WIRE THERETHROUGH DURING SOLIDIFICATION

Nonna Kopylov, Scotch Plains, and Ahmet R. Kortan, Warren, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 31, 1996, Ser. No. 594,193
Int. Cl.[6] C03B *37/017*
U.S. Cl. 65—384 **20 Claims**



1. A method of making optical fiber, the method comprising making a core hole in cast cladding glass for fabricating an optical fiber preform comprising the steps of:
a. positioning a metallic wire in a casting mold having a cylindrical cavity with a central cylindrical axis pointing in a vertical direction, said metallic wire having a predetermined diameter, said wire positioned in said cylindrical cavity along said center cylindrical axis;
b. heating a cladding glass to liquefy said glass;
c. pouring said liquid cladding glass into said cylindrical cavity of said casting mold;
d. vertically translating said metallic wire through cylindrical cavity along said cylindrical axis of said casting mold;
d. applying a temperature gradient across said casting mold to quench said liquid cladding glass so that said liquid first solidifies at points in contact with said casting mold and then progressively toward said cylindrical axis of said cylindrical cavity over a predetermined period of time;
f. continuously translating said metallic wire as set forth in step (d) until said liquid cladding glass completely solidifies;
g. removing said metallic wire from said solidified cladding glass to form the core hole therein; and
h. making said solidified glass into the optical fiber preform, and drawing optical fiber therefrom.

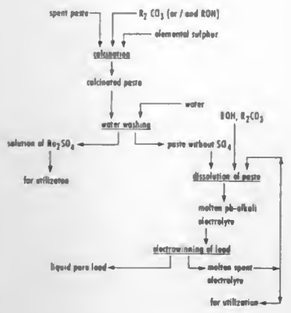
5,827,347

PROCESS FOR THE RECOVERY OF LEAD FROM SPENT BATTERIES

Efim Margulis, Hafia, Israel, assignor to Margulead Ltd., Haifa, Israel

Filed Jul. 24, 1996, Ser. No. 686,623
Claims priority, application Israel, May 23, 1996, 118397
Int. Cl.[6] C25C *3/34*
U.S. Cl. 75—419 **10 Claims**

1. A process for recovery of lead from spent battery paste and other materials, containing lead sulphate, lead dioxide and lead oxide, comprising the steps of:
(a) calcining a blend of the spent paste containing $PbSO_4$ and PbO_2, an alkali carbonate, and elemental sulphur, at a temperature of up to 600° C. for transforming the $PbSO_4$ and PbO_2 in the blend into PbO and converting the alkali carbonate and elemental sulphur into an alkali sulfate;
(b) leaching the calcinated blend with water to dissolve the alkali sulphate, and drying the leached calcinated blend to obtain a rough lead oxide; and



(c) dissolving the rough lead oxide in a molten electrolyte in an electrowinning cell containing alkali hydroxide, optionally in the presence of a carbonate and a sulfate of an alkali metal, to obtain molten lead from the molten electrolyte, and tapping the molten lead from the electrowinning cell.

5,827,348

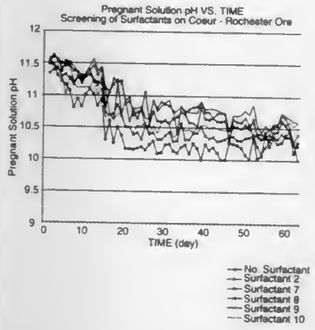
LEACHING OF PRECIOUS METAL ORE WITH FLUOROALIPHATIC SURFACTANT

Jennifer E. Waddell, Burnsville; Michael J. Sierakowski, Stillwater; Patricia M. Savu, Maplewood; George G. I. Moore, Afton; Chetan P. Jariwala, and Miguel A. Guerra, both of Woodbury, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 309,924, Sep. 21, 1994, abandoned. This application Mar. 8, 1996, Ser. No. 612,703

Int. Cl.[6] C22B *3/16*

U.S. Cl. 75—733 **30 Claims**



1. A method for leaching precious metals from precious metal ore, comprising the steps of:

providing a sample of ore containing a precious metal;

providing an aqueous solution comprising cyanide ion and a sufficient amount of fluoroaliphatic surfactant to reduce the surface tension of the solution to less than about 40 dynes/cm, said solution having a pH greater than 7;

contacting the sample with the solution, thereby forming a precious metal-cyanide complex; and

extracting the precious metal from the precious metal-cyanide complex.

5,827,349

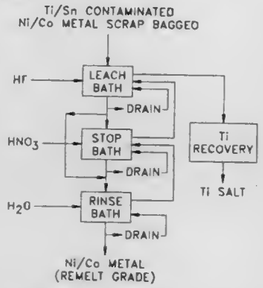
METHOD OF RECYCLING NICKEL AND COBALT ALLOY SCRAP METAL CONTAMINATED WITH TITANIUM

Joseph A. Megy, 100 N. Chester, P.O. Box 1224, New Cumberland, W. Va. 26047, and Robert Rausenberger, 4006 Avenida Madera, Bradenton, Fla. 34210

Filed Nov. 14, 1996, Ser. No. 749,156

Int. Cl.[6] C22B *3/06*

U.S. Cl. 75—743 **19 Claims**



1. A method of purifying Scrap Metals and Alloys not substantially attacked by aqueous HF contaminated with HF soluble free metals and alloys comprising the steps of:

leaching the Scrap Metals and Alloys not substantially attacked by aqueous HF contaminated with HF soluble free metals with aqueous hydrofluoric acid to dissolve the HF soluble free metals and alloys leaving leached Scrap Metals and Alloys not substantially attacked by aqueous HF;

draining the leached Scrap Metals and Alloys not substantially attacked by aqueous HF to separate the aqueous hydrofluoric acid therefrom;

treating the drained Scrap Metals and Alloys not substantially attacked by aqueous HF with a stop bath of aqueous oxidant;

draining the leached Scrap Metals and Alloys not substantially attacked by aqueous HF to separate the stop bath therefrom; and

rinsing the drained Scrap Metals and Alloys not substantially attacked by aqueous HF with water to remove a substantial portion of the stop bath of aqueous oxidant therefrom.

5,827,350

MACHINE AND METHOD FOR SEPARATING AEROSOL PARTICLES

Joseph Magill, Karlsruhe, and Paul Werner, Dettenheim, both of Germany, assignors to European Atomic Energy Community (EURATOM), Plateau du Kirchberg, Luxembourg

PCT No. PCT/EP94/02472, § 371 Date Jul. 1, 1996, § 102(e) Date Jul. 1, 1996, PCT Pub. No. WO95/03872, PCT Pub. Date Feb. 9, 1995

PCT Filed Jul. 27, 1994, Ser. No. 601,018

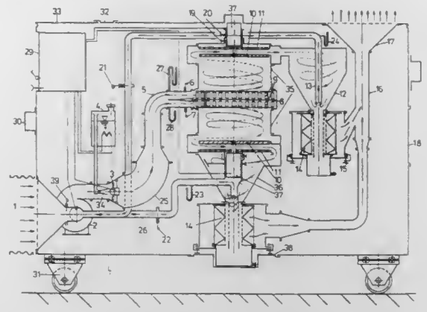
Claims priority, application Luxembourg, Jul. 27, 1993, 88387

Int. Cl.[6] B01D *51/08*

U.S. Cl. 95—29 **4 Claims**

1. A machine for separating aerosol particles, comprising a cylindrical ultrasonic chamber in which the particles agglomerate in the presence of an injected agglomeration initiator, and a filter for withholding the agglomerated particles, wherein upstream of the ultrasonic chamber, a mixing zone is provided into which a vapour acting as agglomeration initiator is injected into the flow of aerosol particles, thereby producing a mist, and wherein a cyclone separator receives the flow from the ultrasonic chamber and separates the agglomerated heavier particles, releasing a part of the aerosol in the filter and recycling the remaining aerosol towards the mixing zone.

4. A method for operating a machine for separating aerosol particles, said machine comprising a cylindrical ultrasonic chamber



in which the particles agglomerate in the presence of an injected agglomeration initiator, and a filter for withholding the agglomerated particles, wherein upstream of the ultrasonic chamber, a mixing zone is provided into which a vapour acting as agglomeration initiator is injected into the flow of aerosol particles, thereby producing a mist, and wherein a cyclone separator receives the flow from the ultrasonic chamber and separates the agglomerated heavier particles, releasing a part of the aerosol in the filter and recycling the remaining aerosol towards the mixing zone, wherein the material of the agglomeration initiator is glycol, which is injected into the mixing zone as a saturated vapour.

5,827,351

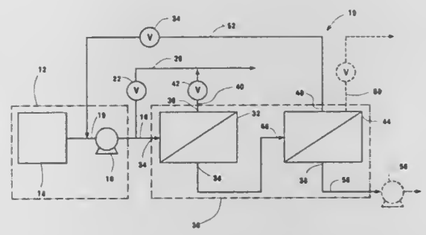
AIR SEPARATION SYSTEM AND METHOD

Ravi Prasad, East Amherst; Pauline Jane Cook, Kenmore, and Christian Friedrich Gottzman, Clarence, all of N.Y., assignors to Praxair Technology, Inc., Danbury, Conn.

Filed Feb. 14, 1997, Ser. No. 795,595

Int. Cl.[6] B01D *53/047;53/22*

U.S. Cl. 95—45 **25 Claims**



1. A method of producing a plurality of oxygen streams at respective pressures and purities from an air separation plant comprising a PSA or VPSA oxygen generator having a compressed output and a cascade membrane unit having respective first and second stages with respective inlets, each of said first and second stages including respective retentate and permeate fluid streams, said method including the steps of:

feeding said VPSA output to said first stage inlet as a first feed gas;

utilizing said first stage retentate stream as a high pressure, low purity oxygen product stream in an industrial or medicinal product application;

directing said first stage permeate to said second stage inlet as a second feed gas; and

utilizing said second stage permeate stream as a high purity, low pressure oxygen product stream.

5,827,352

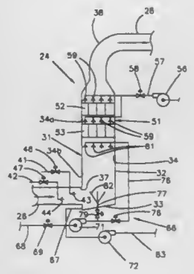
METHOD FOR REMOVING MERCURY FROM A GAS STREAM AND APPARATUS FOR SAME

Ralph F. Altman, Chattanooga, Tenn.; Ramsay Chang, Los Altos, Calif.; Robert M. Henningsgaard, Clear Lake, and Ronald W. Elsner, Coon Rapids, both of Tenn., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Apr. 16, 1997, Ser. No. 838,268

Int. Cl.[6] B03C *3/014*

U.S. Cl. 95—58 **21 Claims**



1. A method for removing mercury from a gas stream comprising the steps of injecting sorbent into the gas stream, dispersing water into the gas stream to create a cooled gas stream, allowing the cooled gas stream to dwell with the sorbent in a chamber for removing mercury from the cooled gas stream and passing the cooled gas stream through an electrostatic precipitator located above the chamber to collect water and recycle the collected water back into the chamber for cooling the gas stream in the chamber.

15. An apparatus for removing contaminants from a gas stream comprising a vessel provided with an internal chamber, the vessel having an inlet in communication with the chamber for permitting a gas stream to be introduced into the chamber, an injector for injecting a sorbent into the gas stream to remove contaminants therein, at least one nozzle for dispersing water in the gas stream to enhance mercury removal and a wet electrostatic precipitator carried by the vessel above and in communication with the chamber for collecting water from the gas stream and raining the collected water back into the chamber for cooling the gas stream.

5,827,353

PRECOLUMN SEPARATOR FOR GAS CHROMATOGRAPH

Gregory G. O'Neil, 1872 Bird Rd. P.O. Box 560, Independence, Ky. 41051

PCT No. PCT/US96/14289, § 371 Date Apr. 15, 1997, § 102(e) Date Apr. 15, 1997, PCT Pub. No. WO97/10888, PCT Pub. Date Mar. 27, 1997

PCT Filed Sep. 6, 1996, Ser. No. 817,914

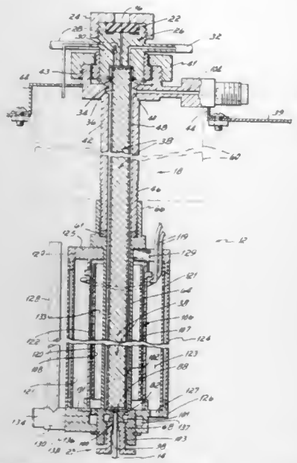
Int. Cl.[6] B01D *15/08*

U.S. Cl. 95—87 **13 Claims**

1. A method of stripping solvent from a sample and passing said sample through a gas chromatograph, said method comprising adding said sample to a precolumn, mixing said sample with a carrier gas flowing at a first flow rate into said precolumn whereby said carrier gas flows through said precolumn carrying said sample with said carrier gas;

venting a first portion of said sample through a purge vent to an area outside of said gas chromatograph;

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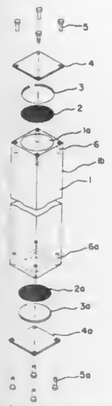


decreasing said carrier gas flow rate directing a portion of said sample from said precolumn to a detector and a second portion of said sample to a purge inlet in said gas chromatograph.

5,827,354
CONTAINER FOR CARBON MOLECULAR-SIEVE MATERIAL

Kai Krabiell, Hattingen; Alfons Schulte-Schulze-Berndt, Bad Bentheim, and Detlef Schafer, Mulheim/Ruhr, all of Germany, assignors to CarboTech-Anlagenbau GmbH, Germany

PCT No. PCT/EP94/01990, § 371 Date Jun. 24, 1996, § 102(e) Date Jun. 24, 1996, PCT Pub. No. WO95/00234, PCT Pub. Date Jan. 5, 1995
PCT Filed Jun. 18, 1994, Ser. No. 564,368
Claims priority, application Germany, Jun. 24, 1993, 43 20 942.4
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—96 **17 Claims**



1. A portable container for receiving a carbon molecular sieve material for use in a gas adsorption apparatus, said container comprising a hollow section having two ends and extending substantially longitudinally through said container, a screen positioned at each end of said hollow section to maintain said sieve material in said hollow section, a screen retainer to position said screen at each end of said hollow section, a sealing arrangement at each end of said hollow section adapted to hermetically seal said sieve material in said hollow section and to secure said screen retainer to each end of said hollow section, said sealing arrangement including a gas-tight metal material bolted to each end of said hollow section and an adhesive positioned between said metal material and each end of said hollow section.

12. A method of producing nitrogen in a pressure alternation adsorption process comprising the steps of:

a) hermetically sealing a carbon molecular sieve material in a container, said container including a housing having a hollow section having two ends and extending substantially longitudinally therethrough and designed to hold said carbon molecular sieve material, a screen positioned at each end of said hollow section to maintain said sieve material in said hollow section, a screen retainer to position said screen at each end of said hollow section, a sealing arrangement at each end of said hollow section adapted to hermetically seal said sieve material in said hollow section and to secure said screen retainer to each end of said hollow section, said sealing arrangement including a gas-tight material covering each end of said hollow section and bolted to each end of said hollow-section and an adhesive positioned between said gas-tight material and each end of said hollow section;

b) breaking said hermetic seal at least one end of said hollow section;

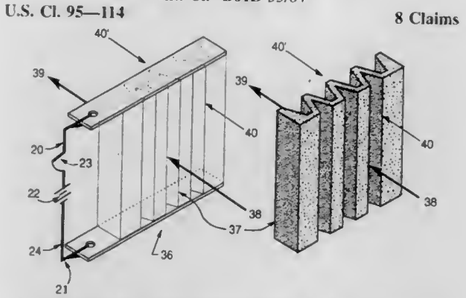
c) mounting said container on a container support to hermetically seal each end of said hollow section to said container support and to secure said screen retainer to each end of said hollow section, said container support including two passageways, said fist passageway being in fluid communication with one end of said hollow section and said second passageway being in fluid communication with said other end of said hollow section; and,

d) supplying gas in one end of said hollow section and withdrawing gas from said second end of said hollow section during a pressure adsorption process.

5,827,355
CARBON FIBER COMPOSITE MOLECULAR SIEVE ELECTRICALLY REGENERABLE AIR FILTER MEDIA

Kirk A. Wilson, Knoxville; Timothy D. Burchell, Oak Ridge, and Roddie R. Judkins, Knoxville, all of Tenn., assignors to Lockheed Martin Energy Research Corporation, Oak Ridge, Tenn.

Filed Jan. 31, 1997, Ser. No. 792,560
Int. Cl.[6] B01D *53/04*
U.S. Cl. 95—114 **8 Claims**



1. An electrically regenerable gas filter method for removing pollutants from a polluted gas comprising the steps of:

(A) Providing a carbon fiber composite molecular sieve medium comprising an activated carbon fiber composite material further comprising a multiplicity of porous carbon fibers bonded with a carbonizable organic binder to form an open, permeable structure, said composite defining a porosity in a range of approximately 82–86%;

(B) Passing the polluted gas into said filter medium to sorb pollutants from the unacceptable gas onto said filter medium and to pass acceptable gas therefrom; and

(C) Passing an electrical current through said filter medium to desorb sorbed pollutants from said filter medium.

5,827,356
CONTINUOUS PROCESS FOR RECOVERY OF ACETYLENE-FREE GASEOUS MIXTURE

Gary P. Hagen, West Chicago, Ill., assignor to Amoco Corporation, Chicago, Ill.

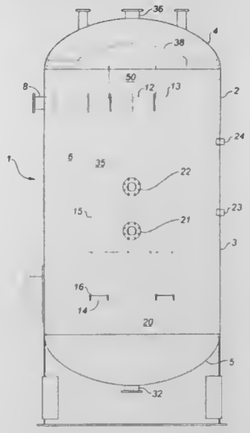
Filed Apr. 7, 1997, Ser. No. 834,987
Int. Cl.[6] B01D *47/00;47/02*
U.S. Cl. 95—238 **11 Claims**

1. A continuous process for recovery of acetylene-free gaseous mixture from gaseous feedstreams containing from about 1 to about 90 mole percent acetylene and optionally other low molecular weight hydrocarbons which comprises contacting the acetylene-containing feedstream with at least one alkanol in combination with a catalyst comprising at least one member selected from the group consisting of Lewis acid compounds, Bronsted acid compounds, or mixtures thereof in an organic solvent, under conditions of reaction sufficient to form a liquid mixture containing at least one acetal organic compound, and a gaseous product substantially free of acetylene.

5,827,357
SEPARATOR AND METHOD FOR SEPARATING COMPONENTS OF PRESSURIZED DRILLING FLUID RETURNS

Raymond Richard Farion, Red Deer, Canada, T4S 2B6, assignor to Northland Production Testing Ltd., Canada

Filed Jan. 15, 1997, Ser. No. 784,245
Int. Cl.[6] B01D *19/00*
U.S. Cl. 95—253 **4 Claims**



1. A separator for separating the liquid, solids and gas components of pressurized drilling fluid returns from a well undergoing drilling, comprising:

a vertical cylindrical pressure vessel having top and bottom end walls and a side wall, said walls forming an internal chamber;

a cluster of vertical vortex tubes positioned inside the vessel chamber between the vessel top and bottom walls, so that upper and lower chamber sections extend above and below the vortex tubes;

each vortex tube having a side wall forming a bore, said side wall having an inlet at its upper end for tangentially introducing returns into the bore, the vortex tube being open at its upper end and closed by a transverse wall at its lower bottom end, said side wall forming at least one peripheral opening at its lower end for discharging liquid and solids;

means for feeding returns to each vortex tube through its inlet;

the vessel bottom wall being elliptical and having a central outlet;

means for withdrawing solids through the vessel bottom wall outlet;

outlet means for discharging gas from the upper chamber section; and

outlet means, located above the bottom ends of the vortex tubes, for discharging liquids through the vessel side wall.

4. A method for separating the components of pressurized drilling fluid returns from a well undergoing drilling, said fluid comprising bit cuttings, liquid, which may include produced oil, and gas, comprising:

providing a vertical pressure vessel having top, bottom and side walls which form an internal chamber, said vessel containing at least one vertical vortex tube having a top opening, a closed bottom and a peripheral opening at its bottom end, said vessel having a returns feed pipe connected with the upper end of the vortex tube to feed returns tangentially to the inner surface of the vortex tube, the bottom of the vortex tube being spaced above the vessel bottom wall so that the vessel chamber includes a bottom section between the vessel bottom wall and the bottom of the vortex tube, the bottom wall having a central outlet at the base thereof, the vessel side wall having vertically spaced apart oil and water discharge outlets spaced above the bottom of the vortex tube, the vessel having a gas outlet at its upper end;

feeding returns into the upper end of the vortex tube so that they rotate downward through the tube bore and form a central gas vortex, an outer layer of solids and an inner layer of liquid;

discharging the gas out of the upper end of the vortex tube and through the gas outlet;

discharging liquid and solids from the vortex tube through its peripheral opening into the chamber bottom section and temporarily retaining them in the chamber so that they separate by gravity separation under quiescent conditions to form a bottom layer of solids and an upper layer of liquid;

withdrawing solids through the vessel's bottom wall outlet while maintaining the inflow of returns into the vessel; and

discharging separate individual streams of oil and water through the liquid discharge outlets at restricted rates so that the bottom outlet of the vortex tube remains submerged in liquid at all times.

5,827,358
RAPID CYCLE PRESSURE SWING ADSORPTION OXYGEN CONCENTRATION METHOD AND APPARATUS

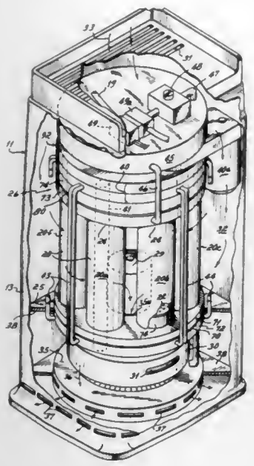
Stanley Kulish, Toledo, and Robert P. Swank, Mansfield, both of Ohio, assignors to Impact MST, Incorporation, Cincinnati, Ohio

Filed Nov. 8, 1996, Ser. No. 745,281
Int. Cl.[6] B01D *53/047*
U.S. Cl. 96—115 **19 Claims**

1. A rapid pressure swing adsorption concentrator comprising:

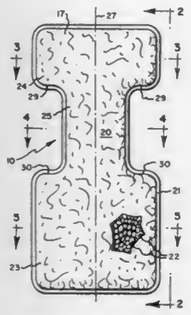
a plurality of at least three molecular sieves connected to operate in sequence in a cycle during which each sieve is pressurized to a pressure higher than atmospheric pressure, each sieve having an inlet side and an outlet side;

valve means for operating each of the sieves sequentially through the cycle such that each sieve has a venting subcycle during which the sieve is vented substantially to atmospheric pressure from the inlet side thereof and remaining portion of the cycle during which the sieve is pressurized from its inlet side and exchanges product rich gas at its outlet side, with



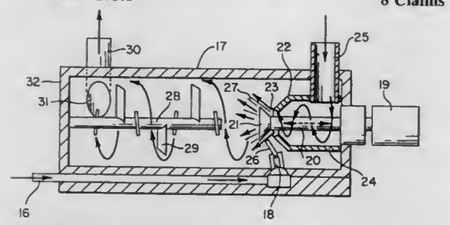
each sieve substantially being in the remaining portion of its cycle when a majority of the other sieves are simultaneously in their respective venting subcycles.

5,827,359
ACCUMULATOR DESICCANT BAG
Rodney L. Dobson, East Aurora; Peter J. Donnelly, Williamsville, and Samuel A. Incorvia, North Tonawanda, all of N.Y., assignors to Multisorb Technologies, Inc., Buffalo, N.Y.
Continuation of Ser. No. 527,566, Sep. 13, 1995, Pat. No. 5,693,124. This application Aug. 19, 1997, Ser. No. 914,463
Int. Cl.[6] B10D *53/04*
U.S. Cl. 96—147 **20 Claims**



1. A preformed desiccant bag comprising a preformed porous casing, a first preformed bulbous end portion of a first girth on said casing, a second preformed bulbous end portion of a second girth on said casing, a preformed central waist portion of a third girth located between said first and second preformed bulbous end portions, said third girth being smaller than either said first and second girths, desiccant in said casing, said first and second preformed bulbous end portions being of substantially solid rectangular configuration, said casing comprising a first wall having a first outer edge portion, a trough-shaped second wall having a second outer edge portion, and a seam joining said first and second edge portions.

5,827,360
METHOD AND EQUIPMENT FOR PRODUCING FOAM BITUMEN
Nestor Mikael Salminen, Turku, Finland, assignor to CMI Corporation, Oklahoma City, Okla.
Division of Ser. No. 693,065, Oct. 9, 1996. This application Oct. 22, 1997, Ser. No. 960,442
Int. Cl.[6] C09D *195/00;* **B05B** *7/24*
U.S. Cl. 106—273.1 **8 Claims**



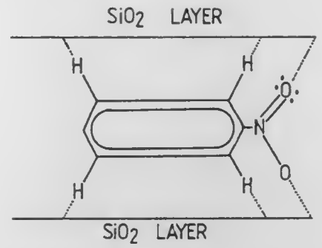
1. In an apparatus for producing foam bitumen from water and bitumen, the combination of:
a reactor having a first end and a second end; a bitumen inlet adjacent the first end thereof; a foam bitumen outlet adjacent the second end thereof, and a water inlet adjacent the first end thereof;
a cylinder in the first end portion of the reactor having one end closed at the first end of the reactor and an orifice in the opposite end thereof;
an adjustable cone partially restricting said orifice;
means for directing the bitumen from said bitumen inlet through said cylinder and out said orifice around said cone to form a conical jet of bitumen exiting said orifice; and
a nozzle connected to said water inlet for directing a jet of water transversely into the jet of bitumen exiting said orifice, whereby the water is incorporated into the bitumen.

5,827,361
CARBON-CONTAINING FIGMENTS
Klaus Bernhardt, Gross-Umstadt; Reiner Vogt, Kranichstein, and Gerhard Pfaff, Münster, all of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Germany
Filed Mar. 29, 1995, Ser. No. 412,580
Claims priority, application Germany, Mar. 30, 1994, 44 10 990.3; Oct. 1, 1994, 44 35 300.6
Int. Cl.[6] C04B *14/20*
U.S. Cl. 106—415 **11 Claims**

1. Carbon-containing pigments prepared by pyrolysis of substrates with a layer consisting of one or more metal oxides, colloidal organic particles and optionally an organofunctional silane compound at temperatures >700° C. under oxygen-free conditions.

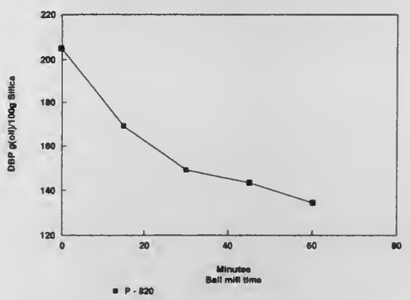
5,827,362
MODIFIED ORGANOCLAYS
Neil Andrew McLeod, West Midlands, United Kingdom, assignor to Envirotreat Limited, United Kingdom
Filed Nov. 22, 1996, Ser. No. 753,228
Int. Cl.[6] C04B *14/04*
U.S. Cl. 106—416 **7 Claims**

1. A modified organoclay for treatment of material contaminated with organic wastes, the modified organoclay comprising:
a clay treated with an agent selected from the group consisting of a quaternary ammonium salt and a polar organic compound to form an organoclay having organophilic properties, said organoclay being modified by treatment by a pillaring agent selected from the group consisting of aluminum chlorhydrol, metal hydroxide polymers, transition metal clusters, silicon



oxides, titanium oxides, and mixtures thereof, and a salt of a transition metal in quantities corresponding to no more than 100% stoichiometric exchange of the exchangeable cations of the clay, to thereby establish chemical bonding between the clay and the organic wastes.

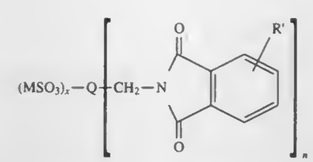
5,827,363
STRUCTURE PRECIPITATED SILICATES AND SILICAS, PRODUCTION AND USE IN INK JET PRINTING
Michael S. Darsillo, Wadsworth, and Sturgis Gregg Allen, Copley, both of Ohio, assignors to Degussa Corporation, Ridgefield Park, N.J.
Filed Dec. 17, 1996, Ser. No. 767,677
Int. Cl.[6] C04B *14/04*
U.S. Cl. 106—484 **15 Claims**



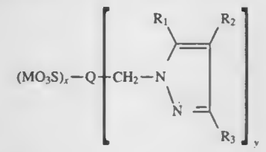
1. A method of making an ink jet coating formulation comprising dry milling a precipitated silicate or silica particulate in a media mill for a sufficient period of time to achieve a 30 to 60% reduction in structure as measured by the decrease in DBP number to form a dry milled product of reduced DBP number, dispersing said product into water to obtain aqueous slurry, and mixing said slurry with a binder for producing the desired ink jet coating.

5,827,364
PIGMENT COMPOSITIONS
Shivakumar Basalingappa Hendi, Newark, Del., assignor to Ciba Specialty Chemicals Corporation, Tarrytown, N.Y.
Filed Feb. 21, 1997, Ser. No. 804,306
Int. Cl.[6] C09C *48/00;67/50*
U.S. Cl. 106—495 **20 Claims**

1. A pigment composition which comprises a pigment, a first quinacridone derivative and a second quinacridone derivative wherein the first quinacridone derivative is a phthalimidomethylquinacridone of the formula



or a o-carboxybenzamidomethylquinacridone partial hydrolysis product thereof, and the second quinacridone derivative is pyrazolylmethylquinacridone of the formula



in which formulae
Q is a quinacridone radical,
R' is hydrogen, halogen, or C1–C4alkyl,
R1, R2, and R3 are independently, hydrogen, balogen, unsubstituted C1–C18alkyl, C1–C18alkyl which is substituted by one or more halogen or C1–C6alkoxy groups, unsubstituted C6–C10 aryl, C6–C10 aryl which is substituted by one or more C1–C18alkyl, halogen, nitro or C1–C6alkoxy groups, or R1 and R2 together with the carbons of the pyrazole ring form part of a fused alicyclic, aromatic or heterocyclic ring,
M is hydrogen, a quaternary ammonium cation, or a metal cation,
n is 1, 2, 3 or 4,
x is a number from 0 to 2, and
y is 1, 2, 3 or 4.

5,827,365
COMPOUND SEMICONDUCTOR AND ITS FABRICATION
Kenji Shimoyama, and Hideki Gotoh, both of Ushiku, Japan, assignors to Mitsubishi Kasei Corporation, Tokyo, Japan
Continuation of Ser. No. 982,737, Mar. 4, 1993, abandoned. This application Jan. 23, 1995, Ser. No. 376,443
Claims priority, application Japan, Jul. 5, 1991, 3-190883
Int. Cl.[6] C30B *25/14*
U.S. Cl. 117—94 **15 Claims**



1. A process for the selective growth fabrication of a thin film form of aluminum-containing Group III–V compound semiconductor using a halogen element-free hydride and a halogen element-free organic metal, characterized in that a halide gas and/or a halogen gas that are free from the mother elements of the compound to be grown are added to the reaction atmosphere at a flow rate that permits the selective growth to be maintained, while the compound is growing, wherein a protective film is used to effect

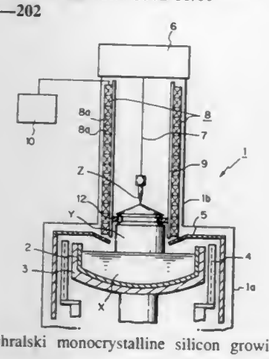
said selective growth, and deposition of polycrystals on said protective film is inhibited by said halide gas and/or halogen gas.

5,827,366

CZOCHRALSKI GROWING APPARATUS SUPPRESSING GROWTH STRIATION OF LONG LARGE-DIAMETER MONOCRYSTALLINE SILICON

Masahito Watanabe, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 22, 1996, Ser. No. 754,158
Claims priority, application Japan, Nov. 22, 1995, 7-304791
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—202 **6 Claims**



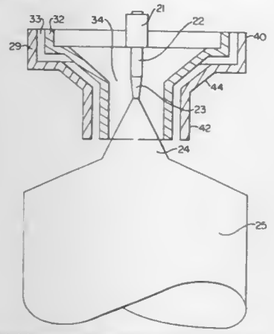
1. A Czochralski monocrystalline silicon growing apparatus comprising:
a crucible for putting molten silicon thereinto;
a mechanism for pulling up a crystal seed by a wire to grow a monocrystalline silicon rod from said molten silicon;
a magnetic ring for being mounted on said monocrystalline silicon rod; and
a fixed electromagnet for pulling up said magnetic ring.

5,827,367

APPARATUS FOR IMPROVING MECHANICAL STRENGTH OF THE NECK SECTION OF CZOCHRALSKI SILICON CRYSTAL

Witawat Wijaranakula, and Akihiko Tamura, both of Vancouver, Wash., assignors to SEH America, Vancouver, Wash.

Filed Sep. 13, 1996, Ser. No. 713,607
Int. Cl.[6] C30B *35/00*
U.S. Cl. 117—208 **45 Claims**



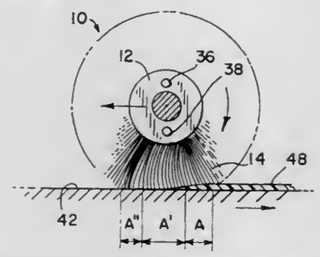
1. A heat shield assembly used in conjunction with a Czochralski (Cz) crystal growing furnace which utilizes a seed chuck assembly for holding a seed to grow a crystal ingot from molten semiconductor material and has a cooling system for providing a cooling gas for cooling said ingot, the heat shield assembly comprising a heat shield for protecting a neck section of said crystal ingot from radiative heat transferred within said furnace, and forming a gas flow chamber which regulate said cooling gas to flow over the neck section of said crystal ingot to provide cooling to said neck section, thereby increasing the mechanical strength thereof.

5,827,368

DEVICE FOR DEPOSITING A LAYER OF MATERIAL ON A SURFACE

Robert J. Stango, Richfield, Wis., assignor to Marquette University, Milwaukee, Wis.

Filed Jun. 2, 1997, Ser. No. 867,072
Int. Cl.[6] B05C *9/00*
U.S. Cl. 118—76 **19 Claims**



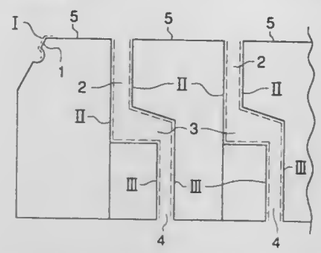
1. A device for depositing a layer of material on a surface, comprising:
a rotatable hub rotatable about an axis;
a plurality of fibers projecting from the hub, each fiber having an outer end and being formed from the material to be deposited on the surface; and
rotation structure for rotating the hub at a predetermined angular velocity such that the outer ends of the fibers engage the surface, and for generating an impact force on the outer ends of the fibers when engaging the surface such that the outer ends of the fibers melt and adhere to the surface.

5,827,369

COATING APPARATUS

Junichi Tobari, and Takeshi Kishido, both of Hino, Japan, assignors to Konica Corporation, Japan

Filed Jun. 7, 1996, Ser. No. 660,286
Claims priority, application Japan, Jun. 12, 1995, 7-144499
Int. Cl.[6] B05C *3/02*
U.S. Cl. 118—410 **16 Claims**



1. A coating die for coating a web with a solution, wherein the web is conveyed in a predetermined direction so as to run past the coating die, said coating die comprising:
a body forming the coating die,
a coating surface provided on the body at a position close to the running web;
a solution chamber provided in the body for containing the solution;

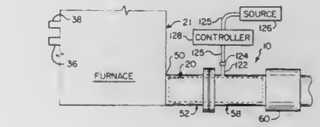
a feeding conduit provided in the body, wherein the solution is fed from the outside of the body to the solution chamber through the feeding conduit;
a slit provided in the body so as to connect the solution chamber and the coating surface, wherein the solution is fed from the solution chamber to the coating surface through the slit, and then the solution is transferred from the coating surface to the running web;
a dry surface provided on the body and positioned upstream of the coating surface in terms of the predetermined direction; and
a polymer layer formed on a polymer layer forming surface, the polymer layer forming surface being at least one of (1) the dry surface, (2) an internal surface of the slit, or (3) internal surfaces of the solution chamber and the feeding conduit, the polymer layer containing a polymer prepared by polymerizing a silane coupling agent having a fluorine containing alkyl group.

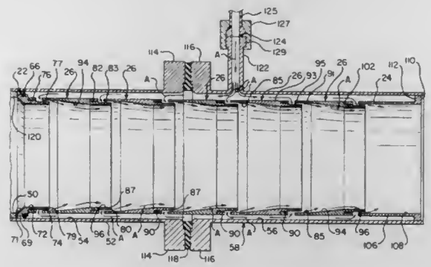
5,827,370

METHOD AND APPARATUS FOR REDUCING BUILD-UP OF MATERIAL ON INNER SURFACE OF TUBE DOWNSTREAM FROM A REACTION FURNACE

Youfan Gu, Boulder, Colo., assignor to MKS Instruments, Inc., Andover, Mass.

Filed Jan. 13, 1997, Ser. No. 782,785
Int. Cl.[6] C23C *16/00;* **F16L** *55/00;9/18*
U.S. Cl. 118—715 **76 Claims**





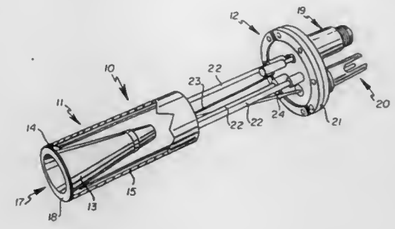
1. Apparatus for conducting a flowing fluid, comprising:
an elongated conduit having a wall with an inside surface that surrounds a space, said elongated conduit having an inlet opening through which a first fluid flows into the space and an outlet opening through which the first fluid flows out of the space;
a nozzle positioned adjacent the inside surface between the inlet opening and the outlet opening and directed longitudinally toward said outlet opening; and
a source of a second fluid outside said conduit connected to said nozzle.

5,827,371

UNIBODY CRUCIBLE AND EFFUSION SOURCE EMPLOYING SUCH A CRUCIBLE

Paul E. Colombo, White Bear Lake, Minn., and Robert F. Donadio, Hudson, N.H., assignors to Chorus Corporation, White Bear Lake, Minn.

Continuation-in-part of Ser. No. 433,033, May 3, 1995. This application Aug. 29, 1996, Ser. No. 705,535
Int. Cl.[6] C23C *16/54;* **F27B** *14/08*
U.S. Cl. 118—726 **43 Claims**



1. An effusion cell for heating material to be deposited on a substrate, comprising:
a support assembly comprising a mounting flange and at least one support post extending from the mounting flange; and
a head assembly connected to the at least one support post, the head assembly comprising a container for holding the material and a heater surrounding at least a portion of the container for heating the material in the container, the container comprising a rigid wall structure enclosing an interior space, said wall structure being constructed of one piece of material and being made of pyrolytic boron nitride, said wall structure defining a base portion and a neck portion attached to the base portion, the neck portion having a negative draft angle extending away from the base portion and terminating in a neck orifice, the base portion having a first peripheral dimension and the neck orifice having a second peripheral dimension, said second peripheral dimension being less than said first peripheral dimension.

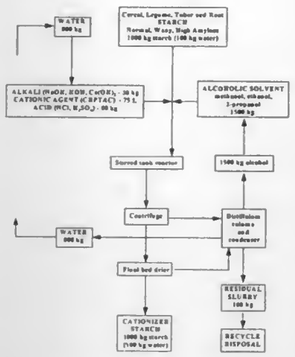
5,827,372

AQUEOUS ALCOHOLIC AKLALINE PROCESS FOR CATIONIZATION AND ANIONIZATION OF NORMAL, WAXY, AND HIGH AMYLOSE STARCHES FROM CEREAL, LEGUME, TUBER AND ROOT SOURCES

Prakash R. Bhirud, Richmond Hill; Frank W. Sosulski, Saskatoon; Robert T. Tyler, Saskatoon, and Meera Kweon, Saskatoon, all of Canada, assignors to Grain Tech Consulting, Saskatoon

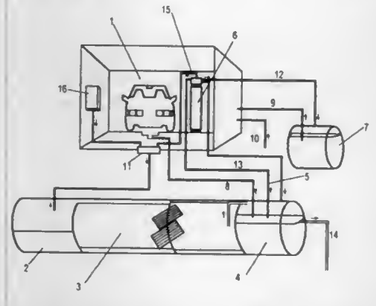
PCT No. PCT/CA95/00538, § 371 Date Oct. 21, 1996, § 102(e) Date Oct. 21, 1996, PCT Pub. No. WO96/09327, PCT Pub. Date Mar. 28, 1996
PCT Filed Sep. 22, 1995, Ser. No. 648,096
Claims priority, application Canada, Sep. 22, 1994, 2132685
Int. Cl.[6] C08B *30/00;30/12;31/00;* **C08L** *3/00*
U.S. Cl. 127—71 **18 Claims**

1. A wet method for the cationization of intact starch granules while inhibiting gelatinization of the intact starch granules comprising mixing the starch with a liquid and cationizing the starch in the said mixture under alkaline conditions, characterized in that the liquid is a mixture consisting of water and one non-aqueous, water



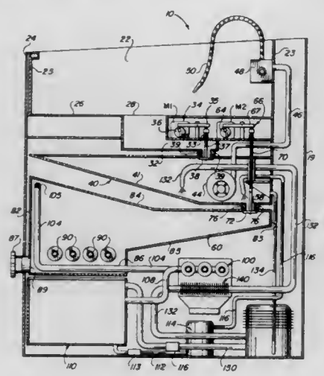
miscible solvent, wherein gelatinization of the starch is inhibited by cationizing the starch at a temperature between 30°–80° C. in said mixture.

5,827,373
WATER-AND CHEMICAL RECYCLING
Tord Georg Eriksson, Box 167, Jäfälla, Sweden
PCT No. PCT/SE95/00477, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO95/29877, PCT Pub. Date Nov. 9, 1995
PCT Filed Apr. 28, 1995, Ser. No. 727,521
Claims priority, application Sweden, Apr. 28, 1994, 9401461
Int. Cl.[6] B08B *7/04; B01D 12/00*
U.S. Cl. 134—10 **16 Claims**



1. A process for regenerating a used washing solution for motorized vehicles, said process comprising:
(a) generating a used washing solution comprising a detergent containing cationic tensides and a sludge comprising at least one of an oil, a heavy metal, and particulate matter;
(b) adding to said used washing solution a quantity of an emulsion breaking and heavy metal precipitating agent, said agent comprising a multivalently anionic soluble salt, to form a treated washing solution;
(c) separating at least a portion of the sludge from the treated solution, thereby forming an at least partially purified solution;
(d) oxygenating and agitating said at least partially purified solution while substantially avoiding application of shearing forces thereto: and
(e) filtering the oxygenated solution to remove additional sludge therefrom to regenerate the used washing solution;
wherein the used solution is maintained at a substantially alkaline pH during said adding, separating, oxygenating and filtering steps by adjusting the quantity of said breaking and precipitating agent added thereto.

5,827,374
PROCESS FOR INTEGRATED RECYCLING OF CLEANING SOLUTION IN INDUSTRIAL WASHING EQUIPMENT
Pierre G. Mansur, Miami, Fla., assignor to Mansur Industries Inc., Miami, Fla.
Continuation of Ser. No. 521,624, Aug. 31, 1995, abandoned, which is a continuation-in-part of Ser. No. 394,290, Feb. 24, 1995, Pat. No. 5,549,128. This application Dec. 20, 1996, Ser. No. 771,640
Int. Cl.[6] B08B *7/04*
U.S. Cl. 134—12 **13 Claims**

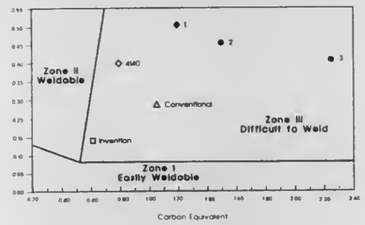


1. A process for recycling cleaning solution in an industrial washing apparatus, said process comprising the steps of:
providing at least one holding tank for containing a charge of the cleaning solution therein;
providing a wash basin including an at least partially surrounding wall structure and a floor having a drain means therein for draining the solution from said wash basin into said holding tank;
providing a drain passage between said wash basin and said holding tank for permitting gravitational flow of the cleaning solution from within said wash basin and into said holding tank;
providing a distillation chamber structured and disposed to receive the charge of cleaning solution therein;
providing a transfer passage between said holding tank and said distillation chamber to permit gravitational fluid flow of the cleaning solution from within said holding tank and into said distillation chamber;
maintaining said wash basin above said holding tank;
maintaining said holding tank above said distillation chamber;
containing the charge of the cleaning solution in said holding tank;
pumping the cleaning solution into said wash basin for washing articles therein;
returning the cleaning solution from said wash basin, by gravitational flow through said drain passage, to said holding tank;
periodically opening a transfer valve below said holding tank and releasing the entire charge of cleaning solution from within said holding tank, after becoming contaminated from use during washing, causing the entire charge of cleaning solution and contaminants in the holding tank to be flushed, by gravitational flow, into said distillation chamber below said holding tank;
sealing said transfer passage between said holding tank and said distillation chamber to prevent vapors from rising from said distillation chamber into said holding tank and to prevent air flow between said holding tank and said distillation chamber;
sealing said drain passage between said wash basin and said holding tank when the washing apparatus is not being used for washing operations, to prevent cleaning solution vapors from escaping from within said holding tank into the surrounding atmosphere;
heating the contaminated charge of cleaning solution to a predetermined temperature in said distillation chamber to cause vaporization of the cleaning solution and, thereby, producing cleaning solution vapors which are separated from non-vaporized contaminants;
directing said cleaning solution vapors away from said distillation chamber and condensing said cleaning solution vapors to yield purified, condensed liquid cleaning solution; and
returning the purified liquid cleaning solution to said holding tank for subsequent use to wash articles in said wash basin.

5,827,375
PROCESS FOR CARBURIZING FERROUS METAL PARTS
George E. Barbour, 3200 S. Jerome Rd., Pittsford, Mich. 49271
Filed Jul. 23, 1993, Ser. No. 96,337
Int. Cl.[6] C23C *8/22*
U.S. Cl. 148—225 **15 Claims**

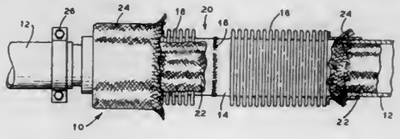
I. A method of carburizing ferrous metal parts in a furnace having a process chamber in which the ferrous metal parts are carburized comprising the steps of:
i.) heating the process chamber to a temperature in excess of about 1100° F.;
ii.) charging the ferrous metal parts to be carburized into the process chamber;
iii.) providing a carrier gas comprising an endothermic carrier gas formed-by partial reaction of fuel gas and air in an externally heated catalyst filled chamber, and feeding the carrier gas into the process chamber so as to provide a furnace atmosphere in the process chamber having a dew point and having a carbon potential of at least about 0.5%;
iv.) providing a source of air and a source of enriching gas and feeding the air and the enriching gas simultaneously to the process chamber so as to raise the carbon potential of the furnace atmosphere in the process chamber by at least about 0.1%; and
v.) discharging the ferrous metal parts from the furnace.

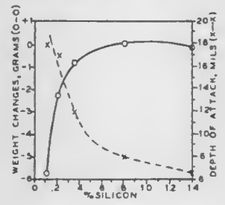
5,827,376
MOLDS FOR PLASTIC PROTOTYPING AND ISOTHERMAL FORGING OF ALUMINUM, STEEL THEREFOR, AND METHOD OF MANUFACTURING THEREOF
Algirdas A. Underys, Arlington Hts, Ill., assignor to A. Finkl & Sons Co., Chicago, Ill.
Filed Jul. 19, 1996, Ser. No. 684,502
Int. Cl.[6] C22C *38/16; C21D 7/06*
U.S. Cl. 148—328 **20 Claims**



1. A steel mold for plastic prototyping having, after solution treatment and ageing in the range of from about 600° F. to about 1400° F.,
a. hardness in the range of 200–250 BHN,
b. yield to ultimate ratio in the range of on the order of about 75% to 85%,
c. reduction in area in the range of on the order of about 60% to 70%,
d. elongation in the range of on the order of about 19% to 27%,
e. a decrease in hardness from surface to center in thick cross sections of no more than about 30 BHN,
f. substantially equal machining tool life as aluminum alloys at machining speeds up to 70% of aluminum alloy machining speeds,
g. a decrease in yield strength at an elevated temperature of about 800° F. of no more than about 15% compared to room temperature yield strength,
h. a welding profile of no more than about 300° F. for preheating and interpass heating, and no post-heating,
i. polishability of at least SPI A2, and
j. the ability to harden at elevated working temperatures.

5,827,377
FLEXIBLE ALLOY AND COMPONENTS MADE THEREFROM
James Roy Crum, Ona; Gaylord Darrell Smith, Huntington; Vernon William Hartmann, Huntington, and William Lawrence Mankins, Huntington, all of W. Va., assignors to INCO Alloys International, Inc., Huntington, W. Va.
Filed Oct. 31, 1996, Ser. No. 757,405
Int. Cl.[6] C22C *30/00*
U.S. Cl. 148—442 **4 Claims**





I. A flexible, thermally stable and weldable nickel-base alloy demonstrating a) fatigue resistance, b) hot salt corrosion resistance, c) chloride stress corrosion cracking resistance, d) pitting and general corrosion resistance generally superior to 321 and 316Ti stainless steels, and e) increasing strength and ductility during service conditions of about 800° F.–1400° F. (427° C.–760° C.), the alloy consisting essentially of 35.5–42% nickel, 21–28% chromium, 4.6–6% molybdenum, 0.8–1.5% silicon, 0.3–1% titanium, up to 0.25% copper, up to 0.45% niobium, up to 0.3% carbon, up to 0.5

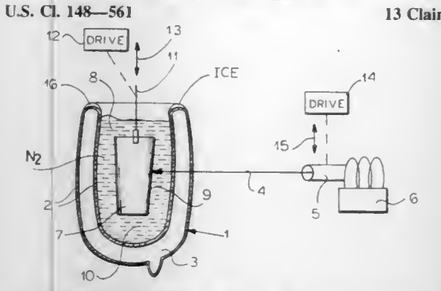
manganese, up to 1% aluminum, up to 0.3% nitrogen, up to 0.001% sulfur, trace commercial impurities, a maximum ASTM grain size number of 8–9, a room temperature yield strength of about 40 ksi (275 mPa), and the balance iron.

5,827,378

METHOD OF TREATMENT OF METALLIC WORKPIECES

Gennadiy Belenkiy, New York, N.Y., assignor to ACDS Technologies, Ltd., Sparks, Nev.

Filed Jun. 24, 1996, Ser. No. 668,941
Int. Cl.[6] C21D *1/09*
U.S. Cl. 148—561 13 Claims



1. A method of treating a surface of a metal workpiece to generate an amorphous structure therein, said method comprising the steps of:

(a) confining a liquefied gas in a bath in a vessel having a window transparent to a laser beam, said window being in direct contact with said liquefied gas;

(b) immersing a metal workpiece in said bath of a liquefied gas so that a surface of said metal workpiece lies below a layer of said liquefied gas;

(c) cooling the metal workpiece in said bath to a temperature of said liquefied gas;

(d) directing a pulsed laser beam to which said window is transparent through said layer onto a spot on said surface through said window to locally heat said surface at said spot while said surface is covered with said layer, thereby generating an amorphous structure at said spot; and

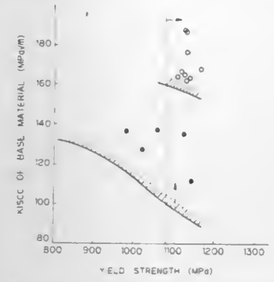
(e) relatively displacing said laser beam and said workpiece to shift said spot on said surface.

5,827,379

PROCESS FOR PRODUCING EXTRA HIGH TENSILE STEEL HAVING EXCELLENT STRESS CORROSION CRACKING RESISTANCE

Yoshihiro Okamura; Ryota Yamaba, both of Tokai; Tomoya Koseki, Chiba, and Ichiro Nakagawa, Kurashiki, all of Japan, assignors to Nippon Steel Corporation, Tokyo, and Kawasaki Steel Corporation, Hyogo, both of Japan

Continuation of Ser. No. 462,409, Jun. 5, 1995, abandoned, which is a continuation of Ser. No. 143,795, Oct. 27, 1993, abandoned. This application Jan. 17, 1997, Ser. No. 785,717
Int. Cl.[6] C21D *6/00*
U.S. Cl. 148—621 2 Claims



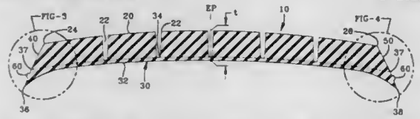
2. A process for producing an extra high tensile steel having an excellent stress corrosion cracking resistance, comprises the steps of: heating a slab consisting essentially of, in terms of % by weight, 0.04 to 0.09% of C, 0.01 to 0.10% of Si, 0.05 to 0.65% of Mn, more than 8.0 and up to 11.0% of Ni, 0.5 to 1.5% of Mo, 0.2 to 1.5% of Cr, 0.02 to 0.20% of V and 0.01% to 0.08% of Al and further comprising at least one member selected from the group consisting of 0.2 to 1.5% Cu, 0.005 to 0.10% of Nb and 0.005 to 0.03% of Ti as strength improving elements and 0.0005 to 0.0005% of Ca and 0.0005 to 0.0100% of REM as elements for regulating inclusions with the balance consisting of iron and unavoidable impurities, to a temperature between 1000° C. and 1250° C., conventionally hot-rolling the slab at a temperature of Ar' point or above to form a hot-rolled plate, after hot-rolling, air-cooling the hot-rolled plate to a temperature below (A_{C3} point−40° C.) thereby providing a cooled-rolled plate, after air-cooling, as a subsequent heating process, reheating the cooled-rolled plate at a rate of 120° C./min or less to a temperature region of from (A_{C3} point−40° C.) to less than A_{C3} point, quenching the reheating plate and subsequently tempering the quenched plate at a temperature of the A_{C1} point or below, thereby providing extra high tensile steel having a yield strength of at least 1080 MPa and a limit of K_{1SCC} of base material of at least 155 MPa$\sqrt{m}$.

5,827,380

PRECURED TIRE TREAD HAVING SEALING PROJECTION FOR A TRUCK TIRE

Lawrence Edward Chlebina, Akron; Gary Edwin Tubb, Copley, and Thomas Andrew Laurich, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 642,290, May 3, 1996, abandoned, which is a division of Ser. No. 497,709, Jun. 30, 1995, Pat. No. 5,536,348. This application Nov. 25, 1997, Ser. No. 978,122
Int. Cl.[6] B60C *13/02*
U.S. Cl. 152—209 R 3 Claims



1. In a precured tire tread for annular mounting to an unvulcanized or a vulcanized prepared tire casing, the tread being made from an elastomeric material, the precured tire tread having a radially outer ground engaging surface, the tread having grooves extending radially inwardly from the ground engaging surface, the tread material radially inwardly of the grooves constituting an inner tread, the inner tread having a radially inner surface and a radially outer surface, the tread when in an annular configuration having a cross-section including first and second lateral surfaces respectively extending radially inwardly and axially outwardly from axially outermost points on the ground engaging surface to axially outermost and radially innermost points of the inner tread surface a distance of less than two times the thickness of the tread, the tread thickness being defined as measured at the equatorial plane, the improvement comprising:

a pair of circumferentially continuous projections, one projection extending axially outwardly from each of the first and second lateral surfaces and being radially outwardly spaced in proximity to and generally above the intersection of the radially inner tread surface and the first or second lateral surface at a distance of about 3 mm, each projection having a radially inner surface providing a means for air tightly sealing the tread-casing assembly at each of the lateral surfaces during the vulcanization of the tread to the casing, when the tread is placed in contact with a surface of a mold, the radially inner surface of each projection and that portion of the first and second lateral surfaces located between the projection and the intersection and the surface of the mold forming a cavity for the flow of unvulcanized rubber from the casing to extend axially outward of the first or second lateral surface and radially up to the radially inner surface of the projection, the flow of unvulcanized rubber effectively encapsulating the tread and creating an imperceptible seam line at the radial inner surface of the projection.

5,827,381

PNEUMATIC RADIAL TIRES INCLUDING A TIRE COMPONENT CONTAINING GROUPS OF REINFORCING ELEMENTS

Toshiya Miyazono; Yoshihide Kohno; Hiroyuki Koseki, and Yoichi Okamoto, all of Kodaira, Japan, assignors to Bridgestone Corporation, Tokyo, Japan

Continuation of Ser. No. 13,802, Feb. 4, 1993, abandoned, which is a continuation-in-part of Ser. No. 742,807, Aug. 9, 1991, abandoned. This application Nov. 15, 1994, Ser. No. 341,038
Claims priority, application Japan, Aug. 10, 1990, 2-210201; Feb. 4, 1992, 4-018985; Feb. 5, 1992, 4-020099; Feb. 5, 1992, 4-020100
Int. Cl.[6] B60C *9/00;9/20*
U.S. Cl. 152—526 54 Claims

1. A pneumatic radial tire comprising; a belt serving to reinforce a tread portion, a carcass ply wound around each of a pair of bead cores from an inside of a tire to an outside thereof, said belt being comprised of a rubber-coated layer containing a given number of reinforcing elements separately arranged in parallel with each other therein, wherein at least 50% of all reinforcing elements included in said rubber-coated layer are divided into plural groups each consisting of 2–9 reinforcing elements, a distance between mutually adjacent and opposite reinforcing elements, which are not grouped together, is wider than a distance between mutually adjacent reinforcing elements within each of said groups and, said distance between mutually adjacent reinforcing elements within each of said groups is not the same in all of said groups.

15. A pneumatic radial tire comprising; a belt serving to reinforce a tread portion, a carcass ply wound around each of a pair of bead cores from an inside of a tire to an outside thereof, said belt being comprised of a rubber-coated layer containing a given number of reinforcing elements separately arranged in parallel with each other therein, wherein at least 50% of all reinforcing elements included in said rubber-coated layer are divided into plural groups each consisting of 2–9 reinforcing elements, a distance between mutually adjacent and opposite reinforcing elements, which are not grouped together, is wider than a distance between mutually adjacent reinforcing elements within each of said groups such that a substantial spacing exists between at least some mutually adjacent reinforcing elements in one group compared to a space between mutually adjacent reinforcing elements in another group.

29. A pneumatic radial tire comprising; a belt serving to reinforce a tread portion, a carcass ply wound around each of a pair of bead cores from an inside of a tire to an outside thereof, said belt being comprised of a rubber-coated layer containing a given number of reinforcing elements separately arranged in parallel with each other therein, wherein 30% to less than 50% of all reinforcing elements included in said rubber-coated layer are divided into plural groups each consisting of 2–9 reinforcing elements, a distance between mutually adjacent and opposite reinforcing elements, which are not grouped together, is wider than a distance between mutually adjacent reinforcing elements within each of said groups and, said distance between mutually adjacent reinforcing elements within each of said groups is not the same in all of said groups.

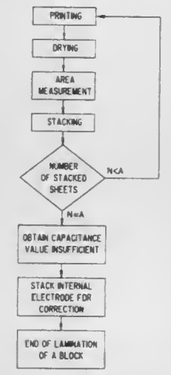
42. A pneumatic radial tire comprising; a belt serving to reinforce a tread portion, a carcass ply wound around each of a pair of bead cores from an inside of a tire to an outside thereof, said belt being comprised of a rubber-coated layer containing a given number of reinforcing elements separately arranged in parallel with each other therein, wherein 30% to less than 50% of all reinforcing elements included in said rubber-coated layer are divided into plural groups each consisting of 2–9 reinforcing elements, a distance between mutually adjacent and opposite reinforcing elements, which are not grouped together, is wider than a distance between mutually adjacent reinforcing elements within each of said groups such that a substantial spacing exists between at least some reinforcing elements in one group compared to a space between reinforcing elements in another group.

5,827,382

METHOD OF MANUFACTURING A MULTILAYER CAPACITOR

Mamoru Ogawa, Fukui, and Takashi Yoshikawa, Sabae, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jul. 3, 1996, Ser. No. 675,600
Claims priority, application Japan, Jul. 5, 1995, 7-194222
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—64 21 Claims



1. A method of manufacturing a multilayer capacitor with a predetermined capacitance by stacking in a block green sheets each having an electrode on a side thereof, comprising, prior to stacking said green sheets, the steps of:

measuring the areas of said electrodes by sampling after the electrodes are printed and dried on the green sheets; and then

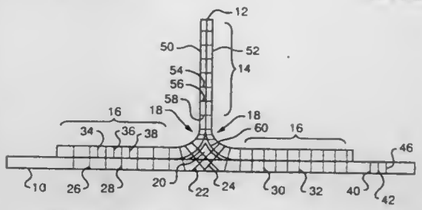
determining the number of said green sheets to be stacked to obtain said predetermined capacitance, on the basis of the areas of the electrodes thus measured.

5,827,383

STIFFENER REINFORCED ASSEMBLY AND METHOD OF MANUFACTURING SAME

Thomas G. Campbell, Concord; John J. Harris, Northboro; Thomas M. Fusco, Medford; Sara E. Rosenberg, Waltham; Glenn A. Freitas, Foxboro, and Eric J. Blaney, Maynard, all of Mass., assignors to Foster-Miller, Inc., Waltham, Mass.

Division of Ser. No. 886,592, Jul. 1, 1997, Pat. No. 5,789,061, which is a continuation-in-part of Ser. No. 600,473, Feb. 13, 1996, Pat. No. 5,589,015. This application Jun. 5, 1998, Ser. No. 92,525
Int. Cl.[6] B32B *7/08;31/16*
U.S. Cl. 156—73.1 18 Claims



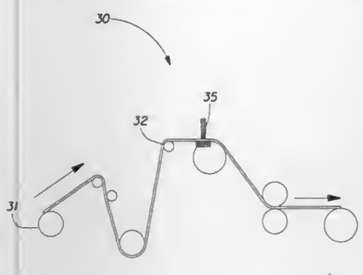
1. A method of securing a stiffener member including a web portion, flange portion, and a radius region to a skin member, the method comprising:

disposing the flange portion of the stiffener member on the skin member; and

inserting a plurality of reinforcing pins through the stiffener member at the radius region of the stiffener member and into the skin member.

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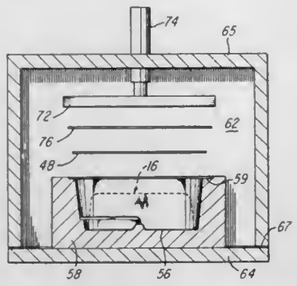
5,827,384
PROCESS FOR BONDING WEBS
David Lee Canfield, Kingsley; Michael Douglas Hill, Factoryville, both of Pa.; Stephen Joseph Lange, Wyoming; Ronald James Lynch, Cincinnati, both of Ohio; Paul Jackson Marshall, Tunkhannock, Pa., and Mark David Whaley, West Chester, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jul. 18, 1997, Ser. No. 896,383
Int. Cl.[6] B32B *31/16*
U.S. Cl. 156—73.4 16 Claims



1. A process for bonding webs, comprising the steps of:
a) providing a first web having a first length, a first width, a first edge and a second edge;
b) providing a second web having a second length, a second width, a first edge and a second edge;
c) overlapping said first edge of said first web with said first edge of said second web thereby forming an overlap region wherein the width of said overlap is less than the first width of said first web and the second width of said second web;
d) providing a roll having at least a first diameter and a second diameter wherein said first diameter is different than said second diameter;
e) juxtaposing a cutting device with said roll;
f) interposing said first web and said second web between said cutting device and said roll whereby at least one of said first web or said second web is displaced out of plane;
g) severing said first web and said second web with said cutting device to provide a severed first edge of said first web and a severed first edge of said second web;
h) overlapping said severed first edge of said first web with said severed first edge of said second web thereby forming a new overlap.
i) bonding said first web to said second web thereby forming a bond coincident with said overlap.

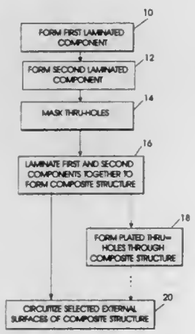
5,827,385
METHOD OF PRODUCING AN EVACUATED INSULATED CONTAINER
Chris E. Meyer, Xenia, and Nicholas Wynne, Hilliard, both of Ohio, assignors to VacuPanel, Inc., Xenia, Ohio
Continuation-in-part of Ser. No. 275,369, Jul. 15, 1994, abandoned. This application Sep. 23, 1996, Ser. No. 717,854
Int. Cl.[6] B32B *1/02;1/06;31/04;31/20*
U.S. Cl. 156—87 8 Claims

1. A method of efficiently producing an insulated container and for minimizing heat transfer through the container, comprising the steps of thermoforming two sheets of gas impermeable plastics material each having a substantially uniform thickness to form an inner shell and an outer shell each having a bottom wall and side walls with the side walls extending to form an outwardly projecting peripheral flange, positioning the inner shell within the outer shell with the corresponding flanges overlapping and with the corresponding walls defining a cavity therebetween, filling the cavity with an insulation media, evacuating the cavity thereby removing substantially all of the air from the insulation media, and sealing the overlapping flanges together to form an air-tight seal between the flanges and to seal the insulation media within the cavity.



5. A method of efficiently producing an insulated container and for minimizing heat transfer through the container, comprising the steps of thermoforming a sheet of gas impermeable plastics material having a substantially uniform thickness to form an outer shell having a bottom wall and side walls with the side walls extending to form an outwardly projecting peripheral flange, thermoforming a second sheet of gas impermeable plastics material to form an inner shell having a bottom wall and side walls with the side walls extending to form an outwardly projecting peripheral flange, positioning the inner shell within the outer shell with the peripheral flanges of the shells overlapping and corresponding side and bottom walls of the shells defining a cavity between the inner and outer shells, filling the cavity with an insulation media, evacuating the cavity thereby removing substantially all of the air from the insulation media, and sealing the peripheral flange of the inner shell to the peripheral flange of the outer shell to form an air-tight seal between the inner and outer shells and to seal the insulation media within the cavity.

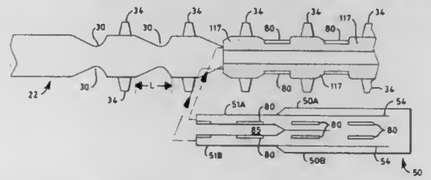
5,827,386
METHOD FOR FORMING A MULTI-LAYERED CIRCUITIZED SUBSTRATE MEMBER
Ashwinkumar Chinuprasad Bhatt, Endicott; Mark Daniel Derwin, Binghamton, and Kenneth John Lubert, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Jun. 14, 1996, Ser. No. 665,184
Int. Cl.[6] H05K *3/36*
U.S. Cl. 156—150 5 Claims



1. A method of forming a multi-layered circuitized substrate member, comprising:
forming a first laminated component having a plurality of electrical circuits defined therein and at least one unfilled hole extending through said first component;

forming a second laminated component having a plurality of electrical circuits defined therein and at least one unfilled hole extending through said second component;
masking a selected end of each of said holes extending through said first and second components;
laminating said first and second components and thereby forming a composite structure wherein said masked ends of the unfilled holes of the first and second components are internally disposed in said composite structure; and
forming at least one electrical circuit connection site on selected external surfaces of said composite structure.

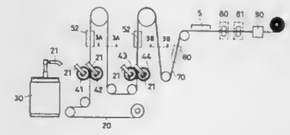
5,827,387
METHOD OF MAKING AN ABSORBENT ARTICLE HAVING LEG CUFFS COMBINED WITH CONTAINMENT FLAPS
Gary Mack Reynolds, and Robert Eugene Vogt, both of Neenah, Wis., assignors to Kimberly-Clark Worldwide, Inc., Neenah, Wis.
Filed Dec. 20, 1996, Ser. No. 777,685
Int. Cl.[6] A61F *13/15*
U.S. Cl. 156—164 28 Claims



1. A method of making a composite web structure including a leg cuff and a containment flap for an absorbent article, the method comprising the steps of:
(a) supplying a substrate having extensible elements thereon, the substrate having a length dimension, a main body extending along the length dimension, and opposing outside edges;
(b) securing extensible leg cuff pieces to the substrate;
(c) subsequently slitting the substrate along a longitudinal center line of the substrate to form two continuous substrate portions, each substrate portion having elastomeric properties, and including some of the leg cuff pieces; and
(d) subsequently folding the opposing longitudinal outside edges of the substrate portions inwardly and securing the outside edges to facing portions of the substrate portions, to form composite containment flap substrates, including therein extensible leg cuff pieces and the extensible elements.

5,827,388
HIGH STRENGTH TUBE FABRICATION METHOD UTILIZING A PVC EMULSION
Chi Liu, 3/F-2, No. 151, Hsuen-Shih Rd., Taichung City, Taiwan
Filed Apr. 15, 1997, Ser. No. 834,220
Int. Cl.[6] B29C *53/36*
U.S. Cl. 156—203 1 Claim

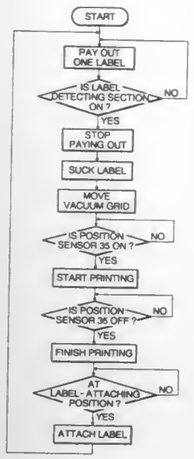
1. A high-strength tube fabrication method comprising the steps of:
i) Polyester yarn gauze treatment in which a gauze made from polyester yarn is washed to remove dust, oil and stains, and then mounted on a high-strength tube fabrication machine;
ii) PVC emulsification in which PVC resin is emulsified and combined with fire proofing material, anti-sweat material and antiseptics to form a PVC emulsion, and the PVC emulsion thus obtained is then contained in an emulsion container, which permits the PVC emulsion to be delivered through a piping system to a first pair of dispensing drums and a second pair of dispensing drums;



iii) Primary coating in which said gauze is delivered through said first pair of dispensing drums, wherein one side of said gauze is coated with a layer of PVC emulsion delivered through said piping system;
iv) Primary setting in which the PVC emulsion coated gauze thus obtained is delivered upwards to a first infrared steam bath, and said PVC emulsion coating is steam-dried to about 5% dryness to form a primarily dried PVC emulsion coated gauze;
v) Secondary coating in which the primarily dried PVC emulsion coated gauze is then delivered from said first infrared steam bath to said second pair of dispensing drums, and a second side is coated with a layer of PVC emulsion delivered through said piping system;
vi) Secondary setting in which the secondarily coated gauze is then delivered upwards to a second infrared steam bath and steam-dried to about 5% dryness, thereby forming the gauze into a plastic cloth;
vii) Baking in which said plastic cloth is processed through an anti-sticking treatment device, and then delivered to a 220° C. baking oven, heated and fully dried;
viii) Surface treating in which the fully dried plastic cloth thus obtained is delivered to a polishing machine and both sides polished;
ix) Cutting in which the polished plastic cloth is delivered to a cutting machine and then cut into strips subject to the size of the tube to be made;
x) Tubing in which the strips obtained form step ix) are delivered to a heat-sealing machine, and then respectively sealed into tubes; and
xi) Rolling up in which each sealed tube is rolled up into a reel.

5,827,389
PRINTED LABEL, METHOD AND APPARATUS FOR MANUFACTURING PRINTED LABELS, AND METHOD AND APPARATUS FOR ATTACHING PRINTED LABELS
Yoshinobu Takizawa, Urawa, and Fumihiko Goto, Sitama-ken, both of Japan, assignors to Lintec Corporation, Tokyo, Japan
Continuation of Ser. No. 490,485, Jun. 14, 1995, abandoned. This application Nov. 3, 1997, Ser. No. 962,843
Claims priority, application Japan, Jun. 14, 1994, 6-155291; Sep. 9, 1994, 6-242129; Mar. 31, 1995, 7-099894
Int. Cl.[6] B32B *31/00*
U.S. Cl. 156—234 8 Claims

1. A method of manufacturing a roll of printed labels having a plurality of consecutively spaced labels, the method comprising the steps of:
separating a label base, which is attached to a release liner by means of an adhesive layer, from said release liner, together with said adhesive layer;
inputting desired characters and/or codes, in real-time during manufacture of the printed labels, to a noncontact-type printer;



forming a printed label by printing the characters and/or codes on one of the label base and said adhesive layer, using the noncontact-type printer, during manufacture of the printed labels to thereby create a roll of printed labels containing individual printed labels that have various display contents corresponding to printing information inputted by the user.

5,827,390

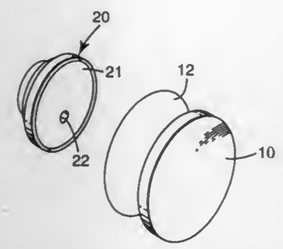
METHOD OF HOLDING AN OPHTHALMIC LENS BLANK

Sharon R. Benjamin, Oakdale; Michael Govek, Lakeville; Patrick D. Hyde, Burnsville; John H. Ko, Woodbury; Philip G. Martin, Forest Lake; Joel D. Oxman, St. Louis Park; William L. Parish, Jr., Maplewood; Carole Sedlock, Minneapolis; Richard L. Severance, Stillwater; F. Andrew Ubel, St. Paul, and Todd R. Williams, Lake Elmo, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1996, Ser. No. 713,345

Int. Cl.[6] B29C *65/40*

U.S. Cl. 156—245 **16 Claims**



1. A method of holding an ophthalmic lens blank, comprising the steps of:

providing a thermoplastic lens blocking composition;

heating the lens blocking composition to its melting or softening point;

providing a blocking material receiving cavity against the lens blank;

forming the ophthalmic lens blocking composition into the receiving cavity; and

allowing the composition to solidify to form a solidified mass of a thermoplastic blocking composition having a mean bending modulus of at least 69 MPa at 21° C., wherein the composition is solid at 21° C. and has a sufficiently low melting or softening point such that the composition may be placed adjacent to the ophthalmic lens blank while at its melting or softening point without damaging the lens blank.

5,827,391

MACHINE FOR MARKING AN ELECTRIC CABLE

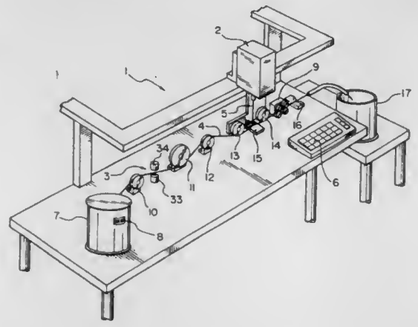
Pierre Carriere; Vincent Dabadie, both of Toulouse; Philippe Record, and Jean-Luc Ballenghien, both of Blagnac, all of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, France

Continuation of Ser. No. 518,308, Aug. 23, 1995, abandoned, which is a division of Ser. No. 389,727, Feb. 15, 1995, Pat. No. 5,474,627, which is a continuation of Ser. No. 197,559, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 836,281, Mar. 3, 1992, abandoned. This application Oct. 7, 1996, Ser. No. 729,744

Claims priority, application France, Oct. 11, 1990, 9012535

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—272.8 **9 Claims**



1. A machine for continuously marking characters on a running electric cable comprising:

(a) a pulsed CO_2 laser which provides a laser beam;

(b) drive means for driving the cable so as to cause it to run past the laser beam;

(c) guide means for guiding the cable in the vicinity of the point of impact of said beam on the cable;

(d) computerized control means;

(e) mask having characters to be marked on the cable machined therein and interposed on the laser beam; and

(f) stationary scanning means for scanning the laser beam parallel to the running direction of the cable, the laser beam, having a cross section shape of the interposed characters, contacting an area of the running cable to be marked, the laser beam being scanned at speed necessary to maintain contact with the area of the running cable to be marked as the cable moves, whereby said characters are clearly marked on said running cable.

5,827,392

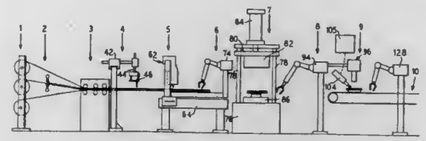
METHOD FOR MAKING STRUCTURAL REINFORCEMENT PREFORMS INCLUDING ENERGETIC BASTING OF REINFORCEMENT MEMBERS

Daniel T. Buckley, Shrewsbury, Vt., and Siegfried W. Horn, DePere, Wis., assignors to C.A. Lawton Company, De Pere, Wis.

Continuation of Ser. No. 304,786, Sep. 12, 1994, abandoned, which is a division of Ser. No. 22,084, Feb. 25, 1993, Pat. No. 5,364,258, which is a division of Ser. No. 552,253, Jul. 12, 1990, Pat. No. 5,217,656. This application Oct. 8, 1996, Ser. No. 727,321

Int. Cl.[6] B32B *31/00*

U.S. Cl. 156—275.3 **14 Claims**



1. A room temperature method for attachment of a member to a previously formed and cured carrier preform comprising the steps of:

providing a formed and cured carrier preform;

applying a UV-curable binder to a surface portion of the carrier preform, the member or both, at a binder area where the carrier preform and member are to be joined;

positioning the carrier preform and member in intimate contact at the binder area; and

stitching the carrier preform and member together by irradiating at least a portion of the binder area with UV energy to cure the UV-curable binder and bond the carrier preform and member together along the binder area.

5,827,393

HOTMELT ADHESIVE

Hans-Georg Kinzelmann, Pulheim, and Regina Biele, Langenfeld, both of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

PCT No. PCT/EP92/00546, § 371 Date Sep. 20, 1993, § 102(e) Date Sep. 20, 1993, PCT Pub. No. WO92/16592, PCT Pub. Date Oct. 1, 1992

PCT Filed Mar. 12, 1992, Ser. No. 119,134

Claims priority, application Germany, Mar. 20, 1991, 41 09 104.3; Oct. 30, 1991, 41 35 730.2

Int. Cl.[6] B32B *31/20;* **C08J** *123/08;175/04;167/02*

U.S. Cl. 156—308.2 **18 Claims**

10. A process of bonding comprising applying a contact hotmelt adhesive as a melt to each surface to be joined permitting the applied hotmelt adhesive to solidify, fitting the coated surfaces together with pressure without heating wherein the contact hotmelt adhesive comprises:

a) NCO-terminated polyester polyurethane prepolymer,

b) a tackifier having a softening range of 40° C. to 150° C. and optionally

c) a plasticizer, the contact hotmelt adhesive having an open time of at least 10 minutes, wherein the NCO-terminated polyester polyurethane prepolymer does not crystallize during the open time.

5,827,394

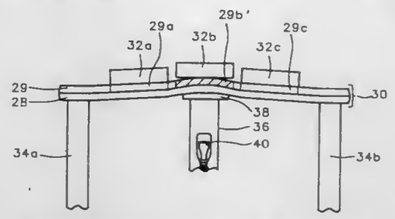
STEP AND REPEAT EXPOSURE METHOD FOR LOOSENING INTEGRATED CIRCUIT DICE FROM A RADIATION SENSITIVE ADHESIVE TAPE BACKING

Chih-Yuan Lu, Hsinchu, Taiwan, assignor to Vanguard International Semiconductor Corporation, Hsin-Chu, Taiwan

Continuation of Ser. No. 679,915, Jul. 15, 1996, abandoned. This application Sep. 25, 1997, Ser. No. 999,614

Int. Cl.[6] B32B *35/00*

U.S. Cl. 156—344 **11 Claims**



1. A method for delaminating from an adhesive tape backing an integrated circuit die comprising:

providing an adhesive tape backing comprising:

a carrier layer; and

a blanket adhesive layer formed over the carrier layer;

positioning upon the blanket adhesive layer a semiconductor substrate wafer;

dicing the semiconductor substrate wafer to form an integrated circuit die while simultaneously dicing completely through the blanket adhesive layer to form a patterned adhesive layer coextensive with the integrated circuit die, the integrated circuit die and the coextensive patterned adhesive layer being separated from a second integrated circuit die coextensive with a second patterned adhesive layer, the adhesive character of the patterned adhesive layer being susceptible to substantially complete degradation through exposure to a dose of radiation;

exposing selectively and irradiating completely the patterned adhesive layer with the dose of radiation while neither exposing nor irradiating the second patterned adhesive layer with the dose of radiation; and

removing the integrated circuit die from the adhesive tape backing.

5,827,395

POLISHING PAD USED FOR POLISHING SILICON WAFERS AND POLISHING METHOD USING THE SAME

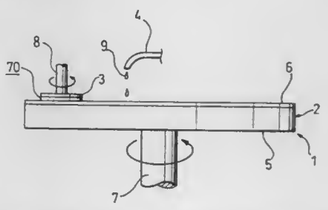
Hisashi Masumura; Kiyoshi Suzuki, and Hideo Kudo, all of Fukushima-ken, Japan, assignors to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed May 31, 1995, Ser. No. 455,519

Claims priority, application Japan, Jun. 3, 1994, 6-122415

Int. Cl.[6] C23F *1/02*

U.S. Cl. 156—345 **8 Claims**



1. A polishing pad for polishing a silicon wafer, comprising a pad of rigid polyurethane added with particles of $CaCO_3$, said rigid polyurethane pad having a JIS-A hardness in the range of from 60 to 100.

8. A method of polishing a silicon wafer characterized by using the polishing pad of claim 1.

5,827,396

DEVICE FOR TURNING A WAFER DURING A WET ETCHING PROCESS

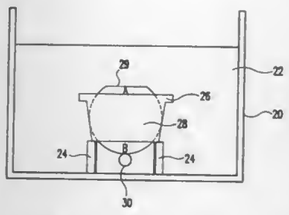
Se-jong Ko, Suwon; Pyeong-sik Jeon, Cheonan; Young-hwan Yun, Seoul, and Sang-young Moon, Ansan, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 24, 1996, Ser. No. 773,059

Claims priority, application Rep. of Korea, Dec. 27, 1995, 1995-59501

Int. Cl.[6] C23F *1/00;* **C03C** *25/06*

U.S. Cl. 156—345 **6 Claims**



1. A wet etching device for manufacturing a semiconductor device, comprising:

a processing bath;

a power source;

a transmission means for transmitting power from said power source;

a wafer carrier housing a plurality of wafers, which wafers are positioned parallel to one another and are oriented vertically in the carrier in a first position where a flattened edge of the circumference of each wafer extends above a top of the wafer carrier;

a wafer guide disposed in the processing bath for receiving the wafer carrier; and

a roller horizontally disposed below the wafer carrier and within the wafer guide, for contacting the circumferential edges of the wafers, which edges extend through a bottom of the wafer carrier, and for rotating the wafers from the first position to a second position where the flattened edge of the circumference of each wafer contacts the roller, the roller being driven by the power generated by the power source and transmitted to the roller by the transmission means.

5,827,397

MIXED OFFICE WASTEPAPER DEINKING PROCESS

Ruth Javier Blanco, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 541,988, Oct. 10, 1995, abandoned. This application Mar. 17, 1997, Ser. No. 819,219

Int. Cl.[6] D21C *5/02*

U.S. Cl. 162—5 **12 Claims**

1. A process for the deinking of a mixture of xerographically printed wastepaper stocks and ledger printer wastepaper stocks which comprises:

a) converting the wastepaper to a pulp,

b) contacting the pulp with an aqueous medium of alkaline pH containing between about 0.05 and about 2 percent by weight, calculated on a dry weight basis of the pulp, of a deinking agent consisting essentially of a first component comprising at least one ethylene oxide adduct of a detergent-range alcohol having in the range of from about 8 to about 20 carbon atoms and an average of from about 3 to about 20 oxyethylene units per molecule of alcohol, a second component selected from the group consisting of one or more detergent-range alpha olefins having from about 8 to about 22 carbon atoms, one or more saturated hydrocarbons having from about 8 to about 20 carbon atoms, and mixtures thereof, and a third component comprising a detergent-range alcohol component having from about 8 to about 20 carbon atoms wherein said deinking agent has a ratio of first component to second component to third component in the range of from 10:1:1 to about 2:1:1, and

c) treating the resulting pulp-containing medium by flotation to remove suspended ink therefrom.

5,827,398

PRODUCTION OF FILLED PAPER

David Depasquale, Nanaimo, Canada, and Bruce Evans, Bethlehem, Pa., assignors to Allied Colloids Limited, United Kingdom, and Mineral Technologies, Inc., Bethlehem, Pa.

Filed Feb. 13, 1996, Ser. No. 600,336

Int. Cl.[6] D21H *21/10*

U.S. Cl. 162—164.1 **13 Claims**

1. A process for making filled paper comprising forming a thin stock which contains precipitated calcium carbonate (PCC) by a process comprising mixing a slurry of PCC with a cellulosic suspension,

mixing polymeric retention aid into the thin stock which includes the PCC, the retention aid having intrinsic viscosity above 4 dl/g and being selected from the group consisting of polyethylene oxide having molecular weight above 2 million and water soluble addition polymers of non-ionic, anionic or cationic ethylenically unsaturated monomer or monomer blend,

draining the thin stock on a screen to form a sheet and

drying the sheet, wherein

a cationising amount of a water-soluble cationic polymer is added into the slurry of PCC before the slurry is mixed with the cellulosic suspension, the cationic polymer being selected from the group consisting of: (i) cationic naturally occurring polymers and; (ii) cationic synthetic polymers having intrinsic viscosity below about 3 dl/g and a cationic charge density of at least 2 meq/g, said cationic synthetic polymers being selected from the group consisting of polyethylene imine, dicyandiamides, polyamines and polymers of 50 to 100% ethylenically unsaturated cationic monomer and 0 to 50% non-ionic ethylenically unsaturated monomer, and

anionic microparticulate material, the microparticulate material being selected from the group consisting of an anionic emulsion of water insoluble anionic polymeric microparticles, microparticulate silica material and inorganic swelling clay, is added to the cellulosic suspension before the addition of the polymeric retention aid.

5,827,399

METHOD AND SYSTEM FOR REGULATION AND ON-LINE MEASUREMENT OF THE FIBRE ORIENTATION IN A WEB PRODUCED BY A PAPER MACHINE

Pekka Neittaanmäki; Erkki Laitinen, both of Jyväskylä; Tapani Miinalainen, Vesanka; Pekka Pakarinen, and Jouni Koskimies, both of Jyväskylä, all of Finland, assignors to Valmet Paper Machinery Inc., Helsinki, Finland

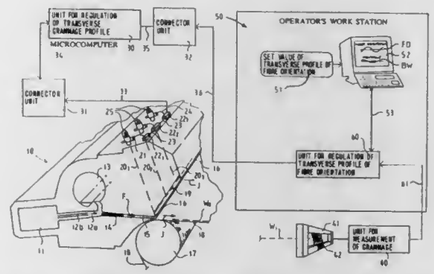
Continuation of Ser. No. 821,430, Jan. 15, 1992, abandoned, which is a continuation of Ser. No. 553,726, Jul. 16, 1990, abandoned. This application Nov. 5, 1993, Ser. No. 147,455

Claims priority, application Finland, Jul. 17, 1989, 893461

Int. Cl.[6] D21F *11/00*

U.S. Cl. 162—198 **20 Claims**

1. A method for regulating the transverse distribution of the fibre orientation of a web produced by a paper machine having transverse pulp flows in a region of a discharge opening (16) of a headbox (1) of the paper machine, wherein the transverse grammage profile of the paper web ($W_0 \ldots W_1$) produced by means of



the paper machine is measured, the measurement signal of the transverse grammage profile being used as a feedback signal in the control of the transverse profile of the discharge opening, for regulating the transverse fiber orientation profile of the web, comprising:

(a) collecting a machine configuration and machine parameters at each particular time present in the paper machine to be controlled defining states of operation, and relation data concerning a relationship between a transverse distribution of fibre orientation $\theta(x)'$ and a transverse distribution of grammage $M(x)'$ of the web ($W_0 \ldots W_1$) that is being produced by the paper machine, by carrying out response runs in various states of operation (i);

(b) storing the relation data obtained in said collecting step in a memory of a computer (52) of the control of the paper machine; and

(c) regulating the transverse distribution of the fibre orientation of the web by solely controlling the transverse profile of the discharge opening of the headbox wherein the transverse profile of the discharge opening is controlled in accordance with said relation data so as to modify the transverse pulp flows to achieve the desired transverse distribution of the fibre orientation.

5,827,400

LIQUID TREATMENT DEVICE

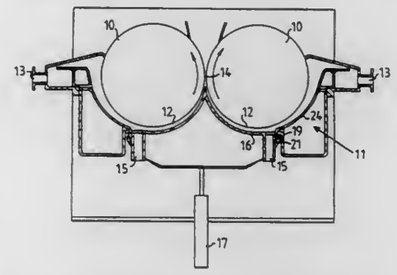
Ingemar Sundqvist, Bergeforsen, Sweden, assignor to Sunds Defibrator Industries, Inc., Sweden

Continuation of Ser. No. 296,707, Aug. 26, 1994, Pat. No. 5,589,035. This application Sep. 11, 1996, Ser. No. 710,016

Claims priority, application Sweden, Sep. 8, 1993, 93028983

Int. Cl.[6] B30B *3/02*

U.S. Cl. 162—232 **9 Claims**



1. An apparatus for liquid treatment and dewatering of material suspensions comprising: a vat having an inlet for supplying a liquid to said apparatus, first and second rotatably mounted cylindrical liquid permeable press rolls juxtaposed each other to form a nip therebetween and at least partially enclosed within said vat, said vat including a bottom portion defining a converging space in the direction towards said nip between said first and second press rolls, and a remaining portion, whereby said vat is divided between said bottom portion and said remaining portion, said bottom portion being openable from said remaining portion so as to provide access to the interior region of said vat, and a sealing assembly for providing a liquid seal between sealing assembly for providing a liquid seal between said bottom portion of said vat and said remaining portion of said vat, said sealing assembly comprising a shoulder extending about said remaining portion of said vat and extending toward said bottom portion of said vat, and an adjustable bar in sealable communication with said shoulder and adjustably extending about said bottom portion of said vat and extending toward said remaining portion of said vat, said adjustable bar being attached to said bottom portion and being adjustable, whereby adjustment of said adjustable bar thereof will modify the dimensions between said bottom portion and said press rolls.

5,827,401

SCREEN SYSTEM FOR A CONTINUOUS DIGESTER

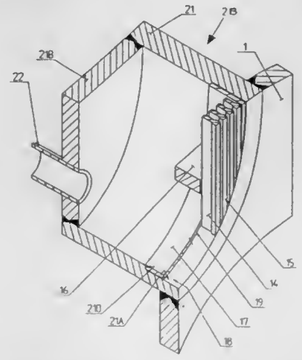
Ake Backlund; Kenneth Bellstrom; Finn Oulie; Johanna Svanberg, and Soren Soderqvist, all of Karlstad, Sweden, assignors to Kvaerner Pulping Technologies AB, Karlstad, Sweden

Continuation of Ser. No. 639,532, May 1, 1996, abandoned, which is a continuation of Ser. No. 415,203, Mar. 31, 1995, Pat. No. 5,567,280, which is a continuation of Ser. No. 130,558, Oct. 1, 1993, abandoned. This application Jan. 16, 1997, Ser. No. 784,808

Claims priority, application Sweden, Nov. 18, 1992, 9203462

Int. Cl.[6] D21C *7/14*

U.S. Cl. 162—248 **10 Claims**



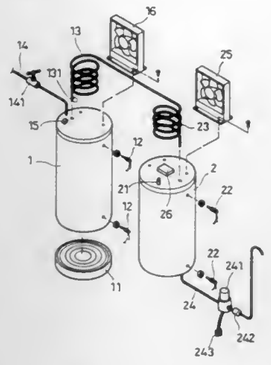
1. In a pulp digesting vessel, having a generally cylindrical wall, a plurality of generally circularly shaped openings formed in said wall and each including a peripheral surface, at least some of said openings including a screen member extending across said respective opening to prevent the passage of particles of a selected size through said respective screen member, said cylindrical wall of said vessel supporting for each said screen member an enclosure surrounding each said opening externally of said vessel, each said enclosure including an outlet connected to a conduit, said screen member comprising a plurality of rods extending across said peripheral surface and being spaced apart from each other to span substantially a diameter of said opening, a supporting bar extending from one side of said opening to the opposite side, said bar having a front edge and said rods each being secured to said front edge of said bar, each said rod having opposite ends and said enclosure including a surface portion for supporting at least one of said ends of each of said rods.

5,827,402

DRINKING WATER APPARATUS

Ben-Mo Liao, 3F., No. 8, Lane 593, Su-Yuan Rd., Hsin-Chuang City, Taipei County, Taiwan

Filed Apr. 25, 1997, Ser. No. 845,402
Int. Cl.[6] B01D *3/42; C02F 1/04*
U.S. Cl. 202—160 **1 Claim**



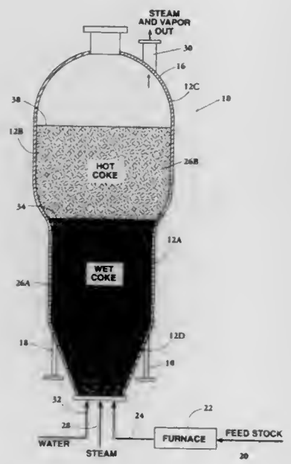
1. An improved drinking water apparatus, comprising:
a first tank for heating water therein;
a water intake pipe coupled in fluid communication with said first tank;
a water source control switch coupled in fluid communication with said water intake pipe for controlling water flow into said first tank;
a heater disposed at a bottom end of said tank for heating water therein to a temperature sufficiently high to boil the water;
a temperature sensor coupled to a top portion of said first tank for sensing an internal temperature thereof;
a pair of first water level sensing rods being coupled to said first tank in spaced relationship;
a second tank for accumulating distilled water therein;
a first cooling pipe coupled in fluid communication with said top portion of said first tank;
a first cooling fan disposed adjacent said first cooling pipe for directing a flow of air therepast;
a second cooling pipe having one coupled in fluid communication with a top portion of said second tank and an opposing end coupled in fluid communication with said first cooling pipe;
a second cooling fan disposed adjacent said second cooling pipe for directing a flow of air therepast;
a pair of second water level sensing rods being coupled to said second tank in spaced relationship;
a microprocessor having inputs coupled to said temperature sensor and said pairs of first and second water level sensing rods, said microprocessor having outputs coupled to said heater, said first and second cooling fans, and said water source control switch for (a) controlling operation of said first and second cooling fans, (b) controlling operation of said heater, and (c) turning said water source control switch on and off;
a first air vent coupled in fluid communication with said first cooling pipe for discharging chlorine released from water boiling in said first tank;
a second air vent coupled in fluid communication with said second cooling pipe for discharging hot air from said second tank; and,
means for pumping distilled water from said second tank coupled to a bottom end portion thereof, said pumping means including a motor and a check valve coupled in fluid communication with a water supply pipe.

5,827,403

METHOD OF DESIGNING AND MANUFACTURING A DELAYED COKER DRUM

Richard S. Boswell, Magnolia, Tex., and Thomas D. Farraro, Lake Charles, La., assignors to Citgo Petroleum Corporation, Tulsa, Okla.

Filed Jul. 10, 1996, Ser. No. 677,801
Int. Cl.[6] C10B *29/04;39/00;13/00*
U.S. Cl. 202—268 **9 Claims**



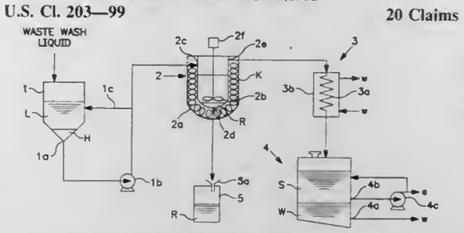
1. A method of designing a delayed coker drum in which coke feedstock derived from the refining of petroleum crude to produce higher order hydrocarbon products, is, after destructive distillation, feed at a high temperature into the drum causing the drum to thermally expand circumferentially and laterally after which the coke solidifies into frangible solid coke and is quenched to reduce the temperature of the solidified coke to permit the coke to be extracted from the drum as a solid at near ambient temperature, and in which the drum shrinks circumferentially and laterally as the temperature of the drum is reduced by the quenching step, the circumferential shrinking resulting in crushing the solidified coke and the lateral shrinking resulting in interface frictional resistance between the solidified coke and the drum, comprising the steps of:
(a) determining the resistance to crushing of the coke as solidified and the interface frictional resistance between the drum and the solidified coke;
(b) calculating the thermal circumferential and lateral expansion of the drum prior to quenching of the coke;
(c) from the results of steps (a) and (b) and the selected dimensions of the drum, determining the stress per unit area of the drum due to: (a) crushing the solidified coke at the determined temperature of the drum when crushing occurs and (b) the interface frictional resistance between the drum and the solidified coke during quenching of the coke; and
(d) select metal plates of shapes and dimensioned so that when welded together a coker drum is formed, each plate having a thickness and elasticity so that stresses in all areas of the drum during crushing of the coke and lateral shrinkage does not exceed the elastic limit of any plate.

5,827,404

METHOD AND APPARATUS FOR SOLVENT RECOVERY FROM WASTE WASH LIQUID OF PRINTING MACHINE

Katsuaki Makino; Hiromitsu Soeda; Isao Matsuura, all of Hiroshima, and Katsutoshi Okazaki, Mihara, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 5, 1996, Ser. No. 742,662
Claims priority, application Japan, Dec. 7, 1995, 7-318979
Int. Cl.[6] B01D *3/00;3/02*
U.S. Cl. 203—99 **20 Claims**



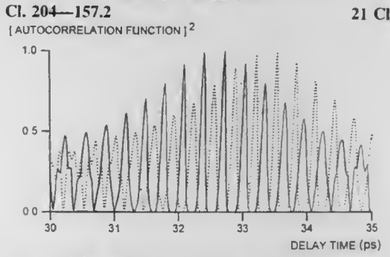
1. A solvent recovery method for recovering solvent from printing machine waste wash liquid that is used for washing ink stuck on a printing machine, said method comprising:
collecting printing machine waste wash liquid that includes a solvent and that has been used for washing ink stuck on a printing machine;
separating the waste wash liquid, using a difference in specific gravity between components of the waste wash liquid, into a lower layer of separated waste wash liquid and an upper layer of separated waste wash liquid, one of the layers comprising the solvent;
heating and vaporizing the waste wash liquid of the lower layer;
heating and vaporizing the waste wash liquid of the upper layer;
cooling and condensing the vapor that is generated by said steps of heating from both the waste wash liquid of the lower layer and the waste wash liquid of the upper layer; and
statically holding the cooled and condensed vapor from said step of cooling and condensing so as to separate the cooled and condensed vapor by using differences in specific gravity, thereby separating the solvent.

5,827,405

LASER ISOTOPE SEPARATION BY EXCITATION OF WAVEPACKETS

Eliyahu Averbukh, Rehovot, Israel, assignor to Yeda Research and Development Co., Limited, Rehovot, Israel

Filed Aug. 30, 1996, Ser. No. 705,669
Claims priority, application Israel, Mar. 1, 1996, 117328
Int. Cl.[6] B01D *5/00*
U.S. Cl. 204—157.2 **21 Claims**



1. A method for the separation of one isotope from the other isotopes in a gaseous mixture of isotopes comprising the steps of:
non-selectively exciting said gaseous mixture of isotopes by a first laser pulse of a first center frequency and a first duration to form spatially localized wavepackets in said isotopes which initially oscillate in phase with each other;
waiting a predetermined time interval until the oscillations of the wavepacket in said one isotope are substantially out of phase with respect to the oscillations of the wavepackets in said other isotopes and the wavepackets have undergone substantial revival;
selectively exciting, after said predetermined time interval, said one isotope by a second laser pulse of a second center frequency and a second duration; and
extracting said selectively excited one isotope by an appropriate extracting technique.

5,827,406

SELECTIVE PHOTOOXIDATION OF HYDROCARBONS IN ZEOLITES BY OXYGEN

Heinz Frei; Fritz Blatter, and Hai Sun, all of Berkeley, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 382,216, Jan. 31, 1995, abandoned. This application Sep. 11, 1996, Ser. No. 710,031
Int. Cl.[6] C07B *33/00*
U.S. Cl. 204—157.15 **20 Claims**

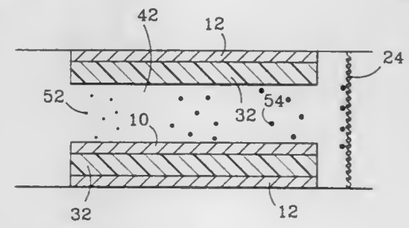
1. A process for a selective photooxidation of alkyl benzenes, said process comprising the steps:
(a) preparing a zeolite support matrix by dehydrating a zeolite selected from the group consisting of BaY, NaY and CaY zeolite under vacuum at temperature from about 150° to about 250° C. for about 12 to about 16 hours;
(b) loading the alkyl benzene in amount about 10 μmol onto about a 10 mg pellet of the dehydrated zeolite support matrix having an electrostatic field about at least 0.2 V/Å, at pressure from about 1 to about 10 Torr;
(c) introducing oxygen into the matrix of step (b) under vacuum from about 400 Torr to about 7600 Torr;
(d) irradiating the matrix of step (c) with a visible light in yellow or red region having a wavelength of about 400 to about 590 nm at temperatures from about −100° to about 80° C. for about one to ten hours; and
(e) producing an alkene oxidation product with about at least 80% selectivity.

5,827,407

INDOOR AIR POLLUTANT DESTRUCTION APPARATUS AND METHOD USING CORONA DISCHARGE

John H. S. Wang, Rancho Palos Verdes; Weldon S. Williamson, Malibu, and Nelson William Sorbo, Redondo Beach, all of Calif., assignors to Raytheon Company, El Segundo, Calif.

Filed Aug. 19, 1996, Ser. No. 689,997
Int. Cl.[6] A62D *3/00*
U.S. Cl. 204—164 **5 Claims**



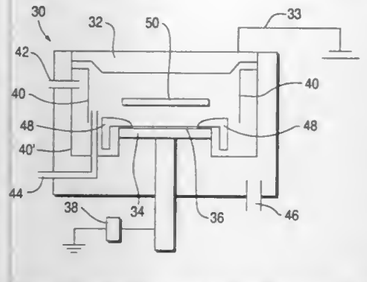
1. An air cleaning method, comprising:
generating an oscillating electric field to produce a corona discharge that releases free charges;
conveying air that includes an amount of fine particulate material pollutants through said corona discharge;
imparting said free charges to said particulate materials;
applying said oscillating electric field to said charged particulate materials to coagulate said charged particulate materials into relatively larger particles; and
filtering out said relatively larger particles.

5,827,408

METHOD AND APPARATUS FOR IMPROVING THE CONFORMALITY OF SPUTTER DEPOSITED FILMS

Ivo Raaijmakers, Phoenix, Ariz., assignor to Applied Materials, Inc, Santa Clara, Calif.

Filed Jul. 26, 1996, Ser. No. 693,823
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.12 14 Claims



1. A method of filling openings in a substrate having a plurality of openings therein comprising

a) passing a mixture of argon and up to 10% by volume of a halogen-containing gas into a physical vapor deposition chamber adjacent to a target electrode while maintaining the pressure in the chamber below about 0.1 Torr;

b) activating the target electrode and heating a substrate support electrode to a temperature of at least 150° C., thereby forming volatile halides of the material of the target and sputtering target material onto the substrate;

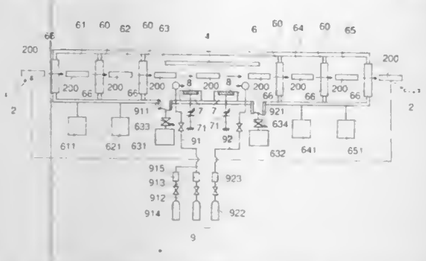
c) etching a portion of said target material in said openings with said volatile halides while continuing to deposit target material, thereby filling said openings from the bottom of the openings.

5,827,409

METHOD AND APPARATUS FOR FORMING THIN FILM FOR LIQUID CRYSTAL DISPLAY

Hiroshi Iwata, and Katsuya Yoshioka, both of Kawasaki, Japan, assignors to Anelva Corporation, Fuchu, Japan

Filed Jul. 3, 1996, Ser. No. 675,076
Claims priority, application Japan, Jul. 3, 1995, 7-191180
Int. Cl.[6] C23C *14/34*
U.S. Cl. 204—192.15 13 Claims



1. A method for forming a thin film comprising a metal oxide on a substrate by reactive sputtering, said method comprising the steps of:

(a) introducing gaseous argon and gaseous oxygen to a space in front of a cathode, said cathode comprising a target which comprises an elemental metal to be deposited; and

(b) depositing a thin film comprising a metal oxide of said metal on said substrate while moving said substrate parallel to the front of said target, said thin film having a concentration gradient of said elemental metal across its thickness, wherein

(i) said gaseous argon and said gaseous oxygen are introduced in a manner such that the partial pressure of said gaseous oxygen is lower at the upstream or the downstream side of the moving direction of said substrate,

(ii) said gaseous oxygen is diluted with gaseous nitrogen at a predetermined ratio, and

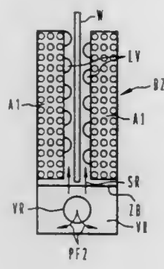
(iii) said thin film is deposited while adjusting said concentration gradient.

5,827,410

DEVICE FOR THE ELECTOLYTIC TREATMENT OF PLATE-SHAPED WORKPIECES

Daniel Hosten, Handzame, Belgium, assignor to Siemens S.A., Bruxelles, Belgium

PCT No. PCT/EP95/04473, § 371 Date May 15, 1997, § 102(e) Date May 15, 1997, PCT Pub. No. WO96/15294, PCT Pub. Date May 23, 1996
PCT Filed Nov. 14, 1995, Ser. No. 836,625
Claims priority, application Germany, Nov. 15, 1994, 44 40 849.8
Int. Cl.[6] C25D *17/00*
U.S. Cl. 204—198 16 Claims



1. Apparatus for the electrolytic treatment of plate-shaped workpieces (W), particular of printed circuit boards, comprising:

contacting and conveying means (KT) that are adapted for anodically or cathodically contacting the workpieces (W) through at least one treatment bath;

a treatment cell (BZ) for the acceptance of the treatment bath,

electrodes adapted to have an opposite polarity than the contacting and conveying means (KT) and arranged at both sides of the conveying path (TW) in the treatment cells (BZ),

vertical slots (S) in the end walls of the treatment cell for the passage of the workpieces (W),

a collecting tank (AW) for the bath liquid emerging from the treatment cell (BZ), and with

at least one pump (P) for the continuous return of bath liquid from the collecting tank (AW) into the treatment cell (BZ), characterized by

means for returning bath liquid into the treatment cell (BZ) at both sides of the conveying path (TW) within an at least largely vertical flow direction (SR); and by

guide devices (LV) arranged at both sides of the conveying path (TW) in the tretreatment cell (BZ), said guide devices adapted for diverting bath liquid toward a surface of the workpieces (W), wherein

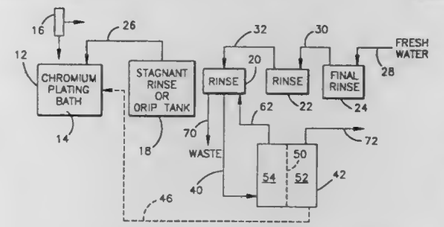
the guide devices (LV) are arranged such that they may form a guide for the workpieces (W).

5,827,411

APPARATUS FOR ELECTROLYTIC TREATMENT OF AN ELECTROLYTIC SOLUTION

Jeries I. Bishara, Mentor; Roland J. Horvath, Lyndhurst; Anthony R. Sacco, Mentor, and Jean M. Hinden, Chardon, all of Ohio, assignors to Eltech Systems Corporation, Chardon, Ohio

Division of Ser. No. 534,683, Sep. 27, 1995, Pat. No. 5,593,627, which is a division of Ser. No. 401,381, Mar. 9, 1995, Pat. No. 5,474,661, which is a continuation of Ser. No. 67,918, May 27, 1993, Pat. No. 5,405,507, which is a continuation-in-part of Ser. No. 799,653, Nov. 29, 1991, Pat. No. 5,246,559. This application Sep. 10, 1996, Ser. No. 716,821
Int. Cl.[6] C25B *9/00*
U.S. Cl. 204—237 7 Claims



1. An electroplating, anodizing or etch apparatus comprising:

an electroplating, anodizing or etch cell;

at least one rinse tank for said cell, said rinse tank being adapted to contain a relatively dilute solution of acid;

means defining an electrolytic cell, said means comprising:

(a) an anode chamber and an anode therein;

(b) a cathode chamber and a cathode therein;

(c) an ion permeable diaphragm separator between the cathode chamber and the anode chamber comprising a fibrous mat which is compressed following mat formation at a pressure in the amount of at least one ton per inch square, the mat comprising 5–70 weight percent organic halocarbon polymer fiber in adherent combination with about 30–95 weight percent of finely divided inorganic particulate, said diaphragm having a weight per unit of surface area of about 3–12 kilograms per square meter, and a permeability less than 0.03 $mm^{-1}Hg$ at two liters per minute air flow through a thirty inch square area;

(d) means for circulating rinse solution from the rinse tank through said cathode chamber producing catholyte/rinse;

(e) means for circulating the bath of the electroplating, anodizing or etch cell through said anode chamber producing an anolyte/bath, said anolyte/bath containing metal cations;

(f) means for impressing a current across said anode and said cathode, said direct current causing:

(i) the migration of acid anions from said catholyte/rinse to said anolyte/bath; and

(ii) the migration of metal cations from said anolyte/bath to said catholyte/rinse, with there being precipitation of said metal cations as metal hydroxides in said catholyte rinse.

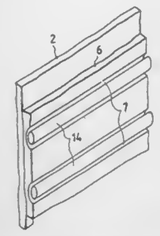
5,827,412

LIQUID PERMEATION-TYPE GAS-DIFFUSION CATHODE

Takayuki Shimamune, Tokyo; Shuhei Wakita, Kanagawa; Takahiro Ashida, Kanagawa; Masashi Tanaka, Kanagawa, and Yoshinori Nishiki, Kanagawa, all of Japan, assignors to Permelec Electrode Ltd., Kanagawa, Japan

Filed Jun. 24, 1997, Ser. No. 881,361
Claims priority, application Japan, Jun. 26, 1996, 8-185488
Int. Cl.[6] C25B *1/00*
U.S. Cl. 204—252 9 Claims

1. A liquid permeation gas-diffusion cathode in contact with an ion-exchange membrane partitioning an electrolytic cell into an anode chamber and a cathode gas chamber, wherein at least one of



plural horizontal concave grooves and horizontal convex portions are provided in an interval with one another on the surface of the cathode facing the gas chamber.

5,827,413

LOW HYDROGEN OVER VOLTAGE CATHODE AND PROCESS FOR PRODUCTION THEREOF

Kazuhisa Yamaguchi; Kanji Yoshimitsu; Satoshi Yoshida; Kazumasa Suetsugu, and Takashi Sakaki, all of Yamaguchi, Japan, assignors to Tosoh Corporation, Yamaguchi, Japan

Filed Oct. 24, 1996, Ser. No. 736,083
Claims priority, application Japan, Oct. 25, 1995, 7-277561; Apr. 19, 1996, 8-098386
Int. Cl.[6] C25B *11/04*
U.S. Cl. 204—293 6 Claims

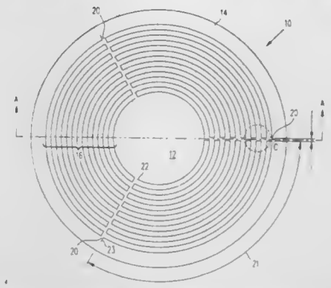
1. A cathode which has a low hydrogen overvoltage of 100–160 mV at an electrolysis current density of 40 A/dm^2 in an aqueous 32.5% sodium hydroxide solution at 90° C., which cathode comprises an electroconductive base material coated with an alloy layer containing cobalt and tin at a content of tin ranging from 0.01 to 95% by weight.

5,827,414

SINGLE PIECE SLOTTED FERROMAGNETIC SPUTTERING TARGET AND SPUTTERING APPARATUS

John David Westwood, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 25, 1997, Ser. No. 900,771
Int. Cl.[6] C23C *14/34;14/35*
U.S. Cl. 204—298.12 20 Claims



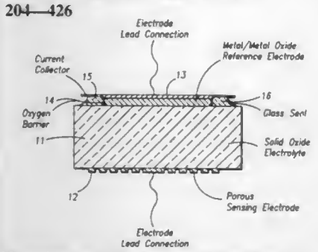
1. A target for a ferromagnetic sputtering apparatus comprising:

a single piece of ferromagnetic target material having a central area;

an outer area; and

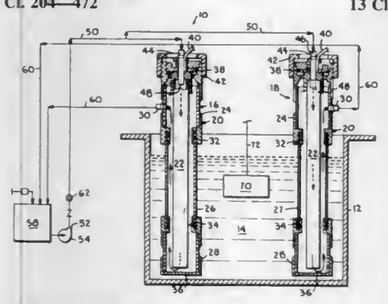
a plurality of slots in said single piece extending in a substantially circumferential direction about said central area, forming a plurality of specified width gaps substantially perpendicular to said circumferential direction between said central area and said outer area, wherein said slots are arranged to provide tabs crossing said slots to provide structural support to said gaps.

5,827,415
OXYGEN SENSOR
Turgut Mehmet Gür, Palo Alto, Calif., and Robert A. Huggins, Ulm, Germany, assignors to The Board of Trustees of Leland Stanford Jun. Univ., Stanford, Calif.
Continuation of Ser. No. 312,115, Sep. 26, 1994, abandoned. This application Jul. 9, 1996, Ser. No. 677,171
Int. Cl.[6] G01N *27/409*
U.S. Cl. 204—426 **25 Claims**



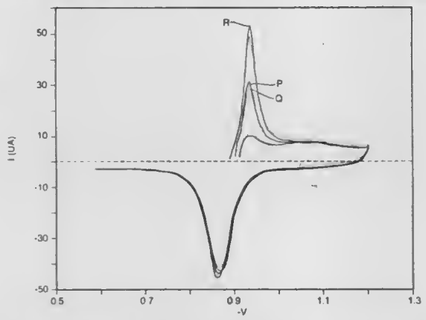
23. A Nernstian type oxygen sensor comprising:
an ion conducting solid electrolyte member having spaced major surfaces;
a reference electrode for providing a reference oxygen level comprising a layer of metal-metal oxide on a first major surface of the solid electrolyte member;
a thin porous metal-metal oxide layer disposed between said electrolyte and said layer to prevent reaction between the reference electrode and the electrolyte member;
an oxygen barrier layer in direct contact with all exposed surfaces of said reference electrode to encapsulate said metal-metal oxide layer and isolate the layer from oxygen in the environment whereby oxygen in the environment does not change the reference oxygen level; and
a porous sensing electrode on a second major surface of the electrolyte in direct contact with the environment having an unknown oxygen concentration, said sensing electrode dissociatively adsorbing molecular oxygen from the environment on a surface of the sensing electrode whereby an open circuit voltage developed between said sensing electrode and the metal-metal oxide layer of the reference electrode is indicative of the molecular oxygen concentration in the environment.

5,827,416
PROCESS FOR CONTROL OF ELECTRODEPOSITION UTILIZING CATHODIC AND ANODIC FLUSHABLE ELECTRODES
Sean M. Brown, 47 Rayburn Dr., Millbury, Mass. 01527; Francis J. Brady, 16 Throne Hill Rd., Groton, Mass. 01450, and W. James Allshouse, 76 Stone Ridge Rd., Franklin, Mass. 02038
Filed Sep. 26, 1996, Ser. No. 718,954
Int. Cl.[6] C25D *13/00*
U.S. Cl. 204—472 **13 Claims**



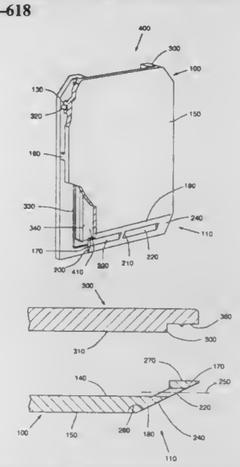
1. An electrocoating process comprising:
placing an object to be coated into a tank containing a coating solution comprising ionic coating particles
placing a first flushable, tubular electrode having a given surface area into said tank, said first electrode being electrically charged and accessible by said solution through a membrane directly separating said first electrode and said solution and having a charge corresponding to the charge on said first electrode;
placing a second flushable, tubular electrode having a given surface area into said tank, said second electrode being electrically charged to correspond with the charge on the first electrode and accessible by said solution through a membrane directly separating said first electrode and said solution and having a charge opposite to the charge on said first and second electrodes;
applying an electrical current to said object and said electrodes to charge said object oppositely to said electrodes, said electrodes and said oppositely charged object cooperating to cause a portion of said ionic coating particles to be attracted to and deposited upon the object, said application of electrical current releasing first and second ions in the solution, said ions comprising cations and anions;
removing said first ions having a charge corresponding to the charge on said object at said first electrode, said charged membrane of said first electrode allowing passage of said first ions;
removing said second ions having a charge opposite to the charge on said object at said second electrode, said charged membrane of said second electrode allowing passage of said second ions;
flushing said first electrode with an electrolyte solution, having a measurable conductivity and pH, to remove said first ions; and
flushing said second electrode with said electrolyte solution to remove said second ions;
such that the pH and electroconductivity of said solution is controlled by removing excess anions and cations released during electrodeposition.

5,827,417
ELECTROCHEMICAL METHOD OF CONTROLLING THIOLATE COVERAGE ON A CONDUCTIVE SUBSTRATE SUCH AS GOLD
Marc D. Porter, Ames, Iowa, and Duane E. Weisshaar, Sioux Falls, S. Dak., assignors to Iowa State University Research Foundation, Inc., Ames, Iowa
Continuation-in-part of Ser. No. 257,471, Jun. 9, 1994, Pat. No. 5,635,047, which is a continuation of Ser. No. 921,305, Jul. 28, 1992, abandoned. This application Feb. 10, 1997, Ser. No. 797,409
Int. Cl.[6] C25D *9/02;13/04*
U.S. Cl. 204—489 **15 Claims**



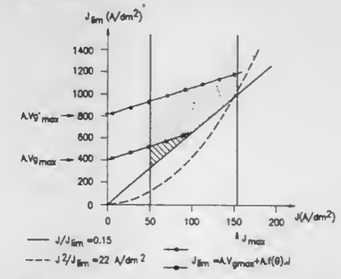
1. A method for forming from a partial to a full monolayer of a thiolate having the formula, XRS^-, wherein R is a member selected from the group consisting of linear chain hydrocarbons, branched chain hydrocarbons and aromatics, and X is a member selected from the group consisting of OH, COOH, CH_3, azides, tetrazoles, benzylcarbamates, cyanates, nitrenes, amines, imides, $CF_3(CF_2)_7$, inorganic complexes with thiol ligands, organometallic compounds, cyclodextrins, and crown ethers, upon a substrate, which comprises
determining the constant voltage necessary to be applied to provide a desired extent of coverage of said thiolate upon said substrate in an electrochemical system, said constant voltage being the value obtained by depositing said thiolate on a working electrode at a first applied voltage, initiating a negative linear voltage sweep at the applied voltage to desorb the deposited thiolate. and calculating the coverage for said first applied voltage using the results of the voltage sweep; repeating the steps of depositing, initiating a negative linear voltage sweep and calculating the coverage for at least one additional applied voltage; and
providing said substrate as a working electrode in said electrochemical system and applying said constant voltage determined to be necessary to provide the desired extent of coverage for a time sufficient to establish a redox equilibrium, which deposits the thiolate layer having the desired extent of coverage upon said substrate.

5,827,418
ELECTROPHORESIS CASSETTE
Kenneth R. Haven, Fremont, Calif., and Sören Eriksson, Uppsala, Sweden, assignors to Hoefer Pharmacia Biotech, Inc., San Francisco, Calif.
Filed Nov. 8, 1996, Ser. No. 745,654
Int. Cl.[6] G01N *27/26;27/447*
U.S. Cl. 204—618 **5 Claims**



1. An electrophoresis gel cassette, comprising:
a bottom piece;
an elongated hexahedron base having a tetragonel cross section, the base having a lower face, an inner face parallel to an outer face, and an upper face perpendicular to the inner and outer faces, the base being integrally connected at it ends to an end of the bottom piece so that, wherein the inner face of the base opposes and is spaced apart from an inner face of the bottom piece to define at least one opening therebetween, the opening having an axis that defines an opening plane which is substantially parallel to the plane of the bottom piece and extending to full length of the inner face of the bottom piece where the lower face of the base and a lower face of the bottom piece meet; and
a cover piece having an inner face that is spaced apart from the inner face of the bottom piece and the outer face of the base in an overlying relationship to define a gel chamber therebetween, wherein the gel chamber defines a plane aligned with the opening plane, has a useable length determined by the full length of the inner face of the bottom piece and communicates with the at least one opening in substantially the same plane.

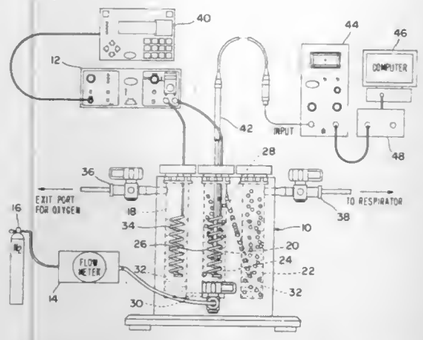
5,827,419
CONTINUOUS PROCESS FOR THE ELECTROGALVANIZING OF METAL STRIP IN A CHLORIDE-BASED PLATING SOLUTION IN ORDER TO OBTAIN COATINGS WITH LOW RUGOSITY AT HIGH CURRENT DENSITIES
Joël Marsal, Vigy; Nicolas Kopytowski, Hayange; Alain Bello, Hettange-Grande; Marie Lombardi, Thionville, and Isabelle Marolleau, Basse Ham, all of France, assignors to Sollac (Societe Anonyme), Puteaux, France
Filed Mar. 20, 1996, Ser. No. 618,805
Claims priority, application France, Mar. 29, 1995, 95 03640
Int. Cl.[6] C25D *7/06;3/22*
U.S. Cl. 205—141 **2 Claims**



1. A continuous process for the electrogalvanizing of a metal strip in a chloride-based plating solution, in which said strip is moved past an anode, said solution is made to flow at a speed V through the gap separating said strip from said anode, the speed V being measured with respect to said moving strip, an electric current corresponding to a current density J greater than 50 A/dm² is passed between said strip forming the cathode and said anode, which comprises carrying out the deposition under conditions such that:
J/J_{lim} is less than or equal to 0.15, and
J^2/J_{lim} is less than or equal to 22 A/dm² to prevent the formation of edge dendrites on the resulting galvanized metal strip,
where J_{lim} is the limiting current density corresponding to the current-density plateau in the current v potential curve characteristic of said plating solution flowing at the speed V in the vicinity of the strip.

5,827,420
METHOD AND APPARATUS FOR THE GENERATION OF NITRIC OXIDE
Shahram Z. Shirazi, and Valentin Zhelyaskov, both of Sarasota, Fla., assignors to World Precision Instruments, Inc., Sarasota, Fla.
Filed Jul. 29, 1997, Ser. No. 902,568
Int. Cl.[6] C25D *5/48;3/38;* **C25B** *1/00;1/22*
U.S. Cl. 205—220 **10 Claims**

1. A method for controllably generating a gas mixture which includes a preselected quantity of nitric oxide comprising the steps of:
disposing a first electrode in a closed first cell which contains a solution of nitric acid and a source of copper ions;
disposing a second electrode in a second cell which contains an electrolyte;
controllably establishing a flow of electric current between said electrodes to electroplate elemental copper from said solution onto said first electrode at a rate commensurate with the



magnitude of the current, the elemental copper reacting with the nitric acid to generate nitric oxide gas;

establishing a flow of carrier gas through said solution in said first cell to provide a gas mixture comprising the generated nitric oxide gas entrained by said carrier gas;

extracting said gas mixture from said first cell;

cleaning said extracted gas mixture to remove nitric acid vapor therefrom; and

discharging the cleansed gas mixture.

5,827,421

HYDROCONVERSION PROCESS EMPLOYING CATALYST WITH SPECIFIED PORE SIZE DISTRIBUTION AND NO ADDED SILICA

David Edward Sherwood, Jr., Beaumont, Tex., assignor to Texaco Inc, White Plains, N.Y.

Continuation-in-part of Ser. No. 425,971, Apr. 20, 1995, Pat. No. 5,545,602, which is a division of Ser. No. 242,995, May 16, 1994, Pat. No. 5,435,908, which is a continuation of Ser. No. 953,176, Sep. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 870,970, Apr. 20, 1992, Pat. No. 5,399,529. This application Aug. 24, 1995, Ser. No. 518,774

Int. Cl.[6] **C10G** *47/02;45/04;29/04;* **B01J** *27/14*

U.S. Cl. 208—112 **21 Claims**

1. A process for hydrotreating a charge hydrocarbon feed containing components boiling above 1000° F. and sulfur, metals, and carbon residue, said process comprises:

contacting said hydrocarbon feed with hydrogen at isothermal hydroprocessing conditions in the presence of a catalyst, said catalyst including a porous alumina support containing ≦0.5 wt % of silica, wherein no silicon containing components are intentionally added to the alumina, alumina support, impregnating solution or impregnating solutions, said porous alumina support bearing 2.2–6 wt % of a Group VIII metal oxide, 7–24 wt % of a Group VIB metal oxide and less than 0.3 wt % of a phosphorus oxide, with no phosphorous containing components intentionally added during the preparation of said catalyst,

said catalyst having a Total Surface Area of 195–230 m^2/g, a Total Pore Volume of 0.82–0.98 cc/g, and a Pore Diameter Distribution wherein 27.0–34.0% of the Total Pore Volume is present as macropores of diameter greater than 250 Å, 66.0–73.0% of the Total Pore Volume is present as micropores of diameter less than 250 Å, 55–64.5% of the micropore volume is present as micropores of diameter ±25 Å about a pore mode by volume of 110–130 Å, less than 0.05 cc/g of micropore volume is present as micropores with diameters less than 80 Å,

thereby forming hydroprocessed product containing a decreased content of components boiling above 1000° F. a decreased content of sulfur, a decreased content of metals and a decreased content of carbon residue,

and recovering said hydroprocessed product and recovering from said hydroprocessed product a portion boiling above 650° F., said portion containing a decreased content of sediment.

5,827,422

PROCESS FOR THE CONVERSION OF A GASOLINE TO A C_6 TO C_8 AROMATIC COMPOUND AND AN OLEFIN

Charles A. Drake, Nowata, and An-hsiang Wu, Bartlesville, both of Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jun. 26, 1996, Ser. No. 673,238

Int. Cl.[6] **C10G** *35/095*

U.S. Cl. 208—135 **5 Claims**

1. A process comprising contacting gasoline with a catalyst composition under a condition sufficient to effect the conversion of said gasoline to an olefin and a C_6 to C_8 aromatic hydrocarbon wherein said composition is prepared by the steps comprising:

(1) contacting a ZSM-5 zeolite with an aqueous solution of a base at a pH higher than 12, at a temperature in the range of from 70° to 120° C., under about 1 atm pressure, and for a period of from 1 to 20 hours to produce a base-leached zeolite;

(2) separating said base-leached zeolite from the spent aqueous solution;

(3) drying said base-leached zeolite;

(4) calcining said base-leached zeolite;

(5) contacting said base-leached zeolite with an aqueous solution containing an acid at a pH lower than 0.5, at a temperature in the range of from 70° to 120° C., under about 1 atm pressure, and for a period of from 1 to 20 hours to produce a base-acid-leached zeolite;

(6) separating said base-acid-leached zeolite from spent aqueous solution containing acid;

(7) drying said base-acid-leached zeolite; and

(8) calcining said base-acid-leached zeolite.

5,827,423

FILTERING DEVICE FOR A WASHING MACHINE

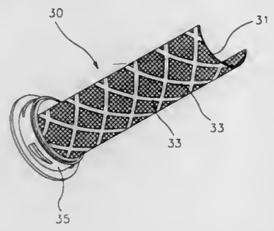
Am-Kyu Lee, Kwangiu, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Rep. of Korea

Filed May 30, 1997, Ser. No. 865,938

Claims priority, application Rep. of Korea, May 31, 1996, 96-14515

Int. Cl.[6] **B01D** *29/66;29/94;35/22;* **D06F** *39/10*

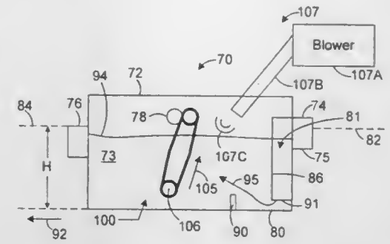
U.S. Cl. 210—167 **3 Claims**



1. A filtering device for a washing machine, said filtering device being installed between a drain pipe for draining washing water in a washing tub during a draining operation and a circulating pipe being bifurcated from said draining pipe for circulating the washing water flowing in said drain pipe into said washing tub during a washing operation, in order to filter dirt from the washing water circulating into said tub through said drain pipe and said circulating pipe, said filtering device comprising:

a filtering web having a plurality of holes therein and installed at a bifurcating entrance of said circulating pipe, said filtering web being disposed so that a planar direction thereof is equal to a flowing direction of the washing water in said drain pipe; and

a plurality of ribs being disposed on said filtering web so as to form a lattice, said ribs being disposed so that longitudinal directions thereof have a predetermined angle against the flowing direction of the washing water, whereby the washing water flowing in said drain pipe is guided toward an entire area of said filtering device to be in uniform contact with said filtering web.



5,827,424

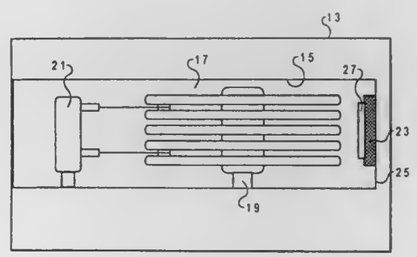
CONTAMINANT REDUCTION SYSTEM FOR DISK DRIVES

Donald R. Gillis, San Jose; Andrew Marian Homola, Morgan Hill; David H. Jen, and Erhard T. Schreck, both of San Jose, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 26, 1996, Ser. No. 721,400

Int. Cl.[6] **F25B** *21/02;* **B01O** *35/18*

U.S. Cl. 210—180 **7 Claims**



1. A contaminant reduction system for an electronic device of the type having a housing with a closed interior and having at least one critical component located therein which would be adversely affected by condensed volatiles, the contaminant reduction system comprising:

a thermoelectric heat transfer element located within the closed interior of the electronic device, the thermoelectric heat transfer element being selectively located for condensing volatiles present within the closed interior at a location within the closed interior;

a getter material located within the closed interior of the electronic device for trapping and maintaining condensed volatiles which are condensed by the thermoelectric heat transfer element at the location within the closed interior of the electronic device; and

wherein the getter material is a microporous sintered metal.

5,827,425

GREASE RECOVERY SYSTEM AND METHODS

Nick McKinnon, PO Box 747, Rockland, Mass. 02370

Filed Apr. 22, 1996, Ser. No. 635,664

Int. Cl.[6] **C02F** *1/40*

U.S. Cl. 210—194 **18 Claims**

1. A system for recovering grease from waste water, comprising:

basin means having a first inlet port to connect the system to a waste disposal network, a first outlet port for draining substantially grease-free water into a sewer network, and a grease outlet port for collecting grease from the system, the basin means holding waste water to a level corresponding to height of the outlet port above a floor of the basin means, the first inlet port being above the level so that incoming waste water drains into the basin means;

an inlet baffle, within the basin means and adjacent to the inlet port, for forcing waste water entering the inlet port downwards toward the floor, the inlet baffle forming an inlet conduit having a diameter that is approximately equal to the inlet port;

belt means, arranged for rotation within the basin means, for collecting grease along the water level, the belt means having a flexible belt that attracts grease and that lifts the grease upwards above the water level during rotation;

a first blocking baffle mounted to the floor between said inlet baffle and said belt, the first blocking baffle forming means for reducing waste water flow along the floor after the waste water passes through the inlet conduit, forcing grease towards the belt means and upwards to the water level downstream of the inlet baffle;

transport means for pushing grease along the water level and in a direction between the inlet port and the belt means; and

grease transport means, connected to the basin means above the water level, having a catch trough for scraping grease off of the belt during rotation, the grease transport means transporting recovered grease out of the grease outlet port.

5,827,426

LIQUID CHROMATOGRAPH AND LIQUID CHROMATOGRAPHY

Yoshio Fujii; Masahito Ito, and Hiroshi Satake, all of Hitachinaka, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1996, Ser. No. 711,789

Claims priority, application Japan, Sep. 14, 1995, 7-236697

Int. Cl.[6] **B01D** *15/08*

U.S. Cl. 210—198.2 **9 Claims**

1. A liquid chromatograph comprising a separation column, a pressurizing pump for feeding a mobile phase into said separation column, a sampler for mixing a sample into said mobile phase in a flow path upstream of said separation column, and a detector for detecting an effluent from said separation column, wherein the particle size of resin filled in said separation column is not more than 4 μm and a ratio (L1/R) of a length L1 (mm) to an inner diameter R (mm) of said separation column is not more than 10, and wherein the inner diameter R (mm) of said separation column is not more than 7 mm.

5,827,427

TANK ASSEMBLY

Christopher Lee Hansen, Newbury, Ohio, assignor to Kinetico Incorporated, Newbury, Ohio

Filed Mar. 11, 1996, Ser. No. 613,484

Int. Cl.[6] **B01D** *25/00*

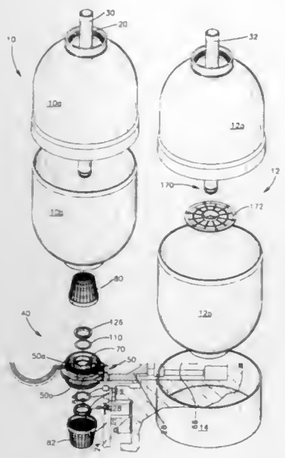
U.S. Cl. 210—232 **18 Claims**

1. A tank assembly comprising:

a) at least two fluid treatment compartments interconnected by a coupler;

b) one of said compartments including aligned, spaced-apart ports, one of said ports adapted to receive a portion of said coupler;

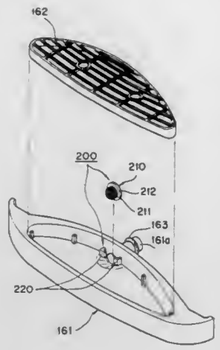
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c) the other of said compartments defining at least one port adapted to receive another portion of said coupler;
d) said coupler defining a first centrally located fluid passage and a second, substantially annular passage for cross-communicating said first and second compartments, said second passage at least partially surrounding said first passage;
e) a first riser tube having an associated end portion received by structure forming part of said central fluid passage, such that said central fluid passage is communicated with fluid conveying structure located at said one port of said first compartment;
f) a second riser tube having an associated end portion received by other structure of said central passage and extending from said coupler to a region in said second compartment spaced from said coupler;
g) sealing elements for concurrently sealing said riser tubes to said coupler when said compartments are interconnected by said coupler, while allowing at least one of said riser tubes to be released from said central passage upon separation of said compartments.

5,827,428
FILTERED WATER DRAIN FOR A SPILLAGE COLLECTOR ON A PURIFIED WATER DISPENSER
Beung-Kwon Chang, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea
Filed May 12, 1997, Ser. No. 854,818
Claims priority, application Rep. of Korea, May 25, 1996, 96-17899
Int. Cl.[6] B01D *35/027*
U.S. Cl. 210—248 **7 Claims**

1. A purified water dispenser comprising:
a housing having a water inlet;
a filtering section comprising a plurality of filtering devices interconnected in series for receiving and purifying water received from the water inlet;
at least one tank disposed in the housing for receiving purified water from the filtering section;
a manually actuable valve mounted in an accessible position on a front of the housing, the valve connected to the tank for dispensing purified water therefrom;
a tub mounted on the front of the housing beneath the valve for collecting spilled water;
a drainage hose connected to a lower portion of the tub for draining the collected water therefrom; and



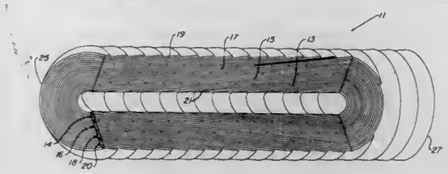
a filter arranged at the inlet of the drainage hose to prevent foreign substances from draining through the drainage hose.

5,827,429
INTRAVENOUS FILTER DEVICE
Ricky R. Ruschke, McHenry, and John A. Leahey, Woodstock, both of Ill., assignors to Filtertek Inc., Hebron, Ill.
Filed Jan. 18, 1996, Ser. No. 588,231
Int. Cl.[6] B01D *63/00*
U.S. Cl. 210—321.75 **23 Claims**



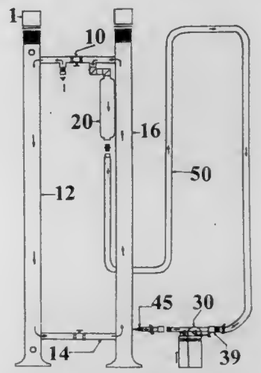
1. An intravenous filter device comprising:
a) a filter housing having a front side, a back side, a first end, a second end, an inlet and an outlet, the housing containing a hydrophilic filtration media and defining a flow path such that intravenous fluid entering the housing through the inlet passes through the filtration media before passing out of the housing through the outlet;
b) inlet and outlet tubing connectors, both attached to the front side of the filter housing adjacent the first end thereof and forming, respectively, the housing inlet and outlet, the connectors being raised above the front side of the housing and placed back-to-back with respect to each other, with the connectors being in line with one another and facing in opposite directions away from one another;
c) at least one vent hole providing a passageway for gas to escape from the housing, the at least one vent hole being open to the front side of the housing, and;
d) a hydrophobic membrane positioned between the at least one vent hole and the flow path at a position along the flow path between the inlet and the hydrophilic filtration media.

5,827,430
CORELESS AND SPIRALLY WOUND NON-WOVEN FILTER ELEMENT
Marney Dunman Perry, Jr., Mineral Wells; Stephen A. von Phul, Weatherford; Nolan Glover, Mineral Wells; H. C. Bradford, Mineral Wells, and Floyd Roberts, Mineral Wells, all of Tex., assignors to Perry Equipment Corporation, Mineral Wells, Tex.
Filed Oct. 24, 1995, Ser. No. 547,352
Int. Cl.[6] B01D *27/06*
U.S. Cl. 210—497.01 **11 Claims**



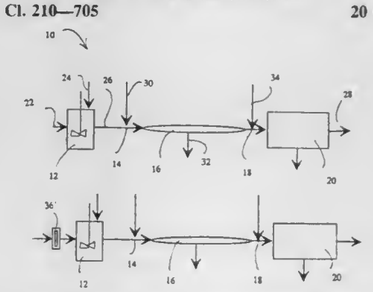
1. A coreless filter element comprising:
a nonwoven fabric comprising a substantially homogeneous mixture of a base fiber and a binder material compressed to form a first nonwoven fabric strip of selected porosity;
the first nonwoven fabric strip being spirally wound upon itself in multiple overlapping layers to form a first band having a selected radial thickness;
a second nonwoven fabric comprising a substantially homogeneous mixture of a base fiber and a binder fiber compressed to form a second nonwoven fabric strip of selected porosity which differs from the porosity of the first fabric strip;
the second fabric strip being spirally wound upon itself in multiple overlapping layers to form a second band having a selected radial thickness;
the first and second bands being overlapped and bonded to form a porous, self-supporting filter element.

5,827,431
AMAZON RAINMAKER
James Phillip Jones, 1609 Northway Dr., Jefferson City, Mo. 65109, assignor to James Phillip Jones, Jefferson City, Mo.
Filed Jan. 15, 1997, Ser. No. 783,688
Int. Cl.[6] A01K *63/04*
U.S. Cl. 210—668 **5 Claims**



1. A process of purifying water for an aquarium comprising:
passing water into an ion exchange reactor having a first chamber with first and second ends, having a mesh screen at each of said first and second ends and containing a charged polymer ion exchange resin; said ion exchange reactor also having a second chamber with first and second ends, having a mesh screen at each of said first and second ends and containing an opposingly charged polymer ion exchange resin;
passing water from said ion exchange reactor into an ultraviolet sterilization chamber having an ultraviolet germicidal sterilization light for killing microorganisms in the water;
passing water from said ultraviolet sterilization chamber to a chemical injection unit to inject a water treatment chemical into the water;
supplying water from said chemical injection unit into said aquarium.

5,827,432
METHOD FOR DEWATERING SLUDGES
Markku Huhtamaki, Naantali; Markku Lehtokari, Raisio, and Jaakko Paatero, Turku, all of Finland, assignors to Raision Tehhtaat Oy AB, Raisio, Finland
PCT No. PCT/FI95/00446, § 371 Date Feb. 27, 1997, § 102(e) Date Feb. 27, 1997, PCT Pub. No. WO96/06804, PCT Pub. Date Mar. 7, 1996
PCT Filed Aug. 23, 1995, Ser. No. 793,526
Int. Cl.[6] C02F *1/24;1/36;1/48*
U.S. Cl. 210—705 **20 Claims**



1. A method of recovering water from sludge containing dissolved substances, comprising:
(a) electrically ionizing the sludge; then after (a)
(b) adding coagulant to the sludge to effect coagulation of dissolved substances therein;
(c) prior to or substantially simultaneously with (b), vigorously mixing the sludge to activate water bound to the sludge and to make the coagulant more effective; then after (b) and (c)
(d) flocculating the sludge to form flocs of solid matter; and
(e) mechanically removing water from the flocculated sludge.

18. A method of recovering water from sludge containing dissolved substances, comprising:
(a) treating the sludge with ultrasound; then after (a)
(b) adding coagulant to the sludge to effect coagulation of dissolved substances therein;
(c) prior to or simultaneously with (b), vigorously mixing the sludge to activate water bound to the sludge and to make the coagulant more effective; then after (b) and (c)
(d) flocculating the sludge to form flocs of solid matter; and
(e) mechanically removing water from the flocculated sludge.

5,827,433
CONTROL OF OILFIELD BIOFOULING
Bryan Martin Hegarty, Peymeinade, and Richard Levy, Biot, both of France, assignors to Rohm and Haas Company, Phila., Pa.
Filed Oct. 12, 1995, Ser. No. 542,263
Claims priority, application France, Oct. 12, 1994, 94 12179
Int. Cl.[6] C02F *1/50;1/76*
U.S. Cl. 210—747 **17 Claims**

1. Process for controlling contamination of oil production system waters by sessile bacteria, comprising:
a) addition of a slug dose of a quick-kill biocide in an amount effective to reduce the content and inhibit the growth of sessile bacteria, simultaneous with or followed by

b) intermittent addition of a control biocide in an amount effective to reduce the content and inhibit the growth of sessile bacteria;

wherein the quick-kill biocide is selected from the group consisting of (C_1–C_8)alkanedials and quaternary ammonium or phosphonium halide salts, and the control biocide is selected from the group consisting of methylene-bis-thiocyanate, dibromonitrilopropionamide, metronidazole, acrolein, and isothiazolones.

5,827,434

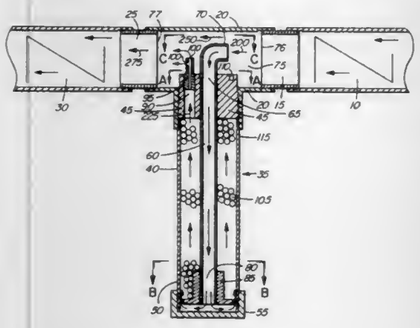
APPARATUS AND METHODS FOR REDUCING AND DETERRING BIOLOGICAL CONTAMINATION

Daniel Yando, 267 Rabideau St., Cadyville, N.Y. 12918

Filed Mar. 19, 1997, Ser. No. 820,804

Int. Cl.[6] C02F *1/50*; B01D *11/02*

U.S. Cl. 210—754 **20 Claims**



1. An apparatus for reducing or deterring biological contamination in an enclosed space, comprising:

a housing defining a chamber including a first fluid aperture in communication with a source of biologically contaminated fluid and a second fluid aperture in communication with a destination;

a reservoir including an inlet and an outlet in fluid communication with said chamber and arranged such that a partial portion of a fluid flow from said source of biologically contaminated fluid is directed through said inlet to said reservoir and back through said outlet to said chamber;

said reservoir comprising a conduit extending from a first end proximal to the source of biologically contaminated fluid to a second end distal to said source of biologically contaminated fluid, said first end comprising said inlet for receiving said partial portion and said conduit delivering said partial portion to said second end; said second end comprising means for diverting said partial flow from said conduit in a direction transverse to said conduit and into an interior of said reservoir, said interior of said reservoir containing a barrier chemical and defining a path for flowing said partial portion through said interior in a direction substantially opposite to its flow in said conduit, in contact with said barrier chemical, and to said outlet; and

said barrier chemical releasing into said partial portion of said fluid flow passing through said reservoir, so that said partial portion of said fluid flow returning back to said chamber contains a quantity of barrier chemical sufficient to reduce or deter said biological contamination in said enclosed space.

5,827,435

PLASMA PROCESSING METHOD AND EQUIPMENT USED THEREFOR

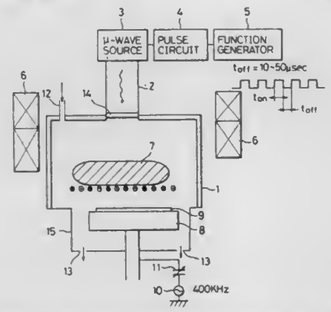
Seiji Samukawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 26, 1995, Ser. No. 548,730

Claims priority, application Japan, Oct. 27, 1994, 6-263763; May 15, 1995, 7-115655

Int. Cl.[6] H01L *21/302*;*21/31*

U.S. Cl. 216—69 **16 Claims**



1. In plasma processing method for processing an object using a plasma, said method comprising the steps of:

supplying an alternating excitation signal for exciting said plasma to a reaction gas contained in a plasma chamber said excitation signal being in the form of pulses; and

applying an alternating bias signal to said object placed in said chamber;

wherein each of said pulses of said excitation signal has an on-period for supplying said excitation signal and an off-period for stopping said excitation signal, said off-period ranging from 10 μsec to 100 μsec;

and wherein said bias signal has a frequency of at most 600 kHz.

5,827,436

METHOD FOR ETCHING ALUMINUM METAL FILMS

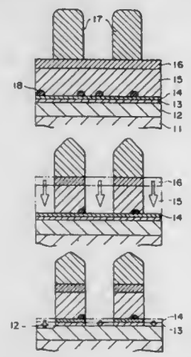
Yukihiro Kamide; Yuji Takaoka, both of Kanagawa, and Yasuaki Yamamichi, Nagasaki, all of Japan, assignors to Sony Corporation, Japan

Filed Mar. 15, 1996, Ser. No. 616,964

Claims priority, application Japan, Mar. 31, 1995, 7-074980

Int. Cl.[6] C23F *1/20*; H01L *21/00*

U.S. Cl. 216—77 **20 Claims**



13. A method of etching an aluminum metal film and an underlying barrier layer which are formed on a substrate comprising:

employing a mixed gas as an etching agent, said mixed gas comprising boron trichloride, a rare gas, and chlorine;

etching said metal film with said mixed gas at a first high frequency power level which is sufficient for anisotropic etching of said aluminum metal film and for etching and removing alloy grains contained in said aluminum metal film;

etching said barrier layer with said mixed gas, to expose an underlying insulating layer, at a second high frequency power level which is less than said first high frequency power level.

5,827,437

MULTI-STEP METALLIZATION ETCH

Richard Yen-chang Yang, Fremont, and Kenlin Chenjin Huang, Milpitas, both of Calif., assignors to Lam Research Corporation, Fremont, Calif.

Filed May 17, 1996, Ser. No. 649,268

Int. Cl.[6] C23F *1/00*

U.S. Cl. 216—77 **25 Claims**

1. In a high density plasma processing chamber, a method for etching through a selected portion of a metallization layer of a wafer's layer stack, said method comprising:

performing a main etch by etching at least partially through said metallization layer of said layer stack with a main-etch etchant source gas that comprises Cl_2 and BCl_3 and having a first Cl_2:BCl_3 flow ratio; and

thereafter, performing an over etch by etching through a remainder of said metallization layer to a layer underlying said metallization layer with an over-etch etchant source gas that comprises Cl_2 and BCl_3 and having a second Cl_2:BCl_3 flow ratio that is higher than said first Cl_2:BCl_3 flow ratio.

5,827,438

ELECTRICALLY MODULATABLE THERMAL RADIANT SOURCE WITH SPECIFIC FILAMENT

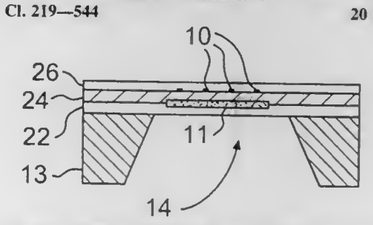
Martti Blomberg, Vantaa; Altti Torkkeli, Espoo; Stefan Lindblad, Koivulahti, and Ari Lehto, Helsinki, all of Finland, assignors to Vaisala Oy, Helsinki, Finland

Filed Nov. 22, 1996, Ser. No. 754,128

Claims priority, application Finland, Nov. 24, 1995, 955657

Int. Cl.[6] H05D *3/00*

U.S. Cl. 219—544 **20 Claims**



1. An electrically modulatable thermal radiant source with a multilayer structure comprising:

a substrate,

a first insulating layer formed onto said substrate,

a radiant surface layer formed onto said first insulating layer,

a second insulating layer formed on said radiant surface layer,

a first metallization layer formed on said second insulating layer,

a third insulating layer formed on said first metallization layer,

a second metallization layer for contacting formed on said third insulating layer,

wherein said first metallization layer forms a planar plate of thin, incandescent filaments, said incandescent filaments being surrounded by said first insulating layer, said radiant layer, said second insulating layer, and said third insulating layer and said incandescent filaments being spaced from each other over an area of said planar plate, a spacing between adjacent incandescent filaments near edges of said planar plate of incandescent filaments being closer than a spacing between adjacent incandescent filaments near a midportion of said planar plate of incandescent filaments.

5,827,439

SUPPLYING METHOD FOR MOLTEN ALLOY FOR PRODUCING AMORPHOUS ALLOY THIN STRIP

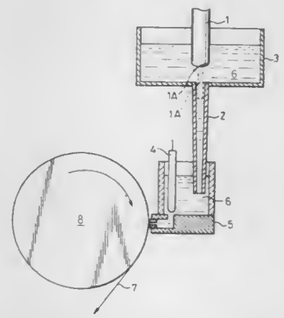
Yuichi Sato; Shigekatsu Ozaki, and Hideya Kuratani, all of Futtsu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 23, 1996, Ser. No. 771,808

Claims priority, application Japan, Dec. 27, 1995, 7-351225; Dec. 27, 1995, 7-351226; Dec. 27, 1995, 7-351228; Oct. 8, 1996, 8-267606

Int. Cl.[6] B22D *37/00*

U.S. Cl. 222—590 **5 Claims**



1. A method for supplying molten alloy to a moving cooling substrate for producing an amorphous metal wire or an amorphous metal thin strip comprising:

providing a ladle for receiving said molten alloy with said ladle having a bottom wall defining a bottom surface of said ladle;

providing a long nozzle having a length and having an interior passage therein extending the length of said long nozzle, with the length of said interior passage extending in a perpendicular direction or inclined to the perpendicular direction, said long nozzle having one end connected to said bottom wall of said ladle for placing said interior passage of said long nozzle in fluid communication with said molten alloy in said ladle;

providing a ladle stopper disposed within said ladle, said ladle stopper having an outer wall surface parallel to said perpendicular direction;

providing a tundish below said ladle and in fluid communication with said long nozzle for receiving molten alloy from a distal end of said interior passage of said long nozzle;

supplying molten alloy from said ladle to said tundish by feeding molten alloy via said interior passage of said long nozzle;

supplying molten alloy from said tundish to said moving cooling substrate;

providing said ladle stopper with a distal end region having a length which is received by said interior passage of said long nozzle at said one end of said long nozzle;

defining a distance (y) as an overlap distance of the length of said distal end region of said ladle stopper received by said interior passage of said long nozzle during flow of said molten alloy through said interior passage;

defining an opening area (Ao) which is a sectional area for molten alloy flow provided by the opening area in said interior passage of said long nozzle resulting from receiving said distal end region of said ladle stopper;

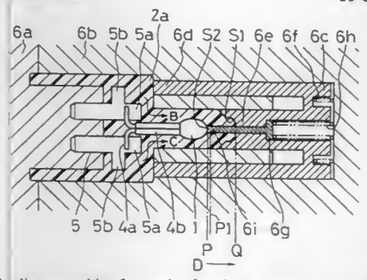
defining a distance (Ln) which is distance from the bottom surface of said ladle to a minimum cross-sectional area of said interior passage of said long nozzle;

defining a distance (Lm) which is distance from the bottom surface of said ladle to a height of molten alloy in said ladle at start of feed of said molten alloy;

wherein when (y) is less than 0.1 mm, Ao is set to be 1.2 cm^2 and a ratio (Ln)/(Lm) is set be at least 1.5; and

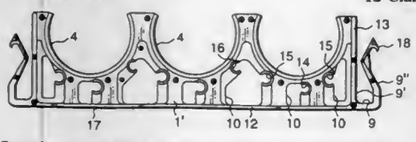
wherein when (y) is 0.1 to 200 mm, Ao is set to be 0.5 to 10 cm^2.

5,827,440
TEMPERATURE SENSOR FORMING DIE
Seiichi Furuya; Takashi Sakamaki, and Hiroyuki Yamauchi, all of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Japan
Filed Sep. 4, 1996, Ser. No. 711,940
Claims priority, application Japan, Sep. 6, 1995, 7-254575
Int. Cl.[6] B29C *33/14;33/76*
U.S. Cl. 249—91 **10 Claims**



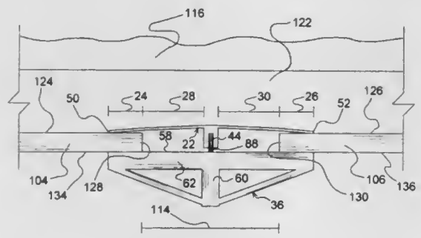
1. A die assembly for resin forming a temperature sensor, comprising:
a die defining a space for receiving a molten forming resin;
a first slide block slidably fitted in said die;
a second slide block slidably fitted in a center of the first slide block, said second slide block being movable relative to both said first slide block and said die; and
a temperature sensing element supported by the first slide block and the second slide block;
wherein a receiving area in a sliding direction of the first slide block is larger than a receiving area in a sliding direction of the second slide block with respect to a molten forming resin injected into the forming die, whereby only the first slide block is retractable by injection pressure when the multen forming resin is first injected into the forming die, while the temperature sensing element is being supported by the second slide block.

5,827,441
CASTING MOULD ARRANGEMENT FOR THE EMBEDDING OF PIPES
Öistein Solbjörg, Oslo, Norway, assignor to Oslo Presstoff Industri A/S, Oslo, Norway
Filed Dec. 19, 1996, Ser. No. 769,438
Int. Cl.[6] E04G *13/00;* **F16L** *3/22*
U.S. Cl. 249—91 **12 Claims**



7. A base part for a casting mould for the embedding of a plurality of individual pipes at a predetermined distance from one another, together with a plurality of reinforcing bars, all extending longitudinally, in a body of cast material cast around the pipes and reinforcing bars in the casting mould, said base part comprising:
a body having a plurality of transversely spaced, vertically opening recesses arranged to hold a respective number of pipes securely and fix those pipes in position;
said body being arranged to be stacked with other parts and with respective pipes secured and fixed in position thereby, as a stack, in which some of the pipes are cooperatively secured and fixed in position in part by said base part;
said base part, at each of two transversely opposite ends thereof having a respective laterally and vertically projecting arm providing a respectively vertically opening socket arranged to receive a corresponding edge margin of a respective mould side panel for laterally delimiting said casting mould; and
said base part including a plurality of openings extending longitudinally therethrough, and arranged for receiving and supporting in position respective longitudinally extending reinforcing bars of a given gauge;
at least one of said openings having a hole portion which is contiguous with at least one pocket portion, of which the hole portion is sized to permit a reinforcing bar having said given gauge to be moved longitudinally, transversely and laterally therein, and the pocket portion is sized to transversely, laterally snappingly receive from the respective said hole portion, hold securely and fix in position a respective reinforcing bar having said given gauge.

5,827,442
FORM GAP FILLING DEVICE
Keith E. Wicker, 11001 Needles Ct., Parker, Colo. 80134, and William G. Schmidt, 12895 E. Navada Cir., Aurora, Colo. 80012
Filed Jul. 1, 1996, Ser. No. 673,595
Int. Cl.[6] E04G *11/06*
U.S. Cl. 249—193 **18 Claims**



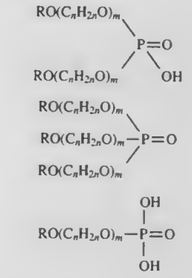
1. A form gap filling device for filling or blocking form gaps in construction forms used to fabricate foundations, walls and similar structures, the foundations, walls and similar structures being fabricated from congealable material having weight and exerting force on construction forms, the construction forms having adjacent form elements, the form gap filling device preventing congealable material from escaping from form gaps between adjacent spaced apart form elements, the form gap filling device comprising:
a. an elongated member having an end, an opposite end, a center and a first side, the elongated member further having an elongated support means centrally and longitudinally formed on the first side, the elongated support means having a support surface;
b. main portions formed on the elongated support means opposite the support surface, the main portions extending the length of the elongated member and extending outward from the elongated support means, the main portions angled toward the support surface of the elongated support means;
c. sealing portions formed on the main portions, the sealing portions extending the length of the elongated member and extending outward from the main portions, the sealing portions angled toward the support surface of the elongated support means; and
d. at least one spring biased rotatable engaging means rotatably attached to the first side of the elongated member, the at least one spring biased rotatable engaging means being medially positioned on and removably contacting the support surface of the elongated support means, wherein the at least one spring biased rotatable engaging means acts in concert with the sealing portions to removably engage adjacent spaced apart form elements.

5,827,443
WATER PERMEATING AGENT FOR TEXTILE PRODUCTS AND WATER PERMEABLE TEXTILE PRODUCTS
Setsuo Kita; Haruhiko Komeda, both of Nara-ken; Teruo Higashiguchi, Takaishi; Kazuhide Takahashi, Nara, and Sumio Oota, Kashiwara, all of Japan, assignors to Matsumoto Yushi-Seiyaku Co., Ltd., Osaka, Japan
Continuation-in-part of Ser. No. 672,051, Jun. 26, 1996, abandoned. This application Mar. 14, 1997, Ser. No. 821,971
Claims priority, application Japan, Jun. 28, 1995, 7-161795
Int. Cl.[6] D06M *13/325*
U.S. Cl. 252—8.61 **2 Claims**

1. A water permeating agent for textile product, comprising (a) at least one member selected from the group consisting of a polyalkylpolyamine amide, its alkylene oxide adducts and mixtures thereof, and (b) at least one member selected from the group consisting of a trialkylglycine derivative, alkyl imidazolium hydroxyethyl glycine derivatives and mixtures thereof, wherein component (b) is present in an amount of 0.2 to 5 parts per weight based on one part by weight of component (a).

5,827,444
STABILIZED MAGNETIC FLUID AND METHOD FOR STABILIZING MAGNETIC FLUID
Kazuya Shimizu, Yokohama; Kousuke Okura, Hiratsuka, and Yusuke Matsumura, Chigasaki, all of Japan, assignors to Taiho Industries Co., Ltd., Tokyo, Japan
Filed Apr. 26, 1996, Ser. No. 638,155
Claims priority, application Japan, Mar. 1, 1996, 8-044357
Int. Cl.[6] H01F *1/44*
U.S. Cl. 232—62.52 **17 Claims**

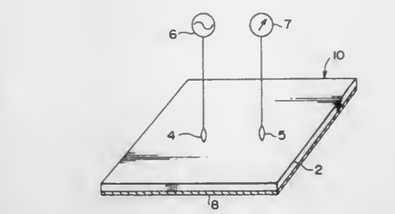
1. A stabilized magnetic fluid which comprises:
magnetic fine particles coated with a fatty acid and dispersed in a poly-α-olefin hydride,
a sulfonate surfactant, and
a dispersant of the formula



wherein R is an alkyl group containing 6–24 carbon atoms or an alkylphenyl group containing 5 to 10 carbon atoms, n is 2 or 3, and m is an integer of 2 to 20.

5,827,445
COMPOSITE MAGNETIC ARTICLE FOR ELECTROMAGNETIC INTERFERENCE SUPPRESSOR
Shigeyoshi Yoshida; Mitsubaru Sato; Eishu Sugawara, and Yutaka Shimada, all of Miyagi, Japan, assignors to Tokin Corporation, Miyagi, Japan
Filed Sep. 17, 1996, Ser. No. 714,805
Claims priority, application Japan, Sep. 22, 1995, 7-244096; Nov. 2, 1995, 7-309961; Nov. 24, 1995, 7-329597
Int. Cl.[6] H01Q *17/00;* **C03C** *14/00*
U.S. Cl. 252—62.54 **14 Claims**

1. A composite article formed of soft magnetic powder in which particles thereof comprise at least one soft metal composition



having a magnetostriction constant which is either positive or negative, said particles being in the form of flakes dispersed through an organic binder, said magnetic flakes having an average thickness of less than a skin depth within which a skin effect occurs at a frequency band at which said composite magnetic article is used.

5,827,446
NONAFLUOROMETHOXYBUTANE COMPOSITIONS
Abid Nazarali Merchant, Wilmington, Del., and Barbara Haviland Minor, Elkton, Md., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Jan. 15, 1997, Ser. No. 784,847
Int. Cl.[6] C09K *5/04;* **C11D** *7/50;7/26*
U.S. Cl. 252—67 **5 Claims**

1. A composition comprising nonafluoromethoxybutane; a compound selected from the group consisting of methanol, ethanol and isopropanol; and a compound selected from the group consisting of n-heptane, cis-1,2-dichloroethylene and acetone.

5,827,447
LIQUID BLEACHING AGENT COMPOSITION
Yoshinori Tamura; Hiroyuki Yamada, and Muneo Aoyagi, all of Tochigi, Japan, assignors to Kao Corporation, Tokyo, Japan
PCT No. PCT/JP92/01508, § 371 Date May 18, 1995, § 102(e) Date May 18, 1995, PCT Pub. No. WO94/11484, PCT Pub. Date May 26, 1994
PCT Filed Nov. 18, 1992, Ser. No. 433,408
Claims priority, application Japan, May 15, 1991, 3-110273; Aug. 4, 1992, 4-208168
Int. Cl.[6] C09K *3/00;* **C11D** *3/39*
U.S. Cl. 252—186.38 **19 Claims**

1. A transparent liquid bleaching agent composition comprising hydrogen peroxide (a); a surfactant (b); and a bleach activator (c) capable of yielding an organic peracid when reacted with hydrogen peroxide and having a value of an interaction parameter β of a mixed system consisting of the surfactant (b) and the bleach activator (c) solubilized by surfactant (b), being calculated according to the following equation of smaller than −2:

$$\beta = \frac{In[\alpha_1 C^*/(x_1 C_1)]}{(1-x_1)^2} = \frac{In[\alpha_2 C^*/(x_2 C_2)]}{(1-x_2)^2}$$

wherein
C_1: the critical micelle concentration of the surfactant;
C_2: the critical micelle concentration of the bleach activator;
α_1: the molar fraction of the surfactant in the whole mixed solute (molar fraction of added surfactant);
α_2: the molar fraction of the bleach activator in the whole mixed solute (molar fraction of added activator);
C^*: the critical micelle concentration of the mixed system;
X_1: the molar fraction of the surfactant in the mixed micelle; and

X_2: the molar fraction of the bleach activator in the mixed micelle.

5,827,448

FERROELECTRIC LIQUID CRYSTAL DEVICE

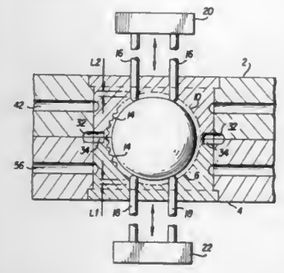
Toshimitsu Konuma, Kanagawa; Akira Mase, Aichi; Shunpei Yamazaki, Tokyo; Misao Yagi, Kanagawa; Hitoshi Kondo; Mika Tadokoro, both of Tokyo; Hiroko Konuma, Kanagawa; Hiroshi Sugiyama, Tokyo, and Toshimitsu Hagiwara, Kanagawa, all of Japan, assignors to Semiconductor Energy Laboratory Co., Ltd., Japan

Filed Nov. 13, 1991, Ser. No. 791,189

Claims priority, application Japan, Nov. 16, 1990, 2-312533

Int. Cl.[6] **C09K** *19/34;19/52;19/36;* **G02F** *1/1337*

U.S. Cl. 252—299.61 **17 Claims**



1. A ferroelectric liquid crystal device comprising:

a pair of substrates, at least one of which is transparent;

an electrode arrangement provided on the inside surface of said substrates;

an orientation control surface provided on the inside surface of at least one of said substrates to produce an orientation control effect in proximate ferroelectric liquid crystal, where each inside surface of the substrates has a different said orientation control effect than the other inside surface;

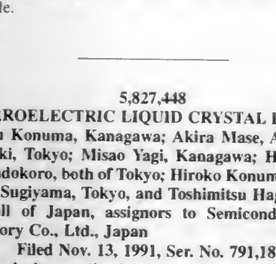
a liquid crystal layer comprising a ferroelectric liquid crystal as a constituent thereof and disposed between said substrates,

wherein said ferroelectric liquid crystal comprises an optically active first liquid crystal at 2–30 mol %, an achiral base second liquid crystal at 55–80 mol % and a third liquid crystal at 2–15 mol %,

wherein said first liquid crystal is represented by a formula:

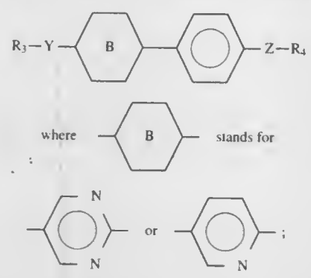
(I)

where "A" stands for



R_1 is a straight chain alkyl group comprising 2–8 carbon atoms; R_2 is a straight chain alkyl group comprising 8–12 carbon atoms; T is a hydrogen atom or a fluorine atom; X is a fluorine atom or a methyl group; n=1 or 2; m=0–3; k=0–1; and C* is an asymmetric carbon atom,

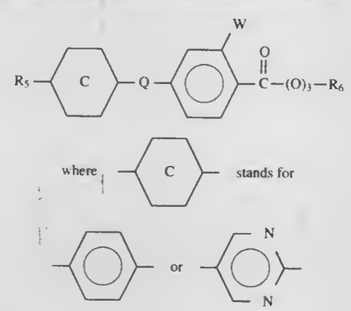
said second liquid crystal is represented by a formula:



(II)

R_3 and R_4 are straight chain or branched chain alkyl groups comprising 6–14 carbon atoms; Y and Z are a single bond or a —O— respectively,

said third liquid crystal is represented by a formula:



(III)

R_5 is a straight chain alkyl or alkoxyl group comprising 6–14 carbon atoms; R_6 is a straight chain or branched chain alkyl group comprising 6–14 carbon atoms; Q is a single bond or —COO—; W is a hydrogen atom or a fluorine atom; J=0 or 1; and wherein said liquid crystal exhibits a multi-micro-domain orientation.

5,827,449

LIQUID-CRYSTAL MIXTURES, PROCESS FOR THEIR PREPARATION AND THEIR USE

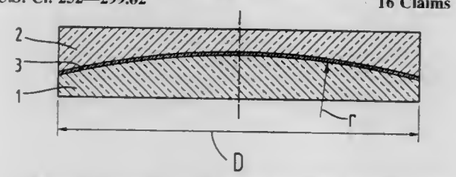
Eckhard Hanelt, Geltendorf; Christian Schierlinger, München, and Franz-Heinrich Kreuzer, Martinsried, all of Germany, assignors to Consortium für elektrochemische Industrie GmbH, München, Germany

Filed Apr. 15, 1997, Ser. No. 839,634

Claims priority, application Germany, May 14, 1996, 196 19 460.1

Int. Cl.[6] **C09K** *19/32;19/36*

U.S. Cl. 252—299.62 **16 Claims**



1. A liquid-crystalline material having a cholesteric phase with a pitch of less than 400 nm, comprising

(a) liquid-crystalline organosiloxane containing dianhydrohexitol derivatives as chiral groups, and

(b) a chiral monomeric additive which induces the same helicality as the said liquid-crystalline organosiloxane.

5,827,450

BENZENE DERIVATIVES, AND LIQUID-CRYSTALLINE MEDIUM

Hiroshi Numata, Yokohama; Hideo Ichinose, and Fumio Shimano, both of Kanagawa Pref., all of Japan, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Germany

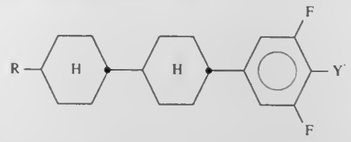
Filed Oct. 9, 1996, Ser. No. 728,376

Claims priority, application European Pat. Off., Oct. 10, 1995, 95 115 939

Int. Cl.[6] **C09K** *19/34;19/52*

U.S. Cl. 252—299.63 **17 Claims**

1. A liquid-crystalline medium based on a mixture of polar compounds having positive dielectric anisotropy, comprising one or more compounds of the formula 11:



11

in which

R is H, an alkyl or alkenyl radical having 1 to 15 carbon atoms which is unsubstituted, monosubstituted by CN or CF_3 or monosubstituted to perhalo-substituted by halogen, optionally with one or more CH_2 groups in these radicals being replaced, in each case independently of one another, by —O—, —S—,

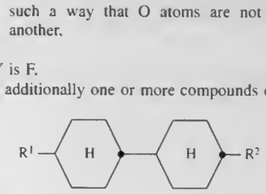


—CO—, —CO—O—, —O—CO— or —O—CO—O— in such a way that O atoms are not linked directly to one another,

and

Y is F,

and additionally one or more compounds of the formula 1*

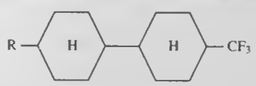


1*

wherein

R^1 and R^2 are each independently of one another an alkyl or alkoxy radical having 1 to 10 carbon atoms,

wherein the medium has a dielectric anisotropy, $\Delta\xi$, $\geqq 6$, and provided the medium contains no compound of the formula



where R is as defined above.

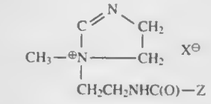
consisting of saturated and unsaturated, linear and branched, fatty acyl groups containing 12 to 22 carbon atoms, and A_2 is selected from the group consisting of hydrogen, methyl, ethyl, propyl, isopropyl, and glyceryl residues of the formula —$C_3O_2H_7$,—CH_2CH_2OH, and —$(CH_2CH_2O)_{1-10}H$; or (ii) A_1 is hydrogen or branched acyl containing 1 to 4 carbon atoms and A_2 is straight or branched alkyl or alkenylene containing 12 to 22 carbon atoms;

(b) from about 10 wt % to about 25 wt % of a quaternary ammonium component selected from the group consisting of (i) compounds of the formula $(R_1)(R_2)N^+(R_3)(R_4)X^-$ wherein

R_1 is straight or branched alkyl containing 1 to 4 carbon atoms;

R_2 and R_3 are each independently $HOCH_2CH_2(OCH_2CH_2)_{1-10}$— or an alkyl or alkenyl group having linear or branched structure containing up to 22 carbon atoms which is optionally substituted with hydroxy; and

R_4 is alkyl or alkenyl containing 8 to 22 carbon atoms, benzyl, allyl, alkoxyalkyl containing 8 to 22 carbon atoms, or $X^-N^+(CH_3)_3$—$(CH_2)_{1-3}$—; and (ii) compounds of the formula



wherein Z is straight or branched, saturated or unsaturated alkyl containing 12 to 18 carbon atoms; and

X^- is an organic or inorganic anion;

(c) from about 3 wt % to about 15 wt % of an ether component of the formula $H(OCH_2CH_2)_e$—E

wherein e is 1 to 10 and E is straight or branched alkoxy containing 1 to 4 carbon atoms; and

(d) from about 50 wt % to about 75 wt % water.

5,827,451

MICROEMULSION USEFUL AS RINSE AID

Wayne J. Cummings, Columbus; Robert D. Pifer, Westchester, and Frank H. Stevens, Columbus, all of Ohio, assignors to Witco Corporation, Greenwich, Conn.

Filed Mar. 17, 1993, Ser. No. 32,685

Int. Cl.[6] **B01J** *13/00;* **C11D** *3/00*

U.S. Cl. 252—312 **13 Claims**

1. An isotropic oil-in-water microemulsion consisting essentially of:

(a) from about 10 wt % to about 25 wt % of an oil component of the formula A_1–OA_2 wherein (i) A_1 is selected from the group

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5,827,452

METHOD OF FORMING PHOTOGRAPHIC DISPERSION

David J. Young, Chorleywood, United Kingdom, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 30, 1996, Ser. No. 706,063

Claims priority, application United Kingdom, Sep. 2, 1995, 9517912

Int. Cl.[6] **B01J** *13/00;* **G03C** *1/015;7/32*

U.S. Cl. 252—314 **15 Claims**

1. A method of forming a photographic dispersion comprising an aqueous gelatin continuous phase and a dispersed oil phase having a reduced droplet size in the oil phase, said method comprising increasing the viscosity of the aqueous phase prior to homogenization, and subsequently homogenizing the oil and aqueous phases to form an oil-in-water emulsion, wherein the increase in viscosity prior to homogenization is by a factor of from about 3 to about 50 inclusive and the viscosity of the aqueous phase during homogenization is in the range of about 100 cP to about 2500 cP.

5,827,453

DEFOAMING COMPOSITIONS

Stephen F. Gross, Souderton; Michael S. Wiggins, Lansdale; Ronald W. Broadbent, Horsham, and David I. Devore, Langhorne, all of Pa., assignors to Henkel Corporation, Plymouth Meeting, Pa.

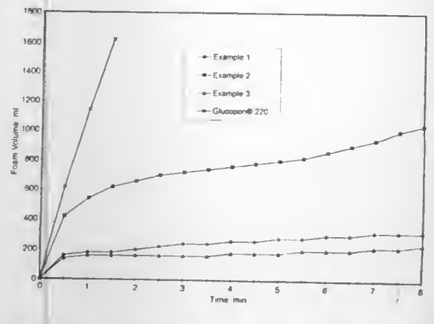
Filed Jan. 14, 1997, Ser. No. 783,224

Int. Cl.[6] **B01D** *19/04*

U.S. Cl. 252—321 **15 Claims**

1. A process for reducing or preventing foam in an aqueous surfactant composition comprising adding to said aqueous surfactant composition a defoaming effective amount of a composition

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which is the product of the process which consists of the base catalyzed reaction of epichlorohydrin and a compound of the formula II

$$R_3(EO)_n(PO)_mOH \quad (II)$$

wherein R_3 is an alkyl, alkenyl or arenyl group having from 4 to 22 carbon atoms; a substituted alkyl or alkenyl group having from 4 to 22 carbon atoms wherein; n is a number from 2 to 50 and m is a number from 0 to 10; wherein the mole ratio of epichlorohydrin to (II) is from about 0.60/1 to about 2/1; and wherein EO is an ethylene oxide unit and PO is a propylene oxide unit.

5,827,454

MIXED SOLVENT COMPOSITION

Kitamura Kenroh; Ikehata Michino, both of Yokohama, and Tsuzaki Masaaki, Ichihara, all of Japan, assignors to AG Technology Co., Ltd., Yokohama, Japan

PCT No. PCT/JP95/00948, § 371 Date Jan. 18, 1996, § 102(e) Date Jan. 18, 1996, PCT Pub. No. WO95/32274, PCT Pub. Date Nov. 30, 1995

PCT Filed May 18, 1995, Ser. No. 578,533

Claims priority, application Japan, May 26, 1994, 6-113004; May 19, 1994, 6-105754; Aug. 30, 1994, 6-205660

Int. Cl.[6] C23G *5/028;* **C09K** *3/00;* **C25F** *1/00*

U.S. Cl. 252—364 **2 Claims**

1. A mixed solvent composition, which consists essentially of an azeotropic mixture consisting essentially of 52% by weight of 3,3-dichloro-1,1,1,2,2-pentafluoropropane and 48% by weight of 1,1,1,2,3,4,4,5,5,5-decafluoropentane.

5,827,455

ENGINE CHOKE CONTROL

Hiroshi Nakai, Hamamatsu, Japan, assignor to Sanshin Kogyo Kabushiki Kaisha, Hamamatsu, Japan

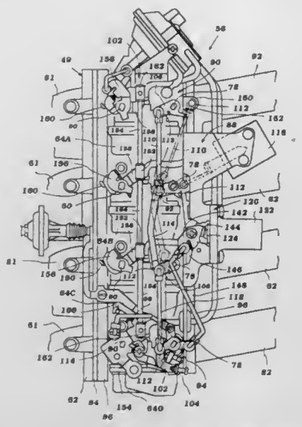
Filed Jun. 3, 1996, Ser. No. 655,691

Claims priority, application Japan, Jun. 2, 1995, 7-136645

Int. Cl.[6] F02M *1/12*

U.S. Cl. 261—23.2 **14 Claims**

1. An engine choke actuation system for use with a plurality of choke devices comprising a linkage which interconnects said choke devices so as to operate said choke devices generally in unison, said linkage comprising a plurality of interconnected linkage rods each of which connects to at least one of said choke devices to operate said choke devices between a closed position and an open position, an end of at least one of said linkage rods being readily detachable from the corresponding choke device, and a hook positioned near said detachable end of the linkage rod and



configured to receive said detachable end of said linkage rod, the corresponding choke device being positioned in said open position with said detachable end inserted into said hook.

5,827,456

METHOD FOR MAKING SELF-SUPPORTING PLASTIC BOTTLE WITH TEXTURED INNER AND OUTER THIN SIDE WALLS

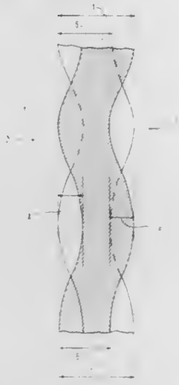
Rainer Bergner, Duesseldorf; Hubert Droessler, Erkrath; Peter Kittscher, Kaarst; Siegfried Konkel, Duesseldorf; Volker Weiss, Langenfeld, and Paul-Otto Weltgen, Hilden, all of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Germany

Continuation of Ser. No. 453,036, May 30, 1995, abandoned, which is a division of Ser. No. 284,499, Aug. 4, 1994, Pat. No. 5,522,519. This application Nov. 27, 1996, Ser. No. 758,390

Claims priority, application Germany, Feb. 5, 1992, 42 03 209.1; Mar. 24, 1992, 42 09 436.4

Int. Cl.[6] B29C *49/20*

U.S. Cl. 264—39 **8 Claims**



1. A method for making a thin-walled, blow molded plastic bottle with a very thin overall wall thickness of 0.1 to 0.3 mm, comprising the steps of:

texturing interior walls of a blow mold to provide a blow molding surface texture to predetermined depths for providing oppositely directed with respect to side wall portions of said bottle but otherwise similar texturing of inner and outer side wall portions of said bottle to have a roughened surface that is uneven to depths of 0.05 to 0.15 mm; and

blow molding a plastic material against said blow molding surface texture for obtaining said texturing of inner and outer side wall portions of said bottle, while maintaining uniform overall thickness for these side wall portions, whereby the textured inner and outer surfaces are of a configuration which stiffens the walls of said bottle.

5,827,457

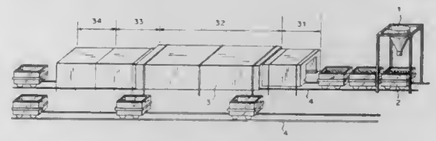
METHOD FOR MANUFACTURING A LIGHTWEIGHT CERAMIC FOAMED SUBSTANCE

Chao-Ming Tseng, 1F, No. 7, Lane 145, Ying-Tao Road, Ying Ko Chen, Taipei Hsien, Taiwan

Continuation-in-part of Ser. No. 574,365, Dec. 18, 1995, abandoned. This application Sep. 29, 1997, Ser. No. 940,017

Int. Cl.[6] C04B *38/00;38/08*

U.S. Cl. 264—43 **5 Claims**



1. A method for manufacturing lightweight ceramic foamed bodies made of (a) at least one expandable volcanic mineral; (b) at least one alkaline earth metal oxide, hydroxide, or carbonate, (c) at least one inorganic binder; and (d) a foaming stabilizer, the method comprising:

(1) sintering and expanding a mixture of components (a) to (d) to prepare a material;
(2) mixing the sintered and expanded material with water;
(3) grinding the mixture of sintered and expanded material with water to form a ground mixture;
(4) drying said ground mixture to form a dried mixture;
(5) crushing said dried mixture to form a fine powder;
(6) shaping said powder into a desired form to form a powder form; and
(7) sintering said powder form.

5,827,458

CONTINUOUS METHOD OF MAKING STRUCTURAL FOAM PANELS

James A. Meadows, Bolivar, Tenn., assignor to Paul F. Janssens-Lens, Marco Island, Fla.

Filed Jan. 24, 1996, Ser. No. 590,669

Int. Cl.[6] B29C *44/06;44/24*

U.S. Cl. 264—46.2 **4 Claims**



1. A method of providing a continuous manufacturing process for making integrated continuous structural foam panels, comprising the steps of:

(a) decoiling top and bottom skins by decoilers, respectively;
(b) releasing top and bottom stiffeners by uncoilers, respectively;
(c) feeding the skins to straighteners, respectively;
(d) threading the top skin and a top stiffener in the first straightener;
(e) aligning and partially attaching the top stiffener to the top skin;
(f) threading the bottom skin and a bottom stiffener in a second straightener;
(g) aligning and partially attaching the bottom stiffener to the bottom skin;
(h) feeding both skins including stiffeners, respectively, to roll formers, shaping both skins, including stiffeners, into a structural shape to form abutting attaching edges;
(i) injecting a foam between the skins by a foam probe to form an integrated continuous panel;
(j) pressing the integrated continuous panel by a pressure foam conveyor;
(k) curing the integrated continuous panel in an oven; and
(l) cutting the integrated continuous panel to form a finished panel according to specifications, by a clamp and cut-off saw.

5,827,459

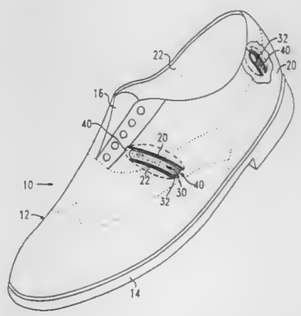
CONFORMING SHOE CONSTRUCTION USING GELS AND METHOD OF MAKING THE SAME

Bernie Allen, Wayland, and Neil M. Goldman, Mansfield, both of Mass., assignors to Acushnet Company, Fairhaven, Mass.

Continuation of Ser. No. 404,675, Mar. 15, 1995, abandoned. This application Feb. 21, 1996, Ser. No. 604,309

Int. Cl.[6] B29C *65/00;71/00;31/50*

U.S. Cl. 264—46.4 **17 Claims**



1. A method of forming a shoe component, comprising the steps of:

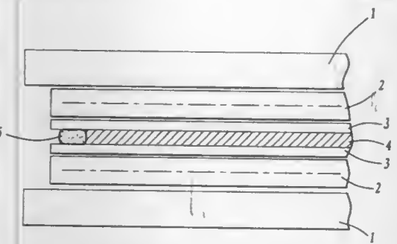
placing a viscoelastic gel and one or more foam-forming ingredients in a mold adjacent at least part of a shoe inner layer;
heating the viscoelastic gel and foam-forming ingredients in the mold to sufficiently form a foam matrix from the foam-forming ingredients which fixes the position of the viscoelastic gel in the foam matrix, thereby forming a first portion of a conforming layer that is adjacent to the inner layer;
placing a bladder which contains a temperature-responsive gel therein into contact with the foam matrix or viscoelastic gel to form a second portion of the conforming layer, wherein the temperature-responsive gel is in a liquid state at a first temperature and a gel state having a smaller amount of water in the liquid state at a second, different temperature; and
attaching a shoe outer layer to the inner layer such that both the first and second portions of the conforming layer are contained between the inner layer and the outer layer to form the shoe component, wherein the temperature-responsive gel changes between the liquid state and the gel state due to heat from a wearer's foot disposed adjacent the component.

5,827,460

PRODUCTION OF FIBER COMPOSITE

Karl-Ludwig Brentrup, Osnabrueck, and Friedrich Heinrich Erfmann, Lotte, both of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 395,358, Feb. 28, 1995, abandoned, which is a continuation of Ser. No. 623,567, Dec. 7, 1990, abandoned. This application Apr. 21, 1997, Ser. No. 847,988
Claims priority, application Germany, Nov. 9, 1990, 40 35 610.8
Int. Cl.[6] B32B *27/32*; B29C *43/28*
U.S. Cl. 264—171.23 26 Claims



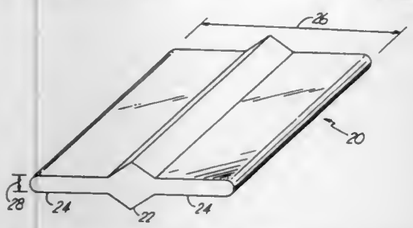
1. A process for producing a thermoplastic prepreg containing glass fiber reinforcement comprising the steps of:
continuously and separately introducing thermoplastic and glass fiber mat or tape into a double band press sealed on both sides by endless traveling belts located within the bands of said double band press and made of a compressible silicone rubber containing fiber reinforcement,
pressing together said thermoplastic and said glass fiber mat or tape at a temperature above the melting point of the thermoplastic, wherein said endless traveling belts move laterally limiting outward flow of said thermoplastic and glass fiber mat or tape during an oversupply of said thermoplastic or glass fiber mat or tape, and
cooling the product thus prepared under pressure to a temperature below the melting point of said thermoplastic.

5,827,461

WIRELESS POLYMERIC TWIST TIE FORMING PROCESS

Michael P. Feltman, Worthington, Minn., assignor to Bedford Industries, Inc., Worthington, Minn.

Division of Ser. No. 290,338, Aug. 15, 1994, Pat. No. 5,607,748. This application Sep. 30, 1996, Ser. No. 722,391
Int. Cl.[6] B29C *47/00*
U.S. Cl. 264—177.1 6 Claims



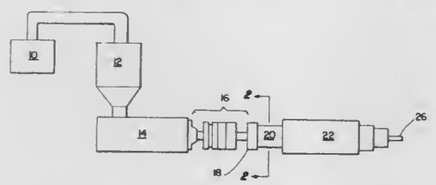
1. A method of forming a wireless polymeric twist tie having a rib portion and at least one wing portion, the method comprising the steps of:
preparing a first non-metallic polymeric composition;
preparing a second non-metallic polymeric composition;
extruding the first polymeric composition to form the rib portion of the wireless polymeric twist tie; and
extruding the second polymeric composition to form the wing portion of the wireless polymeric twist tie.

5,827,462

BALANCED COOLING OF EXTRUDED SYNTHETIC WOOD MATERIAL

Jeffrey R. Brandt, Blacklick; William G. Taylor, Columbus, and James M. Miller, Millersport, all of Ohio, assignors to Crane Plastics Company Limited Partnership, Columbus, Ohio

Filed Oct. 22, 1996, Ser. No. 735,323
Int. Cl.[6] D01F *13/00*; A01J *21/00*
U.S. Cl. 264—179 9 Claims



1. A method for cooling an extruded synthetic wood product, said method comprising:
providing an extruder;
attaching at least one die to said extruder;
attaching a cooling tank to said at least one die, said cooling tank containing a level of coolant sufficient to totally submerse said extruded synthetic wood product;
extruding synthetic wood material through said at least one die to form said extruded synthetic wood product; and
totally submersing said extruded synthetic wood product in said coolant immediately after said extruded synthetic wood product exits said at least one die.

5,827,463

PROCESS FOR MANUFACTURING CELLULOSE MOULDED BODIES

Hartmut Rüf, Vöcklabruck, Austria, assignor to Lenzing Aktiengesellschaft, Lenzing, Austria

PCT No. PCT/AT95/00174, § 371 Date Jun. 21, 1996, § 102(e) Date Jun. 21, 1996, PCT Pub. No. WO96/07779, PCT Pub. Date Mar. 14, 1996
PCT Filed Sep. 4, 1995, Ser. No. 633,754
Claims priority, application Austria, Sep. 5, 1994, A 1695/94
Int. Cl.[6] D01F *2/02*
U.S. Cl. 264—187 8 Claims

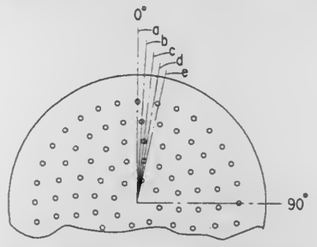
1. A process for the preparation of cellulose moulded bodies including filaments comprising:
dissolving cellulose in a mixture which comprises a tertiary amine oxide and a non-solvent for cellulose thereby forming a solution,
extruding the solution via a moulding tool, thereby forming a filament, and
conveying the filament through the air gap into a precipitation bath while drawing the filament,
wherein the precipitation bath comprises a non-aqueous solvent for the tertiary amine oxide and the molecular weight of the non-aqueous solvent for the tertiary amine oxide is greater than the molecular weight of the tertiary amine oxide.

5,827,464

MAKING HIGH FILAMENT COUNT FINE FILAMENT POLYESTER YARNS

David George Bennie, Rocky Point; Robert James Collins, Wilmington; Hans Rudolf Edward Frankfort, Kinston; Stephen Buckner Johnson, Wilmington, all of N.C.; Benjamin Hughes Knox, Wilmington, Del.; Joe Forrest London, Jr., Greenville, N.C.; Elmer Edwin Most, Jr., Durhan, N.C., and Girish Anant Pai, Matthews, N.C., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 221,306, Mar. 31, 1994, abandoned, which is a continuation-in-part of Ser. No. 93,156, Jul. 23, 1993, Pat. No. 5,417,902, which is a continuation-in-part of Ser. No. 214,096, Mar. 17, 1994, abandoned, which is a continuation-in-part of Ser. No. 214,717, Mar. 16, 1994, Pat. No. 5,487,859, said Ser. No. 93,156 is a continuation-in-part of Ser. No. 926,538, Aug. 5, 1992, abandoned, Ser. No. 925,041, Aug. 5, 1992, abandoned, and Ser. No. 925,042, Aug. 5, 1992, abandoned, said Ser. No. 214,096 is a continuation-in-part of Ser. No. 926,538, Ser. No. 925,041, and Ser. No. 925,042, said Ser. No. 214,717 is a continuation-in-part of Ser. No. 926,538, Ser. No. 925,041, Ser. No. 925,042, Ser. No. 5,672, Jan. 19, 1993, Pat. No. 5,288,553, and Ser. No. 15,733, Feb. 10, 1993, Pat. No. 5,250,245, which is a continuation-in-part of Ser. No. 860,776, Mar. 27, 1992, abandoned, Ser. No. 647,381, Jan. 29, 1991, abandoned, and Ser. No. 647,371, Jan. 29, 1991, abandoned, said Ser. No. 5,672 is a continuation-in-part of Ser. No. 860,776, Ser. No. 647,381, and Ser. No. 647,371. This application Jun. 7, 1995, Ser. No. 475,122
Int. Cl.[6] B29C *47/88*
U.S. Cl. 264—211.12 11 Claims



1. A process of preparing an interlaced multifilament yarn of at least 150 fine filaments in number and of 0.5 to 2.2 spun denier per filament $(dpf)_S$, from a polyester polymer of 13 to 23 relative viscosity(LRV) and of 240° C. to 265° C. zero-shear melting point (T_m^o) comprising :
(i) melting the polyester polymer, heating the resulting melt to a polymer temperature (Tp) that is 25° C. to 55° C. above the T_m^o, and filtering the heated melt;
(ii) extruding the filtered melt through at least 150 capillaries in the face of a spinneret to form at least 150 filamentary streams at a filamentary extrusion density (FED) of at least 6 filaments/cm^2 and at a total melt mass flow rate W, in g/min, where $W=(dpf)_S (V_S)/9000$ times the number of filaments and V_S is the spinning withdrawal speed and is at least 2 Km/min;
(iii) protecting the freshly-extruded filamentary streams immediately below the face of the spinneret by a delay shroud (of length L_q cm below said face), then cooling them by quenching air of laminar velocity (Q_a m/min), such that the Spin Factor (SF) is 0.2 to 1, where said Spin Factor (SF) is calculated according to the expression:

$$SF=k\{(LRV)[(T_m^o+25)/(Tp)]^6[(V_S)^2/(dpf)_S][(Q_a/W)^{0.2}][(FED)(L_q)]^{-0.7}\}^n$$

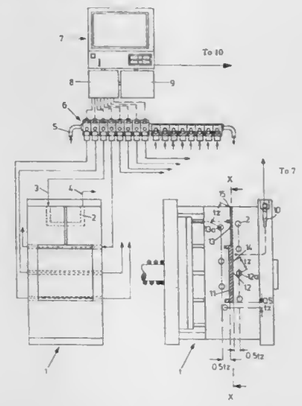
where "k"=2.4×10^{+5} and 'n'=minus (−) 0.8;
(iv) cooling the filamentary streams to a temperature below the glass transition temperature (T_g), converging the resulting cooled filaments into a single multifilament bundle of at least 150 filaments at a convergence distance (L_c, in cm) from the face of the spinneret, and interlacing the single multifilament bundle to provide an interlaced spin-oriented yarn;
and wherein the interlaced yarn is wound to form a package at a winding speed of 2 to 5 Km/min.

5,827,465

METHOD FOR TEMPERING AN INJECTION MOLDING TOOL

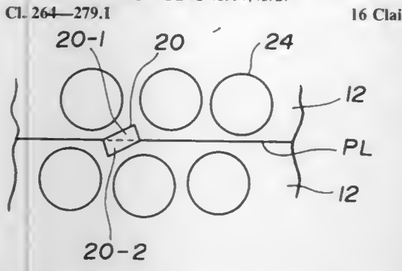
Werner Kotzab, Heinestrasse 7, D-97422 Schweinfurt, Germany

Filed Dec. 13, 1995, Ser. No. 571,435
Claims priority, application Germany, Dec. 13, 1994, 44 44 197.5
Int. Cl.[6] B29C *45/73*
U.S. Cl. 264—328.16 3 Claims



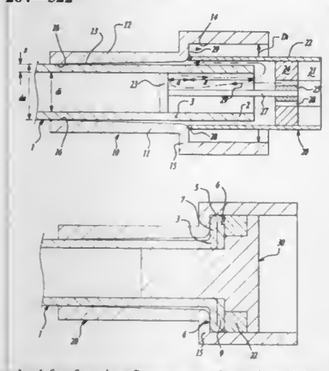
1. A method for tempering an injection molding tool having a plurality of cooling conduits by properly locating and distributing these cooling conduits, wherein a coolant liquid can be introduced in controlled fashion, wherein the injection molding tool has a mold recess formed by an inner tool wall, into which a melt of molding composition is injected during an injection cycle of a molding cycle, said molding cycle comprising said injection cycle, a cycle of heat transfer from the melt to the tool wall, an opening cycle, an ejection cycle, and a closing cycle, comprising the steps of
positioning cooling conduits parallel relative to a closest wall of the mold recess;
calculating the thermal energy to be dissipated in said injection cycle from the sum of thermal energy possessed by said melt, heat exchange with the surroundings of the tool, and externally supplied energy;
calculating the time required for heat to transfer from said melt to said inner tool wall;
calculating the time of heat transfer from a point of said inner tool wall to two neighboring cooling conduits, said point being chosen such that it has the same maximum distance to said cooling conduits; and
positioning the cooling conduits at such a distance from the mold recess that the thermal energy calculated can be transferred from the mold recess to coolant medium carried by said cooling conduits and thus can be carried away by the coolant medium within a time period that is no longer than said cycle time.

5,827,466
METHOD OF MOLDING GOLF BALLS USING AN INJECTION MOLD
Takehiko Yamaguchi, Chichibu, Japan, assignor to Bridgestone Sports Co., Ltd., Tokyo, Japan
Filed May 23, 1997, Ser. No. 862,244
Claims priority, application Japan, May 28, 1996, 8-156092
Int. Cl.[6] B29C *45/14;45/27*
U.S. Cl. 264—279.1 16 Claims



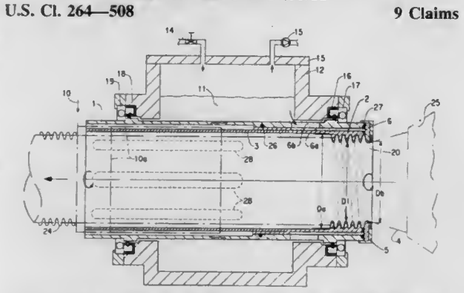
1. A method for preparing a golf ball having a plurality of dimples closely distributed thereon to provide an increased percent area occupied by dimples using an injection mold comprising the steps of: providing a pair of separable mold segments defining a spherical cavity when mated along a parting line, providing a plurality of hollow tubular gates disposed in the surfaces of the mold segments to be mated along the parting line and in fluid communication with the cavity, wherein the gate has a non-circular cross-section at least where it opens to the cavity, and the gate cross-section is separated by the parting line into opposed portion of an equal area, said gate being spaced a distance of about 0.05 to 3.0 mm from the dimple-forming protrusion and the cross-sectional area of said gate being about 0.20 to 3.14 mm^2; and injecting a stock material into the cavity through the gates to mold a golf ball.

5,827,467
METHOD AND APPARATUS FOR FORMING FLANGES ON TUBES
Hans-Peter Ruppert, Gottfried-Kinkel - Strasse 5, 65187 Wiesbaden, and Ernst Wendorff, Waldstrasse 1, 65232 Taunusstein, both of Germany
Filed Jul. 5, 1995, Ser. No. 498,222
Claims priority, application Germany, Jul. 4, 1994, 44 23 372.8
Int. Cl.[6] B29C *57/04*
U.S. Cl. 264—322 6 Claims



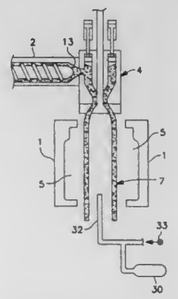
1. A method for forming flanges on tubes of partially crystalline thermoplastics, comprising the steps of:
providing a tube having an inside wall and an outside wall and an end;
clamping a predetermined portion of the tube so that a predetermined length of the tube, between a clamping point and said end, extends free to create a cantilever portion;
providing a heating head, having an outer sleeve, wherein the outer sleeve is disposed over said cantilever portion, said outer sleeve having an inner surface spaced from the outside wall of said tube in said cantilever portion to provide a space therebetween;
said heating head including a plunger disposed within said cantilever portion to limit air flow through an interior of said cantilever portion;
providing a die having an enlarged diameter portion radially outwardly spaced from said heating head and said cantilever portion;
providing heated air to said space and to the interior of said cantilever portion whereby said cantilever portion is heated from inside and outside to heat said inside wall and said outside wall of said tube in said cantilever portion to a softening temperature of the partially crystalline thermoplastic;
axially withdrawing said heating head and said plunger from said cantilever portion when said cantilever portion has reached said softening temperature;
axially upsetting said cantilever portion so as to arch said cantilever portion up into said enlarged portion of said die, thereby forming an axially upset portion;
exerting axial pressure on said axially upset potion of said cantilever portion to form a pair of annular disks abutting each other to form a flange; and
cooling a radial outer peripheral portion of the flange by metal contact with said annular disks so as to cause a renewed partial crystallization of the thermoplastic, advancing radially from outward to inward, to stabilize the flange so produced.

5,827,468
TURNING CALIBRATION APPARATUS AND PROCESS
Hermann Joseph Klaus Jenewein, Muester, Germany, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.
Filed Dec. 9, 1996, Ser. No. 762,354
Int. Cl.[6] B29C *47/24;53/22*
U.S. Cl. 264—508 9 Claims



1. Process for manufacturing convoluted polymer tubing from a molten tubular extrudate of said polymer, comprising feeding said molten tubular extrudate into an interior of a rotating tubular member having a deformation zone and a cooling zone downstream from said deformation zone and an internal spiral thread extending from said deformation zone into said cooling zone, said spiral thread receiving said molten tubular extrudate at an entrance to said rotating tubular member, vacuum forcing said molten tubular extrudate against said spiral thread in the deformation zone of said rotating tubular member to spirally convolute said molten tubular extrudate, and maintaining the resultant convoluted polymer tubing engaged with and in sealing relationship with said spiral thread in said deformation zone and said cooling zone of said rotating tubular member, and contacting said convoluted polymer tubing in said sealing relationship with cooling medium through openings in said spiral thread communicating with a chamber of said cooling medium to cool said convoluted tubing, the rotation of said rotating tubular member and the engagement of said spiral thread with said convoluted tubing in said cooling zone transporting said convoluted tubing as it is formed away from said deformation zone and through said cooling zone.

5,827,469
METHOD OF MAKING A MOLDED PRODUCT HAVING A FUNCTIONAL FILM THE PRODUCT AND APPARATUS FOR MAKING THE PRODUCT
Kaoru Shimizu, Osaka, and Kazuhiko Kodama, Kyoto, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Apr. 10, 1996, Ser. No. 628,550
Claims priority, application Japan, Apr. 10, 1995, 7-838875; Jun. 2, 1995, 7-136437; Jul. 29, 1995, 7-193027
Int. Cl.[6] B29C *49/46*
U.S. Cl. 264—512 6 Claims

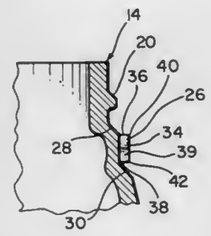


1. A method of blow molding a reflector for a parabolic antenna and forming a film which functions to reflect radio waves on an inside of said reflector, said method comprising the steps of:
(a) supplying a plasticized parison having a hollow part into a die;
(b) feeding a compressed gas into said hollow part of said parison which is within said die;
(c) feeding a material for forming the film, which functions to reflect the radio waves, into said hollow part of said parison before said parison is solidified, and forming a molded pre-product from said parison and disposing said material in the inside of said hollow part of said parison during the process of forming said molded pre-product,
(d) solidifying said molded pre-product and said material disposed in the inside of said molded pre-product; and
(e) forming said reflector for said parabolic antenna by said step (a) to said step (d).

5,827,470
METHOD FOR PREPARING A ZIRCONIA /ZIRCONIUM DIBORIDE COMPOSITE
Dilip K. Chatterjee, Rochester; Gregory S. Jarrold, Henrietta, and Syamal K. Ghosh, Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Continuation of Ser. No. 745,151, Nov. 13, 1996, abandoned.
This application Oct. 20, 1997, Ser. No. 954,399
Int. Cl.[6] C04B *33/32*
U.S. Cl. 264—604 11 Claims

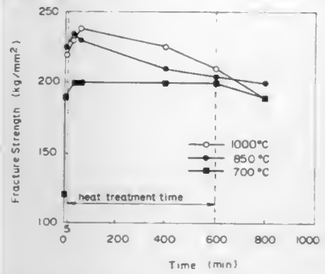
1. A method for preparing a ceramic composite article having a resistivity of less than about $5.86\times10^{-4}\Omega$/sq. comprising:
i) mixing and milling a composition comprising from 70 to 50 weight percent essentially single-phase tetragonal zirconia alloy and from 30 to 50 weight percent zirconium diboride;
ii) pressing the mixture of i) in a die and sintering the pressed mixture in an argon atmosphere between 1300° to 1700° C.; and
iii) hot isostatically pressing the sintered composite from step ii.

5,827,471
BLOW MOLDED CONTAINER WITH IMPROVED NECK WITH LOCKING TEETH AND METHOD FOR FORMING SAME
Borge Hestehave, Alta Loma, and Kjeld Hestehave, Upland, both of Calif., assignors to Bomatic, Inc., Ontario, Calif.
Filed Mar. 6, 1997, Ser. No. 812,454
Int. Cl.[6] B28B *5/00*
U.S. Cl. 264—645 15 Claims



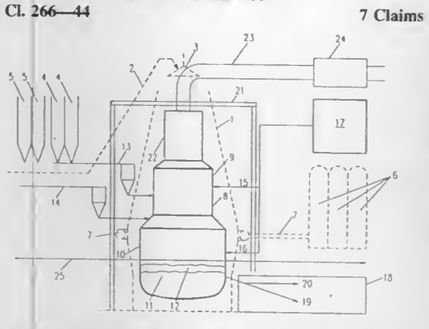
1. A container formed by a blow molding process, comprising:
a body portion for containing a product;
a neck portion extending from said body portion, said neck portion including a first annular wall, a second annular wall positioned between said first annular wall and said body portion, a first annular inclined surface extending outwardly from said first annular wall to said second annular wall at a first oblique angle from a longitudinal axis of said neck portion, and a second annular inclined surface extending outwardly from said second annular wall toward said body portion at a second oblique angle from the longitudinal axis of said neck portion,
a thread formed on said first annular wall for engagement by a cap, and
a locking means for permanently securing the cap to said neck portion, said locking means including a plurality of teeth extending radially outwardly from said second annular wall as blow molded portions thereof;
wherein each of said first and said second oblique angles is an angle of between approximately 40 degrees and 50 degrees; and wherein said inclined surfaces terminate near a root area of the teeth.

5,827,472
PROCESS FOR THE PRODUCTION OF SILICON NITRIDE SINTERED BODY
Masashi Yoshimura; Takeshi Satoh; Akira Yamaguchi, and Akira Yamakawa, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan
Filed Sep. 29, 1995, Ser. No. 536,446
Claims priority, application Japan, Oct. 19, 1994, 6-253330
Int. Cl.[6] C04B *35/584*
U.S. Cl. 264—665 2 Claims



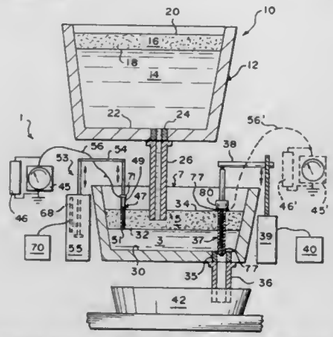
1. A process for the production of a silicone nitride sintered body, characteristic in that the silicon nitride sintered body stock is heat-treated wherein the heat treatment is conducted by keeping the stock within the temperature range for 5 to 600 minutes within a temperature range of from the temperature at which the internal friction of the stock exhibits a peculiar peak maximum minus 150° C. to that plus 150° C.

5,827,473
METHOD AND APPARATUS FOR PRODUCING PIG IRON BY SMELTING REDUCTION AND METHOD OF OBTAINING SUCH A PLANT
Huibert W. den Hartog, Noordwijkerhout, Netherlands, assignor to Hoogovens Staal B.V., Ijmuiden, Netherlands
Filed Jul. 15, 1996, Ser. No. 679,901
Claims priority, application Netherlands, Jul. 19, 1995, 1000838
Int. Cl.[6] C21B *7/00*
U.S. Cl. 266—44 7 Claims



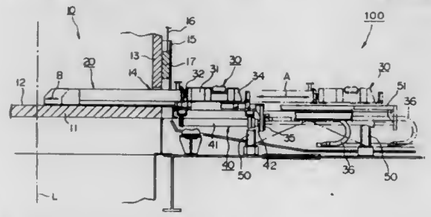
1. A method of providing a plant for a smelting reduction process for pig iron production in which iron oxides are reduced by means of coal and oxygen-containing gas from a blast furnace plant which includes a steel structure, a storage bin for iron ore, a storage bin for coke, a casting house with means for tapping off pig iron and slag, a gas discharge system for hot gas including dedusting means and a cooling water supply system, said method comprising the steps of positioning a metallurgical vessel suitable for carrying out said smelting reduction process within said steel structure and connecting thereto at least one of said storage bin for iron ore, said storage bin for coke, said casting house, said gas discharge system and said cooling water supply system.

5,827,474
APPARATUS AND METHOD FOR MEASURING THE DEPTH OF MOLTEN STEEL AND SLAG
John D. Usher, Beaver Falls, and Robin A. Sommers, Moon Township, both of Pa., assignors to Vesuvius Crucible Company, Wilmington, Del.
Filed Jan. 2, 1997, Ser. No. 779,008
Int. Cl.[6] C21D *11/00*
U.S. Cl. 266—44 17 Claims



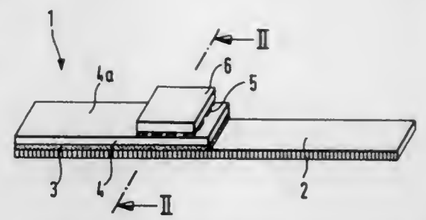
1. Apparatus for measuring slag layer depths and molten metal depths in a vessel containing molten metal covered by a layer of slag, comprising:
means for comparing an electrical potential of said molten metal and said molten slag to a reference potential;
a probe member including a protector tube formed from an electrically conductive ceramic material for housing a probe having a function unrelated to slag or metal depth measurement, said tube having a proximal end in electrical communication with said potential comparing means and a distal end movable across one of said depths, and
means for positioning said distal end of said protector tube within said vessel such that said distal end traverses at least one of said depths and for measuring a vertical position with respect to said vessel such that a depth of molten metal or slag is measured by comparing differences in electrical potential sensed by said potential comparing means during said traversal.

5,827,475
APPARATUS FOR REMOVING AN ACCRETION FROM AN UPTAKE AT THE EXIT OF METAL PRODUCING FURNACE
Akiyoshi Yamashiro, Tokyo, and Kiyoshi Fujiwara, Kagawaken, both of Japan, assignors to Mitsubishi Materials Corporation, Tokyo, Japan
Filed Jun. 23, 1997, Ser. No. 880,525
Int. Cl.[6] C21B *9/10*
U.S. Cl. 266—135 4 Claims



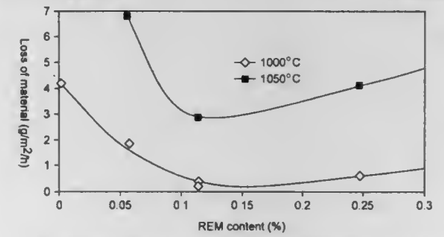
1. An apparatus for removing an accretion from a horizontally extending wall surface of an uptake at the exit of a metal producing furnace, said apparatus comprising:
a scraper disposed to be slidably movable on the wall surface to thereby scrape the accretion off the latter;

a first impact driver arranged to cause said scraper to slidably move on said wall surface; and
a second driver arranged to move said scraper and said first driver between a first position in which said scraper is intruded into the uptake from an opening defined on a side wall of the uptake and a second position in which said scraper is retracted to lie outwardly of the uptake.



from said surface of said first absorbent layer to said surface of said second absorbent layer.

5,827,476
AUSTENITIC STAINLESS STEEL WITH GOOD OXIDATION RESISTANCE
Johan Lindén, Gävle, and Jonas Rosén, Sandviken, both of Sweden, assignors to Sandvik AB, Sandviken, Sweden
Filed Feb. 24, 1997, Ser. No. 805,339
Claims priority, application Sweden, Feb. 26, 1996, 9600709
Int. Cl.[6] C22C *38/50;38/48*
U.S. Cl. 420—40 9 Claims

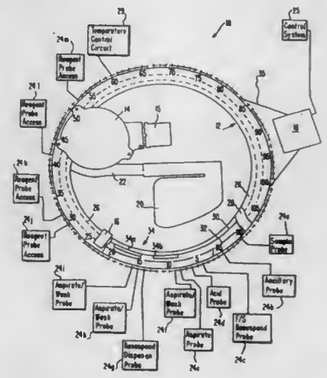


1. An austenitic stainless steel consisting essentially of, in % by weight:
C: <0.12,
Si: <1.0,
Cr: 16–22,
Mn: 1.3–1.7
Ni: 8–14,
Mo: <1.0,
either Ti: >4% by weight of C and <0.8 or Nb: 8% by weight of C and <1.0,
S: <0.03,
O: <0.03,
N: <0.05,
REM: ≦0.30 and >0.10, and the remainder Fe and normally occurring impurities, REM being one or more of the elements Ce, La, Pr and Nd.

5,827,477
PROCESS FOR THE PREPARATION OF A DIAGNOSTIC TEST CARRIER AND THE CARRIER THUS PRODUCED
Heinz Kurt Macho, Fürth/Fahrenbach, and Klaus Dieter Hungenberg, Birkenau-Hornbach, both of Germany, assignors to Boeringer Mannheim GmbH, Mannheim, Germany
Continuation-in-part of Ser. No. 205,319, Jun. 10, 1988, abandoned. This application Jan. 19, 1993, Ser. No. 6,194
Claims priority, application Germany, Jun. 27, 1987, 37 21 236.2
Int. Cl.[6] G01N *33/52*
U.S. Cl. 422—56 23 Claims

1. Test carrier for analysis of a liquid sample, said test carrier comprising
a first absorbent layer having a surface,
a second absorbent layer having a surface facing said surface of said absorbent layer, and
an array of dots of hot melt adhesive connecting said surfaces of said first and second layers, said array comprising at least 25 dots per cm^2, wherein said dots of hot melt adhesive have a dimension perpendicular to said surfaces which keeps said surface spaced apart by a gap of 0.05 to 0.2 mm, said dots and said gap being dimensioned such that a liquid sample can pass

5,827,478
INCUBATION CHAMBER
Glen A. Carey, Grafton, and Michael L. Malek, North Olmsted, both of Ohio, assignors to Chiron Diagnostics Corporation, East Walpole, Mass.
Continuation of Ser. No. 338,022, Nov. 10, 1994, Pat. No. 5,599,501. This application Oct. 31, 1996, Ser. No. 742,230
Int. Cl.[6] G01N *35/04*
U.S. Cl. 422—64 20 Claims



1. An incubation assembly for handling biological samples and test reagents in an automated biological testing system, said assembly comprising:
at least first and second ring segments selectively associated for both fixed and independent rotation in response to control signals, at least one of which ring segments is adapted for holding sample cuvettes in spaced cuvette receiving positions, and at least one other of said ring segments including a sample and reagent condition effector coupled thereto that is selectively applied to a biological sample and a test reagent present in one of said cuvettes by relative rotation of the first and second ring segments in response to said control signals, the sample and reagent condition effector including a magnet comprising at least two magnet segments separated by a split, the magnet operative to attract paramagnetic particles in the sample cuvettes when the second ring is so placed as to have the magnet adjacent selected cuvettes;
at least one sample dosing assembly responsive to said control signals and having a fluid transfer probe for applying a dose of the biological sample to be tested from a sample supply to said one of said cuvettes in one said ring segment at at least one first position to which cuvettes in that ring segment can be rotated;
at least one reagent dosing assembly responsive to said control signals and having a fluid transfer probe for applying a dose of a reagent to be used in testing from a reagent supply to said one of said cuvettes containing the biological sample in one

said ring segment at at least one second position to which cuvettes in that ring segment can be rotated;

a cuvette placement assembly having a supply of cuvettes and a cuvette delivery mechanism operative to deliver cuvettes to at least one third position to which a cuvette receiving position in said cuvette holding ring segment can be placed by rotation of said cuvette holding ring segment in response to said control signals;

a cuvette extraction assembly operative to extract sample and reagent containing cuvettes from at least one fourth position to which a cuvette in said at least one cuvette holding ring segment can be placed by rotation of said ring segment in response to said control signals;

at least one wash assembly having one or more probes for withdrawing and supplying fluid at cuvettes in said first ring segment when positioned adjacent one of said magnet segments in response to said control signals to effect removal of undesired artifacts in the cuvettes before extraction;

a resuspend and dispense assembly positioned adjacent the split between the two magnet segments to supply fluid at cuvettes in said first ring segment when positioned adjacent the split between the magnet segments to effect resuspension of particles in the cuvette; and

a scheduler of said control signals operative to provide coordinated rotation of said at least first and second ring segments, sample and reagent dosing assemblies and cuvette placement and extraction assemblies for incubation of a sample and reagent in each cuvette for selectable incubation times and activation of the cuvette sample and reagent effector in said at least one second ring segment prior to extraction by said cuvette extraction assembly, the scheduler including, scheduling to selectively locate the sample and reagent condition effector adjacent to a cuvette after a predetermined incubation time variable over a range of sample and test reagent combinations to place the magnet adjacent to a cuvette after a predetermined incubation time variable over a range of sample and reagent combinations, and to coordinate the wash assembly and relative rotation of the first and second rings to provide paramagnetic particle segregation on a cuvette said, removal of the remainder of residual cuvette fluid, injection of a neutral fluid medium, and resuspension of the paramagnetic particles.

5,827,479

APPARATUS FOR ANALYZING A PLURALITY OF ANALYSIS ITEMS

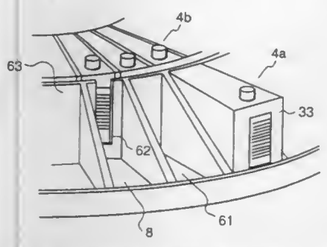
Hajime Yamazaki, Hitachinaka; Hiroshi Mitsumaki, Mito; Tadashi Ohishi, Ibaraki-machi; Tomonori Mimura, Tomobe-machi, and Taku Sakazume, Hitachinaka, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 13, 1997, Ser. No. 782,928

Claims priority, application Japan, Jan. 19, 1996, 8-007162

Int. Cl.[6] G01N *35/02*

U.S. Cl. 422—67 **5 Claims**



1. An analyzer comprising a means for pipetting samples from sample containers to reaction containers on a reaction line, a means for pipetting reagents from reagent bottles in a reagent containing device to said reaction containers, and a means for analyzing reaction solutions in said reaction containers, wherein said reagent containing device comprises an outer bottle holder and an inner bottle holder each of which has reagent bottle receiving positions arranged in a loop-shape, a first driving means for circularly driving said outer bottle holder, and a second driving means for circularly driving said inner bottle holder; and

said analyzer further comprises a control means for controlling said first and second driving means to position a first reagent bottle on the outer bottle holder and a second reagent bottle on the inner bottle holder for the same analysis item as an analysis item of said first reagent bottle at a predetermined bottle exchanging area by driving said outer and said inner bottle holders corresponding to requesting information on removing reagent bottles.

5,827,480

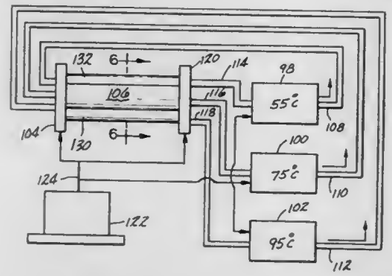
NUCLEIC ACID AMPLIFICATION REACTION APPARATUS

Lawrence A. Haff, Wilton; Enrico Picozza, Newton, both of Conn.; Will Bloch, San Mateo, Calif., and Timothy M. Woudenberg, Bethel, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 299,033, Aug. 31, 1994, Pat. No. 5,720,923, which is a continuation of Ser. No. 98,711, Jul. 28, 1993, abandoned. This application Mar. 25, 1997, Ser. No. 823,735

Int. Cl.[6] G01N *21/01;21/62;33/50;* **C12M** *1/02*

U.S. Cl. 422—68.1 **20 Claims**



1. An apparatus for performing a nucleic acid amplification reaction in a reaction mixture in a capillary tube, the nucleic acid amplification reaction including denaturation, annealing and extension processes, the apparatus comprising:

(a) a first heat exchanger including a thermoregulating system for stabilizing the temperature of the first heat exchanger at a temperature in a range of temperatures suitable to cause the denaturation process to occur in the reaction mixture;

(b) a second heat exchanger including a thermoregulating system for stabilizing the temperature of the second heat exchanger at a temperature in a range of temperatures suitable for causing the annealing and extension processes to occur in the reaction mixture;

(c) the capillary tube being routed so as to have a first portion in thermal contact with the first heat exchanger and a second portion in thermal contact with the second heat exchanger;

(d) a valve assembly having an input port coupled to the capillary tube for receiving said reaction mixture into the tube and an output port for delivering a finished reaction product from the tube, the valve assembly allowing injection of new reaction mixture in a first position, allowing the reaction mixture to circulate in the capillary tube between the first and second heat exchangers in a second position, and allowing ejection of finished reaction product in a third position; and

(e) a pumping device fixedly disposed in one of the heat exchangers coupled to the capillary tube so as to circulate the reaction mixture in the capillary tube such that the reaction mixture passes sequentially and cyclically through the first and second heat exchangers.

5,827,481

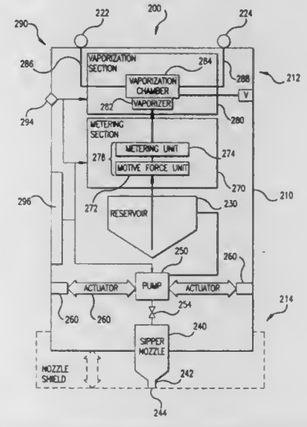
CARTRIDGE SYSTEM FOR EFFECTING SAMPLE ACQUISITION AND INTRODUCTION

H. Bryan Bente, Landenberg, and Michael David Glaser, West Grove, both of Pa., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 31, 1997, Ser. No. 903,014

Int. Cl.[6] G01N *35/10*

U.S. Cl. 422—81 **10 Claims**



1. A device for performing sample acquisition and introduction of a selectable quantity of an acquired sample to a carrier fluid stream in an analytical instrument, comprising:

a reservoir for reserving a quantity of the sample;

a sipper section having a nozzle for inserting an exposed orifice extending therefrom into the sample;

a pump for forcing the quantity of the sample through the nozzle and into the reservoir;

a metering section having a selectably operable motive force unit and a metering unit, for withdrawing a sample quantity to be analyzed from the reservoir and for causing the withdrawn sample quantity to be metered into at least one discrete sample quantity of selectable volume;

a vaporization section having a vaporizing chamber for receiving the discrete sample quantity; and

a pneumatic connector which is connected to the vaporization chamber and adapted for insertion into the carrier fluid stream of the instrument, whereby the vaporization chamber being pneumatically coupled on demand to the carrier fluid stream whereby the discrete sample components are introduced to the carrier fluid stream so as to effect a sample component/carrier fluid mixture.

5,827,482

TRANSISTOR-BASED APPARATUS AND METHOD FOR MOLECULAR DETECTION AND FIELD ENHANCEMENT

Chan-Long Shieh, Paradise Valley, Ariz., and Donald E. Ackley, Cardiff, Calif., assignors to Motornla Corporation, Schaumburg, Ill.

Filed Aug. 20, 1996, Ser. No. 699,757

Int. Cl.[6] G01N *27/02;27/26;33/53;* **C12Q** *1/68*

U.S. Cl. 422—82.02 **28 Claims**

1. A molecular detection apparatus comprising:

a first transistor having a first gate;

a first molecular receptor proximate to the first gate;

a second transistor having a second gate; and

a second molecular receptor proximate to the second gate;

wherein a differential voltage is applied between the first gate and the second gate to enhance a binding difference between the first molecular receptor and the second molecular receptor.

5,827,483

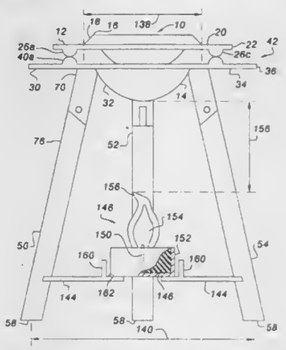
OIL DIFFUSER WITH DOUBLE BOWL AND FOLDING TRIPOD SUPPORT

Philip S. Fullam, Chimayo, N. Mex., assignor to New Venture Engineering, Inc., Sante Fe, N. Mex.

Filed May 30, 1997, Ser. No. 866,124

Int. Cl.[6] A62B *7/08*

U.S. Cl. 422—122 **20 Claims**



1. A fragrance dispensing device for receiving a fragrance material and supporting the fragrance material in proximity to a heat source, comprising:

a thermally conductive reservoir bowl, wherein the fragrance material is disposed within said reservoir bowl;

a support structure supporting said reservoir bowl and defining a heat source location beneath said reservoir bowl;

a thermally conductive heat diffuser disposed between said reservoir bowl and the heat source location, wherein heat from a heat source is transmitted through said heat diffuser and into said reservoir bowl.

5,827,484

PROCESS AND APPARATUS FOR SEPARATING POLYCYCLIC AND POLYHALOGENATED HYDROCARBONS FROM EXHAUST GAS OF A SINTERING PROCESS

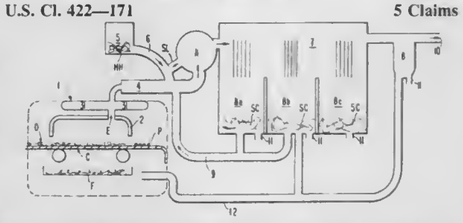
Hansjoerg Herden, Rodgau; Stefan Federhen, Frankfurt; Gernot Mayer-Schwinning, Bad Homburg, and Hubert Roth, Bad Vilbel, all of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Division of Ser. No. 513,527, Aug. 10, 1995, Pat. No. 5,620,673. This application Dec. 6, 1996, Ser. No. 761,654

Claims priority, application Germany, Aug. 16, 1994, 44 29 027.6

Int. Cl.[6] B01D *50/00*

U.S. Cl. 422—171 **5 Claims**



1. An apparatus for separating polycyclic and polyhalogenated hydrocarbons including polyhalogenated dibenzodioxins and dibenzofurans from an exhaust gas containing dust and said polycyclic and polyhalogenated hydrocarbons produced by a sintering plant, said apparatus comprising:

a solid adsorption agent consisting of at least one member selected from the group consisting of kaolinite, bentonite, illite, layer silicates and diatomaceous earth, said solid

adsorption agent having a median particle diameter, d_{50}, of from 5 to 100 micrometers;

means for bringing the entire exhaust gas from the sintering plant (1) into contact with said solid adsorption agent for a reaction time of from 0.5 to 10 seconds above a dew point of the exhaust gas at a temperature from 90° to 180° C. and at a velocity from 6 to 20 meters per second to form a gas-solids suspension having a mean suspension density of from 5 to 500 g solids per sm^3 of said exhaust gas, said means for bringing the entire exhaust gas from the sintering plant (1) into contact with said solid adsorption agent comprising a solids-entraining reactor (4) connected to said sintering plant (1) to receive said exhaust gas from said sintering plant (1) and means (5.6) for supplying said solid adsorption agent to said solids-entraining reactor (4);

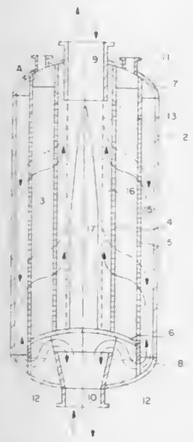
means for subsequently separating said solid adsorption agent and said dust jointly from the gas-solids suspension to form separated solids and a purified gas, said purified gas containing polyhalogenated dibenzodioxins and dibenzofurans in an amount less than 0.1 ng TE per sm^3 of said exhaust gas; and

means for contacting said exhaust gas from the sintering plant (1) with a part of the separated solids.

5,827,485
REACTOR

Klaus Libal; Walter Fiertbeck, and Ulrich Von Gemmingen, all of München, Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Germany

Filed Jun. 18, 1990, Ser. No. 539,831
Claims priority, application Germany, Jun. 16, 1989, 39 19 750.6
Int. Cl.[6] B01J *8/02*
U.S. Cl. 422—179 **27 Claims**



1. A reactor comprising:

a cylindrically shaped shell disposed symmetrically about an essentially vertical axis, said shell having a lower end and an upper end;

an annular bed of free-flowing material positioned within said shell, said bed having a lower end and an upper end;

said bed being bounded by a substantially cylindrical outer basket of a first diameter and a substantially cylindrical inner basket of a second diameter, wherein said first diameter is greater than said second diameter, and wherein each of said outer basket and inner basket have an upper end and a lower end;

each of said inner and outer baskets having a perforated region through which fluid can flow, said perforated region of said inner basket and said perforated region of said outer basket being in contact with said free-flowing material of said bed, and said perforated region of said inner basket and said perforated region of said outer basket each having an upper edge and a lower edge;

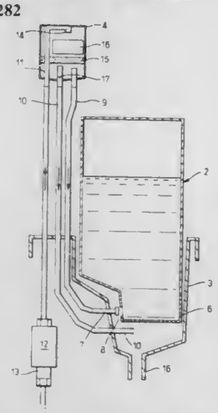
said bed being supported at its lower end by a bottom support member and each of said baskets being rigid in the radial direction and rigidly connected at their lower ends to said shell; and

wherein at least one of said inner basket and said outer basket is rigidly connected at its upper end to said shell, whereby the upper and lower ends thereof and the upper and lower edge of the respective perforated region thereof are fixed relative to said shell, and possesses expandability in the direction of said essentially vertical axis whereby thermal expansion thereof is absorbed.

5,827,486
DISPENSER

Garry W. Crossdale, Alfreton, Great Britain, assignor to Diversey Lever, Inc., Plymouth, Mich.

Filed Jun. 12, 1997, Ser. No. 874,119
Int. Cl.[6] B01D *11/02*
U.S. Cl. 422—282 **8 Claims**



1. A dispenser system, comprising a dispenser head (3), a feeding jet for water (7) at the dispenser head, and a reservoir immediately above the dispenser head for material to be dispensed, wherein an external supply of water is fed to a tank (4) arranged at a predetermined head above the dispenser head (3), wherein a feeding line (9) connects the tank (4) to the feeding jet (7), and wherein variations of flow to the tank (4) are accommodated by means of an overflow line (10) from the tank to a flushing jet (10) at the dispenser head, such that the water at the feeding jet (7) is always at a known pressure.

5,827,487
MEDICAL INSTRUMENT FIXATION METHOD AND MEANS

Russell P. Holmes, Boston, Mass., assignor to Riley Medical, Inc., Auburn, Me.

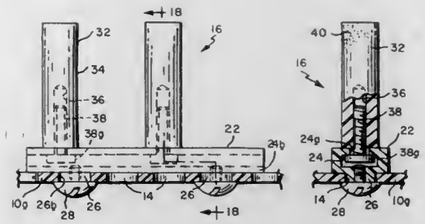
Filed Feb. 26, 1997, Ser. No. 807,812
Int. Cl.[6] A61L *2/00*
U.S. Cl. 422—297 **7 Claims**

1. A medical instrument fixation system comprising

a sterilization tray having a bottom wall;

an array of ventilation holes in the bottom wall said holes being arranged in columns and rows with a selected spacing between the columns and rows;

a plurality of elongated rails, each rail having a bottom surface and a top surface;



a plurality of projections extending from the bottom surface and spaced apart along each rail a distance equal to, or an integral multiple of, said selected spacing, the projections being sized to plug into said holes so that each rail extends along a column or row of holes in position for engaging and supporting one or more medical instruments;

a plurality of posts, each post having

opposite ends,

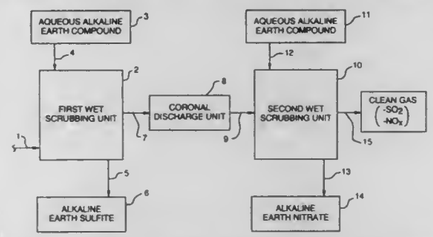
means for keying one end of each post to a different one of said rails so that each post can slide along the corresponding rail to a selected position thereon adjacent to an instrument engaged by the corresponding rail, and

fixing means for releasably fixing the position of each post on the corresponding rail, said fixing means including a threaded fastener threaded axially through said post, said fastener having an end portion engaging said rail so that when the post and fastener are rotated relatively in one direction, the post is clamped to the rail and when the post and fastener are rotated relatively in the opposite direction the post is unclamped from the rail.

5,827,488
PROCESS FOR REMOVING SO_2 AND NO_x FROM A GASEOUS STREAM

Manyam Babu, Upper St. Clair, and John W. College, Pittsburgh, both of Pa., assignors to Dravo Lime Company, Pittsburgh, Pa.

Filed Sep. 6, 1996, Ser. No. 706,657
Int. Cl.[6] B01J *19/08;* **B01D** *53/50;53/56*
U.S. Cl. 423—235 **8 Claims**



1. A process for removing sulfur dioxide and NO_x from a gaseous stream comprising:

contacting said gaseous stream in a first wet scrubbing unit with a first aqueous medium, containing an alkaline earth compound, which reacts with sulfur dioxide to form an alkaline earth sulfite and humidifies said gaseous stream to substantial saturation;

separating said humidified gaseous stream from said first wet scrubbing unit and removing a first aqueous effluent containing an alkaline earth sulfite from said first wet scrubbing unit;

exposing said separated humidified gaseous stream containing NO_x to a coronal discharge to form nitric acid in said humidified gaseous stream;

contacting said humidified gaseous stream containing nitric acid in a second wet scrubbing unit with a second aqueous medium containing an alkaline earth compound which reacts with nitric acid to form an alkaline earth nitrate;

separating said humidified gaseous stream from said second wet scrubbing unit and removing a second aqueous effluent containing an alkaline earth nitrate from said second wet scrubbing unit; and

maintaining the first aqueous effluent from said first wet scrubbing unit separate from the second aqueous effluent from said second wet scrubbing unit during said removing steps.

5,827,489
V/MO/W CATALYSTS FOR THE SELECTIVE REDUCTION OF NITROGEN OXIDES

Eric Garcin, Lyon; Francis Luck, Noisy/le/Grand, and Raymond Surantyn, St. Martin Du Tertre, all of France, assignors to Rhone-Poulenc Chimie, Courbevoie Cedex, France

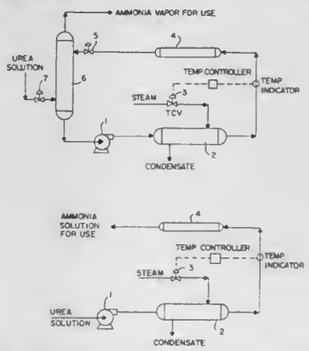
Division of Ser. No. 223,326, Apr. 5, 1994, abandoned, which is a continuation of Ser. No. 991,171, Dec. 16, 1992, abandoned. This application Jun. 5, 1995, Ser. No. 463,768
Claims priority, application France, Dec. 16, 1991, 91/15581
Int. Cl.[6] B01J *8/00;* **C01B** *21/00*
U.S. Cl. 423—239.1 **18 Claims**

1. A process for the purification of a gas stream containing contaminating amounts of nitrogen oxides NO_x, comprising contacting such gas stream, in the presence of ammonia, with a catalyst composition and thereby selectively reducing said NO_x values, wherein said catalyst composition comprises an inorganic oxide support substrate having a catalytically effective amount of a metal oxide active phase deposited thereon, said support substrate comprising at least one alumina, aluminate, titanium dioxide and/or zirconium dioxide and said catalytically active phase comprising at least one vanadium oxide and/or molybdenum oxide and/or tungsten oxide, the surface of said support substrate being chemically bonded to the metals V and/or Mo and/or W and said catalyst being devoid of V_2O_3 and/or MoO_3 and/or WO_3 crystalline phases.

5,827,490
METHOD FOR CONVERTING UREA TO AMMONIA

Dale Gordon Jones, Visalia, Calif., assignor to Noell, Inc., Herndon, Va.

Continuation of Ser. No. 517,455, Aug. 21, 1995, abandoned, and Ser. No. 139,192, Oct. 19, 1993, abandoned, which is a division of Ser. No. 766,853, Sep. 27, 1991, Pat. No. 5,281,403. This application Feb. 7, 1996, Ser. No. 598,092
Int. Cl.[6] C01B *21/00;* **C01C** *1/08*
U.S. Cl. 423—239.1 **18 Claims**



18. A process for converting an aqueous solution of urea to ammonia, the process comprising:

(a) heating an aqueous urea solution to a temperature of from 350° to 650° F. for producing urea reaction products;

(b) pressurizing the urea solution to a pressure of at least 300 psig, wherein said pressure is sufficient to maintain the reaction products in the liquid phase; and

(c) while maintaining the temperature defined in part (a) and the pressure defined in part (b), contacting the urea solution for less than 10 minutes with a conversion catalyst selected from the group consisting of aluminum, aluminum oxide, aluminum compounds, chromium, chromium oxide, chromium compounds, cobalt, cobalt oxide, cobalt compounds, molybdenum, molybdenum oxide, molybdenum compounds, niobium, niobium oxide, niobium compounds, titanium, titanium oxide, titanium compounds, tungsten, tungsten oxide, tungsten compounds, vanadium, vanadium oxide, and vanadium compounds.

5,827,491

PROCESS FOR PREPARING THE SYNTHETIC POROUS CRYSTALLINE MATERIAL MCM-56

Sean C. Emerson, Voorhees, N.J.; Shiu Lun Anthony Fung, Wilmington, Del.; Stephen Latham Lawton, Pitman, and Wieslaw Jerzy Roth, Sewell, both of N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 452,919, May 30, 1995, Pat. No. 5,557,024, which is a continuation of Ser. No. 249,609, May 26, 1994, Pat. No. 5,453,554, which is a continuation-in-part of Ser. No. 51,952, Apr. 26, 1993, Pat. No. 5,362,697. This application Jul. 22, 1996, Ser. No. 684,664

Int. Cl.[6] B01J *29/04*

U.S. Cl. 423—328.2 **12 Claims**

1. A process for the synthesis of a synthetic porous crystalline material, MCM-56, which has an x-ray diffraction pattern including the lines listed in Table I, the process comprising the steps of:

a) preparing a reaction mixture containing sources of alkali or alkaline earth metal (M) cation, an oxide of an trivalent element X, an oxide of a tetravalent element Y containing at least 30 wt. % of solid YO_2, a directing agent (R), and water, said reaction mixture having a composition, in terms of mole ratios of oxides, within the following ranges:

YO_2/X_2O_3 5 to 35
H_2O/YO_2 10 to 70
OH^-/YO_2 0.05 to 0.5
M/YO_2 0.05 to 3.0
R/YO_2 0.1 to 1.0

b) crystallizing said mixture at a temperature of about 80° C. to about 225° C. to form crystals of MCM-56,

c) terminating said crystallization prior to the formation of MCM-49, and

d) separating the MCM-56 crystals from the reaction mixture.

5,827,492

HYDROGEN CHLORIDE PURIFICATION PROCESS

David R. Corbin, West Chester, and Barry Asher Mahler, Glen Mills, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT Nn. PCT/US93/00455, § 371 Date Jul. 26, 1995, § 102(e) Date Jul. 26, 1995, PCT Pub. No. WO94/16988, PCT Pub. Date Aug. 4, 1994

PCT Filed Jan. 28, 1993, Ser. No. 481,516

Int. Cl.[6] C01B *7/07;* **B01D** *53/00*

U.S. Cl. 423—488 **19 Claims**

10. A process for purifying impure hydrogen chloride containing at least one saturated or olefinic impurity of the formula $C_aH_bCl_cF_d$, wherein a is an integer from 1 to 4, b is an integer from 0 to 9, c is an integer from 0 to 9, and d is an integer from 1 to 10, provided that b+c+d equals 2a+2 for acyclic compounds and equals 2a for cyclic compounds and for olefinic compounds, comprising the step of:

contacting the impure hydrogen chloride with a sorbent for said impurities selected from the group consisting of inorganic molecular sieves selected from silicas, metalloaluminates and aluminophosphates at a temperature within the range of −20° to 300° C. and a pressure within the range of 10 kPa to 3000 kPa and for a period of time sufficient to reduce the mole fraction of impurity at least about 50%.

5,827,493

PROCESS FOR PRODUCING HYDROGEN PEROXIDE

Henry Ledon, Versailles, France, assignor to Chemoxal S.A., Paris Cedex, France

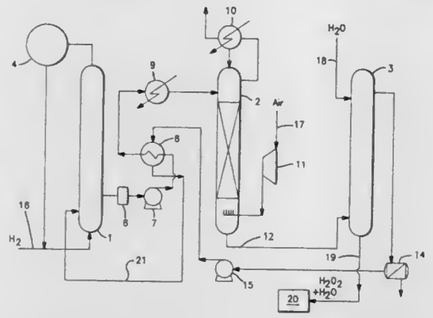
PCT No. PCT/FR96/00158, § 371 Date Oct. 15, 1996, § 102(e) Date Oct. 15, 1996, PCT Pub. No. WO96/26896, PCT Pub. Date Sep. 6, 1996

PCT Filed Jan. 30, 1996, Ser. No. 727,642

Claims priority, application France, Feb. 28, 1995, 95 2316

Int. Cl.[6] C01B *15/023*

U.S. Cl. 423—588 **8 Claims**



1. In a process for producing hydrogen peroxide by autoxidation of an anthraquinone derivative, which comprises:

providing a working solution containing at least one anthraquinone derivative in solution in at least one organic solvent;

subjecting the working solution to a catalytic hydrogenation stage in a hydrogenator to obtain a hydrogenated working solution;

filtering the hydrogenated working solution to obtain a filtered hydrogenated working solution;

subjecting the filtered hydrogenated working solution to an oxygenation stage in an oxidizer with an oxygen-containing fluid to obtain an oxidized working solution;

subjecting the oxidized working solution to a separation stage using water in an extractor to obtain a solution of hydrogen peroxide in water and a separated working solution; and

recycling the separated working solution to the hydrogenator; the improvement wherein

the hydrogenation stage is conducted so as to obtain at the entry of the oxidizer a hydrogen peroxide equivalent ranging between about 7 and about 9 g/l;

the oxidation stage is conducted at a temperature which, at the top of the oxidizer, is lower than approximately 50° C.;

the oxidizer includes a corrugated-crisscross packing;

the solution of hydrogen peroxide in water has a hydrogen peroxide concentration lower than 15% by weight; and

the filtered hydrogenated working solution and the oxygen-containing fluid are fed to the oxidizer counter-currently.

5,827,494

PROCESS FOR PRODUCING NON-SINTERED NICKEL ELECTRODE FOR ALKALINE BATTERY

Mutsumi Yano; Mitsuzo Nogami; Katsuhiko Shinyama; Yoshito Chikano; Koji Nishio, all of Osaka, and Toshihiko Saito, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Division of Ser. No. 511,434, Aug. 4, 1995, Pat. No. 5,660,952. This application May 12, 1997, Ser. No. 854,390

Claims priority, application Japan, Aug. 4, 1994, 6-183446

Int. Cl.[6] C01G *53/00;* **H01M** *4/26*

U.S. Cl. 423—594 **10 Claims**

1. A process for producing active material powders for non-sintered nickel electrodes of alkaline batteries, which comprises immersing nickel hydroxide particles or solid solution particles consisting essentially of nickel hydroxide in a solution of a cobalt salt and a salt of at least one metal (M) selected from the group consisting of aluminum, magnesium, indium and zinc, adding an alkali to the solution to co-precipitate cobalt hydroxide and a hydroxide of the metal (M), thereby covering the surface of the nickel hydroxide particles or solid solution particles consisting essentially of nickel hydroxide with the resulting mixed crystal of cobalt hydroxide and the hydroxide of the metal (M).

5,827,495

MOLTEN CARBONATE FUEL CELL AND METHOD OF MANUFACTURING RETAINING MATERIAL FOR ELECTROLYTE BODY OF MOLTEN CARBONATE FUEL CELL

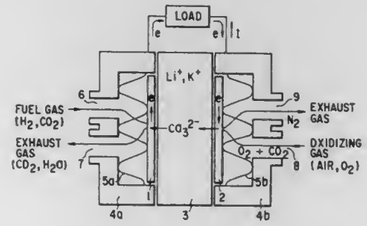
Norihiro Tomimatsu, Kawasaki; Hideyuki Ohzu, Yokohama; Yoshihiro Akasaka, Kawasaki, and Kazuaki Nakagawa, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 3, 1996, Ser. No. 725,170

Claims priority, application Japan, Oct. 3, 1995, 7-255909

Int. Cl.[6] C01F *7/04;* **H01M** *8/14*

U.S. Cl. 423—600 **13 Claims**



1. A method of manufacturing a retaining material for an electrolyte body included in a molten carbonate fuel cell, comprising:

performing particle growth of lithium aluminate powder containing as a main component α-lithium aluminate powder having a specific surface area of at least 20 m^2/g, by introducing said lithium aluminate powder into a molten carbonate heated to 700° to 800° C. under an atmosphere containing carbon dioxide gas; and

removing said carbonate.

5,827,496

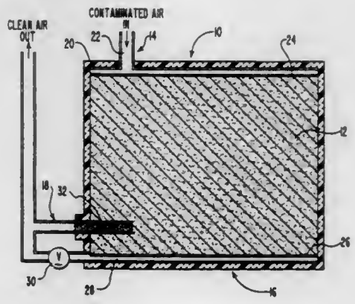
METHODS AND SYSTEMS FOR HEAT TRANSFER BY UNMIXED COMBUSTION

Richard K. Lyon, Pittstown, N.J., assignor to Energy and Environmental Research Corp., Irvine, Calif.

Continuation of Ser. No. 428,032, Apr. 25, 1995, abandoned, which is a continuation-in-part of Ser. No. 270,157, Jun. 30, 1994, Pat. No. 5,509,362, which is a continuation-in-part of Ser. No. 990,880, Dec. 11, 1992, Pat. No. 5,339,754. This application Apr. 16, 1997, Ser. No. 834,435

Int. Cl.[6] F23B *7/00*

U.S. Cl. 423—659 **32 Claims**



1. A method of generating heat within a packed bed in a reactor for carrying out an endothermic reaction in the packed bed, the method comprising the steps of:

(a) providing a packed bed in a reactor, the packed bed comprising a heat receiver and a catalyst for the unmixed combustion of fuel and air, the catalyst mixed and in intimate contact with the heat receiver, the catalyst being readily oxidized when in a reduced state and readily reduced when in an oxidized state, wherein the catalyst is selected from the group consisting of nickel/nickel oxide, silver/silver oxide, copper/copper oxide, cobalt/cobalt oxide, tungsten/tungsten oxide, manganese/manganese oxide, molybdenum/molybdenum oxide, strontium sulfide/strontium sulfate, barium sulfide/barium sulfate, and mixtures thereof;

(b) contacting the catalyst in the packed bed, to release heat which is consumed by an endothermic reaction in the packed bed, alternately with:

(i) a reducing gas to reduce the catalyst and thereby oxidize the reducing gas; and

(ii) an oxidizing gas containing molecular oxygen in a sufficient quantity to completely oxidize the catalyst and thereby remove the molecular oxygen from the oxidizing gas.

5,827,497

CHARCOAL-RADIONUCLIDE AGENTS FOR MEASUREMENT OF GASTROINTESTINAL TRANSIT

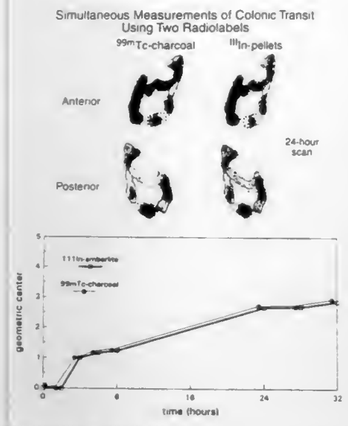
Michael Camilleri; Joseph C. Hung, and Brian P. Mullan, all of Rochester, Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.

Filed Aug. 14, 1996, Ser. No. 698,209

Int. Cl.[6] A61K *51/04*

U.S. Cl. 424—1.37 **9 Claims**

1. A solid unit dosage form effective to measure colonic transit by scintiography in a mammal following ingestion, which dosage



form comprises an effective amount of a radioisotope adsorbed on activated charcoal.

5,827,498

TUMOR AFFINITY PEPTIDE, AND RADIOACTIVE DIAGNOSTIC AGENT AND RADIOACTIVE THERAPEUTIC AGENT CONTAINING THE PEPTIDE

Ikuya Seki, Chiba; Yoshitoshi Itaya, Sodegaura; Yoshifumi Shirakami, and Komei Washino, both of Ichihara, all of Japan, assignors to Nihon Medi-Physics Co., Ltd., Nishinomiya, Japan

Filed Jun. 5, 1995, Ser. No. 463,230

Claims priority, application Japan, Jun. 7, 1994, 6-148655

Int. Cl.[6] A61K *51/00;* **A61M** *36/14*

U.S. Cl. 424—1.69 **18 Claims**

1. A peptide having affinity with tumor or a salt thereof, which comprises an amino acid sequence containing 20 or less amino acid residues, said amino acid sequence being described as X_1-YCAREPPT-X_2 wherein A, C, E, P, R, T, and Y represent amino acid residues expressed by standard one-letter symbols, wherein each of amino acid residues A, C, R, and Y in the amino acid sequence YCAR may be independently in either L-form or D-form, wherein X_2 represents any amino acid sequence and wherein X_1 is a saturated or unsaturated C_1–C_7 alkyl chain substituted with 1–3 amino groups, or X_1 is a saturated C_1—C_7 alkyl chain which is substituted with an —OH group, a —COOH group, or a NH—C(NH)NH_2 group, or both an —OH and a —COOH group, and which is substituted with 1–3 amino groups.

5,827,499

DETERMINING EFFECTS OF PSYCHOACTIVE COMPOUNDS ON THE BRAIN USING POSITRON EMISSION TOMOGRAPHY

John T. Metz, 2843 W. Rascher, Chicago, Ill. 60625, and Malcolm D. Cooper, 612 C S. Laflin St., Chicago, Ill. 60607

Filed Sep. 1, 1995, Ser. No. 522,685

Int. Cl.[6] A61K *51/04;31/445;31/44;31/135;31/045*

U.S. Cl. 424—1.73 **12 Claims**

1. A method of evaluating the effects of administering a psychoactive compound to a patient on the patient's brain, comprising the steps of:

measuring cerebral metabolism of a patient's brain prior to any treatment with a psychoactive compound;

administering a psychoactive compound to the patient;

controlling behavioral influences on the patient's brain by subjecting the patient to a behavioral clamp, said behavior clamp comprising a procedure that

(a) maintains the patient in a standard and stable condition throughout a period of cerebral metabolism of said psychoactive compound;

(b) is capable of being performed by the patient at comparable levels prior to as well as subsequent to administration of said psychoactive compound;

(c) requires a non-stressful level of attention with no opportunity for the patient to develop a productive strategy;

(d) includes measurable variables capable of defining desired criteria: and

(e) minimizes subjective variables including extraneous ideation, motivation and anxiety;

measuring cerebral metabolism of the patient's brain after administering the psychoactive compound and during the behavioral clamp; and

determining any differences between cerebral metabolism prior to administering the psychoactive compound and cerebral metabolism after administering the psychoactive compound.

5,827,500

PROCESS FOR IDENTIFYING RAR-RECEPTOR-ANTAGONIST COMPOUNDS

Michel Demarchez, Le Bar sur Loup, and André Jomard, Saint Vallier de Thiey, both of France, assignors to Centre International de Recherches Dermatologiques Galderma, Valbonne, France

Filed Jun. 19, 1996, Ser. No. 665,814

Claims priority, application France, Jun. 19, 1995, 95 07302

Int. Cl.[6] G01N *31/00;* **A61K** *31/59;31/19*

U.S. Cl. 424—9.1 **8 Claims**

1. Process for identifying RAR-antagonist molecules, which comprises the following steps:

(i) topically applying an RAR-agonist molecule to a portion of the skin of a mammal in an amount sufficient to elicit an RAR agonist response;

(ii) systemically or topically administering a molecule putatively possessing RAR-antagonist activity to the same mammal, or to this same portion of the skin of the mammal, before, during or after step (i); and

(iii) evaluating the skin response at said portion of the skin of the mammal after steps (i) and (ii) and comparing said response to the response obtained at the skin portion when such skin portion is not administered with said putative RAR-antagonist molecule.

5,827,501

USE OF FREE RADICALS IN ESR AND ESREMR IMAGING

Mikkel Jørgensen, Glostrup, Denmark; Frode Rise, Oslo, Norway; Sven Andersson, Lomma; Torsten Almen, Malmö, both of Sweden; Arne Aabye, Oslo, Norway; Lars-Göran Wistrand, Lund; Håkan Wikstrom, Höllviken, both of Sweden; Klaes Golman, Rungsted, Denmark; Rolf Servin, Malmö, and Peter Michelsen, Arlöv, both of Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

Division of Ser. No. 916,974, Sep. 2, 1992. This application Jun. 7, 1995, Ser. No. 477,568

Claims priority, application United Kingdom, Feb. 12, 1990, 9003105; Jun. 1, 1990, 9012300

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.33 **5 Claims**

1. In a method of generating an electron spin resonance enhanced magnetic resonance image of a sample which comprises introducing into said sample a magnetic resonance signal enhancing amount of a free radical and generating an enhanced electron spin resonance image of said sample, wherein the improvement comprises using as said free radical an inert triarylmethyl free radical, wherein each aryl moiety of said triarylmethyl radical, which may be identical or different, comprises an optionally substituted 6-membered carbocyclic or thienyl ring.

5,827,502

MICROPARTICULATE MICROBUBBLE-GENERATING CONTRAST AGENTS

Jo Klaveness, Oslo; Pal Rongved, Hellvik, both of Norway, and Lars Stubberud, Sodertalje, Sweden, assignors to Nycomed Imaging AS, Oslo, Norway

Division of Ser. No. 256,149, Dec. 9, 1994, Pat. No. 5,558,856. This application Jun. 7, 1995, Ser. No. 478,037

Claims priority, application United Kingdom, Jan. 9, 1992, 9200388

Int. Cl.[6] A61K *49/04;* **A61B** *5/055*

U.S. Cl. 424—9.52 **38 Claims**

1. A contrast agent comprising gas microbubble-generating microparticles comprising a carbohydrate and admixed within the microparticulate structure a surfactant, the microbubbles generated by said microparticles comprising a biocompatible low molecular weight fluorinated hydrocarbon.

5,827,503

METHOD AND COMPOSITION FOR TREATING PERIODONTITIS

Christian Schwabe, Charleston, S.C., assignor to Collagenex Pharmaceuticals, Inc., Newton, Pa.

Filed Aug. 8, 1996, Ser. No. 689,403

Int. Cl.[6] A61K *7/16;7/22*

U.S. Cl. 424—54 **20 Claims**

1. A method for improving oral hygiene comprises oral application of a composition consisting essentially of alkyldimethylbenzylammonium chloride, sodium chloride and water, said composition applied in an amount to improve oral hygiene.

5,827,504

METHOD OF ECHOGRAPHIC IMAGING USING FROZEN GASBUBBLE SUSPENSIONS

Feng Yan, Geneva; Michel Schneider, Troinex, and Jean Brochot, Feigeres, all of Switzerland, assignors to Bracco Research S.A., Switzerland

Division of Ser. No. 573,540, Dec. 15, 1995, abandoned. This application Aug. 12, 1997, Ser. No. 909,099

Claims priority, application European Pat. Off., Dec. 16, 1994, 94810731.3

Int. Cl.[6] A61K *49/04*

U.S. Cl. 424—9.52 **23 Claims**

1. A method of echographic imaging of organs or blood pool or tissue of a patient comprising:

(a) defrosting and maintaining at room temperature a frozen suspension of gas bubbles immobilized within a frozen aqueous carrier medium at a temperature between −1° C. and −196° C., wherein the carrier medium comprising the gas bubbles is a physiologically acceptable carrier, the immobilized gas bubbles are microbubbles bounded by an evanescent envelope or a tangible membrane to provide a contrast agent for ultrasonic imaging of blood pool and tissue of living beings;

(b) administering to human or animal patient the ultrasonic contrast agent of step (a); and

(c) echographically imaging the organs, blood pool or tissue of said patient.

5,827,505

ORAL COMPOSITIONS

Iain Allan Hughes, Surrey; Elizabeth Mary Ryan, Middlesex, and Christopher David White, Surrey, all of Great Britain, assignors to The Procter & Gamble Company, Cincinnati, Ohio

PCT No. PCT/US95/16051, § 371 Date Sep. 30, 1997, § 102(e) Date Sep. 30, 1997, PCT Pub. No. WO96/19191, PCT Pub. Date Jun. 27, 1996

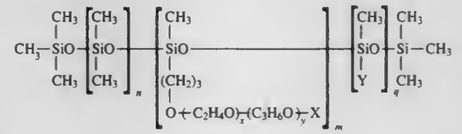
PCT Filed Dec. 12, 1995, Ser. No. 860,060

Claims priority, application United Kingdom, Dec. 22, 1994, 9425941

Int. Cl.[6] A61K *7/16;7/30;9/46;31/74*

U.S. Cl. 424—49 **8 Claims**

1. An oral composition in the form of a toothpaste, powder, liquid dentifrice, mouthwash, denture cleanser, chewing gum or candy comprising one or more oral composition components selected from abrasives, binders, humectants, surfactants, fluoride ion sources, anti-calculus agents and sweeteners and additionally comprising a dimethicone copolyol selected from alkyl- and alkoxy-dimethicone copolyols having the formula (I):



wherein X is selected from hydrogen, alkyl, alkoxy and acyl groups having from about 1 to about 16 carbon atoms, Y is selected from alkyl and alkoxy groups having from about 8 to about 22 carbon atoms, n is from about 0 to about 200, m is from about 1 to about 40, q is from about 1 to about 100, the molecular weight of the residue $(C_2H_4O—)_x(C_3H_6O—)_yX$ is from about 50 to about 2000, and x and y are such that the weight ratio of oxyethylene:oxypropylene is from about 100:0 to about 0:100.

5,827,506

SUNLESS TANNING METHOD AND APPARATUS

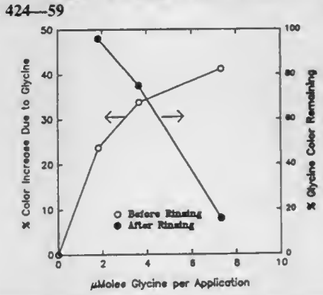
James E. McShane; Carl Kaplan, both of Memphis, and Thomas A. Meyer, Germantown, all of Tenn., assignors to Schering-Plough HealthCare Products, Inc., Memphis, Tenn.

PCT No. PCT/US94/03258, § 371 Date Nov. 13, 1995, § 102(e) Date Nov. 13, 1995, PCT Pub. No. WO94/22419, PCT Pub. Date Oct. 13, 1994

Continuation of Ser. No. 40,804, Mar. 31, 1993, abandoned. This PCT application Mar. 30, 1994, Ser. No. 513,927

Int. Cl.[6] A61K *7/42;7/44;7/00*

U.S. Cl. 424—59 **35 Claims**



1. Apparatus for imparting artificial tan to skin, comprising:

(a) a receptacle containing a fluid formulation comprising dihydroxyacetone;

(b) a receptacle containing a fluid formulation comprising an amino acid; and

(c) dispensing means for simultaneously or sequentially providing amounts of dihydroxyacetone and amino acid which will

establish a primary amino group concentration about 0.04 to 0.12 molar in a mixture of the formulations.

5,827,507

ULTRAVIOLET SHIELDING COMPOSITE FINE PARTICLES, METHOD FOR PRODUCING THE SAME, AND COSMETICS

Kentaro Oshima; Toru Nishimura; Yoshinobu Imaizumi; Shunji Kozaki; Keiichi Tsuto, all of Wakayama; Satoshi Sugawara; Kazuhiro Yamaki, both of Chiba, and Makoto Torizuka, Kanagawa, all of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP94/01609, § 371 Date Apr. 1, 1996, § 102(e) Date Apr. 1, 1996, PCT Pub. No. WO95/09895, PCT Pub. Date Apr. 13, 1995

PCT Filed Sep. 28, 1994, Ser. No. 619,607

Claims priority, application Japan, Oct. 1, 1993, 5-297200; Apr. 28, 1994, 6-114239

Int. Cl.[6] **A61K** *7/42;7/00;* **C01B** *7/19;13/14*

U.S. Cl. 424—59 **22 Claims**

1. Ultraviolet shielding composite fine particles having transparency in a visible light region, comprising:

(a) matrix particles comprising an aggregate of primary particles having an average particle diameter of from 0.001 to 0.3 μm, said aggregate being formed while retaining the shapes of the primary particles; and

(b) daughter particles having an average particle diameter of from 0.001 to 0.1 μm, said daughter particles being dispersed in and supported by said matrix particles, wherein said daughter particles have a smaller band gap energy than that of particles constituting said matrix particles, and possess capability of absorbing ultraviolet light.

5,827,508

STABLE PHOTOPROTECTIVE COMPOSITIONS

Paul Robert Tanner, Maineville; Patricia Ritenour Hertz, Hamilton; Margaret Ann O'Donoghue, Monroe, and Christopher Irwin, Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Sep. 27, 1996, Ser. No. 714,483

Int. Cl.[6] **A61K** *7/42;7/00;* **C01G** *9/00;* **C09C** *1/04*

U.S. Cl. 424—59 **9 Claims**

1. A photoprotective composition useful for providing protection to human skin from the harmful effects of ultraviolet radiation, comprising:

(a) from about 0.1% to about 10% of a dibenzoylmethane sunscreen compound,

(b) from about 0.1% to about 20% of a surface-treated zinc oxide having a mean particle size diameter from about 0.01 microns to about 100 microns, and

(c) a carrier suitable for application to human skin.

5,827,509

PHOTOPROTECTIVE/COSMETIC COMPOSITIONS COMPRISING CINNAMONITRILE-SUBSTITUTED POLYORGANOSILOXANES/POLYORGANOSILANES

Hervé Richard, Villepinte; Madeleine Leduc, Paris, and Alain Lagrange, Couvray, all of France, assignors to Sociètè L'Orèal S.A., Paris, France

Filed Nov. 17, 1995, Ser. No. 559,940

Claims priority, application Japan, Nov. 17, 1994, 6-013769

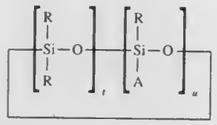
Int. Cl.[6] **C07F** *7/08*

U.S. Cl. 424—60 **23 Claims**

1. A cinnamonitrile-substitute polyorganosiloxane compound having one of the formulae (1) or (2):



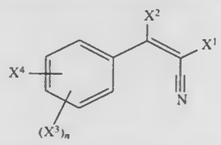
(1)



(2)

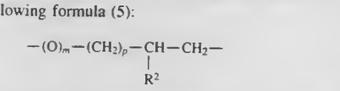
in which the radicals R, which are identical or different, are each a C_1–C_{10} alkyl, phenyl or 3,3,3-trifluoropropyl radical, at least 80% by number of the radicals R being methyl radicals; the radicals B, which are identical or different, are each a radical R or a radical A as defined below; r is an integer ranging from 0 to 50, inclusive, and s is an integer from 0 to 6 inclusive with the proviso that, if s is zero, then at least one of the two radicals B is a radical A; t is an integer ranging from 2 to 10, inclusive; u is an integer ranging from 1 to 3 inclusive

and the radical A is a monovalent radical bonded directly to a silicon atom and which has the following formula (4):



(4)

wherein X^1 is a cyano radical or an alkoxycarbonyl radical COOR' in which the radical R^1 is (i) a C_1–C_{20} alkyl radical, (ii) a C_2–C_{20} hydroxyalkyl radical, or (iii) a divalent radical —Y— having the following formula (5):



(5)

in which R^2 is a hydrogen atom or a C_1–C_4 alkyl radical, p is an integer ranging from 0 to 10, inclusive; m is 0 or 1; the —CH_2— endgroup is directly bonded to a silicon atom; X^2 is a hydrogen atom or an optionally substituted phenyl or C_6–C_{10} aryl radical; n is an integer ranging from 0 to 2, inclusive; the radicals X^3, which are identical or different, are each a C_1–C_8 alkyl radical or a C_1–C_4 alkoxy radical, with the proviso that, when the radicals X^3 are alkoxy radicals, and n is equal to 2, two adjacent radicals X^3 may together form an alkylidenedioxy group in which the alkylidene moiety contains 1 or 2 carbon atoms; and X^4 is a hydrogen atom or a divalent radical —Y—, with the proviso that, if X^4 is a hydrogen atom, then X^1 is necessarily a radical COOY in which m is zero.

5,827,510

HAIR GROWTH PREPARATION

Trevor E. Mesquitta, 69 N. Beacon St., Hartford, Conn. 06105

Filed Sep. 29, 1997, Ser. No. 939,672

Int. Cl.[6] **A61K** *7/07;7/00*

U.S. Cl. 424—74 **4 Claims**

1. Preparation for treating hair consisting of:

18% by weight of water;

5% by weight of castor oil; and

77% by weight of glycerin.

5,827,511

PRESERVATIVE AND EMBALMING FLUID

James W. Campbell, and John L. Margrave, both of Houston, Tex., assignors to EFH, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 306,645, Sep. 15, 1994, Pat. No. 5,607,668, and a continuation-in-part of Ser. No. 306,696, Sep. 15, 1994, Pat. No. 5,622,695, said Ser. No. 306,645 , said Ser. No. 306,696 is a continuation-in-part of Ser. No. 161,893, Dec. 3, 1993, Pat. No. 5,405,606. This application Feb. 27, 1997, Ser. No. 805,207

Int. Cl.[6] **A01N** *1/00*

U.S. Cl. 424—75 **18 Claims**

1. A preservative and embalming fluid concentrate comprising

glutaraldehyde in the range of about 1.0% to about 8.0% by volume of the concentrate;

an alcohol in the range of about 50% to about 74% of the concentrate;

phenoxyethanol in the range of about 1.4% to about 6.0% of the concentrate; and

at least one polyhydric alcohol in the range of about 1.4 to about 9% of the concentrate.

5,827,512

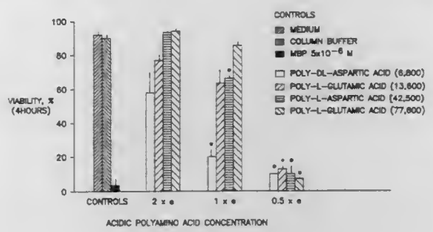
METHOD FOR THE TREATMENT OF BRONCHIAL ASTHMA AND LIKE HYPERSENSITIVITY DISEASES BY ADMINISTRATION OF ANIONIC POLYMERS

Gerald J. Gleich, Rochester, Minn., assignor to Donlar Corporation, Bedford Park, Ill.

Division of Ser. No. 120,125, Sep. 10, 1993, Pat. No. 5,681,555, which is a continuation-in-part of Ser. No. 689,154, Apr. 22, 1991, Pat. No. 5,250,293. This application Jan. 28, 1997, Ser. No. 790,285

Int. Cl.[6] **A61K** *31/765;38/00*

U.S. Cl. 424—78.05 **19 Claims**



1. A method for treating an eosinophil-associated hypersensitivity disease selected from the group consisting of bronchial asthma, eosinophil-associated intranasal inflammation, and eosinophil-associated inflammation of the eye comprising administering to a human in need of such treatment an amount of a polymeric polycarboxylic acid or a pharmaceutically acceptable salt thereof having a net negative charge and having a plurality of repeating units of which at least 80 percent of said repeating units contain at least one carboxyl functionality in combination with a pharmaceutically acceptable carrier effective to inhibit or reduce the pathological effects induced by the release of cationic proteins from eosinophils.

5,827,513

METHODS OF TREATING INSULIN-DEPENDENT DIABETES MELLITUS BY ADMINISTRATION OF IL-10

Martha W. Bond; Kevin W. Moore, both of Palo Alto, Calif.; Kenneth Pennline, Landing, N.J., and Paulo J. M. Vieira, Palo Alto, Calif., assignors to Schering Corporation, Kenilworth, N.J.

PCT No. PCT/US93/09030, § 371 Date Mar. 30, 1995, § 102(e) Date Mar. 30, 1995, PCT Pub. No. WO94/08606, PCT Pub. Date Apr. 28, 1994

Continuation of Ser. No. 955,523, Oct. 1, 1992, abandoned, which is a continuation-in-part of Ser. No. 904,124, Jun. 25, 1992, abandoned, which is a division of Ser. No. 546,235, Aug. 6, 1990, abandoned. This PCT application Sep. 28, 1993, Ser. No. 406,929

Int. Cl.[6] **A61K** *38/20;* **C07K** *14/54*

U.S. Cl. 424—85.2 **5 Claims**

1. A method of treating an individual who is predisposed to develop insulin-dependent diabetes mellitus comprising administering IL-10 protein in an amount effective to maintain blood glucose levels at a non-diabetic level.

5,827,514

PESTICIDAL COMPOSITIONS

Gregory A. Bradfisch; Mark Thompson, both of San Diego, and George E. Schwab, La Jolla, all of Calif., assignors to Mycogen Corporation, San Diego, Calif.

Continuation of Ser. No. 349,867, Dec. 6, 1994, Pat. No. 5,508,264. This application Feb. 8, 1996, Ser. No. 598,305

Int. Cl.[6] **A01N** *63/00;* **C12N** *1/21;5/14;* **C12P** *21/02*

U.S. Cl. 424—93.2 **35 Claims**

1. A composition for controlling lepidopteran pests, wherein said composition comprises cells which express a CryIF chimeric core toxin-containing protein and a CryIA(c) chimeric core toxin-containing protein.

5,827,515

BACILLUS THURINGIENSIS SPORULATION GENE

Mitra Shahabi Reynoso, San Jose; Sue S. Kalman, Saratoga; Nicole H. Cooper, San Jose, and Takashi Yamamoto, Fremont, all of Calif., assignors to Sandoz Ltd., Basle, Switzerland

Filed Jul. 15, 1996, Ser. No. 671,947

Int. Cl.[6] **A01N** *63/00;* **C12N** *15/00;1/20;* **C07H** *21/04*

U.S. Cl. 424—93.2 **38 Claims**

1. An isolated spoV DNA sequence selected from the group consisting of

i) a spoVbt1 gene having the nucleotide sequence depicted in SEQ ID NO.1;

ii) a nucleotide sequence encoding a *Bacillus thuringiensis* sporulation protein as depicted in SEQ ID NO.2;

iii) a nucleotide sequence which hybridizes to a complementary strand of a sequence of i) or ii) under stringent hybridization conditions and

iv) a truncated nucleotide sequence of i), ii) or iii) above wherein said truncated sequence includes at least 500 nucleotides.

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5,827,516
IMMUNOMODULATORY PEPTIDES
Robert Glen Urban, Cambridge; Roman M. Chicz, Jamaica Plain, both of Mass.; Dario A. A. Vignali, Rainham, United Kingdom; Mary Lynne Hedley, Somerville, Mass.; Lawrence J. Stern, Arlington, Mass., and Jack L. Strominger, Lexington, Mass., assignors to President and Fellows of Harvard College, Cambridge, Mass.
Division of Ser. No. 77,255, Jun. 15, 1993, which is a continuation-in-part of Ser. No. 925,460, Aug. 11, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 480,190
Int. Cl.[6] A01N *63/00;* A61K *48/00*
U.S. Cl. 424—93.21 39 Claims

1. A method of decreasing major histocompatibility complex (MHC) class II antigen presentation in a mammal, which method comprises introducing into an antigen presenting cell (APC) of said mammal an expression vector comprising a nucleic acid molecule coding for the expression of a self peptide having the amino acid sequence of a naturally processed segment of a protein of said mammal, said segment being of 10 to 30 residues in length, wherein said self peptide is non-immunogenic in said mammal and binds to an MHC class II molecule of said mammal, thereby decreasing MHC clasp II antigen presentation in said mammal.

5,827,517
CCK ANTIBODIES USED TO IMPROVE FEED EFFICIENCY
Mark E. Cook; Cheryl C. Miller, both of Madison, Wis., and Julio L. Pimentel, Buford, Ga., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.
Continuation-in-part of Ser. No. 286,376, Aug. 5, 1994, abandoned. This application Feb. 28, 1997, Ser. No. 807,435
Int. Cl.[6] A61K *39/395*
U.S. Cl. 424—139.1 27 Claims

1. A method of modulating feeding behavior in animals, comprising the step of feeding an antibody to a gut peptide to an animal by oral administration in order to alter a physiological effect of said peptide relating to feeding or growth behavior.

5,827,518
VIRAL AND INSECT GENES THAT INHIBIT THE IMMUNE SYSTEM AND METHODS OF USE THEREOF
Bruce Allen Webb, and Liwang Cui, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.
Filed Mar. 27, 1996, Ser. No. 622,354
Int. Cl.[6] A61K *39/12;* C12N *15/86*
U.S. Cl. 424—186.1 14 Claims

1. A recombinant DNA comprising SEQ ID NO: 1 or a biologically active fragment or homolog thereof, wherein the encoded product suppresses the immune system of one or more insect species.

5,827,519
HUMAN HERPESVIRUS TYPE 6 PROTEIN P100, THE CORRESPONDING DNA SEQUENCES, THEIR PREPARATION AND USE
Frank Neipel, Erlangen, and Bernhard Fleckenstein, Wiesenthau, both of Germany, assignors to Behring Diagnostics GmbH, Marburg, Germany
Division of Ser. No. 266,311, Jun. 27, 1994, which is a continuation of Ser. No. 126,435, Sep. 24, 1993, abandoned, which is a continuation of Ser. No. 908,041, Jul. 6, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 467,527
Claims priority, application European Pat. Off., Jul. 8, 1991, 91111338
Int. Cl.[6] A61K *39/245;* C12Q *1/70;* G01N *33/569;* C07K *16/08*
U.S. Cl. 424—231.1 8 Claims

1. An antibody specifically reacting with a HHV-6 (human herpesvirus type 6) protein p100 or a part of a HHV-6 protein p100 having its specific immunological properties, wherein said HHV-6 protein in p100 has the amino acid sequence given in FIG. 3, but not with the components of human cytomegalovirus and other herpesviruses.

5,827,520
VEHICLE AND COMPOSITION CONTAINING THIS VEHICLE AND A STABILIZED COSMETIC OR DERMATOLOGICAL ACTIVE SUBSTANCE
Armelle de Salvert, Paris, France, assignor to L'Oreal, Paris, France
Filed Oct. 22, 1996, Ser. No. 734,779
Claims priority, application France, Oct. 23, 1995, 95 12446
Int. Cl.[6] A61K *7/43*
U.S. Cl. 424—401 26 Claims

1. A vehicle which comprises:
not more than 10% by weight of water, based on the total weight of the vehicle,
at least one amphiphilic oil,
at least one polyol or polyol derivative selected from the group consisting of C_2–C_4 glycols, ether derivatives of a C_2–C_4 glycol and mixtures thereof, and
at least one solvent for oil and water, containing an alcohol functional group;
wherein said vehicle is surfactant free.

5,827,521
SHELF STABLE INSECT REPELLENT, INSECT GROWTH REGULATOR AND INSECTICIDAL FORMULATIONS PREPARED FROM TECHNICAL AZADIRACHTIN ISOLATED FROM THE KERNEL EXTRACT OF *AZADIRACHTA INDICA*
Sistla Ramchandra Moorty, Hyderabad, and Annam Dilip Kumar, Secunderabad, both of India, assignors to Fortune Biotech Limited, Secunderabad, India
Filed Mar. 9, 1995, Ser. No. 401,242
Int. Cl.[6] A01N *25/00*
U.S. Cl. 424—405 50 Claims

1. A solid gum-free azadirachtin-containing composition in kilogram amounts comprising about 10% to about 25% by weight of azadirachtin.

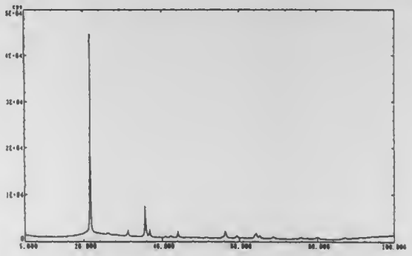
5,827,522
MICROEMULSION AND METHOD
Milton Nowak, South Orange, N.J., assignor to Troy Corporation, Florham Park, N.J.
Filed Oct. 30, 1996, Ser. No. 741,038
Int. Cl.[6] A01N *25/00;* A61K *9/107*
U.S. Cl. 424—405 16 Claims

1. A water miscible biocidal composition suitable for forming a microemulsion, a micellar solution or a molecular solution consisting of a solvating surfactant selected from the group consisting of an alkoxylated castor oil, an alkoxylated hydrogenated castor oil and an alkoxylated rosin, and a biocidal biologically active material dissolved in said solvating surfactant.

5,827,523
UNIVERSAL TOPICAL ANTISEPTIC FIRST AID SPRAY
Dennis A. Holland, 16461 Big Oak Bay Rd., Tyler, Tex. 75707
Filed Apr. 29, 1997, Ser. No. 848,666
Int. Cl.[5] A01N *25/00;* A61K *7/40*
U.S. Cl. 424—405 2 Claims

1. A topical composition, which when applied to the skin, provides an instant cooling effect in the skin, consisting of: Deionized Water, Polyalkylene Glycol, Ethyl Alcohol, Cresylic Acid, Hydrochloric Acid, Allantoin, DL Panthenol, Phenoxy Isopropanol and Chloroxylenol, with a pH of about 1.

5,827,524
ANTIMICROBIAL POLYMER COMPOSITION
Zenji Hagiwara, Kusatsu; Kazuo Kishimoto, and Hiroshi Yamazaki, both of Tokyo, all of Japan, assignors to Hagiwara Research Corporation, Osaka, and Japan Electronic Materials Corporation, Hyogo-Ken, both of Japan
Filed Jan. 11, 1996, Ser. No. 584,001
Claims priority, application Japan, Jan. 12, 1995, 7-018794
Int. Cl.[6] A61K *9/10*
U.S. Cl. 424—409 7 Claims



1. An antimicrobial polymer composition comprising a crystalline antimicrobial composition and a polymer, wherein said crystalline antimicrobial composition comprises a crystalline silicon dioxide containing silver ions and optionally one or two metal ions selected from the group consisting of zinc and copper.

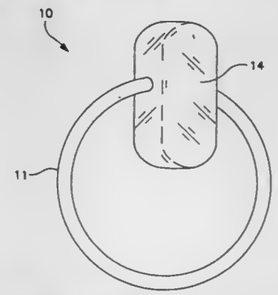
5,827,525
BUCCAL DELIVERY SYSTEM FOR THERAPEUTIC AGENTS
Wei-Chi Liao, Princetion Junction; Agis Kydonieus, Kendall Park, and Kishore R. Shah, Bridgewater, all of N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.
Filed Sep. 10, 1996, Ser. No. 711,754
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—435 14 Claims

1. A unidirectional buccal delivery system for the delivery of a therapeutic agent consisting essentially of a matrix, a therapeutic agent contained within said matrix, said matrix being adapted to release said therapeutic agent into the oral cavity at a sustained rate, said therapeutic agent being adapted to be absorbed from a small section of the gastrointestinal tract or has a short half-life of less than 6 hours, and a securing means for securing the matrix to a region of the oral cavity which is the palate, oral mucosa or tooth, whereby upon securing the matrix to a region of the oral cavity, therapeutic agent is released from the matrix into the buccal cavity, away from the securing means, for an extended period of time ranging from about 12 hours to about 7 days.

5,827,526
USE OF INDIGESTIBLE OLIGOSACCHARIDES TO PREVENT GASTROINTESTINAL INFECTIONS AND REDUCE DURATION OF DIARRHEA IN HUMANS
Margaret Ione Halpin Dohnalek, Worthington; Karin Margaret Ostrom, Reynoldsburg, and Milo Duane Hilty, Lewis Center, all of Ohio, assignors to Abbott Laboratories, Abbott Park, Ill.
Filed Jun. 12, 1996, Ser. No. 653,084
Int. Cl.[6] A61K *9/68*
U.S. Cl. 424—440 8 Claims

1. A method of reducing the duration of diarrhea in a human, said method comprises enterally administering nystose and 1^F-β-fructofuranosyl nystose and mixtures thereof, on a prophylactic basis to said human in an amount effective to reduce the duration of diarrhea.

5,827,527
MEDICATED CANDY PRODUCT
Dana B. Leonard, 19007 Double Eagle Dr., Cornelius, N.C. 28031
Filed Mar. 24, 1997, Ser. No. 823,188
Int. Cl.[6] A61J *17/00*
U.S. Cl. 424—440 6 Claims



1. A candy product, comprising:
(a) a ring forming an annular handle, and having an outer diameter of at least 5 cm to prevent its entry into the mouth and throat of a child;
(b) a candy holder integrally formed with the handle and adapted for carrying a lump of candy to be consumed by a child, said holder forming a paddle to pacify the child upon dissolution of the candy from the holder.

5,827,528
MEDICAL ADHESIVE COMPOSITION
Takabumi Kubo, 81-2-202 Naezuka-cho, Souka-shi Saitama, and Masatoshi Igarashi, 3-36-1 Chishirodaihigashi Wakaba-ku, Chiba-shi Chiba, both of Japan
Filed Apr. 24, 1996, Ser. No. 637,076
Claims priority, application Japan, Apr. 26, 1995, 7-125907
Int. Cl.[6] A61K *9/14;* A61L *15/16*
U.S. Cl. 424—443 6 Claims

1. Medical adhesive composition comprising, as essential components, a pressure sensitive adhesive component and a water absorbing component, the pressure sensitive adhesive component consisting of an elastomer comprised of a thermoplastic elastomer and an elastomer having a low compatibility with the thermoplastic elastomer, and a softner containing at least a liquid rubber and a

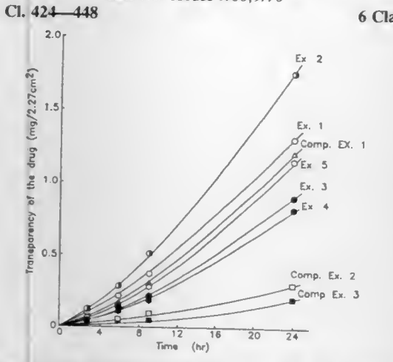
tackifier, wherein the thermoplastic elastomer of the pressure sensitive adhesive component is a styrene copolymer, in which the amount of bound styrene is about 40% by weight or less, the liquid rubber of the softener is contained in a proportional amount of about 30% by weight or more based on the thermoplastic component and the elastomer having a low compatibility with said thermoplastic elastomer is selected from the group consisting of one or a combination of both of PIB (polyisobutylene) and IIR (isobutylene-isoprene-rubber).

5,827,529

EXTERNAL PREPARATION FOR APPLICATION TO THE SKIN CONTAINING LIDOCAINE

Masahiro Ono; Mitsuji Akazawa; Michiko Seki; Kiyomi Iwamoto, and Ryoji Konishi, all of Kagawa-ken, Japan, assignors to Teikoku Seiyaku Kabushiki Kaisha, Kagawa-Ken, Japan

Continuation of Ser. No. 860,008, Mar. 30, 1992, abandoned. This application Jun. 10, 1994, Ser. No. 258,378
Claims priority, application Japan, Mar. 30, 1991, 3-067353
Int. Cl.[6] A61K *9/00;9/70*
U.S. Cl. 424—448 **6 Claims**



1. An external preparation for application to the skin containing lidocaine which comprises a drug-retaining layer placed on a support, wherein said drug-retaining layer comprises an adhesive gel base and 1 to 10% by weight of lidocaine, said base consisting essentially of 0.5 to 50% by weight of a water-soluble high molecular weight substance selected from the group consisting of gelatin, starch, agar, mannan, alginic acid, polyacrylic acid, a salt of polyacrylic acid, dextrin, methylcellulose, methylcellulose sodium, carboxymethylcellulose, carboxymethylcellulose sodium, polyvinyl alcohol, polyvinyl pyrrolidone, copolymer of methyl vinyl ether and maleic anhydride, gum arabic, tragacanth, karaya gum and locust bean gum, 30 to 70% by weight of water and 1 to 70% by weight of a water-retaining agent selected from the group consisting of ethylene glycol, diethylene glycol, polyethylene glycol, glycerin, sorbitol, martitol, propylene glycol and 1,3-butylene glycol, said lidocaine being dissolved in the base so as to result in a uniform base material.

5,827,530

FILLABLE PATCH FOR DERMAL OR TRANSDERMAL DELIVERY

Fred Dewitt Reed, Jr., 62 Macon Ave., Asheville, N.C. 28801

Continuation-in-part of Ser. No. 596,572, Feb. 5, 1996. This application Jan. 15, 1997, Ser. No. 782,313
Int. Cl.[6] A61F *13/00*
U.S. Cl. 424—449 **28 Claims**

1. A fillable agent delivery device for delivery of agents comprising:
a fillable reservoir defined by a diffusion membrane having a perimeter and a backing layer having a perimeter, the diffusion membrane and the backing layer joined to form a seal at their respective perimeters;



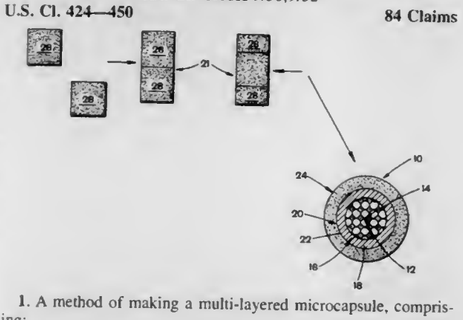
a skin contact adhesive layer carried by one of the diffusion layer and the backing layer for adhering the device to skin;
self sealing access means for receiving a loading needle; and
protection means for protecting the diffusion membrane from damage from the loading needle, the protection means comprising one or more of a group comprising:
a shield positioned inside the reservoir, the shield having a surface positioned opposite the access means; and
a puckered wrinkle releasably formed in the backing layer by pinching, the backing layer being an elastomeric material comprising the self sealing access means.

5,827,531

MICROCAPSULES AND METHODS FOR MAKING

Dennis R. Morrison, Kemah, and Benjamin Mosier, Houston, both of Tex., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 2, 1994, Ser. No. 349,169
Int. Cl.[6] A61K *9/50;9/52*
U.S. Cl. 424—450 **84 Claims**



1. A method of making a multi-layered microcapsule, comprising:
formulating a first phase comprising a first solvent, a first microcapsule layer-forming compound soluble in said first phase and immiscible in a second phase, a co-solvent, oil, and water;
formulating said second phase immiscible with said first phase, said second phase comprising a second solvent, a second microcapsule layer-forming compound soluble in said second phase and immiscible in said first phase, a surface active agent, and a salt;
said surface active agent having a hydrophilic/lipophilic balance value greater than that of said first microcapsule layer-forming compound;

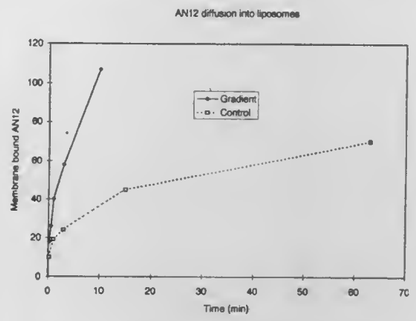
said second microcapsule layer-forming compound having a hydrophilic/lipophilic balance value lower than that of said surface active agent;
creating an interface between said first and second phases in a manner that limits fluid shear equal to or less than about 12 dynes/cm^2, and
maintains adsorptive surface characteristics at said interface.

5,827,532

METHOD FOR LOADING LIPSOMES WITH IONIZABLE PHOSPHORYLATED HYDROPHOBIC COMPOUNDS, PHARMACEUTICAL PREPARATIONS AND A METHOD FOR ADMINISTERING THE PREPARATIONS

Rolf Joachim Mehlhorn, Richmond, Calif., assignor to The Reagents of the University of California, Oakland, Calif.

Filed Jan. 31, 1997, Ser. No. 791,557
Int. Cl.[6] A61K *9/133*
U.S. Cl. 424—450 **18 Claims**



1. A method of preparing a liposome-entrapped ionizable phosphorylated hydrophobic compound, comprising:
(a) forming liposomes in an aqueous medium containing a base which is substantially impermeable through the vesicle to give a basic liposome-containing aqueous medium in which the base is present in the internal and external liposome phases;
(b) adding to the thus-obtained basic liposome-containing aqueous medium an ionizable phosphorylated hydrophobic compound which is anionic; and,
(c) adding to the external liposome phase an acid in an amount effective to create a pH gradient between the external liposome phase and the internal liposome phase to thereby induce the anionic phosphorylated hydrophobic compound to pass into the liposomes' internal basic aqueous phase.

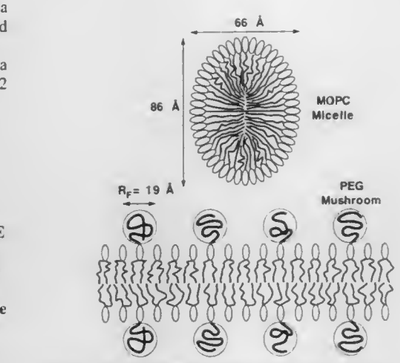
5,827,533

LIPOSOMES CONTAINING ACTIVE AGENTS AGGREGATED WITH LIPID SURFACTANTS

David Needham, Durham, N.C., assignor to Duke University, Durham, N.C.

Filed Feb. 6, 1997, Ser. No. 795,100
Int. Cl.[6] A61K *9/133;9/127*
U.S. Cl. 424—450 **12 Claims**

1. A liposome containing an active agent, comprising:
a liposome having a lipid bilayer membrane comprising vesicle-forming phospholipid and cholesterol, where the combination of phospholipid and cholesterol is the primary lipid source in the membrane, said lipid bilayer membrane containing from 3 mole percent to 60 mole percent cholesterol; and
an active agent aggregated with lipid surfactant to form micelles said micelles entrapped within the interior space of the liposome;



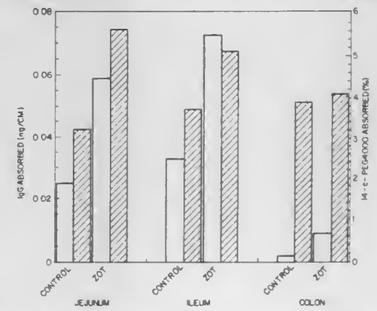
wherein said cholesterol inhibits fusion of the liposome membrane with the micelles entrapped therein, compared to fusion that would occur in the absence of cholesterol.

5,827,534

ORAL DOSAGE COMPOSITION COMPRISING ZONULA OCCLUDENS TOXIN AND A THERAPEUTIC AGENT FOR INTESTINAL DELIVERY

Alessio Fasano, Ellicott City, Md., assignor to University of Maryland at Baltimore, Baltimore, Md.

Filed May 24, 1995, Ser. No. 443,864
Int. Cl.[6] A61K *9/28;9/48*
U.S. Cl. 424—451 **30 Claims**



1. An oral dosage composition for intestinal delivery of a therapeutic agent comprising:
(A) a therapeutic agent selected from the group consisting of a drug compound, a biologically active peptide and a vaccine; and
(B) an intestinal absorption enhancing effective amount of purified *Vibrio cholera* zonula occludens toxin.

5,827,535

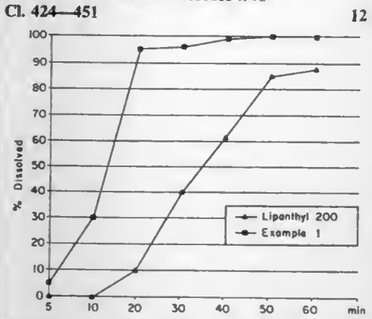
GRAPHICALLY IMPRESSED SOFTGEL AND METHOD FOR MAKING SAME

Dan D. Stone, Northridge, Calif., assignor to Banner Pharmacaps, Inc., Chatsworth, Calif.

Filed Jun. 21, 1996, Ser. No. 667,189
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 **12 Claims**

1. A softgel comprising:
a) a filled portion; and
b) a non-filled portion, wherein at least one of said filled and non-filled portions has an external surface having defined thereon an impressed graphical representation.

5,827,536
PHARMACEUTICAL DOSAGE FORMULATIONS OF FENOFIBRATE AND THEIR APPLICATIONS
Claude Laruelle, Villeneuve Loubet, France, assignor to CLL Pharma, Nice, France
Filed Jul. 25, 1996, Ser. No. 672,852
Claims priority, application France, Jul. 27, 1995, 95 09142
Int. Cl.[6] A61K *9/48*
U.S. Cl. 424—451 **12 Claims**



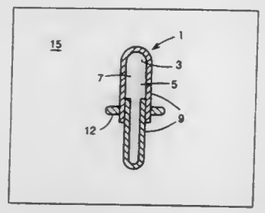
1. Fenofibrate pharmaceutical dosage formulation, characterized in that it essentially contains fenofibrate in solution in a solubilizing agent consisting of a non-ionic surfactant, diethylene glycol monoethyl ether (DGME).

5,827,537
PHARMACEUTICAL THERMAL INFUSION PROCESS
Nageswara R. Palepu, Lansdale, and Gopadi M. Venkatesh, King of Prussia, both of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.
Continuation of Ser. No. 433,368, May 4, 1995, Pat. No. 5,690,959. This application May 25, 1995, Ser. No. 451,078
Int. Cl.[6] A61K *9/24*
U.S. Cl. 424—472 **5 Claims**

1. A method of transporting quantities of potassium clavulanate which comprises:
(a) dry blending potassium clavulanate and a hydrophobic waxy material to form a composition;
(b) placing the composition into a suitable container for transportation.

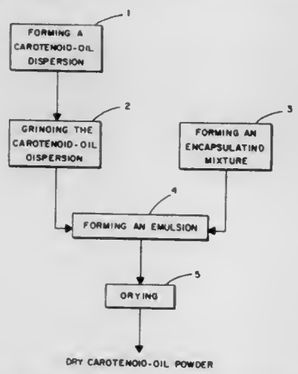
5,827,538
OSMOTIC DEVICES HAVING VAPOR-PERMEABLE COATINGS
Edward L. Cussler, Edina, Minn.; Scott M. Herbig, Bend, Oreg.; Kelly L. Smith, Bend, Oreg., and Paul van Eikeren, Bend, Oreg., assignors to Pfizer Inc., New York, N.Y.
PCT No. PCT/IB94/00114, § 371 Date Jan. 17, 1996, § 102(e) Date Jan. 17, 1996, PCT Pub. No. WO95/03033, PCT Pub. Date Feb. 2, 1995
Continuation of Ser. No. 96,144, Jul. 22, 1993, abandoned. This PCT application May 19, 1994, Ser. No. 571,980
Int. Cl.[6] A61K *9/24*
U.S. Cl. 424—473 **28 Claims**

1. An osmotic device for the controlled release of a beneficial agent to an aqueous environment comprising:
a. a hydrophilic formulation comprising a beneficial agent, a surfactant and an osmagent;
b. a wall surrounding said hydrophilic formulation, said wall formed at least in part of a semipermeable hydrophobic membrane having pores that have an average pore size between about 0.1 μm and 30 μm, said pores substantially filled with a gas phase, said hydrophobic membrane permeable to water in the vapor phase and said hydrophobic membrane impermeable to liquid water at a pressure less than 100 Pa, wherein



said device does not release the beneficial agent through an orifice but delivers the beneficial agent through the hydrophobic membrane pores as they become wetted.

5,827,539
DRY CAROTENOID-OIL POWDER AND PROCESS FOR MAKING SAME
Kevin W. Gellenbeck, Poway, Calif., assignor to Amway Corporation, Ada, Mich.
Filed Dec. 28, 1995, Ser. No. 580,385
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **21 Claims**



1. A process for producing a dry, powder form of a carotenoid comprising the steps of:
dispersing a carotenoid in an oil to make a carotenoid-oil dispersion;
grinding the carotenoid-oil dispersion to produce a milled carotenoid-oil dispersion;
dissolving a starch encapsulating agent, a sugar, and an antioxidant in water to form an encapsulating mixture;
blending the milled carotenoid-oil dispersion and the encapsulating mixture to form an emulsion; and
drying the emulsion to produce a powder, whereby the encapsulating mixture encases the milled carotenoid-oil dispersion.

5,827,540
GRANULAR COMPOSITION WITH FUSED OR SLURRIED COATING
Shozo Motojima, Hadano; Masanori Serita, and Yoko Watanabe, both of Kanagawa, all of Japan, assignors to Mitsubishi Chemical Corporation, Tokyo, Japan
Filed Feb. 22, 1996, Ser. No. 605,798
Claims priority, application Japan, Feb. 23, 1995, 7-035627
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **15 Claims**

1. A granular composition, consisting essentially of a granular carrier having a fused or slurried mixture coated thereon, said

coating comprising a pesticidally active ingredient, an antioxidant or an epoxy compound or both, and wax.

5,827,541
PROCESS FOR PREPARING SOLID PHARMACEUTICAL DOSAGE FORMS OF HYDROPHOBIC SUBSTANCES
Richard John Yarwood; Patrick Kearney, and Andrew Roy Thompson, all of Wiltshire, United Kingdom, assignors to R. P. Scherer Corporation, Troy, Mich.
PCT No. PCT/GB95/02485, § 371 Date Jul. 18, 1996, § 102(e) Date Jul. 18, 1996, PCT Pub. No. WO96/13251, PCT Pub. Date May 9, 1996
PCT Filed Oct. 20, 1995, Ser. No. 663,103
Claims priority, application United Kingdom, Oct. 28, 1994, 9421836
Int. Cl.[6] A61K *9/14*
U.S. Cl. 424—489 **21 Claims**

1. A process for the preparation of an oral rapidly disintegrating dosage form of a hydrophobic pharmaceutically active substance which disintegrates in water at 37° C. in 60 seconds or less, which process comprises the steps of:
forming a suspension of the hydrophobic pharmaceutically active substance in a solvent containing a pharmaceutically acceptable surfactant together with a water-soluble or water-dispersible carrier material;
forming discrete units of the suspension; and
removing solvent from the discrete units under conditions whereby a network of the carrier material carrying a dosage of the hydrophobic pharmaceutically active substance is formed.

5,827,542
QUICK ACTING CHEMICAL STERILANT
Norman A. Miner; William H. Woller; Edward L. Anderson, and David W Hobson, all of San Antonio, Tex., assignors to Healthpoint, Ltd., San Antonio, Tex.
Filed Feb. 12, 1996, Ser. No. 600,058
Int. Cl.[6] A01N *37/00;37/16;59/00;* **A61L** *2/18*
U.S. Cl. 424—616 **16 Claims**

1. A low odor, aqueous quick acting room temperature disinfecting and/or sterilization solution that is non-corrosive to metals and elastomers used in medical instruments which are in need of sterilization and disinfection having a pH within the range of from about 2.0 to about 6.0 consisting essentially of:
from about 1% to about 30% by weight of a peroxide; and
from about 1% to about 30% by weight of malonic acid, or salt form there of, said solution being effective at room temperature to disinfect medical instruments within 30 minutes without corroding surfaces of said medical instruments.

5,827,543
METHODS AND COMPOSITIONS FOR THE PREVENTION AND TREATMENT OF UROGENITAL DISORDERS
Jamesina Anne Fitzgerald, Hamilton, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Dec. 7, 1995, Ser. No. 569,030
Int. Cl.[6] A61K *33/24*
U.S. Cl. 424—653 **16 Claims**

1. A method for treatment of a human or lower animal subject having a urogenital disorder caused or mediated by one or more parasitic protozoa comprising administering to the subject from about 50 milligrams to about 10,000 milligrams of bismuth, per day for from about 1 to 56 days; and from about 100 milligrams to about 10,000 milligrams of each of one or more antimicrobials, per day, for from about 1 to about 28 days.

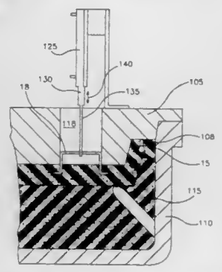
5,827,544
DIFFERENT WAY OF MANAGEMENT OF NEONATAL HYPERBILIRUBINEMIA
Husni H. Abu Seir; Wael F. Sunnoqrot, and Bassam M. El-Wadi, all of Amman, Jordan, assignors to The Arab Pharmaceutical Manufacturing Co. Ltd., Sult-Jordan
Filed Oct. 3, 1996, Ser. No. 720,773
Int. Cl.[6] A01N *59/08*
U.S. Cl. 424—677 **23 Claims**

1. A method for treating or neonatal hyperbilirubinemia (NHB) by administering to an infant an antihyperbilirubinemia preparation consisting essentially of castor oil, cellulose fibers, magnesium and vitamin B_2 as active ingredients and physiologically acceptable additives, carriers or diluents.

5,827,545
VETERINARY PHARMACEUTICAL COMPOSITION AND METHOD OF ADMINISTRATION
Jack W. Register, 1513 5TH Ave., East, Menomonie, Wis. 54751
Filed Feb. 8, 1996, Ser. No. 599,021
Int. Cl.[6] A61K *33/06;33/14*
U.S. Cl. 424—678 **11 Claims**

1. A veterinary composition comprising:
(a) water;
(b) an amount of propylene glycol between 1% and 25% by weight;
(c) an amount of calcium chloride between 5% and 30% by weight; and
(d) an amount of B vitamins between 0.005% and 0.1% by weight.

5,827,546
SYSTEM FOR PRODUCTION OF A PASSENGER SEAT
Charles R. Burchi, Commerce, and Keith Hill, Royal Oak, both of Mich., assignors to Woodbridge Foam Corporation, Canada
Filed Aug. 30, 1996, Ser. No. 706,427
Int. Cl.[6] B29C *44/12*
U.S. Cl. 425—116 **18 Claims**



1. A system for production of a passenger seat, the system comprising:
a first mold for producing a frame element constructed of a relatively high density, rigid foam, the first mold comprising a first mold half and a second mold half engageable to define a frame mold cavity, the first mold half adapted for forming a trim cover attachment means disposed along at least portion of a periphery of the frame element and vehicle anchorage means; and
a second mold for adhering the frame element to a relatively low density, resilient foam, the second mold comprising a third mold half and a fourth mold half engageable to define a seat mold cavity, the third mold half adapted to carrying the frame element in a manner such that trim cover attachment means embedded in the frame element is adjacent to an interior surface of the third mold half, the third mold half further

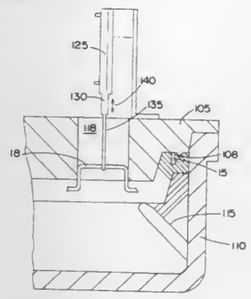
comprising sealing means disposed on the interior surface thereof at a location relatively peripheral to a position corresponding to the trim cover attachment means embedded in the frame element, said sealing means providing a seal to prevent an ingress of foam into said trim cover attachment means.

5,827,547

MOLD FOR PRODUCTION OF A PASSENGER SEAT

Charles R. Burchi, Commerce, and Keith Hill, Royal Oak, both of Mich., assignors to Woodbridge Foam Corporation, Canada

Filed Aug. 30, 1996, Ser. No. 706,431
Int. Cl.[6] B29C *44/12*
U.S. Cl. 425—116 **17 Claims**



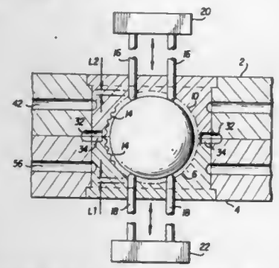
1. A mold for production of a passenger seat comprising a frame element constructed of a relatively high density, rigid foam and comprising trim cover attachment means, the mold comprising a first mold half and a second mold half engageable to define a mold cavity, the first mold half adapted to carry the frame element in a manner such that trim cover attachment means embedded in the frame element is adjacent to an interior surface of the first mold half, the first mold half further comprising sealing means disposed on the interior surface thereof at a location relatively peripheral to a position corresponding to the trim cover attachment means embedded in the frame element, said sealing means providing a seal to prevent an ingress of foam into said trim cover attachment means.

5,827,548

GOLF BALL INJECTION MOLD

Gerald A. Lavallee, Belchertown, Mass., and Douglas L. Miller, Seminole, Fla., assignors to Lisco, Inc., Tampa, Fla.

Filed Jan. 14, 1997, Ser. No. 783,162
Int. Cl.[6] B29C *45/14*
U.S. Cl. 425—116 **10 Claims**



1. An injection mold for applying a cover layer to golf balls, comprising

(a) upper and lower support plates each containing at least one hemispherical cavity, said upper and lower hemispherical cavities being adapted to mate to define at least one spherical cavity when said plates are brought together;

(b) a plurality of retractable core pins in each of said cavities for supporting a core of a golf ball within said spherical cavity, the longitudinal axis of said pins being substantially perpendicular to parting lines defined where said cavities terminate at a surface of said plates;

(c) runner means arranged in said plates and extending about said parting line of each cavity for supplying fluid thermoplastic material to said cavities to form a cover on the golf ball core;

(d) cooling means arranged adjacent to each of said hemispherical cavities for cooling the thermoplastic material of each golf ball cover; and

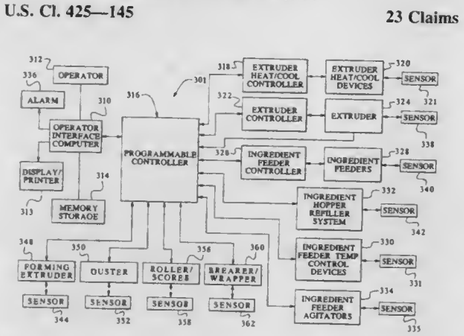
(e) means for independently sequentially ejecting excess thermoplastic material from said runner means and the golf ball from said cavities after said thermoplastic material has set.

5,827,549

PROCESS CONTROL SYSTEM FOR AUTOMATED CONTINUOUS PRODUCTION OF CHEWING GUM

Joseph D. Rancich, Park Ridge; Ronald A. Brix; Rodney F. Onusaitis, both of Darien; Karl B. Bucholz, LaGrange; Carl S. Peterson, Roselle; George W. Lorenz, Downers Grove, all of Ill.; Dennis K. Moriarty, Munster, Ind., and Anthony R. Banasiak, Brookfield, Ill., assignors to Wm. Wrigley, Jr. Company, Chicago, Ill.

Filed Feb. 21, 1996, Ser. No. 604,167
Int. Cl.[6] A23G *3/00;3/30*
U.S. Cl. 425—145 **23 Claims**



1. A system for automatic and continuous production of chewing gum, the system comprising:

means for inputting operational parameters and storing a signal representative of each of the operational parameters;

means for automatically and continuously feeding ingredients necessary for continuous production of chewing gum;

means for collecting and automatically and continuously mixing the ingredients; and

means for controlling connected to the means for inputting, the means for automatically and continuously feeding and the means for collecting and automatically and continuously mixing wherein the means for controlling compares the signals representative of the operational parameters and provides a signal to the means for feeding and the means for collecting and mixing to effect feeding, collecting or mixing.

5,827,550

FERMENTED MEAT TRIM AND ITS INCORPORATION IN MEAT

Maria Berglund, Kagerod; Lars Göran Bodenas, Munka Ljungby, and Jonas Peter Halden, Vallahra, all of Sweden, assignors to Nestec S.A., Vevey, Sweden

Filed Oct. 23, 1996, Ser. No. 735,536
Claims priority, application European Pat. Off., Oct. 24, 1995, 95202882
Int. Cl.[6] A23L *1/317;1/318*
U.S. Cl. 426—59 **20 Claims**

1. In a process for incorporating meat trimmings into a meat wherein meat trim particles are frozen and combined with a brine or pickle or marinade to obtain a suspension which is incorporated into a meat piece, the improvement comprising prior to freezing the meat trim particles, inoculating the meat particles with a bacteria starter culture and fermenting the meat particles with the bacteria from the culture to obtain fermented meat trimmings.

5,827,551

FISH ATTRACTANT

John A. Prochnow, Spirit Lake, and Charles J. Cihlar, Milford, both of Iowa, assignors to Berkley Inc., Spirit Lake, Iowa

Filed Sep. 11, 1996, Ser. No. 712,219
Int. Cl.[6] A01K *85/01*
U.S. Cl. 426—1 **12 Claims**

8. A method for enhancing the attractiveness of a fishing lure comprising:

applying to a lure surface a fish attractant composition that slowly releases attractant upon immersion in water, said composition comprising a stable water-in-oil emulsion blended to a smooth, creamy paste that includes: (a) petrolatum jelly, (b) a water soluble delivery agent, (c) a thickening agent, and (d) a water soluble fish attractant.

5,827,552

PRODUCTION OF FERMENTED FOOD PRODUCTS

Stanley E. Mainzer, Burlingame; Sienna Yoast, La Honda; Robin M. Adams; Tony V. Palombella, both of San Francisco, and Brian F. Schmidt, Half Moon Bay, all of Calif., assignors to Gist-Brocades B.V., Netherlands

Continuation of Ser. No. 48,399, Apr. 14, 1993, abandoned, which is a continuation of Ser. No. 912,020, Jul. 9, 1992, abandoned, which is a continuation of Ser. No. 826,698, Jan. 28, 1992, abandoned, which is a division of Ser. No. 274,584, Nov. 22, 1988, abandoned. This application Nov. 3, 1994, Ser. No. 333,934
Int. Cl.[6] A23C *9/12;9/13;* C12N *1/21;15/09;* C12P *1/04*
U.S. Cl. 426—7 **6 Claims**

1. A method of making a fermented food product comprising:

(a) providing a Lactobacillus comprising an introduced gene encoding a mutant β-galactosidase having a mutation in the amino acid sequence of a native *L. bulgaricus* β-galactosidase wherein said mutant β-galactosidase catalyzes the lysis of β-galactose at a rate at least 20% less than that of said native *L. bulgaricus* β-galactosidase at a temperature of 20° C. or less or a pH of 5.5 or less, but wherein said mutant β-galactosidase catalyzes said lysis at at least 90% of the rate of said native *L. bulgaricus* β-galactosidase under fermentation conditions of the food;

(b) adding the Lactobacillus of step (a) to an unfermented food product; and

(c) fermenting the mixture of step (b) under conditions favorable for production of the fermented food product.

5,827,553

EDIBLE ADHESIVE

Dimitrios A. Dimitroglou, Attleboro, Mass., and Thomas A. Trezza, Concord, Calif., assignors to Mantrose-Haeuser Co., Inc., Attleboro, Mass.

Continuation of Ser. No. 568,325, Nov. 6, 1995, abandoned. This application Feb. 13, 1997, Ser. No. 799,531
Int. Cl.[6] A23C *1/217*
U.S. Cl. 426—89 **18 Claims**

1. An edible food adhesive comprising:

(a) about 3 to about 60% starch hydrolysate having a dextrose equivalent of from 4 to 38 and a molecular weight of about 400 to 4000;

(b) about 26% to about 75% alcohol having from about 1 to 4 hydroxyl groups;

(c) 0% to about 50% polymerized glycol having a weight average molecular weight of 200 to 9,500; and

(d) a solvent;

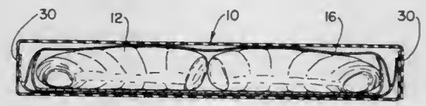
wherein the edible adhesive is fat free and oil free.

5,827,554

FLAT PACK VACUUM PACKED SEAFOOD PACKAGE AND PROCESS FOR PRODUCING MICROWAVEABLE SHRIMP

Nicholas A. Guarino, Roatan, Honduras, assignor to Carnival Brand Seafood Company, Fort Lauderdale, Fla.

Continuation-in-part of Ser. No. 637,610, Apr. 25, 1996. This application Nov. 6, 1996, Ser. No. 746,161
Int. Cl.[6] B65B *29/08*
U.S. Cl. 426—107 **33 Claims**



1. A process for packaging seafood, comprising the steps of:

placing seafood in a flat arrangement on a pallet;

sliding said palletized seafood into a bag to enclose the palletized seafood;

sealing a vacuum to the bag and the palletized seafood; and,

sealing the bag and the enclosed palletized seafood under said vacuum, said vacuum sealed palletized seafood being microwavable; and,

wherein said pallet has a rough upper surface sufficient to restrain movement of said seafood and a smooth under surface sufficient to facilitate entry of said pallet into said bag, said seafood being placed on said rough upper surface and the flat arrangement being such that the likelihood of the bag being penetrated or pierced by any parts of the seafood that is capable of doing so is diminished.

21. A vacuumized seafood package, comprising:

a pallet;

seafood positioned on said pallet in a flat orientation;

a sealed bag enclosing said palletized seafood under vacuum; and,

an outer container enclosing said sealed bag, said sealed bag being adapted for removal from said outer container prior to microwave cooking, said vacuum sealed palletized seafood being microwavable; and,

wherein said pallet has a rough upper surface sufficient to restrain movement of said seafood and a smooth under surface sufficient to facilitate sliding engagement of said pallet and said bag, said seafood being positioned on said rough upper surface and said flat orientation being such that the likelihood of the bag being penetrated or pierced by any part of the seafood that is capable of doing so is diminished.

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5,827,555

FOAMING INSERT FOR A BEVERAGE CONTAINER

Nicholas Adrain Thorne, Echirolles; Claude Encrenaz; Mostafa Aboulfaraj, both of Voiron, all of France, and Robert J. McHenry, St. Charles, Ill., assignors to American National Can Company, Chicago, Ill.

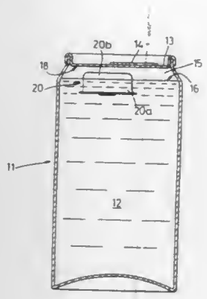
PCT No. PCT/US94/11010, § 371 Date Jun. 27, 1996, § 102(e) Date Jun. 27, 1996, PCT Pub. No. WO95/09118, PCT Pub. Date Apr. 6, 1995

PCT Filed Sep. 28, 1994, Ser. No. 619,758

Claims priority, application United Kingdom, Sep. 28, 1993, 9319932; Oct. 15, 1993, 9321294

Int. Cl.[6] A21D *10/02*; B65B *31/02*; C08G *63/48*

U.S. Cl. 426—112 41 Claims



1. A foam-inducing insert for inclusion in a container containing a beverage with gas dissolved under pressure to initiate release of gas from the insert on opening of the container, the insert comprising:

a housing having a chamber;

gas within the chamber;

the chamber having an orifice through the housing;

and closure means closing the orifice and operable under pressure difference across the orifice caused in use by opening of the container, whereby gas is jetted into the container;

the closure means comprising a sealing member being rupturable and moisture-sensitive, so that the sealing member withstands greater pressure in the sealing member's dry state than after exposure to moisture and secured around the orifice to provide a seal, the seal being burstable under said pressure difference.

5,827,556

ELECTRONIC CONTROLLER FOR HEATING APPARATUS

Charles A. Maher, Jr., Mustang, Okla., assignor to Tridelta Industries, Inc., Mentor, Ohio

Filed Oct. 23, 1996, Ser. No. 734,864

Int. Cl.[6] A01K *43/00*

U.S. Cl. 426—233 20 Claims

1. A method for controlling the cooking of a food product within a cooking medium, said method comprising:

establishing a reference energy value corresponding to a predetermined amount of energy to be transferred to the food product;

activating a cooking cycle for heating the food product;

determining a transferred energy value corresponding to the amount of heat energy transferred to the food product during activation of the cooking cycle;

comparing the transferred energy value to the reference energy value;

deactivating the cooking cycle when the transferred energy value is equal to or exceeds the reference energy value.

5,827,557

METHOD FOR MAKING A COMPLEXLY PATTERNED EXTRUDATE

James N. Weinstein, Minneapolis, and Scott A. Tolson, Arden Hills, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.

Division of Ser. No. 241,321, May 11, 1994, Pat. No. 5,639,485. This application Jun. 27, 1996, Ser. No. 695,746

Int. Cl.[6] A23L *1/27*

U.S. Cl. 426—249 17 Claims

1. A method for preparing a food product having at least two colors exhibiting improved detail resolution; comprising the steps of:

A. providing a first plastic extrudable food mass having a first color;

B. providing at least a second flowable food material having a second color differing from the first color in color or hue;

C. mixing the food mass and the second food material to form a complexly patterned food mass having an initial cross sectional area;

D. reducing the cross sectional area of the complexly patterned food mass by a factor of at least 25:1 through a reducing passageway with an average convergence angle of 5° to 45° while maintaining the cross sectional pattern to form a reduced cross sectional patterned extrudate; and

E. extruding the reduced cross sectional extrudate through a die port.

5,827,558

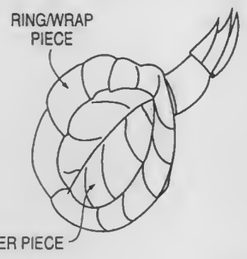
COMPOSITE SHRIMP PRODUCTS AND METHOD OF MAKING THE SAME

Michael Francis Corser, Plant City, and Roberto E. López-Ibáñez, Miami, both of Fla., assignors to Ladex Corporation, Miami, Fla.

Filed Sep. 2, 1997, Ser. No. 921,609

Int. Cl.[6] A22C *29/02*

U.S. Cl. 426—274 34 Claims



1. A method of making a large composite shrimp product from a plurality of smaller shrimp, comprising the steps of:

(a) providing a supply of raw, deheaded, peeled shrimp;

(b) removing the tails from a quantity of said shrimp and cutting these shrimp to form butterfly buttonhole-Western cut ring/wrap shrimp pieces;

(c) cutting a similar quantity of shrimp to form butterfly three-fourths cut center shrimp pieces;

(d) enveloping said cut shrimp pieces with a bonding agent;

(e) placing said bonding-enveloped ring/wrap shrimp piece on top of and around each of the bonding-enveloped center shrimp pieces to form a composite which has an appearance of a larger size shrimp.

5,827,559

COOK-IN PACKAGING AND METHODS RELATING THERETO

Richard James Powell, Orange, Tex., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 29, 1997, Ser. No. 789,908

Int. Cl.[6] A23B *00/00*; B65D *55/00*; C12C *3/04*

U.S. Cl. 426—412 8 Claims

1. A method of packaging and processing food at high temperatures, comprising:

A) placing a heat sealable film around and in contact with the food, said film having a sealant layer in contact with the food, the sealant layer having a thickness of at least 4 microns, a melt index between about 0.5 and about 30 g/10 min, and a melting point of from about 102° C. to about 104° C., the sealant layer comprising one or more acid copolymers of at least:

i. about 2 to 20 parts by weight alpha-beta unsaturated carboxylic acid having from 3–8 carbon atoms or an anhydride derivative thereof, provided that at least a portion of the anhydride is hydrolyzed to provide at least 2 weight percent free acid in the copolymer; and

ii. at least 80 parts by weight ethylene,

B) heat sealing the film to itself to hermetically seal the food within the film, and

C) cooking the packaged food in an environment having a temperature of about 60° C. or higher.

5,827,560

PROCESS FOR PRODUCING COLD WATER SOLUBLE TEA EXTRACT

Xiaoping Fu, Epalinges, Switzerland; Richard Tien-Szu Liu, Worthington, Ohio; Lawrence Nickle, Marysville, Ohio, and Rachid Rahmani, Columbus, Ohio, assignors to Nestec S.A., Vevey, Switzerland

Filed Apr. 14, 1997, Ser. No. 840,157

Int. Cl.[6] A23F *3/34*

U.S. Cl. 426—435 17 Claims

1. A process for producing a tea extract which contains solubilized tannins, the process comprising:

i) extracting tea solids from tea leaves using an extraction liquid to provide a tea extract containing soluble tea solids and insoluble tannins;

ii) separating the insoluble tannins from the tea extract to obtain a clarified tea extract;

iii) oxidizing and solubilizing the tannins under raised temperature conditions to provide a solubilized tannin liquor; and

iv) adding the solubilized tannin liquor to the extraction liquid during extraction of tea solids from tea leaves in step i); and

v) collecting the clarified tea extract of step ii) to obtain a tea extract which contains solubilized tea tannins.

5,827,561

PROCESS FOR PRODUCING MEAT STRIPS OR PROTEINACEOUS STRIPS

Manfred Duve, Ebbetalstrasse 15, D-58840 Plettenberg, Germany

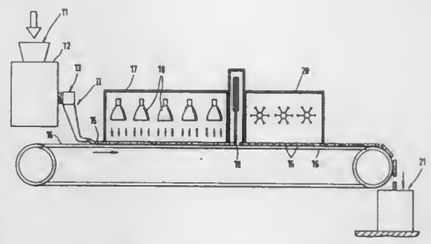
Continuation-in-part of Ser. No. 547,678, Oct. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 272,140, Jul. 8, 1994, Pat. No. 5,482,730. This application Jan. 24, 1997, Ser. No. 788,685

Int. Cl.[6] A23J *3/04;3/14*; A23L *1/317*; A23P *1/12*

U.S. Cl. 426—513 8 Claims

1. A process for producing a food product having base components selected from the group consisting of meat, animal protein and vegetable protein, comprising:

preparing an emulsion of said base components, by comminuting and emulsifying a base composition containing said base components;



loading said emulsion into a stuffing device having an outlet with an end zone;

forcing said emulsion through the stuffing device so that it exits from the outlet thereof in the form of at least one strand;

cooking each strand;

cutting each cooked strand with a cutting device into strips having a length of a few centimeters;

deep freezing the strips; and

packaging the frozen strips.

5,827,562

SWEETENER SALTS

John C. Fry, Meerssen, and Jacob Van Soolingen, Brunssum, both of Netherlands, assignors to Holland Sweetener Company V.o.F., Maastricht, Netherlands

Filed Oct. 10, 1996, Ser. No. 728,594

Claims priority, application Belgium, Oct. 11, 1995, 09500836

Int. Cl.[6] A23L *1/236;1/216*; C07C *261/00;229/00*

U.S. Cl. 426—548 34 Claims

1. A process conducted in a liquid medium for the preparation of a sweetening salt as the reaction product from two sweetener components, wherein one component is a sweetener derived from aspartic acid and the other component is a derivative of an organic sweetening acid which corresponds to an intense sweetener not derived from aspartic acid, said process comprising the combination of steps of:

(a) forming a liquid system containing a sweetener component derived from aspartic acid and a sweetener component derived from an organic sweetening acid which corresponds to an intense sweetener not derived from aspartic acid by adding to a liquid medium, in any order, components (i), (ii) and (iii):

(i) the sweetener component derived from aspartic acid,

(ii) the derivative of an organic sweetening acid which corresponds to an intense sweetener not derived from aspartic acid, and

(iii) a strong acid whereby the liquid system is obtained,

(b) allowing the components then present in the liquid system, optionally with agitation, to react for at least one minute, wherein a reaction mixture containing the sweetening salt is formed; and

(c) isolating the sweetening salt from the reaction mixture.

5,827,563

SPHEROIDAL CRYSTAL SUGAR

Gerald E. Battist; Garry L. Myers, both of Reston, and Richard C. Fuisz, Great Falls, all of Va., assignors to Fuisz Technologies Ltd., Chantilly, Va.

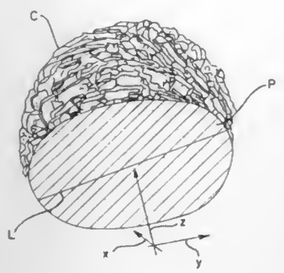
Division of Ser. No. 462,178, Jun. 5, 1995, Pat. No. 5,601,076, which is a continuation of Ser. No. 119,974, Sep. 10, 1993, Pat. No. 5,518,551. This application Jan. 13, 1997, Ser. No. 782,446

Int. Cl.[6] A23L *1/09*; A23G *3/00*

U.S. Cl. 426—572 2 Claims

1. A fondant product comprising:

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a creme containing substantially spheroidal polycrystallite structures, said structures each comprising crystallites having a diameter no greater than about 50 microns arranged around a spheroidal center forming a polycrystallite having a continuous three-dimensional structure.

5,827,564

BREAKFAST CEREAL WITH MILK PIECES

Lawrence Edward Bodkin, Sr., PO. Box 16482, 1149 Molokai Rd., Jacksonville, Fla. 32216

Filed Mar. 20, 1996, Ser. No. 618,582
Int. Cl.[6] A23L *1/164*
U.S. Cl. 426—620 **20 Claims**



1. In a package of dry ready-to-eat cereal pieces of a size substantially greater than the particle size of conventional instantized milk powders, the improvement comprising dry milk means for producing with a milky appearance of liquid milk upon water addition, said dry milk means being added to said cereal pieces in said package in substantially uniform proportions such that with each serving thereof from said package said substantially uniform proportions are maintained.

5,827,565

PROCESS FOR MAKING AN EDIBLE DOG CHEW

Glen S. Axelrod, Mahwah, N.J., assignor to T.F.H. Publications, Inc., Neptune, N.J.

Filed Oct. 25, 1996, Ser. No. 738,423
Int. Cl.[6] A23L *1/0522*
U.S. Cl. 426—623 **4 Claims**

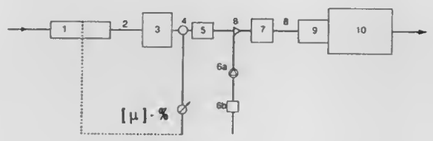
1. A method of producing a hardness-adjustable edible dog chew, comprising the steps of:
extruding a mixture of a potato starch, water and calcium carbonate to form granules; and
injection molding such mixture into the shape of the dog chew.

5,827,566

PROCESS AND DEVICE FOR WETTING PARTICLES WITH A FLUID

Albrecht Epple, Hamm; Herbert Nopper, Kuppenheim, and Wolfgang Haag, Stadecken-Elsheim, all of Germany, assignors to Carl Schenck, Darmstadt, Germany

Filed Feb. 23, 1996, Ser. No. 604,754
Claims priority, application Germany, Feb. 23, 1995, 195 06 353.8
Int. Cl.[6] B05D *1/02*
U.S. Cl. 427—8 **9 Claims**



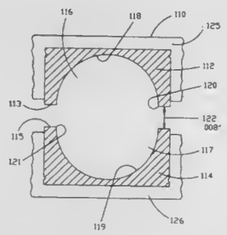
1. A process for wetting particles with a fluid, the process comprising:
(a) feeding the particles into a transport line;
(b) pneumatically conveying the particles through the transport line; and
(c) passing the particles flowing through the transport line into a wetting zone inside a duct, wherein the particle stream is broken up by a reduction in its flow velocity and the fluid is sprayed onto the particles; and
wherein the flow velocity of the particles is increased after said particles enter the transport line and before said particles enter the wetting zone; and
wherein the particles are dried prior to introduction thereof into the particle stream.

5,827,567

GAME BALL MOLD PREPARATION TECHNIQUE AND COATING SYSTEM

John Peter Molitor, 86 Main St., Hatfield, Mass. 01038

Filed Nov. 27, 1996, Ser. No. 753,674
Int. Cl.[6] B05D *3/12;5/08;1/36*
U.S. Cl. 427—135 **27 Claims**



1. A method of preparing a used game ball mold cavity for application of a coating, comprising:
obtaining a metallic game ball mold cavity having land area and a wall defining a hemispherical opening,
pretreating the land area and wall by contacting the mold cavity with an abrasive media until substantially all of any previous coating is removed, and
blasting the land area and wall with aluminum oxide media having a grit of about 180–400 under conditions sufficient to obtain a surface penetration of less than 0.2 mils.

5,827,568

RUBBER BASE ASPHALT EMULSION ADDITIVE

Steve R. Wickett, Santa Fe, Tex., assignor to Rubber Resources, L.L.C., Houston, Tex.

Continuation of Ser. No. 570,739, Dec. 12. 1995, abandoned. This application Dec. 19, 1996, Ser. No. 770,125
Int. Cl.[6] C08L *95/00*
U.S. Cl. 427—136 **4 Claims**

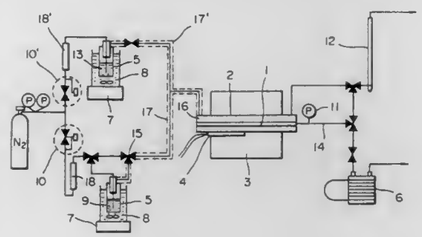
1. A method of applying an asphalt-based emulsion to a surface comprising the steps of mixing an aliphatic solvent and crumb rubber in a ration of 3:7 to 7:3 parts by weight with an emulsifying agent and water at ambient temperature to obtain an asphalt modifying emulsion and thereafter mixing the asphalt modifying emulsion with an asphaltic material at temperatures ranging from ambient temperature up to 150° F. and applying the mixture of asphaltic material and asphalt modifying emulsion to a surface.

5,827,569

HYDROGEN SEPARATION MEMBRANE AND PROCESS FOR PRODUCING THE SAME

Shigeo Akiyama, 2-12-9-304, Amakubo, Tsukuba city, Ibaraki; Hiroshi Anzai, 5-8-5, Kugenumakaigan, Fujisawa city, Kanagawa; Shigeharu Morooka, 3-29-2, Miwadai, Higashi-ku, Fukuoka city, Fukuoka; Hideaki Maeda, 3-10-25, Hakomatsu, Higashi-ku, Fukuoka city, Fukuoka, and Katsuki Kusakabe, 6-1-435, Chihaya, Higashi-ku, Fukuoka city, Fukuoka, all of Japan

Filed Jul. 28, 1995, Ser. No. 508,506
Claims priority, application Japan, Jul. 29, 1994, 6-196228
Int. Cl.[6] B01D *71/02*; B05D *5/00*
U.S. Cl. 427—243 **14 Claims**



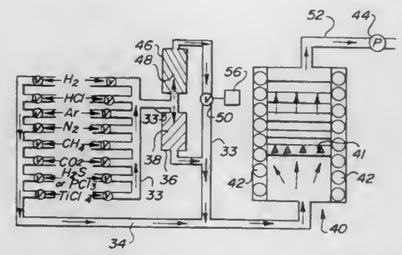
1. A process for producing a hydrogen separation membrane, which comprises:
positioning a porous ceramic membrane in a reactor having an inlet and an outlet, the inlet being in fluid communication with one side of the porous ceramic membrane and the outlet being in fluid communication with another side of the porous ceramic membrane;
introducing a vaporized SiO_2 source through the inlet and into pores of the porous ceramic membrane by suction established by providing a pressure difference between both sides of the porous ceramic membrane, the pressure difference effected by evacuating the reactor through the outlet;
and thermally decomposing the SiO_2 source, thereby forming, depositing and filling SiO_2 into the pores and fully coating the outer surface of the membrane with a SiO_2 thin film simultaneously.

5,827,570

COMPOSITE CERAMIC ARTICLES AND METHOD FOR MAKING SUCH ARTICLES

William C. Russell, Birmingham, Mich., assignor to Valenite Inc., Madison Heights, Mich.

Continuation of Ser. No. 251,155, May 31, 1994, abandoned. This application Sep. 25, 1996, Ser. No. 721,050
Int. Cl.[6] C23C *16/40*
U.S. Cl. 427—255 **31 Claims**



1. A process for depositing a wear-resistant composite ceramic coating on a substrate composed of at lest one member selected from the group consisting of cemented carbide and ceramic, the process comprising:
passing a first metal halide gas, a second metal halide gas, a volatile oxidizing gas, a carrier gas, and dopant over the substrate at a temperature of from about 900° to 1250° C., and at a pressure of from about 1 torr to ambient pressure, so that a two-phase, wear-resistant composite ceramic coating is deposited on said substrate, said composite ceramic coating comprising a two-phase metal oxide layer comprising a fully dense, adherent, continuous metal oxide phase and a fully dense, adherent, discontinuous metal oxide phase, wherein:
said first metal halide gas comprises a member selected from the group consisting of aluminum halide and zirconium halide, said first halide gas being passed over said substrate at a partial pressure, flow rate, and substrate exposure time, to deposit on the substrate and form said continuous metal oxide phase comprising a metal oxide of said first metal halide gas;
said second metal halide gas comprises a member selected from the group consisting of aluminum halide and zirconium halide, said second metal halide gas being different from said first metal halide gas, said second metal halide gas being mixed with said first metal halide gas, said second metal halide gas being passed over said substrate at a partial pressure, flow rate, and substrate exposure time, to deposit over the substrate and form a discontinuous metal oxide phase comprising a metal oxide of said second metal halide gas, said discontinuous metal oxide phase being dispersed as a discrete second phase within said continuous metal oxide phase; and
said dopant comprises at least one member selected from the group consisting of sulfur and a compound of sulfur.

5,827,571

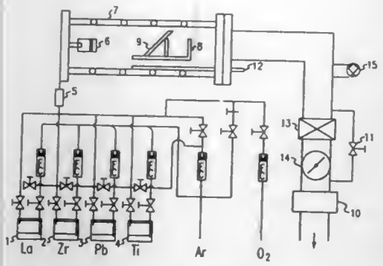
HOT-WALL CVD METHOD FOR FORMING A FERROELECTRIC FILM

Seaung Suk Lee; Ho Gi Kim; Jong Choul Kim, and Soo Han Choi, all of Bubaleub, Rep. of Korea, assignors to Hyundai Electronics Industries Co., Ltd., Rep. of Korea

Continuation of Ser. No. 476,734, Jun. 7, 1995, abandoned. This application Sep. 17, 1997, Ser. No. 932,344
Claims priority, application Rep. of Korea, Jun. 8, 1994, 1994-12900
Int. Cl.[6] C23C *16/40*
U.S. Cl. 427—255.3 **11 Claims**

1. A method for forming ferroelectric films using a hot-wall chemical vapor deposition apparatus, comprising the steps of:

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heating a processing tube and a plurality of receptacles which contain ferroelectric source materials and loading wafers into said processing tube;

conveying vaporized gases from said receptacles to a mixing chamber using a carrier gas when said processing tube is set to a predetermined temperature and mixing said vaporized gases in said mixing chamber, keeping said processing tube at vacuum;

providing said mixing chamber with an oxidization gas and a reaction speed control gas to control reaction speed in said processing tube; and

injecting mixed gases in said mixing chamber into said processing tube through a gas injector positioned in said processing tube and depositing said mixed gases on the wafers;

wherein said gas injector is heated independent of said processing tube and a temperature of said gas injector is less than that of said processing tube;

wherein the step of depositing said mixed gases on the wafers is carried out at a pressure of approximately 100 mTorr to 1200 mTorr.

5,827,572

PROCESS FOR MANUFACTURE OF A ZIRCONIA MATERIAL RESISTANT TO LOW TEMPERATURE DEGRADATION

Huesup Song; Gyeungho Kim; Doh-Yeon Kim, and Tai-Joo Chung, all of Seoul, Rep. of Korea, assignors to Korea Institute of Science & Technology, Seoul, Rep. of Korea

Filed Apr. 30, 1996, Ser. No. 641,190

Claims priority, application Rep. of Korea, Oct. 17, 1995, 1995/35818

Int. Cl.[6] C23C *16/02;16/30;* **C04B** *35/48*

U.S. Cl. 427—255.4 **6 Claims**

1. A process for forming a surface layer on zirconia to prevent low temperature degradation compared to the internal material, which comprises heat treating a sintered zirconia material or a sintered zirconia composite at 1200°–1700° C. under a nitrogen atmosphere.

5,827,573

METHOD FOR COATING METAL COOKWARE

Tung-Hung Tsai, No. 22, Lane 17, Chou-Kuang St., Ta-Liao Hsiang, Kaohsiung Hsien, Taiwan

Filed Mar. 17, 1997, Ser. No. 818,840

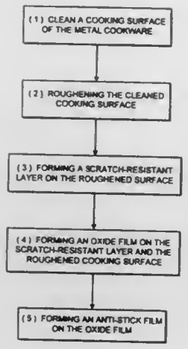
Int. Cl.[6] B05D *3/00;* **B06B** *1/00*

U.S. Cl. 427—327 **2 Claims**

1. A method for coating metal cookware having a cooking surface, comprising the steps of:

(1) cleaning said cooking surface of said metal cookware by immersing said metal cookware in a boiling trichloroethylene solution in which ultrasonic vibrations are excited in order to remove grease and other contaminants.

(2) roughening said cooking surface by blasting aluminum oxide particles against said cleaned cooking surface;



(3) forming a scratch-resistant layer on said roughened cooking surface by electric-arc spraying an aluminum alloy onto said roughened cooking surface, said scratch-resistant layer covering about 50–90% of the area of said roughened cooking surface, said scratch-resistant layer has a thickness of about 30–120 μm, said aluminum alloy consisting of 0.25% by weight of silicon, 0.4% by weight of iron, 0.10% by weight of copper, 0.05–0.20% by weight of manganese, 4.5–5.5% by weight of magnesium, 0.05–0.20% by weight of chromium, 0.10% by weight of zinc, 0.06–0.20% by weight of titanium, 0.15% by weight of impurities and the remainder being aluminum;

(4) forming an oxide film on said scratch-resistant layer and said roughened cooking surface by anodic oxidation, said oxide film has a thickness of about 10–50 μm; and

(5) applying an anti-stick film of fluorocarbon resin on said oxide film by applying a primer coating of fluorocarbon resin and heating said primer coating; applying a top coating of fluorocarbon resin and heating said top coating; and cooling forcibly said top coating, said primer coating has a thickness of 6–15 μm, said top coating has a thickness of 15–25 μm.

5,827,574

METHOD OF NONHAZARDOUS REMOVAL OF PAINT CONTAINING HEAVY METALS AND COATING PREPARATION FOR PERFORMING THE SAME

Robert R. Stanforth, Singapore, Singapore, and Paul V. Knopp, Cross Plains, Wis., assignors to RMT, Inc., Madison, Wis.

Division of Ser. No. 635,516, Apr. 22, 1996, Pat. No. 5,637,355. This application Jun. 9, 1997, Ser. No. 871,043

Int. Cl.[6] B05D *3/12*

U.S. Cl. 427—341 **16 Claims**

1. A method of removing paint containing heavy metals comprising:

introducing an additive which contains a phosphate compound and which renders a heavy metal nonhazardous, to a coating preparation;

applying said coating preparation onto a surface coated with a paint containing heavy metal;

removing said coating preparation and said paint containing heavy metal from said surface wherein said removed coating preparation and said removed paint containing heavy metal are nonhazardous as defined by the Toxicity Characteristic Leaching Procedure.

5,827,575

METHOD FOR FORMING A MULTILAYER TOPCOAT

Akira Kasari; Hiroaki Oda; Junichi Kajima, and Mikio Shimakawa, all of Hiratsuka, Japan, assignors to Kansai Paint Company, Limited, Amagasaki, Japan

Division of Ser. No. 689,663, Aug. 13, 1996. This application Oct. 17, 1996, Ser. No. 729,375

Claims priority, application Japan, Aug. 25, 1995, 7-217599; Dec. 26, 1995, 7-338801; Feb. 6, 1996, 8-019730

Int. Cl.[6] B05D *3/02*

U.S. Cl. 427—380 **3 Claims**

1. A method for forming a topcoat which comprises applying to a substrate an aqueous colored base coating composition (A) comprising a hydroxyl- and carboxyl-containing acrylic resin (A-1), a melamine resin (A-2), a compound containing at least one alicyclic epoxy group (A-3), a neutralizing agent (A-4), and a coloring pigment (A-5) to form a base coat and applying to the obtained base coat an organic solvent-based clear coating composition (B) which is a clear coating composition (B-1) comprising a mixture of a carboxyl group-containing resin and an epoxy group-containing resin or a clear coating composition (B-2) comprising a resin having a carboxyl group and an epoxy group in one molecule, said clear coating composition (B) being cured by crosslinking reaction between said carboxyl group and said epoxy group.

5,827,576

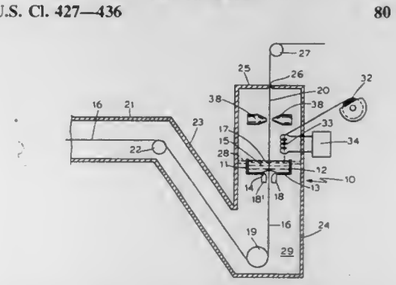
HOT DIP COATING METHOD AND APPARATUS

William A. Carter, Munster, Ind.; John A. Tanski, Los Alamos, N. Mex.; Ismael G. Saucedo, Valparaiso, Ind., and Howard L. Gerber, Chicago, Ill., assignors to Inland Steel Company, Chicago, Ill.

Continuation of Ser. No. 331,289, Oct. 28, 1994, abandoned, and a continuation of Ser. No. 118,013, Sep. 8, 1993, abandoned. This application Mar. 21, 1997, Ser. No. 822,782

Int. Cl.[6] B05D *1/18*

U.S. Cl. 427—436 **80 Claims**



1. In combination, an apparatus for hot dip coating a continuous steel member with a molten coating metal selected from a group including zinc, aluminum, tin, lead, and alloys of each, and a bath of said molten coating metal, said combination comprising:

a vessel containing said bath of molten coating metal;

an opening in said vessel;

means for directing a continuous steel member along a path extending through said opening in the vessel and through the bath of molten coating metal contained in said vessel to coat said member with said molten coating metal;

said path having a first part located outside of said vessel, adjacent said vessel opening, and a second part located within said bath;

and magnetic containment means, said magnetic containment means comprising means which faces toward said bath through said opening and which is positioned alongside said first part of said path, for preventing the molten coating metal in said bath from escaping from said vessel through said opening;

said magnetic containment means comprising means for generating a magnetic field which extends from said magnetic containment means inwardly through said opening in the vessel and maintains said bath out of contact with said magnetic containment means.

5,827,577

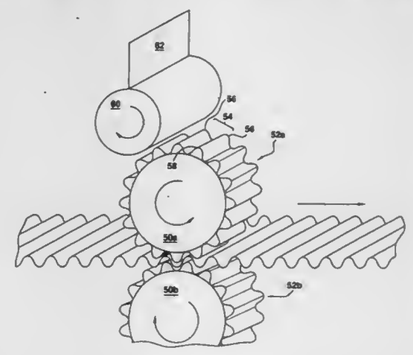
METHOD AND APPARATUS FOR APPLYING CATALYTIC AND/OR ADSORBENT COATINGS ON A SUBSTRATE

Michael D. Spencer, Somerset, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Nov. 22, 1996, Ser. No. 755,423

Int. Cl.[6] B05D *1/28;1/32;* **B05C** *17/04*

U.S. Cl. 427—475 **26 Claims**



1. A method of forming a coating on a corrugated, textured, or dimpled substrate with a composition containing a catalyst or an adsorbent material comprising imprinting through use of a roller assembly, said composition upon the substrate to form said coating.

5,827,578

PROCESS AND DEVICE FOR DEACIDIFYING PRINTED MATERIAL AND PAPER PRODUCTS OF ALL KINDS

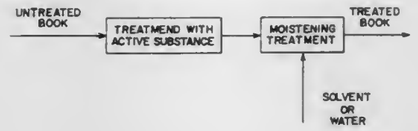
Oswald Bell, Passauer Str. 16, 90480 Nürnberg, Germany

Filed Apr. 10, 1997, Ser. No. 835,651

Claims priority, application Germany, Oct. 13, 1994, 44 36 635.3

Int. Cl.[6] B05D *1/40*

U.S. Cl. 427—479 **25 Claims**



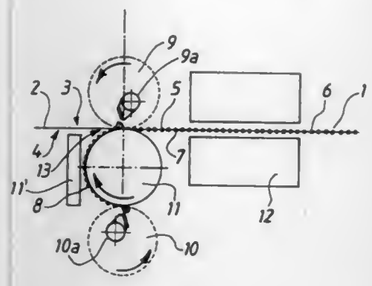
1. A process for deacidification of a book having pages and a book spine, comprising:

opening the book to an open state;

blowing on the open book using at least one air jet such that the air jet effects a fanning out of the pages of the book, the at least one air jet including an active substance therein to establish a deacidification of the pages;

wherein the at least one air jet is made up of at least one part, and the air jet is oriented relative to the book such that the air jet impinges on the book in a direction parallel or diagonal to the book spine.

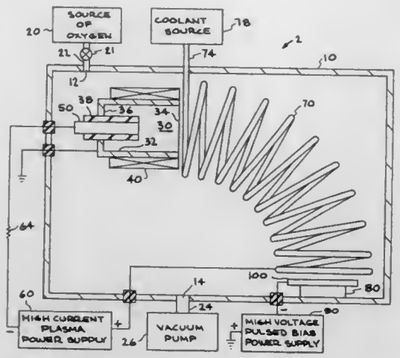
5,827,579
PROCESS FOR MANUFACTURING A FUSIBLE INTERLINING AND THE FUSIBLE INTERLINING THUS OBTAINED
Pierrot Groshens, Peronne, France, assignor to Laniere de Picardie, Peronne, France
Filed Mar. 11, 1997, Ser. No. 815,167
Claims priority, application France, Mar. 25, 1996, 96 03693
Int. Cl.[6] B05D *1/26;1/32;3/06*
U.S. Cl. 427—552 19 Claims



1. A process for manufacturing a fusible interlining using a base fabric having a front face and a rear face, the front face and the rear face being opposite one another, comprising the steps of:
depositing a first thermofusible layer in the form of distributed points onto a front face of a base fabric by means of a first screen printer;
depositing a second thermofusible layer, the second thermofusible layer possessing a higher melting temperature than the first thermofusible layer, in the form of distributed points from a second screen printer to a transfer roller, the transfer roller comprising a regular and smooth surface;
transferring the second thermofusible layer in the form of distributed points from the transfer roller to the rear face of the base fabric;
pressing the base fabric between the transfer roller and the first screen printer such that transferred points with a generally planar surface and a generally uniform thickness are obtained; and
exposing the base fabric, with the first and second thermofusible layers applied, to a treatment such that the second thermofusible layer transforms and the first thermofusible layer melts;
wherein the depositing of the first thermofusible layer on the front face of the base fabric and the transfer of the second thermofusible layer on the rear face of the base fabric are performed simultaneously at the point of contact of the base fabric with the transfer roller and the first screen printer, such that the points of the first and second thermofusible layers lie opposite to one another on the base fabric.

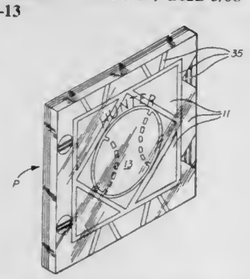
5,827,580
LOW TEMPERATURE FORMATION OF ELECTRODE HAVING ELECTRICALLY CONDUCTIVE METAL OXIDE SURFACE
Simone Anders; Andre Anders, both of Albany; Ian G. Brown, Berkeley; Frank R. McLarnon, Orinda, and Fanping Kong, Berkeley, all of Calif., assignors to Regents of The University of California, Oakland, Calif.
Filed Mar. 27, 1996, Ser. No. 625,270
Int. Cl.[6] H01T *14/00*
U.S. Cl. 427—580 19 Claims

1. A low temperature process for forming a metal suboxide on a substrate surface in a deposition chamber which comprises forming said metal suboxide on the surface of said substrate by cathodic arc deposition while controlling at least one of:



a) the partial pressure of the oxygen present in the deposition chamber; and
b) the density of the metal flux.

5,827,581
DECORATIVE PLAQUE AND FORMING METHOD
Dwayne A. Cobb, Lexington, and Steven A. Tomlin, Winchester, both of Ky., assignors to Hunter Manufacturing Group, Inc., Lexington, Ky.
Filed Feb. 14, 1997, Ser. No. 800,351
Int. Cl.[6] B44C *5/04;* G02B *5/08*
U.S. Cl. 428—13 17 Claims



1. A method of forming a decorative plaque comprising the steps of:
providing a transparent sheet having a front and a back;
printing a decalcomania having a reverse pattern layer with open spaces;
applying the pattern layer of the decalcomania to the back of the transparent sheet for front viewing of the pattern; and
depositing a contrasting layer behind said pattern layer to cover at least the open spaces to make said spaces distinctive and viewable from the front,
whereby the decorative plaque may be economically formed and displaying a high resolution decorative pattern.

5,827,582
OBJECT WITH A SMALL ORIFICE AND METHOD OF MAKING THE SAME
Tariq Quadir, Simpsonville, and Gary E. Del Regno, assignors to CeramTec North America Innovative, and Ceramic Engineering Corporation, both of Laurens, S.C.
Filed Nov. 15, 1996, Ser. No. 751,176
Int. Cl.[6] B28B *5/00*
U.S. Cl. 428—34.4 28 Claims

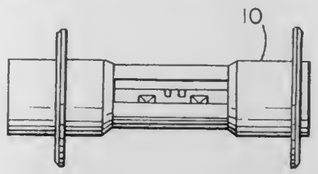
1. A method of producing an object with a small orifice comprising the steps of:

providing a casing defining a bore therethrough;
providing a ferrule made from a material having a controlled cross-sectional area and defining a spinneret having an orifice therethrough;
placing said ferrule in said bore; and
shrinking said casing around said ferrule to securely fix said ferrule in said casing;
whereby the size of said spinneret having said orifice remains constant throughout said step of shrinking;
wherein said spinneret having said orifice maintaining a substantially constant internal diameter.

5,827,583
BARRIER PACKAGE
David M. Ambler, Petaluma, Calif., assignor to Sola International, Inc., Menlo Park, Calif.
Filed Feb. 17, 1995, Ser. No. 390,879
Claims priority, application United Kingdom, Feb. 28, 1994, 9403829
Int. Cl.[6] B65D *85/38;* B65B *1/04*
U.S. Cl. 428—35.2 36 Claims

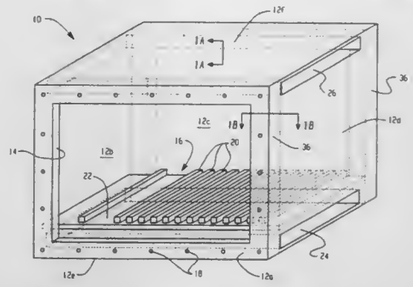
1. A packaged plastic lens wafer suitable for forming a laminated lens when bonded to a second plastic lens wafer which packaged plastic lens wafer comprises:
(a) a package formed of a substantially water impermeable material which package is a moisture barrier that has a water vapor transmission rate that is less than 0.05 grams/100 sq. in./day at 90% relative humidity and 100° F.; and
(b) a plastic lens wafer enclosed within said package wherein said plastic lens wafer is removable from said package and wherein the plastic lens wafer is maintained in an environment which initially has a relative humidity of at least 30% and which is substantially isolated from the environment external of the package.

5,827,584
INJECTION MOLDED ARTICLE FOR PHOTOGRAPHIC PHOTOSENSITIVE MATERIAL, MOLDING METHOD THEREOF AND PACKAGE USING THE SAME
Mutsuo Akao, and Osamu Suzuki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Oct. 27, 1995, Ser. No. 549,235
Claims priority, application Japan, Oct. 27, 1994, 6-264222
Int. Cl.[6] C08L *53/00*
U.S. Cl. 428—35.7 15 Claims



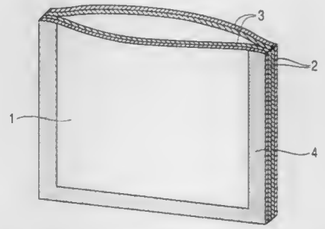
1. An injection molded article for photographic photosensitive materials formed of a noncrystalline resin composition containing 50 wt % or more of a noncrystalline resin having a melt flow rate of from 1 to 60 g/10 min, a flexural modulus of elasticity of 20,000 kg/cm^2 or more and a thermal deformation temperature of 70° C. or higher, from 0.1 to 45 wt % of one or more of a rubbery material, a thermoplastic elastomer and an ethylene copolymer resin, from 0.01 to 49.9 wt % of one or more of a light-shielding material and a fibrous filler and from 0.001 to 20 wt % of one or more of an antioxidant, an age resistor, an ultraviolet absorbent, a fatty acid metal salt, a radical scavenger, a hydrate double salt compound and an oxidation inhibitory synergistic effect-providing agent.

5,827,585
COMPOSITE ENCLOSURE FOR ELECTRONIC HARDWARE
William Bernard Giannetti, Fall River, Mass., assignor to Simmonds Precision Products, Inc., Akron, Ohio
Continuation of Ser. No. 86,273, Jun. 30, 1993, abandoned.
This application Feb. 2, 1996, Ser. No. 594,630
Int. Cl.[6] B32B *9/00*
U.S. Cl. 428—36.2 19 Claims



1. An enclosure for electronic modules, comprising enclosure walls made of a first composite material including conductive fibers for shielding the enclosure interior from electromagnetic radiation, and card guide means for mounting at least one electronic module inside the enclosure; means for securely holding said electronic module on said card guide means, said card guide means conducting heat from the electronic module and comprising a second composite material; said second composite material comprising a matrix and thermally conductive fibers, wherein said thermally conductive fibers are disposed in said matrix with an unbalanced fiber ratio oriented in a direction to facilitate heat transfer through said card guide means.

5,827,586
PACKAGING MATERIAL COMPRISING A WATER-SOLUBLE FILM
Ryo Yamashita, Nishinomiya; Kenichi Kitagaki, Kawanishi; Takahiro Matsubara, and Mikio Takenaka, both of Takarazuka, all of Japan, assignors to Ciba-Geigy Japan Limited, Hyogo, Japan
PCT No. PCT/IB94/00148, § 371 Date Dec. 14, 1995, § 102(e) Date Dec. 14, 1995, PCT Pub. No. WO94/29104, PCT Pub. Date Dec. 22, 1994
Continuation of Ser. No. 571,905, Dec. 14, 1995, abandoned.
This PCT application Jun. 8, 1994, Ser. No. 766,323
Claims priority, application Japan, Jun. 15, 1993, 5-168441
Int. Cl.[6] B65D *65/46*
U.S. Cl. 428—36.6 12 Claims



1. A packaging container formed by sealing multi-layer films each constituted of a water-soluble polymer film and at least one layer of water-insoluble film, wherein the inner layer of said container is constituted of a water-soluble polymer film and the outer layer of said container is constituted of water-insoluble films.

the water-soluble polymer film and the water-insoluble film are readily releasable from each other, and the water-soluble film envelopes a hazardous chemical, and wherein the films are superposed and bonded to each other only in the peripheral seal part of the container.

5,827,587

MULTI-LAYER COMPOSITIONS HAVING A FLUOROPOLYMER LAYER

Tatsuo Fukushi, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 293,469, Aug. 19, 1994, Pat. No. 5,656,121. This application Jun. 12, 1997, Ser. No. 873,763
Int. Cl.[6] B32B *1/08;27/08;27/32;27/34*
U.S. Cl. 428—36.6 **4 Claims**

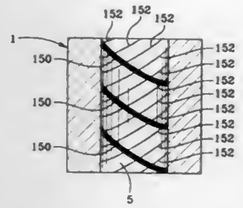
1. A multi-layer composition comprising a first layer comprising a fluoropolymer, a second layer in contact with said first layer comprising a hydrocarbon polymer, and an aliphatic di- or polyamine of less that 1,000 molecular weight, wherein said fluoropolymer comprises interpolymerized units derived from vinylidene fluoride, said hydrocarbon polymer is a polyamide, polyimide, or a carboxyl, anhydride, or imide functional polyolefin, substantially all of said amine is located between and in contact with said two layers, and said amine is present in an amount sufficient to increase the adhesion between said layers compared to compositions without said di- or polyamine.

5,827,588

WORKPIECE HAVING A LASER HEAT-TREATED SURFACE FORMED BY A SMALL DIAMETER BORE EXTENDING IN WORKPIECE

Craig L. Snyder, Glen Gardner, N.J.; William J. Gavigan, Nazareth, Pa.; Frank J. Tufano, Wimington, N.C., and James T. Shandersky, Milan, Pa., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

Filed Nov. 18, 1996, Ser. No. 751,492
Int. Cl.[6] B29D *22/00*
U.S. Cl. 428—36.9 **2 Claims**



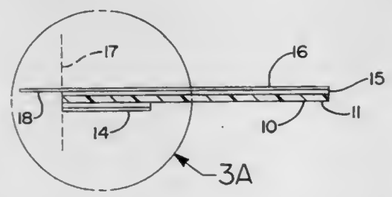
1. A laser heat-treated workpiece comprising;
a. a body having a circular bore extending through said body along a longitudinal bore axis, said bore having a surface, said surface being heat-treated;
b. a heat-affected zone pattern on said bore surface said heat-affected zone pattern produced by a laser light beam;
c. said heat-affected zone pattern forming a first helix advancing longitudinally in a first direction along said bore surface, said first helix having a plurality of turns, each turn separated from adjacent turns; and
d. at least one additional heat-affected zone pattern forming at least one additional helix advancing longitudinally in a second direction along said workpiece bore surface, said second direction being opposite to said first direction, said at least one additional helix having a plurality of turns, each turn separated from adjacent turns, said at least one additional helix turns overlapping in cross-wise pattern said turns of said first helix.

5,827,589

STRAP DEVICES, AND METHODS OF CONSTRUCTING AND UTILIZING SAME

Christopher S. Autterson, 23669 W. Lebost, Novi, Mich. 48375

Continuation-in-part of Ser. No. 500,099, Jul. 10, 1995, abandoned. This application May 2, 1996, Ser. No. 642,157
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—40.1 **5 Claims**



1. A strap device at least partially limiting movement of an object relative to an external member, comprising, in combination:
a strap member having a first predetermined major surface on one side thereof, and a second predetermined major surface on a side opposite said one side;
said strap member comprising a flexible film fabricated from a material selected from a group comprising a metallic foil, a polyester film, a polyvinyl chloride film, a urethane film, and a woven polypropylene;
first securement means disposed on only a predetermined portion of said first predetermined major surface of said strap member securing said strap device to said external member;
second securement means comprises adhesive which is disposed directly on one first predetermined portion of only said second predetermined major surface of said strap member at least partially limiting movement of said object relative to said strap member, said first predetermined portion consists of a minor portion of said second predetermined major surface; and
said strap member being flexible to bring said first predetermined portion of said second predetermined major surface adjacent to a second portion of said second predetermined major surface so that first and second portions of said second predetermined major surface are separated by a distance no greater than the thickness of said second securement means, and thereby at least partially limiting movement of said object relative to said external member.

5,827,590

THERMOSENSITIVE RECORDING ADHESIVE LABEL SHEET

Mitsunobu Morita; Tomohisa Kakuda; Norihiko Inaba; Shinobu Miyauchi, all of Numazu, and Mitsuru Naruse, Shizuoka-ken, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 20, 1996, Ser. No. 710,716
Claims priority, application Japan, Sep. 21, 1995, 7-243015; Oct. 30, 1995, 7-281580; Sep. 17, 1996, 8-244862
Int. Cl.[6] B41M *5/40*
U.S. Cl. 428—40.1 **14 Claims**

1. A thermosensitive recording adhesive label sheet comprising:
(i) a support,
(ii) a thermosensitive recording layer provided on the front side of said support, comprising a leuco dye serving as a coloring agent and a color developer capable of inducing color formation in said leuco dye upon application of heat thereto,
(iii) a protective layer provided on said thermosensitive recording layer, comprising a binder agent, a pigment a calcium-ion-trapping agent and a lubricant comprising an aliphatic acid metallic salt,

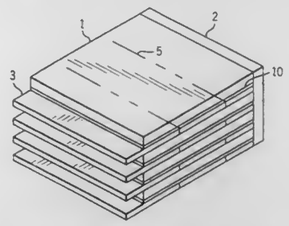
(iv) an adhesive layer provided on the back side of said support, opposite to the side of said thermosensitive recording layer with respect to said support, and
(v) a disposable backing sheet attached to said adhesive layer, comprising a neutral paper, with said protective layer comprising said aliphatic acid metallic salt in an amount of 2 wt % or less of the total solid content of said protective layer, wherein said calcium-ion-trapping agent is capable of trapping calcium ion which migrates from said disposable backing sheet to said protective layer.

5,827,591

REMOVABLE ADHESIVE NOTES FOR AN INDUSTRIAL SETTING

Lana M. Blok, Bayside, Wis., and Hugh M. McKenna, Banbury, England, assignors to Tricor Direct, Inc., Branford, Conn.

Filed Oct. 8, 1996, Ser. No. 727,205
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—41.7 **33 Claims**



1. A pad comprising a stack of a plurality of adhesive sheets alternating with release sheets adhered to the back of each adhesive sheet, wherein
A. each adhesive sheet is removable from a surface without leaving an adhesive residue and comprises a flexible polymer film, polymer-reinforced sheet or cloth having a Taber stiffness of not less than 0.03 measured according to ASTM D747, a front side capable of receiving markings and a back side substantially covered with a pressure sensitive adhesive having an initial tack value of at least 200 g measured according to ASTM D2979 on a Polyken™ probe tack tester, an adhesive tack sufficient to prevent conformability failure of the adhesive sheet after 10 hours conformability testing, and an adhesive strength of at least 100N/m according to ASTM D1000 and
B. each release sheet covers the entire adhesive-coated area on the back of the adhesive sheet to which it is adhered.

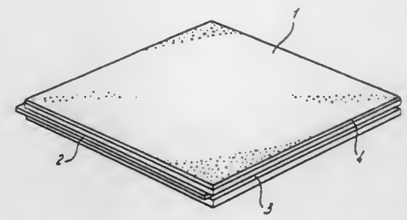
5,827,592

FLOOR ELEMENT

Menno Van Gulik, Lanaken, Belgium; Robert Bartholomeus Mentzen, Theodor Schaepmakersstraat 4, NL-6221 VZ, and Jozef Hendrik Catharina Maria Gerardus Eymael, botb of Maastricht, Netherlands, assignors to Menno Van Gulik, Lanaken, Belgium, and Robert Bartholomeus Mentzen, Maastricht, Netherlands

PCT No. PCT/NL94/00201, § 371 Date Apr. 18, 1996, § 102(e) Date Apr. 18, 1996, PCT Pub. No. WO95/06176, PCT Pub. Date Mar. 2, 1995
PCT Filed Aug. 24, 1994, Ser. No. 602,747
Claims priority, application Netherlands, Aug. 24, 1993, 9301469
Int. Cl.[6] B32B *3/10*
U.S. Cl. 428—44 **3 Claims**

1. In a floor element for covering a base, the floor element comprised entirely of one or more wood fibre boards, each of said boards being provided with milled-in tongues and grooves at the side edges, and being completely covered at its front and rear sides with an at least partially transparent lacquer coating, the improvement wherein all the side edges of said floor element are also completely covered with an at least partially transparent lacquer coating, said fibre board having a density of at least 700 kg/m^3 and a hardness (according to Janka) of at least 4000 N.

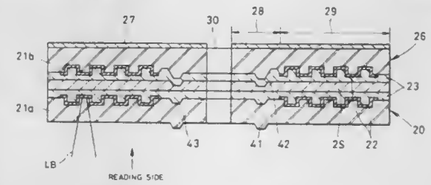


5,827,593

DISC SUBSTRATE USED FOR AN OPTICAL DISC AND A MOLDING DIE FOR MOLDING THE SAME

Haruhisa Maruyama; Masaaki Motokawa, and Shinichi Hanzawa, all of Nakakoma-gun, Japan, assignors to Pioneer Electronic Corporation, Tokyo, and Pioneer Video Corporation, Yamanashi, both of Japan

Filed Dec. 17, 1996, Ser. No. 766,362
Claims priority, application Japan, Dec. 22, 1995, 7-350106
Int. Cl.[6] B32B *3/00*
U.S. Cl. 428—64.1 **5 Claims**



1. An injection-molded disc substrate for a laminated optical disc comprising:
a first circular surface having an inner non-data region formed around a center hole thereof and an outer data region formed around said non-data region;
a second circular surface being entirely flat, opposite and parallel to said first circular surface; and
a ring shaped stack-rib formed on said inner non-data region of the first circular surface having the inner non-data region.

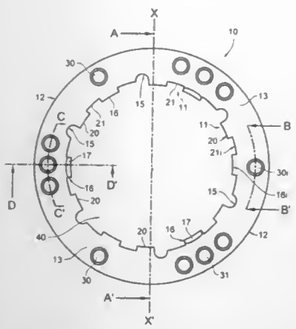
5,827,594

STACKABLE WINDING CORES FOR MAGNETIC TAPES

Ping-Sing Chan, Aberdeen, Hong Kong, assignor to ACME Magnetic Tapes Ltd., Hong Kong

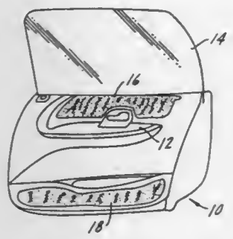
Filed Jan. 3, 1997, Ser. No. 774,719
Int. Cl.[6] B65H *75/18*
U.S. Cl. 428—66.6 **4 Claims**

1. A winding core for flexible tapes comprising an inner rim, an outer rim, first and second core planes, and an axial aperture defined and surrounded by said inner rim, and having distributed along said inner rim:
a plurality of driving-pin engagement surfaces for engaging with a holding device of a processing machine,
a plurality of clamping teeth wherein each tooth comprises a first radially extending portion and a second axially extending portion, said second portion extending from a free end of said first portion,
a plurality of retention teeth wherein each retention tooth comprises a radially extending portion,



a plurality of retention gaps wherein each retention gap is formed between a retention tooth and a clamping tooth and is adapted to receive said secondary portion of a clamping tooth,
a plurality of lugs wherein each lug comprises a protrusion axially extending from said core plane, and
a plurality of recesses distributed on said core planes, and adapted to receive said lugs, wherein for a lug on said first core plane, there is provided a corresponding recess on said second core plane, and said recess is located at an angular displacement, equal to the angular width of said first portion of said clamping teeth, from said lug.

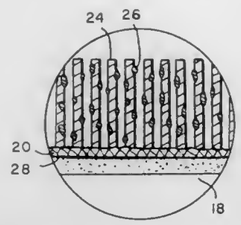
5,827,595
AUTOMOTIVE TRIM PANEL HAVING A SHIRRED APPEARANCE
Vincent H-H Jones, Lake Orion, and Scott M. Kloock, Washington, both of Mich., assignors to Simco Automotive Trim, Inc., Roseville, Mich.
Filed Jan. 31, 1997, Ser. No. 797,641
Int. Cl.[6] D05B *35/08*
U.S. Cl. 428—71 **15 Claims**



1. A panel for covering a substantially rigid substrate having a non-flat contour, the panel comprising an A-side layer and a support layer laminated to one another, the A-side layer by itself having insufficient stiffness to retain a particular shape, and the support layer having sufficient stiffness to impart to the panel a permanent, non-flat contour generally matching that of the substrate, the support layer and A-side layer containing a plurality of gathers to impart a shirred appearance.

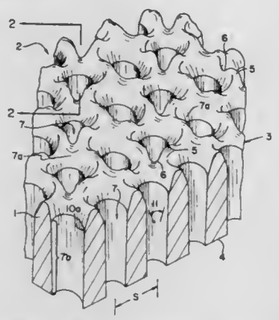
5,827,596
LINING MATERIAL
James Donohue, 1111 Melissa Dr., San Antonio, Tex. 78213
Filed Jul. 7, 1994, Ser. No. 271,791
Int. Cl.[6] B32B *3/02*
U.S. Cl. 428—96 **8 Claims**

1. Lining material comprising:



a knitted, woven or non-woven material coated with a non-tacky gripping agent forming a fine beaded or solid coating whereby the material grips a second structure.

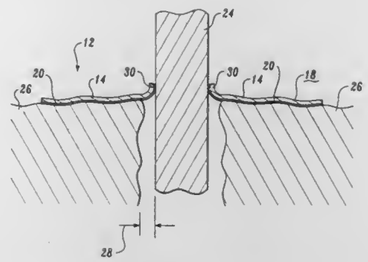
5,827,597
TOPOGRAPHICAL SUPPORT MEMBER FOR PRODUCING NONWOVEN FABRICS
William A. James, Long Branch, and William G. F. Kelly, Middlesex, both of N.J., assignors to McNeil-PPC, Inc., Skillman, N.J.
Division of Ser. No. 307,203, Sep. 16, 1994, Pat. No. 5,585,017, which is a continuation-in-part of Ser. No. 131,191, Sep. 13, 1993, abandoned. This application Jun. 27, 1996, Ser. No. 671,229
Int. Cl.[6] D04H *1/46;* **B32B** *3/24*
U.S. Cl. 428—131 **4 Claims**



1. A topographical support member for producing nonwoven fabrics comprising:
a body having a top surface comprising a pattern of a plurality of peaks and valleys and a plurality of apertures, each of said apertures having a conical top portion surrounded by a cluster of said peaks and valleys.

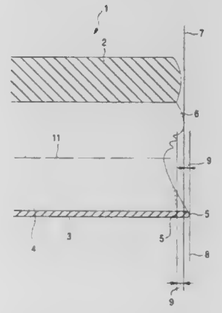
5,827,598
METHOD AND APPARATUS FOR SEALING AN AIRCRAFT PENETRATION
John T. Larsen, Arlington, and John E. Huber, Edmonds, both of Wash., assignors to The Boeing Company, Seattle, Wash.
Filed Nov. 5, 1996, Ser. No. 743,946
Int. Cl.[6] B64C *1/40;* **E04B** *1/74*
U.S. Cl. 428—131 **17 Claims**

1. A sealing system for use in aircraft, the system comprising:
(a) a penetration;
(b) insulating material located about the penetration, the insulating material including an outer surface, the penetration having a predetermined cross-sectional area at the location of the insulating material outer surface; and
(c) a seal for sealing against the passage of moisture at the location of the insulating material and the penetration, the seal comprising:



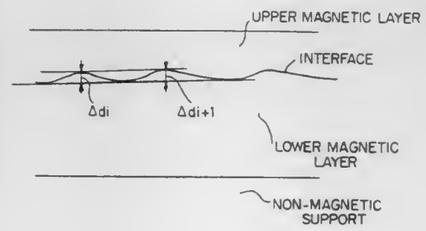
(i) an elastic patch having an opening with an unstretched area of an amount less than the predetermined penetration cross-sectional area; and
(ii) an adhesive layer applied to one side of the patch; sealing of the penetration being accomplished by inserting the penetration through the patch opening and contacting the patch adhesive layer onto the insulation outer surface; the smaller cross-sectional area of the opening causing the edges of the seal at the opening to form a lip about the penetration.

5,827,599
MAGNETIC RECORDING TAPE HAVING A BACKCOAT AND SPECIFIED EDGE PROFILE
Naoto Murao; Masatoshi Takahashi; Nobuyoshi Asada; Junichi Nakamigawa, and Nobuyuki Kobayashi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan
Filed Nov. 8, 1996, Ser. No. 745,601
Claims priority, application Japan, Nov. 30, 1995, 7-312606
Int. Cl.[6] G11B *5/68*
U.S. Cl. 428—141 **11 Claims**



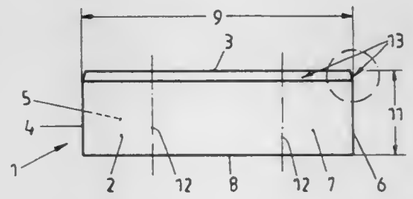
1. A tape-shaped magnetic recording medium having at least one edge face obtained by longitudinally slitting a nonmagnetic support having on one side thereof a magnetic layer comprising a ferromagnetic powder dispersed in a binder and on the other side a back layer, wherein the edge face defines a plurality of widths with a first width being greater than all other widths and wherein the edge face of said back layer doesn't protrude from a longitudinal line tangent to the first width and wherein the Young's modulus of said back layer in the width direction is not less than 640 Kg/mm^2 and the Young's modulus in the width direction of said nonmagnetic support is not less than 850 Kg/mm^2.

5,827,600
MAGNETIC RECORDING MEDIUM
Kiyomi Ejiri; Hiroo Inaba; Shinji Saito, and Satoru Hayakawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Continuation-in-part of Ser. No. 873,201, Apr. 24, 1992, Pat. No. 5,616,397, which is a continuation-in-part of Ser. No. 822,975, Jan. 21, 1992, Pat. No. 5,258,223. This application Dec. 4, 1996, Ser. No. 760,199
Claims priority, application Japan, Apr. 25, 1991, 3-121873; Apr. 25, 1991, 3-121875; Jul. 15, 1991, 3-198309; Jan. 8, 1992, 4-018416; Jan. 10, 1992, 4-021782
Int. Cl.[6] G11B *5/66*
U.S. Cl. 428—141 **17 Claims**



1. A magnetic recording medium comprising a support having provided thereon in sequence at least a lower layer comprising a binder and a non-magnetic powder and an upper magnetic layer over the lower layer, the upper magnetic layer comprising a binder and a ferromagnetic powder, wherein said upper magnetic layer has a dry thickness of not more than 1 μm, and there is no mixed region between said lower layer and said upper magnetic layer.

5,827,601
LARGE-FORMAT FIRECLAY REFRACTORY BRICK, IN PARTICULAR BOTTOM BLOCK IN A TIN BATH
Hans Petschauer, Grossalmerode, Germany, assignor to VGT Industriekeramik GmbH, Grossalmerode, Germany
Filed Nov. 1, 1996, Ser. No. 740,795
Claims priority, application Germany, Nov. 3, 1995, 195 40 944.2
Int. Cl.[6] B32B *3/28*
U.S. Cl. 428—167 **8 Claims**



1. Large-format fireclay refractory brick (1) for placement as bottom block in a tin bath, said brick being made of a material comprising Al_2O_3 and SiO_2, and each brick having a top surface (3) for contacting the tin bath, wherein each brick (1) comprises a perimeter groove (13) surrounding said top surface (3) for contacting a tin bath so that the top surfaces of adjacent brick in a tin bath are displaced from one another.

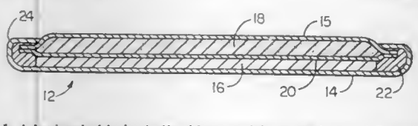
5,827,602
HYDROPHOBIC IONIC LIQUIDS

Victor R. Koch, Lincoln; Chenniah Nanjundiah, Lynn, both of Mass., and Richard T. Carlin, Nashua, N.H., assignors to Covalent Associates Incorporated, Woburn, Mass.

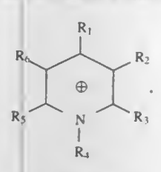
Continuation of Ser. No. 673,422, Jun. 28, 1996, abandoned, which is a continuation-in-part of Ser. No. 497,310, Jun. 30, 1995, abandoned. This application Sep. 17, 1997, Ser. No. 932,931

Int. Cl.[6] H01M *6/14*; C25B *9/00*; H01G *1/74;9/00*

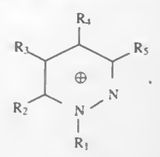
U.S. Cl. 429—194 25 Claims



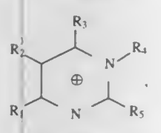
1. A hydrophobic ionic liquid comprising a cation and an anion, wherein said cation is selected from the group consisting of:



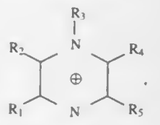
Pyridinium



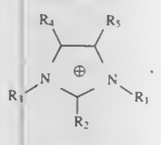
Pyridazinium



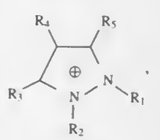
Pyrimidinium



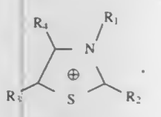
Pyrazinium



Imidazolium

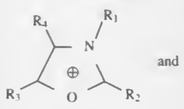


Pyrazolium

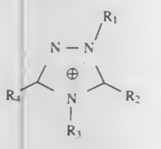


Thiazolium

and



Oxazolium



Triazolium

wherein R_1, R_2, R_3, R_4, R_5, and R_6 are either H; or F; or separate alkyl groups of from 1 to 4 carbon atoms, respectively; or two said separate alkyl groups are joined together to constitute a unitary alkylene radical of from 2 to 4 carbon atoms forming a ring structure converging on N; or separate phenyl groups; and wherein said alkyl groups, unitary alkylene radical or phenyl groups are optionally substituted with electron withdrawing groups; and

wherein said anion is a non-Lewis acid-containing polyatomic anion having a van der Waals volume exceeding 100 Å^3.

5,827,603
TRANSFER FOIL

Joachim Süss, Fürth, Germany, assignor to Leonhard Kurz GmbH & Co., Furth, Germany

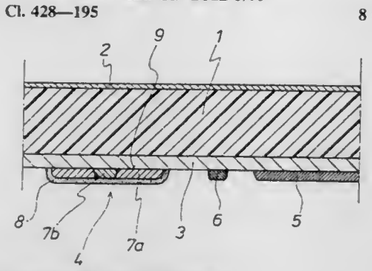
PCT No. PCT/DE95/01194, § 371 Date Mar. 17, 1997, § 102(e) Date Mar. 17, 1997, PCT Pub. No. WO96/09174, PCT Pub. Date Mar. 28, 1996

PCT Filed Aug. 31, 1995, Ser. No. 793,997

Claims priority, application Germany, Sep. 22, 1994, 44 33 858.9

Int. Cl.[6] B32B *3/10*

U.S. Cl. 428—195 8 Claims



1. A transfer foil, which comprises:

a carrier film formed of a plastic film of a thickness of from 3.5 to 19 μm;

at least one decorative layer provided region-wise on a side of said carrier film, said decorative layer being transferable by a hot stamping process utilizing heat and pressure; and

a thermotransfer layer provided region-wise on said side of the carrier film and separate from said decorative layer, said thermotransfer layer being transferable by a thermal print head.

5,827,604
MULTILAYER PRINTED CIRCUIT BOARD AND METHOD OF PRODUCING THE SAME

Hiroaki Uno, and Masato Kawade, both of Gifu, Japan, assignors to Ibiden Co., Ltd., Gifu, Japan

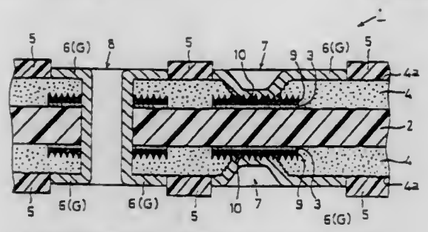
PCT No. PCT/JP95/02460, § 371 Date Jul. 31, 1996, § 102(e) Date Jul. 31, 1996, PCT Pub. No. WO96/17503, PCT Pub. Date Jun. 6, 1996

PCT Filed Dec. 1, 1995, Ser. No. 682,629

Claims priority, application Japan, Dec. 1, 1994, 6-298626; Aug. 25, 1995, 7-238938

Int. Cl.[6] H05K *3/46;3/38*

U.S. Cl. 428—209 20 Claims



1. A build-up multilayer printed circuit board, comprising:

an inner layer copper pattern;

a fine uneven layer on the inner layer copper pattern;

a metal layer on the fine uneven layer, the metal layer comprising at least one metal having an ionization tendency not lower than that of copper but not higher than that of titanium selected from the group consisting of titanium, aluminum zinc, iron, indium, thallium, cobalt, nickel, tin, lead, and bismuth;

an interlaminar insulating layer on the metal layer; and

an outer layer copper pattern on the interlaminar insulating layer.

5,827,605
CERAMIC MULTILAYER SUBSTRATE AND METHOD OF PRODUCING THE SAME

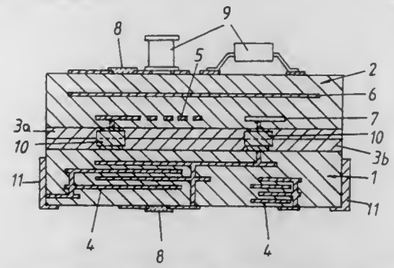
Mitsuyoshi Nishide, Otokuni-gun, and Hiroji Tani, Nagaokakyo, both of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto-fu, Japan

Filed Dec. 21, 1995, Ser. No. 576,440

Claims priority, application Japan, Dec. 21, 1994, 6-318666

Int. Cl.[6] B32B *9/00*

U.S. Cl. 428—209 11 Claims



1. A multilayer ceramic substrate comprising two ceramic substrates which have different thermal expansion coefficients laminated together by at least two layers consisting essentially of glass which have different thermal expansion coefficients which are between the thermal expansion coefficients of the two ceramic substrates, whereby the thermal expansion coefficient changes stepwise between the two ceramic substrates.

5,827,606
LOW ELECTRIC NOISE ELECTRODE SYSTEM

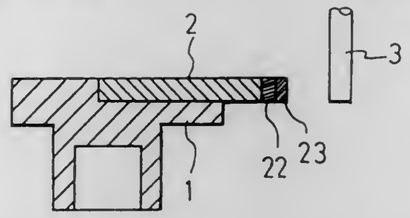
Ikuo Marumoto, Anjyo; Taisuke Miyamoto, Okazaki; Satoru Tojo; Toshio Asahi, both of Toyota; Hiroshi Morita, Toyota; Iwao Hibino, Toyota; Kimitoshi Murata, Toyota, and Nobuyuki Ishihara, Toyota, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 278,970, Jul. 22, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 610,975

Claims priority, application Japan, Jul. 22, 1993, 5-202662; Nov. 19, 1993, 5-290835; Mar. 1, 1994, 6-031262; Jul. 5, 1994, 6-153857

Int. Cl.[6] B32B *3/00;9/00*

U.S. Cl. 428—209 20 Claims



1. A low electric noise electrode system, comprising:

a first electrode and a metal second electrode separated from the first electrode by an air gap;

said first electrode comprising,

a metal electrode substrate,

a first layer comprising a material selected from the group consisting of a metal oxide, an oxide resistor, and a mixture of an oxide dielectric substance and an oxide resistor, said first layer formed on a surface of said substrate; and

a second layer comprising a material of which said first layer is formed but having a larger resistivity than that of said first layer, said second layer being formed on the surface of said first layer covering said first layer and having an exposed surface placed opposite said second electrode with said air gap between the exposed surface of the second layer and the second electrode so as to conduct a discharge between said exposed surface and said second electrode upon application of a sufficiently high voltage across said exposed surface and said second electrode.

5,827,607
ADVANCED POLYMER WOOD COMPOSITE

Michael J. Deaner, Osceola, Wis.; Giuseppe Puppin, Bayport, and Kurt E. Heikkila, Circle Pines, both of Minn., assignors to Andersen Corporation, Bayport, Minn.

Continuation of Ser. No. 224,396, Apr. 7, 1994, abandoned, which is a continuation of Ser. No. 938,364, Aug. 31, 1992, abandoned. This application Oct. 17, 1995, Ser. No. 543,959

Int. Cl.[6] B32B *5/16*

U.S. Cl. 428—326 29 Claims

1. A composite pellet, capable of formation into a structural member, the pellet comprising a thermoplastic extrudate having a length of about 1 to 10 mm:

the thermoplastic consisting essentially of:

(a) about 45 to 70 wt-% of a polymer comprising vinyl chloride;

(b) about 30 to 50 wt-% of wood fiber having a minimum dimension of about 0.1 mm and a minimum aspect ratio of about 1.8; and

(c) less than about 8 wt-% water; and wherein the polymer and wood fiber are mixed at an elevated temperature and pressure such that an intimate admixture is formed in which the wood fiber is dispersed throughout a contiguous polymer phase and wherein the composite has a Young's modulus greater than 600,000 psi.

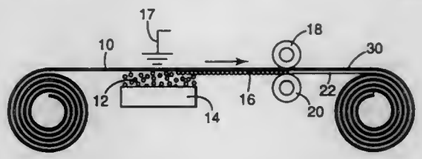
5,827,608
METHOD OF FORMING A THERMOPLASTIC LAYER ON A FLEXIBLE TWO-DIMENSIONAL SUBSTRATE AND POWDER FOR PREPARING SAME

Ernest M. Rinehart, North St. Paul, and Rafael M. Yasis, White Bear Lake, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 28, 1996, Ser. No. 738,517

Int. Cl.[6] C09D *5/46*; C08L *27/12*

U.S. Cl. 428—332 12 Claims



1. A method of forming a thermoplastic layer on a flexible substrate having two major opposing surfaces comprising the steps of:

a) providing a thermoplastic powder having a melt flow index of at least 0.008 grams/10 minutes and comprising a (meth)acrylate polymer and a fluoropolymer, wherein the weight ratio of the (meth)acrylate polymer to the fluoropolymer ranges from 1:1 to 99:1;

b) applying the powder in absence of solvents to at least one major surface of the substrate to form a particle layer; and

c) subjecting the substrate of step b) to elevated heat and pressure until the powder in the particle layer is fused into a continuous layer that is bonded to the substrate, wherein the heat and pressure of step c) are applied simultaneously by passing the coated substrate through a heated nip configuration comprising a heated roll having an outer surface and a backup roll.

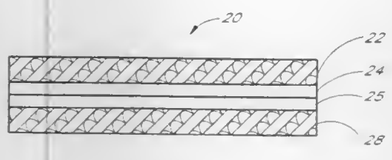
11. A composite sheet material comprising a flexible, thermoplastic substrate having two major opposing surfaces and a thermoplastic layer overlying and bonded to at least one major surface of the substrate, the thermoplastic layer comprising a continuous layer of a thermoplastic powder fused via heat and pressure, wherein the powder has a melt flow index ranging from 0.008 grams/10 minutes to about 0.02 grams/10 minutes, wherein the powder comprises a (meth)acrylate polymer and a fluoropolymer.

5,827,609

MULTILAYER PRESSURE-SENSITIVE ADHESIVE CONSTRUCTION

Jesse C. Ercillo, Covina; Roger H. Mann, Corona Del Mar; Karl Josephy, Los Angeles; Eng-Pi Chang, Arcadia; Luigi Sartor, Pasadena, all of Calif.; Henk de Konig, Zevenhuizen, Netherlands, and Yukihiko Sasaki, Claremont, Calif., assignors to Avery Dennison Corporation, Pasadena, Calif.

Filed Jun. 7, 1995, Ser. No. 481,124
Int. Cl.[6] C09J *7/02*
U.S. Cl. 428—354 **26 Claims**



1. A multilayer pressure-sensitive adhesive construction with improved label convertibility in comparison to a single layer adhesive construction, the multilayer adhesive construction comprising:

a facestock;

a first adhesive layer on the facestock, the first adhesive layer comprising a first adhesive composition with a first glass transition temperature;

a second adhesive layer on the first adhesive layer, the second adhesive layer comprising a second adhesive composition with a second glass transition temperature lower than the first glass transition temperature;

a release surface on the second adhesive layer; and

wherein the first and the second layers when applied have a combined specified thickness and the multilayer adhesive construction so formed is capable of being converted to a label construction by a press utilizing a die-cutting and matrix stripping operation without formation of hangers at a rate in feet per minute which is substantially greater than that of a comparison adhesive construction comprising a single layer of the second adhesive composition applied in an amount such that the single layer has about the specified thickness.

5,827,610

CHITOSAN-COATED PULP, A PAPER USING THE PULP, AND A PROCESS FOR MAKING THEM

Seshadri Ramachandran, Chesterfield, Va., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 10, 1997, Ser. No. 781,331
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—361 **4 Claims**

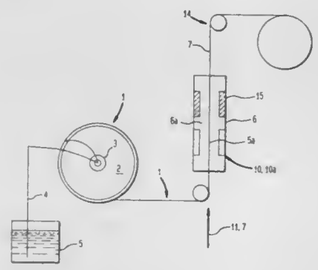
1. Aramid fibers having a length of 0.15 to 10 millimeters, a surface area of 0.5 to 20 square meters per gram and a coating of chitosan in the amount of 1 to 10 percent, based on the weight of the fibers.

5,827,611

MULTILAYERED THERMOPLASTIC ARTICLE WITH SPECIAL PROPERTIES

Charles E. Forbes, Bridgewater, N.J., assignor to Hoechst Celanese Corp, Sommerville, N.J.

Filed Mar. 10, 1997, Ser. No. 814,650
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—375 **12 Claims**



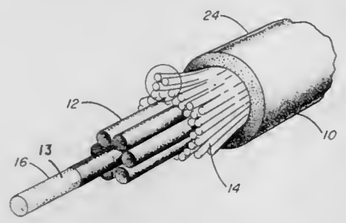
1. A multi layer thermoplastic article comprising a core layer and a cladding layer, each layer comprising a high molecular weight polymeric matrix, and wherein only one of the cladding layers further comprises one of a variety of low molecular weight guest compounds substantially unreactive with the polymer matrix but soluble therein and each of which compounds attributes a specific property to the cladding cladding layer so as to differ in terms of that property from the other layer.

5,827,612

AQUEOUS COATING COMPOSITIONS FOR GLASS FIBERS, FIBER STRANDS COATED WITH SUCH COMPOSITIONS AND OPTICAL FIBER CABLE ASSEMBLIES INCLUDING SUCH FIBER STRANDS

Mikhail M. Girgis, Wexford, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 81,045, Jun. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 900,036, Jun. 17, 1992, Pat. No. 5,369,141. This application Sep. 1, 1995, Ser. No. 522,766
Int. Cl.[6] D02G *3/00*
U.S. Cl. 428—378 **4 Claims**



1. A strand comprising a plurality of sized glass fibers having thereon a secondary aqueous coating composition, the secondary aqueous coating composition comprising:

(a) a first water soluble, emulsifiable or dispersible curable acrylic polymer; and

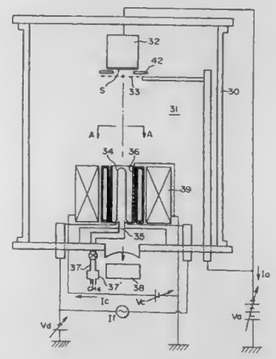
(b) a second water soluble, emulsifiable or dispersible curable acrylic polymer different from the first acrylic polymer, the secondary aqueous coating composition being essentially free of a urethane-containing polymer.

5,827,613

ARTICLES HAVING DIAMOND-LIKE PROTECTIVE FILM AND METHOD OF MANUFACTURING THE SAME

Masatoshi Nakayama, and Masanori Shibahara, both of Saku, Japan, assignors to TDK Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 940,593, Sep. 4, 1992, abandoned. This application Mar. 10, 1994, Ser. No. 209,571
Int. Cl.[6] B29C *33/56*
U.S. Cl. 428—408 **4 Claims**



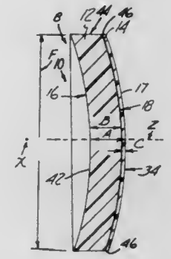
1. An article having a diamond-like film formed thereon which comprises a substrate of a material selected from the group consisting of alloys containing at least Co, Ni, or Fe, ceramics, and glass and which has only a slight affinity for a diamond-like thin film, an Mo film formed on the substrate, and a diamond-like thin film consisting of an amorphous carbon having a Raman's absorption at about 1,550 cm^{-1} but not having a sharp peak at 1,333 cm^{-1} formed further thereon with the substrate at no greater than 520° C. and said diamond-like thin film having a thickness of 0.1–100 μm.

5,827,614

PRODUCTION OF OPTICAL ELEMENTS

Sujal N. Bhalakia, Brooklyn Park, and Thomas J. Moravec, Maple Grove, both of Minn., assignors to Vision-Ease Lens, Inc., Brooklyn Center, Minn.

Division of Ser. No. 397,949, Mar. 3, 1995. This application Apr. 15, 1996, Ser. No. 631,924
Int. Cl.[6] B32B *9/04*
U.S. Cl. 428—411.1 **55 Claims**



1. A method of making an optical element, the method comprising:

laminating a first thermoplastic resinous sheet and a functional member; and

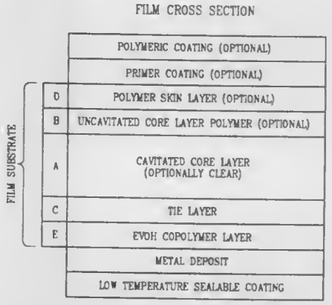
affixing the first thermoplastic resinous sheet to a power portion of the optical element.

5,827,615

METALLIZED MULTILAYER PACKAGING FILM

Robert E. Touhsaent, Fairport, N.Y., and M. Lawrence Tsai, Holmdel, N.J., assignors to Mobil Oil Corporation, Fairfax, Va.

Filed Jul. 15, 1996, Ser. No. 680,758
Int. Cl.[6] B32B *15/08;3/26;7/12;5/16*
U.S. Cl. 428—463 **25 Claims**



1. A metallized multilayer film comprising a film substrate having in cross-section

a) a core layer comprising a film-forming base polymer optionally blended with a maleic anhydride-modified polyolefin;

b) if said maleic anhydride-modified polyolefin is not blended with said base polymer, an adhesion-promoting tie layer of a maleic anhydride modified polyolefin on one surface of the core layer;

c) a metal receiving skin layer of an ethylene vinyl alcohol copolymer (EVOH) on a surface either of the core layer containing such blended maleic anhydride-modified polyolefin, or that of said maleic anhydride-modified polyolefin tie layer;

d) Optionally, on the other side of the core layer, a polymer skin layer having a lower melting temperature than that of said the core layer

said film substrate containing a metal deposit on the surface of said metal receiving EVOH copolymer layer, and a polymeric low temperature sealable coating (LTSC) comprising a copolymer of about 10 to 35 wt. % of at least one α,β-ethylenically unsaturated carboxylic acid with about 65 to 90 wt. % of ethylene, an alkyl acrylate or methacrylate, acrylonitrile, or mixtures thereof, on the surface of said metal deposit.

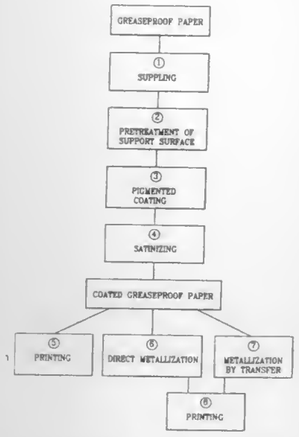
5,827,616

COATED GREASEPROOF PAPER AND PROCESS FOR MANUFACTURING IT

Pierre Girard, SaintIsmier, and Jean-Claude Trillat, Estrablin, both of France, assignors to Sibille Dalle, Vitry Sur Seine, France

Filed Jul. 19, 1996, Ser. No. 683,851
Claims priority, application France, Jul. 24, 1995, 95 08939
Int. Cl.[6] B52B *15/12*
U.S. Cl. 428—464 **14 Claims**

1. Process for manufacturing a material from a greaseproof paper used as support, comprising the following steps: (a) coating at least one face of the support with water or at least one aqueous solution, said support thus becoming a pliable support; (b) treating the surface of the pliable support by depositing one or more pigmented layers on said surface, which improves the qualities of



metallization or of printing or of both of the paper, relative to uncoated paper said pliable support thus becoming a pliable coated support; and (c) calendering the pliable coated support.

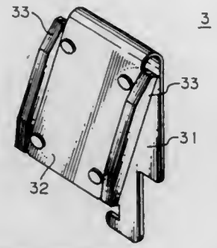
5,827,617
THERMO-TRANSFER RIBBON
Heinrich Krauter, Hombrechtikon, Switzerland, assignor to Pelikan Produktions AG, Zurich, Switzerland
Filed Dec. 11, 1996, Ser. No. 763,829
Claims priority, application Germany, Dec. 21, 1995, 195 48 033.3
Int. Cl.[6] B41M *5/26*
U.S. Cl. 428—484 **20 Claims**

1. A thermo-transfer ribbon comprising a carrier material having deposited on one side of said carrier a wax layer B) of a thermo-transfer color and having an additional layer A) arranged between said carrier and said wax layer, said ribbon being characterized in that said additional layer is a resin separation layer A) for said wax layer B) wax, that the wax of said wax layer have a melting point of approximately 70° C to 110° C., and that in both said layers A) and B) a wax-soluble polymer is finely dispersed.

5,827,618
RUST-PROOFING STEEL SHEET FOR FUEL TANKS AND PRODUCTION METHOD THEREOF
Yashichi Oyagi; Takayuki Omori; Masahiro Fuda; Ken Sawada, and Nobuyoshi Okada, all of Kitakyushu, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan
PCT No. PCT/JP96/00835, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO96/30560, PCT Pub. Date Oct. 3, 1996
PCT Filed Mar. 28, 1996, Ser. No. 750,073
Claims priority, application Japan, Mar. 28, 1995, 7-069087; Mar. 29, 1995, 7-070259; Mar. 29, 1995, 7-070260; Mar. 30, 1995, 7-073140; May 31, 1995, 7-132995; Jun. 20, 1995, 7-152846; Sep. 1, 1995, 7-224906; Sep. 6, 1995, 7-228709
Int. Cl.[6] B21D *39/00*; **B32B** *15/01*; **B05D** *1/36*; **C21D** *1/09*
U.S. Cl. 428—621 **19 Claims**

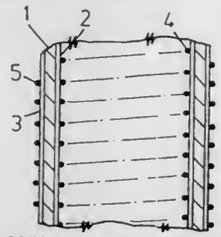
1. A rust-proofing steel sheet for a fuel tank characterized in that an alloy layer containing at least one of nickel, iron, zinc and tin is deposited onto each surface of a steel sheet to a thickness of not greater than 2 μm per surface, and a Sn—Zn alloy plating layer consisting of 40 to 99 wt % of tin and the balance of zinc and containing not greater than 20 crystals/0.25 mm^2 of zinc crystals having a major diameter of at least 250 μm is deposited onto each alloy layer to a thickness of 2 to 50 μm per surface.

5,827,619
BATTERY HOLDER
Fumio Iida, Kanagawa-ken, Japan, assignor to Leader Electronics Corp., Kanagawa, Japan
Filed Feb. 18, 1997, Ser. No. 801,787
Claims priority, application Japan, Feb. 19, 1996, 8-030746
Int. Cl.[6] H01M *2/10*
U.S. Cl. 429—1 **4 Claims**



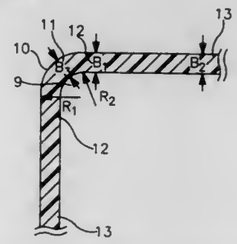
1. A battery holder comprising:
(a) a housing for holding at least a battery therein;
(b) a positive side contact for contacting a positive terminal of the battery, the positive side contact including:
a back plate fixed to the housing;
a conductive contact plate for contacting the positive terminal of the battery, the contact plate forming a U-shaped or V-shaped spring together with the back plate; and
at least two separate protective plates of an insulation material arranged along an outer periphery of the contact plate and protruding therefrom, each protective plate being secured to a side of the contact plate, and the distance between the protective plates being defined to be larger than a diameter of the positive terminal of the battery and smaller than a diameter of the battery itself, thereby preventing a negative terminal of the battery from connection with the contact plate;
(c) a negative side contact providing a resilient force in a longitudinal direction of the housing, for contacting the negative terminal of the battery; and
(d) a pair of lines connected to the positive and negative side contacts to provide a battery voltage to outer electrical circuits.

5,827,620
SOLID OXIDE FUEL CELL STRUCTURES
Kevin Kendall, Runcorn, Great Britain, assignor to Keele University, Staffordshire, Great Britain
PCT No. PCT/GB94/00549, § 371 Date Nov. 24, 1995, § 102(e) Date Nov. 24, 1995, PCT Pub. No. WO94/22178, PCT Pub. Date Sep. 29, 1994
PCT Filed Mar. 17, 1994, Ser. No. 525,598
Claims priority, application United Kingdom, Mar. 20, 1993, 9305804; Mar. 20, 1993, 9305823
Int. Cl.[6] H01M *8/12*
U.S. Cl. 429—31 **26 Claims**



1. A tubular SOFC structure comprising a self-supporting extruded tube a longitudinally extending portion of which includes an electrolyte, an electrically conductive inner electrode making electrical contact with the inner wall of the electrolyte, an electrically conductive outer electrode making electrical contact with the outer wall of the electrolyte, a thermally insulating enclosure defining a wall through which the tube extends such that a first portion of the tube extends within the enclosure and a second portion of the tube extends outside the enclosure, a first gas supply conduit connected to the end of the second portion of the tube by a gas-tight seal located outside the enclosure, a second gas supply conduit which opens within the enclosure, one of the first and second gases being a fuel gas and the other containing oxygen, and means for heating the interior of the enclosure to a temperature at which the structure operates as a solid oxide fuel cell, wherein the inner electrode extends the length of the extruded tube, and wherein the inner electrode is a spiral wire in contact with a porous layer of conductive ink deposited inside the tube.

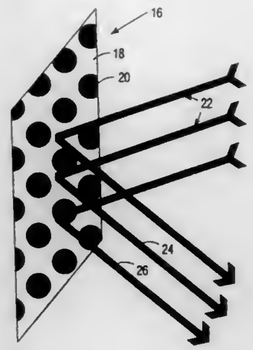
5,827,621
SEALED PRISMATIC STORAGE BATTERY
Nobuyasu Morishita, Fuilldera; Shinji Hamada, Hirakata; Miho Okamoto, Sakai, and Munehisa Ikoma, Shiki-gun, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Feb. 19, 1997, Ser. No. 803,198
Claims priority, application Japan, Feb. 20, 1996, 8-031563
Int. Cl.[6] H01M *2/02*
U.S. Cl. 429—176 **14 Claims**



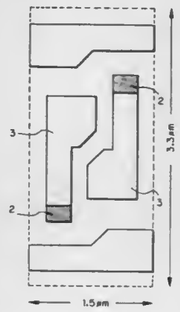
1. A sealed prismatic storage battery comprising:
a battery case including:
a plurality of flat plane sections;
a corner section situated between each flat plane section of said plurality of flat plane sections;
a junction section situated between said corner section and said each flat plane section said junction section having a thickness that is smaller than the thickness of said flat plane section and the thickness of said corner section; and
an electrode group and an electrolyte contained in said battery case.

5,827,622
REFLECTIVE LITHOGRAPHIC MASK
Hans Juergen Coufal, and Robert Keith Grygier, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 552,027, Nov. 2, 1995, abandoned. This application Jun. 27, 1997, Ser. No. 884,094
Int. Cl.[6] G03F *1/00*
U.S. Cl. 430—5 **4 Claims**

1. A process for generating a resist image on a substrate comprising the steps of:
(a) coating a substrate with a film comprising a radiation sensitive resist;
(b) imagewise exposing the film to radiation reflected off a planar reflective metal surface comprising a plurality of areas having different refractive indices, the radiation reflected from one portion of the planar reflective metal surface being phase shifted at 45°, 90° or 180° from radiation reflected other portions of the planar reflective metal surface; wherein the planar reflective metal surface is tilted so that the radiation is incident upon it from about 25° to about 75° from the normal; and
(c) developing the image.



5,827,623
OPTICAL PROXIMITY CORRECTION HALFTONE TYPE PHASE SHIFT PHOTOMASK
Shinji Ishida, and Tadao Yasuzato, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Oct. 30, 1996, Ser. No. 741,016
Claims priority, application Japan, Oct. 31, 1995, 7-308358
Int. Cl.[6] G06F *9/00*
U.S. Cl. 430—5 **12 Claims**



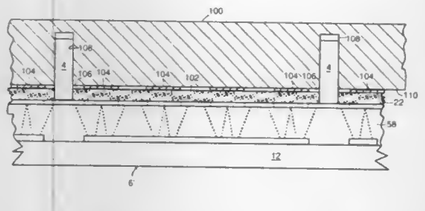
1. A halftone type phase shift photomask comprising:
a transparent substrate;
a light screen pattern formed on a first area of said transparent substrate; and
an halftone pattern formed on a second area of said transparent substrate, said second area being next to said first area,
a phase difference between light passing through said halftone pattern and light not passing through said halftone pattern being 180°, and
wherein said halftone pattern in said second area is of such a length as to correct an optical proximity effect in a photoresist pattern produced by passing light through said photomask, and wherein the length of said halftone pattern is such that a two-dimensional size of said photoresist pattern is not substantially reduced in relation to a photomask pattern when defocus changes within at least a range of between −1.0 μm and +1.0 μm inclusive.

5,827,624

MASK MODIFICATION FOR FOCAL PLANE ON CONTACT PHOTOLITHOGRAPHY TOOL

Darryl Stansbury, Boise, Id., assignor to Micron Display Technology, Inc., Boise, Id.

Filed Dec. 30, 1996, Ser. No. 774,378
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 27 Claims



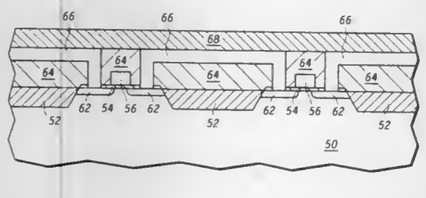
1. In a photolithographic process in which a mask is used to expose desired regions of a photoresist layer, that improvement wherein said mask contains recesses sized and adapted to receive features projecting above said photoresist layer such that, when said mask is placed in position over said resist layer, said features are received within said recesses and the surface of said mask is positioned below the tops of said features and closely adjacent the top of the resist layer.

5,827,625

METHODS OF DESIGNING A RETICLE AND FORMING A SEMICONDUCTOR DEVICE THEREWITH

Kevin Lucas; Michael E. Kling; Bernard J. Roman, and Alfred J. Reich, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Aug. 18, 1997, Ser. No. 912,601
Int. Cl.[6] G03F *9/00*
U.S. Cl. 430—5 34 Claims



1. A method of designing a reticle for a semiconductor device comprising the steps of:

defining a first attenuating feature and a second attenuating feature of a reticle layout file, wherein:

the first attenuating feature corresponds to a first device feature within a first region of the semiconductor device;

the second attenuating feature corresponds to a second device feature within the first region; and

the first region includes a first transparent portion and a second transparent portion; and

inserting a first outrigger into the reticle layout file for the first region of the semiconductor device, wherein:

the first transparent portion lies between and immediately adjacent to the first attenuating feature and the first outrigger; and

the second transparent portion lies between and immediately adjacent to the second attenuating feature and the first outrigger.

5,827,626

PRODUCTION OF COLOR FILTER

Yuji Kobayashi; Shigeo Tachiki; Toshihiko Akahori; Syoichi Sasaki, all of Hitachi; Kouji Yamazaki, and Yoichi Kimura, both of Ichihara, all of Japan, assignors to Hitachi Chemical Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1996, Ser. No. 613,094
Claims priority, application Japan, Mar. 16, 1995, 7-057201
Int. Cl.[6] G02B *5/20*
U.S. Cl. 430—7 9 Claims

1. A process for producing a color filter, which comprises the steps of:

forming a film of colored image forming material comprising

(a) a resin having an acid value of 20 to 300 and a weight-average molecular weight of 1,500 to 200,000,

(b) one or more pigments,

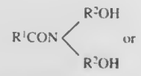
(c) one or more monomers having one or more photopolymerizable unsaturated bonds in the molecule, and

(d) a photoinitiator on a substrate,

exposing the film to actinic light imagewisely so as to photocure exposed portions,

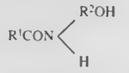
removing unexposed portions from the film to form picture cells or matrix using a developer comprising

a compound of the formula:



(I)

a compound of the formula:



(II)

wherein R^1 is an alkyl group having 1 to 19 carbon atoms; and R^2 is an alkylene group having 1 to 19 carbon atoms, and if necessary,

repeating the above-mentioned steps for individual different colored image forming materials, respectively, to form different colored picture cells or a matrix.

5,827,627

RECEIVING ELEMENT FOR LIQUID TONER-DERIVED INK

Michael Dale Cleckner, Honeoye; George Forman Cretekos, Macedon; Pang-Chia Lu, Pittsford, and Robert Edward Touhsaent, Fairport, all of N.Y., assignors to Mobil Oil Corporation, Fairfax, Va.

Continuation-in-part of Ser. No. 582,819, Jan. 4, 1996, which is a continuation-in-part of Ser. No. 383,133, Feb. 3, 1995.
This application Feb. 12, 1996, Ser. No. 598,592
Int. Cl.[6] G03C *3/00*; B32B *27/00*
U.S. Cl. 430—18 13 Claims

1. An electrostatically printed thermoplastic film comprising a biaxially oriented polypropylene substrate having on at least one side a coating of an aqueous emulsion having a solids content ranging from 1 to about 60 weight percent based on the entire weight of the coating composition for receiving toner derived from a liquid toner composition, the coating being applied to a final coating weight of about 0.1 to about 10 g/m^2, the coating comprising (a) a copolymer derived from a carboxylic acid containing vinylic unsaturation; and (b) an antiblock/slip agent the coated substrate having the toner composition electrostatically applied thereto.

5,827,628

METHOD OF ELECTROGRAPHICALLY MANUFACTURING A LUMINESCENT SCREEN ASSEMBLY FOR A CRT AND CRT COMPRISING A LUMINESCENT SCREEN ASSEMBLY MANUFACTURING BY THE METHOD

Dong Ky Shin; Bok Soo Lee, and Sang Youl Yoon, all of Kyungsangbuk-do, Rep. of Korea, assignors to Orion Electric Co., Ltd., Kyungsangbuk-do, Rep. of Korea

Filed Mar. 11, 1997, Ser. No. 814,255
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—28 8 Claims

1. A method of electrophotographically manufacturing a luminescent screen on an interior surface of a faceplate panel for a CRT comprising the steps of:

(a) first-coating said surface of the panel with a volatilizable conductive layer;

(b) second-coating said conductive layer with a volatilizable first photoconductive layer including a dye sensitive to ultraviolet rays;

(c) third-coating said ultraviolet-photoconductive layer with a volatilizable second photoconductive layer including a dye sensitive to visible light;

(d) establishing a substantially uniform electrostatic charge over the whole area of the inner surface of said second photoconductive layer by exposing the whole surface of said second photoconductive layer to visible light to charge said first photoconductive layer while applying a suitable DC voltage between the conductive layer and the second photoconductive layer;

(e) exposing selected areas of said second photoconductive layer to ultraviolet rays through a shadow mask to discharge the charge from the selected areas of the inner of the second photoconductive layer through the first photoconductive layer and the conductive layer; and

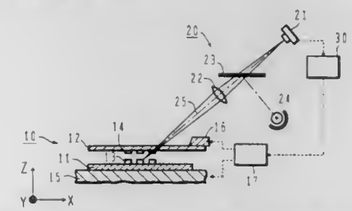
(f) developing one of the charged, unexposed areas and the discharged, exposed areas depending upon the polarity of the charged particles with one of charged phosphor particles and light-absorptive material particles after removing the shadow mask.

5,827,629

POSITION DETECTING METHOD WITH OBSERVATION OF POSITION DETECTING MARKS

Tsutomu Miyatake, Kiyose, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

Filed Apr. 30, 1996, Ser. No. 640,170
Claims priority, application Japan, May 11, 1995, 7-113281; May 19, 1995, 7-121659; Sep. 1, 1995, 7-225165; Nov. 13, 1995, 7-294485
Int. Cl.[6] G03C *5/00*
U.S. Cl. 430—30 2 Claims



1. A method of detecting a position, comprising the steps of:

disposing a wafer with an exposure surface and an exposure mask, directing the exposure surface to said exposure mask with a gap being interposed therebetween, said wafer having a position aligning wafer mark formed on the exposure surface, said wafer having a point scattering source for scattering incident light, and said exposure mask having a position aligning mask mark having a point scattering source for scattering incident light; and

detecting a relative position of said wafer and said exposure mask by applying illumination light to said wafer mark and said mask mark and observing scattered light from the point scattering sources of said wafer and said mask mark,

wherein in said relative position detecting step, said scattered light is observed with an optical system having an observation optical axis oblique to said exposure surface, and said illumination light is applied along a direction not allowing regular reflection light from said wafer mark and said mask mark to become incident to said optical system,

wherein said relative position detecting step, an angle between a line image of the optical axis of said illumination light vertically projected on said exposure surface and a line image of the optical axis of the observation light vertically projected on said exposure surface, is smaller than 90 degrees,

wherein said illumination optical axis and said observation optical axis are coaxial with each other, and

wherein said illumination light is collimated light.

5,827,630

IMAGING ELEMENT COMPRISING AN ELECTRICALLY-CONDUCTIVE LAYER CONTAINING METAL ANTIMONATE AND NON-CONDUCTIVE METAL-CONTAINING COLLOIDAL PARTICLES AND A TRANSPARENT MAGNETIC RECORDING LAYER

Dennis J. Eichorst, Fairport; Paul A. Christian, Pittsford, and Sharon M. Melpolder, Hilton, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 13, 1997, Ser. No. 970,130
Int. Cl.[6] G03C *1/85;1/89;5/10*
U.S. Cl. 430—63 26 Claims

1. A multilayer imaging element comprising:

a support;

at least one image-forming layer;

a transparent magnetic recording layer comprising magnetic particles dispersed in a first film-forming binder; and

a transparent electrically-conductive layer comprising electronically-conductive metal antimonate colloidal particles having a particle size of from 0.005 to 0.05 μm and non-conductive metal-containing colloidal particles having a particle size of from 0.002 to 0.05 μm dispersed in second a film-forming binder.

5,827,631

NON-MAGNETIC ONE-COMPONENT DEVELOPER AND IMAGE FORMING PROCESS USING THE SAME

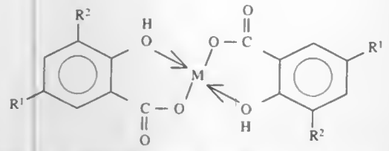
Koutarou Yoshihara; Seiichi Takagi; Toyofumi Inoue; Hiroyoshi Okuno; Tetsu Torigoe; Hiroe Okuyama, and Masahiro Uchida, all of Minami-ashigara, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Feb. 5, 1997, Ser. No. 796,892
Claims priority, application Japan, Feb. 9, 1996, 8-023771
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—110 15 Claims

1. A non-magnetic one-component developer comprising a toner which comprises a binder resin, a colorant and a charge controlling agent,

the binder resin being a polyester resin which has a number average molecular weight of from 2,500 to 3,500, a weight average molecular weight of from 8,000 to 15,000 and a softening point of from 110° C. to 130° C., and which is substantially free from an ingredient insoluble in tetrahydrofuran, and

the charge controlling agent comprising a metal complex salt compound represented by the following formula (1) :



(1)

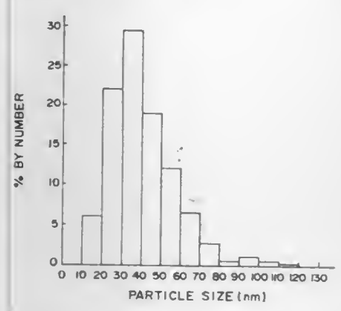
wherein M represents a metal element selected from the group consisting of zinc, iron, nickel and cobalt, and R^1 and R^2 each represents a hydrogen atom or an alkyl group having from 1 to 6 carbon atoms.

5,827,632

TONER FOR DEVELOPING ELECTROSTATIC IMAGE CONTAINING HYDROPHOBIZED INORGANIC FINE POWDER

Kohji Inaba, Yokohama; Tatsuya Nakamura, Tokyo; Tatsuhiko Chiba, Kamakura, and Takao Ishiyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 566,542, Dec. 4, 1995, abandoned. This application Aug. 12, 1997, Ser. No. 909,877
Claims priority, application Japan, Dec. 5, 1994, 6-329298
Int. Cl.[6] G03G *9/097*
U.S. Cl. 431—110 **21 Claims**



1. A toner for developing electrostatic images comprising:
(a) toner particles having a weight-average particle size of 1–9 μm;
(b) hydrophobized inorganic fine powder having an average particle size of 10–90 nm and being formed from a material selected from the group consisting of titanium oxide, aluminum oxide, strontium titanate, cerium oxide, magnesium oxide, silicon nitride, silicon carbide, calcium sulfate, barium sulfate, calcium carbonate, and fluorinated carbon; and
(c) hydrophobized silicon compound fine powder comprising hydrophobized fine powder of silica or silicone resin;
wherein the hydrophobized silicon compound fine powder has
(i) an average particle size of 30–120 nm, and
(ii) a particle size distribution such that it contains 15–45% by number of particles having sizes of 5–30 nm, 30–70% by number of particles having sizes of 30–60 nm and 5–45% by number of particles having sizes of at least 60 nm.

5,827,633

TONER PROCESSES

Beng S. Ong, Mississauga, and Raj D. Patel, Oakville, both of Canada, assignors to Xerox Corporation, Stamford, Conn.

Filed Jul. 31, 1997, Ser. No. 903,694
Int. Cl.[6] G03G *9/097*
U.S. Cl. 430—137 **22 Claims**

1. A process for the preparation of toner comprising
(i) preparing, or providing an aqueous colorant dispersion, which dispersion is comprised of a colorant and an ionic surfactant in water;
(ii) blending said colorant dispersion with a latex emulsion comprised of resin particles, a nonionic surfactant, and an ionic surfactant of opposite charge polarity to that of the ionic surfactant in said colorant dispersion;
(iii) heating the resulting mixture below about the glass transition temperature (Tg) of the latex resin to form toner sized aggregates;
(iv) heating the resulting aggregate suspension of (iii) above about the Tg of the latex resin; and
(v) retaining the temperature in the range of from about 30° C. to about 95° C., and subsequently, adding an aqueous solution of boric acid, or an aqueous solution of a metal salt; adjusting the pH of the resulting reaction mixture to from about 9 to about 12 by the addition of a base, followed by the addition of a salicylic acid or catechol; and optionally
(vi) isolating, washing and drying the toner obtained.

5,827,634

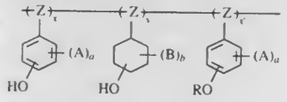
POSITIVE ACID CATALYZED RESISTS

James W. Thackeray, Braintree; Roger F. Sinta, Woburn; Mark D. Denison, Cambridge, and Sheri L. Ablaza, Brookline, all of Mass., assignors to Shipley Company, L.L.C., Marlborough, Mass.

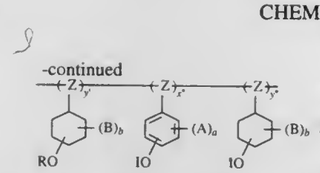
Continuation of Ser. No. 438,180, May 9, 1995, Pat. No. 5,700,624. This application Mar. 12, 1997, Ser. No. 815,199
Int. Cl.[6] G03F *7/004*
U.S. Cl. 430—270.1 **11 Claims**

1. A positive acting photoresist composition comprising the combination of an alkali soluble polyvinylphenol resin binder having pendant phenolic hydroxyl groups, pendant inert blocking groups and pendant acid labile groups and a photoacid generator that generates an acid upon exposure to activating radiation, said resin binder having been formed by reacting a minor portion of its pendant hydroxyl groups to form acid ester groups inert to photogenerated acid and an additional minor portion of its pendant hydroxyl groups reacted to form acid labile groups that cleave upon exposure to photogenerated acid, said photoacid generator being present in an amount whereby sufficient acid is generated upon exposure to activating radiation of sufficient strength to cleave the pendant acid labile groups causing said resin binder to become soluble in aqueous alkali solution wherein the inert blocking group is a member selected from the group consisting of alkyl ester sulfonic acid ester groups having 1 to 4 carbon atoms.

3. A positive acting photoresist composition comprising the combination of an alkali soluble polyvinylphenol resin binder having phenolic groups and cyclic alcohol groups, each having pendant phenolic hydroxyl groups, pendant inert blocking groups and pendant acid labile groups, and a photoacid generator that generates an acid upon exposure to activating radiation, said resin binder having been formed by reacting a minor portion of its pendant hydroxyl groups to form acid ester groups inert to photogenerated acid and an additional minor portion of its pendant hydroxyl groups reacted to form acid labile groups that cleave upon exposure to photogenerated acid, said photoacid generator being present in an amount whereby sufficient acid is generated upon exposure to activating radiation of sufficient strength to cleave said pendant acid labile groups causing said resin binder becomes soluble in aqueous alkali solution, where the resin binder has the structure:



-continued



where Z is an alkylene bridge having from 1 to 3 carbon atoms; A is a substituent on the aromatic ring replacing hydrogen selected from the group consisting essentially of alkyl having from 1 to 3 carbon atoms, halo, alkoxy having from 1 to 3 carbon atoms, hydroxyl, nitro, and amino; a is a number varying from 0 to 4; B is a member selected from the group consisting essentially of hydrogen, alkyl having from 1 to 3 carbon atoms, halo, alkoxy having from 1 to 3 carbon atoms, hydroxyl, nitro, and amino; a is a number varying from 0 to 4; b is an integer varying between 6 and 10; —OR is an acid labile group: OI is an inert acid ester blocking group, x is the mole fraction of the units having hydroxyl substitution, x' is the mole fraction of units having acid labile group substitution and x" is the mole fraction of units having inert blocking group substitution where each of x, x' and x" is greater than 0.01 and the total of x+ x'+ x" equals 1. y is the mole fraction of units having hydroxyl substitution, y' is the mole fraction of units having acid labile group substitution and y" is the mole fraction of units having inert blocking group substitution where each of y, y' and y" is greater than 0.01, and where the inert blocking group is a member selected form the group consisting of alkyl ester sulfonic acid ester groups having from 1 to 4 carbon atoms.

5,827,635

HIGH TEMPERATURE COLOR DEVELOPMENT OF PHOTOGRAPHIC SILVER BROMOIODIDE COLOR NEGATIVE FILMS USING STABILIZED COLOR DEVELOPER SOLUTION

David Leroy Cole, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 703,593, Aug. 27, 1996, abandoned, which is a continuation-in-part of Ser. No. 590,241, Jan. 23, 1996, abandoned. This application Aug. 22, 1997, Ser. No. 916,559
Int. Cl.[6] G03C *7/407*
U.S. Cl. 430—372 **18 Claims**

1. A method of photoprocessing comprising:
A) color developing an imagewise exposed color negative photographic film element containing at least one silver bromoiodide emulsion, with a color developer solution that comprises:
a color developing agent present at from about 0.01 to about 0.1 mol/l, and
an antioxidant present at from about 0.001 to about 0.5 mol/l, said antioxidant having the formula:

R—L—N(OH)—L'—R'

wherein L and L' are independently alkylene of 1 to 8 carbon atoms or alkylenephenylene of 1 to 3 carbon atoms in the alkylene portion, and R and R' are independently hydrogen, carboxy, sulfo or phosphono, provided that at least one of R and R' is not hydrogen,
said contacting being carried out at from about 45° to about 65° C. for from about 20 to about 150 seconds,
provided that said photographic film element exhibits a ΔDmin of less than 10% when processed with said color developer solution that has been held at 57.5° C. for up to 320 hours prior to processing,
wherein ΔDmin is defined as:

$$\Delta D\text{min} = (1\%\ Cr + 1\%\ Cg + 1\%\ Cb)/3$$

$$\%\ C_i = \left[\frac{D\text{min}_i(t) - D\text{min}_i(0)}{D\text{min}_i(0)} \right] \times 100$$

"i" is r (red), g (green), or b (blue), and "t" is time.

5,827,636

PHOTOGRAPHIC REVERSAL PROCESS PREBLEACH CONCENTRATE

Jean Marie Buongiorne, Brockport, and Michael John Haight, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 670,307, Jun. 27, 1996. This application Sep. 26, 1997, Ser. No. 938,164
Int. Cl.[6] G03C *5/42;5/44*
U.S. Cl. 430—461 **13 Claims**

1. A conditioning solution concentrate that is free of sodium ions and comprises:
a formaldehyde bisulfite salt other than the sodium salt, said salt being present in an amount of from about 200 to about 600 g/l,
sulfite ions present in an amount of from 0 to about 200 g/l,
a bleach accelerating agent present in an amount of from about 1.5 to about 25 g/l, and
a metal ion chelating agent present in an amount of less than or equal to 60 g/l.

5,827,637

SILVER HALIDE LIGHT-SENSITIVE MATERIAL AND IMAGE FORMATION METHOD USING THE SAME

Osamu Uchida; Jiro Tsukahara; Toshio Kawagishi; Hideaki Satoh, and Yasufumi Nakai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 19, 1997, Ser. No. 820,908
Claims priority, application Japan, Mar. 19, 1996, 8-063179
Int. Cl.[6] G03C *1/735*
U.S. Cl. 430—505 **20 Claims**

1. A silver halide light-sensitive material comprising a support having thereon at least one light-sensitive layer, said silver halide light-sensitive material comprising a compound represented by the following formula (1):

$$(PUG—B—CHL)_m—M.L_n \qquad (1)$$

wherein PUG represents a photographically useful group bonded to B through a hetero atom thereof, CHL represents a multidentate ligand capable of coordinating to a metal atom, B represents a block group of which bonding to PUG is cleaved on cleavage of the bonding of CHL—M, M represents a divalent or greater metal, L represents a chelating ligand, m represents an integer of from 1 to 3, n represents 0 or an integer of 1 or 2, and the sum of m and n does not exceed 3.

5,827,638

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL AND IMAGE FORMATION METHOD USING THE SAME

Jiro Tsukahara; Hideaki Satoh; Osamu Uchida; Toshio Kawagishi, and Yasufumi Nakai, all of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 20, 1997, Ser. No. 821,657
Claims priority, application Japan, Mar. 22, 1996, 8-066667
Int. Cl.[6] G03C *1/06*
U.S. Cl. 430—505 **22 Claims**

1. A silver halide photographic light-sensitive material comprising a support having provided thereon a light-sensitive silver halide emulsion layer, wherein said silver halide photographic light-sensitive material contains a compound having been blocked by a metal chelate and capable of releasing a photographically useful compound therefrom through a reaction of the metal chelate moiety with a water-soluble chelating agent capable of forming a metal chelate having a higher stability constant on development, wherein said compound having been blocked by the metal chelate and capable of releasing the photographically useful compound therefrom is represented by the following formula (I):

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$(PL)_n \cdot M \cdot L_k$ (I)

wherein PL represents a photographically useful group having chelating ability, M represents magnesium, aluminum, calcium, nickel, copper or zinc, L represents a chelate ligand, n represents an integer of from 1 to 3, K represents 0 or an integer of 1 or 2, and the sum of n and k does not exceed 3.

5,827,639

SILVER HALIDE EMULSION

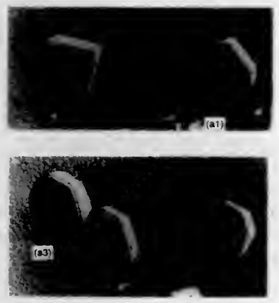
Mitsuo Saitou, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 676,916, Jul. 8, 1996, abandoned, which is a continuation of Ser. No. 506,573, Jul. 25, 1995, abandoned, which is a continuation of Ser. No. 268,739, Jun. 30, 1994, abandoned, which is a continuation of Ser. No. 59,277, May 11, 1993, abandoned. This application Sep. 17, 1997, Ser. No. 931,836

Claims priority, application Japan, May 12, 1992, 4-145031

Int. Cl.[6] G03C *1/035*

U.S. Cl. 430—567 17 Claims



1. A silver halide emulsion comprising a dispersing agent and a mixture of chemically sensitized first and second tabular silver halide grains, wherein:

the average silver halide composition of the mixture of first and second tabular grains is AgClBr (AgCl content: 75 mol % or less), AgBrI (AgI content: 30 mol % or less), or AgBrClI (AgCl content: 75 mol % or less, AgI content: 30 mol % or less),

the emulsion is produced via at least a nucleation step followed by a ripening step, and

the first tabular grains account for at least 30% but less than 100% of the total projected area of all silver halide grains and are characterized in that:

(a) the first tabular grains have a (100) plane as a main plane and an aspect ratio (diameter/thickness) of 2.0 to 20, and a shape on the main plane of a rectangular parallelogram having one to four corners non-equivalently missing;

(b) each of the one to four missing corners has a missing portion bounded by extending the sides of the parallelogram at each missing corner, and the ratio x, (the area of the maximum missing portion among said missing portions)/(the area of the minimum missing portion (which include zero)), is 2 or more;

(c) the length of a side of the maximum missing portion is from 15% to 50% of the length of the respective side of a true rectangular parallelogram formed by extending the sides of the rectangular parallelogram having at least one missing corner; and

(d) the first tabular grains have intragrain defects that give a growth vector in a direction toward an edge, wherein the intragrain defects are formed during a defect formation step by forming one or more gap interfaces formed by precipitating silver halide phases having a difference in AgCl content, AgBr content or AgI content in the range of 10 to 100 mol % on defect-free nuclei.

5,827,640

METHODS FOR THE PRESERVATION OF CELLS AND TISSUES USING TRIMETHYLAMINE OXIDE OR BETAINE WITH RAFFINOSE OR TREHALOSE

Philippa M. Wiggins; Alexander B. Ferguson, and James D. Watson, all of Auckland, New Zealand, assignors to Biostore New Zealand Limited, Auckland, New Zealand

Continuation-in-part of Ser. No. 662,244, Jun. 14, 1996. This application Sep. 30, 1996, Ser. No. 722,306

Int. Cl.[6] A01N *1/02*

U.S. Cl. 435—1.1 23 Claims

1. A method for preserving the viability of a biological material comprising the steps of:

(a) contacting the biological material with a solution comprising raffinose and trimethyl amine oxide in a molar ratio of about 1.1 to 1 to about 2.0 to 1, wherein the solution is substantially isotonic with the biological material to be preserved and is substantially free of iodide, dihydrogen phosphate, bicarbonate, nitrate and bisulfate; and

(b) storing the biological material.

5,827,641

IN VITRO CORNEA EQUIVALENT MODEL

Nancy L. Parenteau, 12 Bell Vista Rd., Brookline, Mass. 02146; Valerie Susan Mason, 28 Old Pickard La., Littleton, Mass. 01460, and Bjorn Reino Olsen, 58 Vose Hill Rd., Milton, Mass. 02186

Continuation-in-part of Ser. No. 974,740, Nov. 13, 1992, Pat. No. 5,374,515. This application Nov. 8, 1994, Ser. No. 337,830

Int. Cl.[6] A01N *1/02;* C12N *5/00*

U.S. Cl. 435—1.1 36 Claims

1. A cornea equivalent comprising:

(a) an inner endothelial cell layer,

(b) a middle stromal cell-collagen mixture layer, wherein said stromal cells are derived from fibroblast cells, and

(c) an external epithelial cell layer, wherein said epithelial cells are derived from corneal epithelial cells.

5,827,642

RAPID EXPANSION METHOD ("REM") FOR IN VITRO PROPAGATION OF T LYMPHOCYTES

Stanley R. Riddell, Bothell, and Philip D. Greenberg, Mercer Island, both of Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Continuation of Ser. No. 299,930, Aug. 31, 1994, abandoned. This application Oct. 3, 1994, Ser. No. 317,100

Int. Cl.[6] C12N *5/02;5/08;* A01N *1/02;* A61K *35/12*

U.S. Cl. 435—2 11 Claims

1. A method for expanding an initial T lymphocyte population in culture medium in vitro, comprising the steps of: adding an initial T lymphocyte population comprising at least 10^4 T lymphocytes to a culture medium in vitro; adding to the culture medium a disproportionately large number of non-dividing peripheral blood mononuclear cells (PBMC) as feeder cells such that the resulting population of cells contains at least about 40 PBMC feeder cells for each T lymphocyte in the initial population to be expanded; adding non-dividing EBV-transformed lymphoblastoid cells (LCL) as feeder cells; adding anti-CD3 monoclonal antibody and IL-2 to the culture medium; and incubating the culture, thereby producing an expanded population of antigen specific, MHC-restricted T lymphocytes.

5,827,643

METHOD OF INCREASING VIABILITY OF STORED ERYTHROCYTES BY ADDITION OF LIPOIC, DIHYDROLIPOIC, 6,8-BISNORTETRALIPOIC, OR TETRANORLIPOIC ACID

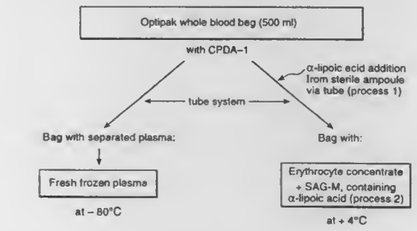
Frank Conrad, Frankfurt; Hermann-August Henrich, Wurzburg; Wolfgang Geise, Dipbach, and Heinz Ulrich, Niedernberg, all of Germany, assignors to ASTA Medica Aktiengesellschaft, Dresden, Germany

Filed Nov. 8, 1995, Ser. No. 554,421

Claims priority, application Germany, Nov. 8, 1994, 44 39 480.2

Int. Cl.[6] A01N *1/02*

U.S. Cl. 435—2 6 Claims



1. A method of storing erythrocytes wherein the erythrocytes have improved viscoelasticity, increased 2,3-diphosphoglycerate content, increased erythrocyte viability or increased storage life compared to untreated erythrocytes comprising

treating erythrocytes by adding D,L-α-lipoic acid or one enantiomer thereof or dihydrolipoic acid or 6,8-bisnortetralipoic acid or tetranorlipoic acid in a concentration of about 10 μM to 1 mM to erythrocytes, and

storing the erythrocytes.

5,827,644

THIAZINE DYES USED TO INACTIVATE HIV IN BIOLOGICAL FLUIDS

Robert A. Floyd, Oklahoma City, Okla., and Raymond F. Schinazi, Decatur, Ga., assignors to Oklahoma Medical Research Foudation, Oklahoma City, Okla.

Continuation of Ser. No. 251,624, May 31, 1994, Pat. No. 5,576,666, which is a continuation of Ser. No. 29,984, Mar. 12, 1993, abandoned, which is a continuation of Ser. No. 758,228, Sep. 9, 1991, abandoned, which is a continuation of Ser. No. 632,606, Dec. 24, 1990, abandoned, which is a continuation of Ser. No. 350,383, May 11, 1989, abandoned, which is a continuation-in-part of Ser. No. 264,088, Oct. 28, 1988, Pat. No. 4,950,665. This application Jul. 12, 1996, Ser. No. 707,992

Int. Cl.[6] A01N *1/02;* C12N *7/06;* A61K *31/54*

U.S. Cl. 435—2 9 Claims

1. A method for treating a biological fluid, obtained from a human for administration to a human patient in need of treatment, in order to inactivate human immunodeficiency virus in the biological fluid, the method comprising the steps of:

adding to the biological fluid a thiazine dye in a concentration which is effective to inactivate the human immunodeficiency virus in the biological fluid upon exposure to light, and

exposing the biological fluid to light of a wavelength and a period of time effective to activate the dye which induces the formation of 8-hydroxyguanosine in the virus.

5,827,645

HOMOCYSTEINE ASSAY

Erling Sundrehagen, Moss, Norway, assignor to Axis Biochemicals AS, Oslo, Norway

Division of Ser. No. 442,104, May 16, 1995, Pat. No. 5,631,127, which is a division of Ser. No. 256,367, Sep. 14, 1994. This application Jan. 16, 1997, Ser. No. 784,931

Claims priority, application Norway, Jan. 22, 1992, 920282; United Kingdom, Mar. 6, 1992, 9204922

Int. Cl.[6] C12Q *1/00;1/34;1/48;1/42*

U.S. Cl. 435—4 23 Claims

1. A method for assaying homocysteine in a sample, said method comprising the steps of contacting said sample with a homocysteine converting enzyme other than S-adenosyl homocysteine hydrolase and at least one substrate for said enzyme other than homocysteine, and without chromatographic separation assessing a non-labelled analyte selected from a homocysteine co-substrate and the homocysteine conversion products of the enzymic conversion of homocysteine by said enzyme using immunological techniques.

5,827,646

DIAGNOSTIC REAGENTS FOR THE DETECTION OF ANTIBODIES TO EBV

Jaap Michiel Middeldorp, and Wouterus Marinus Johannes van Grunsven, both of Oss, Netherlands, assignors to Akzo Nobel N.V., Arnhem, Netherlands

Filed Sep. 14, 1994, Ser. No. 306,078

Claims priority, application European Pat. Off., Sep. 14, 1993, 93202659

Int. Cl.[6] C12Q *1/70;* G01N *33/543*

U.S. Cl. 435—5 2 Claims

1. A diagnostic reagent for the detection of antibodies to Epstein Barr Virus (EBV), comprising: an isolated EBV structural antigen having the amino acid sequence shown in SEQ ID NO: 4; and an isolated EBNA-1 antigen having the amino acid sequence shown in SEQ ID NO: 9.

5,827,647

PARVOVIRUS CAPSIDS

Neal S. Young, Washington, D.C.; Sachiko Kajigaya, Rockville, and Takashi Shimada, Bethseda, both of Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Division of Ser. No. 612,672, Nov. 14, 1990, Pat. No. 5,508,186, which is a continuation-in-part of Ser. No. 270,098, Nov. 14, 1988, abandoned. This application Jun. 5, 1995, Ser. No. 463,332

Int. Cl.[6] C12Q *1/70*

U.S. Cl. 435—5 6 Claims

1. A diagnostic assay for the presence of antibodies to B19 parvovirus in a sample from a patient suspected of being infected with B19 parvovirus, the assay comprising:

i) contacting the sample with isolated empty B19 parvovirus capsids, and

ii) detecting the formation of an antigen antibody complex.

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5,827,648

DIFFERENTIAL HYBRIDIZATION FOR RELATIVE QUANTIFICATION OF VARIANT POPULATIONS

P. Scott Eastman, Moraga; Michael S. Urdea, Alamo, and Janice A. Kolberg, Hercules, all of Calif., assignors to Chiron Corporation, Emeryville, Calif.

Continuation of Ser. No. 167,645, Dec. 13, 1995, abandoned. This application Jul. 29, 1996, Ser. No. 688,088

Int. Cl.[6] C12Q *1/70;1/68;* **C12P** *19/34*

U.S. Cl. 435—5 **11 Claims**

1. A method of measuring the relative populations of first and second variants of a target nucleotide sequence of a target genome in a sample, the method comprising the steps of

(a) amplifying a region of the target genome containing the target nucleotide sequence and a control nucleotide sequence to obtain amplified target polynucleotides;

(b) apportioning the amplified target polynucleotides into at least a first and second reaction portion;

(c) contacting the first reaction portion of the amplified target polynucleotide with a first labeled polynucleotide probe complementary to the first variant of the target nucleotide sequence to obtain a first hybridized labeled polynucleotide probe, and contacting the second reaction portion of the amplified target polynucleotide with a second labeled polynucleotide probe complementary to the second variant of the target nucleotide sequence to obtain a second hybridized labeled polynucleotide probe;

(d) quantifying the amount of the first and second hybridized labeled polynucleotide probes;

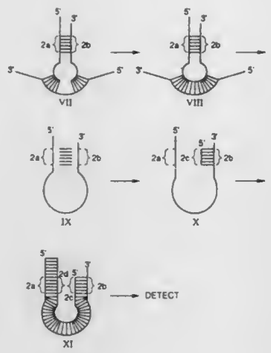
(e) contacting the first and second reaction portions of the amplified target polynucleotide with a third labeled polynucleotide probe complementary to the control nucleotide sequence to obtain a third hybridized labeled polynucleotide probe;

(f) quantifying the amount of the third hybridized labeled polynucleotide probe;

(g) measuring the relative populations of the first and second variants by determining the relative amounts of the first and second hybridized labeled polynucleotide probes compared to the third hybridized labeled polynucleotide probe; and

(h) removing the hybridized labeled polynucleotide probes from the first and second reaction portions of the amplified target polynucleotide.

wherein steps (c), (d), (e), (f), (g) and (h) are performed in order c-d-h-e-f-g or e-f-h-c-d.



5,827,649

KITS FOR NUCLEIC ACID AMPLIFICATION KIT USING SINGLE PRIMER

Samuel Rose; Thomas C. Goodman; Linda M. Western, all of Mountain View; Martin Becker, Palo Alto, and Edwin F. Ullman, Atherton, all of Calif., assignors to Behring Diagnostics GmbH, Deerfield, Ill.

Continuation of Ser. No. 109,852, Aug. 20, 1993, abandoned, which is a continuation of Ser. No. 734,030, Jul. 22, 1991, abandoned, which is a continuation of Ser. No. 399,795, Aug. 29, 1989, abandoned, which is a continuation-in-part of Ser. No. 299,282, Jan. 19, 1989, abandoned. This application May 16, 1994, Ser. No. 242,931

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **5 Claims**

1. A kit for use in determining a polynucleotide analyte, which comprises in packaged combination:

a first polynucleotide probe having a first nucleotide sequence capable of hybridizing to a first portion of said polynucleotide analyte,

a second polynucleotide probe having a second nucleotide sequence capable of hybridizing to a second portion of the same strand of said polynucleotide analyte other than with the portion recognized by said first nucleotide sequence of said first polynucleotide probe,

said first polynucleotide probe and said second polynucleotide probe each comprising a sequence of nucleotides that are hybridizable with one another when said first nucleotide sequence and said second nucleotide sequence are hybridized to their respective portions of said polynucleotide analyte, each said sequence of nucleotides being located in its respective polynucleotide probe at or near the end thereof opposite the site of said first nucleotide sequence or said second nucleotide sequence, respectively,

means for covalently attaching said first and second polynucleotide sequences when said first and second polynucleotide probes are hybridized with said polynucleotide analyte thereby forming covalently attached first and second polynucleotide sequences such that a polynucleotide primer that hybridizes to and is extended along said covalently attached sequences forms an extension product comprising said first and second polynucleotide sequences,

a polynucleotide primer capable of hybridizing with said second polynucleotide probe and of being extended along said covalently attached sequences in the direction of said first polynucleotide probe, and

means for extending said polynucleotide primer, said means comprising a polynucleotide polymerase and one or more deoxynucleoside triphosphates.

5,827,650

MEMBRANE FOR CHEMILUMINESCENT BLOTTING APPLICATIONS

Irena Bronstein, Newton; Brooks Edwards, Cambridge, and John Voyta, Sudbury, all of Mass., assignors to Tropix, Inc., Bedford, Mass.

Continuation of Ser. No. 233,850, Apr. 26, 1994, Pat. No. 5,593,828, which is a continuation of Ser. No. 811,620, Dec. 23, 1991, Pat. No. 5,336,596. This application Jan. 23, 1996, Ser. No. 590,352

Int. Cl.[6] G01N *33/545;* **B32B** *27/00*

U.S. Cl. 435—6 **6 Claims**

1. A membrane suitable for use in a blotting assay, comprising a support bearing a polymer coating, said support selected from the group consisting of nitrocellulose, nylon and PVDF, said polymer coating being selected from the group consisting of polyvinyl benzyl dimethyl hydroxyethyl ammonium chloride, polyvinyl benzyl benzoyl aminoethyl dimethyl ammonium chloride, polyvinyl benzyl tributyl ammonium chloride, copolymers of polyvinyl benzyl trihexyl ammonium chloride and polyvinyl benzyl tributyl ammonium chloride, copolymers of polyvinyl benzyl benzyl dimethyl ammonium chloride and polyvinyl aminoethyl dimethyl ammonium chloride and copolymers of polyvinyl benzyl phenyl ureidoethyl dimethyl ammonium chloride and polyvinyl benzyl benzyl dimethyl ammonium chloride, the molecular weight of said polymer being from 800–200,000.

5,827,651

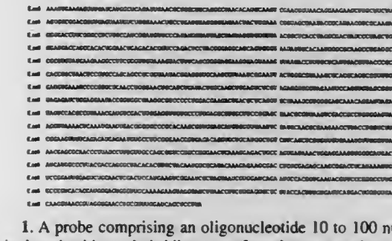
NUCLEIC ACID PROBES AND METHODS FOR DETECTING FUNGI

James John Hogan, San Diego; Jo Ann Kop, San Marcos, and Sherrol Hoffa McDonough, San Diego, all of Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Division of Ser. No. 200,866, Feb. 22, 1994, Pat. No. 5,541,308, which is a continuation of Ser. No. 806,929, Dec. 11, 1991, abandoned, which is a continuation of Ser. No. 295,208, Dec. 9, 1988, abandoned, which is a continuation-in-part of Ser. No. 83,542, Aug. 7, 1987, abandoned, which is a continuation-in-part of Ser. No. 934,244, Nov. 24, 1986, abandoned. This application May 30, 1995, Ser. No. 453,771

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **58 Claims**



1. A probe comprising an oligonucleotide 10 to 100 nucleotides in length able to hybridize to a fungal target region present in nucleic acid of one or more fungi to form a detectable target: probe duplex under high stringency hybridization conditions, said target region corresponding to, or fully complementary to and of the same length as a nucleic acid corresponding to, a nucleic acid region selected from the group consisting of:

bases 845–880 of *S. cerevisiae* 18S rRNA,

bases 1960–2000 of *S. cerevisiae* 28S rRNA, and

bases 1225–1270 of *S. cerevisiae* 28S rRNA;

wherein said oligonucleotide comprises a segment of 10 contiguous bases which is at least 75% complementary to a nucleotide sequence of 10 contiguous nucleotides present in a sequence selected from the group consisting of:

SEQ ID NO:1 CCCGACCGTCCCTATTAATCATTACGATGG,

SEQ ID NO:2 CGACTTGGCATGAAAACTATTCCTTCCTGTGG,

SEQ ID NO:3 GCTCTTCATTCAATTGTCCACGTTCAATTAAGCAACAAGG,

SEQ ID NO:4 GCTCTGCATTCAAACGTCCGCGTTCAATAAAGAAACAGGG,

SEQ ID NO:5 CCCGACCGTCCCTATTAATCATTACGATGGTCCTAGAAAC, and the

sequences fully complementary and of the same length thereto;

wherein said oligonucleotide forms said detectable target: probe duplex under high stringency hybridization conditions with nucleic acid of one or more fungi selected from the group consisting of *Candida albicans, Candida krusei, Candida parapsilosis, Candida tropicalis*, and *Torulopsis glabrata*; and

wherein said oligonucleotide does not hybridize to human nucleic acid and *Escherichia coli* nucleic acid to form a detectable nontarget:probe duplex under said hybridization conditions.

5,827,652

ZEAXANTHIN FORMULATIONS FOR HUMAN INGESTION

Kevin M. Garnett, St. Louis; Dennis L. Gierhart, High Ridge, and Luis H. Guerra-Santos, Ballwin, all of Mo., assignors to Applied Food Biotechnology, Inc., O'Fallon, Mo.

Filed Oct. 31, 1995, Ser. No. 551,153

Int. Cl.[6] C12P *23/00;* **C12N** *1/20;* **A61K** *9/48*

U.S. Cl. 424—451 **18 Claims**

1. A composition of matter comprising a digestible watertight capsule and a fluid contained therein, wherein the capsule and fluid are sized and designed for oral indigestion by a human and are pharmacologically acceptable, wherein the fluid contains a 3R-3'R stereoisomer of zeaxanthin, wherein the 3R-3'R stereoisomer of zeaxanthin constitutes at least about 90 percent of all zeaxanthin in the fluid while S—S and S-R stereoisomers constitute less than about 10 percent of all zeaxanthin in the fluid, and wherein the capsule contains at least about 3 milligrams of the 3R-3'R stereoisomer of zeaxanthin.

5,827,653

NUCLEIC ACID DETECTION WITH ENERGY TRANSFER

Peter George Sammes, Buckinghamshire, and Andrew John Garman, Chester, both of United Kingdom, assignors to Zeneca Limited, London, England

PCT No. PCT/GB94/02068, § 371 Date May 20, 1996, § 102(e) Date May 20, 1996, PCT Pub. No. WO95/08642, PCT Pub. Date Mar. 30, 1995

PCT Filed Sep. 23, 1994, Ser. No. 619,724

Claims priority, application United Kingdom, Sep. 23, 1993, 9319826; Jun. 16, 1994, 9412106

Int. Cl.[6] C12Q *1/68;* **C09K** *3/00;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **33 Claims**

1. A method for detecting a nucleic acid analyte in a sample, which method comprises contacting the sample with (i) a binding entity complementary to the analyte and to which is attached a first partner of a ligand to metal energy transfer system, (ii) a lanthanide ion, and (iii) a second partner of the system to which is attached a duplex binder; wherein the first partner of the ligand to metal energy transfer system is a complexing sensitiser and the second partner is a chelating agent, or vice versa; such that upon complementary binding of the analyte and the binding entity to form a nucleic acid duplex, interaction of the duplex binder with the duplex occurs and allows the first and the second partners of the system to form a closed chelated system around the lanthanide ion and, upon irradiation, emission of light from the lanthanide ion indicates the presence of the analyte in the sample.

5,827,654

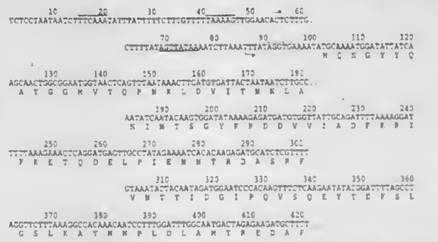
BASAL BODY ROD PROTEIN GENES OF CAMPYLOBACTER

Voon Loong Chan, Toronto, and Helena Louie, Markham, both of Canada, assignors to University of Toronto, Toronto

Filed May 8, 1995, Ser. No. 436,748

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **12 Claims**



1. A purified and isolated nucleic acid molecule having a nucleotide sequence selected from the group consisting of:

(a) the entire sequence set out in FIG. 1 (SEQ ID No: 1), the sequence of the flgF gene (SEQ ID No: 2), the sequence of the flgG gene (SEQ ID No: 3) or the full length complementary sequence of any one of said sequences;

(b) a nucleotide sequence encoding the amino acid sequence of the FlgF protein (SEQ ID No: 4), a sequence encoding the FlgG protein (SEQ ID No: 5) or the full length complementary sequence thereto; and

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(c) a nucleotide sequence encoding a functional FlgF basal body rod protein of a flagellum of a strain of Campylobacter which has at least about 90% nucleotide sequence identity with any one of the nucleotide sequences defining FlgF in (a) or (b).

5,827,655

ASSAY, METHODS AND PRODUCTS BASED ON N K^+ CHANNEL EXPRESSION

Kanianthara G. Chandy; Michael D. Cahalan, both of Laguna Beach, Calif.; Stephan Grissmer, Ulm, Germany; Alan L. Goldin, Irvine, Calif.; Brent A. Dethlefs, Laguna Niguel, Calif.; George A. Gutman, Costa Mesa, Calif., and John J. Wasmuth, Mission Viejo, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Continuation of Ser. No. 170,418, Dec. 20, 1993, abandoned, which is a division of Ser. No. 558,568, Jul. 27, 1990, abandoned. This application Sep. 12, 1995, Ser. No. 527,152

Int. Cl.[6] G01N *33/53;* **C12Q** *1/68*

U.S. Cl. 435—6 **7 Claims**

1. An in vitro assay for identifying materials having a modulating effect on the activity of n K^+ channels in a mammal which comprises:

a. providing an expression system that produces a functional n K^+ channel expression product, wherein said n K^+ channel expression product is the MK3 gene product shown as SEQ ID NO:2;

b. contacting said expression system or said K^+ channel expression product with one or more materials to determine its modulating effect on the bioactivity of said K^+ channel expression product; and

c. selecting from said materials a candidate(s) which modulates the activity of said n K^+ channel.

5,827,656

COMPOSITIONS AND METHODS FOR THE SIMULTANEOUS DETECTION AND QUANTIFICATION OF MULTIPLE SPECIFIC NUCLEIC ACID SEQUENCES

Norman Charles Nelson, San Diego, Calif.; James Stuart Woodhead, Raglan; Ian Weeks, Cardiff, both of Great Britain, and Azzouz Ben Cheikh, Del Mar, Calif., assignors to Gen-Probe Incorporated, San Diego, Calif.

Continuation of Ser. No. 444,285, May 18, 1995, abandoned, which is a continuation of Ser. No. 331,107, Oct. 28, 1994, abandoned. This application Jul. 16, 1996, Ser. No. 683,124

Int. Cl.[6] C12Q *1/68;* **C09K** *3/00;* **C07H** *21/04;* **C12N** *15/00*

U.S. Cl. 435—6 **52 Claims**

1. A method for the assay of a plurality of nucleic acid analytes suspected of being contained in a single sample comprising the steps:

(a) providing in a medium,

(i) a plurality of different oligonucleotide hybridization assay probes, each of said probes able to specifically hybridize to a target nucleotide sequence of a nucleic acid analyte suspected of being in said sample,

(ii) a plurality of different chemiluminescent labels, each of said labels coupled to one or more of said hybridization probes, so that two or more nucleic acid analytes are each targeted by at least one hybridization assay probe coupled to a different chemiluminescent label, and

(iii) said sample, and

(b) establishing hybridization conditions under which the different hybridization assay probes will specifically hybridize to said nucleic acid analytes, if present, to form labeled double-stranded nucleic acid hybrids wherein said conditions do not favor the formation of double-stranded nucleic acid hybrids between said labeled probes and untargeted nucleic acids,

(c) selectively destroying or inhibiting the chemiluminescent potential of said chemiluminescent labels coupled to unhybridized probe, wherein the rate of said destruction or inhibition of at least a first hybrid-associated label is less than about 50-fold different than the rate of said loss for at least a second hybrid-associated label, and wherein the rate of said destruction or inhibition of the first hybrid-unassociated label is less than about 50 fold different than the rate of said loss for the second hybrid-unassociated label,

(d) inducing the chemiluminescent labels associated with double-stranded nucleic acid hybrids to emit light, and

(e) identifying at least two of said nucleic acid analytes, if present, by detecting the light emitted by said first chemiluminescent label associated with one of said at least two analytes at a wavelength of light emission sufficiently distinct from a wavelength of light emission of said second chemiluminescent label associated with the other of said at least two analytes to allow said analytes to be independently detectable in a single test sample.

5,827,657

DIRECT CLONING OF PCR AMPLIFIED NUCLEIC ACIDS

Corinna Herrnstadt, San Diego; Joseph M. Fernandez, Carlsbad, both of Calif.; Lloyd Smith, and David A. Mead, both of Madison, Wis., assignors to Invitrogen Corporation, San Diego, Calif., and Molecular Biology Resources, Inc., Milwaukee, Wis.

Continuation of Ser. No. 460,253, Jun. 2, 1995, abandoned, which is a continuation of Ser. No. 119,313, Sep. 9, 1993, Pat. No. 5,487,993, which is a continuation of Ser. No. 950,742, Sep. 24, 1992, abandoned, which is a continuation of Ser. No. 589,817, Sep. 27, 1990, abandoned. This application Jul. 18, 1996, Ser. No. 683,237

Int. Cl.[6] C12Q *1/68*

U.S. Cl. 435—6 **6 Claims**

1. A kit for direct cloning of PCR amplified nucleic acids comprising, in separate containers, an aliquot of linear plasmid DNA molecules comprising a single overhanging 3'-dTMP termini; and an aliquot of a DNA ligase, said DNA ligase capable of ligating a nucleic acid sequence comprising a 3'-dAMP overhang into said linear plasmid DNA at said overhanging 3' dTMP sites.

5,827,658

ISOLATION OF AMPLIFIED GENES VIA CDNA SUBTRACTIVE HYBRIDIZATION

Bertrand C. Liang, Silver Spring, Md., assignor to The United States of America as reprsented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 9, 1996, Ser. No. 700,763

Int. Cl.[6] C12Q *1/68;* **C12P** *19/34*

U.S. Cl. 435—6 **7 Claims**

1. A method for analyzing an amplified gene in a first sample, comprising of the steps of:

(a) providing cDNA derived from mRNA from said sample;

(b) annealing said cDNA to biotinylated cDNA, wherein said biotinylated cDNA was prepared from mRNA from a sample of normal tissue, and is in excess from about 2 to about 15 fold over the cDNA so as to hybridize most copies of cDNA derived from non-amplified genes of said tissue of interest;

(c) removing said annealed cDNA by binding to magnetic beads coated with streptavidin or avidin;

(d) amplifying cDNA not removed in step (c) by PCR;

(e) verifying that all non-hybridized, amplified cDNA obtained in step (d) is from an amplified gene; and then

(f) analyzing copies of cDNA obtained in step (e).

5,827,659

METHODS AND APPARATUS FOR SEQUENCING POLYMERS USING MASS SPECTROMETRY

Dale H. Patterson, Nashua, N.H., assignor to PerSeptive Biosystems, Inc., Framingham, Mass.

Continuation of Ser. No. 446,055, May 19, 1995, abandoned. This application Feb. 7, 1997, Ser. No. 796,598

Int. Cl.[6] C12Q *1/68;1/70;* **C12P** *19/34;* **C07K** *5/00*

U.S. Cl. 435—6 **10 Claims**

1. A sample holder adapted to receive a polymer comprising a series of different monomers whose sequence is to be determined in a mass spectrometry apparatus, comprising

a planar solid surface having at least two discrete spatial areas arrayed upon said planar solid surface and

differing amounts of an agent capable of hydrolyzing a polymer disposed on each of said discrete spatial areas to form at least two discrete spatial areas wherein, upon the addition of said polymer, differing ratios of agent to polymer are formed in each of said discrete spatial areas, wherein said holder can be used to adapt said apparatus for obtaining sequence information about said polymer.

5,827,660

CAGED FLUOROCHROME-LABELED PROBES AND SUBTRACTION OF AUTOFLOURESCENCE BACKGROUND

Robert H. Singer, Shrewsbury, and Joan C. Politz, Holden, both of Mass., assignors to University of Massachusetts, Boston, Mass.

Filed Aug. 9, 1996, Ser. No. 693,786

Int. Cl.[6] C12Q *1/68;1/70;* **G01N** *33/53;1/00*

U.S. Cl. 435—6 **20 Claims**

1. A method for removing autofluorescence background from a fluorescent in situ hybridization image of cellular material, the method comprising the steps of:

(a) fixing said cellular material with a fixative that retains and preserves a target molecule, if present, in said cellular material;

(b) contacting said cellular material with a molecular probe that binds specifically to said target molecule, said molecular probe being labeled with a caged fluorochrome;

(c) interrogating said cellular material a first time, to produce a first digitized image including an autofluorescence background;

(d) uncaging the fluorochrome label on said molecular probe;

(e) interrogating said cellular material a second time to produce a second digitized image including (1) a fluorescence signal from the uncaged fluorochrome on said molecular probe, and (2) said autofluorescence background; and

(f) digitally subtracting said first digitized image from said second digitized image, thereby removing autofluorescence background from the fluorescent in situ hybridization image.

5,827,661

ENHANCING DETECTION POLYMERASE CHAIN REACTION ASSAYS BY RNA TRANSCRIPTION AND IMMUNODETECTION OF RNA:DNA HYBRIDS

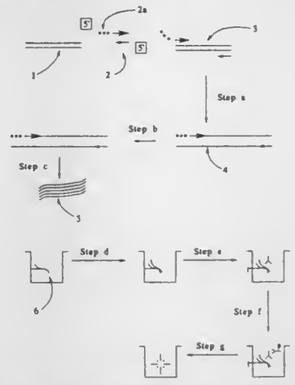
Burton W. Blais, Firch, Canada, assignor to Kalyx Biosciences Incorporated, Ottawa, Canada

Continuation of Ser. No. 366,619, Dec. 30, 1994, abandoned. This application Sep. 23, 1996, Ser. No. 718,596

Claims priority, application Canada, Dec. 23, 1994, 2137070

Int. Cl.[6] C12Q *1/68;* **G01N** *33/53;* **C12P** *19/34;* **C07H** *21/04*

U.S. Cl. 435—6 **6 Claims**



1. A method of nucleic acid sequence detection comprising the steps:

a) synthesizing DNA amplicons complementary to target nucleic acid sequence by a nucleic acid amplification procedure using one or more pairs of priming oligonucleotides, one of each said pair comprising an RNA polymerase promoter sequence;

b) transcribing and amplifying said DNA amplicons into transcription enhancement product using an RNA polymerase;

c) capturing transcription enhancement products by forming RNA:DNA hybrids with an immobilized DNA probe; and

d) detecting the transcription enhancement product:capture probe complexes immunochemically using antibodies which are reactive with RNA:DNA hybrids.

5,827,662

METHODS FOR DETECTING GENETIC MUTATIONS RESULTING IN PROTEASE INHIBITOR INSUFFICIENCIES

Harvey Rubin, Philadelphia; Barry Cooperman, Penn Valley; Norman Schechter, Philadelphia; Michael Plotnick, Havertown, and Zhi Mei Wang, Philadelphia, all of Pa., assignors to The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 276,936, Jul. 19, 1994, Pat. No. 5,612,194, which is a continuation-in-part of Ser. No. 229,286, Apr. 18, 1994, abandoned, which is a continuation-in-part of Ser. No. 221,171, Mar. 31, 1994, Pat. No. 5,723,316, and Ser. No. 221,078, Mar. 31, 1994, Pat. No. 5,674,708, each which is a continuation-in-part of Ser. No. 5,908, Jan. 15, 1993, Pat. No. 5,367,064, and a division of Ser. No. 735,335, Jul. 24, 1991, Pat. No. 5,252,725, which is a division of Ser. No. 370,704, Jun. 23, 1989, Pat. No. 5,079,336. This application Dec. 18, 1996, Ser. No. 722,268

Int. Cl.[6] C12Q *1/00;* **C07K** *14/81;* **C12N** *15/15;15/70*

U.S. Cl. 435—6 **6 Claims**

1. A method of diagnosing patients suspected of having a mutation in a gene encoding a serine protease inhibitor which results in uncontrolled activity of a protease comprising:

(a) obtaining a biological sample from a patient suspected of having a condition characterized by uncontrolled activity of a protease;

(b) identifying the serum protease inhibitor which is associated with the condition;
(c) detecting mutations in the gene encoding said serine protease inhibitor; and
(d) correlating the identified serine protease inhibitor with a recombinant serine protease inhibitor which controls activity of the protease wherein said recombinant serine protease inhibitor contains a protease binding site and a hinge region of a reactive loop which have modified amino acid sequences.

5,827,663

METHOD AND APPARATUS FOR REDUCING SOLVENT LUMINESCENCE BACKGROUND EMISSIONS

Rhett L. Affleck; W. Patrick Ambrose, both of Los Alamos, N. Mex.; James N. Demas, Charlottesville, Va.; Peter M. Goodwin, Jemez Springs, N. Mex.; Mitchell E. Johnson, Pittsburgh, Pa.; Richard A. Keller; Jeffrey T. Petty, both of Los Alamos, N. Mex.; Jay A. Schecker, Santa Fe, N. Mex., and Ming Wu, Los Alamos, N. Mex., assignors to The Regents of the University of California, Los Alamos, N. Mex.

Continuation of Ser. No. 383,272, Feb. 3, 1995, abandoned. This application Oct. 4, 1996, Ser. No. 727,841
Int. Cl.[6] C12Q *1/68;1/37;* **C12N** *15/00*
U.S. Cl. 435—6 **14 Claims**

1. A method for reducing solvent luminescence background emissions in a detection system for a sample that becomes luminescent when excited by light at an exciting wavelength, comprising the steps of:
illuminating said solvent with said sample with a first light in a first region of said detection system effective to form a photobleached solvent;
introducing said photobleached solvent and said sample into a second region of said detection system downstream of said first region, where said first light is absent from said second region; and
illuminating said photobleached solvent and said sample with a second light having said exciting wavelength to luminesce said sample in said second region.

5,827,664

Patent Not Issued For This Number

5,827,665

Patent Not Issued For This Number

5,827,666

SYNTHETIC MULTIPLE TANDEM REPEAT MUCIN AND MUCIN-LIKE PEPTIDES, AND USES THEREOF

Olivera J. Finn, Pittsburgh, Pa.; J. Darrell Fontenot, Espanola, N. Mex., and Ronald C. Montelaro, Wexford, Pa., assignors to University of Pittsburgh, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 99,354, Jul. 30, 1993. This application Aug. 10, 1994, Ser. No. 288,059
Int. Cl.[6] G01N *33/53;33/574;* **C07K** *1/00;14/00*
U.S. Cl. 435—7.1 **8 Claims**

1. A method of detecting the presence of antibodies to pancreatic cancer, breast cancer or colon cancer in a biological test sample, comprising the steps of:
a) contacting a synthetic muc-1 peptide with a biological test sample suspected of containing antibodies to at least one of pancreatic cancer, breast cancer or colon cancer, under conditions such that a synthetic muc-1 peptide-antibody complex is formed, wherein said synthetic muc-1 peptide comprises at least two 20-amino acid tandem repeats of muc-1, and which synthetic muc-1 peptide is capable of attaining native conformation in the absence of glycosylation, and
b) detecting the formation of said synthetic muc-1 peptide-antibody complex, which complex is indicative of the presence of antibodies to pancreatic cancer, breast cancer or colon cancer in said biological test sample.

5,827,667

Patent Not Issued For This Number

5,827,668

IMMUNODIANGNOSTIC ASSAY FOR RHEUMATOID ARTHRITIS

Dennis Raymond Stanworth, Birmingham; Ian Victor Lewin, Tamworth, and Sarita Nayyar, Penn, all of England, assignors to Peptide Therapeutics Limited, Cambridgeshire, England

Continuation of Ser. No. 940,879, Oct. 29, 1992, abandoned. This application Aug. 10, 1995, Ser. No. 513,514
Claims priority, application United Kingdom, May 25, 1990, 9011702; Jun. 26, 1990, 9014227
Int. Cl.[6] G01N *33/53;33/48;* **C07K** *16/00;* **C12P** *21/08*
U.S. Cl. 435—7.1 **15 Claims**

1. A ligand comprising an antibody domain specific for an antigenic determinant of a complex of human IgA and α_1-antitrypsin, said antibody domain being substantially non reactive with free human IgA and free human α_1-antitrypsin.

8. A method of assay for detecting human rheumatoid arthritis (RA) in a patient which comprises:
contacting a body fluid sample suspected to contain a complex of human IgA and α1-antitrypsin (IgA-α1AT) with the ligand as claimed in claim 1,
detecting immunological binding between said complex and and said ligand, and
determining the existence of RA in said patient based on elevated levels of said immunological binding.

5,827,669

SHEETS, KITS AND METHODS FOR DETECTING ANTIGENS OR ANTIBODIES

Mikio Nakayama, Chiba-ken; Tadahiko Kitano, Tokyo; Ayumi Mitoh, Tokyo; Tetsuro Ogawa, Tokyo, and Tsuneo Hiraide, Tokyo, all of Japan, assignors to Nakayama, Mikio, Chiba-ken; Kitano, Tadahiko, and Asahi Kogaku Kogyo Kabushiki Kaisha, both of Toyko, all of Japan

Filed Nov. 12, 1996, Ser. No. 746,485
Claims priority, application Japan, Nov. 10, 1995, 7-293011
Int. Cl.[6] G01N *33/551*
U.S. Cl. 435—7.51 **16 Claims**

1. A detection sheet for detecting an antigen or antibody in a biological fluid, which comprises (a) a fibrous aggregate with carried particles of a calcium phosphate compound having an average particle diameter of about 0.01 to 200 microns and a Ca/P ratio of about 1.0 to 2.0 and (b) an avidin, streptavidin or avidin derivative from which carbohydrates have been extracted immobilized on said calcium phosphate compound.

5,827,670

METHODS OF ISOLATING AND DETECTING BONE MARROW STROMAL CELLS WITH VCAM-1-SPECIFIC ANTIBODIES

Boris Masinovsky, Bellevue; William Michael Gallatin, Mercer Island, and Paul J. Simmons, Seattle, all of Wash., assignors to Fred Hutchinson Cancer Research Center, Seattle, Wash.

Division of Ser. No. 448,649, May 24, 1995, which is a continuation of Ser. No. 51,445, Apr. 21, 1993, abandoned, which is a division of Ser. No. 562,008, Aug. 2, 1990, Pat. No. 5,206,345. This application Jun. 7, 1995, Ser. No. 480,840
Int. Cl.[6] G01N *33/53*
U.S. Cl. 435—7.21 **4 Claims**

1. A method of isolating or immunoselecting bone marrow stromal cells that express VCAM-1 comprising the steps of contacting cells from bone marrow with an antibody that specifically binds to VCAM-1 and isolating or immunoselecting stromal cells that bind to the antibody.

3. A method of detecting bone marrow stromal cells that express VCAM-1 comprising the steps of contacting cells from bone marrow with an antibody that specifically binds to VCAM-1 and detecting stromal cells that bind to the antibody.

5,827,671

ANTIBODIES RAISED AGAINST PROTEINS OF LEISHMANIA WHICH ARE EXPRESSED AT AN INCREASED LEVEL IN THE AMASTIGOTE FORM

Gregory Matlashewski, St-Lazare, and Hugues Chareat, St.-Bruno, both of Canada, assignors to McGill University

Division of Ser. No. 302,463, Sep. 12, 1994, abandoned, which is a division of Ser. No. 115,987, Sep. 3, 1993, abandoned. This application Jun. 2, 1995, Ser. No. 460,555
Int. Cl.[6] G01N *33/569;* **C07K** *16/20*
U.S. Cl. 435—7.22 **3 Claims**

1. Isolated Leishmania antigen-specific antibody raised against a purified protein encoded by a differentially-expressed gene of a Leishmania organism, wherein said protein has the amino acid sequence:

Met 1	Lys	Ile	Arg	Ser 5	Val	Arg	Pro
Leu	Val 10	Val	Leu	Leu	Val	Cys 15	Val
Ala	Ala	Val	Leu 20	Ala	Leu	Ser	Ala
Ser 25	Ala	Glu	Pro	His	Lys 30	Ala	Ala
Val	Asp	Val 35	Gly	Pro	Leu	Ser	Val 40
Gly	Pro	Gln	Ser	Val 45	Gly	Pro	Leu
Ser	Val 50	Gly	Pro	Gln	Ala	Val 55	Gly
Pro	Leu	Ser	Val 60	Gly	Pro	Gln	Ser
Val 65	Gly	Pro	Leu	Ser	Val 70	Gly	Pro
Gln	Ala	Val 75	Gly	Pro	Leu	Ser	Val 80
Gly	Pro	Gln	Ser	Val 85	Gly	Pro	Leu
Ser	Val 90	Gly	Pro	Leu	Ser	Val 95	Gly

-continued

Pro	Gln	Ser	Val 100	Gly	Pro	Leu	Ser
Val 105	Gly	Ser	Gln	Ser	Val 110	Gly	Pro
Leu	Ser	Val 115	Gly	Pro	Gln	Ser	Val 120
Gly	Pro	Leu	Ser	Val 125	Gly	Pro	Gln
Ala	Val 130	Gly	Pro	Leu	Ser	Val 135	Gly
Pro	Gln	Ser	Val 140	Gly	Pro	Leu	Ser
Val 145	Gly	Pro	Gln	Ala	Val 150	Gly	Pro
Leu	Ser	Val 155	Gly	Pro	Gln	Ser	Val 160
Gly	Pro	Leu	Ser	Val 165	Gly	Pro	Gln
Ser	Val 170	Gly	Pro	Leu	Ser	Val 175	Gly
Ser	Gln	Ser	Val 180	Gly	Pro	Leu	Ser
Val 185	Gly	Pro	Gln	Ser	Val 190	Gly	Pro
Leu	Ser	Val 195	Gly	Pro	Gln	Ser	Val 200
Gly	Pro	Leu	Ser	Val 205	Gly	Pro	Gln
Ser	Val 210	Gly	Pro	Leu	Ser	Val 215	Gly
Pro	Gln	Ser	Val 220	Gly	Pro	Leu	Ser
Val 225	Gly	Pro	Gln	Ser	Val 230	Asp	Val
Ser	Pro	Val 235	Ser	(SEQ ID NO: 3).			

3. Isolated Leishmania antigen-specific antibody raised against a purified protein encoded by a differentially-expressed gene of a Leishmania organism, wherein said protein is encoded by a DNA molecule having the nucleotide sequence:

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ATGAAGATCC GCAGCGTGCG TCCGCTTGTG                    60

        GTGTTGCTGG TGTGCGTCGC GGCGGTGCTC
GCACTCAGCG CCTCCGCTGA GCCGCACAAG                   120

        GCGGCCGTTG ACGTCGGCCC GCTCTCCGTT
GGCCCGCAGT CCGTCGGCCC GCTCTCTGTT                   180

        GGCCCGCAGG CTGTTGGCCC GCTCTCCGTT
GGCCCGCAGT CCGTCGGCCC GCTCTCTGTT                   240

        GGCCCGCAGG CTGTTGGCCC GCTCTCTGTT
GGCCCGCAGT CCGTTGGCCC GCTCTCCGTT                   300
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-continued

GGCCCGCTCT CCGTTGGCCC GCAGTCTGTT
GGCCCGCTCT CCGTTGGCTC GCAGTCCGTC 360

GGCCCGCTCT CTGTTGGTCC GCAGTCCGTC
GGCCCGCTCT CCGTTGGCCC GCAGGCTGTT 420

GGCCCGCTCT CCGTTGGCCC GCAGTCCGTC
GGCCCGCTCT CTGTTGGCCC GCAGGCTGTT 480

GGCCCGCTCT CTGTTGGCCC GCAGTCCGTT
GGCCCGCTCT CCGTTGGCCC GCAGTCTGTT 540

GGCCCGCTCT CCGTTGGCTC GCAGTCCGTC
GGCCCGCTCT CTGTTGGTCC GCAGTCCGTC 600

GGCCCGCTCT CCGTTGGCCC GCAGTCTGTC
GGCCCGCTCT CCGTTGGCCC GCAGTCCGTC 660

GGCCCGCTCT CCGTTGGTCC GCAGTCCGTT
GGCCCGCTCT CCGTTGGCCC GCAGTCCGTT 711

GACGTTTCTC CGGTGTCTTA A (SEQ ID NO:2).

5,827,672
HUMAN MONOCYTE ELASTASE INHIBITOR ANTIBODIES

Eileen Remold-O'Donnell, Brookline, Mass., assignor to Center for Blood Research, Inc., Boston, Mass.

Continuation of Ser. No. 315,831, Sep. 30, 1994, Pat. No. 5,663,299, which is a continuation-in-part of Ser. No. 755,461, Sep. 6, 1991, Pat. No. 5,370,991, which is a continuation-in-part of Ser. No. 314,383, Feb. 23, 1989, abandoned. This application Jun. 13, 1996, Ser. No. 662,318

Int. Cl.[6] C07K *16/00;* **C12P** *21/08;* **G01N** *33/53;33/537*

U.S. Cl. 435—7.92 **10 Claims**

1. An antibody that selectively binds to the human monocyte elastase inhibitor encoded by Sequence I.D. No. 12 or an allelic variant of Sequence I.D. No. 12.

9. A method for detecting the presence, absence or amount of a human monocyte elastase inhibitor, comprising

(1) contacting a diagnostically effective amount of an antibody of claim 1 with a sample suspected of containing a human monocyte elastase inhibitor under conditions that allow the antibody to selectively bind to the human monocyte inhibitor; and

(2) detecting the amount of bound antibody.

5,827,673
METHOD OF DETECTING MYOCARDIAL INFARCTION

Akira Matsumori, Minoo, Japan, assignor to Akira Matsumori, Osaka-Fu, and Otsuka Pharmaceutical Co., Ltd., Tokyo-To, both of Japan

Filed Aug. 13, 1996, Ser. No. 696,160

Int. Cl.[6] G01N *33/53;33/536;33/541;33/543*

U.S. Cl. 435—7.92 **2 Claims**

1. A method of detecting acute myocardial infarction within three hours after onset thereof which comprises detecting myocardial infarction by measuring an HGF level of a patient by an immunoassay of a sample obtained within three hours after onset of said acute myocardial infarction to obtain a first measured value, said immunoassay using a monoclonal antibody having specific reactivity for human hepatocyte growth factor obtainable by using human hepatocyte growth factor as an immunogen and comparing said first measured value with those of healthy normal subjects and those of heart disease patients.

5,827,674
HYBRIDOMA PRODUCING A MONOCLONAL ANTIBODY FOR N-PEPTIDE

Yoshito Numata, Yao; Hidehisa Asada, Ibaraki; Keiji Dohi; Takahiro Fukunaga, both of Osaka, and Yasushi Taniguchi, Takatsuki, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 569,461, Dec. 8, 1995, Pat. No. 5,702,910. This application Aug. 8, 1997, Ser. No. 909,002

Claims priority, application Japan, Dec. 9, 1994, 6-306453

Int. Cl.[6] G01N *33/53;33/543*

U.S. Cl. 435—7.94 **2 Claims**

1. A hybridoma producing a monoclonal antibody that specifically binds the same epitope of γ-hANP (1–98) as monoclonal antibody 7B6 which is produced by hybridoma FERM BP-4878.

5,827,675
TEST APPARATUS, SYSTEM AND METHOD FOR THE DETECTION OF TEST SAMPLES

Richard Skiffington, Everett, and Eliezer Zomer, Newton, both of Mass., assignors to Charm Sciences, Inc., Malden, Mass.

PCT No. PCT/US96/00524, § 371 Date Mar. 26, 1996, § 102(e) Date Mar. 26, 1996, PCT Pub. No. WO97/03209, PCT Pub. Date Jan. 30, 1997

PCT Filed Jan. 2, 1996, Ser. No. 619,586

Int. Cl.[6] C12Q *1/66;* **C12M** *1/30*

U.S. Cl. 435—8 **22 Claims**



1. A glass-free test apparatus for the bioluminescent detection of a ATP in a test sample, from or on a material, which apparatus consists essentially of:

a) an elongated tubular sample unit having:

i) a probe means having a first and second end, with said first end to obtain a test sample in use to be collected from or on a material;

ii) an ATP sterile chamber having a first and second open end, and adapted to receive and retain therein, prior to use and after use, said probe means and having a cover for said first end of said chamber; and

iii) threadable means to move longitudinally, said first end of said probe means within said chamber prior to use to selected sequential non-use, use and non-use positions; and

b) a tubular test unit longitudinally aligned and attached to the second end of the chamber having:

i) a reagent transparent housing with a bottom and having a first end and second closed end, said first end attached to said second open end of said chamber, said transparent housing composed of a transparent material adapted for use with or in a test instrument for the identification of the ATP in test sample by measurement of luminescence; and

ii) ATP test sample reagent means to contact the test sample on said probe means and comprising a reagent package which comprises a plurality of separate, aligned, sealed compartments, which includes an ATP release or buffer solution with an indicator dye compartment and a separate luciferin-luciferase compartment, the compartments characterized by a plurality of separate, puncturable membranes adapted to be penetrated sequentially by the threadably controlled, longitudinal movement of said first end of the probe means, the test sample and the reagent means, in combination, providing a selected test for the detection of the ATP in the test sample, when the test sample and the reagent means are combined in said transparent housing in said test unit.

9. A method for the detection of ATP by a user of a test sample from or on a material, in which said test sample is combined with ATP test reagents to provide test results, which method consists essentially of:

a) providing an elongated, tubular, sterile, glass-free test apparatus with a sample unit constructed and arranged to obtain a test sample to retain a probe means having a probe end therein, and a transparent, closed end test unit at the one end to provide test results;

b) removing said probe means and collecting the material to be tested to obtain a test sample on the probe means;

c) inserting said probe means within said test apparatus;

d) threadably, longitudinally moving said probe means in said test apparatus, with said test sample, sequentially between a starting non-use position with the probe end within the sample unit, a use position with the probe end in the test unit, and an ending non-use position with the probe end within the sample unit;

e) puncturing an ATP-packaged test reagent selected for the particular test method for the sample by the downwardly threadable longitudinal movement of the probe end of the probe means to rupture a plurality of membranes defining separate compartments having an ATP release-buffer solution with an indicator dye, and a luciferin-luciferase composition to provide a contacting of said ATP test reagent and said test sample from said probe means in said test unit; and

f) determining the luminescence within said transparent test unit.

5,827,676

Patent Not Issued For This Number

5,827,677
METHOD AND DEVICE FOR SPECIFICALLY DETECTING MYOGLOBIN USING A NON-DISCRIMINATING PEROXIDASE SENSITIVE ASSAY

Francois Rousseau, Ste-Foy; Jean-Claude Forest, Charlesbourg, and Wiener Audouin, Levis, all of Canada, assignors to Universal Lavel, Quebec, Canada

Filed Feb. 1, 1996, Ser. No. 593,123

Int. Cl.[6] C12Q *1/28*

U.S. Cl. 435—28 **12 Claims**

1. A method for specifically determining the presence or amount of myoglobin amongst other mammalian peroxidatively active substances in a test sample comprising the steps of:

(a) separating myoglobin from said other mammalian peroxidatively active substances on the basis of their difference on molecular weights;

b) contacting said separated myoglobin with a detector composition which leads to a scale evaluation of the density of erythrocytes population in said sample; and

(c) detecting the presence or amount of erythrocytes evaluated with said scale as an indication of the presence or amount of myoglobin in said test sample.

5,827,678
ASSAY REAGENT COMPRISING KILLED BACTERIAL CELLS WHICH RETAIN FUNCTIONAL METABOLIC ACTIVITY

Ian Philip Hesslewood, Amersham, and Gordon Sydney Anderson Birnie Stewart, Loughborough, both of United Kingdom, assignors to Merck Patent GmbH, Darmstadt, Germany

PCT No. PCT/GB94/01926, § 371 Date Jul. 17, 1996, § 102(e) Date Jul. 17, 1996, PCT Pub. No. WO95/07346, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 5, 1994, Ser. No. 605,160

Claims priority, application European Pat. Off., Sep. 8, 1993, 93307065

Int. Cl.[6] C12Q *1/02*

U.S. Cl. 435—29 **9 Claims**

1. An assay reagent comprising bacterial cells which have been killed but which retain a functional metabolic activity, the reagent not containing corresponding bacterial cells which have not been killed.

5,827,679
CHEMICAL EVALUATION METHOD

Samuel B. Moore; Jack D. Madren, Jr.; Linda C. Ebrlich, all of Burlington, and Richard A. Diehl, Greensboro, all of N.C., assignors to Burlington Research, Inc., Burlington, N.C.

Continuation of Ser. No. 418,372, Apr. 7, 1995, abandoned. This application Mar. 25, 1997, Ser. No. 823,982

Int. Cl.[6] C12Q *1/02;* **B09B** *3/00*

U.S. Cl. 435—29 **3 Claims**

1. A method of determining the toxicity of a selected water soluble organic chemical relative to the toxicity of other water soluble organic alternative chemical substitutes with a combination of Organization of Economic Cooperation & Development, herein OECD, tests to aid in selecting which of the alternative chemical substitutes will reduce the impact of industrial discharges with respect to the selected chemical, comprising:

a) determining an ASRIT value based score of between 1 and 50 for said chemical by testing said chemical in accordance with OECD Activated Sludge Inhibition Test No. 209;

b) determining an LC_{50} value based score of between 1 and 50 for said chemical by testing said chemical in accordance with OECD Aquatic Toxicity Test No. 202/203;

c) determining a Biodeg value based score of between 1 and 50 for said chemical by testing said chemical in accordance with OECD Biodegradability Rate Test No. 301D;

d) calculating a composite score for said chemical based upon the sum of said ASRIT, LC_{50} and Biodeg scores, wherein said composite score is calculated in accordance with the equation: Composite Score=ASRIT Score+LC_{50} Score+Biodeg Score, wherein ASRIT Score=(2.6×(ASRIT Value$^{0.4}$))−1, LC50 Score=(4.5×(LC_{50} Value$^{0.5}$))−(0.05×LC_{50} Value), and Biodeg Score=(3×(Biodeg Value$^{0.775}$))−2;

e) comparing said composite score against comparably determined composite scores of other water soluble organic alternative chemical substitutes to ascertain the toxicity of the selected chemical relative to the alternate chemical substitutes to aid in selecting an alternative chemical substitute which will reduce the impact of industrial discharges with respect to the selected chemical.

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5,827,680

THREE REAGENT GRAM STAINING METHOD AND KIT

Amy Meszaros, Adrian, and Leon F. Strenkoski, Dexter, both of Mich., assignors to Difco Laboratories, Detroit, Mich.

PCT No. PCT/US94/11503, § 371 Date Jun. 12, 1996, § 102(e) Date Jun. 12, 1996, PCT Pub. No. WO95/17519, PCT Pub. Date Jun. 29, 1995

PCT Filed Oct. 11, 1994, Ser. No. 656,243

Int. Cl.[6] C12Q *1/04*

U.S. Cl. 435—34 32 Claims

1. A method for Gram staining a specimen containing bacteria by:

a) staining Gram positive bacteria in the specimen;

b) fixing the stain to the Gram positive bacteria and;

c) simultaneously decolorizing and counter-staining Gram negative bacteria in the specimen, the counter-stain being selected from the group consisting of safranin, basic fuchsin, acid fuchsin, and neutral red stain.

5,827,681

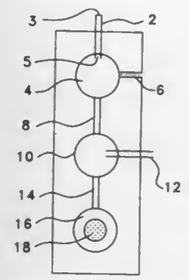
RAPID DETECTION AND DRUG SENSITIVITY OF MALARIA

Edward C. Krug, Aurora, and Randolph L. Berens, Littleton, both of Colo., assignors to University Technology Corporation, Boulder, Colo.

Filed Dec. 20, 1996, Ser. No. 771,450

Int. Cl.[6] C12Q *1/04;1/00;* C12N *1/04;* G01N *33/53*

U.S. Cl. 435—34 12 Claims



1. A test kit for detecting the presence of a malarial infection in a blood sample and determining sensitivity of the malarial infection to an anti-malarial compound comprising:

a bottom layer and a top layer; said bottom layer and said top layer being fused together so that said fusing forms a pattern which creates a plurality of blister chambers connected to each other by connecting tubes wherein at least one of said layers is comprised of breathable film,

and the test kit is dimensioned to be used with a light microscope; and wherein a first blister chamber having an inlet tube and a vent tube is designed to receive a blood sample; and

wherein a second blister chamber is connected to said first blister chamber by a non-permanent seal and said second blister chamber contains liquid culture media and diluent and a vent tube;

and a third blister chamber is connected to said second blister chamber by a non-permanent seal and said third blister chamber contains an antimalarial compound.

5,827,682

TWO-STEP CONVERSION OF VEGETABLE PROTEIN ISOFLAVONE CONJUGATES TO AGLUCONES

Barbara A. Bryan, University City, Mo.; Maryann C. Allred, Collinsville, Ill., and Mark A. Roussey, Chesterfield, Mo., assignors to Protein Technologies International, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 477,102, Jun. 7, 1995, abandoned. This application Oct. 15, 1996, Ser. No. 730,171

Int. Cl.[6] C21P *21/06;* C12N *9/24;* C07D *311/64*

U.S. Cl. 435—68.1 34 Claims

1. A method for converting isoflavone conjugates to isoflavone aglucones, comprising:

forming a mixture comprising isoflavone conjugates and water;

treating said mixture at a pH of about 6 to about 13.5 and a temperature of about 2° C. to about 121° C. for a time sufficient to convert a majority of said isoflavone conjugates to isoflavone glucones; and

contacting isoflavone glucones in said mixture with an enzyme capable of cleaving isoflavone glucoside bonds at a pH of about 3 to about 9 and a temperature of about 5° C. to about 75° C. for a time period sufficient to convert said isoflavone glucones to isoflavone aglucones.

5,827,683

NUCLEIC ACIDS ENCODING BSSL VARIANTS

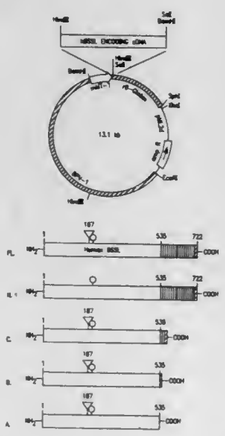
Lars Gustav Bläckberg; Michael Edlund; Stig Lennart Hansson; Olle Carl Edward Hernell, all of Umeå; Lennart Gustav Lundberg, Bilidal; Mats Olof Strömqvist, Umeå, and Jan Birger Fredrik Törnell, Västra Frölunda, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden

Filed Mar. 1, 1994, Ser. No. 204,691

Claims priority, application Sweden, Mar. 1, 1993, 9300686; Mar. 4, 1993, 9300722

Int. Cl.[6] C07H *21/04;* C12N *5/00;15/12;* C12P *21/00*

U.S. Cl. 435—69.1 15 Claims



1. A nucleic acid encoding a variant BSSL polypeptide that retains Bile Salt Stimulated Lipase activity, wherein one or more, but not all, of the amino acids in the region corresponding to amino acids 536–722, inclusive, of SEQ ID NO: 3 have been deleted.

5,827,684

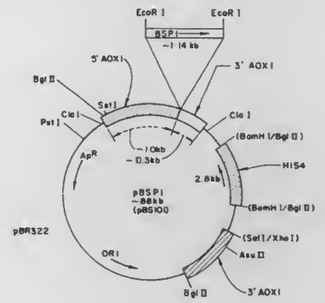
PRODUCTION OF BACILLUS ENTOMOTOXINS METHYLOTROPHIC YEAST

Kotikanyadanam Sreekrishna; William D. Prevatt, both of Bartlesville, Okla.; Gregory P. Thill, Milton, Mass.; Geneva R. Davis; Patricia Koutz, both of San Diego, Calif.; Kathryn A. Barr, and Sharon A. Hopkins, both of Bartlesville, Okla., assignors to Research Corporation Technologies, Inc., Tucson, Ariz.

Continuation of Ser. No. 926,448, Aug. 7, 1992, abandoned. This application Apr. 19, 1994, Ser. No. 231,342

Int. Cl.[6] C12N *1/19;15/32;15/63;21/02*

U.S. Cl. 435—69.1 31 Claims



1. A DNA which comprises at least one expression cassette, said expression cassette comprising:

(1) a promoter segment of a first methylotrophic yeast gene, said segment comprising the promoter and transcription initiation site of said first gene;

(2) a terminator segment of a second methylotrophic yeast gene, said terminator segment comprising the polyadenylation signal-encoding and polyadenylation site-encoding segments and the transcription termination signal of said second gene, said first and second methylotrophic yeast genes being the same or different; and

(3) a DNA segment which encodes a Bacillus toxin polypeptide, which polypeptide encoding segment has a G+C content of between about 45% and about 55%;

said polypeptide encoding segment being oriented and positioned operatively for transcription between said promoter segment and said terminator segment, and said terminator segment being oriented, with respect to direction of transcription from said promoter segment, operatively for termination of transcription and

said Bacillus toxin polypeptide being a biologically active insecticidal toxin.

5,827,685

METHODS AND COMPOSITIONS OF GENETIC STRESS RESPONSE SYSTEMS

Susan Lindquist, Chicago, Ill., assignor to Arch Development Corporation, Chicago, Ill.

Continuation of Ser. No. 710,187, Jun. 3, 1991, abandoned. This application May 25, 1994, Ser. No. 249,380

Int. Cl.[6] C12N *15/31;1/16;15/63;* C07K *14/395*

U.S. Cl. 435—69.1 33 Claims

27. A genetic construct comprising a structural gene coding for a wide-type eukaryotic hsp100 stress protector protein, said protein recognized by a polyclonal antibody raised against the C-terminal 15 amino acid residues of hsp104, said structural gene encoded by an RNA segment that hybridizes to the DNA sequence of FIG. 1A (SEQ ID NO:1) under conditions including about 0.15M to 0.9M salt at a temperature of about 20° to 55° C.

5,827,686

METHOD OF EXPRESSING GENES IN MAMMALIAN CELLS

Taiki Tamaoki, and Hidekazu Nakabayashi, both of Calgary, Canada, assignors to University Technologies International, Inc., Calgary, Canada

Continuation of Ser. No. 148,058, Nov. 4, 1993. This application May 13, 1996, Ser. No. 645,215

Int. Cl.[6] C12P *21/00;* C12N *15/00*

U.S. Cl. 435—69.1 5 Claims

1. A method of expressing a heterologous gene in a mammalian liver cell comprising inserting a DNA construct into a mammalian liver cell, said construct comprising a human AFP enhancer region and a human AFP promoter functionally linked to the heterologous gene in the absence of an AFP silencer region, and expressing the heterologous gene in the mammalian liver cells.

5,827,687

PROMOTER AND METHOD OF GENE EXPRESSION USING THE SAME

Nobuto Koyama, Uji; Eiji Miyoshi, Osaka; Yoshito Ihara, Mino; Atsushi Nishikawa, and Naoyuki Taniguchi, both of Toyonaka, all of Japan, assignors to Takara Shuzo Co., Ltd., Kyoto-fu, Japan

Filed Jun. 28, 1996, Ser. No. 672,569

Claims priority, application Japan, Jun. 30, 1995, 7-187753; Aug. 17, 1995, 7-233364

Int. Cl.[6] C12P *21/06*

U.S. Cl. 435—69.1 14 Claims

1. An isolated DNA having a sequence selected from the group consisting of:

(a) a DNA sequence comprising a sequence of SEQ ID NO:1, or a fragment thereof;

(b) a DNA sequence comprising a sequence of SEQ ID NO:2, or a fragment thereof;

(c) a DNA sequence comprising a sequence of SEQ ID NO:3, or a fragment thereof;

(d) a DNA sequence comprising a sequence of SEQ ID NO:4, or a fragment thereof; and

(e) a DNA sequence capable of hybridizing to any one of (a) to (d) above at 65° C. for 20 hours in a solution containing 6×SSC, 1% sodium dodecyl sulfate, 100 μg/ml salmon sperm DNA and 5×Denhardt's,

wherein said isolated DNA has a promoter activity in an animal cell in vitro.

5,827,688

SECRETED PROTEINS AND POLYNUCLEOTIDES ENCODING THEM

Kenneth Jacobs, Newton; John M. McCoy, Reading; Edward R. LaVallie, Tewksbury; Lisa A. Racie; David Merberg, both of Acton; Maurice Treacy, Chestnut Hill, and Vikki Spaulding, Billerica, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Continuation-in-part of Ser. No. 721,926, Sep. 27, 1996, abandoned, which is a continuation-in-part of Ser. No. 664,596, Jun. 17, 1996. This application Oct. 25, 1996, Ser. No. 738,367

Int. Cl.[6] C07H *21/04*

U.S. Cl. 435—69.1 23 Claims

1. A composition comprising an isolated polynucleotide selected from the group consisting of:

(a) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1;

(b) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:1 from nucleotide 14 to nucleotide 433;

(c) a polynucleotide comprising the nucleotide sequence of the full length protein coding sequence of clone C195_1 deposited under accession number ATCC 98079;

(d) a polynucleotide encoding the full length protein encoded by the cDNA insert of clone C195_1 deposited under accession number ATCC 98079;
(e) a polynucleotide comprising the nucleotide sequence of the mature protein coding sequence of clone C195_1 deposited under accession number ATCC 98079;
(f) a polynucleotide encoding the mature protein encoded by the cDNA insert of clone C195_1 deposited under accession number ATCC 98079;
(g) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:2;
(h) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:2 which comprises the amino acid sequence from amino acid 52 to amino acid 140 of SEQ ID NO:2;
(i) a polynucleotide comprising the nucleotide sequence of the full length protein coding sequence of isolate C195_4 deposited under accession number ATCC 98182;
(j) a polynucleotide encoding the full length protein encoded by the cDNA insert of isolate C195_4 deposited under accession number ATCC 98182;
(k) a polynucleotide comprising the nucleotide sequence of the mature protein coding sequence of isolate C195_4 deposited under accession number ATCC 98182;
(l) a polynucleotide encoding the mature protein encoded by the cDNA insert of isolate C195_4 deposited under accession number ATCC 98182;
(m) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:6;
(n) a polynucleotide comprising the nucleotide sequence of SEQ ID NO:6 from nucleotide 14 to nucleotide 733;
(o) a polynucleotide encoding a protein comprising the amino acid sequence of SEQ ID NO:7;
(p) a polynucleotide encoding a protein comprising a fragment of the amino acid sequence of SEQ ID NO:7 which comprises the amino acid sequence from amino acid 52 to amino acid 140 of SEQ ID NO:7; and
(q) a polynucleotide which is an allelic variant of a polynucleotide of (a)–(e) or (i)–(n) above.

5,827,689

FABD POLYNUCLEOTIDES

Daniel Robert Gentry, Pottstown; David John Payne, Phoenixville; Stewart Campbell Pearson, Berwyn, and John Timothy Lonsdale, Exton, all of Pa., assignors to SmithKline Beecham Corporation, Philadelphia, Pa.

Filed Jan. 24, 1997, Ser. No. 789,609
Int. Cl.[6] C12P *21/00;* **C12N** *1/21;15/63;* **C07H** *21/04*
U.S. Cl. 435—69.1 **31 Claims**

[SEQ ID NO:1]

```
   1  ATGAGTAAAA CAGCAATTAT TTTTCCGGGA CAAGGTGCCC AAAAAGTTGG
  51  TATGGCACAA GATTTGTTTA ATAACAATGA TCAAGCAACT GAAATTTTAA
 101  CTTCAGCAGC AAAGACGTTA GACTTTGATA TTTTAGAGAC AATGTTTACT
 151  GATGAAGAAG GTAAATTGGG TGAAACTCAA AACACGCAAC CAGCTTTATT
 201  GACGCATAGT TCGGCATTAT TAGCAGCGCT AAAAATTTTG AATCCTGATT
 251  TTACTATGGG GCATAGTTTA GGTGAATATT CAAGTTTAGT TGCAGCTGAC
 301  GTATTATCAT TTGAAGATGC AGTTAAAATT GTTAGAAAAC GTGGTCAATT
 351  AATGGCGCAA GCATTTCCTA CTGGTGTAGG AAGCATGGCT GCAGTATTGG
 401  GATTAGATTT TGATAAAGTC GATGAAATTT GTAAGTCATT ATCATCTGAT
 451  GACAAAATAA TTGAACCAGC AAACATTAAT TGCCCAGGTC AAATTGTTGT
 501  TTCAGGTCAC AAAGCTTTAA TTGATGAGCT AGTAGAAAAA GGTAAATCAT
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1. A polynucleotide consisting of the polynucleotide set forth in SEQ ID NO:3 or SEQ ID NO:4.

5,827,690

TRANSGENIC PRODUCTION OF ANTIBODIES IN MILK

Harry Meade, Newton; Paul DiTullio, Framingham, and Daniel Pollock, Medway, all of Mass., assignors to Genzyme Transgenics Corporatiion, Framingham, Mass.

Filed Dec. 20, 1993, Ser. No. 170,579
Int. Cl.[6] C12P *21/04;* **C12N** *15/00*
U.S. Cl. 435—69.6 **13 Claims**

1. A high level expression method for providing a heterologous and assembled immunoglobulin, in the milk of a transgenic mammal comprising:
obtaining milk from a transgenic mammal having introduced into its germline a heterologous immunoglobulin protein-coding sequence operatively linked to a promoter sequence that results in the preferential expression of said protein-coding sequence in mammary gland epithelial cells, thereby providing said heterologous and assembled immunoglobulin in the milk of said mammal, wherein said heterologous and assembled immunoglobulin is a functional configuration and is produced at level of at least about 1 mg/ml in the milk of said mammal.

5,827,691

PROCESS FOR PREPARING A PROTEIN WHICH INHIBITS METASTASIS OF CANCER

Kanso Iwaki; Tsunetaka Ohta, and Masashi Kurimoto, all of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Continuation of Ser. No. 555,857, Nov. 13, 1995, abandoned, which is a division of Ser. No. 127,278, Sep. 27, 1993, Pat. No. 5,498,697. This application Apr. 9, 1997, Ser. No. 827,864
Claims priority, application Japan, Sep. 28, 1992, 4-281136
Int. Cl.[6] C12P *21/02;* **C07K** *14/47*
U.S. Cl. 435—69.1 **5 Claims**

1. A process for preparing protein which comprises:
(a) culturing a cell capable of producing a protein in a nutrient culture medium to form said protein said cell being selected from the group consisting of natural human cells, transformed animal cells, and transformed microorganisms;
(b) purifying said protein by combining at least two techniques from the group consisting of salting out, dialysis, centrifugation, gel filtration, chromatography, ion-exchange chromatography, affinity chromatography, electrophoresis, isoelectric focusing, and isoelectric fractionation to purify said protein, wherein said purified protein has the following physicochemical properties:
(1) Molecular weight 45,000±5,000;
(2) Isoelectric point pI=5.7±0.5;
(3) Partial amino acid sequence Possessing a partial amino acid sequence of Asp-Ser-Glu-Gly-Tyr-Ile-Tyr-Ala-Arg-Gly-Ala-Gln-Asp-Met-Lys-(SEQ ID NO: 1) or Glu-His-Trp-Ser-His-Asp-Pro-Phe-Glu-(SEQ ID NO: 2);
(4) Solubility in solvent Soluble in water, physiological saline and phosphate buffer;
(5) Biological activity Exhibiting metastasis-inhibitory activity on RPMI 4788 cell (FERM BP-2429), an established cell line derived from human colon cancer;
(6) Stability Inactivated in water at pH 7.2 and 100° C. for 30 minutes and being stable in water at pH 7.2 and 4° C. for one month;
(7) Acute toxicity Having an LD_{50} of at least 50 mg/kg mouse on an intravenous administration; and
(c) recovering said protein in purified form.

5,827,692

DIROFILARIA AND BRUGIA ANKYRIN PROTEINS, NUCLEIC ACID MOLECULES, AND USES THEREOF

Liang Tang, and E. Scot Blehm, both of Fort Collins, Colo., assignors to Heska Corporation, Fort Collins, Colo.

Filed Apr. 24, 1997, Ser. No. 847,429
Int. Cl.[6] C12P *21/06;* **C12N** *7/00;* **C07H** *17/00*
U.S. Cl. 435—69.1 **19 Claims**

1. An isolated ankyrin nucleic acid molecule comprises, wherein said nucleic acid molecule is a Dirofilaria or Brugia nucleic acid molecule comprising a nucleic acid sequence selected from the group consisting of: a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40 and SEQ ID NO:41; and an allelic variant of a nucleic acid sequence selected from the group consisting of SEQ ID NO:1, SEQ ID NO:3, SEQ ID NO:4, SEQ ID NO:5, SEQ ID NO:6, SEQ ID NO:8, SEQ ID NO:9, SEQ ID NO:10, SEQ ID NO:11, SEQ ID NO:13, SEQ ID NO:14, SEQ ID NO:16, SEQ ID NO:17, SEQ ID NO:18, SEQ ID NO:19, SEQ ID NO:21, SEQ ID NO:22, SEQ ID NO:24, SEQ ID NO:25, SEQ ID NO:26, SEQ ID NO:27, SEQ ID NO:29, SEQ ID NO:30, SEQ ID NO:31, SEQ ID NO:32, SEQ ID NO:34, SEQ ID NO:35, SEQ ID NO:36, SEQ ID NO:37, SEQ ID NO:39, SEQ ID NO:40 and SEQ ID NO:41.

5,827,693

EXPRESSION OF RECOMBINANT HEMOGLOBIN AND HEMOGLOBIN VARIANTS IN YEAST

Joseph De Angelo, Hamtramck; Nalini M. Motwani, Troy; Wajeeh Bajwa, Canton, all of Mich., and Joseph Bonaventura, Beaufort, N.C., assignors to Apex Bioscience, Inc., Durham, N.C.

Continuation of Ser. No. 368,407, Dec. 29, 1994, abandoned, which is a continuation of Ser. No. 876,290, Apr. 29, 1992, abandoned, which is a continuation-in-part of Ser. No. 684,611, Apr. 12, 1991, abandoned, which is a continuation-in-part of Ser. No. 614,359, Nov. 14, 1990, abandoned, which is a continuation-in-part of Ser. No. 509,918, Apr. 16, 1990, abandoned. This application Jun. 7, 1995, Ser. No. 484,686
Int. Cl.[6] C12P *21/06;* **C12N** *15/00;1/14;* **C07K** *14/805*
U.S. Cl. 435—69.6 **185 Claims**

1. A recombinant DNA vector which expresses a globin chain in a yeast cell comprising:
(a) a first DNA sequence encoding a globin chain;
(b) a yeast transcriptional promoter which promotes the transcription of the first DNA sequence;
(c) a second DNA sequence encoding a yeast selectable marker or functionally active portion thereof; and
(d) a yeast replication origin.

5,827,694

DNA ENCODING NON-HUMAN ANIMAL INTERFERONS, VECTORS AND HOSTS THEREFOR, AND RECOMBINANT PRODUCTION OF IFN POLYPEPTIDES

Daniel J. Capon, San Mateo, and David V. Goeddel, Hillsborough, both of Calif., assignors to Genentech, Inc., South San Francisco, Calif.

Division of Ser. No. 949,327, Sep. 21, 1992, which is a continuation of Ser. No. 749,371, Aug. 23, 1991, abandoned, which is a continuation of Ser. No. 104,461, Oct. 2, 1987, abandoned, which is a continuation-in-part of Ser. No. 438,128, Nov. 1, 1982, abandoned, which is a continuation-in-part of Ser. No. 395,298, Mar. 8, 1982, abandoned. This application May 19, 1995, Ser. No. 446,171
Int. Cl.[6] C12N *15/20;15/21;15/22;15/23*
U.S. Cl. 435—69.51 **21 Claims**

1. An essentially purified and isolated nucleic acid molecule comprising a nucleotide sequence selected from the group consisting of:
the mature bovine interferon alpha-1 coding sequence of FIGS. 3A-1–3A-2;
the mature bovine interferon alpha-2 coding sequence of FIGS. 3B-1–3B-2;
the mature bovine interferon alpha-3 coding sequence of FIGS. 3C-1–3C-2;
the mature bovine interferon alpha-4 coding sequence of FIGS. 3D-1–3D-2;
the mature bovine interferon beta-1 coding sequence of FIGS. 9A-1–9A-2;
the mature bovine interferon beta-2 coding sequence of FIGS. 9B-1–9B-2;
the mature bovine interferon beta-3 coding sequence of FIGS. 9C-1–9C-2;
the mature porcine interferon alpha-1 coding sequence of FIG. 14A;
the mature porcine interferon beta-1 coding sequence of FIG. 14B;
the mature porcine interferon gamma coding sequence of FIG. 14C;
the mature feline interferon beta-1 coding sequence of FIG. 14D; and
the mature laprine interferon gamma coding sequence of FIG. 14E.

6. An essentially purified and isolated nucleic acid molecule comprising a nucleic acid sequence encoding a polypeptide comprising the sequence of a non-human animal interferon having an amino acid sequence selected from the group consisting of:
the mature bovine interferon alpha-1 amino acid sequence set forth in FIGS. 3A-1–3A-2;
the mature bovine interferon alpha-2 amino acid sequence set forth in FIGS. 3B-1–3B-2;
the mature bovine interferon alpha-3 amino acid sequence set forth in FIGS. 3C-1–3C-2;
the mature bovine interferon alpha-4 amino acid sequence set forth in FIGS. 3D-1–3D-2;
the mature bovine interferon beta-1 amino acid sequence set forth in FIGS. 9A-1–9A-2;
the mature bovine interferon beta-2 amino acid sequence set forth in FIGS. 9B-1–9B-2;
the mature bovine interferon beta-3 amino acid sequence set forth in FIGS. 9C-1–9C-2;
the amino acid sequence of mature bovine interferon-gamma set forth in FIG. 13;
the amino acid sequence of mature murine interferon-gamma set forth in FIG. 13;
the mature porcine interferon alpha-1 amino acid sequence set forth in FIG. 14A;
the mature porcine interferon beta-1 amino acid sequence set forth in FIG. 14B;
the mature porcine interferon gamma amino acid sequence set forth in FIG. 14C;
the mature feline interferon beta-1 amino acid sequence set forth in FIG. 14D;
the mature laprine interferon-gamma amino acid sequence set forth in FIG. 14e; and

the amino acid sequence of mature rat interferon-gamma set forth in FIG. 14E.

5,827,695

DETECTION OF WHEAT FUNGAL PATHOGENS USING THE POLYMERASE CHAIN REACTION

James Joseph Beck, Cary, N.C., assignor to Novartis Finance Corporation, New York, N.Y.

Filed Aug. 1, 1997, Ser. No. 905,314
Int. Cl.[6] C12P *19/34;* C12Q *1/68;* C07H *21/04*
U.S. Cl. 435—91.2 21 Claims

9. A method for the detection of a fungal pathogen selected from the group consisting of *Fusarium poae, Microdochium nivale,* and *Fusarium avenaceum,* comprising the steps of:

(a) isolating DNA from a plant leaf infected with said pathogen;

(b) subjecting said DNA to polymerase chain reaction amplification using at least one primer having sequence identity with at least 10 contiguous nucleotides of a sequence selected from the group consisting of: nucleotides 31–180 of SEQ ID NO:22, nucleotides 338–489 of SEQ ID NO:22, nucleotides 31–175 of SEQ ID NO:23, nucleotides 333–499 of SEQ ID NO:23, and nucleotides 339–504 of SEQ ID NO:24; and

(c) detecting said fungal pathogen by visualizing the product or products of said polymerase chain reaction amplification.

5,827,696

SYNTHESIS AND IMMUNOGENICITY OF ROTAVIRUS GENES USING A BACULOVIRUS EXPRESSION SYSTEM

Mary K. Estes, Friendswood, Tex., assignor to Baylor College of Medicine, Houston, Tex.

Division of Ser. No. 385,993, Feb. 9, 1995, which is a continuation of Ser. No. 922,582, Jul. 29, 1992, abandoned, which is a division of Ser. No. 947,773, Dec. 30, 1986, Pat. No. 5,186,933. This application Jun. 7, 1995, Ser. No. 475,907
Int. Cl.[6] C12N *15/46;15/64*
U.S. Cl. 435—91.41 3 Claims

1. A recombinant molecule, comprising:

(a) a baculovirus gene promoter;

(b) a rotavirus gene which codes for rotavirus protein VP7, said promoter spatially positioned in relation to said gene effective to regulate the expression of said gene.

5,827,697

PROCESS FOR PREPARING GLUCANS HAVING A CYCLIC STRUCTURE

Takeshi Takaha, Kobe; Michiyo Yanase, Hyogo-ken; Shigetaka Okada, Ikoma; Hiroki Takata, Kobe; Hiroyasu Nakamura, and Kazutoshi Fujii, both of Amagasaki, all of Japan, assignors to Ezaki Glico Co., Ltd., Osaka, Japan

Division of Ser. No. 415,152, Mar. 31, 1995, Pat. No. 5,686,132. This application Nov. 20, 1995, Ser. No. 560,739
Int. Cl.[6] C12P *19/04*
U.S. Cl. 435—101 8 Claims

1. A process for manufacturing a glucan selected from the group consisting of:

(a) a glucan composed of one cyclic structure containing at least fourteen alpha-1,4-glucosidic bonds;

(b) a glucan composed of one cyclic structure containing at least fourteen alpha-1,4-glucosidic bonds and an acyclic structure;

(c) a glucan composed of one cyclic structure containing at least fourteen alpha-1,4-glucosidic bonds and at least one alpha-1,6-glucosidic bond; and

(d) a glucan composed of one cyclic structure containing at least fourteen alpha-1,4-glucosidic bonds and at least one alpha-1,6-glucosidic bond and an acyclic structure,

wherein the process comprises reacting a linear alpha-1,4-glucan or a saccharide containing the linear alpha-1,4-glucan with a D-enzyme.

5,827,698

LYSINE DECARBOXYLASE GENE AND METHOD OF PRODUCING L-LYSINE

Yoshimi Kikuchi; Tomoko Suzuki, and Hiroyuki Kojima, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Jun. 9, 1997, Ser. No. 849,212
Claims priority, application Japan, Dec. 9, 1994, 6-306386
Int. Cl.[6] C12P *13/08;* C07H *21/00;21/02;21/04*
U.S. Cl. 435—115 22 Claims

1. An isolated nucleic acid molecule encoding a lysine decarboxylase, wherein the lysine decarboxylase comprises the amino acid sequence of SEQ ID NO:4.

5,827,699

STRAIN OF *RHODOCOCCUS RHODOCHROUS* AS A PRODUCER OF NITRILE HYDRATASE

Alexandr Stepanovich Yanenko; Olga Borisovna Astaurova, both of Moscow; Sergei Petrovich Voronin, Saratov; Tatyana Vasilievna Gerasimova, Moscow; Nikolai Borisovich Kirsanov, Moscow; Vladimir Nikolaevich Paukov, Moscow; Inga Nikolaevna Polyakova, Moscow, and Vladimir Georgierich Debabov, Moscow, all of Russian Federation, assignors to Gosudarstvenny. Nauchno-Issledovatelsky Institut Genetiki I Selektsii Promschlennykh Mikroorganizmov, Moscow, Russian Federation

PCT No. PCT/RU94/00275, § 371 Date Aug. 15, 1995, § 102(e) Date Aug. 15, 1995, PCT Pub. No. WO95/17505, PCT Pub. Date Jun. 29, 1995
PCT Filed Dec. 15, 1994, Ser. No. 505,222
Claims priority, application Russian Federation, Dec. 17, 1993, 93056089
Int. Cl.[6] C12P *13/00;13/02;* C12N *1/20*
U.S. Cl. 435—129 5 Claims

1. An isolated culture of *Rhodococcus rhodochrous* VKM Ac-1515D, having the ability to produce nitrile hydratase.

5,827,700

PROCESS FOR PRODUCING CITRIC ACID FROM AN IMPURE PROCESS STREAM

Steven W. Felman, Granger, Ind.; Chetna Patel, Naperville, Ill.; Bhalchandra H. Patwardhan, Granger, and David J. Solow, Elkhart, both of Ind., assignors to Bayer Corporation, Elkhart, Ind.

Continuation of Ser. No. 460,140, Jun. 2, 1995, Pat. No. 5,712,131, which is a continuation-in-part of Ser. No. 88,219, Jul. 6, 1993, abandoned. This application Sep. 2, 1997, Ser. No. 922,094
Int. Cl.[6] C12P *7/40;7/48*
U.S. Cl. 435—144 6 Claims

1. A process for recovering citric acid from an impure process stream, comprising the steps of:

a. concentrating the impure process stream to obtain a concentrated solution of citric acid;

b. adding a sufficient amount of a strong acid or salt thereof to the concentrated solution of citric acid to crystallize citric acid; and

c. separating the crystalized citric acid resulting from step b from the remaining concentrated solution of citric acid.

5,827,701

METHOD FOR THE GENERATION AND USE OF FERRIC IONS

Donald R. Lueking, 34 Peepsock Cir., Houghton, Mich. 49931, and Carl C. Nesbitt, 518 Ethel Ave., Hancock, Mich. 49930

Filed May 21, 1996, Ser. No. 651,676
Int. Cl.[6] C12P *1/04;3/00;* C12N *1/20*
U.S. Cl. 435—168 9 Claims

1. A method for continuously maintaining a population of *Thiobacillus ferrooxidans* bacteria to generate ferric ions comprising the steps:

a) inoculating a vessel with a population of *Thiobacillus ferrooxidans* bacteria;

b) supplying a feed solution to said vessel wherein the feed solution contains growth media and an aqueous solution of ferrous sulfate;

c) supplying carbon dioxide to said vessel;

d) monitoring the pH of the contents of the vessel with a pH probe and maintaining the pH of the contents of the vessel in the range of 1.5 to 2.0 with the addition of acid or base;

e) monitoring the cell density of the bacteria with a particle size analyzer and maintaining the cell density in a predetermined range by controlling the amount of feed solution supplied to said vessel;

f) agitating the contents of said vessel; and

g) recirculating said contents of said vessel.

5,827,702

OCULAR GENE THERAPY

R. Andrew Cuthbertson, San Francisco, Calif., assignor to Genentech, Inc., So. San Francisco, Calif.

Filed Oct. 31, 1994, Ser. No. 332,566
Int. Cl.[6] C12N *15/00;* A61K *48/00*
U.S. Cl. 435—172.1 5 Claims

1. A method for generating a genetically-engineered in situ ocular cell, said method comprising contacting an ocular cell with exogenous nucleic acid under conditions permissive for the uptake of said exogenous nucleic acid into said ocular cell for expression therein.

5,827,703

METHODS AND COMPOSITION FOR IN VIVO GENE THERAPY

Robert James Debs, Mill Valley, and Ning Zhu, El Cerrito, both of Calif., assignors to The Regents of The University of California, Oakland, Calif.

Continuation of Ser. No. 992,687, Dec. 17, 1992, abandoned, which is a continuation-in-part of Ser. No. 927,200, Aug. 6, 1992, abandoned, which is a continuation-in-part of Ser. No. 894,498, Jun. 4, 1992, abandoned. This application May 19, 1994, Ser. No. 246,376
Int. Cl.[6] C12N *15/64;* A61K *9/127;48/00;* C12Q *1/68*
U.S. Cl. 435—172.3 38 Claims

1. A method of introducing a DNA expression cassette into cells of a mammal, said method comprising introducing the expression cassette into the manual systemically, wherein:

the DNA expression cassette comprises a promoter, and a DNA sequence encoding a gene product;

the DNA expression cassette is complexed to a lipid carrier comprising cationic lipids and cholesterol having a mean diameter of less than about 10 microns, resulting in a DNA expression cassette-lipid carrier complex;

the DNA expression cassette and lipid carrier does not aggregate in vitro; and

the DNA expression cassette to lipid carrier ratio is less than 6:1 micrograms DNA to nanomoles catiooic lipid.

5,827,704

VECTORS FOR CLONING AND MODIFICATION OF DNA FRAGMENTS

Kemp B. Cease, Ann Arbor, Mich., and Cortland J. Lohff, Madison, Wis., assignors to The Regents Of The University Of Michigan, Ann Arbor, Mich.

Continuation of Ser. No. 186,384, Jan. 25, 1994, abandoned. This application Feb. 28, 1996, Ser. No. 608,437
Int. Cl.[6] C12N *15/00;15/11*
U.S. Cl. 435—172.3 31 Claims

1. A DNA cloning vector for cloning a double-stranded DNA sequence having 5' terminal bases per strand and a 3' one-base overhang per strand such that the DNA sequence can be excised to produce a fragment having a 5' overhang sequence determined by the 5' terminal bases of each DNA strand, comprising double-stranded DNA having two sites for Class II-S restriction endonucleases which comprise recognition sites and recessed cleavage positions, wherein the recessed cleavage positions are located between the recognition sites, and a blunt-cutting restriction endonuclease site which comprises cleavage positions, wherein the Class II-S restriction endonuclease sites oppose each other and flank the blunt-cutting restriction endonuclease site, and the Class II-S restriction endonucleases recessed cleavage positions are positioned beyond the cleavage positions of the blunt-cutting restriction endonuclease site in the direction away from the Class II-S recognition sites.

5,827,705

MOLECULE AND METHOD FOR IMPORTING DNA INTO A NUCLEUS

David A. Dean, Mobile, Ala., assignor to South Alabama Medical Science Foundation, Mobile, Ala.

Filed Mar. 21, 1997, Ser. No. 822,982
Int. Cl.[6] C12N *5/10;15/86;15/88;* C07H *21/04*
U.S. Cl. 435—172.3 32 Claims

30. A method of targeting a DNA molecule into a nucleus of a host cell, said method comprising:

providing a plasmid for targeting a DNA molecule into a nucleus of a host cell, the plasmid comprising a nuclear targeting molecule having a nucleic acid sequence which consists of SEQ ID NO:1 or a nuclear targeting portion of SEQ ID NO:1, wherein the nuclear targeting portion of SEQ ID NO:1 is selected from the group consisting of nucleotides 1 to 233 of SEQ ID NO:1, 1 to 115 of SEQ ID NO:1, 110 to 372 of SEQ ID NO:1, 110 to 233 of SEQ ID NO:1, 201 to 278 of SEQ ID NO:1, and 273 to 372 of SEQ ID NO:1, and the plasmid further comprising a DNA molecule to be targeted to a nucleus of a host cell; and

introducing said plasmid into the cytoplasm of said host cell, wherein said nuclear targeting molecule targets said DNA molecule into the nucleus of said host cell.

5,827,706

CYCLOSPORIN SYNTHETASE

Ernst Leitner, Kundl; Elisabeth Schneider, Rum; Kurt Schoergendorfer, and Gerhard Weber, both of Unterlangkampfen, all of Austria, assignors to Novartis AG, Basel, Switzerland

Continuation of Ser. No. 263,960, Jun. 20, 1994, abandoned, which is a continuation of Ser. No. 90,522, Jul. 9, 1993, abandoned. This application Jun. 6, 1995, Ser. No. 471,119
Claims priority, application Austria, Jul. 9, 1992, 1403/92; Mar. 8, 1993, 437/93; Switzerland, Apr. 29, 1993, 01310/93; May 4, 1993, 01375/93
Int. Cl.[6] C12N *9/00;5/00;15/00;* C07H *17/00*
U.S. Cl. 435—183 9 Claims

1. An isolated DNA sequence encoding an enzyme which catalyzes the biosynthesis of cyclosporin A.

5,827,707

METHOD FOR MANUFACTURING MINIMAL VOLUME CAPSULES CONTAINING BIOLOGICAL MATERIALS

Francis Lamberti, Irvine, Calif., assignor to Neocrin Company, Irvine, Calif.

Filed Jun. 7, 1995, Ser. No. 484,778
Int. Cl.[6] A61K *9/50;* B01J *13/20;* C12N *5/06*
U.S. Cl. 435—178 15 Claims

12. A method for encapsulation of islets of Langerhans in minimal volume capsules comprising

a. preparing an emulsion comprising a continuous. phase biocompatible aqueous solution comprising poly(ethylene glycol), a dispersed phase biocompatible aqueous polymeric solution comprising dextran and alginate, and said islets wherein the surface tension of the continuous phase, the dispersed phase and the biological material are thermodynamically related so as to induce engulfment of the biological material by the dispersed phase;

b. allowing the dispersed phase of the emulsion to engulf the islets; and

c. gelling the alginate.

5,827,708

ASPARAGINYL TRNA SYNTHETASE POLYNUCLEOTIDES OF STREPTOCOCCUS

Elizabeth Jane Lawlor, Malvern, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa., and SmithKline Beecham plc, Brentford

Filed Apr. 18, 1997, Ser. No. 844,154
Claims priority, application United Kingdom, Apr. 18, 1996, 9607993
Int. Cl.[6] C12N *9/00;15/00;1/20;* C07H *21/04*
U.S. Cl. 435—183 35 Claims

1. An isolated polynucleotide comprising a polynucleotide sequence selected from the group consisting of:

(a) a polynucleotide having at least a 95% identity to a polynucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2 or 4;

(b) a polynucleotide having at least a 97% identity to a polynlicleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ D NO:2 or 4;

(c) a polynacleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2 or 4;

(d) a polynucleotide hybridizing under stringent conditions to a polynaucleotide encoding a polypeptide comprising the amino acid sequence of the reference sequence of SEQ ID NO:2 or 4;

(e) a polynucleotide having at least a 95% identity to a polynucleotide encoding the same mature polypeptide expressed by the asparaginyl tRNA synthetase gene contained in NCIMB Deposit No. 40794 or 40800,

(f) a polynucleotide having at least a 97% identity to a polynucleotide encoding the same mature polypeptide expressed by the asparaginyl tRNA synthetase gene contained in NCIM Deposit No. 40794 or 40800; and

(g) a polynucleotide encoding the same mature polypeptide expressed by the asparaginyl tRNA synthetase gene contained in NCIMB Deposit No. 40794 or 40800.

5,827,709

ENZYME PREPARATIONS STABILIZED WITH INORGANIC SALTS

Rudolf Carolus Maria Barendse, Delft, Netherlands; Hans-Peter Harz, Dudenhofen, and Roland Jürgen Betz, Niederkirchen, both of Germany, assignors to Gist-brocades, B.V., Netherlands

Filed Jul. 29, 1996, Ser. No. 681,792
Claims priority, application European Pat. Off., Jul. 28, 1995, 95202066
Int. Cl.[6] C12N *9/96;9/24;9/00*
U.S. Cl. 435—188 8 Claims

1. A method for preparing a storage and processing stable solid enzyme composition, comprising the steps of:

a) preparing an aqueous solution comprising an enzyme component selected from the group consisting of: a phytase, a protease, a hemicellulase, a cellulase, and mixtures thereof, and a water soluble inorganic salt, wherein the concentration of the inorganic salt is at least 15% (w/w) of the weight of the enzyme and wherein the inorganic salt comprises a divalent cation, wherein said divalent cation is selected from the group consisting of: zinc and magnesium and

b) drying the solution of step (a) by the removal of water so as to obtain solid enzyme composition that is stable upon storage and during processing.

5,827,710

DNA ENCODING THE SUBUNIT OF AVIAN LACTATE DEHYDROGENASE

Kohji Uchida, Shiga-ken; Hirokazu Matsukawa, Osaka; Tuyosi Fujita, Osaka, and Yushi Matuo, Osaka, all of Japan, assignors to Oriental Yeast Co., Ltd., Japan

Filed Jun. 5, 1997, Ser. No. 869,506
Int. Cl.[6] C12N *9/04;15/00;1/14;* C07H *21/04*
U.S. Cl. 435—190 9 Claims

1. DNA encoding the type B subunit protein of avian lactate dehydrogenase having an amino acid sequence of SEQ ID NO. 2.

5,827,711

SUCCINATE-UBIQUINONE REDUCTASE SUBUNIT

Preeti Lal, and Purvi Shah, both of Sunnyvale, Calif., assignors to Incyte Pharmaceuticals, Inc., Palo Alto, Calif.

Filed Mar. 20, 1997, Ser. No. 828,832
Int. Cl.[6] C12N *1/21;15/63;9/02*
U.S. Cl. 435—191 8 Claims

1. An isolated and purified polynucleotide sequence encoding a polypeptide comprising the amino acid sequence of SEQ ID NO: 1.

5,827,712

PROCESS FOR EFFICIENTLY PRODUCING TRANSGLUTAMINASE THROUGH DNA RECOMBINATION

Keiichi Yokoyama; Yoshimi Kikuchi, and Hisashi Yasueda, all of Kawasaki, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed May 17, 1996, Ser. No. 649,193
Claims priority, application Japan, May 17, 1995, 7-118067
Int. Cl.[6] C12N *9/10;* C12P *21/06;* C07K *1/00;* C07H *21/04*
U.S. Cl. 435—193 25 Claims

1. A process for producing a transglutaminase, which comprises incubating *E. coli* comprising a gene encoding a heat shock protein DnaJ and a gene encoding a transglutaminase, wherein each of said genes is operably linked in proper reading frame to sequences which direct the expression of each gene such that expression of the DnaJ gene is enhanced and the transglutaminase produced is biologically active and is present in soluble form at a level higher than that of transglutaminase expressed in *E. coli* in which expression of the DnaJ gene is not enhanced, and collecting the transglutaminase from said *E. coli.*

5,827,713

DNA CODING FOR SULFOTRANSFERASE

Osami Habuchi, Nagoya, and Masakazu Fukuta, Mie-ken, both of Japan, assignors to Seikagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1996, Ser. No. 655,878
Claims priority, application Japan, May 31, 1995, 7-134358
Int. Cl.[6] C12N *9/10;1/20;5/00;* C07H *21/04*
U.S. Cl. 435—193 15 Claims

1. An isolated polynucleotide encoding a sulfotransferase or enzymatically active fragment thereof which is hybridizable with a polynucleotide complementary to the polynucleotide of SEQ ID NO:1 at 42° C. in a solution containing 50% formamide. 5×SSPE, 5×Denhardt's solution 0.5% SDS, and is stable in subsequent washing at 55° C. with 1×SSPE and with 0.1×SSPE, wherein the sulfotransferase or enzymatically active fragment thereof has activity to transfer sulfate group from a sulfate group donor to the hydroxyl group at C-6 position of N-acetylgalactosamine residue or galactose residue of glycosaminoglycan, wherein said at least a part of a sulfotransferase has the following properties:

(i) action: sulfate group is transferred from a sulfate group donor to the hydroxyl group at C-6 position of N-acetylgalactosamine residue or galactose residue of glycosaminoglycan;

(ii) substrate specificity: sulfate group is transferred to chondroitin, chondroitin sulfate originating from chick embryo cartilage, chondroitin sulfate A, chondroitin sulfate C, and keratan sulfate originating from cornea, but no sulfate group is substantially transferred to chondroitin sulfate E, dermatan sulfate, and heparan sulfate;

(iii) optimum reaction pH: about 6.4;

(iv) inhibition and activation: the activity of this enzyme is increased by protamine and $MnCl_2$; and

(v) molecular weight: this enzyme has a molecular weight of about 75,000 estimated by SDS-polyacrylamide gel electrophoresis under a reduced condition, while it has a molecular weight of about 160,000 estimated by gel filtration under a non-reduced condition.

5,827,714

β-GALACTOSIDE-α-2,6-SIALYLTRANSFERASE, AND A PROCESS FOR PRODUCING FROM PHOTOBACTERIUM

Takeshi Yamamoto; Motoko Nakashizuka, both of Kanagawa; Ichiro Terada, Osaka, and Hisashi Kodama, Tokyo, all of Japan, assignors to Japan Tobacco Inc., Tokyo, Japan

Filed Oct. 28, 1996, Ser. No. 739,015
Int. Cl.[6] C12N *9/10;1/20*
U.S. Cl. 435—193 12 Claims

1. A substantially purified β-galactoside-α-2,6-sialyltransferase obtained from a microorganism belonging to the genus Photobacterium, having the following physicochemical properties:

(a) action and specificity: (i) transferring sialic acid from cytidine monophosphate-sialic acid to the 6-position of a galactose residue in a sugar chain of a glycoconjugate or in a free sugar chain, or to the 6-position of a monosaccharide having a hydroxyl group on carbon at the 6-position and (ii) being capable of forming a glycoconjugate;

(b) optimum pH: 5 to 6;

(c) optimum temperature: 30° C.; and

(d) molecular weight 64,000±5,000 (determined by gel filtration).

5,827,715

HEAT RESISTANT MALTOSE PHOSPHORYLASE, PROCESS FOR PREPARATION THEREOF, BACTERIA USED FOR PREPARATION THEREOF, AND METHODS FOR USING THE ENZYME

Keiko Ishii; Yasushi Inoue, and Tetsuji Tomita, all of Funabashi, Japan, assignors to Showa Sangyo Co., Ltd., Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 686,647
Claims priority, application Japan, Jul. 31, 1995, 7-213005
Int. Cl.[6] C12N *9/12;9/26;9/34;* C12P *19/20*
U.S. Cl. 435—194 2 Claims

1. Isolated heat resistant maltose phosphorylase having the following enzymological properties:

(a) action
phosphorolyze maltose reversibly which when it is made to act on maltose in the presence of phosphoric acid, it produces glucose and β-glucose-1-phosphoric acid in an equimolar amount, and when it is made to act on glucose and β-glucose-1-phosphoric acid, it produces maltose and phosphoric acid in an equimolar amount,

(b) substrate specificity
acts specifically on maltose,

(c) optimum temperature
the optimum temperature of maltose phosphorolysis reaction is from about 55° C. to about 70° C., and it exhibits about 50% or more of the maximum activity in the range of 50° C. to 70° C.,

(d) thermal stability
the enzyme retains at least 80% of its activity after being subjected to a temperature of from 50° to 60° C. for 15 minutes in a buffer at pH 6.0,

(e) optimum pH
6.0 to 7.0,

(f) pH stability
stable at pH 5.5 to 8.0, and

(g) molecular weight
150,000 to 190,000 when measured by gel filtration chromatography.

5,827,716

MODIFIED POL-II TYPE DNA POLYMERASES

Joseph A. Mamone, Parma, Ohio, assignor to Amersham Life Science, Inc., Cleveland, Ohio

Filed Jul. 30, 1996, Ser. No. 688,649
Int. Cl.[6] C12N *9/12;9/22*
U.S. Cl. 435—194 7 Claims

1. A Pol-II type DNA polymerase wherein an alanine located at a nucleotide binding site corresponding to amino acid residues 488 to 496 of *Pyrococcus furiosus* is replaced with a hydroxy containing amino acid.

5,827,717

MICROORGANISMS THEIR USE AND METHOD OF PRODUCING L-α-AMINO ACIDS

Fritz Wagner, Brunswick; Dirk Volkel, Salzgitter; Andreas Bommarius, Frankfurt am Main, and Karlheinz Drauz, Freigericht, all of Germany, assignors to Degussa Aktiengesellschaft, Deutschland, Germany

Division of Ser. No. 246,279, May 19, 1994, Pat. No. 5,516,660. This application Feb. 1, 1996, Ser. No. 595,214
Claims priority, application Germany, May 19, 1993, 43 16 928.7
Int. Cl.[6] C12N *9/14;9/90;5/00;* C07H *21/04*
U.S. Cl. 435—195 6 Claims

1. A gene coding for a carbamoylase, hydantoinase or hydantoin racemase, obtainable from microorganism DSM 7329 or DSM 7330.

5,827,718

LIPASE, MICROORGANISMS PRODUCING THE LIPASE, METHOD OF PRODUCING THE LIPASE AND USE OF THE LIPASE

Reiko Ishida, Yokohama; Masahiro Suzuki, Chiba; Takashi Kotsuka, Chiba, and Kazunori Sakimoto, Chiba, all of Japan, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/JP94/01416, § 371 Date Mar. 14, 1996, § 102(e) Date Mar. 14, 1996, PCT Pub. No. WO95/06720, PCT Pub. Date Mar. 9, 1995

PCT Filed Aug. 26, 1994, Ser. No. 605,015

Claims priority, application Japan, Aug. 30, 1993, 5-214506

Int. Cl.[6] C12N *9/20*

U.S. Cl. 435—198 **7 Claims**

1. A lipase obtained from Pseudomonas strain SD 705, wherein said lipase has the following properties:

(a) an pH optimum in the range of 10–11, measured at a temperature in the range of 30° C. to 80° C. using the triolein emulsion as a substrate; and

(b) a temperature optimum in the range of from 55° C. to 65° C.

5,827,719

ENZYME WITH LIPOLYTIC ACTIVITY

Thomas Sandal; Sakari Kauppinen, both of Copenhagen N, and Lene Venke Kofod, Uggerløse, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK95/00427, § 371 Date Apr. 25, 1997, § 102(e) Date Apr. 25, 1997, PCT Pub. No. WO96/13580, PCT Pub. Date May 9, 1996

PCT Filed Oct. 26, 1995, Ser. No. 817,997

Claims priority, application Denmark, Oct. 26, 1994, 1240/94

Int. Cl.[6] C12N *1/15;15/55;15/63;* C12P *21/02*

U.S. Cl. 435—198 **11 Claims**

1. A DNA sequence encoding an enzyme exhibiting lipolytic activity, wherein the DNA sequence is one of:

(a) the DNA sequence of SEQ ID NO:1;

(b) a DNA sequence encoding a lipase having the amino acid sequence of SEQ ID NO:2; or

(c) the DNA sequence isolated from *Saccharomyces cerevisiae* DSM.

5,827,720

α-GLUCOSIDASE, AND A PROCESS FOR PRODUCING THE SAME

Tomoyuki Minamihara; Kimiharu Okada, both of Saitama, and Masaru Suzuki, Chiba, all of Japan, assignors to Kikkoman Corporation, Chiba, Japan

Filed Dec. 30, 1996, Ser. No. 775,459

Claims priority, application Japan, Dec. 28, 1995, 7-352421

Int. Cl.[6] C12P *19/20;* C12N *9/26;1/20*

U.S. Cl. 435—201 **3 Claims**

1. An isolated α-Glucosidase having physicochemical properties comprising:

(a) action: hydrolyzing an α-glucoside linkage to form α-D-glucose;

(b) substrate specificity: acting on maltose, maltotriose, maltotetraose, paranitrophenyl-α-D-glucopyranoside, paranitrophenyl-α-D-maltoside, isomaltose, and sucrose, but hardly acting on maltooligosaccharides with a degree of polymerization of maltopentaoside or more, and completely not acting on soluble starch;

(c) optimum pH and stable pH range: optimum pH in about pH 6.0 to 9.0, and stable pH range from pH 5.0 to 10.0 at 25° C. for 20 hours in the presence of 0.2% bovine serum albumin;

(d) suitable temperature range for action: from about 52° C. to about 55° C.;

(e) conditions for inactivation by pH and temperature: stable in the range of pH 5.0 to 10.0, and completely inactivated at pH 4.5 or less or pH 11.0 or more, for 20 hours at 25° C. in the presence of 0.2% bovine serum albumin, and stable at a temperature of up to 50° C. at pH 7.0 for 15 minutes, and completely inactivated at a temperature of 60° C. or more; and

(f) molecular weight: about 61,300±5,000 (gel filtration).

5,827,721

BH55 HYALURONIDASE

Robert Stern; Gregory I. Frost; Jackson Hall; Svetlana Shuster, all of San Francisco; Gail T. Colbern, Pacifica, and Bent Formby, Santa Barbara, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Division of Ser. No. 419,594, Apr. 7, 1995, Pat. No. 5,747,027. This application Aug. 27, 1997, Ser. No. 919,089

Int. Cl.[6] C12N *9/26;15/00;5/00;* C07H *21/04*

U.S. Cl. 435—201 **8 Claims**

1. An isolated DNA molecule encoding bovine BH55 hyaluronidase.

5,827,722

Patent Not Issued For This Number

5,827,723

NEUTRALIZING MONOCLONAL ANTIBODY 0.5β WHICH BINDS AN EPITOPE LOCATED WITHIN THE REGION OF AMINO ACIDS 308-331 OF HTLVIIB GP120

Shuzo Matsushita, Kumamoto-ken, Japan, assignor to Kyowa Hakko Kogyo Co. Ltd., Tokyo, Japan

Continuation of Ser. No. 618,033, Nov. 27, 1990, abandoned, which is a continuation of Ser. No. 198,957, May 26, 1988, abandoned. This application Nov. 6, 1992, Ser. No. 972,890

Claims priority, application Japan, Jul. 29, 1987, 62-133909

Int. Cl.[6] C12N *5/20;* C07K *16/08;* G01N *33/53*

U.S. Cl. 435—240.27 **3 Claims**

1. A monoclonal antibody or fragment thereof having the following characteristics:

a) which specifically binds to a glycoprotein antigen having a molecular weight of 120,000 daltons and located in the envelope of HTLV-III (HIV-I) virus;

b) which specifically neutralizes

(i) infection by cell-free virions in vitro and

(ii) cell-to-cell infection of said virus in vitro by being capable of binding to the surface of a cell infected with HTLV-III (HIV-I) virus thereby to inhibit the formation of syncytia induced from infected cells and uninfected cells;

c) which specifically binds to a precursor of a glycoprotein antigen, said precursor having a molecular weight of 160,000 daltons;

d) which specifically binds to an epitope located within amino acid sequence of 308 to 331 of HTLV-III (HIV-1) gp160;

e) which is classified as IgG_1; and

f) wherein the antibody is the 0.5 β monoclonal antibody produced by the 54/CBI hybridoma (ECACC 87051401).

5,827,724

BAKER'S YEASTS HAVING A LOW TEMPERATURE INACTIVATION PROPERTY

Christof Gysler; Herbert Hottinger, both of Blonay, and Peter Niederberger, Epalinges, all of Switzerland, assignors to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 86,012, Jun. 30, 1993, Pat. No. 5,480,798, which is a division of Ser. No. 777,029, Oct. 16, 1991, abandoned. This application Sep. 27, 1995, Ser. No. 534,481

Claims priority, application Switzerland, Nov. 9, 1990, 565/90

Int. Cl.[6] C12N *1/18*

U.S. Cl. 435—255.2 **2 Claims**

1. An isolated diploid strain of *Saccharomyces cerevisiae* which grows on a plate in a medium comprising, by weight, 2% glycerol, 1% yeast extract and 2% peptone, and forms a colony size greater than 0.5 mm after 3 days of culture at 30° C.; which raises a 20 cm diameter/0.5 cm thick pizza dough stored in a sealed plastic wrapping for 21 days at 8° C. to an about 2 cm thick pizza crust when baked at 180° C. for 15 minutes; which produces CO_2 at a level of less than 20 ml/g pressed yeast after 7 days in a medium containing 2% by weight maltose refrigerated at from 3° C. to 10° C.; and which produces CO_2 at a level of at least 40 ml/g pressed yeast after 6 days in a medium containing 2% by weight maltose kept at a temperature of at least 14° C.

5,827,725

Patent Not Issued For This Number

5,827,726

DNA CODING PROTEIN KINASE

Jun-ichi Nezu, Shizuoka-ken, Japan, assignor to Chugai Seiyaku Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP96/00660, § 371 Date Sep. 5, 1997, § 102(e) Date Sep. 5, 1997, PCT Pub. No. WO96/28554, PCT Pub. Date Sep. 19, 1996

PCT Filed Mar. 15, 1996, Ser. No. 913,050

Claims priority, application Japan, Mar. 16, 1995, 6-57104

Int. Cl.[6] C12N *1/21;15/12;15/70;* C07H *21/04*

U.S. Cl. 435—252.33 **10 Claims**

1. An isolated DNA encoding a protein having a protein kinase activity, comprising a base sequence encoding the amino acid sequence of SEQ ID NO:7, or a base sequence encoding a protein kinase which hybridizes with said base sequence encoding the amino acid sequence of SEQ ID NO:7 in a solution of 0.2×SSC and 0.1% SDS at 60° C.

5,827,727

METHOD OF RESOLUTION OF 1,3-OXATHIOLANE NUCLEOSIDE ENANTIOMERS

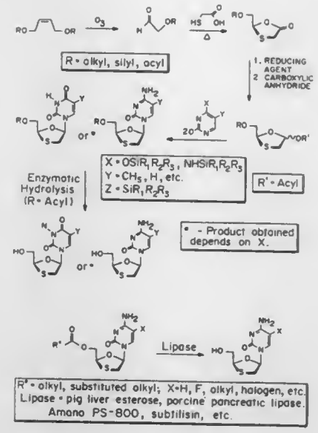
Dennis C. Liotta, McDonough; Raymond F. Schinazi, Decatur, both of Ga.; Woo-Baeg Choi, North Brunswick, N.J., and Yung-Chi Cheng, Woodbridge, Conn., assignors to Emory University, Atlanta, Ga., and Yale University, New Haven, Conn.

Continuation of Ser. No. 402,730, Mar. 13, 1995, which is a continuation of Ser. No. 92,248, Jul. 15, 1993, abandoned, which is a continuation of Ser. No. 736,089, Jul. 26, 1991, abandoned, which is a continuation-in-part of Ser. No. 659,760, Feb. 22, 1991, Pat. No. 5,210,085, which is a continuation-in-part of Ser. No. 473,318, Feb. 1, 1990, Pat. No. 5,204,466. This application Jun. 7, 1995, Ser. No. 483,653

Int. Cl.[6] C12P *17/16;41/00*

U.S. Cl. 435—280 **11 Claims**

1. A method for the resolution of a β-1,3-oxathiolane pyrimidine nucleoside, comprising the steps of selectively hydrolyzing a 5'-O-



acyl derivative of the nucleoside with an enzyme selected from the group consisting of pig liver esterase, porcine pancreatic lipase, and subtilisin.

5,827,728

Patent Not Issued For This Number

5,827,729

DIFFUSION GRADIENT BIOREACTOR AND EXTRACORPOREAL LIVER DEVICE USING A THREE-DIMENSIONAL LIVER TISSUE

Brian A. Naughton, El Cajon; Craig R. Halberstadt, La Jolla, and Benson Sibanda, Oceanside, all of Calif., assignors to Advanced Tissue Sciences, La Jolla, Calif.

Filed Apr. 23, 1996, Ser. No. 636,591

Int. Cl.[6] B01D *63/00;* C12N *5/00*

U.S. Cl. 435—297.2 **22 Claims**

1. A method of dialyzing a patient's blood, the method comprising the steps of:

(a) providing a bioreactor comprising a housing having a three-dimensional liver tissue with a thickness of at least about 100 μm disposed therein to define separate flow spaces on opposite sides of the liver tissue;

(b) withdrawing blood from a patient with a malfunctioning liver;

(c) flowing said blood over one side of said liver tissue;

(d) flowing nutrient medium over the opposite side of said liver tissue, thereby causing blood waste products to diffuse across said liver tissue; and

(e) infusing said blood to the patient.

5,827,730

MUTANT DNA ENCODING INSULIN RECEPTOR SUBSTRATE 1

Oluf Pedersen, Holte; Christian Bjørbæk, Frederiksberg C, and Kathrine Almind Frederiksen, København Ø, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

PCT No. PCT/DK94/00227, § 371 Date Feb. 12, 1996, § 102(e) Date Feb. 12, 1996, PCT Pub. No. WO94/29345, PCT Pub. Date Dec. 22, 1994

PCT Filed Jun. 10, 1994, Ser. No. 557,139

Claims priority, application Denmark, Jun. 10, 1993, 0683/93; Aug. 9, 1993, 0915/93

Int. Cl.[6] C12N *15/00;5/00;* C07K *1/00;* C07H *21/04*

U.S. Cl. 435—320.1 6 Claims

1. An isolated DNA sequence comprising the sequence of SEQ ID NO:1 encoding insulin receptor substrate 1 (IRS-1), the DNA sequence containing a mutation of at least one nucleotide selected from the group consisting of a mutation of G to A in the first position of codon 972, a mutation of A to G in the third position of codon 805, and a mutation of G to C in the third position of codon 894, wherein the mutation interferes with signal transduction through IRS-1.

6. An isolated IRS-1 protein containing at least one amino acid substitution wherein glycine is substituted by arginine at position 972 in SEQ ID NO:2 and wherein said substitution interferes with signal transduction through IRS-1.

5,827,731

THROMBIN-INHIBITORY PROTEIN FROM TICKS

Thomas Friedrich, Darmstadt; Siegfried Bialojan, Oftersheim; Claus Bollschweiler, Heidelberg, and Christoph Kuenast, Otterstadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Continuation of Ser. No. 415,999, Apr. 4, 1995, abandoned, which is a continuation of Ser. No. 204,244, Mar. 8, 1994, abandoned. This application May 20, 1997, Ser. No. 859,183

Claims priority, application Germany, Oct. 22, 1991, 41 34 814.1

Int. Cl.[6] C07K *14/435;14/81;* C12N *15/15;* A61K *38/57*

U.S. Cl. 435—320.1 6 Claims

1. An isolated and purified protein with a thrombin-inhibitory action from ticks of the genus Ornithodorus, having the following characteristics: an isoelectric point at a pH below 3.8, a molecular weight of 8000±1500 Dalton, determined by SDS polyacrylamide gel electrophoresis, and an N-terminal amino acid sequence represented by the following formula:

Leu-Asn-Val-Leu-Cys-Asn-Asn-Pro-His-Thr-Ala-Asp-Cys-Asn-Asn-Asp-Ala-Gln-Val-Asp (SEQ ID NO: 11).

5,827,732

Patent Not Issued For This Number

5,827,733

GROWTH DIFFERENTIATION FACTOR-8 (GDF-8) AND POLYNUCLEOTIDES ENCODING SAME

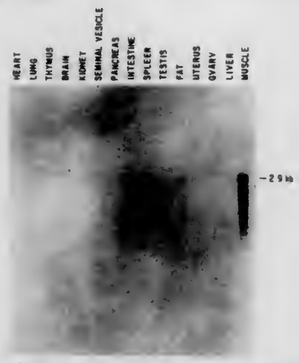
Se-Jin Lee, and Alexandra C. McPherron, both of Baltimore, Md., assignors to The Johns Hopkins University School of Medicine, Baltimore, Md.

PCT No. PCT/US94/03019, § 371 Date Oct. 26, 1995, § 102(e) Date Oct. 26, 1995, PCT Pub. No. WO94/21681, PCT Pub. Date Sep. 29, 1994

Continuation-in-part of Ser. No. 33,923, Mar. 19, 1993, abandoned. This PCT application Mar. 18, 1994, Ser. No. 525,596

Int. Cl.[6] C07K *14/475;* C12N *1/21;5/10;15/12*

U.S. Cl. 435—325 11 Claims



1. Substantially pure growth differentiation factor-8 (GDF-8) having the amino acid sequence as set forth in SEQ ID NO:12 or SEQ ID NO:14.

5,827,734

MATERIALS AND METHODS FOR DETERMINING OB PROTEIN IN A BIOLOGICAL SAMPLE

David S. Weigle, Bainbridge Island; Joseph L. Kuijper, Bothell; John W. Forstrom, and Joyce M. Lehner, both of Seattle, all of Wash., assignors to University of Washington, and Zymogenetics, Inc., both of Seattle, Wash.

Continuation-in-part of Ser. No. 486,459, Jun. 7, 1995, abandoned, Ser. No. 486,450, Jun. 7, 1995, abandoned, and Ser. No. 487,111, Jun. 7, 1995, each which is a continuation-in-part of Ser. No. 419,214, Apr. 10, 1995, abandoned, which is a continuation-in-part of Ser. No. 377,068, Jan. 20, 1995, abandoned. This application Oct. 4, 1995, Ser. No. 540,242

Int. Cl.[6] C12N *5/00;* C07K *16/00*

U.S. Cl. 435—325 19 Claims

1. A monoclonal antibody selected from the group consisting of 216.1.2.1.2; 216.3.3.2.1; and 218.5.4.2.

5,827,735

PLURIPOTENT MESENCHYMAL STEM CELLS AND METHODS OF USE THEREOF

Henry E. Young, Macon, Ga., and Paul A. Lucas, Poughkeepsie, N.Y., assignors to MorphoGen Pharmaceuticals, Inc., New York, N.Y.

Division of Ser. No. 393,453, Feb. 23, 1995, which is a continuation of Ser. No. 901,860, Jun. 22, 1992, abandoned. This application May 20, 1996, Ser. No. 650,420

Int. Cl.[6] C12N *5/00;5/02*

U.S. Cl. 435—325 17 Claims

1. Purified pluripotent mesenchymal stem cells, which cells are substantially free of multinucleated myogenic lineage-committed cells, and which cells are predominantly stellate-shaped cells, wherein the mesenchymal stem cells form predominantly fibroblastic cells when contacted with muscle morphogenic protein in tissue culture medium containing 10% fetal calf serum and form predominantly branched multinucleated structures that spontaneously contract when contacted with muscle morphogenic protein and scar inhibitory factor in tissue culture with medium containing 10% fetal calf serum.

5,827,736

PURIFIED AND ISOLATED SEROTOLI CELL-SECRETORY CELL HYBRID

Richard Heller, Brandon; Don F. Cameron, Lutz; Paul R. Sanberg, Spring Hill, and Mark J. Jaroszeski, Tampa, all of Fla., assignors to University of South Florida, Tampa, Fla.

Continuation of Ser. No. 425,868, Apr. 20, 1995, abandoned. This application Jan. 9, 1997, Ser. No. 782,509

Int. Cl.[6] C12N *15/00;5/00;5/02*

U.S. Cl. 435—346 4 Claims

1. A purified and isolated Sertoli cell-secretory cell hybrid which

a) survives in situ after transplantation;

b) provides immunoprotection for the hybrid cells when transplanted; and

c) provides a mechanism for prolonged viability and cellular functionality of the transplanted cells wherein the hybrid maintains both the immunoprotection characteristics of the Sertoli cell and the secretory function of the secretory cell selected from the group consisting of islet cells and chromaffin cells.

5,827,737

IN VITRO ACTIVATION OF CYTOTOXIC T CELLS

Per A. Peterson, La Jolla; Michael Jackson, and Pierre Langlade-Demoyen, both of Del Mar, all of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation of Ser. No. 209,797, Mar. 10, 1994, Pat. No. 5,529,921, which is a continuation of Ser. No. 841,662, Feb. 19, 1992, Pat. No. 5,314,813. This application Jun. 24, 1996, Ser. No. 669,685

Int. Cl.[6] C12N *5/06;* A61K *35/14*

U.S. Cl. 435—348 1 Claim

1. A stable Drosophila cell line comprising:

(a) a human class I MHC gene selected from the group consisting of HLA-A, HLA-B, HLA-C, HLA-E, HLA-F and HLA-G; operably linked to an inducible promoter, wherein said human class I MHC gene has a stop codon engineered into the nucleotide sequence encoding the HLA molecule preceding the transmembrane domain, said human class I MHC gene capable of expressing a soluble human class I MHC molecule consisting of an extracellular domain without a transmembrane domain on induction of the promoter; and

(b) a human β-2 microglobulin gene, operably linked to a second inducible promoter, capable of expressing a human β-2 microglobulin protein on induction of the second promoter;

wherein the stable Drosophila cell line is capable of assembling the soluble human class I MHC molecule and the human β-2 microglobulin protein into empty complexes, and secreting the empty complexes, whereby the secreted empty complexes can bind a selected peptide.

5,827,738

SUSTAINABLE CHICK CELL LINE INFECTED WITH MAREK'S DISEASE VIRUS

Paul M. Coussens, DeWitt, and Amin Abujoub, East Lansing, both of Mich., assignors to Board of Trustees operating Michigan State University, East Lansing, Mich.

Filed Oct. 27, 1995, Ser. No. 549,045

Int. Cl.[6] C12N *5/10;5/00*

U.S. Cl. 435—349 17 Claims

1. A sustainable Marek's disease virus (MDV) infected chicken cell line which replicates continuously in cell culture, is contact-inhibited, and produces infectious MDV when the cell culture is confluent, and is able to transfer MDV to avians in vivo which consists of chick embryo cells (CEC) which are chicken helper factor (Chf) negative and virus-free and which have been treated with N-methyl-N^1-nitro-N-nitrosoguanidine (MNNG) to render continuously replicating cell line that is not malignantly transformed and is contact-inhibited which is then infected with MDV selected from the group consisting of serotype 1, serotype 2, or serotype 3 MDV, wherein serotype 3 is a turkey herpesvirus (HVT), to establish the sustainable MDV infected chicken cell line.

5,827,739

RECOMBINANT DNA SEQUENCES, VECTORS CONTAINING THEM AND METHOD FOR THE USE THEREOF

Richard Harris Wilson, Glasgow, Scotland, and Christopher Robert Bebbington, Berkshire, England, assignors to Celltech Therapeutics Limited, Slough, England, and The University Court of the University of Glasgow, Glasgow, Scotland

Continuation of Ser. No. 302,241, Sep. 8, 1994, which is a continuation of Ser. No. 165,533, Dec. 13, 1993, abandoned, which is a continuation of Ser. No. 852,390, Mar. 16, 1992, abandoned, which is a continuation of Ser. No. 595,733, Oct. 10, 1990, Pat. No. 5,122,464, which is a continuation of Ser. No. 117,071, Oct. 23, 1987, abandoned. This application Jun. 7, 1995, Ser. No. 476,567

Claims priority, application United Kingdom, Jan. 23, 1986, 8601597

Int. Cl.[6] C12N *5/10;15/86;* C07H *21/04*

U.S. Cl. 435—358 4 Claims

1. A method of endowing a cell line with the ability to survive in a medium lacking glutamine comprising providing a vector encoding the complete amino acid sequence of glutamine synthetase and transforming a host cell either completely lacking or reduced in GS activity with the vector.

5,827,740

ADIPOGENIC DIFFERENTIATION OF HUMAN MESENCHYMAL STEM CELLS

Mark F. Pittenger, Severna Park, Md., assignor to Osiris Therapeutics, Inc., Baltimore, Md.

Filed Jul. 30, 1996, Ser. No. 700,753

Int. Cl.[6] C12N *5/08;* C07J *1/00;* A61K *45/00*

U.S. Cl. 435—372 14 Claims

1. A composition which comprises mesenchymal stem cells which have been isolated from a human and which have potential to differentiate into cells of more than one connective tissue type and a substance in an amount effective to induce said stem cells to differentiate into the adipogenic lineage.

5,827,741

CRYOPRESERVATION OF HUMAN ADULT AND FETAL PANCREATIC CELLS AND HUMAN PLATELETS

Gillian M. Beattie, Poway; John H. Crowe; Fern Tablin, both of Davis, and Alberto Hayek, La Jolla, all of Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Nov. 19, 1996, Ser. No. 753,034
Int. Cl.[6] A01N *1/02;* C12N *5/02*
U.S. Cl. 435—374 7 Claims

1. A method for incorporating trehalose into the interiors of eukaryotic cells containing lipid bilayers, said method comprising subjecting said cells to a temperature change through their thermotropic lipid-phase transition temperature while said cells are suspended in a liquid solution of trehalose in the absence of DMSO, said temperature change occurring at a rate that permits passage of trehalose through said bilayers.

5,827,742

METHOD OF SELECTING PLURIPOTENT HEMATOPIOETIC PROGENITOR CELLS

David T. Scadden, Weston, Mass., assignor to Beth Israel Deaconess Medical Center, Inc., Boston, Mass.

Filed Sep. 1, 1994, Ser. No. 299,902
Int. Cl.[6] C12N *15/06*
U.S. Cl. 435—377 5 Claims

1. A method of selecting a population of mammalian cells containing quiescent pluripotent hematopoietic progenitor cells substantially free of mature, myeloid and lymphoid cells, comprising:

a) contacting a mammalian hematopoietic mononuclear cell suspension with an antibody specific for CD34 and maintaining said cell suspension with said antibody under conditions sufficient for the antibody to specifically bind to mononuclear cells expressing the cell surface antigen;

b) separating the antibody-bound cells from unbound cells and recovering the antibody bound cells thereby obtaining antibody positive mononuclear cells; and

c) culturing the antibody positive cells obtained in step b) in the combined presence of at least one anti-metabolite agent and at least one early-acting growth factor under conditions sufficient to eliminate dividing cells and cells responsive to early-acting growth factors, thereby selecting a population of cells containing quiescent pluripotent hematopoietic progenitor cells.

5,827,743

SUPPORT FOR GROWING/REGENERATING PLANT AND METHOD OF GROWING/REGENERATING PLANT

Hiroshi Tanzawa, Kamakura, Japan, assignor to Mukoyama Orchids Ltd., Yamanashi, Japan

PCT No. PCT/JP95/01223, § 371 Date Dec. 20, 1996, § 102(e) Date Dec. 20, 1996, PCT Pub. No. WO95/35025, PCT Pub. Date Dec. 28, 1995
PCT Filed Jun. 20, 1995, Ser. No. 776,617
Claims priority, application Japan, Jun. 21, 1994, 6-139140
Int. Cl.[6] A01G *31/00;* A01H *4/00;* C12M *3/00*
U.S. Cl. 435—430 18 Claims

1. A carrier for growing or regenerating a plant, comprising a polymer which has been obtained by crosslinking a temperature-responsive polymer having a LCST (lower critical solution temperature).

5. A method of growing or regenerating a plant, comprising:

dispersing a carrier for growing or regenerating a plant, which has been obtained by crosslinking a temperature-responsive polymer having a LCST (lower critical solution temperature), in a predetermined culture medium at a temperature higher than the LCST;

mixing a plant in the resultant dispersion; and

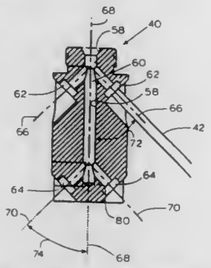
lowering the temperature to a value lower than the LCST to reduce the fluidity of the dispersion and to convert the dispersion into a gel state, thereby to grow or regenerate the plant.

5,827,744

METHOD AND APPARATUS FOR CLEANING A LIQUID DISPENSING PROBE

James Brian Fose, Bear; Ching-Cherng Lee, and John Paul Mizzer, both of Newark, all of Del., assignors to Dade International Inc., Deerfield, Ill.

Continuation of Ser. No. 553,939, Nov. 6, 1995, abandoned.
This application Jul. 11, 1997, Ser. No. 893,634
Int. Cl.[6] B08B *3/04;9/02*
U.S. Cl. 436—49 12 Claims



1. A method of cleaning a liquid sample probe using a wash body having an upper portion and lower portion with a bore closed at the lower portion, the wash body adapted to receive said sample probe thereby defining an annular gap between said bore and said sample probe, comprising the steps of:

introducing said sample probe into said bore;

applying a wash liquid to the lower portion of said bore; and,

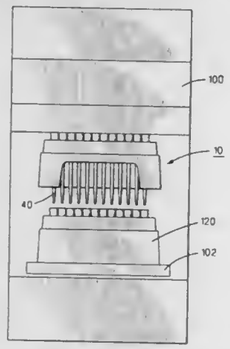
withdrawing said sample probe from said bore while subjecting the upper portion of said bore to a vacuum, thereby to create a flow of air only through the annular gap to clean only the exterior portion of the sample probe.

5,827,745

MICROPIPETTE TIP LOADING AND UNLOADING DEVICE AND METHOD AND TIP PACKAGE

Thomas W. Astle, 607 Harborview Rd., Orange, Conn. 06477

Filed Mar. 29, 1993, Ser. No. 38,533
Int. Cl.[6] G01N *35/10*
U.S. Cl. 436—54 18 Claims



5. A method of loading onto a pipettor a plurality of micropipette tips, said method comprising:

(a) providing said pipettor having a head portion with a plurality of tip pins depending therefrom, and said micropipette tips each having an upper, hollow, tapered, generally cylindrical barrel portion and a lower, hollow, generally cylindrical aspirating tip portion, both lying along a common vertical axis and being cojoined at a horizontal shoulder, and said micropipette tips being held in a micropipette tip package; and

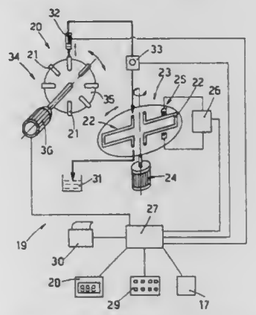
(b) simultaneously engaging said shoulder on each of said micropipette tips and raising said micropipette tips for insertion of said tip pins therein, with said micropipette tip package remaining attached to said micropipette tips.

5,827,746

METHOD TO DETERMINE THE SEDIMENTATION OF BLOOD AND RELATIVE DEVICE

Giovanni Battista Duic, Pavia di Udine, Italy, assignor to Sire Analytical Systems Srl, Udine, Italy

Filed Mar. 8, 1996, Ser. No. 613,233
Claims priority, application Italy, Mar. 15, 1995, UD95A0042
Int. Cl.[6] G01N *33/86*
U.S. Cl. 436—70 26 Claims



9. Method to determine the speed of sedimentation of corpuscles present in a sample of blood, the method being carried out on a sample of blood to which an anti-coagulant has been added, comprising the steps of:

homogenizing and adding an anti-coagulant to a sample of blood and feeding the sample of blood to be analyzed into a reading container;

centrifuging the sample of blood about an axis perpendicular to a plane of positioning of the reading container;

emitting and monitoring an electromagnetic radiation at a fixed point of the reading container bolding the blood sample, while centrifuging to measure development, over a period of time, of an optical density of the sample of blood analyzed without waiting for the formation of a plasma/corpuscle interface to obtain the optical density measurement;

processing optical density signals as a function of a period of time;

displaying speed of sedimentation results obtained from the processed optical density signals; and

discharging the analyzed sample of blood from the reading container.

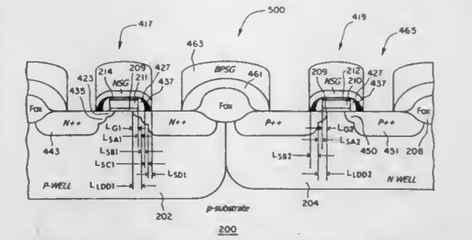
5,827,747

METHOD FOR FORMING LDD CMOS USING DOUBLE SPACERS AND LARGE-TILT-ANGLE ION IMPLANTATION

Chih-Hsien Wang, and Min-Liaog Chen, both of Hsinchu, Taiwan, assignors to Mosel Vitelic, Inc., Hsinchu, Taiwan

Filed Mar. 28, 1996, Ser. No. 623,435
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 438—199 42 Claims

1. A method of forming a complementary metal oxide semiconductor (CMOS) integrated circuit device, said method comprising:



providing a semiconductor substrate comprising a P type well region and a N type well region, a first gate dielectric layer overlying said P type well region and a second gate dielectric layer overlying said N type well region, a first gate electrode overlying said first gate dielectric layer and a second gate electrode overlying said second gate dielectric layer;

introducing a N impurity type at a first concentration into said P type well region and introducing a P impurity type at a second concentration into said N type well region, said N impurity type in said P type well region defining a first LDD region and said P impurity type in said N type well region defining a second LDD region;

forming first sidewall spacers on edges of said first gate electrode and said second gate electrode;

introducing said N impurity type at a third concentration into said P type well region, said P impurity type at said third concentration defining first source/drain regions; and

forming second sidewall spacers on said first sidewall spacers;

introducing said N impurity type at a fourth concentration into said P type well region to further define said first source/drain regions;

introducing said P impurity type at a fifth concentration into said N type well region to define second source/drain regions;

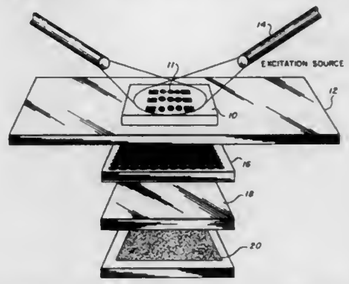
and wherein said first LDD region extends under a first portion L_{SA1} of said first sidewall spacers on said edges of said first gate electrode and extends under a portion L_{G1} of said first gate electrode, and said first source/drain region extends under a second portion of said first sidewall spacers on said edges of said first gate electrode, said portion L_{G1} being of greater length than said first portion L_{SA1}, and wherein said portion L_{G1} is greater than a width of said second sidewall spacers.

5,827,748

CHEMICAL SENSOR USING TWO-DIMENSIONAL LENS ARRAY

Joel P. Golden, Fort Washington, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

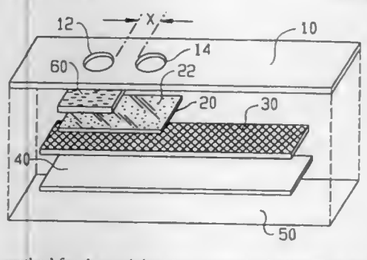
Filed Jan. 24, 1997, Ser. No. 787,720
Int. Cl.[6] G01N *33/552*
U.S. Cl. 436—527 15 Claims



10. A method of simultaneously detecting a plurality of analytes in a sample, comprising:

(a) providing a chemical sensor, said sensor comprising:
a patterned signal layer comprising a two-dimensional array of discrete, optically transparent test sections at known locations thereon, each of said test sections comprising an immobilized specific binding partner for one of said plurality of analytes, such that specific binding of said analyte to said immobilized specific binding partner generates an optical signal indicative of the presence of said analyte in said test section;
a two-dimensional light sensor array which detects said optical signal in a corresponding discrete detection section; and
a two-dimensional array of graded index of refraction lenses which focuses each said optical signal from each said test section into each said corresponding detection section;
(b) contacting said sample to said patterned signal layer; and
(c) detecting the presence or absence of said focused optical signal in each of said detection sections, whereby the presence of said focused optical signal in said detection section indicates the specific binding of the analyte in the test section and thereby indicates the presence of the analyte in the sample.

5,827,749
LIGAND ASSAY METHOD
Raymond F. Akers, Jr., Sewell, N.J., assignor to Akers Laboratories, Inc., Thorofare, N.J.
Division of Ser. No. 248,835, May 25, 1994, Pat. No. 5,565,366, which is a continuation of Ser. No. 588,670, Sep. 26, 1990, abandoned. This application Oct. 11, 1996, Ser. No. 730,522
Int. Cl.[6] G01N *33/546*
U.S. Cl. 436—534 **22 Claims**

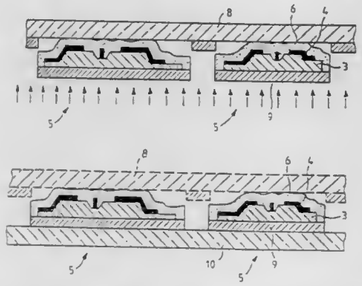


1. A method for determining the presence of a ligand in a sample suspected to contain the ligand, comprising:
forming a test mixture by containing the sample with particulate material, said particulate material being approximately the same diameter from about 0.01 to about 100 micrometers which bears on its surface receptors specific for the ligand and which forms aggregates upon contacting the ligand in the presence of an optimizing agent, effective to optimize speed and sensitivity of the aggregation reaction;
passing the test mixture through a filter means comprising apertures which are larger than the receptor-bearing particulate material but smaller than the aggregates, thereby producing a filtrate;
passing said filtrate through a wicking means adjacent and in fluid communication with the filter means, said wicking means consisting essentially of non-woven fibers of glass or synthetic polymeric material for effecting separation of any non-specifically aggregated receptor-bearing particulate material and/or any unaggregated receptor-bearing particulate material, wherein any unaggregated receptor-bearing particulate material migrates horizontally through said wicking means at a rate faster than said ligand/receptor-bearing particulate material, the presence of non-specifically aggregated or unaggregated receptor-bearing particulate material in the filtrate indicating the absence of the ligand in the sample and the absence of non-specifically aggregated or unaggregated receptor-bearing particulate material in the filtrate indicating the presence of the ligand in the sample.

5,827,750
HUMAN VIRUS ASSOCIATED WITH CHRONIC FATIGUE IMMUNE DEFICIENCY SYNDROME AND ASSAY THEREFORE
Sidney E. Grossberg; Vladimir M. Kushnaryov, both of Milwaukee; L. William Cashdollar, Brookfield; Donald R. Carrigan, Wauwatosa, and Konstance K. Knox, East Troy, all of Wis., assignors to Medical College of Wisconsin, Inc., Milwaukee, Wis.
Division of Ser. No. 250,314, May 27, 1994, Pat. No. 5,545,550, which is a continuation of Ser. No. 891,452, May 28, 1992, abandoned. This application Aug. 8, 1996, Ser. No. 708,107
Int. Cl.[6] G01N *33/53;33/531;* **C12N** *7/00;5/00*
U.S. Cl. 436—547 **2 Claims**

1. A method for the detection of the presence or absence of antibodies which bind to antigens of JHK virus produced by the cell line having ATCC accession No. CRL10991, said method comprising
a) contacting a solution containing antigens of JHK virus with a biological sample of a patient for a time and under conditions sufficient for the antigens in the solution and antibodies in the biological sample to form antibody-antigen complexes; and
b) detecting the antibody-antigen complexes, wherein presence of an antibody-antigen complex indicates the presence of antibodies to JHK virus in the sample.

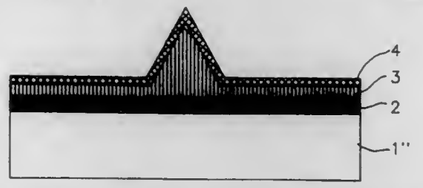
5,827,751
METHOD OF MAKING SEICONDUCTOR COMPONENTS, IN PARTICULAR ON GAAS OF INP WITH THE SUBSTRATE BEING RECOVERED CHEMICALLY
Linh T. Nuyen, Paris, France, assignor to Picogiga Societe Anonyme, Les Ulis, France
Continuation of Ser. No. 271,771, Jun. 6, 1994, abandoned. This application Mar. 1, 1996, Ser. No. 609,487
Claims priority, application France, Dec. 6, 1991, 9115539
Int. Cl.[6] H01L *21/20*
U.S. Cl. 438—28 **6 Claims**



1. A method of making semiconductor components, comprising the following steps:
a) producing a substrate of binary or ternary III–V semiconductor material that is not dissolvable by a chemical action;
b) epitaxially growing on said substrate a separating layer of ternary III–V semiconductor material having a molar fraction of aluminum of at least 40% and an atomic lattice compatible with that of the substrate that is dissolvable by the chemical action;
c) epitaxially growing on said separating layer an active layer of binary III–V semiconductor material or ternary III–V semiconductor material having an aluminum molar fraction of at least 300%, said active layer having an atomic lattice compatible with that of the separating layer;
d) making a set of semiconductor components by etching and metallizing said active layer, which exposes areas of the separating layer;

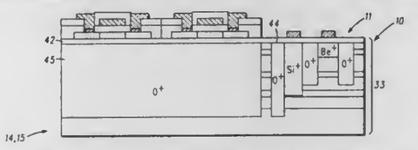
e) applying a protective layer of a material resistant to the chemical action on said set of components and said exposed areas;
f) etching said protective layer so as to bare the separating layer in areas between said components or between groups of said components to form an assembly;
g) fixing a common support plate on the assembly, thereby holding the components together mechanically; and
h) dissolving the separating layer by the chemical action, which frees, but does not dissolve, the substrate.

5,827,752
MICRO-TIP FOR EMITTING ELECTRIC FIELD AND METHOD FOR FABRICATING THE SAME
Byeong Kwon Ju, and Myung Hwan Oh, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea
Filed Jul. 23, 1996, Ser. No. 686,131
Claims priority, application Rep. of Korea, Oct. 24, 1995, 1995-36760
Int. Cl.[6] H01L *21/00;21/02*
U.S. Cl. 438—20 **7 Claims**



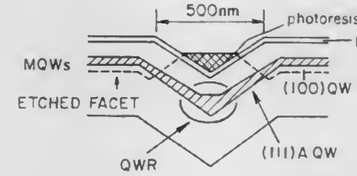
1. A method for fabricating a micro-tip for emitting an electric field, said method comprising the steps of:
forming a silicon mould;
forming a functional layer on said silicon mould, and then forming a tip on said functional layer;
forming a conductive thin film on one side of said tip;
bonding a substrate to said conductive thin film; and
removing said silicon mould.

5,827,753
MONOLITHIC INTEGRATION OF DRIVER CIRCUITS WITH LED ARRAY AND METHODS OF MANUFACTURE
Rong-Ting Huang, Gilbert; Phil Wright, Scottsdale; Chan-Long Shieh, Paradise Valley, and Paige M. Holm, Phoenix, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 20, 1997, Ser. No. 820,850
Int. Cl.[6] H01L *21/338*
U.S. Cl. 438—24 **19 Claims**



1. A method of fabricating a monolithically integrated LED array and driving circuitry comprising the steps of:
providing a semiconductor substrate having a surface;
sequentially forming a plurality of overlying layers of material on the surface of the substrate, the plurality of layers of material cooperating to emit light when activated;
positioning an insulating layer on the plurality of overlying layers;
isolating the plurality of layers into an array area and driver circuitry areas and forming row and column dividers in the plurality of layers of material in the array area so as to divide the plurality of layers of material into an array of light emitting devices arranged in rows and columns; and
forming row and column driver circuits on the insulating layer in the driver circuitry areas and row and column buses individually coupling each light emitting device in the array of light emitting devices to row and column driver circuits, respectively.

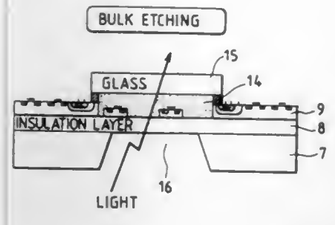
5,827,754
FABRICATION METHOD FOR HIGH-OUTPUT QUANTUM WIRE ARRAY DIODE STRUCTURE
Suk-Ki Min, and Eun Kyu Kim, both of Seoul, Rep. of Korea, assignors to Korea Institute of Science and Technology, Seoul, Rep. of Korea
Filed Dec. 20, 1996, Ser. No. 770,957
Claims priority, application Rep. of Korea, May 22, 1996, 1996-17439
Int. Cl.[6] H01L *21/00*
U.S. Cl. 438—40 **11 Claims**



1. A fabrication method for forming a high output quantum wire array laser diode structure, comprising:
forming a short period quantum wire array on a substrate;
removing a quantum well layer positioned on both sides of said short period quantum wire array; and
forming a current blocking layer.

5,827,755
LIQUID CRYSTAL IMAGE DISPLAY UNIT AND METHOD FOR FABRICATING SEMICONDUCTOR OPTICAL MEMBER
Takao Yonehara, Atsugi; Mamoru Miyawaki, Isehara; Akira Ishizaki, Atsugi; Junichi Hoshi, Hadano; Masaru Sakamoto; Shigetoshi Sugawa, both of Atsugi; Shunsuke Inoue; Toru Koizumi, both of Yokohama; Tetsunobu Kohchi, Hiratsuka; Kiyofumi Sakaguchi, and Takanori Watanabe, both of Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 242,047, May 13, 1994, Pat. No. 5,530,266, which is a continuation of Ser. No. 921,697, Jul. 30, 1992, abandoned. This application Aug. 22, 1995, Ser. No. 517,903
Claims priority, application Japan, Aug. 2, 1991, 3-194115; Oct. 11, 1991, 3-292259; Jan. 31, 1992, 4-040448; Jan. 31, 1992, 4-040449; Jan. 31, 1992, 4-040453; Jan. 31, 1992, 4-040490; Jan. 31, 1992, 4-040582
Int. Cl.[6] H01L *21/00;21/76;21/301*
U.S. Cl. 438—30 **41 Claims**

1. A method for fabricating a liquid crystal image display unit having a substrate and a liquid crystal pixel area formed on said substrate, wherein a portion of said substrate under said liquid crystal pixel area is light transparent, comprising the steps of:
selecting a light non-transparent substrate;
forming a light transparent insulation layer on said light non-transparent substrate;
forming liquid crystal pixels comprising a single crystalline Si layer in a liquid crystal pixel area on said substrate; and



thereafter removing a portion of said substrate under said liquid crystal pixel area by etching so that light is able to enter said liquid crystal pixel area,

wherein said liquid crystal pixels are formed after a semiconductor element is formed on said light transparent insulation layer, and said semiconductor element is formed after a semiconductor layer formed on another substrate is transferred onto said substrate.

5,827,756

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

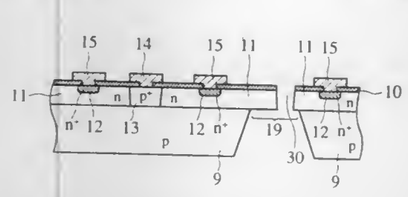
Manabu Sugino, Yokosuka; Susumu Uchikoshi, Yokohama, and Takatoshi Noguchi, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Kanagawa-ken, Japan

Filed Jul. 18, 1996, Ser. No. 683,274

Claims priority, application Japan, Jul. 25, 1995, 7-189425

Int. Cl.[6] H01L *21/00*

U.S. Cl. 438—50 **24 Claims**



1. A method of manufacturing a semiconductor device, comprising:

a) a first step of forming an element region on a first principal surface of a semiconductor substrate, the element region having a portion consisting essentially of an upper layer acting as an etch stop layer and a lower layer which is in contact with the upper layer, the upper layer being thinner than the lower layer;

b) a second step of forming a first diaphragm region by forming a first recess in a second principal surface of the semiconductor substrate;

c) a third step of forming a second diaphragm region by forming a second recess at a portion of the bottom of the first recess by removing said lower layer and stopping the recess forming at a boundary between said upper and lower layer, the second diaphragm region being formed of said upper layer at the bottom of the second recess; and

d) a fourth step of forming an opening extending through the first principal surface to the second principal surface by removing part of the whole of the second diaphragm region.

5,827,757

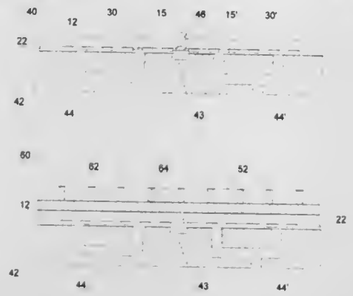
FABRICATION OF LARGE AREA X-RAY IMAGE CAPTURING ELEMENT

George D. Robinson, Jr., Sewell, N.J.; Joseph A. Perrotto, Landenberg, Pa.; Lothar S. Jeromin, Newark, and James E. Davis, Wilmington, both of Del., assignors to Direct Radiography Corp., Newark, Del.

Filed Jul. 16, 1996, Ser. No. 680,951

Int. Cl.[6] H01L *27/14*

U.S. Cl. 438—73 **28 Claims**



1. A method for producing a tiled radiation detection panel from a plurality of discrete modules wherein each module comprises a planar dielectric support having a top surface and a bottom surface, and a plurality of solid state electronic components arrayed adjacent the top surface to form an array of solid state pixels; the method comprising:

A) applying a protective layer over the array of solid state pixels on each module to form a protected module;

B) trimming and polishing at least one edge of each protected module to form a polished edge which is within a specified distance from the solid state pixels of the array;

C) assembling the plurality of protected modules to form a two-dimensional mosaic of the modules on a flat surface of an assembly fixture, wherein the protective layer of each protected module is in contact with the flat surface and wherein each polished edge of each protected module is adjacent to the polished edge of a neighboring protected module to form a gap between adjacent polished edges such that a distance measured between adjacent solid state pixels in adjacent modules is substantially the same as a distance measured between adjacent solid state pixels within the modules and filling the gap with a material;

D) adhering a base plate to the two-dimensional mosaic through an adhesive layer located therebetween to form a protected mosaic array; and then

E) removing the protected mosaic array from the flat surface.

5,827,758

Patent Not Issued For This Number

5,827,759

METHOD OF MANUFACTURING A FUSE STRUCTURE

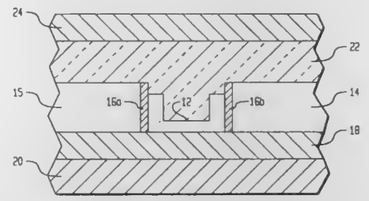
Karl-Heinz Froehner, Hopewell Junction, N.Y., assignor to Siemens Microelectronics, Inc., Cupertino, Calif.

Division of Ser. No. 365,670, Dec. 29, 1994, abandoned. This application Jan. 9, 1997, Ser. No. 781,571

Int. Cl.[6] H01L *21/82*

U.S. Cl. 438—132 **7 Claims**

1. A method for manufacturing a fuse structure for selectively joining a first integrated circuit element to a second integrated circuit element which lie in spaced apart relation on a dielectric layer disposed on a semiconductor substrate comprising:



depositing a layer of dielectric material between said first and second integrated circuit elements;

etching away a center region of said dielectric material so as to form a plurality of dielectric spacers abutting said first and second integrated circuit elements;

depositing a conductive material between said dielectric spacers; and

etching away a central portion of said conductive material so that said conductive material is thinner at its middle section than at its sides.

5,827,760

METHOD FOR FABRICATING A THIN FILM TRANSISTOR OF A LIQUID CRYSTAL DISPLAY DEVICE

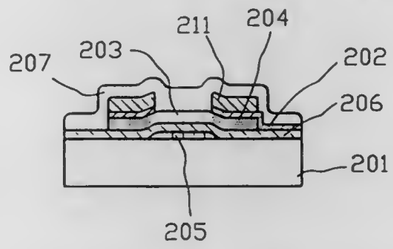
Seong Moh Seo, Kyungki-do, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Feb. 12, 1997, Ser. No. 798,826

Claims priority, application Rep. of Korea, Feb. 12, 1996, 1996-3288

Int. Cl.[6] H01L *21/223*

U.S. Cl. 438—161 **20 Claims**



1. A method for fabricating a thin film transistor, comprising the steps of:

forming a gate electrode on a substrate;

forming a gate insulating layer on said substrate and said gate electrode;

forming a source/drain electrode and a data bus line on said gate insulating layer;

introducing a dopant into said source/drain electrode and said data bus line;

forming a semiconductor over the substrate, said semiconductor layer including an amorphous semiconductor layer;

exposing said semiconductor layer with laser light to thereby crystallize said semiconductor layer and form ohmic regions in said semiconductor layer; and

patterning crystallized semiconductor layer said patterned semiconductor layer to form an ohmic layer and a channel layer.

5,827,761

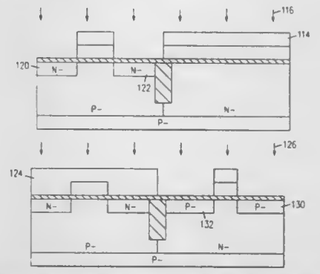
METHOD OF MAKING NMOS AND DEVICES WITH SEQUENTIALLY FORMED GATES HAVING DIFFERENT GATE LENGTHS

H. Jim Fulford, Jr.; Robert Dawson, both of Austin; Mark I. Gardner, Cedar Creek; Frederick N. Hause, Austin; Mark W. Michael, Cedar Park; Bradley T. Moore, and Derick J. Wristers, both of Austin, all of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 25, 1997, Ser. No. 805,537

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—199 **34 Claims**



1. A method of making N-channel and P-channel devices with different gate lengths, comprising the steps of:

providing a semiconductor substrate with first and second active regions;

forming a first gate over a portion of the first active region and a second gate over a portion of the second active region, wherein the first and second gates are formed in sequence and have different lengths, and forming the first and second gates includes (i) forming a gate material over the first and second active regions, (ii) selectively removing a first portion of the gate material over the first active region to form the first gates, and then (iii) selectively removing a second portion of the gate material over the second active region to form the second gate;

forming a source and drain in the first active region; and

forming a source and drain in the second active region.

5,827,762

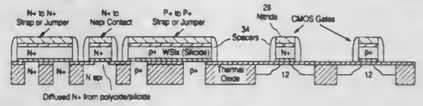
METHOD FOR FORMING BURIED INTERCONNECT STRUCTUE HAVING STABILITY AT HIGH TEMPERATURES

Rashid Bashir, Santa Clara; Francois Hebert, San Mateo, and Datong Chen, Fremont, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed May 2, 1997, Ser. No. 850,603

Int. Cl.[6] H01L *21/8238*

U.S. Cl. 438—202 **12 Claims**



1. A method of forming a fully insulated local interconnect structure which is stable at high temperatures on a substrate on which an active device region is formed, the method comprising:

depositing a layer of a silicide film over the substrate;

doping the layer of silicide film;

depositing a layer of an insulator over the silicide film;

forming a patterned photoresist over said layer of insulator to define said local interconnect structure on the insulator surface;

removing said deposited silicide film and insulator down to the substrate in regions outside of the defined local interconnect structure;

forming a spacer on sidewalls of the defined local interconnect structure; and

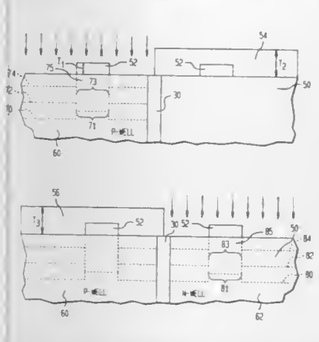
annealing the local interconnect structure at a temperature in excess of 1000° C.

5,827,763

METHOD OF FORMING A MULTIPLE TRANSISTOR CHANNEL DOPING USING A DUAL RESIST FABRICATION SEQUENCE

Mark I. Gardner, Cedar Creek, and Fred Hause, Austin, both of Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 30, 1997, Ser. No. 791,378
Int. Cl.[6] H01L *21/8238*
U.S. Cl. 438—232 **21 Claims**



1. A method of forming a multiple transistor channel doping in a semiconductor substrate, said method comprising the steps of:

forming a pattern of a first resist in first and second locations on first and second different areas of the semiconductor substrate, respectively;

forming a pattern of a second resist on the second area, wherein the second resist covers the first resist pattern in the second location, the first resist being immune from the second resist;

implanting ions in the first area to form a first conductivity type well having a first multiple transistor channel doping profile;

removing the second resist pattern;

forming a pattern of a third resist on the first area, wherein the third resist covers the first resist pattern in the first location, the first resist being immune from the third resist; and

implanting ions in the second area to form a second conductivity type well having a second multiple transistor channel doping profile.

5,827,764

METHOD FOR REDUCING THE CONTACT RESISTANCE OF BUTT A CONTACT

Jhon-Jhy Liaw, and Jin-Yuan Lee, both of Taipei, Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Oct. 8, 1997, Ser. No. 947,833
Int. Cl.[6] H01L *51/8234*
U.S. Cl. 438—238 **16 Claims**

1. A method of fabrication of a butt contact comprising the steps of:

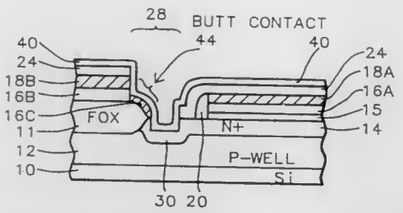
a) forming at least an isolation region on a substrate, said isolation region defining active regions on said substrate;

b) forming a gate oxide layer over said substrate;

c) forming a first polysilicon layer over said gate oxide layer;

d) deposit a silicide layer over said first polysilicon layer;

e) patterning said first polysilicon layer and said silicide layer forming a gate electrode over said substrate and a conductive



structure over said isolation region; said substrate has a butt contact area in between said isolation region and said gate electrode;

f) forming spacers on the sidewalls of said gate electrode and said conductive structure;

g) forming an inter-poly oxide layer over said gate electrode;

h) forming a butt contact photoresist layer over said inter-poly oxide layer; said butt contact **19** photoresist layer having a butt contact photoresist opening over said butt contact area and over adjacent portions of said isolation region;

i) etching said inter-poly oxide layer using said butt contact photoresist layer as a mask removing portions of said inter-poly oxide layer over said butt contact area and over said portions of said isolation region thereby exposing portions of said tungsten silicide layer over said isolation region;

j) etching the exposed portions of said silicide layer thereby exposing a portion of said first polysilicon layer; and

k) implanting ions into said butt contact area and the exposed portion of said first polysilicon layer;

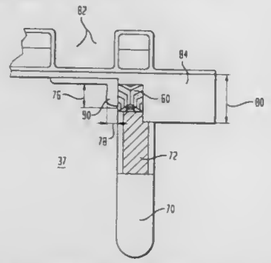
l) depositing a second polysilicon layer over said inter-poly oxide layer, said exposed portion of said first polysilicon layer and over said substrate in said butt contact area thereby forming a low resistance butt contact.

5,827,765

BURIED-STRAP FORMATION IN A DRAM TRENCH CAPACITOR

Reinhard Stengl, Stadtbergen, Germany; Erwin Hammerl, Stormville, N.Y.; Herbert L. Ho, Washingtonville, N.Y.; Jack A. Mandelman, Stormville, N.Y.; Radhika Srinivasan, Wappinger Falls, N.Y., and Alvin P. Short, Poughkeepsie, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany, and International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 22, 1996, Ser. No. 605,622
Int. Cl.[6] H01L *21/20;21/8242*
U.S. Cl. 438—243 **26 Claims**



1. A method of fabricating an electrical connection between a trench storage capacitor and an access transistor in a DRAM cell, said trench storage capacitor including a trench formed in a substrate having a dopant which causes said substrate to be of a first conductivity, said trench being lined with a first semiconducting material having a dopant which causes said first semiconducting material to be of a second conductivity, said dopant of said second conductivity also being partially diffused into said substrate, and

said trench also being lined thereafter with a layer of dielectric material and filled subsequently with a second semiconducting material having a dopant which causes said second semiconducting material to be one of said first and second conductivitites, said second semiconducting material being partially recessed within said trench said trench being, lined with an oxide collar after said recessing, and filled with a third semiconducting material which may be either doped or undoped, said method comprising the steps of:

etching portions of said oxide collar and said third semiconducting material to re-open a portion of said trench;

filling said portion of said trench with a single crystalline semiconducting material; and

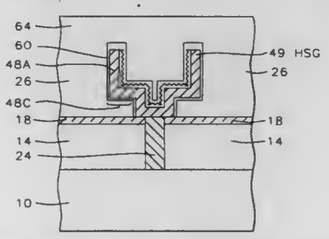
forming an active area of said access transistor on said substrate, said forming causing a selectively controlled outdifussion of a dopant along a path that extends through both said single crystalline semiconducting material and a selected portion of said substrate, said path being electrically conductive and operating to electrically connect said trench storage capacitor with said access transistor.

5,827,766

METHOD FOR FABRICATING CYLINDRICAL CAPACITOR FOR A MEMORY CELL

Chine-Gie Lou, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Filed Dec. 11, 1997, Ser. No. 988,915
Int. Cl.[6] H01L *21/8242*
U.S. Cl. 438—253 **10 Claims**



1. A method of fabrication of a capacitor having a hemispherical grain layer over the inner surface of a cylindrical electrode, comprising the steps of:

a) forming first insulating layer over a substrate;

b) chemical-mechanical polishing said first insulating layer for global planarization;

c) forming a first barrier layer composed of silicon nitride over said first insulating layer;

d) forming a contact opening through said first insulating layer and said first barrier layer exposing said substrate;

e) filling said contact opening and covering said first barrier layer with a conductive material;

f) removing said conductive material over said first barrier layer forming a plug in said contact opening; the removal of said conductive material performed using a chemical-mechanical polishing process;

g) forming a second insulating layer composed of an oxide over said first barrier layer; said second insulating layer having a top surface;

h) forming a first opening and a second opening in said second insulating layer, said first opening having a larger open dimension than said second opening; said second opening exposing said plug;

i) forming a polysilicon layer on said top surface of said second insulating layer, on said second insulating layer in said first and second openings, and over said plug; said polysilicon layer composed of insitu doped polysilicon;

j) forming a hemispherical grain film over said polysilicon layer;

k) removing said polysilicon layer and said hemispherical grain film over said top surface of said second insulating layer; said removal of said polysilicon layer performed with a chemical-mechanical polishing process;

l) selectively etching and removing said second insulating layer thereby forming a cylindrical top; a cylindrical bottom electrode is comprised of said cylindrical top and said plug;

m) forming a capacitor dielectric layer over said cylindrical top; and

n) forming a top electrode over said capacitor dielectric layer.

5,827,767

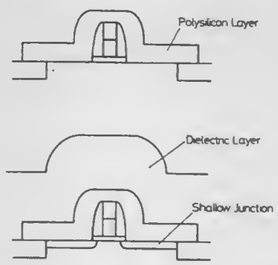
Patent Not Issued For This Number

5,827,768

METHOD FOR MANUFACTURING AN MOS TRANSISTOR HAVING A SELF-ALIGNED AND PLANARIZED RAISED SOURCE/DRAIN STRUCTURE

Horng-Chih Lin, and Tiao-yuan Huang, both of Hsinchu, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Jul. 7, 1997, Ser. No. 888,765
Int. Cl.[6] H01L *21/336*
U.S. Cl. 438—300 **4 Claims**



1. A method for manufacturing a MOS transistor, comprising the sequential steps of:

forming a gate oxide layer, a gate layer, and a first dielectric layer in sequence on a substrate on which isolation layers are already formed;

etching said first dielectric layer and said gate layer in order to define a gate region;

forming sidewall spacers on opposing sides of said gate region;

forming a doped polysilicon layer overlying said isolation layers, said substrate, said sidewall spacers, and said gate region;

etching the portion of said polysilicon layer overlying said isolation layers to achieve isolation between adjacent devices, and to form local interconnections;

depositing a second dielectric layer;

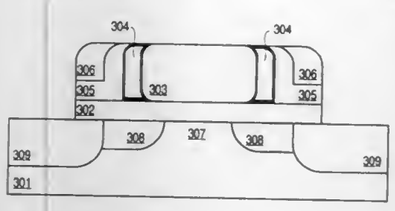
performing an annealing process to diffuse the dopant inside said polysilicon layer into said substrate, thereby forming a doped junction;

performing a polishing process to remove the portion of said polysilicon layer overlying said gate region, thereby defining a completely isolated source region and drain region;

depositing a third dielectric; and

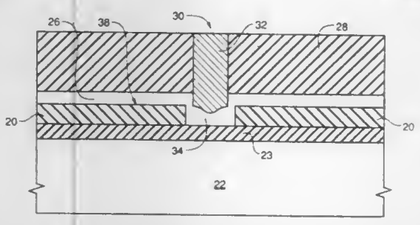
forming contact windows and metal layers contacting said gate, source, and drain regions.

5,827,769
METHOD FOR FABRICATING A TRANSISTOR WITH INCREASED HOT CARRIER RESISTANCE BY NITRIDIZING AND ANNEALING THE SIDEWALL OXIDE OF THE GATE ELECTRODE
Payman Aminzadeh, Portland; Reza Arghavani, Aloha, and Peter Moon, Portland, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.
Filed Nov. 20, 1996, Ser. No. 754,219
Int. Cl.[6] H01L 21/336;21/31
U.S. Cl. 438—305 13 Claims



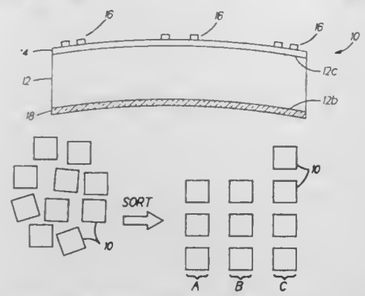
1. A method of fabricating a field effect transistor comprising the steps of:
forming a gate electrode;
forming a first oxide on the sidewalls of said gate electrode;
nitridating said first oxide to create a nitrided oxide;
annealing said nitrided oxide to create an annealed nitrided oxides;
forming a second oxide adjacent to said annealed nitrided oxide;
forming a conformal layer over said gate electrode, said annealed nitrided oxide, and said second oxide; and
anisotropically etching said conformal layer to create spacers for masking a lightly doped drain region from a high dose drain implant.

5,827,770
METHOD OF MAKING A SEMICONDUCTOR DEVICE HAVING IMPROVED CONTACTS TO A THIN CONDUCTIVE LAYER
Howard Rhodes, Boise, and Luan Tran, Meridian, both of Id., assignors to Micron Technology, Inc., Boise, Id.
Continuation of Ser. No. 399,844, Mar. 7, 1995, abandoned. This application Feb. 3, 1997, Ser. No. 789,072
Int. Cl.[6] H01L 21/8242
U.S. Cl. 438—396 8 Claims



1. A process for making a semiconductor device having an improved contact to a conductive layer, comprising the steps of:
a. forming an underlayer of material having an opening therein;
b. forming a layer of conductive material on the underlayer and in the opening;
c. forming an overlayer of material on the layer of conductive material and etching a contact hole therethrough;
d. forming a localized thick region in the layer of conductive material within the opening subjacent the contact hole; and
e. forming a conductor contacting the thick region through the contact hole.

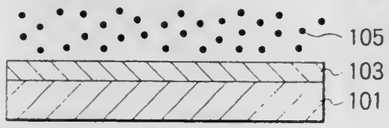
5,827,771
READOUT BACKSIDE PROCESSING FOR HYBRIDIZATION
Robert P. Ginn, Ventura; Joan K. Chia, Santa Barbara, and Stephen H. Propst, Santa Ynez, all of Calif., assignors to Raytheon Company, Lexington, Mass.
Filed Mar. 19, 1996, Ser. No. 618,135
Int. Cl.[6] H01L 21/30;21/46;21/66; G01R 31/26
U.S. Cl. 438—457 10 Claims



1. A method for processing an integrated circuit chip, comprising the steps of:
providing the integrated circuit chip that includes a substrate and at least one first layer comprised of circuitry overlying a first surface of the substrate, the integrated circuit chip having an amount of bowing; and
applying at least one second layer to a second, opposite surface of the substrate, the at least one second layer being applied so as to have a thickness sufficient for exerting a force upon the substrate for reducing the amount of bowing, wherein the step of applying includes a step of depositing a layer of dielectric material upon the second surface.

8. A method for processing readout integrated circuits, comprising the steps of:
providing a plurality of individual readout circuits each having a substrate and at least one layer comprised of active circuitry overlying a first surface of the substrate, each of the readout integrated circuits having an associated amount of non-flatness due at least in part to a first force exerted on the substrate by the at least one layer;
sorting the plurality of readout integrated circuits into a plurality of groups, wherein members of each group have a similar amount of non-flatness; and
for each group, determining a thickness of and applying a compensating layer on a second surface of the substrate so as to exert a second force on the substrate to counteract the first force and to reduce the amount of non-flatness.

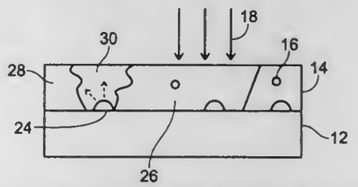
5,827,772
FABRICATION PROCESS FOR THIN FILM TRANSISTOR
Kenichi Nakamura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Nov. 14, 1996, Ser. No. 748,822
Claims priority, application Japan, Nov. 15, 1995, 7-296549
Int. Cl.[6] H01L 21/20
U.S. Cl. 438—486 30 Claims



1. A fabrication process of a thin film transistor comprising the steps of:
forming a semiconductor layer on an insulative substrate;

forming an active layer by patterning said semiconductor layer in an island-shaped structure;
forming a gate insulation layer on said active layer;
forming a gate electrode on said gate insulation layer;
forming a source and drain region by implanting impurity ions in high concentration in a portion of said active layer;
performing oxygen annealing by heating said semiconductor layer under oxygen atmosphere, wherein said step of oxygen annealing is done between said step of forming a semiconductor layer and said step of forming an active layer; and
performing hydrogen annealing at a temperature in the range of 900° to 1200° C. under hydrogen atmosphere, wherein said step of hydrogen annealing is done between said step of oxygen annealing and said step of forming an active layer.

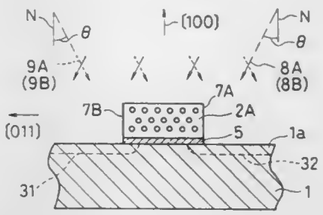
5,827,773
METHOD FOR FORMING POLYCRYSTALLINE SILICON FROM THE CRYSTALLIZATION OF MICROCRYSTALLINE SILICON
Tolis Voutsas, Vancouver, Wash., assignor to Sharp Microelectronics Technology, Inc., Camas, Wash., and Sharp Kabushiki Kaisha, Osaka, Japan
Filed Mar. 7, 1997, Ser. No. 812,580
Int. Cl.[6] H01L 31/02
U.S. Cl. 438—488 27 Claims



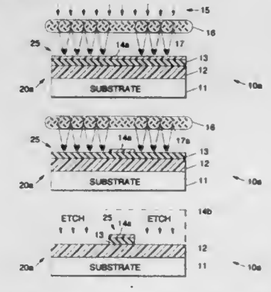
1. In forming a polycrystalline film from a microcrystalline film, a method comprising the steps of:
a) depositing a microcrystalline film including the following:
i) amorphous matter having a thickness of less than approximately 500 Å; and
ii) microcrystallites embedded in the amorphous matter, wherein the microcrystallites are crystals of the same material as the amorphous matter, the microcrystallites having a size generally in the range between 50 Å and 500 Å, and a microcrystallite density generally less than 10^{-8} cm^{-2}; and
b) annealing the film deposited in step a) to, at least partially, form a polycrystalline film, whereby the inclusion of embedded seed crystals in the amorphous matter encourages uniform crystal grains having a relatively large size.

5,827,774
ION IMPLANTATION METHOD USING TILTED ION BEAM
Hiroshi Kitajima, Tokyo, Japan, assignor to NEC Corporation, Japan
Filed Jun. 2, 1997, Ser. No. 867,146
Claims priority, application Japan, May 31, 1996, 8-138363
Int. Cl.[6] H01L 21/425
U.S. Cl. 438—525 13 Claims

1. An ion implantation method comprising steps of:
(a) preparing a semiconductor substrate with a (100)-oriented crystal surface;
(b) forming an elongated mask with a specific pattern on the surface of said substrate; and
(c) irradiating a beam of dopant ions to the surface of said substrate along a first direction, thereby selectively implanting said dopant ions into said substrate using said mask;
wherein said first direction has a first angle with a normal of the surface of said substrate in a plane perpendicular to a longitudinal axis of said mask, where said first angle is in the range from 7° C. to 60° C.;
and wherein said first direction has a second angle with a lateral axis of said mask in a plane parallel to the surface of said substrate, where said second angle is in the range from 5° C. to 20° C.;
and wherein said longitudinal axis of said mask is parallel to one of <011>directions or one of <0$\bar{1}$1> directions.



5,827,775
PHASE MASK LASER FABRICATION OF FINE PATTERN ELECTRONIC INTERCONNECT STRUCTURES
Robert S. Miles, Monrovia; Philip A. Trask, Laguna Hills, and Vincent A. Pillai, Irvine, all of Calif., assignors to Raytheon Comapny, Lexington, Mass.
Continuation of Ser. No. 710,069, Sep. 10, 1996, abandoned, which is a continuation of Ser. No. 436,045, May 5, 1995, abandoned, which is a continuation of Ser. No. 119,925, Sep. 10, 1993, abandoned. This application Nov. 12, 1997, Ser. No. 968,378
Int. Cl.[6] H01L 21/28
U.S. Cl. 438—622 15 Claims



1. A process for fabricating an interconnect structure, comprising the steps of:
providing a substrate;
forming a first layer of dielectric material on the substrate, wherein the first layer of dielectric material has a first thickness;
forming a metal layer on the first layer of dielectric material;
forming a second layer of dielectric material on the metal layer wherein the second layer of dielectric material has a second thickness that is less than about one-fifth of the first thickness of the first layer of dielectric material;
disposing a phase mask above the second layer of dielectric material that has a phase pattern therein defining a metal conductor pattern that corresponds to an interconnect structure;
irradiating the second layer of dielectric material through the phase mask using laser energy to selectively remove portions of the second layer of dielectric material and expose the metal layer to define the metal conductor pattern and to provide a dielectric etch mask;

using the dielectric etch mask to form the interconnect structure; and

forming a third layer of dielectric material on the dielectric etch mask wherein the third layer of dielectric material has a third thickness which is selected to provide a desired capacitance and wherein the second layer of dielectric material does not change said capacitance.

5,827,776

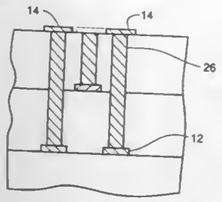
METHOD OF MAKING AN INTEGRATED CIRCUIT WHICH USES AN ETCH STOP FOR PRODUCING STAGGERED INTERCONNECT LINES

Basab Bandyopadhyay; H. Jim Fulford, Jr.; Robert Dawson; Fred N. Hause; Mark W. Michael, and William S. Brennan, all of Austin, Tex., assignors to Advanced Micro Devices, Inc.

Continuation of Ser. No. 683,176, Jul. 18, 1996, abandoned. This application Oct. 23, 1997, Ser. No. 959,106

Int. Cl.[6] H01L *21/4763*

U.S. Cl. 438—624 **14 Claims**



1. A method for forming a multilevel interconnect structure, comprising:

forming at least two first conductors spaced across a semiconductor topography;

depositing a first dielectric upon said first conductors;

forming an etch stop upon a portion of said first dielectric;

depositing a second dielectric upon said etch stop;

etching through said second dielectric directly above said etch stop to form a trench while simultaneously etching through said second and first dielectrics directly above said first conductors to form a pair of vias;

filling said trench and said vias with a plug material; and

forming at least two second conductors spaced across said second dielectric.

5,827,777

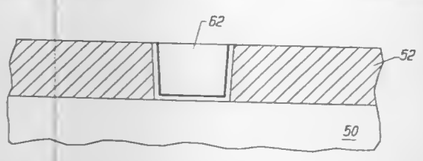
METHOD OF MAKING A BARRIER METAL TECHNOLOGY FOR TUNGSTEN PLUG INTERCONNECTION

Richard D. Schinella, Saratoga; Gobi R. Padmanabhan, Sunnyvale, and Joseph M. Zelayeta, Saratoga, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

Division of Ser. No. 378,027, Jan. 24, 1995, Pat. No. 5,600,182. This application Sep. 24, 1996, Ser. No. 718,852

Int. Cl.[6] H01L *21/4763*

U.S. Cl. 438—629 **28 Claims**



1. A method of forming a titanium nitride barrier layer in an integrated circuit device, comprising:

providing a first metal conducting layer having a top surface;

depositing a titanium layer on said first metal conducting layer, said titanium layer having a top surface;

forming a relatively thin titanium nitride layer in a range of 20 to 50 Angstroms thick on said titanium layer; and

providing a second metal conducting layer over said titanium nitride layer.

5,827,778

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE USING A SILICON FLUORIDE OXIDE FILM

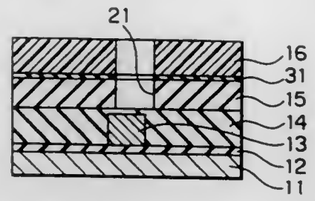
Yoshiaki Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 20, 1996, Ser. No. 753,095

Claims priority, application Japan, Nov. 28, 1995, 7-309108

Int. Cl.[6] H01L *21/283;21/285*

U.S. Cl. 438—637 **17 Claims**



1. A method of manufacturing a semiconductor device comprising forming an insulator film overlying a semiconductor substrate, forming a first layer interconnect pattern on the insulator film, forming a first interlayer insulating film containing silicon oxide on the first layer interconnect pattern, forming a second interlayer insulating film containing silicon fluoride oxide on the first interlayer insulating film, selectively etching the second interlayer insulating film to expose a part of the first interlayer insulating film by using a first gas containing fluorine in a first concentration, selectively etching the exposed part of the first interlayer insulating film to form a via-hole reaching the first layer interconnect pattern by using a second gas containing fluorine in a second concentration which is higher than the first concentration, and forming a second layer interconnect pattern connected with the first layer interconnect pattern via the via-hole.

5,827,779

METHOD OF MANUFACTURING SEMICONDUCTOR MIRROR WAFERS

Hisashi Masumura; Kiyoshi Suzuki, and Hideo Kudo, all of Fukushima-ken, Japan, assignors to Shin-Etsu Handotai Co. Ltd., Shiyoda-ku, Japan

Filed Jul. 19, 1996, Ser. No. 684,000

Claims priority, application Japan, Jul. 21, 1995, 7-207514; Jul. 15, 1996, 8-204311

Int. Cl.[6] H01L *21/44*

U.S. Cl. 438—691 **8 Claims**

1. A method of manufacturing semiconductor mirror wafers which comprises the steps of:

(a) forming wafers of thin disc shape by slicing a single crystal ingot;

(b) chamfering a peripheral edge portion of the sliced wafer;

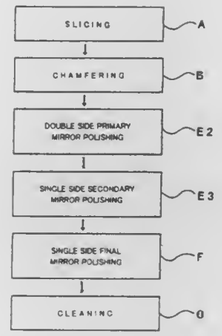
(c) double side primary mirror polishing of both the front and back sides of the chamfered wafer without preparation by lapping or etching prior to polishing; and

(d) single side final mirror polishing of the front side of the double side polished wafer.

2. A method of manufacturing semiconductor mirror wafers which comprises the steps of:

(a) forming wafers of thin disc shape by slicing a single crystal ingot;

(b) chamfering a peripheral edge portion of the sliced wafer;



(c) double side primary mirror polishing of both the front and back sides of the chamfered wafer without preparation by lapping or etching prior to polishing;

(d) single side secondary mirror polishing of the front side of the double side primary mirror polished wafer; and

(e) single side final mirror polishing of the front side of the single side secondary mirror polished wafer.

5,827,780

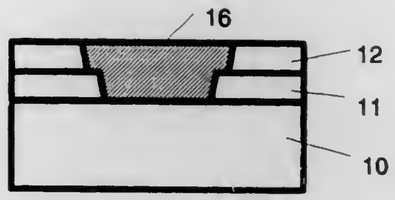
ADDITIVE METALIZATION USING PHOTOSENSITIVE POLYMER AS RIE MASK AND PART OF COMPOSITE INSULATOR

Liang Choo Hsia, 13th Floor, #9, Lane 30, Cheng Kung Road, Section 4, Taipei, Taiwan, and Thomas Tong Long Chang, 3474 Bonita Ave., Santa Clara, Calif. 95051

Continuation-in-part of Ser. No. 407,430, Mar. 17, 1995, Pat. No. 5,550,166. This application Apr. 1, 1996, Ser. No. 626,111

Int. Cl.[6] H01L *21/465;* **G03C** *5/00*

U.S. Cl. 438—692 **16 Claims**



9. A method of fabricating an integrated circuit having a semiconductor substrate covered with a first insulating layer, comprising the steps of:

coating over said first insulating layer a second insulating layer of photosensitive polymer, which is resistant to reactive ion etching when cured,

patterning said photosensitive polymer using a mask,

curing said photosensitive polymer,

etching said first insulating layer using said photosensitive polymer as a mask to form a trench,

without removing said photosensitive polymer, depositing a metal to form said trench to form a contact with said substrate,

removing any excess metal deposited said trench and planarizing the surface of said photosensitive polymer, and

metalizing said surface for interconnection and patterning said interconnection with said reactive ion etching without affecting the integrity of said first insulating layer with protection from said photosensitive polymer.

5,827,781

PLANARIZATION SLURRY INCLUDING A DISPERSANT AND METHOD OF USING SAME

John Skrovan, and Karl M. Robinson, both of Boise, Id., assignors to Micron Technology, Inc., Boise, Id.

Filed Jul. 17, 1996, Ser. No. 682,147

Int. Cl.[6] C09K *13/00*

U.S. Cl. 438—692 **25 Claims**

1. A planarization method comprising the steps of:

providing a wafer surface;

positioning a pad for contact with the wafer surface; and

planarizing the wafer surface using the pad and a slurry, the slurry including a dispersant, the dispersant being one of any micellar forming surfactants selected from diphosphonic acids with 4 or less carbon atoms connecting the acid groups.

5,827,782

MULTIPLE ETCH METHOD FOR OPTIMIZING INTER-METAL DIELECTRIC (IMD) SPACER LAYER PROFILE

Tsu Shih, Chawa, Taiwan, assignor to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan

Filed Jun. 3, 1996, Ser. No. 657,069

Int. Cl.[6] H01L *21/469;21/302;21/465*

U.S. Cl. 438—697 **22 Claims**

1. A method for forming an Inter-Metal Dielectric (IMD) spacer layer comprising:

providing a semiconductor substrate having formed thereupon a patterned layer, the patterned layer having a first aperture formed therein;

forming upon the patterned layer and into the first aperture a conformal Inter-Metal Dielectric (IMD) layer, the conformal Inter-Metal Dielectric (IMD) layer having a second aperture formed therein where the conformal Inter-Metal Dielectric (IMD) layer is formed into the first aperture;

forming upon the Inter-Metal Dielectric (IMD) layer and filling the second aperture a planarizing Spin-On-Glass layer;

etching then selectively and isotropically through a selective and isotropic etch the planarizing Spin-On-Glass layer to leave remaining a Spin-On-Glass layer residue within the second aperture;

etching then non-selectively and anisotropically through a non-selective and anisotropic etch the Spin-On-Glass layer residue and the conformal Inter-Metal Dielectric (IMD) layer to leave remaining an Inter-Metai Dielectric (IMD) spacer layer adjoining the patterned layer.

5,827,783

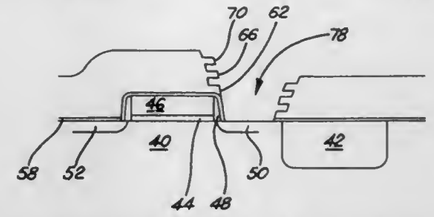
STACKED CAPACITOR HAVING IMPROVED CHARGE STORAGE CAPACITY

Liang-Choo Hsia, Taipei, and Thomas Chang, Hsin-Chu, both of Taiwan, assignors to Mosel Vitelic, Inc., Hsinchu, Taiwan

Filed Aug. 23, 1996, Ser. No. 697,443

Int. Cl.[6] H01L *21/465*

U.S. Cl. 438—735 **15 Claims**



1. A method of fabricating a stacked capacitor having improved charge storage capacity wherein the capacitor is formed adjacent to a trench isolation in a semiconductor device comprising the steps of:

providing a substrate of a semiconducting material,

forming a gate on and a trench isolation in the surface of the substrate,

depositing a plurality of silicon dioxide layers overlying the gate and the trench isolation by a deposition method alternating between a thermal chemical vapor deposition (CVD) technique and a plasma CVD technique,

etching through said plurality of silicon dioxide layers to form a capacitor cell contact between the gate and the shallow trench isolation to expose edges of said silicon dioxide layers by a first etchant which has no selectivity between said thermal CVD silicon dioxide layers and said plasma CVD silicon dioxide layers,

etching said exposed edges of said silicon dioxide layers by a second etchant which has sufficient etch selectivity between said thermal CVD silicon dioxide layers and said plasma CVD silicon dioxide layers such that a corrugated side-wall is formed in said capacitor cell after said etching step, and

depositing semiconducting and insulating layers in said capacitor to form said capacitor.

5,827,784

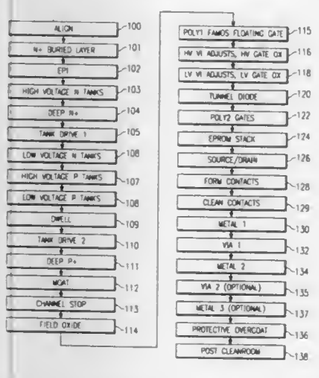
METHOD FOR IMPROVING CONTACT OPENINGS DURING THE MANUFACTURE OF AN INTEGRATED CIRCUIT

Peter J. Loos, Missouri City, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 11, 1996, Ser. No. 763,863

Int. Cl.[6] B08B *3/08;* **C25D** *3/30;* **H01L** *21/311*

U.S. Cl. 438—750 **12 Claims**



1. A method for manufacturing an integrated circuit, comprising the steps of:

providing a semiconductive substrate having a plurality of regions which have been doped to increase conductivity, said substrate being overlaid with a layer of insulative material;

forming at least one contact opening having sidewalls in the insulative layer to expose a contact region on a top surface of at least one of the doped regions of the substrate; and

cleaning the contact opening and contact region after the step of forming the contact opening with a sequential application of two different aqueous etchants.

5,827,785

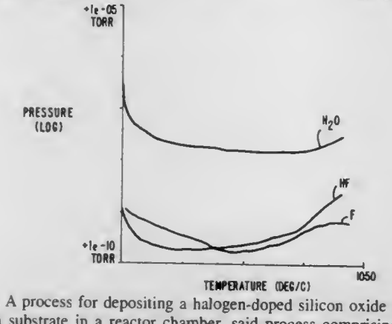
METHOD FOR IMPROVING FILM STABILITY OF FLUOROSILICATE GLASS FILMS

Mohan Krishan Bhan, Cupertino; Sudhakar Subrahmanyam, Sunnyvale; Anand Gupta, San Jose, and Virendra V. S. Rana, Los Gatos, all of Calif., assignors to Applied Materials, Inc., Santa Clara, Calif.

Filed Oct. 24, 1996, Ser. No. 736,555

Int. Cl.[6] H01L *21/316*

U.S. Cl. 438—784 **29 Claims**



1. A process for depositing a halogen-doped silicon oxide layer on a substrate in a reactor chamber, said process comprising the steps of:

introducing, into said chamber, a process gas including a silicon-halide source, a halogen source different from said silicon-halide source, a silicon source and an oxygen source, said process gas having a greater quantity of said silicon-halide source than said halogen source wherein a ratio of said halogen source and said silicon halide source in is between about 0.0125 and 0.5:1, inclusive; and

forming a plasma from said process gas to deposit said halogen-doped layer over said substrate.

5,827,786

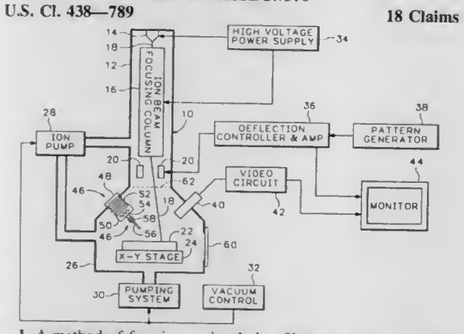
CHARGED PARTICLE DEPOSITION OF ELECTRICALLY INSULATING FILMS

Joseph Puretz, Beaverton, Oreg., assignor to FEI Company, Hillsboro, Oreg.

Continuation of Ser. No. 267,189, Jun. 28, 1994, abandoned. This application Apr. 28, 1997, Ser. No. 853,229

Int. Cl.[6] H01L *21/316*

U.S. Cl. 438—789 **18 Claims**



1. A method of forming an insulating film upon a select region of a sample comprising the steps of:

providing a gaseous vapor consists essentially of a compound including principal elements for the desired insulating film, wherein the desired insulating film is a silicon oxide film and said compound consists of a single compound selected from the group consisting of tetrabutoxysilane, $Si(OC_4H_9)_4$, tetramethoxysilane, $Si(OCH_3)_4$ and tetrapropoxysilane, $Si(OC_3H_7)_4$;

directing said gaseous vapor over the select region of the sample for depositing said compound thereon; and

directing a charged particle beam toward the select region of the sample for decomposing said compound to provide an insulating film comprising said elements upon said select region of the sample and wherein said charged particle beam is comprised of a noninsulating compound that has properties of a contaminant in the insulating film.

5,827,787

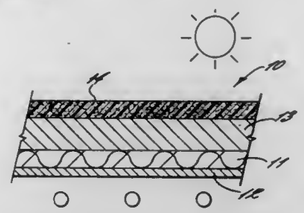
DECORATIVE WEATHERABLE FABRIC

William Wilson White, Mooresville, N.C., assignor to John Boyle & Company, Inc., Statesville, N.C.

Filed Dec. 18, 1996, Ser. No. 769,709

Int. Cl.[6] B32B *7/00*

U.S. Cl. 442—38 **31 Claims**



1. A decorative and translucent weatherable fabric for covering outdoor structures of the type which may be backlit, said fabric comprising:

a reinforcing scrim layer;

a translucent inner protective layer on one side of said reinforcing scrim layer, said layer being formed of a water resistant polymer;

a translucent polymeric substrate layer on the opposite side of said reinforcing scrim layer;

an outer transparent layer adhered to said substrate layer on the side of said substrate layer opposite said reinforcing scrim layer, said transparent layer including UV-absorbing additives for absorbing UV rays and protecting said substrate layer; and

a pigmented decorative film overlying at least portions of said transparent layer in a predetermined graphical pattern.

5,827,788

RECOATABLE DECORATIVE SHEET AND RECOATABLE DECORATIVE MATERIAL

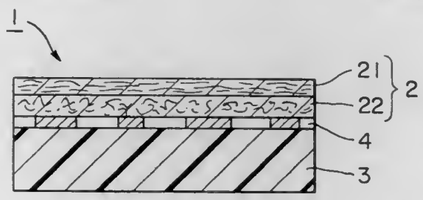
Mitsutoyo Miyakoshi, Tokyo-To, Japan, assignor to Dai Nippon Printing Co., Ltd., Japan

Filed Sep. 13, 1996, Ser. No. 716,717

Claims priority, application Japan, Sep. 20, 1995, 7-264618; Jan. 22, 1996, 8-027254; Jul. 26, 1996, 8-215407

Int. Cl.[6] B32B *21/00;3/00*

U.S. Cl. 442—164 **9 Claims**



1. A recoatable decorative sheet comprising: a recoat layer provided on a surface thereof, said recoat layer comprising a laminate of an oriented nonwoven fabric and a nonoriented nonwoven fabric.

5,827,789

LEAD-FREE GLASS COMPOSITION AND THE USE THEREOF

Gerhard Tünker, Offenbach, and Hildegard Paulus, Frankfurt, both of Germany, assignors to Cerdec Aktiengesellschaft Keramische Farben, Frankfurt, Germany

Continuation of Ser. No. 592,636, Jan. 26, 1996, abandoned. This application Aug. 29, 1997, Ser. No. 920,900

Claims priority, application Germany, Jan. 28, 1995, 195 02 653.5

Int. Cl.[6] C03C *8/14*

U.S. Cl. 501—17 **8 Claims**

1. A glass frit formed from a glass composition consisting essentially of (in mol-%)

K_2O	10–17
B_2O_3	10–25
TiO_2	15–30
SiO_2	35–55
Al_2O_3	0–5
Bi_2O_3	0–5
S	0–3

and optionally containing at least one metal oxide from the group consisting of PbO, CdO, ZnO, Li_2O, Na_2O, MgO, CaO, SrO, BaO and P_2O_5 said oxide or oxides being present in a quantity of less than 0.5 wt-% in each case, said frit having a minimum melting-temperature T_s during a 4-minute stoving of less than 640° C.

5,827,790

UNLEADED TRANSPARENT VITREOUS GLASS COMPOSITION AND ARTICLES

Philip A. Evans; Paul Harrison, both of Leeds, and Rolf A. Wirtz, Gerrards Cross, all of Great Britain, assignors to Proceram, Buckinghamshire, Great Britain

Continuation of Ser. No. 689,345, Aug. 8, 1996, abandoned, which is a continuation of Ser. No. 495,573, Aug. 4, 1995, abandoned. This application Oct. 3, 1997, Ser. No. 943,196

Claims priority, application United Kingdom, Feb. 13, 1993, 9302927

Int. Cl.[6] C03C *3/091*

U.S. Cl. 501—66 **15 Claims**

1. An unleaded durable transparent vitreous glass composition consisting of a combination of

(a) a low alumina alkali borosilicate consisting of:

40 to 69 wt % silica (SiO_2),

10 to 30 wt % boric oxide (B_2O_3),

0.5 to 6.0 wt % aluminium oxide (Al_2O_3),

0.5 to 6.0 wt % calcium oxide (CaO),

10 to 30 wt % sodium oxide (Na_2O) and potassium oxide (K_2O), of mixtures thereof

0.1 to 2.0 wt % lithium oxide (Li_2O),

based on the total amount of the low alumina alkali borosilicate,

(b) 2–20 wt % of a major addition of one element selected from the group consisting of zirconium, tin and titanium, and

(c) less than 10 wt % of at least one element selected from the group consisting of bismuth, barium, strontium, zinc, lanthanum, molybdenum and cerium wherein the amounts of (a), (b) and (c) are calculated on the basis of the total amount of the oxide forms of (a), (b) and (c).

5,827,791

FACECOAT CERAMIC SLURRY AND METHODS FOR USE THEREOF IN MOLD FABRICATION AND CASTING

Thomas A. Pauliny, Salem; Robert K. Mattson, and Thomas Teramura, both of Albany, all of Oreg., assignors to Titanium Metals Corporation, Denver, Colo.

Filed Sep. 12, 1997, Ser. No. 928,850
Int. Cl.[6] C04B *35/48*
U.S. Cl. 501—105 12 Claims

1. A refractory composition comprising, in weight percent, a fused, solid solution of at least 50 yttria, 1 to 49 alumina and 1 to 49 zirconia.

5,827,792

DIELECTRIC CERAMIC COMPOSITION

Koichi Fukuda; Masataka Fujinaga; Atsuyuki Mitani; Masatoshi Takeda, and Shinichi Ishitobi, all of Yamaguchi, Japan, assignors to UBE Industries, Ltd., Ube, Japan

Filed Aug. 29, 1995, Ser. No. 520,580
Claims priority, application Japan, Aug. 30, 1994, 6-205326; Dec. 12, 1994, 6-307357; Dec. 12, 1994, 6-307358; Dec. 13, 1994, 6-308805
Int. Cl.[6] C04B *35/46*
U.S. Cl. 501—138 18 Claims

1. A dielectric ceramic composition mainly comprising a major component which comprises barium, titanium, neodymium, samarium and oxygen and is represented by the following compositional formula:

$$xBaO\text{-}yTiO_2\text{-}zNd_2O_3\text{-}tSm_2O_3 \quad (1)$$

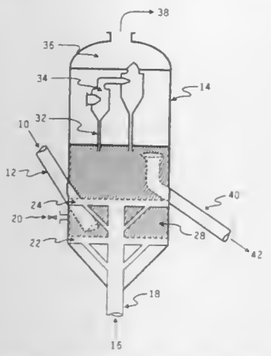
(wherein $0.1 \leqq x \leqq 0.2$; $0.5 \leqq y \leqq 0.8$; $0.01 \leqq z \leqq 0.2$; $0 \leqq t \leqq 0.2$, provided that $x+y+z+t=1$); and a minor component mainly comprised of glass powder and GeO_2, said glass powder comprising PbO, ZnO, and B_2O_3 and present within a range of 1–25% by weight, said GeO_2 present in a range of 0.5–10% by weight based on the weight of the major component.

5,827,793

CONTROLLED FCC CATALYST REGENERATION USING A DISTRIBUTED AIR SYSTEM

Albert Y. Hu, Baton Rouge, La., assignor to Exxon Research and Engineering Company, Florham Park, N.J.

Filed Apr. 11, 1996, Ser. No. 634,494
Int. Cl.[6] B01J *38/30;38/12*
U.S. Cl. 502—41 5 Claims



1. A process for regenerating spent catalyst from a fluidized catalytic cracker containing a stripper which catalyst has been contaminated by deposition of vanadium, nickel and coke thereon which comprises:

(a) conducting stripped spent catalyst from the stripper of the fluid catalytic cracker to a regenerator vessel to form a dense bed of spent catalyst particles in said regenerator;

(b) injecting an oxygen containing gas into a lower portion of said dense bed at a rate effective to maintain the spent catalyst particles in a fluidized state provided that the oxygen containing gas is distributed in at least two gas distribution grids, said grids being located in the bottom 50% of the dense bed of catalyst particles and separated by an amount effective to maintain net reducing conditions in at least the bottom 50% of the dense bed of fluidized spent catalyst particles;

(c) maintaining the dense bed of fluidized spent catalyst particles under regeneration conditions including a temperature of from about 600° to 760° C.; and

(d) removing regenerated catalyst from the regenerator vessel and recycling regenerated catalyst to the fluidized catalytic cracker.

5,827,794

SUPPORTED HIGHLY-POLAR LIQUID PHASE CHIRAL SULFONATED BINAP CATALYST FOR ASYMMETRIC SYNTHESIS OF OPTICALLY ACTIVE COMPOUNDS

Mark E. Davis, and Kam To Wan, both of Pasadena, Calif., assignors to California Institute of Technology, Pasadena, Calif.

Continuation of Ser. No. 199,086, Feb. 22, 1994, abandoned. This application Sep. 28, 1995, Ser. No. 535,784
Int. Cl.[6] B01J *31/24*
U.S. Cl. 502—162 12 Claims

1. A supported highly-polar liquid-phase catalyst comprising an organometallic compound which comprises a metal and an enantiomerically pure chiral sulfonated 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl,

wherein each phenyl group of the chiral sulfonated 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl is monosulfonated, and

wherein the degree to which the chiral sulfonated 2,2'-bis(diphenylphosphino)-1,1'-binaphthyl is sulfonated is selected from the group consisting of tetrasulfonated, pentasulfonated, and hexasulfonated.

5,827,795

CO-IMPREGNANT PROCESS FOR MAKING CATALYTIC CARBONS

Thomas M. Matviya, and Richard A. Hayden, both of Pittsburgh, Pa., assignors to Calgon Carbon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 342,817, Nov. 21, 1994. This application Nov. 27, 1996, Ser. No. 757,212
Int. Cl.[6] B01J *21/18*
U.S. Cl. 502—180 10 Claims

1. A process for the manufacture of a catalytically-active carbonaceous char containing no added metals supported thereon which comprises the steps of:

a. carbonizing a bituminous material at temperatures below 700° C., said bituminous material selected from the group consisting of (i) bituminous coals, (ii) anthracite or semi-anthracite coals or bitumens chemically treated with alkali metals, and (iii) sub-bituminous coals, bitumens, peat, lignite or lignocellulose materials chemically treated with acids or metal salts;

b. oxidizing said carbonized bituminous material at temperatures below 700° C. during or after said carbonization; and

c. when said alkali metals or said metal salts which may have been added prior to step (a) have been removed either before, during or after said carbonizing and said oxidizing, contacting the carbonized and oxidized bituminous material with a nitrogen-containing compound and an organic aliphatic ether-alcohol compound and, during or after said contacting, increasing the temperature minimally to 700° C.

5,827,796

THERMAL RECORDING MATERIAL

Ken Iwakura, Kanagawa; Takekatsu Sugiyama, Shizuoka; Masato Satomura, Kanagawa, and Akira Igarashi, Shizuoka, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Aug. 30, 1985, Ser. No. 771,074
Int. Cl.[6] B41M *5/30*
U.S. Cl. 503—209 5 Claims

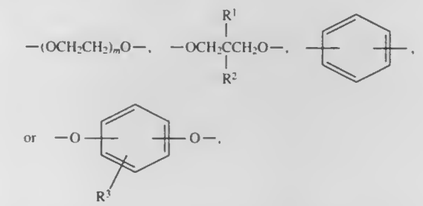
1. A thermal recording material comprising a support having thereon at least one layer containing an electron donating colorless dye, an electron accepting compound and a diaryloxyalkane derivative represented by the following general formula (I) to (III)

$$Ar^1O(CH_2)_nOAr^2 \quad (I)$$

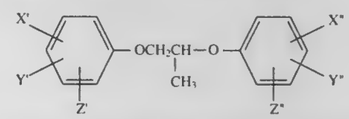
$$Ar^2O\text{—}W\text{—}OAr^3 \quad (II)$$

$$Ar^2OR\text{—}X\text{—}ROAr^3 \quad (III)$$

wherein Ar^1 represents an aryl group having at least one substituent selected from the group consisting of an alkoxyl group containing 2 or more carbon atoms, an aryloxycarbonyl group, an alkenyl group containing 2 or more carbon atoms, an acyloxyl group containing 2 or more carbon atoms, a fluorine atom, a carboxyl group, an alkylenedioxy group and a cycloalkyl group; Ar^2 and Ar^3 each represents a substituted or unsubstituted aryl group the substitutent thereof being selected from the group consisting of an alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, a halogen atom, an acyl group, an acyloxyl group, an alkoxyl group, a thioalkoxyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, an aryloxyl group, a cyano group, a hydroxyl group, a carboxyl group, an aryl group, an alkylenedioxy group and an aralkyl group and Ar^2 and Ar^3 are the same or different; R represents a divalent group containing from 1 to 6 carbon atoms: X represents —S—, —OCH_2—,



wherein R^1 and R^2 each represents a hydrogen atom, a halogen atom, a hydroxyl group, an alkoxyl group, an acyloxyl group or a lower alkyl group and R^1 and R^2 are the same or different; R^3 represents a hydrogen atom a lower alkyl group, a lower alkoxyl group or a halogen atom; and m is an integer of 1 or 2; W represents a branched alkylene group, and n is an integer of from 1 to 10; wherein the diaryloxyalkane derivative is a compound represented by formula (V)



(V)

wherein X', Y', Z', X", Y" and Z" each represents a hydrogen atom, an alkyl group, an alkenyl group, a cycloalkyl group, a cycloalkenyl group, a halogen atom, an acyl group, an acyloxyl group, a thioalkoxyl group, an alkoxycarbonyl group, an aryloxyl group, a cyano group, a hydroxyl group, a carboxyl group, an aryl group, an alkylene dioxy group, or an aralkyl group and X', Y', Z', X", Y" and Z" are the same or different, or at least two of X', Y', Z', X", Y" and Z" form a 5- or 6-membered ring by a combination of adjacent groups thereof.

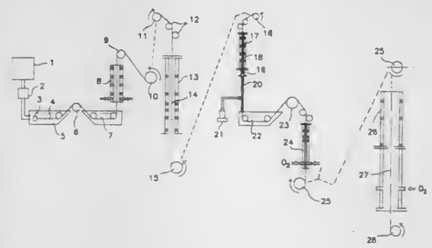
179-298 OG-98-18 - QL3

5,827,797

METHOD FOR PRODUCING REFRACTORY FILAMENTS

Richard B. Cass, 24 Dutch La., Ringoes, N.J. 08551; Roland R. Loh, 1226 Pembroke Rd., Newark, Ohio 43055-1654, and Thomas C. Allen, 35 Meadow Ridge, Social Circle, Ga. 30279

Continuation-in-part of Ser. No. 470,291, Jun. 6, 1995, abandoned, which is a continuation-in-part of Ser. No. 197,673, Feb. 17, 1994, abandoned, which is a continuation of Ser. No. 914,996, Jul. 16, 1992, abandoned, which is a continuation of Ser. No. 580,132, Sep. 10, 1990, abandoned, which is a continuation-in-part of Ser. No. 398,895, Aug. 28, 1989, abandoned. This application Aug. 30, 1996, Ser. No. 707,170
Int. Cl.[6] H01L *39/24;* B05B *3/00;* B29C *35/02*
U.S. Cl. 505—430 48 Claims



1. A process of producing at least one filament of refractory material, comprising:

preparing a dispersion of particles of refractory material;

preparing a spin mix by mixing said dispersion with a carrier solution comprising a salt of cellulose xanthate, wherein the weight ratio of said particles to cellulose of said cellulose xanthate in said spin mix is greater than about 2:8;

wet spinning said spin mix to form at least one filament of cellulose having at least a portion of said particles dispersed therein;

heating said at least one filament to sufficient temperatures and over sufficient durations to remove substantially all of said regenerated cellulose and to sinter said refractory particles to thereby form said at least one filament of refractory material.

5,827,798

METHOD FOR PRODUCTION OF SUPERCONDUCTING POLYCRYSTALLINE WIRE ROD

Ichiro Matsubara, Minoo; Ryoji Funahashi, Kobe; Kazuo Ueno, and Hiroshi Ishikawa, both of Ikeda, all of Japan, assignors to Agency of Industrial Science and Technology, and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Jun. 11, 1997, Ser. No. 873,084
Claims priority, application Japan, Jun. 14, 1996, 8-175828
Int. Cl.[6] H01L *39/24*
U.S. Cl. 505—430 4 Claims

1. A method for the production of a superconducting polycrystalline wire rod having all the crystal (a, b, c) axes thereof aligned, consisting essentially of:

suspending a plurality of superconducting whiskers of a composition of $Bi_2Sr_2CaCU2Cu_2O_8$ (Bi-2212 phase) in an organic solvent,

placing said organic solvent suspending said whiskers therein in a container which is a glass tube or a silver tube of a diameter smaller than the length of said whiskers,

removing said organic solvent therefrom and consequently obtaining a preform consisting of said superconducting whiskers whose fiber axes are oriented in one direction,

press forming said preform, and

heat-treating the resultant preform.

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5,827,799

COMPOUNDS AND HERBICIDES CONTAINING SAME AS ACTIVE COMPONENTS

Kiyoshi Arai, Chiba-ken; Fumiaki Koizumi, Fukuoka-ken; Hiroyuki Suzuki, Chiba-ken; Takeshi Kakimoto, Chiba-ken, and Sadafumi Koda, Chiba-ken, all of Japan, assignors to Mitsui Chemicals, Inc., Tokyo, Japan

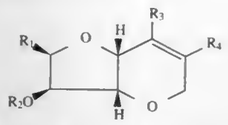
Filed Jul. 19, 1996, Ser. No. 684,231

Claims priority, application Japan, Jul. 28, 1995, 7-192784

Int. Cl.[6] C07D *491/00;495/00;333/74;333/76*

U.S. Cl. 504—245 **5 Claims**

1. Ether compounds of the formula (I)

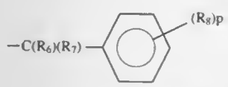


(I)

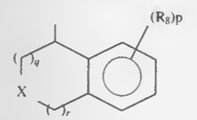
in which R_1 is a lower alkyl group and R_2 is a group selected from formulae (II)–(XI)



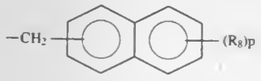
(II)



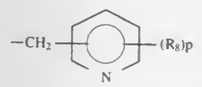
(III)



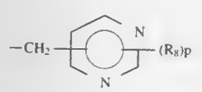
(IV)



(V)



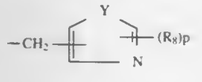
(VI)



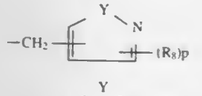
(VII)



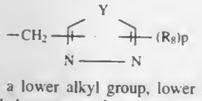
(VIII)



(IX)



(X)



(XI)

(in which R_5 is a lower alkyl group, lower alkoxy group, lower acyloxy group, halogen atom, lower alkyl group substituted by a halogen atom, lower alkoxy group substituted by a halogen atom or lower alkylthio group, R_6 is a hydrogen atom or lower alkyl group, R_7 is a lower alkyl group, R_8 is a lower alkyl group, lower alkoxy group, lower acyloxy group, lower alkylthio group, halogen atom, lower alkyl group substituted by a halogen atom or lower alkoxy group substituted by a halogen atom, X is a methylene group, oxygen atom, sulfur atom, or nitrogen atom (which may be substituted by a lower alkyl group or lower acyl group) or may form a double bond with an adjacent carbon atom, Y is an oxygen atom, sulfur atom or nitrogen atom (which may be substituted by a lower alkyl group or lower acyl group), n is any integer between 0 and 5, p is any integer between 0 and 3, each R_5 and R_8 may be the same or different when n and p are 2 or more, q is 0 or 1, r is any integer between 0 and 2, the sum of q and r is 0, 1 or 2 and X is a methylene group when both r and q are 0) R_3 and R_4 together form an unsaturated five- or six-membered ring containing 1 or 2 hetero atoms (which may be substituted by a lower alkyl group, lower alkoxy group, lower acyloxy group, lower alkylthio group, halogen atom, lower alkyl group substituted by a halogen atom or lower alkoxy group substituted by a halogen atom).

5,827,800

ALKYL SULPHINYL AND ALKYL SULPHONYL-1,2,4-THIADIAZOLYLOXY ACETAMIDES AND THEIR USE AS HERBICIDES

Heinz Förster, Kadenbach; Hans-Joachim Santel, and Markus Dollinger, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

PCT No. PCT/EP95/01472, § 371 Date Oct. 25, 1996, § 102(e) Date Oct. 25, 1996, PCT Pub. No. WO95/29990, PCT Pub. Date Nov. 9, 1995

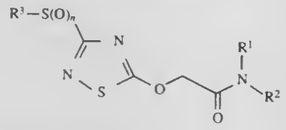
PCT Filed Apr. 19, 1995, Ser. No. 732,239

Claims priority, application Germany, May 2, 1994, 44 15 338.4

Int. Cl.[6] C07D *285/08;* **A01N** *43/836*

U.S. Cl. 504—262 **6 Claims**

1. An alkylsulphinyl- or alkylsulphonyl-1,2,4-thiadiazolyloxyacetamide of the formula



(I)

in which

n represents the numbers 1 or 2,

R^1 represents hydrogen or C_1–C_8-alkyl (which is optionally substituted by fluorine, chlorine, cyano or C_1–C_4-alkoxy), represents C_2–C_8-alkenyl (which is optionally substituted by fluorine and/or chlorine), represents C_2–C_8-alkinyl or represents benzyl,

R^2 represents C_1–C_8-alkyl optionally substituted by fluorine chlorine, cyano or C_1–C_4-alkoxy, or C_2–C_8-alkenyl optionally substituted by fluorine or chlorine, represents C_2–C_8-alkinyl, represents C_3–C_6-cycloalkyl optionally substituted by chlorine or C_1–C_3-alkyl, represents C_5- or C_6-cycloalkenyl, represents benzyl optionally substituted by fluorine, chlorine or C_1–C_4-alkyl, represents C_1–C_8-alkoxy optionally substituted by C_1–C_4-alkoxy, or represents C_3–C_4-alkenyloxy, or

R^1 and R^2, together with the nitrogen atom to which they are bonded, form a saturated or unsaturated, five- to seven-membered nitrogen heterocycle which is optionally substituted once to three times by C_1–C_3-alkyl and which is optionally benzo fused, and

R^3 represents C_2–C_4-alkyl optionally substituted by fluorine, chlorine, bromine, cyano, C_1–C_4-alkoxy, dioxolanyl or dioxanyl or represents phenyl or phenyl-C_1–C_2-alkyl which are in each case optionally substituted by fluorine, chlorine, bromine, cyano, nitro, C_1–C_4-alkyl or C_1–C_4-alkoxy.

5,827,801

OXIDE SUPERCONDUCTIVE WIRE AND PROCESS FOR MANUFACUTRING THE SAME

Yoshiaki Tanaka, Ibaraki; Tomoyuki Yanagiya, Fujisawa; Fumiaki Matsumoto, Kashiwa; Masao Fukutomi, Abiko; Toshihisa Asano, Tsukuba; Kazunori Komori, Tsukuba, and Hiroshi Maeda, Tsukuba, all of Japan, assignors to Sumitomo Heavy Industries, Ltd., Tokyo, and National Research Institute for Metals, Ibaraki, both of Japan

Division of Ser. No. 170,959, Dec. 21, 1993, Pat. No. 5,663,528. This application May 15, 1997, Ser. No. 856,702

Claims priority, application Japan, Dec. 22, 1992, 4-356760

Int. Cl.[6] B32B *9/00*

U.S. Cl. 505—230 **2 Claims**

COMPONENTS OF BASE ALLOY MATERIAL	AFTER MOS PROCESSING	AFTER ANNEALING
PURE Ag	100	70
Ag–0.6at%LTY	130	100
Ag–7at%Cu–3at%Al	180	130
Ag–7at%Cu–3at%Sn	100	120
Ag–7at%Cu–3at%Au	125	100
Ag–0.2at%Zr	130	100
Ag–0.2at%Mg	130	110
Ag–0.6at%Ti	135	105

1. A clad oxide superconductive wire or tape comprising an oxide superconductive material and a base, wherein said base is a silver-copper alloy containing copper in amounts of from 0.05 to 90 atomic % and Au in amounts of from 0.01 to 10 atomic %.

5,827,802

METHOD OF DEPOSITING MONOMOLECULAR LAYERS

Michel Lagues, Fontenay-Aux-Roses, France, assignor to Ufinnova, Paris, France

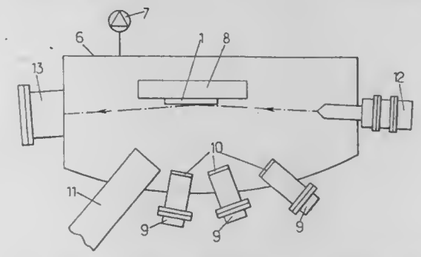
PCT No. PCT/FR94/01321, § 371 Date Jul. 8, 1996, § 102(e) Date Jul. 8, 1996, PCT Pub. No. WO95/13409, PCT Pub. Date May 18, 1995

PCT Filed Nov. 10, 1994, Ser. No. 640,815

Claims priority, application France, Nov. 12, 1993, 93 13511

Int. Cl.[6] H01L *39/24*

U.S. Cl. 505—473 **4 Claims**



1. A method of vacuum depositing on a host surface, a superconducting material comprising a plurality of mutually superposed monomolecular layers, wherein adjacent monomolecular layers of said plurality of monomolecular layers have different chemical compositions and are deposited successively one after the other, each of said monomolecular layers comprising oxygen and at least one element chosen from the group consisting of:

Ca, Cu, Bi, Tl, Hg, Sr, and the lanthanide series,

said method including the steps of heating the host surface to a predetermined temperature below 660° C. and vacuum evaporating said at least one element in order to deposit each of said monomolecular layers on the host surface, while incorporating oxygen in each of said monomolecular layers by creating a local atomic oxygen pressure between 10^{-5} and 10 Pa and a local molecular oxygen pressure between 10^{-4} and 100 Pa in the vicinity of the host surface, the total atomic flux of said at least one element arriving on said host surface being between 10^{12} and 10^{15} atoms/cm.s, wherein the deposition of each of said monomolecular layers is monitored in real time by reflection high-energy electron diffraction, while measuring the intensity of the electron diffraction lines, and stopping the vacuum evaporation of said at least one element when the complete deposition of each of said monomolecular layers is detected, said complete deposition of each of the monomolecular layers being detected when said intensity reaches a second extremum after passing through a first extremum during the deposition of each of said monomolecular layers.

5,827,803

WELL TREATMENT FLUID

Dwight N. Loree, 758 Woodpark Rd. SW., Calgary, Alberta, Canada

Filed May 7, 1997, Ser. No. 852,384

Int. Cl.[6] C09K *7/06*

U.S. Cl. 507—137 **21 Claims**

1. A well treatment fluid, comprising:

a mixture of (A) a major amount of a first hydrocarbon fluid, the first hydrocarbon fluid being composed predominantly of polycyclic aromatics having more than 16 carbon atoms, and (B) a minor amount of a second hydrocarbon fluid, the second hydrocarbon fluid being composed predominantly of hydrocarbons having from 7 to 12 carbon atoms; and

wherein the mixture has a density greater than 1000 kg/m^3 at 15° C. and a viscosity lower than 30 centiStokes at 20° C.

5,827,804

BORATE CROSS-LINKED WELL TREATING FLUIDS AND METHODS

Phillip C. Harris, 2002 Woodrock Dr.; Michael A. McCabe, 1902 Windsor Dr.; Lewis R. Norman, 3408 W. Elk; Ronald J. Powell, 2612 Mantin La., all of Duncan, Okla. 73533; Chris E. Shuchart, 1821 Danfield Dr., Norman, Okla. 73073; Billy F. Slabaugh, Rt. #2, 485A, Marlow, Okla. 73055; John M. Terracina, 1004 Oakview Dr., Duncan, Okla. 73533, and Joseph G. Yaritz, Rt. #2, Box 301, Marlow, Okla. 73055

Filed Apr. 4, 1997, Ser. No. 832,886

Int. Cl.[6] C09K *7/00;* **F21B** *43/17*

U.S. Cl. 507—273 **15 Claims**

1. A method of fracturing a subterranean formation comprising:

hydrating a galactomannan gelling agent in water to form a gelled aqueous fluid;

admixing said gelled aqueous fluid with a buffering and crosslinking composition consisting essentially of from about 1 to about 13% by weight of the composition of an alkanolamine or alkylamine, from about 26 to about 82% by weight of the composition of boron (calculated as boric acid) and from about 5 to about 73% by weight of the composition of water and an optional freezing point depressant whereby said gelled aqueous fluid is caused to be buffered to a pH in the range of from about 8.4 to about 9 without the need for additional buffering agents and subsequently crosslinked by the borate ion present;

introducing said buffered crosslinker-containing gelled fluid into a subterranean formation at a rate and pressure whereby fractures are formed in the subterranean formation;

introducing a propping agent into said fractures suspended in said buffered crosslinker-containing gelled fluid; and

depositing, at least a portion of said propping agent in said created fractures.

5,827,805

CONDENSATES OF ALKYL PHENOLS AND GLYOXAL AND PRODUCTS DERIVED THEREFROM

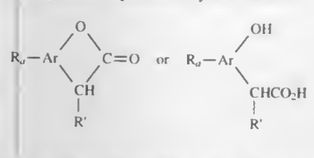
Paul E. Adams, Willoughby Hills; Bryan A. Grisso, Wickliffe, and Mark R. Baker, Lyndhurst, all of Ohio, assignors to The Lubrizol Coproration, Wickliffe, Ohio

Filed Feb. 29, 1996, Ser. No. 609,568

Int. Cl.[6] C10M *129/00;* **C10L** *1/18*

U.S. Cl. 508—198 **76 Claims**

1. A composition represented by the structure



where Ar represents an aromatic group, each R is independently a hydrocarbyl or substituted hydrocarbyl group, at least one R having more than 12 carbon atoms, a is 1 to 4, and R' is hydrogen or an alkyl group containing up to 4 carbon atoms.

5,827,806

PREPARATION OF SULFURIZED PHENOL ADDITIVES INTERMEDIATES AND COMPOSITIONS

Philip Skinner; Dennis John Simpkin, and David Robert Adams, all of Oxfordshire, United Kingdom, assignors to Exxon Chemical Patents, Inc., Wilmington, Del.

PCT No. PCT/EP95/03055, § 371 Date Jan. 30, 1997, § 102(e) Date Jan. 30, 1997, PCT Pub. No. WO96/04356, PCT Pub. Date Feb. 15, 1996

PCT Filed Jul. 31, 1995, Ser. No. 750,947

Claims priority, application United Kingdom, Aug. 1, 1994, 9415624

Int. Cl.[6] C10M *135/00*

U.S. Cl. 508—332 **22 Claims**

1. A process for preparing an oil-soluble sulfurised phenol additive compatible with nitrile seals which process comprises the steps of:

(i) reacting together at a temperature of at least 120° C.:

an oil-soluble active sulfur-containing sulfurised phenol intermediate: and an olefin or an acetylenic compound in an amount in excess of the stoichiometric amount required to react with the active sulfur present in the sulfurised phenol intermediate; and

(ii) removing substantially all unreacted olefin or acetylenic compound;

provided that, when the olefin is a mono-olefin, it is either unsubstituted aliphatic or is substituted with aromatic functionality, or with one or more hydroxy, amino, cyano, ester, amide carboxylic acid, carboxylate, alkaryl, amidine, sulfinyl, or sulfonyl groups.

5,827,807

ENAMEL REMOVER

Masayoshi Aoshima, Tokyo, and Akira Shigeta, Ibaraki, both of Japan, assignors to Kao Corporation, Tokyo, Japan

PCT No. PCT/JP95/02286, § 371 Date May 15, 1997, § 102(e) Date May 15, 1997, PCT Pub. No. WO96/14823, PCT Pub. Date May 23, 1996

PCT Filed Nov. 9, 1995, Ser. No. 836,201

Claims priority, application Japan, Nov. 16, 1994, 6-305759

Int. Cl.[6] A61K *7/047;* **C11D** *7/26*

U.S. Cl. 510—118 **12 Claims**

1. An enamel remover composition, comprising:

(A) ethylene carbonate,

(B) acetone, and

(C) one or more monohydric C_1–C_6 alcohols,

wherein contained are (A) in a proportion of from 5 to 40 wt %, (B) in a proportion of 25 to 50 wt %, and (C) in a proportion of 10 to 60 wt %, based on the total amount of (A)+(B)+(C).

5,827,808

DISHWASHIING METHOD

Claire Appleby, Monkseaton; Graeme Duncan Cruickshank, Forest Hall, and Lynda Anne Jones, Gosforth, all of England, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 31, 1997, Ser. No. 792,200

Int. Cl.[6] C11D *7/18*

U.S. Cl. 510—220 **25 Claims**

1. A method for inhibiting the transfer of colored food soil from an aqueous wash solution to a substrate, comprising the step of washing the substrate with a dishwashing composition comprising an amount of cellulose ether such that the cellulose ether is present in the aqueous wash solution at a level of from between 0.0001% to 0.1% and 0.005% to 20% by weight of a water-soluble bismuth compound.

5,827,809

LOW-RESIDUE MACROEMULSION CLEANER WITH PERCHLOROETHYLENE

Eric L. Mainz, Colwich, and Janice M. Nyberg, Wichita, both of Kans., assignors to Vulcan Materials Company, Wichita, Kans.

Filed Oct. 15, 1996, Ser. No. 730,363

Int. Cl.[6] C11D *1/72;3/24;3/20;* **B08B** *3/08*

U.S. Cl. 510—365 **14 Claims**

1. A stable, oil-in-water macroemulsion low-residue cleaner comprising, by weight, about 35% to about 65% perchloroethylene, about 20% to about 50% water, up to about 15% ethanol, up to about 15% ethyl acetate, and non-ionic surfactant present in an amount of 0.5% or less, wherein at least 5% ethanol or ethyl acetate is present.

5,827,810

PHASE STABLE, THICKENED AQUEOUS ABRASIVE BLEACHING CLEANSER

Kevin J. Brodbeck, Pleasanton; Aram Garabedian, Jr., Fremont; Brian P. Argo, Tracy; Amy M. Penticoff, San Francisco, and Clement K. Choy, Alamo, all of Calif., assignors to The Clorox Company, Oakland, Calif.

Continuation of Ser. No. 474,354, Jun. 7, 1995, Pat. No. 5,529,711, which is a continuation of Ser. No. 141,144, Oct. 22, 1993, abandoned, which is a continuation-in-part of Ser. No. 125,949, Sep. 23, 1993, Pat. No. 5,470,499. This application Jun. 24, 1996, Ser. No. 670,740

Int. Cl.[6] C11D *3/395;3/10;3/14;3/37*

U.S. Cl. 510—369 **21 Claims**

1. A phase stable, thickened aqueous abrasive cleanser having an ionic strength less than about 5M, said cleanser consisting essentially of:

a) 0.1–5% of a cross-linked polyacrylate;

b) 0.1–10% of at least one bleach-stable surfactant;

c) 0.1–10% of a low salt, high purity sodium hypochlorite;

d) 0.1–5% of a pH-adjusting agent;

e) 0.1–70% of abrasive; and

f) the remainder as water.

5,827,811

BLEACHING AGENT

Hans Lagnemo, Nödinge; Monica Jigstam, Torslanda, and Cecilia Oddstig, Göteborg., all of Sweden, assignors to EKA Chemicals AB, Bohus, Sweden

PCT No. PCT/SE95/00959, § 371 Date Mar. 21, 1997, § 102(e) Date Mar. 21, 1997, PCT Pub. No. WO96/11252, PCT Pub. Date Apr. 18, 1996

PCT Filed Aug. 24, 1995, Ser. No. 809,899

Claims priority, application WIPO, Oct. 7, 1994, PCT/SE94/00943; Oct. 7, 1994, PCT/SE94/00944; Sweden, Nov. 3, 1994, 9403778

Int. Cl.[6] C11D *3/39;* **C01B** *15/10*

U.S. Cl. 510—377 **29 Claims**

1. Particles comprising a peroxy compound with capability of releasing hydrogen peroxide or peroxy acids in aqueous solutions, wherein the particles comprise from about 0.01 to 15% by weight of a dicarboxylic acid having from 5 to 10 carbon atoms or a salt thereof.

5,827,812

AZEOTROPE-LIKE COMPOSITIONS AND THEIR USE

Richard M. Flynn, Mahtomedi; Dean S. Milbrath, Stillwater; John G. Owens, Woodbury; Daniel R. Vitcak, Cottage Grove, all of Minn., and Hideto Yanome, Kanagawa, Japan, assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

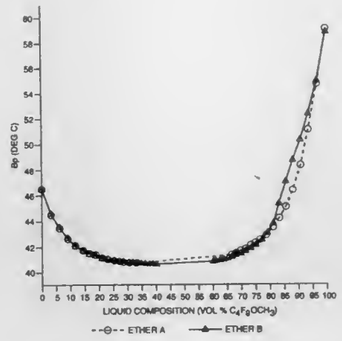
Continuation-in-part of Ser. No. 604,002, Feb. 20, 1996, abandoned, which is a continuation-in-part of Ser. No. 441,960, May 16, 1995, abandoned. This application May 15, 1996, Ser. No. 648,264

Int. Cl.[6] C11D *7/26;7/30;7/50*

U.S. Cl. 510—411 **21 Claims**

1. An azeotrope-like composition including (a) perfluorobutyl methyl ether consisting essentially of perfluoro-n-butyl methyl ether and perfluoroisobutyl methyl ether, and (b) organic solvent, which composition is selected from the group consisting of:

(i) compositions consisting essentially of about 75 to 17 weight percent of the ether and about 25 to 83 weight percent trans-1,2 -dichloroethylene that boil at about 39° to 41° C. at about 729 torr;



(ii) compositions consisting essentially of about 72 to 29 weight percent of the ether and about 28 to 71 weight percent cis-1,2 -dichloroethylene that boil at about 51° to 53° C. at about 741 torr;

(iii) compositions consisting essentially of about 98 to 68 weight percent of the ether and about 2 to 32 weight percent 1,1,2 -trichloroethylene that boil at about 57° to 59° C. at about 736 torr;

(iv) compositions consisting essentially of about 97 to 68 weight percent of the ether and about 3 to 32 weight percent 1-chlorobutane that boil at about 56° to 58° C. at about 728 torr;

(v) compositions consisting essentially of about 93 to 55 weight percent of the ether and about 7 to 45 weight percent 2-chlorobutane that boil at about 54° to 56° C. at about 737 torr;

(vi) compositions consisting essentially of about 94 to 62 weight percent of the ether and about 6 to 38 weight percent i-butyl chloride that boil at about 54° to 56° C. at about 730 torr;

(vii) compositions consisting essentially of about 72 to 13 weight percent of the ether and about 28 to 87 weight percent t-butyl chloride that boil at about 46° to 48° C. at about 733 torr;

(viii) compositions consisting essentially of about 98 to 82 weight percent of the ether and about 2 to 18 weight percent 1,2-dichloropropane that boil at about 58° to 60° C. at about 724 torr;

(ix) compositions consisting essentially of about 92 to 57 weight percent of the ether and about 8 to 43 weight percent 2,2-dichloropropane that boil at about 55° to 57° C. at about 735 torr;

(x) the composition consisting essentially of about 82 to 8 weight percent of the ether and about 18 to 92 weight percent methylene chloride that boil at about 33° to 35° C. at about 737 torr;

(xi) compositions consisting essentially of about 89 to 50 weight percent of the ether and about 11 to 50 weight percent 1 -bromopropane that boil at about 52° to 54° C. at about 729 torr; and

(xii) compositions consisting essentially of about 39 to 10 weight percent of the ether and 61 to 90 weight percent of HCFC-225ca/cb that boil at about 52° to 54° C. at about 738 torr.

5,827,813

DETERGENT COMPOSITIONS HAVING COLOR CARE AGENTS

Frederick Anthony Hartman, Cincinnati; Robert Allen Godfroid, West Chester; Janet Sue Littig, and Mark Robert Sivik, both of Fairfield, all of Ohio, assignors to Procter & Gamble Company, Cincinnati, Ohio

Filed Dec. 18, 1997, Ser. No. 993,255
Int. Cl.[6] C11D 17/06
U.S. Cl. 510—443 3 Claims

1. A granular detergent composition comprising:

a) from about 0.1% to about 50% by weight, of the composition N,N,N',N'-tetrakis-(2-hydroxypropyl)ethylenediamine,

b) from about 5% to about 99.9% by weight, of a detersive surfactant, said detersive surfactant selected from the group consisting of cationic, anionic, nonionic, ampholytic, zwitterionic surfactant, and mixtures thereof;

c) the balance carriers and adjunct ingredients.

5,827,814

Patent Not Issued For This Number

5,827,815

CARBONATE BUILT LAUNDRY DETERGENT COMPOSITION

Francis R. Cala, Highland Park, N.J.; Charles D. Carr, Yardley, Pa., and Bruce R. Conley, Hamilton, N.J., assignors to Church & Dwight Co., Inc.

Filed Apr. 29, 1997, Ser. No. 840,433
Int. Cl.[6] C11D 3/10;1/72;1/12;1/88
U.S. Cl. 510—509 14 Claims

1. A laundry detergent composition wherein the solids content comprises at least about 60 wt. % of a water soluble alkaline carbonate builder; about 1 to about 30 wt. % of an ethoxylated fatty alcohol nonionic surfactant, wherein the fatty alcohol is a single alcohol containing about 10 to about 16 carbon atoms or a mixture of alcohols, a major amount of which contains about 10 to about 16 carbon atoms, with an average of about 12 to about 14 carbon atoms, and the average number of ethoxy groups is about 1.0 to about 12; about 1.0 to about 30 wt. % of a sulfated ethoxylated fatty alcohol anionic surfactant, wherein the fatty alcohol is a single alcohol containing about 10 to about 16 carbon atoms or a mixture of alcohols, a major amount of which contain about 10 to about 16 carbon atoms with an average of about 12 to about 14 carbon atoms, and the average number of ethoxy groups is about 1 to about 12; and about 0.2 to about 30 wt. % of an amphoteric surfactant having the formula



wherein R is one or more alkyl groups each containing about 8 to about 20 carbon atoms and/or one or more monovalent unsaturated hydrocarbyl groups each containing 1 to 3 ethylenic bonds and about 16 to about 18 carbon atoms, with a major amount of the R groups containing about 12 to about 16 carbon atoms; X is hydrogen or a monovalent cation; and n is zero or an integer of 1 to about 6, all percentages based on the total weight of solids in the composition.

5,827,816

STABLE BACTERICIDAL/PERMEABILITY-INCREASING PROTEIN PRODUCTS AND PHARMACEUTICAL COMPOSITIONS CONTAINING THE SAME

Georgia Theofan, Torrance; Arnold Horwitz, Los Angeles; David Burke, Oakland; Manik Baltaian, Glendale, all of Calif., and Lynn Grinna, Middleburg, Va., assignors to Xoma Corporation, Berkeley, Calif.

Continuation of Ser. No. 361,191, Apr. 18, 1995, abandoned, which is a division of Ser. No. 13,801, Feb. 2, 1993, Pat. No. 5,420,019. This application Jun. 6, 1995, Ser. No. 466,822
Int. Cl.[6] A61K 38/17
U.S. Cl. 514—2 6 Claims

5. A method of treating gram-negative bacterial infection comprising administering an effective amount of a pharmaceutical composition comprising: a polypeptide analog comprising from 176 to 199 residues from the amino-terminus of human BPI, wherein a cysteine residue at position 132 is replaced by a different amino acid, and a pharmaceutically-acceptable diluent, adjuvant, or carrier.

5,827,817

P-SELECTIN LIGAND PROTEIN

Glenn R. Larsen, Sudbury; Dianne S. Sako, Boston; Xiao-Jia Chang, Newton Centre; Geertruida M. Veldman, Sudbury; Dale Cumming, Acton; Ravindra Kumar, Belmont; Gray Shaw, Concord, and Ray Camphausen, Arlington, all of Mass., assignors to Genetics Institute, Inc., Cambridge, Mass.

Division of Ser. No. 428,734, Apr. 25, 1995, which is a continuation-in-part of Ser. No. 316,305, Sep. 30, 1994, abandoned, which is a continuation-in-part of Ser. No. 235,398, Apr. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 112,608, Aug. 26, 1993, abandoned, which is a continuation-in-part of Ser. No. 965,662, Oct. 23, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 477,254
Int. Cl.[6] A61K 38/17; C07K 14/435;7/08
U.S. Cl. 514—2 16 Claims

1. An isolated glycoprotein having P-selectin ligand activity comprising a carbohydrate and a protein comprising the sequence from amino acid 42 to amino acid 60 of SEQ ID NO: 2, wherein said carbohydrate comprises sLe^X, and wherein said isolated glycoprotein does not comprise the transmembrane domain and the intracellular domain of mature P-selectin ligand protein or does not comprise the intracellular domain of mature P-selectin ligand protein.

5,827,818

AGENT FOR SUBCUTANEOUS ADMINISTRATION OF PROTEIN C

Johann Eibl, and Hans-Peter Schwarz, both of Vienna, Austria, assignors to Immuno Aktiengesellschaft, Vienna, Austria

Filed Mar. 20, 1996, Ser. No. 617,365
Claims priority, application Germany, Mar. 21, 1995, 195 10 260.6; Mar. 4, 1996, 196 08 218.8
Int. Cl.[6] A61K 37/00
U.S. Cl. 514—2 26 Claims

1. A method of administering protein C to a patient, comprising the step of:

subcutaneously injecting said patient with an agent comprising protein C and a pharmaceutically acceptable carrier.

5,827,819

COVALENT POPLAR LIPID CONJUGATES WITH NEUROLOGICALLY ACTIVE COMPOUNDS FOR TARGETING

Milton B. Yatvin, Portland, Oreg.; Michael H. B. Stowell, Pasadena, Calif., and Michael J. Meredith, Lake Oswego, Oreg., assignors to Oregon Health Sciences University, Portland, Oreg.

Continuation-in-part of Ser. No. 685,152, Jul. 23, 1996, which is a continuation of Ser. No. 142,771, Oct. 26, 1993, Pat. No. 5,543,389, which is a continuation-in-part of Ser. No. 911,209, Jul. 9, 1992, Pat. No. 5,256,641, which is a continuation-in-part of Ser. No. 607,982, Nov. 1, 1990, Pat. No. 5,149,794. This application Oct. 25, 1996, Ser. No. 735,977
Int. Cl.[6] A61K 38/00;31/135;9/127
U.S. Cl. 514—2 12 Claims

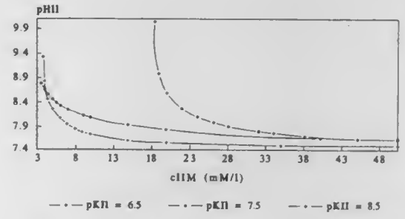
1. A pharmaceutical composition comprising a psychotropic, neurotropic or neurological drug, a polar lipid carrier, two linker functional groups and a spacer, wherein the spacer has a first end and a second end and wherein the polar lipid is attached to the first end of the spacer through a first linker functional group and the drug is attached to the second end of the spacer through a second linker functional group.

5,827,820

AQUEOUS PERITONEAL DIALYSIS SOLUTION

Axel duMoulin, Markt-Indersdorf, and Jutta Muller-Derlich, Munich, both of Germany, assignors to Baxter International Inc., Deerfield, Ill.

Continuation of Ser. No. 538,344, Oct. 3, 1995, abandoned, which is a continuation of Ser. No. 150,152, Apr. 11, 1994, abandoned. This application Jun. 27, 1997, Ser. No. 884,557
Claims priority, application European Pat. Off., Apr. 6, 1992, 92105911
Int. Cl.[6] A61K 31/195;31/70;38/02; A61M 1/28
U.S. Cl. 514—2 20 Claims



pHII as a function of CIIM
pHM =7.4; CIM=35 mmoles/L; pHI =5.2; pKI =4;
pKII =6.5/7.5/8.5

1. A multi-part aqueous peritoneal dialysis solution comprising:

a first part comprising a first solution, the first solution comprising an osmotically active substance and carboxylic acid anions selected from the group consisting of: monocarboxylic acid anions; dicarboxylic acid anions; and a mixture of monocarboxylic and dicarboxylic anions, the first solution having a pH value of 4.5 to 5.8; and

a second part comprising a second solution, the second solution comprising bicarbonate ions and a component selected from the group consisting of: an amino acid component and a peptide component, the second solution having a pH value of 7.2 to 10; the first part and the second part being mixed prior to administration.

5,827,821

CONFORMATIONALLY STABILIZED CELL ADHESION PEPTIDES

Michael D. Pierschbacher, San Diego, and Erkki I. Ruoslahti, Rancho Santa Fe, both of Calif., assignors to The Burnham Institute, La Jolla, Calif.

Continuation of Ser. No. 776,839, Oct. 15, 1991, abandoned, which is a continuation of Ser. No. 292,517, Dec. 29, 1988, abandoned, which is a continuation-in-part of Ser. No. 131,390, Dec. 10, 1987, abandoned. This application Jul. 16, 1992, Ser. No. 914,643
Int. Cl.[6] A61K 38/00
U.S. Cl. 514—11 29 Claims

1. A peptide containing the sequence X-R_1-R_2-Arg-Gly-Asp-R_3-R_4-Y in which R_2 comprises about 0 to 5 amino acids, R_3 comprises about 0 to 5 amino acids, R_1 and R_4 are amino acids connected by a bridge, X is one or more amino acids or H and Y is one or more amino acids, OH or NH_2, said peptide having between 7 and 30 residues.

5,827,822

CYCLOSPORIN A FORMULATIONS AS NANOPARTICLES

Robert Floc'h, Nantes, and Christian Merle, Poitiers, both of France, assignors to Sangstat Medical Corporation, Menlo Park, Calif.

Filed Mar. 25, 1996, Ser. No. 622,516
Int. Cl.[6] A61K 9/10;38/13
U.S. Cl. 514—11 13 Claims

1. An aqueous suspension of cyclosporin nanoparticles, wherein at least 50 weight percent of the cyclosporin present in the suspension is of particles less than about 1 μm, said cyclosporin nanoparticles being amorphous and wherein said suspension comprises at least one of a polyoxyethylene surfactant or a polyethylene glycol of less than about 2000 Daltons.

5,827,823

METHOD OF PRODUCING ANALGESIA USING NEUROTROPHINS

Judith Siuciak, Tarrytown; Charles A. Altar, Katonah, and Ronald M. Lindsay, Briarcliff Manor, all of N.Y., assignors to Regeneron Pharmaceuticals, Inc., Tarrytown, N.Y.

Continuation of Ser. No. 110,399, Aug. 23, 1993, abandoned, which is a continuation-in-part of Ser. No. 944,823, Sep. 14, 1992, abandoned. This application Jan. 25, 1995, Ser. No. 378,079
Int. Cl.[6] A61K 38/10;35/30
U.S. Cl. 514—12 3 Claims

1. A method of producing analgesia in a mammal comprising midbrain or intrathecal administration to the mammal of a pharmaceutically effective dose of at least one neurotrophin selected from the group consisting of brain derived neurotrophic factor, neurotrophin-3 and neurotrophin-4.

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5,827,824

PROTEASE-RESISTANT THROMBOMODULIN ANALOGS

David Richard Light; William H. Andrews, both of San Mateo; Jeffrey Homer Clarke, Pacifica; Robert Michael Wydro, Foster City, and Patricia Ann Young, San Rafael, all of Calif., assignors to Schering Aktiengesellschaft, Berlin, Germany

Division of Ser. No. 197,576, Feb. 16, 1994, which is a continuation of Ser. No. 830,577, Feb. 5, 1992, abandoned, which is a continuation-in-part of Ser. No. 568,456, Aug. 15, 1990, abandoned, which is a continuation-in-part of Ser. No. 506,325, Apr. 9, 1990, Pat. No. 5,256,770, which is a continuation-in-part of Ser. No. 406,941, Sep. 13, 1989, abandoned, which is a continuation-in-part of Ser. No. 345,372, Apr. 28, 1989, abandoned. This application Jun. 5, 1995, Ser. No. 463,605

Int. Cl.[6] A61K *38/00;38/16;* C07K *14/00*

U.S. Cl. 514—12 16 Claims

1. A method of treating thrombotic disease, comprising administering an effective amount of a thrombomodulin protein analog, wherein the amino acid sequence of a protease cleavage site is modified by substitution or deletion of an amino acid at the protease cleavage site, whereby the analog is resistant to protease cleavage at that site and wherein the analog has at least 50% of the ability to potentiate thrombin-mediated activation of protein C as said uncleaved protein without said modification at the protease cleavage site.

5,827,825

SYNTHETIC PEPTIDE, LUNG SURFACTANT CONTAINING THE SAME AND REMEDY FOR RESPIRATORY DISTRESS SYNDROME

Tsunetomo Takei; Eiji Ohtsubo, and Hirosi Ohkawa, all of Tokyo, Japan, assignors to Tokyo Tanabe Company Ltd., Tokyo, Japan

PCT No. PCT/JP94/02057, § 371 Date Jun. 5, 1996, § 102(e) Date Jun. 5, 1996, PCT Pub. No. WO95/15980, PCT Pub. Date Jun. 15, 1995

PCT Filed Dec. 7, 1994, Ser. No. 652,450

Claims priority, application Japan, Dec. 8, 1993, 5-307657

Int. Cl.[6] A61K *38/00*

U.S. Cl. 514—12 28 Claims

1. A peptide having the following sequence:

Xaa-Pro-Val-Xbb-Xcc-Lys-Arg-W

wherein Xaa is either not present or, if present, represents Cys or Ser, wherein an N-terminus of the sequence optionally further comprises an amino acid or amino acids selected from the group consisting of Cys, Ser, and a combination of Cys, or Ser and the sequence Phe-Gly-Ile-Pro; Xbb represents His or Asn; Xcc represents Leu or Ile; and W represents a sequence comprising 12 to 20 molecules of Leu and/or Nle.

5,827,826

COMPOSITIONS OF HUMAN ENDOTHELIAL CELL GROWTH FACTOR

Michael Jaye, Glenside, Pa.; Wilson Burgess, Gaithersburg; Thomas Maciag, Rockville, both of Md., and William N. Drohan, Springfield, Va., assignors to Rhone-Poulenc Rorer Pharmaceuticals Inc., Collegeville, Pa.

Continuation-in-part of Ser. No. 472,964, Jun. 7, 1995, Pat. No. 5,571,790, which is a continuation of Ser. No. 334,884, Nov. 3, 1994, Pat. No. 5,552,528, which is a continuation of Ser. No. 799,859, Nov. 27, 1991, abandoned, which is a continuation of Ser. No. 693,079, Apr. 29, 1991, abandoned, which is a continuation of Ser. No. 134,499, Dec. 18, 1987, abandoned, which is a continuation-in-part of Ser. No. 835,594, Mar. 3, 1986, Pat. No. 4,868,113. This application Nov. 4, 1996, Ser. No. 743,261

Int. Cl.[6] A61K *38/18;* C07K *14/50*

U.S. Cl. 514—12 10 Claims

1. A composition comprising a human endothelial cell growth factor in an amount effective to promote wound healing and an acceptable carrier, wherein said endothelial cell growth factor either has the amino acid sequence of α-endothelial cell growth factor

(NYKKPKLLYCSNGGHFLRILP-
DGTVDGTRDRSDQHIQLQLSAESVGEVYI KSTETGQY-
LAMDTDGLLYGSQTPNEECLFLERLEEN-
HYNTYISKKHAEKN
WFVGLKKNGSCKRGPRTHYGQKAILFLPLPVSSD)

or comprises the amino acid sequence of β-endothelial cell growth factor

(AEGEITTFTALTEKFNLPPGNYKKPKL-
LYCSNGGHFLRILPDGTVDGTRDR SDQHIQLQLSAESV-
GEVYIKSTETGQYLAMDTDGLLYGSQTPNEECLFLER
LEENHYNTYISKKHAEKNWFVGLKKNG-
SCKRGPRTHYGQKAILFLPLPVS SD).

5,827,827

HIV-1 PROTEASE INHIBITORS

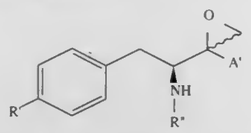
Kim D. Janda, San Diego, and Peter Wirching, Solona Beach, both of Calif., assignors to The Scripps Research Institute, La Jolla, Calif.

Continuation-in-part of Ser. No. 335,039, Feb. 16, 1995, abandoned. This application Jun. 20, 1996, Ser. No. 667,001

Int. Cl.[6] C07K *19/00*

U.S. Cl. 514—17 10 Claims

1. A human immunodeficiency virus protease inhibiting compound of the formula:



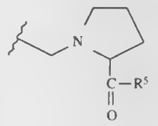
or a pharmaceutically-acceptable acid-addition salt thereof, wherein

R' is selected from a group consisting of hydrogen, hydroxyl, and a protected hydroxyl;

R" is selected from a group consisting of an amino protecting group, and U—V;

wherein U is an oligopeptide containing a sequence of up to five amino acids and V is an N-terminating group; and

A is represented by the following structure:



wherein R^5 is selected from the group consisting of C_1–C_3 alkoxy, a protected amino group, and O—Q, wherein O is an oligopeptide containing a sequence of up to four amino acid residues and Q is a C-terminating group.

5,827,828

SULFATED GLYCOLIPIDS AND ANTIBODIES THERETO FOR PROPHYLAXIS OR THERAPY OF DIABETES

Karsten Buschard, Charlottenlund, Denmark, assignor to A+ Science Invest AB, Göteborg, Sweden

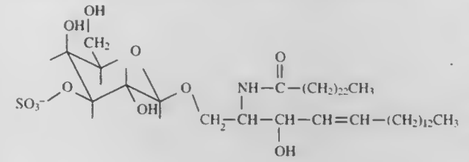
Continuation of Ser. No. 146,013, Dec. 13, 1993, abandoned. This application Feb. 28, 1995, Ser. No. 396,802

Claims priority, application Denmark, May 7, 1991, 0846/91

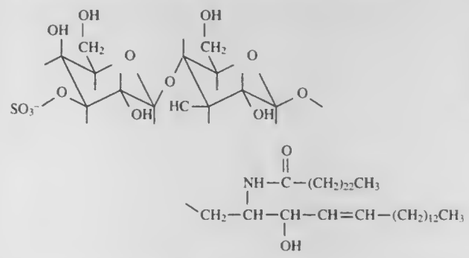
Int. Cl.[6] A61K *31/70;* C07K *16/00;* C07H *15/00*

U.S. Cl. 514—25 30 Claims

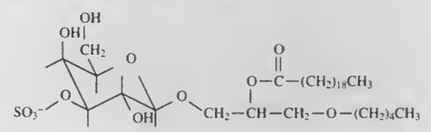
1. A method for treatment of prediabetes or diabetes in an individual by inducing in said individual a tolerance to a galactosylceramide-3-sulfate active agent of the formula



a lactosylceramide-3-sulfate active agent of the formula



or a seminolipid active agent of the formula



the method comprising administering the galactosylceramide-3-sulfate active agent, the lactosylceramide-3-sulfate active agent, or the seminolipid active agent to the individual.

5,827,829

USE OF A HYMENOPTERA VENOM FOR THE MANUFACTURE OF A MEDICAMENT FOR TREATING DNA VIRUS INFECTIONS

Michael Hansen, Valmuevej 13, 3390 Hundested, Denmark, and Ole Gyring Nieben, Peblinge Dossering 18, Copenhagen N, Denmark

Continuation of Ser. No. 356,336, Jan. 10, 1995, abandoned. This application Jan. 21, 1997, Ser. No. 786,518

Claims priority, application Germany, Jun. 24, 1992, 0828/92

Int. Cl.[6] A61K *38/00;39/245*

U.S. Cl. 514—21 13 Claims

1. A method for treating a herpes virus infection comprising administering to a mammal in need of said treatment a composition comprising a therapeutically active amount of an agent selected from the group consisting of a hymenoptera venom, an active proteinaceous or polypeptide component contained therein and a mixture thereof;

said venom or proteinaceous or polypeptide component thereof having at least one of the following properties: (i) reducing pain associated with said viral infection, (ii) promoting faster healing; (iii) reducing the number of infection recurrences; (iv) inhibiting or reducing the viral load or replication; and (v) reducing inflammation.

5,827,830

PLASMALOPSYCHOSINES AND PLASMALOCEREBROSIDES

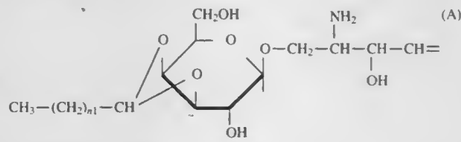
Edward Nudelman, Seattle; Sen-Itiroh Hakomori, Mercer Island; Steven B. Levery; Yasuyuki Igarashi, both of Seattle, all of Wash., and Khalid Sadozai, Pakistan, Pakistan, assignors to The Biomembrane Intstitute, Seattle, Wash.

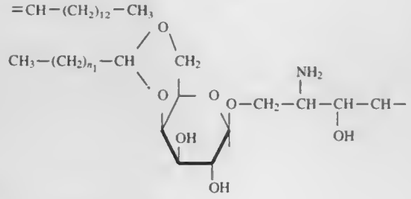
Division of Ser. No. 355,276, Dec. 12, 1994, Pat. No. 5,693,620, which is a continuation-in-part of Ser. No. 79,544, Jun. 22, 1993, abandoned, which is a continuation of Ser. No. 738,375, Jul. 31, 1991, abandoned. This application Sep. 9, 1996, Ser. No. 711,100

Int. Cl.[6] A61K *31/70;* C07H *15/00*

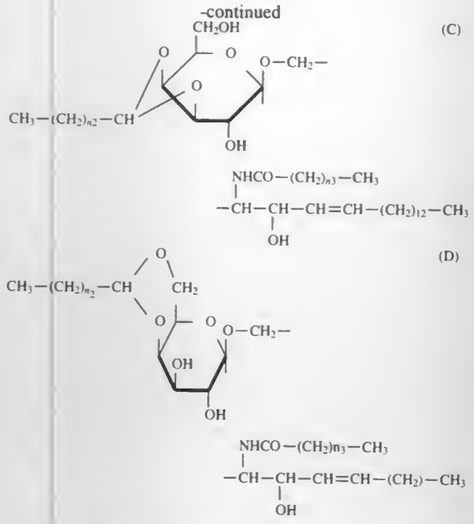
U.S. Cl. 514—25 10 Claims

1. A method of forming neurites from nerve cells comprising contacting said cells with an effective amount of one or more plasmalopsychosine and/or plasmalocerebrosides selected from the group consisting of compound A, compound B, compound C and compound D:


(A)


(B)

-continued



wherein n_1, n_2 and n_3 each is 0–50.

5,827,831

LIPID NUCLEOTIDE ANALOG PRODRUGS FOR ORAL ADMINISTRATION

Karl Y. Hostetler, Del Mar; Raj Kumar, San Diego, and Nagarajan C. Sridhar, Simi Valley, all of Calif., assignors to NeXstar Pharmaceuticals, Inc., Boulder, Colo.

Continuation of Ser. No. 355,510, Dec. 14, 1994, Pat. No. 5,484,809, which is a division of Ser. No. 991,166, Dec. 16, 1992, Pat. No. 5,411,947, which is a continuation-in-part of Ser. No. 373,088, Jun. 28, 1989, Pat. No. 5,223,263, Ser. No. 440,898, Nov. 22, 1989, Pat. No. 5,194,654, and Ser. No. 932,231, Aug. 19, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 484,018

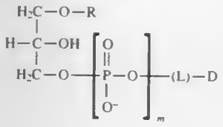
Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—47 **20 Claims**

1. A method of enhancing the pharmacokinetic properties of an orally administered drug, comprising:

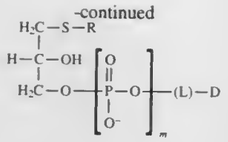
preparing a lipid derivative of said pharmaceutical drug, said lipid derivative comprising a 1-O-alkyl glycerol-3-phosphate, a 1-O-acyl-glycerol-3-phosphate, 1-S-alkyl-glycerol-3-phosphate, or a 1-S-acyl-glycerol-3-phosphate group covalently linked to a functional group of said drug either directly through a phosphate ester or through a linker molecule, whereby the metabolic clearance of said agent is decreased and the phsiological half-life of said agent is extended.

4. A lipid prodrug of the formula



or

-continued



wherein

R is a substitute or unsubstituted, saturated or unsaturated, straight or branched chain, or cyclic C_1 to C_{24} alkyl group, covalently linked to the glycerol moiety in an ether linkage;

L is a linking molecule, of the formula $X-(CH_2)_n-Y$, wherein X and Y are functional groups independently selected from the group consisting of hydroxyl, sulfhydryl, carboxyl or amino groups, and wherein n=1 to 24, or L is absent; and

D is a nucleoside analog having a functional group selected from the group consisting of hydroxyl, sulfhydryl, carboxyl or amino groups; and

m=1–3.

5,827,832

METHOD OF PROTECTING BRAIN TISSUE FROM CEREBRAL INFARCTION SUBSEQUENT TO ISCHEMIA

Bobby W. Sandage, Jr., Acton; Marc Fisher, Shrewsbury, and Kenneth W. Locke, Littleton, all of Mass., assignors to Interneuron Pharmaceuticals, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 603,102, Feb. 20, 1996, which is a continuation-in-part of Ser. No. 399,262, Mar. 6, 1995, abandoned. This application Mar. 1, 1996, Ser. No. 609,448

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—49 **17 Claims**

1. A method of protecting brain tissue from cerebral infarction subsequent to ischemia comprising co-administering to a subject in need thereof a first dose of an effective amount of citicoline and at least a second therapeutic agent, or their respective pharmaceutically acceptable salts, provided said second therapeutic agent excludes effective amounts of cytidine diphosphoethanolamine, cytidine diphospho-N-methylethanolamine, cytidine diphospho-N,N-dimethylethanolamine, or mixtures thereof.

5,827,833

TRICIRIBINE AND ANALOGS AS ANTIVIRAL DRUGS

Leroy B. Townsend; John C. Drach, both of Ann Arbor, Mich., and Louis S. Kucera, Pfaff Town, N.C., assignors to Regents of the University of Michigan, Ann Arbor, Mich., and Wake Forest University, Winston-Salem, N.C.

Division of Ser. No. 266,847, Jul. 5, 1994, Pat. No. 5,633,235, which is a continuation of Ser. No. 16,302, Feb. 11, 1993, abandoned, which is a continuation of Ser. No. 687,579, Apr. 19, 1991, abandoned. This application Dec. 19, 1996, Ser. No. 769,366

Int. Cl.[6] A61K *31/70*

U.S. Cl. 514—49 **35 Claims**

1. A method for treating HIV infection, comprising administering an effective amount of triciribine, triciribine DMF adduct, triciribine 5'-phosphate, or a pharmaceutically acceptable salt thereof to a patient in need thereof.

5,827,834

METHOD OF USING HYALURONIC ACID OR ITS PHARMACEUTICALLY ACCEPTABLE SALTS FOR THE TREATMENT OF DISEASE

Rudolf Edgar Falk, and Samuel S. Asculai, both of Toronto, Canada, assignors to Hyal Pharmaceutical Corporation, Mississauga, Canada

Continuation of Ser. No. 675,908, Jul. 3, 1991. This application Aug. 5, 1994, Ser. No. 286,263

Claims priority, application Canada, Sep. 21, 1989, 612307

Int. Cl.[6] A61K *31/715*

U.S. Cl. 514—54 **6 Claims**

1. A method of transporting a non-steroidal anti-inflammatory drug (NSAID), and hyaluronic acid or a pharmaceutically acceptable salt thereof, to a site in a patient suffering from a disease, wherein said site is in need of treatment with the NSAID, comprising topically administering an amount of the NSAID effective for treating the site, and an amount of hyaluronic acid or a pharmaceutically acceptable salt thereof in excess of 200 mg, wherein the hyaluronic acid or pharmaceutically acceptable salt thereof has a molecular weight less than 750,000 daltons but greater than 150,000 daltons.

5,827,835

THERMALLY-GELLING EMULSIONS

Bhagwati P. Kabra, Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 518,289, Aug. 23, 1995, Pat. No. 5,618,800, which is a continuation-in-part of Ser. No. 298,244, Aug. 30, 1994, abandoned. This application Dec. 3, 1996, Ser. No. 758,787

Int. Cl.[6] A61K *31/715;* **A01N** *43/04;* **C08B** *11/00;11/08*

U.S. Cl. 514—57 **13 Claims**

1. A non-toxic emulsion composition which reversibly increases in either loss modulus or storage modulus, or both, by at least the smaller of 10 Pa or 100% in response to an increase in temperature upon contact with the eye, skin, mucous membrane or body cavity, wherein the emulsion does not require a charged surfactant or pH-sensitive polymer for such increase in either loss modulus or storage modulus, or both, and wherein the composition comprises (a) a nonionic cellulose ether having a molecular weight no less than 30 kD and one or more substituents selected from the group consisting of alkyl, hydroxyalkyl and phenyl groups such that

$$2.2 \leqq \sum_{n=1}^{N} \{n \cdot Q(n) \cdot [MS(R_n) + MS(R_nO)] - P_N \cdot MS(R_nO)\} + Q_\Phi \cdot MS(\Phi) \leqq 3.8$$

wherein,

n=substituent carbon chain length;

N=maximum value of n, ≦22;

R_n=alkyl group of chain length n;

R_nO=alkoxy group of chain length n;

$MS(R_n)$=MS of R_n;

$MS(R_nO)$=MS of R_nO;

$MS(\Phi)$=MS of phenyl groups;

$Q(n)=0.837+0.155^*n+0.0075^*n^2\pm0.15$;

P_N=4.4 if N≦3; 4.4–1.82 if 3<N<10; and 1.82 if N≧10; and

Q_Φ=2.0 to3.5;

provided that the nonionic cellulose ether is not a cellulose ether having only ethyl and hydroxyethyl substituents, an ethyl MS from 1.2 to 2.5 and a hydroxyethyl MS from 0.5 to 1.5, and a cloud point from 30° to 35° C. as spectrophotometrically determined for a 1.0 wt % solution of the cellulose ether in water, heated at a rate of 10° C./min; (b) an oil, c) water, and optionally d) an emulsifying agent.

5,827,836

RETINOID GLYCEROL PHOSPHOLIPID CONJUGATES

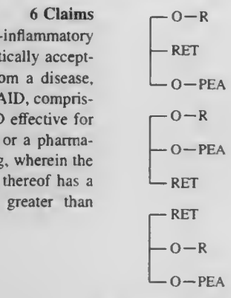
Andrew C. Peterson; Thaddeus P. Pruss, and Parvin T. Yazdi, all of Madison, Wis., assignors to Clarion Pharmaceuticals Inc., Madison, Wis.

Filed Nov. 15, 1996, Ser. No. 749,512

Int. Cl.[6] A61K *31/66;* **C07F** *9/10*

U.S. Cl. 514—77 **42 Claims**

1. Retinoyl substituted glycerophosphoethanolamines of the general Formulas Ia, Ib and Ic:

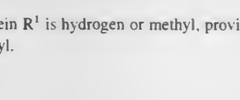


all geometric and optical isomers thereof, and the pharmaceutically acceptable salts of said compounds and isomers, wherein:

R represents a substituted or unsubstituted straight or branched chain C_{10-24} alkyl, any such substituent being one or more of halo, C_{1-3} alkoxy or cyano;

RET represents a retinoyl ester moiety; and

-OPEA represents a phosphoethanolamine moiety of the formula:



wherein R^1 is hydrogen or methyl, provided that at least one R^1 is methyl.

5,827,837

POLYANION ANTI-INFLAMMATORY AGENTS

Michael P. Bevilacqua, Boulder; Richard M. Nelson, Lafayette, both of Colo., and Oliviero Cecconi, Del Mar, Calif., assignors to The Regents of the University of California, Oakland, Calif.

PCT No. PCT/US94/09492, § 371 Date Sep. 3, 1996, § 102(e) Date Sep. 3, 1996, PCT Pub. No. WO95/05830, PCT Pub. Date Mar. 2, 1995

Continuation-in-part of Ser. No. 109,642, Aug. 20, 1993, abandoned. This PCT application Aug. 19, 1994, Ser. No. 601,057

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—103 **10 Claims**

1. A method of blocking selectin binding in a subject with a condition associated with selectin binding comprising administering to the subject a selectin binding inhibitor amount of inositol polyianion which binds to the selectin, said polyanion having at least four anionic groups, wherein the selectin is selected from the group consisting of P-selectin and L-selectin.

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5,827,838

METHOD FOR THE TREATMENT OF DISEASES RELATED WITH PROTEIN ISOPRENYLATION

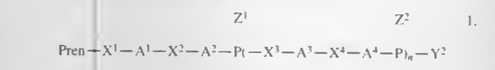
Louis Hartog Cohen, Breukelen; Jacobus Hubertus Van Boom, Voorschoten; Gijsbert Arie Van Der Marel, and Adrianus Petrus Robertus Marie Valentijn, both of Leiden, all of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek TNO & Rijksuniversteit TE Leiden, Netherlands

Continuation-in-part of Ser. No. 957,614, Oct. 6, 1992, abandoned. This application Dec. 2, 1994, Ser. No. 348,568

Int. Cl.[6] A61K *31/66*

U.S. Cl. 514—106 16 Claims

9. A method for the treatment of a tumor condition wherein the tumor is sensitive to treatment with the composition set out below, which includes the step of administering to a mammal suffering from said condition, a pharmaceutical composition in the form of a pharmaceutical carrier selected from the group consisting of a capsule, pill, tablet, gel, powder, sachet, syrup, solution, dispersion, and an injectable solution and an effective amount of a protein isoprenylation inhibiting compound including a polyisoprenyl pyrophosphate analogue having formula 1,



1.

wherein:

Pren represents a member from the group consisting of C_{10}–C_{30} terpenoid group and isomerised, hydrogenated, dehydrogenated, α-phosphono-substituted, halogen-substituted, methoxy-substituted, methyl-substituted, and demethylated derivatives thereof;

A^1, A^2, A^3 and A^4 independently represent a direct bond or a C_1–C_4 alkylene or alkenylene group, optionally having substituents selected from methyl, hydroxy, methoxy, mercapto, methylthio, amino, methylamino, dimethylamino, halogen and a group having formula $—X^5—A^5—P(=Z^2)Y^2Y^3$; A^5 represents a direct bond or a C_1–C_4 alkylene or alkenylene group;

X^1, X^2, X^3, X^4 and X^5 independently represent a direct bond, oxygen, sulphur, imino or methylimino, with the proviso that if A^1 represents a direct bond, X^2 also represents a direct bond and vice versa, and if A^3 represents a direct bond, X^4 also represents a direct bond and vice versa;

Y^1, Y^2 and Y^3 independently represent hydroxy, alkoxy, mercapto, alkylthio, amino, mono- or di-alkylamino, alkyl, alkenyl, alkynyl, cycloalkyl, aryl or arylalkyl, wherein alkyl, alkoxy, alkenyl and alkynyl are linear or branched having 1–6 carbon atoms and may have substituents selected from hydroxy, methoxy, mercapto, methylthio, amino, methylamino, dimethylamino and halogen, cycloalkyl has 3–8 carbon atoms, aryl is carbocyclic or heterocyclic having 5–10 ring atoms and cycloalkyl and aryl may have substituents selected from methyl, hydroxy, methoxy and halogen, whereby one of Y^1, Y^2 and Y^3 may also represent a C_7–C_{30} alkyl or alkenyl group, including a C_{10}–C30 terpenoid group, and Y^1 may represent a group having formula $—X^3—A^5—P(=Z^2)Y^2Y^3$ and two of

Y^1, Y^2 and Y^3 may together represent an oxygen or sulphur atom or an imino or methylene group; Z^1 and Z^2 independently represent oxygen or sulphur; and n is 0, 1 or 2;

or a pharmaceutically acceptable salt thereof; with the proviso that the polyisoprenyl pyrophosphate analogue is not polyisoprenyl pyrophosphate itself.

5,827,839

Patent Not Issued For This Number

5,827,840

PROMOTION OF WOUND HEALING BY CHEMICALLY-MODIFIED TETRACYCLINES

Nungavaram S. Ramamurthy; Lorne M. Golub, both of Smithtown, and Thomas F. McNamara, Port Jefferson, all of N.Y., assignors to The Research Foundation of State University of New York, Albany, N.Y.

Filed Aug. 1, 1996, Ser. No. 691,135

Int. Cl.[6] A61K *31/65*

U.S. Cl. 514—152 9 Claims

1. A method for promoting wound healing, wherein said method comprises:

a) topically administering a first tetracycline compound to a mammal having an acute trauma wound, said first tetracycline compound being substantially incapable of systemic distribution in said mammal; and

b) systemically administering a second tetracycline compound to said mammal, said second tetracycline compound being capable of substantial systemic distribution in said mammal.

5,827,841

METHOD FOR ENHANCEMENT OF PRODUCTION OF LYMPHOKINES AND APPLICATIONS THEREOF

Raymond A. Daynes, and Barbara A. Araneo, both of Salt Lake City, Utah, assignors to University of Utah Research Foundation, Salt Lake City, Utah

Division of Ser. No. 018,471, Feb. 16, 1993, Pat. No. 5,540,919, which is a continuation of Ser. No. 412,270, Sep. 25, 1989, abandoned. This application Sep. 20, 1994, Ser. No. 295,068

Int. Cl.[6] A01N *45/00*; A61K *31/56*

U.S. Cl. 514—169 6 Claims

1. A method for enhancing the production of interleukin-2 and gamma interferon, which comprises exposing, prior to cellular activation by an antigen said cellular activation being production of interleukin-2 and gamma interferon as a result of exposure to an antigen, T cell lymphocytes having a potential to make interleukin-2 and gamma-interferon to dehydroepiandrosterone-sulfate (DHEA-S) in an amount effective for enhancing the production of interleukin-2 and gamma interferon, to produce exposed T cell lymphocytes, and cellularly activating by an antigen said exposed T cell lymphocytes to produce enhanced levels of interleukin-2 and gamma-interferon.

5,827,842

14α, 17α-C_2-BRIDGED NORPROGESTERONE DERIVATIVES

Klaus Schöllkopf; Wolfgang Halfbrodt; Joachim Kuhnke; Wolfgang Schwede; Karl-Heinrich Fritzemeier; Rolf Krattenmacher, and Hans-Peter Muhn, all of Berlin, Germany, assignors to Schering Aktiengesellschaft, Germany

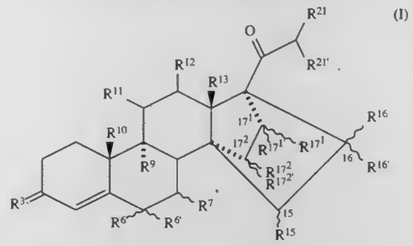
Filed Dec. 26, 1995, Ser. No. 578,847

Claims priority, application Germany, Dec. 23, 1994, 44 47 401.6

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—169 14 Claims

1. A 14,17-C_2-bridged steroid compound of formula (I),



(I)

wherein

R^3 is O, a hydroxyimino group or two H atoms,

R^6 is H, fluorine, chlorine or bromine; or a C_1–C_4-alkyl radical in the α- or β-position and $R^{6'}$ and R^7 are H atoms, or

R^6 is H, fluorine, chlorine or bromine; or a C_1–C_4 alklyl radical and $R^{6'}$ and R^7 form an additional bond,

R^7 is a C_1–C_4-alkyl radical in the α- or β-position and R^6 and $R^{6'}$ are H atoms, or

R^6 and R^7 together form a methylene group in the α- or β-position and $R^{6'}$ is H, or

R^6 and $R^{6'}$ together form an ethylene or methylene group and R^7 is H,

R^9 and R^{10} each are H or form an additional bond,

R^{11} and R^{12} each are H or form an additional bond,

R^{13} is a methyl or ethyl group,

R^{15} is H or a C_1–C_3-alkyl radical,

R^{16} and $R^{16'}$ each independently is H, a C_1–C_3-alkyl radical or a C_2–C_4-alkenyl radical, or together form a C_1–C_3-alkylidene group,

R^{15} and R^{16} form an additional bond and $R^{16'}$ is H or a C_1–C_3-alkyl radical, or

R^{15} and R^{16} together form a ring of partial formula



wherein

n is 1 or 2,

X is a methylene group and

$R^{16'}$ is H,

$R^{17'}$ is H or a C_1–C_3-alkyl radical,

R^{17^2} is H, a C_1–C_3-alkyl radical or a C_2–C_4-alkenyl radical,

$R^{17'}$ and R^{17^2} each are H or form an additional bond,

R^{21} is H or a C_1–C_3-alkyl radical,

$R^{21'}$ is H, a C_1–C_3-alkyl radical or a hydroxy group, with the proviso that the compound is not 14,17-ethano-19-norpregn-4-ene-3,20-dione or 14α,17α-etheno-19-norpregn-4-ene-3,20-dione.

5,827,843

PREPARATION FOR SUBSTITUTION THERAPY, CONTAINING AT LEAST ONE PROGESTOGEN AND AT LEAST ONE ESTROGEN

Philippe Robert Marie Wilhelmus Ghislain Koninckx, Bierbeek, Belgium, assignor to Saturnus A.G., Luxembourg, Germany

PCT No. PCT/EP94/02997, § 371 Date Jun. 4, 1996, § 102(e) Date Jun. 4, 1996, PCT Pub. No. WO95/07081, PCT Pub. Date Mar. 16, 1995

PCT Filed Sep. 8, 1994, Ser. No. 605,118

Claims priority, application Netherlands, Sep. 9, 1993, 9301562

Int. Cl.[6] A61K *31/56*

U.S. Cl. 514—170 9 Claims

1. Preparation for substitution therapy and for oral contraception comprising at least one progestogen and at least one estrogen having dosing means in association therewith wherein the progestogen dose is substantially constant and the estrogen dose varies to oscillate between an estrogen-dominant period and a progestogen-dominant period with a periodicity of less than 10 days such that blood loss is substantially avoided.

5,827,844

LIPOPHILIC BENZOTHIOPHENES USED FOR TREATING ENDOMETRIOSIS

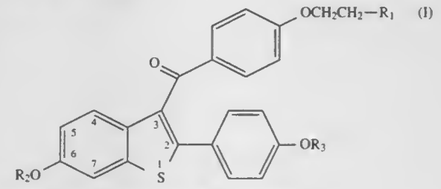
George Joseph, Trafalgar, and Raymond Francis Kauffman, Carmel, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 707,680, Sep. 4, 1996, Pat. No. 5,726,168. This application Oct. 3, 1997, Ser. No. 943,340

Int. Cl.[6] A61K *31/58*; *31/445*

U.S. Cl. 514—176 5 Claims

1. A method for inhibiting endometriosis comprising administering to a woman in need of such treatment an effective amount of a compound of formula I



(I)

wherein R_1 is N-pyrrolidinyl or N-piperidinyl;

R_2 and R_3 are independently hydrogen, —CO—(C_{10}-C_{22} alkyl), —CO—(C_{10}-C_{22} branched alkyl), —CO—(C_{10}-C_{22} alkenyl), —CO—(C_{10}-C_{22} polyalkenyl), —CO—(C_{10}-C_{22} alkynyl), or —CO—$(CH_2)_nCOR_4$; provided R_2 and R_3 are not both dodecanoyl, and provided one of R_2 or R_3 is not hydrogen;

R_4 is -3-cholesteryl or —$O(CH_2)_2(OR_5)CH_2OR_6$;

R_5 and R_6 are independently hydrogen, —CO—(C_{10}-C_{22} alkyl), —CO—(C_{10}-C_{22} branched alkyl), —CO—(C_{10}-C_{22} alkenyl), —CO—(C_{10}-C_{22} polyalkenyl), or —CO—(C_{10}-C_{22} alkynyl); provided one of R_5 or R_6 is not hydrogen;

n is 0–4; and pharmaceutically acceptable salts and solvates thereof.

5,827,845

CEPHALOSPORIN DERIVATIVE

Sohjiro Shiokawa; Kunio Atsumi; Katsuyoshi Iwamatsu; Atsushi Tamura, and Seiji Shibahara, all of Yokohama, Japan, assignors to Meiji Seika Kaisha, Ltd., Tokyo, Japan

PCT No. PCT/JP94/01618, § 371 Date Jul. 31, 1996, § 102(e) Date Jul. 31, 1996, PCT Pub. No. WO95/09171, PCT Pub. Date Apr. 6, 1995

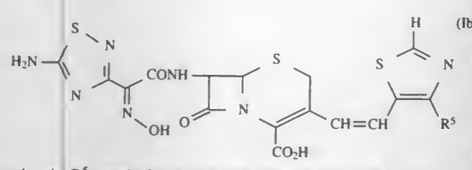
PCT Filed Sep. 29, 1994, Ser. No. 617,870

Claims priority, application Japan, Sep. 29, 1993, 5-243324

Int. Cl.[6] C07D *501/56;* A61K *31/545*

U.S. Cl. 514—206 8 Claims

1. Syn-isomer of a cephem compound represented by the following formula (Ib)



(Ib)

wherein R^5 stands for a hydrogen atom, a lower alkyl group, a halo-(lower)alkyl group or a halogen atom, or a pharmaceutically acceptable salt or ester at the 4-carboxyl group of said syn-isomer.

5,827,846

CARBAZOLE DERIVATIVES AS AGENTS AGAINST MULTI-DRUG RESISTANCE

Urs Regenass, Ettingen; Giorgio Caravatti, Allschwil, and Oskar Wacker, Basle, all of Switzerland, assignors to Novartis Corp., Summit, N.J.

PCT No. PCT/EP95/01909, § 371 Date Nov. 27, 1996, § 102(e) Date Nov. 27, 1996, PCT Pub. No. WO95/32974, PCT Pub. Date Dec. 7, 1995

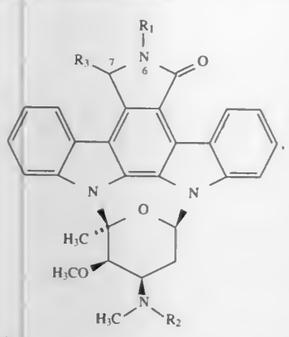
PCT Filed May 19, 1995, Ser. No. 750,155

Claims priority, application Switzerland, Jun. 1, 1994, 1716/94

Int. Cl.[6] A61K *31/55*

U.S. Cl. 514—211 3 Claims

1. A method of removing existing multi-drug resistance or of avoiding the development of multi-drug resistance in a warm-blooded animal in need of such treatment, which method comprises the administration to that warm-blooded animal of a staurosporin derivative of formula I



(I)

wherein

R_1 is formyl, an aliphatic hydrocarbon radical having up to 29 carbon atoms that is unsubstituted or substituted by aryl, or is an aryl radical,

R_2 is hydrogen, C_1–C_5alkyl, benzoyl, lower alkanoyl or α-aminoacyl having a free or protected amino group, and

R_3 is hydrogen, hydroxy, lower alkoxy or oxo,

or wherein

R_1 is methoxycarbonylmethyl,

R_2 is benzoyl, and

R_3 is hydrogen,

or of a pharmaceutically acceptable salt of such a compound of formula I having at least one salt-forming group, in an effective dose that removes multi-drug resistance or avoids the development thereof.

5,827,847

TREATMENT OF COGNITIVE DISORDERS WITH PIPERAZINE DERIVATIVES

Ian Anthony Cliffe; Allan Fletcher, both of Slough, and Alan Chapman White, Staines, all of England, assignors to John Wyeth & Brother, Ltd., Maidenhead, England

PCT No. PCT/GB93/02197, § 371 Date May 3, 1995, § 102(e) Date May 3, 1995, PCT Pub. No. WO94/09780, PCT Pub. Date May 11, 1994

PCT Filed Oct. 25, 1993, Ser. No. 428,093

Claims priority, application United Kingdom, Nov. 5, 1992, 9223153

Int. Cl.[6] A61K *31/55;31/395;31/535;31/495*

U.S. Cl. 514—212 3 Claims

1. A method of treating cognitive disorders which comprises administering to a human in need thereof an effective amount of a piperazine derivative of general formula (I)



(I)

or a pharmaceutically acceptable acid addition salt thereof where R is hydrogen or lower alkyl,

R^1 is an aryl or nitrogen containing heteroaryl radical, and X is a group of formula

$$—(CH_2)_nCR^2R^3.CONR^4R^5 \quad \text{(IIa)}$$

or

$$—A—NR^6COR^7 \quad \text{(IIb)}$$

where

n is one of the integers 1 or 2,

R^2 is hydrogen or lower alkyl,

R^3 is an aryl radical or an aryl(lower)alkyl radical,

R^4 is hydrogen or lower alkyl,

R^5 is hydrogen, an alkyl group of 1 to 8 carbon atoms, cycloalkyl of 3 to 12 carbon atoms or cycloalkyl(lower)alkyl,

or R^4 and R^5 together with the nitrogen atom to which they are attached represent an azetidino, pyrrolidino, piperidino, hexahydroazepino, morpholino or piperazino ring which may be optionally substituted by lower alkyl, aryl or aryl(lower-)alkyl,

A is an alkylene chain of 2 to 4 carbon atoms optionally substituted by one or more lower alkyl groups,

R^6 is a mono or bicyclic- heteroaryl radical

and R^7 is hydrogen, lower alkyl, cycloalkyl, cycloalkenyl, cycloalkyl(lower)alkyl, aryl, aryl(lower)alkyl, heteroaryl, heteroaryl(lower)alkyl, a group of formula $—NR^8R^9$, where R^9 is hydrogen, lower alkyl, aryl or aryl(lower)alkyl and R^{10} is hydrogen, lower alkyl, —CO(lower)alkyl, aryl, COaryl, aryl-(lower)alkyl, cycloalkyl or cycloalkyl(lower)alkyl or R^8 and R^9 together with the nitrogen atom to which they are both attached represent a saturated heterocyclic ring which may contain a further hetero atom or a group of formula OR^{11}, where R^{11} is lower alkyl, cycloalkyl, cycloalkyl(lower)alkyl, aryl, aryl(lower)alkyl, heteroaryl or heteroaryl(lower)alkyl.

5,827,848

Patent Not Issued For This Number

5,827,849

CYCLIC DERICATIVES, PHARMACEUTICAL COMPOSITIONS CONTAINING THESE COMPOUNDS AND PROCESSES FOR PREPARING THEM

F. Himmelsbach, Mittelbiberach; Helmut Pieper; Volkhard Austel, both of Biberach; Günter Linz, Mittelbiberach; Brian Guth, Warthausen; Thomas Müller, Edewecht, and Johannes Weisenberger, Biberach, all of Germany, assignors to Karl Thomae GmbH, Biberach an der Riss, Germany

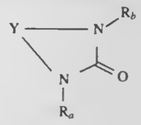
Division of Ser. No. 434,136, May 2, 1995, Pat. No. 5,612,335, which is a division of Ser. No. 200,125, Feb. 22, 1994, Pat. No. 5,519,036. This application Dec. 17, 1996, Ser. No. 768,365

Claims priority, application Germany, Feb. 22, 1993, 43 05 388.2; Sep. 22, 1993, 43 32 168.2; Jun. 17, 1996, 196 24 069.7

Int. Cl.[6] C07D *403/04;* A61K *31/415*

U.S. Cl. 514—215 7 Claims

1. An imidazolidinone of formula



(I)

wherein

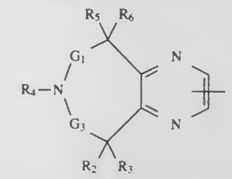
Y represents a $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, —CH=CH—, —CH=N—, —N=CH—, $—CH_2CO—$ or $—COCH_2—$ group optionally substituted by R_c, or by R_c and R_d, and which may additionally be substituted by one or two alkyl groups;

a first of the groups R_a to R_d represents a group of formula

A—B—

wherein

A is a group of the formula



wherein the pyrazino moiety of the above-mentioned group may be substituted by an alkyl, trifluoromethyl, hydroxy or alkoxy group,

G_1 represents a methylene group which may be mono or disubstituted by an alkyl group, whilst the substituents may be identical or different,

G_3 represents a methylene group substituted by R_9 and R_{10},

R_2 represents a hydrogen atom or an alkyl group,

R_3 represents a hydrogen atom or an alkyl group,

R_4 represents a hydrogen atom, a cycloalkyl or cycloalkylalkyl group each having 3 to 7 carbon atoms in the cycloalkyl moiety, a C_{1-6}-alkyl group, a C_{3-6}-alkenyl group (which alkenyl group may not be linked to the nitrogen atom via the vinyl group), or a hydroxyalkyl, alkoxyalkyl, carboxyalkyl, alkoxycarbonylalkyl, aminocarbonylalkyl, N-alkylaminocarbonylalkyl, N,N-dialkylaminocarbonylalkyl, arylalkyl, alkoxycarbonyl, arylmethyloxycarbonyl, formyl, acetyl or trifluoroacetyl group,

R_5 represents a hydrogen atom or an alkyl group,

R_6 represents a hydrogen atom or an alkyl group,

R_9 represents a hydrogen atom or an alkyl group,

R_{10} represents a hydrogen atom or an alkyl group, and

B represents a bond,

an alkylene group,

an arylene group, or

a cyclcohexylene group;

a second of the groups R_a to R_d represents a group of formula

F—E—D—

wherein

D represents a bond,

an alkylene group,

an arylene group,

a C_{4-7}-cycloalkylene group optionally substituted by 1 or 2 alkyl groups, or

a piperidinylene group;

E represents a bond,

an alkylene group which may be substituted by a C_{1-6}-alkyl group, or by an amino, aryl, alkylamino, dialkylamino, HNR_{21} or N-alkyl-NR_{21}— group, (wherein R_{21} represents an alkylcarbonyl or alkylsulphonyl group each having 1 to 6 carbon atoms in the alkyl moiety, an alkyloxycarbonyl group having a total of 2 to 5 carbon atoms, a cycloalkylcarbonyl or cycloalkylsulphonyl group each having 5 to 7 carbon atoms in the cycloalkyl moiety, an arylalkylcarbonyl, arylalkylsulphonyl, arylalkoxycarbonyl, arylcarbonyl or arylsulphonyl group),

a C_{2-4}-alkenylene group,

an arylene group,

a C_{4-7}-cycloalkylene optionally substituted by one or two alkyl groups,

or E may also represent an alkylene group linked to the group D via a group W, wherein W represents an oxygen or sulphur atom or a sulphinyl, sulphonyl, — NR_{20}—CO— or —CO—NR_{20} group, wherein R_{20} represents a hydrogen atom or an alkyl group and the alkylene group may additionally be substituted by a C_{1-6}-alkyl group, by an amino, aryl, alkylamino, dialkylamino, HNR_{21} or N-alkyl-NR_{21}— group, wherein the heteroatom of the additional substituent is separated from a heteroatom of group W by at least two carbon atoms and R_{21} is as hereinbefore defined; and

F represents a carbonyl group substituted by a hydroxy, alkoxy, arylalkoxy or $R_{22}O$ group (wherein R_{22} represents a C_{5-7}-cycloalkyl group or a cycloalkylalkyl group having 5 to 7 carbon atoms in the cycloalkyl moiety),

and the shortest distance between the group F and the nitrogen atom of the 7-membered ring of group A is at least 11 bonds;

R_c represents a hydrogen atom, an alkyl, trifluoromethyl or aryl group; and

R_d represents a hydrogen atom or an alkyl group;

whilst unless otherwise specified

each of the aryl moieties mentioned in the definition of the above groups is to a phenyl group which may be monosubstituted by R_{25}, mono, di or trisubstituted by R_{26}, or monosubstituted by R_{25} and additionally mono or disubstituted by R_{26}, wherein the substituents may be identical or different and

R_{25} represents a cyano, aminocarbonyl, alkylaminocarbonyl, dialkylaminocarbonyl, alkylcarbonyl, alkylsulphenyl, alkylsulphinyl, alkylsulphonyl or trifluoromethyl group and

R_{26} represents an alkyl, hydroxy or alkoxy group, or a fluorine, chlorine or bromine atom, whilst two groups R_{26}, if they are bound to adjacent carbon atoms, may also represent a straight chain C_{3-4}-alkylene group, a 1,3-butadien-1,4-diylene group or a methylenedioxy group,

and each arylene moiety mentioned in the definition of the above-mentioned groups is a phenylene group which may be monosubstituted by R_{25}, mono or disubstituted by R_{26}, or monosubstituted by R_{25} and additionally monosubstituted by R_{26}, wherein the substituents may be identical or different and are defined as hereinbefore;

and unless otherwise specified, the above-mentioned alkyl, alkylene or alkoxy moieties may each contain 1 to 4 carbon atoms, and each carbon atom in the above mentioned alkylene and cycloalkylene moieties is linked to one heteroatom at most;

a tautomer, or stereoisomer thereof, or a salt thereof.

5,827,850

1,2,4-BENZOTRIAZINE OXIDES FORMULATIONS

Stephen Brown, Morpeth, and Edward Baker, Chathill, both of England, assignors to Sanofi Pharmaceuticals, Inc., New York, N.Y.

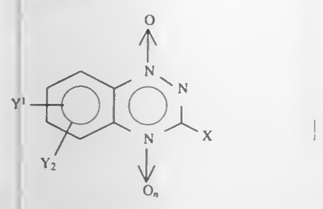
Continuation-in-part of Ser. No. 533,424, Sep. 25, 1995, abandoned. This application Apr. 21, 1997, Ser. No. 837,637

Int. Cl.[6] A61K *31/53*

U.S. Cl. 514—243 14 Claims

1. An aqueous parenteral formulation for the treatment of susceptible cancer tumors comprising:

an effective cancer tumor treating amount of a compound of the formula (I)



wherein X is H; halogen; alkoxy (C1–C4); hydrocarbyl (C1–C4); OR; COR^1; or NR^2R^3;

n is 0 or 1; and

Y^1 and Y^2 are independently H; nitro; halogen, alkoxy (C1–C4), hydrocarbyl (C1–C14), optionally interrupted by a single ether linkage; OR^4; COR^5; NR^6R^7; morpholino; pyrrolidino; piperidino; acyloxy (C1–C4); acylamido (C1–C4) and thio analogs thereof; acetylaminoalkyl (C1–C4); carboxy; alkoxycarbonyl (C1–C4); carbamyl; alkylcarbonyl (C1–C4); alkylsulfonyl (C1–C4); alkylphosphonyl (C1–C4); $NR^8R^9O(CO)R^{10}$; $NH(CO)R^{11}$; $O(SO)R^{12}$; $O(POR^{13})R^{14}$;

wherein R–R^7 can be independently selected from: H, alkyl (C1–C4), acyl (C1–C4), or R^2 and R^3 or R^6 and R^7 taken together directly or through a bridge oxygen atom form a morpholino, pyrrolidino or piperidino ring, and where R^6 and R^7 also can represent hydrocarbyl (C1–C4) unsubstituted or substituted with substituents selected from those described below, morpholino, pyrrolidino or piperidino, and R^8–R^{14} independently represent hydrocarbyl (C1–C4); and

X, Y^1 and Y^2 can be unsubstituted or substituted with substituents selected from OH, halogen (Cl, Br, I, F), NH_2, alkyl (C1–C4), alkoxy (C1–C4), alkylsecondary amino, dialkyltertiary amino, or a pharmacologically acceptable salt of said compound in a parenterally acceptable buffer having a concentration of from about 0.001M to about 0.1M and a pH of about 3–5.

5,827,851

Patent Not Issued For This Number

5,827,852

COATED PHARMACEUTICAL COMPOSITIONS

Carmelita Macklin Russell; Allen I. Dines, both of Cincinnati, and James Grigg Upson, Springdale, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation of Ser. No. 204,791, Mar. 2, 1994, abandoned, which is a continuation of Ser. No. 56,701, Apr. 30, 1993, abandoned. This application Sep. 16, 1994, Ser. No. 307,537

Int. Cl.[6] A61K *31/495;31/435;31/44;31/19*

U.S. Cl. 514—255 13 Claims

1. An oral composition comprising:

a) a pharmaceutical active in a unit dosage form suitable for coating; and

b) a coating comprising a pharmaceutically-acceptable coating material and from about 0.01% to about 10% by weight of a volatile aromatic compound selected from the group consisting of 3-1-menthoxy propane-1,2-diol, N-substituted-p-menthane- 3-carboxamides, acyclic carboxamides, and mixtures thereof.

5,827,853

COSMETIC COMPOSITION CONTAINING A NEUROPEPTIDE Y RECEPTOR ANTAGONIST

Elisabeth Blanc-Ferras, Donneville; Francois Bomo Colombie, Toulouse; Bernard Breda, Bougival; Jean Courrégelogue, Portet sur Garonne; Catherine Ducasse, Houilles; Remy Moumer, Aulnay-sur-Mauldre; Paul Raymond, Saint Vely Du Fesc; Michel Sabadie, Bernay; Claudine Serradeil Le Gal, Escaldens; Vilain Pol, Saussan, and Jean Marie Pereillo, Portet sur Garonne, all of France, assignors to Sanofi, Paris, France

Filed Jan. 27, 1997, Ser. No. 790,761

Claims priority, application France, Oct. 23, 1996, 96 12 916

Int. Cl.[6] A01N *43/60*

U.S. Cl. 514—255 28 Claims

1. A cosmetic composition containing at least one neuropeptide Y-antagonist component in combination with a cosmetically acceptable excipient.

5,827,854

Patent Not Issued For This Number

5,827,855

HEXAHYDRONAPHTHALENE ESTER DERIVATIVES THEIR PREPARATION AND THEIR THERAPEUTIC USES

Hiroshi Kogen; Sadao Ishihara; Teiichiro Koga; Eiichi Kitazawa; Nobufusa Serizawa, and Kiyoshi Hamano, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Division of Ser. No. 435,725, May 5, 1995, abandoned, which is a division of Ser. No. 174,661, Dec. 28, 1993, Pat. No. 5,451,688. This application Dec. 28, 1995, Ser. No. 579,840

Claims priority, application Japan, Dec. 28, 1992, 4-349034

Int. Cl.[6] C07D *309/30;* C07C *67/74;* A01N *43/42*

U.S. Cl. 514—292 7 Claims

1. A compound selected from the group consisting of

3,5-dihydroxy-7-[6-hydroxy-2-methyl-8-(2-ethyl-2-methylpentanoyloxy)-1,2,6,7,8,8a-hexahydro-1-naphthyl]heptanoic acid,

3,5-dihydroxy-7-[6-hydroxy-2-methyl-8-(2-ethyl-2-methylbutyryloxy)-1,2,6,7,8,8a-hexahydro-1-naphthyl]heptanoic acid,

3,5-dihydroxy-7-[6-hydroxy-2-methyl-8-(2,2-diethylbutyryloxy)-1,2,6,7,8,8a-hexahydro-1-naphthyl]heptanoic acid,

pharmaceutically acceptable salts thereof, pharmaceutically acceptable esters thereof and ring-closed lactones corresponding thereto.

5,827,856

METHOD OF TREATING INSULIN RESISTANCE

Knud Erik Andersen, Smørum; Rolf Hohlweg, Kvistgaard; Tine Krogh Jørgensen, Herlev; Peter Madsen, Bagsværd; Henrik Sune Andersen, København; Uffe Bang Olsen, Vallensbæk, all of Denmark; Polivka Zdenek, Praha, Switzerland; Silhánková Alexandra, Praha, Switzerland, and Sidelár Karel, Praha, Switzerland, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

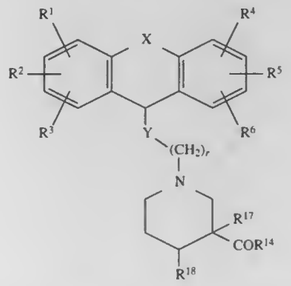
Filed Apr. 2, 1996, Ser. No. 627,750

Claims priority, application Denmark, Apr. 7, 1995, 0413/95; Sep. 11, 1995, 1001/95

Int. Cl.[6] A01N *43/42*

U.S. Cl. 514—297 16 Claims

1. A method of treating insulin resistance in a subject in need thereof comprising administering to the subject an effective amount of a compound of formula I



wherein

R^1, R^2, R^3, R^4, R^5 and R^6 independently are hydrogen, halogen, trifluoromethyl, hydroxy, C_{1-6}-alkyl, C_{1-6}-alkoxy, $-NR^7R^8$ or $-SO_2NR^7R^8$ wherein R^7 and R^8 independently are hydrogen or C_{1-6}-alkyl;

X is completion of an optional bond, $—CH_2—$, $—CH_2CH_2—$, —CH=CH—, —O—, $—S(O)_z—$ wherein z is 0, 1 or 2, or NR^9 wherein R^9 is hydrogen or C_{1-6}-alkyl;

Y is —O—, $—S(O)_q—$ wherein q is 0, 1 or 2, or NR^{10} wherein R^{10} is hydrogen or C_{1-6}-alkyl;

r is 1, 2, 3 or 4;

R^{14} is hydroxy, C_{1-6}-alkoxy or $NR^{15}R^{16}$ wherein R^{15} and R^{16} independently are hydrogen or C_{1-6}-alkyl;

R^{17} is hydrogen; and

R^{18} is hydrogen or hydroxy or may together with R^{17} represent a bond; or a pharmaceutically acceptable salt thereof.

5,827,857

PYRIDO-FUSED THIENYL- AND FURANYL-OXAZOLIDINONES

Bernd Riedl; Dieter Häbich; Andreas Stolle; Martin Ruppelt, all of Wuppertal; Stephan Bartel, Bergisch Gladbach; Walter Guarnieri, Zülpich; Rainer Endermann, and Hein-Peter Kroll, both of Wuppertal, all of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

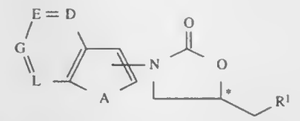
Filed Jan. 9, 1997, Ser. No. 781,001

Claims priority, application Germany, Jan. 16, 1996, 196 01 264.3

Int. Cl.[6] A61K *31/44;* C07D *221/00*

U.S. Cl. 514—301 8 Claims

1. A pyrido-fused thienyl- or furanyl-oxazolidinone compound of the formula (I):



in which

A represents an oxygen or sulfur atom or the $—SO_2—$ group;

one of D, E, G and L represents a nitrogen atom and three of D, E, G and L represent a CR^2 group;

in which

R^2 represents hydrogen, cyano, nitro, carboxyl, straight-chain or branched alkyl, acyl or alkoxy each having up to 7 carbon atoms, halogen, $—NR^3R^4$, $—CO—NR^5R^6$, $—NR^7—CO—R^8$ or $—S(O)_aR^9$;

in which

R^3, R^4, R^5, R^6, R^7 and R^8 are independently represent hydrogen, phenyl or straight-chain or branched alkyl having up to 6 carbon atoms;

a represents a number 0, 1 or 2;

R^9 represents phenyl or straight-chain or branched alkyl having up to 4 carbon atoms;

R^1 represents azido, hydroxyl, $—OR^{10}$, $—O—SO_2R^{11}$ or $—NR^{12}R^{13}$,

in which

R^{10} represents straight-chain or branched acyl having up to 8 carbon atoms or a hydroxyl protective group;

R^{11} represents straight-chain or branched alkyl having up to 4 carbon atoms or phenyl which is optionally substituted by straight-chain or branched alkyl having up to 4 carbon atoms;

R^{12} and R^{13} independently represent cycloalkyl having 3 to 6 carbon atoms, hydrogen, phenyl or straight-chain or branched alkyl or alkoxy each having up to 8 carbon atoms or an amino protective group; or

R^{12} or R^{13} represents $—CO—R^{14}$, $—CS—R^{14'}$, $—P(O)(OR^{15})(OR^{16})$ or $—SO_2—R^{17}$;

in which

R^{14} and $R^{14'}$ independently represent cycloalkyl having 3 to 6 carbon atoms, trifluoromethyl, straight-chain or branched alkoxy having up to 8 carbon atoms, phenyl, benzyloxy or hydrogen; or

represent straight-chain or branched alkyl having up to 8 carbon atoms, which is optionally substituted by cyano, halogen or trifluoromethyl; or

represent straight-chain or branched alkylthio or acyl each having up to 6 carbon atoms; or

represent $—NR^{18}R^{19}$;

in which

R^{18} and R^{19} independently represent hydrogen, phenyl or straight-chain or branched alkyl having up to 6 carbon atoms; or

represent a 5 -membered aromatic heterocycle having up to 3 heteroatoms independently selected from the group consisting of S, N and O;

R^{15} and R^{16} independently represent hydrogen or straight-chain or branched alkyl having up to 4 carbon atoms; and

R^{17} represents straight-chain or branched alkyl having up to 4 carbon atoms or phenyl;

said compound being a pure stereoisomer or a stereoisomer mixture;

or a salt of said compound.

5,827,858

HIV PROTEASE INHIBITORS

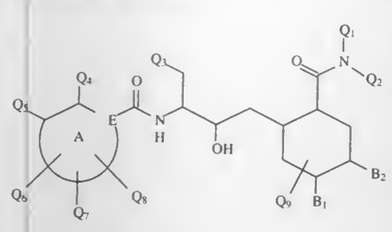
Vincent J. Kalish; Siegfried Heinz Reich, both of San Diego; John H. Tatlock, Poway, all of Calif., and Michael J. Rodriguez, Indianapolis, Ind., assignors to Agouron Pharmaceuticals, Inc.

Division of Ser. No. 190,764, Feb. 2, 1994, Pat. No. 5,484,926, which is a continuation-in-part of Ser. No. 133,543, Oct. 7, 1993, abandoned, Ser. No. 133,696, Oct. 7, 1993, abandoned, and Ser. No. 137,254, Oct. 18, 1993, abandoned, which is a continuation-in-part of Ser. No. 995,621, Oct. 22, 1992, abandoned. This application Jun. 7, 1995, Ser. No. 478,020

Int. Cl.[6] A61K *31/47;31/445;31/44*

U.S. Cl. 514—307 15 Claims

1. A compound of the formula:



wherein:

Q_1 and Q_2 are each independently selected from hydrogen and substituted and unsubstituted alkyl and aryl;

Q_3 is selected from mercapto and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, and aryl;

Q_4, Q_5, Q_6, Q_7, and Q_8 are each independently selected from hydrogen, hydroxyl, mercapto, nitro, halogen, —O—J, where J is a substituted or unsubstituted hydrolyzable group, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, sulfinyl, sulfonyl, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, aryl, and $L_6C(O)L_4$, where L_6 is a single bond, —O or —N, and further where L_4 is alkyl, hydroxyl, alkoxyl or hydrogen; and further wherein any one or more of Q_4, Q_5, Q_6, Q_7, and Q_8 may be a member of a spiro ring, and any two of Q_4, Q_5, Q_6, Q_7, and Q_8 may together be members of a ring;

E is carbon or nitrogen;

Q_9 is selected from hydrogen, halogen, hydroxyl, mercapto, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, and aryl, where Q_9 may form part of a ring;



is a monocyclic or polycyclic carbocycle or heterocycle, which is optionally further substituted, and when



is heterocycle, each heterocyclic ring has one to three heteroatoms independently selected from nitrogen, oxygen, and sulfur; and

B_1 and B_2 form part of a ring having from 3 to 5 members, which ring is optionally further substituted and optionally has from one to three heteroatoms independently selected from nitrogen, oxygen, and sulfur; where when



is a carbocycle, the ring formed partly by B_1 and B_2 is a heterocycle; or a prodrug or pharmaceutically acceptable salt of said compound.

5,827,859

HIV PROTEASE INHIBITORS

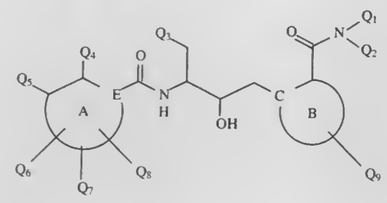
Vincent J. Kalish; Siegfried Heinz Reich, both of San Diego, Calif.; Michael J. Rodriguez, Indianapolis, Ind., and John H. Tatlock, Poway, Calif., assignors to Agouron Pharmaceuticals, Inc.

Division of Ser. No. 190,764, Feb. 2, 1994, Pat. No. 5,484,926, which is a continuation-in-part of Ser. No. 133,543, Oct. 7, 1993, abandoned, Ser. No. 133,696, Oct. 7, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,934

Int. Cl.[6] A01N *43/42;* A61K *31/47*

U.S. Cl. 514—307 18 Claims

1. A compound of the formula:



wherein:

Q_1 and Q_2 are each independently selected from hydrogen and substituted and unsubstituted alkyl and aryl;

Q_3 is selected from mercapto and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, and aryl;

Q_4, Q_5, Q_6, Q_7, and Q_8 are each independently selected from hydrogen, hydroxyl, mercapto, nitro, halogen, —O—J, where J is a substituted or unsubstituted hydrolyzable group, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, sulfinyl, sulfonyl, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, aryl, and $L_6C(O)L_4$, where L_6 is a single bond, —O or —N, and further where L_4 is alkyl, hydroxyl, alkoxyl or hydrogen; and further wherein any one or more of Q_4, Q_5, Q_6, Q_7, and Q_8 may be a member of a spiro ring, and any two of Q_4, Q_5, Q_6, Q_7, and Q_8 may together be members of a ring;

E is carbon or nitrogen;

Q_9 is selected from hydrogen, halogen, hydroxyl, mercapto, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, and aryl, where Q_9 may form part of a ring;



is a monocyclic or polycyclic carbocycle or heterocycle, which is optionally further substituted, and when



is heterocycle, each heterocyclic ring has one to three heteroatoms independently selected from nitrogen, oxygen, and sulfur; and



is a 5-membered monocyclic carbocycle or heterocycle, which is optionally further substituted, and when



is heterocycle, the ring has one to three heteroatoms independently selected from nitrogen, oxygen and sulfur, which is optionally further substituted;

wherein at least one of



or



is a heterocycle; or a prodrug or pharmaceutically acceptable salt of said compound.

5,827,860

PEPTIDYL HETEROCYCLES USEFUL IN THE TREATMENT OF THROMBIN RELATED DISORDERS

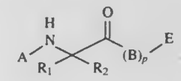
Michael J. Costanzo, Ivyland, and Bruce E. Maryanoff, New Hope, both of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 7, 1995, Ser. No. 481,934

Int. Cl.[6] A61K *31/425;* A01N *43/78*

U.S. Cl. 514—369 17 Claims

1. A compound of the formula I:



I

wherein:

A is

selected from the group consisting of C_{1-8}alkyl; carboxyC_{1-4}alkyl; C_{1-4}alkoxycarbonylC_{1-4}alkyl; phenylC_{1-4}alkyl; substituted phenylC_{1-4}alkyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; formyl; C_{1-4}alkoxycarbonyl, C_{1-12} alkylcarbonyl; phenylC_{1-4}alkoxycarbonyl; C_{3-7}cycloalkylcarbonyl; phenylcarbonyl; substituted phenylcarbonyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; C_{1-4}alkylsulfonyl; C_{1-4}alkoxysulfonyl; perfluoroC_{1-4}alkylsulfonyl; phenylsulfonyl; substituted phenylsulfonyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; 10-camphorsulfonyl; phenylC_{1-4} alkylsulfonyl; substituted phenylC_{1-4}alkylsulfonyl;, C_{1-4}alkylsulfinyl; perfluoroC_{1-4}alkylsulfinyl; phenylsulfinyl; substituted phenylsulfinyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; phenylC_{1-4}alkylsulfinyl; substituted phenylC_{1-4}alkylsulfinyl; 1-naphthylsulfonyl; 2-naphthylsulfonyl or substituted naphthylsulfonyl, wherein the naphthyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, carboxy or C_{1-4}alkoxycarbonyl; 1-naphthylsulfinyl; 2-naphthylsulfinyl or substituted naphthylsulfinyl, wherein the naphthyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl,

R_1 is

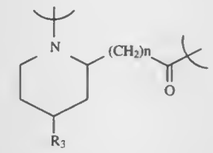
selected from the group consisting of hydrogen and C_{1-5}alkyl;

R_2 is

selected from the group consisting of aminoC_{2-5}alkyl; guanidinoC_{2-5}alkyl; C_{1-4}alkylguanidinoC_{2-5}alkyl; diC_{1-4}alkylguanidinoC_{2-5}alkyl; amidinoC_{2-5}alkyl; C_{1-4} alkylamidinoC_{2-5}alkyl; diC_{1-4}alkylamidinoC_{2-5}alkyl; C_{1-3} alkoxy C_{2-5}alkyl; phenyl; substituted phenyl, wherein the substituents are independently selected from one or more of amino, amidino, guanidino, C_{1-4}alkylamino, C_{1-4}dialkylamino, halogen, perfluoro C_{1-4}alkyl, C_{1-4}alkyl, C_{1-3}alkoxy or nitro; benzyl; phenyl substituted benzyl, wherein the substituents are independently selected from one or more of, amino, amidino, guanidino, C_{1-4}alkylamino, C_{1-4}dialkylamino, halogen, perfluoro C_{1-4}alkyl, C_{1-4}alkyl, C_{1-3}alkoxy or nitro; hydroxyC_{2-5}alkyl; C_{1-5}alkylaminoC_{2-5}alkyl; C_{1-5}dialkylaminoC_{2-5}alkyl; 4-aminocyclohexylC_{0-2}alkyl and C_{1-5}alkyl;

p is 0 or 1

B is



where n is 0–3, R_3 is H or C_{1-5}alkyl and the carbonyl moiety of B is bound to E;

E is

a heterocycle selected from the group consisting of oxazolin-2-yl, oxazol-2-yl, thiazol-2-yl, thiazol-5-yl, thiazol-4-yl, thiazolin-2-yl, imidazol-2-yl, 4-oxo-2-quinoxalin-2-yl, 2-pyridyl, 3-pyridyl, benzo[b]thiophen-2-yl, benzoxazol-2-yl benzimidazol-2-yl, benzothiazol-2-yl, triazol-4-yl, triazol-6-yl, tetrazol-2-yl, pyrimidin-2-yl, quinolin-2-yl, indol-2-yl, pyrazol-2-yl, 4,5,6,7-tetrahydrobenzothiazol-2-yl, naphtho[2,1-d]thiazol-2-yl, naphtho[1,2-d]thiazol-2-yl quinoxalin-2-yl, isoquinolin-1-yl, isoquinolin-3-yl, benzo[b]furan-2-yl, pyrazin-2-yl, quinazolin-2-yl, isothiazol-5-yl, isothiazol-3-yl, purin-8-yl and a substituted heterocycle where the, substituents are independently selected from C_{1-4}alkyl, perfluoro C_{1-4}alkyl C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy, C_{1-4}alkoxycarbonyl, hydroxy or phenylC_{1-4}alkylaminocarbonyl;

or pharmaceutically acceptable salts thereof.

5,827,861

FUNGICIDAL MIXTURES

Eberhard Ammermann, Heppenheim; Gisela Lorenz, Hambach; Dietrich Mappes, Westheim; Klaus Schelberger, Gönnheim, and Manfred Hampel, Neustadt, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

PCT No. PCT/EP95/02025, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO95/34203, PCT Pub. Date Dec. 21, 1995

PCT Filed May 27, 1995, Ser. No. 750,809

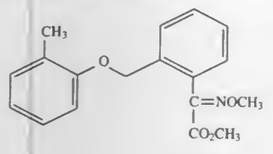
Claims priority, application Germany, Jun. 10, 1994, 44 20 278.4

Int. Cl.[6] A01N *37/12;37/44;43/64*

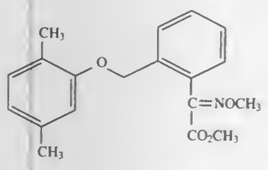
U.S. Cl. 514—383 9 Claims

1. A fungicidal mixture containing

a) an oxime ether carboxylic acid ester of the formula Ia or Ib



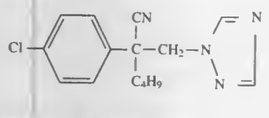
Ia



Ib

and

b) 1-(1,2,4-triazol-1-yl)-2-cyano-2-(4-chlorophenyl)hexane of the formula II



in a synergistically active amount.

5,827,862

AGENT FOR PROPHYLAXIS OR TREATMENT OF CATARACT

Yoshitaka Yamamura, Itano-gun; Tatsuya Yamashita, Tokushima; Shigeki Nakamura, Komatsushima; Toshiyuki Onogawa, Naruto; Yoshihisa Yamada, Naruto; Kenji Tsujimae, Tokushima; Hidenorii Ogawa, Itano-gun; Toyoki Mori, Naruto, and Michiaki Tominaga, Itano-gun, all of Japan, assignors to Otsuka Pharmaceutical Company, Limited, Tokyo, Japan

PCT No. PCT/JP94/00265, § 371 Date Aug. 23, 1995, § 102(e) Date Aug. 23, 1995, PCT Pub. No. WO94/18975, PCT Pub. Date Sep. 1, 1995

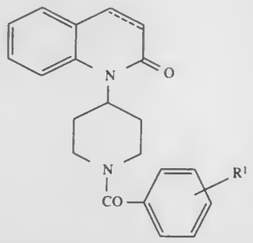
PCT Filed Feb. 22, 1994, Ser. No. 507,333

Claims priority, application Japan, Feb. 23, 1993, 5-032896

Int. Cl.[6] A61K *31/47*

U.S. Cl. 514—312 5 Claims

1. A method for treatment of cataract comprising administering to a warm-blooded animal in need of cataract treatment a therapeutically effective amount of a composition for treatment of the cataract which comprises as an active ingredient at least one compound selected from the group consisting of a carbostyril compound of the formula:



wherein R^1 is a lower alkanoylamino-substituted lower alkoxy group, and the bond between the 3- and 4- positions of the carbostyril nucleus is a single bond or a double bond, or a salt thereof,

5-dimethylamino-1-(4-(2-methylbenzoylamino)benzoyl)-2,3,4,5-tetrahydro-1H-benzazepine and 5-hydroxy-7-chloro-1-(2-methyl-4-(2-methylbenzoylamino)benzoyl)-2,3,4,5-tetrahydro-1H-benzazepine, or a pharmaceutically acceptable salt thereof and a pharmaceutically acceptable carrier or diluent.

5,827,863

PYRAZOLE DERIVATIVES AS ANGIOTENSIN II ANTAGONISTS

Carmen Almansa; Concepción Gonzalez; M. Carmen Torres; Elena Carceller, and Javier Batroli, all of Barcelona, Spain, assignors to J. Uriach & Cia, S.A., Barcelona, Spain

PCT No. PCT/EP95/03086, § 371 Date Jun. 20, 1996, § 102(e) Date Jun. 20, 1996, PCT Pub. No. WO96/04273, PCT Pub. Date Feb. 15, 1996

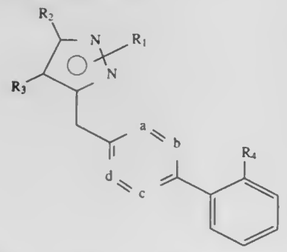
PCT Filed Aug. 2, 1995, Ser. No. 624,459

Claims priority, application Spain, Aug. 2, 1994, 9401711

Int. Cl.[6] A01K *31/44;* C07D *401/00;757/00;* C07F *9/06*

U.S. Cl. 514—341 19 Claims

1. A compound of formula I:



I

wherein:

R_1 represents hydrogen, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, aryl, or $-(CH_2)_mCOR_5$;

R_2 represents hydrogen, halogen, C_{1-6} alkyl, C_{1-6} haloalkyl, C_{3-7} cycloalkyl, C_{3-7} cycloalkylC_{1-4} alkyl, C_{1-6} hydroxyalkyl, C_{1-6} alkoxyC_{1-4} alkyl, aryl or arylC_{1-4} alkyl;

R_3 represents hydrogen, $-(CH_2)_nR_6$ or $-(CH_2)_pCOR_7$;

either a, b, c and d represent CR or one of a, b, c and d represents N and the remaining groups represent CR, wherein each R independently represents hydrogen, halogen, C_{1-4} alkyl, hydroxy, C_{1-4} alkoxy, nitro, amino, C_{1-4} alkylamino or C_{1-4} dialkylamino;

R_4 represents $-CO_2R_8$; -tetrazol-5-yl; tetrazol-5-ylmethyl; —CONH(tetrazol-5-yl); $-CONHSO_2R_9$; $-CONHSO_2$—Het; $-CONHOR_8$; $-CONH_2$; $-CONR_8R_9$; $-COCH_2COR_8$; $-COCH_2CO_2R_8$; $-CONHNHSO_2R_9$; $-CONHNHCONH_2$; $-CH_2NHSO_2R_9$; $-CH_2CO_2R_8$; $-CH_2SO_2NHCOR_8$; $-CH_2SO_2NHCONHR_8$; $-CH_2CONHSO_2R_9$; $-CH_2SO_2NH$—Het; $-CH_2NHCOR_8$; $-NHSO_2R_9$; $-NHCOR_8$; $-NHCONHSO_2R_9$; $-NHSO_2NHCOR_8$; $-SO_3H$; $-SO_2NHR_8$; $-SO_2NHCONH_2$; $-SO_2NHCONR_8R_9$; $-SO_2NHCO_2R_9$; $-SO_2N(CO_2R_8)_2$; $-SO_2NHCOR_8$; $-SO_2NH$—Het; $-SO_2NHCO$—Het; $-PO(OH)_2$; $-PO(OR_8)_2$; $-PO(OH)(OR_9)$; or 3-(trifluoromethyl)-1,2,4-triazol-5-yl;

wherein Het represents a 5- or 6-membered aromatic heterocycle in which from 1 to 3 of the ring atoms are nitrogen and/or oxygen and/or sulphur and is optionally substituted with one or two groups chosen from hydroxy, mercapto, C_{1-4} alkyl, C_{1-4} alkoxy, halogen, nitro, CO_2H, CO_2C_{1-4} alkyl, amino, C_{1-4} alkylamino and C_{1-4} dialkylamino; and R_8 represents hydrogen, C_{1-4} alkyl, aryl, aryl-(C_{1-4})alkyl or perfluoro-(C_{1-4})alkyl, and R_9 represents C_{1-4} alkyl, aryl, aryl-(C_{1-4})alkyl or perfluoro-(C_{1-4})alkyl;

R_5 represents hydrogen, hydroxy, C_{1-6} alkyl, C_{1-6} alkoxy, aryl, aryloxy or a group $-NR_{10}R_{11}$;

R_6 represents hydroxy, C_{1-6} alkoxy, aryloxy, arylC_{1-4} alkoxy or C_{1-6} alkylcarbonyloxy;

R_7 represents hydrogen, hydroxy, C_{1-6} alkyl, C_{1-6} alkoxy, aryl, aryloxy, arylC_{1-4} alkoxy, carboxy, C_{1-4} alkoxycarbonyl, a group $-OR_{12}$ or a group $-NR_{10}R_{11}$;

R_{10} and R_{11} independently represent hydrogen or C_{1-6} alkyl;

R_{12} represents C_{1-6} alkylcarbonyloxyC_{1-4} alkyl, C_{3-7} cycloalkylcarbonyloxyC_{1-4} alkyl, C_{1-6} alkoxycarbonyloxyC_{1-4} alkyl, C_{3-7} cycloalkyloxycarbonyloxyC_{1-4} alkyl, C_{1-6} alkoxycarbonylC_{1-4} alkyl, C_{3-7} cycloalkyloxycarbonylC_{1-4} alkyl, C_{1-6} alkylcarbonylaminoC_{1-4} alkyl, C_{3-7} cycloalkylcarbonylaminoC_{1-4} alkyl, a group of formula $-(CH_2)_qR_{13}$, or a group of formula $-(CH_2)_rOR_{13}$;

R_{13} represents phenyl optionally substituted with a group arylcarbonyl, C_{1-6} alkylcarbonyl or aryloxy;

m, n, q and r independently represent 1, 2 or 3;

p represents 0, 1 or 2;

aryl, whenever appearing in the above definitions, represents phenyl or phenyl substituted with 1, 2, 3 or 4 groups selected from C_{1-4} alkyl, C_{1-4} haloalkyl, C_{1-4} alkoxy, C_{1-4} haloalkoxy, halogen, nitro, cyano, hydroxy, amino, C_{1-4} alkylamino or C_{1-4} dialkylamino; and the salts and solvates thereof.

5,827,864

Patent Not Issued For This Number

5,827,865

HETEROCYCLIC COMPOUNDS AS PHARMACEUTICAL

David Haigh, West Sussex, and John Thomas Sime, Surrey, both of England, assignors to SmithKline Beecham p.l.c., Brentford, England

Continuation of Ser. No. 360,755, Mar. 9, 1995, abandoned. This application Jun. 2, 1995, Ser. No. 460,162

Int. Cl.[6] A61K *31/44;* C07D *213/74*

U.S. Cl. 514—352 14 Claims

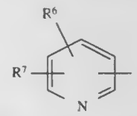
1. A compound of formula (I):



(I)

or a tautomeric form thereof a pharmaceutically acceptable salt thereof, or a pharmaceutically acceptable solvate thereof, wherein:

A^1 represents a moiety of formula (c)



(c)

wherein:

R^6 and R^7 each independently represents a hydrogen or halogen atom, an alkyl or alkoxy group or a substituted or unsubstituted aryl group or when R^6 and R^7 are each attached to adjacent carbon atoms, then R^6 and R^7 together with the carbon atoms to which they are attached form a benzene ring wherein each carbon atom represented by R^6 and R^7 together is substituted or unsubstituted;

A^2 represents a benzene ring having three optional substituents;

A^3 represents a moiety of formula $-(CH_2)_m$—$CH(OR^1)$— wherein R^1 represents substituted or unsubstituted alkyl, aryl, aralkyl or alkylcarbonyl and m represents an integer in the range of from 1 to 5, or A^3 represents a moiety of formula $-(CH_2)_{m-1}$— $CH{=}C(OR^1)$— wherein R^1 and m are as defined above;

R^2 represents OR^3 wherein R^3 represents hydrogen, alkyl, aryl or aralkyl or R^2 represents an aromatic heterocyclyl group or $-NR^4R^5$ wherein R^4 and R^5 each independently represent hydrogen, alkyl or alkylcarbonyl or R^4 and R^5 together with the nitrogen atom to which they are attached form a heterocyclic ring;

X represents NR wherein R represents a hydrogen atom, an alkyl group, an acyl group, an aralkyl group wherein the aryl moiety may be substituted or unsubstituted, or a substituted or unsubstituted aryl group;

Y represents CO or CS or a bond providing that Y represents a bond only when R^2 represents the above mentioned aromatic heterocyclyl group; and

n represents an integer in the range of from 2 to 6.

5,827,866

PEPTIDYL HETEROCYCLES USEFUL IN THE TREATMENT OF THROMBIN RELATED DISORDERS

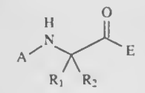
Michael J. Costanzo, Ivyland, and Bruce E. Maryanoff, New Hope, both of Pa., assignors to Ortho Pharmaceutical Corporation, Raritan, N.J.

Filed Jun. 7, 1995, Ser. No. 482,587

Int. Cl.[6] A61K *31/425;* A01N *43/78*

U.S. Cl. 514—369 19 Claims

1. A compound of the formula I:



I

wherein;

A is:

a D or L amino acid which is coupled at its carboxy terminus to the nitrogen depicted in formula I and is selected from the group consisting of alanine, glycine, N—C_{1-8}alkyl-glycine, proline, norleucine, leucine, tert-leucine, isoleucine and valine;

where the amino terminus of said amino acid is connected to a member selected from the group consisting of hydrogen; C_{1-4}alkyl; carboxyC_{1-4}alkyl; C_{1-4}alkoxycarbonylC_{1-4}alkyl; phenylC_{1-4}alkyl; substituted phenyl C_{1-4}alkyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; formyl; C_{1-4}alkoxycarbonyl; C_{1-12}alkylcarbonyl; perfluoroC_{1-4}alkylC_{0-4}alkylcarbonyl; phenylC_{1-4}alkylcarbonyl; substituted phenylC_{1-4}alkylcarbonyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, or amino; perfluoroC_{1-4}alkylsulfonyl; C_{1-4}alkylsulfonyl; C_{1-4}alkoxysulfonyl; phenylsulfonyl; substituted phenylsulfonyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoro C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; 10-camphorsulfonyl; phenylC_{1-4}alkyl sulfonyl; substituted phenylC_{1-4}alkylsulfonyl; perfluoroC_{1-4}alkylsulfinyl;

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C_{1-4}alkylsulfinyl; phenylsulfinyl; substituted phenylsulfinyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoro C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; phenylC_{1-4}alkylsulfinyl; substituted phenylC_{1-4}alkylsulfinyl, wherein the phenyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoro C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; 1-naphthylsulfonyl; 2-naphthylsulfonyl; substituted naphthylsulfonyl, wherein the naphthyl substituents are independently selected from one or more of, C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy or C_{1-4}alkoxycarbonyl; 1-naphthylsulfinyl; 2-naphthylsulfinyl; and substituted naphthylsulfinyl, wherein the naphthyl substituents are independently selected from one or more of C_{1-4}alkyl, perfluoroC_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy and C_{1-4}alkoxycarbonyl;

R_1 is

selected from the group consisting of hydrogen and C_{1-5}alkyl;

R_2 is

selected from the group consisting of aminoC_{2-5}alkyl; guanidinoC_{2-5}alkyl; C_{1-4}allkylguanidinoC_{2-5}alkyl; diC_{1-4}alkylguanidinoC_{2-5}alkyl; amidinoC_{2-5}alkyl; C_{1-4}alkylamidinoC_{2-5}alkyl; diC_{1-4}alkylamidinoC_{2-5}alkyl; C_{1-3}alkoxy C_{2-5}alkyl; phenyl; substituted phenyl, wherein the substituents are independently selected from one or more of, amino, amidino, guanidino, C_{1-4}alkylamino, C_{1-4}dialkylamino, halogen, perfluoro C_{1-4}alkyl, C_{1-4}alkyl, C_{1-3}alkoxy or nitro; benzyl; phenyl substituted benzyl, wherein the substituents are independently selected from one or more of, amino, amidino, guanidino, C_{1-4} alkylamino, C_{1-4}dialkylamino, halogen, perfluoro C_{1-4}alkyl, C_{1-4}alkyl, C_{1-3}alkoxy or nitro; hydroxyC_{2-5}alkyl; C_{1-5}alkylaminoC$_{2-5}$alkyl; C_{1-5}dialkylaminoC$_{2-5}$alkyl; 4-aminocyclohexylC$_{0-2}$alkyl and C_{1-5}alkyl;

E is

a heterocycle selected from the group consisting of oxazolin-2-yl, oxazol-2-yl, thiazol-2-yl, thiazol-5-yl, thiazol-4-yl, thiazolin-2-yl, imidazol-2-yl, 4-oxo-2-quinoxalin-2-yl, 2-pyridyl, 3-pyridyl, benzo[b]thiophen-2-yl, benzoxazol-2-yl, benzimidazol-2-yl, benzothiazol-2-yl, triazol-4-yl, triazol-6-yl, tetrazol-2-yl, pyrimidin-2-yl, quinolin-2-yl, indol-2-yl, pyrazol-2-yl, 4,5,6,7-tetrahydrobenzothiazol-2-yl, naphtho[2,1-d]thiazol-2-yl, naphtho[1,2-d]thiazol-2-yl quinoxalin-2-yl, isoquinolin-1-yl, isoquinolin-3-yl, benzo[b]furan-2-yl, pyrazin-2-yl, quinazolin-2-yl, isothiazol-5-yl, isothiazol-3-yl, purin-8-yl and a substituted heterocycle where the substituents are independently selected selected from C_{1-4}alkyl, perfluoro C_{1-4}alkyl, C_{1-4}alkoxy, hydroxy, halo, amido, nitro, amino, C_{1-4}alkylamino, C_{1-4}dialkylamino, carboxy, C_{1-4}alkoxycarbonyl, hydroxy or phenylC_{1-4}alkylaminocarbonyl;

or pharmaceutically acceptable salts thereof.

5,827,867

Patent Not Issued For This Number

5,827,868

PROSTAGLANDIN ANALOGS

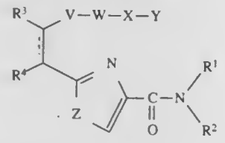
Raj N. Misra, Hopewell; Jagabandhu Das, Hamilton Square; Steven E. Hall, Pennington, all of N.J.; Wen-Ching Han, Holland, Pa.; Philip M. Sher, Plainsboro, and Philip D. Stein, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Oct. 7, 1991, Ser. No. 772,830

Int. Cl.[6] C07D *413/04;* **A01K** *31/42*

U.S. Cl. 514—374 **19 Claims**

1. A compound of the formula



wherein:

V is $-(CH_2)_m-$, —O—, or



but if V is —O— or



R^3 and R^4 must complete an aromatic ring:

W is $-(CH_2)_2-$, —CH=CH— or phenylene;

X is a single bond, —CH=CH—, $-(CH_2)_n-$, or —O—$(CH_2)_n$—; or X is branched alkylene or —O-branched alkylene wherein W is linked to Y through a straight chain bridge of n carbon atoms;

Y is $-CO_2H$, $-CO_2$alkyl, $-CO_2$alkali metal, $-CH_2OH$, $-CONHSO_2R^5$, $-CONHR^6$, or $-CH_2$-5-tetrazolyl;

Z is O or NH;

m is 1, 2, or 3;

n is 1, 2, or 3;

R^1 is hydrogen, alkyl, alkenyl, alkynyl, aralkyl, aryl, cycloalkyl, cycloalkylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl, heteroaryl or heteroarylalkyl, or amide, each of R^1 being unsubstituted or optionally substituted with alkyl, aryl, cycloalkyl, or cycloalkylalkyl;

R^2 is hydrogen, alkyl, aryl, or aralkyl; or

R^1 and R^2 together with the nitrogen to which they are linked may form a 5- to 8-membered ring;

R^3 and R^4 are each independently hydrogen or alkyl; or R^3 and R^4 together complete a cycloalkyl, cycloalkenyl, phenyl, naphthyl, partially saturated naphthyl, pyridinyl, piperidinyl, pyrrolyl, pyrimidinyl, triazinyl, bornanyl, bornenyl, norbornanyl, norbornenyl, bicyclooctanyl, furanyl, pyranyl, dioxanyl, dioxolyl, dioxazolyl, oxazolyl, isoxazolyl, oxazinyl, isoxazinyl, imidazolyl, morpholinyl, oxepinyl, diazepinyl, thiophenyl, thiopyranyl, or thiazolyl ring, optionally substituted through a carbon atom with a halo, lower alkyl, phenyl, halo(lower alkyl), halophenyl, oxo or hydroxyl group;

R^5 is alkyl, aryl or aralkyl;

R^6 is hydrogen, alkyl, aryl, or aralkyl;

"alkyl" and "alkylene" refer to straight and branched chain groups of 1 to 12 carbon atoms;

"alkenyl" refers to groups of 2 to 12 carbon atoms having at least one double bond;

"alkynyl" refers to groups of 2 to 12 carbon atoms having at least one triple bond;

"cycloalkyl" refers to saturated cyclic hydrocarbon groups of 3 to 8 carbon atoms;

"cycloalkenyl" refers to unsaturated, nonaromatic, cyclic hydrocarbon groups of 5 to 8 carbon atoms;

"aryl" refers to monocyclic or bicyclic aromatic groups of 6 to 10 carbon atoms;

"cycloheteroalkyl" refers to 5-, 6-, or 7-membered saturated rings that include 1 or 2 heteroatoms selected from nitrogen, oxygen and sulfur and that are linked to the "N" of the $-NR^1R^2$ group through a carbon atom either beta or gamma to a heteroatom;

"cycloheteroalkylalkyl" refers to 5-, 6-, or 7-membered saturated rings that include 1 or 2 heteroatoms selected from nitrogen, oxygen and sulfur and that are linked to the "N" of the $-NR^1R^2$ group through a $-(CH_2)_x-$ chain wherein x is 1 to 12;

"heteroaryl" refers to 5- or 6-membered rings that include 1 or 2 heteroatoms selected from nitrogen, oxygen and sulfur and that are not linked to the "N" of the $-NR^1R^2$ group directly through a heteroatom;

"heteroarylalkyl" refers to 5- or 6-membered rings that include 1 or 2 heteroatoms selected from nitrogen, oxygen and sulfur and that are linked to the "N" of the $-NR^1R^2$ group through a $-(CH_2)_x-$ chain wherein x is 1 to 12; and

"amide" refers to groups of the formula

$$-(CH_2)_t-C(O)-N(H)-R_a$$

or

$$-(CH_2)_t-N(H)-C(O)-R_a$$

wherein t is 1 to 12 and R_a is alkyl, aryl, cycloalkyl, or cycloalkylalkyl.

5,827,869

SUBSTITUTED BIPHENYL ISOXAZOLE SULFONAMIDES

Natesan Murugesan, Lawrenceville, N.J., assignor to Bristol-Myers Squibb Company, Princeton, N.J.

Division of Ser. No. 487,358, Jun. 7, 1995, Pat. No. 5,612,359, Continuation-in-part of Ser. No. 368,285, Jan. 4, 1995, abandoned, which is a continuation-in-part of Ser. No. 297,187, Aug. 26, 1994, abandoned. This application Dec. 9, 1996, Ser. No. 762,547

Int. Cl.[6] A61K *31/42*

U.S. Cl. 514—374 **9 Claims**

1. A pharmaceutical composition for the treatment of an endothelin-related disorder, comprising the compound N-(3,4-Dimethyl-5-isoxazolyl)-4'-(2-oxazolyl)[1,1'-biphenyl]-2-sulfonamide or a pharmaceutically acceptable salt thereof, in an amount effective therefore, and a physiologically acceptable vehicle or carrier.

5,827,870

ANTIMICROBIAL COMPOSITIONS AND METHODS FOR USING THE SAME

Daniel Frank Chodosh, Meadowbrook, Pa., assignor to Woodward Laboratories, Inc., Los Alamitos, Calif.

Continuation of Ser. No. 459,716, Jun. 2, 1995, abandoned, which is a division of Ser. No. 215,365, Mar. 21, 1994, abandoned. This application Dec. 3, 1996, Ser. No. 756,958

Int. Cl.[6] A61K *31/415*

U.S. Cl. 514—390 **45 Claims**

1. A method for treating an animal having a microbial infection comprising administering to the site of the infection an antimicrobial composition comprising the following distinct components:

(a) an antimicrobial agent comprising benzalkonium chloride present in a therapeutically effective, non-toxic quantity of about 0.05–5 wt %;

(b) allantoin, present in an amount of about 0.05 to 5 weight percent of said antimicrobial composition;

(c) about 0.1 to 20 weight percent surfactant, comprising at least one nonionic, cationic or amphoteric surfactant;

(d) at least one preservative for preserving the antimicrobial composition; and

(e) at least about 60 weight percent water.

5,827,871

MEDICAMENTS 1,2,3,4-TETRAHYDOCARBAZOLES AND 5-HT, AGONIST USE THEREOF

Francis David King; Laramie Mary Gaster, both of Harlow; Alberto Julio Kaumann, Trumpington, and Rodney Christopher Young, Hertford, all of England, assignors to Smithkline Beecham plc, England

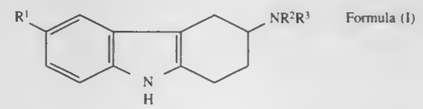
Continuation-in-part of Ser. No. 167,846, Dec. 23, 1993, Pat. No. 5,464,864. This application May 17, 1995, Ser. No. 442,720

Claims priority, application United Kingdom, Jun. 26, 1991, 9113802

Int. Cl.[6] A61K *31/40;* **C07D** *209/82*

U.S. Cl. 514—411 **17 Claims**

1. A method of treatment of a condition wherein a 5-HT_1-like agonist is indicated, which comprises administering to a subject in need thereof an effective amount of a compound of general formula (I):



Formula (I)

wherein

R^1 represents hydrogen, halogen, trifluoromethyl, nitro, hydroxy, C_{1-6}alkyl, C_{1-6}alkoxy, arylC_{1-6}alkoxy, $-CO_2R^4$, $-(CH_2)_nCN$, $-(CH_2)_nCONR^5R^6$, $-(CH_2)_nSO_2NR^5R^6$, C_{1-6}alkanoylamino$(CH_2)_n$, or C_{1-6}alkylsulphonylamino$(CH_2)_n$;

R^4 represents hydrogen, C_{1-6}alkyl or arylC_{1-6}alkyl;

R^5 and R^6 each independently represent hydrogen or C_{1-6}alkyl, or R^5 and R^6 together with the nitrogen atom to which they are attached form a 5 to 7-membered saturated heterocyclic ring, which may optionally contain a further heteroatom selected from oxygen, sulphur or nitrogen;

n represents 0, 1 or 2; and

R^2 and R^3 each independently represent hydrogen, C_{1-6}alkyl or benzyl or together with the nitrogen atom to which they are attached form a pyrrolidino, piperidino or hexahydroazepino ring;

or a physiologically acceptable salt, solvate or hydrate thereof.

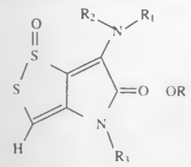
5,827,872

XENOMINS NOVEL HETEROCYCLIC COMPOUNDS WITH ANTIMICROBIAL AND ANTNEOPLASTIC PROPERTIES

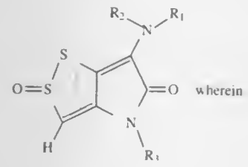
John M. Webster, 5551 Molina Road, North Vancouver, B. C., Canada, V7R 4P3; Jianxiong Li, 117 Buckingham Dr., Port Moody, B. C., Canada, V3H 2T4, and Genhui Chen, 725 Louis Riel, Simon Fraser University, Burnaby, B. C., Canada, V5A 1S6

Filed Aug. 23, 1996, Ser. No. 701,834
Int. Cl.[6] A61K *31/40;* C07D *495/02*
U.S. Cl. 514—421 14 Claims

1. A compound of the structure shown below.



A



B

R_1=hydrogen. R_2=an unsubstituted acyl group; and R_3=hydrogen or alkyl; or a group thereof.

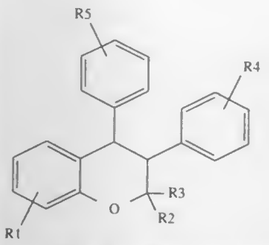
5,827,873

USE OF 3,4-DIPHENYL CHROMANS FOR THE MANUFACTURE OF A PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OR PREVENTION OF CEREBRAL DEGENERATIVE DISORDERS

Niels Korsgaard, Værløse; Michael Shalmi, København V, and Birgitte Hjort Guldhammer, Hillerød, all of Denmark, assignors to Novo Nordisk A/S, Bagsvaerd, Denmark

Continuation of Ser. No. 585,012, Jan. 11, 1996, Pat. No. 5,696,149. This application Jan. 10, 1997, Ser. No. 783,420
Claims priority, application Denmark, Jan. 20, 1995, 0068/95; Jun. 30, 1995, 0776/95
Int. Cl.[6] A61K *31/40;31/35*
U.S. Cl. 514—422 20 Claims

1. A method for preventing cerebral degenerative disorders comprising administering to a patient in need thereof a compound of formula I



(1)

wherein R1, R4, and R5 are individually hydrogen, hydroxy, halogen, trifluoromethyl, lower alkyl, lower alkoxy or (tertiary amino) (lower alkoxy); and R2 and R3 are individually hydrogen or lower alkyl, or a pharmaceutically acceptable salt thereof in an amount sufficient to prevent said disorders.

5,827,874

METHODS OF TREATING PAIN AND INFLAMMATION WITH PROLINE

Hans Meyer, Bäumliweg 18, 4125, Riehen, and Segesser Bernhard, Gilgenbergstrasse 9, 4053, Basel, both of Switzerland

Filed Apr. 29, 1996, Ser. No. 638,765
Claims priority, application Switzerland, May 5, 1995, 01 301/95
Int. Cl.[6] A61K *31/40*
U.S. Cl. 514—423 7 Claims

1. A method of treating inflammation, or pain which comprises administering to an animal requiring such treatment a pharmaceutical composition comprising a therapeutically effective amount of proline, as the active ingredient or a pharmaceutically acceptable salt thereof or mixtures thereof.

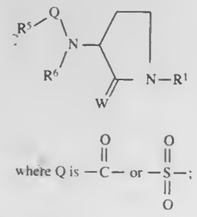
5,827,875

INHIBITORS OF MICROSOMAL TRIGLYCERIDE TRANSFER PROTEIN AND METHOD

John K. Dickson, Jr., Eastampton, N.J.; Jeffrey A. Robl, Newtown, Pa., and Scott A. Biller, Hopewell, N.J., assignors to Bristol-Myers Squibb Company, Princeton, N.J.

Filed Apr. 23, 1997, Ser. No. 842,132
Int. Cl.[6] A61K *31/40;* C07D *207/26*
U.S. Cl. 514—424 16 Claims

1. A compound which has the structure

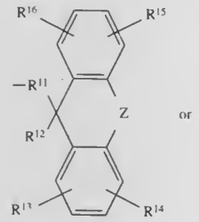


where Q is ;

W is H,H or O;

R^1 is alkyl, alkenyl, alkynyl, aryl, heteroaryl, arylalkyl, diarylalkyl, arylalkenyl, diarylalkenyl, arylalkynyl, diarylalkynyl, diarylalkylaryl, heteroarylalkyl, cycloalkyl, or cycloalkylalkyl, all optionally substituted through available carbon atoms with 1, 2, 3 or 4 groups selected from halo, haloalkyl, alkyl, alkenyl, alkoxy, aryloxy, aryl, arylalkyl, alkylmercapto, arylmercapto, cycloalkyl, cyclo-alkylalkyl, heteroaryl, fluorenyl, heteroarylalkyl, hydroxy or oxo;

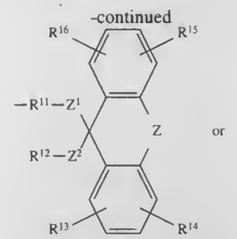
or R^1 is a fluorenyl-type group of the structure



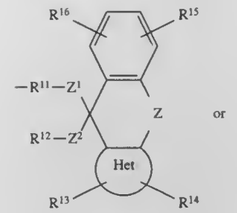
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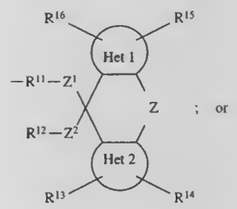
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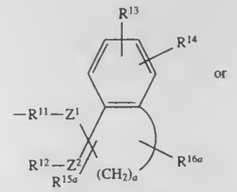


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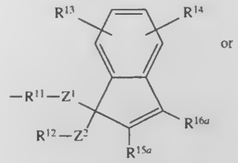


; or

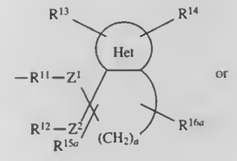
R^1 is an indenyl-type group of the structure



or



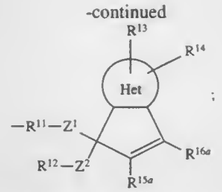
or



or

-continued

B

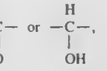


H

;

Z^1 and Z^2 are the same or different and are independently a bond, O, S,

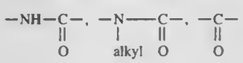
C



with the proviso that with respect to B, at least one of Z^1 and Z^2 will be other than a bond; R^{11} is a bond, alkylene, alkenylene or alkynylene of up to 10 carbon atoms; arylene or mixed arylene-alkylene; R^{12} is hydrogen, alkyl, alkenyl, aryl, haloalkyl, trihaloalkyl, trihaloalkylalkyl, heteroaryl, heteroarylalkyl, arylalkyl, arylalkenyl, cycloalkyl, aryloxy, alkoxy, arylalkoxy or cycloalkylalkyl, with the provisos that

D

(1) when R^{12} is H, aryloxy, alkoxy or arylalkoxy, then Z^2 is



or a bond and

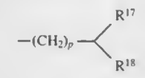
(2) when Z^2 is a bond, R^{12} cannot be heteroaryl or heteroarylalkyl;

Z is a bond, O, S, N-alkyl, N-aryl, or alkylene or alkenylene from 1 to 5 carbon atoms; R^{13}, R^{14}, R^{15}, and R^{16} are independently hydrogen, alkyl, halo, haloalkyl, aryl, cycloalkyl, cycloheteroalkyl, alkenyl, alkynyl, hydroxy, alkoxy, nitro, amino, thio, alkylsulfonyl, arylsulfonyl, alkylthio, arylthio, aminocarbonyl, alkylcarbonyloxy, arylcarbonylamino, alkylcarbonylamino, arylalkyl, heteroaryl, heteroarylalkyl or aryloxy;

E

R^{15a} and R^{16a} are independently hydrogen, alkyl, halo, haloalkyl, aryl, cycloalkyl, cycloheteroalkyl, alkenyl, alkynyl, alkoxy, alkylsulfonyl, arylsulfonyl, alkylthio, arylthio, aminocarbonyl, alkylcarbonyloxy, arylcarbonylamino, alkylcarbonylamino, arylalkyl, heteroaryl, heteroarylalkyl, or aryloxy;

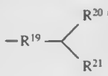
or R^1 is a group of the structure



F

wherein p is 1 to 8 and R^{17} and R^{18} are each independently H, alkyl, alkenyl, aryl, arylalkyl, heteroaryl, heteroarylalkyl, cycloalkyl or cycloalkylalkyl at least one of R^{17} and R^{18} being other than H;

or R^1 is a group of the structure



G

wherein

R^{19} is aryl or heteroaryl;

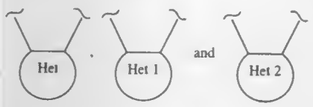
R^{20} is aryl or heteroaryl;

R^{21} is H, alkyl, aryl, alkylaryl, arylalkyl, aryloxy, arylalkoxy, heteroaryl, heteroarylalkyl, heteroarylalkoxy, cycloalkyl, cycloalkylalkyl or cycloalkylalkoxy;

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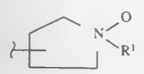
R^5 is independently alkyl, alkenyl, alkynyl, aryl, alkoxy, aryloxy, arylalkoxy, heteroaryl, arylalkyl, heteroarylalkyl, cycloalkyl, cycloalkylalkyl, polycycloalkyl, polycycloalkylalkyl, cycloalkenyl, cycloheteroalkyl, heteroaryloxy, cycloalkenylalkyl, polycycloalkenyl, polycycloalkenylalkyl, heteroarylcarbonyl, amino, alkylamino, arylamino, heteroarylamino, cycloalkyloxy, cycloalkylamino, all optionally substituted through available carbon atoms with 1, 2, 3 or 4 groups selected from hydrogen, halo, alkyl, haloalkyl, alkoxy, haloalkoxy, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, cycloheteroalkyl, cycloheteroalkylalkyl, aryl, heteroaryl, arylalkyl, arylcycloalkyl, arylalkenyl, arylalkynyl, aryloxy, aryloxyalkyl, arylalkoxy, arylazo, heteroaryloxo, heteroarylalkyl, heteroarylalkenyl, heteroaryloxy, hydroxy, nitro, cyano, amino, substituted amino thiol, alkylthio, arylthio, heteroarylthio, arylthioalkyl, alkylcarbonyl, arylcarbonyl, arylaminocarbonyl, alkoxycarbonyl aminocarbonyl, alkynylaminocarbonyl, alkylaminocarbonyl, alkenylaminocarbonyl, alkylcarbonyloxy, arylcarbonyloxy, alkylcarbonylamino, arylcarbonylamino, arylsulfinyl, arylsulfinylalkyl, arylsulfonyl, alkylsulfonyl, arylsulfonylamino, heteroarylcarbonylamino, heteroarylsulfinyl, heteroarylthio, heteroarylsulfonyl, alkylsulfinyl;

R^6 is hydrogen or C_1–C_4 alkyl or C_1–C_4 alkenyl; all optionally substituted with 1, 2, 3 or 4 groups which may independently be any of the substituents listed in the definition of R^5 set out above;



are the same or different and are independently selected from heteroaryl containing 5- or 6-ring members; and

an N-oxide



thereof; stereoisomers thereof; and a pharmaceutically acceptable salt thereof, with the proviso that when R^5 is aryl, then R^1 is other than cycloalkyl, phenyl and phenyllower alkyl.

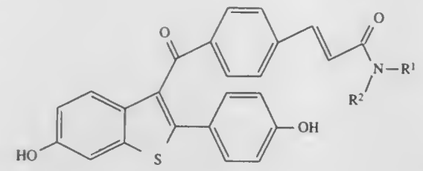
5,827,876

INHIBITION OF BONE LOSS BY 3-(4-ACRYLAMIDOBENZOYL) BENZO[B]-THIOPHENES

Joseph Peter Sabatucci, Cranbury, N.J., assignor to American Home Products Corporation, Madison, N.J.

Filed Apr. 8, 1997, Ser. No. 835,435
Int. Cl.[6] A61K *3/445;31/38;31/385;31/40*
U.S. Cl. 514—448 **14 Claims**

1. A method for the treatment in a host mammal in order to modify the balance between the rate of bone resorption and the rate of bone formation whereby the ratio of the rate of bone resorption to the rate of bone formation in said host animal is reduced, which comprises administering to said host mammal a therapeutically effective amount of a compound of formula:



wherein R^1 and R^2 are independently hydrogen or lower alkyl containing 1–8 carbon atoms, or R^1 and R^2 together with the interposed nitrogen forms a 5–7 membered ring optionally containing an additional heteroatom selected from nitrogen, sulfur or oxygen.

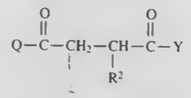
5,827,877

KETOMETHYLENE GROUP-CONTAINING CYSTEINE AND SERINE PROTEASE INHIBITORS

Sankar Chatterjee, Wynnewood, Pa., assignor to Cephalon, Inc., West Chester, Pa.

Filed May 7, 1996, Ser. No. 646,071
Int. Cl.[6] A01N *43/16;* **C07D** *311/82*
U.S. Cl. 514—454 **8 Claims**

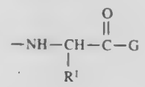
1. A compound of the formula:



wherein:

Q is xanthene-9-yl;

Y has the formula:



wherein:

R^1 and R^2 are independently H, alkyl having from one to about 14 carbons, cycloalkyl having from 3 to about 10 carbons, or a natural or unnatural side chain of an L-amino acid, said alkyl and cycloalkyl groups being optionally substituted with one or more J groups;

J is halogen, lower alkyl, aryl, amino optionally substituted with one to three aryl or lower alkyl groups, guanidino, alkoxycarbonyl, aralkoxycarbonyl, alkoxy, hydroxy, or carboxy; and

G is hydrogen; $C(=O)NR^3R^4$; CH_2R^5 or $C(=O)OR^3$;

wherein:

R^3 and R^4 are each independently hydrogen, alkyl having from 1 to about 10 carbons, said alkyl groups being optionally substituted with one or more J groups, aryl having from about 6 to about 14 carbons, and aralkyl having from about 7 to about 15 carbons; and

R^5 is halogen;

with the proviso that if G is hydrogen and Q is alkyl substituted with J, and said J is an α-amino group, then the α-amino nitrogen must be tertiary.

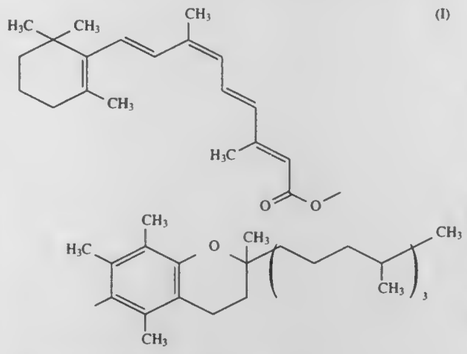
5,827,878

PHARMACEUTICAL COMPOSITION FOR THE TREATMENT OF LEUKEMIA CONTAINING 9-CIS-RETINOIC ACID-α-TOCOPHEROL ESTER

Makoto Makishima, Saitama-ken; Yasuhiro Kanatani, Tokorozawa; Yoshio Honma, Saitama-ken; Kohei Inomata, and Takao Kishiye, both of Saitama-ken, all of Japan, assignors to Nisshin Flour Milling Co., Ltd., Tokyo, Japan

Filed Jun. 27, 1997, Ser. No. 884,040
Claims priority, application Japan, Jul. 1, 1996, 8-171028
Int. Cl.[6] A61K *31/355*
U.S. Cl. 514—458 **3 Claims**

1. A method of inducing the differentiation of leukemia cells in a patient in need thereof comprising treating said patient with an effective amount of the 9-cis-retinoic acid-α-tocopherol ester represented by formula (I):



(I)

thereby inducing differentiation of said cells.

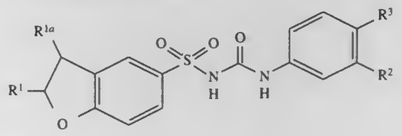
5,827,879

ANTITUMOR COMPOSITIONS AND METHODS OF TREATMENT

William J. Ehlhardt; James E. Ray, and John E. Toth, all of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 3, 1997, Ser. No. 943,474
Int. Cl.[6] A61K *31/34*
U.S. Cl. 514—469 **16 Claims**

1. A compound of the formula



wherein:

R^1 is oxo, hydrogen, or hydroxy;

R^{1a} is oxo, hydrogen, or hydroxy; and

R^2 and R^3 are independently selected from the group consisting of hydrogen, halo, C_1–C_6 alkyl, and trifluoromethyl, provided that no more than one of R^2 and R^3 can be hydrogen;

provided that no more than one of R^1 and R^{1a} is hydrogen; and further provided that no more than one of R^1 and R^{1a} is oxo;

or a pharmaceutically acceptable salt, solvate, or prodrug thereof.

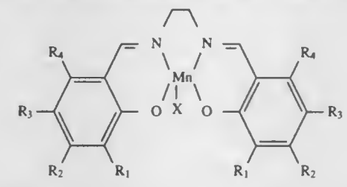
5,827,880

SYNTHETIC CATALYTIC FREE RADICAL SCAVENGERS USEFUL AS ANTIOXIDANTS FOR PREVENTION AND THERAPY OF DISEASE

Bernard Malfroy-Camine, Arlington, and Susan Robin Doctrow, Roslindale, both of Mass., assignors to Eukarion, Inc., Bedford, Mass.

Continuation-in-part of Ser. No. 987,474, Dec. 7, 1992, Pat. No. 5,403,834. This application Jan. 26, 1995, Ser. No. 380,731
Int. Cl.[6] A61K *31/28;* **C07F** *13/00*
U.S. Cl. 514—492 **13 Claims**

1. A salen-metal compound having the structural formula



wherein:

each R_1 is independently hydrogen, fluorine, or methoxy;

each R_2 is independently hydrogen or methoxy;

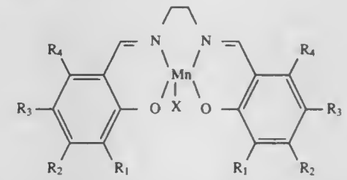
each R_3 is independently hydrogen or methoxy;

each R_4 is independently hydrogen or methoxy; and

X is chlorine or acetoxy;

provided that: when $R_{2\text{-}4}$ are all hydrogen, both R^1's are not methoxy simultaneous with X being acetoxy or chlorine; when $R_{1\text{-}4}$ are all hydrogen, X is not chlorine or acetoxy; and when R_1, R_2 and R_4 are all hydrogen, both R_3's are not methoxy simultaneous with X being chlorine.

12. A pharmaceutical composition comprising a compound of the formula



wherein:

each R_1 is independently hydrogen, fluorine, or methoxy;

each R_2 is independently hydrogen or methoxy;

each R_3 is independently hydrogen or methoxy;

each R_4 is independently hydrogen or methoxy; and

X is chlorine or acetoxy; and

a pharmaceutically acceptable carrier;

provided that: $R_{1\text{-}4}$ are not all hydrogen simultaneous with X being chlorine; and when R_1, R_2 and R_4 are all hydrogen, both R_3's are not methoxy simultaneous with X being chlorine.

5,827,881

DIESTERS OF CARBONIC ACID ENDOWED WITH ANTIVIRAL AND ANTI-INFLAMMATORY ACTIVITY

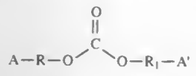
Alberto Sala; Giorgio Bertolini; Gianfranco Pavich; Fabrizio Marcucci; Gianni Gromo, and Giuliana Porro, all of Sesto S. Giovanni, Italy, assignors to Italfarmaco S.P.A., Milano, Italy

Continuation of Ser. No. 687,567, Aug. 9, 1996, abandoned. This application Jun. 4, 1997, Ser. No. 869,043
Claims priority, application Italy, Feb. 28, 1994, MI94A0349
Int. Cl.[6] A61K *31/265*
U.S. Cl. 514—512 **3 Claims**

1. A method of treating a patient requiring anti-lympho-tropic adenopathy viral therapy or anti-inflammatory therapy which com-

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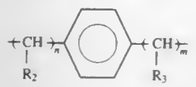
prises administering to said patient an effective dosage of a composition comprising as the principal active ingredient a compound of the formula.



(I)

wherein

R and R_1 independently represent methylene, ethylene, (C_{3-18})alkylene optionally branched, (C_{2-10})alkylidene optionally branched, (C_{5-7})cycloalkylene, a group



wherein R_2 and R_3 are independently hydrogen or a (C_{1-4})alkyl group, and n and m are independently 0 or an integer from 1 to 6; and

A and A' independently represent: the group R_4



wherein R_4 and R_5 are independently hydrogen, or (C1–14)alkyl optionally branched, in admixture with a pharmaceutically acceptable carrier.

5,827,882

METHOD OF USING ETHYL PYRUVATE FOR TREATING WRINKLES

Ruey J. Yu, Ambler, and Eugene J. Van Scott, Abington, both of Pa., assignors to Tristrata Technology, Inc., Wilmington, Del.

Continuation of Ser. No. 135,841, Oct. 7, 1993, which is a continuation of Ser. No. 840,149, Feb. 24, 1992, abandoned, which is a division of Ser. No. 393,749, Aug. 15, 1989, Pat. No. 5,091,171, which is a continuation-in-part of Ser. No. 945,680, Dec. 23, 1986, abandoned. This application Jun. 6, 1995, Ser. No. 465,695

Int. Cl.[6] A61K *7/48;31/22*

U.S. Cl. 514—546 **17 Claims**

1. Method of visibly reducing a human skin wrinkle comprising topically applying to said wrinkle a composition comprising ethyl pyruvate in an amount and for a period of time sufficient to visibly reduce said wrinkle.

5,827,883

DERMATOLOGICAL USE OF VITAMIN D DERIVATIVES

Pierre Barbier, Rixheim; Marc Muller, Huningue, both of France, and Josef Stadlwieser, Basel, Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

PCT No. PCT/EP96/00176, § 371 Date Jul. 21, 1997, § 102(e) Date Jul. 21, 1997, PCT Pub. No. WO96/22776, PCT Pub. Date Aug. 1, 1996

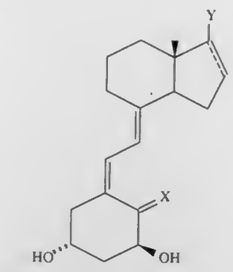
PCT Filed Jan. 17, 1996, Ser. No. 875,187

Claims priority, application European Pat. Off., Oct. 26, 1995, 95101030

Int. Cl.[6] A01N *37/02;37/08;* **C07C** *69/74;69/66*

U.S. Cl. 514—546 **21 Claims**

1. A method of treating dermatological conditions comprising topically administering to a host in need of such treatment an effective amount of a compound of formula I



I

wherein

X is $=CH_2$ or H,H;

Y is

$—CH(CH_3)—(A)_n—C(O)—OR^1$ (a)

$—CH(CH_3)—CH_2—O—C(O)R^2$ (b)

or

$—C(O)—OR^1$ (c);

A is —CH=CH— or $CH_2—CH_2$—

R^1 is lower alkyl, cycloalkyl, cycloalkylmethyl, $—CH_2R^3$ or $—CH_2—CH_2R^3$;

R^2 is lower alkyl, cycloalkyl or R^3;

R^3 is hydroxy-lower alkyl, hydroxy-cycloalkyl or trifluoromethyl-hydroxy-lower-alkyl;

n is 0 or 1; and the dotted bond in the five-membered ring is optional.

5,827,884

SKIN PEEL MAINTENANCE COMPOSITION AND METHOD

Zein E. Obagi, Beverly Hills, and George H. Michel, Glendora, both of Calif., assignors to OMP Acquisition Corporation, Torrance, Calif.

Continuation-in-part of Ser. No. 528,782, Sep. 15, 1995, abandoned. This application Jun. 28, 1996, Ser. No. 672,797

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—557 **41 Claims**

1. A method for treating a human patient's skin to cause exfoliation without subjecting the patient to skin peeling ultraviolet light which comprises:

forming a composition comprising a visualizing agent, a surfactant and an acid or acid equivalent dispersed in a carrier liquid, the concentration of the acid or acid equivalent not exceeding 25% in said composition;

applying said composition to a predetermined area of said patient's skin in a quantity effective to cause a predetermined degree of said exfoliation of said skin;

determining degree of coverage of said area of skin by visual observation of extent of appearance of said visualizing agent; and

maintaining said composition in contact with said area of skin for a period of time effective to result in said predetermined degree of exfoliation of said skin.

5,827,885

METHODS OF TREATING ANIMALS TO MAINTAIN OR INCREASE CD-4 AND CD-8 CELL POPULATIONS

Mark E. Cook; Michael W. Pariza; Xiaoyun Yang, and Danielle DeVoney, all of Madison, Wis., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Division of Ser. No. 458,956, Jun. 2, 1995, Pat. No. 5,674,901, which is a continuation-in-part of Ser. No. 875,896, Apr. 29, 1992, Pat. No. 5,430,066. This application Aug. 18, 1997, Ser. No. 912,614

Int. Cl.[6] A61K *31/20*

U.S. Cl. 514—558 **3 Claims**

1. A method of preventing or alleviating adverse effects produced in an animal by a causative agent selected from the group consisting of tumor necrosis factor and a virus, said method comprising administering orally or parenterally to an animal at risk of or predisposed to experiencing the adverse effects a safe amount of a member selected from the group consisting of a conjugated linoleic acid (CLA) and a substance which is converted in the animal to CLA, said amount being effective to prevent or alleviate said adverse effects caused by the agent.

5,827,886

COMPOSITION FOR RELIEF OF ARTHRITIS-INDUCED SYMPTOMS

Theodore Hersh, Atlanta, Ga., assignor to Thione International, Inc., Atlanta, Ga.

Filed May 7, 1997, Ser. No. 852,612

Int. Cl.[6] A61K *31/195;33/04;31/16;31/615*

U.S. Cl. 514—562 **19 Claims**

1. A topical composition for ameliorating inflammatory reactions and symptoms of the various diseases and syndromes of arthritis, lumbago, myalgias and neuralgias and post-exercise symptoms and low back pain syndrome comprising reduced glutathione, a selenoamino acid and an anesthetic in suitable quantities to reduce inflammation and chronic pain characteristic of said diseases in a suitable carrier for topical application.

5,827,887

BIPHENYL COMPOUNDS

Jean-François Gourvest, Claye-Souilly; Dominique Lesuisse, Paris, and Jean-Georges Teutsch, Pantin, all of France, assignors to Roussel Uclaf, France

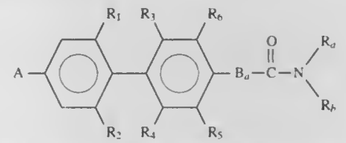
Filed Jul. 31, 1996, Ser. No. 690,681

Claims priority, application France, Aug. 8, 1995, 95 09618

Int. Cl.[6] C07C *235/18;* **A61K** *31/19*

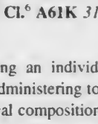
U.S. Cl. 514—563 **23 Claims**

1. A compound selected from the group consisting of a compound of the formula



(I)

wherein A is selected from the group consisting of carboxy, —CN, $—NO_2$, HONHCO— and a nitrogen heterocycle, B_a is selected from the group consisting of a) $—(CH_2)_n—$, n is an integer from 1 to 6, b) $—(CH_2)_{n-1}—CH(Alk)—$, Alk is alkyl of 1 to 6 carbon atoms and d) $—O—(CH_2)_{n'}—$, n' being an integer from 1 to 6, R_a and R_b are individually selected from the group consisting of hydrogen, alkyl of 1 to 8 carbon atoms, acyl of organic carboxylic acid of 1 to 12 carbon atoms, phenyl, benzyl, diphenylmethyl and trityl or together with the nitrogen to which they are attached form an optionally unsaturated 5 to 6 member heterocycle optionally containing a second —S—, —NH or —O—, R_1, R_2, R_3, R_4, R_5, and R_6 are individually selected from the group consisting of hydrogen, halogen, optionally substituted alkyl of 1 to 8 carbon atoms, alkoxy and alkylthio of 1 to 8 carbon atoms, $—NO_2$, —CN, $—CF_3$, $—NH_2$, mono and dialkyl amino with alkyl of 1 to 8 carbon atoms and



R'a and R'b together with the nitrogen to which they are attached form an optionally unsaturated 5 to 6 member nitrogen heterocycle optionally containing a second nitrogen or —O— or —S— optionally substituted with alkyl of 1 to 4 carbon atoms or R_4 and R_5 form —CH=CH—CH=CH— and their non-toxic, pharmaceutically acceptable salts with acids or bases.

5,827,888

PERINATAL TREATMENT OF A FETUS TO AVOID OXYGEN DEPRIVATION

Donald J. Abraham, Midlothian, Va., and Michael J. Gerber, Denver, Colo., assignors to The Center For Innovative Technology, Herndon, Va.

Filed Oct. 29, 1996, Ser. No. 741,174

Int. Cl.[6] A61K *31/19*

U.S. Cl. 514—563 **1 Claim**

1. A method for perinatal treatment of a fetus to avoid oxygen deprivation, comprising the step of administering to a mother of a fetus in need thereof a sufficient quantity of 2-[4-((((3,5-dimethylphenyl)amino)carbonyl)methyl)phenoxy]-2-methyl propionic acid to increase release of oxygen from said mother to said fetus.

5,827,889

ANAL FISSURE TREATMENT PREPARATION AND METHOD

Robert Cunico, 4124 Lakeside Dr., Richmond, Calif. 94806

Continuation of Ser. No. 636,655, Apr. 23, 1996, abandoned. This application Jun. 27, 1997, Ser. No. 883,811

Int. Cl.[6] A61K *31/195*

U.S. Cl. 514—565 **14 Claims**

1. A method of treating an individual with an anal fissure, comprising periodically administering to the anal-rectal area of the individual a pharmaceutical composition comprising a carrier and, as an active agent, an acid addition salt of L-arginine, wherein (a) the amount of the active agent in the composition and (b) the time period during which treatment is carried out are selected so as to provide for healing of the anal fissure.

5,827,890

SUCCINAMIDE DERIVATIVES, PROCESSES FOR THEIR PREPARATION AND THEIR USE AS GELATINASE AND COLLAGENASE INHIBITORS

Nigel Robert Arnold Beeley, Thame, and Thomas Andrew Millican, Maidenhead, both of United Kingdom, assignors to Celltech Therapeutics Ltd., Slough, United Kingdom

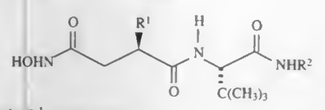
Filed Apr. 4, 1996, Ser. No. 586,822

Claims priority, application United Kingdom, Aug. 2, 1993, 9315965; Jan. 11, 1994, 9400377

Int. Cl.[6] A61K *31/19;* **C07C** *259/00*

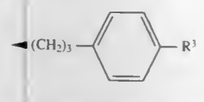
U.S. Cl. 514—575 **14 Claims**

1. A compound of formula (1)



(I)

wherein R^1 represents



where R^3 is a hydrogen or halogen atom or a methyl, trifluoromethyl or a methoxy group;

R^2 represents a hydrogen atom or a methyl group; or a salt, solvate, hydrate or prodrug thereof.

5,827,891

HIV PROTEASE INHIBTORS

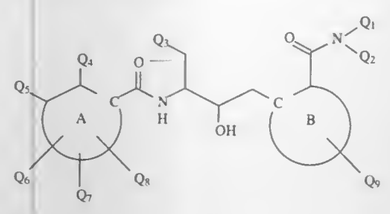
Bruce A. Dressman, Indianapolis; James E. Fritz, Greenwoode, both of Ind.; Marlys Hammond, Pasadena, Calif.; William J. Hornback; Stephen W. Kaldor, both of Indianapolis, Ind.; Vincent J. Kalish, San Diego, Calif.; John E. Munroe, Indianapolis, Ind.; Siegfried Heinz Reich, San Diego; John H. Tatlock, Poway, both of Calif.; Timothy A. Shepherd, and Michael J. Rodriguez, both of Indianapolis, Ind., assignors to Agouron Pharmaceuticals, Inc.

Division of Ser. No. 190,764, Feb. 2, 1994, Pat. No. 5,484,926, which is a continuation-in-part of Ser. No. 133,543, Oct. 7, 1993, abandoned, and Ser. No. 133,696, Oct. 7, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 478,599

Int. Cl.[6] A61K *31/16;31/165;* **C07C** *233/00*

U.S. Cl. 514—616 **12 Claims**

1. A compound of the formula:



wherein:

Q_1 and Q_2 are each independently selected from hydrogen and substituted and unsubstituted alkyl and aryl;

Q_3 is selected from mercapto and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, and aryl;

Q_4, Q_5, Q_6, Q_7, and Q_8 are each independently selected from hydrogen, hydroxyl, mercapto, nitro, halogen, —O—J, where J is a substituted or unsubstituted hydrolyzable group, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, sulfinyl, sulfonyl, amino, alkyl, cycloalkyl, saturated and partially saturated heterocycle, aryl, and $L_6C(O)L_4$, where L_6 is a single bond, —O or —N, and further where L_4 is alkyl, hydroxyl, alkoxyl or hydrogen; and further wherein any one or more of Q_4, Q_5, Q_6, Q_7, and Q_8 may be a member of a spiro ring, and any two of Q_4, Q_5, Q_6, Q_7, and Q_8 may together be members of a ring;

Q_9 is selected from hydrogen, halogen, hydroxyl, mercapto, and substituted and unsubstituted alkoxyl, aryloxyl, thioether, amino, alkyl, and aryl, where Q_9 may form part of a ring;



is a monocyclic or polycyclic carbocycle, which is optionally further substituted; and



is a monocyclic or polycyclic carbocycle, which is optionally further substituted;

or a prodrug or pharmaceutically acceptable salt of said compound.

5,827,892

USE OF DROLOXIFENE FOR THE TREATMENT OF CARDIOVASCULAR DISEASES

Roland Löser, Feldafing; Michael Schliack, München, both of Germany, and David D. Thompson, Gales Ferry, Conn., assignors to Pfizer Inc., New York, N.Y.

PCT No. PCT/IB95/00403, § 371 Date Mar. 13, 1996, § 102(e) Date Mar. 13, 1996, PCT Pub. No. WO96/02242, PCT Pub. Date Feb. 1, 1996

Continuation-in-part of Ser. No. 276,969, Jul. 19, 1994, Pat. No. 5,441,986. This PCT application May 26, 1995, Ser. No. 605,131

Int. Cl.[6] A61K *31/135*

U.S. Cl. 514—648 **2 Claims**

1. A method for the treatment or prevention of atherosclerosis which comprises administering to a mammal in need of such treatment an effective amount of droloxifene or a pharmaceutically acceptable salt thereof.

5,827,893

MECHANICAL AND PHARMACOLOGICAL THERAPIES TO TREAT CARDIAC ARREST

Keith G. Lurie, 4751 Girard Ave. S., Minneapolis, Minn. 55409, and Karl Lindner, Steinhovelstr 9, Ulm 89075, Germany

Filed Mar. 29, 1996, Ser. No. 625,733

Int. Cl.[6] A61K *25/00*

U.S. Cl. 514—653 **28 Claims**

1. A pharmaceutical composition comprising vasopressin and epinephrine in combination with a pharmaceutically acceptable carrier, wherein the vasopressin and the epinephrine are present in amounts effective to increase arterial blood pressure so as to enhance blood flow to the brain and heart when administered to patient suffering from cardiac arrest and undergoing cardiopulmonary resuscitation.

5,827,894

ANTI-NEOPLASTIC, ANTI-VIRAL OR ANTI-RETROVIRAL SPERMINE DERIVATIVES

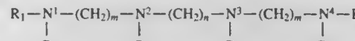
Raymond J. Bergeron, Gainesville, Fla., assignor to University of Florida Research Foundation, Inc., Gainesville, Fla.

Continuation of Ser. No. 478,040, Jun. 7, 1995, abandoned, which is a division of Ser. No. 162,776, Dec. 8, 1993, Pat. No. 5,455,277, which is a division of Ser. No. 834,345, Feb. 12, 1992, Pat. No. 5,342,945, which is a division of Ser. No. 210,520, Jun. 23, 1988, Pat. No. 5,091,576, which is a continuation-in-part of Ser. No. 66,227, Jun. 25, 1987, abandoned, which is a continuation-in-part of Ser. No. 936,835, Dec. 2, 1986, abandoned. This application Sep. 18, 1996, Ser. No. 714,296

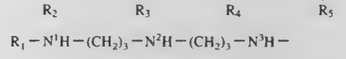
Int. Cl.[6] A61K *31/13;31/135;31/505*

U.S. Cl. 514—674 **2 Claims**

1. A method of treating a human or non-human animal in need of anti-viral, anti-psoriasis or anti-retroviral therapy comprising administering to said animal an anti-viral, anti-psoriasis or anti-retroviral effective amount of a compound having one of the formulae:



(I)



(II)

wherein:

R_1 and R_6 may be the same or different and are alkyl having from 1 to 12 carbon atoms or hydrocarbyl aralkyl having up to 12 carbon atoms;

R_2–R_5 may be the same or different and are H, R_1 or R_6;

m is an integer from 3 to 6, inclusive;

n is an integer from 3 to 6, inclusive; or

(III) a salt thereof with a pharmaceutically acceptable acid.

5,827,895

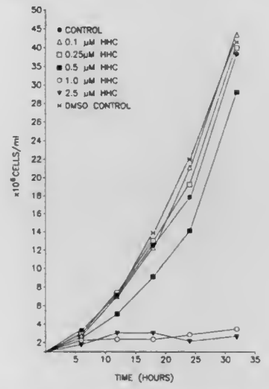
HEXAHYDROLUPULONES USEFUL AS ANTICANCER AGENTS

Louise Nutter; Emily O. Ngo; Thomas Stephan, all of Minneapolis, and Gilbert J. Mannering, St. Paul, all of Minn., assignors to Regents of the University of Minnesota, Minneapolis, Mich.

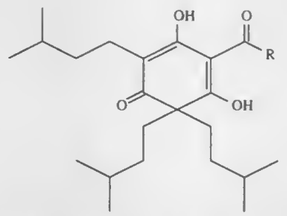
Continuation-in-part of Ser. No. 607,473, Feb. 27, 1996, abandoned. This application Sep. 20, 1996, Ser. No. 717,120

Int. Cl.[6] A61K *31/12*

U.S. Cl. 514—690 **18 Claims**



1. A method comprising inhibiting the growth of *Staphylococcus aureus* or *Mycobacterium tuberculosis* bacteria by contacting the bacteria with an effective amount of a compound of formula (I):



(I)

wherein R is —$CH(CH_3)_2$; or a pharmaceutically acceptable salt thereof; wherein the bacteria is resistant to methicillin, ciproflaxacin, vancomycin, chloramphenicol, penicillin, aminoglycosides, erythromycin, cephalothin, cloxacillin, tetracycline, chloramphenicol, isoniazid, rifampin, pyrazinamide or ethambutol.

5,827,896

PINITOL AND DERIVATIVES THEREOF FOR THE TREATMENT OF METABOLIC DISORDERS

Richard E. Ostlund, Ladue, and William R. Sherman, University City, both of Mo., assignors to Washington University, St. Louis, Mo.

Continuation-in-part of Ser. No. 407,430, Mar. 17, 1995, Pat. No. 5,550,166. This application Mar. 4, 1996, Ser. No. 610,039

Int. Cl.[6] A61K *31/075*

U.S. Cl. 514—715 **15 Claims**

1. A composition comprising an effective amount of pinitol or a derivative or metabolite thereof in a dosage form effective in lowering plasma free fatty acid levels in a mammal.

5,827,897

STIMULATING THE DIFFERENTIATION OF PREDIPOCYTIC CELLS AND THERAPIES BASED THEREON

Gérald Ailhaud; Paul Grimaldi; Irina Safonova, all of Nice; Braham Shroot, Antibes, and Uwe Reichert, Pont du Loup, all of France, assignors to Centre International De Recherches Dermatologiques Galderma, Valbonne, France

Division of Ser. No. 510,312, Aug. 2, 1995, Pat. No. 5,728,739. This application Jan. 22, 1997, Ser. No. 787,216

Claims priority, application France, Aug. 2, 1994, 94-09584

Int. Cl.[6] A61K *31/07;31/215;31/22;31/20*

U.S. Cl. 514—725 **23 Claims**

1. A regimen for treating an insulin-resistant state in a mammalian organism in need of such treatment, comprising administering to such organism a therapeutically effective amount of (a) at least one ligand displaying affinity for the nuclear receptors for retinoic acid and/or isomers thereof, and (b) at least one fatty acid.

5,827,898

USE OF BISPHENOLIC COMPOUNDS TO TREAT TYPE II DIABETES

Atul S. Khandwala, San Carlos, and Jian Luo, Brisbane, both of Calif., assignors to Shaman Pharmaceuticals, Inc., South San Francisco, Calif.

Filed Oct. 7, 1996, Ser. No. 726,591

Int. Cl.[6] A61K *31/05*

U.S. Cl. 514—734 **3 Claims**

1. A method for reducing blood glucose which comprises administering to a mammal a composition whose active ingredient consists essentially of nordihydroguaiaretic acid or a pharmaceutically acceptable salt thereof.

5,827,899

Patent Not Issued For This Number

5,827,900

METHOD AND PHARMACEUTICAL PREPARATIONS FOR REDUCING THE ACTIVITY OF CELLS

Joseph Levy, and Yoav Sharoni, both of Omer, Israel, assignors to Makhteshim Agan, Beer-Sheva, Israel

Continuation of Ser. No. 158,114, Nov. 24, 1993, abandoned. This application Sep. 22, 1995, Ser. No. 532,263

Claims priority, application Israel, Nov. 30, 1992, 103920

Int. Cl.[6] A61K *31/01*

U.S. Cl. 514—762 **6 Claims**

1. A method of inhibiting the growth of cancer cells sensitive to lycopene, wherein the cancer cells the growth of which is to be inhibited are selected from the group consisting essentially of mammary cancer, endometrial cancer, ovarian cancer, and lung cancer comprising administering to a subject in need thereof a composition consisting essentially of lycopene, said composition containing a growth-inhibiting effective amount of lycopene wherein the lycopene is natural extract, a biosynthetic product or a synthetic product.

5,827,901

PROCESS OF PRODUCING METHANOL

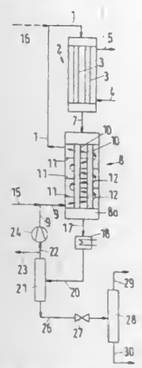
Peter König, Frankfurt am Main, and Hermann Göhna, Bad Soden, both of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

Filed Jan. 31, 1997, Ser. No. 792,325

Claims priority, application Germany, Feb. 15, 1996, 196 05 572.5

Int. Cl.[6] C07C *27/00*

U.S. Cl. 518—706 **7 Claims**



1. A process of producing methanol from a synthesis gas containing hydrogen and carbon oxides through conversion of said synthesis gas on a granular, copper-containing catalyst at pressures in the range from 20 to 120 bar and temperatures in the range from 130° to 350° C., where the synthesis gas is passed through a first and a second synthesis reactor connected in series, said two reactors containing fixed beds of said catalyst, comprising the steps of:

a) producing a feed mixture of fresh and recycled synthesis gas preheated to a temperature in the range from 220° to 280° C., introducing said feed mixture into the first synthesis reactor, in which the catalyst is provided in tubes surrounded by water as a coolant which is boiling at an elevated pressure,

b) in the first synthesis reactor 40 to 80% of the introduced carbon oxides are converted, and a first mixture containing gases and methanol vapor is withdrawn, said first mixture is directly fed into the second synthesis reactor without an intermediate cooling,

c) passing the first mixture through said second synthesis reactor, in which the catalyst is indirectly cooled with said feed mixture, withdrawing preheated feed mixture from said second reactor and feeding it into said first reactor, withdrawing a second mixture containing gases and methanol vapor from the second synthesis reactor, said second mixture is cooled and methanol vapor is condensed, a methanol containing condensate is withdrawn and a synthesis gas stream is separately withdrawn and is mixed with fresh synthesis gas to produce said feed mixture.

5,827,902

FISCHER-TROPSCH PROCESS WITH A MULTISTAGE BUBBLE COLUMN REACTOR

Cristina Maretto, Padova, and Vincenzo Piccolo, Paullo, both of Italy, assignors to AGIP Petroli S.p.A., Rome; AGIP S.p.A., Milan, both of Italy, and Institut Francais du Petrole, Rueil Malmaison, France

Filed Aug. 6, 1997, Ser. No. 907,010

Claims priority, application Italy, Aug. 7, 1996, MI96A1717

Int. Cl.[6] C07C *27/00*

U.S. Cl. 518—706 **9 Claims**

1. A process for the optimum operation of a bubble column reactor in the presence of a gas phase and a liquid phase with suspended solid which involves the formation of prevalently heavy hydrocarbons starting from gaseous mixtures comprising CO and H_2 in the presence of suitable catalysts, characterized in that:

1) the process is carried out in a number of stages in series of ≧2, the temperature in each stage being controlled independently;

2) the flow conditions of the gas phase and liquid phase containing the suspended solid are essentially plug flow, with a gas velocity of between 3 cm/s and 200 cm/s and a liquid velocity of between 0 and 10 cm/s;

3) the solid concentration in each stage is essentially constant and equal for each single stage, and is between 5 and 50% (vol./vol.).

5,827,903

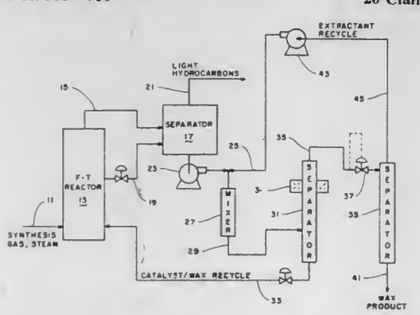
SEPARATION OF CATALYST FROM FISCHER-TROPSCH SLURRY

Curt M. White, Pittsburgh, Pa.; Michael S. Quiring, Katy, Tex.; Karen L. Jensen, Pittsburgh, Pa.; Richard F. Hickey, Bethel Park, Pa., and Larry D. Gillham, Bartlesville, Okla., assignors to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Jan. 31, 1996, Ser. No. 594,969

Int. Cl.[6] F16K *00/00;* **C07C** *27/00;* **B01J** *20/34;* **R01J** *23/40*

U.S. Cl. 518—710 **20 Claims**



1. A process for converting synthesis gas including hydrogen and carbon monoxide to hydrocarbons wherein the synthesis gas is contacted with a catalyst in a reaction zone, the catalyst having activity for reducing carbon monoxide is dispersed in a liquid to form a slurry and wherein a hydrocarbon wax is produced in the reaction zone, the improvement comprising:

removing the wax product with a portion of the dispersed catalyst from the reaction zone;

mixing the removed catalyst/wax product with a dense-fluid solvent to extract a portion of the wax into the solvent;

separating the solvent with extracted wax from the dispersed catalyst and residual wax;

reducing the density of the solvent to precipitate a wax product and separating the wax product from the solvent.

5,827,904

MEDICAL IMPLANT COMPOSITION

David Hahn, 7528 Oxford Cir., Dublin, Calif. 94568

Filed Sep. 27, 1996, Ser. No. 722,632

Int. Cl.[6] C08K *5/01;* **A61F** *2/40;2/38*

U.S. Cl. 523—113 **7 Claims**

1. A load bearing medical implant, consisting essentially of:

a. a polymeric solid material; and

b. a sufficient amount of a carotenoid compound doped into said polymeric solid material to produce a stable, oxidation resistant, matrix for forming the medical, load bearing implant.

5,827,905

BIODEGRADABLE PLASTICS FILLED WITH REINFORCING MATERIALS

Ernst Grigat, Leverkusen; Hanns Peter Müller, Odenthal; Wolfgang Schulz-Schlitte, Langenfeld; Aziz El Sayed, and Ralf Timmermann, both of Leverkusen, all of Germany, assignors to Bayer Aktiengesellschaft, Germany

Filed Sep. 18, 1996, Ser. No. 718,123

Claims priority, application Germany, Sep. 26, 1995, 195 35 715.9; Nov. 15, 1995, 195 42 498.0; Dec. 20, 1995, 195 47 636.0; Jan. 22, 1996, 196 01 912.5

Int. Cl.[6] C08K *3/26;3/34;* **C08L** *1/02;77/12*

U.S. Cl. 523—124 **6 Claims**

1. Reinforced thermoplastic moulding compositions containing aliphatic polyester amides, and wherein said polyester amides have a random distribution of starting substances in the polymer and have a molecular weight of at least 10000 g/mol, and reinforcing materials selected from the group consisting of wood flour, gypsum, wollastonite, chalk, kaolin, and cellulose.

5,827,906

SURFACE-MODIFIED FILLER COMPOSITION

Heinz-Dieter Metzemacher, Cologne, and Rainer Seeling, Bergheim, both of Germany, assignors to Martinswerk GmbH Fur Chemische und Metallurgische Produktion, Cologne, Germany

PCT No. PCT/EP96/00743, § 371 Date Aug. 25, 1997, § 102(e) Date Aug. 25, 1997, PCT Pub. No. WO96/26240, PCT Pub. Date Aug. 29, 1996

PCT Filed Feb. 22, 1996, Ser. No. 894,377

Claims priority, application Switzerland, Feb. 23, 1995, 530/95

Int. Cl.[6] C08K *9/04;9/06;3/22*

U.S. Cl. 523—205 **28 Claims**

1. A surface-modified filler composition for thermoplastic olefins or thermoplastic elastomers comprising at least one halogen-free, flame-inhibiting filler which has been surface-treated only with a composition consisting of:

(a) at least one fatty acid derivative selected from the group consisting of polymeric fatty acids, keto fatty acids, fatty alkyl oxazolines and fatty alkylbisoxazolines, optionally at least one processing auxiliary and optionally at least one fibrous reinforcing material, or

(b) at least one fatty acid derivative selected from the group consisting of polymeric fatty acids, keto fatty acids, fatty alkyl oxazolines and fatty alkylbisoxazolines, at least one siloxane derivative selected from the group consisting of oligoalkylsiloxanes, polydialkylsiloxanes, polyalkylarylsiloxanes, polydiarylsiloxanes, oligoalkylsiloxanes which have been functionalized with at least one reactive group, polydialkylsiloxanes which have been finctionalized with a least one reactive group, polyalkylarylsiloxanes which have been functionalized with at least one reactive group and polydiarylsiloxanes which have been functionalized with at least one reactive group, optionally at least one processing auxiliary and optionally at least one fibrous reinforcing material, or

(c) at least one fatty acid, at least one siloxane derivative selected from the group consisting of oligoalkylsiloxanes, polydialkylsiloxanes, polyalkylarylsiloxanes, polydiarylsiloxanes, oligoalkylsiloxanes which have been finctionalized with at least one reactive group, polydialkylsiloxanes which have been functionalized with at least one reactive group, polyalkylarylsiloxanes which have been functionalized with at least one reactive group, and polydiarylsiloxanes which have functionalized with at least one reactive group, optionally at least one processing auxiliary and optionally at least one fibrous reinforcing material.

5,827,907

HOMO-, CO- OR MULTICOMPONENT THERMOPLASTIC POLYMER DISPERSED IN A THERMOSET RESIN

Jeffrey Thomas Gotro, Endwell; Jeffrey Curtis Hedrick, Peekskill; Konstantinos Papathomas, Endicott; Niranjan Mohanlal Patel, Wappingers Falls; Alfred Viehbeck, Fishkill, all of N.Y., and William Joseph, Minneapolis, Minn., assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 30, 1993, Ser. No. 114,419

Int. Cl.[6] C08K *9/00;* **C08F** *283/00;* **C08G** *65/48*

U.S. Cl. 523—206 **34 Claims**

1. A curable material consisting of:

the reaction product of a fluorine-containing thermoset material selected from one or more of the following resins epoxy, bismaleimides, acetylene terminated resins, bisnadimides, benzocyclobutenes, and bismaleimide triazine-epoxy resin blend, with a fluorine-containing arylene ether homopolymer;

said reaction product being heat-curable at temperatures of between about 100° C. to 325° C.;

said reaction product in the cured state comprising said fluorine-containing thermoset material having a plurality of discrete phases of said fluorine-containing arylene ether homopolymer dispersed therein;

said arylene ether homopolymer phases being in the range of submicron to micron size.

5,827,908

NAPHTHALENE AND OR BIPHENYL SKELETON CONTAINING EPOXY RESIN COMPOSITION

Kazuhiro Arai; Tadaharu Ikeda, and Toshio Shiobara, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

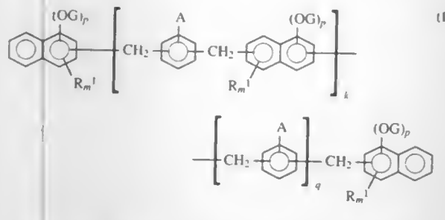
Continuation-in-part of Ser. No. 688,681, Jul. 29, 1996, abandoned, which is a continuation of Ser. No. 377,247, Jan. 24, 1995, abandoned. This application Feb. 6, 1997, Ser. No. 796,544

Claims priority, application Japan, Jan. 26, 1994, 6-023684

Int. Cl.[6] C08K *3/20;3/34;3/36;* **C08L** *63/00*

U.S. Cl. 523—212 **17 Claims**

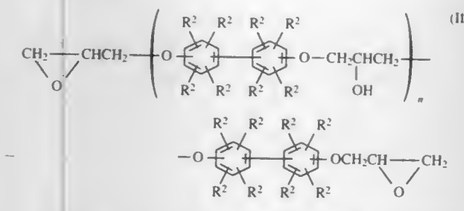
1. An epoxy resin composition comprising at least one epoxy resin having an epoxy equivalent of 100 to 400 selected from the group consisting of a naphthalene skeleton-containing epoxy resin of the following formula (I):



(I)

wherein R^1 is an alkyl group having 1 to 10 carbon atoms, OG is a glycidoxy group, A is a hydrogen atom or glycidoxy group, letter k is an integer of 0 to 5, q is an integer of 0 to 3, m is an integer of 0 to 2, and p is equal to 1 or 2, OG groups may be attached to either or both rings of the naphthalene nucleus,

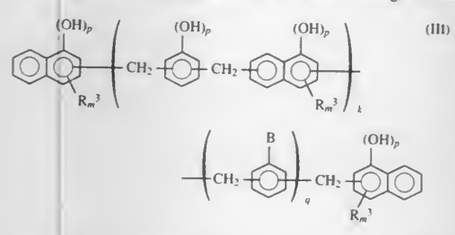
and a biphenyl skeleton-containing epoxy resin of the following formula (II):



(II)

wherein R^2 is a hydrogen atom, halogen atom or monovalent hydrocarbon group having 1 to 5 carbon atoms, and letter n is an integer of 0 to 5,

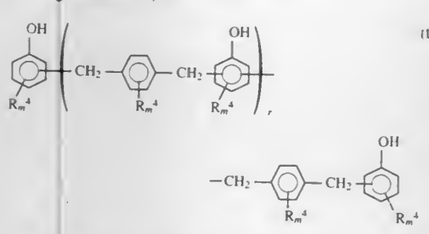
at least one curing agent having a hydroxyl equivalent of 90 to 250 selected from the group consisting of a naphthalene skeleton-containing phenolic resin of the following formula



(III)

wherein R^3 is an alkyl group having 1 to 10 carbon atoms, B is a hydroxyl group or hydrogen atom, letter k is an integer of 0 to 5, q is an integer of 0 to 3, m is an integer of 0 to 2, and p is equal to 1 or 2, OH groups may be attached to either or both rings of the naphthalene nucleus,

and an aralkyl skeleton-containing phenolic resin of the following formula (IV):



(IV)

wherein R^4 is a hydrogen atom or alkyl group having 1 to 10 carbon atoms, letter m is an integer of 0 to 2, and r is an integer of 1 to 5,

in an amount of 50 to 80 parts by weight per 100 parts by weight of the epoxy resin,

an inorganic filler having a mean weight diameter of about 5 to 30 μm in an amount of about 200 to 1200 parts by weight per 100 parts by weight of the epoxy resin and curing agent combined, and

an inorganic water absorbing agent having a mean weight diameter of 0.5 to 20 μm selected from the group consisting of molecular sieve, silica gel, porous silica having a specific surface area of 10 to 200 m^2/g, and active alumina other than said inorganic filler, in an amount of 1 to 50% by weight based on the weight of the entire composition, said inorganic water absorbing agent being regenerated at 200° to 300° C. for about 2 to 12 hours prior to use, wherein said regenerated inorganic water absorbing agent has an adsorbed water content of 0.1% by weight or less,

said composition curing into a product having a coefficient of water diffusion of up to 1×10^{-4} $cm^2/hr.$ as measured at a thickness of 3 mm under humid conditions at 85° C. and RH 85%.

5,827,909

RECIRCULATING A PORTION OF HIGH INTERNAL PHASE EMULSIONS PREPARED IN A CONTINUOUS PROCESS

Thomas A. DesMarais, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 370,694, Jan. 10, 1995, abandoned. This application Sep. 17, 1996, Ser. No. 716,510

Int. Cl.[6] C08J *9/26;9/28*

U.S. Cl. 523—346 **39 Claims**

1. A continuous process for the preparation of a high internal phase emulsion, which process comprises:

A) providing a liquid oil phase feed stream comprising an effective amount of a water-in-oil emulsifier;

B) providing a liquid water phase feed stream;

C) simultaneously introducing the liquid feed streams into a dynamic mixing zone at flow rates such that the initial weight ratio of water phase to oil phase is in the range from about 2:1 to about 10:1;

D) subjecting the combined feed streams in said dynamic mixing zone to sufficient shear agitation to at least partially form an emulsified mixture in said dynamic mixing zone;

E) continuously withdrawing the emulsified mixture from said dynamic mixing zone;

F) recirculating from about 10 to about 50% of the withdrawn emulsified mixture to said dynamic mixing zone prior to step (D);

G) subjecting the recirculated emulsion in the dynamic mixing zone to sufficient shear mixing to completely form a stable high internal phase emulsion having a water to oil phase weight ratio of at least about 4:1; and

H) continuously withdrawing from the dynamic mixing zone the portion of the stable high internal phase emulsion that is not recirculated in step (F);

wherein at any time subsequent to step D), the flow rate of the oil phase stream, the water phase stream, or both may be altered to modify the weight ratio of water phase to oil phase.

5,827,910

MAR-RESISTANT COATING

Robert J. Barsotti, Franklinville, N.J., and J. David Nordstrom, Detroit, Mich., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

PCT No. PCT/US94/14240, § 371 Date Jun. 26, 1996, § 102(e) Date Jun. 26, 1996, PCT Pub. No. WO95/18166, PCT Pub. Date Jul. 6, 1995

PCT Filed Dec. 21, 1994, Ser. No. 666,486

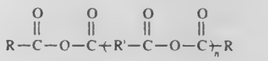
Int. Cl.[6] C08L *63/00;* **C08F** *20/00*

U.S. Cl. 523—400 **9 Claims**

1. A curable coating composition comprising organic solvent and binder comprising

(a) 20–80%, on the basis of components (a) and (b), of an anhydride resin having a weight average molecular weight of less than about 2000 that contains (1) a central moiety, and (2) three to four pendant, non-cyclic anhydride moieties bonded to each central moiety;

(b) 80-20%, on the basis of components (a) and (b), of a compound having at least two non-cyclic acid anhydride groups and represented by the following formula



wherein R is a monovalent hydrocarbon group having 1 to 50 carbon atoms, R' is independently selected from bivalent hydrocarbon groups having 2 to 50 carbon atoms, R and R' optionally containing an ether linkage, urethane linkage or ester linkage, and n is an integer of 2–100;

(c) at least one organic component having at least two epoxy groups and;

(d) a functional amount of at least one catalyst, wherein the ratio of equivalents of epoxy to anhydride is from 0.7 to 1.4.

5,827,911

COLORED THERMOPLASTIC RESIN COMPOSITION

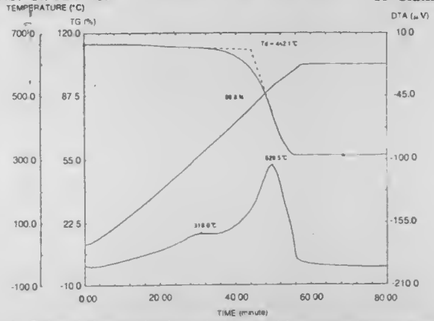
Akihiko Hayashi, and Masataka Nishikawa, both of Osaka, Japan, assignors to Orient Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 22, 1997, Ser. No. 837,707

Claims priority, application Japan, Apr. 23, 1996, 8-127886

Int. Cl.[6] C08K *5/3465;5/521;5/41;5/101*

U.S. Cl. 524—89 **15 Claims**



1. Colored thermoplastic resin composition comprising a transparent thermoplastic resin and a black dye contained therein, wherein said black dye is a black dye obtained by reaction of nigrosine with at least one anionic surfactant selected from the group consisting of

(a) sulfuric acid ester series surfactants and the corresponding salts thereof,

(b) phosphoric acid ester series surfactants and the corresponding salts thereof,

(c) sulfonic acid series surfactants and the corresponding salts thereof, and

(d) carboxylic acid series surfactants and the corresponding salts thereof.

5,827,912

RUBBER COMPOUNDS CONTAINING OLIGOMERIC SILANES

Thomas Scholl, Bergisch Gladbach, Germany, assignor to Bayer AG, Germany

Filed Jun. 3, 1996, Ser. No. 657,095

Claims priority, application Germany, Jun. 16, 1995, 195 21 799.3; Dec. 28, 1995, 195 49 027.4

Int. Cl.[6] L08K *5/41*

U.S. Cl. 524—155 **12 Claims**

1. A rubber compound for manufacture of tires comprising rubber, a filler and at least one silane of the formula (I):

$$R^1R^2R^3Si—X^1—(—S_x—Y—)_m—(—S_x—X^2—SiR^1R^2R^3)_n \quad (I),$$

wherein

R^1, R^2 and R^3 are the same or different and represent C_1–C_{18} alkyl or C_1–C_{18} alkoxy radicals which may be interrupted by oxygen, nitrogen or sulphur atoms, C_6–C_{12} aryl, C_6–C_{12} aryloxy, C_7–C_{18} alkylaryl, or C_7–C_{18} alkylaryloxy, wherein at least one of the groups R^1 and R^3 is an alkoxy, aryloxy or alkylaryloxy group;

X^1 and X^2 are the same or different and represent linear, branched or cyclic C_1–C_{12} alkylene groups;

Y represents linear, branched or cyclic C_1–C_{18} alkylene groups, which may be substituted by C_6–C_{12} aryl, C_1–C_8 alkoxy or hydroxy groups and may be interrupted by oxygen, sulphur or nitrogen atoms or aromatic C_6–C_{12} groups, C_6–C_{12} arylene groups, or heteroarylene groups;

m represents for a whole number from 1 to 20;

n represents for a whole number from 1 to 6; and

x represents a number from 1 to 6;

wherein the silane (I) is present in amounts from 0.1 to 15 wt. %, based on the amount of rubber

and wherein either:

i) the filler is carbon black, and the compound contains an additional cross-linking agent selected from the group consisting of sulfur and peroxides; or

ii) the filler is silica or silica and carbon black and additional cross-linking agents are not present.

5,827,913

HOT MELT ADHESIVE COMPRISING AN ENCAPSULATED INGREDIENT

John P. Baetzold, North St. Paul; Thomas F. Kauffman, Woodbury; Steven L. Scholl, Cottage Grove, and Eugene R. Simmons, Vadnais Heights, all of Minn., assignors to H.B. Fuller Licensing & Financing, Inc., St. Paul, Minn.

Filed Feb. 5, 1997, Ser. No. 795,617

Int. Cl.[6] C08K *9/10;* **B05D** *5/10;* **B32B** *27/32;27/42*

U.S. Cl. 523—210 **20 Claims**

1. A method of making a hot melt adhesive composition comprising the steps of:

a) combining unencapsulated hot melt adhesive ingredients to form a molten mixture;

b) providing at least one ingredient encapsulated in a shell, wherein at least a portion of said shell material becoming molten at a temperature ranging from about 175° F. to about 350° F.;

c) combining said molten composition with said encapsulated ingredient at a temperature lower than the melt point of said shell.

5,827,914

Patent Not Issued For This Number

5,827,915

METHOD FOR PREVENTING SUPERCOOLING OF A LATENT HEAT STORAGE COMPOSITION AND A LATENT HEAT STORAGE EQUIPMENT UTILIZING THE SAME

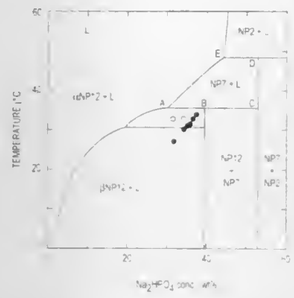
Kenji Saita, and Yutaka Suzuki, both of Ibaraki-ken, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 503,492, Jul. 18, 1995. This application Sep. 22, 1997, Ser. No. 935,296

Claims priority, application Japan, Jul. 20, 1994, 6-168220

Int. Cl.[6] C08J *5/36;3/10;3/30;3/32*

U.S. Cl. 524—394 **17 Claims**



1. A method for preventing supercooling of a latent heat storage composition, the composition comprising: a peritectic salt hydrate selected from the group consisting of disodium hydrogenphosphate dodecahydrate, sodium thiosulfate pentahydrate, sodium carbonate decahydrate and sodium acetate trihydrate; water; and a water-swellable crosslinking polymer;

comprising the steps of selecting the molar ratio of water to anhydrous salt from the region in which the ratio is from 13.5 to 20 for disodium hydrogenphosphate dodecahydrate from 5.5 to 8.0 for sodium thiosulfate pentahydrate, from 13 to 16 for sodium carbonate decahydrate, from 3.3 to 5.0 for sodium acetate trihydrate and a temperature of secondary nucleation of the peritectic salt hydrate is higher than a temperature of secondary nucleation of a lower hydrate of the same salt, and;

maintaining a part of the latent heat storage composition at a temperature the same as or lower than a melting point of the peritectic salt hydrate during heat storage and release process at the remaining part.

5,827,916

FORMULATED ETHYLENE α-OLEFIN ELASTOMERIC COMPOUNDS

Kevin W. McKay, Baton Rouge; Robert R. Blanchard, Brusly, and Edwin R. Feig, Baton Rouge, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 572,325, Dec. 14, 1995, abandoned, which is a continuation of Ser. No. 436,775, May 8, 1995, abandoned, which is a division of Ser. No. 945,035, Sep. 15, 1992, Pat. No. 5,414,040. This application Feb. 28, 1997, Ser. No. 803,850

Int. Cl.[6] C08K *3/26*

U.S. Cl. 524—425 **12 Claims**

1. A formulated elastomeric composition consisting essentially of from about 10 to about 95 weight percent of at least one homogeneous linear ethylene/α-olefin copolymer, at least one curing agent, and at least one filler, wherein the α-olefin is a C_5–C_{20} α-olefin, and wherein the copolymer has a density of about 0.86 to about 0.89 g/cm^3.

5,827,917

METHOD FOR TREATING A TALC POWDER WITH A VIEW TO INCORPORATING IT IN A THERMOPLASTIC MATERIAL

Georges Fourty, Toulouse, France, assignor to Talc de Luzenac, Luzenac, France

Filed Jun. 18, 1996, Ser. No. 663,057

Claims priority, application France, Dec. 28, 1993, 93 15855

Int. Cl.[6] C08J *5/10;* **C08K** *3/34;* **C08L** *29/02*

U.S. Cl. 524—451 **16 Claims**

1. A method for incorporating a granular talc powder in a material, which comprises:

a) mixing the talc powder with water and a polyethylene glycol (PEG), a polypropylene glycol (PPG) or a copolymer of these compounds, in relative proportions by weight of between 10% and 35% of water with respect to the weight of dry talc, and between 0.05% and 2% of PEG, PPG or copolymer with respect to the weight of dry talc;

b) pressing the mixture through dies, and chopping the mixture into lengths on leaving the dies so as to obtain granules with a mean size greater than that of the grains of the initial powder;

c) incorporating the products obtained in the material either in the form of granules resulting from the chopping operation, or, following handling operations, in the form of a mixture of powder and agglomerates resulting from a partial disintegration of the granules; and

d) carrying out a mechanical dispersion so as to disintegrate the granules or agglomerates completely in order to release the grains of the initial powder and to distribute said grains in the mass of material.

5,827,918

PHASE CHANGE INK FORMULATION USING UREA AND URETHANE ISOCYANATE-DERIVED RESINS

Donald R. Titterington, Tualatin; Jeffery H. Banning, Hillsboro; Clifford R. King, Salem, all of Oreg., and Loc V. Bui, Valencia, Calif., assignors to Tektronix, Inc., Wilsonville, Oreg.

Filed Jun. 28, 1996, Ser. No. 671,998

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00*

U.S. Cl. 524—590 **43 Claims**

1. A phase change ink carrier composition comprising in combination:

(a) a urethane resin that is the reaction product of the reaction of at least one alcohol and an isocyanate, the alcohol further being selected from the group of alcohols consisting of a monohydric aliphatic alcohol, a monohydric aromatic alcohol, a monohydric aliphatic/aromatic alcohol, a monohydric fused ring alcohol, a polyol and mixtures thereof;

(b) a urea resin that is the reaction product of an isocyanate and at least one monoamine; and

(c) a mono-amide.

5,827,919

FLUOROURETHANE ADDITIVES FOR WATER-DISPERSED COATING COMPOSITIONS

Donald Douglas May, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 7, 1996, Ser. No. 695,105

Int. Cl.[6] C08J *3/00;* **C08K** *3/20;* **C08L** *75/00;* **B05D** *3/02*

U.S. Cl. 524—590 **9 Claims**

1. A polyfluorourethane compound which is the product of the reaction of: (1) at least one diisocyanate, (2) at least one fluorochemical compound containing at least one Zerewitinoff hydrogen in an amount sufficient to react with 5% to 80% of the isocyanate groups in the diisocyanate, (3) at least one compound of formula R_{10}—$(R_2)_k$—YH in an amount sufficient to react with 5% to 80% of the isocyanate groups in the diisocyanate wherein R_{10} is a C_1–C_{18} alkyl, C_2–C_{18} omega-alkenyl radical, C_2–C_{18} omega-alkenoyl; R_2 is $—C_nH_{2n}—$ optionally end-capped with $—[OCH_2C(R_4)H]_p—$, $—[OCH_2C(CH_2Cl)H]_p—$, or $—C(R_5)(R_6)(OCH_2C[CH_2Cl]H)_p—$ wherein R_4, R_5, and R_6 are the same or different and are H or a C_1–C_6 alkyl radical, n is 0 to 12, p is 1 to 50; Y is O, S, or $N(R_7)$ wherein R_7 is H or C_1–C_6 alkyl; and k is 0 or 1; and optionally (4) water in an amount sufficient to react with 5% to 60% of the isocyanate groups in the diisocyanate.

5,827,920

EMULSION COMPOSITION

Kei Watanabe; Hiroyuki Kakoki, and Kenzo Ito, all of Yokohama, Japan, assignors to Shiseido Company, Ltd., Tokyo, Japan

PCT No. PCT/JP96/01803, § 371 Date May 12, 1997, § 102(e) Date May 12, 1997, PCT Pub. No. WO97/02090, PCT Pub. Date Jan. 23, 1997

PCT Filed Jun. 28, 1996, Ser. No. 793,443

Claims priority, application Japan, Jun. 30, 1995, 7-166474

Int. Cl.[6] C08L *31/02;83/04*

U.S. Cl. 524—833 **17 Claims**

1. An emulsion composition comprising (i) an acrylic acid-methacrylic acid alkyl copolymer, (ii) a C_{12} to C_{28} higher alcohol which is solid at room temperature, and (iii) a silicone oil, the weight ratio of the component (i)/component (ii) being not more than 0.5, with the proviso that said composition includes no surfactant.

5,827,921

SILICONE-BASED AQUEOUS EMULSION COMPOSITION

Yoshihito Osawa; Sachiko Nezu; Yoshinobu Takahashi, and Satoshi Kuwata, all of Gunma-ken, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Japan

Filed Nov. 27, 1996, Ser. No. 757,553

Claims priority, application Japan, Nov. 29, 1995, 7-310284

Int. Cl.[6] C08L *83/00*

U.S. Cl. 524—837 **19 Claims**

1. A silicone-based aqueous emulsion composition which comprises:

(a) water as the dispersion medium of the emulsion composition; and

(b) a combination of ingredients, as the dispersed phase in the dispersion medium, comprising:

(A) 100 parts by weight of an organopolysiloxane having, in a molecule, at least two alkenyl groups bonded to the silicon atoms;

(B) from 0.05 to 20 parts by weight of an organohydrogen polysiloxane having, in a molecule, at least two hydrogen atoms directly bonded to the silicon atoms;

(C) from 1 to 100 parts by weight of a powder of a colloidal silica or a polyorganosilsesquioxane;

(D) from 0.5 to 20 parts by weight of a reaction product of an amino group-containing organosilane compound and a carboxylic acid anhydride compound; and

(E) from 0.0001 to 1 part by weight of a catalytic compound for the hydrosilation reaction between the alkenyl groups in the ingredient (A) and the silicon-bonded hydrogen atoms in the ingredient (B).

5,827,922

AQUEOUS SILYLATED POLYMER CURABLE COMPOSITIONS WITH TIN CATALYSTS

Ming J. Chen, Valley Cottage, and Frederick D. Osterholtz, Pleasantville, both of N.Y., assignors to OSi Specialties, Inc., Greenwich, Conn.

Continuation-in-part of Ser. No. 452,163, May 19, 1995, Pat. No. 5,621,038. This application Feb. 28, 1997, Ser. No. 808,113

Int. Cl.[6] C08L *83/00*

U.S. Cl. 524—837 **24 Claims**

1. A curable composition comprising:

(a) a stable, water dispersible, curable polymer containing a sterically hindered alkoxylated silane group at 0.1 to 75 weight percent of the total composition;

(b) water dispersible or water soluble, hydrolytically stable organotin catalyst, at 0.1 to 10 weight percent of the total composition; and

(c) water at 99.8 to 24.9 weight percent of the total composition.

5,827,923

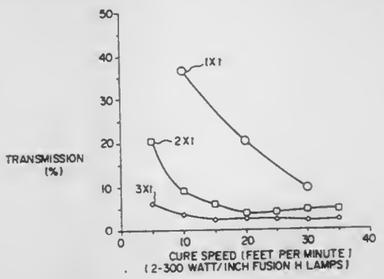
ABRASION RESISTANT, CURABLE HARDCOATING COMPOSITIONS AND TINTED ARTICLES MADE THEREFROM

George F. Medford, Ballston Lake; Gregory R. Gillette, Clifton Park, both of N.Y., and Norio Sato, Ohta, Japan, assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 422,368, Apr. 14, 1995, Pat. No. 5,614,321. This application Jan. 10, 1997, Ser. No. 781,704

Int. Cl.[6] C08L *35/00*

U.S. Cl. 524—854 **20 Claims**



1. A curable coating composition comprising:

(A) an effective amount of a nonvolatile colloidal silica;

(B) an effective amount of an acrylate or methacrylate compound, containing at least one functional group capable of reacting with said colloidal silica;

(C) an effective amount of at least one monomer which contains two or more functional groups selected from the group consisting of acryloxy and methacryloxy groups;

(D) a catalytic amount of a free radical initiator; and

(E) an organic tintability additive which remains substantially unpolymerized after the remainder of the coating composition is cured.

5,827,924
POLYMER SEALANT MICROENCAPSULATED BY POLYURETHANE REACTION AND ITS BINDER SOLUTION

In-Hwan Park; Kyung-Suck Min, both of Daejeon, and Sang-Chul Park, Seoul, all of Rep. of Korea, assignors to Korea Research Institute of Chemical Technology, Rep. of Korea

PCT No. PCT/KR94/00073, § 371 Date Dec. 15, 1995, § 102(e) Date Dec. 15, 1995, PCT Pub. No. WO94/29603, PCT Pub. Date Dec. 22, 1994
PCT Filed Jun. 16, 1994, Ser. No. 564,219
Claims priority, application Rep. of Korea, Jun. 16, 1993, 1993 10984; Jun. 16, 1993, 1993 10985
Int. Cl.[6] B32B *19/00;* **C08F** *8/30;* **C08L** *75/00;27/00*
U.S. Cl. 525—123 **17 Claims**



1. A microcapsule comprising a polymer sealant and a microcapsule wall, wherein the polymer sealant is microencapsulated by an interfacial polymerization reaction between a continuous aqueous surfactant phase and an aqueous oil-droplet phase,
wherein the continuous aqueous surfactant phase comprises:
a polyfunctional alcohol; and
a surfactant, wherein the surfactant comprises a mixture of gelatin and arabic gum, and
wherein the aqueous oil-droplet phase comprises vinyl monomers, oligomers, redox initiators, organic solvents, and triisocyanate.

5,827,925
POLYMERIC DRUG DELIVERY SYSTEM

Samuel J. Tremont, Manchester, Mo.; Paul Waddell Collins, Deerfield, Ill.; William Eldredge Perkins, Libertyville, Ill., and Peter Hadley Jones, Bull Valley, Ill., assignors to Monsanto Company, St. Louis, Mo.

PCT No. PCT/US91/05029, § 371 Date Jan. 25, 1993, § 102(e) Date Jan. 25, 1993, PCT Pub. No. WO92/01477, PCT Pub. Date Feb. 6, 1992
PCT Filed Jul. 22, 1991, Ser. No. 966,171
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—102 **31 Claims**

1. A delivery system for releasing an active ingredient at pH values up to about 7 and for inhibiting release of the active ingredient at pH values above 7, the system, comprising a polymeric material covalently bonded to the active ingredient through a covalent bond that is pH sensitive and capable of being cleaved at pH values up to about 7.

5,827,926
MOISTURE-CURABLE, HOT-MELT COMPOSITION

Yoshinori Shimizu, Tokyo, Japan, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Nov. 8, 1996, Ser. No. 745,364
Int. Cl.[6] C08L *33/06;75/04*
U.S. Cl. 525—127 **23 Claims**

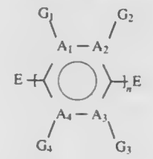
1. A moisture-curable hot-melt composition comprising a polyurethane prepolymer and a crystalline polymer obtained from monomer(s) containing at least one crystalline (meth)acrylate monomer with no active hydrogen.

5,827,927
MACROMONOMERS HAVING REACTIVE END GROUPS

Robert R. Gagné, Pasadena; Matthew Louis Marrocco, III, Santa Ana; Mark Steven Trimmer, Pasadena, and Neil H. Hendricks, Brea, all of Calif., assignors to Maxdem Incorporated, San Dimas, Calif.

Continuation of Ser. No. 331,144, Oct. 27, 1994, abandoned, which is a continuation of Ser. No. 746,917, Aug. 19, 1991, abandoned. This application May 14, 1996, Ser. No. 645,914
Int. Cl.[6] C08F *8/00*
U.S. Cl. 525—143 **31 Claims**

1. A rigid-rod macromonomer of the formula:



wherein each A_1, A_2, A_3, and A_4, on each monomer unit, independently, is C or N; each G_1, G_2, G_3, and G_4, on each monomer unit, independently, is H or a solubilizing side group, provided that at least one monomer unit has at least one solubilizing side group, wherein said solubilizing side groups provide macromonomers with a solubility of at least 0.5% by weight in the solvent system from which they are formed, and provided that when any of A_1, A_2, A_3, and A_4 is N, the corresponding G_1, G_2, G_3, or G_4 is nil, wherein said solubilizing side groups G are selected from the group consisting of Phenyl, biphenyl, naphthyl, phenanthryl, anthracenyl, benzyl, benzoyl, naphthoyl, phenoxy, phenoxyphenyl, phenoxybenzoyl, alkyl, alkyl ketone, aryl, aryl ketone, aralkyl, alkaryl, alkoxy, aryloxy alkyl ester, aryl ester, amide, alkyl amide, dialkyl amide, aryl amide, diaryl amide, alkyl aryl amide, amides of cyclic amines such as piperidine, piperazine and morpholine, alkyl ether, aryl ether, alkyl sulfides, aryl sulfides, alkyl sulfones, aryl sulfones, thioether, fluoro, trifluoromethyl, perfluoroalkyl, and pyridyl, where alkyl is a linear or branched hydrocarbon chain having between 1 and 30 carbon atoms, and aryl is any single, multiple or fused ring aromatic or heteroaromatic group having between 3 and 30 carbon atoms, and fluorine-substituted analogs of the aforementioned G groups; E is a reactive end group selected from the group consisting of acetals, acetylenes, acetyls, acid anhydrides, acrylamides, acrylates, aldehydes, alkyl aldehydes, amides, amines, anilines, aryl aldehydes, azides, benzocyclobutenes, biphenylenes, carboxylates, carboxylic anhydrides, cyanates, cyanides, epoxides, esters, ethers, formyls, fulvenes, heteroaryls, hydrazines, hydroxylamines, imides, imines, isocyanates, ketals, ketoalkyls, ketoaryls, ketones, maleimides, nadimides, nitriles, olefins, phenols, phosphates, phosphonates, silanes, silicates, silicones, silyl ethers, styrenes, sulfonamides, sulfones, sulfonic acids and their salts, sulfoxides, tetrahydropyranyl ethers, thioethers, urethanes, vinyl ethers, and vinyls; the macromonomer has an average degree of polymerization, DP_n, greater than 6; and adjacent monomer units are oriented head-to-head, head-to-tail, or randomly.

5,827,928
ONE-COMPONENT, THERMOSETTING RESIN COMPOSITION FOR COATING USE

Hideo Morimoto, Hirakata; Takashi Irie, Suita; Kei Aoki, Ikoma, and Haruhiko Sawada, Osaka, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 11, 1996, Ser. No. 630,630
Claims priority, application Japan, Apr. 12, 1995, 7-111152
Int. Cl.[6] C08F *20/00;20/52*
U.S. Cl. 525—217 **13 Claims**

1. A one-component, thermosetting resin composition for coating use comprising:

(a) a component containing of α, β-ethylenically unsaturated carbonyl groups in the molecule;
(b) a component containing a plurality of an activated methylene group or an activated methyne group in the molecule;
(c) a quaternary ammonium salt, a quaternary phosphonium salt or a tertiary sulfonium salt, having a halide monobasic carboxylate, polybasis carboxylate, nitrate, nitrite, sulfonate, sulfite, phosphate or acid phosphate ester counter anion;
(d) a five-membered cyclic compound as an independent component or covalently attached to at least one of said component (a) and said component (b).

5,827,929
FUNCTIONALIZED INITIATORS FOR ANIONIC POLYMERIZATION

James A. Schwindeman, Lincolnton; Eric J. Granger, Charlotte; John F. Engel, Belmont, and Conrad W. Kamienski, Gastonia, all of N.C., assignors to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 436,784, May 8, 1995, Pat. No. 5,621,149, which is a continuation-in-part of Ser. No. 332,217, Oct. 31, 1994, abandoned. This application Apr. 12, 1996, Ser. No. 631,274
Int. Cl.[6] C08F *297/04;* **C07C** *43/115*
U.S. Cl. 525—272 **31 Claims**

6. Hydrocarbon solutions of monofunctional ether initiators of the following structure;

$$M—Z—O—C(R^1R^2R^3)$$

wherein M is an alkali metal; Z is a branched or straight chain hydrocarbon group which contains 3–25 carbon atoms, optionally containing aryl or substituted aryl groups containing lower alkyl, lower alkoxy, lower alkylthio, or dialkylamino, and R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl groups containing lower alkyl, lower alkoxy, lower alkylthio, or lower dialkylamino groups, aryl, and substituted aryl groups containing lower alkyl, lower alkoxy, lower alkylthio, or lower dialkylamino groups.

13. A process for the anionic polymerization of an anionically polymerizable monomer comprising the steps of:
a) initiating polymerization of a conjugated polyene hydrocarbon having 4 to 30 carbon atoms or a vinylsubstituted aromatic hydrocarbon in a hydrocarbon or mixed hydrocarbon-polar solvent media at a temperature of 10°–70° C. with an initiator having the formula

$$M—Z—O—C(R^1R^2R^3)$$

wherein M is an alkali metal selected from the group consisting of lithium, sodium and potassium; Z is a branched or straight chain hydrocarbon group which contains 3–25 carbon atoms, optionally containing aryl or substituted aryl containing lower alkyl, lower alkoxy, lower alkylthio or lower dialkylamino; and R^1, R^2 and R^3 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl groups containing lower alkyl, lower alkoxy, lower alkylthio, or lower dialkylamino groups, aryl, and substituted aryl groups containing lower alkyl, lower alkoxy, lower alkylthio, or lower dialkylamino groups to produce an intermediate polymer and
b) reacting the intermediate polymer with a functionalizing compound to produce a functionalized polymer
c) optionally hydrogenating the functionalized polymer
d) further reacting the functionalized polymer with one or more comonomers in the presence of a strong acid catalyst to simultaneously deprotect the polymer and polymerize the comonomers at both functional sites or
e) further reacting the functionalized polymer with other comonomers in the absence of strong acid catalysts, then deprotecting the resultant copolymer and
f) further reacting the resultant copolymer with the same or other comonomers.

5,827,930
CURABLE COATING COMPOSITION

Walter H. Ohrbom, Harland Township; Brian D. Bammel; John D. McGee, both of Highland, all of Mich.; Todd A. Seaver, Fort Wayne, Ind.; Gregory G. Menovcik, Farmington Hills, Mich.; Paul J. Harris, and John W. Rehfuss, both of Bloomfield, Mich., assignors to BASF Corporation, Southfield, Mich.

Continuation of Ser. No. 540,277, Oct. 6, 1995, abandoned. This application Aug. 15, 1996, Ser. No. 698,522
Int. Cl.[6] C09B *175/00;* **C08F** *8/32*
U.S. Cl. 525—440 **26 Claims**

1. A curable coating composition comprising
(A) the reaction product of
(1) a compound comprising carbamate or urea and hydroxyl functional groups that is the reaction product of
(a) a compound comprising a carbamate or urea group or a group that can be converted to a carbamate or urea group, and an active hydrogen group that is reactive with a lactone or hydroxy carboxylic acid, and
(b) a lactone or hydroxy carboxylic acid, and
(2) a component that is reactive with compound (A)(1) to convert a hydroxyl group on compound (A)(1) to a carbamate group, or a component comprising a group that is reactive with a hydroxyl group on compound (A)(1) and a carbamate or urea group or group that can be converted to carbamate or urea,
wherein the carbamate group has a formula



wherein R is H or alkyl;
and further wherein the urea group has a formula



wherein R' and R" each independently are H or alkyl, or R' and R" together form a heterocyclic ring structure; and
(B) a compound comprising a plurality of groups that are reactive with carbamate or urea.

5,827,931
POLYURETHANE POLYMER OR OLIGOMER HAVING CARBAMATE GROUPS, METHOD FOR ITS PREPARATION, AND COATING COMPOSITION

Gregory L. Menovcik, Farmington Hills, and Walter H. Ohrbom, Commerce, both of Mich., assignors to BASF Corporation, Southfield, Mich.

Continuation of Ser. No. 547,174, Oct. 24, 1995, Pat. No. 5,723,552, which is a division of Ser. No. 361,344, Dec. 21, 1994, abandoned. This application Oct. 15, 1997, Ser. No. 950,950
Int. Cl.[6] C08G *18/28*
U.S. Cl. 525—453 **22 Claims**

1. A curable coating composition comprising:
(1) a polyurethane that is the reaction product of a mixture comprising:
(a) a polyol having at least one pendant carbamate group,
(b) a polyisocyanate, and
(c) optionally, an active hydrogen-containing capping agent, and
(2) a curing agent having a plurality of groups that are reactive with carbamate.

5,827,932

Patent Not Issued For This Number

5,827,933

Patent Not Issued For This Number

5,827,934

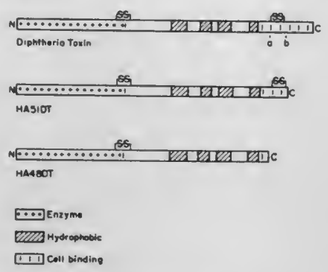
CYTOTOXIC DIPHTHERIA TOXIN FRAGMENTS

Clarence L. Villemez, Laramie, Wyo., and Dean A. Myers, Edmond, Okla., assignors to The University of Wyoming, Laramie, Wyo.

Continuation of Ser. No. 488,812, Mar. 5, 1990, abandoned, which is a continuation-in-part of Ser. No. 165,213, Mar. 8, 1988, abandoned. This application Nov. 22, 1991, Ser. No. 799,684

Int. Cl.[6] **C07K** *1/12;14/34*

U.S. Cl. 530—409 **4 Claims**



1. A process for preparing a 51, 48, 11, 7 or 3.5 kilodalton peptide fragment from a diphtheria toxin which comprises subjecting said toxin to chemical proteolysis to cleave said toxin at either or both the asparaginyl-glycyl peptide bonds thereby producing at least two of HA51DT, HA48DT, HA11DT, HA7DT and HA3DT peptide fragments, wherein said HA51DT and HA48DT peptide fragments have cytotoxic and translocation activity and lack cell binding activity; and recovering said at least two produced fragments.

5,827,935

CHIMERIC TRNA^{LYS}-RIBOZYME MOLECULES

John J. Rossi, Glendora, and Garry P. Larson, San Dimas, both of Calif., assignors to City of Hope, Duarte, Calif.

PCT No. PCT/US92/04362, § 371 Date Jan. 24, 1994, § 102(e) Date Jan. 24, 1994, PCT Pub. No. WO93/24133, PCT Pub. Date Dec. 9, 1993

PCT Filed May 27, 1992, Ser. No. 185,827

Claims priority, application WIPO, May 27, 1992, PCT/US92/04362

Int. Cl.[6] **C12N** *15/11;* **C07H** *21/04;* **C12Q** *1/68*

U.S. Cl. 536—23.1 **19 Claims**

1. A chimeric tRNA^{LYS}-ribozyme.

5,827,936

Patent Not Issued For This Number

5,827,937

POLYSACCHARIDE GEL COMPOSITION

Bengt Ågerup, Upsala, Sweden, assignor to Q Med AB, Upsala, Sweden

Filed Jul. 17, 1995, Ser. No. 503,323

Int. Cl.[6] **C07H** *1/00;13/02;* **A61K** *31/715;31/73*

U.S. Cl. 536—123.12 **35 Claims**

1. A process for preparing a cross-linked biocompatible polysaccharide gel composition, which process comprises the following steps:

(i) forming an aqueous solution of a water soluble, cross-linkable polysaccharide;

(ii) initiating a first cross-linking reaction whereby cross-linking of said polysaccharide is effected using a polyfunctional cross-linking agent therefor;

(iii) sterically hindering the first cross-linking reaction such that it is terminated before gelation occurs, resulting in the production of an activated polysaccharide; and

(iv) performing a second cross-linking reaction after sterically unhindered conditions are reintroduced for said activated polysaccharide to produce a viscoelastic gel.

5,827,938

PREPARATION OF AMINES AND AMINONITRILES

Werner Schnurr, Herxheim; Guido Voit, Schriesheim; Klemens Flick, Herxheim; Johann-Peter Melder, Neuhofen; Rolf-Hartmuth Fischer, Heidelberg, and Wolfgang Harder, Weinheim, all of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Germany

Filed Apr. 22, 1996, Ser. No. 635,684

Claims priority, application Germany, Apr. 10, 1996, 196 14 154.0

Int. Cl.[6] **C07C** *255/00*

U.S. Cl. 558—459 **4 Claims**

1. In a process for the coproduction of 6-aminocapronitrile (ACN) and hexamethylenediamine (HMD) by the hydrogenation of adiponitrile (ADN) to convert ADN to both ACN and HMD, said hydrogenation taking place at a temperature of from 40° to 150° C. at a hydrogen partial pressure of from 2 to 20 MPa in the optional presence of a solvent or the hydrogenation takes place in a fixed bed reactor in a downflow or upflow process at from 20° to 150° C. and at a pressure of from 2 to 30 MPa, the improvement which comprises: continuing the conversion of ADN to ACN and HMD until the conversion of ADN has dropped below a predetermined value or until the selective conversion to ACN has dropped below a pre-determined value, and thereafter

(a) interrupting the hydrogenation of ADN by stopping the feed of ADN and of the solvent, if used,

(b) treating the catalyst at from 150° to 400° C. with hydrogen using a hydrogen pressure within the range from 0.1 to 30 MPa and a treatment time within the range from 2 to 48 h, and

(c) then continuing the hydrogenation of ADN with the treated catalyst of stage (b).

5,827,939

HETEROPOLYACID CATALYSTS IN THE PREPARATION OF ESTERS OF UNSATURATED CARBOXYLIC ACIDS

Eric Paumard, Cappel, France, assignor to Atochem, Paris, France

Continuation of Ser. No. 713,254, Jun. 13, 1991, abandoned. This application Dec. 22, 1993, Ser. No. 171,880

Claims priority, application France, Jun. 13, 1990, 90 07368

Int. Cl.[6] **C07C** *67/04;* **B01J** *21/02*

U.S. Cl. 560—205 **34 Claims**

1. A process for the preparation of an alpha-ethylenically unsaturated carboxylic acid ester by a direct liquid-phase esterification reaction of said acid with an alcohol in the presence of an acid catalyst, wherein said catalyst is at least one heteropolyacid of the general formula

$$H_nA_aD_cO_y \cdot xH_2O$$

in which:

A is phosphorus, boron, silicon, germanium, tin, arsenic, antimony, copper, nickel, cobalt, iron, cerium, thorium, chromium, or a mixture of at least two of these elements;

D is molybdenum, tungsten, vanadium, or a combination of at least two of these elements;

a is a number from 0.1 to 10;

c is a number from 6 to 18;

n is the number of acidic hydrogen atoms in the heteropolyacid and is a number above 1;

y is the number of oxygen atoms in the heteropolyacid and is a number from 10 to 70; and

x is the number of moles of water of crystallization and is a number from 0 to 40.

5,827,940

HYBRID MAIZE PLANT & SEED (3231)

Norman Eugene Williams, York, Nebr., assignor to Pioneer Hi-Bred International, Inc., Des Moines, Iowa

Filed Mar. 13, 1996, Ser. No. 614,876

Int. Cl.[6] **A01H** *5/00;4/00;10/00;* **C12N** *5/04*

U.S. Cl. 800—200 **7 Claims**

1. Hybrid maize seed designated 3231, representative seed of said hybrid 3231 having been deposited under ATCC accession number 209332.

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5,827,941

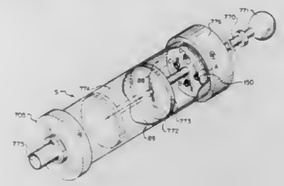
FLOW-CONTROLLED CALIBRATION SYRINGE

Fred Good, Westminster, and Carl Zimmer, Boulder, both of Colo., assignors to Pulmonary Data Service Instrumentation, Inc., Louisville, Colo.

Continuation of Ser. No. 645,038, May 6, 1996, abandoned, which is a continuation of Ser. No. 353,703, Dec. 12, 1994, abandoned. This application Nov. 6, 1997, Ser. No. 965,498

Int. Cl.[6] **F04B** *21/02*

U.S. Cl. 73—1.19 **39 Claims**



1. A pump, comprising:

a pump housing comprising first and second chambers substantially isolated from each other;

a first port associated with said first chamber;

a first valve associated with said first port, wherein said first valve comprises a first flow orifice which is dynamically adjustable to vary a size of said first flow orifice;

a second port associated with said second chamber;

an adapter disposed on an exterior surface of said pump and extending beyond adjacent portions of said pump housing, said second port extending through said adapter; and

means for simultaneously drawing a first fluid into said first chamber through said first port and valve and discharging a second fluid from said second chamber through said second port and said adapter, wherein a magnitude of force used by said means for simultaneously drawing and discharging affects said size of said first flow orifice, said size of said first flow orifice decreasing as said amount of said force increases, and wherein via said means for simultaneously drawing and discharging, said first fluid is drawn into said first chamber at the same time that said second fluid is discharged from said second chamber.

5,827,942

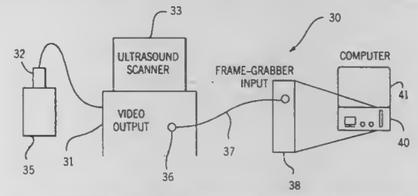
SYSTEM AND METHOD FOR TESTING IMAGING PERFORMANCE OF ULTRASOUND SCANNERS AND OTHER MEDICAL IMAGERS

Ernest L. Madsen, Madison, Wis., and James M. Kofler, Jr., Rochester, Minn., assignors to Wisconsin Alumni Research Foundation, Madison, Wis.

Filed Oct. 16, 1997, Ser. No. 951,381

Int. Cl.[6] **G01N** *29/00*

U.S. Cl. 73—1.82 **38 Claims**



1. An automated system for testing the resolution capabilities of medical imagers, comprising:

(a) means for storing digitized target image data of an image corresponding to a slice whose midplane is superimposed on a plane of a phantom which contains the centers of an array of target spheres having a known spacing in the array and known diameter, and for storing digitized background image data of an image corresponding to a slice of the phantom which contains only background material;

(b) means for retrieving the stored target image and background image data for analysis;

(c) means for locating the positions of a plurality of the target spheres in the target image data based on the known spacing between and the known diameter of the target spheres in the phantom;

(d) means for determining a lesion signal-to-noise ratio at the located positions of the plurality of target spheres in the target image using an average target value calculated from target image data over sample areas corresponding to the known diameter of the target spheres at the located positions of the target spheres in the target image, an average background value calculated from image data over averaging areas centered at the located positions of the target spheres and including mostly background image data in the target image not within the expected regions of the target spheres in the target image data, and an average background plane noise value calculated from image data over averaging areas centered at the located positions of the target spheres in the background image, the signal-to-noise ratio being determined as the average target value minus the average background value all divided by the average background plane noise value.

5,827,943

METHOD FOR CALIBRATION IN LEVEL MEASUREMENT

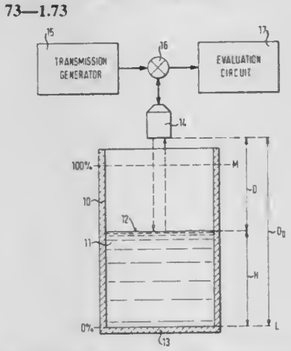
Hartmut Schmidt, Weil am Rhein, Germany, assignor to Endress + Hauser GmbH + Co., Maulburg, Germany

Filed Oct. 21, 1996, Ser. No. 734,093

Claims priority, application European Pat. Off., Oct. 27, 1995, 95116970

Int. Cl.[6] **G01F** *25/00*

U.S. Cl. 73—1.73 **2 Claims**



1. A method for calibrating a device for measuring a level and a volume of a material in a container wherein the device includes a sensor located above the highest fill level of the material which measures a distance to the surface of the material in the container and an evaluation circuit in which a relationship between the level of the material and the volume of the material in the container is stored, said evaluation circuit computing the level of the material in the container using the distance measured by the sensor and an empty distance corresponding to a distance measured by the sensor when the container is empty, and said evaluation circuit determining the volume of the material in the container using the computed level of the material in the container and the stored relationship between the level of the material and the volume of the material, said calibration method comprising the steps of:

a) interrupting an on-going filling or emptying of the container;

b) recording an actual volume of the material in the container during the interruption;

c) measuring the distance to the surface of the material in the container with the sensor of the measuring device to be calibrated;

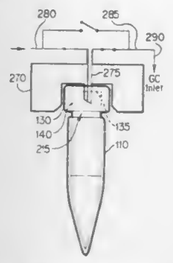
d) entering the actual volume of the material into the evaluation circuit;
e) determining, in the evaluation circuit, the level of the material corresponding to the entered actual volume of the material as a function of the stored relationship between the level of the material and the volume of the material;
f) computing the empty distance by summing the level of the material determined in the evaluation circuit and the distance to the surface of the material measured with the sensor; and
g) storing the computed empty distance in the evaluation circuit for use in computing the level of the material and in determining the volume of the material in the container.

5,827,944

SAMPLE SCREENING AND PREPARATION WITHIN A COLLECTION VESSEL

Mark A. Nickerson, Landenberg, Pa., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 16, 1996, Ser. No. 602,673
Int. Cl.[6] C12Q *1/68*
U.S. Cl. 73—23.41 **19 Claims**



1. An apparatus for sample preparation in which a headspace containing analytes of interest adsorbed from a sample stored in a sealed vessel are removed and introduced into a gas chromatograph, comprising:
a vessel into which the sample is stored, the vessel further comprising a cap having a septum for sealing and providing access to the vessel,
a stationary phase coating formed on substantially all of the inside surface of the vessel such that in a first orientation, at least a portion of the stationary phase is in contact with the sample such that analytes of interest may be adsorbed into that portion of the stationary phase coating that is in contact with the samples, and wherein, after the analytes of interest are adsorbed, the vessel may be oriented in a second orientation such that a headspace is placed into contact with the stationary phase coating previously in contact with the sample such that analytes of interest are enabled to desorb into the headspace.

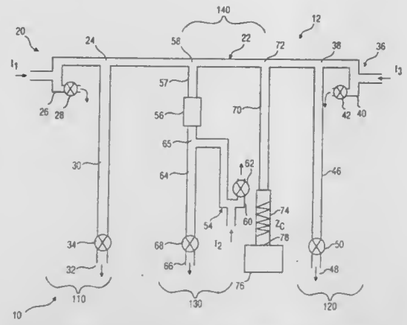
5,827,945

REAL-TIME GAS-CHROMATOGRAPHY MASS-SPECTROMETRY TRACE VAPOR DETECTION

James T. Arnold, Sunnyvale, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed Oct. 24, 1996, Ser. No. 738,961
Int. Cl.[6] G01N *30/08*
U.S. Cl. 73—23.42 **21 Claims**

1. A gas flow distribution system for controlled accumulation and delivery of a sample in a diffused state for trace vapor detection and analysis, said gas flow distribution system comprising:
a sample delivery circuit including a sample accumulator for accumulating said sample in an accumulation cycle, said sample accumulator in communication with a gas chromatography column for receiving said sample in a delivery cycle and separating said sample in a separation cycle;
a sample bearing carrier gas influent circuit including a supply of sample bearing carrier gas to said sample delivery circuit through said sample accumulator for accumulation of said sample in said sample accumulator in real time and a sample diversion switch diverting said sample bearing carrier gas from said sample delivery circuit in said delivery cycle;
a GC carrier gas influent circuit including a supply of GC carrier gas to said sample delivery circuit through said gas chromatography column for sample separation in real time and a GC carrier gas diversion switch diverting said GC carrier gas from said sample delivery circuit in said delivery cycle; and
a distribution carrier gas influent circuit including a supply of distribution carrier gas to deliver said sample in said accumulator to said gas chromatography column in said delivery cycle in real time and a drain switch diverting said distribution carrier gas from said sample delivery circuit in said accumulation cycle and separation cycle.

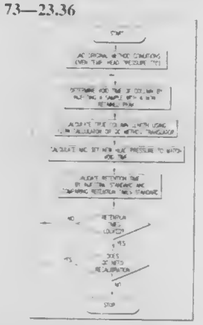


5,827,946

METHOD FOR SAMPLE IDENTIFICATION USING A LOCKED RETENTION TIME DATABASE

Matthew S. Klee, Wilmington, Del.; Philip L. Wylie, Kennett Sq.; Bruce D. Quimby, Lincoln University, both of Pa., and Leonid M. Blumberg, Hockessin, Del., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Apr. 30, 1997, Ser. No. 846,977
Int. Cl.[6] G01N *30/02;21/01;* B01D *15/08*
U.S. Cl. 73—23.36 **8 Claims**



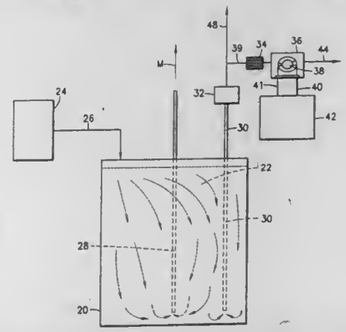
1. A method for developing a retention time database of identified analytes and their retention times on a reference GC system operated under locked conditions and the identification of unknown analytes of interest eluting from a locking GC system locked to the retention time database where each of said reference GC system and said locking GC system has a GC column operated at a column head pressure, comprising the method steps of:
adjusting the column head pressure of the reference GC system such that the column void time or the retention time of a known analyte is maintained at a defined value,
injecting a series of known analytes into the reference GC system and recording the corresponding retention times, wherein a retention time database is generated,
adjusting the column head pressure on the locking GC system such that the column void time of the column in the locking GC system is matched with the column void time in the reference GC system, or by adjusting the column head pressure on the locking GC system such that the retention time of a known analyte is matched to the corresponding retention time in the retention time database, wherein, the new head pressure compensates for differences in column dimensions, phase ratio, GC oven calibration, and provides for retention time locking such that analytes exiting the column in the locking GC system can be identified by referencing the retention time database.

5,827,947

PIEZOELECTRIC SENSOR FOR HYDRIDE GASES, AND FLUID MONITORING APPARATUS COMPRISING SAME

Cynthia A. Miller, Brookfield, and Glenn M. Tom, New Milford, both of Conn., assignors to Advanced Technology Materials, Inc., Danbury, Conn.

Filed Jan. 17, 1997, Ser. No. 785,342
Int. Cl.[6] G01N *31/02;31/22;30/00*
U.S. Cl. 73—24.06 **28 Claims**



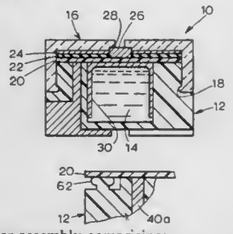
1. A sensor element for detection of a trace fluid component in a fluid environment, comprising:
a piezoelectric crystal having a fundamental resonant frequency in response to an applied oscillating electric field; and
an inert porous material coating on the piezoelectric crystal to provide a coated piezoelectric crystal, the coating containing a metal species which is reactive with the trace fluid component to yield a solid interaction product of changed mass in relation to an initial mass of the metal species interacting with the trace fluid component to yield the solid interaction product, the coated piezoelectric crystal exhibiting a frequency response rate to the trace fluid component in the range of from about 0.001 to about 100,000 milliHertz/min/(part-per-million of the fluid component);
wherein the sensor element is constructed and arranged to measure the differential frequency rate of change, dF/dt.

5,827,948

GAS SENSOR WITH LIQUID-TIGHT SEAL

Dennis Martell, Naperville, Ill.; Richard Grove Warburton, Coraopolis, Pa.; Laura Ann Lindner, Oakdale, Pa., and Juergen Lindner, Bethel Park, Pa., assignors to J and N Associates, Inc., Valpariso, Ind., and National Draeger Incorporated, Pittsburgh, Pa.

Division of Ser. No. 515,688, Aug. 16, 1995, Pat. No. 5,744,697. This application Jul. 8, 1997, Ser. No. 889,648
Int. Cl.[6] G01N *21/77*
U.S. Cl. 73—31.06 **3 Claims**



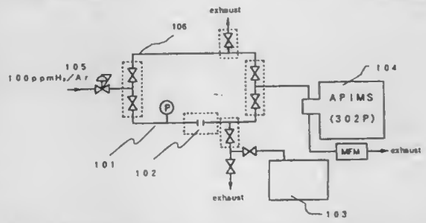
1. A gas sensor assembly comprising:
a housing portion having a receptacle formed therein;
a gas-sensing agent disposed in said receptacle;
a plurality of electrodes disposed in fluid contact with said gas-sensing agent;
a plurality of conductive members, each of said conductive members being in electrical contact with a respective one of said electrodes;
a closure member disposed adjacent said housing forming said receptacle; and
a seal being formed between said closure member and said housing forming said receptacle so that said closure member and said housing form an enclosed substantially liquid-tight chamber, none of said electrodes and none of said conductive members passing through said seal,
wherein said closure member comprises an electrode support element and wherein said electrodes are formed on said electrode support element.

5,827,949

METHOD AND SYSTEM FOR MEASURING EXTERNAL LEAKAGE

Tadihiro Ohmi, Miyagi-ken; Atsushi Ohki, Saitama-ken, and Yohichi Kanno, Miyagi-ken, all of Japan, assignors to Osaka Sanso Kogyo, Ltd., Osaka-Fu, Japan

PCT No. PCT/JP95/00284, § 371 Date Nov. 17, 1997, § 102(e) Date Nov. 17, 1997, PCT Pub. No. WO96/26426, PCT Pub. Date Aug. 29, 1996
PCT Filed Feb. 24, 1995, Ser. No. 894,504
Int. Cl.[6] G01M *3/04;* G01N *7/00*
U.S. Cl. 73—40 **14 Claims**



1. A method of measuring an external leakage about a portion of a vessel, comprising the steps of:
flushing a first gas different from an external atmosphere around a portion where the external leakage should be measured, into an inside of said portion;
adding gas containing hydrogen to said first gas at a point adjacent from said portion; and

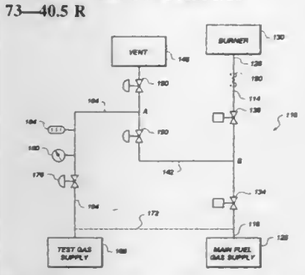
measuring a gas component entering from the external atmosphere around said portion where the external leakage should be measured, by an atmospheric pressure ionization mass spectrometer at a point downstream from said point where the gas containing hydrogen was added.

5,827,950

LEAK TEST SYSTEM

H. Allan Woodbury, and James R. North, both of Salt Lake City, Utah, assignors to Woodbury Leak Advisor Co., Salt Lake City, Utah

Filed Apr. 14, 1997, Ser. No. 833,213
Int. Cl.[6] G01M *3/28*
U.S. Cl. 73—40.5 R 23 Claims



1. A leak test system for a double block and bleed valve arrangement having first and second safety shutoff valves disposed along a gas supply line, and a vented bleed line extending from the gas supply line between the first and second safety shutoff valves with a vent valve disposed along the bleed line, the leak test system comprising:

a second vent valve disposed along the bleed line downstream from the vent valve;

pressure monitoring means in communication with the bleed line line for monitoring pressure in the bleed line between the first and second vent valves and for generating signals indicative thereof; and

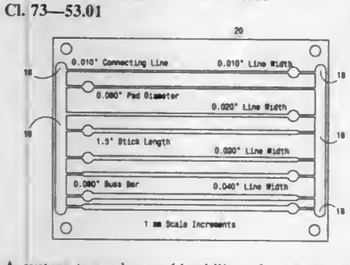
processor means disposed in communication with the pressure monitoring means for processing said signals.

5,827,951

SOLDERABILITY TEST SYSTEM

Fred Yost, Cedar Crest; Floyd M. Hosking; James L. Jellison, both of Albuquerque, all of N. Mex.; Bruce Short; Terri Giversen, both of Beverly, Mass., and Jimmy R. Reed, Austin, Tex., assignors to Sandia National Laboratories, Albuquerque, N. Mex.

Filed Apr. 21, 1995, Ser. No. 426,543
Int. Cl.[6] G01N *13/00*
U.S. Cl. 73—53.01 18 Claims



1. A system to analyze solderability of printed wiring boards comprising:

a plurality of lollipop-shaped metallizations each having a circular pad of radius r and a linear strip feature of width d extending therefrom formed on a printed wiring board substrate with at least one such metallization having a different ratio of d:r than another of such metallizations,

an amount of solder on at least some of the pads of the metallizations sufficient to form a droplet of liquid solder on the pad whose contact angle is greater than the equilibrium contact angle of the solder,

means to heat the solder on the pads to a liquid state, and

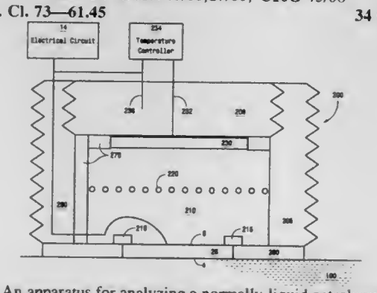
means to measure a flow characteristic of the liquid solder on the linear feature.

5,827,952

METHOD OF AND APPARATUS FOR DETERMINING DEPOSITION-POINT TEMPERATURE

Arthur J. Mansure; James J. Spates, and Stephen J. Martin, all of Albuquerque, N. Mex., assignors to Sandia National Laboratories, Albuquerque, N. Mex.

Continuation-in-part of Ser. No. 621,929, Mar. 26, 1996, Pat. No. 5,661,233. This application May 27, 1997, Ser. No. 863,936
Int. Cl.[6] G01N *11/00;27/00;* C10G *43/08*
U.S. Cl. 73—61.45 34 Claims



1. An apparatus for analyzing a normally-liquid petroleum-based composition having constituents in a solution which solidify and deposit on a surface when such surface is below a deposition-point temperature of the composition, the apparatus comprising:

acoustic-wave sensing means having an exposed surface, the exposed surface being in contact with the petroleum-based composition for detecting the presence of constituents deposited on the exposed surface and for generating an output signal in response to the deposition thereon; and

temperature varying means, thermally connected to the acoustic-wave sensing means, for causing the temperature of the acoustic-wave sensing means to drop below the deposition-point temperature of the liquid petroleum-based composition.

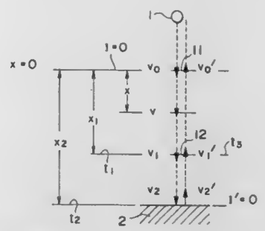
5,827,953

METHOD OF TESTING HARDNESS IN REBOUND TYPE HARDNESS TESTER

Yasunori Sato; Junichi Arai, and Yuichi Minami, all of Zama, Japan, assignors to Kabushiki Kaisha Akashi, Japan

Filed Mar. 20, 1998, Ser. No. 45,444
Claims priority, application Japan, Mar. 21, 1997, 9-087534
Int. Cl.[6] G01N *3/30*
U.S. Cl. 73—79 2 Claims

1. A method of measuring hardness in a rebound type hardness tester in which a hammer is caused to impact a specimen and a hardness test of said specimen is performed in accordance with the ratio of the velocities of the hammer before and after the impaction, said method of measuring hardness in a rebound type hardness tester comprising the step of calculating the hardness H of said specimen according to Equation 1 on the basis of a velocity v_1 in the impacting course and a velocity v_1' in the rebounding course of said hammer at a second hammer velocity measurement point a distance x_1 closer to said specimen than a first hammer velocity measurement point, which is a distance x_2 apart from said specimen, along the passage for said hammer to go forward and backward, and said distance x_1.



$$H = k \times \sqrt{\frac{v_1'^2 + 2\alpha(x_2 - x_1)}{v_1^2 + 2\alpha(x_2 - x_1)}} \quad \text{[Eq. 1]}$$

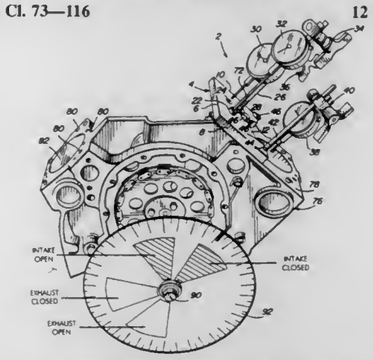
where α denotes the acceleration acting on said hammer.

5,827,954

CAMSHAFT DEGREEING PLATFORM

E. Bruce Noland, 205 Wildman St., N. E., Leesburg, Va. 22075

Filed May 15, 1997, Ser. No. 856,507
Int. Cl.[6] G01M *15/00*
U.S. Cl. 73—116 12 Claims



1. A measurement platform assembly for degreeing a camshaft of an internal combustion engine having at least one piston reciprocable within a cylinder formed in a block, an intake valve and an exhaust valve and respective intake lifter and exhaust lifter associated with the cylinder and extending through respective intake and exhaust lifter bores in the block, the assembly comprising:

a plate having plural holes sized and arranged to permit fastening of the plate to the engine block via bolt holes in the block; said plate having one or more standards secured thereto; and at least two dial indicators mounted on said one or more standards, one of said dial indicators adapted to engage the piston and the other of said dial indicators adapted to be positioned over one of the intake and exhaust lifter bores; and

a lifter rod substitute for the intake lifter and for the exhaust lifter, each lifter rod substitute including an extension rod which, in use, extends upwardly through said plate.

5,827,955

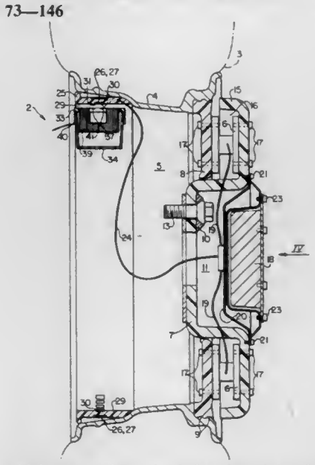
Patent Not Issued For This Number

5,827,956

FORCE MEASURING WHEEL FOR VEHICLES

Andreas Beste, Gaimersheim; Josef Vogler, Ingolstadt; Frank Hailer, Calw; Manfred Muller, Leonberg, and Werner Aicher, Stuttgart, all of Germany, assignors to AUDI AG, Ingolstadt, Germany

PCT No. PCT/EP94/00886, § 371 Date Oct. 10, 1995, § 102(e) Date Oct. 10, 1995, PCT Pub. No. WO94/24535, PCT Pub. Date Oct. 27, 1994
PCT Filed Mar. 22, 1994, Ser. No. 545,617
Claims priority, application Germany, Apr. 10, 1993, 43 11 903.4
Int. Cl.[6] E01C *23/00;* G01L *1/04*
U.S. Cl. 73—146 14 Claims



1. A vehicle measuring wheel for detection of forces and moments between a rim of said vehicle measuring wheel and a vehicular axles, said vehicle wheel comprising:

a plurality of force transducers for generating energy and data signals mounted between a rim face and a wheel flange of said vehicle measuring wheel;

signal coupling means coupled to said vehicle wheel and said plurality of force transducers for transmitting and receiving said energy and data signals; and

a test value acquisition and processing system for transmitting and receiving test values and said energy and data signals and for processing said test values and said energy and data signals, said system being disposed within a vehicle upon which said vehicle measuring wheel is coupled and coupled to said vehicle measuring wheel,

wherein at least one of said wheel flange and said rim face comprises a fiber reinforced material and said signal coupling means is mounted along the circumference of a rim well disposed within said measuring wheel.

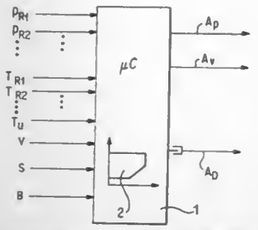
5,827,957

METHOD AND APPARATUS FOR EVALUATING VEHICLE TIRE CONDITION BY COMPARING TIRE OPERATING PARAMETERS WITH PRESENT LIMITS OVERTIME

Horst Wehinger, Ebersbach, Germany, assignor to Mercedes-Benz AG, Germany

Filed Mar. 24, 1997, Ser. No. 822,014
Claims priority, application Germany, Mar. 22, 1996, 196 11 364.4
Int. Cl.[6] G01M *17/02*
U.S. Cl. 73—146.3 5 Claims

3. Apparatus for monitoring vehicle tires comprising:



a memory containing data defining a predetermined desired range for an operating condition of said tire, said range comprising at least one tire operating condition parameter; and

a digital computer programmed to

continuously record instantaneous values of said at least one tire operating condition parameter;

compare recorded instantaneous values with said predetermined desired range to determine whether an instantaneous operating condition of said tire falls within said desired range; and

determine at least one of a frequency with which, and a proportion of overall tire operation during which, said instantaneous operating condition of said tire is outside said desired range.

5,827,958

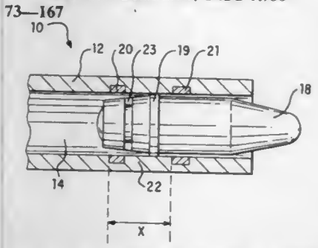
PASSIVE VELOCITY DATA SYSTEM

John W. Sigler, La Mirada, Calif., assignor to Primex Technologies, Inc., Downey, Calif.

Filed Jan. 5, 1996, Ser. No. 583,374

Int. Cl.[6] G01L *5/14; F42C 11/06*

U.S. Cl. 73—167 **17 Claims**



1. A system for determining the velocity of a projectile, comprising:

a gun barrel that expels said projectile;

at least a first signal source and a second signal source both supported by said gun barrel with a non-signal source material disposed therebetween;

at least one receptor on-board said projectile that detects passage of said at least first and second signal sources; and

a microprocessor on-board said projectile in electrical communication with said receptor, said microprocessor containing a timing circuit and a logic circuit and having been programmed to compute the velocity of said projectile.

5,827,959

MONITORING CHEMICAL FLOW RATE IN A WATER TREATMENT SYSTEM

William B. Clanin, 765 E. Cole Ave., Fresno, Calif. 01890

Filed Sep. 18, 1997, Ser. No. 932,844

Int. Cl.[6] G01F *15/09*

U.S. Cl. 73—198 **17 Claims**

1. Apparatus for monitoring chemical flow rate in a water treatment system comprising,

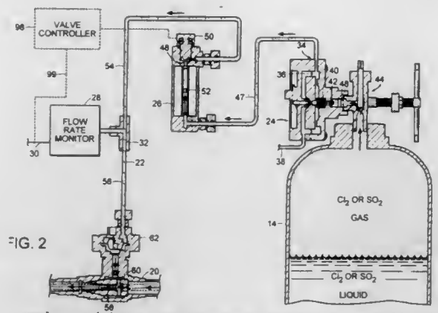


FIG. 2

a tank containing a water treatment chemical in gas form under pressure;

a vacuum-regulating check valve with an inlet and an outlet, the inlet being in fluid communication with the tank, the check valve constructed to adjust gas flow therethrough to maintain the pressure at the outlet at a predetermined level below atmospheric pressure;

a conduit constructed to pass the flow of water therethrough, the conduit defining a water flow restriction arranged to produce a local vacuum pressure in the conduit in the presence of said flow, the conduit further defining an inlet, in fluid communication with the check valve, at the water flow restriction for receiving the water treatment chemical for ingestion into the water flow;

a gas line connecting the check valve and the conduit inlet, the gas line comprising

an upstream portion connected to the check valve,

a downstream portion connected to the conduit inlet, and

gas flow restriction disposed between the upstream and downstream portions; and

a gas flow rate sensor in pressure communication with the downstream portion of the gas line, the sensor responsive to pressure to produce an electrical output signal representative of the magnitude of the gas flow rate in the gas line.

5,827,960

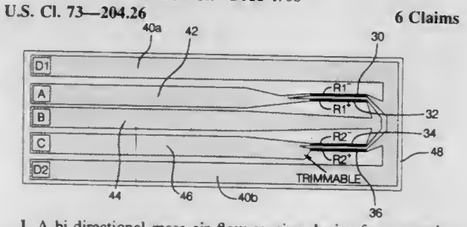
BI-DIRECTIONAL MASS AIR FLOW SENSOR HAVING MUTUALLY-HEATED SENSOR ELEMENTS

Michel Farid Sultan; Charles Robert Harrington, both of Troy; Michael James O'Rourke, Warren, and Antonio Buddy Catalan, Sterling Heights, all of Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Aug. 28, 1997, Ser. No. 919,644

Int. Cl.[6] G01F *1/68*

U.S. Cl. 73—204.26 **6 Claims**



1. A bi-directional mass air flow sensing device for measuring air flow, comprising:

a bridge circuit coupled across a voltage potential, wherein the bridge circuit comprises

(a) a first leg including first and second temperature dependent sensor elements connected in series at a first series connection and disposed on a thermally insulative substrate in line with an air flow and in proximity to each other so that, relative to a first direction of the air flow, the first sensor element is upstream of the second sensor element and so that heat developed by passage of current through said first sensor element heats both said first sensor element and said second sensor element, and heat developed by passage of current through said second sensor element heats both said second sensor element and said first sensor element, and

(b) a second leg connected in parallel with the first leg and including third and fourth temperature dependent sensor elements connected in series at a second series connection and disposed on the thermally insulative substrate in line with the air flow and in proximity to each other so that, relative to the first direction of the air flow, the third sensor element is upstream of the fourth sensor element and so that heat developed by passage of current through said third sensor element heats both said third sensor element and said fourth sensor element, and heat developed by passage of current through said fourth sensor element heats both said fourth sensor element and said third sensor element, wherein the third and fourth sensor elements are substantially thermally isolated from the first and second sensor elements, wherein the first sensor element is on a high side of the first series connection relative to the voltage potential and the third sensor element is on a low side of the second series connection relative to the voltage potential; and

a differential amplifier having an inverting input and a non-inverting input, wherein one of the inverting and non-inverting inputs is coupled to the first series connection and the other of the inverting and non-inverting inputs is coupled to the second series connection, wherein the differential amplifier develops an output signal indicative of the air flow based on differences in temperatures at said first and second sensor elements and at said third and fourth sensor elements.

5,827,961

Patent Not Issued For This Number

5,827,962

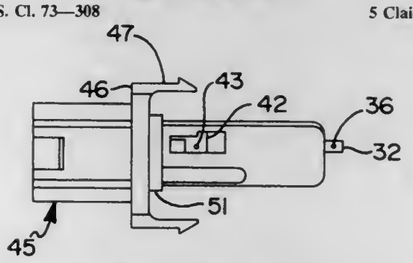
HYDRAULIC BRAKE FLUID RESERVOIR LEVEL INDICATOR SYSTEM

Stefan Guenther, Lake Orion, and Kevin J. Gallagher, Commerce, both of Mich., assignors to ITT Automotive Inc., Auburn Hills, Mich.

Filed Sep. 12, 1996, Ser. No. 712,714

Int. Cl.[6] G01F *23/30*

U.S. Cl. 73—308 **5 Claims**



1. A fluid level indicating system, comprising:

A reservoir including a chamber, said chamber including a collar radially disposed about the entrance to said chamber;

a first electrically conductive pin having a first end and a second end, said first pin end adapted to receive a female pin, said first pin including electrical components attached in series between said first end and said second end, said second end including a first solder pad;

a second electrically conductive pin having a first end and a second end, said first end adapted to receive a female pin, said second end including a second solder pad;

said first and second pins and said electrical components encased within non-conductive injection molding material whereby said first and said second said solder pads are left exposed, and whereby said first ends of said first and second pins are surrounded by said molding material to form a socket, said socket including a shoulder terminating in a reduced diameter neck, said neck including a sealing surface thereon;

and an exposed switch attached between said first and second solder pads.

5,827,963

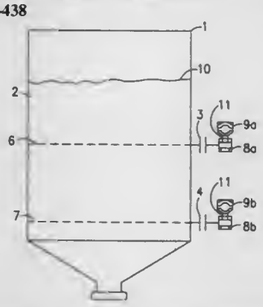
SYSTEM AND METHOD FOR DETERMINING A DENSITY OF A FLUID

Gilberto Selegatto, Serrana; Cesar Sperandio Verissimo, Ribeirão Preto; Joel Concalves de Oliveira Sobrinho, Sertõrio Mazer; Antonio Carlos Cardoso, Ribeirão Preto; Luis Carlos Geron, Setãozinho; Antonio Dias Cunali Filho, Mococa, and Fulvio de Barros Pinheiro Machado, Sertaãzinho, all of Brazil, assignors to SMAR Research Corporation, Ronkonkoma, N.Y.

Filed May 31, 1996, Ser. No. 656,026

Int. Cl.[6] G01N *9/26*

U.S. Cl. 73—438 **30 Claims**



1. A method for determining a density of a substantially static fluid in a tank having a first measuring level and a second measuring level, the tank containing a fluid level above the first measuring level and the second measuring level, the method comprising the steps of:

measuring a first fluid pressure of the substantially static fluid at the first measuring level via a first sensor assembly, the first sensor assembly being mounted, external to the tank, via a first single connection at the first measuring level and including a first transmitter generating a first fluid pressure signal corresponding to the first fluid pressure, the first fluid pressure signal having a first value;

measuring a second fluid pressure of the substantially static fluid at the second measuring level via a second sensor assembly, the second sensor assembly being mounted, external to the tank, via a second single connection at the second measuring level and including a second transmitter generating a second fluid pressure signal corresponding to the second fluid pressure, the second fluid pressure signal having a second value; and

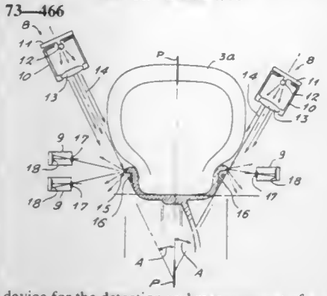
calculating the fluid density in the tank as a function of the first value of the first fluid pressure signal and the second value of the second fluid pressure signal.

5,827,964

DEVICE FOR THE DETECTION AND MEASUREMENT OF A POSITION ON A TURNING BODY, AND MACHINE FOR BALANCING A TURNING BODY

Denis Douine, Lagoy sur Marne, and Patrice Muller, Chartres, both of France, assignors to Muller BEM, Chartres, France

Filed Jan. 23, 1996, Ser. No. 589,243
Claims priority, application France, Jan. 27, 1995, 95 00947
Int. Cl.[6] G01M *1/16*
U.S. Cl. 73—466 5 Claims



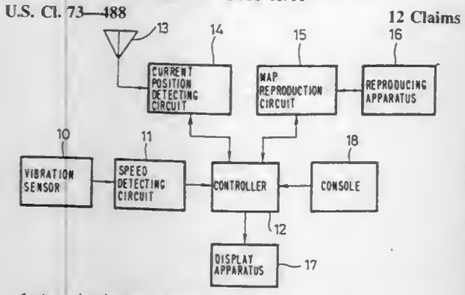
1. In a device for the detection and measurement of a position on a turning body mounted on a balancing machine having means for driving the turning body into rotation about an axis of rotation, the device comprising in combination illumination means and at least one means for detecting luminous intensity receiving radiation from an illuminated position, the improvement wherein said illumination means include means for providing a light beam of substantially parallel rays with glancing incidence and the detector means of luminous intensity include a chamber comprising an inlet surface provided with means for defining an image on a linear optical CCD detector receiving radiation from the illuminated position, so as to detect a luminous intensity peak in order to determine a geometric parameter representative of the position to be detected, and said device further comprising means for withdrawing the illumination means and detection means of the luminous intensity, to avoid projection of debris.

5,827,965

NAVIGATION DEVICE EMPLOYING AN ELECTRET VIBRATION SENSOR

Yoshimori Nakagawa, Tokyo, and Jun Kishigami, Saitama, both of Japan, assignors to Sony Corporation, Japan

Division of Ser. No. 592,397, Feb. 1, 1996, abandoned. This application Jan. 23, 1997, Ser. No. 787,802
Claims priority, application Japan, Jun. 20, 1994, 6-137586
Int. Cl.[6] G01P *15/00*
U.S. Cl. 73—488 12 Claims



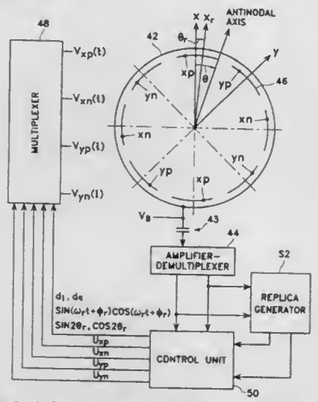
1. A navigation apparatus comprising:
a position detecting circuit which detects a current position of a navigation object;
a vibration sensor which is mechanically coupled to said navigation object, said vibration sensor comprising;
a substrate,
a diaphragm, said diaphragm comprising;
a central diaphragm portion,
a supporting portion disposed around the periphery of said central diaphragm portion,
a plurality of elongated openings disposed radially at equal intervals around a circumference of said central diaphragm portion between said central diaphragm portion and said supporting portion, and
a plurality of flexible displacement portions defined between said openings for coupling said diaphragm portion and said supporting portion such that said central diaphragm portion is able to move relative to said substrate, said central diaphragm portion being spaced from said substrate by a predetermined distance, and
an electret film being disposed either on said substrate on a surface opposing said diaphragm or on said diaphragm on a surface opposing said substrate;
a reproducing circuit for reading and reproducing map data from memory;
a display for displaying thereon said map data supplied thereto from said reproducing circuit; and
a control circuit controlling operation of said reproducing circuit in response to output from at least one of said vibration sensor and said position detecting circuit.

5,827,966

VIBRATORY ROTATION SENSOR UTILIZING LINEARIZED FLEXURE MEASURES

David D. Lynch, and Anthony Matthews, both of Santa Barbara, Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Filed May 29, 1997, Ser. No. 865,364
Int. Cl.[6] G01P *15/00*
U.S. Cl. 73—488 8 Claims



1. A method for obtaining linear measures of one or more parameters p_m of a device having one or more input ports i and an output port, m taking on integer values from 1 to M, M being an integer equal to or greater than 1, i taking on integer values from 1 to I, I being an integer equal to or greater than 1, the device causing one or more input signals $G_i(p_m)E_{ei}(t)$ fed into one or more input ports to be transformed into an output signal comprising a summation over i of $G_i(p_m)H_i(p_m)E_{oi}(t)$ at the output port, $G_i(p_m)$ being a weighting function associated with the i'th input port, $E_{ei}(t)$ being an excitation signal associated with the i'th input port, $E_{oi}(t)$ being the transformation of the excitation signal $E_{ei}(t)$ that results from $E_{ei}(t)$ traversing the path from the input port i to the output port, $E_{ei}(t)$ and $E_{oi}(t)$ being independent of the parameter p_m, the product function $G_i(p_m)H_i(p_m)$ being representable by a power series of order N_{im} in p_m, the value of N_{im} depending on a specified accuracy of representation, the method comprising the steps:

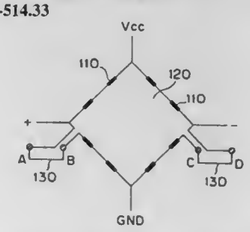
generating one or more linearizing weighting functions $G_{ii}(p_m)$ for which the output signal is a linear measure of the parameter p_m to the specified accuracy of representation;
feeding the input signals $G_{ii}(p_m)E_{ei}(t)$ into the device;
using a component of the output signal as a linear measure of each of the one or more parameters p_m.

5,827,967

SEMICONDUCTOR ACCELEROMETER INCLUDING STRAIN GAUGES FORMING A WHEATSTONE BRIDGE AND DIFFUSION RESISTORS

Katsumichi Ueyanagi, and Mutsuo Nishikawa, both of Kawasaki, Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, and Fujitsu Ten Limited, Kobe, both of Japan

Filed May 22, 1996, Ser. No. 651,578
Claims priority, application Japan, May 23, 1995, 7-123896
Int. Cl.[6] G01P *15/12*
U.S. Cl. 73—514.33 9 Claims



1. A semiconductor accelerometer, comprising:
a sensor element having
a support frame;
a silicon mass;
flexures connected to said support frame and said silicon mass;
semiconductor strain gauges formed on said flexures, said strain gauges being integrally processed; and
a staggered arrangement of diffusion resistors for adjusting an offset value variation;
aluminum wiring connected with said strain gauges to form a Wheatstone bridge circuit; and
a housing for covering said sensor element.

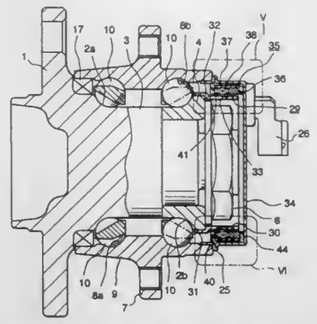
5,827,968

HUB UNIT WITH ROTATION SPEED SENSOR

Hideo Ouchi, and Kouichi Morita, both of Kanagawa-ken, Japan, assignors to NSK Ltd., Tokyo, Japan

Continuation of Ser. No. 700,929, Aug. 23, 1996, abandoned, which is a continuation of Ser. No. 503,631, Jul. 18, 1995, Pat. No. 5,583,431. This application Sep. 9, 1997, Ser. No. 933,534
Claims priority, application Japan, Jul. 18, 1994, 6-165633; Aug. 11, 1994, 6-189276; May 31, 1995, 7-133598
Int. Cl.[6] G01P *3/48*
U.S. Cl. 73—514.39 1 Claim

1. A bearing unit integral with an annular sensor, comprising:
a stationary outer bearing ring having an outer raceway and an axial end portion;
a rotatable inner bearing ring having an inner raceway and an axial end portion;
a plurality of rolling elements provided between the outer and inner raceways;
a sensor support member fixed to the axial end portion of the outer bearing member;
an annular sensor supported by the sensor support member and comprising a permanent magnet for generating magnetism, an annular coil for converting a change in the magnetism to electric voltage, and an annular stator for transmitting the magnetism, the annular stator made of a magnetic material and having a detecting ring portion in which a plurality of cutouts are circumferentially arranged for opening and closing the magnetism; and
an annular tone wheel made of a thin magnetic plate, and fixed to the axial end portion of the inner bearing ring directly or by fitting, the tone wheel having a ring portion in which a plurality of cutouts are circumferentially arranged for opening and closing the magnetism;
wherein the detecting ring portion of the annular stator and the ring portion of the tone wheel are relatively rotatable in a mating relationship with a clearance therebetween, so that the opening and closing for magnetic flux are conducted by the relative rotation of the detecting ring portion and the ring portion, and
the coil surrounded by the permanent magnet, stator, tone wheel and clearance forming a magnetic circuit, so that the magnetism change in the magnetic circuit caused by the relative rotation is converted to the electric voltage in the coil, whereby the magnetism change converted to the electric voltage is enhanced by surrounding the coil with the magnetic circuit.

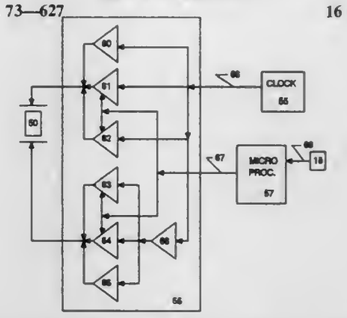


5,827,969

PORTABLE HAND HELD DOPPLER FETAL HEART RATE PROBE WITH SELECTIVE POWER SETTINGS

William C. Lee, Orinda; Del D. Fisher, Santa Cruz, and Andras Boross, Belmont, all of Calif., assignors to MedaSonics, Inc., Newark, Calif.

Filed Jun. 12, 1996, Ser. No. 662,049
Int. Cl.[6] A61B *8/06*
U.S. Cl. 73—627 16 Claims



1. A probe in a hand held ultrasonic Doppler fetal heart beat detection and monitoring system comprising:
a crystal for transmitting ultrasonic energy;
a variable power source, connected to said crystal, having a plurality of power settings for driving said crystal at a selected power setting wherein said variable power source comprises a plurality of pairs of power drivers; and

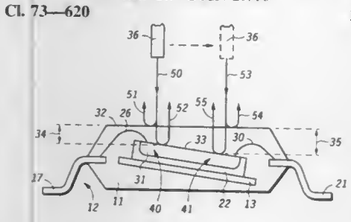
a selection means for selecting a power setting for said variable power source from said plurality of power settings wherein said variable power source comprises a plurality of pairs of power drivers.

5,827,970

NON-DESTRUCTIVE METHOD OF DETERMINING SUBSTRATE TILT WITHIN A PACKAGED SEMICONDUCTOR COMPONENT

Isaac T. Poku, Austin; Rama P. Cherkur, Cedar Park, both of Tex., and Yushi Matsuda, Sendai, Japan, assignors to Motorola Inc., Schaumburg, Ill.

Filed Sep. 16, 1996, Ser. No. 724,285
Int. Cl.[6] G01N *29/10*
U.S. Cl. 73—620 **20 Claims**



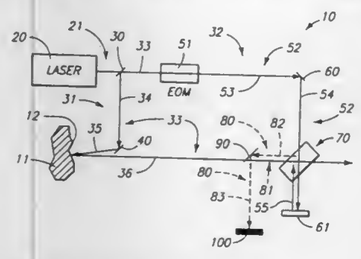
1. A non-destructive method of determining substrate tilt within a packaged semiconductor component comprising:
providing the packaged semiconductor component having a surface;
providing a substrate in the packaged semiconductor component, the substrate having first and second ends opposite each other, the substrate having a surface coupling the first and second ends;
using a first acoustic wave to measure a first distance from the surface of the packaged semiconductor component to the surface of the substrate at the first end of the substrate;
using a second acoustic wave to measure a second distance from the surface of the packaged semiconductor component to the surface of the substrate at the second end of the substrate; and
comparing the first and second distances to a threshold value.

5,827,971

OPTICAL VIBRATION DETECTION SPECTRAL ANALYSIS ASSEMBLY AND METHOD FOR DETECTING VIBRATION IN AN OBJECT OF INTEREST

Thomas C. Hale, Los Alamos, N. Mex., and Kenneth L. Telschow, Idaho Falls, Id., assignors to Lockheed Martin Idaho Technologies Company, Idaho Falls, Id.

Filed Jan. 22, 1997, Ser. No. 787,073
Int. Cl.[6] G01B *9/02*; **G01H** *9/00*
U.S. Cl. 73—657 **37 Claims**



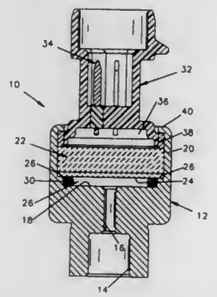
1. A vibration detection assembly, comprising:
an emitter of light which has object and reference beams, the object beam reflected off of a vibrating object of interest; and
a photorefractive substance having a given response time, and which passes the reflected object beam and the reference beam, the reference beam and the object beam interfering within the photorefractive substance to create a space charge field which develops within the response time of the photorefractive substance, and wherein the photorefractive substance has a cut-off frequency, and wherein the reference beam has a frequency of less than the cut-off frequency of the photorefractive substance.

5,827,972

HIGH PRESSURE SENSOR APPARATUS WITH LOW COST COMPACT PACKAGING SYSTEM

Richard J. Balcarek, Taunton; Robert L. Bartosh, Attleboro; Robert P. Bishop, Pembrook; Bryan J. Dague, North Attleboro; Douglas B. Strott, Attleboro, all of Mass.; John M. Armacost, Slatersville, R.I., and Steven Beringhause, Norton, Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 2, 1993, Ser. No. 146,868
Int. Cl.[6] G01L *7/00*; *9/00*
U.S. Cl. 73—756 **12 Claims**



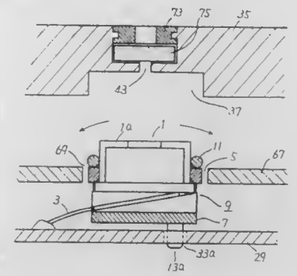
1. A pressure sensor comprising:
a metallic housing having a bottom wall formed with a fluid pressure inlet in the bottom wall and having a sidewall extending upwardly from the bottom wall to a distal end,
a pressure sensing module having a pressure responsive surface communicating with the fluid pressure inlet and disposed within the housing closely adjacent the upwardly extending sidewall, the upwardly extending sidewall circumscribing the pressure sensing module,
an annular stop surface integrally formed as part of the bottom wall, the stop surface disposed a selected first distance above the remainder of the bottom wall, the pressure sensing module received on the stop surface,
a seal formed of resilient material received on the bottom wall contiguous to and inboard of the stop surface, the seal formed of resilient material having a height of a second distance greater than the first distance whereby compression of the seal by the pressure sensing module is limited by the stop surface,
the distal end of the upwardly extending sidewall being crimped inwardly to place a force on the pressure sensing module biasing the module against the stop surface, and
a connector attached to the housing to provide electrical connection to the pressure sensing module.

5,827,973

EQUIPMENT FOR ATTACHING A PART ON A SUBSTRATE

Goro Takeda, Kyoto, Japan, assignor to Cateye Co., Ltd., Osaka, Japan

Filed Mar. 18, 1996, Ser. No. 617,660
Claims priority, application Japan, Mar. 20, 1995, 7-060540
Int. Cl.[6] G01L *7/00*
U.S. Cl. 73—756 **8 Claims**



1. Equipment for attaching an attachment part having a pressure sensor to a first object of attachment including a substrate such that the attachment part is fitted in a recessed portion of a second object of attachment, comprising:
first connecting means for electrically connecting said attachment part and said first object of attachment, said attachment part having a leg portion extending therefrom, said first object of attachment having a hole therein, the inside diameter of said hole being larger than the outside dimension of said leg portion;
second connecting means for connecting said attachment part and said first object of attachment to be relatively moveable laterally with respect to one another; and
restricting means for restricting the range of said movement, whereby assembly of the equipment is facilitated by the relative movement between the leg portion and the hole in the first object of attachment and the relative movement between the attachment part and the first object of attachment.

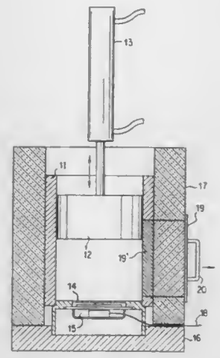
5,827,974

SYSTEM FOR MEASURING THE CRISPINESS OF MATERIALS

Amos Nussinovitch, 48 Fin Ganim Street, Petah-Tiqua, Israel, and Eyal Mey-Tal, 15 Chashmonaim Street, Rehovot, Israel

Continuation-in-part of Ser. No. 383,126, Feb. 3, 1996, abandoned. This application Oct. 22, 1996, Ser. No. 734,960
Int. Cl.[6] G01N *3/08*
U.S. Cl. 73—821 **6 Claims**

1. A device for determining the crispiness and behavior of a material during crushing of the material by measuring the Fractal number which comprises a piston, a support located at the bottom of a cylinder to support the material during crushing, and a microphone protected by said support and located beneath or adjacent to said support, said microphone being connected to a means for picking up noise created during crushing of the material and evaluating the noise to obtain a Fractal number, and said piston being provided with means for gradually lowering the piston inside the cylinder and for exerting a predetermined pressure on the material.

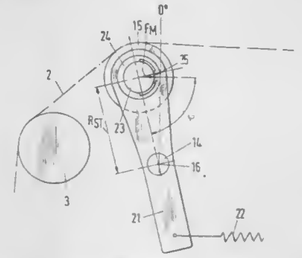


5,827,975

METHOD AND APPARATUS FOR MEASURING THE TENSION OF THE WARP IN A WEAVING MACHINE

Godert De Jager, Volketswil; Dietmar Markward, Rüti, and Lorant Gacsay, Zürich, all of Switzerland, assignors to Sulzer Rueti AG, Rueti, Switzerland

Filed Dec. 5, 1996, Ser. No. 766,381
Claims priority, application European Pat. Off., Feb. 5, 1996, 96810074
Int. Cl.[6] G01N *3/08*
U.S. Cl. 73—828 **14 Claims**



1. Method for the measurement of tension in a warp of a weaving machine, wherein the warp is led along a path over a deflection member and a rotationally symmetrical tensioning member which is pivotable over a pivotal range, is acted on by a spring, and is pivoted about an axis under the action of the warp, wherein a force acting on the tensioning member is measured by a force pickup connected in a force transmitting manner to the tensioning member, and measuring a force F_M which has a substantially constant magnitude over the pivotal range in dependence on the path of the warp and on a geometrical arrangement of the deflection member, the tensioning member and the pivot axis.

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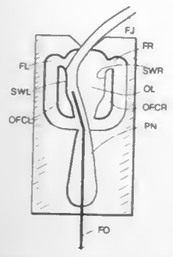
FLUIDIC FLOW METER WITH FIBER OPTIC SENSOR

Ronald D. Stouffer, Silver Spring, and Robert Bower, Odenton, both of Md., assignors to Bowles Fluidics Corporation, Columbia, Md.

Filed Jun. 12, 1995, Ser. No. 489,514
Int. Cl.[6] G01F *1/20*; **G02B** *6/10*
U.S. Cl. 73—861.19 **8 Claims**

8. A fluidic flow sensor comprising a fluidic oscillator having an oscillation chamber, a power nozzle for issuing a jet of fluid into

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said oscillation chamber, an outlet for issuing fluid from said oscillation chamber, means in said oscillation chamber for causing said jet of fluid to sweep back and forth within said oscillation chamber, and a flexible fiber optic wave guide having a light input end and a light output end and a predetermined surface area which is adapted to lose light as a result of flexing, means for mounting said fiber optic wave guide in a flow path in said oscillation chamber subject to oscillatory flow of said fluid, means for injecting light into one end of said fiber optic wave guide and means for detecting loss of light from said surface area due to oscillatory flow of said fluid as a measure of fluid flow through said oscillation chamber.

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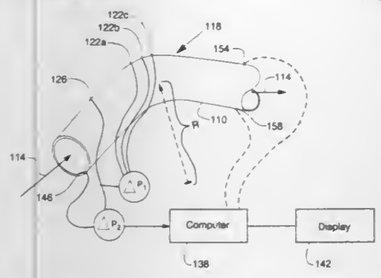
DEVICE AND METHOD FOR MEASURING MULTI-PHASE FLUID FLOW AND DENSITY OF FLUID IN A CONDUIT HAVING A GRADUAL BEND

Marcos German Ortiz, Idaho Falls, Id., and Timothy J. Boucher, Helena, Mont., assignors to Lockheed Martin Idaho Technologies Company, Idaho Falls, Id.

Continuation-in-part of Ser. No. 383,343, Feb. 3, 1995, Pat. No. 5,641,915. This application Oct. 3, 1996, Ser. No. 725,528

Int. Cl.[6] G01F *1/34*

U.S. Cl. 73—861.42 **3 Claims**



1. A system for measuring fluid mass flow in a conduit having a gradual arc and straight sections either before or after the arc or both, comprising:

a first pressure sensor means disposed in the side of the conduit at a location on the outside of the arc for measuring pressure of fluid in the conduit at that location,

a second pressure sensor means disposed on a side of the conduit at a location spaced from the first pressure transducer for measuring pressure of fluid in the conduit at that location,

a third pressure sensor means disposed in the side of the conduit for measuring of fluid pressure in the conduit,

a fourth pressure sensor means disposed in the conduit at an elevation above that of the third pressure sensor means, for measuring fluid pressure in the conduit, and

computation means for computing the density of fluid flowing in the conduit from the pressure measurements of the third and fourth pressure sensor means, and for computing flow rate of fluid in the conduit from the fluid pressure measurements by the first and second pressure sensor means, and the density computation.

5,827,978

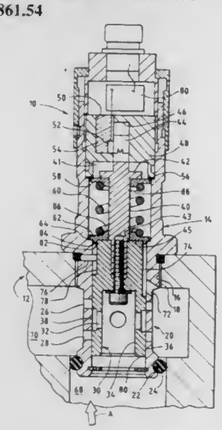
FLOW TRANSDUCER

George Kadlicko, Ontario, Canada, assignor to Microhydraulics, Inc., Mississauga, Canada

Continuation of Ser. No. 361,641, Dec. 22, 1994, abandoned. This application May 13, 1996, Ser. No. 647,279

Int. Cl.[6] G01F *1/22*

U.S. Cl. 73—861.54 **5 Claims**



1. A flow transducer to measure the rate of flow of a fluid in a conduit comprising a body including a sleeve to be inserted in said conduit and present a barrier to flow in the conduit, a piston slidable within said sleeve and having first and second oppositely directed fluid reaction surfaces, one of which is subjected to fluid pressure on one side of said sleeve and the other of which is subject to fluid pressure on the opposite side of said sleeve, an aperture formed in said sleeve and a port in said piston and movable relative to said aperture define an orifice for fluid flow from one side of said sleeve to the other, biasing means acting between said piston and said body to bias said piston to a predetermined position in which flow past said sleeve is prevented, and a signal generating means associated with said piston to provide a signal indicative of the rate of fluid flow through said orifice, said signalling means including a position sensor to determine the position of said piston relative to a predetermined position and provide a first signal indicative thereof and a signal correlation means for correlating said first signal to a predetermined output indicative of the flow rate through said orifice at the sensed position.

5,827,979

SIGNAL PROCESSING APPARATI AND METHODS FOR ATTENUATING SHIFTS IN ZERO INTERCEPT ATTRIBUTABLE TO A CHANGING BOUNDARY CONDITION IN A CORIOLIS MASS FLOW METER

Michael N. Schott, Loveland; Donald R. Cage, Longmont; Larry K. Carmichael, Westminster, and David T. Hahn, Longmont, all of Colo., assignors to Direct Measurement Corporation, Longmont, Colo.

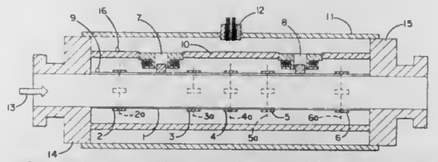
Filed Apr. 22, 1996, Ser. No. 636,034

Int. Cl.[6] G01F *1/84*

U.S. Cl. 73—861.357 **36 Claims**

10. An apparatus for measuring a mass flow rate of a fluid flowing relative to a flow conduit, comprising:

a force driver for vibrating said flow conduit;



a first motion sensor for measuring a resulting motion of said flow conduit at a first location along a length of said flow conduit, said resulting motion having a component proportional to both a Coriolis mode and a boundary condition mode;

a second motion sensor for measuring said resulting motion at a second location along said length of said flow conduit, said resulting motion having a component proportional to said Coriolis mode, a component proportional to said boundary condition mode and a component proportional to both said Coriolis mode and said boundary condition mode;

signal processing circuitry, coupled to said first and second motion sensors to receive sensed motion signals therefrom, for determining a magnitude of said Coriolis mode component of said resulting motion; and

output circuitry for producing an output signal proportional to said mass flow rate, said output signal substantially free of influence from said boundary condition mode component of said sensed motion signals.

5,827,980

FORCE OR EXTENSION SENSOR

Günter Doemens, Holzkirchen, and Markus Gilch, Mavern, both of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

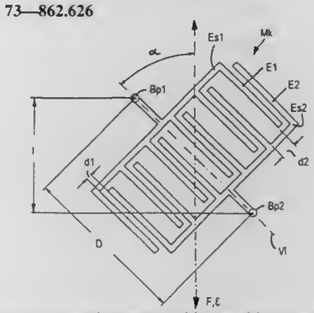
PCT No. PCT/DE95/01048, § 371 Date Feb. 11, 1997, § 102(e) Date Feb. 11, 1997, PCT Pub. No. WO96/05491, PCT Pub. Date Feb. 22, 1996

PCT Filed Aug. 9, 1995, Ser. No. 776,956

Claims priority, application Germany, Aug. 16, 1994, 44 29 049.7

Int. Cl.[6] G01L *1/12*

U.S. Cl. 73—862.626 **3 Claims**



1. A force or extension sensor with capacitive transducer, comprising:

a measuring capacitor having comb-like, interlocking electrode structures, which are electrically insulated from one another, the structures being adjustable in parallel with one another by two attachment points thereof as a function of a force or extension to be measured;

a total capacitance of the measuring capacitor being determinable by a parallel circuit having individual electrode pairs each of which being formed by a first electrode of a first electrode structure of the electrode structures, and an associated, adjacent second electrode of a second electrode structure of the electrode structures;

an electrode spacing, which can vary in accordance with the force or the extension to be measured, of the electrode pairs is, within an entire measuring range, small in comparison with a distance between the adjacent first and second electrodes, which are not associated with one another, of the first and second electrode structures;

the attachment points of the first and second electrode structures lie on a junction line which runs parallel to a direction of the first and second electrodes and which is oriented at an angle in the range of 40° to 50° with respect to the direction of the force or the extension to be measured.

5,827,981

FORCE MEASURING DEVICE

Adrian Anthony Cecil March, Winchester, United Kingdom, assignor to Adrian March Limited, Winchester, United Kingdom

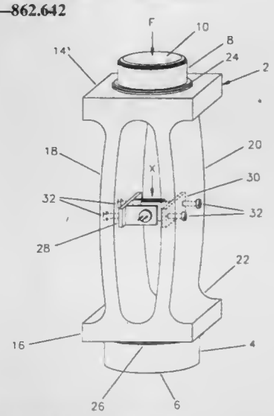
PCT No. PCT/GB95/01668, § 371 Date Feb. 28, 1997, § 102(e) Date Feb. 28, 1997, PCT Pub. No. WO96/02814, PCT Pub. Date Feb. 1, 1996

PCT Filed Jul. 14, 1995, Ser. No. 765,904

Claims priority, application United Kingdom, Jul. 15, 1994, 9414299

Int. Cl.[6] G02L *5/04*

U.S. Cl. 73—862.642 **12 Claims**



1. A force sensing device comprising:

an elastic member composed at least partially of elastically deformable material, said elastic member receiving a force along a longitudinal axis and including

two respective transversely extending intermediate end portions at respective longitudinal ends of said elastic member, said intermediate end portions extending at least transversely as defined by a transverse plane perpendicular to the longitudinal axis,

opposed generally concave leg members extending between said two intermediate end portions and spaced on respective lateral sides of a central plane including the longitudinal axis, said leg members defining an open area therebetween in a face plane perpendicular to the central plane and the transverse plane, and

each said leg member having a flared end portion integral with an associated said intermediate end portion at an intersection with the associated said intermediate end, said flared end portions minimizing stress concentrations at the intersections;

two respective connection portions attached longitudinally outward from respective said intermediate end portions of said elongate member to which a force to be measured is applied; and

a measurement means for measuring a distortion of said leg members when a force is applied between said connection portions.

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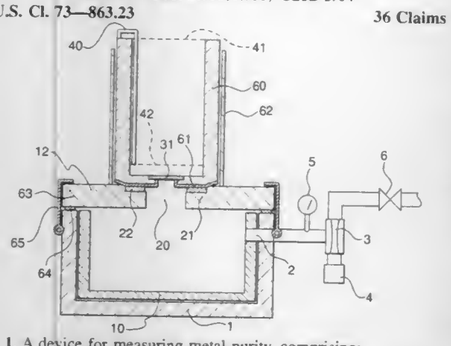
PORTABLE LIQUID METAL FILTRATION DEVICE FOR INCLUSION ANALYSIS

Don Allen Doutre, Kingston; Gary Hay, Ontario, and Peter Alexander Wales, Kingston, all of Canada, assignors to Alcan International Limited, Montreal, Canada

Filed Feb. 25, 1997, Ser. No. 810,152

Int. Cl.[6] G01N *1/00;11/00;* C21B *3/04*

U.S. Cl. 73—863.23 36 Claims



1. A device for measuring metal purity, comprising:

a receptacle for holding a sample of molten metal at a temperature above a liquidus temperature of said metal, said receptacle being made, at least internally, from an insulating refractory material having a heat diffusivity value, said receptacle having a bottom wall provided with a hole, and said bottom wall being substantially impermeable to air except at said hole;

a filter element for collecting impurities from said molten metal, said filter element being positioned in said hole; and

an enclosed collection vessel positioned below and separable from said receptacle for collecting molten metal which passes through the filter element from said receptacle, said collection vessel having an opening permitting extraction of gas from within said vessel to enable a vacuum to be generated within said vessel during use of the device;

wherein a leak-tight seal is established between a bottom of said receptacle for molten metal and said collection vessel to permit vacuum generated in said collection vessel to draw molten metal into said collection vessel from said receptacle through said filter; and

wherein said heat diffusivity value of said insulating refractory material of said receptacle is sufficiently low that, in use, the temperature of the molten metal in said receptacle does not fall below the liquidus temperature in the absence of further addition of heat in a period of time after introduction of the metal into the receptacle required for said vacuum to draw a fixed amount of said molten metal sufficient for metal purity testing purposes from said receptacle through said filter and into said collection vessel.

5,827,983

LAPTOP KEYBOARD TESTING DEVICE

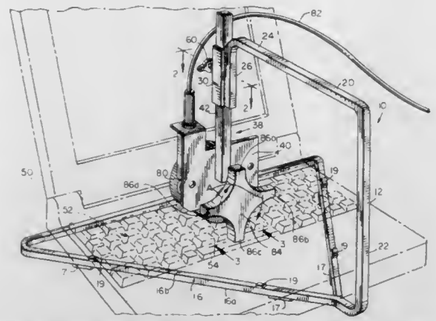
Gerald L. Ortoli, Cry, N.C., assignor to Ziff-Davis Publishing Company, New York, N.Y.

Filed Oct. 28, 1996, Ser. No. 738,888

Int. Cl.[6] G01M *19/00*

U.S. Cl. 73—865.3 21 Claims

1. A keyboard testing device for actuating at least one key on a keyboard, comprising a frame having a first portion for supporting a keyboard and a second portion, a rotatable key actuator supported by said second portion of said frame, an adjustment mechanism coupling said rotatable key actuator to said second portion of said frame which allows adjustment of said rotatable key actuator with respect to a keyboard supported on said first portion of said frame, and a motor support on said second portion for supporting a



motor to rotate said rotatable key actuator to regularly actuate one of the keys on said keyboard.

5,827,984

APPARATUS FOR SIMULATING THE EFFECT OF THE LIVING ORGANISM ON THE CHANGE IN SHAPE, THE DISINTEGRATION AND DISSOLUTION BEHAVIOUR AND THE ACTIVE-INGREDIENT RELEASE OF A PHARMACEUTICAL DOSAGE FORM

Joel Sinnreich, Basel, and Christian Bosshard, Hersberg, both of Switzerland, assignors to Ciba Geigy Corporation, Summit, N.J.

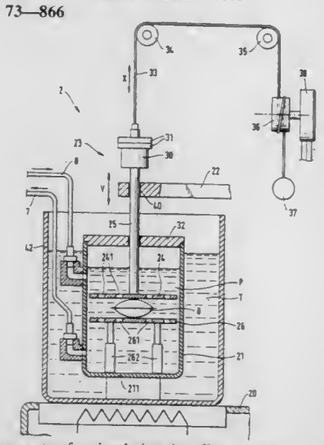
PCT No. PCT/EP94/02485, § 371 Date Feb. 6, 1996, § 102(e) Date Feb. 6, 1996, PCT Pub. No. WO95/15329, PCT Pub. Date Jun. 8, 1995

PCT Filed Jul. 28, 1994, Ser. No. 592,419

Claims priority, application Switzerland, Aug. 6, 1993, 2349/93

Int. Cl.[6] G01N *33/15*

U.S. Cl. 73—866 23 Claims



1. An apparatus for simulating the effect of a living organism on the change in shape, the disintegration and dissolution behaviour and the active-ingredient release of a pharmaceutical dosage form, comprising a beaker-shaped container for accommodating a test medium and the pharmaceutical dosage form and an agitating device for agitating the test medium, which agitating device can be moved periodically in a reciprocating movement into and back out of the container, wherein the agitating device comprises a piston-shaped head portion arranged on a piston rod, which head portion is provided with through-openings for the test medium and the distance of the piston-shaped head portion from the container floor can be altered periodically in accordance with the periodic reciprocating movement of the agitating device.

wherein, in a first alternative, the piston rod is suspended from a gallows-shaped boom or, in a second alternative, the piston rod passes through a bore in the gallows-shaped boom in such a manner that downward movement of the piston-shaped head portion arranged on the piston rod is caused by gravity alone and

wherein there is arranged in the container an intermediate base supported on the container floor, the base being provided with through-openings for the test medium and serving as a support for the dosage form, wherein the distance between the intermediate base and the container floor is adjustable by a means for adjusting the distance between the base and the floor.

5,827,985

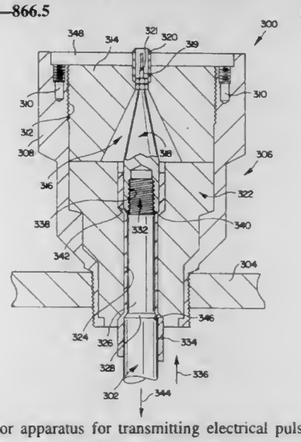
SENSOR APPARATUS FOR PROCESS MEASUREMENT

Bernd D. Grieger, and Donald D. Cummings, both of Greenwood, Ind., assignors to Endress + Hauser GmbH + Co., Maulburg, Germany

Continuation-in-part of Ser. No. 574,818, Dec. 19, 1995, Pat. No. 5,661,251. This application Oct. 23, 1996, Ser. No. 735,736

Int. Cl.[6] G01D *5/12;* G01F *23/24*

U.S. Cl. 73—866.5 11 Claims



1. A sensor apparatus for transmitting electrical pulses from a signal line into and out of a vessel to measure a process variable, the sensor apparatus comprising:

a mounting section configured to be coupled to the vessel, the mounting section being formed to include a central aperture defined by a first tapered surface;

at least one dielectric insert having a second tapered surface configured to engage the first tapered surface of the mounting section to prevent movement of the at least one dielectric insert in a direction away from the mounting section and a third tapered surface;

a conductive transitioning pin having a fourth tapered surface configured to engage the third tapered surface of the at least one dielectric insert;

a metallic insert located above the transitioning pin and the at least one dielectric insert, the metallic insert being coupled to the mounting section to secure the at least one dielectric insert within the mounting section;

a conductive probe element coupled to the transitioning pin and extending downwardly through the at least one dielectric insert and into the vessel; and

an electrical connector coupled to the transitioning pin, the electrical connector being configured to couple the signal line to the probe element through the transitioning pin.

5,827,986

APPARATUS FOR CLEANING SEMICONDUCTOR WAFERS

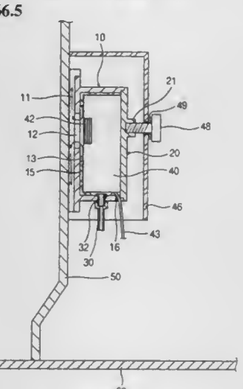
Tae-Chel Kang, and Chang-Yong Jung, both of Soowon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 9, 1997, Ser. No. 868,831

Claims priority, application Rep. of Korea, Jun. 8, 1996, 96-20494

Int. Cl.[6] G01R *35/00*

U.S. Cl. 73—866.5 13 Claims



11. A semiconductor wafer detecting device for a wafer cleaning apparatus having successively arranged process vessels for washing, rinsing, and drying wafers, the detecting device comprising:

a pair of brackets on each process vessel, one bracket provided on opposite sides of each process vessel, each bracket having an opening;

a sensor housing disposed inside each bracket;

a pair of sensors for detecting whether a wafer is located in the respective process vessel, one sensor being disposed inside each sensor housing, so that a space is created between each sensor and the outside wall of the vessel, into which space a water vapor eliminating gas is introduced.

5,827,987

ELECTRONIC MUSICAL INSTRUMENT WITH A VARIABLE COEFFICIENTS DIGITAL FILTER RESPONSIVE TO KEY TOUCH

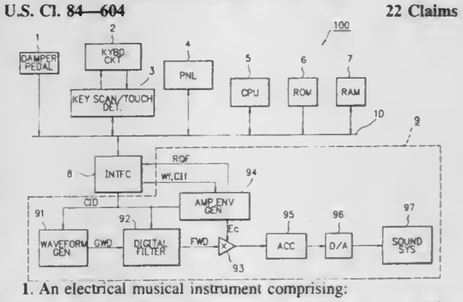
Taichi Kosugi, Hamamatsu, Japan, assignor to Kabushiki Kaisha Kawai Gakki Seisakusho, Shizuoka-ken, Japan

Filed Jun. 25, 1997, Ser. No. 882,336

Claims priority, application Japan, Jun. 25, 1996, 8-184132

Int. Cl.[6] G10H *1/08;1/12;7/02*

U.S. Cl. 84—604 22 Claims



1. An electrical musical instrument comprising:

tone generation instruction means for inputting tone generation start and stop instructions of a tone;

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detection means for detecting an operation strength upon inputting a tone generation instruction by said tone generation instruction means;

control means for controlling generation of a tone on the basis of the tone generation instruction input by said tone generation instruction means and the detection result of said detection means; and

tone generation means for generating a tone controlled by said control means, comprising waveform generation means for generating a tone waveform responsive to instructions by said tone generation instruction means, said waveform generation means having a waveform memory which stores waveform data for generation of the tone waveform,

wherein said tone generation means includes a digital filter for filtering the output waveform data from said waveform generation means, filter characteristics of said digital filter being controlled based on a resonant frequency and a resonance sharpness value by said control means, and generates a tone using the filter characteristics controlled by said control means, and

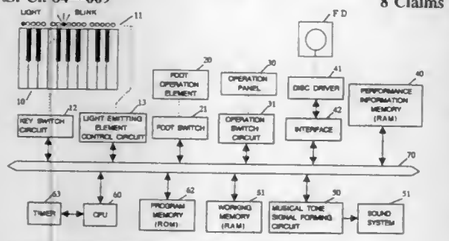
said control means includes first table means which stores a plurality of resonant frequency data in correspondence with operation strengths, and second table means which stores a plurality of resonance sharpness value data in correspondence with operation strengths, the control means controls the filter characteristics using the resonant frequency data and the resonance sharpness value data selected from said first and second table means on the basis of the detection result of said detection means.

5,827,988

ELECTRONIC MUSICAL INSTRUMENT WITH AN INSTRUCTION DEVICE FOR PERFORMANCE PRACTICE

Masatada Wachi, Hamamatsu, Japan, assignor to Yamaha Corporation, Japan

Filed May 25, 1995, Ser. No. 450,415
Claims priority, application Japan, May 26, 1994, 6-113070
Int. Cl.[6] A63H *5/00;* **G04B** *13/00;* **G10H** *7/00*
U.S. Cl. 84—609 **8 Claims**



1. An electrical musical instrument comprising:

a plurality of performance operation elements;

mode selection means for selecting one of a plurality of different practice modes including at least one guide mode;

memory means for memorizing performance data corresponding to a musical tune, said performance data comprising at least one sequence of data indicative of ones of the performance operation elements;

readout means for successively reading performance data from said memory means;

instruction means for highlighting a performance operation element to be operated by a player on a basis of performance data read by the readout means if one of said at least one guide modes is selected;

operation means operable by a player for designating a repeat condition; and

control means for returning a readout position of the performance data in a predetermined section to a previous readout position in response to operation of said operation means;

wherein said performance operation elements are in the form of a plurality of manually operated elements, and said operation means comprises an operation element to be operated by the player's foot.

2. An electronic musical instrument comprising:

a plurality of performance operation elements;

mode selection means for selecting one of a plurality of different practice modes including at least one guide mode;

memory means for memorizing performance data corresponding to a musical tune, said performance data comprising at least one sequence of data indicative of ones of the performance operation elements;

readout means for successively reading performance data from said memory means;

instruction means for highlighting a performance operation element to be operated by a player on a basis of performance data read by the readout means if one of said at least one guide modes is selected;

operation means operable by a player for designating a repeat condition; and

control means for returning a readout position of the performance data in a predetermined section to a previous readout position in response to operation of said operation means;

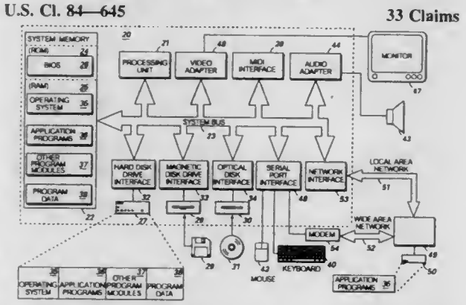
wherein the predetermined section is defined to correspond with a phrase of said musical tune.

5,827,989

SYSTEM AND METHOD FOR REPRESENTING A MUSICAL EVENT AND FOR CONVERTING THE MUSICAL EVENT INTO A SERIES OF DISCRETE EVENTS

Todor C. Fay, Bellevue, and Mark Taylor Burton, Redmond, both of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Jun. 23, 1997, Ser. No. 880,922
Int. Cl.[6] G09B *15/02;* **G10H** *7/00*
U.S. Cl. 84—645 **33 Claims**



1. A method of processing musical data, comprising the steps of:

receiving a plurality of original MIDI events; converting the plurality of original MIDI events into a single curve event; and

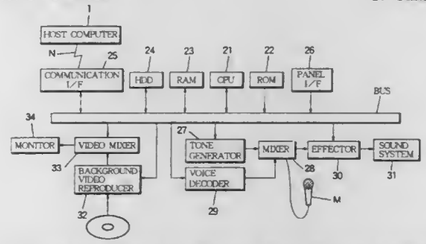
generating a plurality of recreated MIDI events from the single curve event, the recreated MIDI events being approximate to but not identical to said original MIDI events.

5,827,990

KARAOKE APPARATUS APPLYING EFFECT SOUND TO BACKGROUND VIDEO

Hiroyuki Fujita, Hamamatsu, Japan, assignor to Yamaha Corporation, Hamamatsu, Japan

Filed Mar. 20, 1997, Ser. No. 821,597
Claims priority, application Japan, Mar. 27, 1996, 8-072498
Int. Cl.[6] G10H *1/36;7/00*
U.S. Cl. 84—610 **17 Claims**



1. A karaoke apparatus for providing audio and video to support a karaoke play based on karaoke data, said karaoke apparatus comprising:

a first sound device that operates according to the karaoke data for generating a musical sound as a part of the audio so as to accompany the karaoke play;

a display device that operates according to the karaoke data for displaying a background scene as a part of the video, the displayed background scene matching with the musical sound; and

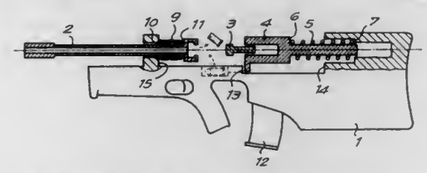
a second sound device that operates according to the karaoke data for generating an effect sound as another part of the audio, the effect sound being associated with the displayed background scene in order to produce an acoustic impression specific to the displayed background scene.

5,827,991

FIRE ARM WITH MOVEABLE BARREL

René Predazzer, Flemalle, Belgium, assignor to FN Herstal S.A., Herstal, Belgium

PCT No. PCT/BE95/00115, § 371 Date Aug. 9, 1996, § 102(e) Date Aug. 9, 1996, PCT Pub. No. WO96/18860, PCT Pub. Date Jun. 20, 1996
PCT Filed Dec. 12, 1995, Ser. No. 687,429
Claims priority, application Belgium, Dec. 12, 1994, 09401122
Int. Cl.[6] F41B *5/16;5/14*
U.S. Cl. 89—161 **5 Claims**



1. A firearm having an automatic cycle comprising:

a frame and a barrel associated with a firing chamber, said barrel mounted for longitudinal movement on the frame;

a breech bolt movably mounted relative to the frame and connected to the barrel for normally closing the firing chamber, said bolt being separable from the barrel;

said barrel and breech bolt being supported on the frame so as to be moveable together as an assembly in a rearward recoil direction from a rest position to a recoil position in reaction to firing of an ammunition round in the firing chamber with the chamber closed by the breech bolt, and to be moveable together forwardly from the recoil position up to the rest position, and so that the barrel is moveable from the recoil position forwardly beyond the rest position to a forward recoil position; and

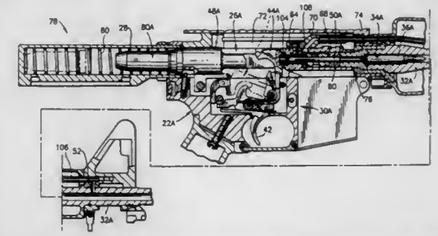
said barrel and breech bolt being arranged so that, upon at least partial movement of the barrel forwardly of the rest position, the barrel and breech bolt become separated from each other to permit extraction of a spent ammunition casing from and feeding of a fresh ammunition round into the firing chamber.

5,827,992

GAS OPERATED FIREARM

Michael R. Harris, Dover, Fla., and James F. Taylor, Wethersfield, Conn., assignors to Colt's Manufacturing Company, Inc., West Hatford, Conn.

Division of Ser. No. 670,661, Jun. 19, 1996, Pat. No. 5,726,377. This application Oct. 24, 1997, Ser. No. 957,140
Int. Cl.[6] F41A *5/10;3/00*
U.S. Cl. 89—191.01 **8 Claims**



1. In a gas operated firearm having a barrel, a receiver connected to the barrel, a receiver extension connected to a rear end of the receiver, a bolt assembly movably mounted between a battery position and a recoil position in the receiver and receiver extension, a recoil assembly located in the receiver extension behind the bolt assembly and biasing the bolt assembly towards the battery position, the recoil assembly having a body and weights movably located in the body, wherein the improvement comprises:

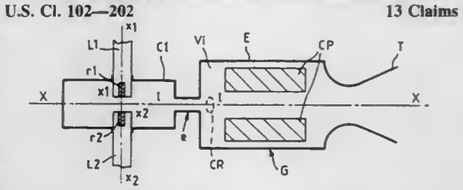
the receiver extension having a length less than six inches and the recoil assembly having only two weights comprised of a high density material, wherein the firearm has a length of less than about twenty-five inches and, during automatic firing, the recoil assembly is adapted to assist in controlling movement of the bolt assembly such that there are minimal cartridge feeding problems and substantially no muzzle climb.

5,827,993

PYROTECHNIC IGNITION DEVICE FOR A GAS GENERATOR

Jean-Francois Beau, Saint-Ouen L'Aumone, France, assignor to Societe Nationale Industrielle et Aerospatiale, Paris, France

Filed Apr. 9, 1996, Ser. No. 629,571
Claims priority, application France, Apr. 20, 1995, 95 04713
Int. Cl.[6] C06C *7/00;* **F42C** *19/08;* **C06D** *5/00*
U.S. Cl. 102—202 **13 Claims**



1. A pyrotechnic ignition device for a gas generator (G), which comprises:

an outer case (E) having a longitudinal axis (X—X), provided with at least one gas outlet (T) located at one end of said outer case (E) and containing a gas-emitting combustible primary charge (CP); and

at least one transmission line (L) located between an ignition control member (D) and said primary charge (CP), said transmission line (L) being provided, at its end pointing toward said primary charge (CP), on that side of the latter which is opposite the gas outlet (T), with a detonating terminal lead charge (r), wherein:

at least in the vicinity of said primary charge (CP), said transmission line (L) is at least substantially perpendicular to said longitudinal axis (X—X) of said outer case (E);

said end of the transmission line, provided with said detonating terminal lead charge (r), emerges in a sealed intermediate chamber (CI); and

said intermediate chamber (CI) is connected to said primary charge (CP) via at least one throttling vent (e) having an axis (1—1) at least approximately parallel to said longitudinal axis (X—X) of said outer case (E); so that

on firing said detonating terminal lead charge (r), said throttling vent (e), on the one hand, forms a barrier to transmission of the shock wave generated by said detonating terminal lead charge (r) and, on the other hand, directs and concentrates the flow of high-temperature, high-pressure gas, also generated by said detonating terminal lead charge (r), toward said combustible primary charge (CP).

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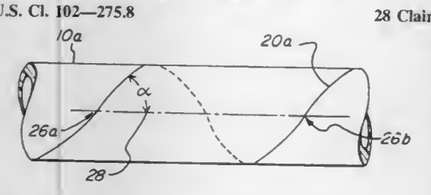
FISSILE SHOCK TUBE AND METHOD OF MAKING THE SAME

Ernest L. Gladden, Granby, and Robert G. Pallanck, Windsor, both of Conn., assignors to The Ensign-Bickford Company, Simsbury, Conn.

Filed Jul. 11, 1996, Ser. No. 678,106

Int. Cl.[6] C06C *5/04*

U.S. Cl. 102—275.8 **28 Claims**



19. A fissile signal transmission tube comprising:

a tube comprising a tube wall having an inner surface and at least one longitudinally extending rupture line formed in the tube wall along the entire length of the tube to provide a region of reduced bursting strength; and

a reactive material disposed on the inner surface of the tube in an amount sufficient to propagate an initiation signal therethrough and to burst the tube along the at least one rupture line.

5,827,995

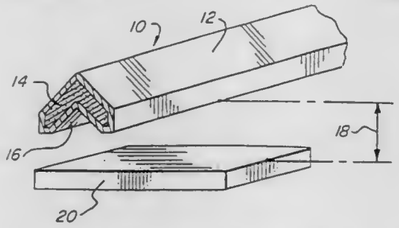
REACTIVE PRODUCTS HAVING TIN AND TIN ALLOY LINERS AND SHEATHS

John A. Graham, Middletown, Conn., assignor to The Ensign-Bickford Company, Simsbury, Conn.

Continuation-in-part of Ser. No. 770,419, Dec. 20, 1996, abandoned, which is a continuation of Ser. No. 587,823, Jan. 19, 1996, abandoned, which is a continuation of Ser. No. 417,438, Apr. 5, 1995, abandoned, which is a continuation of Ser. No. 262,474, Jun. 20, 1994, abandoned. This application Jan. 23, 1997, Ser. No. 788,114

Int. Cl.[6] F42B *1/02;* **C06C** *5/04*

U.S. Cl. 102—307 **21 Claims**



1. A reactive product comprising a sheath at least partially encasing a reactive material selected from the group consisting of explosive material, deflagrating material, pyrotechnic material and a mixture of two or more thereof, the sheath comprising a tin-based alloy comprising from 96 to 99.9 percent tin; not more than about 1 percent antimony; not more than about 0.05 percent bismuth; and one of (a) from 0.1 to 3 percent copper and (b) from about 0.1 to 4 percent silver.

5,827,996

AIR BAG GAS GENERATING COMPOSITION

Tadao Yoshida, Soka; Yasuo Shimizu; Kazuo Hara, both of Tokushima; Shiro Chijiwa, Osaka, and Junichi Onishi, Tokushima, all of Japan, assignors to Otsuka Kagaku Kabushiki Kaish, Osaka, Japan

PCT No. PCT/JP96/02760, § 371 Date May 29, 1997, § 102(e) Date May 29, 1997, PCT Pub. No. WO97/12848, PCT Pub. Date Apr. 10, 1997

PCT Filed Sep. 24, 1996, Ser. No. 849,526

Claims priority, application Japan, Sep. 29, 1995, 7/253309; Dec. 27, 1995, 7/340614; Aug. 13, 1996, 8/213415

Int. Cl.[6] C06B *29/00;31/00*

U.S. Cl. 149—45 **8 Claims**

1. An air bag gas generating composition comprising, as active compounds, as least one gas generating base selected from the group consisting of urazole and a metal salt thereof, and an oxidizing agent selected from the group consisting of oxohalogen acid salts nitrites, metallic peroxides hyperoxides and ozone compounds.

5,827,997

METAL FILAMENTS FOR ELECTROMAGNETIC INTERFERENCE SHIELDING

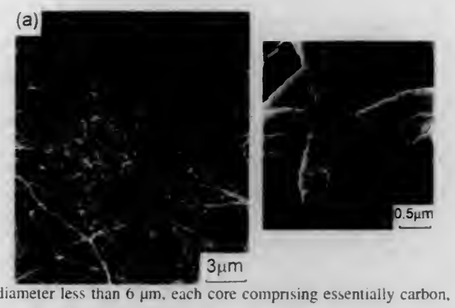
Deborah D. L. Chung, 108 Rolling Meadow La., E. Amherst, N.Y. 14051, and Xiaoping Shui, 187 Wendover Ave., Apt. 1, Tonawanda, N.Y. 14223

Filed Sep. 30, 1994, Ser. No. 328,266

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 MS **16 Claims**

1. A material comprising filaments, each filament comprising a metal and an essentially coaxial core, each filament having a



diameter less than 6 μm, each core comprising essentially carbon, such that the incorporation of 7 percent volume of this material in a matrix that is incapable of electromagnetic interference shielding results in a composite that is substantially equal to copper in electromagnetic interference shielding effectiveness at 1–2 GHz.

5,827,998

ELECTROMAGNETIC SHIELDING STRUCTURE HAVING RADIO WAVE-ABSORBING MATERIAL

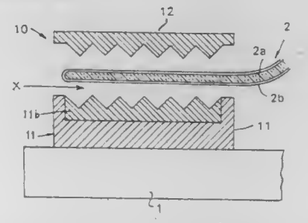
Tatsuji Moriguchi, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Feb. 12, 1996, Ser. No. 600,244

Claims priority, application Japan, Feb. 14, 1995, 7-025008

Int. Cl.[6] H05K *9/00*

U.S. Cl. 174—35 MS **7 Claims**



1. An electromagnetic shielding structure comprising first and second opposing members each having an opposing surface, one of said opposing surfaces capable of being arranged adjacent the other of said opposing surfaces; at least one of said members comprising a radio wave-absorbing material, a surface of the radio wave-absorbing material comprising one of said opposing surfaces, said surface of the radio wave-absorbing material being an uneven surface, and further wherein the shielding structure is arranged as a securing device between a satellite body and a thermal blanket for securing the thermal blanket to the satellite body.

the first opposing member comprising a first bracket, a first surface of said first bracket comprising said uneven surface of said radio wave-absorbing material, said first bracket having a second surface adapted to be brought into contact with the satellite body; and

the second opposing member comprising a second bracket having an uneven surface that can fit together with the uneven surface of said radio wave-absorbing material of said first bracket and, with said uneven surface of said second bracket, said thermal blanket may be pressed against said first bracket and secured between the uneven surfaces of said first and second brackets..

5,827,999

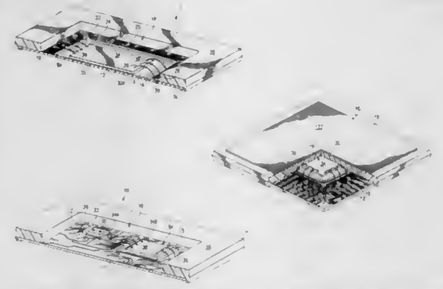
HOMOGENEOUS CHIP CARRIER PACKAGE

John R. McMillan, SouthLake, and William H. Maslakow, Lewisville, both of Tex., assignors to Amkor Electronics, Inc., West Chester, Pa.

Continuation-in-part of Ser. No. 250,153, May 26, 1994, Pat. No. 5,471,011. This application Nov. 14, 1994, Ser. No. 339,329

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **22 Claims**



1. A thermoplastic chip carrier cavity package for an integrated circuit chip, said cavity package comprising:

a circuit substrate formed of a suitable thermoplastic material selected from the group consisting of liquid crystal polymer and polyphenylene sulfide and including a plurality of metallized lead traces formed on a top side thereof and a plurality of metallized electrical contact points formed on a bottom side thereof;

means for mounting at least one chip onto said substrate;

means for connecting said metallized lead traces on said top side to said metallized electrical contact points on said bottom side of said circuit substrate; and

a casing comprised of said suitable thermoplastic and covering a portion of said circuit substrate and said connecting means so that a cavity is formed around said chip mounting means, said casing being chemically fused to a portion of said circuit substrate around said chip mounting means.

5,828,000

SEMICONDUCTOR DEVICE WITH HEAT RADIATING PLATE AND POSITIONING DUMMY LEAD AND LEAD FRAME THEREFOR

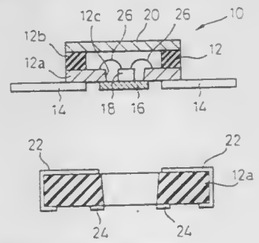
Yoshiaki Sano, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Apr. 17, 1997, Ser. No. 843,854

Claims priority, application Japan, Nov. 14, 1996, 8-303059

Int. Cl.[6] H01L *23/02*

U.S. Cl. 174—52.4 **22 Claims**



1. A semiconductor device comprising:

an insulating package outer frame member having an annular bottom surface with outer and inner peripheral regions, a first metallized pattern provided at least on the outer peripheral

region of said bottom surface, and a second metallized pattern provided on the inner peripheral region of said bottom surface;

outer leads connected to the first metallized pattern of the package outer frame member;

a heat radiating plate arranged in the same plane as the outer leads and connected to the second metallized pattern of the package outer frame member;

at least one positioning dummy lead made from a material different from that of the heat radiating plate and connected to the second metallized pattern of the package outer frame member to regulate the position of the heat radiating plate; and

a semiconductor chip mounted to the heat radiating plate within the package outer frame member.

5,828,001

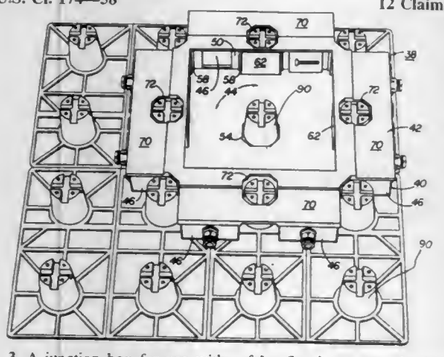
PLASTIC JUNCTION BOX WITH RECEPTACLE BOXES

Jan J. Schilham, Leusden, Netherlands, assignor to Guilford (Delaware), Inc., Guilford, Me.

Continuation-in-part of Ser. No. 389,753, Feb. 15, 1995, Pat. No. 5,673,522. This application Sep. 19, 1996, Ser. No. 715,787

Int. Cl.[6] H01R *13/516*

U.S. Cl. 174—58 **12 Claims**



3. A junction box for use with a false flooring system having standoffs for supporting floor panels, the junction box comprising a housing, a plurality of receptacle containers, and a cover for enclosing outlets placed within the receptacle containers, wherein the cover comprises openings through which the standoffs protrude.

5,828,002

ELECTRICAL BOX SUPPORT FRAME

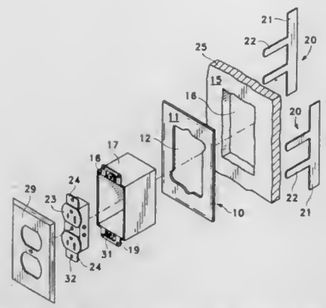
Wayne Fedun, 897 Old Liberty Rd., Monticello, N.Y. 12701

Filed May 27, 1997, Ser. No. 863,976

Int. Cl.[6] H05K *5/02*

U.S. Cl. 174—58 **11 Claims**

1. In combination with an electrical box having an accessible enclosed interior and top and bottom retaining tabs, an electrical box support frame for use on an outer surface of a wall directly over a wall opening when the wall opening is irregular or substantially larger than the electrical box, said frame comprising: a rectangular plate of a thin rigid material, larger than the wall opening, and having a front face, a back face and at least one rectangular aperture sized to just allow the electrical box to pass easily therethrough with the retaining tabs engaging the front face of said plate, said aperture having a top edge, a bottom edge and



two side edges, there being a recess in the center of the top edge and of the bottom edge.

5,828,003

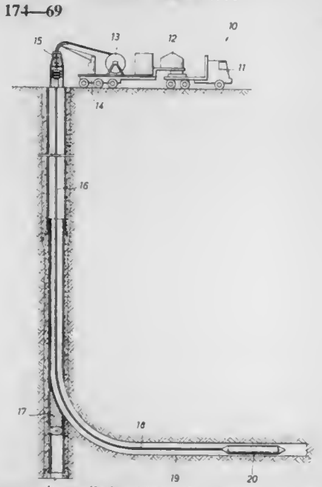
COMPOSITE COILED TUBING APPARATUS AND METHODS

Bart Thomeer, Houston, Tex., and Robert Sorem, Lawrence, Kans., assignors to Dowell — A Division of Schlumberger Technology Corporation, Sugar Land, Tex.

Filed Jan. 29, 1996, Ser. No. 593,634

Int. Cl.[6] H01B *7/06*

U.S. Cl. 174—69 **20 Claims**



1. A composite coiled tubing of a hollow cylindrical cross section, comprising:

an outer cylindrical surface layer;

a cylindrical composite fiber layer, wherein the composite fiber layer is concentrically inside of the surface layer to form with said outer layer a circumferential wall about the hollow coiled tubing, the composite fiber layer formed in part by weaving composite fibers in a predetermined pattern whereby the woven fibers are oriented in relationship to the longitudinal direction of the coiled tubing such as to provide appropriate strength and buckling characteristics to the coiled tubing; and

conductive fibers in said wall of said hollow composite coiled tubing extending continuously without interruption for a predetermined continuous length of said coiled tubing for conducting signals along the continuous length of said coiled tubing; said coiled tubing having a section modulus and section properties which vary along the length of the coiled tubing so that predetermined characteristics of said coiled tubing including stiffness or strength thereof may be varied.

5,828,004

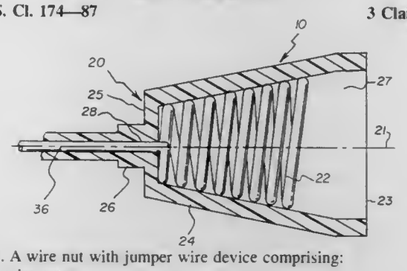
WIRE NUT WITH JUMPER WIRE DEVICE

Martin Nazco, 418 9 St., Union City, N.J. 07007, and Lionel Nazco, Sr., P.O. Box 357, North Bergen, N.J. 07047

Filed Oct. 24, 1996, Ser. No. 736,122

Int. Cl.[6] H01R *4/26*

U.S. Cl. 174—87 **3 Claims**



1. A wire nut with jumper wire device comprising:

a wire nut;

a jumper wire;

a threaded insert where the threaded insert is in an electrical connection with the jumper wire and both the threaded insert and the jumper wire are fixedly attached to the wire nut;

said wire nut comprising a wire nut cover having a generally conical shape, wherein the wire nut cover, and a wire insulation for the jumper wire, are all made of one continuous material which is suitable for electrical insulation;

wherein the jumper wire is comprised of a terminal end and a formed wire, wherein one end of the formed wire forms the threaded insert and the formed wire and the threaded insert are made from one continuous wire wherein the terminal end is located opposite of the threaded insert of the formed wire, wherein the wire insulation provides electrical insulation for the formed wire.

5,828,005

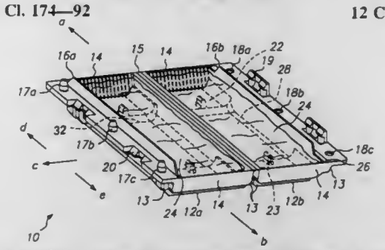
GEL-FILLED CLOSURE

Thai Huynh-Ba; Harry Yaworski, and Michael J. Bontatibus, Jr., all of Newark, Del., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation-in-part of Ser. No. 550,729, Nov. 1, 1995. This application Oct. 30, 1996, Ser. No. 739,647

Int. Cl.[6] H01R *13/52*

U.S. Cl. 174—92 **12 Claims**



1. A gel-filled closure for environmentally protecting a connector forming a connection between a cable and at least one electrical component, the closure comprising

first and second cavitied bodies, each having two lateral sides and two end sides;

a hinge joining the first and second cavitied bodies along one of said lateral sides of each of the first and second cavitied bodies, such that the cavitied bodies are capable of pivoting around the hinge and closing around the connector and immediately adjacent portions of the cable and the at least one electrical component; the connector being an insulation displacing connector;

a gel substantially filling each of the first and second cavitied bodies;

a first flap along the other one of the lateral sides of the first cavitied body distal from the hinge and projecting above a top level of said first cavitied body and a second flap along the other one of the lateral sides of the second cavitied body distal from the hinge and projecting above a top level of said second cavitied body, the first and second flaps overlapping and directing said gel to flow in the lateral direction as the first and second cavitied bodies are closed; and

locking mechanism for securing the cavitied bodies in a closed position.

5,828,006

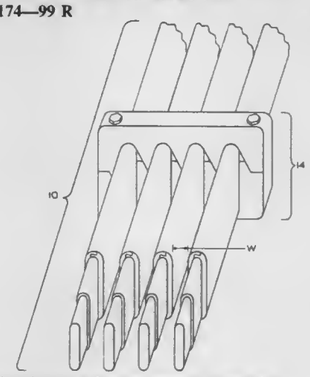
BUSWAY SYSTEM WITH WEDGE BRACE SUPPORTS

Eric J. Graham, Farmington, Conn.; Clarence W. Walker, Selmer, Tenn.; Louis A. Rosen, Wallingford, Conn., and Steven E. Richard, Selmer, Tenn., assignors to General Electric Company, New York, N.Y.

Filed Oct. 21, 1996, Ser. No. 734,161

Int. Cl.[6] H02G *5/06*

U.S. Cl. 174—99 R **16 Claims**



1. An electric power busway system comprising:

a plurality of electrically insulated power bus bars;

a plurality of metallic housing ducts; each of said housing ducts enclosing snugly a substantial length of one of said bus bars; and

braces spaced at intervals along the length of said plurality of bus bars and said plurality of housing ducts to retain said bus bars in position within said housing ducts.

5,828,007

WIRE

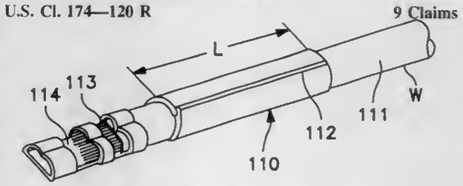
Mikio Fujishita, and Hidemi Tanigawa, both of Yokkaichi, Japan, assignors to Sumitomo Wiring Systems, Ltd., Japan

Filed Feb. 20, 1996, Ser. No. 603,809

Claims priority, application Japan, Feb. 24, 1995, 7-036972; Feb. 24, 1995, 7-036974

Int. Cl.[6] H01B *7/00*

U.S. Cl. 174—120 R **9 Claims**



1. A wire for carrying high current levels without emitting smoke, said wire having opposed first and second ends and consisting essentially of: at least one core (**113**); an insulating sheath (**111**) consisting essentially of polyvinyl chloride surrounding said

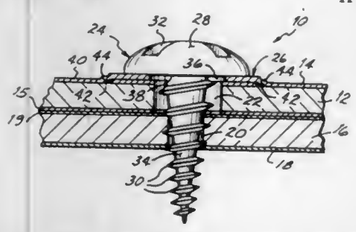
core (113), said insulating sheath (111) having an outer circumferential surface, a portion of said insulating sheath (111) adjacent said first end of said wire being removed for exposing said core (113); a terminal fitting (114) being secured at least to said core (113) at said first end of said wire; and a heat removing layer (110) covering and engaging portions of said outer circumferential surface of said insulating sheath (111) and extending from a first location in proximity to said terminal fitting (114) to a second location spaced from said second end of said wire, said heat removing layer (110) consisting essentially of polyvinyl chloride and a thermally conductive material selected from the group consisting of silica, alumina, magnesium oxide, boron nitride, beryllium oxide and mixtures of two or more thereof such that said heat removing layer (110) has a higher thermal conductivity than the insulating sheath (111), whereby heat from said core (113) is radiated to surrounding environments and away from said insulating sheath (111) by the heat removing layer (110) to prevent smoking of said wire in response to high current flows.

5,828,008

FASTENER ASSEMBLY FOR ESTABLISHING A MECHANICAL AND ELECTRICAL CONNECTION TO COATED METAL

Mark D. Lockwood, and Mark J. Friederick, both of Dubuque, Iowa, assignors to Barnstead/Thermolyne, Dubuque, Iowa

Filed Feb. 6, 1997, Ser. No. 796,509
Int. Cl.[6] H01B *17/00*
U.S. Cl. 174—138 R **11 Claims**



1. An electrically operated device comprising at least one piece of metal coated with an electrically insulative coating and a fastening assembly for establishing both a mechanical and electrical connection to the piece of metal, said fastening assembly including:

a fastener engaged with the piece of metal to establish said mechanical connection therewith; and

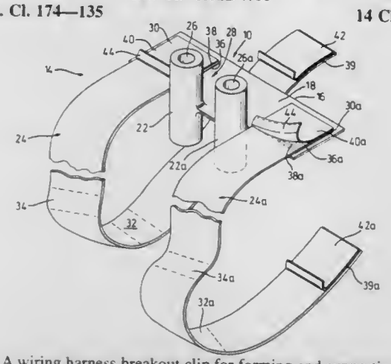
a washer disposed between at least a portion of said fastener and the piece of metal, said washer having a generally concave side and having a plurality of projections on the generally concave side of said washer, said washer being compressible between said fastener and said piece of metal upon securement of said fastener with said piece of metal thereby causing the projections of said washer to be urged downwardly and move radially outward through said coating to make electrical contact with the piece of metal and form a buildup of coating material on said projections, said washer further being formed of a permanently deformable metal so that upon removal of said fastener said washer remains flattened and mechanically connected against said piece of metal by said build-up of coating material.

5,828,009

WIRING HARNESS BREAKOUT CLIP WITH A PAIR OF LOCATING POSTS AND FLEXIBLE RETAINING BANDS

Benjamin B. James, Birchrunville, Pa., and Denis van Wassenhove, Crepy-en-Valois, France, assignors to Bentley-Harris Inc., Exton, Pa.

Filed Oct. 17, 1996, Ser. No. 734,440
Int. Cl.[6] H01B *7/00*
U.S. Cl. 174—135 **14 Claims**



1. A wiring harness breakout clip for forming and supporting the trunk and branch portions of a wire bundle comprising a wiring harness, said harness breakout clip being adapted to be mounted on a support surface, wherein said harness breakout clip comprises:

a substantially rigid plate having a surface for supporting the trunk portion of said wire bundle;

a pair of locating posts joined to and projecting transversely of the surface of said plate, said locating posts being spaced apart to form a locating space for a branch portion of said wire bundle, at least one of said locating posts having a through bore extending therethrough for receipt of a mounting pin ; and

a pair of elongated flexible securing straps, each strap of said pair of flexible securing straps being joined to said plate in adjacent relation to one of said locating posts, said each strap comprising a plurality of strap fastening means arranged along said each strap for fastening said each strap to itself at spaced fastening locations along said each strap, said plurality of strap fastening means also for securing said wire bundle to said plate.

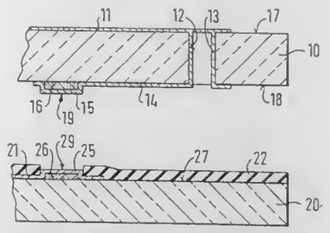
5,828,010

CONNECTION OF ELECTRICALLY CONDUCTING LAYERS WITH CERAMIC PROMINENCES

Hans-Joerg Renz, Leinfelden-Echterdingen; Harald Neumann, Vaihingen/Enzwethingen, and Johann Riegel, Bietigheim-Bissingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

PCT No. PCT/DE94/00406, § 371 Date Dec. 21, 1994, § 102(e) Date Dec. 21, 1994, PCT Pub. No. WO94/24838, PCT Pub. Date Oct. 27, 1994
PCT Filed Apr. 13, 1994, Ser. No. 360,711
Claims priority, application Germany, Apr. 21, 1993, 4312976.5
Int. Cl.[6] H01R *9/09*
U.S. Cl. 174—261 **8 Claims**

1. A connection arrangement comprising electrically conducting layers extending in at least two layer levels, at least one ceramic foil arranged between said at least two layer levels, a connection between the electrically conducting layer of one of the layer levels to the electrically conducting layer of another of the layer levels extending through the ceramic foil, and a contact point located outside the connection provided on at least one of the at least two layer levels; and wherein at least one of the electrically conducting layers has a raised surface at the contact point; and, at the contact point the ceramic foil has a prominence, consisting of the material



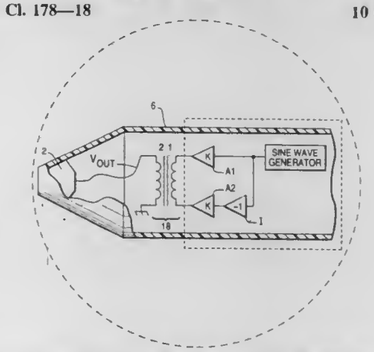
of the ceramic foil, over which said at least one of the electrically conducting layers is passed, so that the raised surface is produced.

5,828,011

HIGH VOLTAGE STYLUS FOR PORTABLE COMPUTER

Tony S. Partow, and Carl M. Stanchak, both of Colorado Springs, Colo., assignors to AT&T Global Information Solutions Company, Dayton, Ohio; Hyundai Electronics America, San Jose, Calif., and Symbios Logic Inc., Fort Collins, Colo.

Filed Feb. 4, 1994, Ser. No. 191,908
Int. Cl.[6] G08C *21/00*
U.S. Cl. 178—18 **10 Claims**



1. In a stylus for a digitizing pad, powered by at least one battery providing a voltage V, the improvement comprising:

a transformer having a primary winding; and

means for applying a time-varying signal, of peak-to-peak amplitude exceeding the voltage V, to said primary winding.

5,828,012

PROTECTIVE COVER ASSEMBLY HAVING ENHANCED ACOUSTICAL CHARACTERISTICS

Damian I. Repollé, Newark, Del., and Frank S. Principe, Landenberg, Pa., assignors to W. L. Gore & Associates, Inc., Newark, Del.

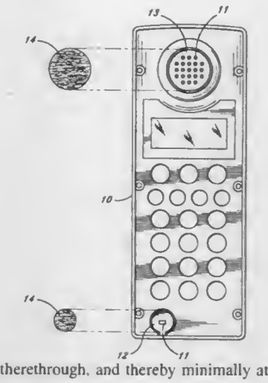
Filed May 28, 1997, Ser. No. 864,476
Int. Cl.[6] G10K *11/00*
U.S. Cl. 181—175 **17 Claims**

1. A sound-transmissive protective cover assembly comprising:

(a) a protective membrane layer having first and second surfaces and a perimeter defined by its edges,

(b) a porous support layer having first and second surfaces;

one said surface of each of said protective membrane layer and porous support layer selectively bonded together to form a bonded outer region within said perimeter and, surrounded by said bonded outer region, an unbonded inner region wherein said protective membrane and said porous support material are free to move independently in response to acoustic energy passing therethrough, and thereby minimally attenuating said acoustic energy.

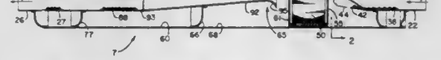


5,828,013

MUFFLER WITH CATALYTIC CONVERTER ARRANGEMENT; AND METHOD

Wayne M. Wagner, Apple Valley; Marty A. Barris, Lakeville; Douglas E. Flemming, Rosemount; James C. Rothman, Burnsville, and Peter A. Betts, Prior Lake, all of Minn., assignors to Donaldson Company, Inc., Minneapolis, Minn.

Continuation of Ser. No. 294,198, Aug. 22, 1994, abandoned, which is a continuation of Ser. No. 889,949, Jun. 2, 1992, Pat. No. 5,355,973. This application Nov. 4, 1996, Ser. No. 743,516
Int. Cl.[6] F01N *1/00*
U.S. Cl. 181—255 **21 Claims**



1. An apparatus for modifying an exhaust stream of a diesel engine, said apparatus comprising:

(a) a muffler arrangement comprising a cylindrical outer shell and having an exhaust inlet, and exhaust outlet and means for sound attenuation;

(b) a catalytic converter arrangement positioned within said muffler arrangement between said exhaust inlet and exhaust outlet;

(i) said catalytic converter arrangement including a porous core member having an upstream face;

(c) means for directing flow of exhaust gases through said catalytic converter arrangement whenever exhaust gases operably flow through said muffler arrangement from said exhaust inlet to said exhaust outlet;

(d) a flow distribution arrangement constructed and arranged to direct exhaust flow substantially evenly against said porous core member upstream face;

(i) said porous core member being positioned within a distance of about 2 to 4 inches from said flow distribution arrangement; and

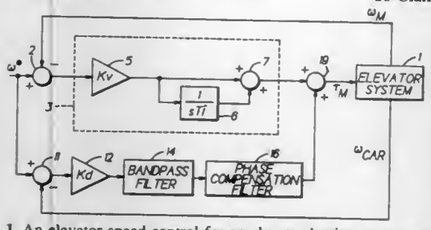
(e) said means for sound attenuation comprises downstream acoustic elements including a flow passage tube extending through at least one resonating chamber; said flow passage tube having a re-entry port on an end thereof proximate said catalytic converter arrangement.

5,828,014

ELEVATOR SPEED CONTROL CIRCUIT

Michio Goto, Yokobama; Kazuya Ogura; Yasuhiro Yoshida, both of Nagoya, and Masayuki Mori, Inazawa, all of Japan, assignors to Otis Elevator Company, Farmington, Conn.

Filed Jun. 7, 1997, Ser. No. 872,483
Claims priority, application Japan, Jun. 7, 1996, 8-145650; Nov. 7, 1996, 8-294685
Int. Cl.[6] B66B *1/34*
U.S. Cl. 187—292 16 Claims



1. An elevator speed control for an elevator having a car moveable in a hoistway; a counterweight connected to the car by a rope passing over a sheave driven by a motor, means for sensing the speed of said motor and providing motor speed signals indicative thereof, means for sensing the motion of said car and providing car motion signals indicative thereof, and a controller for providing motion command signals, comprising:

a proportional and integral motion amplifier responsive to the deviation between the motion indicated by said motion command signals and the actual motor motion indicated by said motor motion signals to provide a torque indicating signal indicative of a torque required of said motor;

characterized by the improvement comprising:

deviation means responsive to said motion command signals and to said car motion signals for providing a deviation signal responsive to the difference therebetween, said difference including car vibration components;

a bandpass filter responsive to said deviation signal and having a passband related to the frequencies of said car vibration components;

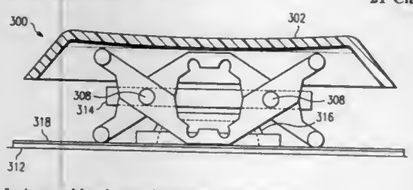
feedback means responsive to the output of said bandpass filter for adding signals related to said car vibration components with said torque indicating signal to provide a torque command signal to said motor.

5,828,015

LOW PROFILE KEYBOARD KEYSWITCH USING A DOUBLE SCISSOR MOVEMENT

Kenneth E. Coulon, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 27, 1997, Ser. No. 829,912
Int. Cl.[6] H01H *13/70;3/12*
U.S. Cl. 200—5 A 21 Claims



1. A portable electronic device comprising:

a. a housing;

b. a low profile keyboard associated with said housing comprising a plurality of keyswitches, each keyswitch having a keycap which moves towards a base in response to a keystroke by a user to compress for generating an electrical signal, wherein the improvement comprises:

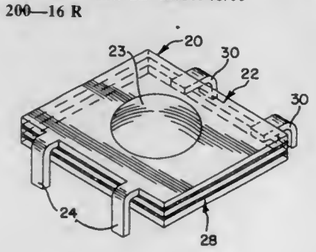
a dual scissors movement for at least one of said keyswitches having two scissor structures on each of two sides of said keyswitches, where each scissor structure has a pivot point and at least two arms which pivot about said pivot point, and one or more ends of said arms connected to said key cap and said base layer.

5,828,016

LOW PROFILE TACTILE SWITCH

Dennis A. Grannan, Williamsburg, Va., and David W. Thompson, Loveland, Colo., assignors to Lucas Automation and Control Engineering, Inc., Hampton, Va.

Filed Feb. 3, 1997, Ser. No. 794,650
Int. Cl.[6] H01H *13/00*
U.S. Cl. 200—16 R 38 Claims



1. A low profile switch comprising:

a conductive tactile member formed from a thin metal strip and being self-supporting,

a conductive contact member, and

an insulator between said members,

said tactile conductive member having a collapsible tactile portion,

said contact member having a contact portion engageable by said collapsible tactile portion when it is forced to collapse,

said insulator being formed from a thin plastic film having a layer of pressure-sensitive adhesive on at least one side for adhesively connecting said film to said tactile conductive member,

said contact member being carried by the insulator which electrically insulates the contact member from the tactile conductive member, and

lead means for said tactile conductive member and said contact member for connection of the switch into a circuit,

whereby application of a tripping force to said collapsible tactile portion of said tactile conductive member causes the collapsible tactile portion to collapse and contact said contact member to close the circuit, and release of the tripping force allows the collapsible tactile portion to return to its normal state and open the circuit.

5,828,017

ELECTRICAL SWITCH ASSEMBLY

Joseph Fiorini, Newmarket, and Cong Doan, Willowdale, both of Canada, assignors to LaPrairie Electrical Products, Markham, Canada

Filed Sep. 16, 1996, Ser. No. 714,472
Int. Cl.[6] H01R *11/11*
U.S. Cl. 200—17 R 7 Claims

1. An electrical switch apparatus for isolating equipment in an electrical circuit, said electrical switch apparatus comprising:

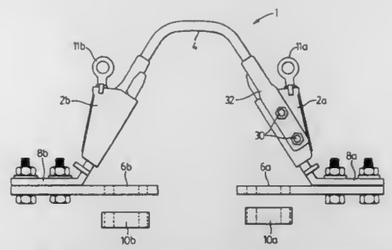
(a) first and second detachable couplers;

(b) a flexible conductor connecting said first and second detachable couplers;

(c) first and second terminal means, said terminal means including means for engaging said first and second detachable couplers and forming a conductive path, wherein detaching one of said couplers breaks said conductive path, and said first and second terminal means further including means for securing said detachable couplers when engaged;

(d) said first and second terminal means further including means for connecting to respective terminals of said electrical equipment and continuing said conductive path when said first and second detachable couplers are engaged; and

(e) wherein said detachable couplers comprise pigtail connectors having a wedge locking member.

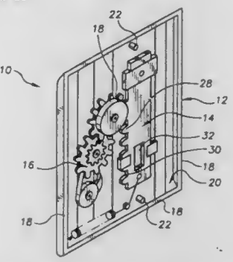


5,828,018

LIGHT SWITCH COVER PLATE WITH MECHANICAL TIMER MECHANISM

Edward M. Cooper, 2404 Congressman Hebert, Chalmette, La. 70043

Filed Mar. 26, 1997, Ser. No. 837,254
Int. Cl.[6] H01H *43/00*
U.S. Cl. 200—33 R 7 Claims



1. A light switch cover plate with mechanical timer mechanism comprising:

a cover plate member defining a timer mechanism cavity and having a cover plate opening formed therethrough between a front cover plate surface and said timer mechanism cavity;

a linear rack member having a switch opening formed therethrough sized to receive therethrough a switch actuator of a light switch and a switch locking pin assembly extending outwardly from said linear rack member through said cover plate opening, said linear rack member being slidably installed within said timer mechanism cavity and guided along a predetermined path between a fully upward position and a fully downward position by an upper rack guide and a left and right lower rack guide, said linear rack member being biased toward said fully downward position by a helical spring attached between said linear rack member and said cover plate member, said linear rack member having rack gear teeth formed along a side edge thereof; and

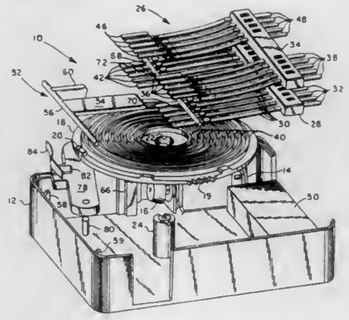
a spring loaded mechanical drive mechanism including a spring drive assembly, a spring drive gear, a reduction gear assembly and an anchor escapement gear, said spring drive gear being in meshing relationship with said rack gear teeth, said spring loaded mechanical drive mechanism providing a resistance against movement of said linear rack member toward said fully downward position under a tensional force of said helical spring in a manner such that a predetermined period of time is required for said linear rack member to move from said fully upward position to said fully downward position.

5,828,019

MOTORIZED SEQUENCING SWITCH ASSEMBLY

Ronald S. Joyce, Elk Grove Village, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 22, 1996, Ser. No. 651,371
Int. Cl.[6] H01H *43/10*
U.S. Cl. 200—38 B 14 Claims



1. A sequencing switch assembly comprising:

(a) housing structure including motor means mounted thereon;

(b) a cam rotatably mounted on said housing means, said cam having a plurality of first cam tracks thereon and at least one second cam track thereon;

(c) drive means operatively connected to said motor means for effecting rotary movement of said cam in a forward direction and a reverse direction;

(d) a plurality of switches each including cam follower means and disposed for actuation by contacting one of said plurality of first cam tracks upon rotation of said cam in said forward direction; and,

(e) lift means operative upon rotation of said cam in said reverse direction, for lifting certain ones of said switches from contacting said cam tracks.

5,828,020

Patent Not Issued For This Number

5,828,021

POLE PANEL FOR SWITCHES AND FABRICATION METHOD THEREOF

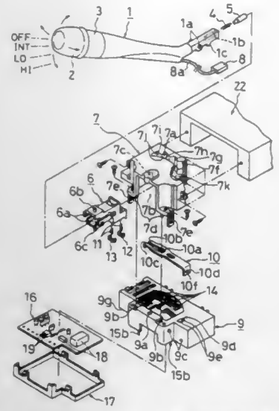
Norio Uchiyama, and Takeshi Shibata, both of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Tokyo, Japan

Filed Sep. 24, 1996, Ser. No. 718,942
Claims priority, application Japan, Oct. 9, 1995, 7-287877
Int. Cl.[6] H01H *3/16;9/00;1/64*
U.S. Cl. 200—61.54 11 Claims

1. A pole panel for a combination switch having a switch case (**7**) on which an operating lever (**1**) is pivotally supported for swing-operation, a base (**22**) having the switch case (**7**) detachably attached by receiving therein, and a pole panel (**9**) arranged on the underside of the switch case (**7**) so that fixed contacts (**14**) of the pole panel (**9**) are in contact with movable contacts, the pole panel comprising:

an opening (**9***h*) formed in an underside of the pole panel (**9**);

terminals (**15***b*) respectively formed integral with the fixed contacts (**14**) to project into the opening (**9***h*); and



a substrate (**16**) provided to cover the opening (**9***h*). said terminals (**15***b*) of the pole panel (**9**) extending through said substrate (**16**).

5,828,022

INHIBITOR SWITCH DEVICE HAVING AN OPERATING LEVER WITH A STRENGTH ADJUSTING PORTION

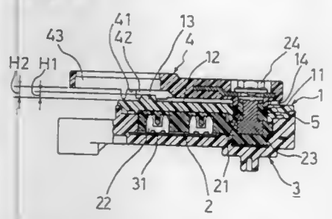
Takashi Nakazawa, and Tsutom Watada, both of Tokyo, Japan, assignors to Niles Parts Co., Ltd., Japan

Filed Mar. 27, 1997, Ser. No. 826,123

Claims priority, application Japan, Mar. 28, 1996, 8-099022

Int. Cl.[6] **H01H** *9/06;21/22;21/78*

U.S. Cl. 200—61.88 **5 Claims**



1. An inhibitor switch device, comprising:

a case (**1**, **6**) with a bearing hole (**11**, **61**);

a rotating axle (**21**, **71**) that fits into said bearing hole (**11**, **61**) so that said rotating axle rotates freely;

a movable plate (**2**, **7**) that moves freely in said case (**1**, **6**), said movable plate being integrated with said rotating axle (**21**, **71**);

a movable contact point (**22**, **72**) supported on said movable plate (**2**, **7**);

a fixed contact point (**31**, **81**) that corresponds with said movable contact point (**22**, **72**);

a plateform (**3**, **8**) that supports said fixed contact point (**31**, **81**) and houses said movable plate (**2**, **7**) in conjunction with said case (**1**, **6**); and

an operating lever (**4**, **9**) that is fixed to said rotating axle (**21**, **71**) and moves on an external surface (**12**, **62**) of said case (**1**, **6**), said operating lever (**9**) having a strength adjusting portion (**96**) that adjusts the strength of said operating lever (**9**) near said rotating axle (**71**);

wherein said strength adjusting portion comprises a plurality of longitudinally extending grooves formed in said operating lever.

5,828,023

INHIBITOR SWITCH FOR DETECTING POSITION OF AUTOMOBILE AUTOMATIC GEAR SHIFTER INCLUDING OPERATING LEVER STOPPERS

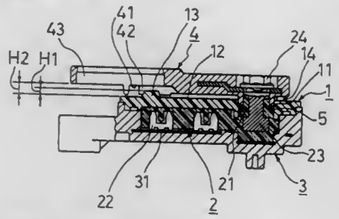
Takashi Nakazawa, Tokyo, Japan, assignor to Niles Parts Co., Ltd., Japan

Filed Mar. 27, 1997, Ser. No. 826,125

Claims priority, application Japan, Mar. 28, 1996, 8-099016; Mar. 28, 1996, 8-099017

Int. Cl.[6] **H01H** *3/16;21/02;21/22*

U.S. Cl. 200—61.88 **12 Claims**



1. An inhibitor switch device comprising:

a case (**1**, **6**) with a bearing hole (**11**, **61**);

a rotating axle (**21**, **71**) that fits into said bearing hole (**11**, **61**) so that said rotating axle rotates freely;

a movable plate (**2**, **7**) that moves freely in said case (**1**, **6**), said movable plate being integrated with said rotating axle (**21**, **71**);

a movable contact point (**22**, **72**) supported on said movable plate (**2**, **7**);

a fixed contact point (**31**, **81**) that corresponds with said movable contact point (**22**, **72**);

a platform (**3**, **8**) that supports said fixed contact point (**31**, **81**) and houses said movable plate (**2**, **7**) in conjunction with said case (**1**, **6**); and

an operating lever (**4**, **9**) that is fixed to said rotating axle (**21**, **71**) and moves on an external surface (**12**, **62**) of said case (**1**, **6**);

wherein a projected portion (**42**, **92**, **92**A) is formed on the bottom side (**41**, **91**) of said operating lever (**4**, **9**), and stoppers (**13**, **14**, **63**, **64**) which impact with said projected portion (**42**, **92**, **92**A) are formed on an external wall (**12**, **62**) of said case (**1**, **6**).

5,828,024

SWITCH

Tsunesuke Takano; Kouichi Sinzawa, and Yoji Yabata, all of Tokyo, Japan, assignors to Kabushiki Kaisha T an T, Tokyo, Japan

Filed Dec. 27, 1996, Ser. No. 777,345

Claims priority, application Japan, Oct. 29, 1996, 8-286530

Int. Cl.[6] **H01H** *13/12*

U.S. Cl. 200—531 **14 Claims**

13. A switch unit coupled with blade terminals of bus bars of an insulated base, the switch unit comprising:

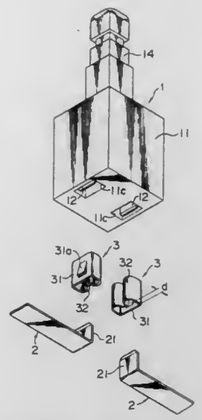
a housing having terminal plate recesses and connection terminal recesses;

an operating lever protruding from said housing, said operating lever sliding between an OFF state and an ON state;

a resilient contact plate coupled with said operating lever;

terminal plates disposed in said terminal plate recesses of said housing, said housing defining a contact path for said resilient contact plate, said terminal plates being disposed in said terminal plate recesses along a portion of said contact path; and

connection terminals disposed in said connection terminal recesses of said housing, said connection terminals resiliently clamping ends of said terminal plates in said housing, said connection terminals receiving the blade terminals, wherein said resilient contact plate is displaced along said contact path



when said operating lever slides between said OFF state and said ON state, and wherein said resilient contact plate engages said terminal plates in said ON state.

5,828,025

DISCONNECTING/GROUNDING SWITCH FOR METAL-ENCAPSULATED, GAS-INSULATED HIGH-VOLTAGE SWITCHGEAR

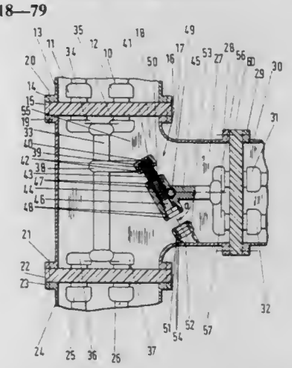
Heinrich Neumaier, Hausach, and Volker Thomas, Hanau, both of Germany, assignors to ABB Patent GmbH, Mannheim, Germany

Filed Aug. 13, 1997, Ser. No. 910,650

Claims priority, application Germany, Aug. 13, 1996, 196 32 574.9

Int. Cl.[6] **H01H** *33/00*

U.S. Cl. 218—79 **11 Claims**



1. A disconnecting/grounding switch for metal-encapsulated, gas-insulated high-voltage switchgear, comprising:

a first inner conductor and a first fixed contact connected to said first inner conductor; a second inner conductor extending perpendicularly to said first inner conductor and a second fixed contact connected to said second inner conductor; a fixed grounding contact; a moving contact member in the form of a thrust contact movable between a first position in which said moving contact member connects said first and second fixed contacts and a second position in which said moving contact member connects said second fixed contact to said grounding contact;

a contact housing forming said second fixed contact, said moving contact member being disposed in said contact housing and being linearly movable therein along a movement path extending at a given angle relative to said first and second inner conductors;

each of said first and second fixed contacts and said grounding contact having a center axis, wherein said center axes of said fixed contacts and of said grounding contact, and the movement path of said moving contact member are aligned with one another.

5,828,026

STOCK GIVING OFF ARC-EXTINGUISHING GAS, AND GAS-BLAST CIRCUIT BREAKER COMPRISING SUCH A STOCK

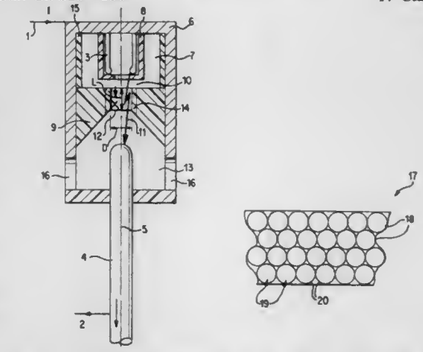
Bodo Brühl, Künten; Elias Jülke, Wettingen; Kurt Kaltenegger, Lengnau; Lutz Niemeyer, Birr, and Leopold Ritzer, Untersiggenthal, all of Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland

Filed Mar. 29, 1996, Ser. No. 623,959

Claims priority, application Germany, May 12, 1995, 195 17 540.9

Int. Cl.[6] **H01H** *33/02;33/04*

U.S. Cl. 218—150 **17 Claims**



1. An electrically insulating stock which gives off arc-extinguishing gas when exposed to an arc, said stock comprising an insulating-material matrix and a filler embedded in the matrix, said filler comprises a cellular structure in which a predominant portion of the cells is filled with a material having arc-extinguishing properties or contains a material which upon exposure to an arc forms the arc-extinguishing gas.

5,828,027

ELECTRICAL DISCHARGE MACHINE WITH TAR BUILD-UP DETECTOR

Akihiro Goto; Mitsuyoshi Wada, and Yoshio Ozaki, all of Aichi, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 267,233, Jun. 29, 1994, Pat. No. 5,753,882. This application Jun. 27, 1997, Ser. No. 884,660

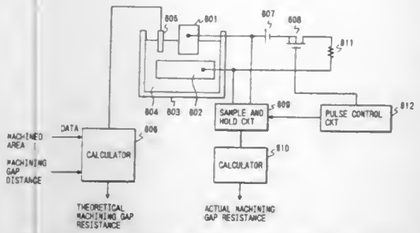
Claims priority, application Japan, Jun. 30, 1993, 5-162725

Int. Cl.[6] **B23H** *1/02*

U.S. Cl. 219—69.18 **3 Claims**

1. An electrical discharge machine for applying a pulsed voltage to a machining gap between an electrode and a workpiece opposed via a dielectric fluid made of water and a compound or via oil to generate a discharge to machine the workpiece with the energy of said discharge, comprising:

a tar build-up detector for detecting the build-up of tar on at least one of the electrode or the workpiece based upon a difference between a machining gap impedance found from dielectric



fluid resistivity and an electrode area and said machining gap impedance actually measured.

5,828,028

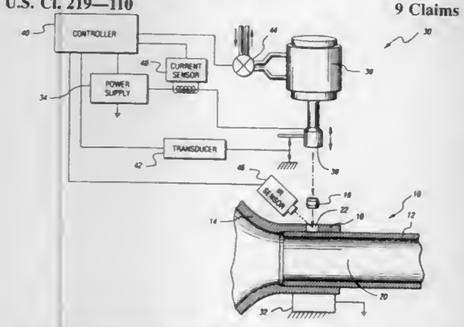
HOT FORGING METHOD AND APPARATUS

Dimitrios G. Cecil, 1277 Ashover Dr., Bloomfield Hills, Mich. 48304

Filed Jun. 24, 1996, Ser. No. 669,575

Int. Cl.[6] B23K *11/14*

U.S. Cl. 219—110 **9 Claims**



1. A joining apparatus for hot forging first and second workpieces together, wherein the first workpiece is provided with a deformable rivet and the second workpiece is provided with an aperture sized to receive the deformable rivet, the apparatus comprising:

an assembly fixture for supporting the first and second workpieces to be joined with the deformable rivet of the first workpiece extending through the aperture in the second workpiece;

a resistance heating power supply having a pair of power output terminals for providing power output, one of which being in electrical communication with the first workpiece;

a hot forging electrode connected to the other one of the resistance heating power supply power output terminals and movable relative to the deformable rivet;

an actuator affixed to the hot forging electrode for shifting the hot forging electrode into and out of engagement with the deformable rivet;

a pressure regulator cooperating with the actuator for varying a force exerted by the hot forcing electrode on the deformable rivet;

a transducer having an output indicative of position of the hot forging electrode to determine rivet deformation; and

a controller cooperating with the transducer, the pressure regulator, and the resistance heating power supply, wherein the controller regulates the power output of the resistance heating power supply as a function of rivet deformation and regulates the force exerted by the hot forging electrode on the deformable rivet when the hot forcing electrode reaches a predetermined position to ensure that the deformable rivet properly deforms.

5,828,029

DEVICE FOR EXTERNALLY COOLING A PLASMA TORCH

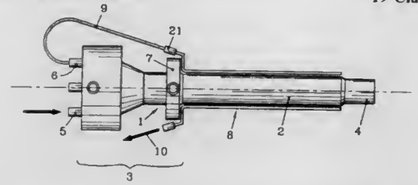
Daniel Loubet, Saint Aubin de Medoc, and René Leroux, Merignac, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris Cedex, France

Filed Jun. 19, 1996, Ser. No. 665,904

Claims priority, application France, Jun. 20, 1995, 95 07610

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.49 **19 Claims**



1. External cooling system for cooling a plasma torch in which at least one electrode and plasma fluid and cooling circuits are housed in a tubular casing, said external cooling system having a construction adapted to allow the torch to be introduced into an opening of an oven through the external cooling system, wherein the external cooling system comprises:

a fixing device for surrounding the opening of the oven, the fixing device being adapted to cooperate with a flange of the torch;

an independent sheath for surrounding at least one portion of said tubular casting, the independent sheath being formed by an internal concentric casing and an external concentric casing, the independent sheath comprising at a proximal extremity a flange adapted to cooperate with the fixing device, the independent sheath being provided with passages for cooling fluid to enter and leave the independent sheath;

at least one cooling fluid inlet and at least one outlet, both the at least one inlet and the at least one outlet being disposed at a proximal extremity of said independent sheath, the at least one inlet and the at least one outlet being connected to a cooling fluid source; and

a system of baffles being disposed between the two casings of the independent sheath so as to constitute between the inlet and outlet a cooling circuit substantially covering the entire surface of the independent sheath.

5,828,030

METHOD AND APPARATUS FOR A CONTACT START PLASMA CUTTING PROCESS

Peter Naor, San Diego, Calif., assignor to Illinois Tool Works Inc., Glenview, Ill.

Continuation of Ser. No. 573,380, Dec. 15, 1995, Pat. No. 5,660,745. This application Aug. 15, 1997, Ser. No. 911,905

Int. Cl.[6] B23K *10/00*

U.S. Cl. 219—121.57 **10 Claims**

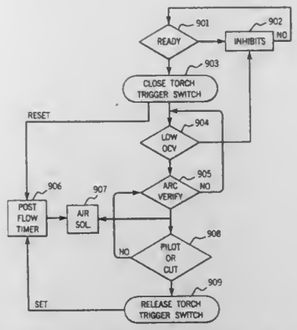
1. A system for plasma cutting comprised of:

a power supply having a first power output and a second power output;

a cutting torch electrically connected to the first power output and the second power output, and having an air input and a nozzle;

a source of air connected to the air input; and

a valve, connected between the nozzle and the air supply, wherein the valve has an air flow position that allows air to flow from the air source to the nozzle, and wherein the valve has a vent position that prevents air from flowing from the air supply to the nozzle and wherein when the valve is in the vent position the torch, including the nozzle, is vented to the ambient air.



5,828,031

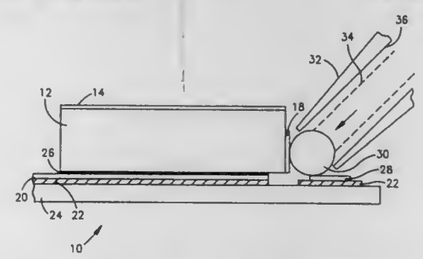
HEAD TRANSDUCER TO SUSPENSION LEAD TERMINATION BY SOLDER BALL PLACE/REFLOW

Surya Pattanaik, San Jose, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 27, 1996, Ser. No. 670,551

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.63 **15 Claims**



1. A method for forming an electrical connection between a magnetic head transducer and an electrical conductor comprising:

using a capillary tube to place a solder ball in contact with a head termination pad and a conductor termination pad, the capillary tube including an axial passage which extends along a length of the capillary tube, and the head termination pad being part of a transducer for reading and writing data on a magnetic disk; and

irradiating the solder ball with a focused laser beam from a laser to cause reflow of the solder ball, the focused laser beam being directed to the solder ball through the axial passage.

5,828,032

PROCESS FOR BUTT WELDING TWO METAL BLANKS AND A MOTOR VEHICLE PART OBTAINED BY SAID PROCESS

Jean-Marc Krzys; Hugues Oberlé; Galles Peru, all of Dunkerque, and Pascal Verrier, Lumbres, all of France, assignors to Sollac, Puteaux, France

Filed Apr. 3, 1996, Ser. No. 627,013

Claims priority, application France, Apr. 4, 1995, 95 03972

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.64 **21 Claims**

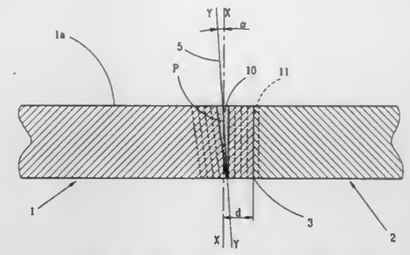
1. Process for butt welding two metal blanks of which a first blank is of steel and second blank is of aluminum or an aluminum alloy whose melting temperature is lower by more than 400° C. than the melting temperature of said steel, said process comprising the following steps:

positioning said two metal blanks so that they are in contact in a joint plane between lateral faces thereof to be butt joined;

maintaining said two metal blanks in contact with each other by clamping means;

directing onto one of the principal faces of said first metal blank a high energy density beam which passes through said first metal blank and has a focusing point situated at a given distance from said joint plane so as to generate in the region of said joint plane a temperature equal to within 10% of said melting temperature of said metal of said second metal blank

displacing said high energy density beam in a directional parallel to said joint plane so as to form a butt welded joint in said joint plane.



5,828,033

METHOD OF MANUFACTURING A FUEL TANK

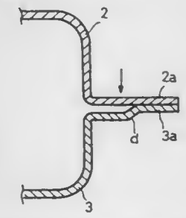
Hiroshi Mitsuyoshi; Hiroki Goto, and Yasuo Masuda, all of Oozu-machi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 690,571

Claims priority, application Japan, Nov. 30, 1995, 7-311934

Int. Cl.[6] B23K *26/00*

U.S. Cl. 219—121.64 **8 Claims**



6. A method of laser-beam-welding aluminum-plated steel panels, comprising the steps of:

overlapping flanges of a pair of aluminum-plated steel panels with a gap defined therebetween;

welding said flanges to each other with a beam applied closely to said gap while discharging unwanted components from a welded area into said gap; and

wherein one of said aluminum-plated steel panels has a stepped region spaced from the other of the aluminum-plated steel panels, thereby defining said gap between said stepped region and said other of the aluminum-plated steel panels.

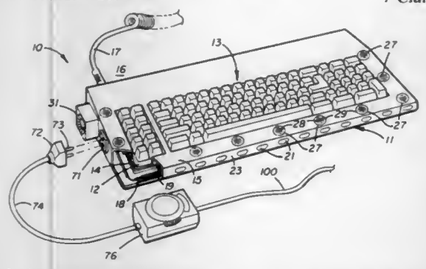
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5,828,034

WARMED COMPUTER INPUT PERIPHERALS FOR KEEPING A COMPUTER USER'S HAND AND FINGERS WARM AND COMFORTABLE

Wen-Lung Chang, c/o Chang Enterprises, Inc., 915 Linden Ave., South San Francisco, Calif. 94080

Filed Jan. 3, 1997, Ser. No. 779,000
Int. Cl.[6] H05B *1/00;* H05K *5/00;7/20*
U.S. Cl. 219—209 7 Claims



1. A computer input device for maintaining a computer user's hands and fingers warm and comfortable, comprising in combination:

a frame structure supporting a plurality of manually manipulative mechanisms for generating data signals transmittable to a computer;

a shell structure mounted on the frame structure providing an exterior surface with openings allowing for manipulation of the manipulative mechanisms by the computer user's hands and fingers, the mounted shell structure defining in combination with the fame structure, an interior volume beneath the shell structure;

an electrical heater element located within the interior volume beneath the shell structure for warming the enclosed interior volume and shell structure, and

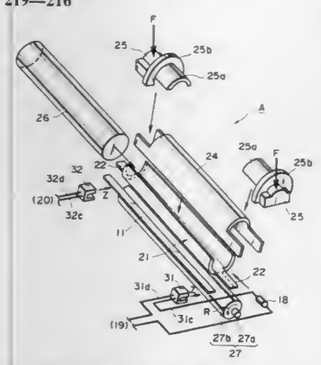
a source of electrical energy connectable to the heater element for energizing the heater element causing it to radiate thermal energy.

5,828,035

WEB-TYPE HEATING APPARATUS WITH MOVABLY SUPPORTED HEATER

Akira Kuroda, Numazu, Japan, assignor to Cannon Kabushiki Kaisha, Japan

Filed Jul. 29, 1996, Ser. No. 688,641
Claims priority, application Japan, Jul. 28, 1995, 7-212696
Int. Cl.[6] G03G *15/20*
U.S. Cl. 219—216 17 Claims



1. An image heating apparatus comprising:

a heater;

a supporting member for supporting said heater;

a film having a first slidable contact with said heater and a second side movable a recording material carrying an image in contact therewith;

wherein the image on the recording material is heated by heat from said heater through said film;

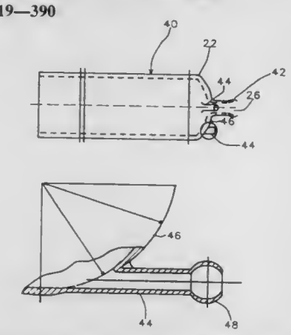
wherein said heater is movably supported on a heater supporting portion of said supporting member without adhesive material therebetween.

5,828,036

METHOD AND APPARATUS FOR REFLOWING AND ANNEALING BOROPHOSPHOSILICATE GLASS

Chen-Chiu Hsue, Hsin-chu, and Edward Houn, Tainan, both of Taiwan, assignors to United Microelectronics Corporation, Taiwan

Division of Ser. No. 289,650, Aug. 12, 1994. This application Jul. 7, 1995, Ser. No. 499,299
Int. Cl.[6] C23L *16/00;* H01L *21/316*
U.S. Cl. 219—390 8 Claims



1. An improved furnace for semiconductor device fabrication comprising:

a furnace tube formed of quartz having a large opening on one end to permit introduction and withdrawal of semiconductor wafers on a support;

at least one small quartz tube in said furnace tube extending parallel to the longitudinal axis of the furnace tube and spaced therefrom and located on a side of said semiconductor wafers when said support is positioned in said furnace tube;

said at least one small quartz tube having one open end for a gas inlet protruding outside of said furnace tube, and the opposite end being sealed by an end wall, said at least one small quartz tube mounted on said end wall with a swivel joint;

said at least one small quartz tube having a plurality of small holes of a diameter less than the inside diameter of the small tubes located along the tube surface facing the central longitudinal axis of the furnace tube;

a closure member for said large opening in said furnace tube, and

a means to heat the interior of said furnace tube.

5,828,037

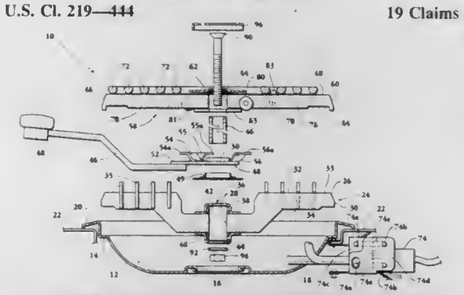
Patent Not Issued For This Number

5,828,038

REPLACEABLE AND RETRACTABLE BURNER FOR ELECTRIC RANGE

Eugene T. Logan, Salina, Kans., assignor to Sigma Industries, Inc., Salina, Kans.

Filed Aug. 12, 1997, Ser. No. 909,620
Int. Cl.[6] H05B *3/68*
U.S. Cl. 219—444 19 Claims



17. A surface heating assembly for installation in existing electric ranges, said surface heating assembly comprising:

a vessel support assembly comprised of a plurality of vessel support arms, a vessel support assembly upper plate, and a vessel support assembly lower plate, said vessel support arms arranged radially about said upper plate and said lower plate, said vessel support arms having an inside end, an outside end, and an upper surface, said inside ends of said vessel support arms affixed to said upper plate and to said lower plate, said vessel support assembly upper plate and said vessel support assembly lower plate aligned co-axially, said outside ends of said vessel support arms supported by said rim area of said drip pan;

a burner assembly sleeve, said burner assembly sleeve defining a central orifice, said burner assembly sleeve passing through said vessel support assembly upper plate and through said vessel support assembly lower plate;

a cam plate having an upper surface, said cam plate defining a centrally located orifice, said centrally located orifice positioned about said burner assembly sleeve, said cam plate rotatable about said burner assembly sleeve, said cam plate positioned above and supported by said vessel support assembly upper wear ring;

an element support assembly, said element support assembly comprised of a plurality of element support arms and a vessel support assembly disks, said vessel support arms arranged radially about said vessel support assembly disks and having an inside end, an outside end, an upper surface, and a lower surface, said inside ends of said element support arms affixed to said element support assembly disks, said element support assembly disks slidably positioned on said burner assembly sleeve above said cam plate, said lower surface of said outside ends of said element support arms having stop tabs thereon for supporting said element support assembly when said element support assembly is in a lowered position;

at least one wear button affixed to an element support arm, said wear button positioned above said cam plate and extending below said lower surface of said element support arm;

at least one cam spring affixed to said upper surface of said cam plate, and oriented to make contact with a corresponding wear button, said cam spring for biasing against said wear button, said cam spring for variably elevating said element support assembly depending on the rotational orientation of said cam plate;

a coiled heating element positioned on said upper surfaces of said element support arms;

a means to removably connect said heating element to an electric stove connection means; and

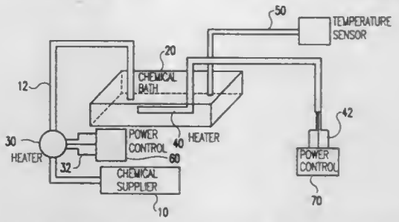
a burner assembly thru-bolt positioned within said burner assembly sleeve and extending outwardly therefrom, said burner assembly thru-bolt secured to a nut, said burner assembly thru-bolt and nut for preventing said vessel support assembly, said cam plate, and said element support assembly from disengaging from said burner assembly sleeve.

5,828,039

METHOD AND APPARATUS FOR HEATING CHEMICAL USED IN MICROELECTRONIC DEVICE FABRICATION

Hee-Sun Chae, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1996, Ser. No. 774,606
Claims priority, application Rep. of Korea, Mar. 18, 1996, 1996-7191
Int. Cl.[6] H05B *1/02*
U.S. Cl. 219—486 8 Claims



1. An apparatus for heating a chemical used in microelectronic device fabrication, said apparatus comprising:

supplying means for supplying a chemical for a microelectronic device fabrication process;

a chemical bath for containing said chemical supplied from said supplying means;

sensing means for sensing a temperature of said chemical contained in said chemical bath;

a first heater for heating said chemical as it is supplied from said supplying means to said chemical bath;

a first electric power source for applying power to said first heater at multiple, selectable intensity levels;

a second heater for heating said chemical contained in said chemical bath;

a second electric power source for applying power to said second heater at multiple, selectable intensity levels; and

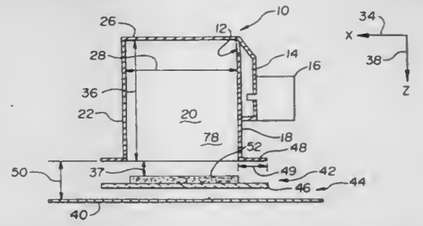
a first and a second power control means for controlling said first electric power source and said second electric power source, respectively, according to said temperature of said chemical sensed by said sensing means.

5,828,040

RECTANGULAR MICROWAVE HEATING APPLICATOR WITH HYBRID MODES

Per O. Risman, Harryda, Sweden, assignor to The Rubbright Group, Inc., Eagan, Minn.

Filed May 31, 1995, Ser. No. 455,114
Int. Cl.[6] H05B *6/74;6/78*
U.S. Cl. 219—695 34 Claims



1. A rectangular microwave applicator operating at a predetermined frequency and comprising a microwave enclosure forming a cavity having first and second transverse dimensions and a longi-

tudinal dimension in the direction of propagation of microwave energy, wherein each of the first and second transverse dimensions are sized to support only one hybrid mode having a low longitudinal impedance and an absence of a transverse E field component in one of the first and second transverse directions such that a load placed having edges inside the cavity in a region adjacent a downstream end of the enclosure is evenly heated without edge overheating.

5,828,041

POWER SUPPLY CUT-OFF APPARATUS OF A MICROWAVE OVEN

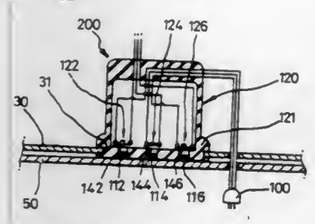
Jung-Eui Hoh; Young-Won Cho, both of Suwon, and Hong-Kil Choe, Kyungki-Do, all of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 13, 1997, Ser. No. 874,327

Claims priority, application Rep. of Korea, Jun. 27, 1996, 1996 18062; Jul. 1, 1996, 1996 19547; Sep. 3, 1996, 1996 28034; Mar. 5, 1997, 1997 7290

Int. Cl.[6] H05B *6/68*

U.S. Cl. 219—702 **6 Claims**



1. A microwave oven comprising:
a housing forming a cooking chamber supplied with microwaves by a magnetron, the magnetron being energized by electricity received through an electric power cord, the housing including relatively separable first and second panels;
a switch box mounted on the first panel and including switches connected to respective wires of the power cord; and
magnets mounted to the second panel for causing the switches to be closed when the first and second panels are assembled together, the switches moving to an open state when the first and second panels are separated from one another, to cut-off a supply of electric power to the microwave oven.

5,828,042

UNIFORM HEATING APPARATUS FOR MICROWAVE OVEN AND METHOD THEREOF

Joon Sik Choi, Seoul, and Yang Kyeong Kim, Inchon, both of Rep. of Korea, assignors to LG Electronics Inc., Rep. of Korea

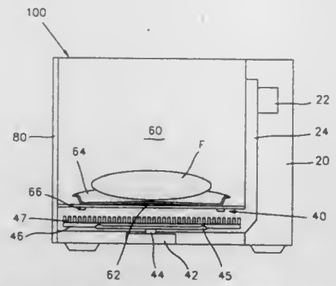
Filed Jul. 11, 1997, Ser. No. 890,706

Claims priority, application Rep. of Korea, Jul. 11, 1996, 1996 27905

Int. Cl.[6] H05B *6/68;6/74*

U.S. Cl. 219—705 **1 Claim**

1. A uniform apparatus for microwave oven, comprising:
an oscillator unit having a wave guide tube for guiding microwaves generated by a magnetron to a lower portion of a heating chamber formed in a microwave oven main body, the waveguide tube being vertically formed on a lateral surface of the oscillator unit and being extended to a lower portion of a heating chamber of the microwave oven;
a resonant mode conversion unit for converting the microwaves guided to the lower portion of the heating chamber to have



various resonant modes, said resonant mode conversion unit including:
a circularly-shaped agitating plate having a predetermined thickness and diameter, the circularly-shaped agitating plate being positioned on an upper portion of another plate which is provided on a portion extending from the waveguide tube; and
a motor for rotatable driving the agitating plate,
and wherein in an upper surface of the agitating plate of the resonant mode conversion unit are formed a plurality of parallel slots formed therein at a regular interval whereby the microwaves guided by the wave guide tube are converted thereby to have various resonant modes,
sensor means for detecting the characteristics of a food when the microwaves, the resonant mode of which are converted by the resonant mode conversion unit, are supplied to the food in the heating chamber, said sensor means comprising a weight sensor for weighing a food and a microwave sensor for detecting microwaves transmitted through a food to be cooked and reflected by the food; and
a controller for controlling the oscillator and the resonant mode conversion unit in accordance with the characteristics of the food detected by the sensor means.

5,828,043

CARD READER SYSTEM INCLUDING AN INVALIDATING DEVICE

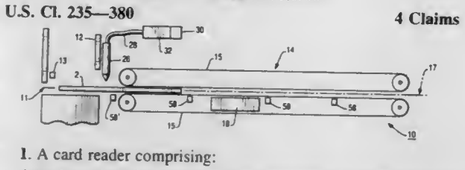
Kenneth A. Nicoll, Dundee; Robert J. Suttie, Perthshire; Alexander W. Logie, West Lothian, and David C. C. May, Fife, all of Scotland, assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 15, 1996, Ser. No. 680,086

Claims priority, application United Kingdom, Dec. 14, 1995, 9525523

Int. Cl.[6] G06K *7/08;5/00*

U.S. Cl. 235—380 **4 Claims**



1. A card reader comprising:
detection means for detecting a predetermined irregular mode of operation; and
card invalidation means other than a magnetic write head for rendering a card permanently non-usable when a predetermined irregular mode of operation is detected, the card invalidation means including actuatable hot air means for, when actuated, heating a card to a sufficient temperature to physically deform the card.

5,828,044

NON-CONTACTING TYPE RADIO FREQUENCY RECOGNIZING CREDIT CARD SYSTEM

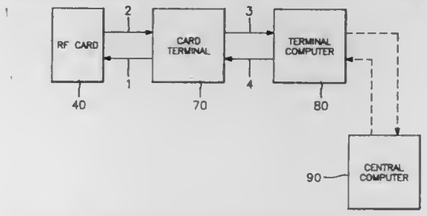
Young Sam Jun, Seoul, and Ho Yun Lee, Kyunggi-do, both of Rep. of Korea, assignors to Kookmin Credit Card Co., Ltd., Seoul, Rep. of Korea

Filed Feb. 13, 1997, Ser. No. 765,729

Claims priority, application Rep. of Korea, Mar. 14, 1996, 1996/6854

Int. Cl.[6] G06K *19/06*

U.S. Cl. 235—380 **5 Claims**



1. A non-contacting type radio frequency recognizing credit card system comprising:
a batteryless type RF card having an antenna coil wound around the inner edges of said RF card within said card several times and an IC disposed within said antenna coil, and being energized by received radio wave from a card terminal so as to transmit its own card number to said card terminal by a radio frequency;
said card terminal radiating a radio wave to generate an indused electromotive force in said RF card, receiving said card number data by RF, and transmitting the card number data, received through a radio frequency, to a wire-connected terminal computer for an inquiry to a black list; and
said terminal computer reading the card number data from said card terminal to make an inquiry to a black list which is updated from the central computer periodically or intermittently, to make a decision for issuing an approval of a transaction or a disapproval of the transaction, and to transmit the result of the decision to said card terminal.

5,828,045

OPTOELECTRONIC RECORD ELEMENT WITH ELECTRONIC FEEDBACK FOR POWER CONTROL

Norbert Brömse, Frankfurt, Germany, assignor to Linotype-Hell AG, Kiel, Germany

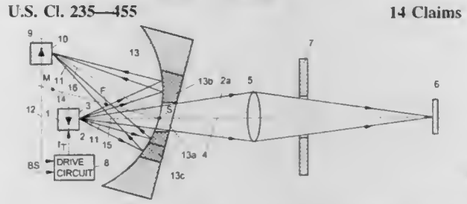
PCT No. PCT/DE96/00093, § 371 Date Dec. 10, 1996, § 102(e) Date Dec. 10, 1996, PCT Pub. No. WO96/24908, PCT Pub. Date Aug. 15, 1996

PCT Filed Jan. 24, 1996, Ser. No. 718,534

Claims priority, application Germany, Feb. 8, 1995, 295 02 016 U

Int. Cl.[6] G06K *7/10*

U.S. Cl. 235—455 **14 Claims**



1. An optoelectronic recording element for point-by-point and line-by-line recording of information on a recording material, comprising:
a laser diode for generating a light beam along an optical axis;
an objective arranged on the optical axis for focussing the light beam onto the recording material;
a light detector arranged spaced from the laser diode for measuring a light power of the light beam;
a single reflector only arranged in the beam path of the light beam for reflecting a light part of the beam onto the light detector;
the single reflector comprising at least one mirror segment of a concave mirror positioned to have its curved surface facing the laser diode and between the laser diode and the objective and an apex of which lies in a region of the optical axis;
the concave mirror being rotated at the apex such that a principal axis of the concave mirror substantially bisects an angle defined by a straight-line between the laser diode and the apex and a straight-line between the light detector and the apex; and
the concave mirror having an aperture, a center line of which substantially coincides with the optical axis and a diameter of which is larger than a diameter of a light part of the light beam employed for the recording so that the light part of the light beam employed for the recording passes through the concave mirror loss-free and the light part of the light beam not used for the recording is substantially completely focussed onto the light detector.

5,828,046

Patent Not Issued For This Number

5,828,047

CYCLE MEASUREMENT DEVICE AND METHOD FOR MAKING THE SAME

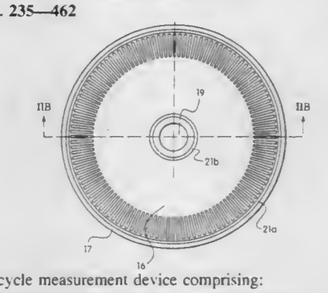
Jochen Rückert, Seebach, Germany, assignor to Ruhlatec Industrieprodukte GmbH, Seebach, Germany

Filed Feb. 25, 1997, Ser. No. 804,633

Claims priority, application Germany, Dec. 6, 1996, 196 50 690.5

Int. Cl.[6] B41J *2/00*

U.S. Cl. 235—462 **9 Claims**



1. A cycle measurement device comprising:
a transparent carrier (**1**) having an upper surface, a lower surface, and an edge region (**9**);
a light sensitive film layer (**2**) coupled to said lower surface of said carrier, said film layer (**2**) comprising a plurality of spaced bar codes blackened by light exposure, and transparent window openings (**6, 7**) arranged between said bar codes such that said bar codes and window openings can be scanned by optical sensors;
a continuous bar code disposed along said edge region (**9**); and
a reflective layer (**8**) including a cover for covering said plurality of bar codes, said window openings, and said continuous bar code, said cover extending to said edge region (**9**).

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5,828,048

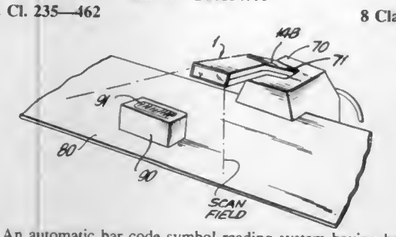
COUNTERTOP BAR CODE SYMBOL READING SYSTEM HAVING AUTOMATIC HAND-SUPPORTABLE BAR CODE SYMBOL READING DEVICE AND STAND FOR SUPPORTING PROJECTED SCAN FIELD THEREOF

George B. Rockstein, Audobon; David M. Wilz, Sr., Sewell; David P. Budnoski, Glassboro, and Carl H. Knowles, Moorestown, all of N.J., assignors to Metrologic Instruments Inc., Blackwood, N.J.

Continuation of Ser. No. 690,677, Jul. 31, 1996, which is a continuation of Ser. No. 476,069, Jun. 7, 1995, Pat. No. 5,591,953, which is a continuation of Ser. No. 147,833, Nov. 4, 1993, Pat. No. 5,424,525, which is a continuation of Ser. No. 583,421, Sep. 17, 1990, Pat. No. 5,260,553. This application Jun. 12, 1997, Ser. No. 873,681

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—462 8 Claims



1. An automatic bar code symbol reading system having hand-held and stand-supported modes of automatic operation, comprising:

a) a hand-supportable bar code symbol reading device including

(1) a hand-supportable housing supportable in the hand of a user, and having a light transmission aperture through which visible light can exit and enter said hand-supportable housing;

(2) bar code symbol detection means in said hand-supportable housing for processing produced scan data so as to detect the presence of a bar code symbol on an object located within at least a portion of a scan field external to said hand-supportable housing and to automatically generate a control activation signal in response to the detection of said bar code symbol in said object;

(3) scan data producing means in said hand-supportable housing for producing scan data from said object, said scan data producing means including

(i) a laser beam producing means disposed in said hand-supportable housing for producing and projecting a laser beam through said light transmission aperture,

(ii) scanning means for scanning said laser beam across said scan field and said bar code symbol on said object, and

(iii) laser light detecting means for detecting the intensity of laser light reflected off said bar code symbol and passed through said light transmission aperture and for automatically producing scan data indicative of said detected light intensity;

(4) decode processing means in said hand-supportable housing for processing produced scan data so as to detect and decode said bar code symbol on said object and for automatically producing symbol character data representative of said detected and decoded bar code symbol; and

(5) system control circuitry for automatically controlling the operation of said automatic bar code symbol reading system in response to the generation of said control activation signal,

wherein during said hand-held mode of automatic operation said control activation signal is automatically generated when a bar code symbol on an object is detected by said bar code symbol detection means while said hand-supportable bar code symbol reading device is supported within the hand of said user; and

(b) a scanner stand including

(1) housing support means for receiving and supporting at least a portion of said hand-supportable housing, and

(2) a base portion mountable relative to a countertop surface so that when said hand-supportable housing is supported within said housing support means during said stand-supported mode of automatic operation said scan field is projected away from said scanner support stand and said hand-supportable housing and extends above said countertop surface permitting the automatic reading of bar code symbols on objects passed by said scanner support stand,

wherein, during said scanner-supported mode of automatic operation said control activation signal is automatically generated when a bar code symbol on an object is detected by said bar code symbol detection means while said hand-supportable housing is supported within said housing support means.

5,828,049

CODE SYMBOL READING SYSTEM WITH MULTI-PORT DIGITAL SIGNAL DECODER

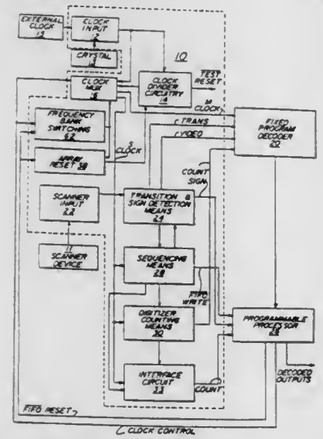
Carl Harry Knowles, Moorestown, and George Kolis, Pennsauken, both of N.J., assignors to Metrologic Instruments Inc., Blackwood, N.J.

Continuation of Ser. No. 657,220, Jun. 3, 1996, Pat. No. 5,686,717, which is a continuation of Ser. No. 467,608, Jun. 6, 1995, abandoned, which is a continuation of Ser. No. 297,620, Aug. 29, 1994, abandoned, which is a continuation of Ser. No. 819,700, Jan. 13, 1992, Pat. No. 5,343,027, which is a continuation of Ser. No. 424,303, Jun. 6, 1989, Pat. No. 5,081,342.

This application Jun. 18, 1997, Ser. No. 878,325

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—462 46 Claims



1. A code symbol reading system comprising:

(1) a first scanning device for scanning a code symbol and producing a first digital data signal having first and second signal levels of variable time duration which undergo signal level transitions in accordance with said code symbol being scanned by said first scanning device; and

(2) a digital signal processing device capable of decoding a plurality of digital data signals, including said first digital data signal, and a second digital data signal produced as output from a second scanning device and having first and second signal levels of variable time duration which undergo signal level transitions in accordance with a code symbol being scanned by said second scanning device, said digital signal processing device including:

(a) a plurality of data input ports, each said data input port being operably connectable to one said scanning device, for supplying one said digital data signal to one said data input port for processing;

(b) signal level transition detection means for detecting the signal level transitions in the digital data signal supplied to any one of said plurality of data input ports, and producing signal level transition data for the supplied digital data signal;

(c) connection means for operably connecting said data input ports to said signal level transition detection means;

(d) common timing means for measuring the time duration of the first and second signal levels between detected signal level transitions in the supplied digital data signal, and producing digital data related to the time duration of the first and second signal levels in the supplied digital data signal;

(e) common control means for controlling the operation of said common timing means in response to signal level transition data produced from said signal level transition detection means;

(f) common data processing means operably associated with said common timing means and programmed for processing said digital data from the supplied digital data signal, so as to produce decoded symbol data representative of the code symbol being scanned by said scanning device producing the supplied digital signal; and

(g) a data output port operably associated with said common data processing means and for providing the decoded symbol data to a host device operably connectable to said data output port.

5,828,050

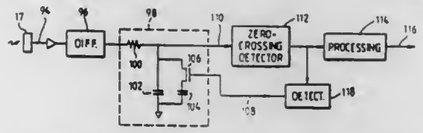
LIGHT EMITTING LASER DIODE SCANNER

Edward Barkan, South Setauket, N.Y., assignor to Symbol Technologies, Inc., Holtsville, N.Y.

Continuation of Ser. No. 424,664, Apr. 18, 1995, abandoned, which is a division of Ser. No. 56,878, May 5, 1993, Pat. No. 5,410,140, which is a continuation of Ser. No. 47,340, Apr. 19, 1993, Pat. No. 5,268,564, which is a continuation of Ser. No. 772,745, Oct. 7, 1991, abandoned, which is a continuation of Ser. No. 562,130, Aug. 3, 1990, Pat. No. 5,151,580. This application Oct. 31, 1997, Ser. No. 961,985

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—462 37 Claims



1. A method of operating a bar code scanner comprising the steps of:

(a) directing a light beam at a bar code symbol;

(b) scanning said light beam across said bar code symbol;

(c) detecting light reflected from said bar code symbol and generating an electrical signal in response thereto;

(d) passing said electrical signal through a low-pass filter with selectable bandwidth;

(e) determining a density of said bar code symbol as represented by said electrical signal and producing a control signal based on that determination; and

(f) selecting the bandwidth of said low-pass filter based on said control signal.

5,828,051

OPTICAL SCANNER AND BAR CODE READER EMPLOYING SAME

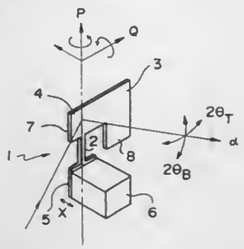
Hiroshi Goto, Yamatokoriyama, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Feb. 11, 1992, Ser. No. 833,664

Claims priority, application Japan, Feb. 21, 1991, 3-041341; May 13, 1991, 3-138307; Oct. 16, 1991, 3-298235

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—467 18 Claims



1. An optical scanner comprising:

a light beam source;

a vibrating element having at least two modes of vibration respectively in at least two planes, said vibrating element having respective resonant frequencies associated with each of the modes of vibration which are not integral multiples of each other;

means for driving said vibrating element at substantially its resonant frequency in each of said two modes to cause it to thereby rotate said vibrating element in said at least two planes; and

a scanning surface which receives and reflects a light beam from said source and which moves in association with movement of said vibrating element;

wherein each harmonic frequency of the resonant frequency of one mode of vibration is separated from the resonant frequency of the other mode of vibration by at least 10% of the value of the resonant frequency of said other mode of vibration.

5,828,052

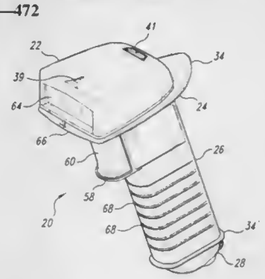
ERGONOMETRIC MODULAR HAND-HELD SCANNER, INCLUDING AN ERGONOMIC HANDLE AND HILT

Andrew E. Reynolds, Bothell; James R. Stewart, Woodinville, both of Wash.; Kenneth D. Wood, Woodside; David W. Laituri, Palo Alto, both of Calif.; Nancy Hafermann, Mercer Island, Wash.; Pat Rodden, Snohomish, Wash.; Eric Hassenzahl, and Matt Pedersen, both of Seattle, Wash., assignors to Intermec Corporation, Everett, Wash.

Filed Oct. 24, 1996, Ser. No. 735,664

Int. Cl.[6] G06K 7/10

U.S. Cl. 235—472 34 Claims



1. An ergonomic body for a hand-held scanner, comprising:

a hollow head portion for holding scanning components, the head portion having a longitudinal axis and a first width in a direction transverse to the longitudinal axis;

a handle portion sized for gripping by a user's hand, said handle portion having a second width in a direction transverse to the longitudinal axis of the head portion, the second width being less than the first width, and the handle portion having a top end connected to said head portion and a bottom end;

a hilt portion disposed between said head portion and said handle portion, said hilt having a third width that is greater than the first width and the hilt portion extending outward, perpendicularly to said handle portion in the direction transverse to the longitudinal axis of the head, the hilt portion having a lower surface positioned to sit upon a top portion of a user's hand holding said handle portion; and

an endcap portion disposed over said bottom end of said handle portion.

5,828,053

PORTABLE STORAGE MEDIUM AND PORTABLE STORAGE MEDIUM ISSUING SYSTEM

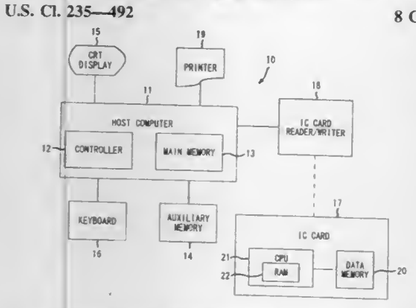
Hiroshi Kinugasa, Chiba-ken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 14, 1996, Ser. No. 645,843

Claims priority, application Japan, May 17, 1995, 7-118092

Int. Cl.[6] G06K *19/06;5/00*

U.S. Cl. 235—492 **8 Claims**



1. A portable storage medium issuing system for writing plural issuing data into storing regions of a portable storage medium, comprising:

means for storing plural secret data;

first collating means for collating input secret data with the secret data stored in the storing means;

collated result storage means for storing which secret data of plural secret data has been collated and agreed with secrete data stored in the storage means based on the collating result of the first collating means;

collating condition storage means for storing plural issuing data and conditions of secret data, which are set corresponding to each of the plural issuing data and require the collation before writing into the portable storage medium, as collating conditions;

comparing means for comparing the collating conditions stored in the collating condition storage means with the collated status stored in the collated result storage means; and

writing means for writing issuing data in which this collating conditions are set in storing regions in the portable storage means when the collated status satisfies the collating conditions based on the result of comparison of the comparing means.

5,828,054

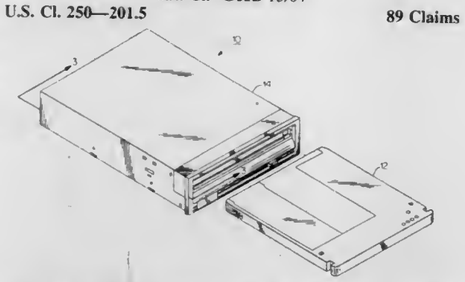
FOCUSING METHOD AND SYSTEM FOR FOCUS CAPTURE AND FOCUS CONTROL IN OPTICAL DISC SYSTEM INCLUDING DETECTION OF QUAD SUM SIGNAL TO CLOSE FOCUS

David L. Schell, Colorado Springs, Colo., assignor to Discovision Associates, Irvine, Calif.

Division of Ser. No. 420,944, Apr. 11, 1995, which is a division of Ser. No. 376,882, Jan. 25, 1995. This application Jun. 7, 1995, Ser. No. 478,164

Int. Cl.[6] G11B *13/04*

U.S. Cl. 250—201.5 **89 Claims**



1. In an optical disc system having a lens and a disc, a focusing method for focus capture and focus control, said method comprising the steps of:

impinging light upon a disc to be read;

retracting the lens to the bottom of its stroke;

scanning up to the top of the lens stroke while searching for a maximum Quad Sum signal;

moving the lens away from the disc;

monitoring a total of return light returning from the disc;

determining, during said monitoring, when said total of return light is above one-half a peak value associated therewith;

searching for a first zero crossing;

determining when said Quad Sum signal is over one-half peak amplitude;

closing focus at that point, and thereafter;

controlling a focus error signal at a first predetermined gain to produce a first level output, said first predetermined gain being maintained while reading information stored on the disc; and

controlling said focus error signal at a second predetermined gain to produce a second level output, said second predetermined gain being maintained while writing information on to the disc, and said second predetermined gain being less than said first predetermined gain.

5,828,055

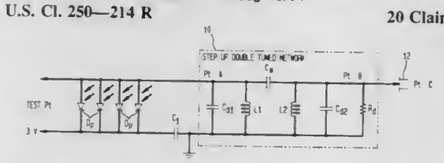
WIDE-BAND TUNED INPUT CIRCUIT FOR INFRARED RECEIVERS

Robert W. Jebens, Skillman, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Oct. 28, 1996, Ser. No. 736,700

Int. Cl.[6] H01J *40/14*

U.S. Cl. 250—214 R **20 Claims**



1. A wide-band tuned photodiode input circuit comprising:

a photodiode; and

a double tuned network having an input and an output, said double tuned network responsive to said photodiode, said input capacitively coupled to said photodiode, said double tuned network having mutually dependent stages;

wherein said double tuned network increases noise immunity and increases frequency selectivity at a given frequency.

5,828,056

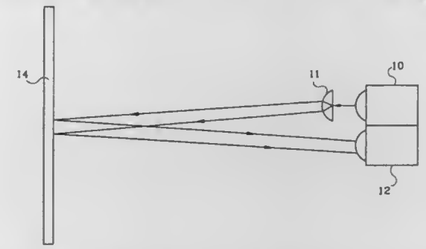
PHOTOELECTRIC DETECTOR WITH IMPROVED CLEAR CONTAINER FEATURE DETECTION

Richard A. Alderman; Kenneth F. Barnes, and Bo Su Chen, all of Freeport, Ill., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 1, 1996, Ser. No. 742,708

Int. Cl.[6] G01N *9/04*

U.S. Cl. 250—223 B **25 Claims**



1. A photodetector system, comprising:

a photodetector and a light source for placement on a first side of a conveyor of target objects;

a reflector for placement on a second side of the conveyor of target objects;

means operatively associated with said light source for providing a first optical path and a second separate optical path;

said first optical path comprising a first beam of emitted light extending from said light source to said reflector and a first beam of reflected light extending from the reflector back toward said photodetector;

said second separate optical path comprising a second beam of emitted light extending from said light source through a detection zone between the light source and said reflector to said reflector and a second beam of reflected light extending from the reflector back toward said photodetector;

said first and second reflected beams being received to produce first and second signals which are representative of the intensity of light received by said photodetector along said first and second optical paths, respectively;

at least one of said first and second optical paths being affected when an object to be detected is within said detection zone;

a comparator for comparing said first and second signals to a predefined threshold; and

means for determining the presence of said object to be detected within said detection zone when a magnitude of at least one of said first and second signals is less than a predefined threshold.

5,828,057

METHOD AND ARRANGEMENT FOR TARGET SEEKING

Mikael Hertzman, Sollentuna, and Anders Näslund, Täby, both of Sweden, assignors to Spectra Precision AB, Danderyd, Sweden

PCT No. PCT/SE96/01147, § 371 Date May 12, 1997, § 102(e) Date May 12, 1997, PCT Pub. No. WO97/10517, PCT Pub. Date Mar. 20, 1997

PCT Filed Sep. 13, 1996, Ser. No. 836,315

Claims priority, application Sweden, Sep. 14, 1995, 9503188

Int. Cl.[6] G01B *11/26;* **G01C** *3/08*

U.S. Cl. 250—225 **10 Claims**

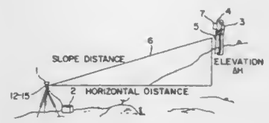
1. Method for searching for targets, where an instrument emits an electromagnetic radiation and searches for a target reflector by detecting if reception takes place of a received electromagnetic radiation reflected from the target reflector back to the instrument, characterized in that in the radiation direction of the electromagnetic radiation, the following procedural steps take place after one another:

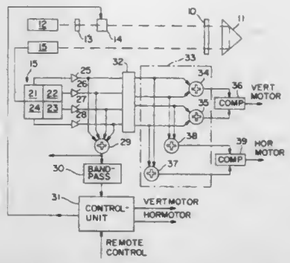
a. polarization of the electromagnetic radiation;

b. polarization modulation of the polarization direction of the electromagnetic radiation through alternately changing it;

c. polarization of the electromagnetic radiation;

wherein at least one of the procedural steps mentioned under points a) to c) is performed near to the target reflector (**11**); and checking of the detected reflector is performed by testing if the received radiation changes alternately at the same rate as the modulation of the polarization direction, and only accepting a target which gives different signal strengths for the received radiation at said rate.





5,828,058

OPTICAL FIBER REMOTE SENSING SYSTEM WITH ELECTROMAGNETIC WAVE MEASUREMENT

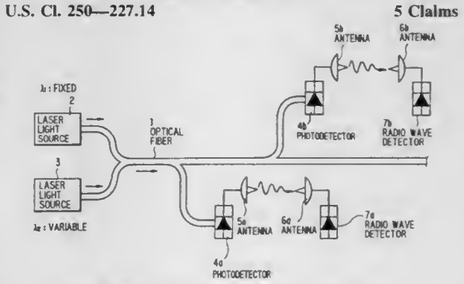
Hirohito Yamada, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 15, 1997, Ser. No. 856,978

Claims priority, application Japan, May 15, 1996, 8-120438

Int. Cl.[6] H01J *5/16*

U.S. Cl. 250—227.14 **5 Claims**



1. An optical fiber remote sensing system, comprising:

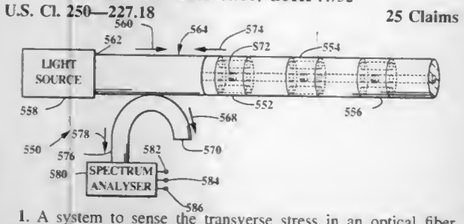
first and second light sources which are connected to ends of branched optical fibers and emit lights with two wavelengths different from each other;

one or more optical detectors which conduct a photoelectric conversion of said lights propagated through said optical fibers from said first and second light sources and generate an electromagnetic wave with a wavelength corresponding to a difference between said two different wavelengths; and

a measuring means which receives said electromagnetic wave propagated through a measured substance and measures a

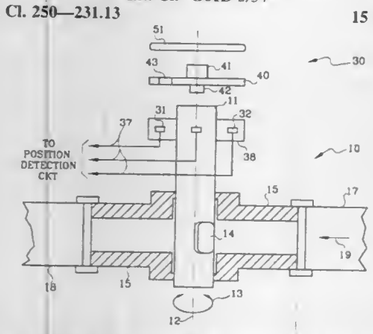
state of said measured substance based on an optical absorption characteristic of said measured substance.

5,828,059
TRANSVERSE STRAIN MEASUREMENTS USING FIBER OPTIC GRATING BASED SENSORS
Eric Udd, 2555 NE. 205th Ave., Troutdale, Oreg. 97060
Filed Sep. 9, 1996, Ser. No. 707,861
Int. Cl.[6] G01B *11/16*; G01K *11/32*
U.S. Cl. 250—227.18 **25 Claims**



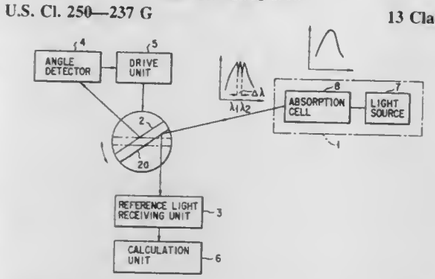
1. A system to sense the transverse stress in an optical fiber including:
a source of light for producing a first light beam;
a beamsplitter connected to receive the first light beam from said light source and split it into second and third light beams;
a optical fiber connected to receive the second light beam from the beamsplitter, said optical fiber having:
a first optical grating formed therein for exposure to the transverse stress for reflecting a portion of the second light beam as a fourth light beam having two maximums of spectral intensity whose spectral spacing varies with the transverse stress applied to said optical fiber at said first optical grating; and
a detector to measure the spectral spacing of the two maximums of spectral intensity and to produce a first output representative of the transverse stress in said optical fiber.

5,828,060
APPARATUS FOR DETERMINING THE POSITION OF A ROTATING SHAFT
Jonathan Juniman, Harleysville, Pa., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Mar. 31, 1997, Ser. No. 828,682
Int. Cl.[6] G01D *5/34*
U.S. Cl. 250—231.13 **15 Claims**



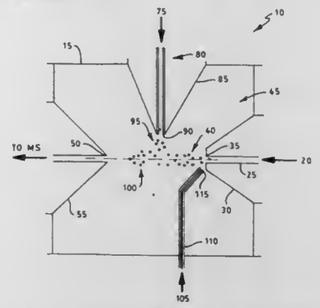
8. An apparatus for determining the position of a shaft rotatably displaceable about a longitudinal axis comprising:
means for producing a source of light energy;
first means arranged along a rotational center line, disposed to produce a first detection signal responsive to the detection of said light energy;
second means arranged along said rotational center line, disposed to produce a third detection signal responsive to the detection of said light energy;
third means mounted to said rotatable shaft and arranged along said rotational center line between said first and said second means, disposed to produce a second detection signal responsive to the detection of said light energy;
means for modulating said light energy, arranged to expose and subsequently mask said light energy sequentially to each of said first means, said third means and said second means;
means for counting arranged to receive said first, said second, and said third detection signals and to produce a first count signal responsive to said first and subsequently said third detection signals and a second count signal responsive to said third and subsequently said second detection signal; and,
means for determining said shaft's position arranged to receive said first and said second count signals, and determine the position of said shaft along said longitudinal axis.

5,828,061
APPARATUS FOR DETECTING A ROTATION ANGLE OF A DIFFRACTION GRATING
Tatsuki Kakimoto, Hiratsuka, Japan, assignor to Anritsu Corporation, Tokyo, Japan
PCT No. PCT/JP95/02547, § 371 Date Sep. 26, 1996, § 102(e) Date Sep. 26, 1996, PCT Pub. No. WO96/26414, PCT Pub. Date Aug. 29, 1996
PCT Filed Dec. 13, 1995, Ser. No. 718,594
Claims priority, application Japan, Feb. 24, 1995, 7-037070
Int. Cl.[6] G01J *3/18*
U.S. Cl. 250—237 G **13 Claims**



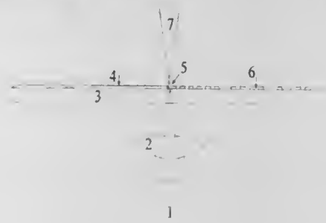
1. An apparatus for detecting a rotation angle of a diffraction grating, which diffraction grating includes a rotatable diffraction grating for receiving incident light and exiting split beams, and a drive unit for rotating the rotatable diffraction grating, the apparatus further comprising:
an angle detecting unit for detecting a rotation angle of the rotatable diffraction grating;
a light source unit including a light source and an absorption cell, said light source unit exiting, to the rotatable diffraction grating, reference light of a wavelength range including a specified wavelength determined depending upon the absorption cell, the absorption cell being comprised of a tube sealed with a gas having an absorption line absorbing the reference light of a predetermined wavelength at all times without being affected by a variation in an environmental condition;
a reference light receiving unit for receiving a split reference light from the rotatable diffraction grating and converting the split reference light into an electric signal; and
a signal processing unit which (i) detects an extreme value of the electric signal from the reference light receiving unit, which electric signal is obtained while the rotatable diffraction grating is rotated by the drive unit, (ii) receives a rotation angle output from the angle detecting unit when the extreme value is detected, and (iii) calculates a specified rotation angle corresponding to the specified wavelength.

5,828,062
IONIZATION ELECTROSPRAY APPARATUS FOR MASS SPECTROMETRY
Joseph A. Jarrell, Newton Highlands, Mass., and Michael J. Tomany, Thompson, Conn., assignors to Waters Investments Limited, New Castle, Del.
Filed Mar. 3, 1997, Ser. No. 807,993
Int. Cl.[6] B01D *59/44*; H01J *49/00*
U.S. Cl. 250—288 **7 Claims**



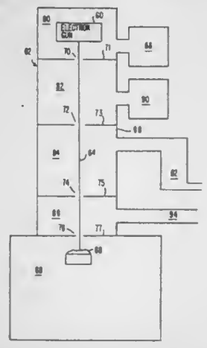
1. An apparatus for converting a flow stream comprising analyte into an ionized analyte aerosol to output the aerosol toward a mass spectrometer, the apparatus comprising:
an electrospray region receiving the flow stream at high flow rate and outputting the ionized analyte aerosol, the electrospray region comprising:
a first nebulizer terminating in the electrospray region passing the flow stream therethrough as an analyte aerosol,
a second nebulizer terminating in the electrospray region passing a first reagent flow stream therethrough as an ionized reagent aerosol, and
an aperture positioned at an end of the electrospray region, the aperture being substantially aligned with an exit port of the first nebulizer; wherein the ionized reagent aerosol contacts the analyte aerosol to form the ionized analyte aerosol for output toward the mass spectrometer.

5,828,063
METHOD FOR MATRIX-ASSISTED LASER DESORPTION IONIZATION
Claus Köster, Lilienthal, and Jochen Franzen, Bremen, both of Germany, assignors to Bruker-Franzen Analytik, GmbH, Bremen, Germany
Filed Apr. 2, 1997, Ser. No. 832,469
Claims priority, application Germany, Apr. 27, 1996, 196 17 011.7
Int. Cl.[6] H01J *49/10*
U.S. Cl. 250—288 **18 Claims**



1. A method of generating ions from large analyte molecules on a sample support in a vacuum by matrix-assisted laser desorption (MALDI), the method comprising:
a) depositing, on a sample support, a mixture having a plurality of components, wherein one of said components is both of a relatively high adsorbtivity for the analyte molecules, and is decomposable by laser light used for said laser desorption;
b) depositing the analyte molecules on the matrix mixture; and
c) desorbing and ionizing the analyte molecules with said laser light so as to decompose the decomposable component of the matrix mixture.

5,828,064
FIELD EMISSION ENVIRONMENTAL SCANNING ELECTRON MICROSCOPE
W. Ralph Knowles, North Andover, Mass., assignor to Philips Electronics North America Corporation, New York, N.Y.
Filed Aug. 7, 1996, Ser. No. 693,616
Int. Cl.[6] H01J *37/00*
U.S. Cl. 250—310 **37 Claims**



1. An environmental scanning electron microscope which provides for improved spatial resolution of a specimen under examination of approximately 2nm, said environmental scanning electron microscope comprising:
(a) means for generating and directing an electron beam toward the specimen wherein said generation means is a field emission gun;
(b) an electron optic column comprising a differentially pumped aperture system including at least four differentially pumped vacuum zones to provide a pressure difference up to approximately 10^{10} Torr between said field emission gun and said specimen, said differentially pumped aperture system further including at least four pressure limiting apertures to define said at least four differentially pumped vacuum zones through which the electron beam passes;
(c) a specimen chamber which maintains the specimen enveloped in gas in registration with a final pressure limiting aperture of said at least four pressure limiting apertures of said differentially pumped aperture system; and
(d) means for detecting signals emanating from the surface of the specimen.

5,828,065

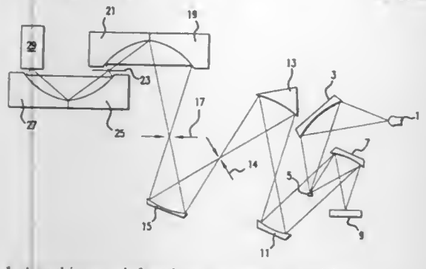
Patent Not Issued For This Number

5,828,066

MULTISOURCE INFRARED SPECTROMETER

Robert G. Messerschmidt, 1000 Parkland Pl. SE., Albuquerque, N. Mex. 87108

Filed Jul. 2, 1996, Ser. No. 674,869
Int. Cl.[6] G01N 21/35
U.S. Cl. 250—339.07 10 Claims



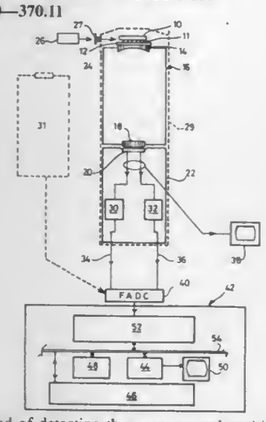
1. A multisource infrared spectrometer, comprising
a source of broad band infrared energy,
a relay mirror that focuses the infrared energy at an intercepting mirror,
a first object mirror that collimates the infrared energy from the intercepting mirror,
a spatial light modulator that receives the collimated infrared energy and reflects it back to the first object mirror, the spatial light modulator including deformable mirror elements, and
a controller that deforms the mirror elements according to a predetermined pattern.

5,828,067

IMAGING METHOD AND APPARATUS

John Gordon Rushbrooke; Claire Elizabeth Hooper; William Wray Neale, and Richard Eric Ansorge, all of Cambridge, United Kingdom, assignors to Cambridge Imaging Limited, Cambridge, United Kingdom

PCT No. PCT/GB94/02301, § 371 Date Mar. 22, 1996, § 102(e) Date Mar. 22, 1996, PCT Pub. No. WO95/11461, PCT Pub. Date Apr. 27, 1995
PCT Filed Oct. 20, 1994, Ser. No. 619,576
Claims priority, application United Kingdom, Oct. 20, 1993, 9321638; Mar. 23, 1994, 9405755
Int. Cl.[6] G01T 1/208
U.S. Cl. 250—370.11 14 Claims



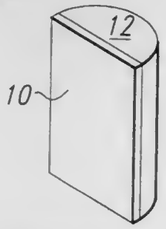
1. A method of detecting the presence and position of radioactively labelled material in a sample, in which an area of the sample is exposed to an area of a phosphor so that radioactive decay events produce photon emission events, and the phosphor is imaged onto the photocathode of an image intensifier means, the output of which provides the optical input for a CCD camera, characterised by the steps of:
(1) repetitively scanning a CCD array of the camera, each scan corresponding to an interrogation of the array and being preceded by an exposure period and followed by a resetting step which initiates the beginning of the next following exposure period,
(2) generating during each interrogation data signals whose values describe the charge pattern on the array,
(3) performing measurements on the data signals to identify clusters of data values, from adjacent separately addressable sub-regions of the array indicative that photon emission from the image intensifier has impinged thereon, and
(4) identifying a centre position of each identified cluster of data values and storing the center coordinates in a memory together with the centre coordinates of any other identified clusters occurring during the same interrogation; wherein
(5) the step of performing measurements on the data signals includes examination of clusters appertaining to adjacent sub-regions of the array, in real time, applying a sizing criterion to each identified cluster and rejecting any cluster possessing fewer than a predetermined number of sub-regions so that no centre coordinates therefor are stored.

5,828,068

UNCOOLED MERCURY CADMIUM TELLURIDE INFRARED DEVICES WITH INTEGRAL OPTICAL ELEMENTS

Donald F. Weirauch, Dallas, Tex., assignor to Raytheon TI Systems, Inc., Lewisville, Tex.

Filed Apr. 3, 1997, Ser. No. 834,791
Int. Cl.[6] H01L 27/146
U.S. Cl. 250—370.13 21 Claims



1. A method of fabricating an uncooled HgCdTe IR sensor, said method comprising:
a) growing an HgCdTe film on an IR transparent substrate; and
b) shaping said substrate into a lens configuration, thereby creating an intregal, controlled field of view sensor and whereby both reflections at the interface between the HgCdTe and the lens, and problems of attaching HgCdTe to the lens are substantially reduced.

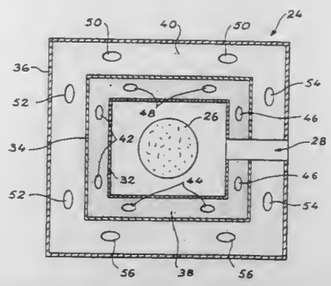
5,828,069

IRRADIATION AND/OR COUNTING ENCLOSURE FOR NEUTRON DETECTION ANALYSIS

Krzysztof Umiastowski, Meudon; Frédéric Laine, Maurepas, and Abdallah Lyoussi, Aix en Provence, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

PCT No. PCT/FR95/01373, § 371 Date Apr. 15, 1997, § 102(e) Date Apr. 15, 1997, PCT Pub. No. WO96/12974, PCT Pub. Date May 2, 1996
PCT Filed Oct. 18, 1995, Ser. No. 817,453
Claims priority, application France, Oct. 19, 1994, 94 12468
Int. Cl.[6] G01T 3/00
U.S. Cl. 250—390.01 8 Claims

1. Counting enclosure for the detection of neutrons, said enclosure having an outer wall and an inner space for receiving an object to be tested, the wall being constituted in sequence by a first, inner cadmium coating, an inner moderator coating, an intermediate cadmium coating, an outer moderator coating and an outer cadmium coating.

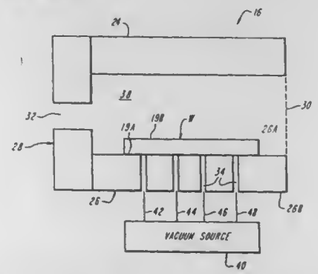


5,828,070

SYSTEM AND METHOD FOR COOLING WORKPIECES PROCESSED BY AN ION IMPLANTATION SYSTEM

Adam A. Brailove, Boston, Mass.; Peter H. Rose, Conway, N.H.; Julian G. Blake, Beverly Farms, Mass.; Zhongmin Yang, Boston, Mass., and Kenneth H. Purser, Lexington, Mass., assignors to Eaton Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 601,983, Feb. 16, 1996, abandoned. This application Nov. 26, 1996, Ser. No. 756,972
Int. Cl.[6] G01N 21/00; G21K 5/10
U.S. Cl. 250—443.1 73 Claims



1. An apparatus for cooling a workpiece, comprising
a loadlock housing having an internal chamber with a plurality of walls, one of the walls forming an inner cooling surface; and
vacuum means coupled to the cooling surface for drawing the workpiece into relatively close proximity with the cooling surface and, thereby, effecting heat transfer from the workpiece to the cooling surface.

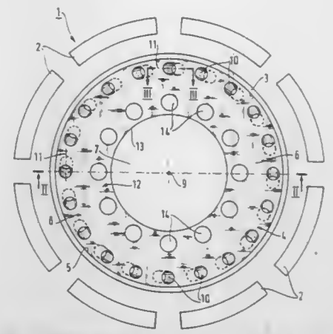
5,828,071

APPARATUS FOR CURING BY UV RADIATION

Patrick Bourghelle, Saint-Denis, and Christopher McNutt, Saint Germain en Laye, both of France, assignors to Alcatel Cable, Clichy Cedex, France

Filed Jan. 5, 1996, Ser. No. 583,803
Claims priority, application France, Jan. 6, 1995, 95 00116
Int. Cl.[6] G01N 21/00
U.S. Cl. 250—492.1 9 Claims

1. Apparatus for curing an object by using UV radiation, said object being made, at least in part, of a material that is cross-linkable under UV radiation, said apparatus comprising: UV radiation sources (2); a tube (3) made of a material that is permeable to UV radiation, said tube being surrounded by the UV radiation sources (2), and being designed to receive at least a portion of an object to be cured; gas feed means for generating a gas flow (15) through the tube (3) along a general flow axis (9); and a sparger disk (6) placed at the upstream of the tube (3) and perpendicular to a general flow axis (9), said sparger disk (6) comprising a central bore (7) through which flows a main part (17) of said gas flow (15) for atmosphere control around said object and an outer concentric ring (8) of through peripheral openings (10) through which flows a secondary part (16) of said gas flow (15) for cleaning of inside wall of the reaction chamber.



5,828,072

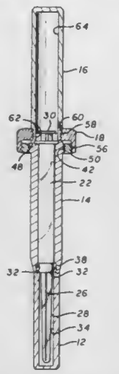
Patent Not Issued For This Number

5,828,073

DUAL PURPOSE SHIELDED CONTAINER FOR A SYRINGE CONTAINING RADIOACTIVE MATERIAL

Bing Bing Zhu, Northridge; Monty Mong Chen Fu, Canyon Road, and Richard L. Green, Simi Valley, all of Calif., assignors to Syncor International Corporation, Woodland Hills, Calif.

Filed May 30, 1997, Ser. No. 866,920
Int. Cl.[6] G21F 5/00
U.S. Cl. 250—506.1 12 Claims



1. A radiopharmaceutical pig assembly for shielding a syringe containing radioactive material during transport and discharge of the syringe, the syringe having a flanged body with a needle and an opposing plunger extending therefrom, the radiopharmaceutical pig assembly comprising:
a radiation-dense lower body portion having a threaded upper end, and an interior surface defining a first internal cavity with an opening in the upper end sized to accept the needle of the syringe therein;

a radiation-dense mid body portion having a upper end, a lower end and an interior surface extending therebetween to define a passageway between openings in the upper and lower ends of the mid body portion, the passage sized to accept the body of the syringe therein, the lower end of the mid body portion being threaded to releasably engage the threads on the lower body portion, the passage in the mid body portion located in alignment with the cavity in the lower body portion upon their engagement;

a locknut threadedly engaging the upper end of the mid body portion; and

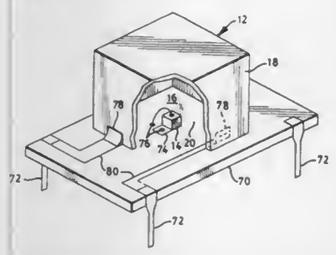
a radiation-dense upper body portion having a lower end and an interior surface defining a second internal cavity with an opening in the lower end of the upper body portion, the opening and cavity being sized to accept the plunger of the syringe therein, the lower end being threaded to releasably engage the locknut such that the passageway in the mid body portion is located in alignment with the cavity in the upper body portion.

5,828,074

OPTOISOLATOR COMPRISING WALLS HAVING PHOTOSENSITIVE INNER SURFACES

Alan R. Pearlman, Newton Highlands, Mass., assignor to Mini-Systems, Inc., N. Attleboro, Mass.

Filed May 19, 1997, Ser. No. 858,279
Int. Cl.[6] H01L *31/12*
U.S. Cl. 250—551 **27 Claims**



1. An optoisolator comprising:

(a) an enclosure including walls defining a compartment, each of said walls having an inner surface, said inner surface of at least two of said walls having a photosensitive portion, said photosensitive portions having different orientations with respect to each other, and each of said photosensitive portions producing at least one electrical signal when illuminated;

(b) a light source within said compartment providing light to illuminate said inner surfaces when said light source is energized;

(c) electrical contacts for providing electricity to energize said light source; and

(d) electrical contacts for receiving said at least one electrical signal from said photosensitive portions.

5,828,075

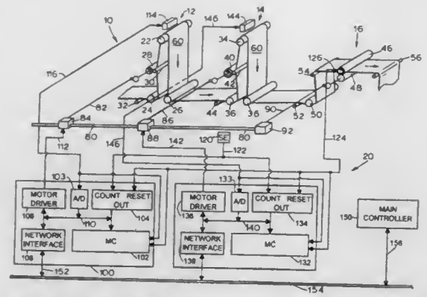
APPARATUS FOR SCANNING COLORED REGISTRATION MARKS

Steven J. Siler, Cary; Scott T. Hilkert, Skokie, and Jeffrey C. Petrin, Arlington Heights, all of Ill., assignors to Hurletron, Incorporated, Danville, Ill.

Filed Oct. 11, 1996, Ser. No. 728,700
Int. Cl.[6] G01N *21/86*
U.S. Cl. 250—559.44 **28 Claims**

6. An apparatus for scanning colored registration marks printed on a moving web, said apparatus comprising:

a photoemitter for generating a beam of light directed at a moving web having a plurality of registration marks printed thereon;



a detector for detecting an amount of light reflected from said moving web and generating a reflectance signal having a magnitude relating to said amount of light;

means for periodically sampling said reflectance signal to generate a number of scan values;

memory means for storing said scan values; and

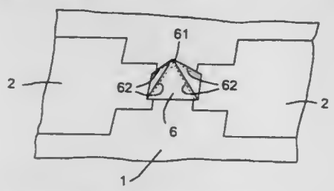
means for determining a baseline level of said reflectance signal, said baseline level corresponding to the reflectivity of a portion of said moving web having substantially no printed matter thereon.

5,828,076

MICROELECTRONIC COMPONENT AND PROCESS FOR ITS PRODUCTION

Harald Gossner, München; Ignaz Eisele, Icking; Lothar Risch, Neubiberg, all of Germany, and Erwin Hammerl, Stormville, N.Y., assignors to Siemens Aktiengesellschaft, Munich, Germany

PCT No. PCT/DE95/00448, § 371 Date Oct. 17, 1996, § 102(e) Date Oct. 17, 1996, PCT Pub. No. WO95/28741, PCT Pub. Date Oct. 26, 1995
PCT Filed Apr. 4, 1995, Ser. No. 727,440
Claims priority, application Germany, Apr. 19, 1994, 44 13 470.3
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—24 **5 Claims**



1. A microelectronic component, comprising:

a substrate of monocrystalline silicon at least at a main face, and,

at least one surface structure on said main face having at least three faces intersecting at an intersection point and pairs of said at least three faces intersecting on straight intersection lines

a gate dielectric which covers said at least one surface structure at least at said at least three intersecting faces,

a gate electrode on the surface of the gate dielectric,

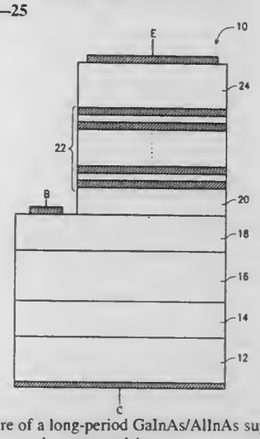
at least two conductive regions at the main face, each on at least one of the straight intersection lines and insulated from the substrate, and between which, by applying a control voltage to the gate electrode, it is possible to control a current flow across an inversion layer which is formed along an intersection zone of the intersecting faces and at the intersection point when the control voltage is applied to the gate electrode.

5,828,077

LONG-PERIOD SUPERLATTICE RESONANT TUNNELING TRANSISTOR

Wen-Chau Liu, and Shiou-Ying Cheng, both of Tainan, Taiwan, assignors to National Science Council, Taipei, Taiwan

Filed Nov. 6, 1997, Ser. No. 965,659
Claims priority, application Taiwan, Aug. 27, 1997, 86112304
Int. Cl.[6] H01L *29/15;29/732*
U.S. Cl. 257—25 **9 Claims**



1. A structure of a long-period GaInAs/AlInAs superlattice resonant tunneling transistor, comprising:

a substrate formed by InP material;

a buffer layer consisting of $Ga_{0.47}In_{0.53}As$ material on said substrate;

a collector layer consisting of $Ga_{0.47}In_{0.53}As$ material on said buffer layer;

a base layer consisting of $Ga_{0.47}In_{0.53}As$ material on said collect layer;

an emitter layer consisting of $Ga_{0.47}In_{0.53}As$ material on said base layer;

a 20-period superlattice tunneling layer formed on said emitter layer, wherein a barrier layer of said 20-period superlattice tunneling layer consists of $Al_{0.48}In_{0.52}As$ material and a quantum well layer consists of $Ga_{0.47}In_{0.53}As$ material; and

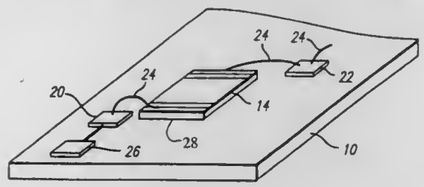
an ohmic contact layer consisting of $Ga_{0.47}In_{0.53}As$ material on said 20-period superlattice tunneling layer.

5,828,078

ELECTROSTATIC DISCHARGE PROTECTION USING HIGH TEMPERATURE SUPERCONDUCTORS

Nicholas A. Doudoumopoulos, Marina Del Rey, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Continuation of Ser. No. 506,308, Jul. 24, 1995, abandoned. This application Oct. 25, 1996, Ser. No. 740,279
Int. Cl.[6] H01L *29/06;29/00*
U.S. Cl. 257—30 **6 Claims**



1. An electrostatic discharge and power surge protected circuit board consisting of:

a circuit board comprising a substrate and current carrying mechanisms and

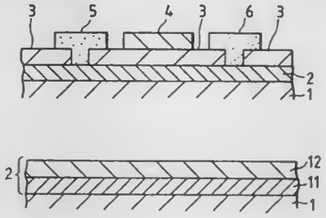
a temperature sensitive conducting material formed on said substrate integral with said circuit board and coupled to said current carrying mechanisms, said temperature sensitive conducting material having a critical current density and a high impedance when said critical current density is exceeded.

5,828,079

FIELD-EFFECT TYPE SUPERCONDUCTING DEVICE INCLUDING BI-BASE OXIDE COMPOUND CONTAINING COPPER

Koichi Mizuno, Nara; Hideaki Adachi, Osaka; Yo Ichikawa, Osaka, and Kentaro Setsune, Osaka, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 24, 1993, Ser. No. 80,726
Claims priority, application Japan, Jun. 29, 1992, 4-170507; Jun. 29, 1992, 4-170508; Dec. 1, 1992, 4-321583
Int. Cl.[6] H01L *29/06*
U.S. Cl. 257—39 **32 Claims**



1. A field-effect type superconducting device comprising:

a channel layer including Bi-based oxide compound containing Cu, wherein the channel layer includes a superposition of first and second sub layers which contain first and second Bi-based oxide compounds respectively, each containing Cu, and at least one of the first and second Bi-based oxide compounds in the first and second sub layers includes a Bi-based oxide superconductor containing Cu;

a source electrode contacting the channel layer;

a drain electrode contacting the channel layer;

a gate insulating film made of insulating material and extending on the channel layer; and

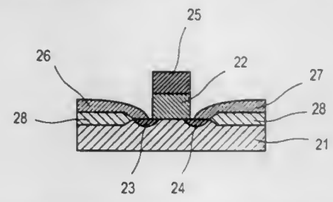
a gate electrode extending on the gate insulating film.

5,828,080

OXIDE THIN FILM, ELECTRONIC DEVICE SUBSTRATE AND ELECTRONIC DEVICE

Yoshihiko Yano, Kanagawa, and Takao Noguchi, Chiba, both of Japan, assignors to TDK Corporation, Tokyo, Japan

Filed Aug. 17, 1995, Ser. No. 516,356
Claims priority, application Japan, Aug. 17, 1994, 6-215300; Mar. 15, 1995, 7-083184; Mar. 27, 1995, 7-093024; Mar. 31, 1995, 7-099948; Mar. 31, 1995, 7-099949
Int. Cl.[6] H01L *29/12;29/76*
U.S. Cl. 257—43 **30 Claims**



1. An oxide thin film in the form of a unidirectionally oriented epitaxial film consisting essentially of zirconium oxide formed on

a single crystal substrate of silicon wherein said unidirectionally oriented epitaxial film contains at least 95% of Zr based on the amount of only constituent elements of the film excluding oxygen, a rocking curve of reflection on a (002) or (111) plane of said unidirectionally oriented epitaxial film has a half-value width of up to 1.5°, and

said unidirectionally oriented epitaxial film has a ten point mean roughness Rz of up to 2 nm across a reference length of 500 nm over at least 80% of its surface.

5,828,081

INTEGRATED SEMICONDUCTOR DEVICE

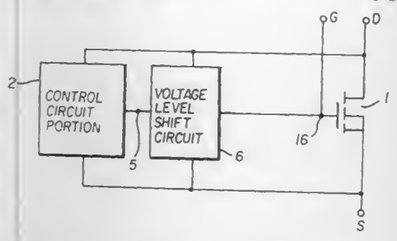
Kazuhiko Yoshida, and Tatsuhiko Fujihira, both of Nagano, Japan, assignors to Fuji Electric Co., Ltd., Japan

Continuation of Ser. No. 391,694, Feb. 16, 1995, abandoned. This application Dec. 4, 1996, Ser. No. 759,177

Claims priority, application Japan, Feb. 17, 1994, 6-020059; May 27, 1994, 6-113249

Int. Cl.[6] **H01L** *23/58;29/76;29/00*

U.S. Cl. 257—48 **6 Claims**



5. An integrated semiconductor device comprising:

a control circuit;

a MOS semiconductor element integrated with the control circuit on a semiconductor substrate, wherein said MOS semiconductor element includes a gate electrode;

a gate terminal connected to the gate electrode; and

a voltage level shift means, connected between the control circuit and the gate electrode of the MOS semiconductor element, for limiting a voltage applied to the control circuit during a screening test operation below a level of a test voltage applied to the gate terminal during the screening test operation, and for permitting bidirectional current flow between the control circuit and the gate electrode after the screening test operation;

wherein the level shift means comprises a resistive element and a voltage regulation diode connected between an end of the resistive element that is connected to the control circuit and a source electrode of the MOS semiconductor element.

5,828,082

THIN FILM TRANSISTOR HAVING DUAL INSULATION LAYER WITH A WINDOW ABOVE GATE ELECTRODE

Biing-Seng Wu, Hsinchu, Taiwan, assignor to Industrial Technology Research Institute, Hsinchu, Taiwan

Continuation of Ser. No. 431,610, Apr. 28, 1995, abandoned, which is a continuation of Ser. No. 875,651, Apr. 29, 1992, abandoned. This application Mar. 3, 1997, Ser. No. 810,094

Int. Cl.[6] **H01L** *29/04*

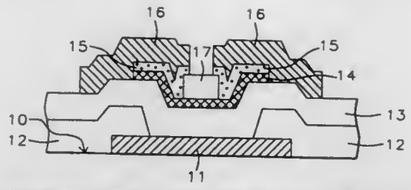
U.S. Cl. 257—57 **12 Claims**

1. A thin film field effect transistor (TFT) device having an active region with a gate, a source region, a drain region and a channel, and a field region outside said active region, comprising:

a transparent insulating substrate,

a metal gate electrode formed on said substrate,

said metal gate electrode having edges and having a top surface above said substrate,



a first insulating layer covering said substrate and the periphery of said gate electrode with a channel window therethrough over the remainder of said top surface of said gate electrode, said first insulating layer being composed of a material selected from the group consisting of Al_2O_3, CrO_2, and TaO_x,

a second insulating layer composed of a-SiN silicon nitride conformally covering both said first insulating layer and extending down into said channel window to cover said remainder of said top surface of said gate electrode and leaving a depression above said channel window,

a first semiconductor film formed conformally covering said second insulating layer above said channel window extending down towards said channel window into said depression above said channel window and leaving an intermediate depression above said channel window,

said first semiconductor film consisting of amorphous silicon,

a second semiconductor film conformally covering said first semiconductor film extending down towards said channel window into said intermediate depression above said channel window and leaving an upper depression above said intermediate depression,

said second semiconductor film being composed of heavily doped amorphous silicon,

said first and second semiconductor films being patterned into a self-aligned island formed above said gate electrode, said island being aligned with but shorter than said gate electrode along the dimension from said drain region to said source region,

said first semiconductor film serving as said channel of said TFT,

said second semiconductor film serving as said source region and said drain region of said TFT, and

a metal contact layer formed above said second second semiconductor film on the surface thereof, said metal contact layer patterned to form metal contacts for said source and said drain with said metal contacts and with said second semiconductor film being aligned.

5,828,083

ARRAY OF THIN FILM TRANSISTORS WITHOUT A STEP REGION AT INTERSECTION OF GATE BUS AND SOURCE BUS ELECTRODES

Myung Chul Jun, Kyungki-Do, Rep. of Korea, assignor to Goldstar Co., Ltd., Seoul, Rep. of Korea

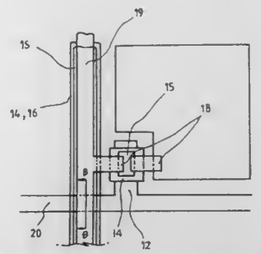
Continuation of Ser. No. 396,056, Feb. 28, 1995, abandoned, which is a continuation of Ser. No. 174,022, Dec. 28, 1993, abandoned. This application Mar. 19, 1996, Ser. No. 616,780

Int. Cl.[6] **H01L** *29/04;31/036;* **G02F** *1/1343*

U.S. Cl. 257—59 **10 Claims**

3. A flat panel display device comprising:

a plurality of first conductors and second conductors arranged so that the first conductors perpendicularly intersect the second conductors and so that the second conductors are located over the first conductors; and



a plurality of pixel elements connected to said second conductors at intersections of the first conductors and the second conductors, respectively;

wherein each second conductor is separated from each first conductor by a plurality of separation layers of material therebetween, each of the separation layers extending substantially along an entire length of the second conductor; and

wherein the plurality of separation layers of material includes:

a first insulating layer on the first conductor;

a first semiconductor layer on the first insulating layer;

a second insulating layer on the first semiconductor layer; and

a second semiconductor layer over said second insulating layer.

5,828,084

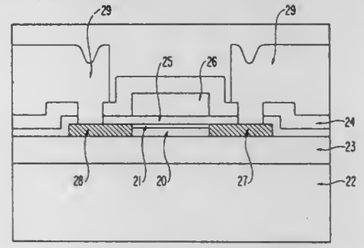
HIGH PERFORMANCE POLY-SIGE THIN FILM TRANSISTOR

Takashi Noguchi, Atsugi, Japan; Rafael Reif, Newton; Julie Tsai, Belmont, both of Mass., and Andrew J. Tang, Arlington, Tex., assignors to Sony Corporation, Japan, and Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 27, 1995, Ser. No. 411,203

Int. Cl.[6] **H01L** *29/04;29/76*

U.S. Cl. 257—65 **20 Claims**



1. A thin film transistor comprising an active region and a gate, wherein said active region comprises a poly-$Si_{1-x}Ge_x$ alloy material and a channel layer of silicon, in which the channel layer of silicon is interposed between the poly-$Si_{1-x}Ge_x$ alloy material and the gate and wherein x ranges from 0.05 to 0.40 atomic %.

5,828,085

LIGHT EMITTING DIODE HAVING LIGHT-EMITTING AND LIGHT-ABSORBING REGIONS

Yasumasa Kashima, and Tsutomu Munakata, both of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

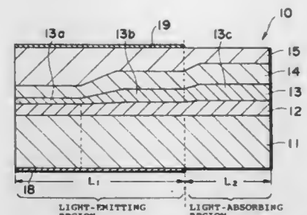
Filed Aug. 6, 1997, Ser. No. 907,126

Claims priority, application Japan, Aug. 8, 1996, 8-226008

Int. Cl.[6] **H01L** *27/15*

U.S. Cl. 257—80 **5 Claims**

1. A light-emitting diode comprising:



an active layer formed on a substrate, said active layer being surrounded jointly by a pair of clad layers and a pair of block layers, wherein said active layer includes a light-emitting portion and a light-absorbing portion continuously formed in one body, said light-emitting portion emitting light when carriers are injected thereinto between said pair of clad layers, said light-absorbing portion absorbing the light coming from the light-emitting portion.

5,828,086

SEMICONDUCTOR LIGHT EMITTING DEVICE WITH A MG SUPERLATTICE STRUCTURE

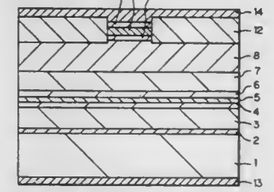
Akira Ishibashi; Satoshi Matsumoto; Masaharu Nagai; Satoshi Ito, all of Kanagawa; Shigetaka Tomiya; Kazushi Nakano, both of Tokyo, and Etsuo Morita, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 691,536, Aug. 2, 1996, Pat. No. 5,665,977, which is a continuation of Ser. No. 389,790, Feb. 16, 1995, abandoned. This application Mar. 24, 1997, Ser. No. 826,108

Claims priority, application Japan, Feb. 16, 1994, 6-041876; May 31, 1994, 6-142641; Jun. 21, 1994, 6-162770; Aug. 5, 1994, 6-204245

Int. Cl.[6] **H01L** *33/00*

U.S. Cl. 257—94 **6 Claims**



1. A semiconductor light emitting device comprising:

a first cladding layer having one of n-type and p-type conductivity, an active layer, and a second cladding layer having another one of n-type and p-type conductivity on a semiconductor substrate,

said cladding layer having the p-type conductivity comprising a II–VI semiconductor superlattice structure, said structure being composed of a plurality of Mg including layers and a plurality of Mg excluding layers.

5,828,087

ALINAS SEMICONDUCTOR DEVICE CONTANING SI AND P

Naoki Takahashi, Nara-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

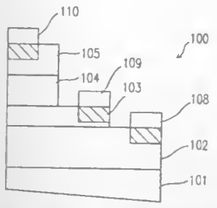
Filed Dec. 20, 1996, Ser. No. 770,462

Claims priority, application Japan, Dec. 22, 1995, 7-335028

Int. Cl.[6] **H01L** *33/00*

U.S. Cl. 257—96 **7 Claims**

1. A semiconductor device comprising at least an Si-doped



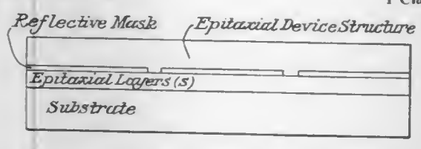
AlInAs layer formed on an InP substrate, wherein the Si-doped AlInAs layer contains phosphorus.

5,828,088

SEMICONDUCTOR DEVICE STRUCTURES INCORPORATING "BURIED" MIRRORS AND/OR "BURIED" METAL ELECTRODES

Michael G. Mauk, Wilmington, Del., assignor to AstroPower, Inc., Newark, Del.

Filed Sep. 5, 1996, Ser. No. 706,557
Int. Cl.[6] H01L *33/00;31/0232*
U.S. Cl. 257—98 **1 Claim**



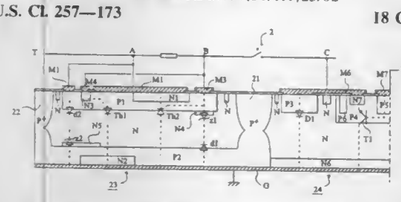
1. A semiconductor device structure having a substrate and at least one semiconductor epitaxial layer to form a composite structure, the improvement being in including a buried mirror between said substrate and epitaxial layers, said buried mirror being of non-single crystalline form, said epitaxial layers being formed from epitaxial layer overgrowth to result in a single-crystal epitaxial device over said buried mirror, and said buried mirror is a metal layer between a pair of adjacent epitaxial layers.

5,828,089

FULL PROTECTION COMPONENT FOR A SUBSCRIBER LINE INTERFACE CIRCUIT

Eric Bernier, Mettray, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed May 1, 1996, Ser. No. 641,676
Claims priority, application France, May 12, 1995, 95 05877
Int. Cl.[6] H01L *29/74;31/111;23/62*
U.S. Cl. 257—173 **18 Claims**



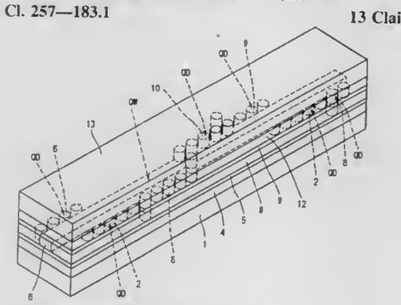
1. A monolithic component for protecting a SLIC, the component comprising:
an N-type substrate;
a first uniform metallization coated on a bottom surface of the N-type substrate;
a first portion formed in the substrate including:
two vertical diodes having a common cathode corresponding to the bottom surface of the substrate; and
two vertical transistors having a common collector and a common base, the collectors corresponding to the bottom surface of the substrate;
a second portion formed in the substrate including:
a first pair of head-to-tail parallel-connected vertical thyristors and a first pair of head-to-tail parallel-connected vertical zener diodes that control the conduction of said first pair of thyristors; and
a second pair of head-to head-to-tail parallel-connected vertical thyristors and a second pair of head-to-tail parallel-connected vertical zener diodes that control the conduction of said second pair of thyristors; and
a P-type isolation wall that separates the first portion from the second portion.

5,828,090

CHARGE TRANSFER DEVICE

Ryuichi Ugajin, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 3, 1995, Ser. No. 552,879
Claims priority, application Japan, Nov. 4, 1994, 6-295742
Int. Cl.[6] H01L *31/0328;31/111;29/74*
U.S. Cl. 257—183.1 **13 Claims**



1. A charge transfer device comprising:
at least one wire which permits charges to transfer along the lengthwise direction thereof; and
a one-dimensional quantum boxes array helically extending around said wire from one lengthwise end to the other of said wire,
wherein charges are transferred along said wire by applying an external field within a plane extending across the lengthwise direction of said wire and by rotating the direction of application of said external field within said plane.

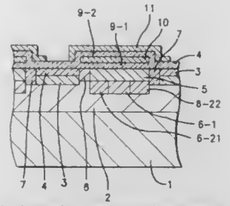
5,828,091

INTERLINE CHARGE COUPLED DEVICE SOLID STATE IMAGE SENSOR

Shinichi Kawai, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 27, 1997, Ser. No. 827,361
Claims priority, application Japan, Mar. 28, 1996, 8-074091
Int. Cl.[6] H01L *27/148;29/768*
U.S. Cl. 257—218 **20 Claims**

1. A vertical charge coupled device resistor formed in an upper region of a semiconductor substrate of an interline solid state image sensor, said vertical charge coupled device resistor comprising laminations of a first conductivity type diffusion layer and a second conductivity type diffusion layer extending under the first conductivity type diffusion layer,
wherein said second conductivity type diffusion layer varies in impurity concentration in a width direction so that opposite side regions of said second conductivity type diffusion layer



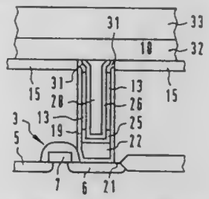
are higher in impurity concentration than a center region of said second conductivity type diffusion layer.

5,828,092

SEMICONDUCTOR MEMORY DEVICE AND METHOD FOR ITS PRODUCTION

Georg Tempel, München, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 24, 1996, Ser. No. 639,123
Claims priority, application Germany, Apr. 24, 1995, 95106098.7
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—295 **10 Claims**



1. A semiconductor memory device, comprising:
a semiconductor substrate having a surface defining a plane extending substantially parallel to said surface;
a multiplicity of memory cells disposed on said semiconductor substrate;
each of said memory cells having a selection transistor disposed in said plane, said selection transistor having a gate terminal, a first electrode terminal and a second electrode terminal;
each of said memory cells having a storage capacitor being associated with the triggerable by said selection transistor, said storage capacitor having a ferroelectric dielectric, a first capacitor electrode and a second capacitor electrode, said storage capacitor having a configuration projecting upward from said plane, and said storage capacitor being disposed inside a trench extending as far as said second electrode terminal of said selection transistor;
a word line to which said gate terminal of said selection transistor is connected;
a bit line to which said first electrode terminal of said selection transistor is connected; and
a common conductor layer of electrically conductive material to which said first capacitor electrode of said storage capacitor is connected.

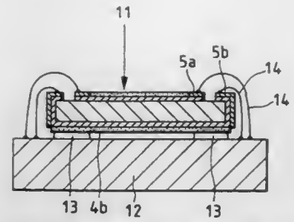
5,828,093

CERAMIC CAPACITOR AND SEMICONDUCTOR DEVICE IN WHICH THE CERAMIC CAPACITOR IS MOUNTED

Yasuyuki Naito, and Yukio Sakabe, both of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Japan

Continuation of Ser. No. 267,035, Jun. 27, 1994, abandoned.
This application Apr. 21, 1997, Ser. No. 843,787
Claims priority, application Japan, Jun. 29, 1993, 5-159179
Int. Cl.[6] H01L *29/76;29/00;23/053;29/94*
U.S. Cl. 257—295 **36 Claims**

1. A ceramic capacitor comprising:
a ceramic dielectric substrate having substantially planar first and second principal faces which are opposed to each other through said ceramic dielectric substrate, and side faces which extend between said first and second principal faces;
a first capacitor electrode formed on said first principal face of said ceramic dielectric substrate, said first capacitor electrode having an area which is smaller than that of said first principal face;
a second capacitor electrode formed on said second principal face of said ceramic dielectric substrate; and
a lead electrode formed at a periphery of said first principal face and extending along a side face to said second principal face of said ceramic dielectric substrate, and being connected at said second principal face to said second capacitor electrode, said lead electrode being separated from said first capacitor electrode by a gap and surrounding said first capacitor electrode.

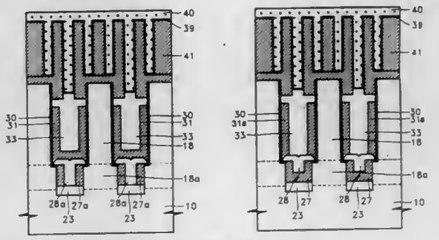


5,828,094

MEMORY CELL STRUCTURE HAVING A VERTICALLY ARRANGED TRANSISTORS AND CAPACITORS

Joo-Young Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Mar. 17, 1995, Ser. No. 406,337
Claims priority, application Rep. of Korea, Mar. 17, 1994, 1994 5372
Int. Cl.[6] H01L *27/108*
U.S. Cl. 257—296 **5 Claims**



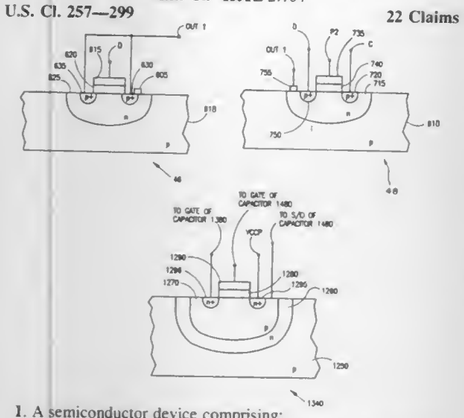
1. A semiconductor device, comprising:
a semiconductor substrate having a plurality of spaced apart first pillars formed therein with isolated first trenches therebetween and second pillars connected to said first pillars thereunder with isolated second trenches therebetween, a width of said second trenches being smaller than a width of said first trenches;
a first isolation insulating layer formed inside said first trenches and isolated by a gate insulating layer and gate electrode enclosing said first pillars;
impurity-doped regions having a first and a second impurity-doped region vertically formed in said first and second pillars and a channel region therebetween;
a bit line surrounding said second pillars and connected to said first impurity-doped region, said bit line being formed as a matrix type with said gate electrode;
a second isolation insulating layer formed in the bottom of said first trenches and inside said second trenches, for isolating said bit lines; and
a word line isolated by said first isolation insulating layer and connected to said gate electrode.

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5,828,095
CHARGE PUMP

Todd Merritt, Boise, Id., assignor to Micron Technology, Inc., Boise, Id.

Filed Aug. 8, 1996, Ser. No. 694,256
Int. Cl.[6] H01L 27/04
U.S. Cl. 257—299 22 Claims

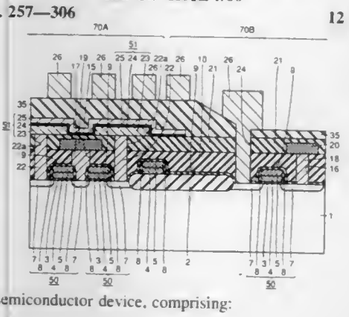


1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type having a primary surface;
a well region of a second conductivity type in said semiconductor substrate at said primary surface;
a first doped region of said first conductivity in said well region;
a second doped region of said first conductivity type in said well region, said second doped region spaced from and electrically connected to said first doped region;
an insulation layer on said primary surface of said substrate overlying respective portions of said first and second doped regions and a portion of said well region between said first and second doped regions;
a gate electrode on said insulation layer over said respective portions of said first and second doped regions and at least a part of said portion of said well region between said first and second doped regions; and
a conductive layer electrically shorting at least one of said first and second doped regions to said well region.

5,828,096
SEMICONDUCTOR DEVICE HAVING A CONTACT HOLE

Yoshikazu Ohno; Hiroki Shinkawata, and Takahiro Yokoi, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1996, Ser. No. 726,314
Claims priority, application Japan, Mar. 29, 1996, 8-076320
Int. Cl.[6] H01L 1/00
U.S. Cl. 257—306 12 Claims

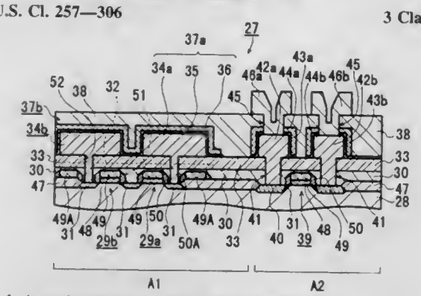


1. A semiconductor device, comprising:
a first interconnection layer formed on a main surface of a semiconductor substrate;
a first insulation layer of silicon nitride or silicon oxynitride, having an upper surface and side surfaces, formed on said first interconnection layer;
a second insulation layer of silicon nitride or silicon oxynitride formed on the upper surface and a side surface of said first insulation layer;
a third insulation layer of silicon oxide formed on said second insulation layer;
a second interconnection layer formed on said third insulation layer;
a first contact hole formed between said second interconnection layer and said semiconductor substrate by etching; and
a first conductor formed in said first contact hole, connecting said second interconnection layer and said semiconductor substrate and being electrically insulated from said first interconnection layer; wherein,
said first insulation layer and said second insulation layer have an etching rate lower than the etching rate of said third insulation layer with respect to an etchant.

5,828,097
SEMICONDUCTOR MEMORY DEVICE WITH A STACKED CAPACITANCE STRUCTURE

Takaho Tanigawa, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 22, 1997, Ser. No. 786,303
Claims priority, application Japan, Jan. 23, 1996, 8-009435
Int. Cl.[6] H01L 27/108
U.S. Cl. 257—306 3 Claims

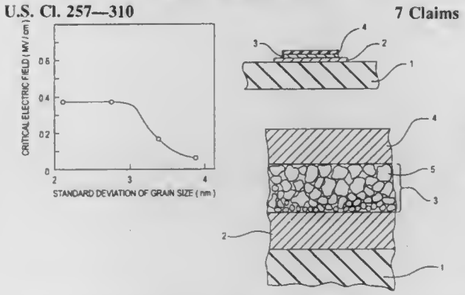


1. A semiconductor memory device comprising:
a memory cell area on a semiconductor substrate, said memory cell area having memory cells;
a peripheral circuit area on said substrate, said peripheral circuit area having peripheral circuits for driving said memory cells;
an interlayer insulating layer covering said entire substrate, said interlayer insulating layer having a first plurality of penetrating holes and a second plurality of penetrating holes;
each of said memory cells having a first element formed on said substrate, and a capacitor stacked over said first element, said first element being located below said interlayer insulating layer, and said capacitor being located on said interlayer insulating layer;
said capacitor having a lower electrode, an upper electrode, and a dielectric located between said lower and upper electrodes, said lower electrode being electrically connected to said first element through each of said first Plurality of penetrating holes of said interlayer insulating layer;
each of said peripheral circuits having a second element on said substrate, a contact Dad electrically connected to said second element, a pad insulating layer covering said contact pad, a pad protection layer on said pad insulating layer covering said contact sad, and an interconnection conductor electrically connected to said contact pad through a contact hole penetrating said pad protection layer and said pad insulating layer;
said second element being located below said interlayer insulating layer;
said pad insulating layer, said protection layer, and said interconnection conductor being located over said interlayer insulating layer; and
said contact pad being electrically connected to said second element through said second penetrating hole of said interlayer insulating layer;
wherein said lower electrode of said capacitor and said contact pad are spaced apart and are comprised of a first same conductive layer, an upper surface of said dielectric of said capacitor and an upper surface of said pad insulating layer are coplanar, said dielectric of said capacitor and said pad insulating layer are spaced apart and are comprised of the same insulative layer, and said upper electrode of said capacitor and said pad protection layer are spaced apart and are comprised of a second same conductive layer.

5,828,098
SEMICONDUCTOR CAPACITOR DIELECTRIC HAVING VARIOUS GRAIN SIZES

Yasuhiro Shimada, Osaka; Yasubiro Uemoto, Otsu; Atsuo Inoue, Otokuni-gun; Taketoshi Matsuura, Takatsuki, and Masamichi Azuma, Otsu, all of Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed Jun. 20, 1996, Ser. No. 667,913
Claims priority, application Japan, Jun. 22, 1995, 7-155921
Int. Cl.[6] H01L 29/43
U.S. Cl. 257—310 7 Claims

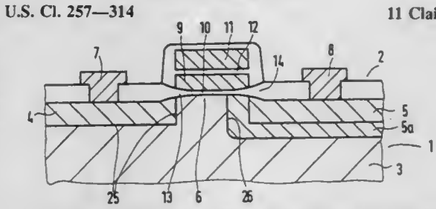


1. A semiconductor device with embedded capacitor elements comprising;
a substrate of a semiconductor integrated circuit,
a first electrode deposited on a surface of said substrate,
a capacitor insulation layer having a high dielectric constant deposited on a surface of said first electrode, and
a second electrode deposited on a surface of said capacitor insulation layer, wherein said second electrode is not in contact with the first electrode,
wherein crystal grains constituting said capacitor insulation layer comprise various particle sizes,
wherein said various particle sizes have an average particle size within a range of 5 to 20 nm, and
wherein said various particle sizes comprise a standard deviation within 3.0 nm or less.

5,828,099
SEMICONDUCTOR DEVICE HAVING A NONVOLATILE MEMORY CELL IN WHICH THE FLOATING GATE IS CHARGED WITH HOT CHARGE CARRIERS AT THE SOURCE SIDE

Maarten J. Van Dort, Eindhoven, Netherlands, and Andrew J. Walker, Palo Alto, Calif., assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 548,931, Oct. 26, 1995, abandoned.
This application Sep. 22, 1997, Ser. No. 935,335
Claims priority, application European Pat. Off., Oct. 28, 1994, 94203146
Int. Cl.[6] H01L 29/76
U.S. Cl. 257—314 11 Claims

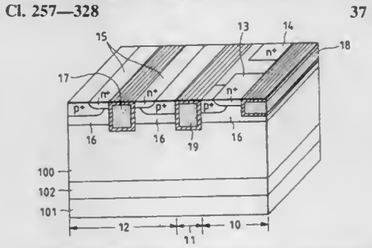


1. A semiconductor device with a semiconductor body having a surface, a memory element at said surface comprising a field effect transistor with a source zone and a drain zone, each separated from a surrounding portion of the semiconductor body by a pn-junction, a channel region situated between the source and drain zones, a control electrodes, a floating gate electrode situated between the control electrode and the channel region, a gate dielectric separating the floating gate electrode from the surface, and means for providing charge, on the floating gate electrode at or adjacent the source zone through generation of hot charge carriers, characterized in that: said means comprise a thickened portion of the gate dielectric adjoining the source zone, while the pn-junction of the source zone intersects the surface of the semiconductor body below the thickened portion, the source zone and the floating gate electrode have edges extending toward the surface which coincide at least substantially, and the gate dielectric at the area where the pn-junction of the drain zone intersects the surface is thinner than the gate dielectric at the area of the thickened portion.

5,828,100
INSULATED GATE SEMICONDUCTOR DEVICE HAVING TRENCH GATE AND INVERTER PROVIDED WITH THE SAME

Akihiko Tamba, Mito, and Yutaka Kobayashi, Hitachinaka, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 16, 1996, Ser. No. 714,603
Claims priority, application Japan, Sep. 14, 1995, 7-236532
Int. Cl.[6] H01L 27/02;29/74
U.S. Cl. 257—328 37 Claims



1. An insulated gate semiconductor device comprising a semiconductor substrate having raised portions and depressed portions in a surface of the substrate, and a first region and a second region wherein said first region includes:
a first semiconductor layer of a first conductivity type formed in at least one of the raised portions,

a second semiconductor layer and a third semiconductor layer which are of a second conductivity type formed in the first semiconductor layer, and

an insulated gate electrode formed in at least one of the depressed portions so as to be contiguous with a portion of the first semiconductor layer between the second and the third semiconductor layers;

wherein said second region includes:

a fourth semiconductor layer of the first conductivity type formed in another one of the raised portions,

a fifth semiconductor layer of the second conductivity type formed in the fourth semiconductor layer,

a sixth semiconductor layer of the second conductivity type formed contiguously with the fourth semiconductor layer,

a seventh semiconductor layer of the first conductivity type formed at a side of the sixth semiconductor layer opposite a side thereof on which the fourth semiconductor layer is formed, and

an insulated gate electrode formed in another one of the depressed portions so as to be contiguous with the surface of the fourth semiconductor layer;

wherein the insulated gate electrode in the second region is not contiguous with the portion of the first semiconductor layer between the second and the third semiconductor layers; and

wherein the first semiconductor layer, the second semiconductor layer, the third semiconductor layer and the insulated gate electrode in the first region form a lateral MOSFET.

5,828,101

THREE-TERMINAL SEMICONDUCTOR DEVICE AND RELATED SEMICONDUCTOR DEVICES

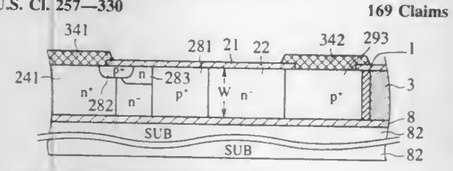
Koichi Endo, Tokyo, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 25, 1996, Ser. No. 622,287

Claims priority, application Japan, Mar. 30, 1995, 7-073354

Int. Cl.[6] H01L *29/792;29/94*

U.S. Cl. 257—330 **169 Claims**



1. A semiconductor device comprising:

a) a substrate having at least one main surface;

b) a first semiconductor region formed on or in at least a part of the main surface of the substrate;

c) a second semiconductor region serving as a first main electrode region formed in a part of the first semiconductor region;

d) a third semiconductor region serving as a second main electrode region formed apart from the second semiconductor region in a part of the first semiconductor region;

e) at least one gate trench formed in a part of the first semiconductor region between the second and third semiconductor regions from a main surface of first semiconductor region along a direction toward the substrate;

f) a gate insulating film formed on a side-wall of the gate trench; and

g) a buried gate electrode buried in at least a part of a space defined by the gate insulating film in the gate trench, so as to form a channel between the second and third semiconductor regions and to directly control main currents conducting between the first and second main electrode regions a direction of the main currents flowing in the channel being substantially in parallel with the main surface of the first semiconductor region, the main currents being distributed vertically to the main surface of the first semiconductor region so as to allow a part of the main currents to move in a deep position of the channel.

5,828,102

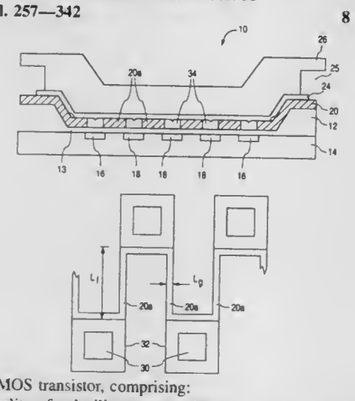
MULTIPLE FINGER POLYSILICON GATE STRUCTURE AND METHOD OF MAKING

Albert Bergemont, Palo Alto, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Continuation of Ser. No. 703,547, Aug. 27, 1996, abandoned. This application Sep. 30, 1997, Ser. No. 940,556

Int. Cl.[6] H01L *29/768*

U.S. Cl. 257—342 **8 Claims**



1. A MOS transistor, comprising:

a plurality of polysilicon gate regions;

an interconnect comprising a first metal layer and a second metal layer, said first metal layer overlying and individually contacting each one of said plurality of polysilicon gate regions and said second metal layer overlying and contacting said first metal layer and forming a stack with said first metal layer to completely short together all of said plurality of polysilicon gate regions.

5,828,103

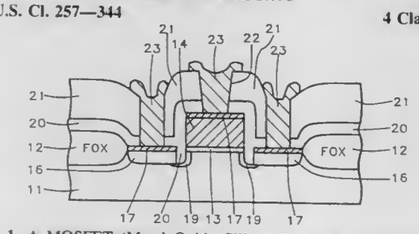
RECESSED LIGHTLY DOPED DRAIN (LDD) FOR HIGHER PERFORMANCE MOSFET

Chen-Chung Hsu, Taichung, Taiwan, assignor to United Microelectronics Corp., Hsinchu, Taiwan

Division of Ser. No. 297,497, Aug. 29, 1994, Pat. No. 5,491,099. This application Dec. 26, 1995, Ser. No. 739,346

Int. Cl.[6] H01L *29/78*

U.S. Cl. 257—344 **4 Claims**



1. A MOSFET (Metal Oxide Silicon Field Effect Transistor) device structure, comprising:

field oxide regions on a surface of a semiconductor substrate;

a device region between said field oxide regions;

a metal silicided polysilicon gate structure on said substrate in a center of said device region;

metal silicided source and drain regions in the surface of said substrate, between said metal silicided polysilicon gate structure and said field oxide regions;

a trench in the substrate, between the metal silicided polysilicon gate structure and the metal silicided source and drain regions;

a lightly doped source and drain region in a surface of said trench and extending under the metal silicided polysilicon gate structure, and under only a portion of a respective one of said metal silicided source and drain regions; and

an insulator layer over a surface of said metal silicided source and drain regions, said metal silicided polysilicon gate structure, and said field oxide and filling said trench.

5,828,104

MOS STRUCTURE DEVICE HAVING ASYMMETRIC LDD STRUCTURE AND FABRICATION METHOD THEREOF

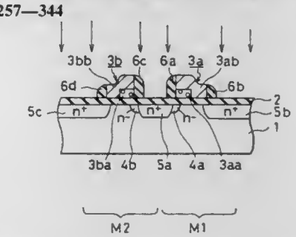
Kazuyuki Mizushima, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Continuation of Ser. No. 521,849, Aug. 31, 1995, abandoned. This application Nov. 3, 1997, Ser. No. 962,807

Claims priority, application Japan, Sep. 1, 1994, 6-232283

Int. Cl.[6] H01L *29/76;29/94*

U.S. Cl. 257—344 **11 Claims**



1. An MOS semiconductor device containing an MOSFET, said device comprising:

a semiconductor substrate of a first conductivity type;

a first heavily doped region of a second conductivity type opposite to said first conductivity type, said first heavily doped region being formed in a surface area of said substrate;

a lightly doped region of said second conductivity type formed in said surface area of said substrate, said lightly doped region being adjacent to said first heavily doped region; said first heavily doped region and said lightly doped region acting as a drain region of said MOSFET;

a second heavily doped region of said second conductivity type formed in said surface area of said substrate apart from said first heavily doped region and said lightly doped region;

said second heavily doped region acting as a source region of said MOSFET;

a channel region being formed between a source-side end of said lightly doped region and a drain-side end of said second heavily doped region;

said first heavily doped region, said second heavily doped region and said lightly doped region constituting an asymmetric LDD structure;

a gate insulator film formed on said surface area of said substrate to cover said first heavily doped region, said second heavily doped region and said lightly doped region;

a gate electrode formed on said gate insulator film to be positioned over said channel region, said gate electrode being composed of a plurality of parts;

a first part of said plurality of parts having a drain-side end positioned over said lightly doped region and a source-side end positioned over said channel region not to extend to said second heavily doped region; and

a second part of said plurality of parts being formed on and in contact with said first part and said gate insulator film.

5,828,105

Patent Not Issued For This Number

5,828,106

ESD TOLERATED SOI DEVICE

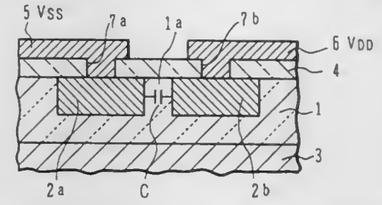
Noriaki Sato, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 305,065, Sep. 13, 1994, abandoned. This application Aug. 20, 1997, Ser. No. 915,140

Claims priority, application Germany, Sep. 20, 1993, 5233951

Int. Cl.[6] H01L *27/01*

U.S. Cl. 257—350 **12 Claims**



1. A semiconductor-on-insulator (SOI) type semiconductor device comprising:

a support substrate having a top insulating layer, the insulating layer having a first surface;

semiconductor regions embedded in said insulating layer, and each having a second surface which forms a copolanar surface with said first surface;

a pair of voltage supply lines formed on said copolanar surface;

a plurality of active semiconductor regions among said semiconductor regions, constituting transistors of an integrated circuitry;

a pair of low resistivity semiconductor regions among said semiconductor regions, connected with said pair of voltage supply lines, disposed at a same level and exposed at said coplanar surface, and dielectrically isolated from each other; and

a dielectric region formed of said insulating layer, disposed between said pair of low resistivity semiconductor regions;

wherein said pair of low resistivity semiconductor regions solely form a capacitor and do not constitute said integrated circuitry.

5,828,107

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE

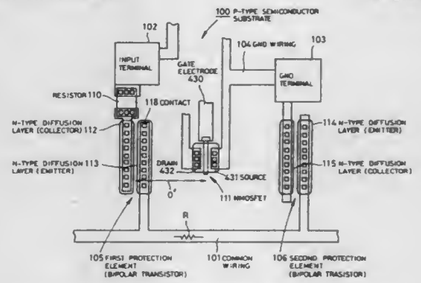
Kaoru Narita, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 8, 1996, Ser. No. 748,495

Claims priority, application Japan, Nov. 15, 1995, 7-296550

Int. Cl.[6] H01L *23/60*

U.S. Cl. 257—363 **10 Claims**



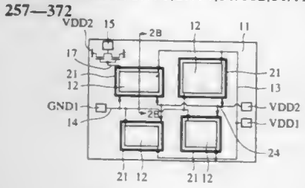
1. A semiconductor integrated circuit device comprising:

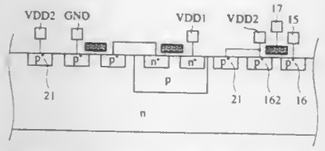
an internal circuit formed on a semiconductor substrate;

an signal terminal for supplying an input/output signal of said internal circuit;

a power source supply terminal for supplying a power source for said internal circuit;
a common wiring;
a first protection element provided between said signal terminal and said common wiring for providing prevention of electrostatic break down;
a second protection element provided between said power supply terminal and said common wiring for providing prevention of electrostatic break down; and
a resistor element to be inserted in one of between the signal terminal and the first protection element and between said power supply terminal and said second protection element.

5,828,108
SEMICONDUCTOR INTEGRATED CIRCUIT SUPPRESSING NOISES DUE TO SHORT-CIRCUIT/SUBSTRATE CURRENTS
Kenji Toyoda, Kanagawaken, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 9, 1996, Ser. No. 728,501
Claims priority, application Japan, Oct. 11, 1995, 7-262634
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—372 **22 Claims**

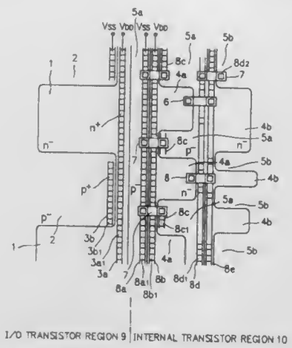




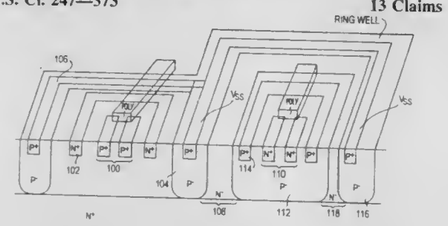
1. A semiconductor integrated circuit comprising:
a semiconductor substrate;
at least one macrocell, each macrocell including CMOS elements formed on the substrate; and
means for absorbing short-circuit current produced by the CMOS elements, the means formed on the substrate and including a high-impurity-concentration diffused region formed at the surface of the substrate and at least around one of the macrocells.

5,828,109
SEMI-CONDUCTOR INTEGRATED CIRCUIT DEVICE
Hitoshi Okamoto, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Mar. 27, 1997, Ser. No. 827,087
Int. Cl.[6] H01L *29/06;29/78*
U.S. Cl. 257—372 **14 Claims**

1. A semi-conductor integrated circuit device comprising:
a plurality of first low concentration impurity diffusion layer areas of a first conduction type;
a second low concentration impurity diffusion layer of a second complementary conduction type surrounding said first low concentration impurity diffusion layer areas such that said first low concentration impurity diffusion layer areas form islands within said second low concentration impurity diffusion layer;
a first transistor configuration group comprising a plurality of first transistors scattered within said plurality of first low concentration impurity diffusion layer areas, wherein each of said first transistors includes a high concentration impurity diffusion layer area of said second conduction type within one of said plurality of first low concentration impurity diffusion layer areas;
a second transistor configuration group comprising a plurality of second transistors that are scattered within said second low concentration impurity diffusion layer, wherein each of said second transistors includes a high concentration impurity diffusion layer area of said first conduction type; and
an extension means for connecting at least two of said plurality of low-concentration impurity diffusion layer areas whereby an observed area of low concentration diffusion is enlarged.

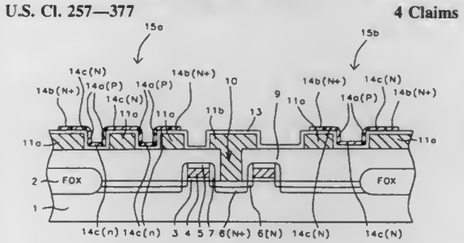


5,828,110
LATCHUP-PROOF I/O CIRCUIT IMPLEMENTATION
Donald L. Wollesen, Saratoga, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.
Continuation of Ser. No. 462,460, Jun. 5, 1995, abandoned. This application Dec. 18, 1996, Ser. No. 769,065
Int. Cl.[6] H01L *29/772;27/105*
U.S. Cl. 247—373 **13 Claims**



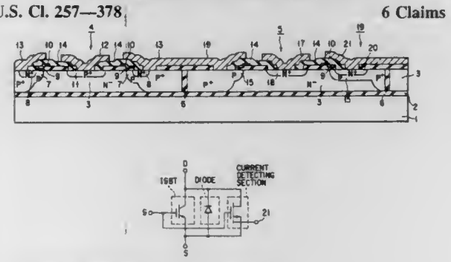
1. A latchup reducing input/output (I/O) arrangement for an integrated circuit chip having a plurality of devices including an active device on a common substrate, the arrangement comprising:
an active device on the substrate and connected to a bond pad, the active device residing in a region of a first conductivity type;
a space region of a second conductivity type opposite to the first conductivity type on the substrate, the space region surrounding the active device; and
a ring well on the substrate, the ring well of the first conductivity type, the ring well surrounding and electrically isolated from the region in which the active device resides by the space region and separating the active device from each of the other ones of the plurality of devices and acting as a collector to prevent active device triggering of latchup of the devices outside the ring well.

5,828,111
INCREASE RESISTANCE OF A POLYSILICON LOAD RESISTOR, IN AN SRAM CELL
Jenn Ming Huang, Hsin-Chu, and Yi-Miaw Lin, Taipei, both of Taiwan, assignors to Taiwan Semiconductor Manufacturing Company, Ltd., Hsin-Chu, Taiwan
Division of Ser. No. 775,072, Dec. 27, 1996, Pat. No. 5,721,166. This application Dec. 4, 1997, Ser. No. 984,839
Int. Cl.[6] H01L *29/76;29/94*
U.S. Cl. 257—377 **4 Claims**



1. A polysilicon load resistor structure, for an SRAM cell, traversing an underlying raised grid topography, and overlying a MOSFET device, comprised of:
a smooth, first interlevel dielectric layer, overlying said MOSFET device;
a contact hole in said first interlevel dielectric layer, filled with a polysilicon contact structure, with a polysilicon contact structure, contacting a source region, of a heavily doped source/drain region of said MOSFET device;
a raised grid topography, comprised of a series of polysilicon mesas on said first dielectric layer;
a second interlevel dielectric layer on said raised grid topography;
a first polysilicon load resistor, on a first portion of said second interlevel dielectric layer, traversing the topography created by the underlying, said raised grid topography, and comprised of a series of back to back diodes in said polysilicon load resistor; and
a second polysilicon load resistor, on a second portion of said second interlevel dielectric layer, traversing the topography created by the underlying, said raised grid topography, and comprised of a set of back to back diodes, in said polysilicon load resistor.

5,828,112
SEMICONDUCTOR DEVICE INCORPORATING AN OUTPUT ELEMENT HAVING A CURRENT-DETECTING SECTION
Yoshihiro Yamaguchi, Urawa, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Sep. 17, 1996, Ser. No. 715,093
Claims priority, application Japan, Sep. 18, 1995, 7-238333
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—378 **6 Claims**

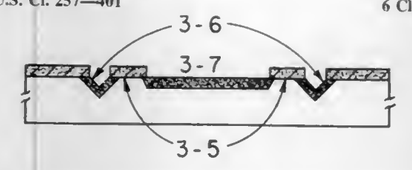

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5,828,114

METHOD FOR THE PREVENTION OF MISFIT DISLOCATION IN SILICON WAFER AND SILICON WAFER STRUCTURE MANUFACTURED THEREBY

Choong Ki Kim, Seoul; Chul Hi Han, and Ho Jun Lee, both of Daejeon, all of Rep. of Korea, assignors to Korea Advanced Institute of Science and Technology, Daejeon, Rep. of Korea

Continuation of Ser. No. 383,919, Feb. 6, 1995, abandoned.
This application Feb. 27, 1997, Ser. No. 807,825
Claims priority, application Rep. of Korea, Feb. 7, 1994, 1994-2223
Int. Cl.[6] H01L *29/76;29/94;31/062;31/113*
U.S. Cl. 257—401 6 Claims



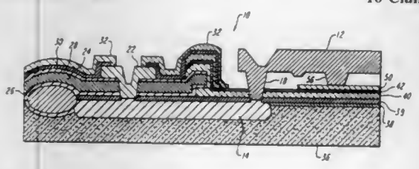
1. An edged silicon wafer structure that inhibits misfit dislocation propagation, comprising:
a silicon oxide mask formed on the silicon wafer, which is a single rectangular ring-shape;
an impurity-blocked region formed under the silicon oxide in the silicon wafer, which is a single rectangular ring-shape;
an outer impurity-injected region enclosing the impurity-blocked region which includes the edge of the wafer; and
an inner impurity-injected region formed in the silicon wafer, enclosed by the impurity-blocked region and the outer impurity-injected region to establish an enclosed portion of the silicon wafer; and
whereby the misfit dislocation propagation is inhibited from the edge of the silicon wafer into the enclosed portion.

5,828,115

MICROMACHINED DEVICE WITH GROUND PLANE UNDER SENSOR

Theresa A. Core, North Andover, Mass. assignor to Analog Devices, Inc., Norwood, Mass.

Continuation of Ser. No. 486,894, Jun. 7, 1995, Pat. No. 5,578,224. This application Nov. 22, 1996, Ser. No. 755,295
Int. Cl.[6] H01L *29/82*
U.S. Cl. 257—415 16 Claims



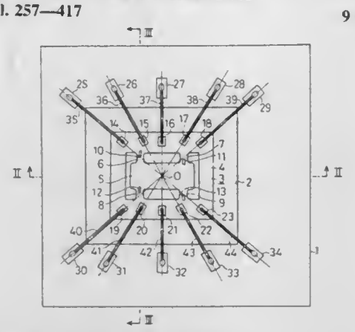
1. A micromachined device comprising:
a substrate;
a first diffused region formed in the substrate;
a dielectric layer formed over the substrate;
a conductive layer formed on the dielectric layer; and
a body including a mass suspended over the substrate and lying in a plane parallel to a surface of the substrate, a first anchor extending to the diffused region, and a second anchor extending to the conductive layer, each of the first and second anchors extending generally perpendicular to the plane.

5,828,116

SEMICONDUCTOR DEVICE WITH BONDED WIRES

Kenichi Ao, Tokai, Japan, assignor to Denso Corporation, Kariya, Japan

Filed Jan. 21, 1997, Ser. No. 786,764
Claims priority, application Japan, Jan. 22, 1996, 8-008678
Int. Cl.[6] H01L *29/82*
U.S. Cl. 257—417 9 Claims



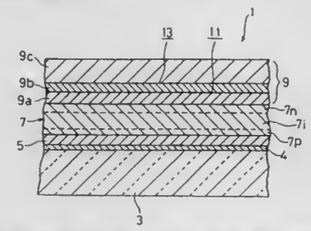
1. A semiconductor device comprising:
a substrate;
a semiconductor chip having bonding pads thereon, the semiconductor chip being mounted on the substrate with an adhesive; and
wires bonded to the bonding pads, each wire having a bonded portion that has a shape elongated substantially along a line extending radially from a center of the semiconductor chip.

5,828,117

THIN-FILM SOLAR CELL

Masataka Kondo, Kobe; Katsuhiko Hayashi, Otsu; Atsuo Ishikawa, Otsu; Shinichiro Kurata, Otsu, and Hideo Yamagishi, Kyoto, all of Japan, assignors to Kanegafuchi Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 647,893, Jun. 4, 1996, abandoned.
This application May 21, 1997, Ser. No. 859,687
Claims priority, application Japan, Oct. 6, 1994, 6-242508; Oct. 6, 1994, 6-242509; Sep. 22, 1995, 7-244849
Int. Cl.[5] H01L *31/075;31/105;31/117*
U.S. Cl. 257—458 6 Claims



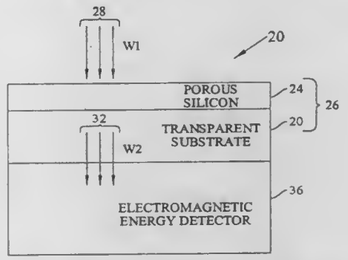
1. A thin-film solar cell including a transparent electrode layer, a thin-film semiconductor layer, and a back surface electrode layer which are laid in order on an insulative transparent substrate and comprising:
a back surface electrode layer comprising a layered body comprising a first transparent conductive metal compound layer having a smaller refractive index than a semiconductor that constitutes the thin-film semiconductor layer; a second transparent conductive metal compound layer; and a metal layer,
wherein the components of adjacent layers are mixed with each other around at least one of the boundaries between the first transparent conductive metal compound layer and the second transparent conductive metal compound layer or between the second transparent conductive metal compound layer and the metal layer in a continuous transition from 100% material of one layer to 100% material of the next layer near the boundaries.

5,828,118

SYSTEM WHICH USES POROUS SILICON FOR DOWN CONVERTING ELECTROMAGNETIC ENERGY TO AN ENERGY LEVEL WITHIN THE BANDPASS OF AN ELECTROMAGNETIC ENERGY DETECTOR

Stephen D. Russell, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Continuation-in-part of Ser. No. 118,900, Sep. 9, 1993, abandoned. This application Mar. 6, 1997, Ser. No. 812,680
Int. Cl.[6] H01L *31/00;29/06*
U.S. Cl. 257—466 17 Claims



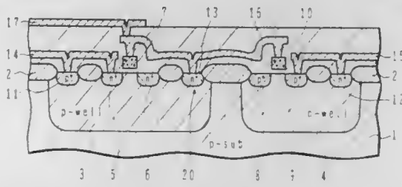
1. An electromagnetic energy detector system using porous silicon for down converting electromagnetic energy, comprising:
a transparent substrate:
a porous silicon layer formed on said substrate for down converting electromagnetic energy characterized by a first wavelength W1 to electromagnetic energy characterized by a second wavelength W2, where W2>W1; and
an electromagnetic detector for detecting said electromagnetic energy characterized by said second wavelength.

5,828,119

MOS LSI WITH PROJECTION STRUCTURE

Masaki Katsube, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 538,855, Oct. 4, 1995, abandoned. This application Nov. 21, 1997, Ser. No. 976,006
Claims priority, application Japan, Oct. 6, 1994, 6-243141
Int. Cl.[6] H01L *27/08*
U.S. Cl. 257—491 13 Claims



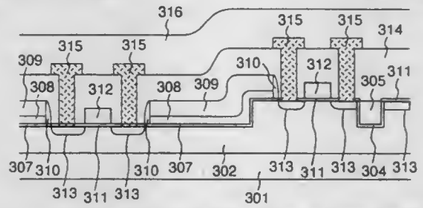
1. A semiconductor device comprising:
a semiconductor substrate of a first conductivity type;
a well formed in a surface of said semiconductor substrate, said well being of a second conductivity type opposite to the first conductivity type;
a first MOS transistor formed in a surface of a first conductivity type region of said semiconductor substrate, said first MOS transistor having a gate electrode, with a gate insulating film being interposed under the gate electrode;
a second MOS transistor formed in a surface of said well, said second MOS transistor having a gate electrode, with a gate insulating film being interposed under the gate electrode;
a wiring connected to the gate electrodes of said first and second MOS transistors; and
a protection diode with a p-n junction formed in the first conductivity type region of said semiconductor substrate, and comprising a second conductivity type region electrically connected to said wiring and the first conductivity type region of said semiconductor substrate,
wherein said wiring and said well are not connected electrically directly nor through a diode, and
wherein a total area of said wiring is a 500-fold or more of a sum of a gate electrode area of said first MOS transistor and a gate electrode area of said second MOS transistor respectively disposed on the gate insulating film.

5,828,120

SEMICONDUCTOR DEVICE AND PRODUCTION METHOD THEREOF

Akio Ishikawa, Tokyo, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Feb. 21, 1997, Ser. No. 804,413
Claims priority, application Japan, Feb. 23, 1996, 8-061867
Int. Cl.[6] H01L *29/00*
U.S. Cl. 257—499 26 Claims



1. A semiconductor device equipped on the same substrate thereof with a first area isolated for device isolation by a buried insulating film and with a second area isolated for device isolation by a field shield device isolation structure, the thickness of said substrate inside said second area being smaller than the thickness of said substrate inside said first area, wherein a part of said field shield device isolation structure is continuously superposed on and with said first area.

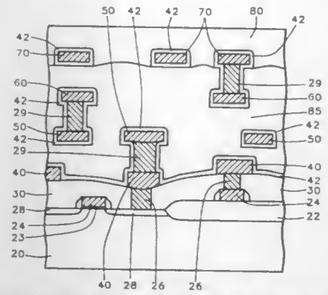
5,828,121

MULTI-LEVEL CONDUCTION STRUCTURE FOR VLSI CIRCUITS

Water Lur, Taipei, and Jiunn Yuan Wu, Don-Lio, both of Taiwan, assignors to United Microelectronics Corporation, Taichung, Taiwan

Continuation of Ser. No. 427,209, Apr. 24, 1995, abandoned, which is a division of Ser. No. 275,268, Jul. 15, 1994, Pat. No. 5,413,962. This application Jun. 27, 1996, Ser. No. 668,518
Int. Cl.[6] H01L *23/485;23/535;23/532;29/41*
U.S. Cl. 257—522 14 Claims

1. A multi-level conductor structure for VLSI circuits, comprising:
a silicon substrate with circuits formed therein;
a base dielectric layer formed on said silicon substrate;
layers of electrodes having a first layer of electrodes and higher layers of electrodes;
contact studs formed in said base dielectric layer forming electrical connections between said circuits in said silicon substrate and said first layer of electrodes;
a multi-level structure comprising said layers of electrodes and inter-level studs wherein said inter-level studs form electrical connections between said layers of electrodes;



a thin envelope oxide coating surrounding said electrodes and said inter-level studs; and

a layer of passivation material with poor step coverage entirely covering said multi-level structure including said layers of electrodes and said air dielectric between said layers of electrodes.

5,828,122

SEMICONDUCTOR BODY WITH A SUBSTRATE GLUED TO A SUPPORT BODY

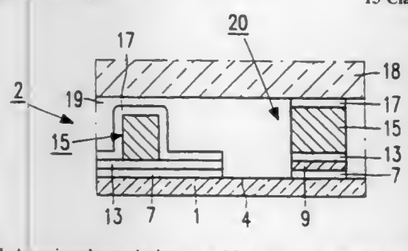
Henricus G. R. Maas; Ronald Dekker; Theodorus M. Michielsen, and Wilhelmus T. A. J. Van Den Einden, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 12, 1997, Ser. No. 815,253

Claims priority, application European Pat. Off., Mar. 12, 1996, 96200673

Int. Cl.[6] H01L *29/00*

U.S. Cl. 257—531 **13 Claims**



1. A semiconductor device comprising a substrate having a plane surface on which a layer structure is formed in a number of layers, a side of the substrate on which the layer structure is formed being fastened to a plane support body by means of a layer of glue encompassing spacer elements, wherein the spacer elements are fastened on the surface of the substrate and all have an equal height measured from the substrate surface, and wherein the spacer elements comprise a stack comprising the layers in which the layer structure is formed.

5,828,123

CHIP RESISTOR AND METHOD FOR PRODUCING SAME

Tatsuki Hirano, Zama, Japan, assignor to Kamaya Electric Co., Ltd., Kanagawa-Ken, Japan

Filed Dec. 18, 1996, Ser. No. 769,155

Claims priority, application Japan, Dec. 21, 1995, 7-333755

Int. Cl.[6] H101L *29/00;49/02*

U.S. Cl. 257—536 **3 Claims**

1. A chip resistor comprising an insulated substrate, a pair of top electrodes disposed on said insulated substrate, a resistor film bridging said pair of top electrodes, a protective film coating said resistor film, and an end electrode and a plated electrode film on each of said pair of top electrodes, wherein each of said top electrodes comprises:

a first electrode section formed of an Ag/Pd glaze material having Ag content of not more than 85% by weight and Pd content of not less than 15% by weight in the Ag/Pd mixing ratio connected to said resistor film; and

a second electrode section not in direct contact with said resistor film and arranged connected to and along said first electrode section and extending in parallel with a portion of said first electrode section between said resistor film and said end electrode, said second electrode section having a sheet resistivity lower than the sheet resistivity of said first electrode section.

5,828,124

LOW-NOISE BIPOLAR TRANSISTOR

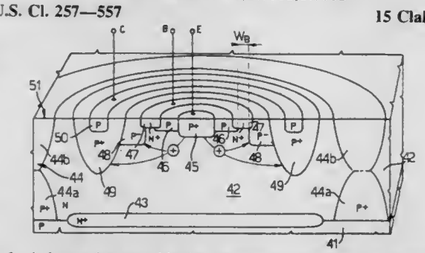
Flavio Villa, Milan, Italy, assignor to SGS-Thomson Microelectronics S.r.l., Agrate Brianza, Italy

Filed Sep. 26, 1994, Ser. No. 312,472

Claims priority, application European Pat. Off., Sep. 27, 1993, 93830393

Int. Cl.[6] H01L *29/00;27/082;27/102*

U.S. Cl. 257—557 **15 Claims**



1. A low-noise pnp bipolar transistor comprising an emitter region, a base region, a collector region integrated in a semiconductor material layer defining a surface portion and a deeper bulk portion that is deeper than the emitter region; wherein, the transistor further comprises a cutoff region having the same doping type as the emitter region laterally surrounding the emitter region in the surface portion for operating the transistor predominantly in the bulk portion; wherein the base region comprises an N-type annular region laterally surrounding the emitter region and arranged in the surface portion; the semiconductor material layer being N-type, and presenting a first doping level; the N-type annular region presenting a second doping level higher than the first doping level; and wherein a base contact is disposed on the N-type annular region.

5,828,125

ULTRA-HIGH DENSITY WARP-RESISTANT MEMORY MODULE

Carmen D. Burns, Austin, Tex., assignor to Staktek Corporation, Austin, Tex.

Continuation of Ser. No. 473,593, Jun. 7, 1995, Pat. No. 5,644,161, which is a continuation-in-part of Ser. No. 280,968, Jul. 27, 1994, Pat. No. 5,581,121, which is a division of Ser. No. 37,830, Mar. 29, 1993, Pat. No. 5,369,056. This application Dec. 2, 1996, Ser. No. 758,839

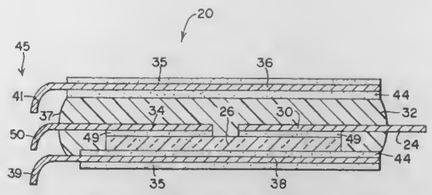
Int. Cl.[6] B44F *1/22;* **C23F** *1/02*

U.S. Cl. 257—668 **4 Claims**

1. An ultra-high density memory module of the type having in-line leads, comprising:

a plurality of high density memory integrated circuit packages, wherein each package comprises:

an integrated circuit die;



a substantially planar internal lead frame mounted to at least a portion of said die, said internal lead frame having a plurality of electrical conductors electrically connected to said die;

a protective casing covering said die and said internal lead frame, wherein a plurality of said conductors extend from said internal lead frame, as leads, through a first edge of said casing;

a thin, substantially planar external thermally conductive element mounted to a major exterior surface of said package;

wherein at least one of said packages includes a thin, warp resistant layer mounted to a major exterior surface of said package opposite said external thermally conductive element;

wherein said packages are vertically oriented and mounted to one another to form said module.

5,828,126

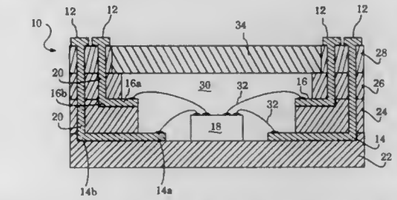
CHIP ON BOARD PACKAGE WITH TOP AND BOTTOM TERMINALS

Stephen J. Thomas, San Jose, Calif., assignor to VLSI Technology, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 900,211, Jun. 17, 1992, abandoned. This application Jun. 6, 1994, Ser. No. 254,143

Int. Cl.[6] H01L *23/48;23/04;23/053;* **H05K** *1/11*

U.S. Cl. 257—695 **7 Claims**



1. A package for containing an integrated circuit die within a central cavity, said package comprising a laminated structure including:

(a) a first nonconductive rigid substrate having a pattern of first conductive bond fingers embedded thereupon, said first conductive bond fingers having one end of said first conductive bond fingers exposed within said central cavity for connection to a semiconductor die;

(b) a second nonconductive rigid substrate positioned above the pattern of first conductive bond fingers of the first nonconductive rigid substrate; said second nonconductive rigid substrate having a pattern of second conductive bond fingers embedded thereupon, said second conductive bond fingers having one end of said second conductive bond fingers exposed within said central cavity for connection to a semiconductor die;

(c) a third nonconductive rigid substrate positioned above the pattern of second conductive bond fingers of the second nonconductive rigid substrate:

(d) a plurality of exposed package terminals positioned on both an upper surface and on a lower surface of the package once assembly of the package is complete; and

(e) a plurality of electrically conductive medial leads which are substantially perpendicular to the first conductive bond fingers and the second conductive bond fingers; wherein each of said medial leads electrically connects a first conductive bond finger or a second conductive bond finger to an exposed package terminal.

5,828,127

SEMICONDUCTOR SUBSTATE WITH IMPROVED THERMAL CONDUCTIVITY

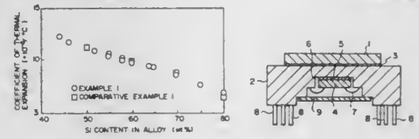
Shin-ichi Yamagata; Kazuya Kamitake, and Yoshishige Takano, all of Itami, Japan, assignors to Sumitomo Electric Industries, Ltd., Japan

Filed Nov. 14, 1995, Ser. No. 557,552

Claims priority, application Japan, Nov. 15, 1994, 6-280726; Apr. 19, 1995, 7-093302; Jun. 7, 1995, 7-163139; Oct. 4, 1995, 7-284483

Int. Cl.[6] H01L *23/36;23/14;23/373;23/28*

U.S. Cl. 257—706 **60 Claims**



1. A material for a semiconductor substrate having a thermal conductivity of 0.28 to 0.33 cal/cm.sec.° C., a coefficient of thermal expansion of 6.6 to 11.3×10^{-6}/° C. and a density of 2.40 to 2.5 g/cm^3, said material comprising an aluminum-silicon alloy containing from 50% to 80% by weight of silicon.

5,828,128

SEMICONDUCTOR DEVICE HAVING A BUMP WHICH IS INSPECTED FROM OUTSIDE AND A CIRCUIT BOARD USED WITH SUCH A SEMICONDUCTOR DEVICE

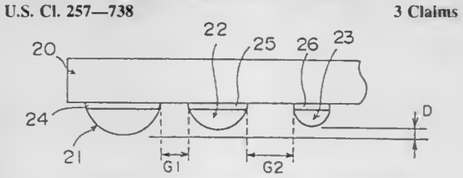
Yutaka Higashiguchi; Toshio Kumai; Yasuhiro Tesbima; Mamoru Niishiro; Yasushi Kobayashi; Yukio Sekiya; Shuzo Igarashi, and Yasuhiro Ichihara, all of Kawasaki, Japan, assignors to Fujitsu, Ltd., Kawasaki, Japan

Filed Feb. 21, 1996, Ser. No. 604,429

Claims priority, application Japan, Aug. 1, 1995, 7-196482

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—738 **3 Claims**



I. A semiconductor device mountable to a wiring board, comprising:

a package having a bottom surface which faces said wiring board when said semiconductor device is mounted on said wiring board,

a first set of soldering bumps provided on said bottom surface of said package for making electrical contact with said wiring board;

a second set of soldering bumps provided on said bottom surface of said package for making electrical contact with said wiring board, the second set of soldering bumps intentionally differing from the first set of soldering bumps in that the second set of soldering bumps has a different size than the first set of soldering bumps, the second set of soldering bumps being located at a position where the second set of soldering bumps is observable when said semiconductor device is mounted on said wiring board, and

a third set of soldering bumps, said second set of soldering bumps being larger than said first and third sets of soldering bumps, said third set of soldering bumps being smaller than said first set of bumps.

5,828,129

SEMICONDUCTOR MEMORY DEVICE INCLUDING A CAPACITOR HAVING A TOP PORTION WHICH IS A DIFFUSION BARRIER

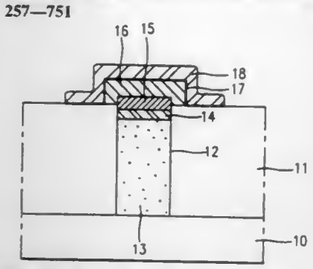
Jae Sung Roh, Kwacheon-si, Rep. of Korea, assignor to LG Semicon Co., Ltd., Chungcheongbuk-Do, Rep. of Korea

Filed Jan. 23, 1997, Ser. No. 788,105

Claims priority, application Rep. of Korea, Sep. 25, 1996, 42479/1996

Int. Cl.[6] H01L *23/48;23/52;29/40;27/108*

U.S. Cl. 257—751 13 Claims



1. A semiconductor memory device comprising:
a semiconductor substrate;
an insulating film over the semiconductor substrate and having a contact hole;
a conductive film on the semiconductor substrate through the contact hole, the conductive film having an upper portion acting as a diffusion barrier, the diffusion barrier having a portion within the contact hole and a portion extending out from the contact hole and having a width the same as the contact hole, the conductive film including a first conductive material and a second conductive material;
a first electrode over the conductive film;
a dielectric film over the first electrode; and
a second electrode over the dielectric film.

5,828,130

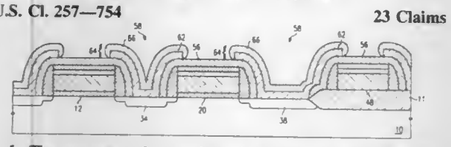
METHOD OF FORMING A LANDING PAD STRUCTURE IN AN INTEGRATED CIRCUIT

Robert Otis Miller, and Gregory Clifford Smith, both of Carrollton, Tex., assignors to STMicroelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 577,565, Dec. 22, 1995, Pat. No. 5,719,071. This application Dec. 3, 1996, Ser. No. 758,340

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—754 23 Claims



1. The structure of a portion of a semiconductor integrated circuit formed at a surface of a body, comprising:
an active region in a substrate;
a doped polysilicon landing pad overlying a portion of the active region and electrically contacting the active region, a portion of the doped polysilicon landing pad separated from an adjacent conductive element by a distance of between approximately 1000 and 5000 Å; and
selectively deposited tungsten overlying the polysilicon to form a composite polysilicon/tungsten landing pad.

5,828,131

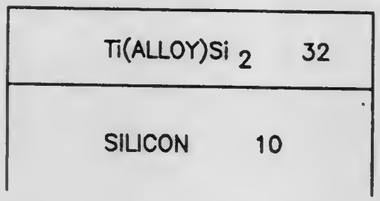
LOW TEMPERATURE FORMATION OF LOW RESISTIVITY TITANIUM SILICIDE

Cyril Cabral, Jr., Ossining; Lawrence Alfred Clevenger, Lagrangeville; Francois Max d'Heurle, Ossining; James McKell Edwin Harper, Yorktown Heights, all of N.Y.; Randy William Mann, Jericho, Vt.; Glen Lester Miles, Essex Junction, Vt.; James Spiros Nakos, Essex, Vt.; Ronnen Andrew Roy, Briarcliff Manor, and Katherine L. Saenger, Ossining, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 145,921, Oct. 29, 1993, Pat. No. 5,510,295. This application Jan. 16, 1996, Ser. No. 586,046

Int. Cl.[6] H01L *29/45*

U.S. Cl. 257—757 6 Claims



1. A semiconductor device having a titanium silicide layer comprising:
a silicon layer; and
a layer of titanium silicide over said silicon layer, wherein said layer of titanium silicide comprises substantially C54 phase titanium silicide and from 1 to 20 atomic percent of a second refractory metal, and wherein said titanium silicide layer has a thickness of between 10 and 200 nm.

5,828,132

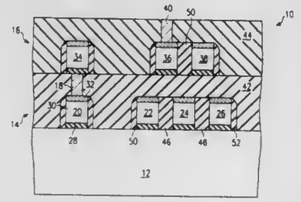
SEMICONDUCTOR DEVICE HAVING PERFLUORINATED AND NON-FLUORINATED PARYLENE INTERMETAL DIELECTRIC

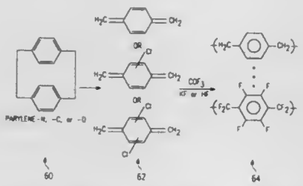
Mona Eissa, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 21, 1997, Ser. No. 821,875

Int. Cl.[6] H01L *23/48*

U.S. Cl. 257—759 6 Claims





1. A dielectric material comprising a copolymer of perfluorinated parylene and non-fluorinated parylene.
2. A semiconductor device, comprising:

first and second elongated metal conductors disposed adjacent one another; and
an elongated intermetal dielectric body disposed between the first and second conductors and comprising a copolymer of per-fluorinated and non-fluorinated parylene.

5,828,133

SUPPORT FOR AN ELECTROCHEMICAL DEPOSIT

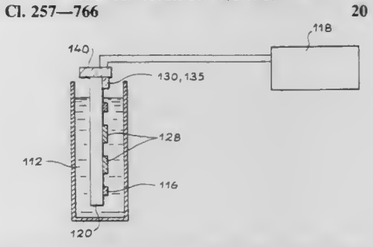
Patrice Caillat, Echirolles, and Claude Massit, St Ismier, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 5, 1996, Ser. No. 760,800

Claims priority, application Japan, Dec. 18, 1995, 95 14972

Int. Cl.[6] H01L *23/48;23/52;29/40*

U.S. Cl. 257—766 20 Claims



1. A support for an electrochemical deposit, comprising:
a substrate, including,
a plurality of first conductive surfaces able to constitute electrodes,
at least one second conductive surface able to constitute a counter electrode, and
a means for connecting said first conductive surfaces and said at least one second conductive surface to a voltage source;
wherein said at least one second conductive surface comprises a conductive material support surrounding at least a portion of said plurality of first conductive surfaces.

5,828,134

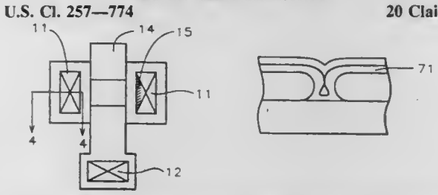
METALLIZATION TO IMPROVE ELECTROMIGRATION RESISTANCE

Water Lur, Taipei, and Jiun Yuan Wu, Dou-Lio, both of Taiwan, assignors to United Microelectronics Corporation, Taiwan, Taiwan

Continuation of Ser. No. 537,105, Sep. 29, 1995, abandoned, which is a division of Ser. No. 241,005, May 11, 1994, Pat. No. 5,464,794. This application Nov. 8, 1996, Ser. No. 746,436

Int. Cl.[6] H01L *23/48;23/52*

U.S. Cl. 257—774 20 Claims



1. An integrated circuit having a contact structure, the integrated circuit comprising:
a conductive region provided on or above a semiconductor substrate;
an insulating layer having first and second pairs of opposing walls that define an opening aligned with at least part of the conductive region so that the insulating layer extends above the conductive region, the first and second pairs of opposing walls having opposing top portions, opposing middle portions and opposing bottom portions, the opposing bottom portions adjacent a surface of the conductive region;
the first and second pairs of opposing walls defining an opening having a rectangular shape, with the first pair of the opposing walls spaced farther apart from one another than the second pair of opposing walls;
wherein the opposing top portions and opposing bottom portions of the first pair of opposing walls are farther apart from one another than the opposing middle portions; and
conductive material along the sides of the opposing walls within the opening and on the surface of the conductive region in the opening.

5,828,135

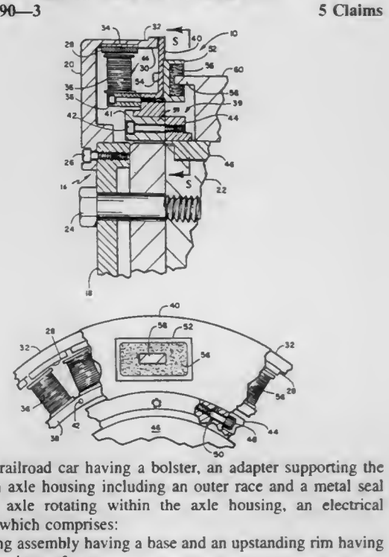
RAILROAD CAR WITH AXLE-MOUNTED ELECTRICAL GENERATOR

John Barrett, 7636 Miramar Rd. Suite 1400, San Diego, Calif. 92126

Continuation-in-part of Ser. No. 656,689, May 28, 1996. This application Sep. 13, 1996, Ser. No. 710,132

Int. Cl.[6] F01B *31/00;* F01K *3/00*

U.S. Cl. 290—3 5 Claims



1. In a railroad car having a bolster, an adapter supporting the bolster, an axle housing including an outer race and a metal seal cover, an axle rotating within the axle housing, an electrical generator which comprises:
a housing assembly having a base and an upstanding rim having an interior surface;
means for attaching the housing assembly to the railroad car axle for rotation therewith;
a plurality of spaced permanent magnets on the interior surface of the rim;
a coil mounting assembly with an attaching means for mounting to the axle housing, said coil mounting assembly rotating as said axle housing rotates;
a bearing means attached to the coil mounting assembly;
a stator carrying a plurality of coils positioned within the rim with the coils adjacent to the magnets;
wherein the stator is slidably connected to the bearing means, said stator held stationary with respect to the rotation of said coil mounting assembly.

5,828,136

COMBINED POWER SYSTEM USING A ROTATION SPEED AND TORQUE DETECTOR

Tai-Her Yang, No. 32 Lane 29 Talpin St., Si-Hu Town, Dzan-Hwa, Taiwan

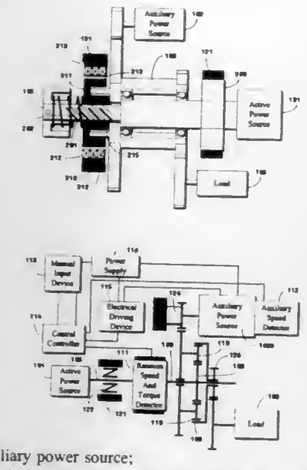
Filed Jul. 23, 1996, Ser. No. 681,448

Int. Cl.[6] F01C *13/00;* F01D *15/10*

U.S. Cl. 290—4 A 20 Claims

1. A combined power system, comprising:
an active power source arranged to supply power to a load;

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an auxiliary power source;

a transmission including means for transmitting power from said active power source and said auxiliary power source to said load;

a rotational speed and torque detector including means for detecting (i) a rotational speed of a power input from the active power source to the transmission, and (ii) a torque difference between a rotational torque of said power input and a rotational torque of an output of said transmission to said load; and

a controller including means for controlling said auxiliary power source in response to detection by said detector of said rotational speed and said torque difference.

5,828,137

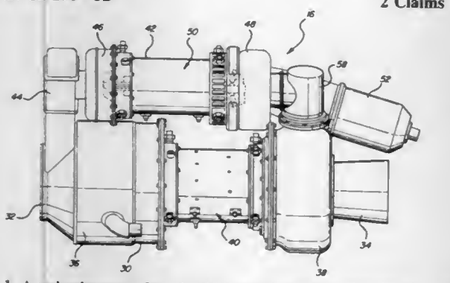
TURBOALTERNATOR FOR HYBRID MOTOR VEHICLE

Brian J. Selfors, Boston, and Arnold M. Heltmann, Swampscott, both of Mass., assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 642,085, May 2, 1996. This application Jul. 11, 1996, Ser. No. 678,307

Int. Cl.[6] F01D *13/00*

U.S. Cl. 290—52 **2 Claims**



1. A turboalternator for a hybrid motor vehicle comprising:

a low speed portion having a first compressor, a first turbine. a first axial shaft and integral first rotor, said first axial shaft interconnecting said first compressor and said first turbine, said low speed portion further having a first stator positioned adjacent said first rotor so as to generate electrical power;

a high speed portion having a second compressor, a second turbine. a second axial shaft and integral second rotor. said second axial shaft interconnecting said second compressor and said second turbine, said high speed portion further having a second stator positioned adjacent said second rotor so as to generate electrical power, said second axial shaft being generally parallel to and independent from said first axial shaft; and

an intercooler interconnecting said first compressor and said second compressor.

5,828,138

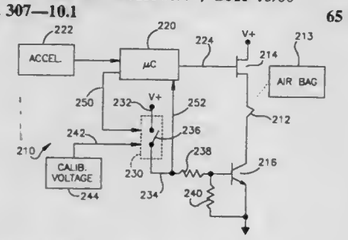
ACCELERATION SWITCH

George William McIver, Redondo Beach, and Michael Dean Lammert, Manhattan Beach, both of Calif., assignors to TRW Inc., Lyndhurst, Ohio

Filed Dec. 2, 1996, Ser. No. 756,948

Int. Cl.[6] H01H *35/14;* **G01P** *15/00*

U.S. Cl. 307—10.1 **65 Claims**



1. A switch adjustably responsive to an acceleration force, said switch comprising:

an inertial mass member ("IMM") relatively movable from a hold position to an actuated position, said member relatively moving when said switch is accelerated and being deflectable out of its hold position in response to said switch acceleration of sufficient magnitude,

electrical contacts, at least one of which is coupled to said IMM, for moving between closed and open positions when said IMM moves between said hold position and said actuated position,

hold means comprising at least one hold electrode to which a hold voltage may be applied for adjustably establishing an electrostatic field creating a restraining force urging the IMM into its hold position, said field and said restraining force having a magnitude functionally related to said hold voltage, and

means for applying a hold voltage to said hold electrode, and

wherein said IMM remains in said hold position when said switch is subjected to acceleration forces that are insufficient to overcome forces tending to restrain said IMM to said hold position, including the restraining force established by said electrostatic field, and deflects to said actuated position when said switch is subjected to acceleration forces that are sufficient to overcome said forces tending to restrain said IMM,

whereby the acceleration required to move relatively said IMM from said hold position to said actuated position may be adjusted by selecting the hold voltage applied to said hold means.

5,828,139

ELECTRICAL CIRCUIT FOR AN AUTOMOBILE

Benjamin Daniel Slater, 2211 E. Mohawk Rd., N. St. Paul, Minn. 55109

Filed Aug. 27, 1997, Ser. No. 917,970

Int. Cl.[6] B60Q *1/04*

U.S. Cl. 307—10.8 **2 Claims**

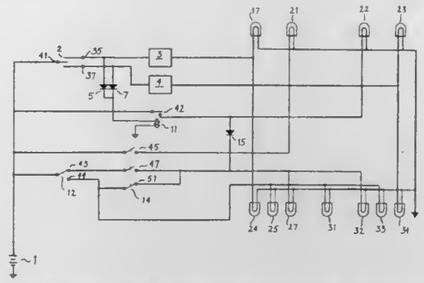
1. An electrical circuit for an automobile, said circuit comprising:

a battery;

a single-pole double-throw turn signal switch having a left turn position, a right turn position, and a center off position;

a first flasher and a second flasher;

a first diode and a second diode;



a single-pole single-throw relay having a normally open contact;

a third diode;

a single-pole double-throw brake switch having an off position and an on position;

a triple-pole single-throw parking light switch having a first normally open contact, a second normally open contact, and a normally closed contact;

front lights including a left turn light, a left parking light, a right parking light, and a right turn light;

rear lights including a left turn light, a left brake light, a left tail light, a middle brake light, a right tail light, a right brake light, and a right turn light;

and wiring connections between said components as follows:

said battery is connected through said turn signal switch and said flashers said front and rear turn lights;

said battery is connected through said relay to said parking lights;

said battery is connected through said turn signal switch, said first and second diodes, said relay, and said third diode to said tail lights;

said battery is connected through said parking light switch to said parking lights;

said battery is connected through said brake switch to said brake lights;

said battery is connected through said brake switch and said parking light switch to said tail lights.

5,828,140

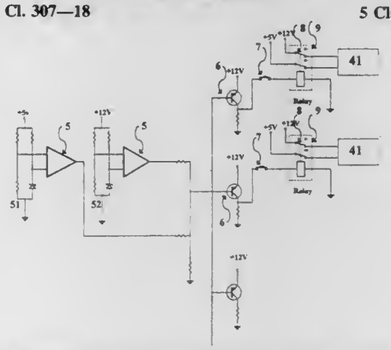
REDUNDANT POWER CONTROLLER

Steven Shih, 14, Alley 13, Lane 245, Pateh Rd., Sec 4, Teipei 105, Taiwan

Filed Nov. 3, 1995, Ser. No. 552,865

Int. Cl.[6] H02J *3/14*

U.S. Cl. 307—18 **5 Claims**



1. A redundant power controller used in a computer system that has a plurality of components including a Power supply and a plurality of accessaries and that is connected between the output of the power supply and an input to each of the plurality of accessaries for cutting off the power to an individual accessary without affecting the power supply to other system components, said power controller comprising:

a comparator circuit for detecting the input of the voltage of the power supply and for outputting a signal when the voltage is not within a predetermined range;

a relay switch individual to each accessary and comprised. of a normally closed mechanical switch connected between the power supply and the corresponding accessary and a relay that can oven said mechanical switch;

an electric switch individual to each accessary that is operated in response to said signal and which is connected between a relay power source and said relay; and

a mechanically operable switch that is normally closed and is connected in series between said electric switch and said relay;

whereby the accessaries can be individually deenergized by operating said mechanically operable switch and said electric switch can automatically deenergize said accessaries upon the generation of said signal.

5,828,141

APPARATUS FOR SWITCHING AN INDUCTIVE LOAD

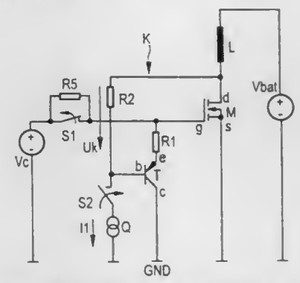
Ralf Foerster, Regensburg, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 2, 1997, Ser. No. 887,470

Claims priority, application Germany, Jul. 2, 1996, 196 26 630.0

Int. Cl.[6] H01H *47/00;* **H03K** *5/08*

U.S. Cl. 307—125 **5 Claims**



1. An apparatus for switching an inductive load, comprising:

an operating voltage source having a positive pole and a negative pole;

a first series circuit including a load to be switched and an electronic low-side MOSFET switch having a gate and a drain, said first series circuit connected between the positive pole and the negative pole of said operating voltage source;

a second series circuit including a control switch and a control voltage source, said second series circuit connected between the gate of said MOSFET switch and the negative pole of said operating voltage source, said control voltage source having a negative pole connected to the negative pole of said operating voltage source;

a first resistor connected parallel to said control switch; and

a clamping circuit including:

a second resistor having one terminal connected to the gate of said MOSFET switch and having another terminal;

a pnp transistor having an emitter connected to the other terminal of said second resistor, having a collector connected to the negative pole of said operating voltage source and having a base;

a constant-current source connected to the negative pole of said operating voltage source;

a further switch connected between said constant-current source and the base of said pnp transistor; and

a third resistor connected between the base of said pnp transistor and the drain of said MOSFET switch.

5,828,142

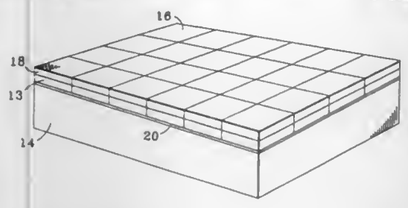
PLATEN FOR USE WITH LITHOGRAPHIC STAGES AND METHOD OF MAKING SAME

Craig R. Simpson, Danville, Vt., assignor to MRS Technology, Inc., Chelmsford, Mass.

Continuation of Ser. No. 560,393, Nov. 17, 1995, abandoned, which is a continuation-in-part of Ser. No. 316,739, Oct. 3, 1994, abandoned. This application Aug. 22, 1997, Ser. No. 918,704

Int. Cl.[6] H02K *41/02;15/02*

U.S. Cl. 310—12 25 Claims



1. A platen including:

a base;

tiles integral with said base and extending upwardly therefrom, said tiles being formed of powdered magnetic material, said powdered magnetic material being coated, each said tile being of uniform size and having a uniform array of teeth and having interstices between said teeth;

non-magnetic material filling said interstices; and

said teeth and said non-magnetic material defining a smooth, planar upper surface for said platen.

5,828,143

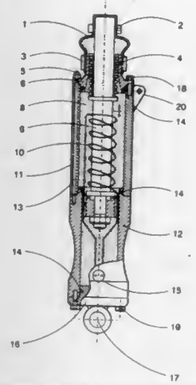
MAGNETOSTRICTIVE METHOD AND APPARATUS FOR PROPELLING AN OBJECT

Oleg Kotlyar, 4675 W. 3825 South, Salt Lake City, Utah 84120

Filed Sep. 22, 1997, Ser. No. 934,957

Int. Cl.[6] H01L *41/06*

U.S. Cl. 310—26 16 Claims



1. A magnetostrictive device for propelling an object through a medium, comprising:

a sealed housing having an internal sealed chamber, said internal sealed chamber having a rigid first end and an opposing second end comprising a flexible membrane;

means for attaching said housing to an object to be propelled through a medium;

a magnetostrictive rod having a longitudinal axis between opposite first and second ends, the first end of the magnetostrictive rod being removably attached to the rigid first end of the internal sealed chamber, the second end of the magnetostrictive rod being in contact with the flexible membrane, the magnetostrictive rod being comprised of a material capable of rapidly expanding longitudinally in response to the presence of a magnetic field and being further capable of rapidly contracting longitudinally in the absence of the magnetic field;

electrical means for applying a magnetic field pulses proximate to the magnetostrictive rod for magnetostrictive elongation along the longitudinal axis of the magnetostrictive rod, the elongation creating, at the second end of the magnetostrictive rod, a force sufficient to propel the object through the medium; and

electrical control means for controlling magnetic field pulse magnitude and frequency proximate to the magnetostrictive rod.

5,828,144

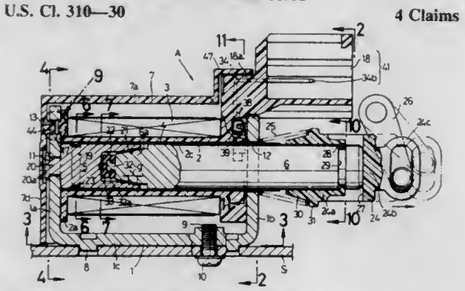
ELECTROMAGNETIC ACTUATOR

Masakazu Murai, Shibata, Japan, assignor to Keihin Corporation, Tokyo, Japan

Filed Jan. 13, 1997, Ser. No. 782,105

Int. Cl.[6] H02K *33/02*

U.S. Cl. 310—30 4 Claims



1. An electromagnetic actuator comprising a housing made of a magnetic material, a coil disposed in the housing, a stationary core surrounded by the coil and secured to the housing, a movable core, a return spring for biasing the movable core away from the stationary core, and a joint member coupled to an outer end of the movable core, wherein

said movable core is attracted to the stationary core upon excitation of the coil, and wherein

said joint member is made of a synthetic resin and has a cylindrical portion formed, thereon and coupled by press-fit to an outer peripheral surface of said movable core at an outer end of said movable core, said cylindrical portion having a locking claw integrally formed on said joint member and locked to the outer peripheral surface of said movable core, wherein said joint member has a flange formed on the cylindrical portion thereof for carrying a movable end of said return spring mounted around said movable core, and wherein said return spring is formed of a tapered coil spring, and is carried at a smaller-diameter end thereof on said housing and at a larger-diameter end thereof on said flange.

5,828,145

BICYCLE GENERATOR-CONTAINING HUB AND A LIGHTING APPARATUS USING THE HUB

Kazunori Nakamura, Sakai, Japan, assignor to Shimano, Inc., Osaka, Japan

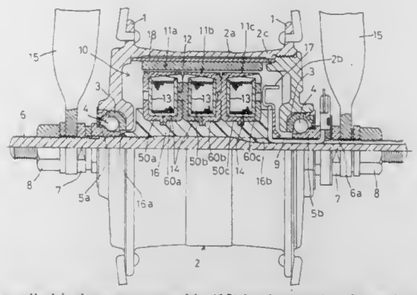
Filed Jan. 16, 1996, Ser. No. 586,380

Claims priority, application Japan, Jan. 18, 1995, 7-005787

Int. Cl.[6] H02K *7/00;1/22;* B60Q *1/00*

U.S. Cl. 310—67 A 9 Claims

1. In a bicycle generator-containing hub having a hub spindle, a hub body rotatably mounted on the hub spindle, and a generator disposed inside the hub body, said generator comprising:



a cylindrical magnet assembly (**12**) having north poles and south poles arranged alternately along an inner peripheral wall of said hub body; and

a plurality of generating coil units (**11***a*,**11***b*,**11***c*) arranged inside said cylindrical magnet assembly and positioned axially along said hub spindle, each of said generating coil units including:

a first core element and a second core element opposed to each other and positioned axially along said hub spindle, wherein said first core element has magnetic poles arranged at intervals in peripheral positions thereof and extending toward said second core element, and said second core element has magnetic poles arranged at intervals in peripheral positions thereof and extending toward said first core element; and

a generating coil disposed between said first and second core elements to be coaxial with said hub spindle;

wherein an adjacent pair of said generating coil units are arranged to have said second core element of one generating coil unit in contact with said first core element of the other generating coil unit, such that said magnetic poles of said first core element of said one generating coil unit and said magnetic poles of said second core element of said other generating coil unit are in corresponding positions circumferentially of said hub spindle, and that said magnetic poles of said second core element of said one generating coil unit and said magnetic poles of said first core element of said other generating coil unit are in corresponding positions circumferentially of said hub spindle.

5,828,146

APPARATUS FOR THE BIDIRECTIONAL TRANSFER OF INFORMATION

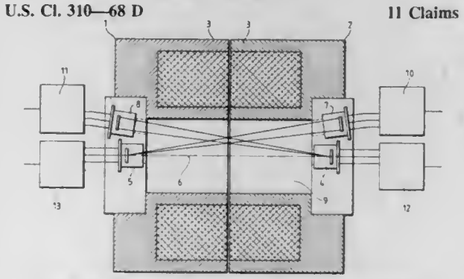
Gerhard Lorenz, Krefeld; Ernst Luhn, Haan, and Lothar Zell, Düsseldorf, all of Germany, assignors to BFI Betriebstechnik GmbH, Dusseldorff, Germany

Filed Aug. 11, 1995, Ser. No. 514,434

Claims priority, application Germany, Aug. 13, 1994, 44 28 790.9

Int. Cl.[6] H02P *9/30*

U.S. Cl. 310—68 D 11 Claims



1. An apparatus for providing bidirectional signal transfer comprising:

first and second components having respective end portions disposed in a facing relationship such that at least one of said first and second components rotates relative to the other component about an axis of rotation which extends through both said first and second components;

each of said first and second components comprising:

a receiver disposed along the axis of rotation and having a predetermined aperture angle within which the receiver effectively receives signals; and

a transmitter, offset from the axis of rotation and positioned at an angle toward the axially disposed receiver of the other component, for directly transmitting signals to the axially disposed receiver of the other component and within the aperture angle of the axially disposed receiver of the other component such that signals are bidirectionally transferred between said first and second components as each component rotates relative to the other component.

5,828,147

STATOR FOR AN ELECTRIC MOTOR

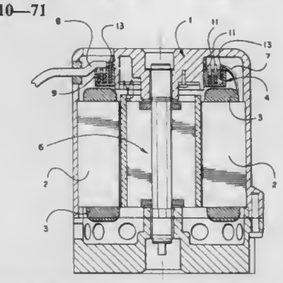
Dieter Best, Ingelfingen; Wilhelm Reinhardt, Schrozberg-Gütbach; Rudolf Rebentrost, Niedernhall; Gunter Streng, Schrozberg, and Berthold Walke, Utzmemmingen, all of Germany, assignors to EBM Werke GmbH & Co., Germany

Continuation of Ser. No. 753,872, Nov. 29, 1996. This application Feb. 3, 1997, Ser. No. 794,688

Claims priority, application Germany, Dec. 1, 1995, 195 44 830.8

Int. Cl.[6] H01R *33/20;* H02K *11/00*

U.S. Cl. 310—71 20 Claims



1. A stator for an electric motor, comprising:

a stator core assembly (**2**), stator windings (**3**) and, arranged at one end of the stator core assembly (**2**), an interconnecting arrangement (**4**) for the stator windings (**3**); and

the interconnecting arrangement (**4**) has an insulating part (**9**) composed of several individual annular parts (**9***a*,**9***b*,**9***c*) each having a slotted chamber (**11**) in order to accept respective electric connecting leads (**12**) that are insulated with respect to each other in order to interconnect wire ends (**7**) of the stator windings (**3**).

5,828,148

METHOD AND APPARATUS FOR REDUCING WINDAGE LOSSES IN ROTATING EQUIPMENT AND ELECTRIC MOTOR/GENERATOR EMPLOYING SAME

Richard E. Niggemann; Scott M. Thomson, and Michael G. Schneider, all of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Mar. 20, 1997, Ser. No. 821,143

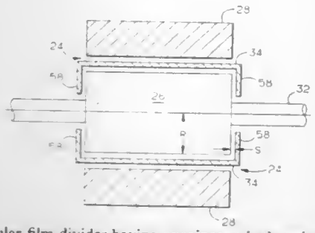
Int. Cl.[6] H02K *5/00*

U.S. Cl. 310—86 30 Claims

1. An apparatus, comprising:

a stator having an inner periphery;

a rotor rotatably positioned within said stator, said rotor having an outer periphery, said outer periphery and said inner periphery defining a cylindrical gap therebetween; and

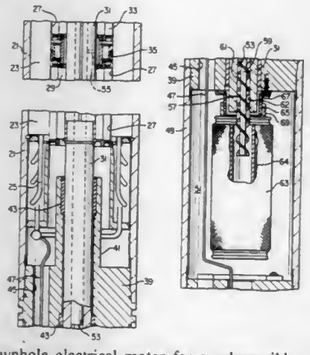


an annular film divider having openings at both ends positioned within said cylindrical gap wherein the film divider is freely rotatable with respect to the stator and the rotor.

5,828,149
LUBRICANT INDUCER PUMP FOR ELECTRICAL MOTOR

Larry J. Parmeter, Bartlesville, and Earl B. Brookbank, Claremore, both of Okla., assignors to Baker Hughes Incorported, Houston, Tex.

Filed Jul. 18, 1996, Ser. No. 683,442
Int. Cl.[6] F04B *17/00;15/08*
U.S. Cl. 310—87 **4 Claims**

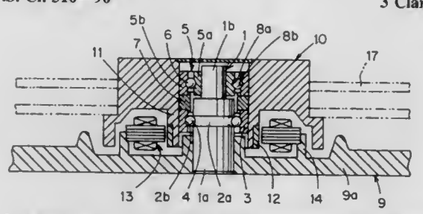


1. A downhole electrical motor for a submersible well pump, comprising in combination:
a cylindrical housing having a longitudinal axis;
a stator mounted in the housing and having an axial passage;
a rotor which is mounted to a shaft for rotation about the longitudinal axis within the axial passage of the stator, defining an annular clearance between the rotor and the stator;
a plurality of radial support bearings axially spaced along the length of the rotor and in stationary engagement with the stator;
a base in the housing below the stator for radially supporting a lower end of the shaft;
a lubricant chamber located in the housing below the base;
an axial bore in the shaft extending upward from the lower end of the shaft along the length of the shaft, the axial bore having a cylindrical sidewall;
a plurality of lateral passages extending from the axial bore to an exterior of the shaft and spaced along the length of the rotor;
a filter located in the lubricant chamber, having a porous media wall through which lubricant in the chamber passes, a perforated central tube which receives the lubricant, and an upper outlet, the filter being fastened to the lower end of the base with the central tube axially aligned with the shaft;
an inducer pump mounted in the axial bore for rotation with the shaft, the inducer pump having a helical flight, the inducer pump extending downward from the shaft and into the central tube of the filter, the inducer pump rotating relative to the central tube so as to cause lubricant from the lubricant chamber to flow through the filter up the axial bore and out the lateral passages for circulating lubricant through the bearings when the shaft rotates, the lubricant flowing back down the annular clearance to the lubricant chamber and filter.

5,828,150
HARD DISC DRIVE WITH A COMPOUND BEARING ASSEMBLY

Rikuro Obara, Nagano-ken, Japan, assignor to Minebea Kabushiki-Kaisha, Nagano-ken, Japan

Filed Oct. 18, 1996, Ser. No. 732,764
Claims priority, application Japan, Oct. 20, 1995, 7-297391
Int. Cl.[6] H02K *5/16;* **F16C** *33/02*
U.S. Cl. 310—90 **3 Claims**



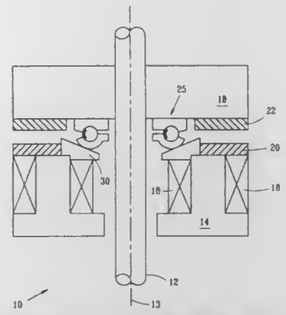
1. A hard disc drive including a motor, comprising a compound bearing assembly including:
a stepped shaft having a large-diameter portion and a small-diameter portion, said large-diameter portion having an inner raceway groove directly formed in an outer periphery thereof;
a first outer race ring surrounding said large-diameter portion of said stepped shaft and having an outer raceway groove;
a plurality of balls provided between said inner and outer raceway grooves;
a ball bearing unit having an inner race ring, a second outer race ring and a plurality of balls provided therebetween, said inner race ring being fitted on said small-diameter portion of said stepped shaft; and
a sleeve-like spacer surrounding said stepped shaft and between said first and second outer race rings, said sleeve-like spacer having a central portion with a first diameter and opposite end portions at opposite ends thereof having a second diameter smaller than said first diameter, said first and second outer race rings being fitted on said opposite end portions of said sleeve-like spacer, respectively;
said sleeve-like spacer having a stepped cross section wherein said opposite end portions form steps with said central portion, said first and second outer rings positioned on said steps at said opposite end portions of said sleeve-like spacer;
said first outer race ring, said sleeve-like spacer and said ball bearing unit being assembled into said compound bearing assembly, a lower end of said stepped shaft secured to a base of a casing of the hard disc drive at a right angle thereto, said motor of the hard disc drive having a rotor with a central hub thereof fitted on and secured to said compound bearing assembly.

5,828,151
SELF ALIGNING ACTUATOR WITH LOW BEARING WEAR

Eleazor Felipe Bustamante, New Hamburg; Phillip G. Adams, Etobicoke; Catherine Hoskin, and David Yan Leng, both of Mississauga, all of Canada, assignors to CTS Corporation, Elkhart, Ind.

Filed Aug. 27, 1997, Ser. No. 919,013
Int. Cl.[6] H02K *5/16*
U.S. Cl. 310—90 **14 Claims**

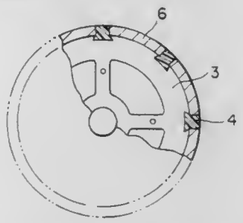
1. An actuator, comprising:
a) a rotor, having a first rotor surface;
b) a stator, having a bearing support member;
c) a slanted bearing surface, being part of the bearing support, member and opposed to the first rotor surface; and
d) a bearing device, mounted on and between the first rotor surface and the bearing support member, the bearing device having a lower race with a substantially arc shaped contact region directly contacting the slanted bearing surfaces, the bearing device positioned and shaped to separate the rotor from the stator and to self align on the slanted bearing surface in a position that substantially evenly distributes bearing loading on the bearing device.



5,828,152
ROTOR WITH PERMANENT MAGNET OF GENERATOR AND METHOD OF MANUFACTURING THE SAME

Masanobu Takeda; Shunichi Tetsui; Yasumasa Mizuno, and Hirotaka Yamamoto, all of Kawagoe, Japan, assignors to Denyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1996, Ser. No. 598,183
Claims priority, application Japan, Feb. 7, 1995, 7-019551; Feb. 7, 1995, 7-019552; Feb. 7, 1995, 7-019553
Int. Cl.[6] H02K *1/27;15/03*
U.S. Cl. 310—156 **9 Claims**



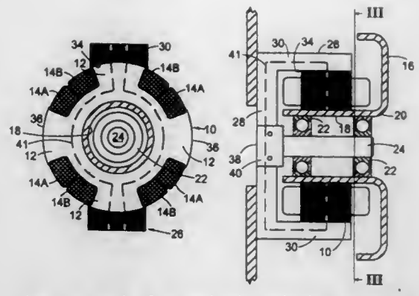
1. A rotor with permanent magnets comprising:
a rotor iron core consisting of stacked rotor iron plates; and
a pair of end plates provided at respective end surfaces of the rotor iron core, said end plates including a plurality of projections formed at inside surfaces of said end plates, wherein the projections are deformable so that the permanent magnets are forcedly inserted and secured between the inside surfaces of said end plates on the outer circumference of the rotor.

5,828,153
ROTOR FOR A RELUCTANCE MACHINE

Michael Leo McClelland, Harrogate, England, assignor to Switched Reluctance Drives Limited, North Yorkshire, England

Filed Dec. 9, 1996, Ser. No. 762,562
Claims priority, application United Kingdom, Dec. 7, 1995, 9525408.2
Int. Cl.[6] H02K *17/42*
U.S. Cl. 310—168 **23 Claims**

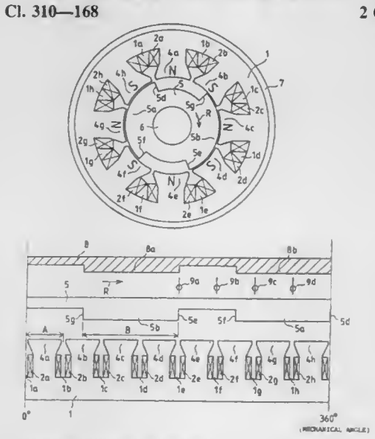
1. A rotor for a reluctance machine, the rotor comprising:
a journal defining an axis extending in an axial direction; and
at least one stack of magnetizable laminations, each stack of laminations extending in a plane parallel to the axis and defining:
at least a pair of spaced rotor poles; and
a central member extending between the rotor poles;
wherein:
the rotor poles extend from one side of the central member parallel to the axis of the journal; and
the rotor defines a flux path extending in an axial direction along one of the spaced rotor poles, then extending along the central member, and then extending in an axial direction along another of the spaced rotor poles.



5,828,154
RELUCTANCE MOTOR

Itsuki Bahn, Nerima-ku, Japan, assignor to Kabushikigaisha Sekogiken, Tokyo, Japan

PCT No. PCT/JP96/02096, § 371 Date Mar. 31, 1997, § 102(e) Date Mar. 31, 1997, PCT Pub. No. WO97/05692, PCT Pub. Date Feb. 13, 1997
PCT Filed Jul. 25, 1996, Ser. No. 809,891
Claims priority, application Japan, Aug. 1, 1995, 7-225661
Int. Cl.[6] H02K *19/00;11/00;* **H02P** *7/05*
U.S. Cl. 310—168 **2 Claims**



1. A reluctance motor comprising:
a magnetic stator formed with 8n units (where n is an integer greater than or equal to 1) of slots disposed in the inner peripheral surface thereof at regular angular intervals of 90 degrees in terms of electrical angles;
8n units of magnetic poles formed by winding armature coils individually between the adjacent slots in said magnetic stator;
a magnetic rotor formed with 2n units of salient poles disposed on the outer peripheral surface thereof and having a width of

an electrical angle of 270 degrees and at intervals ranging from electrical angles of 90 degrees to 180 degrees;

means for holding said magnetic rotor relatively to said stator so that the respective outer peripheral surfaces of the 2n units of salient poles of said magnetic rotor and inner peripheral surface of said stator confront one another across narrow air gaps;

rotational position detecting means for detecting the respective rotational positions of the salient poles of the rotor with respect to each slot of said stator;

a power-supply signal generator for generating 4n sets of phase power-supply signals based on rotational position signals from said rotational position detecting means so that power-supply signals in one phase overlap power-supply signals in another phase by electrical angles of 90°;

4n units of phase exciting coils formed by connecting the armature coils of each diametrically opposite salient poles, out of said 8n units of salient poles, in series or parallel with each other; and

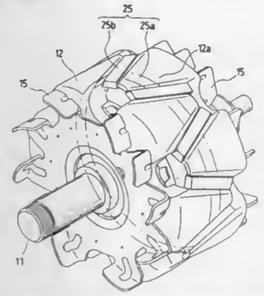
a power-supply control circuit designed so that semiconductor switching elements are connected individually in series with said 4n units of phase exciting coils, and that the exciting coils for each phase are energized one after another by turning on the semiconductor switching elements corresponding to the exciting coils for the phase concerned by a width equivalent to an electrical angle of 180°, in response to the power-supply signals of each phase delivered from said power-supply signal generator.

5,828,155

ALTERNATING CURRENT GENERATOR

Katsumi Adachi, and Kyoko Kurusu, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 5, 1996, Ser. No. 659,240
Claims priority, application Japan, Dec. 8, 1995, 7-320060
Int. Cl.[6] H02K *1/00;1/22;1/27*
U.S. Cl. 310—263 **5 Claims**



1. A rotor for an alternating current generator, comprising:

field core claws disposed on a field core;

a metal ring portion abutting against and holding said field core claws; and

resin permanent magnets being fixed to said metal ring portion and disposed between said field core claws;

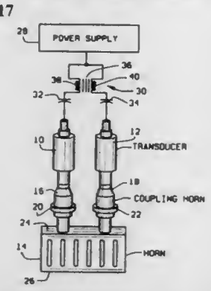
wherein each of said resin permanent magnets abuts respective adjacent ones of said field core claws substantially without gaps therebetween.

5,828,156

ULTRASONIC APPARATUS

Allan J. Roberts, Poughquag, N.Y., assignor to Branson Ultrasonics Corporation, Danbury, Conn.

Filed Oct. 23, 1996, Ser. No. 731,954
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—317 **17 Claims**



1. An ultrasonic apparatus for delivering vibratory energy in the ultrasonic frequency range to a workpiece comprising:

a horn dimension to be mechanically resonant for vibrations of predetermined frequency in the ultrasonic frequency range;

a plurality of piezoelectric transducers coupled to said horn for rendering said horn resonant at said frequency by providing in-phase mechanical vibrations to said horn;

a power supply connected to said transducers for providing electrical energy of said frequency to said transducers and causing said transducers to be energized in parallel, and

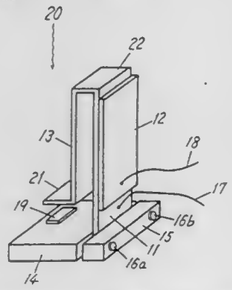
means for balancing the electrical current flow through said transducers coupled in circuit between said power supply and said transducers.

5,828,157

PIEZOELECTRIC ACTUATOR AND PYROELECTRIC TYPE INFRARED RAY SENSOR USING THE SAME

Katsumasa Miki, Neyagawa; Koji Nomura, Shijonawate, and Takeshi Masutani, Moriguchi, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

PCT No. PCT/JP95/02267, § 371 Date Sep. 30, 1996, § 102(e) Date Sep. 30, 1996, PCT Pub. No. WO96/14687, PCT Pub. Date May 17, 1996
PCT Filed Nov. 7, 1995, Ser. No. 666,317
Claims priority, application Japan, Nov. 7, 1994, 6-272048
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—328 **23 Claims**



1. A piezoelectric actuator comprising: a flat elastic element having

two ends and two sides, and

a flat piezoelectric element adhered to one side of said flat elastic element forming a piezoelectric element adhering part;

a fixing member for fixing one end of said flat elastic element, wherein the piezoelectric element adhering part produces a flexural motion through an application of an electric field to said flat piezoelectric element by vibrating said flat elastic element;

a displacement magnifying part having an end connected to the other end of said flat elastic element by a binding part, wherein said displacement magnifying part has a front end opposite said end of said displacement magnifying part connected to the binding part, said front end positioned nearer to said fixed end than to the binding part,

wherein a resonance frequency f1 is generated due to a vibration of the piezoelectric element adhering part from the fixed end to the binding part, and

a resonance frequency f2 is generated due to a vibration of the displacement magnifying part,

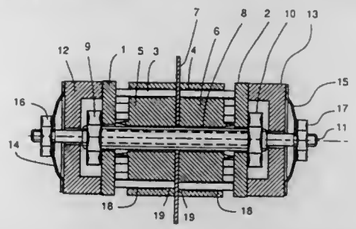
wherein a difference exists between said resonance frequency f1 and said resonance frequency f2 and a driving frequency is intermediate of f1 and f2.

5,828,158

TRAVELING WAVE PIEZOELECTRIC MOTOR

David Chatellard, Saint Gervais Les Bains, France, assignor to Figest BV, Netherlands

Filed Jan. 30, 1997, Ser. No. 791,255
Claims priority, application France, Feb. 29, 1996, 96 02549
Int. Cl.[6] H01L *41/09;* **H02N** *2/00*
U.S. Cl. 310—328 **11 Claims**



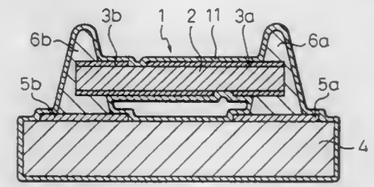
1. A traveling-wave piezoelectric motor comprising at least one stator (**1**, **2**) consisting of an annular body with which are associated two groups of piezoelectric elements (**3**, **4**) consisting of cylindrical polarized ceramic rods which are independent of one another, are arranged perpendicularly to the stator, that is to say parallel to the axis of the motor, and are distributed around the stator, in permanent contact, via one of their ends, with the stator and, via the other end, with a connector (**7**; **30**; **50**) by way of which the rods are excited by an alternating current with a phase-shift of π/2 between the groups of rods so as to generate on the surface of the stator a deformation in the form of a traveling wave, and a rotor (**12**, **13**) held elastically in contact with the stator for the rotational driving thereof by the traveling wave generated on the stator, wherein the rods (**3**, **4**) are housed in a drum (**5**, **6**; **20**, **21**; **40**, **41**) made of an insulating material whose holes, each containing a rod, have a diameter greater than the diameter of the rods over the greater part of their length and a constriction (**24**) of diameter approximately equal to the diameter of the rods so as to hold the rods by friction.

5,828,159

RESONATOR DEVICE ADAPTED FOR SUPPRESSION OF FLUCTUATION IN RESONANT RESISTANCE, AND METHOD OF PRODUCING SAME

Takashi Miyagawa, and Masanori Yachi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 440,654, May 15, 1995, abandoned. This application Jun. 4, 1997, Ser. No. 869,222
Claims priority, application Japan, Jun. 17, 1994, 6-135788
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—340 **5 Claims**



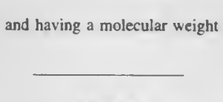
1. A resonator device comprising:

an insulating substrate,

a strip-shaped vibrating element which is mounted on said insulating substrate and is provided with electrodes formed on the main opposing surfaces of a piezoelectric substrate, and

terminal electrodes which are provided on said insulating substrate so as to be electrically connected with said driving electrodes and to which driving signals are applied by an external signal source,

wherein at least longitudinal side portions of said vibrating element are coated with a surface active agent, said surface active agent consisting of a macromolecular material having the structural formula:



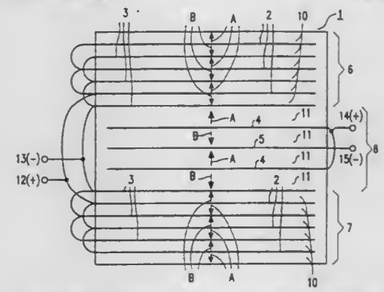
where R is alkyl, and having a molecular weight of 50 to 300.

5,828,160

PIEZOELECTRIC TRANSDUCER

Takao Sugishita, Minato-ku, Japan, assignor to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 561,959, Nov. 22, 1995, abandoned. This application Sep. 10, 1997, Ser. No. 926,840
Claims priority, application Japan, Nov. 25, 1994, 6-315791
Int. Cl.[6] H01L *41/08*
U.S. Cl. 310—366 **4 Claims**



1. A piezoelectric transducer for receiving an input electrical signal and generating an output electrical signal, said transducer having a first part and a second part, each part comprising stacked piezoelectric ceramic layers with internal electrode layers therebe-

VOL 1215 ISS 4 OCT 27 1998 UMI

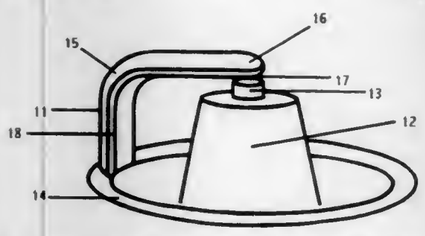
tween, which piezoelectric ceramic layers are polarized in the direction of thickness, characterized in that the piezoelectric ceramic layers of the first part are separated into two groups which enclose the piezoelectric ceramic layers of the second part along an axis normal to the layers of the first and second parts, a first pair of electrodes, each of the first pair of electrodes electrically interconnected with one or more of the internal electrodes between the ceramic layers of the first part and each of the first pair of electrodes electrically connected to an input interface for receiving input electrical signals, a second pair of electrodes, each of the second pair of electrodes electrically interconnected with one or more of the internal electrodes between the ceramic layers of the second part and each of the second pair of electrodes electrically connected to an output interface for transmitting the output electrical signals, the ceramic layers of the first part and second part coupled so that mechanical oscillations generated in the ceramic layers by the input electrical signals received at the input interface are converted into output electrical signals at the output interface; in that materials of the piezoelectric ceramic layers of the first part and the second part have an electromechanical coupling coefficient K_{31} of at least 0.3.

5,828,161

EXTERNAL NEGATIVE ELECTRODE HAVING A CAMBERED SHAPE

Ronald L. Palyu, Cleveland, Ohio, assignor to TLR Innovations, Inc., Cleveland, Ohio

Filed Oct. 9, 1996, Ser. No. 727,958
Int. Cl.[6] H01T *13/20*
U.S. Cl. 313—141 **1 Claim**



1. A spark plug for an internal combustion engine with an improved ground electrode includes a distal end portion that is a quarter of a sphere in shape; and a cross section of the ground electrode, parallel to the axis of the spark plug, is approximately semicircular having a cambered first surface, and a flat second surface; wherein, the flat second surface faces a center electrode of the spark plug.

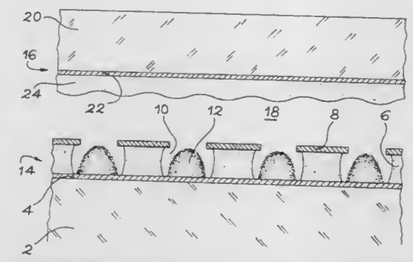
5,828,162

FIELD EFFECT ELECTRON SOURCE AND PROCESS FOR PRODUCING SAID SOURCE AND APPLICATION TO DISPLAY MEANS BY CATHODOLUMINESCENCE

Joël Danroc, Granable, and Danh Tran Van, Crolles, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Oct. 20, 1995, Ser. No. 546,396
Claims priority, application France, Nov. 8, 1994, 94 13371
Int. Cl.[6] H01J *19/00*
U.S. Cl. 313—309 **10 Claims**

1. A field effect electron source comprising:
an electrically insulating substrate;
at least one cathode electrode located on said electrically insulating substrate;



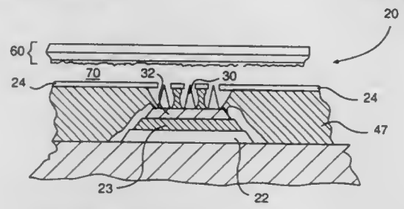
an electrically insulating layer formed on said cathode electrode;
at least one grid electrode formed on the electrically insulating layer;
wherein the cathode electrode is at least partly exposed through holes formed through said grid electrode and the electrically insulating layer; and
electron emitting elements formed in open areas defined by the holes on the cathode electrode, said electron emitting elements being microheaps surrounded by sidewalls of the holes with each microheap being a micropile of diamond or diamond like carbon power grains in direct contact with each other.

5,828,163

FIELD EMITTER DEVICE WITH A CURRENT LIMITER STRUCTURE

Gary W. Jones; Susan K. Jones, both of Lagrangeville; Jeffrey Marino, Fishkill; Joseph K. Ho, Wappingers Falls; R. Mark Boysel; Steven M. Zimmerman, both of Pleasant Valley; Yachin Liu; Michael J. Costa, both of Poughkeepsie, and Jeffrey A. Silvernail, Kingston, all of N.Y., assignors to FED Corporation, Hopewell Junction, N.Y.

Filed Jan. 13, 1997, Ser. No. 781,289
Int. Cl.[6] H01J *1/02*
U.S. Cl. 313—336 **20 Claims**



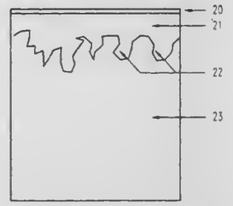
1. A field emitter comprising:
an insulating substrate;
a column conductor deposited on the substrate;
an insulator laid over the column conductor;
a high resistance layer laid over the insulator, the high resistance layer being physically isolated from the column conductor;
a low resistance pad placed on and in electrical contact with the high resistance layer;
one or more electron emitters affixed to the low resistance pad in a group, the group having a width; and
a low resistance strap electrically interconnecting the column conductor with the high resistance layer to connect in a series circuit the column conductor, the high resistance layer, the low resistance pad and the electron emitters.

5,828,164

THERMIONIC CATHODE USING OXYGEN DEFICIENT AND FULLY OXIDIZED MATERIAL FOR HIGH ELECTRON DENSITY EMISSIONS

Louis E. Branovich, Howell; Donald W. Eckart, Wall, and Paul Fischer, Oakhurst, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 218,533, Mar. 28, 1994, abandoned, which is a continuation-in-part of Ser. No. 866,773, Apr. 3, 1992, Pat. No. 5,298,830. This application May 14, 1996, Ser. No. 647,502
Int. Cl.[6] H01J *1/14;19/06;* **H01K** *1/04*
U.S. Cl. 313—346 R **54 Claims**



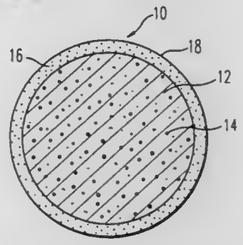
1. A cathode having an enhanced thermionic emission, comprising a porous billet, and an impregnant including at least one oxygen deficient compound and at least one fully oxidized compound.

5,828,165

THERMIONIC CATHODE FOR ELECTRON TUBES AND METHOD FOR THE MANUFACTURE THEREOF

Guy Clerc, and Jean de Cachard, both of Thonon-Les-Bains, France, assignors to Thomson-CSF, Paris, France

Filed Mar. 4, 1997, Ser. No. 796,694
Claims priority, application France, Mar. 5, 1996, 96 02743
Int. Cl.[6] H10J *1/22*
U.S. Cl. 313—346 R **19 Claims**



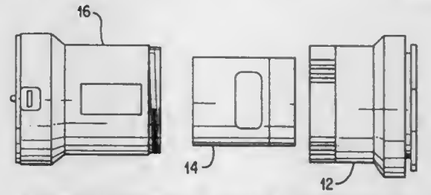
1. A thermionic cathode for electron tubes comprising a material that has:
a substrate made of a refractory metal;
a compound of an element forming an emitting monolayer;
a reducing agent which, at the working temperature of the cathode, reacts with the compound releasing the element that forms the emitting monolayer,
said thermionic cathode being a cathode wherein the compound is chosen from among the rare earth zirconates, rare earth hafnates, rare earth aluminates and rare earth berylates.

5,828,166

IMAGE INTENSIFIER SYSTEM INCORPORATED INTO A REMOVABLE LENS DAYLIGHT IMAGING SYSTEM

Michael Roselli, Nutley; Frank Vallese, Lincoln Park; Gerard DiTaranto, and Robert Lindner, both of Parsippany, all of N.J., assignors to Electrophysics Corp., Fairfield, N.J.

Filed Sep. 11, 1996, Ser. No. 712,561
Int. Cl.[6] H01J *31/50*
U.S. Cl. 313—365 **5 Claims**



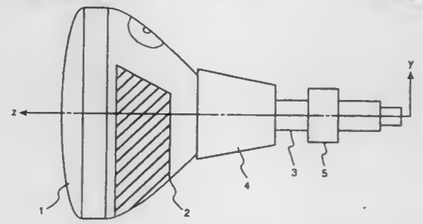
1. A system for intensifying an image in low light environments, said system connected to a camera provided with a removable electronic objective lens, the camera provided with an internal source of power and an electronic control; the system comprising:
a back adapter mechanically and electrically connected to the camera;
an intensifier means for intensifying an image, said intensifier including an image intensifier, said intensifier means mechanically and electrically connected to said back adapter; and
a front lens adapter mechanically and electrically connected to said intensifier means, said front lens adapter provided with a mount for attachment to the removable electronic objective lens, where an image is directed through said front lens adapter, through said intensifier means for intensifying the image, said intensified image directed through said back adapter to a surface provided within the camera.

5,828,167

COLOR CATHODE RAY TUBE WITH A DYNAMIC CONVERGENCE DEVICE AND COLOR DISPLAY SYSTEM EMPLOYING SAME

Hiroshi Jitsukata; Soichi Sakurai, both of Yokohama; Hiroshi Yoshioka, Mobara; Yoshio Sato, Chousei-gun; Hiroshi Sasaki, and Hidesuyo Baba, both of Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 19, 1996, Ser. No. 684,341
Claims priority, application Japan, Jul. 24, 1995, 7-186756; Sep. 18, 1995, 7-238729
Int. Cl.[6] H01J *29/70*
U.S. Cl. 313—412 **57 Claims**



1. A color cathode ray tube comprising:
an evacuated envelope including a panel portion, a neck portion, and a funnel portion connecting said panel portion to said neck portion;
a phosphor screen formed on an inner surface of said panel portion;
a color selection electrode disposed spaced from said phosphor screen in said panel portion;

an in-line electron gun contained in said neck portion, for generating one center electron beam and two side electron beams and directing said center and side electron beams toward said phosphor screen;

a deflection device mounted in the vicinity of a junction between said neck portion and said funnel portion, for deflecting said three electron beams in horizontal and vertical directions and self-converging said three electron beams;

static beam convergence means comprising permanent magnets and mounted on said neck portion, for generating magnetic fields adjustable to converge said three electron beams at a central portion of said phosphor screen; and

a dynamic beam convergence means comprising coreless electromagnetic coils, mounted on said neck portion, for generating magnetic fields adjustable to converge said three electron beams at peripheral portions of said phosphor screen;

wherein said dynamic beam convergence means comprises at least a third electromagnetic coil means for generating an adjustable magnetic field to move said three electron beams in a same direction.

5,828,168

DEFLECTION YOKE WITH INNER ARM

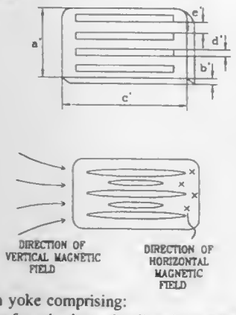
Chang Seop Koh, Seoul, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 6, 1996, Ser. No. 692,676

Claims priority, application Rep. of Korea, Nov. 30, 1995, 1995-45371

Int. Cl.[6] H01J *29/70*

U.S. Cl. 313—440 **4 Claims**



1. A deflection yoke comprising:

a coil separator for a horizontal coil and a vertical coil; an inner arm of rectangular shape for installation between the coil separator and vertical coil for changing a vertical magnetic field into a barrel-shape magnetic field; and

a slit in the inner arm for insulting heat generated by a horizontal magnetic field of the horizontal coil.

5,828,169

DISCHARGE LAMP HAVING AN AMALGAM WITHIN A BARRIER MEANS

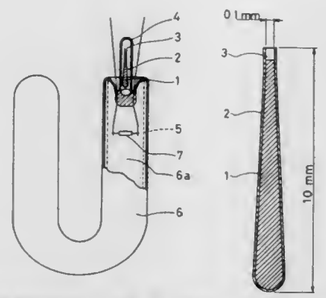
Minoru Myojo, and Toshiyuki Namura, both of Takatsuki, Japan, assignors to Matsushita Electronics Corporation, Osaka, Japan

Filed May 23, 1996, Ser. No. 652,909

Int. Cl.[6] H01J *1/62*

U.S. Cl. 313—475 **26 Claims**

1. A low pressure mercury vapor filled discharge lamp comprising: a vessel having a fluorescent layer coated on an inner surface thereof; an amalgam including mercury as a primary amalgam disposed at a predetermined position in a discharge space formed inside the vessel; and barrier means for restricting movement of mercury atoms between the amalgam and the discharge space corresponding to switching on and off of the lamp;



wherein the vessel contains no amalgam other than said primary amalgam and the barrier means is provided to contact the amalgam for shielding the amalgam from the discharge space except for at least one opening, and the opening of the barrier means permits supply of the mercury atoms from the amalgam to the discharge space while the lamp is lighted and restricts return of mercury atoms from the discharge space to the amalgam after switching off of the lamp;

the barrier means comprising a container having a rotationally symmetrical waterdrop shape such that the length of the container along its lengthwise direction is greater than a largest width in a direction perpendicular to said lengthwise direction and having only one opening formed at an end of the container along the lengthwise direction, the opening having an effective diameter larger than the diameter of a mercury atom but smaller than 0.5 mm when the opening is converted to the diameter of a circle having the same area as the opening, and an inside wall of the container fits a surface of said amalgam for shielding the amalgam from the discharge space and a portion of the amalgam that directly contacts with the discharge space is exposed at the opening of the container.

5,828,170

FLUORESCENT LAMP UNIT AND LIGHTING APPARATUS HAVING THE FLUORESCENT LAMP UNIT

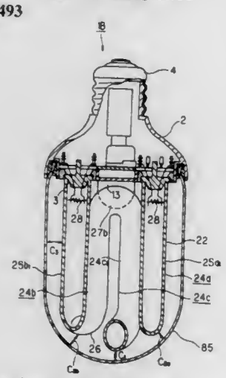
Kiyoshi Nishio; Kazuhisa Ogishi, both of Yokosuka; Takeo Yasuda, and Toshiya Tanaka, both of Yokohama, all of Japan, assignors to Toshiba Lighting & Technology Corporation, Tokyo, Japan

Filed Sep. 20, 1996, Ser. No. 716,126

Claims priority, application Japan, Sep. 29, 1995, 7-254337; Sep. 29, 1995, 7-254338; Oct. 31, 1995, 7-283517; Dec. 25, 1995, 7-351644

Int. Cl.[6] H01J *61/32*

U.S. Cl. 313—493 **19 Claims**



1. A fluorescent lamp unit comprising:

a fluorescent lamp having a bulb constituting one discharge path, said bulb including three U-shaped tube portions;

a lighting circuit operatively connected to the fluorescent lamp for lighting the fluorescent lamp; and

a cover part having a cap at one end thereof and having a globe at other end thereof for containing the lighting circuit and the fluorescent lamp;

wherein each of said three U-shaped tube portions has a pair of straight tube portions provided straight in a direction along to a basic center axis of the fluorescent lamp unit and has a bent portion being bent so as to be convexly curved toward the globe side opposite to the cap side thereby to form substantially U-shape and linking the glove side ends of the pair of straight tube portions, said straight tube portions being arranged equidistantly on a circumference of a certain radius from the basic center axis;

and wherein said three U-shaped tube portions are formed so that minimum gaps c1, c2*a*, and c2*b* between the inner surface of the globe and each of the outer surfaces of the globe side ends of the three U-shaped tube portions have substantially a same length.

5,828,171

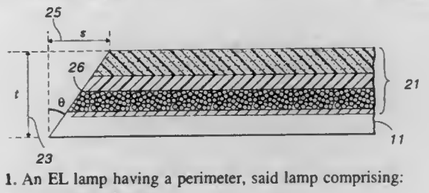
EL LAMP WITH BEVELED EDGE

Ralph M. McGuigan, Phoenix, Ariz., assignor to Durel Corporation, Chandler, Ariz.

Division of Ser. No. 663,387, Jun. 13, 1996. This application Apr. 13, 1998, Ser. No. 59,602

Int. Cl.[6] H01J *1/62*

U.S. Cl. 313—506 **4 Claims**



1. An EL lamp having a perimeter, said lamp comprising:

a transparent substrate;

a front electrode overlying said substrate;

a rear electrode;

an electroluminescent layer between said front electrode and said rear electrode;

wherein said perimeter is beveled and said rear electrode is smaller in area than said front electrode due to said bevel.

5,828,172

DIODE MOUNT FOR AN LED WITH A PLUG CONNECTOR AND COMPENSATING RESISTOR, AND A METHOD OF ITS MANUFACTURE

Gottfried Berthold, Reutlington; Hans-Michael Schmitt, Muennerstadt, and Anton Ruettiger, Wildflecken, all of Germany, assignors to Preh-Werke GmbH & Co. KG, Bad Neustadt, Germany

Filed Jul. 10, 1996, Ser. No. 677,942

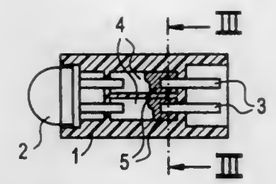
Claims priority, application Germany, Jul. 19, 1995, 195 26 313.8

Int. Cl.[6] H01L *33/00*

U.S. Cl. 313—512 **8 Claims**

1. Diode mount for an LED with a plug connector and a compensating resistor;

wherein the diode mount is constructed of a one piece housing for mounting the LED, the plug connector, and the compensating resistor;



wherein the compensating resistor is formed of an electrically-conductive paste which has been hardened in the housing;

wherein an electrical connection and a mechanical affixing of the LED and the plug connector is made by the electrically-conductive paste; and

wherein the housing has at least one pocket for receiving the electrically-conductive paste.

5,828,173

MAGNETIC SYSTEM FOR GYROTRONS FORMING A WAVY MAGNETIC FIELD

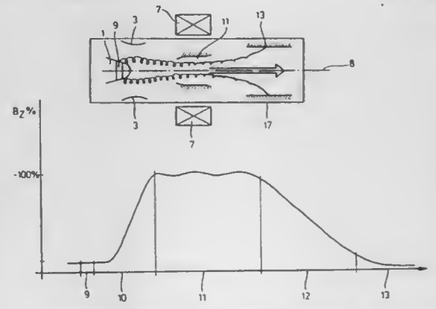
Arnold Möbius, Eggenstein-Leopoldshafen, and Julius Pretterebner, Stuttgart, both of Germany, assignors to Forschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Dec. 4, 1996, Ser. No. 760,066

Claims priority, application Germany, Jul. 9, 1994, 44 24 230.1

Int. Cl.[6] H01J *25/00*

U.S. Cl. 315—5.35 **8 Claims**



1. A magnetic system for gyrotrons comprising an electron emitter, a permanent magnet arrangement for generating an axial magnetic constant field defining a resonator area through which the electrons emitted by said electron emitter are guided by said field and a collector arranged in axial alignment with said permanent magnet arrangement, said permanent magnet arrangement including a central radially polarized annular magnet having opposite axial end faces, an axially polarized annular magnet disposed at one end face of said central magnet facing said collector and an annular magnet disposed at the opposite end face of said central magnet facing said emitter to prevent a breakout of the magnetic field, said radially and said axially polarized magnets of said magnetic system being in direct contact with one another, said annular magnets being mechanically joined and being structured in the resonator area so as to provide a predetermined wavy magnetic field which has no or only a small compensatable field reversal between the emitter area and the collector area, the field reversal of the axially magnetic constant field being in the axial extension of the emitter area outside the electron beam range.

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5,828,174

IGNITION DEVICE FOR DISCHARGE LAMP

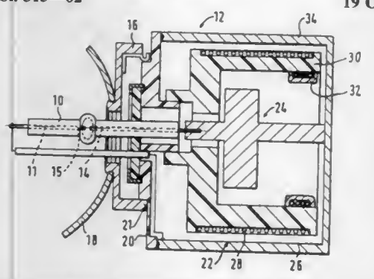
Hartmut Seiler, Baden-Baden; Bernhard Woerner, Reutlingen; Ralf Kramp, Bad Homburg; Martin Frey, Lichtenstein; Ingo Gorille, Oberriexingen, and Thomas Fabry, Neckartenzlingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Mar. 7, 1997, Ser. No. 812,526

Claims priority, application Germany, Mar. 16, 1996, 196 10 388.6

Int. Cl.[6] H01J 7/44

U.S. Cl. 315—62 19 Claims



1. A discharge lamp assembly, comprising a discharge lamp; and an ignition device for said discharge lamp, said ignition device including at least one inductive component and at least one capacitive component, at least a part of one of said components being surrounded by at least a part of the other of said components, said ignition device further having a housing in which said components are arranged and which is connectable with said discharge lamp.

5,828,175

CIRCUITRY FOR OPERATING A GLOW DISCHARGE PATH

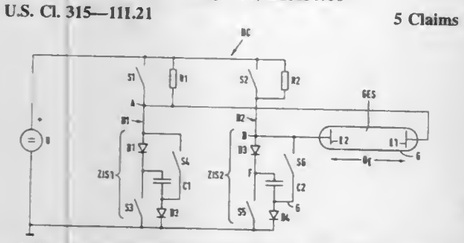
Siegfried Straemke, Fichtenhain 6, 52538 Selfkant, Germany

Filed Dec. 10, 1996, Ser. No. 764,724

Claims priority, application Germany, Dec. 29, 1995, 295 20 685 U

Int. Cl.[6] H01J 7/30; B23K 9/06

U.S. Cl. 315—111.21 5 Claims



1. A circuit for operating a glow discharge path (GES), comprising two electrodes (E1, E2) forming the glow discharge path and an ignition pulse circuit (ZIS1, ZIS2) supplying voltage pulses each having a pulse peak (U2) and subsequently a portion (U3) with an amplitude sufficient for maintaining the glow discharge, a bridge circuit (BC) having branches including a polarity switch (S1, S2) and an ignition pulse circuit (ZIS1, ZIS2) in each branch thereof, a glow discharge path (GES) in one branch of the bridge circuit (BC), each ignition pulse circuit (ZIS1, ZIS2) is controlled to supply voltage pulses when the polarity switch (S1, S2) allocated thereto and located in another branch is in a conducting state, and each polarity switch (S1, S2) has a resistor (R1, R2) connected in parallel thereto.

5,828,176

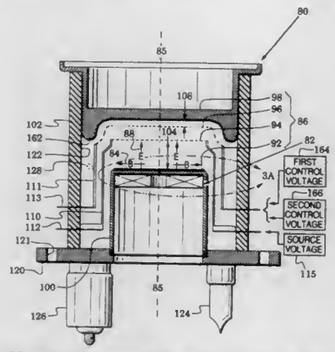
PLANAR CROSSED-FIELD PLASMA SWITCH AND METHOD

Dan M. Goebel, Tarzana, Calif., assignor to Hughes Electronics Corporation, El Segundo, Calif.

Filed Nov. 27, 1996, Ser. No. 753,617

Int. Cl.[6] H01J 7/24

U.S. Cl. 315—111.41 20 Claims



1. A cold cathode, crossed field switch arranged about a switch axis and containing an ionizable gas, comprising:

a magnet system configured to generate a magnetic field which surrounds said switch axis and is radially oriented outward from said switch axis; and

a planar electrode system which includes:

a) a planar cold cathode;

b) a planar anode spaced from said cathode;

c) a planar source grid positioned between said anode and said cathode and spaced from said cathode to form a source grid-to-cathode gap which substantially contains said radially-oriented magnetic field, said source grid and said cathode arranged to generate an axially-oriented electric field in said source grid-to-cathode gap in response to a source voltage applied to said source grid, said radially-oriented magnetic field and said axially-oriented electric field directing secondary ions from said cathode along cycloidal paths in said ionizable gas to generate a plasma source in said source grid-to-cathode gap; and

d) a planar control grid positioned between said anode and said source grid, and spaced from said anode to form a control grid-to-anode gap, said control grid arranged to selectively receive first and second control voltages to initiate and terminate a plasma path which connects said plasma source and said anode across said control grid-to-anode gap.

5,828,177

LIGHT CIRCUIT FOR DISCHARGE LAMP

Atsushi Toda; Goichi Oda, and Masayasu Yamashita, all of Shimizu, Japan, assignors to Koito Manufacturing Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1997, Ser. No. 795,667

Claims priority, application Japan, Feb. 14, 1996, 8-049671

Int. Cl.[6] H05B 37/00

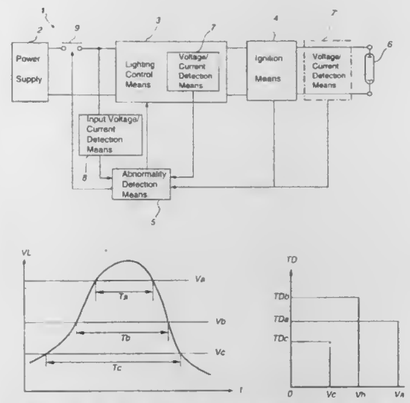
U.S. Cl. 315—127 20 Claims

1. A lighting circuit for a discharge lamp, comprising:

detection means for detecting a voltage and/or a current to be applied to a discharge lamp or a voltage and/or a current equivalent thereto; and

abnormality detection means for stopping power supply to said discharge lamp when detecting an abnormality in said discharge lamp or a circuit abnormality based on a detection signal from said detection means,

whereby said abnormality detection means has a plurality of reference values for comparison or a plurality of reference ranges to be set for said detection signal from said detection means, and determination times to be respectively set in association with said plurality of reference values or reference ranges, compares a level of said detection signal with each of said reference values or said reference ranges and determines that an abnormality in said discharge lamp or a circuit abnormality has occurred when a certain comparison result continues for an associated determination time or longer.



5,828,178

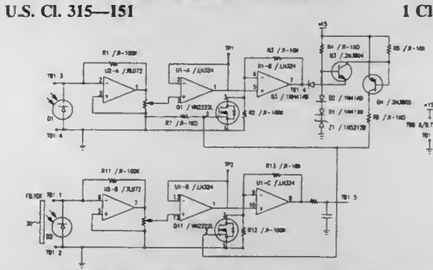
HIGH INTENSITY DISCHARGE LAMP COLOR

Allan Brent York, Langley, and Robert H. Maxwell, Alton, both of Canada, assignors to TIR Systems Ltd., Vancouver, Canada

Filed Dec. 9, 1996, Ser. No. 762,615

Int. Cl.[6] H05B 37/02; G05F 1/00

U.S. Cl. 315—151 1 Claim



1. Apparatus for controlling the operation of one or more high intensity discharge lamps, each of said lamps having a photosensor associated therewith, said apparatus comprising:

(a) an electronic high intensity discharge lamp power supply electrically connected to a power source and to said one or more high intensity discharge lamps;

(b) each of said photosensors for producing an output signal representative of colour temperature in light output by said respective lamps, each of said photosensors further comprising first and second photodiodes, and a colour filter mountable between said second photodiode and said lamp associated with said photosensor;

(c) a controller electrically connected between each of said photosensors and said power supply, said controller for receiving said output signals representative of colour temperature and for outputting power supply control signals for controlling operation of said one or more lamps to maintain a desired uniformity of colour temperature variation in light output by said one or more lamps;

(d) for each lamp, colour signal feedback means electrically coupled between said first and second photodiodes and said controller, said colour signal feedback means for producing a signal representative of colour temperature variation, said colour signal feedback means further comprising:

(i) a first variable gain amplifier electrically connected to said first photodiode for input to said first amplifier of a first signal output by said first photodiode in response to light intensity output by said lamp;

(ii) a second variable gain amplifier electrically connected to said second photodiode for input to said second amplifier of a second signal output by said second photodiode in response to colour temperature of light output by said lamp; and,

(iii) comparator means electrically connected to receive signals output by one of said amplifiers, to compare said amplifier output signals with a voltage reference signal and to output to each of said amplifiers a feedback signal for gain control of each of said amplifiers.

5,828,179

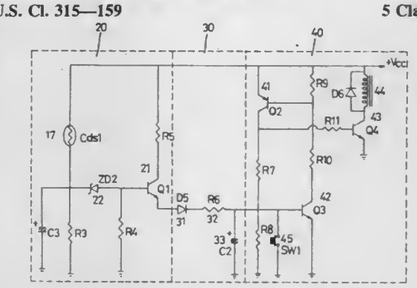
DEVICE FOR PREVENTING A LAMP FROM IGNITING A COVER SUCH AS A CURTAIN

Fu-kuo Lee, Taipei, Talwan, assignor to Mei-jen Chang, Taiwan

Filed Jan. 23, 1997, Ser. No. 787,901

Int. Cl.[6] H05B 37/02

U.S. Cl. 315—159 5 Claims



1. An anti-fire device for a lamp comprising:

a photoresistor having a photo-sensitive surface for receiving light that is reflected back to the lamp from a surface that is illuminated when the lamp is energized;

a detecting control circuit including a detecting trigger unit and an electron switch;

said detecting trigger unit having a transistor having a base electrode connected to the photoresistor via a delayed diode, and having an emitter electrode that comprises an output of the detecting trigger unit;

said electron switch unit having a first transistor, a second transistor, a third transistor and a relay;

said first transistor having a collector electrode connected to the output of the detecting trigger unit;

said second transistor having a base electrode connected to the output of the detecting trigger unit;

said third transistor having a base electrode connected to the output of the detecting trigger unit;

said second transistor having a collector electrode connected to a base electrode of said first transistor; and

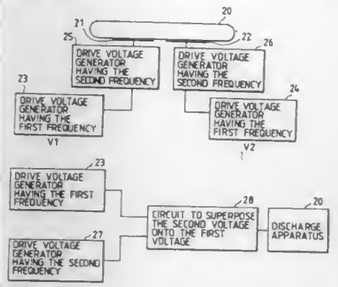
said third transistor having a collector electrode connected to the relay to control an energizing power supply of the lamp.

5,828,180

DRIVING METHOD OF DISCHARGE APPARATUS

Shinichi Shinada, Kokubunji; Soichiro Ogawa, Mizuho-machi; Shigeo Mikoshiba, Tokyo, and Tomokazu Shiga, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 24, 1996, Ser. No. 668,779
Claims priority, application Japan, Jun. 28, 1995, 7-161744
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—160 14 Claims



1. A driving method of a discharge apparatus having a discharge space and a pair of electrodes, comprising the steps of:

applying a first voltage having a first frequency between the electrodes; and

applying a second voltage having a second frequency, which is higher than the first frequency, between the electrodes by superposing the second voltage on the first voltage;

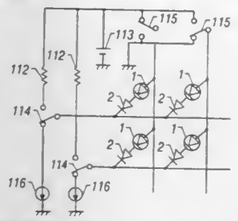
wherein the first voltage and the second voltage superposed thereon applied between the electrodes establish a discharge in the discharge space.

5,828,181

DRIVING CIRCUIT FOR AN ORGANIC ELECTROLUMINESCENT ELEMENT USED IN A DISPLAY

Yoshiyuki Okuda, Tsurugashima, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed May 24, 1996, Ser. No. 653,160
Claims priority, application Japan, May 29, 1995, 7-153882
Int. Cl.[6] H05B *33/00;* G09G *3/00;3/12*
U.S. Cl. 315—169.3 5 Claims



1. An emitting element driving circuit for driving an emitting element comprising:

at least one organic electroluminescent emitting element, and

a rectifier directly connected in series to said emitting element, wherein said emitting element has a capacitor in parallel to an emission part in its electrical equivalent circuit,

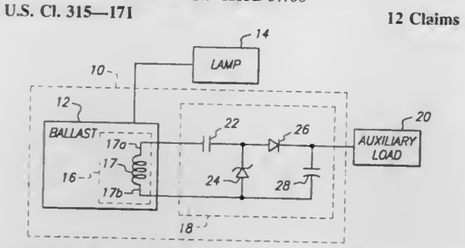
wherein, immediately after a scanning duration with a forward bias to the emitting element and the rectifier, an inverse voltage is applied across the emitting element, and said rectifier prohibits injection of an inverse current to the emitting element so that emission of the emitting element continues during a discharge period.

5,828,182

APPARATUS FOR SUPPLYING POWER FROM A BALLAST CIRCUIT TO AN AUXILIARY LOAD

John R. Shannon, Daly City; Jeffrey Michael Dixon, Freemont, and Hubertus Notohamiprodjo, Union City, all of Calif., assignors to Electronic Lighting Incorporated, Menlo Park, Calif.

Filed Apr. 23, 1996, Ser. No. 636,647
Int. Cl.[6] H05B *37/00*
U.S. Cl. 315—171 12 Claims



1. A power supply for supplying power to a negative resistance load, comprising:

a circuit for limiting current supplied to the negative resistance load, the circuit including a first alternating current supply portion; and

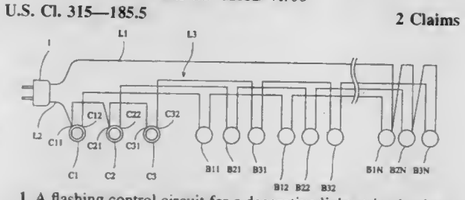
a second supply portion for receiving an alternating current from the first alternating current supply portion and supplying a direct current to an auxiliary load, the second supply portion being electrically isolated from the first alternating current supply portion.

5,828,183

FLASHING CONTROL CIRCUIT FOR DECORATIVE LIGHT STRING

Dennis Wang, and Jessica Wang, both of 4F-3, No. 77, Sec. 2, Tun Hwa South Road, Taipei, Taiwan

Filed Nov. 12, 1997, Ser. No. 975,950
Int. Cl.[6] H05B *41/00*
U.S. Cl. 315—185.5 2 Claims



1. A flashing control circuit for a decorative light string having a first electric power cord, a second electric power cord, and an electric plug for supplying an electric power source to the first electric power cord and the second electric power cord, comprising:

a first flashing control bulb having a first terminal and a second terminal, the first terminal of which being connected to the second electric power cord;

a second flashing control bulb having a first terminal and a second terminal, the first terminal of which being connected to the first terminal of the first flashing control bulb;

a third flashing control bulb having a first terminal and a second terminal, the first terminal of which being connected to the first terminal of the second flashing control bulb;

a first series light string consisting of a plurality of light bulbs connected in series, having a first end connected to the second terminal of the first flashing control bulb and a second end connected to the first electric power cord;

a second series light string consisting of a plurality of light bulbs connected in series, having a first end connected to the second terminal of the second flashing control bulb and a second end connected to the first electric power cord; and

a third series light string consisting of a plurality of light bulbs connected in series, having a first end connected to the second terminal of the third flashing control bulb and a second end connected to the first electric power cord;

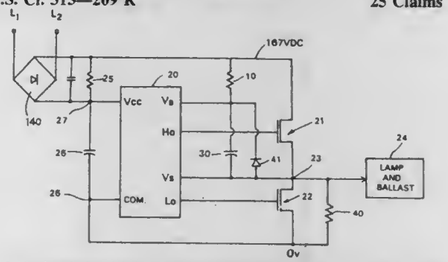
wherein the first, the second, and the third flashing control bulbs are arranged on the decorative light string sequentially at interval and the light bulbs of each light string are arranged on the decorative light string sequentially at interval according to the arranged sequence of the flashing control bulbs.

5,828,184

LAMP BALLAST DRIVE CIRCUIT HAVING A RESISTOR IN PLACE OF BOOT STRAP DIODE

Bruno C. Nadd, Puyvert, France, assignor to International Rectifier Corporation, El Segundo, Calif.

Filed Jan. 21, 1997, Ser. No. 786,768
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—209 R 25 Claims



1. A circuit for driving a pair of power devices arranged in a half bridge configuration in which a first terminal is coupled to a voltage source and a second terminal is coupled to a ground potential and having a common terminal located at a node between the power devices for supplying an output signal to a load circuit; said driving circuit comprising;

a self oscillating driver circuit having first and second output terminals each coupled to a respective one of said pair of power devices, a high side supply terminal, and a high side offset terminal coupled to said node between said power devices; and

a bootstrap circuit comprising a capacitor coupled between said high side supply terminal and said high side offset terminal, and

a resistor directly connected between said voltage source and said high side supply terminal.

5,828,185

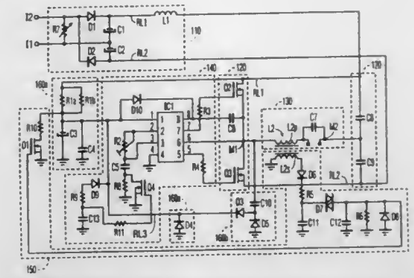
HIGH FREQUENCY HID LAMP SYSTEM WITH LAMP DRIVEN AT A FREQUENCY ABOVE THE AUDIBLE AND BELOW THE LOWEST LAMP RESONANT FREQUENCY

Mark Fellows, New Fairfield, Conn.; Gregory Nelson, Painted Post, N.Y.; Robertus A. J. Keyser, Veldhoven, Netherlands; Dale E. Work, Flemington, N.J.; Josephus C. M. Hendricx, Herersveld, Netherlands; Oscar J. Deurloo, Veldhoven, Netherlands; Aswin J. G. Linden, Weert, Netherlands; Peter A. Seinen, Veldhoven, Netherlands, and Andrew Jackson, Hammondsport, N.Y., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed May 9, 1996, Ser. No. 647,384
Int. Cl.[6] H05B *37/02*
U.S. Cl. 315—246 23 Claims

1. A high frequency, high pressure discharge lamp system, comprising:

a high pressure discharge lamp comprising a discharge device sealed in a gas-tight manner and enclosing a discharge space, a discharge sustaining filling, and means for maintaining a discharge within said discharge space during lamp operation; and



a ballast circuit coupleable to said discharge device for energizing said discharge lamp to maintain a gas discharge within said discharge space,

characterized in that:

the discharge device during normal lamp operation is free of acoustic resonances at alternating lamp currents below a lowest lamp resonant frequency,

the ballast circuit energizes the discharge lamp so as to have an alternating lamp current having a fundamental frequency and harmonics which are integral multiples of the fundamental frequency,

the lamp resonant frequency being greater than about 19 kHz, the fundamental frequency during nominal lamp operation being maintained only in a window between (i) about 19 kHz and (ii) below the lowest lamp resonant frequency, and

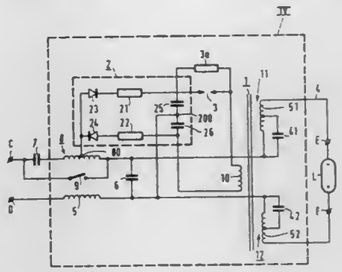
the harmonics above the lowest lamp resonant frequency have amplitudes which are insufficient to induce acoustic resonance.

5,828,186

IGNITION SCHEME FOR A HIGH PRESSURE DISCHARGE LAMP

Frans Slegers; Hendrik J. Blankers, and Nicolaas J. De Jong, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 29, 1996, Ser. No. 608,909
Claims priority, application European Pat. Off., Mar. 1, 1995, 95200498
Int. Cl.[6] H05B *41/00;41/14*
U.S. Cl. 315—290 9 Claims



4. A circuit arrangement for igniting a high pressure discharge lamp, comprising:

a pulse generating circuit having a natural frequency and including a voltage-dependent breakdown element;

a pulse transformer coupled to the pulse generating circuit and having a secondary winding formed from a first winding and a second winding;

lamp connection points; and

an electrical connection between the secondary winding of the pulse transformer and the lamp connection points character-

ized in that a portion of the first winding and a portion of the second winding are each shunted by capacitive means.

5,828,187

METHOD AND CIRCUIT ARRANGEMENT FOR OPERATING A DISCHARGE LAMP

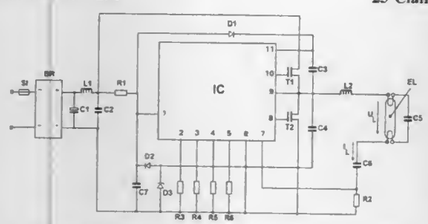
Klaus Fischer, Müchen, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed Dec. 12, 1996, Ser. No. 764,491

Claims priority, application Germany, Dec. 13, 1995, 195 46 588.1

Int. Cl.[6] H05B *37/02*

U.S. Cl. 315—291 **25 Claims**



1. Method for operating a discharge lamp (EL), with a load circuit which contains the discharge lamp (EL), a capacitor (**C5**) connected in parallel therewith, a coil (**L2**), at least one further capacitor (**C6**) and an element (**R2**) which registers a load current (I_L) flowing in the load circuit, and with an inverter with two switching elements (**T1**, **T2**) which are externally controlled with a frequency (f_{In}) of the inverter, characterized in that the following procedural steps are carried out

in the preheating phase (TV)

registering the actual value of the load current (I_L);

forming a first, time-invariant setpoint value (**SW1**) of the load current (I_L), which corresponds to a desired actual value of a load current in the preheating phase;

activating a clock generator (TG) which runs freely at a frequency (f_{TG}) which is less than the resonant frequency (f_{res1}) of the load circuit when the lamp is off and is greater than the resonant frequency (f_{res2}) of the load circuit when the lamp is on;

terminating the preheating phase after a first predeterminable time period (TV) has elapsed;

in the striking phase (TZ)

registering the actual value of the load current (I_L) in the load circuit;

forming a time-varying setpoint value (**SW2**(t)) of the load current, which setpoint value (**SW2**(t)) is brought from a time-invariant setpoint value (**SW1**) of the load current (I_L) to a predeterminable value (SW2max);

synchronizing the clock generator (TG) with the frequency (f_{In}) of the inverter;

terminating the striking phase as soon as the setpoint value of the load current (I_L) has reached a value at which the on-time of a half-bridge switching element is greater than the period ($t_{TG}=1/f_{TG}$) of the free-running clock generator (TG).

in normal operation (TN)

registering the actual value of the load current (I_L); and

forming a second, time-invariant setpoint value (**SW5**) of the load current, which setpoint value (**SW5**) corresponds to a desired actual value of the load current in normal operation.

5,828,188

OVER TEMPERATURE PROTECTION CIRCUIT HAVING PLURAL THERMAL COMPONENTS

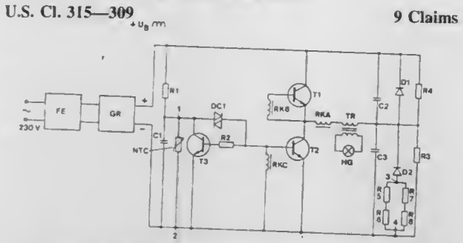
Reinhard Lecheler, Neuberg an der Donau, Germany, assignor to Patent-Treuhand-Gesellschaft fur elektrische Gluhlampen mbH, Munich, Germany

Filed Mar. 31, 1997, Ser. No. 829,904

Claims priority, application Germany, Apr. 2, 1996, 196 13 077.8

Int. Cl.[6] H05B *39/04*

U.S. Cl. 315—309 **9 Claims**



1. Circuit arrangement having a temperature sensor (NTC) as component part of an overtemperature protection circuit, characterized by at least two or more additional thermal components (**R5**–**R8**) which are arranged in a manner distributed uniformly around and thermally coupled to the temperature sensor (NTC), the at least two or more thermal component (**R5**–**R8**) having flowing through them in the event of an overload a current which is increased compared with normal operation, and thereby being heated, as a result of which the overtemperature protection circuit is consequently triggered in the event of an overload.

5,828,189

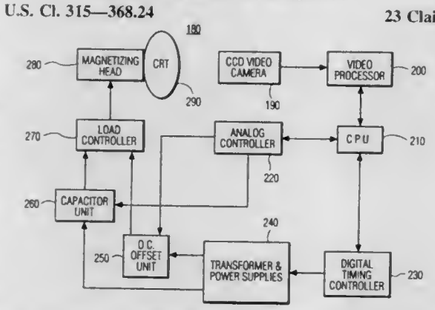
PROCESS AND APPARATUS FOR MAGNETIZING A MAGNETIC RING FOR STATIC CONVERGENCE CORRECTION IN A CRT

Wieslaw Strzelichowski, Farmington Hills, Mich., and Samuel Sunwhee Chung, Knoxville, Tenn., assignors to Philips Electronics North America Corporation, New York, N.Y.

Filed Dec. 4, 1996, Ser. No. 767,097

Int. Cl.[6] G09G *1/28;* **H01J** *29/51*

U.S. Cl. 315—368.24 **23 Claims**



1. A process for correcting static convergence, color purity and frame errors in a CRT by inducing a customized magnetization pattern in a magnetizable ring mounted in the vicinity of the exit end of the electron gun of the CRT, the process comprising the steps of:

(a) subjecting the ring to a first plurality of localized magnetic fields about the periphery of the ring, each localized field comprising a series of decaying high power magnetic pulses of alternating positive and negative polarity, beginning with an initial pulse of sufficient amplitude to induce a state of magnetic saturation in the ring, and continuing with subsequent pulses of decaying amplitude, the amplitudes of the subsequent pulses being sufficient to induce a custom magnetization in the ring sufficient to achieve a coarse convergence correction of the CRT; and

(b) subjecting the ring to a second plurality of localized magnetic fields about the periphery of the ring, each localized field comprising a series of decaying high power magnetic pulses of alternating positive and negative polarity, beginning with an initial pulse of sufficient amplitude to induce a state of magnetic saturation in the ring, and continuing with subsequent pulses of decaying amplitude, each localized field additionally comprising a low power magnetic field for offsetting at least the subsequent pulses in order to induce a custom magnetization in the ring sufficient to achieve a fine convergence correction of the CRT, the low power magnetic field for each localized field predetermined to correct any convergence error remaining in the CRT after the coarse correction.

5,828,190

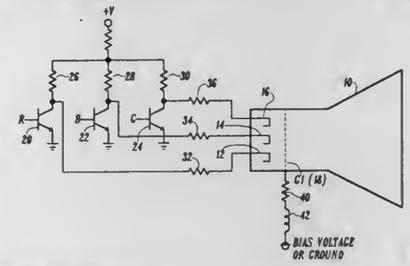
G1 HIGH FREQUENCY DRIVE FOR COLOR CATHODE RAY TUBES

William J. Mark, Glenview, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed May 15, 1997, Ser. No. 857,082

Int. Cl.[6] H01J *29/52*

U.S. Cl. 315—381 **4 Claims**



1. In combination:

a cathode ray tube having a plurality of cathodes and a common control grid;

a corresponding plurality of video amplifiers for supplying video frequency signals to respective ones of said cathodes; and

an inductor coupled to said common control grid for compensating for the roll-off in frequency experienced by said video signals due to the capacitance between said cathodes and said common control grid.

5,828,191

CATHODE RAY TUBE WITH LOW DYNAMIC CORRECTION VOLTAGE

Shoji Shirai, Mobara, and Kenichi Watanabe, Isumi-gun, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

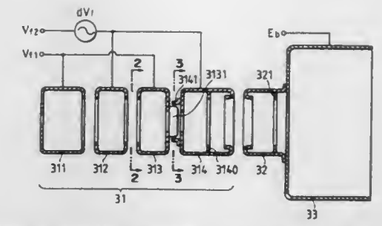
Continuation of Ser. No. 262,975, Jun. 21, 1994, Pat. No. 5,610,481. This application Jan. 28, 1997, Ser. No. 790,060

Claims priority, application Japan, Jun. 30, 1993, 5-161913

Int. Cl.[6] G09G *1/04;* **H01J** *29/50*

U.S. Cl. 315—382 **16 Claims**

1. A cathode ray tube provided with at least an electron gun having an electron beam generating unit for generating a plurality of electron beams arrayed in a horizontal direction and for controlling said plurality of electron beams and a main lens unit for focusing said plurality of electron beams onto a fluorescent screen, and a deflection yoke for scanning said plurality of electron beams on said fluorescent screen, said main lens unit comprising:



electrode members constituting a first kind of a focusing electrode group adapted to be supplied with a first focusing voltage;

electrode members constituting a second kind of a focusing electrode group adapted to be supplied with a second focusing voltage; and

an accelerating electrode disposed downstream of said first and second kind of focusing electrode groups and adapted to be supplied with an accelerating voltage;

at least two non-axisymmetric electron lenses being formed between one electrode member of said first kind of a focusing electrode group and one electrode member of said second kind of a focusing electrode group, respectively, including

a first non-axisymmetric electron lens for focusing said plurality of electron beams stronger in a horizontal direction than in a vertical direction, and

a second non-axisymmetric electron lens being a multipole lens for focusing said plurality of electron beams in one of the horizontal and vertical directions and diverging said plurality of electron beams in another of the horizontal and vertical directions when said first focusing voltage is higher than said second focusing voltage, and for diverging said plurality of electron beams in said one of the horizontal and vertical directions and focusing said plurality of electron beams in said another of the horizontal and vertical directions when said first focusing voltage is lower than said second focusing voltage, thereby reversing a polarity of said multipole lens,

at least one of said first and second focusing voltages being a combination of a fixed voltage and a dynamic voltage varying with a deflection amount of said plurality of electron beams; and

a final main lens being formed between said accelerating electrode and one of said electrode members of said first and second kind of focusing electrode groups adjacent to said accelerating electrode for focusing said plurality of electron beams in both the horizontal and vertical directions and for focusing said plurality of electron beams stronger in the horizontal direction than in the vertical direction.

5,828,192

ELECTRIC VEHICLE POWER FEED SYSTEM

Kenji Kawaguchi, Tokyo, and Masayuki Toriyama, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 190,538, Feb. 2, 1994, abandoned. This application Jul. 18, 1996, Ser. No. 683,423

Claims priority, application Japan, Feb. 2, 1993, 5-037443

Int. Cl.[6] H02P *1/00*

U.S. Cl. 318—139 **23 Claims**

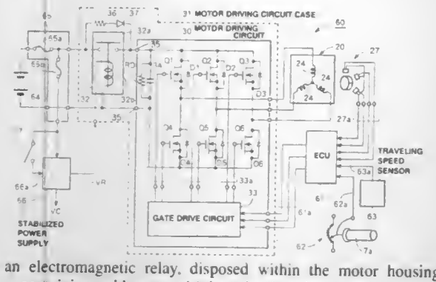
1. A power feed system for feeding power to a motor of an electric vehicle, the power feed system comprising:

a battery supplying high-voltage dc power;

a fuse circuit;

a first high-voltage cable connecting said battery and said fuse circuit;

a motor driving circuit unitarily mounted within a motor housing for converting do supply power into ac power and for feeding the ac power to the motor, said motor driving circuit including a smoothing capacitor and a plurality of semiconductor switches;



an electromagnetic relay, disposed within the motor housing containing said motor driving circuit, wherein said electromagnetic relay enables and disables do supply power to said motor driving circuit;

a power supply generating and supplying a relay drive voltage to enable said electromagnetic relay to supply the dc power from said battery to said plurality of switches via said smoothing capacitor wherein the relay drive voltage is less than a voltage of the DC power supplied by said battery

a second high-voltage cable connecting said fuse circuit and said electromagnetic relay of said motor driving circuit;

a third high-voltage cable connecting said fuse circuit and said power supply; and

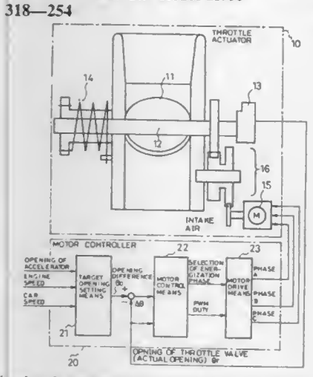
a control circuit disposed outside the motor housing and separated from said motor driving circuit wherein said control circuit controls said motor driving circuit.

5,828,193

INTAKE AIR AMOUNT CONTROL UNIT FOR ENGINE

Akira Furuta, Tokyo, Japan, assignor to Mitsubushi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 7, 1997, Ser. No. 796,554
Claims priority, application Japan, Jun. 20, 1996, 8-160198
Int. Cl.[6] H02K *23/00*
U.S. Cl. 318—254 **14 Claims**



1. An intake air amount control unit for an engine comprising:

a throttle valve supported by a rotary axis in an intake air passage of an engine;

a brushless motor having a rotor and stator windings connected to the rotary axis through a reduction gear;

a throttle opening sensor for detecting an opening of the throttle valve by detecting a rotation angle of the rotary axis;

target opening setting means for setting an opening of the throttle valve based on various car information;

PWM duty signal output means for calculating a phase current value to be supplied to each of the stator windings based on an opening difference between an actual opening of the throttle valve obtained from the throttle opening sensor and a target opening of the throttle valve set by the target opening setting means independently for each stator winding and for outputting a PWM duty signal corresponding to the calculated phase current value;

rotor magnetic pole position learning means for detecting and learning a magnetic pole position of the rotor;

energization stator winding determining means for determining a stator winding to be energized from an opening of the throttle valve and a value learned by the rotor magnetic pole position learning means; and

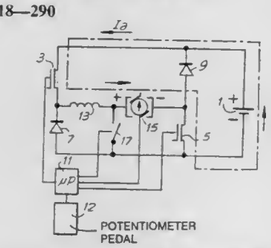
motor drive means for supplying a current to the brushless motor based on the PWM duty signal from the PWM duty signal output means and an energization phase selection signal corresponding to the stator winding to be energized determined by the energization stator winding determining means.

5,828,194

CONTROL CIRCUIT FOR CONTROL OF A DIRECT-CURRENT MOTOR NORMALLY EXCITED IN SERIES INCLUDING STRUCTURE FOR SEPARATE EXCITATION DURING BRAKING

Antonio Canova, Montevarchi, Italy, assignor to Magnetek S.p.A., Siena, Italy

Filed Feb. 27, 1997, Ser. No. 807,899
Claims priority, application Italy, Mar. 2, 1996, FI96A0038
Int. Cl.[6] H02P *3/00*
U.S. Cl. 318—290 **13 Claims**



1. A circuit for the control of a direct-current electric motor normally excited in series, the circuit comprising:

a d.c. voltage source;

an excitation winding with a first pole and a second pole;

an armature with a first pole and a second pole;

reversing means for reversing the direction of rotation of the motor, said reversing means including a first half bridge for connecting the motor to said d.c. voltage source, said first half bridge including a first half bridge controlled switch for controlled opening and closing and a second half bridge for connecting the motor to said d.c. voltage source, said second half bridge including a second half bridge controlled switch for controlled opening and closing, said first half bridge connecting said first pole of said excitation winding to said d.c. voltage source and said second half bridge connecting a pole of said armature to said d.c. voltage source;

a control unit controlling the opening and closing of each of said first half bridge controlled switch and said second half bridge controlled switch and toggling said reversing means as a function of the operating conditions of the motor, said control unit being programmed for toggling both of said first half bridge controlled switch and said second half bridge controlled switch cyclically, simultaneously or independently from an open condition to a closed condition and from a closed condition to an open condition; and

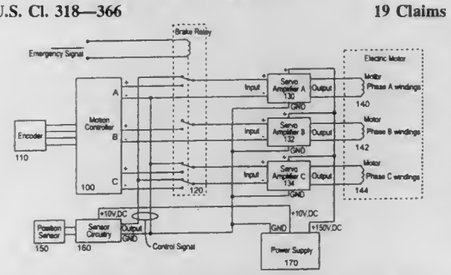
a controlled switch device positioned for connection of said second pole of said excitation winding to said d.c. voltage source for switching between a connection of said excitation winding and said d.c. voltage source and a connection of said armature and said source alternately to provide a configuration with series excitation and a configuration with separate excitation.

5,828,195

METHOD AND APPARATUS FOR ELECTRONIC BRAKING OF AN ELECTRIC MOTOR HAVING NO PERMANENT MAGNETS

Andrew Zalesski, Apalachin, N.Y., assignor to Universal Instruments Corporation, Binghamton, N.Y.

Filed Aug. 29, 1996, Ser. No. 705,266
Int. Cl.[6] H02P *6/24*
U.S. Cl. 318—366 **19 Claims**



1. An apparatus for braking either a linear or rotary electric motor having no permanent magnets and having either a stator or a rotor with equally spaced teeth comprising:

a motion controller;

at least one position sensor in relationship to said teeth with an electrical characteristic representative of motor position; and

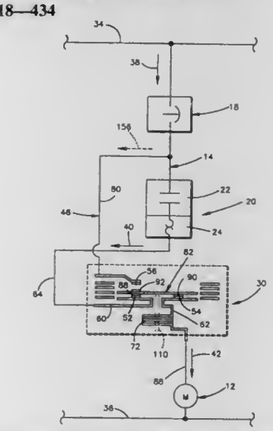
an electronic circuit, responsive to an emergency signal and responsive to said position sensor, for outputting a control signal for controlling the braking of said electric motor, said electronic circuit comprising a relay configured to connect said electronic circuit to a stored energy source, wherein said electronic circuit, said control signal, and said stored energy source operate independently of said motion controller.

5,828,196

APPARATUS AND METHOD FOR CONTROLLING AN ELECTRIC MOTOR

Engelbert Hetzmannseder, Milwaukee, Wis., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 22, 1997, Ser. No. 917,054
Int. Cl.[6] H02K *17/32*
U.S. Cl. 318—434 **23 Claims**



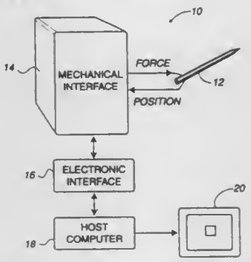
1. An apparatus for use in controlling an electric motor, said apparatus comprising main circuit means for conducting electrical current to the electric motor during normal operation of the electric motor, said main circuit means including a motor starter and a current limiting switch assembly which are connected in series and through which electrical current is conducted during normal operation of the electric motor, and bypass circuit means for conducting electrical current around said motor starter to said current limiting switch assembly upon initiation of a flow of excessive electrical current to the electric motor to protect said motor starter against excessive current flow, said current limiting switch assembly including a movable conductor which is movable between a first position and a second position, said movable conductor being effective to open said bypass circuit means and form a portion of said main circuit means to conduct electrical current which energizes the electric motor during normal operation of the electric motor when said movable conductor is in the first position, said movable conductor being effective to open said main circuit means and form a portion of said bypass circuit means to conduct electrical current which flows to the electric motor when said movable conductor is in the second position, said current limiting switch assembly including means for moving said movable conductor from the first position to the second position upon initiation of a flow of excessive electrical current to the electric motor.

5,828,197

MECHANICAL INTERFACE HAVING MULTIPLE GROUNDED ACTUATORS

Kenneth M. Martin, Palo Alto; Mike D. Levin, Sunnyvale, and Louis B. Rosenberg, Pleasanton, all of Calif., assignors to Immersion Human Interface Corporation, San Jose, Calif.

Filed Oct. 25, 1996, Ser. No. 736,161
Int. Cl.[6] G05B *19/10*
U.S. Cl. 318—567 **56 Claims**



1. An interface apparatus for interfacing motion of a user manipulable object with a computer system, said interface apparatus comprising:

a user manipulable object being physically contacted by a user;

a 3-D spatial mechanism coupled to said user object and including a plurality of members including a ground member, said spatial mechanism providing at least three degrees of freedom to said user manipulable object, said three degrees of freedom including two degrees of freedom provided in a planar workspace and a third degree of freedom provided as rotation of said planar workspace about an axis with respect to said ground member;

three actuators rigidly coupled to said ground member of said spatial mechanism, said actuators operative to apply forces in said three degrees of freedom to said user manipulable object in response to electrical signals from said computer system; and

a sensor for detecting a position of said user manipulable object in three-dimensional space and outputting sensor signals to said computer system.

5,828,198
METHOD AND APPARATUS FOR CONTROLLING COORDINATE DISPLACEMENTS OF A PLATFORM

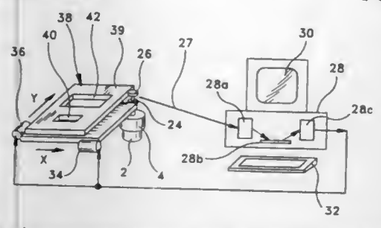
Peter Den Engelse, Voorschoten; Alexander Flipse, Leiden, and Walter Janus, Haarlem, all of Netherlands, assignors to Becton Dickinson and Company, Franklin Lakes, N.J.

Continuation of Ser. No. 538,332, Oct. 3, 1995, Pat. No. 5,627,442, and a continuation of Ser. No. 53,057, Apr. 26, 1993, Pat. No. 5,459,384. This application May 6, 1997, Ser. No. 852,068

Claims priority, application European Pat. Off., Apr. 30, 1992, 92107387

Int. Cl.[6] G05D *3/10;* **G02B** *21/24;* **G01B** *21/00*

U.S. Cl. 318—640 **1 Claim**



1. A microscope stage having a platform with a substantially flat top surface

comprising a first plate and a first drive means operably connected to said first plate for displacement thereof in a first direction x and a second direction y;

and a second plate displaceably mounted on said first plate and a second drive means operably connected for displacement of said second plate;

wherein the first and second drive means for actuating the x and y coordinate displacements are arranged below the level of the substantially flat top surface of the platform, such that the displacement drive means do not rise above the level of the substantially flat top surface at the front side, the left-hand side and the right-hand side of the platform;

and wherein the platform has two illuminable working areas in the upper one of the two plates for viewing a specimen slide;

wherein one of the working areas is a previewing area and wherein previewing is performed by manual displacement of a slide on the flat top surface of the platform and further comprising a button for causing a computer to switch between the positions of the two working areas and wherein the position switch button is located in the neighborhood of the first and second position drive means below the flat top surface of the platform.

5,828,199
VARIABLE SPEED CONTROLLER FOR AN INDUCTION MOTOR

Hirokazu Tajima; Hidetoshi Umida, both of Tokyo, and Hiroshi Tetsutani, Hyogo, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki-ku, Japan

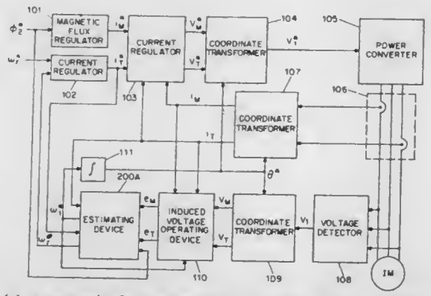
Filed Aug. 8, 1997, Ser. No. 908,575

Claims priority, application Japan, Aug. 8, 1996, 8-209982

Int. Cl.[6] H02P *7/622;21/00*

U.S. Cl. 318—779 **6 Claims**

1. A variable speed controller for an induction motor, said variable speed controller resolving a primary current of said induction motor into a magnetizing current and a torque current, said primary current provided by an electric power converter generating outputs at variable voltages, frequencies and phases, said magnetizing current being a component providing a magnetic field parallel to a magnetic flux axis of said induction motor, said torque current being a component in quadrature phase to said magnetizing current, and said variable speed controller regulating said magnetizing current and said torque current independently to control an induction motor torque, said variable speed controller comprising:



(a) a magnetic flux phase device for integrating a reference primary angular frequency signal and for obtaining a signal representing the position of said magnetic flux axis;

(b) an induced voltage generating device for generating a signal representing the induced voltage of said induction motor;

(c) a first primary angular frequency generating device for generating a first primary angular frequency signal based on said induced voltage and a magnetic flux value;

(d) a slip frequency generating device for generating a signal representing a reference slip frequency based on a reference torque current value, or an actual torque current value, and a reference magnetic flux value;

(e) a first speed generating device for subtracting said signal representing said reference slip frequency from said signal representing said first primary angular frequency, and for obtaining a signal representing a first speed value;

(f) a changeover signal generator responsive to a signal representing a sensed operating condition of said motor for generating a changeover signal, said changeover signal representing a first mode of operation and a second mode of operation for said variable speed controller, said first and second modes of operation determined by a predetermined changeover threshold of said sensed operating condition signal;

(g) a load torque generating device for generating a signal representing an estimated load torque based on said reference torque current value, said signal representing said first speed value, and said magnetic flux value;

(h) a sample holder for holding said signal representing said estimated load torque in said second mode of operation;

(i) an acceleration and deceleration torque generating device for subtracting said signal representing said estimated load torque from the product of said reference torque current value and said magnetic flux value, said acceleration and deceleration torque device generating a signal representing an acceleration and deceleration torque value;

(j) an integrator for integrating said signal representing said acceleration and deceleration torque value with an induction motor mechanical constant to obtain a signal representing a second speed value;

(k) an adder for adding said signal representing said second speed value and said signal representing said reference slip frequency, to obtain a signal representing a second primary angular frequency; and

(l) an output device for selecting and outputting, in response to said changeover signal indicating said first mode of operation, said signal representing said first primary angular frequency as said reference primary angular frequency, and said signal representing said first speed value as an estimated speed, and for selecting and outputting, in response to said changeover signal indicating said second mode of operation, said signal representing said second primary angular frequency as said reference primary angular frequency and said signal representing said second speed value as said estimated speed.

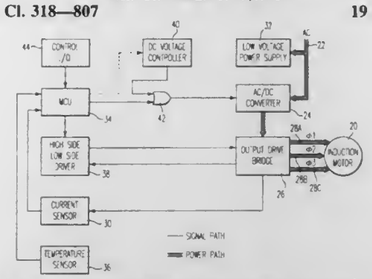
5,828,200
MOTOR CONTROL SYSTEM FOR VARIABLE SPEED INDUCTION MOTORS

James R. Ligman; Warren E. Dennis, and Thomas M. Ligman, all of Santa Barbara, Calif., assignors to Phase III, Santa Barbara, Calif.

Filed Nov. 21, 1995, Ser. No. 561,429

Int. Cl.[6] H02P *5/40;1/42*

U.S. Cl. 318—807 **19 Claims**



1. A control system for an induction motor, comprising:

control means for providing a variable frequency signal for controlling the speed of said motor, for providing phase signals from said variable frequency signals, and for a period of time, when said motor is started, for keeping said variable frequency signal and said motor speed at low levels;

switch means for applying power from a power source to said motor;

driver means for applying said phase signals to actuate said switch means; and

power sensing means for sensing the power drawn by said motor, said control means limiting said power drawn by said motor when said power exceeds a predetermined level by ramping down said variable frequency signal to a lower frequency to lower the speed of said motor and the power drawn by said motor.

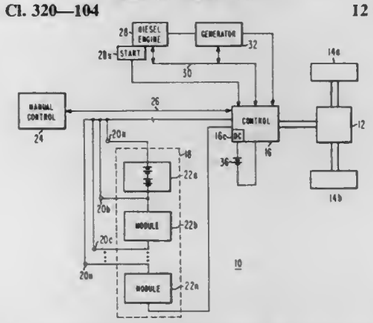
5,828,201
METHOD FOR MAINTAINING THE CHANGE CAPACITY OF TRACTION BATTERY MODULES OF A HYBIRD ELECTRIC VEHICLE

David William Hoffman, Jr., Port Crane, and Timothy Michael Grewe, Endicott, both of N.Y., assignors to Lockheed Martin Corporation, Johnson City, N.Y.

Filed Oct. 30, 1997, Ser. No. 961,573

Int. Cl.[6] H01M *10/44*

U.S. Cl. 320—104 **12 Claims**



1. A method for maintaining the modules of a traction battery of a hybrid electric vehicle, which traction battery is made up of a plurality of series-connected modules, which vehicle, when operating, tends to charge said traction battery at a rate which may at times exceed the discharge rate for powering said vehicle so that said traction battery tends to receive a net charge, each of said modules of said traction battery having a nominal voltage when fully charged, and each of said modules of said traction battery having a characteristic which includes degradation when overcharged, and which experiences a reduction of charge capacity when discharged without prompt full recharging, said method comprising the recurrent steps of:

while said vehicle is not operating, and under control of a programmed processor, fully charging at least one module of said traction battery, but not charging any of the remaining modules of said traction battery simultaneously with charging of said one module of said traction battery:

under said control of said programmed processor, and after said step of fully charging said at least one module, intentionally partially discharging said at least one module, but not said remaining modules, of said battery; and

operating said vehicle for a period of time.

5,828,202
BATTERY APPARATUS

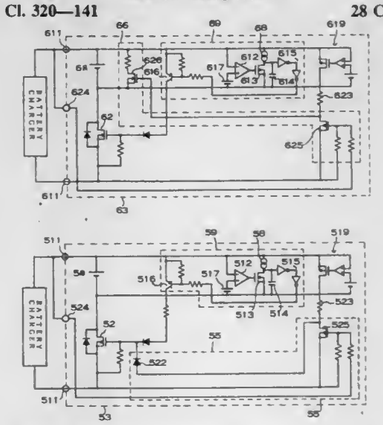
Mikitaka Tamai, Tsuna-gun, Japan, assignor to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Feb. 27, 1997, Ser. No. 807,465

Claims priority, application Japan, Feb. 29, 1996, 8-042640; Apr. 17, 1996, 8-095455; Jun. 24, 1996, 8-163225

Int. Cl.[6] H02J *7/00*

U.S. Cl. 320—141 **28 Claims**



1. A battery apparatus comprising:

(1) a switching device connected between a battery charger and a rechargeable battery;

(2) a pulse control circuit to control on and off the switching device, the pulse control circuit turn off the switching device and suspend charging when rechargeable battery voltage exceeds a specified voltage, and turn on the switching device and resume charging when rechargeable battery voltage drops below the specified voltage; and

(3) an over-ride circuit to detect a cut-off of charging voltage application to the rechargeable battery and to force the switching device on.

5,828,203
BATTERY CHARGER WITH CHARGING CURRENT VARIATION BASED ON A TEMPERATURE DIFFERENCE BETWEEN THE BATTERY AND ITS ENVIRONMENT

Wieger Lindeboom, and Oedilius J. Bisschop, both of Drachten, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 4, 1997, Ser. No. 923,136

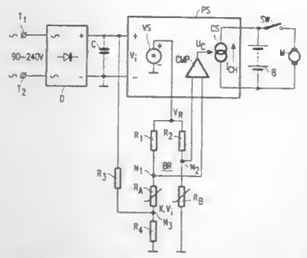
Claims priority, application European Pat. Off., Sep. 5, 1996, 96202474

Int. Cl.[6] H02J *7/04*

U.S. Cl. 320—150 **9 Claims**

1. A battery charger for charging a rechargeable battery, comprising:

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power supply means (PS) for converting a supplied input voltage (Vi) into a charging current for the battery, said conversion generating heat which raises the ambient temperature of the battery, the generated heat increasing as the supplied input voltage (Vi) increases;

a first sensor for generating a first signal which is representative of the ambient temperature of the battery;

a second sensor for generating a second signal which is representative of the internal temperature of the battery; and

means for changing the charging current produced by said power supply means (PS) in accordance with the difference between the first and second signals;

characterized in that said battery charger further comprises:

means for generating a third signal which is representative of the supplied input voltage (Vi); and

means for modifying the difference between the first and second signals in accordance with said third signal, so as to compensate for a change in ambient temperature of the battery due to heat generated by conversion of the supplied input voltage (Vi) into charging current for the battery.

5,828,204

POWER SUPPLY WITH MINIMAL DISSIPATION OUTPUT STAGE

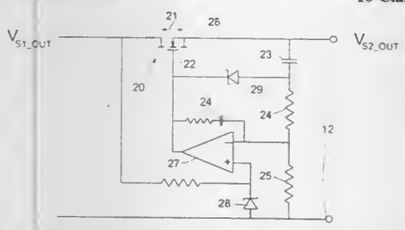
Arian Jansen, Crolle, France, assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 675,302

Claims priority, application European Pat. Off., Jul. 14, 1995, 95111027

Int. Cl.[6] H01F *5/00;7/08*

U.S. Cl. 323—266 **16 Claims**



1. An electrical power supply comprising a regulation stage having an input and an output, the regulation stage being supplied at its input with a dc input voltage with a significant ripple component, the regulation stage including means to provide at its output an output voltage at a level essentially equal to the input voltage value occurring at troughs of the ripple component.

5,828,205

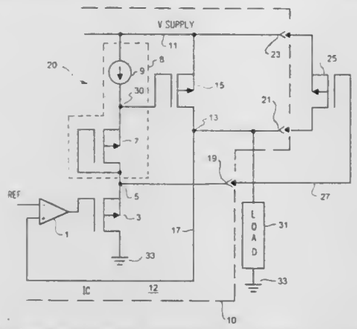
INTEGRATED CIRCUIT WITH AN ONBOARD REGULATOR HAVING AN OPTIONAL EXTERNAL PASS TRANSISTOR

T. Gerard Byrne, Dublin, Ireland, assignor to Skelbrook, Dublin, Ireland

Filed Mar. 4, 1997, Ser. No. 810,428

Int. Cl.[6] G05F *1/59*

U.S. Cl. 323—268 **9 Claims**



1. An integrated circuit mounted on a chip has a means for connecting an optional external pass element located off chip to the integrated circuit, the integrated circuit comprises:

a voltage regulator including; a control circuit with a control input and a control output—an internal pass element having first and second connections and a control connection—a disable circuit having first and second nodes and an output node—a voltage bus— and a common bus—the internal pass element having the first connection connected to the voltage bus, the second connection connected to the control input and the control connection connected to the output node—the first node being connected to the voltage bus, the second node being connected to the control output— and a load being connected between the input and the common bus—the voltage bus and the control input and the control output being arranged to be connected to the external pass element, the external pass element having an input lead, control lead and output lead; and

whereby in a first mode of operation, when the external pass element is not connected to the voltage bus, the control input and the control output, the internal pass element conducts current from the voltage bus to the load and in a second mode of operation, when the input lead is connected to the voltage bus, the output lead is connected to the control input and the control lead is connected to the control output, the disable circuit disables the internal pass element and the external pass element conducts current from the voltage connection to the load.

5,828,206

SERIAL CONTROL TYPE VOLTAGE REGULATOR

Rinya Hosono, and Takeyuki Kouti, both of Tsurugashima, Japan, assignors to Toko Kabushiki Kaisha, Tokyo-to, Japan

Filed Mar. 15, 1996, Ser. No. 616,735

Claims priority, application Japan, Mar. 17, 1995, 7-086119

Int. Cl.[6] G05F *1/56*

U.S. Cl. 323—273 **4 Claims**

1. A serial control type voltage regulator comprising:

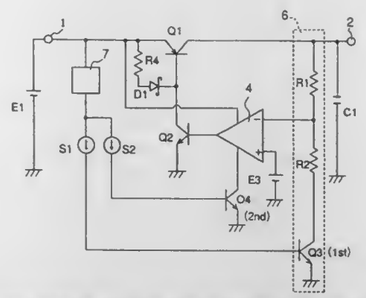
an input terminal;

an output terminal;

a control transistor connected in series between the input terminal and the output terminal;

an input voltage detector coupled with the input terminal for detecting an input voltage at the input terminal;

an output voltage detector coupled with the output terminal for detecting an output voltage at the output terminal;



an error amplifier for controlling the control transistor based on a comparison between the output voltage detected by the output voltage detector with a reference voltage, the error amplifier including a differential amplifier and a second switching element, the first switching element cutting off a bias current to the differential amplifier when the control transistor stops operation; and

a second switching element for cutting off the output voltage detector when the control transistor stops operation,

whereby the first and second switching elements are operated to cut off based on the input voltage detected by the input voltage detector.

5,828,207

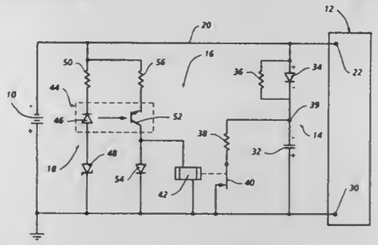
HOLD-UP CIRCUIT WITH SAFETY DISCHARGE FOR PREVENTING SHUT-DOWN BY MOMENTARY POWER INTERRUPTION

Tobia Saadeh, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 20, 1993, Ser. No. 49,463

Int. Cl.[6] G05F *1/40;* **H02J** *7/00*

U.S. Cl. 323—281 **12 Claims**



1. In combination with a source of power, an electrical load connected to the source for operation at an operating voltage above a predetermined level, hold-up circuit means for maintaining said operation of the load during momentary interruption in power of the source, comprising: power storage means connected to the load for supply of said operating voltage thereto, impedance means connected to the power storage means for regulating charge thereof and discharge thereof into the load during said interruption in power of the source and safety means responsive to a drop in voltage applied to the load from the source below said predetermined level for preventing continuation of said discharge of the power storage means into the load during said interruption in power of the source.

5,828,208

VOLTAGE REGULATOR USABLE WITHOUT DISCRIMINATION BETWEEN INPUT AND OUTPUT TERMINALS

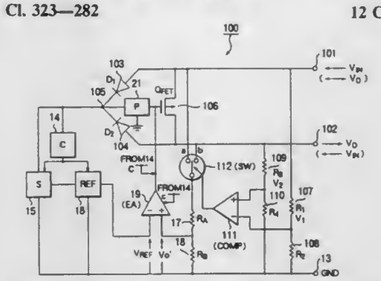
Koichiro Oku, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jul. 25, 1997, Ser. No. 900,350

Claims priority, application Japan, Jul. 26, 1996, 8-198185

Int. Cl.[6] G05F *1/40*

U.S. Cl. 323—282 **12 Claims**



1. A voltage regulator for regulating an input voltage into an output voltage stabilized, said voltage regulator comprising:

a pair of common terminals one of which is used as an input terminal for said input voltage and the other of which is used as an output terminal for said output voltage;

a pair of rectifying diodes which are connected to said common terminals, respectively, and which are connected to each other at a point of connection therebetween, for rectifying a current from said common terminals to said point to supply said input voltage to said point,

detecting means for detecting said output voltage to produce a detecting voltage proportional to said output voltage,

control means connected to said point and said detecting means for producing a control signal in response to said input voltage and said detecting voltage,

output amplifying means connected to said common terminals and said control means for amplifying said input voltage supplied from one of the common terminals in response to said control signal to produce said output voltage which is provided to the other of the common terminals, and

selecting means connected to said common terminals and said detecting means for selectively electrically coupling said detecting means with one of the common terminals to supply said output voltage to said detecting means.

5,828,209

VOLTAGE REFERENCE ARRANGEMENT, A VOLTMETER, A BATTERY VOLTAGE DETECTION ARRANGEMENT, AND A WIRELESS COMMUNICATION DEVICE

Daniel J. G. Janssen, Eindhoven, Netherlands, assignor to U.S Philips Corporation, New York, N.Y.

Filed Jul. 18, 1996, Ser. No. 683,479

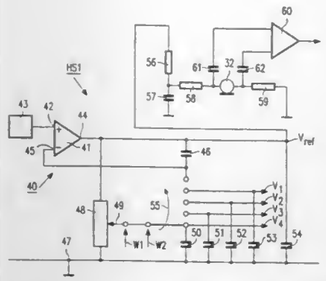
Claims priority, application European Pat. Off., Jul. 21, 1995, 95202011

Int. Cl.[6] G05F *1/10*

U.S. Cl. 323—354 **18 Claims**

11. A voltmeter comprising:

a voltage reference circuit including a differential amplifier having a first input coupled to an input reference voltage source, an output providing an accurate output voltage and coupled to a second input of the differential amplifier, wherein said output is coupled to a supply voltage terminal via a



digitally controllable potentiometer having a programmable slider coupled to the second input for adjusting inaccuracies in the input reference voltage source,

a comparator having first ard second inputs and an output,

measurement logic,

first means coupling an input of the voltmeter to the first input of the comparator, and

second means coupling the voltage reference circuit between the measurement logic and the second input of the comparator, whereby under control of the measurement logic the voltage reference circuit is controlled until an output value at the output of the comparator indicates that a voltage measurement is terminated.

5,828,210

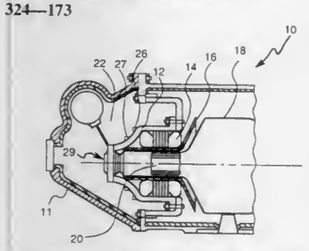
X-RAY TUBE ANODE DRIVE SPEED MONITOR INCLUDING FLUX PICKUP COIL

Gerald Burt Kliman; Rudolph Alfred Albert Koegl, both of Niskayuna, N.Y., and Steven Duane Hansen, Port Washington, Wis., assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 23, 1996, Ser. No. 702,375

Int. Cl.[6] G01P *3/48;3/54*

U.S. Cl. 324—173 **12 Claims**



1. A speed monitor for an X-ray tube anode drive including a rotor, a stator, and a stator support basket, the speed monitor comprising:

an axial leakage flux pickup coil situated on the stator support basket so as to pick up a flux signal from the rotor while the rotor rotates;

an electrically conductive guard ring situated on the stator support basket between a high voltage contact and the coil; and

a signal processor for using the flux signal to estimate a speed of the rotor.

5,828,211

DETERMINING STRESS IN FERROMAGNETIC MATERIALS FROM MEASUREMENTS OF MAGNETIC ANISOTROPY AND MAGNETIC PERMEABILITY

Christopher Brian Scruby, Botley; David John Buttle, Wantage; Fiona Anne Ravenscroft, Sutton Courtenay, all of United Kingdom; Carlo Guido de Michelis, Milan, Italy; Massimo Gori, Milan, Italy, and Giampiero Antonelli, Milan, Italy, assignors to AEA Technology PLC, Didcot, United Kingdom, and Centro Informazioni Studi Esperienze SPA, Milan, Italy

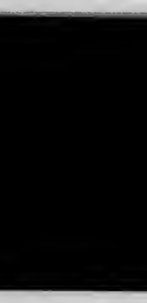
PCT No. PCT/GB94/01022, § 371 Date Nov. 16, 1995, § 102(e) Date Nov. 16, 1995, PCT Pub. No. WO94/28407, PCT Pub. Date Dec. 8, 1994

PCT Filed May 12, 1994, Ser. No. 553,272

Claims priority, application United Kingdom, May 21, 1993, 9310803

Int. Cl.[6] G01B *7/24;* **G01R** *33/18*

U.S. Cl. 324—209 **10 Claims**



1. A method for measuring stress in a ferromagnetic material, the method using a probe (**12**) comprising an electromagnet means defining an electromagnet core (**26**) and two spaced apart electromagnet poles (**28**), a first magnetic sensor (**32**) between the two poles (**28**) and arranged to sense magnetic flux density perpendicular to the direction of the free space magnetic field between the poles (**28**), a second magnetic sensor (**30**) arranged to sense the reluctance of that part of the magnetic circuit between the poles (**28**) of the electromagnet means, and means (**30**) to generate an alternating magnetic field in the electromagnet means, the method comprising arranging the probe (**12**) with the poles (**28**) adjacent to a location on a surface of a ferromagnetic material (**16**), generating an alternating magnetic field in the electromagnet means and so also in the ferromagnetic material (**16**) with a maximum amplitude well below magnetic saturation, turning the probe (**12**) so the alternating magnetic field in the ferromagnetic material (**16**) has in succession a plurality of different orientations, detecting the signals from the first sensor (**32**) with the magnetic field in the plurality of different orientations, determining from the orientations of the magnetic field at which the maxima and minima of the signals from the first sensor (**32**) occur the directions of the principal stress axes, detecting the signals from the second sensor (**30**) at least when the magnetic field is aligned with the directions of the principal stress axes, processing the signals from the second magnetic sensor (**30**) by backing them off with a back-off signal preset such that when the probe is adjacent to a stress-free location the backed-off signal is zero, and then resolving that component of the backed-off signal which, in the impedance plane, is perpendicular to the effect of lift-off from the surface, and using the values of the resolved component with the magnetic field aligned with the directions of the principal stress axes to determine the values of the principal stresses at that location in the material (**16**).

5,828,212

APPARATUS FOR DETERMINING THE THICKNESS OF A LAYER OF PAINT ON A SUBSTRATE

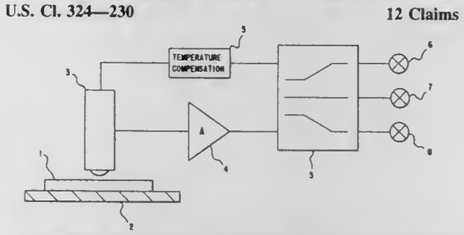
Norbert Nix, Köln, Germany, assignor to Automation Hans Nix KG, and Fabrik f. ind. Erzeugnisse & Co., both of Cologne, Germany

Filed Mar. 27, 1996, Ser. No. 622,833

Claims priority, application Germany, Mar. 28, 1995, 195 11 397.7

Int. Cl.[6] G01B *7/06;* **G01R** *33/12;* **G01N** *27/72*

U.S. Cl. 324—230 **12 Claims**



1. Apparatus for determining the thickness of a layer of paint on a substrate, said apparatus comprising magnetic field responsive sensor means for sensing the thickness of the layer of paint on the substrate; a plurality of display elements; discriminator means coupled to the sensor means and the display elements, for applying a signal to a predetermined one of the display elements as a function of the thickness of the paint layer sensed by the sensor means, measuring means for measuring the temperature dependent internal resistance of said sensor means, and temperature compensation means connected to said measuring means and the discriminator means for compensating for temperature drift of the sensor means; wherein each of the display elements corresponds to a predetermined range of paint layer thickness.

5,828,213

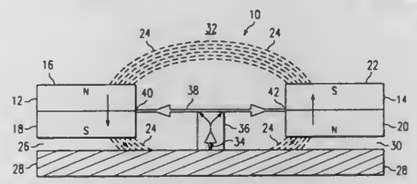
METHOD AND APPARATUS FOR MAGNETICALLY SAMPLING THE UNIFORMITY OF AN ELONGATE OBJECT

Jack R. Hickman, 2120 Danny Park, Metairie, La. 70001

Filed Oct. 21, 1996, Ser. No. 733,944

Int. Cl.[6] G01N *27/82;* **G01R** *33/12*

U.S. Cl. 324—235 **31 Claims**



1. Apparatus for magnetically sampling uniformity of an elongate object, comprising:

a housing having means for receiving said object;

first and second magnet means disposed in said housing forming a magnetic field therebetween for passing magnetic flux through said object, said first and second magnet means respectively comprising a plurality of circumferentially disposed magnets approximating a cylindrical magnetic coil having a central cavity for receiving said object, wherein said cavities are longitudinally aligned, and

sensing means for sensing variations in said magnetic flux passing through said object, said sensing means being engaged with said first and second magnet means, respectively, for providing a magnetic flux return path having a maximum capacity to return to said first and second magnet means magnetic flux less than or equal to a predetermined maximum allowable magnetic flux deviance generated by a fault in said object, said maximum allowable magnetic flux deviance being less than the saturated magnetic flux capacity of said object.

5,828,214

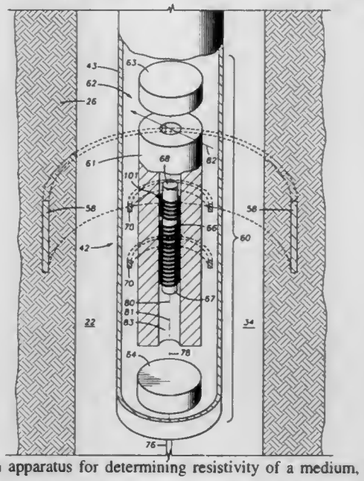
METHOD AND APPARATUS FOR RESISTIVITY DETERMINATION BY NUCLEAR MAGNETIC RESONANCE MEASUREMENT

Gersh Z. Taicher, and Arcady Reiderman, both of Rehovot, Israel, assignors to Western Atlas International, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 606,089, Feb. 23, 1996. This application Apr. 1, 1996, Ser. No. 625,211

Int. Cl.[6] G01V *3/14*

U.S. Cl. 324—303 **58 Claims**



1. An apparatus for determining resistivity of a medium, comprising:

a magnet for inducing a static magnetic field in said medium;

means for generating a radio frequency magnetic field for exciting nuclei in said medium; and

means for receiving nuclear magnetic resonance signals from said excited nuclei, said means for receiving including means for measuring a phase of said nuclear magnetic resonance signals with respect to said radio frequency magnetic field, said means for measuring phase including means for calculating said resistivity from said measurement of phase.

5,828,215

METHOD FOR PHASE CONTRAST MR ANGIOGRAPHY, AND ARRANGEMENT FOR CARRYING OUT THE METHOD

Uwe Boettcher, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Aug. 7, 1996, Ser. No. 694,474

Claims priority, application Germany, Aug. 10, 1995, 195 29 512.9

Int. Cl.[6] G01V *3/00*

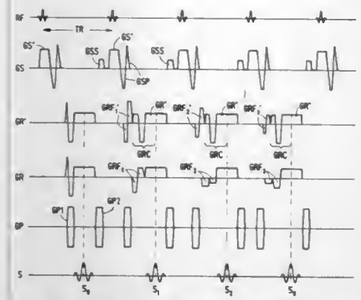
U.S. Cl. 324—306 **14 Claims**

1. A method for spatially resolved flow acquisition comprising the steps of:

(a) exciting nuclear magnetic resonance signals in an examination subject having a flow therein by emitting a radio-frequency pulse;

(b) emitting a phase encoding gradient in a first direction;

(c) emitting a bipolar flow encoding gradient having at least two sub-pulses in at least one direction;



(d) reading out said nuclear magnetic resonance signals from said subject under a readout gradient in a second direction perpendicular to said first direction to obtain read out nuclear magnetic resonance signals each having a phase associated therewith which has a sensitivity to said flow;

(e) determining said flow in said subject from the respective phase of the read out nuclear magnetic resonance signals; and

(f) repeating steps (a) through (e) n times in successive measurements, with an absolute value of an amplitude-time integral of the sub-pulses of the bipolar flow encoding gradient being different in each measurement with the same phase encoding gradient, thereby obtaining data respectively in said successive measurements having different sensitivity of said phase to said flow.

5,828,216

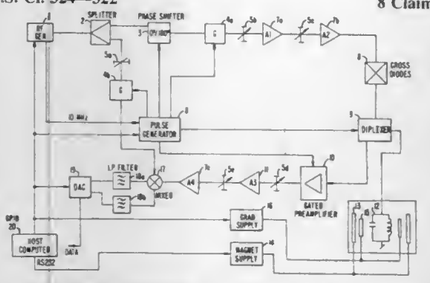
GATED RF PREAMPLIFIER FOR USE IN PULSED RADIOFREQUENCY ELECTRON PARAMAGNETIC RESONANCE AND MRI

Rolf Gottfried Tschudin, Kensington; Ramachandran Murugesan; Murali K. Cherukuri, both of Rockville; James B. Mitchell, Damascus, all of Md., and Sankaran Subramanian, Madras, India, assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Aug. 19, 1996, Ser. No. 699,383

Int. Cl.[6] G01V *3/00*

U.S. Cl. 324—322 **8 Claims**



1. A gated RF preamplifier for utilization in a data acquisition subsystem characterized by a transmit cycle during which an RF excitation pulse of high amplitude is followed immediately by a receive cycle and data acquisition period, where said excitation pulse excites a sample and causes the sample to radiate a low amplitude data signal, with the imaging system asserting a gating signal during said receive cycle, said preamplifier comprising:

a plurality of amplification stages, each stage having an inverting input port for receiving an input signal and an output port for providing an amplified output signal;

a like plurality of switches, with each switch in said plurality having an input terminal coupled to the output of a preceding amplification stage, a first output terminal coupled to the input of a succeeding amplification stage, a second output terminal coupled to a terminating impedance, and each switch having a control input to receive said gating signal, each switch for coupling its input terminal to its first output terminal when the gating signal is asserted, and for coupling its input terminal to its second output terminal when the gating signal is not asserted so that said data signal passes from the preceding to the succeeding amplifier when said gating signal is asserted and so that the data signal is highly attenuated and each amplification stage is terminated when the gating signal is not asserted; and

a biasing network for continuously providing a bias voltage to said amplification stages while the gating signal is asserted to provide quick response to an input signal transmitted by one of said switches.

5,828,217

MISFIRE DETECTING DEVICE FOR INTERNAL COMBUSTION ENGINE

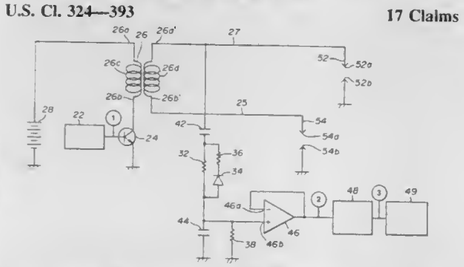
Hiroshi Inagaki, Komaki, and Kanehisa Kitsukawa, Konan, both of Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Dec. 4, 1995, Ser. No. 567,992

Claims priority, application Japan, Dec. 2, 1994, 6-329535

Int. Cl.[6] F02P *17/00*

U.S. Cl. 324—393 **17 Claims**



1. A misfire detecting device for an internal combustion engine provided with a double-ended distributorless ignition system including an ignition coil having a primary winding and a secondary winding, primary current interrupting means for interrupting flow of battery current through the primary winding of the ignition coil, a first spark plug connected at a center electrode side thereof to a positive side of the secondary winding and grounded at an outer electrode side thereof, and a second spark plug connected at a center electrode side thereof to a negative side of the secondary winding and grounded at an outer electrode side thereof, the misfire detecting device comprising:

a first capacitor connected to a side of the secondary winding of the ignition coil opposite from the side to which the second spark plug is connected to and in parallel with the first and second spark plugs, said first capacitor being charged by a voltage produced at the secondary winding side of the ignition coil and thereafter applying a voltage to the first and second spark plugs when a voltage at the secondary winding side drops;

a second capacitor connected in series with said first capacitor and having a capacitance larger than that of said first capacitor to divide a voltage across said first capacitor; and

misfire detecting means connected to a junction between said first capacitor and said second capacitor to detect a misfire on the basis of a decay characteristic of a divided voltage produced at said second capacitor.

5,828,218

METHOD OF ESTIMATING RESIDUAL CAPACITY OF BATTERY

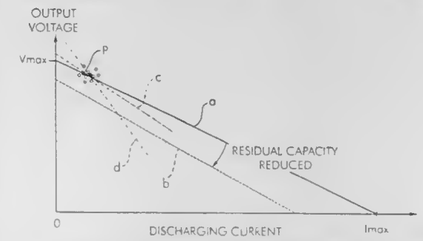
Masahide Yokoo; Masao Nagano, and Hideharu Takemoto, all of Saitama-ken, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 595,448, Feb. 5, 1996, Pat. No. 5,635,842, which is a continuation of Ser. No. 269,404, Jun. 30, 1994, abandoned. This application Mar. 6, 1997, Ser. No. 812,473

Claims priority, application Japan, Jun. 30, 1993, 5-160647

Int. Cl.[6] G01N *27/46*

U.S. Cl. 324—427 **19 Claims**



1. A method of estimating the residual capacity of a battery, comprising the steps of:

measuring a present discharging current and an output voltage of the battery when the battery is being discharged;

establishing a reference point approximating an intersection of a plurality of current/voltage characteristics linear curves representing the relationship between discharging current and output voltage during discharge of the battery;

determining a present current/voltage characteristic linear curve of the battery passing through said reference point and an operating point of the battery which corresponds to said measured present discharging current and the output voltage values; and

estimating a present residual capacity of the battery based on a location of said measured present discharging current and output voltage values on said present current/voltage characteristic linear curve.

5,828,219

METHOD OF DETECTING FAULTS IN THE INSULATION LAYER OF AN INSULATED CONCEALED CONDUCTOR

Jason Julian Hanlon, and Andrzej Zbigniew Regini, both of Bristol, United Kingdom, assignors to Radiodetection, Ltd., Bristol, United Kingdom

Filed Aug. 12, 1997, Ser. No. 909,547

Claims priority, application United Kingdom, Aug. 22, 1996, 9617605.2

Int. Cl.[6] G01R *31/12;* **G01V** *3/11*

U.S. Cl. 324—529 **4 Claims**

1. A method of detecting faults in the insulation layer of an insulated concealed conductor, comprising the steps of:

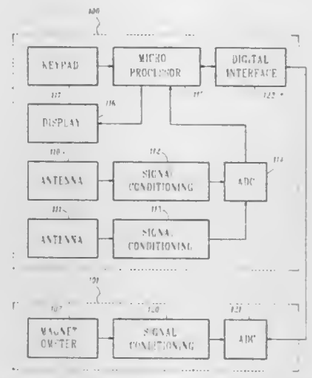
(i) applying a first alternating current with a frequency of less than 10 Hz to the insulated concealed conductor;

(ii) detecting the field generated at a selected point along the concealed conductor with a magnetometer, the magnetometer being part of a detector;

(iii) applying a second alternating current with a frequency of more than 10 Hz to the insulated concealed conductor;

(iv) detecting the field generated by the second alternating current at said selected point along the concealed conductor with a magnetic field detector, said magnetic field detector being a further part of said detector;

(v) determining the depth of the concealed conductor at said selected point using said detected field generated by the second alternating current;



(vi) deriving the magnitude of the first alternating current at said selected point;

(vii) repeating steps (i) to (vi) for a plurality of selected points, the detector being moved between the plurality of selected points; and

(viii) determining the variation of said first alternating current between said plurality of selected points, thereby to detect changes in the gradient of said variation of current, thereby to detect faults in the insulation layer.

5,828,220

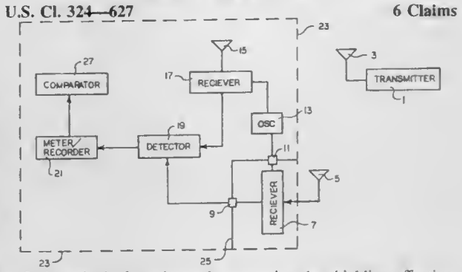
METHOD AND SYSTEM UTILIZING RADIO FREQUENCY FOR TESTING THE ELECTROMAGNETIC SHIELDING EFFECTIVENESS OF AN ELECTROMAGNETICALLY SHIELDED ENCLOSURE

Thomas Lee Carney, Leesburg, Va., and Michael Kent McInerney, Champaign, Ill., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 2, 1995, Ser. No. 505,582

Int. Cl.[6] G01R *31/00*

U.S. Cl. 324—627 **6 Claims**



1. A method of continuously measuring the shielding effectiveness of an electromagnetically shielded enclosure, the method comprising the steps of:

a) continuously transmitting a radio frequency (RF) signal through atmospheric free space at a predetermined frequency from a location remote from said electromagnetically shielded enclosure;

b) receiving said continuously transmitted RF signals by way of a reference receiver having its receiving antenna positioned outside of said enclosure, the signals received by said reference receiver being reference signals;

c) receiving said continuously transmitted RF signals by way of an enclosure receiver positioned within said shielded enclosure, the signals received by said enclosure receiver being enclosure signals;

d) continuously computing the ratio, in a comparator, of the received reference signals versus the received enclosure sig-

nals, these ratios being indicative of the shielding effectiveness of the electromagnetic shield of said enclosure; and

e) determining the electromagnetic shielding effectiveness by analyzing said computed ratios.

5,828,221

ELECTROMAGNETIC OBJECT DETECTOR FOR A MEDICAL DIAGNOSTIC APPARATUS

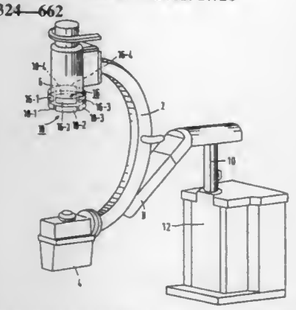
Wilhelmus J. P. Habraken; Antonius H. M. Blom, and Ronald J. Asjes, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1996, Ser. No. 758,653

Claims priority, application European Pat. Off., Nov. 30, 1995, 95203299

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—662 **17 Claims**



1. An apparatus for medical diagnosis and/or therapy, including a detection device for detection of the presence of an object in the vicinity of a movable part of the apparatus, which detection device comprises:

a signal source for producing an electric signal,

a transmitter unit which is connected to the signal source in order to produce, in the vicinity thereof, an electric field corresponding to the electric signal,

a detection unit which is arranged in the vicinity of the transmitter unit in order to detect an electric field in the vicinity thereof,

a receiver which is responsive to a control unit and which is arranged to receive on an input an input signal which corresponds to the electric field in the vicinity of the detection unit, and to produce an output signal V_o corresponding to the input signal, and

the control unit for automatically adjusting the receiver in order that the output signal V_o of the receiver is adjusted to a predetermined nominal zero value in the absence of motion of the movable part of the apparatus.

5,828,222

QUICK DC COMPRESSIVE STRENGTH TEST METHOD AND THE RELATED APPARATUS

Pin-Yi Chen, Taipei, Taiwan, assignor to Extech Electronics Co., Ltd., Taipei, Taiwan, and Associated Research, Inc., Lake Bluff, Ill.

Filed Jun. 5, 1997, Ser. No. 869,037

Int. Cl.[6] G01R *27/26*

U.S. Cl. 324—678 **6 Claims**

2. A DC dielectric voltage-withstand test apparatus comprising:

a microprocessor;

a status display controlled by said microprocessor to display a test status; and

a test circuit controlled by said microprocessor to test a sample to be tested, said test circuit comprising a programmable high voltage generator having an input end connected to an output end of said microprocessor and an output end, an analog/digital converter having an input end connected to the output end of said high voltage generator and an output end connected to an input end of said microprocessor;

wherein said microprocessor includes inputs by which a predetermined charging current upper limit value Ic, said charging current upper limit value Ic being a maximum acceptable charging current value set by the user, a predetermined test charging current time interval ΔT during which charging currents are presumed to occur and no leakage current test is conducted, and a predetermined test voltage V to be applied to the sample, are inputted into said microprocessor before a leakage test, said high voltage generator being driven by said microprocessor to provide a high voltage to the test sample within said predetermined test charging current time interval ΔT, said high voltage causing a charging current Ir to flow between opposite ends of said test sample, and

wherein said test circuit is arranged to measure the charging current value Ir and said microprocessor is arranged to compare the measured current value Ir with said predetermined charging current upper limit value Ic and prevent the leakage test from being performed if said measured current value exceeds said upper limit value.

5,828,223

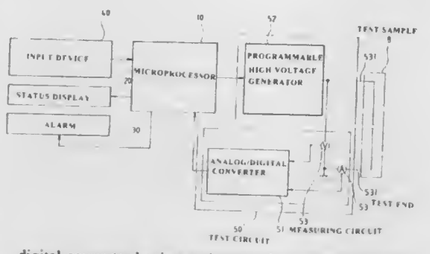
UNIVERSAL CHIP TESTER INTERFACE DEVICE

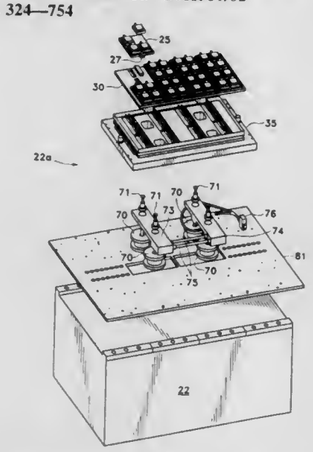
Richard Rabkin; Ken Berling; Robert Besuner; James Lubin, and David Estrich, all of 30 Liberty Ship Way, Ste. 208, Sausalito, Calif. 94965

Filed Oct. 28, 1996, Ser. No. 738,802

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—754 **8 Claims**





1. An interface device designed to accomplish rapid product changes in a robotic chip testing machine comprising:

a support plate having a plurality of vertical supports mounted thereon,

a housing plate mounted on said support plate on said vertical supports, said housing plate having a plurality of pneumatic actuators associated therewith and operable to access assemblies above said housing plate;

a plurality of male header pin assemblies mounted on the surface of the housing plate; and

a socket plate with a plurality of apertures which register with said plurality of said header assemblies, said socket plate having coupling means operable to engage and disengage with said actuators whereby when said coupling means is engaged energizing said actuators will move said socket plate toward the housing plate causing the pin portions of said header assemblies to be received in the apertures in the socket plate thereby connecting any female pin connectors disposed in these apertures to be connected to one of said header assemblies and reversing said actuators will disconnect all of said female pin connectors.

5,828,224

TEST CARRIER FOR SEMICONDUCTOR INTEGRATED CIRCUIT AND METHOD OF TESTING SEMICONDUCTOR INTEGRATED CIRCUIT

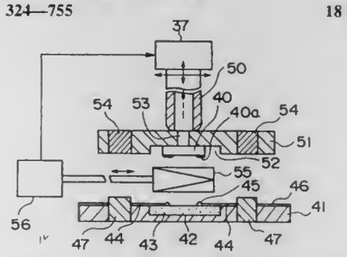
Shigeyuki Maruyama, Kawasaki, Japan, assignor to Fujitsu, Limited, Kanagawa, Japan

Continuation-in-part of Ser. No. 398,652, Mar. 3, 1995, Pat. No. 5,757,199. This application Jul. 24, 1996, Ser. No. 686,052

Claims priority, application Japan, Mar. 18, 1994, 6-048850; Jun. 21, 1996, 8-161449

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—755 **18 Claims**



1. An apparatus for holding a semiconductor device comprising:

a substrate having wirings thereon on which electrodes or terminals of said semiconductor device are superposed;

a holding body for holding said semiconductor device and pushing said semiconductor device against said substrate;

a magnet attached, to either of said holding body and said substrate, in a peripheral region of said semiconductor device;

a magnet portion formed of magnetic substance, which is provided on either of said substrate and said holding body, so as to oppose said magnet;

an elastic body embedded in said substrate beneath a certain region of said wirings on which said semiconductor device is mounted; and

a magnetic field generating portion for applying a magnetic field to said magnetic portion in an opposite direction to a magnetic field of said magnet after completion of a circuit performance test of said semiconductor device.

5,828,225

SEMICONDUCTOR WAFER PROBING APPARATUS

Tadashi Obikane; Eiji Hayashi, both of Kofu, and Ryoichiro Koshi, Yamanashi-ken, all of Japan, assignors to Tokyo Electron Limited, Tokyo, Japan

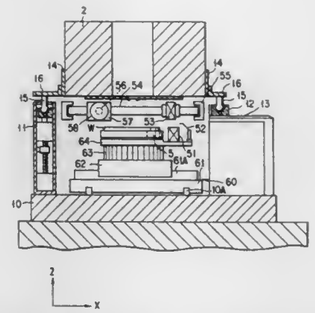
Filed Jul. 3, 1996, Ser. No. 674,916

Claims priority, application Japan, Jul. 5, 1995, 7-169711; Jun. 8, 1996, 8-168269

Int. Cl.[6] G01R *31/02*

U.S. Cl. 324—758 **21 Claims**

1. A probing apparatus which has an apparatus body and a test head detachable from said apparatus body and is used for testing electrical characteristics of a substrate to be tested, comprising:



a probe card having a plurality of contact elements to be brought into contact with the substrate, said probe card being supported by said test head;

first, second, and third engaging portions disposed on said test head around said probe card to receive a load of said test head in a distributed manner;

a work table which is vertically movable and disposed on said apparatus body to place the substrate thereon; and

first, second, and third supports disposed on said apparatus body around said work table to support said test head such that said probe card opposes said work table, by respectively and detachably engaging with said first, second, and third engaging portions and supporting said test head through said first, second, and third engaging portions, respectively, said first and second supports having first and second vertical drivers to move said test head in a vertical direction through said first and second engaging portions, respectively, wherein an inclination of said probe card with respect to the substrate placed on said work table is adjusted while said test head is moved by said first and second vertical drivers.

5,828,226

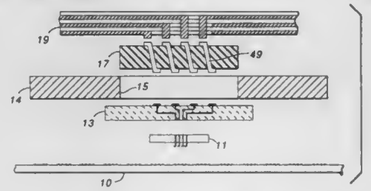
PROBE CARD ASSEMBLY FOR HIGH DENSITY INTEGRATED CIRCUITS

H. Dan Higgins; Rajiv Pandey, both of Chandler; Norman J. Armendariz, Phoenix, and R. Dennis Bates, Gilbert, all of Ariz., assignors to Cerprobe Corporation, Gilbert, Ariz.

Filed Nov. 6, 1996, Ser. No. 746,117

Int. Cl.[6] G01R *1/073*

U.S. Cl. 324—762 **11 Claims**



1. A probe card assembly for providing temporary electrical connections to a high density integrated circuit, said probe comprising:

a probe card including a plurality of conductive traces;

a plurality of pins in a high density array, wherein each pin includes a post and a cantilever mounted beam, said beam has a first end attached to the post and a second end for contacting said integrated circuit; and

an interposer electrically connecting respective ones of said traces and said pins.

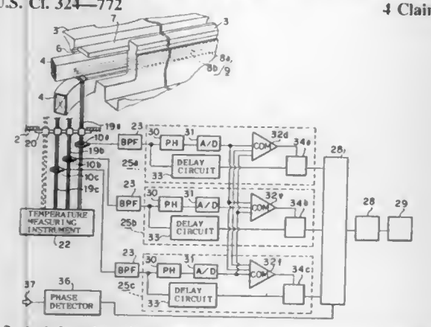
VOL 1215 ISS 4 OCT 27 1998 UMI

5,828,227

ABNORMALITY DETECTING APPARATUS FOR ELECTRIC EQUIPMENT, PARTICULARLY FOR A ROTATING ELECTRIC MACHINE

Tetsu Shiota; Hideki Tokura; Kenji Morimoto; Takaho Tanaka, all of Osaka; Yoshiharu Kaneda, Hyogo; Keiichi Itoh, Hyogo; Ken Kimura, Hyogo, and Shigeo Kitamura, Hyogo, all of Japan, assignors to The Kansai Electric Power Co., Inc., Osaka, and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of Japan

Division of Ser. No. 359,427, Dec. 20, 1994, Pat. No. 5,680,059. This application Apr. 30, 1997, Ser. No. 846,316
Claims priority, application Japan, Feb. 25, 1994, 6-027741
Int. Cl.[6] G01R 23/00
U.S. Cl. 324—772 4 Claims



3. A defect detecting apparatus that monitors electrical equipment, the defect detecting apparatus comprising:

a plurality of sensors, each sensor of the plurality of sensors being operatively connected to a respective location on the electrical equipment, each respective location having a respective resonance frequency;

a plurality of band pass filters, each bandpass filter of the plurality of bandpass filters being operatively connected to a respective sensor of the plurality of sensors, and having a respective bandwidth and a respective center frequency at substantially the respective resonance frequency;

a respective signal strength comparing circuit operatively connected to each respective bandpass filter;

a respective noise elimination circuit operatively connected to each respective signal strength comparing circuit; and

a partial discharge generation processing circuit operatively connected to each respective noise elimination circuit.

5,828,228

NULL CONVENTION LOGIC SYSTEM

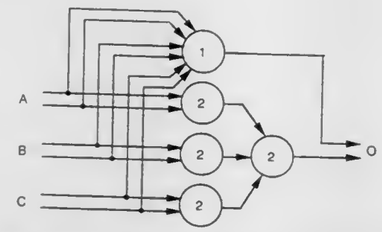
Karl M. Fant, and Scott A. Brandt, both of Minneapolis, Minn., assignors to Theseus Logic, Inc., St. Paul, Minn.

Continuation of Ser. No. 220,636, Mar. 31, 1994, Pat. No. 5,664,212, which is a continuation of Ser. No. 74,288, Jun. 8, 1993, Pat. No. 5,305,463, which is a continuation of Ser. No. 702,016, May 17, 1991, abandoned. This application Sep. 2, 1997, Ser. No. 921,568
Int. Cl.[6] H03K 19/23;19/00
U.S. Cl. 326—35 17 Claims

1. A threshold logic element for processing encoded electronic signals comprising:

an input receiving a plurality of input signals, each input signal capable of assuming at least three signal states encoded onto a plurality of physical input signal lines, wherein a first signal state represents a meaningful logic state, a second signal state represents a NULL state that has no logic meaning, and a third signal state is distinct from the first and second signal states;

an output producing an output signal capable of assuming at least three signal states encoded onto a plurality of physical output signal lines, wherein a first signal state represents a meaningful logic state, a second signal state represents a NULL state that has no logic meaning, and a third signal state is distinct from the first and second signal states; and



a threshold switching circuit triggering changes of the output signal state in response to states of the input signals;

wherein said threshold switching element switches the output signal to the NULL state when all input signals are in the NULL state;

wherein said switching element switches the output signal to the meaningful state when a number of input signals in a meaningful state equals or exceeds a threshold number; and

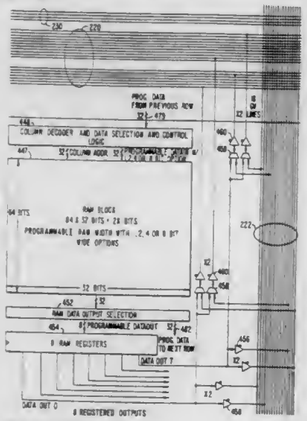
wherein said switching elements switches the output signal to the third state when (i) fewer than all input signals are in the NULL state, and (ii) fewer than the threshold number of input signals are in the meaningful state.

5,828,229

PROGRAMMABLE LOGIC ARRAY INTEGRATED CIRCUITS

Richard G. Cliff, Milpitas; L. Todd Cope, San Jose; Cameron McClintock, Mountain View; William Leong, San Francisco; James Allen Watson, Santa Clara; Joseph Huang, San Jose; Bahram Ahanin, San Francisco; Chiakang Sung, Milpitas, and Wanli Chang, Saratoga, all of Calif., assignors to Altera Corporation, San Jose, Calif.

Continuation of Ser. No. 555,106, Nov. 8, 1995, Pat. No. 5,633,830, and Ser. No. 655,870, May 24, 1996, Pat. No. 5,668,771, which is a continuation of Ser. No. 245,509, May 18, 1994, Pat. No. 5,550,782, which is a continuation-in-part of Ser. No. 111,693, Aug. 25, 1993, Pat. No. 5,436,575, which is a continuation-in-part of Ser. No. 754,017, Sep. 3, 1991, Pat. No. 5,260,610, and Ser. No. 880,942, May 8, 1992, Pat. No. 5,260,611. This application May 1, 1997, Ser. No. 847,004
Int. Cl.[6] H03K 19/177
U.S. Cl. 326—40 3 Claims



1. An apparatus comprising:

a plurality of logic regions arranged in an array of rows and columns;

a plurality of user-configurable memory blocks included in the array of rows and columns, each of the memory blocks including: (1) a plurality of memory cells that store programming data; (2) an input port configured to receive programming data for each memory cell in the memory block; and (3) an output port to output the received programming data; and

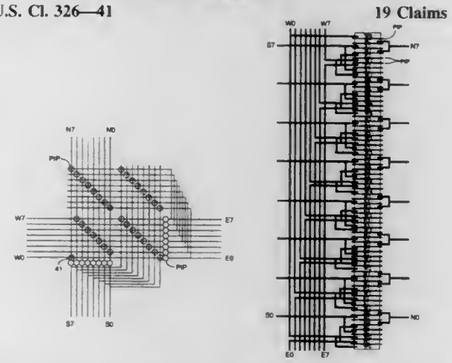
programming circuitry coupled to the memory blocks and configured to direct a plurality of programming data elements, each intended to be stored in a target one of the memory cells, through the input and the output ports of selected ones of the plurality of user-configurable memory blocks until each of the programming data elements is stored in its target memory cell.

5,828,230

FPGA TWO TURN ROUTING STRUCTURE WITH LANE CHANGING AND MINIMUM DIFFUSION AREA

Steven P. Young, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Jan. 9, 1997, Ser. No. 775,425
Int. Cl.[6] H03K 19/177
U.S. Cl. 326—41 19 Claims



1. A programmable routing structure in an integrated circuit device having programmable interconnections and at least one elongated diffusion area, wherein:

said diffusion area is separated into adjacent diffusion regions by transistor gates;

each of said diffusion regions has an associated direction taken from the group of four compass directions;

each such diffusion region is part of either a "triple", or a "single";

said triple comprising a group of three adjacent diffusion regions wherein the directions associated with the two outer diffusion regions are the same, and the direction associated with the central diffusion region is parallel but opposite thereto;

said single comprising one of said diffusion regions which is not part of a triple; and

wherein said diffusion regions can be formed into one or more sets of adjacent diffusion regions wherein each such set conforms to the following criteria:

said set includes an even number of said triples and an equal number of said singles;

half of said triples in said set are perpendicular to the other half of said triples in said set;

half of said singles in said set are perpendicular to the other half of said singles in said set;

said set includes an equal number of diffusion regions having associated directions corresponding to each of said four compass directions;

each of said triples is adjacent only to diffusion regions having associated directions perpendicular to the direction of said triple, and, where there are two such adjacent diffusion regions, said two diffusion regions have associated directions opposite to each other; and

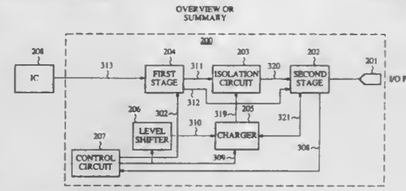
each of said singles is electrically connected to said central diffusion region of one of said triples, wherein said connected central diffusion region may be in said set and may be in a different such set.

5,828,231

HIGH VOLTAGE TOLERANT INPUT/OUTPUT CIRCUIT

Hassan K. Bazargan, San Jose, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Aug. 20, 1996, Ser. No. 700,247
Int. Cl.[6] H03K 19/185
U.S. Cl. 326—81 18 Claims



7. An output driver circuit comprising:

a first stage operating at a medium voltage;

a second stage operating in a tristate mode and an active mode, the second stage comprising an output driver having a p-type pull-up transistor coupled to an input/output pad, wherein the input/output pad interfaces with a high voltage network operating between a low voltage and a high voltage;

an isolator circuit coupled between the first stage and the second stage for programmable voltage isolation between the first stage and the second stage during the tristate mode; and,

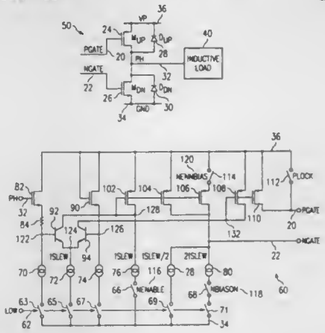
a charger circuit, for maintaining the high voltage on a gate of the p-type pull-up transistor during the tristate mode, the charger having a transistor for reducing the voltage on the high data line to a value close to the medium voltage in advance of the isolator circuit coupling the first and second stages.

5,828,232

CIRCUIT TO REDUCE CURRENT AND VOLTAGE SPIKES WHEN SWITCHING INDUCTIVE LOADS

Bert White, Irvine, Calif., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 558,397, Nov. 16, 1995, abandoned. This application Nov. 10, 1997, Ser. No. 966,594
Int. Cl.[6] H03K 17/16
U.S. Cl. 326—83 22 Claims



1. A circuit comprising:

an inductive load;

a first driver for providing a path for a first signal from said inductive load to a terminal for a supply voltage;

a second driver for providing a path for said first signal from said inductive load to a terminal for ground;

a current steering circuit for directing current to said first and second drivers to turn on said first and second drivers;

said current steering circuit being driven by a second signal, said second signal having a first offset voltage with respect to said first signal;

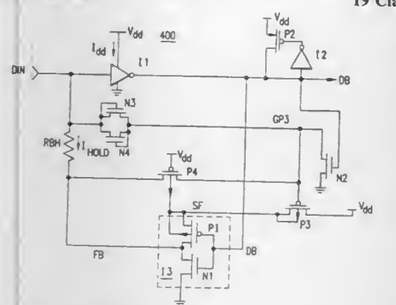
said current steering circuit increasing current directed to said second driver when said first signal rises above a threshold voltage to simultaneously turn on said first and second drivers, said threshold voltage being above said supply voltage by a second offset voltage.

5,828,233

MIXED MODE CMOS INPUT BUFFER WITH BUS HOLD

Hung T. Nguyen, Santa Clara, and Leo Lee, San Jose, both of Calif., assignors to Quality Semiconductor, Inc., Santa Clara, Calif.

Filed Sep. 12, 1996, Ser. No. 710,280
Int. Cl.[6] H03K *19/0175;19/23*
U.S. Cl. 326—86 **19 Claims**



1. A receiver circuit, comprising:

a bus input for coupling to a bus;

an output;

a reference voltage input;

a supply voltage input for receiving a supply voltage;

an inverter coupled between said bus input and a first node, said output being driven responsive to a voltage at said first node; and

a bus hold circuit coupled between said first node and said bus input, said bus hold circuit comprising:

a p-channel pullup transistor having a first current node and a second current node, said first current node being coupled to a second node, said bus input being driven responsive to a voltage at said second current node when the bus is in a high impedance state, said pullup transistor being driven responsive to said voltage at said first node;

a switch transistor coupled between said supply voltage input and said second node; and

a switch transistor activation circuit coupled to said bus input, said supply voltage input, and said switch transistor for causing said switch transistor to couple said supply voltage input to said second node when said bus input is at a first voltage less than said supply voltage, and for causing said switch transistor to isolate said supply voltage input from said second node when said bus input is at a second voltage higher than said supply voltage;

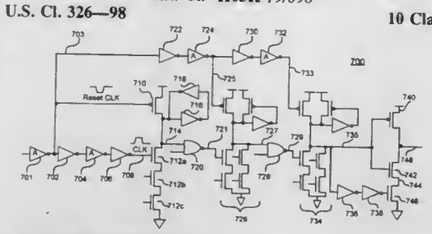
wherein leakage currents from said bus input to said supply voltage input through said bus hold circuit are suppressed when said bus input is driven to a voltage greater than said supply voltage.

5,828,234

PULSED RESET SINGLE PHASE DOMINO LOGIC

Milo David Sprague, Aloha, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Aug. 27, 1996, Ser. No. 702,244
Int. Cl.[6] H03K *19/096*
U.S. Cl. 326—98 **10 Claims**



1. A circuit comprising:

a circuit pair and at least one domino stage coupled to the circuit pair;

a first signal path having an output coupled to a reset input of the circuit pair; and

a second signal path having an output coupled to an evaluate input of the circuit pair;

wherein the length of the second signal path is greater than the length of the first signal path by at least one inverting logic gate and wherein the first signal path comprises an atomically resetting inverting logic gate.

5,828,235

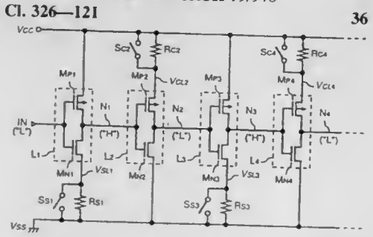
SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING POWER REDUCTION MECHANISM

Masashi Horiguchi, Kawasaki; Kunio Uchiyama, Kodaira; Kiyoo Itoh, Higashi-kurume; Takeshi Sakata, Kunitachi; Masakazu Aoki, Tokorozawa, and Takayuki Kawahara, Hachioji, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 193,765, Feb. 8, 1994, Pat. No. 5,583,457, which is a continuation-in-part of Ser. No. 45,792, Apr. 14, 1993, abandoned. This application May 24, 1996, Ser. No. 653,248

Claims priority, application Japan, Apr. 14, 1992, 4-94070; Apr. 14, 1992, 4-94077; Dec. 25, 1992, 4-345901; Feb. 10, 1993, 5-22392

Int. Cl.[6] H03K *19/948*
U.S. Cl. 326—121 **36 Claims**



1. A semiconductor integrated circuit device, comprising:

a first logic gate having a first transistor whose source/drain path is between a first node and a first output node;

a first control means connected to receive a control signal, said first control means being provided between said first node and a first potential point, wherein;

said first control means permits a first current to flow in said first logic gate in response to said control signal being in a first state;

said first control means limits the current flowing in said first logic gate to a current smaller than said first current in response to said control signal being set to a second state different from said first state; and

a second logic gate having a second transistor whose source/drain path is between a second node and a second output node;

a second control means provided between said second node and a second potential point, wherein

said second control means permits a second current to flow in said second logic gate in response to said control signal being in said first state;

said second control means limits the current flowing in said second logic gate to a current smaller than said second current in response to said control signal being in said second state;

wherein both said first and second transistors are in an off state when said control signal is in said second state;

wherein each of said first and second transistors is a MOS transistor;

wherein said first logic gate has a third MOS transistor whose source/drain path is between a third node and said first output node;

wherein said second logic gate has a fourth MOS transistor whose source/drain path is between a fourth node and said second output node;

wherein said third node is directly coupled to said second potential point; and

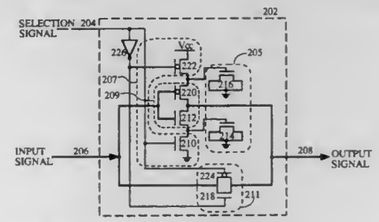
wherein said fourth node is directly coupled to said first potential point.

5,828,236

SELECTABLE INVERTER CIRCUIT

Shi-dong Zhou, Milpitas, Calif., assignor to Xilinx, Inc., San Jose, Calif.

Filed Feb. 20, 1997, Ser. No. 801,408
Int. Cl.[6] H03K *19/20;19/0948*
U.S. Cl. 326—121 **15 Claims**



1. A selectable inverter circuit, comprising:

an inverter circuit, having an input terminal coupled to receive a first input signal state and a second input signal state, and coupled to an output terminal, for complementing the input signal states and providing the complemented input signal states at the output terminal;

a charge storing circuit, coupled to the inverter circuit, for supplying a first supplemental charge to the inverter circuit in response to the first input signal state and absorbing a second supplemental charge from the inverter circuit in response to the second input signal state; and

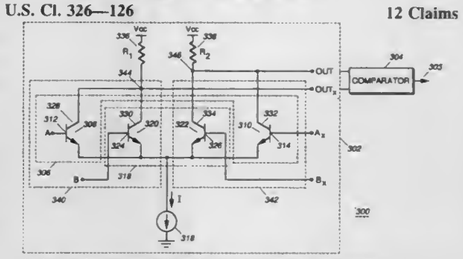
an enabling circuit, having a power supply terminal for providing charge and a ground terminal for absorbing charge, coupled to the inverter circuit and the charge storing circuit, and coupled to receive a selection signal, for routing the first supplemental charge from the power supply terminal to the charge storing circuit and routing the second supplemental charge to the ground terminal from the charge storing circuit, in response to the selection signal.

5,828,237

EMITTER COUPLED LOGIC (ECL) GATE AND METHOD OF FORMING SAME

Pierce V. Keating, Pompano Beach, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed May 31, 1996, Ser. No. 656,543
Int. Cl.[6] H03K *19/086*
U.S. Cl. 326—126 **12 Claims**



4. An emitter coupled logic (ECL) circuit, including:

first and second differential pairs biased from first and second complementary logic signals having substantially equal voltage levels respectively, each half of the first and second differential pairs being coupled through a common collector;

first and second resistive loads coupled to the common collectors of each half of the differential pairs, the first and second resistive loads setting first and second gain factors respectively;

first and second differential output signals being generated at the common collectors of the first and second differential pairs in response to the first and second gain factors and the first and second complementary logic signals; and

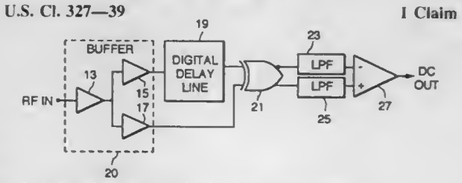
a comparator for comparing the first and second differential output signals.

5,828,238

DIGITAL FREQUENCY DISCRIMINATOR

Patrick K. Bailleul, Whittier; Harold L. Zauss, Redondo Beach, and Brent E. Adams, Los Angeles, all of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Oct. 30, 1996, Ser. No. 738,452
Int. Cl.[6] H04L *27/14*
U.S. Cl. 327—39 **1 Claim**



1. A digital frequency discriminator comprising:

a buffer responsive to a sinusoidal RF input signal having a predetermined center frequency with a predetermined period for providing a squarewave output signal having the same frequency as the sinusoidal RF signal;

a programmable digital delay line responsive to said squarewave output signal for generating a delayed signal replica of said squarewave output signal, at a predetermined delay τ by shifting said predetermined center frequency by 90 degrees;

an exclusive OR gate, responsive to said output signal of said programmable digital delay line and to said squarewave output signal for providing a different output signal comprising an inverted output signal and non-inverted output signal which comprises a series of pulses of width τ and having a period of equal to one-half the period of the predetermined period of said sinusoidal RF input signal; and

first and second low pass filters for filtering said inverted output signal and said non-inverted output of said exclusive OR gate, respectively; and

a differential amplifier coupled to said first and second low pass filters for providing a DC output voltage indicative of said central frequency of said sinusoidal RF signal;

wherein said center frequency of the discriminator determined by said predetermined delay τ of said programmable digital delay line, said series of pulses output from said exclusive OR gate has twice the predetermined center frequency of said sinusoidal RF input signal and a duty cycle of 50 percent, and the DC output voltage at said center frequency is zero and said DC output voltage is adjusted by changing said predetermined delay τ, wherein when sinusoidal RF input signal frequencies greater than said center frequency of the discriminator, said pulse width of the exclusive OR gate output signal remains the same and average value of the exclusive OR output pulses increased, and when said sinusoidal RF input signal frequencies lower than said center frequency of the discriminator the pulse width of the exclusive OR output signal remains the same and said average value of the exclusive OR gate output pulses decreased.

5,828,239

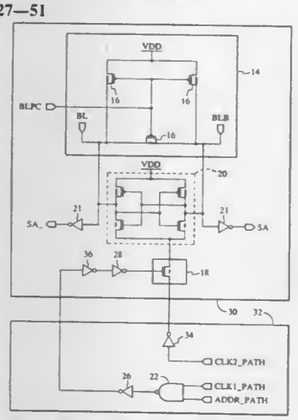
SENSE AMPLIFIER CIRCUIT WITH MINIMIZED CLOCK SKEW EFFECT

Younes Lotfi, Round Rock, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 14, 1997, Ser. No. 839,565

Int. Cl.[6] G01R *7/06*

U.S. Cl. 327—51 **22 Claims**



1. A sense amplifier with improved compensation for clock skew effects comprising:

sense amplifier enabling means for receiving first and second control signals, wherein the sense amplifier enabling means comprises a transistor;

first logic means for providing the first control signal to a first input of the transistor of the sense amplifier enabling means; and

second logic mans for providing the second control signal to a second input of the transistor of the sense amplifier enabling means, wherein the speed degradation resulting from skew between the first and second control signals is reduced.

5,828,240

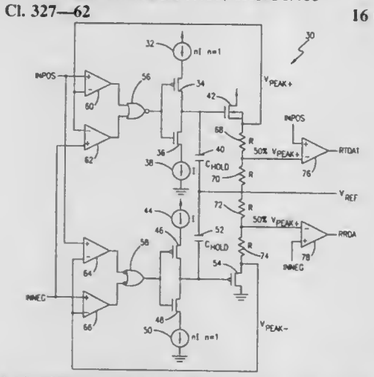
DIFFERENTIAL CROSS COUPLED PEAK DETECTOR

Michael D. Smith, Flower Mound, Tex., assignor to Dallas Semiconductor Corp., Dallas, Tex.

Continuation of Ser. No. 537,214, Sep. 29, 1995, Pat. No. 5,631,584. This application May 5, 1997, Ser. No. 850,963

Int. Cl.[6] G01R *19/00*; **H03K** *5/153*

U.S. Cl. 327—62 **16 Claims**



1. A circuit for processing an AC signal having a peak to peak envelope associated therewith, the envelope having an upper edge, a lower edge, and an intermediate edge therebetween, said circuit comprising:

an input for receiving the AC signal;

a first detector coupled to said input, said first detector for detecting the upper edge of the peak to peak envelope of the AC signal, said first detector including a plurality of comparators and a logic gate electrically coupled with at least one of said plurality of comparators;

a second detector coupled to said input, said second detector for detecting the lower edge of the peak to peak envelope of the AC signal;

a first sampler circuit coupled to said first detector, said first sampler circuit for sampling the AC signal at a first point between the intermediate edge and the upper edge of the peak to peak envelope, said first sampler circuit including a first output; and

a second sampler circuit coupled to said second detector, said second detector for sampling the AC signal at a second point between the intermediate edge and the lower edge of the peak to peak envelope, said second sampler circuit including a second output.

5,828,241

SIGNAL TRANSMISSION CIRCUIT PROVIDING AMPLIFIED OUTPUT FROM POSITIVE FEEDBACK OF INTERMEDIATE AMPLIFIER CIRCUIT

Shunichi Sukegawa, Oume, Japan, assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 393,525, Feb. 23, 1995, abandoned, which is a continuation of Ser. No. 979,085, Nov. 19, 1992, abandoned. This application Jun. 5, 1996, Ser. No. 658,766

Claims priority, application Japan, Jan. 22, 1991, 3-334121

Int. Cl.[6] H03K *5/22*

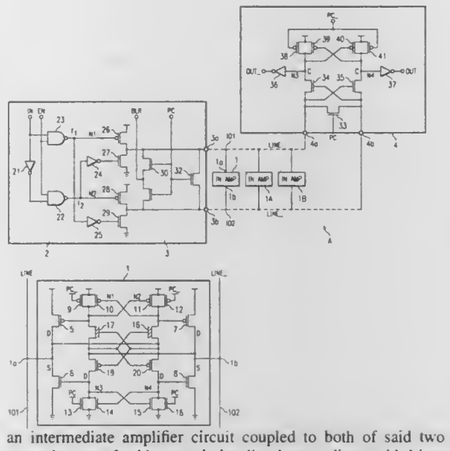
U.S. Cl. 327—67 **4 Claims**

1. A signal transmission circuit comprising:

a driver circuit coupled to receive an input signal having logic signal levels and to provide a pair of differential output signals, each of said pair of differential output signals being the complement of the other;

a transmission line having two conductors coupled to an output of said driver circuit for transmitting said pair of differential output signals;

a receiver circuit coupled to said transmission line for receiving said pair of differential output signals and for generating an output signal at said logic signal levels;



an intermediate amplifier circuit coupled to both of said two conductors of said transmission line intermediate, said driver circuit and said receiver circuit for amplifying said pair of differential signals on said transmission line, said intermediate amplifier having a positive feedback amplifier coupled to said two conductors of said transmission line for receiving and amplifying a signal thereon, wherein said at least one intermediate amplifier circuit comprises:

first and second drive transistors defining a first drive transistor pair connected to a first one of said two conductors;

third and fourth drive transistors defining a second drive transistor pair connected to the second one of said two conductors;

said first and second drive transistor pairs driving the output signal derived from said driving circuit;

first and second sets of precharge terminals, each set of precharge terminals including positive and negative precharge terminals;

a first precharge transistor group connected to the first set of precharge terminals;

a second precharge transistor group connected to the second set of precharge terminals;

said first precharge transistor group being connected to said first drive transistor pair and said second precharge transistor group being connected to said second drive transistor pair;

first and second pairs of switching transistors cross-connected with respect to each other, said first pair of switching transistors being connected to said first precharge transistor group and said second pair of switching transistors being connected to said second precharge transistor group;

said first pair of switching transistors being connected to said first drive transistor pair; and

said second pair of switching transistors being connected to said second drive transistor pair.

5,828,242

COMPARATOR WITH BUILT-IN HYSTERESIS

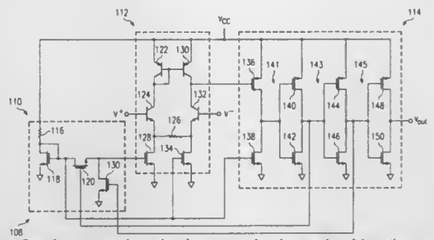
Eric J. Danstrom, Farmington Hills, Mich., assignor to SGS-Thomson Microelectronics, Inc., Carrollton, Tex.

Continuation of Ser. No. 623,502, Mar. 28, 1996, abandoned, which is a division of Ser. No. 418,558, Apr. 7, 1995, Pat. No. 5,587,674, which is a continuation-in-part of Ser. No. 366,492, Dec. 30, 1994, abandoned. This application Apr. 30, 1997, Ser. No. 848,843

Int. Cl.[6] H03K *5/22*

U.S. Cl. 327—67 **16 Claims**

1. A comparator circuit having a bias current circuit, a differential input stage, and a hysteresis circuit within the bias current circuit, comprising:



a first input transistor having a conductive path with a first end connected to the bias current circuit and to the hysteresis circuit, and with a second end, and having a control element for receiving a first input voltage;

a second input transistor having a conductive path with a first end and a second end, and having a control element for receiving a second input voltage;

a resistive element having a first end connected to the first end of the first input transistor and having a second end connected to the first end of the second input transistor;

a first current bias transistor having a current path with a first end connected to the first end of the first input transistor and the first end of the resistive element, having a second end connected to a voltage potential, and having a control element for receiving a first bias voltage input of the differential input stage;

a second current bias transistor having a current path with a first end connected to the first end of the second input transistor and the second end of the resistive element, having a second end connected to the voltage potential, and having a control element for receiving a second bias voltage input of the differential input stage; and

output means for driving an output node of the differential input stage, connected to the second end of the second input transistor, so that the output node of the differential input stage is responsive to the difference between the first input voltage and the second input voltage,

wherein the bias current circuit provides the second bias voltage input received by the control element of the second current bias transistor, and

wherein the hysteresis circuit selectively connects the first bias voltage input to the control element of the first current bias transistor when the first input voltage is greater than the second input voltage.

5,828,243

METHOD FOR DETECTING CLOCK FAILURE AND SWITCHING TO BACKUP CLOCK

Robert Craig Bagley, San Jose, Calif., assignor to MTI Technology Corporation, Anaheim, Calif.

Filed Oct. 28, 1996, Ser. No. 740,105

Int. Cl.[6] G01R *19/00*

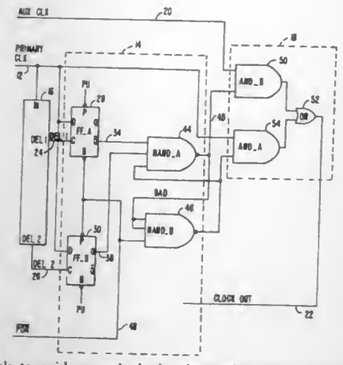
U.S. Cl. 327—99 **8 Claims**

1. A clock failure detection circuit for detecting failure of a first clock and switching to a second clock, comprising:

a delay line having an input coupled to said first clock, and having at least a first delayed output, said first delayed output having a delay that offsets an edge of said first delayed output compared to said first clock;

logic means, having inputs coupled to said first clock and said first delayed output, with one of said inputs being an edge-triggered clock and the other input being a data input, for producing a good output signal when said data input is a first value when clocked, and a bad output signal when said data input is a second value when clocked; and

switching means, coupled to said logic means and having said first and second clocks as inputs, for switching from said first



clock to said second clock when said bad output signal is received.

5,828,244

DRIVING CIRCUIT AND METHOD FOR DRIVING A MOS TRANSISTOR WITH DELAYED ACTIVATION

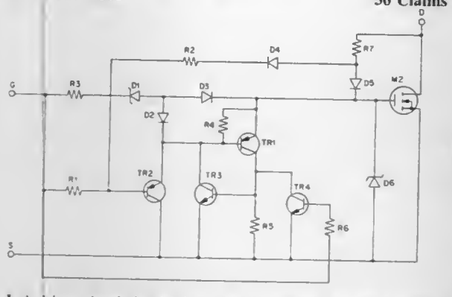
Sergio Palara, Acitrezza, and Vito Graziano, Palermo, both of Italy, assignors to SGS-Thompson Microelectronics S.r.l., Agrate Brianza, and Consorzio per la Ricerca sulla Microelettronica nel Mezzogiorno, Catania, both of Italy

Filed Jul. 30, 1996, Ser. No. 688,297

Claims priority, application European Pat. Off., Jul. 31, 1995, 95830341

Int. Cl.[6] H03K *3/00*

U.S. Cl. 327—108 **36 Claims**



1. A driver circuit for driving a MOS transistor having a control terminal and a source terminal, the driver circuit comprising:

a threshold circuit element having a first terminal that receives an input signal at a control input and a second terminal coupled to the control terminal, the threshold circuit element delaying an activation of the MOS transistor by blocking current from flowing to the control terminal until a voltage of the input signal exceeds a predetermined value;

a first turn off circuit having a first terminal coupled to the first terminal of the threshold circuit and a second terminal coupled to the control terminal, including:

a first junction that couples together the control terminal and the control input in response to the input signal; and

a second junction between the control terminal coupled in series with the first junction and the control input; and a second turn off circuit having a first terminal coupled between the first junction and the second junction and a second terminal connected to the source terminal.

5,828,245

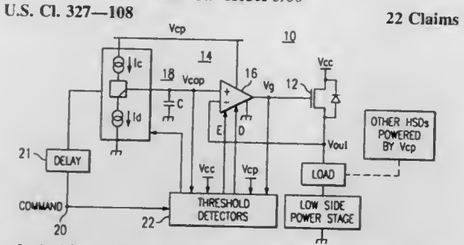
DRIVER CIRCUIT INCLUDING AMPLIFIER OPERATED IN A SWITCHING MODE

Massimiliano Brambilla, San Jose, and Gianluca Colli, Santa Clara, both of Calif., assignors to STMicroelectronics, Inc., Carrollton, Tex.

Filed Oct. 24, 1996, Ser. No. 740,129

Int. Cl.[6] H03K *3/00*

U.S. Cl. 327—108 **22 Claims**



1. A driver circuit, for a power driving stage with a power device, comprising:

an amplifier connected to receive an input signal for transitioning conduction of the power device, from on to off and from off to on, the amplifier having an output connected to a control terminal of the power device;

a first power supply for supplying a supply voltage across a channel of the power device;

a second power supply for supplying a charge pump voltage, of a magnitude greater than the supply voltage, for biasing the amplifier; and

means for operating the amplifier in a switching mode wherein the amplifier draws current from the second power supply during transitions of the power device between on and off conditions and draws substantially zero current from the second power supply at times other than said transitions, the means for operating the amplifier in a switching mode comprising one or more threshold detectors connected to detect on and off conditions of the power device and to cause the amplifier to be off except during said transitions.

5,828,246

CIRCUIT IN CMOS TECHNOLOGY FOR HIGH SPEED DRIVING OF OPTICAL SOURCES

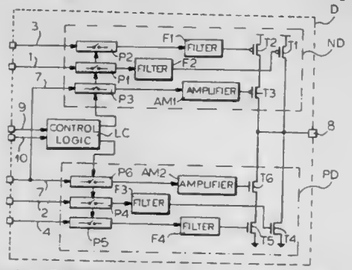
Bruno Bostica, Pino Torinese; Marco Burzio, Grugliasco; Paolo Pellegrino, Turin, and Luca Pesando, Bussoleno, all of Italy, assignors to Cselt Studi E Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Mar. 11, 1997, Ser. No. 815,118

Claims priority, application Italy, Apr. 24, 1996, TO96A0326

Int. Cl.[6] H03K *3/42*

U.S. Cl. 327—108 **5 Claims**



1. Circuit in CMOS technology for high speed driving of optical sources, comprising:

means for generating a bias current for the optical source, comprising a first MOS transistor whose gate is connected to a first output of a first control voltage source, whose source is connected to a first power supply terminal and whose drain is connected to the circuit output; and

means for generating a modulation current for the optical source, comprising a second and a third MOS transistors, arranged in series and having the same conductivity as the first transistor, the second transistor having its source connected to said first power supply terminal, the gate connected to a first output of a second control voltage source and the drain connected to the source of the third transistor, whose gate in turn is connected to a digital data signal input and whose drain is connected to the circuit output;

said means for generating the bias current further comprise a fourth MOS transistor, whose conductivity is complementary to that of the first transistor and in which the gate is connected to a second output of the first control voltage source, the source is connected to a second power supply terminal and the drain is connected to the circuit output; and

said means for generating the modulation current further comprise a fifth and a sixth MOS transistors, arranged in series and having the same conductivity as the fourth transistor, the fifth transistor having its source connected to said second power supply terminal, its gate connected to a second outout of the second control voltage source, and its drain connected to the source of the sixth transistor, whose gate in turn is connected to said digital data signal input and whose drain is connected to the circuit output;

said first and second control voltage sources each having an input connected to a respective generator of an adjustable control current and present on said first and second outputs two different control voltages for controlling the bias and the modulation currents of the optical sources with complementary conductivity, the control voltages of said first control voltage source being supplied to the first and the fourth transistors, respectively, and the control voltages of said second control voltage being supplied to the second and the fifth transistors respectively;

and the circuit further comprising:

a first and a second set of CMOS gates, arranged between the gates of said first, second and third transistors and respectively of said gates of said fourth, fifth and sixth transistors on one side, and the first outputs of the first and the second control voltage sources, respectively, the second outputs of the first and second control voltage sources, and said digital data signal input on the other end; and means for enabling in a mutually exclusive way, either set of gates according to a selection signal imposed externally and having a first or a second value according to the conductivity of the optical source to be driven.

5,828,247

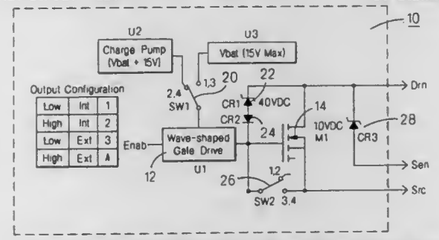
EXTERNALLY MULTI-CONFIGURABLE OUTPUT DRIVER

David Dale Moller, Westfield, and Robert J. Berg, Kokomo, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 9, 1996, Ser. No. 762,077

Int. Cl.[6] H03B *1/00*

U.S. Cl. 327—110 **10 Claims**



1. A multi-configurable output driver for supplying current to an inductive load from a power source having a high voltage terminal and a low voltage terminal, comprising:

(a) circuit means including a switching device to couple said power source to said inductive load;

(b) said circuit means being configurable, without the addition or rearrangement of components, in an output topography selected from the group consisting of a low side output driver in which said switching device is connected between said inductive load and the low voltage terminal of said power source, and a high side output driver in which said switching device is connected between said inductive load and the high voltage terminal of said power source; and

(c) means to select the output topography of said circuit means in response to input signals.

5,828,248

METHOD AND APPARATUS FOR GENERATING A CLOCK SIGNAL WHICH IS COMPENSATED FOR A CLOCK RATE THEREOF

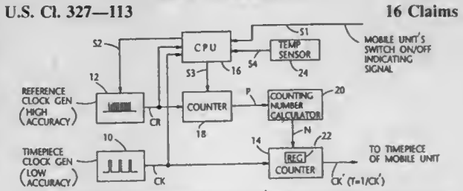
Kazuaki Masuda, Kawasaki, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Oct. 15, 1996, Ser. No. 732,574

Claims priority, application Japan, Oct. 16, 1995, 7-266939

Int. Cl.[6] H03K *1/04*

U.S. Cl. 327—113 **16 Claims**



1. A method of generating a clock signal by dividing a clock rate of a timepiece clock signal and by compensating for a change in the clock rate of said timepiece clock signal in a mobile unit, said timepiece clock signal being continuously generated even when the power of the mobile unit is switched off, said method comprising the steps of:

(a) determining a deviation of a clock rate of said timepiece clock signal relative to a reference clock rate of a reference clock signal when the power of the mobile unit is switched on, said reference clock rate being higher than the clock rate of said timepiece clock signal;

(b) calculating a count number based on the deviation of the clock rate of said timepiece clock signal; and

(c) counting the clock pulses of said timepiece clock signal and generating said clock signal having clock pulses which are successively generated each time the clock pulses of said timepiece clock signal are counted up to said count number.

5,828,249

ARRANGEMENT FOR SELECTIVE GENERATION OF AN OUTPUT SIGNAL RELATED TO A CLOCK SIGNAL AND METHOD THEREFOR

D. C. Sessions, Phoenix, Ariz., assignor to VLSI Technology, Inc., San Jose, Calif.

Filed Dec. 10, 1996, Ser. No. 762,770

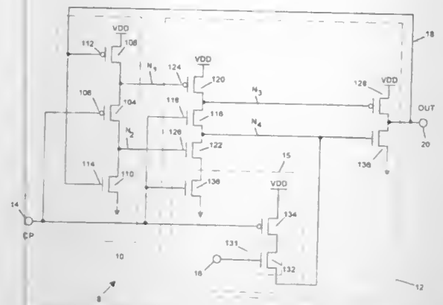
Int. Cl.[6] H03K *21/117*

U.S. Cl. 327—115 **41 Claims**

1. A circuit arrangement, comprising:

a dynamic latching arrangement, including a first state storing circuit including an internal node configured to store an internal signal, the dynamic latching arrangement configured and arranged to process a clock signal and generate the internal signal therefrom, and to generate at an output node an output signal as a function of the internal signal; and

a conditional driver, responsive to the clock signal, the conditional driver configured and arranged to, in response to a control signal, selectively impress on the internal node an alternate internal, such that the dynamic latching arrangement

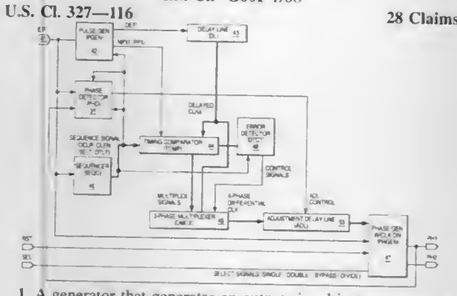


generates at the output node an alternate output signal as a function of the alternate internal signal.

5,828,250
DIFFERENTIAL DELAY LINE CLOCK GENERATOR WITH FEEDBACK PHASE CONTROL

Katsushi Konno, Ibaraki-ken, Japan, assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 396,119, Feb. 28, 1995, abandoned, which is a continuation-in-part of Ser. No. 301,321, Sep. 6, 1994, Pat. No. 5,537,068. This application May 10, 1996, Ser. No. 644,564
Int. Cl.[6] G06F *1/08*
U.S. Cl. 327—116 **28 Claims**



1. A generator that generates an output signal in response to an external signal comprising:

a delay means for providing a plurality of delayed images of the external signal;

a timing comparison means for determining which one of the plurality of delayed images has a predetermined delay relative to the period of the external signal;

a circuit means coupled to said timing comparison means and said delay means for generating the output signal; and

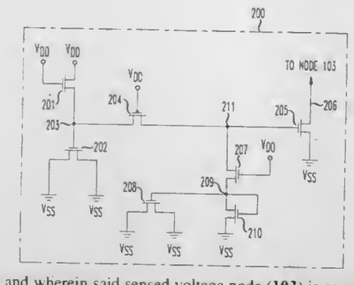
a phase synchronization means for detecting a phase difference between the external signal and the output signal and for substantially synchronizing the phase of the output signal with the phase of the external signal.

5,828,251
POWER-UP DETECTOR CIRCUIT

Ronald Lamar Freyman, Bethlehem, and Michael James Hunter, Boyertown, both of Pa., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jul. 2, 1996, Ser. No. 674,411
Int. Cl.[6] H03L *7/00*
U.S. Cl. 327—143 **5 Claims**

1. An integrated circuit having a power-up detector comprising a charging device (**101**) coupled between a power supply voltage conductor (V_{DD}) and a capacitor (**102**) that maintains a voltage on a sensed voltage node (**103**) during operation of said integrated



circuit, and wherein said sensed voltage node (**103**) is coupled to a voltage clamping device (**115**) that clamps the voltage on said node when the power supply voltage (V_{DD}) is removed, and said sensed voltage node (**103**) is also coupled to a voltage sensing circuit (**105, 106**) having a threshold voltage;

characterized in that said power-up detector further comprises a discharge circuit (**200**) having an enhancement-mode discharge transistor (**205**) for discharging the voltage on said sensed voltage node (**103**) when said power supply voltage is removed;

wherein said discharge circuit comprises a first capacitor (**202**) that is charged to a given voltage level by a charging device (**201**) when said power supply voltage (V_{DD}) is applied, and that is also coupled to the control terminal of a discharge device (**205**), whereby said discharge device conducts to discharge said sensed voltage node (**103**) when said power supply voltage is removed;

wherein said discharge circuit further comprises a second capacitor (**208**) for reducing the effect of noise voltages on the control terminal of said discharge device (**205**); and

wherein said discharge circuit discharges the voltage on said sensed voltage node to a level below said threshold voltage of said voltage sensing circuit.

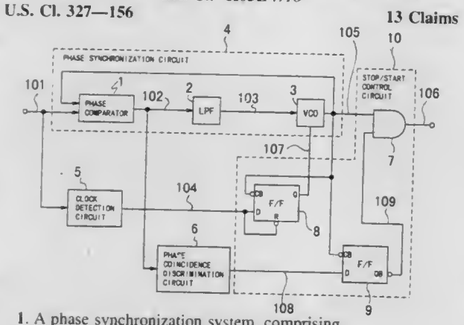
5,828,252

Patent Not Issued For This Number

5,828,253
PHASE SYNCHRONIZATION SYSTEM WHICH REDUCES POWER CONSUMPTION AND HIGH FREQUENCY NOISE

Tohru Murayama, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 25, 1997, Ser. No. 823,682
Claims priority, application Japan, Mar. 28, 1996, 8-073696
Int. Cl.[6] H03L *7/10*
U.S. Cl. 327—156 **13 Claims**



1. A phase synchronization system, comprising

a phase synchronization section including a phase comparator, a low-pass filter and a voltage-controlled oscillation circuit, said

phase comparator comparing a phase of a phase reference signal inputted thereto from the outside with a phase of a phase synchronization signal fed back from said voltage-controlled oscillation circuit, said low-pass filter removing high frequency components of phase comparison information outputted from said phase comparator, an oscillation frequency of said voltage-controlled oscillation circuit being controlled with a phase difference signal outputted from said low-pass filter so that said voltage-controlled oscillation circuit oscillates and outputs the phase synchronization signal;

input signal detection section means for detecting whether or not the phase reference signal is inputted to said phase synchronization section and outputting input signal detection information of a first level;

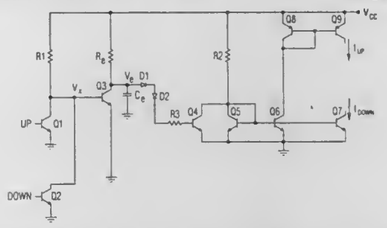
phase coincidence discrimination section means for receiving, when an input of the phase reference signal is detected by said input signal detection section means, the phase comparison information outputted from said phase comparator of said phase synchronization section, discriminating whether or not a phase error at said phase synchronization section satisfies an allowable phase coincidence requirement and outputting phase coincidence information of a second level when it is discriminated that the phase error satisfies the allowable phase coincidence requirement; and

voltage-controlled oscillation circuit stop/start control section means for receiving, when the input of the phase reference signal to said phase synchronization section stops, an input of the input signal detection information of the first level outputted from said input signal detection section means and outputting a oscillation control signal for stopping the oscillation of said voltage-controlled oscillation circuit of said phase synchronization section and for receiving, when the phase reference signal is inputted to said phase synchronization section, the phase synchronization signal outputted from said phase synchronization section and outputting the received phase synchronization signal as a modified phase synchronization signal, which does not include a pulse noise signal produced by the oscillation of said voltage-controlled oscillation circuit, in response to the input signal detection information of the first level outputted from said input signal detection section means and the phase coincidence information of the second level outputted from said phase coincidence discrimination section means.

5,828,254
ERROR REGULATOR CIRCUIT FOR SAMPLE AND HOLD PHASE LOCKED LOOPS

Mehrdad Nayebi, Palo Alto, and Duc Ngo, San Jose, both of Calif., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Park Ridge, N.J.

Filed Jan. 11, 1996, Ser. No. 584,925
Int. Cl.[6] H03L *7/06*
U.S. Cl. 327—157 **14 Claims**



1. An error regulator circuit for maintaining an appropriate level of charge across a storage element within a charge pump circuit, wherein the error regulator circuit is configured for disabling a charging and discharging circuit used to charge and discharge the storage element in response to one or more charge pump control signals, the error regulator circuit comprising:

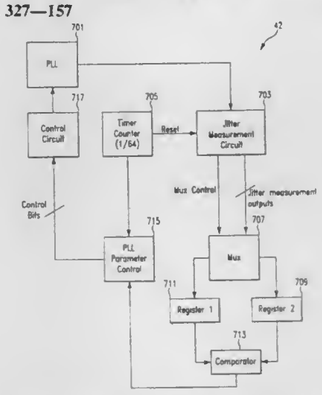
a. a monitoring circuit coupled to receive one or more charge pump control signals for monitoring the one or more charge pump control signals and determining if any of the one or more charge pump control signals are maintained at a first voltage level for more than a predetermined period of time, wherein the charge pump control signals control charging and discharging of the storage element within the charge pump circuit; and

b. a disabling circuit coupled to the monitoring circuit and configured for disabling the charge and discharge circuit when the monitoring circuit detects that any of the one or more charge pump control signals are maintained at the first voltage level for more than the predetermined period of time.

5,828,255
PHASE LOCKED LOOP HAVING ADAPTIVE JITTER REDUCTION

Ram Kelkar, South Burlington; Ilya Iosiphovich Novof, Essex Junction, and Stephen Dale Wyatt, Jericho, all of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 15, 1996, Ser. No. 749,871
Int. Cl.[6] H03L *7/06*
U.S. Cl. 327—157 **17 Claims**



1. In a semiconductor circuit, a method of real time jitter reduction in a phase locked loop having a first charge pump with a first gain associated therewith and having a second charge pump with a second gain associated therewith, said method comprising the steps of:

(a) initializing said first and second gains to preselected values;

(b) measuring the phase locked loop jitter level at different points in time;

(c) comparing consecutive jitter level measurements;

(d) modifying the first gain until the phase locked loop jitter level cannot be further reduced by additional changes in the first gain;

(e) re-measuring the phase locked loop jitter level at different points in time;

(f) modifying the second gain until the phase locked loop jitter level cannot be further reduced by additional changes in the second gain; and

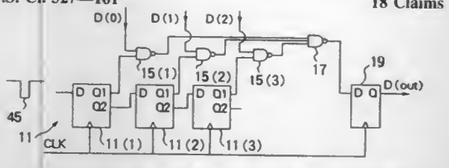
(g) repeating steps (b) through (f) such that phase locked loop jitter level is continuously being monitored and optimized during normal semiconductor circuit operations.

5,828,256

MULTIPLEXER COMPRISING AN N-STAGE SHIFT REGISTER WITH EACH STAGE COMPOSED OF A DUAL OUTPUT D F/F WITH ONE OUTPUT USED FOR MULTIPLEXING AND THE OTHER FOR NEXT STAGE

Masakazu Kurisu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Jan. 31, 1997, Ser. No. 791,554
Claims priority, application Japan, Jan. 31, 1996, 8-014853
Int. Cl.[6] G11C *19/00*
U.S. Cl. 327—161 18 Claims



1. A multiplexer circuit for time division multiplexing first to N-th bit parallel circuit input signals into a bit-serial circuit output signal, where N represents a predetermined integer greater than one, comprising an N-stage shift register for shifting a signal pulse through first to N-th D flipflops to produce first to N-th stage output signals, first to N-th two-input logic gates having primary and secondary first to N-th inputs supplied with said first to said N-th bit-parallel circuit input signals and with said first to said N-th stage output signals to produce first to N-th gate output signals, respectively, an N-input logic gate supplied with said gate output signals to produce a single gate output signal, and a retiming logic gate for retiming said single gate output signal into said circuit output signal, wherein an n-th D flipflop is an n-th dual output D flipflop producing n-th primary and secondary slave output signals, where n represents an integer variable from 1 to N, said n-th primary slave output signal being used as an n-th one of said first to said N-th stage output signals, said n-th secondary slave output signal being supplied to an (n+1)-th dual output D flipflop provided that (n+1) is not greater than N.

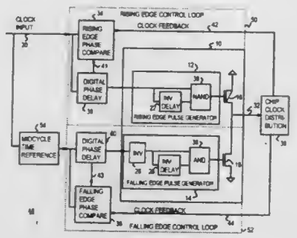
5,828,257

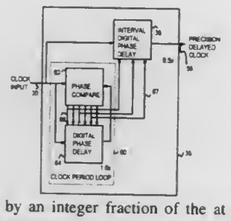
PRECISION TIME INTERVAL DIVISION WITH DIGITAL PHASE DELAY LINES

Robert Paul Masleid, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 525,325, Sep. 8, 1995, abandoned.
This application Aug. 19, 1997, Ser. No. 915,306
Int. Cl.[6] H03K *5/13;5/159*
U.S. Cl. 327—276 4 Claims

1. A clock generation circuit comprising:
an input clock signal having a period;
a first digital phase delay coupled to the input clock signal for generating a first delay signal, the first digital phase delay including a plurality of delay stages;
a second digital phase delay coupled to the input clock signal, the second digital phase delay including at least twice as many delay stages as the first digital phase delay;
a phase compare coupled to the input clock signal, to the first digital phase delay, and to the second digital phase delay, wherein the phase compare is coupled to the second digital phase delay by a plurality of control lines and is coupled to the first digital phase delay by one-half of the plurality of control lines, the second digital phase delay responsive to the phase compare for delaying the input clock signal by at least one input clock period, and the first digital phase delay responsive to the phase compare for delaying the input clock signal by an integer fraction of the at least one input clock period and;
a clock buffer coupled to the first digital phase delay, the clock buffer having a rising edge control loop and a falling edge control loop, the rising edge control loop coupled to the input clock signal, and the falling edge control loop coupled to the first delay signal.



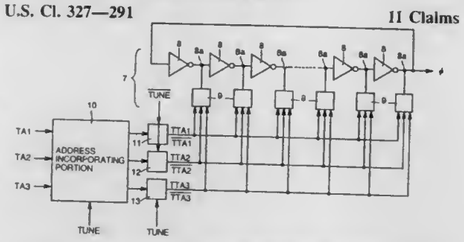


5,828,258

SEMICONDUCTOR DEVICE AND TESTING APPARATUS THEREOF

Tsukasa Ooishi; Tomoya Kawagoe; Hideto Hidaka, and Mikio Asak. ra, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 25, 1996, Ser. No. 639,326
Claims priority, application Japan, Jun. 23, 1995, 7-157377; Nov. 28, 1995, 7-309576
Int. Cl.[6] G06F *1/04*
U.S. Cl. 327—291 11 Claims



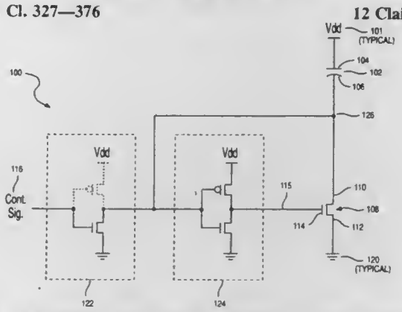
1. A semiconductor device for performing a prescribed operation in synchronization with a clock signal, comprising, on a common chip:
a clock generating circuit for generating said clock signal;
an outputting terminal for drawing said clock signal output from said clock generating circuit externally of said chip; and
switching means having one terminal for receiving said clock signal generated from said clock generating circuit and another terminal connected to said outputting terminal, wherein switching is activated in response to a control signal supplied externally of said chip.

5,828,259

METHOD AND APPARATUS FOR REDUCING DISTURBANCES ON AN INTEGRATED CIRCUIT

Moises Cases, and Leon Li-heng Wu, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 18, 1996, Ser. No. 746,950
Int. Cl.[6] H01H *83/20*
U.S. Cl. 327—376 12 Claims



1. An apparatus for reducing disturbances on an integrated circuit, comprising:
a capacitor operatively coupled to a supply voltage for the integrated circuit; and
control circuitry operatively coupled to the capacitor, wherein a first control device is automatically switched off, to substantially isolate the capacitor, by a second control device in response to a voltage produced by current through the capacitor exceeding a certain threshold, and a third device tends to discharge that voltage to automatically switch the first control device on again in response to the current through the capacitor subsiding, so that the control circuitry tends to isolate the capacitor in response to a current through the capacitor exceeding a certain threshold, and tends to restore the capacitor to operation in response to the current through the capacitor subsiding.

5,828,260

OUTPUT BUFFER CIRCUIT

Hideki Taniguchi, and Katsushi Asahina, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 16, 1996, Ser. No. 648,957
Claims priority, application Japan, Jul. 12, 1995, 7-176084; Dec. 25, 1995, 7-337065
Int. Cl.[6] H03K *17/16*
U.S. Cl. 327—387 29 Claims



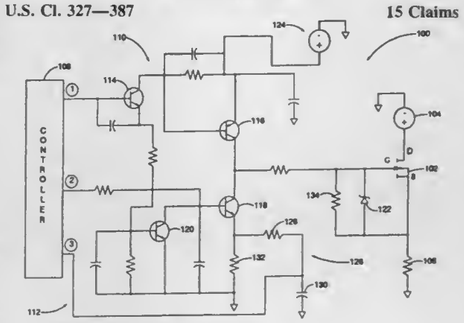
1. An output buffer comprising:
(a) first and second potential points for applying first and second potentials respectively;
(b) an output point;
(c) a first conductive control element having a control end given a third potential corresponding to either binary logic, for conducting and not conducting between said first potential point and said output point, when said third potential corresponds to a first logic and its complementary second logic, respectively;
(d) a second conductive control element having a control end given a fourth potential corresponding to either binary logic, for conducting and not conducting between said second potential and said output point, when said fourth potential corresponds to a third logic and its complementary fourth logic, respectively;
(e) detecting penetration current causing logic means for outputting a penetration detection signal activated when said third and fourth potentials correspond to said first and third logics, respectively; and
(f) forced logic presenting means fulfilling at least either one of a first logic presenting function for presenting by force said second logic to said control end of said first conductive control element, and a second logic presenting function for presenting by force said fourth logic to said control end of said second conductive control element, on the basis of activation of said penetration detection signal.

5,828,261

GATE DRIVE CIRCUIT THAT CONTROLS A POWER TRANSISTOR IN THREE STATES

James A. Antone, Edwards, and Paul C. Gottshall, Washington, both of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Nov. 13, 1996, Ser. No. 747,854
Int. Cl.[6] H03K *17/16*
U.S. Cl. 327—387 15 Claims

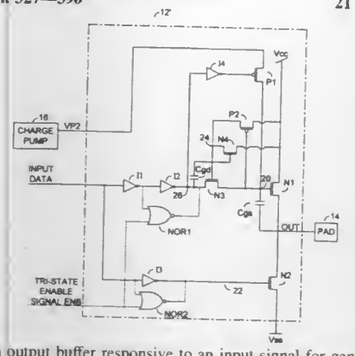


1. A gate drive circuit, comprising:
a first voltage source;
a power transistor having a drain connected to the first voltage source and a source connected to a load;
a first switching device connected to the power transistor gate for biasing the power transistor ON to transfer energy from the first voltage source to the load;
a second switching device connected to the power transistor gate for biasing the power transistor OFF to block the transfer of energy from the first voltage source to the load; and
a controller connected to the first and second switching device for controlling the power transistor at a first state where the first switching device biases the power transistor ON, for controlling the power transistor at a second state where the second switching device biases the power transistor OFF and provides a signal path from the power transistor gate to ground, and for controlling the power transistor at a third state where the second switching device biases the power transistor OFF to isolate the second switching device from short circuit voltages in response to the controller detecting a short circuit condition from the first voltage source to the load.

5,828,262
ULTRA LOW POWER PUMPED N-CHANNEL OUTPUT BUFFER WITH SELF-BOOTSTRAP

David B. Rees, Overton, United Kingdom, assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Sep. 30, 1996, Ser. No. 723,077
Int. Cl.[6] H03K 17/16
U.S. Cl. 327—390 21 Claims



1. An output buffer responsive to an input signal for generating an output signal on an output node, comprising:

pullup means coupled to a first power supply producing a first voltage level for pulling said output node to a logic high state, said pullup means including means for boosting said input signal which has a magnitude of said first voltage level by a predetermined amount to enable said pullup means to pull said output node to said first voltage level;

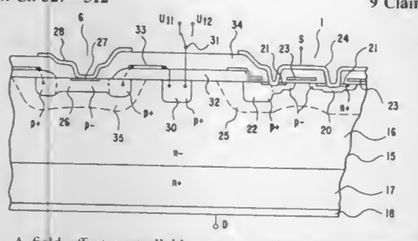
means responsive to a second voltage level for passing said input signal to said boosting means and for inhibiting charge associated with said boosting means and which corresponds to voltage levels higher than said first voltage level from leaking to an input signal source; and,

capacitance means coupled to said passing and inhibiting means for equalizing induced voltages caused by variations of said input signal.

5,828,263
FIELD EFFECT-CONTROLLABLE POWER SEMICONDUCTOR COMPONENT WITH TEMPERATURE SENSOR

Josef-Matthias Gantioler; Holger Heil, and Norbert Krischke, all of München, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

Filed Dec. 20, 1996, Ser. No. 770,874
Claims priority, application Germany, Dec. 21, 1995, 195 48 060.0
Int. Cl.[6] H01L 35/00
U.S. Cl. 327—512 9 Claims



1. A field effect-controllable power semiconductor component assembly, comprising:

a power semiconductor component including a semiconductor body, and a cell array with a multiplicity of cells connected in parallel with one another and having gate zones and a drain zone; and

a temperature sensor adjacent said cell array of said power semiconductor component, said temperature sensor including a bipolar transistor with a base zone and a collector zone;

said base zone of said bipolar transistor and said gate zones of said power semiconductor component being of the same conduction type;

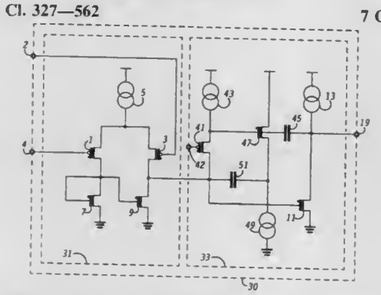
said semiconductor body of said power semiconductor component having a single zone forming said collector zone of said bipolar transistor and said drain zone of said power semiconductor component; and

at least one zone of the same conduction type disposed between said base zone of said bipolar transistor and said gate zones of said cells of said power semiconductor component, said at least one zone connected to a fixed bias voltage at most equal to a supply voltage applied to said power semiconductor component.

5,828,264
TWO-STAGE OPERATIONAL AMPLIFIER CIRCUIT WITH WIDE OUTPUT VOLTAGE SWINGS

Vladimir Koifman, Rama-Gan, and Yachin Afek, Kfar Saba, both of Israel, assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 7, 1995, Ser. No. 569,038
Claims priority, application United Kingdom, Dec. 8, 1994, 9424941
Int. Cl.[6] H03F 1/30;1/34
U.S. Cl. 327—562 7 Claims



1. A two stage operational amplifier circuit, comprising:

a first stage having a first input and a first output;

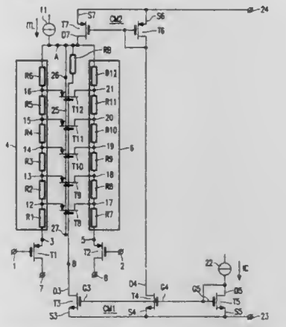
a second stage having a second input and a second output, the second input being coupled to the first output; and

a feedback path coupled between the second output and the second input, the feedback path comprising a first frequency range compensation portion and a second frequency range compensation portion, wherein the first frequency range compensation portion includes a first transistor, a first capacitor, and a first current source, and wherein the first transistor and the first capacitor have an associated time constant such that the first frequency compensation portion feeds back frequency components having a value less than a value of a reciprocal of the time constant and the second frequency compensation portion feeds back frequency components having a value greater than the value of the reciprocal of the time constant.

5,828,265
DEGENERATED DIFFERENTIAL PAIR WITH CONTROLLABLE TRANSCONDUCTANCE

Clemens H. J. Mensink, Nijmegen, and Bram Nauta, Eindhoven, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 8, 1997, Ser. No. 854,003
Claims priority, application European Pat. Off., May 9, 1996, 96201256
Int. Cl.[6] G06G 7/12
U.S. Cl. 327—563 19 Claims



1. A differential pair comprising a first (T1) and a second transistor (T2) each with a control electrode and a main current path between a first (3, 5) and a second (7, 8) main electrode, and a degeneration resistor for coupling the first main electrode (3) of the first transistor (T1) to the first main electrode (5) of the second transistor (T2), characterized in that the degeneration resistor is built up from a series circuit of a first branch (4) of coupled resistors (R1–R6) and a second branch (6) of coupled resistors (R7–R12) which are shunted in mutually corresponding junction points (12/17, 13/18, 14/19, 15/20, 16/21) by respective control transistors (T8–T12) whose control electrodes are connected so as to receive a control signal, the first main electrode (3) of the first transistor (T1) being coupled to the first branch (4) and the first main electrode (5) of the second transistor (T2) being coupled to the second branch (6).

5,828,266
APPARATUS AND METHODS FOR SETTING UP A TUNING FREQUENCY OF A PLL DEMODULATOR THAT COMPENSATES FOR DISPERSION AND AGING EFFECTS OF AN ASSOCIATED CERAMIC RESONATOR FREQUENCY REFERENCE

Jean-Yves Couet, Saint Martin le Vinoux, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

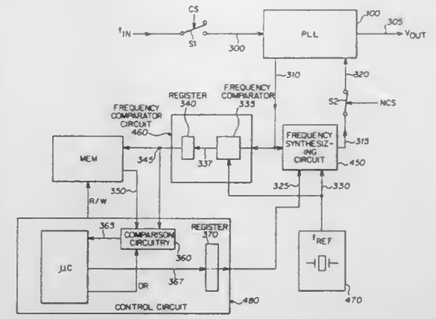
Filed Jul. 30, 1996, Ser. No. 688,489
Claims priority, application France, Jul. 31, 1995, 95 09326
Int. Cl.[6] H03D 3/02; H03L 7/06;7/18
U.S. Cl. 329—325 26 Claims

23. A method for setting up a tuning frequency for a phased-locked loop demodulator having a first input to receive an oscillator input signal, a second input to receive a carrier frequency signal, and an output to provide an oscillator output signal, the apparatus comprising:

providing a reference signal from a ceramic resonator;

storing, in a first storage device, a first value based on the reference signal and the oscillator output signal when the phased-locked loop demodulator provides the oscillator output signal according to the oscillator input signal;

storing, in a second storage device, a second value based on the reference signal and the oscillator output signal when the phased-locked loop demodulator provides the oscillator output signal according to the carrier frequency signal; and

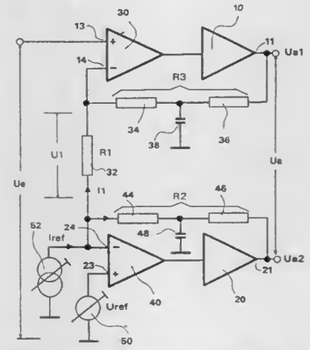


adjusting the oscillator input signal according to the stored first value and the stored second value.

5,828,267
AMPLIFIER

Dirk Loeffler, Brahmenau, Germany, assignor to LDT GmbH & Co. Laser-Display-Technologie KG, Gera, Germany

PCT No. PCT/EP96/00108, § 371 Date Sep. 12, 1996, § 102(e) Date Sep. 12, 1996, PCT Pub. No. WO96/22631, PCT Pub. Date Jul. 25, 1996
PCT Filed Jan. 11, 1996, Ser. No. 716,153
Claims priority, application Germany, Jan. 17, 1995, 195 01 236.4
Int. Cl.[6] H03F 3/68
U.S. Cl. 330—124 R 12 Claims



1. In an amplifier which generates an output voltage which is proportional to an input voltage and can be picked off between outputs of two push-pull output stages and has peak-to-peak values of up to twice a supply voltage of the push-pull output stages, an improvement comprising:

each push-pull output stage being driven by a differential amplifier having a positive and a negative differential input in each instance and whose polarities are so defined that the outputs of the two push-pull output stages have voltages of like polarity when identical voltages are present between the positive and negative differential inputs of the two differential amplifiers;

a differential input of one differential amplifier being connected with a differential input of like polarity of the other differential amplifier;

the remaining two differential inputs of the differential amplifiers being provided for applying a voltage proportional to the input voltage; and

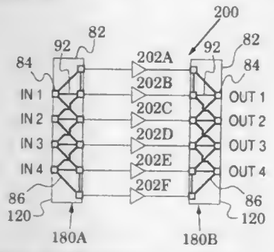
an adjustable current source and/or an adjustable voltage generator being provided, by which DC voltage components can be added to or subtracted from the output voltages of the push-pull output stages.

5,828,268

MICROWAVE SWITCHES AND REDUNDANT SWITCHING SYSTEMS

Michael N. Ando, Torrance, and Clinton F. Steidel, La Mirada, both of Calif., assignors to Hughes Electronics Corporation, Los Angeles, Calif.

Filed Jun. 5, 1997, Ser. No. 870,148
Int. Cl.[6] H01P *1/12*
U.S. Cl. 330—124 D **24 Claims**



10. A redundant amplifier system, comprising:

an input microwave switch;

an output microwave switch;

wherein n is an even integer greater than 4 and said input and output microwave switches each include:

a) 0.5n−1 waveguide modules which each have:

1) an input microwave port having a signal line; and

2) three waveguide transmission lines, each having an input end and an output end with said input end coupled to said input microwave port, each of said waveguide transmission lines also having an interior surface and dimensioned to have a cutoff frequency greater than said operating frequency band;

wherein said waveguide modules are coupled together in a serial arrangement with two output ends of each waveguide module each coupled to a respective one of two output ends of an adjacent waveguide module to form an interconnection node;

b) 0.5n+1 output microwave ports, each having a signal line with a different one of said output microwave ports coupled to the output ends at each interconnection node and a different one of said output microwave ports coupled at each end of said serial arrangement to an output end that is not part of an interconnection node; and

c) 1.5n−3 conductive reeds, each of said reeds positioned in a different one of said waveguide transmission lines and movable between a signal-attenuating position abutting the interior surface of that waveguide transmission line and a signal-conducting position substantially coaxial with that waveguide transmission line and abutting signal lines of the microwave ports coupled to that waveguide transmission line; and

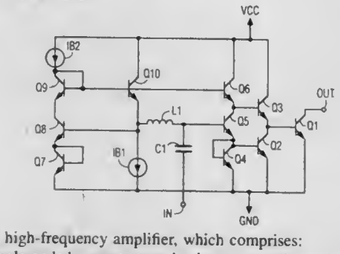
a plurality of amplifiers, each coupled between a different one of said output microwave ports of said input microwave switch and a different one of said output microwave ports of said output microwave switch.

5,828,269

HIGH-FREQUENCY AMPLIFIER WITH HIGH INPUT IMPEDANCE AND HIGH POWER EFFICIENCY

Stephen L. Wong, Scarsdale, and Sifen Luo, Hartsdale, both of N.Y., assignors to Philips Electronics North America Corporation, NY, N.Y.

Filed Dec. 5, 1996, Ser. No. 798,195
Int. Cl.[6] H03F *3/26*
U.S. Cl. 330—275 **5 Claims**



1. A high-frequency amplifier, which comprises:

a single-ended output stage having a control terminal and an output terminal;

a push-pull emitter follower stage having first and second input terminals, and an output terminal coupled to the control terminal of said output stage;

a phase-splitter stage having an input terminal for receiving a high-frequency input signal, first, second and third transistors having their main current paths coupled in series between a power supply terminal and a ground terminal, and first and second low-impedance split-phase output terminals coupled to the first and second input terminals of said emitter follower stage, said first split-phase output terminal being coupled to a point between said first and second transistors and said second split-phase output terminals being coupled to a point between said second and third transistors; and

a bias-current control stage isolated at high frequencies from said high-frequency input signal for providing bias currents to said at least two transistors of said phase-splitter stage.

5,828,270

METHOD AND APPARATUS FOR MODULATING AND DEMODULATING A CARRIER

Chen-Nan Chang, Keelung, Taiwan, assignor to Chao-Jung Liu, Chung-Ho, Taiwan

Filed Jan. 14, 1997, Ser. No. 783,038
Int. Cl.[6] H03K *7/00;9/00;* **H04L** *27/00*
U.S. Cl. 332—106 **16 Claims**

1. A method of generating a composite signal, comprising the steps of:

generating a carrier having consecutive carrier cycles; and

inserting a modulated signal corresponding to an n-bit digital data byte between the consecutive carrier cycles to generate the composite signal.

5,828,271

PLANAR FERRITE TOROID MICROWAVE PHASE SHIFTER

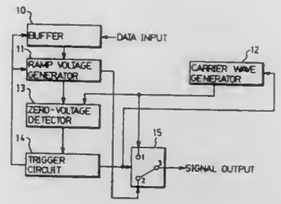
Steven N. Stitzer, Ellicott City, Md., assignor to Northrop Grumman Corporation, Los Angeles, Calif.

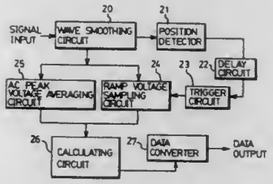
Filed Mar. 6, 1997, Ser. No. 811,793
Int. Cl.[6] H01P *1/32*
U.S. Cl. 333—24.1 **20 Claims**

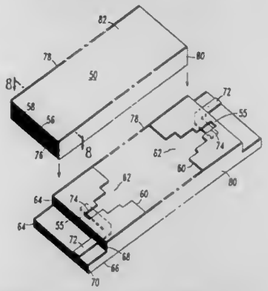
1. A planar ferrite toroid phase shifter, comprising:

an elongated ground plane having a predetermined length;

a plurality of elongated planar layers of dielectric material having a first dielectric constant formed in upper and lower







sections of planar layers on said ground plane, said lower section of planar layers being coextensive with said ground plane;

a plurality of planar layers of ferrite material formed in an elongated toroid on said layers of first dielectric constant and being coextensive with said upper section of elongated planar layers of dielectric material, said toroid having a centralized internal space extending the length thereof;

a plurality of elongated planar layers of dielectric material having a second dielectric constant formed in and coextensive with said centralized internal space of the toroid; and, an electrical conductor element located in and coextensive with said toroid in said centralized internal space of said toroid for magnetizing the layers of ferrite material forming said toroid so as to provide a latched operating state of the phase shifter.

5,828,272

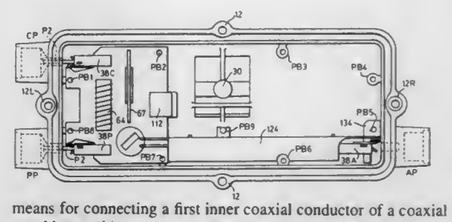
TRANSMISSION LINE FOR DISTRIBUTION NETWORK HOUSING

Robert L. Romerein, and David B. Crowhurst, both of Lindsay, Canada, assignors to J. E. Thomas Specialties Limited, Lindsay, Canada

Continuation of Ser. No. 444,755, May 19, 1995, Pat. No. 5,635,881, which is a continuation of Ser. No. 426,232, Apr. 21, 1995, Pat. No. 5,638,035. This application Feb. 3, 1997, Ser. No. 794,758
Int. Cl.[6] H01P *5/12*
U.S. Cl. 333—10 **8 Claims**

1. In a coaxial cable distribution network, a conducting housing having greater length than width, and having bottom and side housing walls,

said housing having a common port and pedestal port at one end and an aerial port at the other,



means for connecting a first inner coaxial conductor of a coaxial cable at said common port to one end of an RF path,

and a second inner coaxial conductor of another coaxial cable at said aerial port to the other end of said RF path,

characterized by the fact that said RF path includes a first RF path extent mounted on an insulating board connected to said first inner conductor, and accompanied by a ground plane, mounted on said board, connected to said housing near said common port,

said ground plane being arranged to approximate the cable characteristic impedance relative to said first RF path extent,

where said RF path includes a second RF path extent connected to said first RF path extent and to said second inner coaxial conductor,

said second RF path extent being accompanied by a second RF path extent outer conductor, being U shaped in section and arranged to have its open side face a relatively adjacent housing wall,

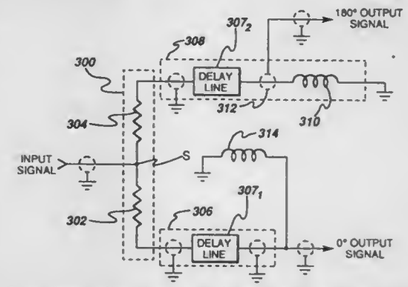
wherein the majority of said second RF path extent is spaced by air from said second RF path extent outer conductor.

5,828,273

PHASE SPLITTER FOR HIGH DATA RATE COMMUNICATION

Daniel David Harrison, Delanson, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 407,089, Mar. 20, 1995, Pat. No. 5,579,357. This application Jun. 20, 1996, Ser. No. 667,912
Int. Cl.[6] H01P *5/12*
U.S. Cl. 333—127 **20 Claims**



1. A phase splitter having an input port coupled to receive a modulated carrier having a predetermined bandwidth, said phase splitter having first and second output ports for supplying, respectively, first and second modulated carrier constituents having a substantially uniform 180° phase angle differential between one another while maintaining a substantially uniform amplitude over said bandwidth, said phase splitter comprising:

a first transmission line coupled between said input port and said first output port for supplying a respective output signal having a phase angle substantially in-phase with respect to the modulated carrier, the output signal supplied by said first transmission line constituting the first modulated carrier constituent supplied by said phase splitter; and

a second transmission line coupled between said input port and an electrical ground, said second transmission line including reversing means coupled to the second output port for supplying a respective output signal having a phase angle substan-

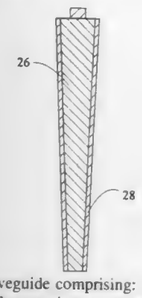
tially 180° out-of-phase with respect to the modulated carrier and providing a predetermined level of inductance that effectively allows said reversing means to impart the substantially 180° phase angle without electrically shorting the output signal supplied by said second transmission line, wherein the output signal supplied by said second transmission line constitutes the second modulated carrier constituent supplied by said phase splitter.

5,828,274

CLAD ULTRASONIC WAVEGUIDES WITH REDUCED TRAILING ECHOES

Chen-Kuei Jen, and Jean-Gabriel Legoux, both of Quebec, Canada, assignors to National Research Council of Canada, Ottawa, Canada

Filed May 28, 1996, Ser. No. 654,973
Int. Cl.[6] H03H *9/00*
U.S. Cl. 333—143 **16 Claims**



1. An ultrasonic waveguide comprising:
a solid core in which acoustic waves can propagate, said entire core having a longitudinally tapered shape of continuously changing diameter, the tapered shape effective to reduce the occurrence of trailing echoes in said acoustic waves, and
a solid cladding adhering contiguously to said core except end surfaces thereof such as too provide ultrasonic coupling between said core and said cladding,
wherein the core and the cladding have each a specific density and longitudinal acoustic velocity and are selected such that the product of the longitudinal velocity and the density of the core is within one order of magnitude of the product of the longitudinal velocity and the density of said cladding.

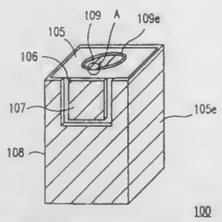
5,828,275

DIELECTRIC FILTER INCLUDING AN ADJUSTED INNER ELECTRODE AND A COUPLING ELECTRODE BEING LEVEL WITH AN OPEN END OF A MOLDED MEMBER

Masaki Kita, Kyoto; Makoto Fujikawa, Ikoma; Takashi Fujino, Izumi, and Hideyuki Miyake, Matsubara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 20, 1996, Ser. No. 603,457
Int. Cl.[6] H01P *1/205*
U.S. Cl. 333—207 **18 Claims**

1. A dielectric filter, comprising:
a molded member of a pillar shape which is made of a dielectric material and has a hole formed from a first end surface thereof toward the inside;
an inner electrode formed so as to cover the inner circumferential surface of said hole and having a predetermined area;
an outer electrode provided so as to cover a portion of the outer surface of said molded member except a prescribed region; and
a coupling electrode provided only on a side face of the molded member;



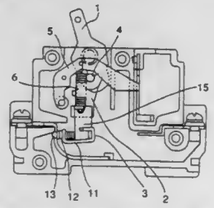
wherein a coupling capacitance which is formed between said inner electrode and said coupling electrode is adjusted by adjusting the predetermined area of the inner electrode without changing a distance from the side face of the molded member to the hole formed in the molded member; and
said first end surface of said molded member is included in said prescribed region, thereby forming an open end, and one edge of said coupling electrode is level with at least said open end of said molded member.

5,828,276

MOLDED-CASE MULTICIRCUIT BREAKERS

Toru Kurono, Seto, and Hideaki Hayashi, Owariasahi, both of Japan, assignors to Nitto Electric Works, Ltd., Aichi-ken, Japan

Filed Jan. 22, 1996, Ser. No. 589,596
Int. Cl.[6] H01H *75/12*
U.S. Cl. 335—35 **3 Claims**



1. A molded-case multicircuit breaker having at least two circuits which are on-off operated by a single handle, comprising:
a handle;
a first finger having a movable contact for a first circuit;
another finger having a movable contact for a circuit other than said first circuit;
wherein said first finger is designed to be switched on and off directly by said handle, and said finger for a circuit other than said first circuit is electrically insulated from said first finger and is attached resiliently to said first finger.

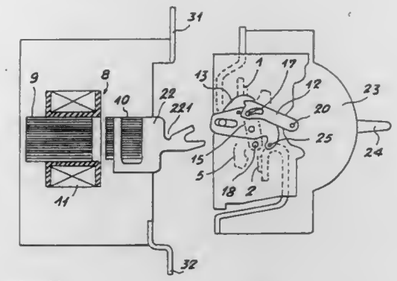
5,828,277

CONTACTOR/CIRCUIT-BREAKER TYPE SWITCH DEVICE

Pierre Duchemin, Fourqueux, France, assignor to Schneider Electric SA, Boulogne-Billancourt, France

Filed Jul. 11, 1996, Ser. No. 678,756
Claims priority, application France, Jul. 13, 1995, 95 08636
Int. Cl.[6] H01H *67/02*
U.S. Cl. 335—132 **7 Claims**

1. A contactor/circuit breaker switching device comprising:
at least one power switching pole comprising fixed and movable contacts;
an actuator member coupled to said movable contacts for moving said movable contacts;
a lock;
a lock lever linking said lock to said actuator member such that said lock may move said actuator member to open said contacts;



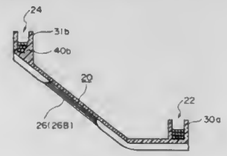
a solenoid;
a coupling lever coupled to said actuator member;
a detachable coupling defined by said solenoid and said coupling lever, said coupling detachably coupling said coupling lever to said solenoid such that said solenoid may move said actuator member to open said contacts; and
a locking member operative to detach said detachable coupling in response to a locking state of said lock.

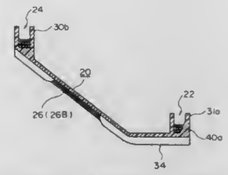
5,828,278

DEFLECTION SYSTEM

Akio Murata, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Aug. 28, 1996, Ser. No. 704,102
Int. Cl.[6] H01F *5/00*
U.S. Cl. 335—213 **2 Claims**





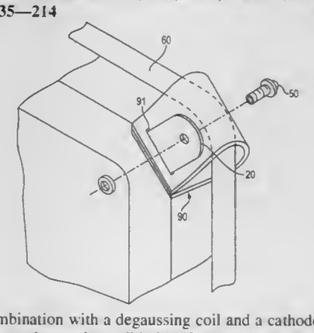
2. A deflection system for a cathode ray tube comprising:
a bobbin mounted on an outer peripheral surface of the cathode ray tube between a neck and a funnel thereof and having left and right sides viewed from a front of the cathode ray tube:
a front bend formed onto an inner surface of the bobbin adjacent the funnel and a rear bend formed onto the inner surface of the bobbin adjacent the neck;
a funnel flange formed on the front bend and a neck flange formed on the rear bend, the funnel and neck flanges forming grooves;
a deflection coil formed of windings wound so that the windings run counter clockwise from the inner surface of the bobbin around a first edge of the funnel flange at the right side of the bobbin through the groove of the funnel flange around a second edge of the funnel flange at the left side of the bobbin, along the inner surface of the bobbin, around a first edge of the neck flange at the left side of the bobbin, through the groove of the neck flange around a second edge of the neck flange at the right side of the bobbin and along the inner surface of the bobbin; and
a first coil layer regulating portion being formed at the first edge of the funnel flange, the first coil layer regulating portion having a coil winding receiving portion being wider at an open side than at a closed side, wherein windings on the right side of the bobbin at the funnel flange are biased toward the funnel of the cathode ray tube; and
a second coil layer regulating portion being formed at the first edge of the neck flange, the second coil layer regulating portion having a coil winding receiving portion being wider at an open side than at a closed side, wherein windings on the neck flange at the left side of the bobbin are biased toward the neck of the cathode ray tube.

5,828,279

DEGAUSSING COIL HOLDER FOR CATHODE RAY TUBE

Kwang-cheal Shin, Anyang, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Aug. 8, 1996, Ser. No. 694,115
Claims priority, application Rep. of Korea, Sep. 30, 1995, 1995-34004
Int. Cl.[6] H01H *1/00;5/00;47/00;* **H01F** *13/00*
U.S. Cl. 335—214 **6 Claims**



1. In combination with a degaussing coil and a cathode ray tube having a lug, a degaussing coil holder for coupling said degaussing coil to said cathode ray tube, said degaussing coil holder comprising a flexible sheet having two ends and a hole formed in each of said two ends, said holes receiving said lug formed on said cathode ray tube.

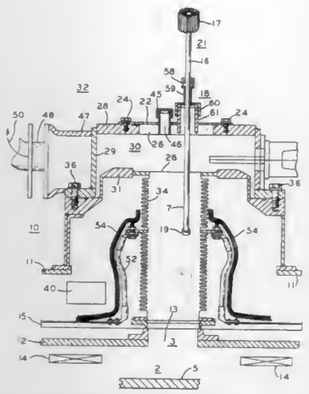
5,828,280

PASSIVE CONDUCTOR HEATER FOR ZERO BOILOFF SUPERCONDUCTING MAGNET PRESSURE CONTROL

John W. Spivey, Jr., Cheraw; William S. Stogner, and Daniel C. Woods, both of Florence, all of S.C., assignors to General Electric Company, Milwaukee, Wis.

Filed Apr. 14, 1997, Ser. No. 839,521
Int. Cl.[6] H01F *1/00*
U.S. Cl. 335—216 **18 Claims**

1. A zero boiloff recondensing superconducting magnet assembly including a sealed pressure vessel enclosing a magnet coil and a liquid cryogen the boiling of which cools the coil to superconducting temperatures comprising with recondensing apparatus to recondense the boiled cryogen back to liquid cryogen:
passive non-electric pressure control means to control the pressure within said vessel to maintain said pressure elevated above that outside said pressure vessel to prevent cryopumping;
said pressure control means including a passive thermal conductor extending from outside said vessel through said vessel with a portion thereof exposed to the exterior of said pressure vessel and a portion exposed to the interior of said pressure vessel; and
means to selectively control the amount of penetration of said thermal conductor into said magnet assembly to control the



amount of heat conducted by said thermal conductor from the portion outside said magnet assembly vessel to the interior of said pressure vessel;

whereby the pressure within said pressure vessel is controlled by the amount of said penetration of said thermal conductor to provide selected conduction heating from the exterior to the interior of said vessel to maintain the elevated pressure and prevent subatmospheric pressures within said vessel.

5,828,281

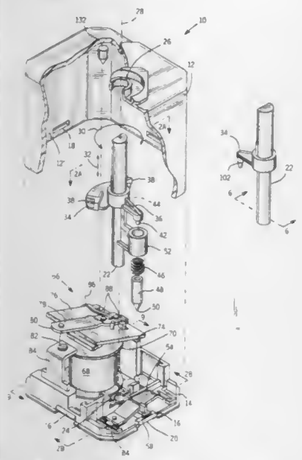
ROTARY SWITCH WITH LOW PLAY

Kenyon A. Hapke, Libertyville, Ill.; David M. Howie, Waukesha, and Spencer C. Schantz, Dousman, both of Wis., assignors to U.S. Controls Corporation, New Berlin, Wis.

Filed Jun. 28, 1995, Ser. No. 496,272

Int. Cl.[6] H01F *7/20*

U.S. Cl. 335—286 **15 Claims**



1. An electrical switch comprising:

(a) a switch operator rotatable about an axis with respect to a switch housing, the switch operator having an arm extending outward from the axis, the arm supporting an axially extending finger;

(b) a stop limiting the rotation of the switch operator to a rotation range between a first and second rotation endpoint;

(c) a lever extending along a path of the finger as the switch operator is rotated through the rotation range, so that a surface of the lever presses against the finger throughout the rotation range;

(d) a first contact attached to one end of the lever;

(e) a second contact positioned adjacent to the first contact to electrically connect with the first contact with movement of the lever;

wherein the surface slopes away from the outwardly extending arm under pressure of the finger so as to rotationally bias the switch operator against the rotation endpoints at positions near the rotation endpoints.

5,828,282

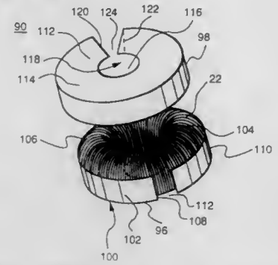
APPARATUS AND METHOD FOR SHIELDING A TOROIDAL CURRENT SENSOR

Jerome Johnson Tiemann, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Dec. 13, 1996, Ser. No. 764,187

Int. Cl.[6] H01F *27/36;38/20;27/28*

U.S. Cl. 336—84 R **6 Claims**



1. A current sensor for sensing current supplied by a conductor thereto, said sensor comprising:

a toroidally shaped magnetic core having a conductor aperture therein;

secondary windings wound on said core; and

a magnetically permeable shield comprising a C-shaped cup portion and a C-shaped cap portion, said cup portion and said cap portion together forming a chamber enclosing said magnetic core and said secondary windings wound on said magnetic core, each of said cup portion and cap portion having an aperture therein.

5,828,283

APPARATUS FOR CONNECTING PRIMARY CONDUCTIVE LINES OF FLEXIBLE TRANSFORMER

Chang-Gu Choi, Taejon, and Ha-Eun Nam, Seoul, both of Rep. of Korea, assignors to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

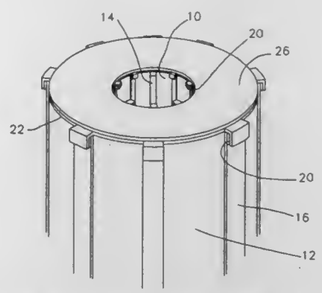
Filed Dec. 23, 1996, Ser. No. 772,753

Claims priority, application Rep. of Korea, Dec. 31, 1995, 95-72216

Int. Cl.[6] H01F *27/28*

U.S. Cl. 336—200 **10 Claims**

1. In an apparatus electrically connecting inner and outer primary structures of a transformer, wherein said transformer comprises said inner primary structure being one part of a primary winding as an input part of said transformer, said outer primary structure being the other part of said primary winding as said input part of said transformer, and at least one secondary winding for an output part of said transformer, said inner primary structure being a first flexible sheet which has a first plurality of parallel primary conductive lines on a surface thereof and which is bent into a first primary cylinder, said outer primary structure being a second flexible sheet which has a second plurality of parallel primary conductive lines on a surface thereof and which concentrically



surrounds said at least one secondary winding to form a second primary cylinder, and said at least one secondary winding being flexible laminated members which are arranged in a circular configuration concentrically about said first primary cylinder,

the improvement in said apparatus electrically connecting inner and outer primary structures of the transformer comprising:

a rigid supporting plate being in a circular disc shape with an opening at the center thereof; and

a connecting member being a flexible insulator sheet, wherein said supporting plate adheres to one surface of said connecting member, a plurality of radial conductive lines are deposited on the other surface of said connecting member, said connecting member has an opening at the center thereof, and first end portions of said plurality of radial conductive lines project beyond an inner peripheral edge which is a peripheral edge of said opening, said first end portions are inner end portions, second end portions of said plurality of radial conductive lines project beyond an outer peripheral edge which is a peripheral edge of said connecting member, said second end portions are outer end portions, said first and second end portions are folded to accommodate an electrical connection with one end portions of said first plurality of parallel conductive lines and one end portions of said second plurality of parallel conductive lines respectively so that said transformer maintains a structure having said primary winding which surrounds said secondary winding.

5,828,284

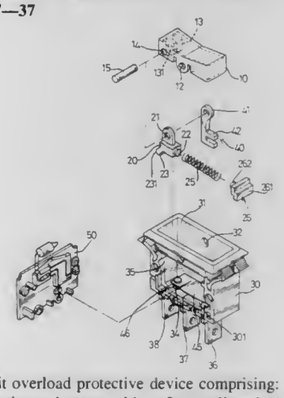
CIRCUIT OVERLOAD PROTECTIVE DEVICE

Albert Huang, No. 210-1, Hsing Nueng Rd., Tou Liu City, Yunlin Hsien, Taiwan

Filed Dec. 4, 1997, Ser. No. 985,311

Int. Cl.[6] H01H *37/02;37/32;37/46;37/52*

U.S. Cl. 337—37 **7 Claims**



1. A circuit overload protective device comprising:

a body having a bottom with a first wall and a second wall respectively extending from two ends of said bottom, said first wall having a curved recess defined in an inner side thereof and said second wall having a support member extending laterally from an inner side thereof, at least two terminals extending downwardly from an underside of said bottom, a first contact point disposed to one of said terminals;

a bimetallic strip having a first end thereof fixedly connected to said second wall and a second end thereof with a second contact point disposed thereto, said second contact point disengagably contacting said first contact point;

a button pivotally disposed to a top of said body;

a first member and a second member respectively connected to one of two ends of said button, said first member having a leg extending inclinedly and downwardly therefrom and said second member having a distal end thereof connected to said second contact point, and

a third member connected to said support member and a spring biasedly connected between said first and said third member.

5,828,285

HOLDER FOR A BIMETALLIC SWITCHING DEVICE

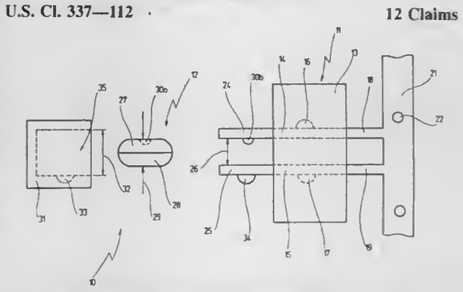
Marcel Hofsäss, Bodelschwinghstr. 36, D-75179 Pforzheim, Germany

Filed Feb. 29, 1996, Ser. No. 610,162

Claims priority, application Germany, Mar. 3, 1995, 19507488.2

Int. Cl.[6] H01H *37/04*

U.S. Cl. 337—112 **12 Claims**



1. A pre-assembled holder for a bimetallic switching device of a temperature-dependent switch, said holder comprising:

a support part made of electrically isolating material; and

two electrically conductive contact parts fastened to the supporting part and comprising each a holding end protruding beyond the support part

said switching device being clamped between said holding ends outside the supporting parts.

5,828,286

TEMPERATURE-DEPENDENT SWITCH

Marcel Hofsäss, Bodelschwinghstr. 36, D-75179 Pforzheim, Germany

Filed Dec. 5, 1996, Ser. No. 760,860

Claims priority, application Germany, Dec. 9, 1995, 195 45 997

Int. Cl.[6] H01H *37/00;37/74;37/52;37/54*

U.S. Cl. 337—343 **14 Claims**

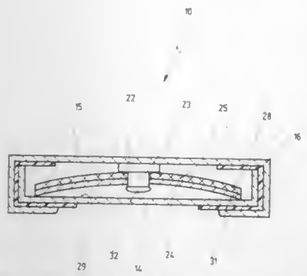
12. A temperature-dependent switch, comprising:

a housing having a lower housing part and a cover part capping said lower housing part;

first countercontact provided at an inner surface of said cover part and having a projection pointing into said housing;

a second countercontact provided at an inner surface of said lower housing part;

a temperature-dependent switching mechanism arranged in said lower housing part and including an electrically conductive spring element having an opening;



said spring element assuming at least two distinct temperature-dependent switching positions, whereby in its first switching position said spring element is in contact with both said first and second countercontacts, thereby electrically interconnecting said first and second countercontacts;

said projection at said first countercontact protruding into said opening in said spring element at least when the latter has assumed its first switching position, wherein the projection is made of electrically insulating material.

5,828,287

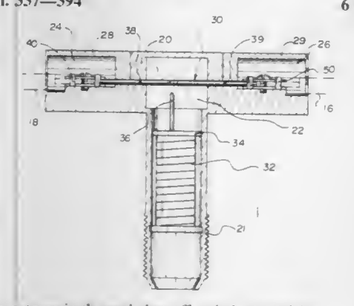
AUTOMATIC THERMAL SHUT-OFF SWITCH

Bruce G. Nilson, 1155 White Horse Pike, Hammonton, N.J. 08037

Filed Dec. 31, 1996, Ser. No. 775,726

Int. Cl.[6] H01H *37/48*

U.S. Cl. 337—394 **6 Claims**



1. An automatic thermal shut-off switch comprising:

a T-shaped housing having a longitudinal portion and a traverse portion, said longitudinal portion extending substantially from a middle of said traverse portion;

a longitudinal cavity within said longitudinal portion;

a first cavity and a second cavity within said traverse portion, said first cavity being positioned opposite said second cavity, each of said first and said second cavities further being positioned near respective distal ends of said traverse portion;

a thermal switch within said longitudinal cavity for electrically coupling between a power source and an electric motor connected to a water pump, wherein said thermal switch is normally closed and wherein said thermal switch opens when an extremely hot temperature is conducted from a pump housing; and

wherein said thermal switch includes

a bimetallic compression spring slidably positioned within a lower portion of said longitudinal cavity for conducting heat from said pump housing and expanding when said extremely hot temperature has been conducted,

a first contact projecting from said first cavity into an upper portion of said longitudinal cavity,

a second contact projecting from said second cavity into said upper portion of said longitudinal cavity to electrically couple to said first contact,

a disc positioned on top of said bimetallic compression spring, and

a pin secured orthogonally to said disc for engaging a bottom surface of said first contact and separating said first contact from said second contact when said bimetallic compression spring expands because of said extremely hot temperature.

5,828,288

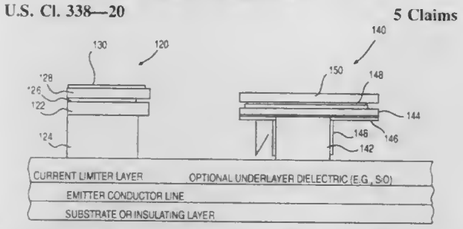
PEDESTAL EDGE EMITTER AND NON-LINEAR CURRENT LIMITERS FOR FIELD EMITTER DISPLAYS AND OTHER ELECTRON SOURCE APPLICATIONS

Gary W. Jones, Poughkeepsie; Steven M. Zimmerman, Pleasant Valley; Susan K. Schwartz Jones; Michael J. Costa, both of Poughkeepsie, and Jeffrey A. Silvernail, Kingston, all of N.Y., assignors to Fed Corporation, Hopewell Junction, N.Y.

Filed Aug. 24, 1995, Ser. No. 518,745

Int. Cl.[6] H01C *7/00*

U.S. Cl. 338—20 **5 Claims**



1. A current limiter for a microelectronic field emitter device, said current limiter comprising a semi-insulating material selected from the group consisting of SiO, SiO+Cr (0 to 50% wt.), SiO2+Cr (0 to 50% wt.), SiO+Nb, doped or undoped diamond-like carbon, Al2O3, and SixOyNz, sandwiched between an electron injector and a hole injector.

5,828,289

PRESSURE ACTIVATED SWITCHING DEVICE

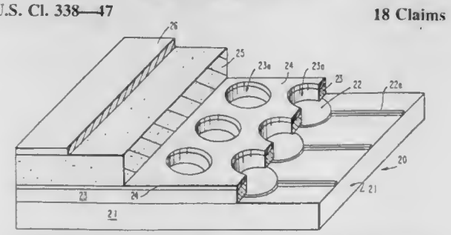
Lester E. Burgess, Box 522, Swarthmore, Pa. 19081

Division of Ser. No. 429,683, Apr. 27, 1995, Pat. No. 5,695,859.

This application Oct. 20, 1997, Ser. No. 954,495

Int. Cl.[6] H01C *10/10*

U.S. Cl. 338—47 **18 Claims**



1. A pressure actuated switching apparatus, which comprises:

a) a spacer element having an insulative layer and an upper conductive layer, said spacer element having at least one opening;

b) a layer of piezoresistive material positioned above said spacer element and being in electrical contact with said upper conductive layer;

c) a lower conductive layer positioned below said spacer element, at least a portion of said lower conductive layer being aligned with said at least one opening,

wherein said piezoresistive material disposes itself through said at least one opening to make electrical contact between said upper and lower conductive layers in response to pressure of predetermined magnitude applied thereto.

5,828,290

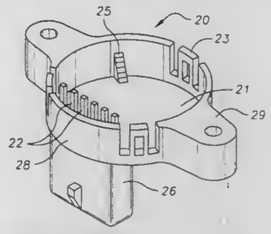
MODULAR POSITION SENSOR

Gary L. Buss, Elkhart; James E. Haugh, Granger; Murray Kaijala, Elkhart; William G. Osmer, Granger; William W. Wheeler, Middlebury, and John Zdanys, Jr., Elkhart, all of Ind., assignors to CTS Corporation, Elkhart, Ind.

Filed Aug. 22, 1997, Ser. No. 916,545

Int. Cl.[6] H01C *10/32*

U.S. Cl. 338—162 **22 Claims**



1. A position sensor, comprising:

a) a sensor unit, including:

a1) a sensor housing having:

i) a top side having a hole located therein,

ii) a bottom side having: 1) a pressure wall, located thereon and within the housing, and having a first and second side, 2) a plurality of pin holes adjacent the first side and extending through the bottom side, 3) a film tab, located thereon next to the plurality of pin holes and the pressure wall; and

iii) a housing wall positioned between the top and bottom sides;

a2) a flexible film having output pads located thereon, and positioned within the sensor housing so that 1) one edge of the film fits into the film tab so that the pads are located between the first side and the pin holes, and 2) a remainder of the flexible film is positioned adjacent the housing wall and located on the second side;

a3) a rotor, positioned to extend into and be exposed through the hole, having a contactor for contacting the flexible film located there around;

a4) a pressure element, positioned between the first side and the flexible film, for pressing the flexible film away from the first side and against any electrical pins inserted into the plurality of pin holes; and

a5) wherein, the sensor housing substantially encloses the flexible film, the rotor and the pressure element therein;

b) a connector unit, surrounding the sensor unit including:

b1) a connector housing, having a bottom wall and side wall; and

b2) a plurality of electrical pins, extending from the bottom wall; and

c) a coupling device so constructed and located on both the sensor and connector units so that 1) the connector housing side wall surrounds the sensor unit housing wall, 2) the plurality of electrical pins fits into the plurality of pin holes, and 3) the output pads are matched to and pressed against the plurality of electrical pins.

5,828,291

MULTIPLE COMPOUND CONDUCTOR CURRENT-LIMITING DEVICE

Thomas Baumann; Willi Paul, both of Wettingen, and Jakob Rhyner, Zurich, all of Switzerland, assignors to ABB Research Ltd., Zurich, Switzerland

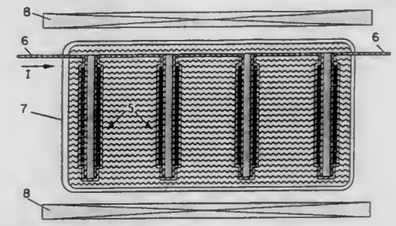
PCT No. PCT/CH95/00215, § 371 Date Jul. 30, 1996, § 102(e) Date Jul. 30, 1996, PCT Pub. No. WO96/10269, PCT Pub. Date Apr. 4, 1996

PCT Filed Sep. 25, 1995, Ser. No. 647,951

Claims priority, application Germany, Sep. 29, 1994, 44 34 819.3

Int. Cl.[6] H01L *43/00;43/12;* **H01H** *47/00*

U.S. Cl. 338—32 S **7 Claims**



1. A current-limiting device, comprising:

at least one superconductor;

at least one non-superconducting shunt resistor in parallel with each superconductor, each superconductor having a first main superconductor face in contact with a main shunt resistor face of a shunt resistor so as to form a compound conductor generally in the form of a meandering band having a band width greater than approximately 3.5 times the superconductor thickness;

at least one insulator having opposing faces each contact with said compound conductor, wherein

multiple compound conductors are arranged with respect to each other such that current flows in opposite directions through adjacent compound conductors, and wherein

a superconductor separation of superconductors on opposite sides of an insulator, perpendicular to the plane of the meandering band, is smaller than the band width.

5,828,292

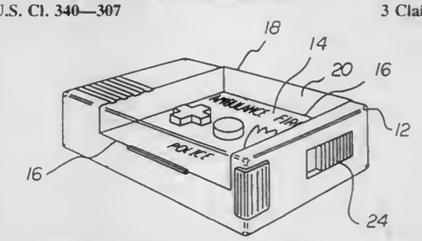
BUTTON EMERGENCY SIGNAL VIA INCORPORATED TRANSMITTER

Viatcheslav A. Kokhan, Flat 1, 89 Longfleet Road, Poole, Dorset BH15 2HP, United Kingdom

Filed Apr. 29, 1996, Ser. No. 639,477

Int. Cl.[6] G08B *25/00*

U.S. Cl. 340—307 **3 Claims**



1. A new and improved 3-button emergency signal via incorporated transmitter device comprising, in combination:

a portable housing with a generally rectangular configuration having a front face, a rear face, a top surface, a bottom surface, and a pair of side surfaces formed therebetween defining an interior space, the housing having a recess centrally formed in the front face thereof with the recess having a periphery including a pair of opposite open side edges in communication with the side surfaces of the housing, a trans-

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parent lid having a planar top surface and a pair of lips formed normally with respect to the top surface wherein one of the lips is pivotally coupled to one of the side edges of the recess via a hinge thus allowing the lid to be selectively situated about recess in a closed orientation and further reside in an open orientation for affording access to the recess, a locking mechanism situated on a side surface of the housing opposite the hinge and adapted to allow the selective securement of the lid in the closed orientation thereof, and a clip comprising a thin rectangular member pivotally coupled to the rear face of the housing for allowing the securement thereof to an article of clothing;

a plurality of push button switches linearly aligned within the recess and comprising a first switch adapted to transmit a first activation signal upon the depression thereof, a second switch adapted to transmit a second activation signal upon the depression thereof, and a third switch adapted to transmit a third activation signal upon the depression thereof, wherein each push button switch is constructed from a uniquely colored material and the present device further comprises an associated red warning light adapted to illuminate for a predetermined amount of time upon the depression of a switch;

a transmitter situated within the interior space of the housing and electrically connected to the switches, an antenna also situated within the interior space of the housing, and a power source comprising a battery, the transmitter adapted to transmit via free space a first transmission signal for intended receipt by a medical facility upon the receipt of the first activation signal, a second transmission signal for intended receipt by a law enforcement facility upon the receipt of the second activation signal, and a third transmission signal for intended receipt by a fire rescue facility upon the receipt of the third activation signal, the transmitter further adapted to only cease transmission of a transmission signal upon the receipt of a deactivation signal; and

a reset module for use by an official for allowing the transmission of the deactivation signal;

wherein a receiver of the transmission signal may locate the user and further deactivate the transmitter via the transmission of the deactivation signal and allow the device to be reused.

5,828,293
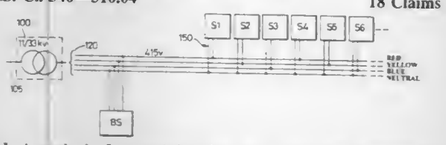
DATA TRANSMISSION OVER A POWER LINE COMMUNICATIONS SYSTEM

Robin Paul Rickard, Hertfordshire, Great Britain, assignor to Northern Telecom Limited, Montreal, Canada

Filed Jun. 10, 1997, Ser. No. 871,930

Int. Cl.[6] H04M *11/04*

U.S. Cl. 340—310.04 **18 Claims**



1. A method of transmitting data in a power line communications system comprising a power line upon which noise level varies with time, the power line comprising a plurality of different phase lines, there being a plurality of subscriber stations coupled to the phase lines, the method comprising:

determining quiet periods when noise upon the phase lines is at a reduced level; and

transmitting data packets over the power line to subscriber stations, each packet being transmitted within a single one of the determined quiet periods, wherein each of the packets is preferentially transmitted to a subscriber station on a phase line during a quiet period occurring on that phase line.

5,828,294

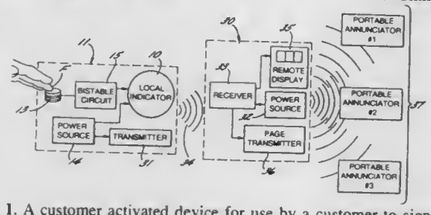
CUSTOMER ACTIVATED SIGNAL FOR SERVICE

Edward J. Shank, 6401 Randy Dr., Charlotte, N.C. 28215

Continuation-in-part of Ser. No. 194,474, Jan. 31, 1994, Pat. No. 5,594,409. This application Jan. 9, 1997, Ser. No. 780,809

Int. Cl.[6] G08B *5/00*

U.S. Cl. 340—326 **5 Claims**



1. A customer activated device for use by a customer to signal service personnel that the customer desires service, said device comprising:

(a) a portable local indicator, including:

(I) a signal light and

(ii) a bistable circuit connecting the signal light to a source of power;

(b) an enclosure;

(c) said signal light and said bistable circuit being mounted inside said enclosure; and

(d) said binary circuit including a proximity sensor,

whereby a customer desiring service activates said device by positioning a portion of the customer's body within a predetermined distance of said proximity sensor to activate said bistable circuit to turn on said signal light to indicate to service personnel that said customer desires service.

5,828,295

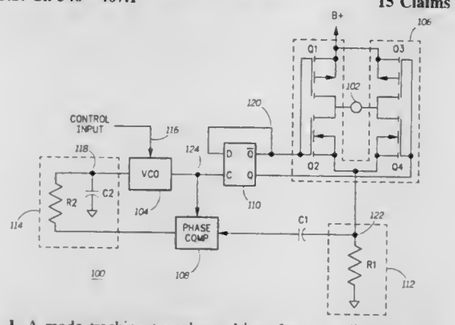
MODE TRACKING TRANSDUCER DRIVER FOR A NON-LINEAR TRANSDUCER

James Gregory Mittel, Boynton Beach; John M. McKee, Hillsboro Beach, and Darrell Curtis Weber, Boynton Beach, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Sep. 4, 1996, Ser. No. 707,543

Int. Cl.[6] H04B *3/36;* **H04Q** *1/30*

U.S. Cl. 340—407.1 **15 Claims**



1. A mode tracking transducer driver for a non-linear electromagnetic transducer having at least a first operating mode and a second operating mode, said transducer driver comprising:

a voltage controlled oscillator, for generating an output signal having a variable frequency, said voltage controlled oscillator having an input responsive to a frequency control signal for controlling a frequency of the output signal;

a divider for dividing the output signal by a predetermined division value to generate a transducer drive signal;

a transducer driver, having an input coupled to said divider for driving the non-linear electromagnetic transducer continuously with the transducer drive signal; and

a mode detector, coupled to said transducer driver, for detecting a mode signal indicating a mode change between at least the first operating mode and the second operating mode of the non-linear electromagnetic transducer, the mode signal being generated at a multiple of the transducer drive signal at a value equal to the predetermined division value,

said mode detector including a phase comparator, responsive to the mode signal for generating the frequency control signal for establishing a quasi-resonant operating frequency at which a tactile energy output of the non-linear electromagnetic transducer is maximized.

5,828,296

VEHICULAR THEFT PREVENTIVE SYSTEM AND A THEFT DETERMINING DEVICE THEREOF

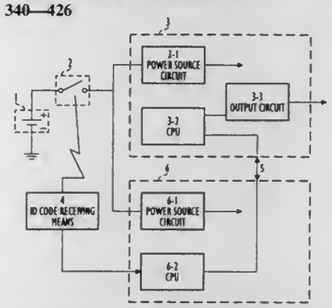
Motohiko Watanabe, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1996, Ser. No. 633,207

Claims priority, application Japan, Dec. 1, 1995, 7-314069

Int. Cl.[6] B60R *25/10*

U.S. Cl. 340—426 **6 Claims**



1. A vehicular theft preventive system comprising:

a controlling means for controlling a vehicle;

a theft determining means for outputting a control allowance signal to the controlling means based on a signal inputted from outside the vehicle;

a communication line connected to the controlling means and the theft determining means; and

a restricting means for restricting communication of theft determination information between the theft determining means and the controlling means over said communication line to a predetermined number of times or a predetermined period of time, but allowing unrestricted communications over said communication line for purposes unrelated to theft prevention;

wherein the controlling means controls the vehicle when the control allowance signal is outputted from the theft determining means to the controlling means within the predetermined number of times or the predetermined period of time.

5,828,297

VEHICLE ANTI-THEFT SYSTEM

Donald L. Banks, Greenwood; William F. Collins, Columbus; Matthew W. Workman, Indianapolis, and Auden E. Rovelle-Quartz, Columbus, all of Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Jun. 25, 1997, Ser. No. 882,520

Int. Cl.[6] B60R *25/10*

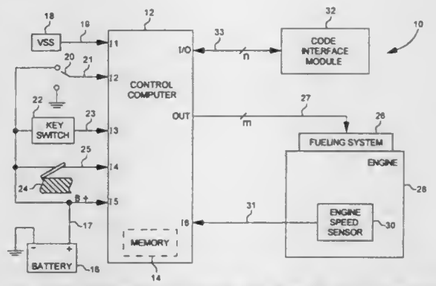
U.S. Cl. 340—426 **24 Claims**

1. A vehicle anti-theft system comprising:

means for producing a security code signal;

means for producing an accelerator signal;

an engine fueling system responsive to at least one fueling signal to provide fuel delivery to an internal combustion engine of a vehicle;



means for determining an operational state of said engine and producing an engine operational state signal corresponding thereto; and

a control computer normally responsive to said accelerator signal to produce said at least one fueling signal in accordance therewith, said control computer responsive to a first occurrence of said security code signal and said engine operational state signal to modify said at least one fueling signal to thereby maintain an engine idling state regardless of said accelerator signal if said engine is running.

5,828,298

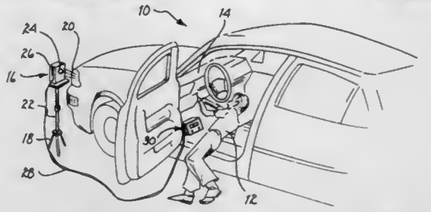
DEVICE AND METHOD FOR SENSING WHEN EXTERIOR VEHICLE LIGHTS ARE ON

Chris S. Eagan, 670 Eldorado La., Las Vegas, Nev. 89123

Filed May 12, 1997, Ser. No. 855,870

Int. Cl.[6] B60Q *11/00*

U.S. Cl. 340—458 **52 Claims**



1. A portable device for sensing when an exterior light on a vehicle is on comprising in combination:

a vehicle having at least one exterior light element having an external protective surface;

portable light sensing and electric current generating means coupled to said one exterior light element external to said external protective surface to determine if said one exterior light element is on and for generating an electric current indicating that said one exterior light is on; and

portable display means coupled to said portable light sensing and electric current generating means for sensing said electric current and for providing at least one of a visual and audio indication at any desired location internal or external to said vehicle when said one exterior light element is on.

5,828,299

CAR DOOR WARNING SYSTEM

Ing-Wen Chen, No. 23, Lane 207, Kao-Feng Road, Hsin-Chu, Taiwan

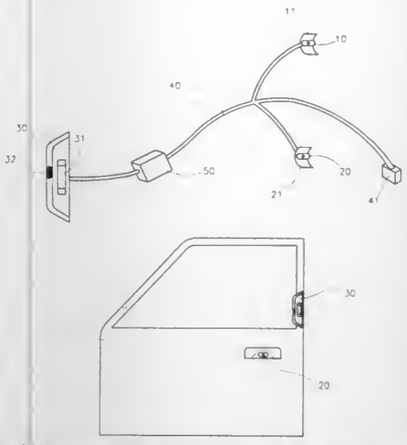
Filed Jan. 30, 1997, Ser. No. 791,274

Int. Cl.[6] B60Q *1/26*

U.S. Cl. 340—468 **7 Claims**

1. A car door warning system activated by a car door handle comprising:

a warning device with at least one lighting device;



a switch operated by motion of the door handle. said switch is electrically connected to said warning device; wherein

moving the door handle to open the car door actuates said switch such that an electrical signal is transmitted to said warning device, thereby actuating said warning device and lighting said lighting device to generate a warning signal;

each of a plurality of doors of a car is provided with at least one switch operated by motion of a corresponding door handle all of said switches are powered by a common power supply;

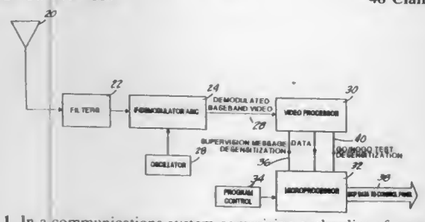
said system includes a first switch actuated by an inner door handle and a second switch actuated by an outer door handle.

5,828,300

ALARM SYSTEM WITH SUPERVISION CONTROLLED RECEIVER PARAMETER MODIFICATION

Thomas P. Schmit, Huntington; Francis C. Marino, Dix Hills, and Kenneth Addy, Massapequa, all of N.Y., assignors to Pittway Corporation, Chicago, Ill.

Filed May 20, 1996, Ser. No. 650,292
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—539 **48 Claims**



1. In a communications system comprising a plurality of remote transmitting devices and a receiving station having a receiver associated therewith, each of said remote transmitting devices capable of transmitting a supervision signal having a plurality of correlated supervision messages and a non-supervision signal having a plurality of correlated non-supervision messages, a method for automatically testing the communications system comprising the steps of:

a) receiving at said receiving station a first message from a transmitting device;

b) determining if said first message is a supervision message or a non-supervision message; and

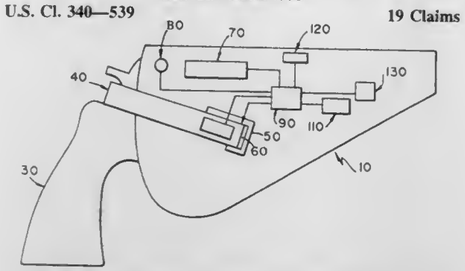
c) impairing the ability of the receiving station to properly detect a subsequent message when said first message is determined to be a supervision message.

5,828,301

ELECTRONICALLY ACTIVATED HOLSTER

Luis R. Sanchez, Miami, Fla., assignor to Micro Indentification, Inc., Miami, Fla.

Filed Sep. 11, 1996, Ser. No. 712,008
Int. Cl.[6] G08B *1/08*
U.S. Cl. 340—539 **19 Claims**



1. A holster for releasably holding a weapon upon the occurrence of one or more predetermined conditions, comprising:

a) control circuit means including memory means for storing instructions and data;

b) at least one input sensor means having an output connected to said control circuit means and said input means sensing a plurality of conditions including said predetermined conditions that releases said weapon; and

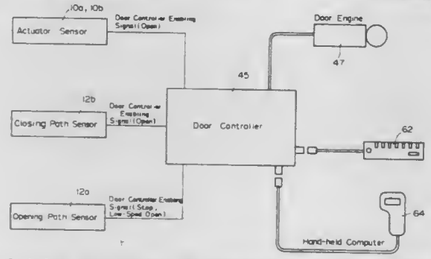
c) locking means for securing said weapon to said holster and having an input connected to said control circuit means so that said locking means is released upon the occurrence of said predetermined conditions.

5,828,302

DOOR SENSOR WITH SELF-DIAGNOSING FUNCTION

Koji Tsutsumi, 4-10, Nishimaiko 7-chome; Ye Zengguang, 23-28-104, Shimizugaoka 1-chome, both of Tarumi-ku, Kobe, and Shigeaki Sasaki, 1-20, Takaha-cho 5-chome, Nada-ku, Kobe, all of Japan

Filed Apr. 24, 1997, Ser. No. 847,364
Claims priority, application Japan, Apr. 26, 1996, 8-130705; Apr. 27, 1996, 8-130686; Mar. 24, 1997, 9-090356
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—540 **29 Claims**



1. A door sensor with a self-diagnosing function, for sensing an object approaching a door panel and actuating the door panel in response to the sensing of the object, comprising:

a light-emitting unit emitting light into a space or onto a floor near said door panel;

a light-receiving unit receiving light emitted by said light-emitting unit and reflected from an object in said space or on said floor or from said floor; and

a control unit determining the presence of an object on the basis of the amount of light received by said light-receiving unit, said control unit being adapted to supply, to a door controller which controls the opening and closing of said door panel, a door controller enabling signal for opening said door panel when the presence of an object is determined;

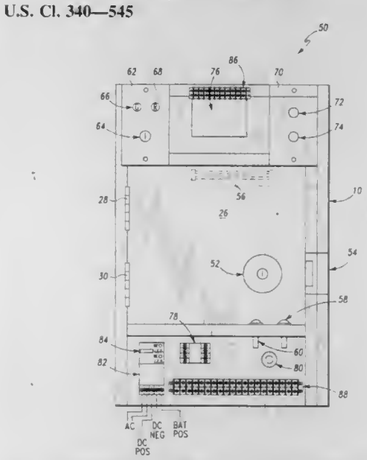
wherein said control unit includes a plurality of failure detecting means for detecting failure in portions of said light-emitting unit, light-receiving unit and control unit, and develops continuously said door controller enabling signal when one of said failure detecting means detects failure in any of said portions.

5,828,303

APPARATUS FOR FACILITATING INSTRUCTION OF ELECTRONIC SECURITY AND ELECTRONIC ACCESS CONTROL

Harold J. Williams, 7420 Thompson Rd., Indianapolis, Ind. 46237

Filed Oct. 21, 1997, Ser. No. 955,038
Int. Cl.[6] G08B *13/08*
U.S. Cl. 340—545 **20 Claims**



1. An apparatus for facilitating instruction of electronic security and electronic access control, comprising:

an installation mock-up frame having a cavity therein;

a door hingedly attached to the installation mock-up frame, such that the door has an open position and a closed position in which access to the cavity is prevented by the door;

a lockset installed into the door;

an electric strike installed into the installation mock-up frame and positioned so as to interact with the lockset;

a magnetic lock having first and second halves, the first half being coupled to the installation mock-up frame within the cavity and the second half being coupled to the door, wherein energization of the magnetic lock prevents the first and second halves from being separated, thus preventing the door from being opened;

a roller switch coupled to the installation mock-up frame and operative to sense whether the door is open or closed;

a plurality of electronic access control devices mounted to the installation mock-up frame above the door;

a top terminal strip mounted to the installation mock-up frame above the door, wherein the plurality of electronic access control devices are electrically coupled to the top terminal strip;

a bottom terminal strip mounted to the installation mock-up frame below the door;

a power supply mounted to the installation mock-up frame and coupled to the bottom terminal strip; and

a multiconductor wire coupling the top terminal strip to the bottom terminal strip, such that power is provided to the top terminal strip and such that the plurality of electronic access control devices are electrically coupled to the bottom terminal strip;

wherein the installation mock-up frame is sized to be placed upon a laboratory bench; and

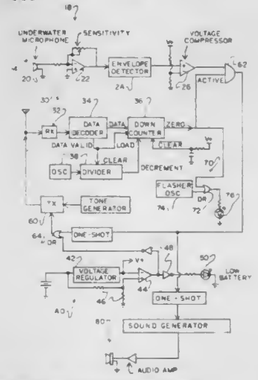
wherein the plurality of electronic access control devices may be interconnected using the bottom and top terminal strips without placing wires across the door, thereby ensuring an unobstructed pathway for moving the door between the closed position and the open position.

5,828,304

POOL MONITORING SYSTEM

Ruth I. Mowday, 49 Seneca Ave., Coatesville, Pa. 19320

Continuation-in-part of Ser. No. 820,162, Mar. 19, 1997, abandoned. This application Oct. 20, 1997, Ser. No. 954,148
Int. Cl.[6] G08B *13/20;21/00*
U.S. Cl. 340—566 **8 Claims**



2. A pool monitoring system comprising:

a body of water;

a monitoring unit including:

detection means adapted to transmit an alarm signal upon the detection of a human falling within the body of water,

timer deactivation means having a first mode of operation during which an activation signal is transmitted, wherein the activation signal is transmitted only while the timer deactivation means is maintained in the first mode of operation, the timer deactivation means further having a second mode of operation initiated by the receipt of a timer deactivation signal via free space and further maintained in the second mode of operation during a time period inherent in the timer deactivation signal, and

transmitter means connected to the sound detection means and timer deactivation means, the transmitter means adapted to transmit via free space a remote alarm activation signal upon the receipt of the alarm signal from the sound detection means coincident with the receipt of the activation signal from the timer deactivation means; and

a remote alarm unit situated distant the monitoring unit and including:

timer selection means adapted to transmit via free space the deactivation signal indicative of the predetermined time period, and

remote receiver means adapted to generate an audible noise upon the receipt of the remote alarm activation signal via free space.

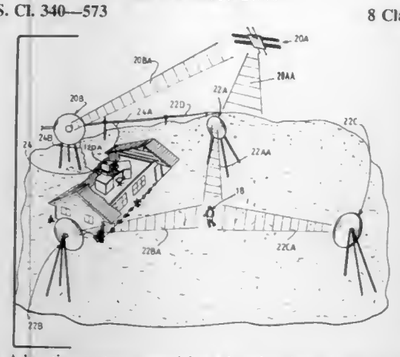
5,828,305

Patent Not Issued For This Number

5,828,306
LOCATION DETECTOR AND MONITOR AND METHOD OF USING THE SAME

Brendan Joseph Curran, 57-69 73rd Pl., Maspeth, N.Y. 11378

Filed Apr. 15, 1996, Ser. No. 631,923
Int. Cl.[6] G08B *23/00*
U.S. Cl. 340—573 8 Claims



1. A location system comprising a location detector and monitor (**10**) removably attachable to a person (**18**) and a central monitoring computer (**24**) electronically and signal communicatively coupled to:

a central monitoring computer signal line (**24**A);

a central monitoring computer satellite line (**24**B);

a central monitoring computer transmitter (**24**C) which is coupled to a central monitoring computer transmitter antenna (**24**CA);

a central monitoring computer receiver (**12**D) which is coupled to a central monitoring computer receiver antenna (**12**DA);

a first signal dish (**22**A), a second signal dish (**22**B), and a third signal dish (**22**C), through said central monitoring computer signal line;

a satellite dish (**20**B), which is capable of producing and capturing a satellite dish microwave (**20**BA), through said central monitoring computer satellite line;

a satellite (**20**A); which is capable of producing a satellite microwave (**20**AA);

the central monitoring computer (**24**) further comprises software functioning to plot a location utilizing Cartesian Coordinates generated from a first signal dish radio wave (**22**AA) emanating from the first signal dish (**22**A), a second signal dish radio wave (**22**BA) emanating from the second signal dish (**22**B) and a third signal dish radio wave (**22**CA) emanating from the third signal dish (**22**C), the location detector and monitor (**10**) further comprises:

A) remote unit (**12**) which comprises:

i) a remote housing (**12**A),

ii) a power means (**12**E) contained within the remote unit housing (**12**A),

iii) a remote unit computer chip (**12**G) electronically connected to the power means (**12**E),

iv) a remote unit speaker/microphone (**12**D) electronically connected to the remote unit computer chip (**12**G),

v) a remote unit transmitter (**12**F) electronically connected to the remote unit computer chip (**12**G),

vi) a remote unit keypad (**12**H) electronically connected to the remote unit computer chip (**12**G),

vii) a remote unit receiver (**12**F) electronically connected to the remote unit chip (**12**G),

viii) a remote unit left strap hinge (**12**L) securely attached to the remote unit housing (**12**A), and

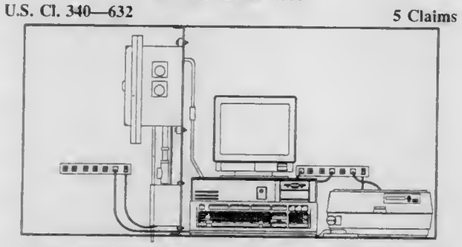
ix) a remote unit right strap hinge (**12**R) securely attached to the remote unit housing (**12**A);

B) a strap (**14**) which comprises a left strap (**14**L) movably attached to the left strap hinge (**12**L) and a right strap (**14**R) movably attached to a remote unit right strap hinge (**12**R), the left strap (**14**L) comprises a left strap receiver antenna (**14**LA) electronically connected to the remote unit receiver (**12**F), the left strap (**14**L) further comprises a left safety strap (**14**LB) electronically connected to the remote unit computer chip (**12**G), the left strap (**14**L) further comprises a left strap transmitter antenna (**14**LC) electronically connected to the remote unit transmitter (**12**F), the right strap (**14**R) comprises a right strap receiver antenna (**14**RA) electronically connected to the remote unit receiver (**12**F), the right strap (**14**R) further comprises a right safety strap (**14**RB) electronically connected to the remote unit computer chip (**12**G), the right strap (**14**R) further comprises a right strap transmitter antenna (**14**RC) electronically connected to the remote unit transmitter (**12**F), the left strap receiver antenna (**14**LA) is securely and electronically coupled to the right strap receiver antenna (**14**RA) by a left strap receiver antenna coupler (**14**LAA) and a right strap receiver antenna coupler (**14**RAA), the left safety strap (**14**LB) is securely and electronically coupled to the right safety strap (**14**RB) by a left safety strap coupler (**14**LBA) and a right safety strap coupler (**14**RBA), the left strap transmitter antenna (**14**LC) is securely and electronically coupled to the right strap transmitter antenna (**14**RC) by a left strap transmitter antenna coupler (**14**LCA) and a right strap transmitter antenna coupler (**14**RCA).

5,828,307
HYDROCARBON GAS MONITOR DESK

Tom J. Washer, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 23, 1996, Ser. No. 700,346
Int. Cl.[6] G08B *17/10*
U.S. Cl. 340—632 5 Claims



1. Apparatus for use in an area designated as hazardous according to a national or local government electric code, said apparatus comprising:

(a) an electrical enclosure having a construction that is essentially vapor tight except for a front access opening, said enclosure including:

i. an enclosed frame structure having all joints sealed to resist vapor entry;

ii. a table top surface on said frame structure;

iii. a compartment located beneath said top surface for containing said gas monitor, said low thermal storage electrical devices and said electrical receptacle; and wherein said compartment includes said front access opening; and

iv. four legs for supporting said enclosed frame structure,

(b) a combustible gas monitor for producing an alarm signal on detection of a predefined level of explosive gas concentration;

(c) wherein said gas monitor is securely mounted in said enclosure and aligned to monitor the atmosphere introduced through said front access opening, and wherein said combustible gas monitor is rated for operation in said hazardous location;

(d) means for delivering electric current to equipment housed in said enclosure;

(e) at least one low thermal storage electrical device, which is safety rated for general purpose areas, wherein said device is housed in said electrical enclosure;

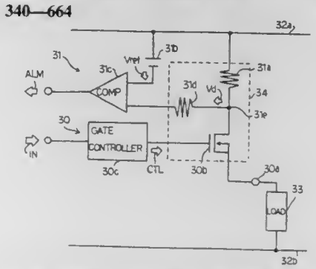
(f) an electrical power receptacle housed in said electrical enclosure for delivering electric current to said at least one low thermal storage device; and

(g) means responsive to said alarm signal for automatically disconnecting electric current delivered to said at least one low thermal storage electrical devices through said electrical receptacles.

5,828,308
CURRENT SENSING CIRCUIT FORMED IN NARROW AREA AND HAVING SENSING ELECTRODE ON MAJOR SURFACE OF SEMICONDUCTOR SUBSTRATE

Ikuo Fukami, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 5, 1997, Ser. No. 906,503
Claims priority, application Japan, Aug. 6, 1996, 8-207237
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—664 9 Claims



1. A current sensing circuit for monitoring a current driving transistor connected at a first current node thereof to a load to see whether or not the amount of driving current is within a standard range, comprising:

a current-to-voltage converter connected between a power voltage line and a second current node of said current driving transistor for producing a potential level variable with the amount of said driving current at said second current node, said current-to-voltage converter and said current driving transistor being implemented by a vertical transistor fabricated on a semiconductor substrate structure having a major surface, said vertical transistor including

a drain region of a first conductivity type formed on said semiconductor substrate and providing said second current node and a sensing node on a first area exposed to said major surface,

a base region of a second conductivity type opposite to said first conductivity type and formed over a second area of said drain region,

a source region of said first conductivity type formed in a central area of said base region and having an area serving as said first current node and exposed to said major surface,

a channel region formed between said drain region and said base region for providing a current path between said drain region and said source region,

a gate insulating layer covering a part of said channel region and a peripheral area of said base region, and

a gate electrode formed on said gate insulating layer;

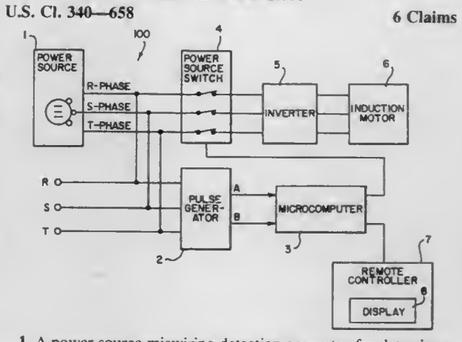
a reference potential source for producing a constant reference potential level; and

a voltage comparator having two input nodes connected to said sense node and said reference potential source so as to compare said potential level with said reference potential level for producing a signal representative of said driving current out of said standard range.

5,828,309
POWER SOURCE MISWIRING DETECTION APPARATUS

Masayuki Kumakura, and Eiji Oohashi, both of Ooizumimachi, Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan

Filed Apr. 2, 1996, Ser. No. 630,043
Claims priority, application Japan, Apr. 17, 1995, 7-115175
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—658 6 Claims



1. A power source miswiring detection apparatus for detecting a miswiring of wires of a power source, including:

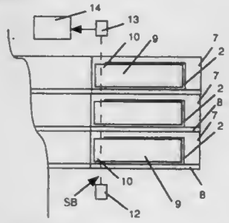
pulse generating means for generating a first pulse having a pulse width corresponding to a first phase difference between a first pair of two phases of a three-phase alternating power source, and a second pulse having a pulse width corresponding to a second phase difference between a second pair of two phases of the three-phase alternating power source, which is different from said first pair of two phases; and

judging means for detecting a third phase difference between said first pulse and said second pulse to judge whether the third phase difference is in a predetermined range, and detecting the miswiring if the third phase difference is judged to be out of the predetermined range.

5,828,310
INDICATOR SYSTEM HAVING PLURALITY OF FEEDERS AND ACTUATORS ARRANGED TO SELECTIVELY ACTUATE A SENSOR

Kean Fong Foo; Ka Tiek Lim; Ping Chow Teoh, and Kon Hing Chooi, all of Penang, Malaysia, assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 20, 1997, Ser. No. 859,451
Int. Cl.[6] G08B *21/00*
U.S. Cl. 340—674 15 Claims



1. An indicator system comprising:

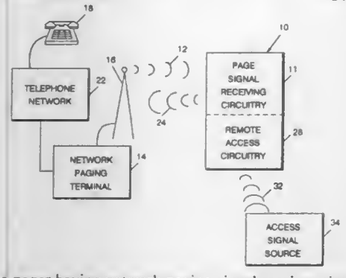
a plurality of feeders for supplying electrical components to respective dispensing locations;

a sensor;

actuators associated with respective ones of said feeders, said actuators being movable relative to said sensor to thereby selectively actuate said sensor when said components in one of said respective feeders are below a desired number; and

a signaling means coupled to said sensor to provide a warning signal indicative of said components associated with one of said feeders being below said desired number.

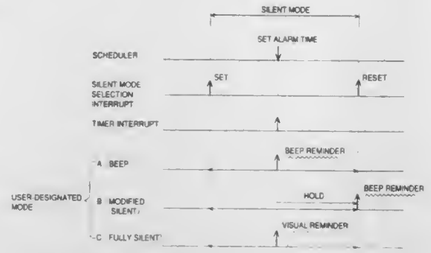
5,828,311
CIRCUITRY AND METHOD FOR ACCESSING A RADIO PAGER
Anders Östlund, Gothenburg, Sweden, assignor to Telefonaktiebolaget L M Ericsson (publ.), Stockholm, Sweden
Filed Oct. 10, 1995, Ser. No. 541,130
Int. Cl.[6] H04Q *7/00*; **H04M** *11/00*
U.S. Cl. 340—825.44 **37 Claims**



1. In a pager having network paging signal receiver circuitry for receiving a paging signal transmitted thereto by a network paging terminal, an improvement of access signal receiving circuitry for receiving a perceptible access signal formed at a source other than the network terminal and provided to said access signal receiving circuitry by way of a mass-market communication medium, the perceptible access signal formed of at least a selected one of an audio signal and an optical signal, the selected one of the audio signal and the optical signal of characteristics permitting perception thereof during transmission of the perceptible access signal to the pager, said access signal receiving circuitry comprising:
an access signal transducer for sensing the perceptible access signal, said access signal transducer further for converting the perceptible access signal, when sensed, into an electrical signal of values representative of values of the perceptible access signal; and
a control device coupled to receive the electrical signal formed by said access signal transducer, the control device for generating control commands for controlling operation of selected functions of the pager responsive to values of the electrical signal.

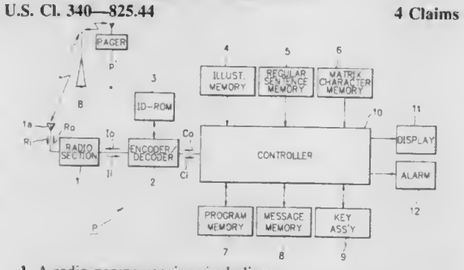
5,828,312
REMINDER APPARATUS AND METHOD
Yasuyuki Yamazaki, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 11, 1996, Ser. No. 680,229
Claims priority, application Japan, Jul. 13, 1995, 7-177025/1995
Int. Cl.[6] H04Q *1/00*
U.S. Cl. 340—825.44 **19 Claims**

1. An apparatus for generating a reminder alarm in a selective call receiver which is selectively set to one of a sound mode and a silent mode, wherein an incoming call causes a sound medium incoming call alarm to be generated when the sound mode is selected and a silent medium incoming call alarm to be generated when the silent mode is selected, the apparatus comprising:
a scheduler for determining a time of an alarm;
a mode selector for selecting one of a first reminder alarm mode, a second reminder alarm mode, and a third reminder alarm mode; and
a controller for generating:



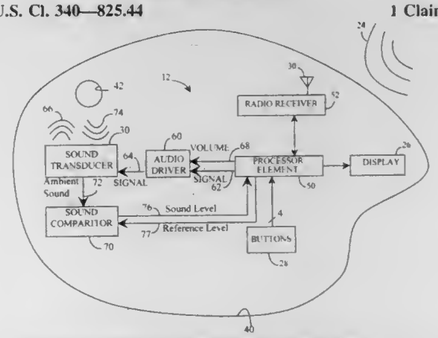
in said first reminder alarm mode, a sound medium reminder alarm at the time of the alarm even if said silent mode is selected;
in said second reminder alarm mode, the sound medium reminder alarm if the alarm time has passed when the silent mode has been reset to the sound mode; and
in said third reminder alarm mode, a silent medium reminder alarm at the time of the alarm if the silent mode has been selected.

5,828,313
RADIO PAGING RECEIVER FOR DISPLAYING A CALL MESSAGE WHICH INCLUDES ILLUSTRATION
Yasuyuki Mochizuki, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan
Filed Jul. 22, 1996, Ser. No. 684,616
Claims priority, application Japan, Jul. 21, 1995, 7-185143/95
Int. Cl.[6] H04M *11/00*
U.S. Cl. 340—825.44 **4 Claims**



1. A radio paging receiver including:
a first memory for storing therein a plurality of subsets of a set of character data of which an arbitrary one is representative of a corresponding one of a plurality of subsets of a set of characters and accessible by a corresponding one of a plurality of first codes;
a second memory for storing therein a plurality of illustration data of which an arbitrary one is representative of a corresponding one of a plurality of illustrations and accessible by a corresponding one of a plurality of second codes;
a controller sequentially responsive to a code sequence representative of a page message, the code sequence containing the corresponding first code and the corresponding second code, for reading a corresponding data sequence containing the arbitrary subset of the set of character data from the first memory and the arbitrary illustration data from the second memory and processing the read data sequence to provide a sequence of image data; and
a display member responsive to the sequence of image data for displaying the page message containing the arbitrary subset of the set of characters and the arbitrary illustration,
wherein the display member has a display region for displaying thereon the page message, the display region being composed of a matrix of display segments each respectively displayable of an arbitrary element of the set of characters, the display region being divided into a matrix of subregions each respectively consisting of a predetermined number of elements of the matrix of display segments and displayable of an arbitrary one of the plurality of illustrations,
wherein the code sequence has a subsequence thereof containing a combination of the corresponding second code and a third code representing a certain element of the matrix of subregions of the display region, and
wherein the controller is responsive to the subsequence of the code sequence to provide the sequence of image data with additional information representative of the third code so that the display region displays the arbitrary illustration by the predetermined number of elements of the matrix of display segments at the certain element of the matrix of subregions, allowing the remaining elements of the matrix of display segments to elementwise continuously display the arbitrary subset of the set of characters.

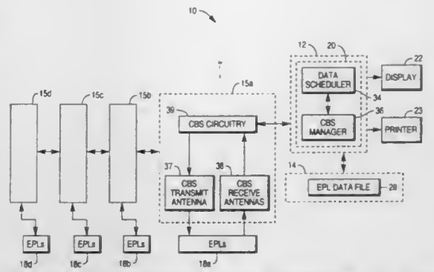
5,828,314
PAGER WITH ADAPTABLE ALARM
Michael C. Park, Portland, Oreg., assignor to Seiko Communication Systems, Beaverton, Oreg.
Filed Oct. 16, 1996, Ser. No. 732,174
Int. Cl.[6] G08B *5/22*
U.S. Cl. 340—825.44 **1 Claim**



1. In a paging device, an improvement comprising:
a sound measurement device providing a representation of ambient sound;
an alarm providing an audible alarm, said alarm having at least a first and a second selectable alarm presentations;
means for storing a reference threshold, said reference threshold being selected by a user of said paging device; and
control circuitry receiving said representation of ambient sound and selectively driving said alarm to cause one of said first and said second selectable alarm presentations as a function of a comparison of said representation of ambient sound and said reference threshold.

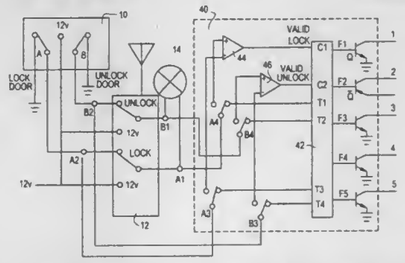
5,828,315
METHOD OF SENDING MESSAGES TO ELECTRONIC PRICE LABELS PRIOR TO THEIR IDENTIFICATION WITH PRICE LOOK-UP ITEMS
John C. Goodwin, III, Suwanee, Ga., assignor to NCR Corporation, Dayton, Ohio
Filed Oct. 5, 1995, Ser. No. 539,448
Int. Cl.[6] G06F *7/12*
U.S. Cl. 340—825.54 **6 Claims**

1. A method of sending a command to electronic price labels (EPLs) prior to their assignment to price look-up (PLU) items comprising the steps of:
providing the EPLs with a single unique reserved temporary EPL identification number prior to their installation in a transaction establishment;



transmitting a broadcast message addressed to the single reserved temporary EPL identification number of the EPLs after their installation in the transaction establishment, wherein the broadcast message contains the command; and
accepting the message by the EPLs.

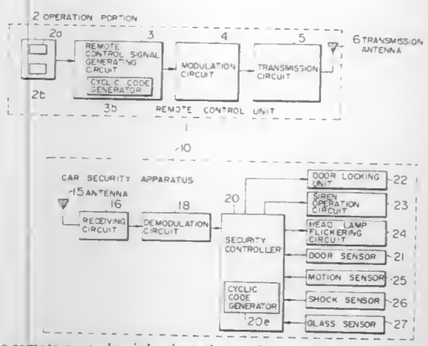
5,828,316
KEYLESS ENTRY FUNCTION EXPANDER
John DiCroce, Oceanside, N.Y., assignor to Audiovox Corporation, Hauppauge, N.Y.
Filed May 12, 1995, Ser. No. 440,106
Int. Cl.[6] B60R *25/00*
U.S. Cl. 340—825.69 **14 Claims**



1. A vehicle security system expander for use with a security system having a first output function that is actuated in response to a signal produced by one of an actuation of a remote control module and an actuation of a local control module, said expander comprising:
a detector for detecting an output signal produced by each of said remote control module and said local control module;
a signal origin identifier for determining if said output signal is produced by actuation of said remote control module or by actuation of said local control module; and
a signal decoder for decoding signals produced by multiple actuations of said remote control module and providing a second function when said multiple actuations of said remote control module are received within a predetermined time period after said output signal is produced.

5,828,317
REMOTE CONTROL METHOD AND REMOTE CONTROL SYSTEM
Kazuyuki Togashi, Iwaki, Japan, assignor to Alpine Electronics, Inc., Japan
Filed Sep. 11, 1995, Ser. No. 526,730
Claims priority, application Japan, Sep. 16, 1994, 6-221546
Int. Cl.[6] G08C *19/00;19/12*; **H04B** *1/02*
U.S. Cl. 340—825.69 **20 Claims**

1. A method for controlling a remote control system, the remote control system including:



a remote control unit having a key and transmission circuitry for transmitting a remote-control signal in response to actuation of the key, the remote-control signal including a command code; and

a stationary apparatus for receiving the remote-control signal and for performing an operation that corresponds to the command code transmitted by said remote control unit;

wherein each of the remote control unit and the stationary apparatus include a cyclic code generator, each cyclic code generator generating incremental cyclic codes in a common sequential order;

the method comprising the step of:

incrementing the cyclic code generator of the remote control unit such that a first cyclic code changes to a second cyclic code each time the key is actuated, the first and second cyclic codes being represented by a plurality of sequential bits including a last bit, the second cyclic code being generated by incrementally shifting a first group of the sequential bits and by exclusive-ORing the last bit with a second group of sequential bits;

transmitting the second cyclic code with the command code in the transmitted remote-control signal;

incrementing the cyclic code generator of the stationary apparatus such that a third cyclic code changes to a fourth cyclic code upon receiving the transmitted remote-control signal;

comparing the second cyclic code with the fourth cyclic code; and

executing the operation in response to the command code only when the second cyclic code coincides with the fourth cyclic code.

5,828,318

SYSTEM AND METHOD FOR SELECTING A SUBSET OF AUTONOMOUS AND INDEPENDENT SLAVE ENTITIES

Christian Lenz Cesar, Shrub Oak, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 8, 1996, Ser. No. 646,539

Int. Cl.[6] G08C *19/00*; **G05B** *23/02*

U.S. Cl. 340—825.69 **18 Claims**

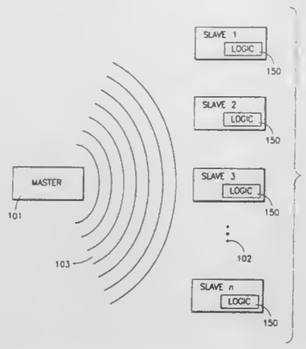
1. A state machine slave comprising:

three or more states, being at least a first state, a second state, and a third state, the slave being in the first state;

a memory with one or more information values;

a receiving unit for receiving one or more commands in a command sequence, each of the commands specifying a "transfer from state", a "transfer to state", and a primitive condition; and

a processing unit that causes the slave to move to the second state being the "transfer to state" if the first state is the same as the "transfer from state" and one or more of the information values satisfies the primitive condition, the slave being moved to the third state by another command in the command sequence only if the slave is in the second state, and the slave, once moved into to the third state, remaining in the third state.



wherein two of the states reverse roles after an end of one or more subsequences in the sequence of commands.

5,828,319

MOTOR VEHICLE DISPLAY SYSTEM AND RANGING DEVICE

Mark Christopher Tonkin, Lewes; Simon Lewis Marshall Hall, Worthing; Gareth Anthony Strong, Shoreham by Sea, and Marco Cucinotta, Worthing, all of Great Britain, assignors to Design Technology & Innovation Limited, Lewes/Sussex, United Kingdom

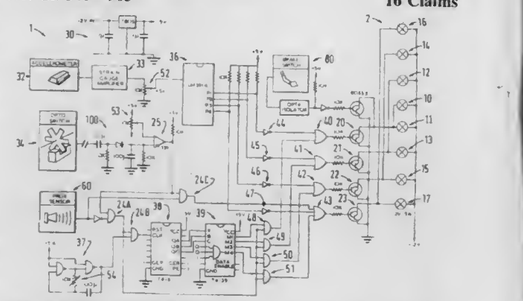
PCT No. PCT/GB93/00251, § 371 Date Aug. 5, 1994, § 102(e) Date Aug. 5, 1994, PCT Pub. No. WO93/15931, PCT Pub. Date Aug. 19, 1993

PCT Filed Feb. 5, 1993, Ser. No. 284,540

Claims priority, application United Kingdom, Feb. 5, 1992, 9202472

Int. Cl.[6] B60Q *1/00*

U.S. Cl. 340—903 **16 Claims**



11. A motor vehicle display system for indicating the state of motion of a subject vehicle to a driver of a following vehicle, the system comprising

an array of lamps mounted in use on the subject vehicle and operable to produce a visual display indicative of the state of motion;

a vehicle motion measuring means operable to sense a measure of velocity of the subject vehicle;

means for comparing the measure of velocity with a reference value;

means for illuminating said lamps in a time dependent sequence in response to said measure of velocity being determined to be less than said reference value, whereby the sequence produces an animated visual display indicative of the state of motion as being stationary;

a vehicle distance measuring device mounted in use on the subject vehicle and operable to determine whether said following vehicle is within a pre-set distance behind said subject vehicle; and

wherein the means for illuminating said lamps is operatively connected to said vehicle distance measuring device such that, when said following vehicle is determined to be within said pre-set distance, the time dependent sequence is discontinued and said lamps are illuminated thereafter in a time independent manner to produce a static visual display indicative of the state of motion as being stationary.

5,828,320

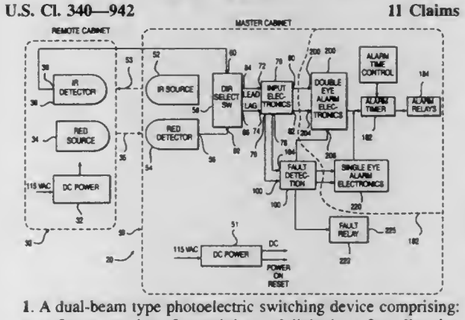
VEHICLE OVERHEIGHT DETECTOR DEVICE AND METHOD

John H Buck, Norfolk, Va., assignor to Trigg Industries, Inc., Hampton, Va.

Filed Sep. 26, 1997, Ser. No. 939,082

Int. Cl.[6] G08G *1/04*

U.S. Cl. 340—942 **11 Claims**



1. A dual-beam type photoelectric switching device comprising:

a. a first transmitter for emitting red light in a first direction along a first optical axis, and a first detector placed along the first optical axis, said first detector for receiving red light emitted from the first transmitter and said first detector for outputting a signal indicating the presence and absence of red light emitted from the first transmitter;

b. a second transmitter for emitting infrared light in a second direction along a second optical axis, and a second detector placed along the second optical axis, said second detector for receiving infrared light emitted from the second transmitter and said second detector for outputting a signal indicating the presence and absence of infrared light emitted from the second transmitter; wherein the first optical axis and the second optical axis are approximately parallel to each other and wherein the first direction and the second direction are approximately opposite of each other;

c. a fault detector for receiving the signal from the first light detector and the signal from second light detector, processing said signals and producing outputs indicating fault status of said light detectors; and

d. an alarm mode component for receiving the signal of the first detector, the signal of the second detector and the fault status outputs, and for triggering certain outputs in accordance with a predetermined logic.

5,828,321

LOCATION DETECTING SYSTEM

Shin-ichi Matsuzaki, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed May 5, 1992, Ser. No. 878,500

Claims priority, application Japan, Jun. 18, 1991, 3-145900

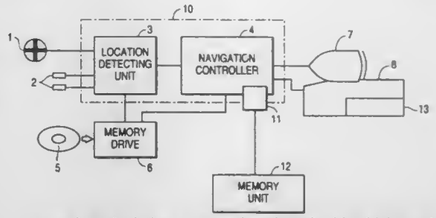
Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—988 **7 Claims**

1. A location detecting system mounted on a vehicle, comprising:

sensor means;

a main body having an operating mode consisting of a traveling mode and a simulation mode and including location detecting



means for calculating a current location of said vehicle on the basis of data sensed by said sensor means and further including a navigation controller connected to said location detecting means;

change-over means for changing over said operating mode to said traveling mode or said simulation mode;

storage means detachably connected to said main body;

write means for storing said data sensed by said sensor means into said storage means when said storage means is connected to said main body and also said main body is in said traveling mode;

read means for inhibiting said data sensed by said sensor means from being supplied to said location detecting means and instead supplying the data stored in said storage means to said location detecting means, when said storage means is connected to said main body and also said main body is in said simulation mode; and

displaying means for displaying during said traveling mode said current location of said vehicle calculated by said location detecting means,

wherein during said simulation mode, said location detecting means calculates a vehicle location based on said data supplied from said storage means, said calculated vehicle location being displayed by said displaying means during said simulation mode.

5,828,322

SYSTEM FOR CONTROLLING DELIVERY AND RETURN OF PRINTED MATTER

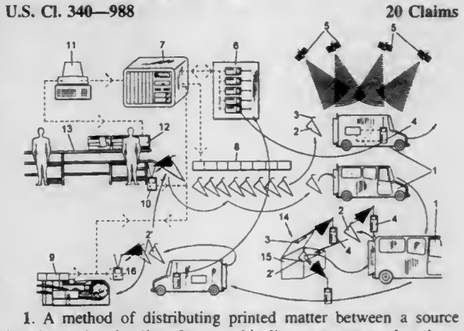
Hans Joachim Eberhard, Lupinenstrasse 14, D-76287 Rheinstetten, Germany

Filed Apr. 24, 1996, Ser. No. 644,662

Claims priority, application Germany, May 6, 1995, 195 16 696.5

Int. Cl.[6] G08G *1/123*

U.S. Cl. 340—988 **20 Claims**



1. A method of distributing printed matter between a source location and a plurality of geographically separate target locations, the method comprising the steps of:

a) providing at each of the target locations a location transmitter capable of emitting a unique identifying code;

b) packing at the source location individual orders of the printed matter for the target locations into respective containers and providing each of the containers with a container transmitter capable of generating a unique identifying code;

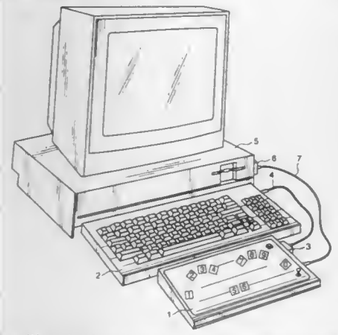
c) loading the packed containers for a plurality of the target locations onto a truck;
d) recording in a respective portable device on each truck the codes of the container transmitters loaded into the truck as well as the respective target locations;
e) continuously electronically determining the position of the truck and guiding the loaded truck along a route past the respective plurality of target locations in accordance with the electronically determined truck position;
f) when the truck reaches each target location reading the respective target-location transmitter and generating an acoustic or optical output indicating which of the containers is to be unloaded thereat; and
g) at each target location unloading any container whose code is associated with the respective target location.

5,828,323

HIGH SPEED KEYBOARD FOR COMPUTERS

Juan F. Bartet, Talara Ave. 432, Jesus Maria, Lima 11, Peru

Continuation-in-part of Ser. No. 238,016, May 3, 1994, abandoned. This application Sep. 3, 1996, Ser. No. 697,881
Int. Cl.[6] H03K *17/94*
U.S. Cl. 341—22 **7 Claims**



1. An auxiliary keyboard system for providing information to a computer, characterized by a keyboard unit including ten ergonomical piano-like shaped keys, one for each finger, circuit means for translating activation of paired keys into unique electrical signals, and a source of power to supply the auxiliary keyboard system.

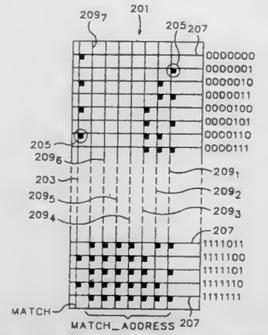
5,828,324

MATCH AND MATCH ADDRESS SIGNAL GENERATION IN A CONTENT ADDRESSABLE MEMORY ENCODER

Airell R. Clark, II, Albany, Oreg., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jun. 17, 1996, Ser. No. 664,902
Int. Cl.[6] H03M *7/30*
U.S. Cl. 341—51 **17 Claims**

1. An encoder apparatus for a CAM, having a cell array of addressable cell means for storage of data bits therein, said apparatus, comprising:
first encoding means for receiving CAM cell array outputs, the first encoding means including:
a MATCH signal line connected to each cell,
a plurality of MATCH ADDRESS signal lines connected to the MATCH signal line, and wherein
the MATCH signal line and each of the MATCH ADDRESS signal lines have an identical number of substantially identical switching means for indicating a change in digital state value on said MATCH signal and MATCH ADDRESS signal lines, respectively, wherein said MATCH signal line includes one of said switching means for one-half of the



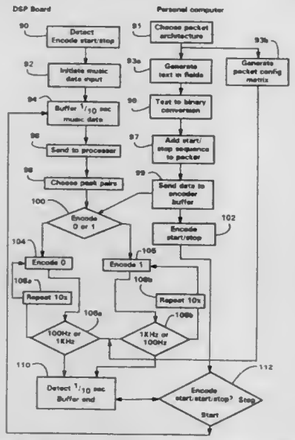
cells in the cell array and wherein a predetermined one of said switching means on said MATCH ADDRESS signal lines designates both a binary digit of the MATCH ADDRESS signal and a MATCH signal on lines for MATCH signals not having a MATCH signal line switching means; and
first output bus means for transmitting MATCH signals and MATCH ADDRESS signals.

5,828,325

APPARATUS AND METHOD FOR ENCODING AND DECODING INFORMATION IN ANALOG SIGNALS

Jack Wolosewicz, Boston, and Kanaan Jemili, Wourn, both of Mass., assignors to Aris Technologies, Inc., Cambridge, Mass.

Filed Apr. 3, 1996, Ser. No. 627,107
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—52 **18 Claims**



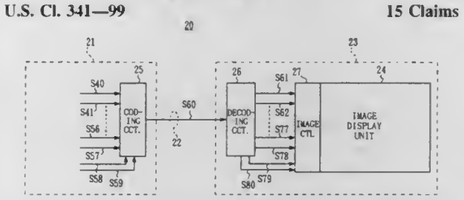
1. A method for encoding information symbols onto an analog host signal, comprising the steps of:
identifying signal peaks of said host signal within a predetermined time interval, which peaks have values within a preselected range;
modifying the values of identified signal peaks to fall within a first predetermined band;
defining a set of a plurality of symbols wherein each symbol corresponds to a defined number of signal peaks; and
further modifying the values of identified signal peaks within said first predetermined band, according to the symbol desired to be encoded in said predetermined time interval, such that the number of signal peaks remaining within a second predetermined band within said first predetermined band corresponds to said desired symbol.

5,828,326

METHOD OF ENCODING AND DECODING FOR DATA TRANSMISSION

Hidekazu Kikuchi, Kanagawa, Japan, assignor to Sony Corporation, Japan

Filed Dec. 9, 1996, Ser. No. 762,449
Claims priority, application Japan, Dec. 15, 1995, 7-347780
Int. Cl.[6] H03M *7/00*
U.S. Cl. 341—99 **15 Claims**



1. A digital data transmitting method for transmitting digital data and synchronous data for timing said digital data, said transmitting being in words having constant length of "n" bits, the method comprising:
providing said digital data in word lengths of "m" bits, wherein n>m;
periodically providing said synchronous data in word lengths of "k" bits, wherein k<n-m;
determining if said synchronous data is provided;
if said synchronous data is not provided, coding said digital data into words with a length of "n" bits, and multiplexing and transmitting said coded data; and
if said synchronous data is provided, combining said digital data and said synchronous data into words with a length of "n" bits, and multiplexing and transmitting said combined data.

5,828,327

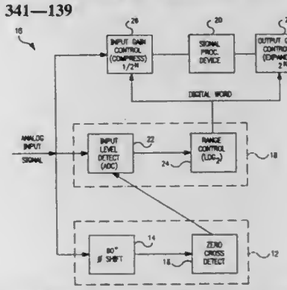
Patent Not Issued For This Number

5,828,328

HIGH SPEED DYNAMIC RANGE EXTENSION EMPLOYING A SYNCHRONOUS DIGITAL DETECTOR

Scott Ensign Marks, Penfield, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 28, 1996, Ser. No. 671,668
Int. Cl.[6] H03M *1/18*
U.S. Cl. 341—139 **19 Claims**



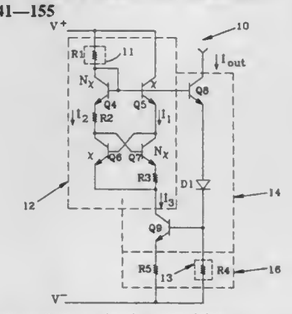
1. An apparatus for extending a dynamic range of a signal processing device to which an analog input signal is provided, the apparatus comprising:
a peak indicator for receiving the analog input signal and comprising a 90° phase shifter and zero crossing detector for indicating that the analog input signal is at a peak amplitude within each of its cycles when a 90° phase shifted input signal crosses zero in a first direction;
an analog to digital converter (ADC) for receiving the analog input signal and sampling its amplitude when each peak amplitude is indicated by said peak indicator and for providing a digital word indicating how a gain of the analog input signal is to be changed responsive to each sampled peak amplitude before the analog input signal is provided to the signal processing device; and
first gain control means for receiving the analog input signal and adjusting the gain of the analog input signal provided to the signal processing device responsive to the digital word.

5,828,329

ADJUSTABLE TEMPERATURE COEFFICIENT CURRENT REFERENCE

Lawrence M. Burns, Mountain View, Calif., assignor to 3COM Corporation, Santa Clara, Calif.

Filed Dec. 5, 1996, Ser. No. 760,504
Int. Cl.[6] G05F *3/26;* **H03M** *1/00*
U.S. Cl. 341—155 **14 Claims**



1. A current reference circuit, comprising:
a proportional to absolute temperature (PTAT) current source having at least one resistor, said PTAT current source producing a PTAT current output which is a function of said resistor, and
a complementary to absolute temperature (CTAT) current source which produces a CTAT current output in response to a constant current input, said CTAT current source (a) connected to receive a PTAT current input from said PTAT current source, (b) having at least one resistor, and (c) connected to produce a reference output current which can have a zero, negative or positive temperature coefficient, depending upon the values of said PTAT and CTAT current source resistors.

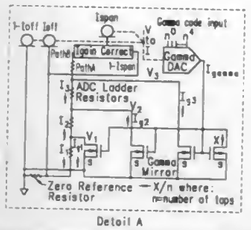
5,828,330

ANALOG TO DIGITAL CONVERTER HAVING DYNAMICALLY CONTROLLED NON-LINEAR OUTPUT

Phillip J. Benzel, Fremont, Calif., assignor to Exar Corporation, Fremont, Calif.

Filed Mar. 19, 1997, Ser. No. 820,535
Int. Cl.[6] H03M *1/36*
U.S. Cl. 341—159 **20 Claims**

1. An analog to digital converter having a controlled non-linear output comprising
a code converter,
a resistor ladder connected between a zero reference voltage and a maximum span voltage for use in comparing an analog voltage and driving said code converter, said resistor ladder comprising a plurality of serially connected resistors with nodes between resistors,



a first current driver means for selectively steering part of a first current through said resistor ladder and establishing said span voltage, and

current sink means connected to said nodes for selectively adding or removing current from selected resistors and thus altering voltage drop across said selected resistors.

5,828,331

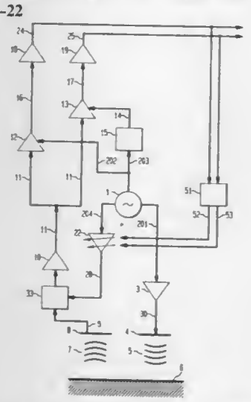
VIBRATION DETECTION

Mark Francis Lucien Harper, Cambridge, England, assignor to Mecon Limited, England

Filed Jul. 31, 1997, Ser. No. 903,849

Int. Cl.[6] G01S *13/52;* **G01V** *3/12*

U.S. Cl. 342—22 **24 Claims**



3. A method of measuring time-varying displacements of a vibrating object corresponding to vibrations thereof, said method comprising the steps of:

a) illuminating an object with an electromagnetic radiated beam of a radar nature wherein the wavelength of said electromagnetic radiation is larger than time-varying displacements of the object;

b) detecting an electromagnetic echo from the object;

c) generating an echo signal from said electromagnetic echo;

d) subtracting from said echo signal an echo-equivalent signal to generate a difference signal, wherein said echo-equivalent signal is equivalent to an echo from the object in a non-vibrating state;

e) amplifying said difference signal; and

f) deducing from said amplified difference signal the magnitude of said time-varying displacements of said object from its rest position.

5,828,332

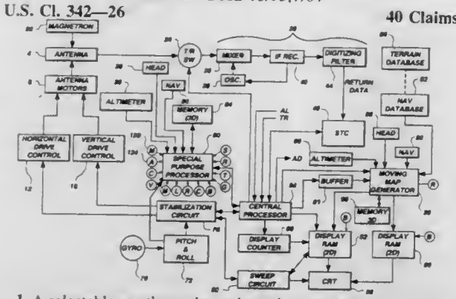
AUTOMATIC HORIZONTAL AND VERTICAL SCANNING RADAR WITH TERRAIN DISPLAY

Philip R. Frederick, Salt Lake City, Utah, assignor to Imaging Accessories, Inc., Salt Lake City, Utah

Continuation-in-part of Ser. No. 613,017, Mar. 11, 1996. This application Aug. 13, 1996, Ser. No. 696,145

Int. Cl.[6] G01S *13/95;7/04*

U.S. Cl. 342—26 **40 Claims**



1. A selectable weather radar and terrain map display system for aircraft comprising:

emitting and receiving means for emitting radar signals from the aircraft and for receiving back reflected radar signals;

means for digitizing the reflected radar signals received by the receiving means;

means for calculating latitude and longitude coordinates of features which reflected the radar signals;

means for storing a plurality of flight modes having storable and retrievable alert region settings which correspond to a region of space relative to the aircraft which can result in an alarm when features are within the alert region;

first means for storing the digitized signals and the latitude and longitude coordinates of the features;

second means for storing terrain elevation data referenced to latitude and longitude coordinates of the ground over which the aircraft will be traveling; and

display means, responsive to the first and second storing means, for simultaneously displaying a plan view image indicating superimposed weather and terrain elevation data represented by the digitized reflected radar signals relative to the calculated latitude and longitude coordinates.

5,828,333

MULTIPLE ACCESS DIPLEX DOPPLER RADAR

David Livingstone Richardson, Arlington Heights; Beverly Jean Timm, Elgin; Mark Douglas Hischke, Algonquin; Kenneth Alan Gustafson, St. Charles; Roger Brunner Williams, Lake Zurich, and Stuart J. Collar, Algonquin, all of Ill., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Jan. 21, 1997, Ser. No. 774,931

Int. Cl.[6] G01S *13/93*

U.S. Cl. 342—70 **24 Claims**

1. A continuous wave diplex Doppler radar, comprising:

an oscillator generating a carrier frequency modulated by an offset frequency to produce at least a diplex transmit signal, said oscillator having a frequency control input;

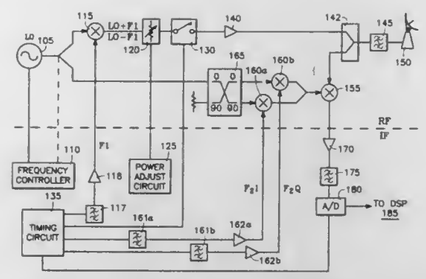
a spread spectrum modulator coupled to said frequency control input for spreading the spectrum of said transmit signal, said spectrum modulater further comprising:

a carrier frequency selector;

a summer having plural input nodes, one of said input nodes connected to said frequency selector;

a pseudo-random noise modulator connected to another of said input nodes of said summer;

a temperature sensor connected to a further input node of said summer for compensation of frequency changes caused by temperature; and



a digital to analog converter connected to an output of said summer and to said frequency control input.

5,828,334

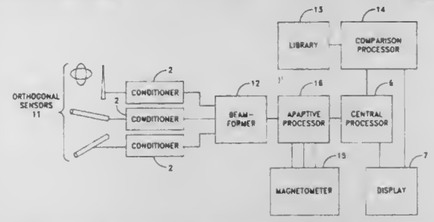
PASSIVE AIRCRAFT AND MISSILE DETECTION DEVICE

Thierry Deegan, 39 Porter Ave., Portsmouth, R.I. 02871

Continuation-in-part of Ser. No. 336,920, Nov. 10, 1994, abandoned. This application May 20, 1996, Ser. No. 650,732

Int. Cl.[6] G01S *11/12*

U.S. Cl. 342—90 **7 Claims**



1. A method of passively detecting aircraft and missiles having engines which form exhaust streams by measuring the electromagnetic emissions caused by accelerating ions that have been generated by combustion in the engines of said aircraft and missiles, wherein related spectral features of said measured emissions are used to classify the distinctive type of said engine, said spectral features being indicative of the number of turbine blades, stator vanes, chamber geometry, nozzle ratio and dynamic properties of said engine.

5,828,335

SPACECRAFT COMMUNICATION CHANNEL POWER CONTROL SYSTEM

Naofal Mohammed Wassel Al-Dhahir, Niskayuna; John Erik Hershey, Ballston Lake, and Gary Jude Saulnier, Rexford, all of N.Y., assignors to Martin Marietta Corporation, King of Prussia, Pa.

Filed Nov. 6, 1995, Ser. No. 554,131

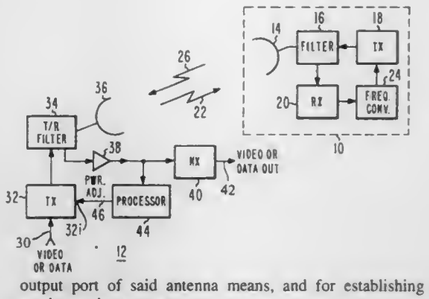
Int. Cl.[6] H04B *7/185*

U.S. Cl. 342—352 **1 Claim**

1. A control system for an uplink transmitter of a ground station communicating with a spacecraft, said control system comprising:

an antenna means located at said ground station, said antenna means including at least an output port, and being directed toward said spacecraft for receiving downlink signals transmitted therefrom, and for coupling said signals to said output port of said antenna means in the form of received signals, said received signals being accompanied by noise power attributable to ambient, sky and ground temperatures;

a low-noise receiving apparatus coupled to said output port of said antenna means, for receiving said signals from said output port of said antenna means, and for establishing a receiver noise temperature;



an uplink transmitter producing signal power which is transmitted to said spacecraft, said uplink transmitter also including a power control input port, for controlling said signal power in response to a control signal applied to said power control input port;

processing means coupled to said low-noise receiving apparatus and to said power control input port of said uplink transmitter, for responding to changes in said noise power attributable to the presence or absence of precipitation in said downlink by producing an estimate of the attenuation attributable to said precipitation in said downlink, and generating said control signal in response to said estimate of the attenuation; and wherein said processing means includes:

means for establishing an effective noise temperature by taking the quotient of a first numerator and a first denominator, wherein said first numerator is the difference between ambient noise temperature and said sky noise temperature, and said first denominator is the sum of said receiver, ground, and sky noise temperatures; and further includes

means for taking the quotient of a second numerator and a second denominator, wherein said second numerator is said effective noise temperature, and said second denominator is the sum of said effective noise temperature and the number one, from which is subtracted the measured change in receiver noise.

5,828,336

ROBUST REAL-TIME WIDE-AREA DIFFERENTIAL GPS NAVIGATION

Thomas P. Yunck, Pasadena; William I. Bertiger, Altadena; Stephen M. Lichten, Pasadena; Anthony J. Mannucci, Pasadena; Ronald J. Muellerschoen, Pasadena, and Sien-Chong Wu, Torrance, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 29, 1996, Ser. No. 628,566

Int. Cl.[6] H04B *7/185;* **G01S** *5/02*

U.S. Cl. 342—357 **16 Claims**

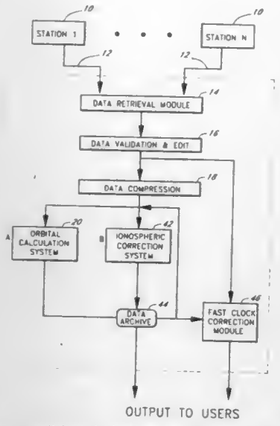
1. A method for providing real-time, wide area differential GPS signals to allow users with a GPS receiver to obtain improved GPS positioning, the method of comprising the steps of:

collecting real-time dual frequency GPS signals from a network of stationary receiving stations;

compressing and accumulating the GPS signals so that data received over a predetermined slow time period forms one data point from each receiving station, the data points from the entire network forming a data set;

periodically producing and outputting a slow correction once each slow time period by processing the data sets with a dynamical orbit predictor to produce calculated GPS satellite orbits in a real-time mode so that the processing steps occur in a time period less than the slow time period, the producing and outputting comprising the steps of:

conditioning the data set with updated estimates GPS parameters from processing data sets of previous slow time periods;



using the conditioned data sets to compute model orbital trajectories:

introducing the model orbital trajectories into a dynamical orbit model and computing the dynamical orbit model to incorporate the model orbital trajectories;

using a Kalman filter/smoother to combine the computed dynamical orbit model with previously computed models to produce updated estimates of GPS parameters;

using the updated estimates of GPS parameters to propagate orbits forward in time to a next slow correction;

using the propagated orbits to calculate satellite ephemeris and clock corrections for the next slow correction; and

outputting the next slow correction including satellite and ephemeris clock corrections to the users;

producing and outputting ionospheric maps indicating a magnitude of signal delay in ionospheric regions, producing ionospheric maps comprising the steps of:

weighting each data set according to the elevation angle of each GPS satellite relative to a receiving station receiving the data set;

processing the weighted data sets, predicted satellite and receiver frequency biases, and a previously computed ionospheric delay map using a Kalman filter/smoother and thereby computing a total electron content at a plurality of ionospheric points;

using the computed total electron content to update a Sun-fixed spherical ionospheric delay map; and

outputting grid points of the updated ionospheric delay map to reflect changes in the ionospheric delay map; and

periodically calculating and outputting a fast clock correction over a fast time period, calculating the fast clock correction comprising the steps of:

propagating GPS parameters from the most recent slow correction forward in time to an arrival of the next actual pseudorange data from the ground stations;

calculating predicted pseudoranges using the propagated GPS parameters;

differencing the predicted pseudoranges with the next actual pseudorange data;

accumulating at least one set of differences;

averaging accumulated differences for each satellite; and

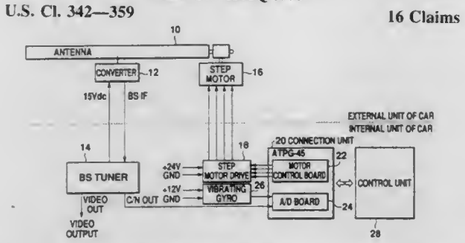
outputting the averaged differences to the users as the fast clock corrections for each satellite.

5,828,337

VEHICLE-MOUNTED SATELLITE SIGNAL RECEIVING APPARATUS

Shigeki Aoshima, Susono, and Tomohisa Harada, Aichi-ken, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 22, 1997, Ser. No. 861,851
Claims priority, application Japan, May 24, 1996, 8-130133
Int. Cl.[6] H01Q *3/00*
U.S. Cl. 342—359 **16 Claims**



1. A vehicle mounted satellite signal receiving apparatus comprising:

an antenna mounted on a vehicle;

a gyro sensor for detecting an angular velocity of azimuth rotation of said vehicle;

offset error correcting means for adding a correction value, which is used to correct an offset error of an output signal of said gyro sensor, to said output signal and for outputting a corrected output signal of said gyro sensor, which is derived from said correction of said offset error;

gyro tracking means for controlling direction of said antenna based on said corrected output signal of said gyro sensor when a reception level of a satellite signal is greater than or equal to a first predetermined value;

step tracking means for controlling a direction of said antenna so as to raise said reception level when said reception level is less than said first predetermined value; and

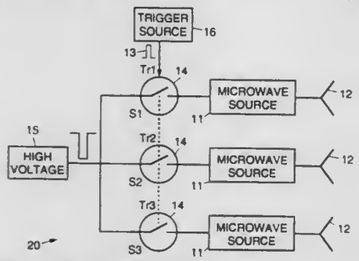
revising means for revising said correction value by adding a revision value, which is in a same direction as a direction of control caused by said step tracking means, to said correction value when said reception level is less than said first predetermined value and said step tracking means commences controlling said direction of said antenna.

5,828,338

THYRATRON SWITCHED BEAM STEERING ARRAY

John W. Gerstenberg, Lake Elsinore, Calif., assignor to Hughes Electronics, Los Angeles, Calif.

Filed May 23, 1996, Ser. No. 652,889
Int. Cl.[6] G01S *5/02*
U.S. Cl. 342—374 **13 Claims**



1. A beam steering array comprising:

a high voltage source for providing high voltage pulses;

a plurality of high voltage switches coupled to the high voltage source;

a plurality of microwave sources respectively coupled to the plurality of switches;

a plurality of antenna elements respectively coupled to the plurality of microwave sources; and

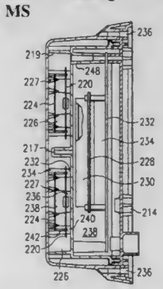
a trigger source coupled to the plurality of switches for providing trigger pulses to each of the switches that are used to selectively switch the respective switches on and off to transfer the high voltage pulses from the high voltage source to a selected microwave source.

5,828,339

INTEGRATED DIRECTIONAL ANTENNA

Mineshkumar R. Patel, Middlesex, United Kingdom, assignor to DSC Communications Corporation, Plano, Tex.

Filed Nov. 17, 1995, Ser. No. 560,284
Claims priority, application United Kingdom, Jun. 2, 1995, 9511188
Int. Cl.[6] H101Q *1/38;1/42*
U.S. Cl. 343—700 MS **25 Claims**



1. An integrated directional antenna comprising:

a radome,

means defining a first resonant cavity within said radome,

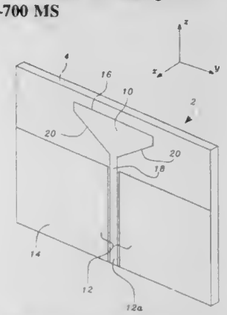
means for defining a second resonant cavity within said radome wherein each of said first and second resonant cavities include a microstrip radiator and a patch re-radiator to provide a directed beam.

5,828,340

WIDEBAND SUB-WAVELENGTH ANTENNA

J. Michael Johnson, 2225 Roscomare Rd., Los Angeles, Calif. 90077-2222

Filed Oct. 25, 1996, Ser. No. 736,781
Int. Cl.[6] H01Q *1/38*
U.S. Cl. 343—700 MS **10 Claims**



1. A wideband antenna comprising:

a planar conductive tab having a top edge, a tapered region and a bottom end wherein said top edge is wider than said bottom end and said tapered region lies between said top edge and said bottom end;

a planar conductive ground plane that is parallel with said conductive tab and located below said bottom end of said conductive tab, said ground plane having an upper edge that is aligned with said bottom end of said conductive tab; and

a transmission line connected to said bottom end of the planar conductive tab,

wherein said top edge of said conductive tab is nominally 0.2 wavelengths wide and is located nominally 0.1 wavelengths from said upper edge of said ground plane, and

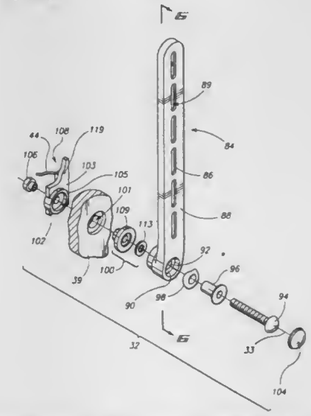
wherein wavelength is a free space wavelength at a center frequency of operation.

5,828,341

LAPTOP COMPUTER HAVING INTERNAL RADIO WITH INTERCHANGEABLE ANTENNA FEATURES

Jeff Delamater, Spokane, Wash., assignor to Itronix Corporation, Spokane, Wash.

Filed Mar. 29, 1996, Ser. No. 623,945
Int. Cl.[6] H01Q *1/24;1/50*
U.S. Cl. 343—702 **19 Claims**



1. An antenna for use with a portable computing device having a housing formed at least in part from conductive material with a mounting aperture for receiving the antenna in assembly, comprising:

an elongate antenna arm having a conductive mating abutment portion provided at a pivot end;

a conductive fastener conductively associated with the antenna arm; and

an insulative bushing disposed between the antenna arm and the housing so as to pivotally support the antenna arm along the abutment portion and configured to support the fastener in insulated relation with the housing conductive material;

the fastener configured to retain together the antenna arm, bushing, and housing so as to form a pivotal mechanical monopole conductive connection extending between the antenna arm and the conductive fastener from within the housing, and with the housing conductive material providing a separate conductive ground connection for a radio frequency feedline.

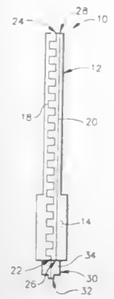
5,828,342

MULTIPLE BAND PRINTED MONOPOLE ANTENNA

Gerard James Hayes, Wake Forest, and Ross Warren Lampe, Raleigh, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Continuation of Ser. No. 459,235, Jun. 2, 1995, abandoned. This application May 22, 1997, Ser. No. 859,938
Int. Cl.[6] H01Q *1/24*
U.S. Cl. 343—702 **42 Claims**

1. A printed monopole antenna having a ground plane defined substantially perpendicular thereto and being operable within a first specified frequency band and a second specified frequency band, comprising:



(a) a first printed circuit board having a first side and a second side, said first printed circuit board lying in a plane substantially perpendicular to said ground plane;

(b) a first monopole radiating element comprising a first conductive trace formed on said first printed circuit board first side, said first conductive trace having a physical length from a feed end to an opposite end and a predetermined electrical length so that said first monopole radiating element is resonant within said first specified frequency band;

(c) a feed port including a signal feed portion and a ground portion, said signal feed portion being coupled only to said feed end of said first conductive trace; and

(d) a second monopole radiating element positioned adjacent to said first monopole radiating element and not connected to said feed port, said second monopole radiating element comprising a second conductive trace having a physical length from a first end to a second end and a predetermined electrical length so that said second monopole radiating element is resonant within said second specified frequency band, wherein said second conductive trace is electrically coupled to said first conductive trace so as to receive signals through said first conductive trace when said printed monopole antenna is operated within said second specified frequency band.

5,828,343

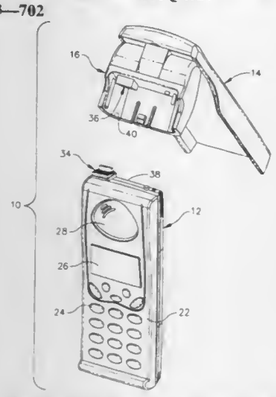
ANTENNA CONNECTOR DEVICE FOR A HANDHELD MOBILE PHONE

James D. MacDonald, Jr., Apex, and Yawei Ma, Cary, both of N.C., assignors to Ericsson Inc., Research Triangle Park, N.C.

Filed Mar. 11, 1996, Ser. No. 613,701

Int. Cl.[6] H01Q *1/24*

U.S. Cl. 343—702 **19 Claims**



1. A device for connecting RF signal circuitry located in a base of a portable phone and a plurality of antennas integrated with a detachable flip cover rotatable mounted to said portable phone base by means of a support bracket assembly which are utilized to transmit and/or receive signals at designated frequencies, said device comprising:

(a) a female portion electrically coupled to said RF signal circuitry, said female portion including a plurality of adjacently positioned ports for electrical coupling with said RF signal circuitry; and

(b) a complementary male portion electrically coupled to said antennas, said male portion including a plurality of adjacently positioned pin members, wherein each of said pin members is connected to one of said antennas at a first end and received within a corresponding one of said ports at a second end as said male and female portions of said device are mated together, whereby said RF signal circuitry and said antennas are electrically coupled.

5,828,344

RADIATION SENSOR

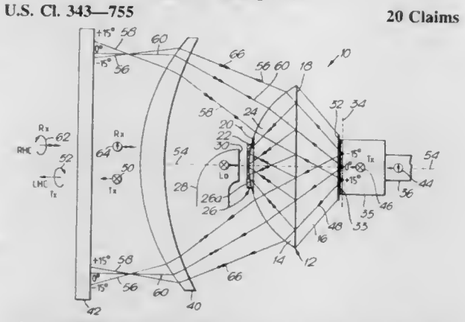
Christopher J. Alder; Paul M. Backhouse, and Huw D. Rees, all of Worcs, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, United Kingdom

Filed Jul. 23, 1991, Ser. No. 744,781

Claims priority, application United Kingdom, Aug. 1, 1990, 9016854

Int. Cl.[6] H01Q *19/10*

U.S. Cl. 343—755 **20 Claims**



1. A radiation sensor including a converging dielectric lens arranged to define an optical aperture and an optical axis through the aperture, and wherein:

(a) the lens incorporates polarization-selective reflecting means for defining first and second focal planes at respective lens surface regions extending across the optical axis,

(b) the reflecting means provides for the focal planes to correspond to differing radiation polarization,

(c) a first receive array of antennas is located not more than λ_1 from the first focal plane, where λ_1 is an operating wavelength of the sensor measured in a medium adjacent the first focal plane and through which radiation passes to the receive array, each antenna defining a respective radiation beam direction through the lens and being coupled predominantly to radiation passing through the lens, and

(d) directionally selective transmitting means couplable to a plurality of output beam directions through the lens are located not more than λ_2 from the second focal plane, where λ_2 is an operating wavelength of the sensor as measured in a medium adjacent the second focal plane through which radiation Passes from the transmitting means.

5,828,345

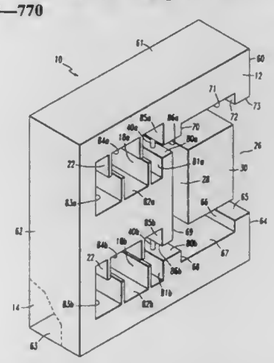
ELECTRICALLY SHORT WIDE-BAND, WIDE-SCAN, SLOW WAVE DUAL NOTCH RADIATOR

Timothy Waterman, Eldersburg, Md.; John Vezmar, Garner, N.C., and James Yon, Bowie, Md., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Nov. 8, 1996, Ser. No. 745,982

Int. Cl.[6] H01Q *13/10*

U.S. Cl. 343—770 **28 Claims**



1. An antenna comprising:

first and second ground planes oriented parallel with respect to each other and formed of conductive material, a plurality of conductive connecting planes attached to and connecting said first and second ground planes;

first and second notches formed in said first and second ground planes, each of said first and second notches having an open end and an opposite closed end;

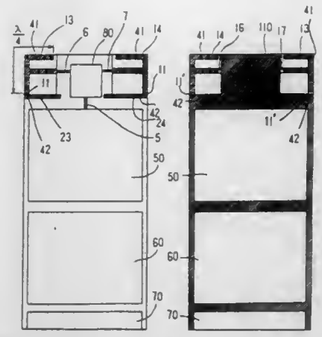
a transmission line, disposed between said first and second ground planes, having a first end coupled to a signal source, said transmission line branching into first and second lines which respectively span across the open ends of said first and second notches and which subsequently terminate in respective first and second open circuits between said first and second ground planes,

said first and second lines within the open ends of said first and second notches respectively radiating electromagnetic waves;

delay means mounted within said first and second notches for delaying the electromagnetic waves radiated from said first and second lines toward the closed ends of said first and second notches;

first and second transformers, each having a first end and an opposite second end such that the first ends of said first and second transformers are respectively coupled to the open ends of said first and second notches and the second ends of said first and second transformers are open to space, said first and second transformers respectively transforming an impedance of electromagnetic waves radiated from said first and second notches and passing the transformed electromagnetic waves out of the antenna; and

a passage disposed between said first and second transformers for providing an alternative shorter path for the electromagnetic waves between said first and second transformers.



a printed circuit board having opposite corners and front and rear surfaces;

two antenna elements respectively at the opposite corners of the printed circuit board, the antenna elements being thin, conductive, diverse patterns on the front and rear surfaces and spaced from each other about ¼ of a wavelength of signals to be emitted, wherein an operating frequency of each of the antenna elements is the same;

via holes through the printed circuit board for electrically connecting the thin, conductive, diverse patterns on the front and rear surfaces;

a switching circuit and at least one micro-strip line for switching connections of the antenna elements to a high frequency circuit for the signals; and

a control for controlling the switching circuit to alternately feed the signals to the antenna elements and to receive other signals from the antenna elements.

5,828,346

CARD ANTENNA

Tah Joon Park, Busan, Rep. of Korea, assignor to Samsung Electro-Mechanics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 2, 1996, Ser. No. 692,049

Claims priority, application Rep. of Korea, May 28, 1996, 1996-18183

Int. Cl.[6] H01Q *1/38;3/24*

U.S. Cl. 343—826 **4 Claims**

1. A card antenna for emitting signals and receiving signals emitted from another card, said card antenna comprising:

5,828,347

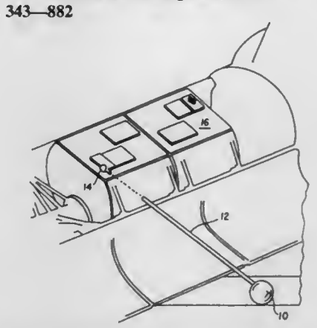
UNIVERSAL COMMUNICATIONS SYSTEM FOR SPACE APPLICATIONS

David A. Rossi, Washington, D.C.; Clark Thompson, Webster, and John M. Lounge, Seabrook, both of Tex., assignors to Spacehab Inc., Vienna, Va.

Filed Jun. 18, 1996, Ser. No. 666,729

Int. Cl.[6] H01Q *3/02;15/20*

U.S. Cl. 343—882 **3 Claims**



1. A universal communication system comprising:

an antenna structure mounted to a first end of a boom structure via a rotating and articulating mounting;

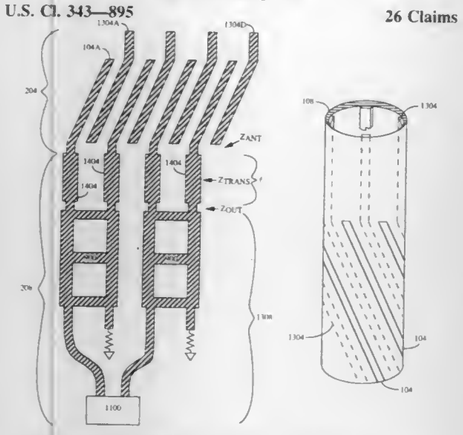
a universal mounting assembly coupled to a second end of the boom and to a payload module, wherein the universal mounting permits rotation and articulation of the boom structure; and

means for automatically disconnecting the boom structure from the universal mounting assembly in response to an emergency situation in which the boom structure cannot be properly stowed.

5,828,348
DUAL-BAND OCTAFILAR HELIX ANTENNA

Mohammad Ali Tassoudji, San Diego; James H. Thompson, Carlsbad, and Randolph E. Standke, San Diego, all of Calif., assignors to QUALCOMM Incorporated, San Diego, Calif.

Filed Sep. 22, 1995, Ser. No. 532,921
Int. Cl.[6] H01Q *1/36*
U.S. Cl. 343—895 26 Claims



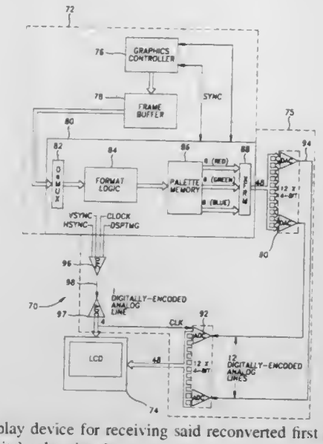
1. A dual-band octafilar helix antenna, comprising:
a first set of four helical radiators matched to a first frequency and disposed on a radiator portion of a support substrate;
a second set of four helical radiators matched to a second frequency and disposed on said radiator portion of said support substrate and interleaved with said first set of radiators;
wherein one of said first and second sets of radiators has a greater length than the other and uses a variable pitch for the helical shape along the portion of its length which extends beyond said other set of radiators; and
at least one feed network formed on a feed portion of said support substrate providing 0°, 90°, 180° and 270° signals to at least one of said first and second sets of radiators.

5,828,349
METHOD AND SYSTEM FOR MULTIPLEXING AND DEMULTIPLEXING VIDEO SIGNALS FOR GRAPHIC DISPLAY MONITORS IN COMPUTER SYSTEMS

Brian John MacHesney, Burlington, and Roderick Michael Peters West, Colchester, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 6, 1996, Ser. No. 706,620
Int. Cl.[6] G09G *5/00*
U.S. Cl. 345—3 20 Claims

1. A computer graphics and display system, comprising:
a graphics system for outputting a first plurality of digital color signals;
a first digital-to-analog converter (DAC) for converting said first plurality of digital color signals into a second plurality of analog color signals, said second plurality being less in number than said first plurality;
an interconnection medium for conveying said second plurality of analog color signals;
a first analog-to-digital converter (ADC) for receiving and reconverting said second plurality of analog color signals back to said first plurality of digital color signals; and



a display device for receiving said reconverted first plurality of digital color signals.

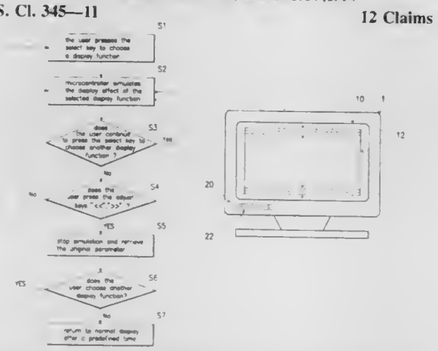
5,828,350

Patent Not Issued For This Number

5,828,351
METHOD AND APPARATUS OF ADJUSTING MONITOR DISPLAY

Tsung-Hsun Wu, Taoyuan, Taiwan, assignor to ACER Peripherals, Inc., Taichung, Taiwan

Filed Mar. 10, 1997, Ser. No. 814,017
Claims priority, application Taiwan, Jan. 16, 1997, 86100413
Int. Cl.[6] G09G *1/06;5/00;* H04N *5/57;5/14*
U.S. Cl. 345—11 12 Claims

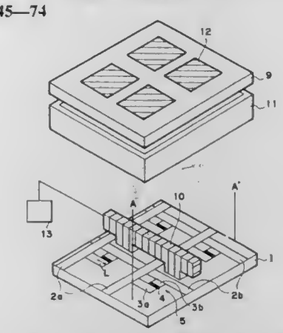


1. A method of adjusting a display of a monitor, comprising the steps of:
selecting a display function controlling the display by pressing a select key on the monitor;
automatically varying a parameter value associated with the selected display function to alter the display in response to the selecting step, for demonstrating the effect of the selected display function on the monitor;
ceasing to vary the parameter value of the selected display function when an adjust key used for adjusting the parameter value of the selected display function is pressed; and modifying the parameter value of the selected display function by pressing the adjust key.

5,828,352
IMAGE-FORMING DEVICE

Ichiro Nomura; Hidetoshi Suzuki, both of Atsugi; Tetsuya Kaneko, Yokohama; Shinya Mishina, Nagahama, and Naoto Nakamura, Atsugi, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 913,483, Jul. 14, 1992, abandoned.
This application Oct. 11, 1994, Ser. No. 321,465
Claims priority, application Japan, Jul. 17, 1991, 3-201162
Int. Cl.[6] G09G *3/22*
U.S. Cl. 345—74 55 Claims

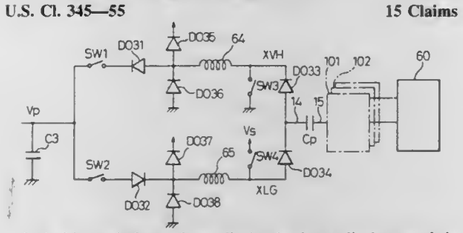


1. An image-forming device comprising, in an envelope:
a cold cathode type electron-emitting element having a pair of electrodes and an electron-emitting region located between the electrodes, with the electron-emitting element emitting an electron beam by application of voltage between the electrodes;
an image-forming member for forming an image on irradiation of the electron beam emitted from the electron-emitting element; and
an electroconductive supporting member for supporting the envelope against atmospheric pressure, wherein the supporting member is connected electrically to one of the electrodes, and a potential in a whole surface of said supporting member is the same potential as that in one of said electrodes.

5,828,353
DRIVE UNIT FOR PLANAR DISPLAY

Tomokatsu Kishi; Kyoji Kariya; Tadatsugu Hirose; Shigetoshi Tomio; Yoshimasa Awata, all of Kawasaki; Shigeki Kameyama; Kazuo Yoshikawa, both of Satsuma-gun, and Akira Otsuka, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 21, 1996, Ser. No. 667,515
Claims priority, application Japan, May 31, 1996, 8-138993
Int. Cl.[6] G09G *3/20*
U.S. Cl. 345—55 15 Claims

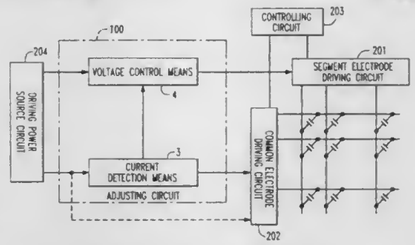


1. A drive unit for a planar display having a display panel, in which electrodes are placed between two substrates being arranged with a given space between them, in which a plurality of intersections formed by said electrodes form cells that constitute pixels and that are arranged in the form of a matrix, in which said cell is composed of an electrode formed on one of said two substrates and a pair of electrodes formed on the other substrate, and in which one of the pair of electrodes is a common electrode connected in common, said drive unit for a planar display comprising:
a common electrode drive circuit for changing said common electrode alternately into a high potential and low potential; and
a power save circuit that when said common electrode is changed from the high potential to the low potential, restores and accumulates power applied to said common electrode, and that when said common electrode is changed from the low potential to the high potential, applies accumulated power to said common electrode,
said power save circuit including:
a capacitive element for accumulating restored power;
a restoration channel that includes an inductance element, that is connected between said capacitive element and said common electrode, and that when said common electrode is changed from the high potential to the low potential, restores power applied to said common electrode; and
an application channel that includes an inductance element, that is connected in parallel with said restoration channel between said capacitive element and said common electrode, that when said common electrode is changed from the low potential to the high potential, applies accumulated power to said common electrode.

5,828,354
ELECTROOPTICAL DISPLAY DEVICE

Heihachiro Ebihara, Tokorozawa, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 364,420, Dec. 27, 1994, Pat. No. 5,583,528, which is a continuation of Ser. No. 729,123, Jul. 12, 1991, abandoned. This application Nov. 1, 1996, Ser. No. 742,848
Claims priority, application Japan, Jul. 13, 1990, 2-184147
Int. Cl.[6] G09G *3/20*
U.S. Cl. 345—58 3 Claims



1. An electrooptical display device, comprising:
a display panel including a plurality of common electrodes and a plurality of segment electrodes;
a common electrode driving circuit for driving said plurality of common electrodes;
a segment electrode driving circuit for driving said plurality of segment electrodes; and
an adjusting circuit including current determining means for determining an amount of change in current by detecting an amount participating in a change of current flowing instantaneously through said display panel, and voltage control means for steeply increasing or decreasing at least one level of driving voltages applied to said segment electrode and said common electrode driving circuits from a normal level thereof for a short period in accordance with the output signal of said current determining means;
said current determining means includes means for outputting an impulse-shaped signal in accordance with the result of the counted number of the change of the display data to be displayed on said display panel;
said voltage control means changes said at least one level of driving voltages by adding a voltage for correcting said impulse-shaped signal on said driving voltage; and

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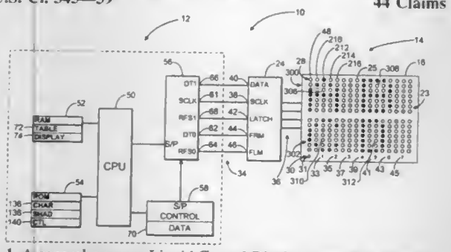
said adjusting circuit changes said driving voltage so as to generate a reversal of polarity in relation to a polarity which is originally generated in an output of said driving circuit to which said voltage control means is connected.

5,828,355

GENERAL PURPOSE LIQUID CRYSTAL DISPLAY CONTROLLER

Guillaume Gérald Comeau, Ottawa, and Francois Blouin, Hull, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Oct. 16, 1996, Ser. No. 733,108
Int. Cl.[6] G09G *3/20*
U.S. Cl. 345—59 **44 Claims**



1. A general purpose Liquid Crystal Display controller apparatus for controlling an LCD driver operable to control an LCD having a plurality of individually addressable pixels arranged in lines, the apparatus comprising:

a) a pixel group address generator for generating a pixel group address for addressing respective groups of pixels on said lines of said LCD;

b) a display buffer for storing image codes representing a desired image to be displayed on said LCD, said image codes being accessed in response to respective pixel group addresses;

c) an identifier for identifying each of said image codes as being a direct pixel control code or a character addressing code;

d) a character table for storing character sub-line codes for controlling pixels forming sub-lines of a character to be displayed on said LCD in response to said character addressing code; and

e) a processor for controlling said addressed group of pixels with said direct pixel control code when said identifier identifies said image code as a direct pixel control code and for controlling said addressed group of pixels with a character sub-line code from said character table when said identifier identifies said image code as a character addressing code.

5,828,356

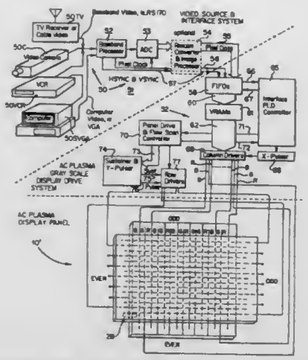
PLASMA DISPLAY GRAY SCALE DRIVE SYSTEM AND METHOD

Ray A. Stoller, Paulding, Ohio, assignor to Photonics Systems Corporation, Northwood, Ohio

Continuation-in-part of Ser. No. 932,198, Aug. 21, 1992, abandoned. This application Nov. 19, 1992, Ser. No. 978,225
Int. Cl.[6] G09G *3/28*
U.S. Cl. 345—60 **4 Claims**

1. An AC color plasma display system comprising, in combination,

an AC plasma display panel having first and second dielectrically insulated linear electrode arrays, said linear array being carried on substrates and in transverse relation to each other to define a matrix of display pixels in a display region, a plurality of linear ribs carried on one of said substrates and in substantially parallel alignment with one of said linear electrode arrays forming gas channels each aligned with a respective electrode in one of said arrays and providing an optical barrier in directions transverse to the direction of orientation



of said linear ribs, a plurality of blue, green and red phosphor layers on said ribs, respectively, said blue phosphor layer being on said ribs in every third one of said channels, respectively, said green phosphor layer being on said ribs in every next third ones of said channels, respectively, and red phosphor layer on ribs in the final third ones of said channels, respectively, gas discharge medium in said channels and at a pressure such that said gas on discharge is rich in UV, and seal means retaining said gas discharge medium in said channels,

an interface circuit connected to receive video signals from one of a selected plurality of video sources and producing, in digital form, pixel data, pixel clock, and horizontal and vertical synchronizing signals, and

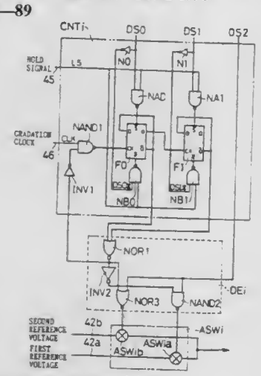
a gray scale drive system connecting said interface circuit to electrodes on said AC plasma display panel, said gray scale drive system including blue, green and red color channels and pixel-by-pixel gray scale control means within each color channel.

5,828,357

DISPLAY PANEL DRIVING METHOD AND DISPLAY APPARATUS

Shigeki Tamai, Kashihara, and Yoshinori Ogawa, Yamatotakada, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jul. 11, 1996, Ser. No. 680,267
Claims priority, application Japan, Mar. 27, 1996, 8-071681
Int. Cl.[6] G09G *3/36*
U.S. Cl. 345—89 **20 Claims**



1. A display apparatus comprising:

a display panel for performing gradation display by applying a voltage across a pair of electrodes; and

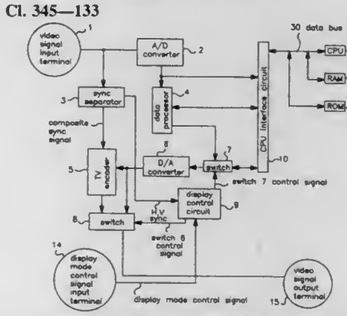
a voltage source for outputting a first voltage changing from a predetermined first potential to a second potential higher than the predetermined first potential, at intervals of a predetermined period, and a second voltage changing from the second potential to a third potential higher than the second potential, at intervals of the predetermined period, and applying one of the predetermined first potential and a potential lower than the predetermined first potential, or one of the third potential and a potential higher than the third potential, to a first electrode of the pair of electrodes of the display panel by switching at intervals of a multiple of the predetermined period; and a source driver supplied with the first and second voltages that applies one to one of the first and second voltages to a second electrode of the pair of electrodes.

5,828,358

WAVEFORM DISPLAY SIGNAL GENERATING APPARATUS

Hiroki Monta, Takatsuki, and Masahito Yamaoka, Ibaraki, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 10, 1996, Ser. No. 631,835
Claims priority, application Japan, Apr. 10, 1995, 7-083877
Int. Cl.[6] G09G *5/34*
U.S. Cl. 345—133 **7 Claims**



1. A waveform display signal generating apparatus comprising:

A/D converting means for converting an input analog video signal into a digital video signal;

data processing mean for signal processing the digital video signal outputted from said A/D converting means and providing a digital output signal;

calculating means for processing by calculation the digital output signal of said A/D converting means and outputting a processed signal as a bit-map data signal;

interface means connected to said A/D converting means and said data processing means and connected to said calculating means through a data bus;

first switching means for switching the digital output signal of said data processing means and the processed signal of said calculating means and outputting a switched signal;

D/A converting means for converting the switched signal into an analog signal;

video signal converting means for converting the analog signal provided by said D/A converting means into a television video signal by adding a sync signal to the analog signal; and

second switching means for selecting the television video signal of said video signal converting means if the switched signal of said first switching means is the processed signal of said calculating means and selecting the analog signal of said D/A converting means if the switched signal of said first switching means is the digital output of said data processing means and outputting the selected signal as a waveform display signal.

5,828,359

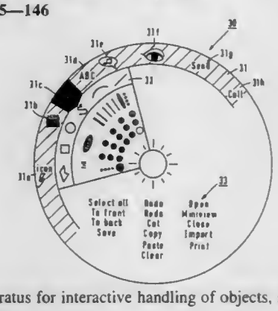
Patent Not Issued For This Number

5,828,360

APPARATUS FOR THE INTERACTIVE HANDLING OF OBJECTS

Lisa C. Anderson; Kathleen L. Holman, and Maurice G. B. F. Van Swaaij, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, N.Y., N.Y.

Continuation of Ser. No. 21,640, Feb. 16, 1993, abandoned, which is a continuation of Ser. No. 694,535, May 1, 1991, abandoned. This application Jul. 20, 1994, Ser. No. 278,676
Claims priority, application European Pat. Off., Feb. 1, 1991, 91200194
Int. Cl.[6] G09G *5/08*
U.S. Cl. 345—146 **26 Claims**



23. Apparatus for interactive handling of objects, said apparatus comprising:

(a) a viewscreen for displaying a menu of main options,

(b) a pointer device for pointing to an option for selecting same,

(c) means for displaying the options on the viewscreen in the shape of a curved band made up of a plurality of individually selectable, laterally adjacent, pointer-sensitive, sector-shaped regions each circumscribed (I) by an outer concave curved line, (ii) an inner concave curved line, and (iii) two spaced later lines extending generally along a radius toward an imaginary center point for the outer and inner curved lines, said lines being visible or imaginary,

(d) said outer curved lines of adjacent sector-shaped regions forming an outer continuous concave curve,

(e) said inner curved lines of adjacent sector-shaped regions forming an inner continuous concave curve spaced by a substantial distance from the center point so as to define a substantial free area inside the inner continuous concave curve for text or graphics,

(f) the angular extent about said center point of the curved band shape being smaller than 270°, whereby the options are adapted for use by a single one of the right and left hands.

5,828,361

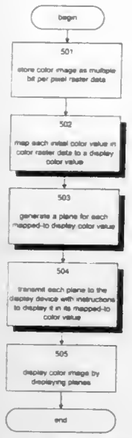
METHOD AND SYSTEM FOR RAPIDLY TRANSMITTING MULTICOLOR OR GRAY SCALE DISPLAY DATA HAVING MULTIPLE BITS PER PIXEL TO A DISPLAY DEVICE

Michael Scott Gibson, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 146,413, Nov. 1, 1993, Pat. No. 5,565,886. This application Jun. 12, 1996, Ser. No. 662,843
Int. Cl.[6] G09G *5/02*
U.S. Cl. 345—150 **44 Claims**

1. A method in a computer system for transmitting to a display device an image encoded into multiple bit per pixel raster data, the multiple bit per pixel raster data having a plurality of pixels, each pixel storing one color value corresponding the color of a particular region within the image, comprising the steps of:

associating with the multiple bit per pixel raster data one or more single bit per pixel raster planes encoded from the multiple bit per pixel raster data, each plane for a color value stored in the multiple bit per pixel raster data, whereby each pixel of each single bit per pixel raster plane corresponds to a pixel of the multiple bit per pixel raster data, and whereby, in



a particular single bit per pixel raster plane, the bit of each pixel indicates whether the corresponding pixel of the multiple bit per pixel raster data stores the color value of the single bit per pixel raster plane, wherein, for each pixel of the multiple bit per pixel raster data, the single bit per pixel raster planes being mutually exclusive in that no more than one single bit per pixel raster plane indicates that the pixel stores the color value of the single bit per pixel raster plane; and

transmitting the associated single bit per pixel raster planes to the display device, each accompanied by one or more instructions to draw the single bit per pixel raster plane in the color value of the single bit per pixel raster plane.

5,828,362

PLANE SEQUENTIAL COLOR DISPLAY APPARATUS AND METHOD FOR DRIVING SAME

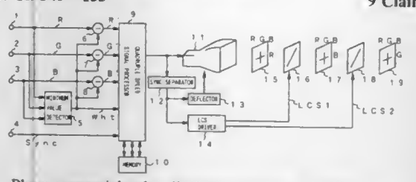
Takao Takahashi, Tokyo, and Naohisa Arai, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 24, 1995, Ser. No. 506,345

Claims priority, application Japan, Aug. 4, 1994, 6-202866

Int. Cl.[6] G09G *5/04*

U.S. Cl. 345—153 **9 Claims**



1. Plane-sequential color display apparatus, comprising:

means for receiving three primary color signals;

image means for displaying a monochromatic image;

signal producing means for producing corrected three primary signals and an achromatic signal from said received three primary signals, said signal producing means further including an emphasis circuit for sharpening an edge of said achromatic signal;

brightness and moving detector means for detecting a brightness level and movement of an image represented by said received three primary color signals;

means for enabling said emphasis circuit to be activated when said brightness and moving detector means detects a high brightness level movement of said image;

driving means for sequentially driving said image means in response to said corrected three primary color signals and said achromatic signal; and

at least one color shutter disposed on an optical axis in series with said image means and operable to be switched in synchronism with said driving means.

5,828,363

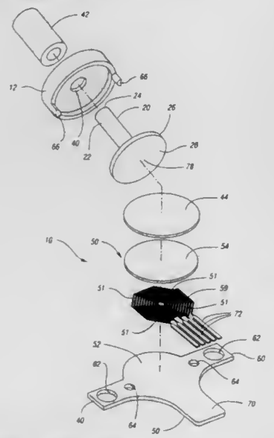
FORCE-SENSING POINTING DEVICE

Stuart I. Yaniger, and Mark C. Pickett, both of Ventura, Calif., assignors to Interlink Electronics, Inc., Camarillo, Calif.

Continuation of Ser. No. 168,632, Dec. 15, 1993, Pat. No. 5,659,334. This application Aug. 18, 1997, Ser. No. 912,733

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—156 **2 Claims**



2. A computer system comprising:

a display;

an analog pointing device for controlling cursor movement on the display, the analog pointing device comprising:

an arm having first and second ends;

a force transfer member affixable to the second end of the arm;

a force sensor detecting a force having a magnitude applied to the first end of the arm such that the force is transferred through the arm and the force transfer member to the force sensor; and

an elastomeric member affixable to the force sensor and the force transfer member, whereby the force sensor produces an analog output proportional to the magnitude of the force.

5,828,364

ONE-PIECE CASE TOP AND INTEGRATED SWITCH FOR A COMPUTER POINTING DEVICE

Kabir Siddiqui, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Filed Jan. 3, 1995, Ser. No. 367,938

Int. Cl.[6] G09G *3/03*

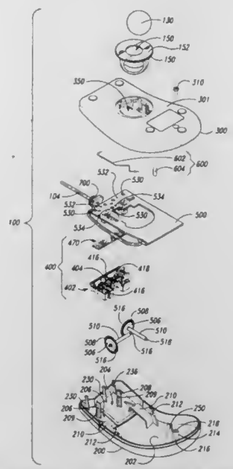
U.S. Cl. 345—163 **26 Claims**

1. An input device for providing user commands to a computer comprising:

first and second transducers for receiving user commands indicating movement of the input device in two perpendicular directions and producing first and second position signals in response thereto;

a first switch for receiving user commands indicating actuation of said first switch and producing a first switch signal in response thereto;

a control circuit coupled to said first and second transducers and to said first switch for receiving said first and second position signals and said first switch signal and providing an output signal to the computer in response thereto;



a case bottom forming a bottom side of a housing, said first and second transducers and said first switch being positioned within said housing; and

a case top forming a top side of said housing, said case top being of unitary construction and including a main body, first button and a first spring arm, wherein said main body, first button and first spring arm are of one-piece construction, said first button being movable between rest and actuation positions for user actuation of said first switch, said first spring arm located within said housing and extending between said main body and said first button, said first spring arm biasing said first button into said rest position.

5,828,365

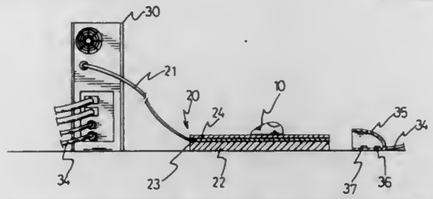
ELECTRIC FIELD-INDUCED CORDLESS MOUSE DEVICE

Yao-kuo Chen, No. 19, Lane 28, Yuhsi St., Yungho City, Taipei Hsien, Taiwan

Filed Nov. 29, 1996, Ser. No. 758,553

Int. Cl.[6] G09G *5/08*

U.S. Cl. 345—163 **6 Claims**



1. An electric field-induced cordless mouse device comprising:

a cordless mouse therein having an interior circuit, a double-head trigger circuit connected to an output of the interior circuit for converting a square-wave into a pulse, and an undersurface thereof having a connection point, a plurality of pulse transmitting electrodes connected to the double-head trigger circuit for outputting signals;

a mousepad having a metal sheet and an insulating pad covering the metal sheet, said metal sheet being connected to an RS-232 interface circuit in a computer via a demodulating circuit provided for converting a pulse into a square-wave;

a housing connected to the RS-232 interface circuit via a two-way signaling cord, said housing having a mouse accommodating portion and a plurality of conducting strips contacting the connection point of the mouse for detecting the setup program.

5,828,366

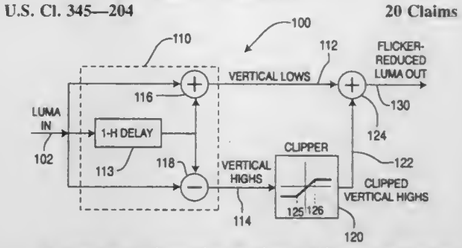
NON-LINEAR INTERLINE FLICKER REDUCER

Robert Norman Hurst, Mercer, N.J., assignor to Sarnoff Corporation, Princeton, N.J.

Filed Sep. 12, 1995, Ser. No. 527,037

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—204 **20 Claims**



1. An apparatus for improving the display of images on a display that employs an interlace display technique, said apparatus comprising:

a filtering means for filtering an input signal into a low-pass signal and a high-pass signal;

a clipping means, coupled to said filtering means, for limiting said high-pass signal in accordance with a predetermined maximum value, resulting in a clipped high-pass signal; and

a summing means, coupled to said filtering means and said clipping means, for combining said low-pass signal with said clipped high-pass signal to produce a flicker reduced output signal.

5,828,367

DISPLAY ARRANGEMENT

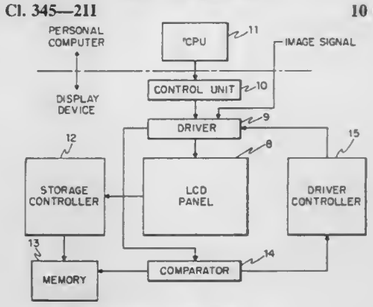
Kaeko Kuga, Kyoto, Japan, assignor to Rohm Co., Ltd., Kyoto, Japan

Filed Jul. 11, 1994, Ser. No. 273,328

Claims priority, application Japan, Oct. 21, 1993, 5-263780; Oct. 21, 1993, 5-263800

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—211 **10 Claims**



1. A display arrangement comprising:

a display section for presenting visual images;

memory means for storing a set of image signals to be supplied to the display section;

input means for supplying successive sets of image signals to be stored in the memory means:

comparison circuit means for determining whether the set of image signals to be supplied to the display section are those for a constant image or for a changing image display by comparing a set of image signals to be supplied to the display section with a previous set of image signals read out of the memory means;

drive circuit means for driving the display device; and

control circuit means responsive to the comparison circuit means for controlling drive means so that, when the comparison circuit means determines that the image signals to be supplied

to the display section are for a constant image display, the drive circuit means drives the display section in a reduced-power drive mode.

5,828,368

START PULSE VERTICAL SIGNAL GENERATOR USING A DATA ENABLE SIGNAL FOR PRECHARGING

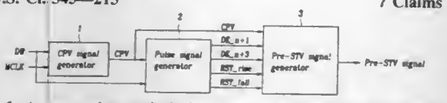
Tae-Bo Jung, Yongin-gun, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 27, 1996, Ser. No. 757,819

Claims priority, application Rep. of Korea, Nov. 28, 1995, 1995-44308

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—213 **7 Claims**



1. A start pulse vertical signal generator using a data enable signal for precharging, comprising:

a clock pulse vertical signal generator for generating a clock pulse vertical (CPV) signal by counting a main clock signal and a data enable signal;

a pulse signal generator for generating reset pulse signals and delayed pulse signals by delaying the data enable signal and by counting the CPV signal; and

a precharging start pulse vertical (STV) signal generator for generating a precharging start pulse vertical (pre-STV) signal by counting the CPV signal, reset pulse signals and delayed pulse signals.

5,828,369

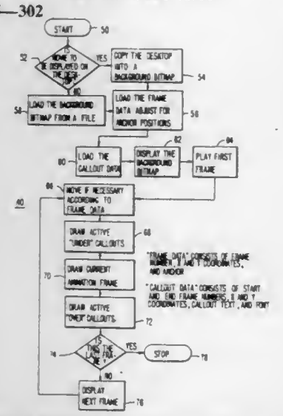
METHOD AND SYSTEM FOR DISPLAYING AN ANIMATION SEQUENCE FOR IN A FRAMELESS ANIMATION WINDOW ON A COMPUTER DISPLAY

Brett Foster, Almonte, Canada, assignor to Comprehend Technology Inc., New York, N.Y.

Filed Dec. 15, 1995, Ser. No. 573,118

Int. Cl.[6] G06T *13/00*

U.S. Cl. 345—302 **17 Claims**



1. A method of displaying a movie for viewing by a viewer in a frameless animation window on a computer display operatively displaying a bitmap, the movie comprising a predetermined number of sequentially-displayed movie frames defining a movie duration, the animation window having a size and a boundary smaller than the boundary of the computer display and being selectively movable about the computer display for placement and display at various locations on the computer display in such a manner that the viewer is substantially unable to distinguish the animation window boundary as the movie is displayed in each of a sequential plurality of locations on the computer display during the movie duration, the selective movement of the animation window presenting an appearance to the viewer that the movie is substantially equal in size and shape to the computer display boundary, said method comprising the steps of:

(a) identifying a screen element on the computer display relative to which the movie is to be displayed for a predetermined duration, wherein said screen element may be selectively moved on the computer display by the viewer;

(b) determining a location on the computer display relative to the identified screen element at which the movie is to be displayed for said predetermined duration;

(c) capturing a selected portion of the bitmap displayed on the computer display for placement within the animation window;

(d) opening the animation window at said determined movie display location and displaying said captured portion as the background within the animation window so as to render the location and boundary of the animation window substantially undetectable to the viewer;

(e) displaying the movie in the animation window for said predetermined duration;

(f) determining, as the movie is displayed in the animation window, whether the movie duration has elapsed;

(g) identifying, if said step (f) has determined that the movie duration has not elapsed, a next screen element on the computer display and repeating steps (b) through (g).

5,828,370

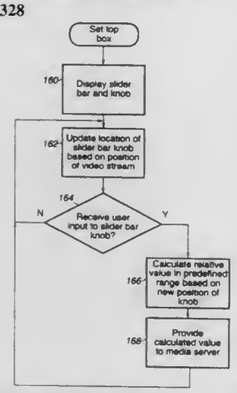
VIDEO DELIVERY SYSTEM AND METHOD FOR DISPLAYING INDEXING SLIDER BAR ON THE SUBSCRIBER VIDEO SCREEN

Chris Moeller, Morgan Hill; Mike DeMoney, Los Gazos, and Rob Goedman, Palo Alto, all of Calif., assignors to Thompson Consumer Electronics Inc., Indianapolis, Ind., and Sun Microsystems Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 673,582

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—328 **27 Claims**



1. A computer implemented method for indexing to positions in a video stream in a video delivery system, wherein the video delivery system includes a media server and a subscriber device coupled to the media server, wherein the subscriber device includes a display screen, the method comprising:

displaying on the display screen of the subscriber device a video stream received from the media server;

displaying on the display screen of the subscriber device a graphical icon for indexing to positions within the video stream, wherein the graphical icon is adjustable to effect changes in position of the received video stream;

receiving input from a user indicating a desired change in output position of the video stream;

the subscriber device providing information to the media server in response to said receiving input from the user;

the media server determining a new output position for the video stream in response to receiving said information from the subscriber device; and

the media server outputting the video stream at the new position in response to said determining the new output position.

5,828,371

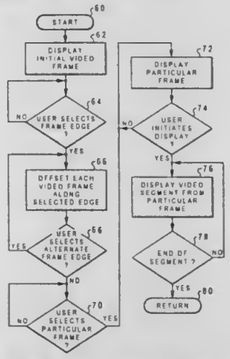
METHOD AND SYSTEM FOR GRAPHIC VIDEO IMAGE PRESENTATION CONTROL

Troy Lee Cline, Cedar Park; Scott Harlan Isensee, Georgetown; Ricky Lee Poston, Austin, all of Tex., and Jon Harald Werner, Oceanside, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 22, 1995, Ser. No. 561,995

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—328 **8 Claims**



1. A method for efficiently controlling the presentation of a selected segment of video data within a video presentation which comprises a plurality of individual video frames, each video frame containing video data, said method comprising the computer system implemented steps of:

displaying within said computer system a video frame icon representative of a plurality of serially adjacent overlapping video frames;

selecting an edge of said video frame icon;

offsetting each serially adjacent overlapping video frame slightly away from an adjacent overlapping video frame along said selected edge, wherein a small portion of video data within each underlying video frame may be visually accessed by a user of said computer system; and

displaying within said computer system a particular video frame in response to selection of said particular frame by a user of said computer system.

5,828,372

INFORMATION PROCESSING SYSTEM

Masami Kameda, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

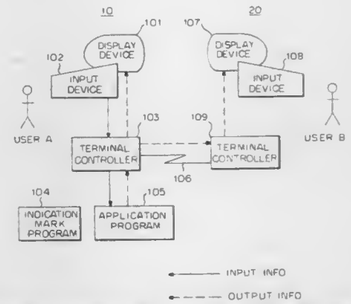
Filed Jan. 26, 1995, Ser. No. 378,605

Claims priority, application Japan, Jan. 26, 1994, 6-007086

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—330 **4 Claims**

1. An information processing system having a plurality of information processing apparatuses each including an input device, a display device and a terminal control device, said plurality of information processing apparatuses being connected to each other by a communication line, said input device having at least a keyboard and a mouse, said terminal control device comprising:



first means for controlling said input device and said display device and communication on said communication line; and

second means for operating an application program stored in said information processing apparatus in response to input information from any one of said input devices of said plurality of information processing apparatuses and transferring results obtained from operation of said application program to said display device and to the display devices of the other information processing apparatuses such that the same results obtained from operation of said application program are displayed on each display device of said plurality of information processing apparatuses;

third means for transferring information for displaying an indication mark to indicate an arbitrary position on a screen to said display device and the display devices of the other information processing apparatuses in response to input information from any one of said input devices such that the same information for displaying said indication mark is displayed on each display device of said plurality of information processing apparatuses; and

means for selectively enabling one of a program state during which said third means is not permitted to operate, an indication mark state during which said second means is not permitted to operate and a common state during which said second and third means are permitted to operate.

5,828,373

AID METHOD CONCERNING THE SPECIFICATION OF AN INTERFACE BETWEEN A CONTROL TERMINAL AND AT LEAST ONE COMPUTER

Saint Upery Yves, Toulouse, France, assignor to Aerospatiale Societe Nationale Industrielle, Paris, France

Filed Jun. 12, 1996, Ser. No. 662,015

Claims priority, application France, Jun. 13, 1995, 95 06980

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—333 **15 Claims**

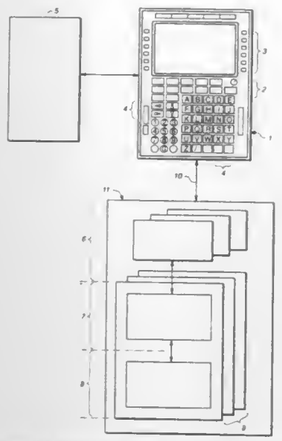
8. A system comprising:

a multi-purpose control and display terminal (MCDU) in an aircraft having a screen and keyboard operable by an operator including a pilot;

at least one of a flight management computer, a maintenance computer, or a communication computer, said at least one computer for assisting the piloting and navigation of a aircraft and including at least one memory containing at least one management software for managing said interface;

an interface system having an associated specification of an interface between said MCDU and said at least one computer, said specification for implementing alphanumeric displays on said screen for controlling actions by the operator on said keyboard, said specification being expressed in a data flow type graphic language including symbols relating to specific functions by said at least one computer;

said symbols being connected by links, said symbols being directly linked into data flow paths so as to form a data flow diagram and so as to express a display configuration on said screen, a description of actions able to be carried out by said



operator, and a description of responses of said control and display terminal in response to said at least one computer and independent of said actions of said operator;

wherein said specification when provided to said at least one computer allows a check of coherency and accuracy of said specification.

5,828,374

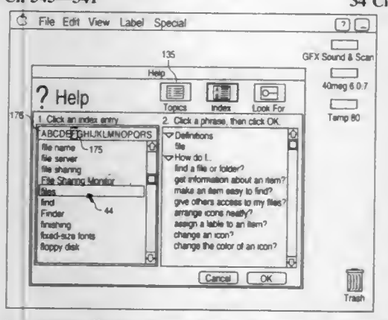
METHOD AND APPARATUS FOR SELECTING CHARACTERS ALONG A SCROLL BAR WITH A SLIDER

Patricia J. Coleman, Menlo Park; James Edward Palmer, Redwood City; Matthew Justin Powers, Monte Sereno; Jeffrey Alan Herman, Palo Alto; Eli Cochran, Menlo Park, and John Richard Powers, III, Monte Sereno, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 488,034, Jun. 7, 1995, abandoned, which is a division of Ser. No. 10,061, Jan. 27, 1993, abandoned. This application Mar. 14, 1997, Ser. No. 818,288

Int. Cl.[6] G06F *3/00*

U.S. Cl. 345—341 **34 Claims**



1. A computer display system having a central processing unit (CPU) coupled to a display for displaying data, said display system comprising:

user interface generation means coupled to said CPU for displaying data on said display in windows;

at least one of said windows including a working area for displaying data, said working area having a scroll bar including:

a plurality of characters displayed along said scroll bar;

a slider which may be selectively positioned over a portion of each of said characters using slider positioning means coupled to said CPU, the placement of said slider over a portion of a character resulting in said CPU displaying one or more data entries corresponding to said character selected in said working area; and

a cursor control device coupled to said CPU for positioning a cursor on said display, said cursor control device being controlled by a user; and wherein

one of said one or more data entries may be selected using said cursor control device and said one or more data entries may be scrolled within said working area by moving said cursor within a predetermined area on said display wherein said predetermined area is distinct from said scroll bar;

said windows displayed by said user interface generation means may be selectively positioned at desired locations on said display by said cursor control device; and

said CPU generates a plurality of windows, said window having said scroll bar comprising said working area and a second working area which is distinct from said working area, and wherein one or more data entries in said second working area are displayed in response to a selection of a data entry in said working area.

5,828,375

INFORMATION PROCESSING UNIT FOR AUTOMATICALLY BUILDING WORK ENVIRONMENT FOR HOLDING INFORMATION NECESSARY TO REFLECT ACTIVITIES CARRIED OUT IN WORK ENVIRONMENT

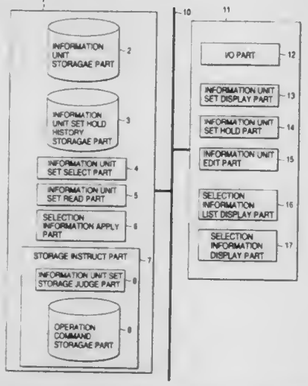
Takahiko Nomura, and Koichi Hayashi, both of Ashigarakami-gun, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed May 14, 1997, Ser. No. 856,088

Claims priority, application Japan, May 17, 1996, 8-148366; Oct. 28, 1996, 8-302511

Int. Cl.[6] G06F *3/14*

U.S. Cl. 345—339 **37 Claims**



1. An information processing unit including data objects and application objects for operating the data objects and further including a work space for collecting and creating the data objects using the application objects, said information processing unit comprising:

information unit set hold means for holding a set of information units consisting of said data objects or said application objects;

information unit set hold history storage means capable of storing a plurality of said information unit sets;

storage instruct means for instructing that said information unit sets held by said information unit set hold means should be stored into said information unit set hold history storage means;

selection information apply means for applying selection information to said information unit sets stored into said information unit set hold history storage means by said storage instruct means;

select means for selecting said information unit set to be stored into said information unit set hold means from said information unit sets stored into said information unit set hold history storage means using said selection information applied by said selection information apply means; and

read means for reading out said information unit set selected by said select means into said information unit set hold means.

5,828,376

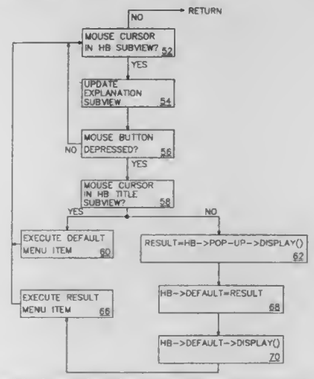
MENU CONTROL IN A GRAPHICAL USER INTERFACE

Vito Solimene, Englewood, and Robert Provencal, Denver, both of Colo., assignors to J. D. Edwards World Source Company, Denver, Colo.

Filed Sep. 23, 1996, Ser. No. 717,639

Int. Cl.[6] G06F *15/00*

U.S. Cl. 395—352 **19 Claims**



1. A graphical user interface menu control system for configuring and accessing menu items that control operation of a computer application, comprising:

(a) a menubar comprising a persistent menubar view for displaying a plurality of menu categories or menu items, wherein

(a1) each menu category comprises at least one menu item displayed in a pull-down menu when a user selects the menu category, and

(a2) when the user selects the menu item, a corresponding command is executed by the computer application; and

(b) a hyperbutton comprising

(b1) a pop-up menu comprising at least one of the menu items, the pop-up menu being displayed when the user sends a first control signal to the computer application, and

(b2) a default menu item selected from the menu items of the pop-up menu, wherein the command corresponding to the default menu item is executed when the user sends a second control signal to the computer application.

5,828,377

SHAPE DEPENDENT THREE-DIMENSIONAL GRAPHIC DATA MANAGING METHOD

Keiro Muro, Kokubunji, and Kazuaki Iwamura, Kodaira, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 17, 1995, Ser. No. 559,993

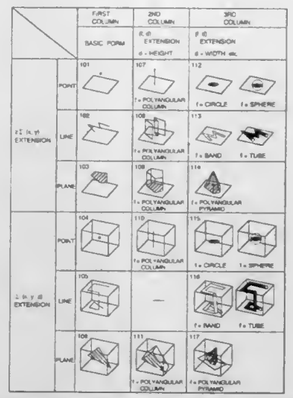
Claims priority, application Japan, Nov. 21, 1994, 6-311211

Int. Cl.[6] G06T *17/00*

U.S. Cl. 345—420 **9 Claims**

1. A three-dimensional graphic data managing method for managing three-dimensional graphic data expressed by the coordinates of the component points of figures, comprising the steps of:

forming a piece of data representing a three-dimensional figure of header information and component point information;



storing a height common to the entire three-dimensional figure, and attribute information including the shape and the color of the three-dimensional figure in the header information;

storing attribute information including coordinates specifying the positions of the component points of the three-dimensional figure in the component point information;

and providing the header information or the component point information with a control flag for indicating the deletion of pieces of attribute information unnecessary for expressing graphic shapes or the addition of pieces of attribute information necessary for expressing graphic shapes.

5,828,378

THREE DIMENSIONAL GRAPHICS PROCESSING APPARATUS PROCESSING ORDINARY AND SPECIAL OBJECTS

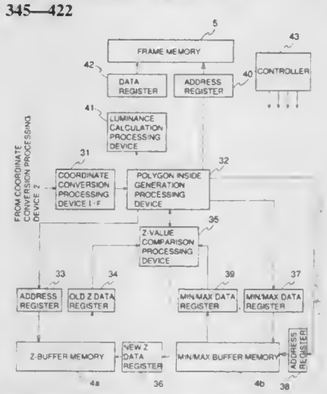
Naoto Shiraishi, Toyonaka, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed May 31, 1996, Ser. No. 657,810

Claims priority, application Japan, Jun. 1, 1995, 7-135423

Int. Cl.[6] G06T *15/00*

U.S. Cl. 345—422 **5 Claims**



1. A three-dimensional graphics processing apparatus, comprising:

first storing means for storing objects including an ordinary object and a special object, each object comprising polygons;

coordinate conversion means for placing each object stored in said first storing means in a three-dimensional coordinate system, and converting coordinates of the placed object into coordinates of a screen coordinate system;

second storing means for storing Z values of front polygons of said special object and Z values of rear polygons of said

special object to define a predetermined volume, said second storing means having a capacity of storing a frame of data;

determination means for determining whether Z values of a polygon of said ordinary object are values within the predetermined volume, by determining whether said Z values of the polygon of said ordinary object are values between said Z values of said front polygons and said Z values of said rear polygons of said special object stored in said second storing means; and

performance means for performing a predetermined special operation when said determination means determines that said Z values of said polygon of said ordinary object are values between said Z values of said front polygons and said Z values of said rear polygons of said special object.

5,828,379

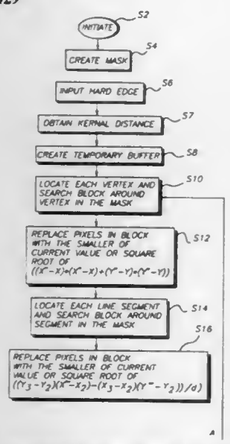
COMPUTER PROGRAM PRODUCT FOR GENERATING A SOFT EDGE ON A DIGITAL MASK

David R. Cok, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 12, 1997, Ser. No. 800,892

Int. Cl.[6] G06K *15/00*

U.S. Cl. 345—429 **16 Claims**



1. A computer program product used in a computer system, for inputting a desired soft edge into a digital mask, comprising: a computer readable storage medium having a computer program stored thereon for performing the steps of:

(a) selecting the desired profile having a predetermined hard-edge position and transition width;

(b) selecting a distance from the hard-edge position to a boundary of the transition width for forming a kernel distance;

(c) determining a minimum distance to the hard edge for each pixel within the kernel distance from the hard edge;

(d) substituting values from the desired profile for each pixel within the kernel distance from the hard edge using the minimum distance of the pixel from the hard edge.

5,828,380

METHOD FOR PROCESSING IMAGES

Tsung-Wei Lin, Taipei, Taiwan, assignor to Elead Systems, Inc., Taipei, Taiwan

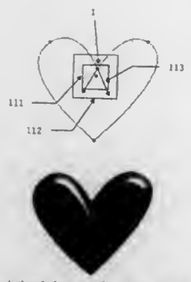
Filed Nov. 19, 1996, Ser. No. 752,468

Claims priority, application Taiwan, Jul. 24, 1996, 85109016

Int. Cl.[6] G06F *15/00*

U.S. Cl. 345—441 **8 Claims**

1. A method for digitally processing an original image in an image processing system having a display, comprising the steps of:



providing said original image having a first set of coordinate points, wherein said points respectively have digital data;

defining said original image as a connection of edges approximating said original image, wherein endpoints of said edges are a second set of coordinate points;

performing a first operation on said first and second sets of coordinate points to obtain a relation map function corresponding to said first set of coordinate points;

performing a second operation on said digital data of said first set of coordinate points associated with said relation map function to process said image.

5,828,381

VARIABLE DISPLAY RATE IMAGE CODING

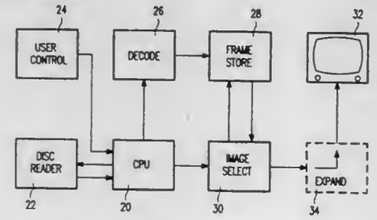
David E. Penna, Redhill, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 13, 1995, Ser. No. 556,690

Claims priority, application United Kingdom, Dec. 8, 1994, 9424809

Int. Cl.[6] G06T *3/00*

U.S. Cl. 345—473 **13 Claims**



11. Apparatus for encoding a sequence of video images, the apparatus comprising:

input means for receiving a sequence of video image frames;

compression means connected to receive successive frames from the input and reduce each to less than or equal to 1/n times its original area, where n is an integer greater than one;

frame arrangement means connected to the compression means and operable to take n successive spatially compressed frames and arrange them in non-overlapping manner in a further image frame; and

frame encoder means coupled to receive the further image frames output from the frame arrangement means and operable to encode the said further image frames according to a predetermined image sequence coding scheme.

5,828,382

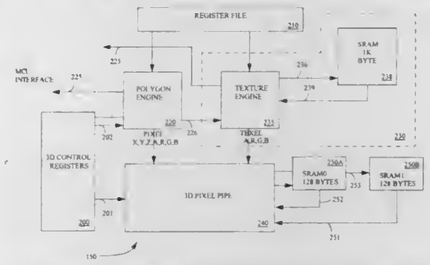
APPARATUS FOR DYNAMIC XY TILED TEXTURE CACHING

Daniel P. Wilde, Cedar Park, Tex., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Aug. 2, 1996, Ser. No. 691,762

Int. Cl.[6] G06F *15/00; G06T 1/00*

U.S. Cl. 345—501 **21 Claims**



1. A graphics subsystem for rendering texture information representative of graphics primitive on a computer display, comprising:

a host processor for generating display list information of parameter values defining said primitives;

a system memory coupled to said host processor for storing said display list information;

a graphics processor coupled to said host processor and said system memory for processing said texture map information; wherein said graphics processor includes:

a register file for storing said display list of parameter values;

a polygon engine coupled to said register file for generating polygons responsive to said primitives; and

a texture control unit coupled to said register file for receiving said texture information and generating texture maps representative of said graphics primitives, comprising:

a texture engine for receiving the initial and incremental values of a texture to be fetched from said system memory, said texture engine further receiving polygon size information from said register file in order to track the exact number of texels to complete a primitive to be rendered; and

a static random access memory device disposed within said texture control unit for storing texture maps used to fill in polygons drawn by said polygon engine.

5,828,383

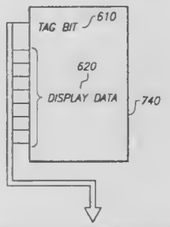
CONTROLLER FOR PROCESSING DIFFERENT PIXEL DATA TYPES STORED IN THE SAME DISPLAY MEMORY BY USE OF TAG BITS

Bradley Andrew May, Sao Jose, and Thuan Thai Hoang, Santa Clara, both of Calif., assignors to S3 Incorporated, Santa Clara, Calif.

Filed Dec. 21, 1995, Ser. No. 576,870

Int. Cl.[6] G09G *5/00; G06F 12/16*

U.S. Cl. 345—507 **18 Claims**



1. A display controller for generating display signals from display data representing multimedia data types stored in a common memory area of a memory, the display data having at least one tag bit stored therewith in a parity bit location, the tag bit indicative of a data type of the display data, said display controller comprising:

a memory interface for receiving the display data from a data portion of the memory and the at least one tag bit from a parity bit location in the memory;

a processing pipeline with a first and a second set of processing elements for processing the display data of first and second data types, respectively; and

a pipeline control for using the at least one tag bit to cause said processing pipeline to process the display data of the first and second data types through one of said first and second set of processing elements.

5,828,384

IMAGE DISPLAY CONTROL DEVICE, METHOD AND COMPUTER PROGRAM PRODUCT

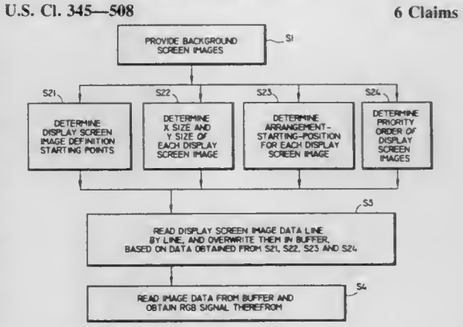
Keiichi Iwasaki, Yokohama, and Toshihiro Tsukagoshi, Itami, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Sep. 12, 1996, Ser. No. 711,870

Claims priority, application Japan, Sep. 14, 1995, 7-237280

Int. Cl.[6] G09G *5/00*

U.S. Cl. 345—508 **6 Claims**



1. An image display control device, comprising:

a first storage device for storing a plurality of patterns of image data, each pattern defining a screen having display image data;

an offset register for storing values which define starting positions in said first storage device of the display image data for each screen;

a horizontal direction counter for counting dots in a horizontal scanning direction;

a vertical direction counter for counting lines in vertical scanning direction;

a first storage device control circuit for successively generating address and control signals for reading a respective line of said display image data from each screen from said first storage device within one horizontal scanning period, said address and control signals being based on the values of said offset register and the value of said vertical direction counter;

two second storage devices, each selectively storing a thus-read respective line of said display image data for each screen in a predefined order such that image data of a previously stored pattern is overwritten at least by display image data of a subsequently stored pattern, each of said two second storage devices storing alternate horizontal lines of a same frame of image data;

a second storage device writing circuit for sequentially writing thus-read image data for each pattern at addresses of a predetermined one of said two second storage devices so as to form an image data line defined by said ordered pattern of image data, said addresses corresponding to displaying dots of said image data;

a second storage device reading circuit for reading, according to the value of said horizontal direction counter, said image data line stored in a predetermined one of said two second storage devices;

a control circuit for controlling said second storage device writing circuit and said second storage device reading circuit so that an image data writing operation and an image data reading operation are preformed alternately between said two second storage devices for each horizontal scanning period;

at least one direction register storing at least one of X-direction and Y-direction sizes of said display image data measured from said defining starting positions of said plurality of patterns of image data, respectively; and

an arrangement-starting-point register for storing values which indicate arrangement-starting-position from which said display image data of said plurality of patterns of image data are positioned in an imaginary coordinate plane, respectively,

wherein said first storage device control circuit successively generates address and control signals for reading a respective line of said display image data from said first storage device, based on the values of said arrangement-starting-point register, the values of said offset register, the values of said vertical direction counter and values of said at least one direction register.

5,828,385

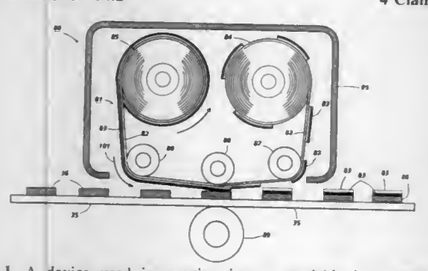
MAGNETIC TAPES AND PROCESSES

Wayne R. Smith, Pittsford, and William A. Sullivan, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Division of Ser. No. 7,307, Jan. 21, 1993. This application Jun. 7, 1995, Ser. No. 485,951

Int. Cl.[6] G11B *9/00*

U.S. Cl. 346—74.2 **4 Claims**



1. A device used in creating images readable by a MICR reader-sorter, comprising:

a cassette including pay-out and take-up spools; and

a substrate wound up onto said pay-out spool and connected to said take-up spool of said cassette, said substrate having a heat releasable magnetic coating attached thereto.

5,828,386

RECORDING HEAD AND APPARATUS FOR DETECTING CONTACT CONDITION

Masaaki Okada, Sanjou; Yoshiyuki Imanaka, Kawaski, and Yuji Kamiyama, Sapporo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1996, Ser. No. 614,890

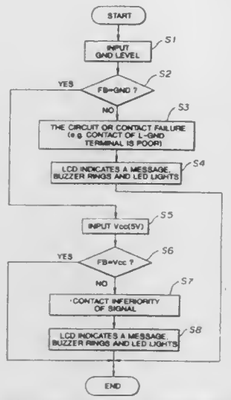
Claims priority, application Japan, Mar. 17, 1995, 7-058468

Int. Cl.[6] B41J *29/38*

U.S. Cl. 347—9 **38 Claims**

1. A recording head having a plurality of recording elements divided into a plurality of blocks, said recording head comprising:

a select signal terminal for inputting a select signal that designates at least one block among the plurality of blocks to be driven;



a selector for selecting at least one block designated by the select signal;

a monitor for monitoring a connection condition of said select signal terminal; and

a monitor terminal for outputting a monitor signal to indicate the monitored connection condition.

5,828,387

RECORDING APPARATUS WITH COMPENSATION FOR VARIATIONS IN FEEDING SPEED

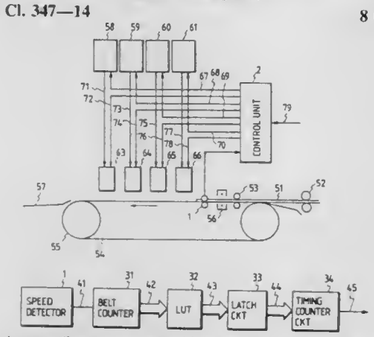
Masafumi Wataya, Kawasaki; Toshiyuki Yanaka, Tokyo; Ilidejiro Kadowaki, Yokohama; Ken Tsuchii, Tokyo; Haruhiko Takahashi, Yokohama; Makoto Takamiya, Kawasaki, and Kosuke Yamamoto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 972,088, Nov. 5, 1992, abandoned, which is a continuation of Ser. No. 700,303, May 8, 1991, abandoned, which is a continuation of Ser. No. 407,063, Sep. 14, 1989, abandoned. This application Dec. 6, 1994, Ser. No. 354,056

Claims priority, application Japan, Sep. 17, 1988, 63-231469; Nov. 28, 1988, 63-298299; May 31, 1989, 1-136135

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—14 **8 Claims**



1. A recording apparatus which uses a recording means for recording an image on a recording medium in accordance with an image data supplied from an image data source, the recording apparatus comprising:

movement means for moving the recording medium, the movement means having a recording medium feeding unit having at least a one outer peripheral portion, the recording medium being moved according to a positional change of said recording medium feeding unit of said movement means;

detection means for detecting a state of a movement speed of said at least one outer peripheral portion of said movement means;

table means, which comprises memory means previously storing correction data according to a periodic change of the movement speed in an operation of said movement means, for outputting corresponding correction data in accordance with the state of the movement speed detected by said detection means, from said memory means, the table means having an output;

providing means for providing a driving signal to the recording means in accordance with the image data from the image data source; and

control means for controlling the providing means providing the driving signal to the recording means at an image record timing in accordance with the output of said table means.

5,828,388

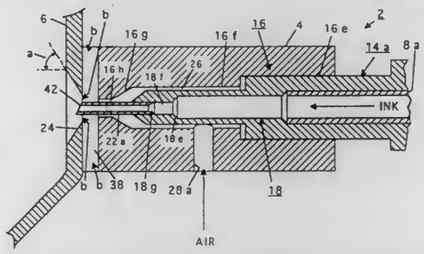
SPRAY HEAD FOR A COMPUTER-CONTROLLED AUTOMATIC IMAGE REPRODUCTION SYSTEM

Arthur L. Cleary, Laconia, and Peter L. Duffield, Meredith, both of N.H., assignors to Vutek, Inc., Meredith, N.H.

Continuation of Ser. No. 186,308, Jan. 26, 1994, abandoned, which is a continuation-in-part of Ser. No. 814,566, Dec. 30, 1991, abandoned. This application Mar. 19, 1997, Ser. No. 820,067

Int. Cl.[6] B41J *2/015*

U.S. Cl. 347—21 **37 Claims**



1. Apparatus for reproducing a predetermined pattern on a medium comprising in combination

a source of colored ink,

a primary source of compressed air, and

a spray head, said spray head comprising:

a housing having an inner ink chamber in flow communication with said source of ink,

an outer air chamber in flow communication with said source of air and surrounding said inner ink chamber,

a spray nozzle having an outside diameter and an internal longitudinal bore connected to said inner ink chamber and extending forward of said housing,

a spray shield having an outer surface adjacent said medium and an inner surface positioned adjacent to and spaced from said housing and having a transverse opening therethrough in alignment with said nozzle, and

an auxiliary air supply having a pressure significantly less than the pressure of the air from said primary source of compressed air, said auxiliary air supply being in flow communication with the space between said shield and said housing thereby to force clean air through the space and out through said spray shield opening.

5,828,389

INK JET RECORDING APPARATUS WITH SELECTIVE SUCTION METHOD DEPENDING UPON INK CARTRIDGE REPLACEMENT

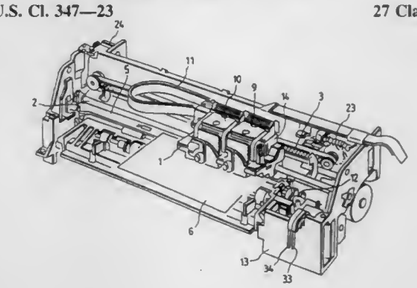
Shuichi Yamaguchi; Seiji Mochizuki, and Masahiro Nakamura, all of Nagano, Japan, assignors to Seiko Epson Corporation, Tokyo, Japan

Filed May 31, 1995, Ser. No. 456,055

Claims priority, application Japan, May 31, 1994, 6-141065

Int. Cl.[6] B41J *2/165;29/38*

U.S. Cl. 347—23 **27 Claims**



1. An ink jet recording apparatus accommodating a plurality of ink cartridges concurrently, said apparatus comprising:

a carriage, comprising:

a plurality of ink jet recording heads, each having a corresponding one of said plurality of ink cartridges, said plurality of ink jet recording heads being arranged in a direction of movement of said carriage;

a cartridge mounting mechanism comprising, for each one of said corresponding ink cartridges:

respective means for detecting each one of said corresponding ink cartridges, said respective detection means producing a respective cartridges detection signal based on whether each one of said corresponding ink cartridge is mounted,

a respective ink supply needle communicating ink between each one of said corresponding ink cartridges and said corresponding ink jet recording heads, and

a respective cartridge housing chamber housing each one of said corresponding ink cartridges;

a plurality of cap members, disposed outside of a printing area of said apparatus, each corresponding to a respective one of said plurality of ink jet recording heads for sealing said corresponding ink jet recording head;

pump means for effecting a negative pressure inside each of said plurality of cap members;

ink cartridge replacement status determination means for determining a mounting status of each one of said ink cartridges based on said respective detection signal for each one of said each ink cartridges;

suction control means for controlling said pump means to effect said negative pressure for a specified period inside only one or more selected ones of said cap members; and

print enforcement means for enabling printing for only ones of said plurality of ink jet recording heads for which each one of said corresponding ink cartridges is mounted;

wherein said one or more selected ones of said cap members are selected based on said mounting status of each one of said corresponding ink cartridges indicating a mounting of each one of said corresponding ink cartridges.

5,828,390

INK JET PRINT HEAD

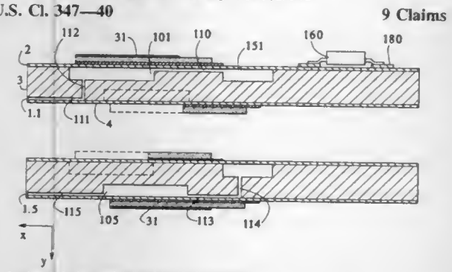
Wolfgang Thiel, Berlin, Germany, assignor to Francotyp-Postalia AG & Co., Birkenwerder, Germany

Filed Feb. 21, 1995, Ser. No. 393,933

Claims priority, application Germany, Mar. 10, 1994, G 94 04 328.0

Int. Cl.[6] B41J *2/145;2/045*

U.S. Cl. 347—40 **9 Claims**



1. An ink jet print head comprising:

a middle part having opposite surfaces and a single nozzle row including a first group of nozzles and a second group of nozzles, said opposite surfaces having respective, different structures worked thereon, a first of said structures having parallel nozzle channels respectively leading to nozzles in said first group of nozzles and said second group of nozzles in said single nozzle row, each of said different structures having recesses forming a group of non-concentric ink chambers in said different structures being respectively offset from each other in mutually orthogonal x, y and z directions of a Cartesian coordinate system, the ink chambers in said first of said structures being respectively directly connected to said first group of nozzles by said respective nozzle channels, and said ink chambers in said second of said structures being respectively connected to nozzles in a second group of nozzles in said single nozzle row by said respective nozzle channels and respective channels extending through said middle part between said first structure and said second structure to said respective nozzle channels; and

outer, non-profiled membrane plates respectively disposed on said opposite surfaces of said middle part and covering said different structures on said opposite surfaces.

5,828,391

THERMAL TRANSFER RECORDING DEVICE

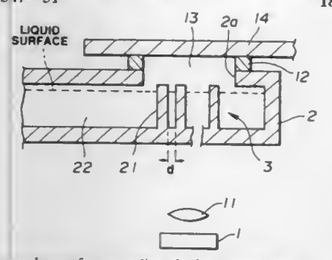
Kenji Shinozaki; Hideki Hirano, both of Kanagawa, and Masanori Ogata, Saitama, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 399,640, Mar. 7, 1995, abandoned. This application Nov. 5, 1996, Ser. No. 743,920

Claims priority, application Japan, Mar. 8, 1994, 6-036933

Int. Cl.[6] B41J *2/05*

U.S. Cl. 347—51 **18 Claims**



1. A thermal transfer recording device comprising:

a dye container including a bottom wall and an opposed top wall with a transfer opening having a dye-receiving cavity defined therein and a transfer section in said dye-receiving cavity adjacent and aligned with said transfer opening, a molten vaporizable transfer dye composition disposed in said dye-receiving cavity and a surface wave suppressing structure comprising a plurality of upstanding pillars having a square cross-section arranged in an array of equally spaced columns and rows defined in said transfer section within the area circumscribed by the transfer opening adjacent to the transfer opening and configured to substantially suppress any surface wave generated on vaporizing transfer dye in the transfer section.

5,828,392

Patent Not Issued For This Number

5,828,393

INK JET HEAD FOR JETTING INK ONTO AN INK CARRIER AND AN INK JET RECORDING APPARATUS FOR FORMING AN INK IMAGE ONTO AN INK CARRIER

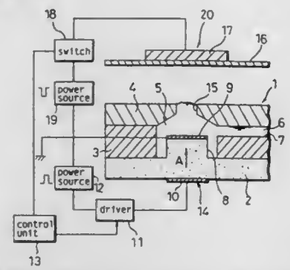
Hideo Hotomi, Ibaragi, Japan, assignor to Minolta Co., Ltd., Osaka, Japan

Continuation of Ser. No. 961,523, Oct. 15, 1992, Pat. No. 5,477,249. This application Oct. 5, 1995, Ser. No. 539,778

Claims priority, application Japan, Oct. 17, 1991, 3-269338; Oct. 17, 1991, 3-269339

Int. Cl.[6] B41J *2/045;2/06*

U.S. Cl. 347—71 **63 Claims**



1. An ink jet recording apparatus for forming an ink image onto an ink carrier, comprising:

a first member having a plurality of hollow portions, each of said hollow portions having a bottom surface;

a second member, said second member having a plurality of portions including a piezoelectric material, each one of said plurality of portions of said second member corresponding to a respective one of said hollow portions, said second member being provided adjacent to said first member so that each respective one of said portions of said second member confronts a respective one of said hollow portions to define a space between a surface of each respective one of said portions of said second member and the bottom surface of each respective confronting hollow portion, each space defining an ink room;

an ink supply connected with each of said ink rooms to supply ink into said ink rooms;

a plurality of electrodes provided on said portions of said second member, respectively; and

a driver connected with each of said electrodes to apply a voltage to each respective one of said portions of said second member,

wherein each respective one of said portions of said second member is polarized in a direction parallel to the direction of an electric field induced by the voltage applied by said driver.

5,828,394

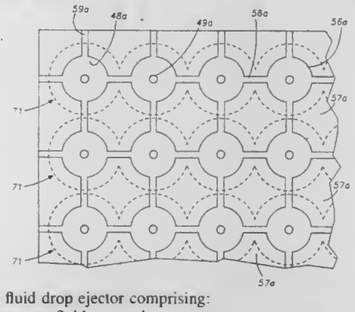
FLUID DROP EJECTOR AND METHOD

Butrus Thomas Khuri-Yakub, Palo Alto, Calif., and Laurent Levin, Paris, France, assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 20, 1995, Ser. No. 530,919

Int. Cl.[6] B41J *2/45*

U.S. Cl. 347—72 **10 Claims**



1. A fluid drop ejector comprising:

at least one fluid reservoir,

at least one elastic membrane having at least one orifice defining at least one nozzle adapted to be in contact with a fluid in said reservoir,

a conductive film on the surface of said membrane and a spaced conductor whereby application of the ac electrical signal between the film and spaced conductor generates an electrostatic force which brings said at least one membrane into mechanical oscillation whereby, when the fluid is in contact with said at least one membrane, the displacement of the membrane causes the formation and ejection of a drop of fluid from said at least one nozzle with each cycle of oscillation.

5,828,395

CONNECTING DEVICE BETWEEN INK SUPPLY SOURCE AND INK JET HEAD

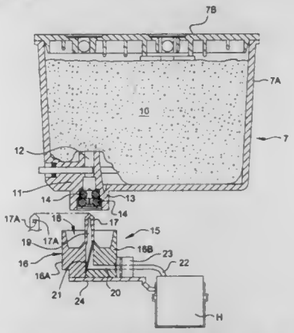
Masayuki Takata, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Sep. 24, 1996, Ser. No. 719,078

Claims priority, application Japan, Sep. 29, 1995, 7-276907

Int. Cl.[6] B41G *2/175*

U.S. Cl. 347—86 **17 Claims**



1. A connecting device for use in an ink jet printer having suction means for sucking ink from an ink cartridge to an ink jet head by negative pressure produced by the suction means, the device conveying ink along with any air bubbles occurring in the ink, under negative pressure from the ink cartridge, through a filter member, to the ink jet head so as to avoid any collection of air bubbles at the filter member, the device comprising a connecting member arranged between the ink cartridge and the ink jet head, the connecting member having:

an ink guide path having a predetermined sectional area for leading ink flow from the ink cartridge to the ink jet head; and

said filter member having a first side facing the ink cartridge and a second side opposite to the first side, disposed obliquely in the ink guide path with respect to a direction of the ink flow, wherein the ink guide path includes a first path formed on an upstream ink flow side of the filter member and a second path formed on a downstream ink flow side of the filter member;

wherein the sectional area of the first path along the direction of the ink flow at the first side of the filter member gradually becomes narrow; and

wherein the air bubbles in the ink guide path pass through the filter member from the first side to the second side when sucked by the suction means.

5,828,396

INFORMATION RECORDING APPARATUS FOR RECORDING IMAGES USING PLURAL INFORMATION SIGNALS CORRESPONDING TO RESPECTIVE PLURAL COLORS

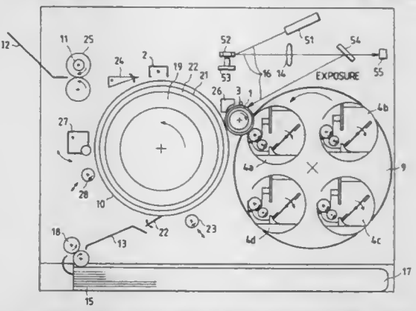
Kaoru Seto, Chigasaki; Atsushi Kashihara, Hachioji, and Manabu Takebayashi, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1993, Ser. No. 83,497

Claims priority, application Japan, Jun. 30, 1992, 4-173442

Int. Cl.[6] B41J *2/385;2/205;* **G01D** *15/06;* **H04N** *1/21*

U.S. Cl. 347—111 **14 Claims**



1. An information recording apparatus which performs a conversion process on a pixel based on whether the pixel comprises a part of one of plural predetermined images, the apparatus comprising:

color information signal generation means for generating plural color information signals which represent plural colors, the plural color information signals comprising pixels for plural color images;

temporary memory means for temporarily storing at least a part of the plural color information signals generated by said color information signal generation means;

selecting means for selecting a color information signal from among the plural color information signals stored in the temporary memory means;

detecting means for detecting whether the selected color information signal comprises a part of one of the plural predetermined images;

information conversion means for converting a pixel in the selected color information signal in a case where said detecting means detects that the selected color information signal comprises a part of one of the plural predetermined images; and

output means for outputting the color information signal converted by said information conversion means and color information signals not converted by said information conversion means,

wherein conversion performed by the information conversion means comprises smoothing a contour of the one of the plural predetermined images, and

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wherein the information conversion means does not perform conversion on the selected color information signal in a case that the selected color information signal does not comprise a part of one of the plural predetermined images.

5,828,397

IMAGE FORMING METHOD AND APPARATUS

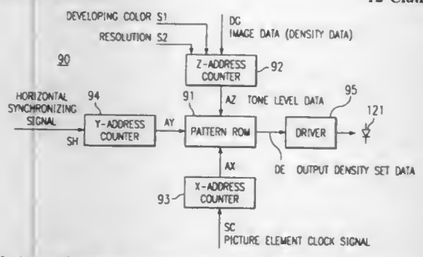
Hiroshi Goto, Itami, and Satoshi Deishi, Ibaraki, both of Japan, assignors to Minolta Co. Ltd., Osaka, Japan

Filed Nov. 1, 1995, Ser. No. 551,345

Claims priority, application Japan, Nov. 4, 1994, 6-270829; Nov. 11, 1994, 6-277321

Int. Cl.[6] B41J *2/39;2/395;* **H04N** *5/262;9/64*

U.S. Cl. 347—131 **12 Claims**



1. A tone image processing apparatus comprising a converter to receive tone image data, select a pattern from a plurality of stored patterns based on a tone level of the received tone image data, and convert the tone image data to reproduction image data based on the selected pattern,

wherein each pattern has a plurality of cells arranged in a matrix, each cell being capable of indicating at least a first state and a second state, to represent an output density value according to a number and position of cells in a first state within the matrix,

wherein said plurality of patterns respectively correspond to a plurality of tone levels of the tone image data, and a difference between one output density value, represented by a pattern assigned to one tone level, and a next output density value, represented by a pattern assigned to a next tone level, is increased over all the tone levels as the tone levels become higher.

5,828,398

Patent Not Issued For This Number

5,828,399

IMAGESETTER WITH ROTATING INTERNAL DRUM

Luc Van Aken, Kuringen; Bert Vackier, 's-Gravenwezel, and Karl Van den Eynde, Deurne, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

Filed Oct. 18, 1996, Ser. No. 733,754

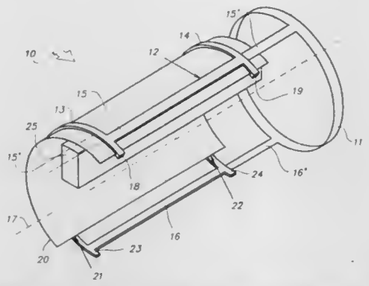
Claims priority, application European Pat. Off., Nov. 13, 1995, 95203079

Int. Cl.[6] B41J *2/47*

U.S. Cl. 347—153 **11 Claims**

1. A rotating drum imagesetter comprising:

means forming a drum for retaining a flexible sheet of radiation sensitive material in cylindrically curved condition, said drum-forming means being arranged for rotation about a central axis, said drum having an inside surface;



said drum-forming means being arranged to hold said sheet on said inside surface of said drum;

means for imagewise exposing said sheet as said sheet is held and rotated by said drum-forming means; and

said exposure means being arranged inside said drum to carry out internal drum exposure of said sheet while said sheet is rotated by said drum-forming means.

5,828,400

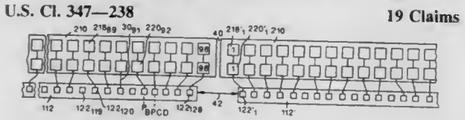
METHOD FOR CONSTRUCTING A LIGHT-EMITTING DIODE PRINTHEAD WITH A MULTIPLE DPI RESOLUTION DRIVER IC

Paul John Fleming, Lima, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 28, 1995, Ser. No. 580,262

Int. Cl.[6] B41J *2/47;2/435;2/45*

U.S. Cl. 347—238 **19 Claims**



1. A light-emitting diode print head comprising:

a light-emitting diode chip array comprising a first plural number of input bond pads and light-emitting diode elements each coupled to one of said pads, the first plural number of input pads arrayed in a first row in a first direction and separated apart in a first pitch spacing;

a current driver integrated circuit (IC) chip array comprising a second plural number of driver channels and output bond pads coupled thereto, the second plural number of output pads arrayed in a second row in the first direction and having a second pitch spacing different from the first pitch spacing and the second plural number of bond pads being greater in number than the first plural number of input pads;

a support supporting the light-emitting diode chip array and the current driver integrated circuit chip array in side by side relationship with a gap between the input pads and the output pads; and

interconnection means extending between and electrically connecting each input pad of the input pads in the first row with a respective different output pad of a first sub-set of the output pads of the second row such that each of the input pads is electrically connected across the gap to the nearest one of the output pads.

5,828,401

LASER BEAM EXPOSING UNIT HAVING PLASTIC NON-SPHERICAL LENSES BETWEEN A SCANNER AND AN IMAGE BEARER

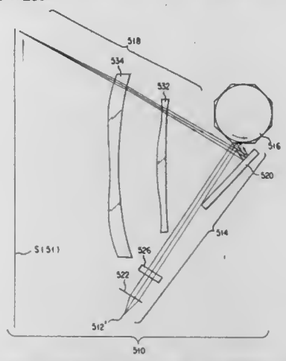
Takashi Shiraishi, Sagamihara, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 266,679, Jun. 28, 1994, abandoned. This application Apr. 15, 1996, Ser. No. 632,144

Claims priority, application Japan, Jun. 28, 1993, 5-157576

Int. Cl.[6] B41J *2/47;* **G01D** *15/14;* **G02B** *26/00;27/00*

U.S. Cl. 347—259 **16 Claims**



1. An exposing apparatus for exposing a light beam on an image bearing member having an image forming area, comprising:

a light source;

first optical lens means for converting the light beam from the light source into a convergent light beam;

scanning means for scanning the light beam from the first optical lens means in a scanning direction toward the image bearing member;

a first lens, provided within an optical path between the scanning means and the image bearing member, for correcting for a variation of an arrival position of the light beam from the scanning means; and

a second lens, provided within the optical path between the first lens and the image bearing member, for correcting for a variation of an arrival position of the light beam passing through the first lens; and

the first optical lens means having a lens power in the scanning direction such that a distance, between a scanning point of the scanning means and an image forming point where light from the scanning means is image-formed at a center of an image forming area when the first lens and second lens are replaced with a plane with no power, is shorter than a distance between the scanning point of the scanning means and an end portion of the image bearing member.

5,828,402

METHOD AND APPARATUS FOR SELECTIVELY BLOCKING AUDIO AND VIDEO SIGNALS

Timothy David Collings, White Rock, Canada, assignor to Canadian V-Chip Design Inc., Burnaby

Continuation-in-part of Ser. No. 667,030, Jun. 20, 1996. This application Dec. 5, 1996, Ser. No. 761,091

Claims priority, application Canada, Jun. 19, 1996, 2179474

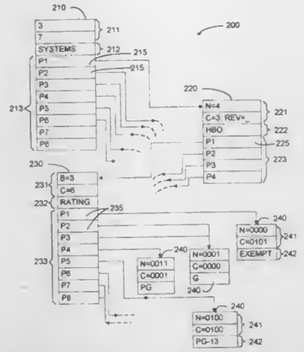
Int. Cl.[6] H04N *7/16;7/00*

U.S. Cl. 348—5.5 **15 Claims**

1. A video program transmission method for enabling a viewer to receive information useful for selectively blocking the viewing of television programming, said method comprising the steps of:

a) transmitting a plurality of television channels to a viewer;

b) for each said channel in a first group of one or more of said channels, embedding program information comprising at least a value representing a level in first multi-level category of a first informational scheme for a program being transmitted on said each channel;



c) for each said channel in a second group of one or more of said channels, embedding program information comprising at least a value representing a level in second multi-level category of a second informational scheme for a program being transmitted on said each channel; and,

d) transmitting to said viewer first and second sets of configuration information, said first set of configuration information comprising at least a value representing a number of levels in said first multi-level category and descriptive names for said category and one or more of said levels in said first category according to said first informational scheme, said second set of configuration information comprising at least a number of levels in said second multi-level category and descriptive names for said second category and one or more of said levels in said second category according to said second informational scheme.

5,828,403

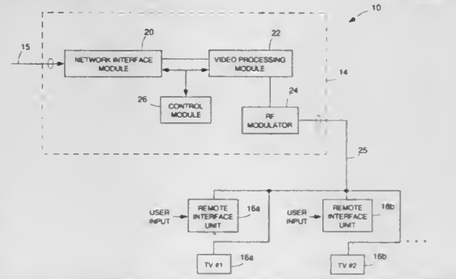
METHOD AND SYSTEM FOR SELECTING AND RECEIVING DIGITALLY TRANSMITTED SIGNALS AT A PLURALITY OF TELEVISION RECEIVERS

Stephen DeRodeff, Westminster, and Christopher J. Rust, Lafayette, both of Colo., assignors to U S WEST, Inc., Denver, and MediaOne Group, Inc., Englewood, both of Colo.

Filed Dec. 22, 1995, Ser. No. 577,192

Int. Cl.[6] H04N *7/173;7/16*

U.S. Cl. 348—7 **26 Claims**



1. For use with a network provider broadcasting multiple streams of compressed, digitally encoded signals, a method for transmitting the digitally encoded signals to a plurality of user programmable devices disposed in a single environment and coupled to a common set-top transceiver, the user programmable devices transmit and receive signals at a predetermined range of frequencies, the method comprising:

transmitting a user programming from each of the plurality of user programmable devices to the network provider via the

common set-top transceiver at one of a plurality of frequencies within the predetermined range of frequencies, each of the user programmable device selecting the same or different one of the plurality of compressed, digitally encoded signals as each of the other user programmable devices;

receiving each of the selected ones of the plurality of digitally encoded signals from the network provider at the common set-top transceiver; and

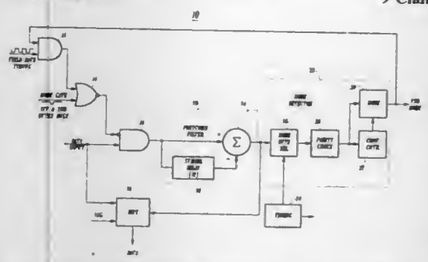
transmitting each of the selected ones of the plurality of digitally encoded signals to each of the plurality of user programmable devices based on the user programming transmitted by each of the user programmable devices.

5,828,404

VSB MODE DETECTION SYSTEM WITH COMB FILTER

Gopalan Krishnamurthy, Wheeling, and Rudolf Turner, Hawthorn Woods, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 10, 1996, Ser. No. 661,241
Int. Cl.[6] H04N *5/38*
U.S. Cl. 348—21 **9 Claims**



1. A method of determining the mode of a received VSB digital signal with a receiver that includes a comb filter for reducing NTSC signal interference comprising:

continually sampling the mode information in one field of the digital signal with the comb filter being effective; and

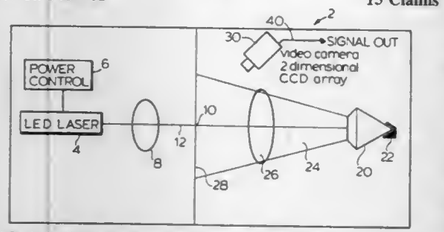
continually sampling the mode information in the other field of the digital signal with the comb filter being ineffective.

5,828,405

GEMSTONE REGISTRATION SYSTEM

Dana J. Vanier, Ottawa; Hermann F. Wallner, Richmond, and Michael Leydon, Saskatoon, all of Canada, assignors to Omphalos Recovery Systems Inc., Saskatoon, Canada

Filed Nov. 8, 1996, Ser. No. 745,361
Claims priority, application Canada, Nov. 9, 1995, 2162532
Int. Cl.[6] H04N *7/18*
U.S. Cl. 348—61 **13 Claims**



10. A device for producing a reproducible identification pattern of a polished gemstone comprising

light directing means for directing a collimated beam of light onto a gemstone orientated in a particular known manner to produce an optical output of the internal refraction and reflection characteristics of the gemstone,

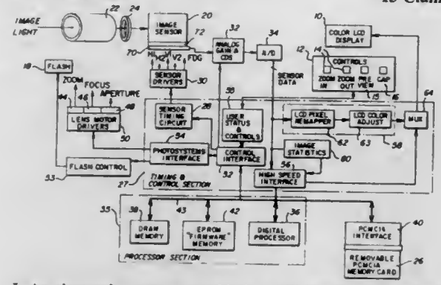
means for capturing a selected portion of the output in a manner to establish the relative size and location of the reflected light beams, wherein said capturing means is a video camera and said light directing means is a light emitting laser diode having associated therewith optical means for collimating the output.

5,828,406

ELECTRONIC CAMERA HAVING A PROCESSOR FOR MAPPING IMAGE PIXEL SIGNALS INTO COLOR DISPLAY PIXELS

Kenneth A. Parulski, Rochester, and Timothy J. Tredwell, Fairport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 30, 1994, Ser. No. 367,399
Int. Cl.[6] H04N *5/225*
U.S. Cl. 348—220 **15 Claims**



1. An electronic camera operable in a still image mode and in a motion preview mode, said electronic camera comprising:

an image sensor including a two-dimensional array of image pixels covered by a mosaic pattern of color filters, said image sensor providing a stream of color pixel signals at an output thereof suitable for still imaging;

an analog-to-digital stage for converting the color pixel signals to digital pixel signals;

a color display comprising a discrete two-dimensional arrangement of color display pixels, said color display having fewer color display pixels than the number of image pixels on the image sensor; and

a preview mode processor for mapping the digital image pixel signals into at least a viewable portion of the color display pixels by combining same-colored image pixels into a fewer number of same-colored intermediate pixels, each associated with a single color, that correspond to the color arrangement of the color display pixels.

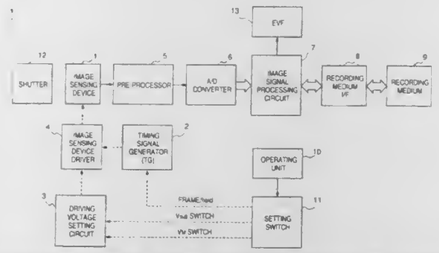
5,828,407

METHOD OF CONTROLLING A SOLID-STATE IMAGE SENSING DEVICE AND IMAGE SENSING APPARATUS ADOPTING THE METHOD

Masao Suzuki, Toyko, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1996, Ser. No. 670,576
Claims priority, application Japan, Jun. 30, 1995, 7-165930
Int. Cl.[6] H04N *5/335;5/238*
U.S. Cl. 348—312 **25 Claims**

1. A method of controlling an image sensing device, which includes a photoelectric converter made of a plurality of photoelectric converting elements formed on a substrate of a semiconductor, a vertical charge transfer unit for transferring charges read out from the photoelectric converter in a single direction by applying pulses having high potential, intermediate potential, and low potential, where the high potential is higher than the low potential and the intermediate potential is in between the high potential and the low potential, and a horizontal charge transfer unit for transferring



charges sent from the vertical charge transfer unit in the direction perpendicular to the charge transfer direction of the vertical charge transfer unit, and which can be operated in a field mode in that image signals are obtained after adding charges stored in pixels by two adjoining lines and in a frame mode in that image signals are obtained by interlace scanning, by controlling a potential of a substrate and the intermediate potential of the pulses when the image sensing device is scanned in the frame mode, said method comprising:

a setting step of setting the potential of the substrate to a first potential and the intermediate potential to a second potential;

a first changing step of changing the intermediate potential to a third potential which is higher than the second potential during reading a first field of the image sensing device;

a second changing step of changing the potential of the substrate to a fourth potential which is higher than the first potential; and

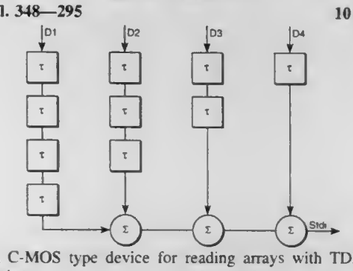
a second field read-out step of reading out charges stored in a second field and transfer them vertically after all charges read out from the first field have transferred.

5,828,408

DEVICE FOR READING DETECTOR ARRAYS WITH TDI EFFECT

Eric Mottin, Le Vimaux, and Philippe Pantigny, Claix, both of France, assignors to Commissariat A L'Energie Atomique, Paris, France

Filed Dec. 12, 1996, Ser. No. 764,267
Claims priority, application France, Jan. 4, 1996, 96 00045
Int. Cl.[6] H04N *3/14*
U.S. Cl. 348—295 **10 Claims**



1. A C-MOS type device for reading arrays with TDI effect, comprising:

an assembly of detector lines, each detector being capable of integrating its own contribution during an integration time, each contribution corresponding to an image in an elementary circuit of a network of elementary circuits, each elementary circuit comprising:

an impedance matching device;

an integration and storage device; and

an addressing device;

a demultiplexer sequenced in function of the detectors and predetermined image numbers, capable of directing, simultaneously for all the detectors, the contribution of each detector into a first elementary circuit determined by this detector and the predetermined image number of the current image;

a summing device capable of executing the sum of the contribution of the detectors consisting in choosing, for each detector, a second elementary circuit determined in function of the predetermined image number of the current image and of the detector considered and in executing the sum of these elementary circuits so as to carry out the TDI effect on the detectors in such a way as to obtain the contribution of the detector line, wherein the number of memorization cells for detector n_i is given by the following relation:

$$N_{c_i}=(N_d-i)\ \tau+2$$

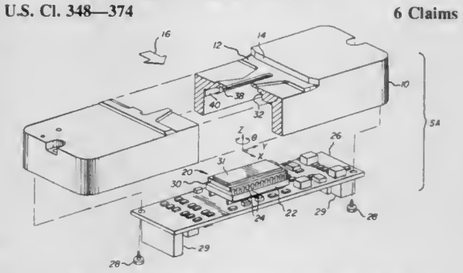
where N_{c_i} is the number of memorization cells for detector n_i, N_d is the number of diodes on which the TDI effect is produced, τ is a supersampling rare, and i is an integer.

5,828,409

FILM SCANNER MOUNT ASSEMBLY FOR A SOLID STATE SENSOR

Stephen Palmer North, and Bruce E. Rottner, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 12, 1996, Ser. No. 631,593
Int. Cl.[6] H04N *5/225;3/36*
U.S. Cl. 348—374 **6 Claims**



1. A film scanner mount assembly for a solid state sensor comprising:

a sensor package comprising a solid state sensor, a sensor support frame and a line of external sensor leads extending from said frame, the sensor being mounted within said frame with one dimension of the sensor being in precision alignment with the line of sensor leads; and

a sensor package metallic support body having a film track, a scanning aperture oriented in a cross scan direction of an image on film in the film track and a plurality of reference datum surfaces defining a predetermined lateral alignment position of the sensor relative to the scanning aperture, at least one of the datum surfaces comprising an insulator material;

the sensor package being mounted within the support body in abutment with said reference surfaces, the line of sensor leads being in abutment with the insulator material reference surface so that at least one axis of the sensor is thereby placed in said predetermined aligned position relative to the scanning aperture by virtue of said precision alignment of the sensor with the sensor leads.

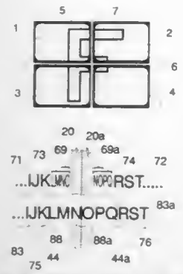
5,828,410

VIDEO-WALL VIEWING-ANGLE ENHANCEMENT SYSTEM

Raoul E. Drapeau, 2410 Luckett Ave., Vienna, Va. 22180

Filed Jul. 19, 1995, Ser. No. 504,284
Int. Cl.[6] H04N *5/66;9/12*
U.S. Cl. 348—383 **4 Claims**

1. A system for obscuring an image of a frame between display surfaces of adjacent video display units of a multi-unit display system and increasing the useful viewing angle, comprising:



magnifying means consisting of for each video display unit, a cylindrical surface lens overlying the marginal portion of said video display unit, each said lens having first and second edges;

said first edge of each said cylindrical lens having least refraction, and said second edge of each said cylindrical lens having greatest refraction;

said lenses being placed with each first edge thereof above an inner edge of a marginal strip of a viewing surface of a respective display surface of a respective video display unit with said first edge facing toward a center of said respective display surface;

said lenses being respectively placed with each second edge thereof parallel with and directly above an outer edge of a side of said frame adjacent a respective said video display unit;

said lenses being mounted in a raised position above said display system such that a viewer will observe a magnified image of said marginal strip of each video display surface sufficient to obscure said frame; and

wherein an outermost portion of an image displayed on one of said video display unit display surfaces and lying entirely under a respective one of said cylindrical lenses is duplicated on an adjacent outermost portion of an adjacent video display unit display surface, said adjacent outermost portion lying entirely under an adjacent cylindrical lens of said adjacent video display unit display surface, said duplication in combination with magnification produced by adjacent cylindrical lenses being sufficient to produce a unified non-duplicative image from adjacent video display units and providing an increase in useful viewing angle.

5,828,411

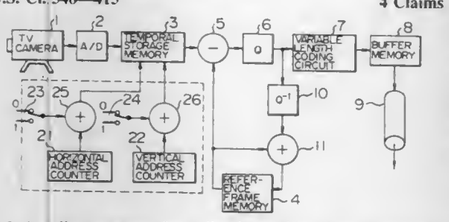
LOW BIT RATE CODER FOR STILL AND MOTION IMAGES USING SUB-SAMPLING

Masaaki Takizawa, Tokyo, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 868,510, Apr. 15, 1992, abandoned. This application May 3, 1994, Ser. No. 237,340

Int. Cl.[6] H04N *7/32*

U.S. Cl. 348—415 **4 Claims**



1. A coding apparatus for coding input video signals depending upon a type of picture image of the input video signals, comprising:

storing means for successively receiving a number of frames of a digitized input video signal and storing samples of at least one frame of said digitized input video signal;

sub-sampling means for producing an output digitized video signal for each frame by sub-sampling a set of reduced number of samples for each frame among said stored samples;

coding means for receiving said output digitized video signal and coding the received output digitized video signal into a low bit rate video signal by executing interframe predictions, combining a plurality of prediction error signals as a signal block, quadrature-converting the signal block and quantizing the quadrature-converted signal block; and

means for controlling said sub-sampling means in accordance with a type of picture image represented by said input video signal so as to produce, as said output digitized video signal for each frame, a set of samples sub-sampled in a fixed sampling mode in which sampling points are fixed over successive frames when the input video signal is a moving picture image, and to periodically produce different sets of samples, a predetermined number of frames a cycle, sub-sampled in a variable sample mode in which portions of sampling points are varied over successive frames within the cycle when the input video signal is a still picture image, wherein said coding means receives different sets of samples depending upon the type of picture image of the input video signals.

5,828,412

METHOD AND RECEIVING APPARATUS FOR DECODING COMPRESSED FRAMES

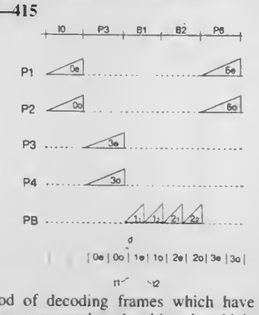
Thierry Fautier, Nogent, and David Molter, Creteil, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 7, 1995, Ser. No. 568,773

Claims priority, application France, Dec. 7, 1994, 9414727

Int. Cl.[6] H04N *7/36*

U.S. Cl. 348—415 **12 Claims**



1. A method of decoding frames which have been digitally encoded using a compression algorithm, in which method a fixed number of pixels are to be processed per unit of time, and wherein each frame includes at least an odd field and an even field and is divided into blocks of pixels each comprising several pixels in both horizontal and vertical directions, and wherein a line of blocks is defined as a plurality of blocks which, side by side, occupy the length of a frame line, said compression algorithm being based on processing of blocks transmitted sequentially, and wherein the frames include three different types of frames, including intraframes which are encoded in absolute values without reference to other frames, predicted frames which are encoded with reference to a preceding intraframe or predicted frame, and bidirectional frames which are encoded on the basis of a maximum number of two other frames which are each intraframes or predicted frames, the method comprising the steps of:

displaying an even field and an odd field of each frame after decoding the same;

displaying certain bidirectional frames before one of the intraframes or predicted frames used for decoding the same;

decoding the bidirectional frames in successive stages of one line of blocks at a time;

dividing a memory space into zones each having a capacity of one line of blocks for storing lines of blocks of a bidirectional frame which has just been decoded;

progressively replacing contents of one of said zones already displayed by each line of blocks which has just been displayed;

decoding each bidirectional frame at least twice in succession;

decoding a first one of the fields, odd or even, of a frame in a first decoding operation, and decoding the other one of the fields, even or odd, of the frame being decoded during a second decoding operation;

starting the display of the other one of the fields, even or odd, derived from results of the first decoding operation before half of a period of the first decoding operation is completed; and,

starting the display of the first one of the fields, odd or even, derived from results of the second decoding operation before half of a period of the second decoding operation is completed.

5,828,413

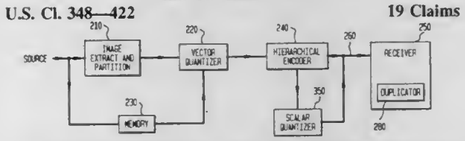
METHOD AND APPARATUS FOR IMAGE PROCESSING USING MODEL-BASED LOCALIZED QUANTIZATION

Nuggehally S. Jayant, Morris, N.J., and Moshe Porat, Haifa, Israel, assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Sep. 21, 1995, Ser. No. 531,807

Int. Cl.[6] H04N *7/30*

U.S. Cl. 348—422 **19 Claims**



1. A method of encoding a source signal for transmission at a compressed bit rate to a receiver, said source signal having a plurality of frames, said method comprising the steps of:

partitioning at least one of said plurality of frames into a plurality of blocks, each of said blocks including a portion of said source signal;

recording historical data representing said at least one of said plurality of frames;

generating a plurality of increasingly refined codebooks for each of said plurality of blocks based on historical data of previous frames stored in memory and said historical data representing said at least one of said plurality of frames, said codebooks having a first codebook and a second codebook, the second codebook being more refined than the first codebook;

encoding at least one of the blocks with the first codebook;

determining a first error criterion;

further encoding said at least one of the blocks with the second codebook when said first error criterion is less than a first preset threshold; and

scalar quantizing portions of said one of said blocks.

5,828,414

REDUCTION OF TIMING JITTER IN AUDIO-VIDEO TRANSPORT STREAMS

Michael G. Perkins, Louisville, Colo., and Thomas Lookabaugh, Sunnyvale, Calif., assignors to Divicom, Inc., Milpitas, Calif.

Filed Feb. 23, 1996, Ser. No. 606,197

Int. Cl.[6] H04N *7/12*

U.S. Cl. 348—423 **13 Claims**

1. A method of reducing program clock reference jitter in transport packets in a multiple program transport stream, the method comprising the steps of:

processing program clock references for transport packets of one or more single program transport streams within the multiple program stream to generate corresponding dejittered program clock references as a function of clock frequency mismatch between a program clock and an asynchronous clock;

generating a current cycle count for a current program clock reference indicative of the number of cycles of the asynchronous clock between the current program clock reference and a previous program clock reference;

generating a current clock frequency mismatch estimate indicative of mismatch between a program clock and the asynchronous clock, wherein the mismatch estimate is a function of a sequence of jitter estimates for previous program clock references, and further wherein a given jitter estimate is the difference between a program clock reference and its corresponding dejittered program clock reference;

generating a dejittered program clock reference for the current program clock reference as a sum of (i) a previous dejittered program clock reference, (ii) the current cycle count, and (iii) a product of the current cycle count and the current clock frequency mismatch estimate; and

restamping the transport packets of the single program stream or streams with the corresponding dejittered program clock references.

5,828,415

APPARATUS FOR CONTROLLING VIDEO DOWN-CONVERSION

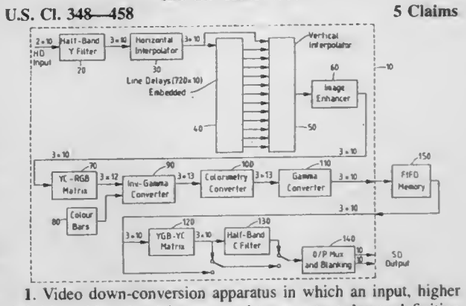
Stephen Mark Keating, Reading, and Andrew Campbell, Yateley, both of United Kingdom, assignors to Sony Corporation, Tokyo, Japan, and Sony United Kingdom Limited, Weybridge, England

Filed Oct. 28, 1996, Ser. No. 738,826

Claims priority, application United Kingdom, Nov. 9, 1995, 9522959

Int. Cl.[6] H04N *7/01*

U.S. Cl. 348—458 **5 Claims**



1. Video down-conversion apparatus in which an input, higher definition video signal is converted to an output, lower definition video signal having a smaller number of active lines and/or a smaller number of active pixels per line than the input video signal, said apparatus comprising:

a first interpolator for receiving the input video signal at an input pixel rate and for producing first interpolated output values at the input pixel rate, the first interpolated output values including active pixel values and dummy pixel values;

a second interpolator for receiving the first interpolated output values at the input pixel rate and for producing second interpolated output values at the input pixel rate, the second interpolated output values including active pixel values and dummy pixel values;

control logic for generating a first partial active enable signal associated with the first interpolated output values and a second partial active enable signal associated with the second interpolated output values, said control logic including means for combining the first and second partial active enable signals to generate an active enable signal, said active enable signal having a first state when an active output pixel value is generated and a second state when a dummy pixel value is generated;

a signal processing device connected to receive the second interpolated output values, said signal processing device comprising an input latch operable to latch an output data value from said second interpolator only when said active enable signal is in said first state; and

a buffer memory for buffering data output by said signal processing device, for output at a pixel rate associated with said output, lower definition video signal.

5,828,416

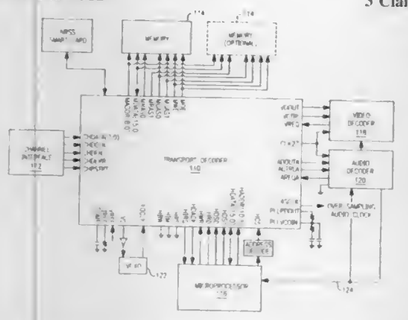
SYSTEM AND METHOD FOR INTERFACING A TRANSPORT DECODER TO A ELEMENTARY STREAM VIDEO DECORDER

Robert T. Ryan, Langhorne, Pa., assignor to Matsushita Electric Corporation of America, Secaucus, N.J.

Filed Mar. 29, 1996, Ser. No. 623,878

Int. Cl.[6] H04N *9/475*

U.S. Cl. 348—512 **3 Claims**



1. In a transport decoder system designed for decoding a transport datastream which includes transport packets carrying program elementary stream (PES) packets having headers and payloads, said transport decoder coupled to an external video decoder for decoding an elementary datastream, said external video decoder requiring delivery of PES packet payloads without headers, timestamp information and byte count information, a method for handling the interface between the transport decoder and the external video decoder comprising the steps of:

stripping received PES packets of their headers;

removing and holding timestamp information from the stripped headers;

maintaining elementary stream byte count information;

notifying a controller that timestamp information has arrived;

retrieving, by the controller, the timestamp and byte count information and delivering this information to the external decoder.

5,828,417

TELEVISION RECEIVER WITH ON SCREEN DISPLAY FOR RESERVING PROGRAMS TO BE RECORDED OR VIEWED

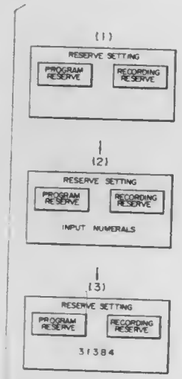
Tsuguo Itagaki, Yokohama; Hideo Tomita, Ebina, and Sigeya Tanaka, Gifu, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 550,823, Oct. 31, 1995, abandoned, which is a division of Ser. No. 267,478, Jun. 28, 1994, Pat. No. 5,576,773. This application Oct. 9, 1997, Ser. No. 948,146

Claims priority, application Japan, Jul. 7, 1993, 5-167719; Oct. 20, 1993, 5-262093

Int. Cl.[6] H04N *5/44*

U.S. Cl. 348—553 **7 Claims**



1. A television receiver comprising:

means for reserving a desired program through a program reservation, the program reservation including the desired program and a desired time, the desired program being viewed and listened to at the desired time;

a picture recording reserve means facility for performing an external picture recording apparatus, the recording apparatus recording the desired program at the desired time based on a picture recording reservation, the picture recording reservation including said desired program and said desired time; and

reserve setting picture displaying means for displaying a reserve setting picture on a display unit, said reserve setting picture including an information inputting part for inputting information concerning the desired program, and an election instructing part for electing one of the program reservation and the picture recording reservation with respect to the desired program;

wherein in the election instruction part of the reserve setting picture, in the case when the program reservation is elected, the program reserving means performs the program reservation of the corresponding program on the basis of the information inputted to the information inputting part of said reserve setting picture, and on the other hand, in the case when the picture recording reservation is elected, the picture recording reservation means performs the picture recording reservation of the corresponding program on the basis of the information inputted to the information inputting part of said reserve setting picture.

5,828,418

VIDEO DISPLAY CONTROLLING DEVICE FOR MAKING IMAGE DATA TRANSFORMATIONS PRIOR TO DISPLAY, INCLUDING EXPANSION COMPRESSION, AND MOVING OF ONE OR MORE ASPECTS OF THE IMAGE

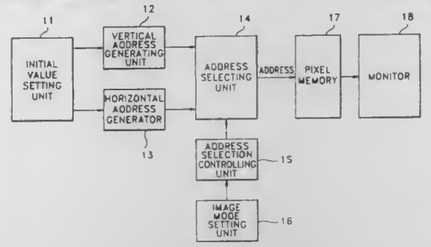
Yong-hyun Lee, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Sep. 27, 1996, Ser. No. 719,703

Claims priority, application Rep. of Korea, Sep. 27, 1995, 1995-32198; Sep. 27, 1995, 1995-32199; Sep. 27, 1995, 1995-32200; Oct. 17, 1995, 1995-35858

Int. Cl.[6] H04N *5/46*

U.S. Cl. 348—556 **17 Claims**



1. A video display controlling device comprising:

display means for displaying an image constituted by an N×M matrix of pixel data on a screen;

storing means for storing an (N+a)×(M+b) matrix of pixel data associated with an image, where addresses for reading the pixel data are composed of vertical addresses from 0 to (N+a−1) and horizontal addresses from 0 to (M+b−1), and the reference letters a and b are positive integers;

reference pixel setting means for setting vertical and horizontal addresses of a reference pixel among pixel data stored in said storing means;

image mode setting means for setting an image mode for transforming an original image according to a predetermined pattern and displaying the transformed image on the screen of said displaying means; and

address generating means for generating addresses for selecting a predetermined set of pixel data among the (N+a)×(M+b) pixel data in said storing means, in accordance with the reference pixel and the image mode;

wherein the pixel data selected from said storing means at the vertical and horizontal addresses generated by said address generating means is displayed on the screen of said displaying means.

5,828,419

METHOD AND APPARATUS FOR GENERATING TELEVISION PROGRAM GUIDES UTILIZING ICONS

Jeff Bruette, Germantown; Matthew Mohebbi, North Potomac, both of Md., and Henry Forson, Annandale, Va., assignors to Hughes Electronics, Los Angeles, Calif.

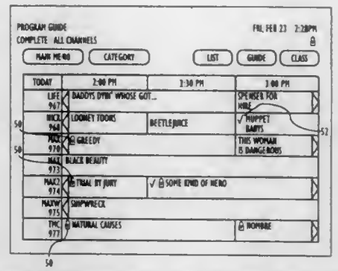
Filed Feb. 29, 1996, Ser. No. 608,912

Int. Cl.[6] H04N *5/445*

U.S. Cl. 348—563 **14 Claims**

1. A method of generating an on-screen program guide, said method comprising the steps of:

providing a viewer interface whereby a viewer enters a selection criteria for selecting one or more program events based on content information associated with the program events;



generating a program guide, said program guide comprising program source information and program event information for a plurality of program sources;

comparing the selection criteria to the content information of the program events in the program guide;

generating icons to be displayed adjacent said program event information for program events with content information matching the selection criteria; and

simultaneously displaying the program source information, program event information and associated icons for the plurality of program sources.

5,828,420

VIDEO MIX PROGRAM GUIDE

Connie T. Marshall, Muskogee; Thomas R. Lemmons, Coweta, and Donald W. Allison, Tulsa, all of Okla., assignors to Prevue Networks, Inc., Tulsa, Okla.

Continuation of Ser. No. 234,060, Apr. 28, 1994, Pat. No. 5,502,504. This application Feb. 9, 1996, Ser. No. 599,143

Int. Cl.[6] H04N *7/00;9/74*

U.S. Cl. 348—564 **14 Claims**



1. A system interactively controlled by a remote control for displaying a program guide on a display screen, comprising:

a tuner for receiving television signals corresponding to a plurality of television channels and providing an output television signal corresponding to a selected television channel of the plurality of television channels;

computer circuitry for receiving control signals from the remote control and for receiving program guide data for the program guide, the computer circuitry generating a program guide output signal corresponding to at least a portion of the program guide data; and

superimposing circuitry for displaying the program guide with a perceived transparency on the selected television channel on the display screen by combining the program guide output signal and the output television signal.

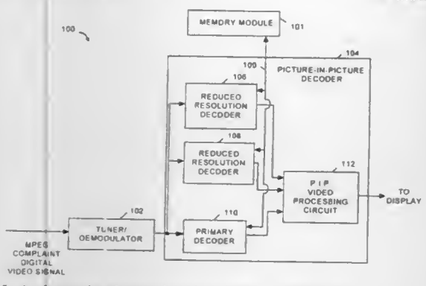
5,828,421
IMPLEMENTATION EFFICIENT DIGITAL PICTURE-IN-PICTURE DECODING METHODS AND APPARATUS

Jill MacDonald Boyce, Manalapan, N.J.; Larry Pearlstein, Newton, Pa., and Frank Anton Lane, Medford Lakes, N.J., assignors to Hitachi America, Ltd., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 320,481, Oct. 11, 1994, Ser. No. 339,436, Nov. 14, 1994, and Ser. No. 424,686, Apr. 18, 1995. This application Jun. 6, 1995, Ser. No. 468,147

Int. Cl.[6] H04N 5/445

U.S. Cl. 348—565 9 Claims



1. A picture-in-picture decoder circuit, comprising:

memory for storing main picture data and inset picture data representing first and second images, respectively; and

time shared decoding circuit means, coupled to the memory, for decoding the main and inset picture data stored in the memory device in a period of time equal to or less than the time used to display a picture, the time shared decoding circuit means including at least some common circuitry that is used on a time shared basis to decode the main and inset picture data.

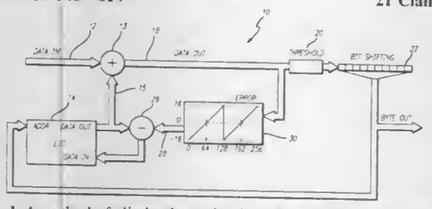
5,828,422
GHOST CANCELER

Jean Etienne Gaudreau, Montreal, Canada, assignor to WavePhore, Inc., Phoenix, Ariz.

Filed Apr. 12, 1996, Ser. No. 631,346

Int. Cl.[6] H04N 5/21

U.S. Cl. 348—614 21 Claims



1. A method of eliminating noise from an input stream of digital samples of a signal received from a communications medium, each of the samples nominally having one of two values to produce an output data stream, the method comprising:

selecting a correction value from a plurality of correction values based upon the output data stream;

adding the correction value to each sample sequentially to provide a corrected data sample;

determining if the corrected sample is closer to a first or a second nominal value;

determining a difference between the corrected sample and the closer of the nominal values;

multiplying the difference by a damping factor to be the correction value; and

updating the correction value based upon the multiplication.

5,828,423
MOTION VECTOR DETECTION CIRCUIT PROVIDED WITH THE PICTURE DATA MEMORY

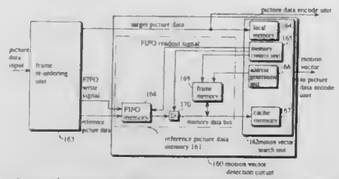
Makoto Serizawa; Atsushi Ubukata, and Akihiko Otani, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Division of Ser. No. 639,963, Apr. 29, 1996. This application May 6, 1997, Ser. No. 852,184

Claims priority, application Japan, May 2, 1995, 7-108867

Int. Cl.[6] H04N 5/14

U.S. Cl. 348—699 4 Claims



1. A motion vector detection circuit for, (i) when two pictures each consisting of a plurality of equal-size blocks are referred to as a target picture and a reference picture, (ii) when one of the plurality of equal-size blocks of the target picture is referred to as a search unit, and (iii) when blocks which are located in predetermined positions in the plurality of equal-size blocks of the reference picture are referred to as a search area, detecting a motion vector between the search unit and the search area, said motion vector detection circuit comprising:

a buffer for temporarily storing a predetermined amount of inputted picture data of the reference picture;

a reference picture data memory for storing picture data corresponding to at least one reference picture;

a search area determination means for determining the search area of every search unit in a target picture, a determining operation proceeding from one block to an adjacent block in the target picture;

a search area memory for storing picture data of the search area determined by said search area determination means;

a first reference picture data write means for reading picture data of a block which belongs to the determined search area and which does not belong to a search area of a preceding search unit from said buffer and writing the read picture data to said reference picture data memory and said search area memory;

a second reference picture data write means for reading picture data of a block which belongs to the determined search area and which has already been read from said buffer as part of a search area from said reference picture data memory and writing the read picture data to said search area memory; and

a motion vector detection means for searching a search area stored in said search area memory for a block which has a smallest difference with a search unit and detecting a motion vector between the search unit and the searched block.

5,828,424
PROCESS AND APPARATUS FOR GENERATING AT LEAST THREE LASER BEAMS OF DIFFERENT WAVELENGTH FOR THE DISPLAY OF COLOR VIDEO PICTURES

Richard Wallenstein, Gruenstadt, Germany, assignor to LDT GmbH & Co. Laser-Display-Technologie KG, Gera, Germany

PCT No. PCT/EP95/03501, § 371 Date Jul. 5, 1996, § 102(e) Date Jul. 5, 1996, PCT Pub. No. WO96/08116, PCT Pub. Date Mar. 14, 1996

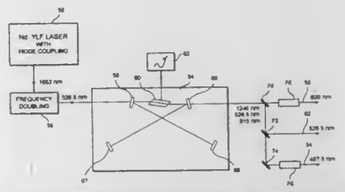
PCT Filed Sep. 6, 1995, Ser. No. 640,845

Claims priority, application Germany, Sep. 8, 1994, 44 32 029.9

Int. Cl.[6] H04N 9/31

U.S. Cl. 348—760 17 Claims

1. In a process for generating at least three laser beams of different wavelengths for displaying color video pictures in which every laser beam is controlled in intensity for generating a monochromatic partial image, and these monochromatic partial images



are mixed additively for displaying the color video pictures, wherein at least one of the three laser beams is obtained in that a medium is excited by at least a partial beam of an exciting primary laser with a defined wavelength, which the medium, upon excitation, emits an excited laser beam with a different wavelength than the wavelength of the exciting primary laser, and wherein the exciting primary laser beam and the excited laser beam are used directly or after frequency conversion for the display of monochromatic partial images, the improvement comprising the steps of:

using a pulsed laser as the exciting primary laser;

using the material with nonlinear optical characteristics as a medium, wherein the material, in addition to the excited laser beam generated by excitation, releases an additional laser beam whose frequency is given by the sum or difference frequencies of the exciting primary laser beam and the excited laser beam; and

using the laser beams emitted by the medium and the exciting primary laser beam directly as laser beams for the display of monochromatic partial images for the display of monochromatic partial images.

5,828,425
APPARATUS FOR DECODING VIDEO DATA

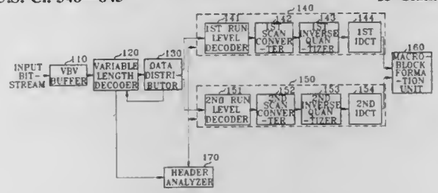
Seong-bong Kim, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Nov. 25, 1996, Ser. No. 755,910

Claims priority, application Rep. of Korea, Nov. 24, 1995, 1995-43583

Int. Cl.[6] H04N 7/24;7/30

U.S. Cl. 348—845 15 Claims



1. A decoding apparatus for decoding a video bitstream, said decoding apparatus comprising:

variable length decoding means for variable length decoding the video bitstream and outputting header data and symbols;

a data distributor for receiving the output of said variable length decoding means and alternately outputting blocks of said symbols via two output terminals;

first and second restoring means individually connected to one of said two output terminals of said data distributor for restoring the input symbols in response to an encoding indication signal;

a header analyzer for receiving said header data from said variable length decoding means and analyzing said header data and outputting said encoding indication signal in response thereto; and

macroblock formation means for reconstructing blocks of said input symbols restored by said first and second restoring means into a macroblock.

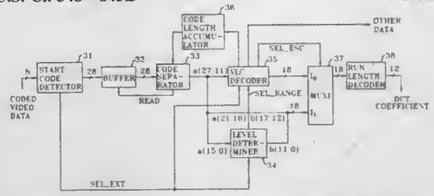
5,828,426
APPARATUS FOR DECODING VARIABLE LENGTH CODED DATA OF BOTH MPEG-1 AND MPEG-2 STANDARDS

Pil-ho Yu, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Aug. 20, 1996, Ser. No. 699,938

Int. Cl.[6] H04N 7/01

U.S. Cl. 348—845.3 4 Claims



1. An apparatus for decoding a variable length coded (VLC) and fixed length coded (FLC) data for use in MPEG-1 and MPEG-2 standards, said decoding apparatus comprising:

means for generating a code standard signal indicating whether input data is MPEG-1 code standard or MPEG-2 code standard; and

means for determining a [run, level] code relating to a predetermined number of bits of the input data supplied from said means for generating a code standard signal according to said code standard signal, wherein said means for determining a [run, level] code outputs data from a fifth least significant bit (LSB) of the predetermined number of bits to a sixteenth least significant bit thereof as an escape code level, when the code standard signal indicates the MPEG-2 code standard, and

determines the escape code level according to whether an absolute value of data within a specific bit interval contained in the predetermined number of bit data is larger than or equal to, or less than, 128, when the code standard signal indicates the MPEG-1 code standard; and

wherein the MPEG-1 standard is ISO/IEC 11172 2 issued in 1993 and the MPEG-2 standard is ISO/IEC 13818 2 Draft International Standard issued Mar. 25, 1994.

5,828,427
COMPUTER-BASED IMAGE DISPLAY SYSTEMS HAVING DIRECT AND PROJECTION MODES OF VIEWING

Sadeg M. Faris, Pleasantville, N.Y., assignor to Reveo, Inc., Hawthorne, N.Y.

Continuation-in-part of Ser. No. 126,077, Sep. 23, 1993, Pat. No. 5,537,144, which is a continuation of Ser. No. 536,190, Jun. 11, 1990, abandoned. This application Apr. 21, 1994, Ser. No. 230,779

Int. Cl.[6] G02F 1/1335;1/1347; G02B 21/56;21/132

U.S. Cl. 349—5 41 Claims

1. An image display device having direct and projection viewing modes of operation, said image display device comprising:

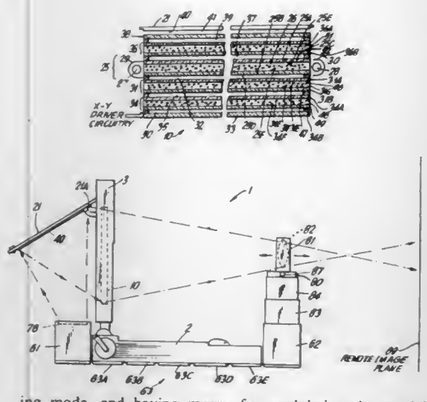
light producing means for producing light during said direct viewing mode;

a light guiding structure formed from optically transparent material, said light guiding structure having first and second light guiding surfaces, and a first light conducting edge through which light produced from said light producing means can be transmitted into said light guiding structure and undergo total internal reflection between said first and second light guiding surfaces;

a light diffusing structure operably associated with said light guiding structure, said light diffusing structure having a light scattering state of operation selectable during said direct viewing mode, and a light non-scattering state of operation selectable during said projection viewing mode;

a spatial light mask, disposed adjacent said light diffusing structure, being optically transparent during said projection view-

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ing mode, and having means for modulating the spatially intensity of light transmitted through said light diffusing structure; and

state selection means for selecting said light scattering state of operation for said light diffusing structure during said direct viewing mode, and for selecting said light non-scattering state of operation for said light diffusing structure during said projection viewing mode,

wherein during said direct viewing mode, said light diffusing structure scatters light reflected within said light guiding structure and a portion of said scattered light is transmitted through said second light guiding surface of said light guiding structure and said light diffusing structure, and through said spatial light mask, and

wherein during said projection viewing mode, said light diffusing structure permits light produced from an external source to be transmitted through the first and second light guiding surfaces of said light guiding structure and said light diffusing structure without substantial scattering, and through said spatial light mask, for spatial intensity modulation of said transmitted light.

5,828,428

RESISTIVE CIRCUIT FOR A THIN FILM TRANSISTOR LIQUID CRYSTAL DISPLAY AND A METHOD FOR MANUFACTURING THE SAME

Dong-Gyu Kim, and Woon-Yong Park, both of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Jan. 29, 1996, Ser. No. 593,242

Claims priority, application Rep. of Korea, Jan. 27, 1995, 1995-1529

Int. Cl.[6] G02F *1/1333*

U.S. Cl. 349—40 **8 Claims**



7. A method for fabricating a resistive circuit of a thin film transistor liquid crystal display, comprising the steps of:

forming a resistive layer on a substrate;

forming a first metal layer on said resistive layer to create a shorting bar and a first pad;

depositing a passivation layer on said first metal layer;

patterning said passivation layer to form an aperture which exposes a portion of said first metal layer over said resistive layer;

forming a second pad on said passivation layer and connecting with said first pad; and

etching said portion of said first metal layer exposed through said aperture using said passivation layer as a mask.

5,828,429

ELECTRO-OPTICAL DEVICE AND METHOD OF DRIVING WITH VOLTAGE SUPPLY LINES PARALLEL TO GATE LINES AND TWO TRANSISTORS PER PIXEL

Yasuhiko Takemura, Kanagawa, Japan, assignor to Semiconductor Energy Laboratory Co., Ltd, Kanagawa-ken, Japan

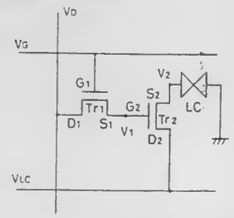
Continuation of Ser. No. 959,918, Oct. 14, 1992, abandoned.

This application Apr. 10, 1995, Ser. No. 419,956

Claims priority, application Japan, Oct. 16, 1991, 3-296331

Int. Cl.[6] G06F *1/133;1/136;1/1314*

U.S. Cl. 349—42 **16 Claims**



12. An electro-optical device of an active matrix type comprising:

a pixel electrode;

a first line;

a second line;

a voltage supplying line;

a first transistor connected with said first line and said second line at a gate thereof and one of source and drain thereof, respectively; and

a second transistor connected with the other of said source and drain at a gate of said second transistor, connected with said pixel electrode at one of source and drain of said second transistor for supplying a static voltage to said pixel electrode for a desired period of time, and connected with said voltage supplying line at the other of the source and drain of said second transistor,

wherein signals on said second line being selectively set at a positive voltage and a negative voltage in accordance with information to be displayed.

5,828,430

ACTIVE MATRIX TYPE LIQUID CRYSTAL DISPLAY APPARATUS HAVING OPTICAL SHIELD LAYER CAPABLE OF SUPPRESSING DISPLAY DISTORTION

Shinichi Nishida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1997, Ser. No. 834,301

Claims priority, application Japan, Apr. 15, 1996, 8-092080

Int. Cl.[6] G02F *1/136*

U.S. Cl. 349—44 **15 Claims**

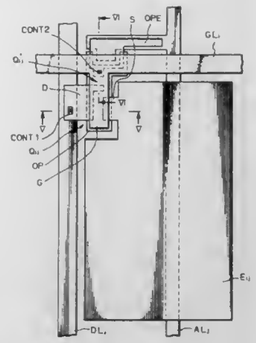
1. An active matrix type liquid crystal display apparatus comprising:

a plurality of scan bus lines;

a plurality of signal bus lines;

a plurality of pixel electrodes;

a plurality of first thin film transistors, each having a gate connected to one of said scan bus lines, a drain connected to one of said signal bus lines and a source connected to one of said pixel electrodes;



a plurality of optical shield layers each for preventing light from penetrating one of said first thin film transistors; and

a plurality of second thin film transistors, each having a gate connected to one of said scan bus lines, a drain connected to one of said signal bus lines and a source connected to one of said optical shield layers.

5,828,431

REFLECTIVE-TYPE DISPLAY DEVICE HAVING A REFRACTIVE INDEX RATIO BETWEEN LIGHT SCATTERERS AND HOST BETWEEN 1 AND 1.8

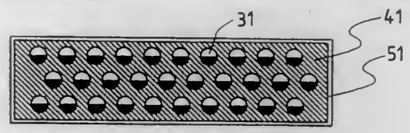
Masahiko Ando, Hitachi; Tohru Sasaki, Mobara; Masaaki Kitajima, Hitachioota; Osamu Itoh, Hitachi; Yoshihito Maeda, Osaka; Yoshiharu Nagae, and Tatsuya Sugita, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 27, 1995, Ser. No. 507,908

Claims priority, application Japan, Jul. 27, 1994, 6-175109; Jan. 30, 1995, 7-012318

Int. Cl.[6] G02F *1/1333;* G02B *26/00*

U.S. Cl. 349—86 **22 Claims**



1. A reflective-type display device comprising:

a light modulating layer including a host within which light scatterers are dispersed, said light modulating layer being held between two transparent electrodes;

a light absorbing layer disposed on one side of said light modulating layer in which at least one of the size of said scatterers and the nearest distance between adjacent light scatterers is substantially equivalent to the wavelength of incident light; and

a refractive index ratio relative to incident light between said light scatterers and said host varies from 1 to 1.8 in response to a change in the magnitude of a voltage applied across said electrodes.

5,828,432

CONDUCTING SUBSTRATE, LIQUID CRYSTAL DEVICE MADE THEREFROM AND LIQUID CRYSTALLINE COMPOSITION IN CONTACT THEREWITH

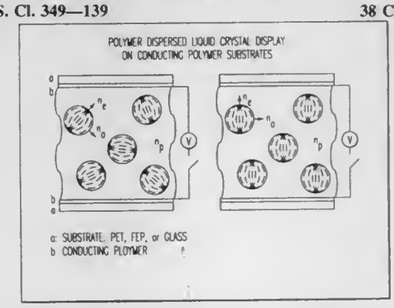
Ranganathan Shashidhar, Springfield; Jeffrey M. Calvert; Renate J. Crawford, both of Alexandria; Kenneth J. Wynne, Falls Church; Terrence G. Vargo, Fairfax Station, all of Va.; Alan G. MacDiarmid, and Jamshid K. Avlyanov, both of Drexel Hill, Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.; GEO-Centers, Inc., Newton Centre, Mass., and The Trustees of the University of Pennsylvania, Philadelphia, Pa.

Continuation of Ser. No. 401,912, Mar. 9, 1995, abandoned.

This application Jun. 25, 1997, Ser. No. 882,297

Int. Cl.[6] G02F *1/1343*

U.S. Cl. 349—139 **38 Claims**



1. A display device, comprising a substrate, a conducting polymer on a surface of said substrate, and a lead electrically connected to said conducting polymer, wherein said conducting polymer has a conductivity of 100 to 5×10^3 S/cm.

5,828,433

LIQUID CRYSTAL DISPLAY DEVICE AND A METHOD OF MANUFACTURING THE SAME

Woo Sup Shin, Kumi-si, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

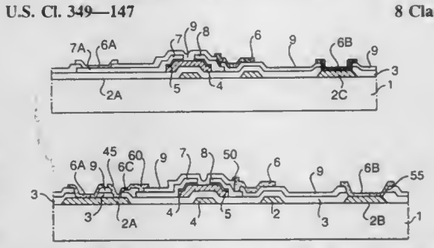
Continuation of Ser. No. 616,291, Mar. 15, 1996, abandoned.

This application Oct. 7, 1997, Ser. No. 944,967

Claims priority, application Rep. of Korea, Aug. 19, 1995, 1995/25538

Int. Cl.[6] G02F *1/1343;1/1345*

U.S. Cl. 349—147 **8 Claims**



1. A pad for providing an electrical connection to a switching device, said pad comprising:

a substrate;

an insulating layer over said substrate;

a semiconductor active layer over said insulating layer;

a data electrode having a first portion on and contiguous to said insulating layer and a second portion over said semiconductor active layer;

a passivation layer on said second portion of said data electrode; and

an indium tin oxide layer on said first portion of said data electrode for connecting the pad to wiring external to the switching device.

5,828,434

LIQUID CRYSTAL DISPLAY ELEMENT WITH WALL SHAPED SPACERS FORM BETWEEN ADJACENT TRANSPARENT ELECTRODES AND OVERLAP PORTIONS OF THE LIGHT-SHIELDING ELECTRODE FILMS

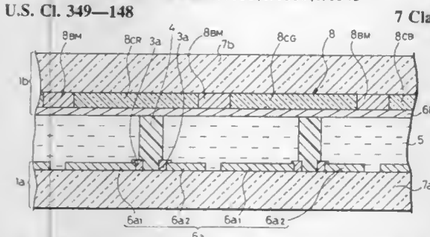
Mitsuhiro Koden, and Kazuhiko Tamai, both of Kashiwa, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan, and The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Hants, United Kingdom

Filed Nov. 1, 1996, Ser. No. 742,922

Claims priority, application Japan, Nov. 6, 1995, 7-287677

Int. Cl.[6] G02F *1/1333;1/1339;1/1343*

U.S. Cl. 349—148 **7 Claims**



1. A liquid crystal display element, which has a pair of substrates, each having a plurality of transparent electrodes that are placed in parallel with each other, and liquid crystal that is sandwiched by the pair of the substrates, comprising:

a pair of light-shielding electrode films that have a conductive property and a light-shielding property and that is placed between the adjacent transparent electrodes on at least one of the pair of the substrates along the long sides of each transparent electrode with overlapping portions with the long sides;

a wall-shaped spacer with a uniform height that has an insulating property and a light-shielding property and that is formed so as to partially overlap each of the pair of the light-shielding electrode films; and

a light-shielding member that is placed on at least one of the pair of the substrates so as to shield from light at least portions at which none of the transparent electrodes, light-shielding electrode films and spacers are formed.

5,828,435

METHOD FOR FABRICATING A LIQUID CRYSTAL CELL COMPRISES FORMING A SEAL MEMBER AFTER ALIGNING THE SUBSTRATES

Yoshinori Kato, Kyungki-do, and Kun-Jong Lee, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Sep. 20, 1996, Ser. No. 717,187

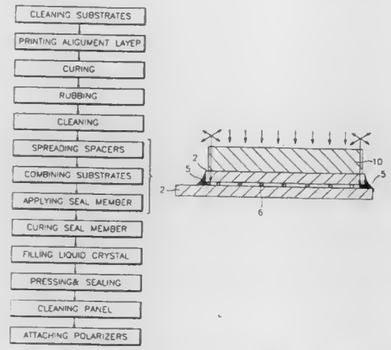
Claims priority, application Rep. of Korea, Sep. 21, 1995, 95-31217

Int. Cl.[6] G02F *1/1339;1/13*

U.S. Cl. 349—190 **19 Claims**

1. A method for fabricating a liquid crystal cell comprising the steps of:

a first step for spreading a plurality of spacers on an inner surface of a first transparent substrate provided with a plurality of electrodes; and



a second step for forming a seal member along the boundary edge of a second transparent substrate provided with a plurality of electrodes after aligning said first substrate and said second substrate such that an inner surface of said second substrate face the inner surface of said first substrate.

5,828,436

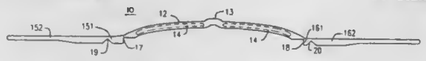
EYEGLASS FRAME FORMED FROM A NON-CYLINDRICAL MATERIAL HAVING RESILIENT, DEFORMABLE BELLOWS

William M. Lester, 616 S. Orange Ave. Apt. SH2, Maplewood, N.J. 07040

Filed Sep. 19, 1996, Ser. No. 710,547

Int. Cl.[6] G02C *1/00;5/14;5/16*

U.S. Cl. 351—41 **18 Claims**



1. An eyeglass frame, comprising:

a single molding of a flexible, resilient material having a first end, a second end, and a housing for lenses positioned therebetween, a portion of said molding extending from said first end to said housing and comprising a first temple, a portion of said molding extending from said housing to said second end and comprising a second temple, said first temple being comprised of a first element and a second element, said first element of said first temple extending from said first end to a first deformation positioned along said first temple and said second element extending from said first deformation to a second deformation positioned along said first temple, said first temple being coupled to said housing at said second deformation, said first deformation on said first temple being configured as an angled, non-extendible notch in said first temple, said second temple being comprised of a first element and a second element, said first element of said second temple extending from said second end to a first deformation positioned along said second temple and said second element extending from said first deformation to a second deformation positioned along said second temple, said second temple being coupled to said housing at said second deformation, said first deformation on said second temple being configured as an angled, non-extendible notch in said second temple, each one of said deformations being flexible and resilient, wherein said first and said second temples can be moved in relation to said housing by bending said temples at said deformations.

5,828,437

EYE PROTECTION DEVICE

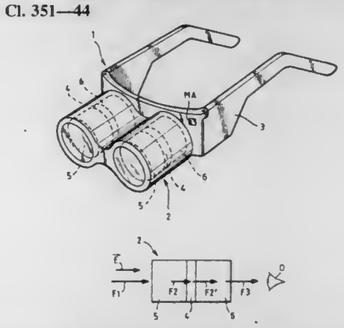
Christophe Hubert-Habart, Meudon, and Michel Jean Lavergne, Marselle, both of France, assignors to Aerospatiale Societe Nationale Industrielle, Paris, and Eurocopter France, Marignane Cedex, both of France

Filed Dec. 18, 1996, Ser. No. 769,006

Claims priority, application France, Dec. 18, 1995, 95 14961

Int. Cl.[6] G02C *7/10;* **G02B** *27/02*

U.S. Cl. 351—44 **17 Claims**



1. Device adapted to be placed by means of a support in front of the eyes of a user to protect the eyes against luminous aggression, in particular by a laser beam, including:

a light attenuation system adapted to attenuate the intensity of the received beam by a particular attenuation value; and

a light amplification system disposed between said light attenuation system and said eyes of said user and adapted to amplify the intensity of the light received from said light attenuation system by a particular amplification value, wherein the intensity of the light transmitted towards said eyes does not exceed a prescribed maximal intensity that is not harmful for said eyes, said attenuation and amplification values being substantially equal.

5,828,438

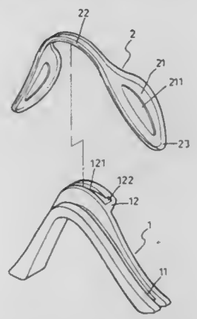
BRIDGE PAD AND MOUNTING STRUCTURE FOR ATTACHMENT TO SPECTACLES

Lin Kuo-Tseng, Taipei, Taiwan, assignor to Gazelle Corporation, Taipei, Taiwan

Filed Apr. 1, 1997, Ser. No. 831,436

Int. Cl.[6] G02C *5/12*

U.S. Cl. 351—137 **2 Claims**



1. An adjustable bridge structure for spectacles, comprising:

a bridge bracket having an inverted V-shaped contour and a groove formed on an outer surface thereof for receiving a bridge portion of a pair of spectacles therein, said bridge bracket having a clamp splice formed at an apex portion thereof and extending from an inner side of said bridge bracket, said clamp splice having a narrow clamping slot formed in an upper surface thereof and a wide containing slot formed transversely with respect to said to said clamping slot and in open communication therewith; and,

a bridge pad coupled to said bridge bracket, said bridge pad being formed by a metal chip-die having a predetermined contour and an elastomer cladding on said metal chip-die, said bridge pad having a narrow central portion disposed between a pair of curved retainer portions formed on opposing ends thereof defined by said predetermined contour of said metal chip-die, each of said pair of curved retainer portions having an opening formed therethrough, said narrow central portion of said of said bridge pad being disposed in said containing slot and said pair of curved retainer portions being adjusted to fit a user by bending said metal chip-die.

5,828,439

OPHTHALMOLOGIC DEVICE FOR MEASURING EYE REFRACTIVE POWER

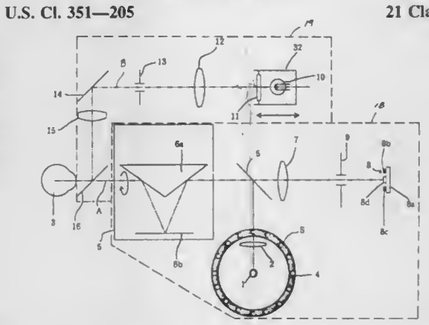
Yasunori Ueno, Kawasaki, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Oct. 29, 1996, Ser. No. 739,314

Claims priority, application Japan, Nov. 15, 1995, 7-321022

Int. Cl.[6] A61B *3/10*

U.S. Cl. 351—205 **21 Claims**



1. An apparatus for measuring the refractive power of a subject eye, the apparatus comprising:

(a) a refractive-power measurement subsystem comprising a first light source operable to project a light flux along a first optical axis onto the retina of a subject eye having a first intraocular pressure condition; and a light sensor situated relative to the eye and the first light source to receive the light flux that reflects from the retina, the light sensor being operable to generate, from the received light flux, a refractive-power measurement signal for the subject eye at the first intraocular pressure condition; and

(b) a processor connected to the light sensor so as to receive from the light sensor the refractive-power measurement signal corresponding to the first intraocular pressure condition, the processor being operable to calculate, from the refractive-power measurement signal and previously entered data concerning a second intraocular pressure condition for the subject eye, and display a corrected refractive-power value for the subject eye under the second intraocular pressure condition.

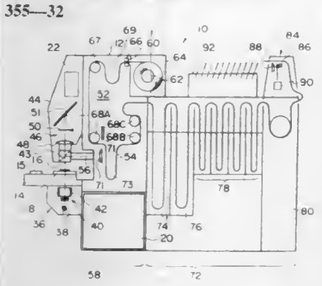
5,828,440

Patent Not Issued For This Number

5,828,441
SHADING CORRECTION METHOD, PHOTOGRAPHIC PRINTER AND INDEX PRINT PRODUCTION APPARATUS

Toshihiko Narita; Hiroaki Nakamura; Kazuhiko Katakura, and Yoshihito Nakaya, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 703,356, Aug. 26, 1996, Pat. No. 5,703,671. This application Sep. 3, 1997, Ser. No. 922,607
Claims priority, application Japan, Aug. 28, 1995, 7-218710; Sep. 7, 1995, 7-230186; Jul. 12, 1996, 8-183524
Int. Cl.[6] G03B *27/32;27/52*
U.S. Cl. 355—32 8 Claims



1. A photographic printer, comprising:

a printer unit comprising a main exposure optical system and a subprint unit;

said main exposure optical system comprising a main exposure light source emitting exposure light through a color correction filter and a diffusion cylinder, and onto negative film to provide exposed light, said exposed light being exposed onto a first portion of said printing paper;

said subprint unit comprising:

colored light sources providing colored lights to dichroic mirrors, each of said colored light sources providing a respective one of said colored lights

said dichroic mirrors synthesizing said colored lights to provide synthesized source light,

an LCD panel, having pixels receiving said synthesized source light, and providing transmitted light to a transmitted light amount sensor detecting differences in light transmittance among said pixels, and to an exposure lens,

a memory storing correction data, and

a subcontroller controlling said colored light sources, said LCD panel, and said transmitted light amount sensor, said main exposure optical system providing said exposed light to said subcontroller as a frame of image data;

said subcontroller driving said pixels of said LCD panel to successively display colored images, each of said colored images relating to a corresponding one of said colored lights and being based on said frame and said correction data;

for each of said colored images, said subcontroller controlling said colored light sources to successively provide said corresponding one of said colored lights; and

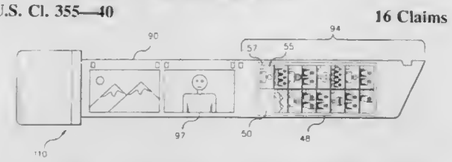
said exposure lens exposing said transmitted light onto a second portion of said printing paper;

wherein said subcontroller controls said colored light sources according to at least one of a light emission time and a current value, and said correction data compensates for said differences in light transmittance for each of said colored images.

5,828,442
INDEX PRINT ATTACHABLE TO AN IMAGE RECORDING MEDIUM

Raymond Eugene Wess, Holley, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 27, 1996, Ser. No. 606,779
Int. Cl.[6] G03B *27/52*
U.S. Cl. 355—40 16 Claims



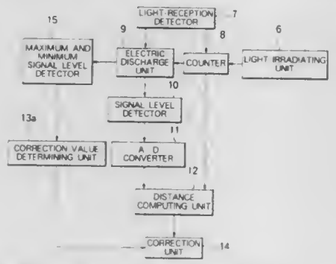
1. An image recording medium on which are recorded a plurality of images, and an index print including a support sheet on which are recorded a plurality of positive images corresponding to the plurality of images recorded on the image recording medium, is characterized in that:

the support sheet is physically attached directly to the image recording medium, thereby inhibiting separation of the index print from its associated image recording medium.

5,828,443
DISTANCE MEASURING APPARATUS

Hiroshi Fujioka, and Shoichi Tanaka, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 27, 1996, Ser. No. 607,512
Claims priority, application Japan, Jul. 31, 1995, 7-195219
Int. Cl.[6] G01C *3/08;* G01S *13/08*
U.S. Cl. 356—5.08 6 Claims



1. A distance measuring apparatus comprising:

a transmitter for transmitting an electromagnetic wave in a direction of an object;

a receiver for receiving an electromagnetic wave reflected by the object;

a counter, having a preset frequency, for measuring a propagation delay time by counting a number of pulses between the transmission of the electromagnetic wave and the reception of the reflected wave;

an electric discharger for generating an electric discharge when the receiver receives the reflected electromagnetic wave;

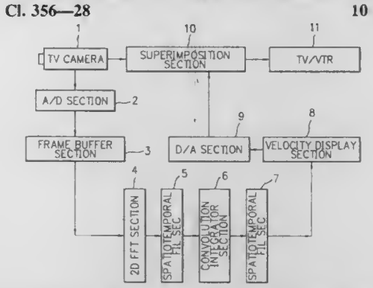
a discharge voltage detector for measuring a voltage of the electric discharge at a first count-up time after reception of the reflected wave; and

a distance calculator for calculating a distance to the object based on the number of counted pulses and the discharge voltage measured by the discharge voltage detector.

5,828,444
VELOCITY MEASUREMENT METHOD AND VELOCITY MEASUREMENT SYSTEM USING OPTICAL FLOW, AND OPTICAL FLOW DETECTION METHOD

Masahide Nomura, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Mar. 15, 1996, Ser. No. 616,583
Claims priority, application Japan, Mar. 15, 1995, 7-055663
Int. Cl.[6] G01P *3/36;* G01N *21/00;* H04N *7/18*
U.S. Cl. 356—28 10 Claims



1. A method for measuring a velocity of a target object, the method comprising the steps of:

measuring spatiotemporal energy of luminance of a motion picture signal representing a target object, as it is obtained from a camera;

determining a local optical flow distribution from a distribution of local spatiotemporal energy obtained by the measurement of the spatiotemporal energy;

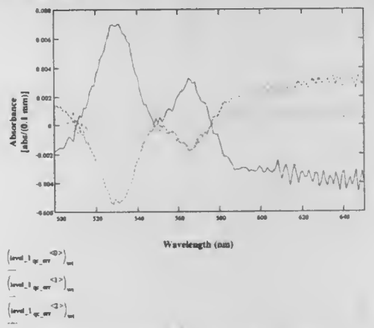
determining an optical flow of the target object based on said local optical flow distribution; and

determining the velocity of the target object from the optical flow of the target object.

5,828,445
METHOD FOR MEASURING AND REPORTING CO-OXIMETER QUALITY CONTROL RESULTS

Ronald S. Scharlack, Brookline, Mass., assignor to Chiron Diagnostics Corporation, East Walpole, Mass.

Filed Mar. 30, 1995, Ser. No. 413,563
Int. Cl.[6] G01J *3/42;* G01N *33/49*
U.S. Cl. 356—40 17 Claims



16. A method of performing absorbance spectrophotometer analysis comprising:

a. measuring the absorbance spectrum of a quality control product;

b. fitting the measured spectrum with a standard spectrum of a quality control product having the similar concentration of one or more absorbing components to obtain a best fit spectrum and an apparent concentration of the quality control product;

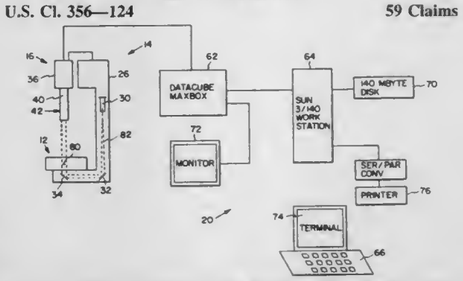
c. evaluating the quality of the fit; and

d. measuring the absorbance spectrum of a test sample.

5,828,446
METHOD OF INSPECTING OPHTHALMIC LENSES

Thomas G. Davis, Princeton, N.J., assignor to Johnson & Johnson Vision Products, Inc., Jacksonville, Fla.

Continuation of Ser. No. 573,603, Dec. 15, 1995, abandoned, which is a continuation of Ser. No. 995,654, Dec. 21, 1992, abandoned. This application Sep. 13, 1996, Ser. No. 712,658
Int. Cl.[6] G01B *9/00*
U.S. Cl. 356—124 59 Claims



1. A method of automatically inspecting ophthalmic lenses, comprising:

continuously moving a transparent lens carrier containing a multitude of lenses along a predetermined path to position each of the lenses, one at a time, into a lens inspection position;

each time one of the lenses moves into the lens inspection position,

i) activating a light source to generate a respective one pulse of collimated light,

ii) directing the collimated light pulse through said transparent carrier and said lens contained therein and onto an array of pixels,

iii) capturing selected portions of said light pulse on said array of pixels and generating a respective one set of digital data values representing the intensity of light incident on said array, said selected portions of said light pulse representing one or more lens defect conditions,

iv) processing said set of digital data values according to a predetermined program to determine at least one lens defect condition, and

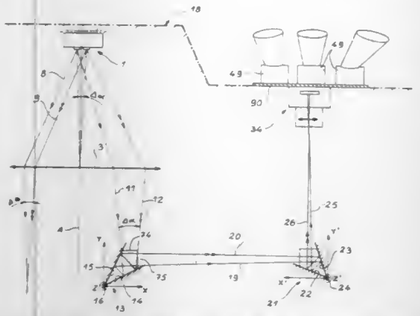
v) generating an output signal representing at least one lens defect condition.

5,828,447
ORIENTATION LOCATION SYSTEM OF AN OBSERVATION INSTRUMENT

Paul Duchon, Venerque, and Georges Otrio, Auzielle, both of France, assignors to Centre National D'Etudes Spatiales, France

PCT No. PCT/FR95/01130, § 371 Date Feb. 25, 1997, § 102(e) Date Feb. 25, 1997, PCT Pub. No. WO96/07120, PCT Pub. Date Mar. 7, 1996
PCT Filed Aug. 29, 1995, Ser. No. 793,508
Claims priority, application France, Aug. 29, 1994, 94 10368
Int. Cl.[6] G01B *11/26*
U.S. Cl. 356—152.1 6 Claims

1. Orientation location system of an observation instrument comprising a light source integral with the instrument emitting a light pattern to the focal plane of the instrument, a mirror-equipped light reflecting system and a light sensor provided with an orientation reference, the reflecting system being designed so as to transmit light from the source to the sensor, the mirrors comprising a dihedron having two facets on which the light from the source is



successively reflected, characterized in that the dihedron is integral with a sighting change mirror rotating in front of the instrument, the reflecting facets of the dihedron forming a right angle and being joined by an edge perpendicular to the plane of the sighting change mirror.

5,828,448

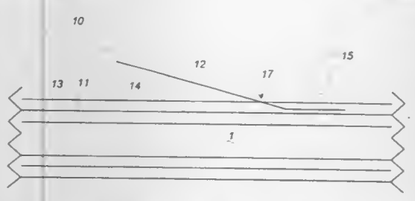
METHOD AND APPARATUS FOR DISTINGUISHING BETWEEN DEFECTS IN AN OPTICAL FIBER COATING

Christian Jakobsen, Copenhagen; Flemming Pedersen, Farum, both of Denmark; Leonardo M. Penn, Norcross, Ga.; Tracy E. Brewer, Charleston, S.C.; Aarne Karp, Hamilton Square, and David H. Smithgall, Windsor, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 11, 1997, Ser. No. 814,673

Int. Cl.[6] G01N *21/00;21/84;* **G01B** *9/10*

U.S. Cl. 356—237 **14 Claims**



1. An apparatus for distinguishing between first and second defects in a coating layer of an optical fiber, said apparatus comprising:

a light source for coupling a beam of light into the coating layer at a coupling spot along the optical fiber, said light source being positioned so that the beam of light is coupled into the coating layer at a preselected angle with respect to a longitudinal axis of the optical fiber;

an optical detector positioned adjacent the optical fiber for receiving at least a portion of the light coupled into the coating layer by said light source as the light coupled into the coating layer is reflected outward from the optical fiber by defects existing in the coating layer, wherein said optical detector produces an output signal proportional to the amount of light received by said optical detector, and

a signal processor electrically coupled to said optical detector for receiving the output signal from said optical detector and for processing the output signal to determine whether or not either of said first or second defects have been detected, and wherein said signal processor analyzes the optical detector output signal and, based on the analysis, distinguishes between said first and second defects.

5,828,449

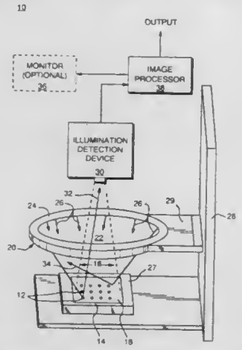
RING ILLUMINATION REFLECTIVE ELEMENTS ON A GENERALLY PLANAR SURFACE

Steven Joseph King, Merrimack, N.H.; Jonathan Edmund Ludlow, Lexington, Mass., and George Schurr, Fort Thomas, Ky., assignors to Acuity Imaging, LLC, Nashua, N.H.

Division of Ser. No. 807,397, Feb. 26, 1997. This application Jul. 25, 1997, Ser. No. 898,844

Int. Cl.[6] G01N *21/00;* **G06K** *9/00;* **H04N** *7/18;9/47*

U.S. Cl. 356—237 **27 Claims**



1. A ring illumination apparatus, for illuminating a plurality of reflective elements disposed on a generally planar surface of an article to be inspected and disposed within in a field of view of an illumination detection device, said ring illumination apparatus comprising:

a substantially ring-shaped light source having a predefined diameter, said substantially ring-shaped light source including a plurality of light emitting elements, for generating a plurality of light beams, wherein each of said plurality of light emitting elements are mounted at a predefined angle with respect to a plane parallel to said generally planar surface of said article, such that a centerline of each of said plurality of light emitting elements is disposed at said predefined angle with respect to said generally planar surface of said article to be inspected;

a light reflecting surface disposed generally behind each of said plurality of light emitting elements, for reflecting at least some of said light beams generated by said light emitting elements;

a light diffusing surface disposed generally in front of each of said plurality of light emitting elements, for diffusing at least some of said plurality of light beams as said plurality of light beams are directed toward said article within said field of view; and

wherein said plurality of light beams are directed toward said article in said field of view in a range of angles of illumination with respect to said generally planar surface of said article such that said plurality of reflective elements on said article are illuminated simultaneously and any of said plurality of light beams striking said generally planar surface of said article to be inspected are not reflected to said illumination detection device.

5,828,450

SPECTRAL MEASURING APPARATUS AND AUTOMATIC ANALYZER

Xiaoming Dou, and Toshio Takama, both of Kyoto, Japan, assignors to Kyoto Dai-Ichi Kagaku Co., Ltd., Kyoto, Japan

Filed Jul. 17, 1996, Ser. No. 680,347

Claims priority, application Japan, Jul. 19, 1995, 7-206560

Int. Cl.[6] G01J *3/44;* **G01N** *21/65*

U.S. Cl. 356—301 **13 Claims**

1. A Raman spectral measuring apparatus comprising:

a light source part comprising a near infrared semiconductor laser diode having an oscillation wavelength of 800 to 1560 nm as a light source;

a sample part for irradiating a sample with a sample beam from said light source part;

a photoreceiving part comprising a polychrometer which comprises a single diffraction grating for separating Raman scattered light being generated from said sample into its spectral components and a multichannel detector having sensitivity for near infrared region shifted by Raman scattering from the wavelength of said light source for detecting said Raman scattered light being separated into its spectral components by said diffraction grating; and

a data processor for calculating the concentration of a target component in said sample on the basis of a detection signal from said photoreceiving part; wherein

said multichannel detector is one of a germanium, indium gallium arsenide, and silicon photo detective device.

5,828,451

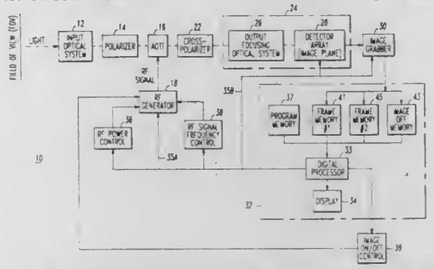
SPECTRAL IMAGING SYSTEM AND METHOD EMPLOYING AN ACOUSTO-OPTIC TUNABLE FILTER FOR WAVELENGTH SELECTION WITH INCREASED FIELD OF VIEW BRIGHTNESS

Peter A. Bellus, Eden Prairie, Minn., and Dennis R. Suhre, Monroeville, Pa., assignors to Northrop Grumman Corporation, Los Angeles, Calif.

Filed Sep. 30, 1997, Ser. No. 940,543

Int. Cl.[6] G01J *3/28*

U.S. Cl. 356—326 **13 Claims**



1. A spectral imaging system comprising: an acousto-optic tunable filter (AOTF) having one or more optical wavelength passbands dependent on the frequency or frequencies of a radio frequency signal applied thereto;

a radio frequency generator for generating the radio frequency signal;

means for controlling the radio frequency generator so that the radio frequency signal has one or more preselected frequency components;

an input optics system for directing incident object or scene light to the AOTF;

a first polarizing element disposed between the input optics system and the AOTF to pass to the AOTF only image light which is polarized in a first direction;

a second polarizing element disposed to receive output image light from the AOTF and to pass only image light which is polarized in a direction orthogonal to the first direction;

means for detecting image light passed by the second polarizing element;

an output optics system for focussing image light passed by the second polarizer on an image plane of the detecting means;

an image grabber for recording an image corresponding to the detected image light; and

an image processor for receiving recorded image data for processing.

5,828,452

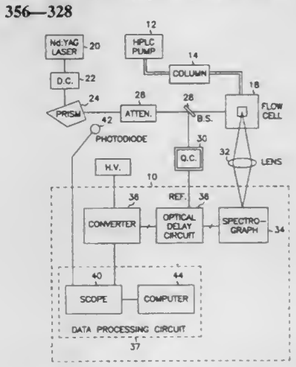
SPECTROSCOPIC SYSTEM WITH A SINGLE CONVERTER AND METHOD FOR REMOVING OVERLAP IN TIME OF DETECTED EMISSIONS

Gregory Gillispie, and Jimmie A. Burt, both of Fargo, N. Dak., assignors to Dakota Technologies, Inc., and NDSU Research Foundation, both of Fargo, N. Dak.

Filed Dec. 31, 1996, Ser. No. 777,903

Int. Cl.[6] G01J *3/32;* **G01N** *21/64*

U.S. Cl. 356—328 **17 Claims**



1. A spectroscopic system that processes spatially dispersed electromagnetic emissions at a number of wavelengths from a test material, the system comprising:

a converter that generates an electrical signal that is proportional to the intensity of the electromagnetic radiation received by the converter;

an optical delay circuit coupled to an input of the converter that selectively delays application to the converter of the electromagnetic emissions from the test material for at least one wavelength of electromagnetic emissions;

a data processing circuit coupled to an output of the converter that records the value of the electrical signal from the converter over time so as to measure, contemporaneously, the intensity of electromagnetic emissions at each wavelength as a function of time; and

wherein the data processing circuit includes a computer that is programmed to extract signals that represent the electromagnetic emissions at different wavelengths that overlap in time at the converter.

5,828,453

LENS DESIGNING METHOD AND OBJECTIVE LENS APPARATUS WITH TWO LENSES

Kenji Yamamoto, Saitama; Isao Ichimura, Kanagawa; Fumisada Maeda, Tokyo; Toshio Watanabe, Kanagawa, and Kiyoshi Obsato, Chiba, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 6, 1997, Ser. No. 812,736

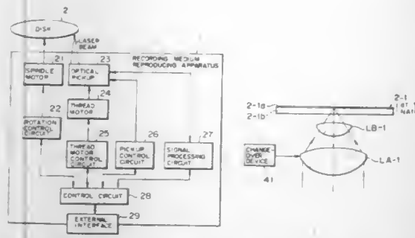
Claims priority, application Japan, Mar. 13, 1996, 8-055676

Int. Cl.[6] G01B *9/02*

U.S. Cl. 356—345 **19 Claims**

1. A method for designing an objective lens apparatus including at least two lenses, a first lens and a second lens, said method comprising the steps of:

measuring aberration which occurs when a light beam is converged by said first lens;



setting said first lens such that the aberration occurring in said first lens satisfies Maréchal's criterion, in accordance with the measurement results;

measuring aberration which occurs when a light beam is converged by said first lens and said second lens; and

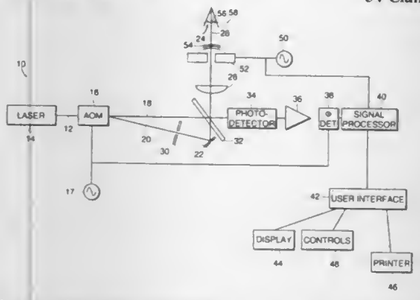
setting said second lens such that the aberrations occurring in said first lens and said second lens satisfy Maréchal's criterion, in accordance with the measurement results.

5,828,454

OPTICAL HETERODYNE INTERFEROMETER FOR MEASUREMENT OF OCULAR DISPLACEMENT

Gary R. Gust, 16391 Maruffa Cir., Huntington Beach, Calif. 92649

Filed Jul. 29, 1996, Ser. No. 681,804
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—349 **34 Claims**



1. An optical heterodyne interferometer for measuring precise displacement of an eyeball, comprising:

an optical configuration for steering a measurement beam onto the surface of the eyeball and receiving a reflected component of the measurement beam from the eyeball;

a frequency generator having a frequency output;

a modulator driven by said frequency generator for impressing a frequency shift on at least one of a reference beam and the measurement beam;

a heterodyne detector, having an input, for producing a heterodyne signal;

an optical combining means for supplying the reference beam and the reflected component of the measurement beam at the input of said heterodyne detector; and

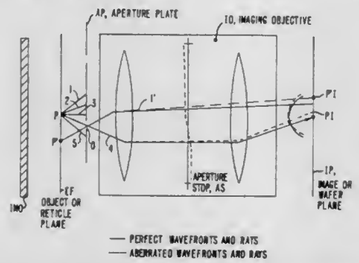
a signal processor coupled to the heterodyne detector and to the frequency generator for calculating an ocular displacement based upon the heterodyne signal and the frequency output.

5,828,455

APPARATUS, METHOD OF MEASUREMENT, AND METHOD OF DATA ANALYSIS FOR CORRECTION OF OPTICAL SYSTEM

Adlai H. Smith; Bruce B. McArthur, both of San Diego, and Robert O. Hunter, Jr., Rancho Santa Fe, all of Calif., assignors to Litel Instruments, San Diego, Calif.

Filed Mar. 7, 1997, Ser. No. 813,742
Int. Cl.[6] G01C *9/02*
U.S. Cl. 356—354 **9 Claims**



1. A method for analysis of a lens train for taking an image from a reticle plane and relaying the image to a image plane, the method comprising the steps of:

providing a reticle consisting of a multiplicity of separate and distinguishable points in the reticle plane;

providing an aperture plate at a distance from the reticle having at least one opening;

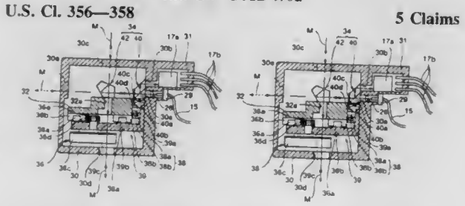
imaging at least a portion of the reticle through the at least one opening in the aperture plate to create a multiplicity of spots at the image plane, the multiplicity of spots having spot centroids relative to the separate and distinguishable points in the reticle deviated from diffraction limited positions by an average of grad $\phi(u)$) over the diffraction limited positions of the spots produced by a diffraction limited lens train.

5,828,456

MULTIAXIS LASER INTERFEROMETRY DISTANCE MEASURING DEVICE

Tatsuya Aoki, and Kazunori Tanaka, both of Kanagawa, Japan, assignors to Sokkia Company Limited, Tokyo, Japan

Filed Oct. 21, 1996, Ser. No. 734,070
Claims priority, application Japan, Nov. 15, 1995, 7-296909; Mar. 27, 1996, 8-072290
Int. Cl.[6] G01B *9/02*
U.S. Cl. 356—358 **5 Claims**



1. A multiaxis laser distance measuring device comprising:

a beam source portion for emitting a laser beam,

a multiaxis interferometer equipped with an interferometer body having a stage that is linearly or rotatable movable, and a beam directing mechanism set onto said stage for splitting the incoming laser beam and directing the beam toward either the orthogonal x, y, or z axes of an NC machine tool, and transmitting the interference beam resulting from the interference of the measuring beam with the reference beam, and a switching mechanism for controlling movement of the stage to move the beam directing mechanism into a position that directs said beam along either said x, y, or z axes.

an optical fiber, which is disposed between the beam source portion and the interferometer body for guiding the laser beam from the beam source portion to the interferometer body,

a plurality of reflecting targets which are fixed on the measurement positions of the NC machine tool for receiving the laser beam projected in the x, y, or z axis direction and reflecting the beam back towards the interferometer body,

a beam receiving portion for receiving the interference beam from the interferometer body,

a controller for controlling the switching mechanism, and

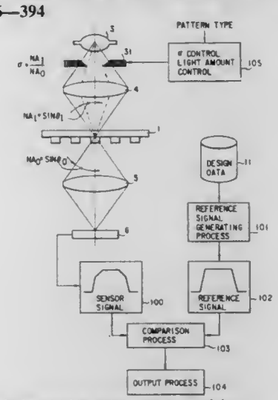
a control unit for operating the NC machine tool in the x, y, and z axis directions in accordance with a prescribed procedure, and comparing the distance measurement data obtained by the beam receiving portion at the beam source portion with priorly set reference data to provide the NC machine tool with correction values, and commanding a switching operation to the controller each time the measurements for one of the axes, x, y, and z, have been completed.

5,828,457

SAMPLE INSPECTON APPARATUS AND SAMPLE INSPECTION METHOD

Mitsuo Tabata, Yokohama; Toru Tojo, Naka-gun, and Hisakazu Yoshino, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan, and Kabushiki Kaisha Topcon, Tokyo, Japan

Continuation of Ser. No. 413,174, Mar. 29, 1995, abandoned. This application May 12, 1997, Ser. No. 854,750
Claims priority, application Japan, Mar. 31, 1994, 6-063744
Int. Cl.[6] G01B *11/00;* **H01L** *21/00*
U.S. Cl. 356—394 **28 Claims**



1. A sample inspection apparatus comprising:

a light source radiating light on a sample on which a pattern relating to fabrication of a semiconductor device is formed;

an illumination lens provided between said light source and said sample for illuminating light on said sample;

light receiving means for detecting a light transmission image of the pattern on the sample on which the light has been radiated by said light source;

an objective lens, provided between said sample and said light receiving means, focusing an image of the pattern on the sample onto said light receiving means;

determination means for determining a presence/absence of a defect of the pattern by comparing measurement data corresponding to the light transmission image of the pattern obtained by said light receiving means with reference data relating to said pattern; and

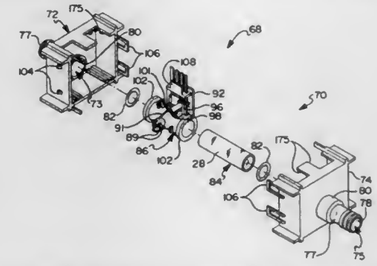
control means for controlling a ratio σ of a numerical aperture of said illumination lens to a numerical aperture of said objective lens, in accordance with a type of said pattern.

5,828,458

TURBIDITY SENSOR

Robert E. Taylor, Cadillac, and David W. Bull, Hersey, both of Mich., assignors to Nartron Corporation, Reed City, Mich.

Filed Jan. 26, 1995, Ser. No. 381,267
Int. Cl.[6] G01N *21/05*
U.S. Cl. 356—440 **22 Claims**



1. A turbidity sensor for use in testing the condition of a fluid comprising:

a) a test cell that defines a flow path through the test cell for a sample fluid to be sensed;

b) a light source for shining light through the test cell as fluid under test flows through the test cell;

c) first and second light detectors for sensing light that has passed through at least a portion of the fluid within the test cell wherein a first light detector measures transmitted light and the second light detector measures light that has been scattered by the fluid within the test cell;

d) a third light detector located outside the test cell for calibrating the light source by detecting light transmitted from the source to the third light detector;

e) a monitoring circuit for monitoring first and second output signals from the first and second light detectors to determine the turbidity of the fluid;

f) a feedback circuit coupled between the third light detector and the light source for controlling the intensity of light output from the light source based upon the intensity of light reaching the third detector to maintain the light output intensity from said source due to varying conditions;

g) a temperature sensor attached to the test cell for monitoring a temperature and said monitoring circuit includes a compensation circuit that adjusts the indicated light intensity from the first and second light detectors based on sensed temperature;

h) wherein said first and second light detectors each generate a signal output corresponding to the light measurement, and further comprising a particle analyzer; and

i) wherein said particle analyzer comprises a high pass filter coupled to the signal output of at least one of said first and second detectors, and a low pass filter coupled to said signal output of said at least one of said first and second detectors.

5,828,459

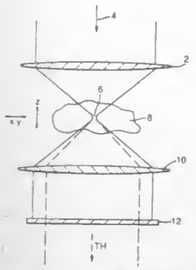
APPARATUS AND METHOD FOR SCANNING LASER MICROSCOPY

Yaron Silberberg, Rehovot, Israel, assignor to Yeda Research and Development Co. Ltd., Rehovot, Israel

Filed Apr. 28, 1997, Ser. No. 847,853
Claims priority, application Israel, May 3, 1996, 118130
Int. Cl.[6] G01N *21/00*
U.S. Cl. 356—444 **8 Claims**

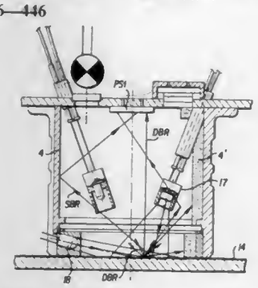
1. A method for determining the fine structure of materials by means of a nonlinear scanning laser microscope, comprising the steps of:

forming an image of a specimen by scanning selected points thereof with a focusable laser beam of a predetermined fundamental frequency w, thereby exciting said points to generate signals constituting the third harmonic 3w of said fundamental frequency w;



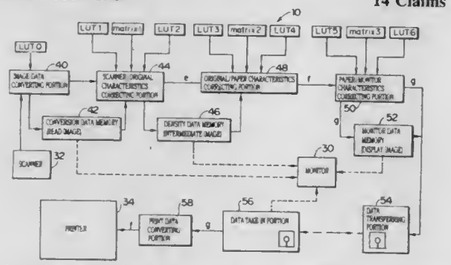
collecting said signals by collecting means;
substantially filtering out from said collected 3w signals, signals of a frequency other than said third harmonic 3w;
feeding said filtered 3w signals to a detector, and
storing the output of said detector for processing and display.

5,828,460
APPARATUS FOR OPTICAL INSPECTION OF METALLIC SURFACES
Arcady Lucovsky, Hod Ha-Sharon; Arcady Gershanik, Beer-Sheva, and Leonid Lipetsker, Arad, all of Israel, assignors to S.Q.C.C. Ltd., Industrial Zone Raanana, Israel
Filed Jul. 11, 1995, Ser. No. 500,495
Int. Cl.[6] G01N *21/47*
U.S. Cl. 356—446 **22 Claims**



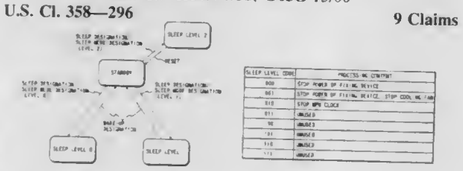
1. An apparatus for optical inspection of a substantially metallic surface, said apparatus comprising:
a housing, provided with a window, enabling viewing therethrough of said inspected surface;
a plurality of light sources for illumination of said inspected surface via said window, wherein the inner wall of said housing is provided with a reflecting surface for reflecting of back radiation effected by said inspected surface upon illumination thereof;
detection means, comprising at least one photo responsive cell, for enabling detecting of back radiation and for generating of corresponding electrical signals thereupon;
control means for controlling operation of said light sources and for digital processing of said electrical signals; and
display means for showing, upon said digital processing, results of inspection of said inspected surface;
wherein said plurality of light sources comprises:
a first light source for illuminating the inspected surface via said window by a light beam having a wave length in a UV region;
a second light source for illuminating the inspected surface via said window by a visible light beam having a wave length less than 500 nm and defined by an angular divergence of not more than 5 degrees; and
at least two additional light sources for illuminating the inspected surface via said window by light beams having wave lengths more than 550 nm and defined by angular divergence of not more than 5 degrees.

5,828,461
METHOD AND APPARATUS FOR CONVERTING ORIGINAL IMAGE DATA TO DENSITY DATA FOR FORMING AN IMAGE ON PHOTOSENSITIVE MATERIAL AND FOR DISPLAYING AN IMAGE ON A MONITOR
Masahiro Kubo, Kanagawa; Koichi Taniguchi, Tokyo; Naoki Takaoka, and Mamoru Shinohara, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan
Filed Nov. 15, 1996, Ser. No. 746,722
Claims priority, application Japan, Nov. 17, 1995, 7-300098
Int. Cl.[6] H04N *1/21;* **G03G** *15/00;* **G03B** *27/80;* **G03K** *9/00*
U.S. Cl. 358—296 **14 Claims**



1. An image processing method in which an image of an original is read by an image input device, the read image data is converted to density data used when printing onto a photosensitive material, and an image is obtained on the photosensitive material by digital exposure,
wherein, when the image data is converted to the density data used when printing onto the photosensitive material, on the basis of parameters determined by combinations of print finish characteristics, including at least image input device characteristics, kind of original, kind of photosensitive material, and exposure amount characteristics, which affect a print image when the image of the original is printed onto the photosensitive material by an analogue exposure system, the density data used when printing onto the photosensitive material while correcting the image data, and in order to display the image on a monitor, on the basis of the density data, data for monitor display is generated so that gradation and color tone when printing onto the photosensitive material coincide with appearances of gradation and color tone when displayed on the monitor.

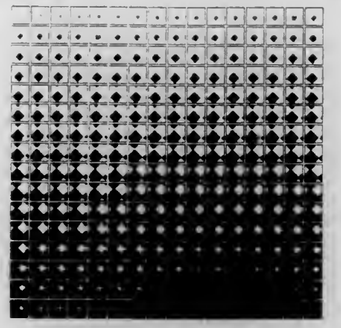
5,828,462
IMAGE RECORDING APPARATUS WITH CONTROLLER FOR SELECTIVELY EXECUTING AN ENERGY SAVING MODE
Hiroshi Hashimoto, Tokyo, and Junichi Kimizuka, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Division of Ser. No. 420,802, Apr. 12, 1995, abandoned. This application Oct. 6, 1997, Ser. No. 944,417
Claims priority, application Japan, Apr. 14, 1994, 6-100766; Apr. 10, 1995, 7-109029
Int. Cl.[6] H04N *1/32;* **G03G** *15/00*
U.S. Cl. 358—296 **9 Claims**



1. An image recording apparatus comprising:

image forming means for forming an image on a recording medium on the basis of an image signal generated by an image signal generating unit which generates the image signal;
fixing means for heat-fixing the image formed on the recording medium;
cooling means for cooling inside of said image recording apparatus; and
control means for selectively executing either a first economy mode in which said cooling means is activated and said fixing means is inactivated on the basis of a command from said image signal generating unit or a second economy mode in which said cooling means and said fixing means are inactivated.

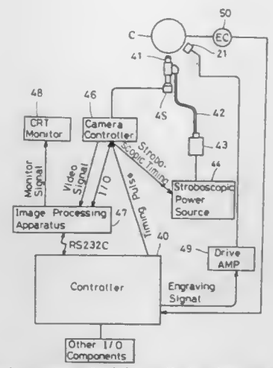
5,828,463
PRINTING PLATE FOR A HALFTONE IMAGE HAVING TONER DEPENDENT ROSETTE STRUCTURES BY PHASE MODULATION
Paul Delabastita, Antwerp, Belgium, assignor to Agfa-Gevaert N.V., Belgium
Continuation of Ser. No. 430,008, Apr. 27, 1995. This application Mar. 17, 1997, Ser. No. 819,499
Claims priority, application European Pat. Off., Apr. 27, 1994, 94201150
Int. Cl.[6] H04N *1/405;* **G03G** *13/28*
U.S. Cl. 358—298 **6 Claims**



5. A printing plate having ink-accepting and non-ink-accepting zones which are arranged to form a halftone reproduction comprising a set of halftone images, wherein each halftone image of said set is characterized by superimposed halftone images of the set which yield clear centered rosettes in low density halftone dot regions and dot centered rosettes in high density halftone dot regions.

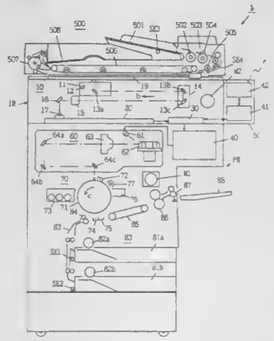
5,828,464
ELECTROMECHANICAL ROTOGRAVURE STYLUS AUTOMATIC CALIBRATOR
Takumi Yoshida; Tadashi Syudou, and Minetoshi Yamaguchi, all of Kyoto, Japan, assignors to Dainippon Screen Mfg. Co. Ltd., Kyoto, Japan
Filed Oct. 26, 1993, Ser. No. 143,552
Claims priority, application Japan, Oct. 28, 1992, 4-290094
Int. Cl.[6] B41C *1/02*
U.S. Cl. 358—299 **27 Claims**

1. A rotogravure automatic calibrating apparatus for automatically adjusting electromechanical engraving of cells into a printing cylinder by a stylus of a rotogravure engraving system, wherein the stylus is actuated to engrave cells in response to an engraving signal generated by the engraving system according to a plurality of control parameters determining displacement relative to said printing cylinder of said stylus, said apparatus comprising:



cell measuring means obtaining cell size data expressing size of an individual cell engraved into said printing cylinder; and
engraving signal calibrating means adjusting said control parameters of said engraving signal based upon said cell size data obtained by said cell measuring means;
said engraving signal being calibrated to actuate said stylus to engrave cells according to an image-density/cell-depth calibration factor for a screen ruling for the engraving system.

5,828,465
FACSIMILE APPARATUS
Hideo Muramatsu, Shinshiro, and Tatsuji Nozawa, Toyokawa, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan
Filed Aug. 21, 1995, Ser. No. 517,417
Claims priority, application Japan, Aug. 22, 1994, 6-197005; Jul. 24, 1995, 7-187141
Int. Cl.[6] H04N *1/00;1/40;* **H04M** *11/00;* **G01R** *31/08*
U.S. Cl. 358—400 **11 Claims**



1. A facsimile apparatus, comprising:
an image memory storing multiple sets of image data which correspond to respective registration numbers;
a polling transmission means which reads, from the image memory, image data corresponding to a registration number designated by a receiving party, and which carries out facsimile transmission of the image data read from the image memory to the receiving party;
a mode setting means which sets the facsimile apparatus to operate in an overwrite mode or in an append mode by executing following steps
a first selecting step of initially selecting a polling registration mode,
a second selecting step of selecting a change registration mode after said first selecting step, and
a third selecting step of selecting one of said overwrite mode and said append mode after said second selecting step

a registration number designation means which designates a registration number; and

a control means which stores new image data in the image memory so as to correspond to a registration number designated by said registration number designation means, in place of previously stored image data that corresponded to said registration number, when the overwrite mode has been set by the mode setting means, and which stores new image data in the image memory so as to correspond to a registration number designated by said registration designation means, in addition to previously stored image data that corresponds to said designated registration number, when the append mode has been set by the mode setting means.

5,828,466

IMAGE RECORDING APPARATUS

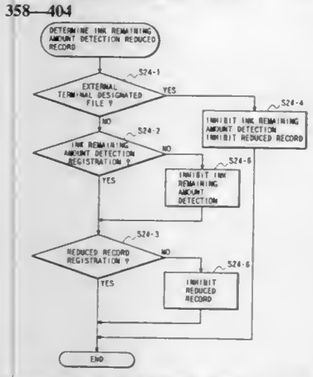
Takashi Imai, Yokohama; Yasuhide Ueno, Fuchu; Nobuyuki Hirai, Tokyo; Atsushi Ikeda, Tokorozawa, and Koji Okamura, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,299

Claims priority, application Japan, Nov. 14, 1994, 6-279325

Int. Cl.[6] H04N *1/00;1/393*

U.S. Cl. 358—404 **19 Claims**



1. An image recording apparatus having storage means for storing received image data, and recording means for recording an image on a recording medium in accordance with the image data stored in said storage means, comprising:

processing means for performing reduction processing of the image data stored in said storage means and supplying the data to said recording means so as to record a reduced image;

setting means for setting a retention mode for retaining the image data stored in said storage means; and

inhibition means for inhibiting reduction processing performed by said processing means in an image recording operation performed by said recording means when the retention mode is set by said setting means.

5,828,467

BLOCK NOISE PREVENTION BY SELECTIVE INTERPOLATION OF DECODED IMAGE DATA

Kazuhiro Suzuki, Nakai-machi, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

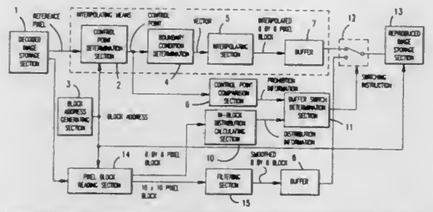
Filed Oct. 2, 1996, Ser. No. 725,323

Int. Cl.[6] H04N *1/41*

U.S. Cl. 358—428 **18 Claims**

8. An image processor comprising:

storage means for holding decoded blocks to which a block-encoded image is decoded for each rectangular region consisting of an M by N matrix of pixels;



interpolating means which provides an interpolated block by reading a plurality of reference pixels having a predetermined positional relationship with the decoded blocks from said storage means and by interpolating gradations in the decoded blocks using a interpolated surface under boundary conditions set on the basis of the reference pixels;

smoothing means which outputs an M×N matrix of pixels at the center of the block as a smoothed block by reading a (M+2i)×(N+2i) matrix of pixels, which is larger than the M×N matrix of pixels by "i" pixels in both vertical and horizontal directions, from the decoded block in said storage means, and by smoothing the (M+2i)×(N+2i) matrix of pixels read from said storage means;

first determination means which determines whether or not the distribution of pixels in the decoded block is flat, on the basis of the statistical information of the decoded block;

second determination means which determines whether or not the pixel distribution can be interpolated, on the basis of the boundary conditions; and

selecting means which selects either the interpolated block or the decoded block on the basis of the results of said first and second determination means.

5,828,468

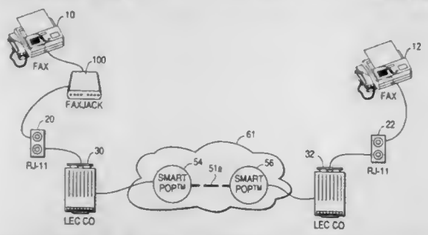
POINT OF PRESENCE (POP) FOR DIGITAL FACSIMILE NETWORK WITH SPOOFING CAPABILITY TO MAINTAIN FAX SESSION

Warren S. Lee; David W. Copp, both of Jacksonville, Fla.; Dale T. Platteter, Pittsford, N.Y., and Neil P. Carrier, Jacksonville, Fla., assignors to NKO, Inc., Jacksonville, Fla.

Filed May 17, 1996, Ser. No. 649,239

Int. Cl.[6] H04N *1/00;* **H04M** *11/00*

U.S. Cl. 358—434 **10 Claims**



1. A method of providing a spoofing operation in a facsimile session over a digital data link, comprising the steps of:

receiving, at a first point of presence, a request to send a fax transmission over the digital data link, said request indicating a source fax machine that is making the request and indicating a destination fax machine that is to receive the fax transmission;

determining, at the first point of presence, a maximum allowable reception time for receiving an acknowledgement of the request made by the source fax machine;

relaying the request over the digital data link in a packetized format to a destination point of presence;

monitoring, at the first point of presence, an elapsed time from when the request was received to determine if the maximum allowable reception time will be exceeded within a first amount of time;

if the first amount of time is reached, sending a signal corresponding to the acknowledgement of the request to the source fax machine irrespective of whether the destination fax machine is actually able to receive the fax transmission;

determining, by the second point of presence, if the destination fax machine is able to accept the fax transmission;

if the destination fax machine is determined to be able to accept the fax transmission, receiving an acknowledgment signal sent by the destination fax machine at the second point of presence and relaying the acknowledgement signal sent by the destination fax machine to the first point of presence in the packetized form;

if the signal corresponding to the acknowledgment of the request has already been sent to the source fax machine and if the acknowledgement signal relayed from the destination fax machine to the first point of presence is received thereafter, enabling start of the fax transmission; and

if no acknowledgement signal is received from the destination fax machine at the first point of presence within the maximum allowable reception time, disabling start of the fax transmission.

5,828,469

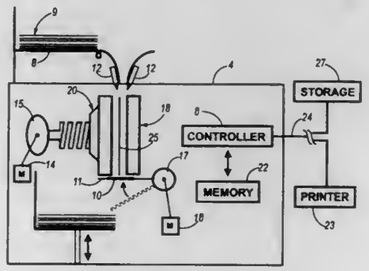
DOCUMENT SCANNER WITH GRAVITATIONAL REGISTRATION

Robert P. Kowalski, Campbell, and Carol A. Hankins, Palo Alto, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1997, Ser. No. 822,446

Int. Cl.[6] H04N *1/04*

U.S. Cl. 358—498 **20 Claims**



1. An apparatus for scanning a document, comprising:

a pair of opposing planar members with at least one of the planar members supporting an imaging assembly; said pair of opposing planar members having a substantially vertical orientation for gravitationally accepting along a path the document therebetween when said pair of opposing planar members are spaced a distance apart from each other;

a registration stop positioned under said spaced pair of opposing planar members in interference with the path of the document for registering an edge of the document relative to an edge of the imaging assembly; and

a driver for moving at least one of said planar members towards the other of said planar members to bring the document registered with said registration stop into contact with the imaging assembly for recording electronic signals representing information on one side of the document.

5,828,470

COLOR VALUES PROCESSING APPARATUS CAPABLE OF OPTIMIZING A PROCESSING DESCRIPTION

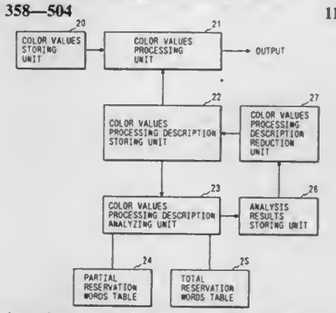
Masahiro Maeda; Noriaki Seki; Masayuki Kurahashi; Toshiyuki Tsuzuki, and Toru Yamasaki, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 425,775, Apr. 20, 1995, abandoned, which is a continuation of Ser. No. 106,716, Aug. 16, 1993, abandoned. This application Apr. 24, 1997, Ser. No. 839,966

Claims priority, application Japan, Aug. 17, 1992, 4-238849

Int. Cl.[6] H04N *1/46;* **G03F** *3/08*

U.S. Cl. 358—504 **11 Claims**



1. A color values processing apparatus comprising:

means for storing a color values processing description that defines a procedure of color values conversion between color processing systems;

means for analyzing the stored color values processing description, to thereby detect a type of a particular procedure in the stored color values processing description, wherein the type includes at least one of the following: normalization, gamma correction, log correction, LUT referencing, and a matrix operation;

means for changing the particular procedure in accordance with the detected type to perform at least one of normalization, gamma correction, log correction, LUT referencing and a matrix operation; and

means for converting color values of a first color processing system to color values of a second color processing system by using the color values processing description including the changed procedure.

5,828,471

ILLUMINATION SYSTEM AND DISPLAY DEVICE

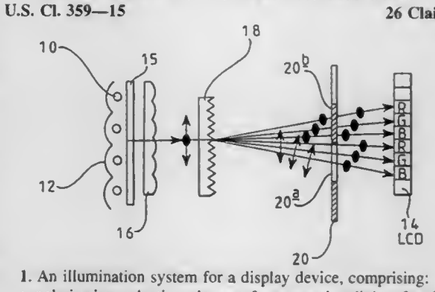
Gillian Margaret Davis, Oxfordshire; Kathryn Walsh, Reading, and Paul May, Cambridge, all of United Kingdom, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 27, 1995, Ser. No. 579,563

Claims priority, application United Kingdom, Dec. 29, 1994, 9426330

Int. Cl.[6] G02B *5/32;5/30;* **G03H** *1/00;* **G02F** *1/1335*

U.S. Cl. 359—15 **26 Claims**



1. An illumination system for a display device, comprising:

a polarization selective element for separating light of a first polarization type from light of a second polarization type; and

converting means for converting light of at least one of the first and the second polarization type into light of a common polarization type,

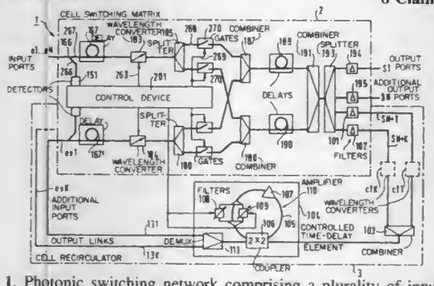
wherein the polarization selective element is a holographic element comprising at least one optically anisotropic material, and the holographic element is of thin, substantially planar form and is substantially parallel to the converting means.

5,828,472

PHOTONIC SWITCHING MATRIX

Francesco Masetti, Paris, France, assignor to Alcatel N.V., Rijswijk, Netherlands

Filed Dec. 27, 1995, Ser. No. 579,432
Claims priority, application France, Dec. 29, 1994, 9415863
Int. Cl.[6] H04J *4/00*
U.S. Cl. 359—123 **8 Claims**



1. Photonic switching network comprising a plurality of input ports and a plurality of output ports, centralized buffers for storing cells supplied by said input ports as and when they arrive and supplying them one by one to said output ports, modulation means associated with said input ports to modulate cells addressed to the same output port onto an optical carrier having a wavelength assigned to that output port, said centralized buffers comprising Q optical paths offering respective time-delays of 0, 1, . . . , Q−1 cell times between said input ports and said output ports so that, on being routed from an input port to an output port, cells are switched to one of said paths with time-delay so as to reach the same output port one by one, and a plurality of additional output ports each connected to a controllable time-delay element the output of which can be coupled to a recirculation input port.

5,828,473

Patent Not Issued For This Number

5,828,474

OPTICAL APPARATUS FOR TRANSMITTING DATA OF AN ELECTRICAL SIGNAL

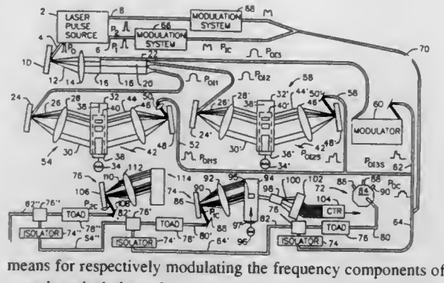
Paul R. Prucnal, Princeton, and Warren S. Warren, Lawrenceville, both of N.J., assignors to The Trustees of Princeton University, Princeton, N.J.

Filed Nov. 29, 1996, Ser. No. 758,437
Int. Cl.[6] H04J *4/00;14/00*
U.S. Cl. 359—123 **6 Claims**

1. Communication apparatus comprising:

means for providing a plurality of synchronized trains of optical pulses;

means for spatially separating the frequency components of the pulses of each of said trains into a plurality of optical channels;



means for respectively modulating the frequency components of each optical channel;

means for deriving the sum of the modulated frequency components of the optical channels of each train of pulses;

means for causing the sums derived from each train of pulses to occupy respective time slots between successive pulses of each train;

means for selecting the sum of the modulated frequency components for the channels of each train of pulses;

means for dividing each sum into its channels; and

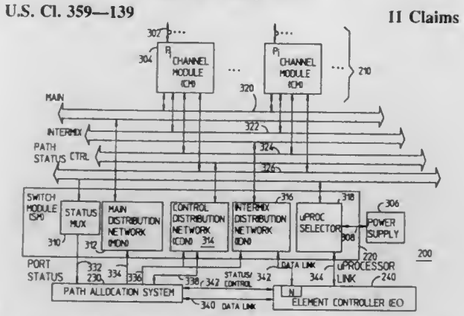
means for deriving the modulated components of each channel.

5,828,475

BYPASS SWITCHING AND MESSAGING MECHANISM FOR PROVIDING INTERMIX DATA TRANSFER FOR A FIBER OPTIC SWITCH USING A BYPASS BUS AND BUFFER

Dwayne R. Bennett, Scarborough; Clifford S. Yeung, Richmond Hill, and Wayne Wu, Rexdale, all of Canada, assignors to McDATA Corporation, Broomfield, Colo.

Continuation of Ser. No. 547,856, Oct. 25, 1995, abandoned.
This application Jan. 29, 1997, Ser. No. 790,697
Int. Cl.[6] H04J *14/08*
U.S. Cl. 359—139 **11 Claims**



1. A system for providing the capability to accommodate intermix data transfer in a fiber optic switch, the switch is connected to a fiber optic channel, the system comprising:

a port intelligence system configured to transmit and receive data from the fiber optic channel according to a first protocol;

a memory interface system connected to the port intelligence system; and

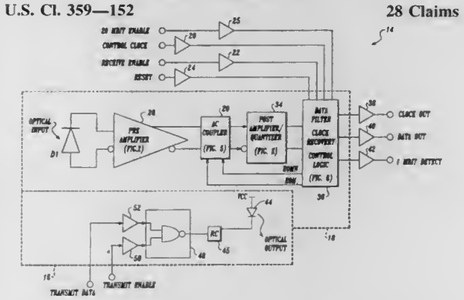
a buffer residing in the memory interface system, the buffer responsive to a control signal to selectively receive intermix data and class 1 data.

5,828,476

DUAL RATE, BURST MODE, RADIATION HARDENED, OPTICAL TRANSCEIVER

Rodney K. Bonebright, Milton; Rodney A. Hughes, Tacoma; Jay W. Clement, Kent, and John H. Nitardy, Seattle, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Jun. 11, 1996, Ser. No. 660,972
Int. Cl.[6] H04B *10/00*
U.S. Cl. 359—152 **28 Claims**



1. A transceiver for transmitting digitally coded data signals on and receiving digitally coded data signals from an optical transmission medium, comprising:

a) a transmitter for receiving digitally coded data to be transmitted and converting said digitally coded data signals into a form suitable for transmission on an optical transmission medium; and

b) a receiver for receiving digitally coded data signals from an optical transmission medium, converting said digitally coded data signals into a form suitable for detection and recovering a clock from said received digitally coded data signals, said receiver comprising:

1) a photodiode for receiving digitally coded data signals from an optical transmission medium;

2) a preamplifier coupled to said photodiode for receiving digitally coded data signals from said photodiode and differentially amplifying said signals;

3) an AC coupler coupled to said preamplifier for receiving said differentially amplified digitally coded data signals and removing the DC component of said differentially amplified digitally coded data signals, said AC coupler including a switching circuit for causing the AC component of said differentially amplified digitally coded data signals to have a purely differential signal form;

4) a post amplifier/quantizer coupled to said AC coupler for receiving said AC component of said differentially amplified digitally coded data signals from said AC coupler and producing a related quantized digitally coded data signal; and

5) a data filter, clock recovery and control logic system coupled to said post amplifier/quantizer for:

i) receiving said quantized digitally coded data signal;

ii) filtering said quantized digitally coded data signal to pass valid digitally coded data and reject undesired noise and upsets;

iii) recovering a clock signal from said quantized digitally coded data signal that is synchronized by every data edge of the quantized signal; and

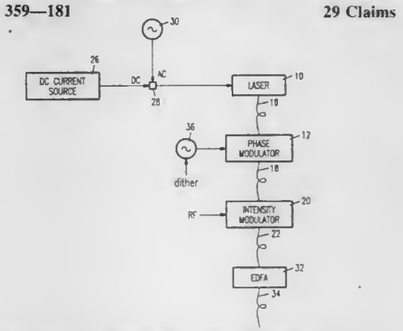
iv) controlling the switching circuit of said AC coupler.

5,828,477

MULTI-TONE PHASE MODULATION FOR LIGHT WAVE COMMUNICATION SYSTEM

Alan C. Nilsson, Mountain View; Chien-Yu Kuo, Cupertino; Joseph Kleefeld, Palo Alto; Charles H. Gall, Newark; Alfred Nicholson Riddle, Milpitas, and Harry Cbou, San Jose, all of Calif., assignors to Harmonic Lightwaves, Inc., Sunnyvale, Calif.

Filed Nov. 16, 1995, Ser. No. 559,057
Int. Cl.[6] H04B *10/04*
U.S. Cl. 359—181 **29 Claims**



1. An optical fiber transmission system comprising:

a light source outputting a light beam which is coupled to an optical phase modulator;

an intensity modulator driven by an information-carrying RF signal and coupled to an output port of the phase modulator;

a connector for connecting an output port of the intensity modulator to an optical fiber;

a first source of a first frequency signal driving the phase modulator; and

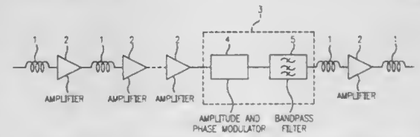
a second source of a second frequency signal driving the light source; wherein the second source includes a DC current source and an oscillator providing an alternating current, to drive the light source with a second high frequency signal.

5,828,478

SYSTEM FOR TRANSMITTING RZ PULSES OVER AN AMPLIFIED OPTICAL LINE, IN PARTICULAR OVER LONG DISTANCES

Jean-Baptiste Thomine, Paris, and Veluppillai Chandrakumar, Bagneux, both of France, assignors to France Telecom, Paris, France

Filed Aug. 28, 1996, Ser. No. 703,992
Claims priority, application France, Sep. 1, 1995, 95 10294
Int. Cl.[6] H04B *10/04;10/12*
U.S. Cl. 359—181 **7 Claims**



1. A system for transmitting a return to zero type optical pulse stream having a plurality of pulses, said system comprising:

an optical line having a line fiber with a mean chromatic dispersion of a normal type and a length;

means for amplifying distributed along said line; and

means for reshaping pulses distributed along said line, said reshaping means having a modulator that is synchronized to said pulse stream, said modulator receiving said pulse stream and applying

an amplitude modulation to reshape said pulses temporally and

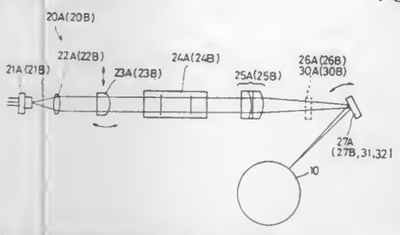
a phase modulation that decreases at a start of each of said pulses and increases at an end of each of said pulses to reshape said pulses spectrally.

5,828,479

CASCADE SCANNING OPTICAL SYSTEM

Masatoshi Takano; Eiji Takasugi; Shinji Kikuchi; Tsotomu Sato; Hiroyuki Saito; Yoshiyuki Araki; Mitsunori Iima; Takashi Sasaki, and Takashi Iizuka, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 4, 1997, Ser. No. 929,003
Claims priority, application Japan, Sep. 5, 1996, 8-235401
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—201 **9 Claims**



1. A cascade scanning optical system, comprising:

a pair of laser scanning optical systems each having a laser beam emitter and a laser beam deflector, wherein a laser beam emitted by said laser beam emitter enters said laser beam deflector so that said laser beam deflector deflects said laser beam to scan a surface of a member, such that said laser beams proceed to said surface on a common line thereon in respective ranges of said common line;

a pair of mirrors respectively provided in said pair of laser scanning optical systems, each of said pair of mirrors being positioned in a corresponding optical path between said laser beam deflector and said member to reflect a laser beam incident thereon toward said surface;

a pair of cylindrical lenses having a power in a sub-scanning direction, respectively provided in said pair of laser scanning optical systems, each of said pair of cylindrical lenses being positioned in a corresponding optical path between said laser emitter and said laser beam deflector;

a first adjuster that adjusts an angle of at least one of said pair of mirrors relative to said surface; and

a second adjuster that adjusts a position of at least one of said pair of cylindrical lenses relative to a corresponding one of said laser beam deflectors.

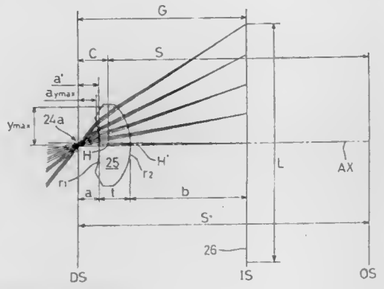
5,828,480

IMAGE FORMING LIGHT SCANNING APPARATUS

Hiromu Nakamura, Toyokawa, and Satoru Ono, Toyokawa, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

Division of Ser. No. 620,103, Mar. 21, 1996, Pat. No. 5,721,631, which is a division of Ser. No. 296,020, Aug. 25, 1994, Pat. No. 5,563,729. This application Oct. 14, 1997, Ser. No. 949,921
Claims priority, application Japan, Aug. 30, 1993, 5-214311; Dec. 21, 1993, 5-322556; May 16, 1994, 6-101102
Int. Cl.[6] G02B *26/08;3/00*
U.S. Cl. 359—206 **6 Claims**

1. A scanning lens comprising a single fθ lens for scanning a scanned surface with a convergent luminous flux from a point of deflection, wherein a first surface and a second surface of the single fθ lens are both aspherical and wherein the following



conditions are fulfilled:

$r_1 < 0$

$$\frac{r_1}{r_2} > 0$$

$a_{ymax} < a'$

$$0 < \frac{a}{G} < 0.15$$

$$0 < \frac{t}{G} < 0.25$$

$$1.1 < \frac{L}{G} < 1.5$$

$$\frac{|f|}{G} < 1.5$$

where r_1 is a paraxial radius of curvature of the first surface, r_2 is a paraxial radius of curvature of the second surface, a_{ymax} is a distance between a position of the point of deflection and a position at which a luminous flux passing an upper limit of an effective height of the lens passes through the first surface which distance is measured parallel to the optical axis, a' is a distance between the position of the point of deflection and a position at which a luminous flux passing the upper limit of the effective height of the lens passes through a spherical surface extending from a position of an optical axis on the first surface with a paraxial radius of curvature r_1, G is a distance between the point of deflection and an image surface, a is a distance between the point of deflection and the first surface, t is a thickness of a center of the lens, L is a width of scanning, and f is a focal length.

5,828,481

MID-OBJECTIVE LASER SCANNER

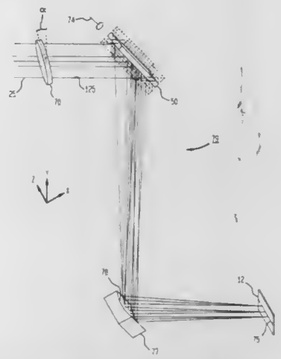
Joshua Monroe Cobb, Millbrook, N.Y.; Candace Joy Flattery-Freedenberg, Sneads Ferry, N.C.; Franz X. Topolovec, Accord, and Uldis Artis Ziemins, Poughkeepsie, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 250,890, May 31, 1994, abandoned. This application Jun. 5, 1995, Ser. No. 462,979
Int. Cl.[6] G02B *26/08;* **B41J** *2/47*
U.S. Cl. 359—208 **19 Claims**

1. An apparatus comprising a Mid-Objective scanner system for correcting astigmatism, bow distortion and field curvature comprising:

(a) at least one means for tilting at least one lens at an angle alpha to focus at least one incoming light beam onto at least one scanning mechanism, wherein said lens is tilted at said angle alpha to produce an opposite amount of astigmatism to thereby correct astigmatism,

(b) said scanning mechanism located between said at least one tilted lens and at least one workpiece, wherein said scanning mechanism has at least one means for directing said at least



one incoming light beam onto at least a portion of the reflective surface of a concave cylindrical mirror, and

(c) a means in said concave cylindrical mirror for directing said at least one incoming light beam onto a workpiece, such that said at least one incoming light beam is focused at said workpiece, wherein said concave cylindrical mirror has a radius of curvature which corrects the field curvature in the image plane of said workpiece, and thereby correcting astigmatism, bow distortion and field curvature using a Mid-Objective scanner system.

5,828,482

APPARATUS AND METHOD FOR DIRECTING A BEAM OF LIGHT TO A SURFACE OF AN OPTICAL DISK

Amit Jain, Sunnyvale, Calif., assignor to TeraStor Corporation, San Jose, Calif.

Filed Feb. 5, 1997, Ser. No. 795,606
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—211 **16 Claims**



1. An apparatus for use with an optical disk drive for directing a beam of light to a surface of an optical disk, the beam being generated along a first path, the apparatus comprising:

a beam shifter configured to direct the beam from the first path along a second path substantially parallel to the first path, the first and second paths separated by a distance;

an objective lens near the surface of the disk, the objective lens having a front focal point; and

an imaging lens configured to direct the beam from the second path along a third path which passes near the front focal point of the objective lens, wherein the third path and the first path diverge at an angle based on the distance separating the first and second paths.

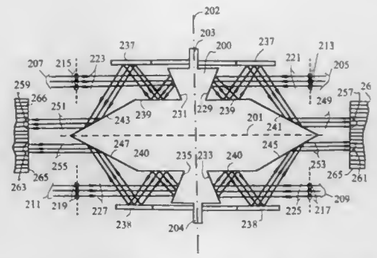
5,828,483

PRINTING AND INSPECTION SYSTEM USING ROTATING POLYGON AND OPTICAL FIBERS

Nira Schwartz, 1314 Wellington Pl., Aberdeen, N.J. 07747, and Arie Shahar, 14 David Street, Moshav Magshimim 56910, Israel

Continuation of Ser. No. 238,280, May 5, 1994, abandoned, which is a continuation-in-part of Ser. No. 155,889, Nov. 23, 1993, Pat. No. 5,557,438. This application Feb. 13, 1997, Ser. No. 799,288
Int. Cl.[6] G02B *26/08*
U.S. Cl. 359—216 **20 Claims**

1. A system for scanning, tracking, engraving printing, plotting, writing, inspecting, or reading, comprising:



(a) a polygon means which can rotate about a rotational axis throughout a range of rotation with an angular velocity,

(b) said polygon means comprising a polygon having at least one side, said one side including at least one optical means,

(c) a first region and a second region remote from said first region,

(d) a first medium support means and a first medium having a bundle of radiation guides, said first medium support means supporting said first medium,

(e) each of said rotation guides having a first end and a second end, said first end being located at said first region and said second end being located at said second region,

(f) a second medium support means and a second medium having a third region, said second medium support means supporting said second medium,

(g) a radiation source means for providing at least one radiation beam and directing said one radiation beam onto said optical means of said polygon means such that said one radiation beam travels to said optical means of said polygon means,

(h) said optical means arranged to project said at least one radiation beam from said optical means onto said first region so as to form, on said first region, a corresponding radiation spot which moves on said first region at a second velocity which is linearly proportional to said angular velocity of said polygon means throughout said range of rotation of said Polygon means,

(i) said optical means also arranged to receive said one radiation beam from said radiation source along a first line and to project said one radiation beam onto said first region along a second line, such that said first and second lines intersect a plane that contains said rotational axis at two intersection points that are separated along said plane in the direction of said rotational axis,

(j) said first region being positioned to receive said one radiation beam from said optical means of said polygon means, such that said one radiation beam travels along an optical path from said radiation source means to said optical means, and then from said optical means to said radiation guides on said first region,

(k) said bundle of radiation guides being arranged to receive said one radiation beam from said first region and to guide said one radiation beam to said second region,

(l) said third region being positioned to receive said one radiation beam from said second region, and

(m) said radiation source means and said first and second medium support means and hence said first, second, and third regions being positioned so that they are spaced from said rotational axis and are spaced from each other.

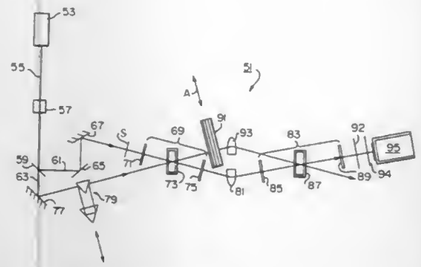
5,828,484

MULTIPLE-STAGE OPTICAL KERR GATE SYSTEM

Ping-Pei Ho, 240-42 69th Ave., Douglaston, N.Y. 11362, and Robert R. Alfano, 3777 Independence Ave., Bronx, N.Y. 10463

Division of Ser. No. 784,220, Oct. 30, 1991, Pat. No. 5,227,912. This application Apr. 26, 1993, Ser. No. 51,987
Int. Cl.[6] H01S *3/10*
U.S. Cl. 359—258 **1 Claim**

1. A multiple-stage optical gate adapted for use in gating a pulse of light comprising:



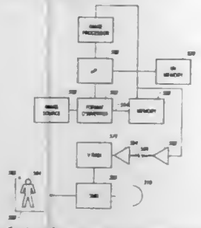
(a) a non-linear medium;
(b) first and second polarizers; and
(c) first and second analyzers, said first and second analyzers being crossed relative to said first and second polarizers, respectively, and said second polarizer having a polarization axis parallel to that of said first analyzer, said first and second polarizers and said first and second analyzers being arranged relative to said non-linear medium so that said first polarizer, said non-linear medium and said first analyzer form a first optical gate and said second polarizer, said non-linear medium and said second analyzer form a second optical gate.

5,828,485

PROGRAMMABLE LIGHT BEAM SHAPE ALTERING DEVICE USING PROGRAMMABLE MICROMIRRORS

William E. Hewlett, Sutton Coldfield, England, assignor to Light & Sound Design Ltd., Birmingham, England

Filed Feb. 7, 1996, Ser. No. 598,077
Int. Cl.[6] G02B *26/00*
U.S. Cl. 359—291 **22 Claims**



6. A mirror gobo, comprising:
a light source;
a plurality of electrically controllable mirrors, which are electrically controlled to change position, said mirrors being optically in series with said light source; and
a control system that stores information indicative of a plurality of template shapes and selectively outputs said information to control the mirrors to change position according to a specified template to thereby alter the shape of the light according to the specified template, said control system including an automated program which selects a first template shape at a first time and which selects a second template shape at a second time.

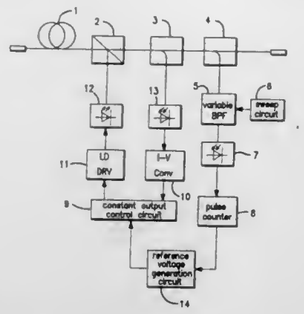
5,828,486

OPTICAL AMPLIFIER DEVICE FOR WAVELENGTH DIVISION MULTIPLEXING OPTICAL TRANSMISSION

Takashi Yoshida, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 1, 1997, Ser. No. 904,611
Claims priority, application Japan, Aug. 1, 1996, 8-203888
Int. Cl.[6] H01S *3/00;* **H04B** *10/00*
U.S. Cl. 359—341 **7 Claims**

1. An optical amplifier device for wavelength division multiplexing optical transmission comprising:



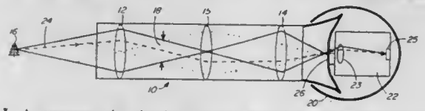
light input means for receiving multiplexed signal light obtained by performing a wavelength division multiplexing for a plurality of signal light having respective different wavelengths;
optical amplifier means for receiving said multiplexed signal light to optically amplify said multiplexed signal light, and for outputting the amplified signal light;
first optical division means for partially dividing said amplified signal light to output first divided amplified signal light;
photoelectric converting means for converting said first divided amplified signal light to an electric signal;
control means for comparing said electric signal with a prescribed reference value and for controlling said optical amplifier means so that both of said electric signal and said reference value become equal to each other;
second optical division means for partially dividing said amplified signal light to output second divided amplified signal light;
a variable wavelength band-pass light filter for passing signal light of a prescribed wavelength selectively from said second divided amplified signal light in response to a sweep signal supplied thereto and for outputting a selected amplified signal light;
wavelength sweep means for sweeping said variable wavelength band-pass light filter at a band including all wavelengths of said second divided amplified signal light and for outputting said sweep signal to selectively designate said signal light of the prescribed wavelength;
photoelectric converting means for converting said selected amplified signal light to an electric signal;
channel number detection means for detecting the number of channels of said multiplexed signal light and for outputting the number of the channels; and
reference value setting means for setting said reference value depending on said number of the channels.

5,828,487

STEREOSCOPIC VIEWING SYSTEM USING A TWO DIMENSIONAL LENS SYSTEM

Anthony B. Greening, North Vancouver, and Thomas N. Mitchell, Richmond, both of Canada, assignors to International Telepresence Inc., Vancouver, Canada

Continuation-in-part of Ser. No. 227,556, Apr. 14, 1994, abandoned. This application Jun. 6, 1996, Ser. No. 659,379
Int. Cl.[6] G02B *27/22;* **A61B** *1/04;* **H04N** *13/02*
U.S. Cl. 359—466 **18 Claims**



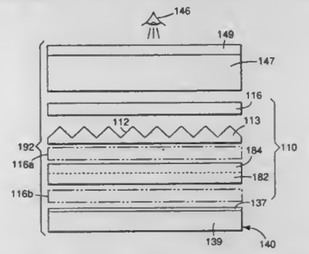
1. A stereoscopic viewing system for viewing an object in a single image path with a camera comprising:
a two dimensional lens system on the single image path;
a switching device having an opaque leaf positioned on the single image path between the two dimensional lens system and the camera, the opaque leaf movable in the single image path from a left position to a right position, to provide a left image perspective and a right image perspective on the single image path to the camera, the left image perspective and the right image perspective required for stereoscopic viewing;
a left positive stop and a right positive stop to provide the left position and the right position for the opaque leaf;
means for moving the opaque leaf between the left positive stop and the right positive stop, and retain the opaque leaf stationary in each position for a sufficient time for the camera to completely view each image perspective;
a variable locating means for the left positive stop and the right positive stop for varying the left image perspective and the right image perspective to represent a cross-sectional area in a range greater than one-half the cross-sectional area of the image path blanked at the location of the opaque leaf to less than one-half the cross-sectional area of the image path blanked at the location of the opaque leaf;
stereoscopic viewing means to view the left image perspective from the camera with one eye of a viewer and to view the right image perspective from the camera with the other eye of the viewer;
synchronization means to synchronize the means for moving the opaque leaf and control the stereoscopic viewing means so that the viewer sees only the left image perspective with one eye and only the right image perspective with the other eye, and
wherein the means for moving the opaque leaf in the switching device comprises two opposing electromagnets on both sides of a magnetic material armature movable between the electromagnets, the armature being connected by an arm to the opaque leaf, the arm having a bearing between the armature and the opaque leaf, the electromagnets moving the armature from side to side such that the opaque leaf moves from the left positive stop to the right positive stop.

5,828,488

REFLECTIVE POLARIZER DISPLAY

Andrew J. Ouderkirk; Olester Benson, Jr., both of Woodbury; Sanford Cobb, Jr., St. Mary's Point, all of Minn.; James M. Jonza, Round Rock, Tex.; Michael F. Weber, Shoreview, Minn.; David L. Wortman, and Carl A. Stover, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Continuation-in-part of Ser. No. 171,239, Dec. 21, 1993, abandoned, Ser. No. 172,593, Dec. 21, 1993, abandoned, Ser. No. 359,436, Dec. 20, 1994, abandoned, and a continuation-in-part of Ser. No. 360,204, Dec. 20, 1994, abandoned. This application Mar. 10, 1995, Ser. No. 402,349
Int. Cl.[6] G02B *5/30;27/28*
U.S. Cl. 359—487 **92 Claims**



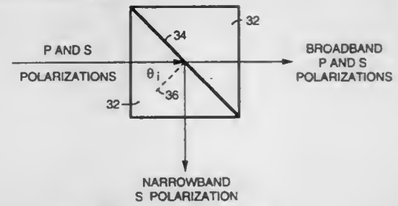
1. A brightness enhanced reflective polarizer which provides directional and polarization control of light incident upon it, comprising:
a reflective polarizer including a multiple layer stack of alternating layers of at least two different materials having a refractive index difference between the different materials along a first in-plane axis which is greater than a refractive index difference between the different materials along a second in-plane axis such that the reflective polarizer transmits light having a first polarization orientation and reflects light having a different polarization orientation; and
a first structured surface material adapted to reflect light having an angle of incidence between an axis normal to the first structured surface material and a first predetermined angle, and adapted to redirect and transmit light having an angle of incidence between the first predetermined angle and an axis parallel to the first structured surface material;
wherein the reflective polarizer and the first structured surface material operate together to control direction and polarization of light transmitted by the brightness enhanced reflective polarizer.

5,828,489

NARROW WAVELENGTH POLARIZING BEAMSPLITTER

Walter E. Johnson, Dayton, Ohio; William H. Southwell, Thousand Oaks, and Randolph L. Hall, Newbury Park, both of Calif., assignors to Rockwell International Corporation, Costa Mesa, Calif.

Filed Apr. 12, 1996, Ser. No. 631,509
Int. Cl.[6] G02B *5/30;27/28;1/10*
U.S. Cl. 359—487 **7 Claims**



1. A polarizing beamsplitter comprising:
an optical medium; and
a rugate filter embedded in said optical medium at a non-orthogonal angle with respect to an incident beam in said optical medium, said angle being defined by

$$\theta_i = \arcsin\left[\left(\frac{n_L}{n_i}\right)\sin\left\{\arctan\left(\frac{n_H}{n_L}\right)\right\}\right].$$

where θ_i is the angle of incidence of said incident beam with respect to a normal to said rugate filter, n_i is the refractive index of said optical medium, and n_H and n_L are high and low values, respectively, of the refractive index profile of said rugate filter.

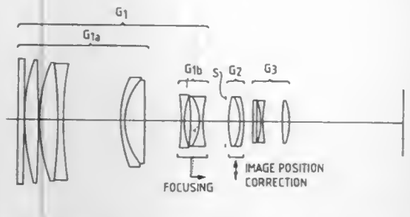
5,828,490

IMAGE POSITION CORRECTING OPTICAL SYSTEM

Susumu Sato, Tokyo, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed May 30, 1997, Ser. No. 865,898
Claims priority, application Japan, Mar. 6, 1996, 8-163865
Int. Cl.[6] G02B *27/64;9/12*
U.S. Cl. 359—557 **36 Claims**

1. An image position correcting optical system comprising:
a first lens group that is fixed with respect to a direction perpendicular to an optical axis,
a second lens group that is decentered as necessary in the direction perpendicular to the optical axis to correct an image position, and
a third lens group that is fixed with respect to the direction perpendicular to the optical axis,
the first, second and third lens groups being positioned in order from an object side of the system,



the second lens group consisting of a positive lens and a negative lens,

the third lens group including a positive lens, a negative lens and an additional lens,

said image position correcting optical system satisfying a condition:

$$-0.1 \leq |d\ l/f3| \leq 0.4$$

when |dl is an absolute distance from a back focal position of the second lens group to a front principal point of the third lens group and f3 is a focal length of the third lens group; and

wherein:

$$0.7 < |f2/F23| < 1.3$$

when f2 is a focal length of the second lens group, and F23 is a composite focal length of the second lens group and the third lens group.

5,828,491

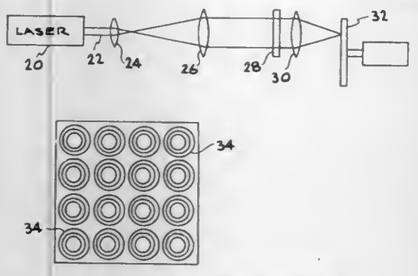
PHASE PLATE TECHNOLOGY FOR LASER MARKING OF MAGNETIC DISCS

Bill Neuman; John Honig; Lloyd Hackel; C. Brent Dane, and Shamasundar Dixit, all of Livermore, Calif., assignors to The Regents of the University of California, Oakland, Calif.

Filed Dec. 20, 1996, Ser. No. 777,680

Int. Cl.[6] G02B *27/24;27/46;5/18;* **G03F** *9/00*

U.S. Cl. 359—565 **22 Claims**



1. A method for designing a phase plate, comprising:

adding an assumed grating phase profile to a laser beam profile to calculate a modified laser beam profile;

calculating a Fourier transform of said modified laser beam profile to produce a calculated far field laser beam comprising a plurality of beams;

multiplying each beam of said plurality of beams that is located within a desired pattern by a filter according to the equation

$$\text{filter} = \left[1 + \Delta \frac{I_{desired} - I}{I} \right]^{1/2}$$

to produce a modified far field, where Δ is a relaxation parameter that is a number that is between 0 and 1, I is calculated irradiance, and $I_{desired}$ is the desired irradiance at each beam of said plurality of beams within said desired pattern;

multiplying each beam of said plurality of beams that is located outside said desired pattern and greater than a specified maximum threshold irradiance $I_{threshhold}$ by a second filter according to the equation

$$\text{second filter} = \left[1 + \Delta \frac{I_{threshold} - I}{I} \right]^{1/2}$$

to produce a further modified far field;

calculating the inverse Fourier transform of said further modified far field to obtain the near field at the location of said grating, wherein the new grating phase is extracted from said user field;

scaling said near field at the location of said grating so that it matches the input laser irradiance profile, wherein said new grating phase is unchanged; and

repeating the above process until the grating phase has converged to a desired tolerance to produce a converged grating phase, producing in the far field of an imaging lens a desired laser spot array, wherein said desired laser spot array is uniformly printed in the regions where laser spots are desired and wherein said laser spots are prevented from printing in undesired regions without aperturing said laser beam.

5,828,492

GRATING STRUCTURE HAVING A PLURALITY OF BINARY LAMELLAR GRATINGS

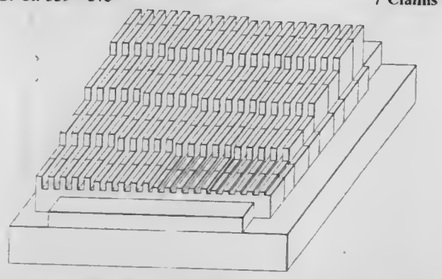
Herbert Moser, Karlsruhe, Germany, and Karl-Dieter Möller, Allendale, N.J., assignors to Forschungszentrum Karlsruhe GmbH, Karlsruhe, Germany

Filed Oct. 30, 1996, Ser. No. 739,202

Claims priority, application Germany, Jun. 18, 1994, 44 21 392.1

Int. Cl.[6] G02B *5/18*

U.S. Cl. 359—575 **7 Claims**



1. A grating structure for use in a Fourier spectrometer with a series of alternately raised and recessed surface areas of optical quality, said grating structure having a plurality of binary lamellar gratings arranged on different surface areas and including at least 64 surface pairs with 64 distinct height differences.

5,828,493

REFLECTORS

Carmen B. Bischer, Jr., Hayward, and Edward A. Small, Jr., Santa Rosa, both of Calif., assignors to Dielectric Coating Industries, Hayward, Calif.

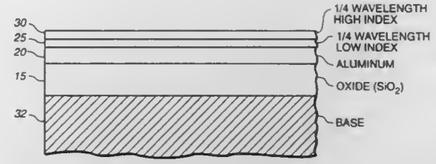
Continuation-in-part of Ser. No. 344,159, Nov. 23, 1994, abandoned, which is a division of Ser. No. 58,642, May 5, 1993, Pat. No. 5,395,662, which is a continuation-in-part of Ser. No. 919,768, Jul. 24, 1992, Pat. No. 5,312,647. This application Sep. 17, 1996, Ser. No. 710,464

Int. Cl.[6] G02B *1/10*

U.S. Cl. 359—584 **30 Claims**

21. A high reflectance reflector comprising:

a base of polished metal;



a non-porous layer of oxide at least 0.5 microns thick deposited over said base;

an opaque layer of aluminum vacuum deposited onto said layer of oxide;

a quarter wavelength thick layer of a low index of refraction material and a quarter wavelength thick layer of a high index of refraction material vacuum deposited onto said layer of aluminum.

5,828,494

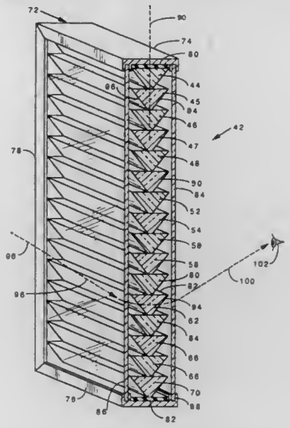
GLASS PANEL UNIT FOR REFRACTING AND DISPERSING LIGHT

Paul R. Stremple, 160 Monks Rd., Saxonburg, Pa. 16056

Continuation of Ser. No. 245,716, May 18, 1994, abandoned. This application Dec. 23, 1996, Ser. No. 772,304

Int. Cl.[6] G02B *5/04;27/00*

U.S. Cl. 359—615 **20 Claims**



15. A panel unit having a light reflecting side and a viewing side, comprising:

a frame with an opening, and

a plurality of transparent light refracting and dispersing elements in said opening of said frame,

said plurality of elements each having a relatively high index of refraction and being shaped to disperse reflected light on said light reflecting side into a specific wavelength to provide a block of color in said each of said elements such that said plurality of elements form a mosaic color pattern when viewed on said viewing side of said panel unit.

5,828,495

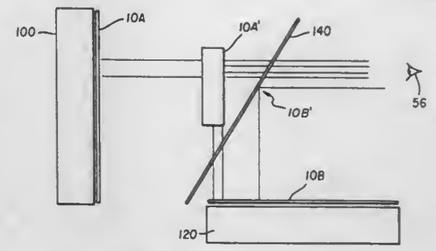
LENTICULAR IMAGE DISPLAYS WITH EXTENDED DEPTH

Roland R. Schindler, Pittsford, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jul. 31, 1997, Ser. No. 904,089

Int. Cl.[6] G02B *27/10;27/14*

U.S. Cl. 359—621 **7 Claims**



1. A virtual lenticular imaging apparatus, comprising:

(a) a beam splitter; and

(b) first and second lenticular image elements each having a lenticular image of interleaved lines from a plurality of images and a lenticular lens sheet or barrier lens sheet aligned with the lenticular image, the lenticular image elements being positioned to project their respective lenticular images onto the beam splitter to provide a virtual integrated lenticular image for viewing and wherein the first lenticular image element has a lenticular three-dimensional image which includes interleaved lines from a plurality of different perspective views of the same scene, so that the virtual integrated lenticular image includes a three-dimensional image from the first lenticular image element plus another image from the second lenticular image element.

5,828,496

ILLUMINATION OPTICAL SYSTEM

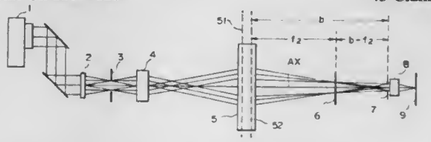
Masayuki Nishiwaki, Kawasaki; Hiroshi Sugitani, Machida; Tsuyoshi Orikasa, Musashimurayama, and Akira Goto, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1994, Ser. No. 361,042

Claims priority, application Japan, Dec. 22, 1993, 5-325156

Int. Cl.[6] G02B *27/10*

U.S. Cl. 359—626 **43 Claims**



1. An illumination optical system, comprising:

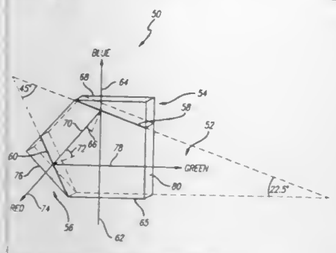
beam dividing means for dividing a radiation beam into plural illumination beams; and

an optical arrangement for superposing the illumination beams one upon another on a surface to be illuminated, said optical arrangement comprising an anamorphic optical system having different focal lengths in substantially orthogonal first and second directions, and said anamorphic optical system being adapted to focus each of the illumination beams on said surface in the first direction while defocusing the same in the second direction, whereby a linear illumination region is defined on said surface.

5,828,497
DICHROIC PENTAPRISM FOR SEPARATING OR COMBINING FREQUENCY BANDS OF ELECTROMAGNETIC ENERGY

Margarete Neumann, Penetanguishene, and Robert Pursel, Victoria Harbor, both of Canada, assignors to Raytheon Company, Lexington, Mass.

Filed Feb. 26, 1997, Ser. No. 805,512
Int. Cl.[6] G02B *27/14;01/10*
U.S. Cl. 359—634 **21 Claims**

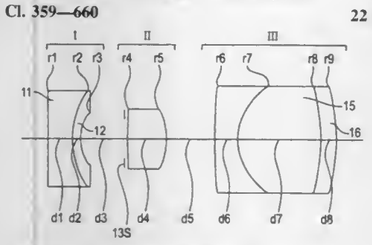


1. A dichroic beamsplitter comprising:
a first input surface approximately perpendicular to an input beam of light;
a first dichroic surface mounted at a first angle with respect to said input aperture for transmitting light of a first color along a first path parallel to said input beam and for reflecting light of a second color and light of a third color;
a second dichroic surface mounted at a second angle with respect to said input aperture for reflecting said light of a second color along a second path approximately perpendicular to said input beam and for reflecting said light of a third color along a third path angled approximately forty-five degrees with respect to said input beam; and
a first output surface approximately perpendicular to said second path for outputting said light of a second color.

5,828,498
OBJECTIVE LENS OF ENDOSCOPE

Takaomi Sekiya; Kazuyuki Takahashi, and Masaru Eguchi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 547,339, Oct. 24, 1995, abandoned. This application Oct. 29, 1997, Ser. No. 967,212
Claims priority, application Japan, Oct. 25, 1994, 6-260702; Nov. 17, 1994, 6-283811
Int. Cl.[6] G02B *21/02;3/02;9/04*
U.S. Cl. 359—660 **22 Claims**

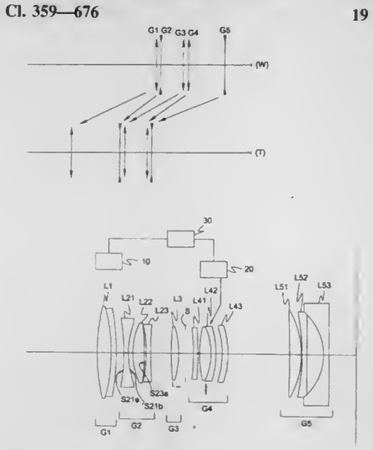


1. An objective lens for an endoscope comprising:
a front lens group of negative power;
an aperture stop; and,
a rear lens group of positive power in this order from the object side;
wherein at least one lens of one of said front lens group or rear lens group is a compound aspherical lens comprising a glass lens and a transparent resin layer applied to a surface of said glass lens, a surface of said transparent resin layer farthest from said glass lens being an aspherical surface, and a refractive index n of said glass lens to which said transparent resin layer is applied being more than 1.65 (n>1.65)
wherein a thickness of said glass lens on which said transparent resin layer is formed is larger on an optical axis of said objective lens than a thickness of said transparent resin layer.

5,828,499
ZOOM LENS SYSTEM

Motoyuki Ohtake, Kanagawa, Japan, assignor to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 605,543, Feb. 16, 1996, abandoned. This application Oct. 27, 1997, Ser. No. 960,097
Claims priority, application Japan, Feb. 23, 1995, 7-059946
Int. Cl.[6] G02B *15/14;27/64*
U.S. Cl. 359—676 **19 Claims**



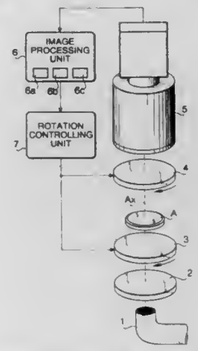
1. A zoom lens system comprising:
a first lens group of positive refractive power positioned nearest an object side of the zoom lens system;
a second lens group of negative refractive power adjacent the first lens group on an image side, the second lens group consists of only three lens elements, the second lens group consisting of, in order from the object side:
a first lens subgroup,
a second double convex lens subgroup on the image side of, and separated by an airspace from, the first lens subgroup, and
a third lens subgroup on the image side of, and separated by an airspace from, the second lens subgroup; and
a third lens group of positive refractive power adjacent the second lens group on the image side, wherein each lens group moves during zooming from a maximum wide-angle state to a maximum telephoto state so that a spacing between the first lens group and the second lens group changes and a radius of curvature ra of a surface on the object side of the first lens subgroup and a radius of curvature rb of a surface on the object side of the third lens subgroup satisfy:

$0.8<ra/rb<3$.

5,828,500
OPTICAL ELEMENT INSPECTING APPARATUS

Atsushi Kida; Masato Hara; Masayuki Sugiura, and Toshihiro Nakayama, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 9, 1996, Ser. No. 728,182
Claims priority, application Japan, Oct. 11, 1995, 7-263327; Dec. 14, 1995, 7-326121; Jul. 11, 1996, 8-182557; Jul. 11, 1996, 8-182558
Int. Cl.[6] G02B *7/02;* **G01J** *21/00*
U.S. Cl. 359—798 **23 Claims**



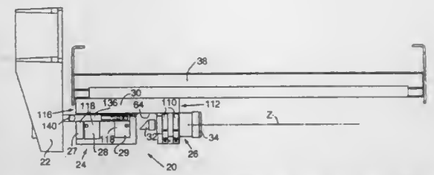
1. An optical element inspecting apparatus for detecting a defect of an optical element, said apparatus comprising:
an illuminating unit for illuminating said optical element;
an image capturing unit which receives light output by said illuminating unit via said optical element;
two polarizers located in an optical path between said illuminating unit and said image capturing unit, positioned such that said optical element is located between said polarizers;
a rotation device for rotating said polarizers such that respective transmission axes of said two polarizers rotate in planes which cross said optical path while keeping a constant angle between said respective transmission axes;
a controller for controlling said image capturing unit and said rotation device to capture image data representative of images formed by the light transmitted through said polarizers, said controller controlling said image capturing unit to capture image data at a plurality of angular positions within a 180° rotation of said polarizers;
means for composing the image data captured by said image capturing unit; and
means for representing at least one characteristic of patterns included in said image data as a numerical value, and for comparing said numerical value with a predetermined reference value in order to judge whether said optical element is acceptable or not.

5,828,501
APPARATUS AND METHOD FOR POSITIONING A LENS TO EXPAND AN OPTICAL BEAM OF AN IMAGING SYSTEM

Alan W. Menard, Bolton; David P. Squires, Lebanon; Gene D. Welti, Ellington, and Joseph A. Wheeler, Vernon, all of Conn., assignors to Barco Gerber Systems, South Windsor, Conn.

Filed Jul. 2, 1996, Ser. No. 674,439
Int. Cl.[6] G02B *7/02;* **G11B** *17/00*
U.S. Cl. 359—819 **30 Claims**

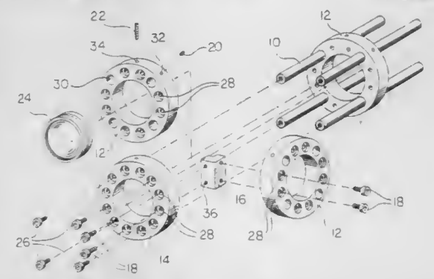
1. A beam expander apparatus for magnifying and focusing an optical beam of an imaging system, the imaging system including an exposure surface for supporting media, a rigid spar extending the longitudinal length of and parallel to said media, a carriage slidably coupled to said spar, a spinner motor secured to said carriage, a mirror attached to said spinner motor for reflecting said optical beam, a carriage drive means for moving said carriage along said spar in response to drive signals, and a motion control system electrically connected to said carriage drive means for providing said drive signals to move said carriage along said spar in response to a motion control algorithm, said apparatus comprising:
a lens mount having a pair of engagement surfaces;
a lens secured to said lens mount for receiving said optical beam;
a bearing means disposed on said carriage for slidably moving said lens mount along said carriage;
an engagement means disposed said carriage for coupling said lens mount to said carriage;
a means for urging said lens mount to an initial position; and
a catch means for engaging and maintaining said lens mount in fixed relationship to said spar.



5,828,502
OPTICAL BENCH SYSTEM

Ali Afshari, c/o AF optical Company, 17962 Sky Park Cir., Suite A., Irvine, Calif. 92714

PCT No. PCT/US94/11472, § 371 Date Mar. 14, 1997, § 102(e) Date Mar. 14, 1997, PCT Pub. No. WO96/10204, PCT Pub. Date Apr. 4, 1996
PCT Filed Sep. 26, 1994, Ser. No. 793,305
Int. Cl.[6] G02B *7/02*
U.S. Cl. 359—819 **21 Claims**



1. An optical bench set, comprising:
at least one truncated circular cylindrical optical mounting plate having an outer radius and having a concentric central bore therethrough defining an inner radius of such dimension as to admit the installation of optical elements therein;
said mounting plate having a thickness dimension such that threaded bores may be incorporated in a radial direction therein;
a plurality of radially directed threaded bores in said mounting plate;
said mounting plate further having a differential radial dimension so as to permit the fabrication of apertures in an axial direction;
a plurality of axially directed apertures in said mounting plate;
corner connectors having threaded bores and adapted to connect a plurality of mounting plates to one another; and
a plurality of plate retaining rods wherein each of said rods is adapted to pass through an axially directed aperture in said mounting plate.

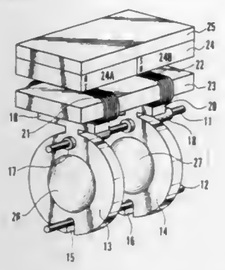
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5,828,503

DRIVING DEVICE AND OPTICAL APPARATUS HAVING THE SAME

Naoya Kaneda, and Junichi Murakami, both of Kanagawa-ken, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 14, 1995, Ser. No. 557,497
Claims priority, application Japan, Nov. 17, 1994, 6-309559
Int. Cl.[6] G02B *7/02;* G03B *17/00*
U.S. Cl. 359—824 13 Claims



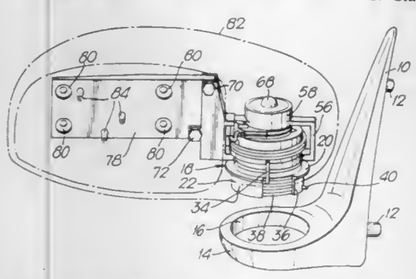
13. A driving device for driving a first driven member and a second driven member, comprising:
forming means for forming one magnetic circuit;
a first coil disposed at said first driven member, and
a second coil disposed at said second driven member,
said first coil and said second coil being provided within said one magnetic circuit and arranged to move by being respectively supplied with currents; and
sensors provided respectively at said first and second coils for detecting the intensity of magnetic fields of said first and second coils, outputs of said sensors being used in detecting the positions of said coils corresponding to said sensors.

5,828,504

EXTERIOR REARVIEW MIRROR FOR A VEHICLE

Xavier Beuzeville, Chatelet en Brie, France, assignor to Britax (Geco) S.A., France

Filed Nov. 17, 1995, Ser. No. 560,045
Claims priority, application United Kingdom, Nov. 26, 1994, 9423938
Int. Cl.[6] B60R *1/06;* G02B *7/182*
U.S. Cl. 359—841 17 Claims



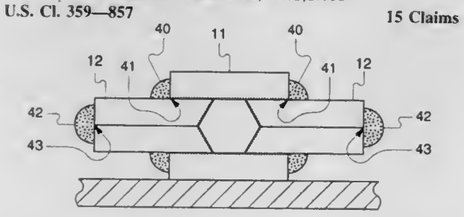
1. An exterior rearview mirror for a vehicle comprising
a base member adapted to be secured to a vehicle body,
a mirror head mounted on the base member for angular movement about a substantially vertical axis between a position of normal use and a position folded alongside the vehicle body,
an intermediate member mounted for angular movement about said substantially vertical axis,
detent means adapted to engage with the intermediate member, thereby to hold the mirror head in its normal position,
an electric motor,
transmission means powered by the electric motor and arranged to cause movement of the detent means out of engagement during an initial phase of movement and to cause angular movement of the mirror head away from its normal position during a subsequent phase of movement, and
further detent means adapted to couple the intermediate member to the base member and to disengage when an external force exceeding a predetermined threshold is applied to the mirror head so as to cause angular movement thereof about said substantially vertical axis.

5,828,505

OPTICAL BEAM-SHAPER-UNIFORMIZER CONSTRUCTION

Nestor O. Farmiga, Clifton, N.J., assignor to Anvik Corporation, Hawthorne, N.Y.

Filed May 10, 1996, Ser. No. 644,773
Int. Cl.[6] G02B *5/08;7/182;27/08*
U.S. Cl. 359—857 15 Claims



1. The method of constructing a hexagonal internally-mirrored tube uniformizer (**10**) of uniform cross-section, for use in accepting a light beam with a given numerical aperture, a non-uniform intensity profile and an arbitrary cross-section, and producing a beam of the same numerical aperture with a substantially uniform intensity profile and a hexagonal cross-sectional shape, characterized by the following steps:
a) laying down a base flat-mirrored panel (**11**) with mirror face (**29**) directed into the tube to form a first mirrored face and a datum plane extending outward from said first mirrored face;
b) stacking, outside the dimensions of the hexagonal tube, on said datum plane, two complementary pairs of bevel-edge mirrored trapezoidal-cross-section slabs (**12**), each with thickness t with mirrored 60° bevel edges of length L, directed into the tube to form second through fifth mirrored faces;
c) applying a completion flat-mirrored panel (**11**) with mirror face (**29**) directed into the tube to form a sixth mirrored face of width f with a datum plane extending outward and resting on said two complementary pairs; and
d) affixing said slabs and said panels into an integral internally-mirrored hexagonal tube assembly.

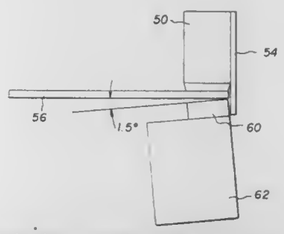
5,828,506

MAGNETIC HEAD INTERFACE HAVING A SINGLE NARROW BAND OF CONTACT FOR LONGITUDINAL EDGE TRACK RECORD/REPRODUCE ON MAGNETICS-ON-FILM (MOF)

Wlodzimierz Stanley Czarnecki, Rancho Santa Fe; Kent Raphael Gandola, Carlsbad, both of Calif.; Richard R. Tuyn, Fairport, N.Y., and George William Brock, La Jolla, Calif., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Aug. 8, 1996, Ser. No. 694,070
Int. Cl.[6] G11B *15/62*
U.S. Cl. 360—3 7 Claims

1. Photographic apparatus for recording/reproducing information in a magnetic region along an edge of photographic film, said apparatus comprising:



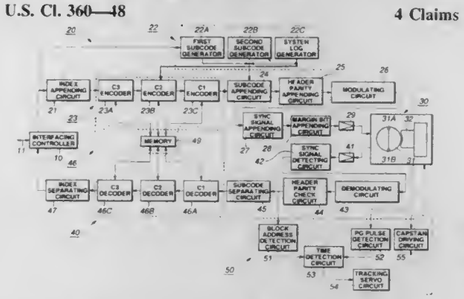
a magnetic head supported by said apparatus in contact with a magnetic region of film transported past said magnetic head, said magnetic head having a frustum shape in the direction of said film transport with at least one magnetic gap at the center of said frustum, wherein said magnetic head-to-film interface is concentrated in those regions immediately surrounding the gap regions; including a resilient backer device supported by said apparatus opposite said magnetic head gap to apply a single line of contact along the apex of the head bearing surface effecting equalization of the force distribution, wherein said backer device is tilted toward said magnetic head at the edge of said film to achieve a more uniform head-to-film compliance and to better balance the head-to-film force distribution.

5,828,507

METHOD FOR RECORDING DATA ONTO TAPE-SHAPED RECORDING MEDIA FOR HIGH-SPEED RETRIEVAL BASED ON SYSTEM LOG INFORMATION RECORDED IN A LEADING PARTITION

Masaki Yamada, and Shinya Ozaki, both of Kanagawa, Japan, assigoors to Sony Corporation, Tokyo, Japan

Filed Jul. 25, 1995, Ser. No. 507,670
Claims priority, application Japan, Jul. 27, 1994, 6-175530
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—48 4 Claims



1. A data recording and retrieval method for a tape-shaped recording medium having a leading end comprising the steps of:
partitioning said tape-shaped recording medium into a plurality of partitions;
designating a system region for at least a leading partition of said plurality of partitions, wherein the leading partition is chosen as the partition most proximate to the leading end of the tape-shaped recording medium;
recording format data to form a plurality of azimuth tracks on the tape-shaped recording medium using a rotary head in said plurality of partitions in regions not designated as a system region; and
recording system log information as main data for each partition of said plurality of partitions into said system region of said leading partition of the plurality of partitions, whereby retrieval of data from each of the plurality of partitions is performed based only on the system log information recorded as main data in the leading partition, whereby the system log data will be subject to the same error correction algorithms as the format data.

5,828,508

TECHNIQUE FOR REDUCING OVERHEAD IN A DATA STORAGE SYSTEM

Jeffrey L. Whaley, Boulder, and Robert L. Metz, Westminster, both of Colo., assignors to Maxtor Corporation, Longmont, Colo.

Filed Oct. 17, 1996, Ser. No. 733,964
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—49 14 Claims

SECTOR NUMBERS FOR TRACK A	1	2	3	4	5	6	7	8	9	*0
LSBs OF CYLINDER NUMBER FOR TRACK A	6	6	6	6	6	6	6	6	6	6
MSBs OF CYLINDER NUMBER FOR TRACK A	0	*	1	0	1	1	0	0	1	1
INDEX PATTERN	0	1	2	3	0	1	2	3	0	1
STORED VALUE	6	8	9	9	7	9	8	9	7	8
SECTOR COUNTER	0	1	2	3	4	*	5	6	8	9
MISSING UPDATE					*					
COUNTER MOD 4	0	1	2	3	0	*	1	2	0	1
STORED VALUE COUNTER MOD 4	6	7	7	6	7	*	7	7	7	7
MSB (ASSUMED)	0	1	1	0	1	*	1	0	1	1
LSB (CALCULATED)	6	6	6	6	6	*	6	7	6	6

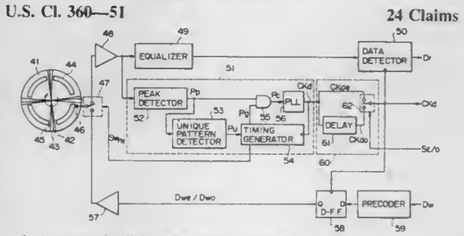
1. A data storage disk for use in a disk drive, comprising:
a data storage medium; and
a plurality of concentric tracks disposed upon a surface of said data storage medium, said plurality of tracks including pairs of adjacent tracks, each of said plurality of tracks including a plurality of data fields for use in storing user data and a plurality of overhead sectors for use in storing information other than user data, wherein selected overhead sectors within adjacent tracks are radially aligned with one another;
wherein each of said selected overhead sectors in said adjacent tracks includes a value representing the combination of at least two parameters corresponding to said selected overhead sectors;
wherein said values in said selected overhead sectors in adjacent tracks differ from one another in only one bit position for all adjacent tracks on the disk;
wherein, for all of the plurality of tracks, said values of said adjacent overhead sectors within a common track differ from each other in greater than one bit position.

5,828,509

MAGNETIC DISK RECORDING AND PLAYBACK APPARATUS USING INDEPENDENTLY FORMED RECORDED PATTERN SETS FOR CLOCK GENERATION

Hiroaki Yada; Nobuhiro Hayashi; Takamichi Yamakoshi, all of Kanagawa, and Munekatsu Fukuyama, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Division of Ser. No. 134,375, Oct. 12, 1993. This application Jun. 6. 1995, Ser. No. 471,243
Claims priority, application Japan, Oct. 14, 1992, 4-276165; Oct. 19, 1992, 4-280014
Int. Cl.[6] G11B *5/09*
U.S. Cl. 360—51 24 Claims



1. A magnetic disk apparatus comprising:

a magnetic disk on which a data recording region, a magnetic clock pattern region for giving the timing reference common to the adjacent tracks and a set of several magnetic patterns region for specifying a circumferential position of said magnetic clock pattern, wherein the magnetic clock pattern region and set of several magnetic patterns region are formed independently of each other on the magnetic disk such that the magnetic clock pattern region and set of several magnetic patterns region produce isolated waveforms when read;

playback means for reproducing information recorded on said magnetic disk;

first clock generating means for generating a data existing point clock using the reproduced signals of said magnetic clock pattern region and set of several magnetic patterns region of said magnetic disk;

second clock generating means for generating a second data existing point clock having a constant phase difference for each adjacent track from the data existing clock generated by said clock generating means; and

data detecting means for detecting data reproduced from the data region of said magnetic disk in synchronization with the second data existing point clock generated by said second clock generating means.

5,828,510

MAGNETIC DISK RECORDING AND PLAYBACK APPARATUS USING INDEPENDENTLY FORMED RECORDED PATTERN SETS FOR CLOCK GENERATION

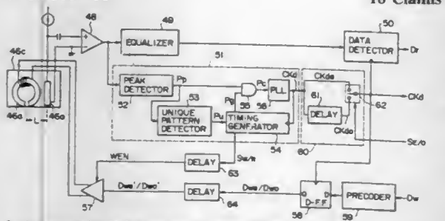
Hiroaki Yada; Nobuhiro Hayashi; Takamichi Yamakoshi, all of Kanagawa, and Munekatsu Fukuyama, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 467,853, Jun. 6, 1995, abandoned, which is a division of Ser. No. 134,375, Oct. 12, 1993, abandoned. This application Feb. 18, 1997, Ser. No. 800,551

Claims priority, application Japan, Oct. 14, 1992, 4-276165; Oct. 19, 1992, 4-280014

Int. Cl.[6] G11B *5/09*

U.S. Cl. 360—51 **18 Claims**



1. A magnetic disk apparatus comprising:

a magnetic disk having a magnetic clock pattern region for providing a common timing reference between a data recording region and adjacent tracks and a set of several magnetic patterns region for specifying a circumferential position of said magnetic clock pattern, wherein the magnetic clock pattern region and set of several magnetic patterns region are formed independently of each other on the magnetic disk, such that the magnetic clock pattern region and set of several magnetic patterns regions produce isolated waveforms when read;

a magnetic recording head for recording data on said magnetic disk;

a magnetic playback head provided separately from said magnetic recording hear to reproduce data from said magnetic disk;

clock generating means for generating a data existing point clock using the reproduced signals of said magnetic clock pattern region and set of several magnetic patterns region of said magnetic disk;

data detecting means for detecting data from the reproduced signal of the data region of said magnetic disk in synchronization with a data existing point clock generated by said clock generating means; and

recording means for driving said magnetic disk to record the data in the data recording region of said magnetic disk in synchronization with a data existing point clock generated by said clock generating means.

5,828,511

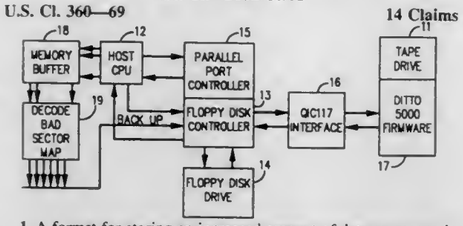
WRITING AND READING HIGH DENSITY MAGNETIC TAPES

Refael Bar, San Diego, Calif., assignor to Iomega Corporation, Roy, Utah

Filed Apr. 22, 1996, Ser. No. 635,717

Int. Cl.[6] G11B *20/12*

U.S. Cl. 360—69 **14 Claims**



1. A format for storing an increased amount of data on magnetic tape, said data being written/read in a tape drive of the type having wide write/narrow read heads, said format comprising:

tracks of data extending longitudinally of said tape written by said wide write heads so that a center portion of each track, which does not overlap another track, is wider than said narrow read heads,

means in said format for identifying a tape written in said format; said means including:

a header having an encrypted bad sector map identifying unusable sectors on said tracks of data.

5,828,512

INFORMATION PROCESSING APPARATUS HAVING A FLOATING-TYPE HEAD

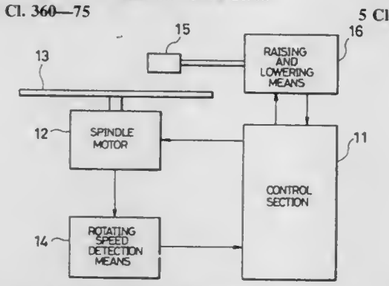
Katsuo Wada, Yao; Miyuki Onishi, Higashiosaka; Junichiro Nakayama, Shiki-gun; Tomoyuki Miyake; Takashi Iwaki, both of Nara, and Takeshi Yamaguchi, Sakai, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 840,905, Feb. 25, 1992, Pat. No. 5,313,445. This application Feb. 24, 1994, Ser. No. 202,411

Claims priority, application Japan, Mar. 1, 1991, 3-036336; Mar. 5, 1991, 3-038714; Mar. 13, 1991, 3-048386; May 31, 1991, 3-129727; May 31, 1991, 3-129731; May 31, 1991, 3-129741; May 23, 1991, 3-118855

Int. Cl.[6] G11B *21/02*

U.S. Cl. 360—75 **5 Claims**



1. An information processing apparatus comprising:

a rotative driving means for rotating a disc-shaped recording medium;

a floating-type head at least for reproducing information recorded from a recording medium or for recording information on the recording medium, the floating-type head having a slider which is floated by an air flow that is directed near the surface of the rotating disc-shaped recording medium;

a suspension, made of an elastic member, for supporting the floating-type head and for applying a force in such a direction as to move the floating-type head toward the disc-shaped recording medium;

a raising and lowering means for moving the floating-type head away from the disc-shaped recording medium when the rotation of the disc-shaped recording medium is stopped and for allowing the floating-type head to approach a floating height above the disc-shaped recording medium when the disc-shaped recording medium is rotated; and

a control means for controlling the raising and lowering means in such a manner that the lowering speed at which the floating-type head is brought to the floating height above the disc-shaped recording medium is kept slower than a raisins speed at which the floating-type head is moved away from the disc-shaped recording medium;

wherein the raising and lowering means has a lever that is raised and lowered while contacting the suspension, the lever being adapted so that it can elastically deflect the suspension such that raising and lowering operations of the floating-type head are executed.

5,828,513

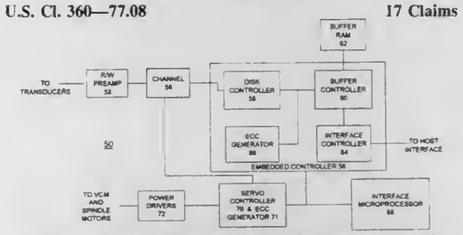
SERVO ADDRESS APPARATUS AND POSITIONING METHODS FOR READ, WRITE AND SEEK OPERATIONS IN A DIRECT ACCESS STORAGE DEVICE

Richard Greenberg, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 7, 1995, Ser. No. 568,829

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—77.08 **17 Claims**



1. A servo positioning method for writing customer data in a direct access storage device, said method comprising the steps of:

writing a servo address in a servo burst and loading said written servo address into an error correcting code (ECC) generator for generating ECC check bytes;

writing said ECC check bytes at the end of said written servo address;

when customer data is to be written, reading said written servo address and ECC check bytes and loading said read servo address and ECC check bytes to said ECC generator to determine whether said writing position is correct;

responsive to identifying a correct writing position, preloading a servo address logical block address (LBA) into a second error correcting code (ECC) generator;

writing customer data and loading said written customer data into said second error correcting code (ECC) generator for generating data and read positioning ECC check bytes; and

writing said data and read positioning ECC check bytes at the end of said written customer data.

5,828,514

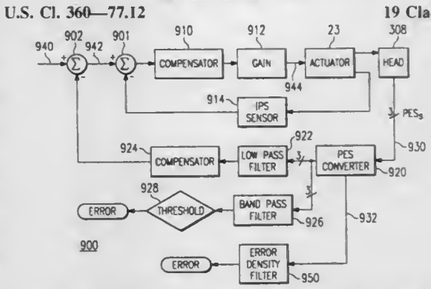
SERVO ERROR DETECTION IN A NOISY ENVIRONMENT

Alex Chliwnyj, and Steven Carter Wills, both of Tucson, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 16, 1996, Ser. No. 600,914

Int. Cl.[6] G11B *5/584*

U.S. Cl. 360—77.12 **19 Claims**



1. In a tape drive having a frame, a tape head for accessing data on a magnetic tape, and an actuator for positioning said tape head, said tape head having read elements for reading data from said magnetic tape, write elements for writing data to said magnetic tape, and servo elements for detecting a lateral position of said tape head relative to said magnetic tape, a method for servo controlling said tape head such that said tape head remains aligned with said magnetic tape comprising steps of:

sensing a position of said tape head relative to said frame of said tape drive to allow said actuator to adjust said tape head to movements of said frame;

magnetically detecting a lateral position adjustment of said magnetic tape relative to said servo element of said tape head as said magnetic tape longitudinally travels past said tape head;

converting said lateral position adjustment into a plurality of position error signals;

first filtering said plurality of position error signals to generate a filtered position error signal;

second filtering said plurality of position error signals to calculate an error density, said error density computed by veracity checking a current time sample of position error signals to generate a current time sample of position reliability signals and adding said current time sample of position reliability signals to previously sampled position reliability signals;

laterally positioning said tape head with said actuator according to said filtered position error signal; and

comparing said error density with a surface threshold to determine whether a surface defect exists on said magnetic tape.

5,828,515

AUTOMATIC SERVO CONTROL GAIN COMPENSATION TECHNIQUE FOR HARD DISK DRIVE

Gwan-Il Kim, Sungnam, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Nov. 26, 1996, Ser. No. 756,336

Claims priority, application Rep. of Korea, Nov. 27, 1995, 1995-43969

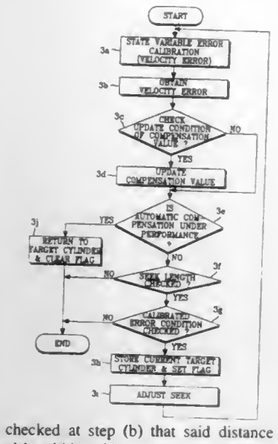
Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—78.06 **8 Claims**

1. An automatic servo control gain compensation method of a hard disk drive, comprising the steps of:

(a) receiving an input of a seek command, inputting a position signal varied according to movement of a head, and obtaining a current position and a current velocity by calibration, and finally obtaining a velocity error;

(b) accumulating said velocity error obtained in step (a) and checking whether or not a seek distance by a seek command is within a proper range;



(c) when checked at step (b) that said distance by said seek command is within said proper range, varying a control gain to be adapted to a characteristic variation of a control system by using said velocity error;

(d) checking whether of not a current seek distance corresponds to a distance is sufficient to obtain said error required for performing automatic compensation depending on said variations of said control gain obtained in step (c);

(e) checking whether or not the sum of said velocity error obtained in step (a) exceeds a reference value, and then, upon said sum thereof exceeding said reference value, determining whether or not said control system is to be updated;

(f) storing a current target cylinder number based on result obtained in step (e), setting a clock during said automatic compensation, determining said characteristic variations of said control system, and adjusting said seek to update said control system; and

(g) returning to said stored current target cylinder and setting a flag.

5,828,516

METHOD OF DETECTING POSITION OF A HEAD OF DISK RECORDING SYSTEM USING A DIGITAL SERVO CONTROL METHOD

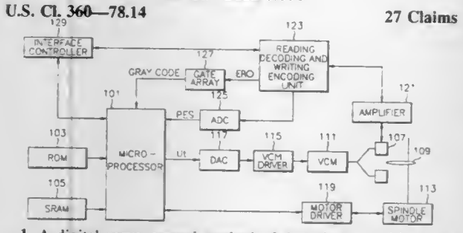
Sung-Yeoul Park, Seoul, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Feb. 23, 1996, Ser. No. 605,975

Claims priority, application Rep. of Korea, Feb. 26, 1995, 1995 3622

Int. Cl.[6] G11B *5/596*

U.S. Cl. 360—78.14 **27 Claims**



1. A digital servo control method of detecting a position of a head in a disk recording system using a disk recording medium containing a servo burst recording region comprising a plurality of servo bursts, said method comprising the steps of:

reading track identification information and servo burst information on a current track of said disk recording medium in which the head is positioned;

determining whether the current track is one of an odd and even track from said track identification information read from the current track of said disk recording medium and generating an odd/even information bit in dependence upon said determination;

generating first and second position error signals from said servo burst information read from the current track of said disk recording medium;

obtaining seek information from addition and subtraction of the first and second position error signals and from said odd/even information bit; and

correcting said track identification information in correspondence with said seek information and outputting a current position error signal to position the head on a target track of the disk recording medium.

5,828,517

DOOR OPENING MECHANISM OF CASSETTE LOADING DEVICE

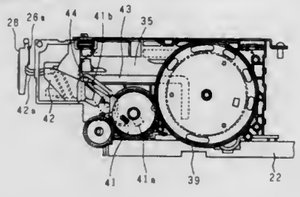
Naoki Asakura, Nagaokakyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

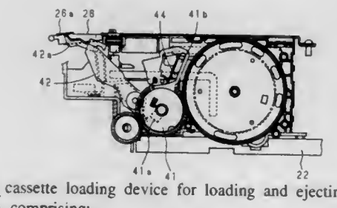
Continuation of Ser. No. 462,618, Jun. 5, 1995, abandoned, which is a division of Ser. No. 283,154, Aug. 3, 1994, abandoned. This application Aug. 2, 1996, Ser. No. 691,261

Claims priority, application Japan, Aug. 17, 1993, 5-203461

Int. Cl.[6] G11B *5/008*

U.S. Cl. 360—96.5 **22 Claims**





1. A cassette loading device for loading and ejecting a tape cassette, comprising:

a cassette housing for housing and moving said tape cassette between an ejected position and a loaded position;

drive force transmitting means for transmitting a drive force to said cassette housing;

moving means for moving said cassette housing using said drive force transmitted from said drive force transmitting means;

a door opening/closing arm, made of one single element including a first portion at a first end for engaging said moving means within a predetermined rotational range, and a second portion at a second end for contacting and pushing a door provided at a loading inlet for said tape cassette upward to open the door in an intended direction in accordance with the moving range of said moving means; and

engaging means protruding from said cassette housing for selectively engaging and locking said door opening/closing arm whereby said door opening/closing arm is prevented from opening the door when said cassette housing is in the ejected position.

5,828,518

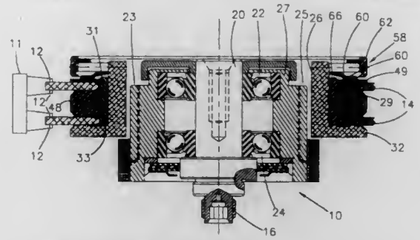
DISC CENTERING SLEEVE FOR A DISC DRIVE

Michael Bruce Moir, Newbury Park, and Richard Gene Krum, Thousand Oaks, both of Calif., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Dec. 17, 1996, Ser. No. 767,710

Int. Cl.[6] G11B *17/02*

U.S. Cl. 360—99.12 **6 Claims**



1. A disc pack assembly comprising:

a spindle motor rotatable about a central axis, said spindle motor having a spindle hub with a hub flange;

at least one information storage disc stacked on said spindle hub and resting on said hub flange;

a disc spacer stacked on top of said information storage disc;

a disc clamp to secure said information storage disc to said spindle hub;

a disc centering sleeve located between said spindle hub and said information storage disc, inner raised portions of said disc centering sleeve abutting against outer surface of said spindle hub and selective outer raised portions of said disc centering sleeve abutting against inner diameter of said information storage disc and said disc spacer.

5,828,519

DISK CLAMP DEVICE AND DISK DRIVE

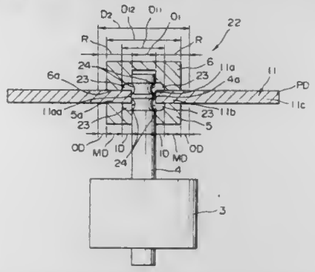
Takeshi Sasa, Miyagi, Japan, assignor to Sony Corporation, Japan

Filed Jun. 19, 1996, Ser. No. 666,988

Claims priority, application Japan, Jun. 26, 1995, 7-180563

Int. Cl.[6] G11B *17/02;23/00*

U.S. Cl. 360—99.12 **8 Claims**



1. A disk clamp device for fixing a disk of synthetic resin having a central hole to a spindle, comprising:

a clamp base disposed around and fixed to the spindle, for placing a clamped region of the disk thereon; and

a clamp cap disposed over the spindle for sandwiching the clamped region of the disk between the clamp cap and the clamp base;

said clamp base and said clamp cap having respective recesses defined therein to keep said clamp base and said clamp cap out of contact with an inner circumferential surface which defines the central hole in the disk,

wherein said disk is fixed directly against said spindle, said spindle having an annular groove defined in an outer circumferential surface thereof in substantial alignment with at least one of upper and lower ends of said inner circumferential surface which defines the central hole in the disk.

5,828,520

MAGNETIC HEAD-MOUNTED TO A TIP PORTION OF A CARRIAGE VIA ADHESIVE IN AN ADHESIVE FILLING GROOVE

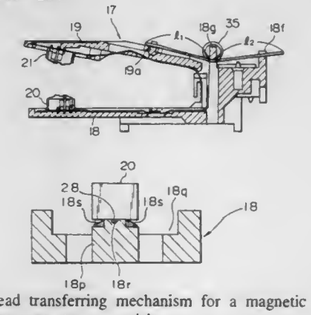
Takashi Nakagawa; Sadahiro Takahashi; Takayuki Sasaki, all of Fukushima-ken; Tetsuo Ando, Niigata-ken, and Toru Sawada, Fukushima-ken, all of Japan, assignors to Alps Electric Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1996, Ser. No. 704,483

Claims priority, application Japan, Sep. 13, 1995, 7-235428

Int. Cl.[6] G11B *5/49;5/54*

U.S. Cl. 360—104 **7 Claims**



1. A head transferring mechanism for a magnetic recording/reproducing apparatus, comprising:

a carriage reciprocatively movable in radial directions relative to a magnetic disk,

a magnetic head attached to a tip portion of said carriage;

a hold case hinge-connected to a rear end portion of said carriage; and

a load spring for biasing said hold case toward said magnetic head, the load spring being attached to said carriage,

wherein said carriage includes an adhesive filling groove at said tip portion and said magnetic head is placed on said carriage across said adhesive filling groove, with said magnetic head being secured onto said carriage through the use of an adhesive disposed in said adhesive filling groove; and

wherein an end portion of said adhesive filling groove is formed to have a larger width than a central portion thereof covered by said magnetic head, and said larger-width end portion is positioned away from said magnetic head.

5,828,521

ARM UNIT FOR HARD DISK DRIVE

Hitoshi Hasegawa, Saitama, Japan, assignor to Nittoku Engineering Kabushiki Kaisha, and Nittoku Giken Kabushiki Kaisha, both of Saitama, Japan

Filed Oct. 3, 1996, Ser. No. 723,654

Claims priority, application Japan, Feb. 29, 1996, 8-043066

Int. Cl.[6] G11B *5/48;5/55*

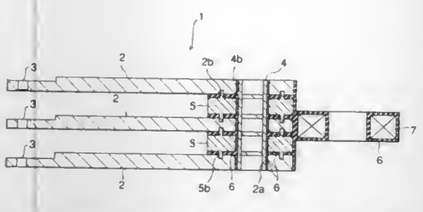
U.S. Cl. 360—104 **6 Claims**

1. A pivot arm unit which is pivotable on a pivot shaft in a hard disk drive, the pivot arm unit comprising:

arm members having base ends and distal ends, said base ends defining apertures and said arm members being stacked over one another;

a bearing member inserted through said apertures of the base ends of said arm member for rotatably supporting said arm members on said pivot shaft of said hard disk drive;

a coil for generating a magnetic force for swinging said arm members about said pivot shaft, said coil being disposed adjacent said base end;



a spacer disposed between said arm members, said spacer defining an aperture through which said bearing member extends;

said apertures of said arm members and said aperture of said spacer having a diameter such that an annular gap exists between said bearing member and inner surfaces of said apertures of said arm members and of said aperture of said spacer;

means for maintaining gaps between said arm members and said spacer; and

molded resin filling said annular gap and said gaps to join said arm members, said spacer and said bearing member together and said molded resin connecting said coil with said base ends.

5,828,522

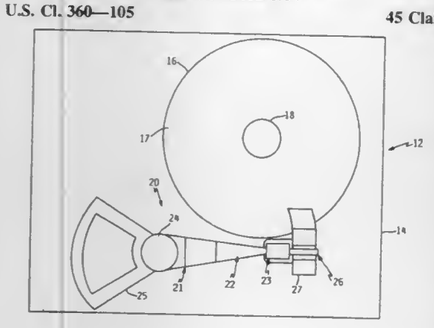
VELOCITY CONTROL OF HEAD LOAD/UNLOAD MECHANISM IN A DISK DRIVE USING DITHER

Dana Henry Brown, and Zine-Eddine Boutaghou, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1994, Ser. No. 305,109

Int. Cl.[6] G11B *5/54*

U.S. Cl. 360—105 **45 Claims**



1. A head disk assembly for use in a disk drive which includes a disk, comprising:

a support;

an actuator assembly mounted on the support with at least one suspension member for carrying a slider;

a parking ramp fixed to the support and immovable with respect thereto;

an extension on the suspension member for supporting the suspension member on the ramp in a parked contact position with respect to a disk engagement location, the suspension member and the extension being capable of oscillatory motion;

the slider being located between the extension and said actuator; and

means for activating the actuator assembly to produce said oscillatory motion of the suspension member and the extension,

whereby stiction force between the extension and the ramp is reduced.

5,828,523

ROTARY HEAD CYLINDER DEVICE

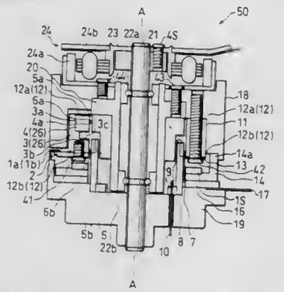
Hiroaki Takeuchi, Tenri, and Tohru Okuda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 20, 1997, Ser. No. 802,513

Claims priority, application Japan, Feb. 22, 1996, 8-034687

Int. Cl.[6] G11B *5/584*

U.S. Cl. 360—107 **15 Claims**



1. A rotary head cylinder device for recording and/or reproducing a signal with respect to a recording medium while moving a magnetic head provided to a rotor along a rotation axis of the rotor, the rotary head cylinder device comprising a fixed drum and a rotor;

wherein the rotor includes:

a permanent magnet for generating a magnetic flux;

a first yoke, made of a magnetic material, for supporting the magnetic head and being a part of a magnetic circuit in which the magnetic flux generated by the permanent magnet runs;

a leaf spring for supporting the first yoke so that the first yoke can move along the rotation axis of the rotor; and

a second yoke made of a magnetic material and fixed to the rotor so as to outwardly face the first yoke and to be separated from the first yoke by a gap, and

wherein the fixed drum includes a drive coil fixed so that the axial line of the drive coil agrees with the rotation axis of the rotor, and so that the drive coil crosses the magnetic flux running in the magnetic circuit composed of the first and second yokes and the permanent magnet.

5,828,524

ROTARY HEAD ASSEMBLY WITH ANGULARLY DISPLACED HEADS

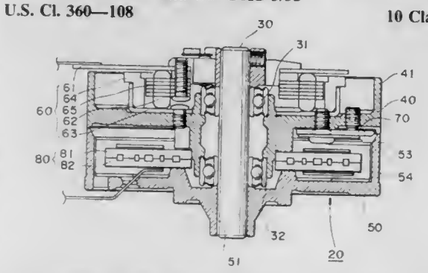
Kenji Maemine, Miyagi-ken, Japan, assignor to Alps Electric Co. Ltd., Tokyo, Japan

Filed Sep. 4, 1996, Ser. No. 706,472

Claims priority, application Japan, Sep. 18, 1995, 7-263447

Int. Cl.[6] G11B *5/52*

U.S. Cl. 360—108 **10 Claims**



1. A magnetic read/write device comprising: a rotary drum; a first write head disposed on the circumference of the rotary drum; a first read head disposed on the circumference of the rotary drum diametrically opposite to the first write head; a second write head disposed on the circumference of the rotary drum angularly behind the first write head with respect to the rotating direction of the rotary drum; a second read head disposed on the circumference of the rotary drum angularly behind the first read head with respect to the rotating direction of the rotary drum and diametrically opposite to the second write head; and a rotary transformer provided with a first write channel for transmitting signals to the first write head, a first read channel for transmitting signals from the first read head, a second read channel for transmitting signals from the second read head, and a second write channel for transmitting signals to the second write head concentrically arranged in that order.

5,828,525

DIFFERENTIAL DETECTION MAGNETORESISTANCE HEAD

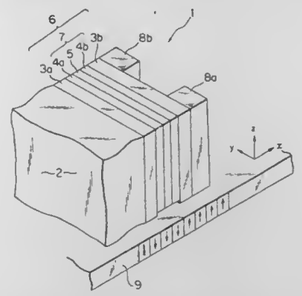
Hitoshi Iwasaki, Yokosuka; Yuichi Ohsawa, Tokyo; Reiko Kondoh; Yuzo Kamiguchi, both of Yokohama; Susumu Hashimoto, Ebina; Tomomi Funayama, Fujisawa; Hiromi Fuke; Junichi Akiyama, both of Kawasaki, and Kazuhiro Saito, Yokohama, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Mar. 10, 1995, Ser. No. 401,489

Claims priority, application Japan, Mar. 15, 1994, 6-043483

Int. Cl.[6] G11B *5/127*

U.S. Cl. 360—113 **2 Claims**



1. A differential detection magnetoresistance head comprising

a magnetoresistance element part having a resistance and comprising at least three ferromagnetic layers superposed through a medium including nonmagnetic intermediate layers, wherein

said three ferromagnetic layers comprise:

an upper ferromagnetic layer and a lower ferromagnetic layer, each having a magnetization varied in response to signal magnetic fields; and

a low-permeability ferromagnetic layer having a magnetization that is substantially retained in response to the signal magnetic fields, wherein

the resistance of the magnetoresistance element part is varied when the magnetizations of the upper and lower ferromagnetic layers change to an opposite direction by oppositely applied signal magnetic fields, and

recorded information on a magnetic medium is detected using the variation of the resistance of the magnetoresistance head based on a giant magnetoresistance effect due to spin-dependent scattering in the magnetoresistance element part, and said low-permeability ferromagnetic layer is disposed recessed from said upper and lower ferromagnetic layers relative to a surface facing the magnetic medium.

5,828,526

MAGNETORESISTANCE EFFECT ELEMENT AND MAGNETIC FIELD DETECTION DEVICE

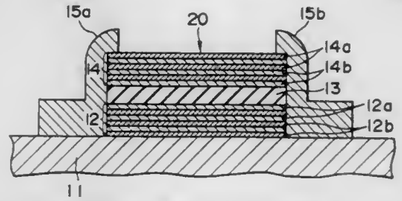
Kiyoshi Kagawa; Yoichi Negoro; Akihiko Okabe, all of Kanagawa, and Hiroshi Kano, Miyagi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Aug. 1, 1996, Ser. No. 690,756

Claims priority, application Japan, Aug. 3, 1995, 7-218051

Int. Cl.[6] G11B *5/39; H01L 43/00*

U.S. Cl. 360—113 **5 Claims**



1. A magnetoresistance effect element comprising:

a magnetoresistance effect film formed of alternate laminations of first magnetic layers and first non-magnetic layers, said first magnetic layers coupling anti-ferromagnetically with each other between said adjacent first magnetic layers, and

a soft magnetic layer provided on said magnetoresistance effect film for applying a bias magnetic field to said magnetoresistance effect film, said soft magnetic layer formed of alternate laminations of second magnetic layers made of the same material as said first magnetic layers and second non-magnetic layers made of the same material as said first non-magnetic layers, said second magnetic layers coupling ferromagnetically with each other between said adjacent second magnetic layers, said second non-magnetic layers having a thickness different from a thickness of said first non-magnetic layers as to exhibit a ferromagnetic coupling as opposed to an anti-ferromagnetic coupling in said magnetoresistance effect film.

5,828,527

THIN-FILM MAGNETIC HEAD HAVING MAGNETIC RESISTANCE EFFECT STABILIZING LAYER

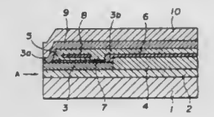
Akio Takada; Tadayuki Honda; Takuji Shibata, and Moriaki Abe, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

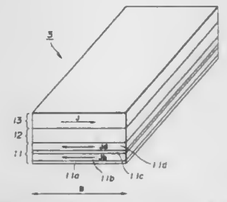
Filed Mar. 12, 1997, Ser. No. 820,343

Claims priority, application Japan, Mar. 14, 1996, 8-057996

Int. Cl.[6] G11B *5/39*

U.S. Cl. 360—113 **15 Claims**

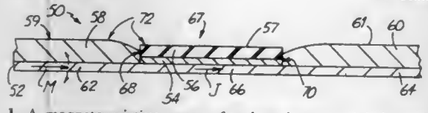




15. A thin-film magnetic head comprising a magnetoresistance effect element comprising:

a magnetoresistance effect layer having a soft magnetic film exhibiting the magnetoresistance effect;
a non-magnetic insulating layer; and
a magnetoresistance effect stabilizing layer formed under said magnetoresistance effect layer via said non-magnetic insulating layer and comprising a hard magnetic film, a soft magnetic film, a non-magnetic film interposed between said hard magnetic film and said soft magnetic film, and an underlying layer,
wherein said hard magnetic film is formed of CoPtCr, said soft magnetic film is formed of NiFe, said non-magnetic film is formed of Cr of a thickness of not less than 0.3 nm and not more than 3 nm and wherein said underlying layer is formed of Cr.

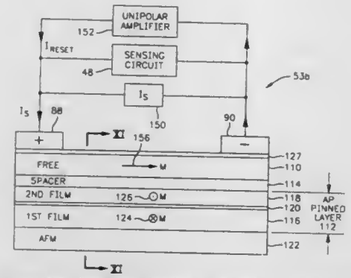
5,828,528
MR SENSORS WITH SELECTED RESISTANCES FOR THE SENSING AND BIASING LAYERS TO ENHANCE READING CAPABILITIES
Charles H. Tolman, Bloomington, Minn., and Lin Zhou, Shrewsbury, Mass., assignors to Seagate Technology, Inc., Scotts Valley, Calif.
Filed May 9, 1997, Ser. No. 853,262
Int. Cl.[6] G11B 5/39
U.S. Cl. 360—113 **18 Claims**



1. A magnetoresistive sensor for detecting stored information from a medium and for providing an output voltage to auxiliary circuitry, the magnetoresistive sensor comprising:
a magnetoresistive magnetic layer having a magnetization property, a resistivity and a thickness, wherein a resistance of the magnetic layer equals the resistivity divided by the thickness, and wherein the output voltage is provided when a sense current flows through the magnetic layer;
a bias layer formed from a Sendust alloy of at least iron, silicon, and aluminum, comprising 70 to 90 percent iron, up to 15 percent silicon, and up to 15 percent aluminum, the Sendust alloy having a resistivity, a thickness and a saturation inductance, wherein a resistance of the bias layer equals the resistivity divided by the thickness, and where the resistance of the bias layer is in parallel with the resistance of the magnetic layer; the bias layer helping to bias the magnetization property of the magnetic layer from a rest position to a magnetized position when the sense current flows through the magnetic layer; and
a spacer layer positioned between the magnetic layer and the bias layer, the spacer layer having a resistivity and a thickness, wherein a resistance of the spacer layer equals the resistivity divided by the thickness, and wherein the resistance in the spacer layer is in parallel with the resistances of both the magnetic layer and the bias layer.

5,828,529
ANTIPARALLEL PINNED SPIN VALVE WITH READ SIGNAL SYMMETRY
Hardayal Singh Gill, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Filed Apr. 29, 1997, Ser. No. 841,182
Int. Cl.[6] G11B 5/30
U.S. Cl. 360—113 **54 Claims**

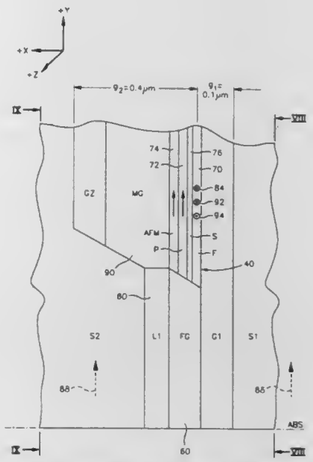
1. A thin film magnetoresistive (MR) spin valve read sensor which has positive and negative read signals about a bias point of a transfer curve upon sensing positive and negative magnetic incursions from a moving magnetic medium comprising:



a ferromagnetic free layer having a magnetic moment which is free to rotate in first and second directions from a position which corresponds to said bias point upon sensing said positive and negative magnetic incursions respectively;
an antiparallel pinned layer;
an antiferromagnetic layer immediately adjacent said antiparallel pinned layer which pins a magnetic moment of the antiparallel pinned layer along a pinned direction;
an electrically conductive nonmagnetic spacer layer sandwiched between the free layer and the antiparallel pinned layer so that, upon sensing said positive and negative magnetic incursions, the magnetic moment of the free layer rotates in said first and second directions relative to said pinned direction of the magnetic moment of the pinned layer thus causing an increase or decrease in magnetoresistance respectively;
sense current source means connected to the sensor for applying a sense current to the sensor in a predetermined direction;
upon the application of said sense current the magnetic moment of the free layer being forced by an anisotropic magnetoresistive (AMR) effect of the free layer to rotate in said second direction; and
said predetermined direction producing a field on the free layer that forces said magnetic moment to rotate in said first direction,
whereby symmetry of the positive and negative read signals about said bias point is improved.

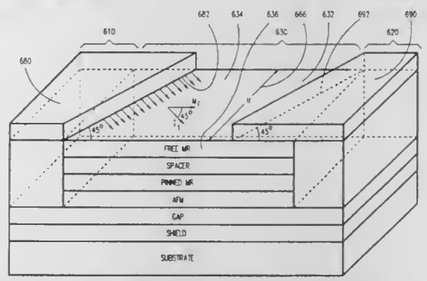
5,828,530
ORTHOGONAL SPIN VALVE SENSOR WITH REDUCED NET FIELD
Hardayal Singh Gill, Portola Valley; Bruce A. Gurney, Santa Clara; Joseph Francis Smyth, Los Altos; Virgil Simon Speriosu, San Jose, and Douglas Johnson Werner, Fremont, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 709,549, Sep. 6, 1996, Pat. No. 5,696,656. This application May 16, 1997, Ser. No. 857,425
Int. Cl.[6] G11B 5/39
U.S. Cl. 360—113 **11 Claims**

1. An orthogonal spin valve read head comprising:
a spin valve sensor;
first and second shield layers;
leads for conducting a sense current through the spin valve sensor;
the spin valve sensor having a free layer which has a magnetic moment that is free to rotate from an easy axis in response to an external magnetic field; and
the free layer of the spin valve sensor being asymmetrically positioned between the first shield layer and the second shield



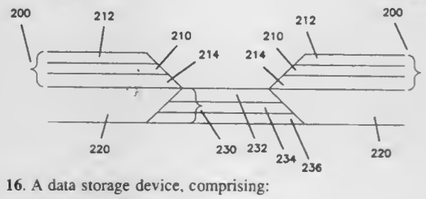
layer so that when the sense current is applied to the spin valve sensor freedom of the magnetic moment to rotate from the easy axis in response to the external magnetic field is enhanced.

5,828,531
SPIN VALVE SENSOR WITH ENHANCED MAGNETORESISTANCE
Hardayal Singh Gill, Portola Valley, Calif., assignor to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 715,200, Sep. 18, 1996, Pat. No. 5,739,988. This application Sep. 24, 1997, Ser. No. 936,310
Int. Cl.[6] G11B 5/127
U.S. Cl. 360—113 **18 Claims**



1. A spin valve (SV) magnetoresistive sensor having an air bearing surface (ABS), said spin valve sensor comprising:
end regions separated by a central region;
a magnetoresistive (MR) element formed in said central region, said MR element including:
a pinned layer formed in said central region, said pinned layer having a pinned layer magnetization;
a free layer formed in said central region, said free layer having a free layer magnetization perpendicular to said pinned layer magnetization in the absence of an external field; and
a spacer layer formed in said central region, said spacer layer disposed between said free layer and said pinned layer; and
a first and a second electrical lead in contact with said free layer, each of said electrical leads having a slanted conducting edge for orienting current flow at a non-zero less than 90 degree angle with respect to said free layer magnetization.

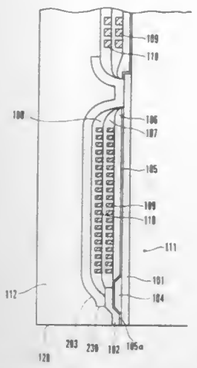
5,828,532
GETTING LAYER LEAD STRUCTURE FOR ELIMINATING RESISTANCE INCREASE PHENOMENA AND EMBRITTLEMENT AND METHOD FOR MAKING THE SAME
Richard H. Ahlert, San Jose; James K. Howard, Morgan Hill, and Michael A. Parker, Fremont, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.
Continuation of Ser. No. 738,973, Oct. 24, 1996, Pat. No. 5,680,282. This application Sep. 30, 1997, Ser. No. 941,774
Int. Cl.[6] G11B 5/39
U.S. Cl. 360—113 **59 Claims**



16. A data storage device, comprising:
a recording medium;
an actuator arm assembly;
a slider, attached to the actuator arm assembly proximate to the recording medium such that the slider can be selectively positioned over the surface of the recording medium;
a magneto-resistive sensor assembly, coupled to the slider, for writing and reading data to and from the recording medium; and
a thin film lead structure, within the magneto-resistive sensor assembly, for providing a signal path for the data, the thin film lead structure comprising:
a thin film lead; and
a getter layer material, disposed proximate to the thin film lead, having a higher affinity for mobile impurities that the thin film lead, the getter layer material capturing mobile impurities and preventing the migration of the mobile impurities into the thin film lead, wherein the getter layer material is encapsulated within the thin film lead.

5,828,533
THIN FILM MAGNETIC HEAD WITH DIFFERING SATURATION MAGNETIC FLUX DENSITY FILMS AND SPACER BETWEEN FLOATING SURFACE AND COIL PATTERNS
Keishi Obashi; Haruo Urai, and Shinsaku Saito, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan
Filed Jun. 10, 1996, Ser. No. 659,565
Claims priority, application Japan, Jun. 14, 1995, 7-147548
Int. Cl.[6] G11B 5/147;5/235
U.S. Cl. 360—126 **15 Claims**

1. A thin film magnetic head comprising:
a first magnetic film having a distal end portion facing a magnetic head floating surface, said first magnetic film being heated at a temperature T1 to have a saturation magnetic flux density BS1;
a second magnetic film opposing only said distal end portion of said first magnetic film through a magnetic gap, said second magnetic film being heated at the temperature T1 to have the saturation magnetic flux density BS1;
a third magnetic film that magnetically connects said first and second magnetic films to constitute a magnetic core, said third magnetic film being heated at a temperature T2 to have a saturation magnetic flux density BS2, T2 and T1 satisfying T2<T1, and BS1 and BS2 satisfying BS2<BS1;
a nonmagnetic layer formed between said first and third magnetic films to constitute said magnetic gap;



thin film coil patterns formed between said third magnetic film and said nonmagnetic layer to excite said first and third magnetic films;

insulating layers for insulating said thin film coil patterns from each other and said thin film coil patterns and said third magnetic film from each other; and

a nonmagnetic spacer made of an inorganic substance that is spaced from the magnetic head floating surface and that extends on said first magnetic film away from the magnetic head floating surface to a position short of said thin film coil patterns.

5,828,534

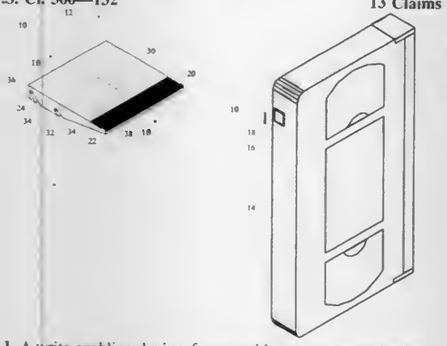
WRITE ENABLE DEVICE

Eddie Y. S. Lou, 1334 Camerons St., Rowland Heights, Calif. 91748

Continuation-in-part of Ser. No. 461,709, Jun. 6, 1995, Pat. No. 5,699,217. This application Apr. 21, 1997, Ser. No. 840,974

Int. Cl.[6] G11B *23/02*

U.S. Cl. 360—132 **13 Claims**



1. A write enabling device, for use with a tape cassette having a recording safety cavity covered by a breakable tab, said cavity substantially formed by four walls having a first depth and a floor substantially perpendicular to said four walls, comprising:

a planar member having a top side and an opposite and substantially parallel underside connected by four faces each having a second depth substantially equal to said first depth;

said underside having a bevel and means for removal of said planar member from said cavity after being installed in said cavity, using said bevel, which creates a progressively thinner tail side, as compared to an opposite thicker head side, thereby providing a required leverage effect, when pressed at said tail side to pop up said head side for removing said planar member from said cavity.

5,828,535

Patent Not Issued For This Number

5,828,536

MAGNETIC DISK AND MAGNETIC DISK DEVICE IN WHICH CONTROL DATA SECTION OF DISK HAS STRUCTURAL RELATIONSHIP TO SLIDER AND/OR DATA SECTION

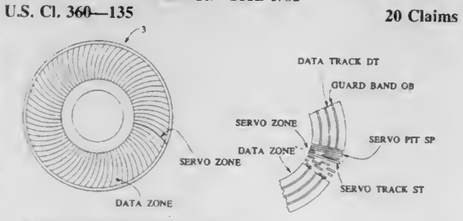
Osamu Morita, Miyagi, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jan. 22, 1997, Ser. No. 786,912

Claims priority, application Japan, Jan. 24, 1996, 8-029850; Jan. 24, 1996, 8-029851; Jan. 24, 1996, 8-029852; Jan. 24, 1996, 8-029853; Jan. 24, 1996, 8-029854; Jan. 25, 1996, 8-032675

Int. Cl.[6] G11B *5/82*

U.S. Cl. 360—135 **20 Claims**



1. A magnetic disk unit comprising:

a magnetic disk;

a magnetic head mounted on floating head slider for recording and regeneration of data a surface of said magnetic disk, said magnetic disk being radially divided into a data recording zone and a control signal recording zone by lands and grooves formed on the surface, the control signal recording zone having a circumferential length not exceeding 3/10 times the length of said head slider.

5,828,537

DEVICES FOR ACCESSING INFORMATION IN THE MEMORY CIRCUITS OF MAGNETIC TAPE CASSETTES

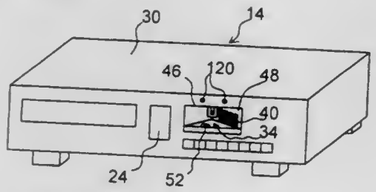
Stephane M. A. d'Alayer de Costemore d'Arc, Genappe, Belgium, assignor to Staar S.A., Brussels, Belgium

Filed Aug. 23, 1996, Ser. No. 702,310

Claims priority, application Belgium, Sep. 1, 1995, 09500729

Int. Cl.[6] G11B *15/07;23/32*

U.S. Cl. 360—137 **24 Claims**



1. In combination:

cassettes containing a magnetic recording tape, each of said cassettes having a shell, electronic memory supported by a shell wall inside said shell, and memory terminals connected to said memory supported by a shell wall outside of said shell;

a playback/recording apparatus for said cassettes having a housing and a loading/unloading mechanism to receive and load one of said cassettes in an operative position inside said playback/recording apparatus housing, a controller including a microprocessor for operating said playback/recording apparatus to function with one cassette when in the operative position, and a read/write device inside said playback/recording apparatus housing interfaced to the controller and having contacts engaged by terminals of one cassette when in the operative position which connect the memory of said one cassette to the controller of the playback/recording apparatus for processing of data;

a display associated with said playback/recording apparatus and electrically connected with the controller; and

a read device mounted for access from outside said playback/recording apparatus housing without utilizing said loading/unloading mechanism including contacts which have an operable electrical connection to the controller and which are engageable by terminals of an other of said cassettes when said other cassette is presented to said read device, the operable electrical connection enabling the controller to read signals in the memory of said other cassette when presented to said read device and to display information on the display represented by the signals notwithstanding the presence or absence of said one cassette in the operative position in the playback/recording apparatus housing.

5,828,538

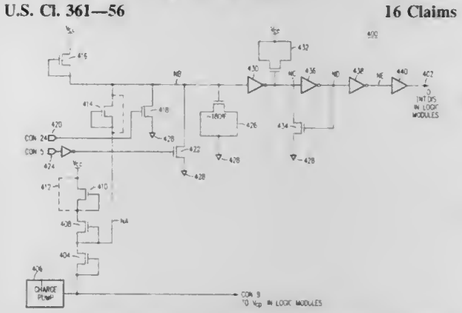
POWER-UP CIRCUIT FOR FIELD PROGRAMMABLE GATE ARRAYS

James M. Apland, Gilroy, and Andrew K. Chan, Palo Alto, both of Calif., assignors to QuickLogic Corporation, Sunnyvale, Calif.

Continuation-in-part of Ser. No. 667,702, Jun. 21, 1996. This application Jan. 3, 1997, Ser. No. 775,984

Int. Cl.[6] H02H *9/00*

U.S. Cl. 361—56 **16 Claims**



1. A protection circuit for preventing a current spike in a logic module having an internal disable input during power up of a field programmable gate array, the protection circuit comprising means for providing a voltage input to the internal disable input to disable the logic module until a voltage output by a charge pump of the field programmable gate array reaches a predetermined voltage, the voltage input to the internal disable input being substantially equal to an instantaneous supply voltage being applied to the protection circuit, the means for providing comprising:

means for providing an increasing voltage proportional to the voltage output by the charge pump to the protection circuit at a first node of the protection circuit during power up;

means for retarding the voltage increase at the first node of the protection circuit during power up;

means for providing a voltage at a second node substantially equal to the instantaneous supply voltage being applied to the protection circuit during power up; and

means for switching the voltage input to the internal disable input from a digital logic high to a digital logic low.

5,828,539

METHOD AND DEVICE IN POWER TRANSISTOR

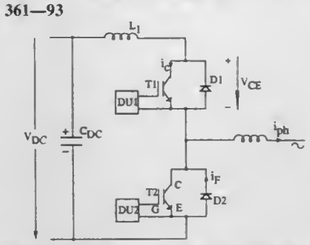
Bo Bijlenga, Skultuna; Peter Lundberg, Västeraes; Anders Persson, Västeraes, and Lennart Zdansky, Västeraes, all of Sweden, assignors to ABB Research Ltd., Zurich, Switzerland

Filed Oct. 30, 1996, Ser. No. 739,999

Claims priority, application Sweden, Sep. 20, 1996, 9603432

Int. Cl.[6] H02H *3/00*

U.S. Cl. 361—93 **34 Claims**



1. A method for controlling a turn-on operation of a voltage controlled power transistor having a gate, a first main electrode and a second main electrode, said method comprising the steps of:

operating a first current source to deliver current to the gate; and

controlling a recharging of a capacitance between the gate and the first main electrode by means of the current delivered to the gate thus determining the time rate of change (di/dt) of the current (i) between the main electrodes of the power transistor during the turn-on operation

delivering a constant current with a predetermined course of time by means of said current source; and

controlling said current source by a control signal.

5,828,540

METHOD OF PROTECTING AGAINST FAILURE OF A CIRCUIT BREAKER

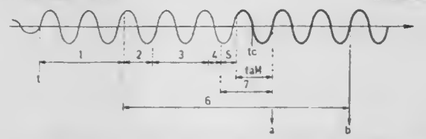
Jean Marmonier, Aix les Bains, and Hervé Lefort, La Grande Motte, both of France, assignors to Gec Alsthom T & D SA, Paris, France

Filed Jul. 14, 1997, Ser. No. 892,129

Claims priority, application France, Jul. 18, 1996, 96 09012

Int. Cl.[6] H01H *71/46*

U.S. Cl. 361—195 **2 Claims**



1. A method of protecting against circuit breaker failure, said circuit breaker having contacts capable of moving between a closed position and an open position, and vice versa, and being fitted with protection apparatus including fault detector apparatus for putting into operation an opening electromagnetic coil that actuates circuit breaker contact drive apparatus to separate the circuit breaker contacts to their open position, with position-indicator contacts of monitor apparatus being changed over as soon as the circuit breaker contacts start to move, said circuit breaker having a maximum acceptable arc time associated therewith and conducting a non-zero current, wherein said method comprises:

detecting a fault;

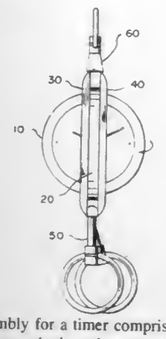
generating a time delay from the time the indicator contacts change over;

verifying, at the end of said time delay, whether the current conducted by the circuit breaker has become zero; and

generating an alarm if the current conducted by the circuit breaker is not zero.

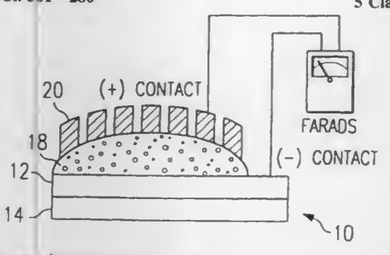
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5,828,541
HANGING ASSEMBLY FOR A TIMER
Chien-Dau Wu, No. 282, Lung-Kang Rd., Sec. 1, Chung-Li, Taiwan
Filed Oct. 12, 1995, Ser. No. 542,019
Int. Cl.[6] G04B *37/00*
U.S. Cl. 368—278 **2 Claims**



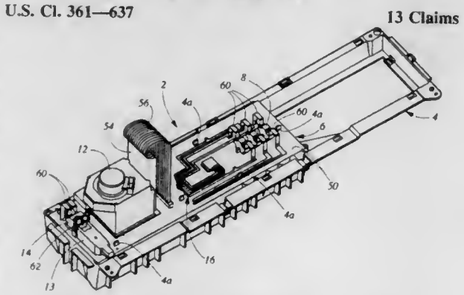
1. A hanging assembly for a timer comprising:
a) an annular front case body and an annular rear case body, the case bodies being combined together to define a frame for supporting a timer therein;
b) the case bodies each including an outer rim terminating in an inwardly directed annular flange, the outer rims collectively defining an annular groove and the flanges collectively defining an annular slot, wherein the width of the groove is larger than the width of the slot;
c) a pair of opposed pivotal axles carried by the case bodies and extending inwardly of the frame for defining a common pivotal axis, and a timer mounted to the axles and spaced inwardly of the frame for pivotal movement about the common axis; and
d) at least one moveable hanging column carried by the frame, the hanging column including a shaft provided with an enlarged portion at a first end thereof and a hanging ring at a second end thereof, the enlarged portion having a width exceeding the width of the annular slot, the enlarged portion being captured within the annular groove and the shaft extending outwardly from the annular slot for permitting the column to freely slide around the annular groove and the attachment of an article to the hanging ring.

5,828,542
METHOD OF FORMING A CAPACITANCE TYPE GASEOUS SENSING DEVICE AND APPARATUS THEREOF
Scott J. Riley, McKinney; Kenneth J. Balkus, Jr., The Colony, and Bruce E. Gnade, Dallas, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.
Division of Ser. No. 329,003, Oct. 25, 1994. This application Jun. 7, 1995, Ser. No. 473,165
Int. Cl.[6] H01G *7/00*
U.S. Cl. 361—280 **5 Claims**



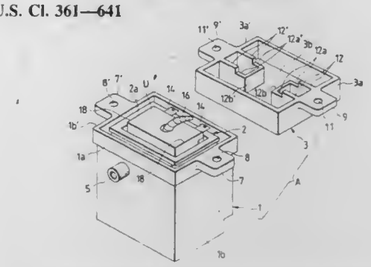
1. A capacitance type sensor device, comprising:
a first electrode layer located on a semiconductor substrate layer;
a reorganized layer uniformly located on said first electrode layer, said reorganized layer formed of a low density molecular sieve material, said reorganized layer having a crystalline surface;
a second electrode layer on selected portions of said reorganized layer, said reorganized layer operable to absorb gases into said low density molecular sieve material, said reorganized layer having a dielectric constant that changes in response to said gases absorbed into said low density molecular sieve material, said change in dielectric constant being measurable as a change in capacitance across said first and second electrode layers.

5,828,543
INTEGRATED CONTROL AND PANEL ASSEMBLY WITH IMPROVED TERMINATIONS
Denis J. Leveque, 9612 W. Vera Ave., Milwaukee, Wis. 53224
Filed Feb. 10, 1997, Ser. No. 799,592
Int. Cl.[6] H02B *1/04*
U.S. Cl. 361—637 **13 Claims**



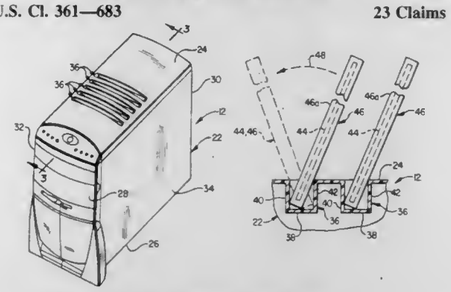
1. An integrated control and panel assembly comprising:
(a) an elongated deck member formed of dielectric material and having a plurality of openings therein;
(b) a conductor subassembly comprising:
(i) a carrier sheet formed of dielectric material having a thickness relatively small with respect to its width and having a plurality of openings therein;
(ii) a unitary planar strip formed of conductive material having a plurality of spaced generally parallel conductors, adjacent ones of said conductors being interconnected by webs formed therebetween;
(iii) each of said conductors comprising at least one integral tab bent to project out of a plane containing said conductors to provide a terminal for each respective said conductor, said unitary strip being disposed on said carrier sheet with said webs removed to provide electrical isolation of said conductors;
(c) said conductor sub-assembly being disposed on a surface of said deck member with said openings in said carrier sheet aligned with said openings in said deck member;
(d) at least one electrically operated control device disposed over said carrier sheet and mounted to said deck member through said aligned openings in said carrier sheet and said deck member, said control device having at least a pair of tab-type electric terminals projecting therefrom, said control device terminals and said integral tabs of said conductor extending in a common direction; and
(e) a plurality of connectors attached to respective said control device terminals and said conductor tabs.

5,828,544
ELECTRONIC UNIT FIXING STRUCTURE OF ELECTRONIC UNIT BOX
Hiroyuki Matsuda, Shizuoka, Japan, assignor to Yazaki Corporation, Tokyo, Japan
Filed May 14, 1997, Ser. No. 856,167
Claims priority, application Japan, May 24, 1996, 8-129951
Int. Cl.[6] H02B *1/26*
U.S. Cl. 361—641 **4 Claims**



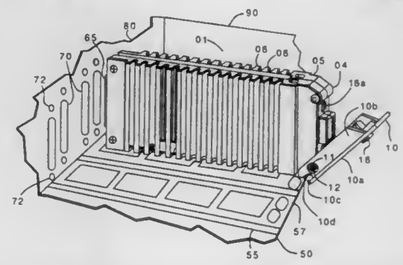
1. An electronic unit fixing structure of an electronic unit box, comprises:
a box body of the electronic unit box;
a unit accommodating casing provided in said box body, to accommodate an electronic unit; and
a lid which covers said box body to fixedly hold the electronic unit in said box body;
wherein a plurality of first fixing ribs parallel to each other and a plurality of second fixing ribs parallel to each other are disposed on a top wall of said lid; and
wherein said first and second fixing ribs have step-shaped cuts opposite to each other, so that when said box body is covered with said lid, said cuts of said first and second fixing ribs are abutted against opposite edges of the electronic unit to fixedly hold the electronic unit.

5,828,545
COMPUTER TOWER UNIT WITH EXTERNAL SUPPORT WELLS FOR PORTABLE MEDIA STORAGE DEVICES
John H. Loudenslager, Phoenix, Ariz., assignor to Compaq Computer Corporation, Houston, Tex.
Filed Apr. 30, 1997, Ser. No. 845,966
Int. Cl.[6] G06F *1/16;* **H05K** *5/02*
U.S. Cl. 361—683 **23 Claims**



1. A computer system component comprising:
a housing adapted to contain a CPU and having an exterior wall section and at least one external support well structure carried by said exterior wall section, each external support well structure being recessed from said exterior wall section into the interior of said housing and opening outwardly through said exterior wall section, configured to receive an edge portion of a portable media storage device in a manner supporting the device in a generally upright orientation and permitting the supported device to be removed from the support well structure for subsequent use remote therefrom, and being useable to support the device only in a nonoperative manner.

5,828,546
DEVICE COVER AND EJECTION APPARATUS AND METHOD
Paul T. Tirrell, Uxbridge, and William R. Tuccio, Sutton, both of Mass., assignors to EMC Corporation, Hopkinton, Mass.
Filed Mar. 20, 1995, Ser. No. 406,358
Int. Cl.[6] H05K *5/00*
U.S. Cl. 361—685 **38 Claims**

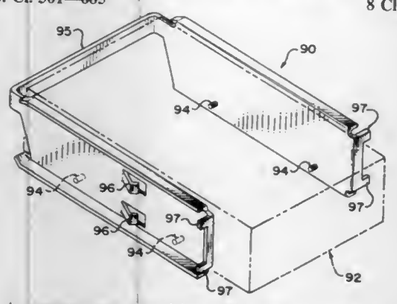


1. An apparatus for covering a removable storage system peripheral to be mounted in a housing, comprising:
a rigid cover comprised of two symmetrical side covers, each having a pair of hubs, and each having a plurality of air channels for dissipating heat formed along it in such a way that the spaces formed by said air channels do not permit objects wider than a predetermined width to be inserted between them;
a latch and a latch opening in said rigid cover;
a drive carrier for mounting said removable storage system peripheral, said drive carrier having a rigid shell for containing a removable storage system peripheral, and having apertures through which fasteners can be inserted to mount said removable storage system peripheral within said drive carrier;
a chassis shelf inside said housing, said chassis shelf having at least one rail and at least one tab opening;
a backplane located inside said housing, said backplane having pin connectors and guide pins associated therewith;
a floating drive adaptor board attached to said removable storage system peripheral inside said drive carrier, said floating drive adaptor board having a female gang connector for mating with said pin connectors in said backplane and guide pin receptors for mating with said guide pins in said backplane;
an ejector having a locking tab for gripping said tab opening in said chassis shelf, and a latch insertion area for inserting said latch to engage with said latch opening in said rigid cover, said ejector also having an ejection lip for engaging said chassis shelf to propel a covered removable storage system peripheral out of said housing for removal;
an LED panel mounted on said rigid cover and electrically connected to control logic in said storage system; and
fasteners for fastening said side covers to said drive carrier containing said removable storage system peripheral, and said ejector so that said ejector can be used to insert said removable storage system peripheral along said guides and rails of said chassis shelf, to form a stable physical and electrical connection with said backplane, and said air channels in said rigid cover cooperate with air flow in said housing to dissipate heat.

5,828,547
COMPUTER CASE HAVING SLIDABLY INSERTABLE DRIVE HOUSING WITH U-SHAPED MOUNTING BRACKET HAVING INWARDLY PROJECTING PINS ON TWO OPPOSED LEGS

Walter Francovich, Pierrefonds; Gad Shaanan, Westmount; Derek Hunziker, Montréal; Joseph Germain Maurice Paul Girard, and Vladislav Ircha, both of Richmond, all of Canada, assignors to Seanix Technology Inc., Richmond, Canada

Filed Jun. 10, 1996, Ser. No. 660,780
Int. Cl.[6] G06F *1/16;* **G11B** *33/02;* **H05K** *7/10*
U.S. Cl. 361—685 **8 Claims**

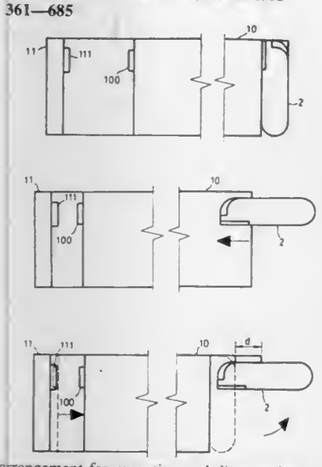


1. A computer case comprising a 3½" drive housing removably mountable within said case, said 3½" drive housing having one or more channels for slidable insertion within said 3½" drive housing of one or more 3½" drives, further comprising a "U" shaped mounting bracket for each one of said 3½" drives, said bracket having two opposed legs, each of said legs having one or more inwardly projecting pins slidably receivable within an aperture located in a side of said 3½" drive.

5,828,548
REMOVABLE HARD DISK DRIVE MOUNTING/ DISMOUNTING ARRANGEMENT

Chih-Kung Chen, 2FL., NO. 1-16, Tung Shih Street, Nuan Nuan Dist. Chi Lung, Taiwan

Filed Apr. 28, 1997, Ser. No. 846,489
Int. Cl.[6] G06F *1/16;* **H05K** *5/02*
U.S. Cl. 361—685 **2 Claims**



1. An arrangement for mounting and dismounting a removable hard disk drive casing having a handle connected to the casing by a shaft, comprising:

a rack arranged to receive said removable hard disk drive casing, an opening end of said rack including a bent portion, said bent portion having fastened thereto a T-shaped block, the cross-bar portion of the T-shaped block forming an inverted L-shape when viewed in the direction of mounting the hard disk drive casing, and the horizontal portion of the L-shape and the bent portion of the rack defining therebetween a retaining opening,

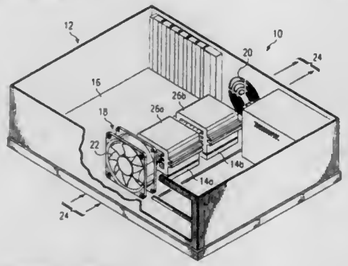
wherein said handle is arranged to pivot between horizontal and vertical and includes an arc-shaped end, an arc-shaped notch on one side of said arc-shaped end, and a linear notch extending linearly on a second side of said arc-shaped end, said arc-shaped notch and said linear notch defining a retaining portion therebetween, and

wherein said bent portion, said T-shaped block, and said handle are arranged such that when said handle is horizontal and said casing is pushed into said rack, said retaining portion passes said horizontal portion and said arc-shaped end engages the bent portion, thereby preventing the casing from being pushed fully into the rack, and when said handle is turned to vertical, said retaining portion enters the retaining opening to permit the casing to complete entry into and be retained in the rack.

5,828,549
COMBINATION HEAT SINK AND AIR DUCT FOR COOLING PROCESSORS WITH A SERIES AIR FLOW

Jerry Gandre, Austin, and Ty Schmitt, Round Rock, both of Tex., assignors to Dell U.S.A., L.P., Round Rock, Tex.

Filed Oct. 8, 1996, Ser. No. 729,815
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—695 **14 Claims**



1. A computer comprising:

a plurality of heat producing devices;

a plurality of heat sinks, one for each of the heat producing devices, wherein each of the heat sinks comprises:

a base having a top surface and bottom surface, wherein the bottom surface is thermally attached to the corresponding devices;

left and right side walls thermally attached to the base, each having an inner surface and outer surface; and

a top wall thermally attached to the left and right side walls and having an inner surface and outer surface;

wherein a single passage is formed by the top surface of the base and the inner surfaces of the left, right and top walls for receiving a fluid and for transferring the fluid to the passage of another one of the heat sinks;

the top surface of the base and the inner surfaces of the left and right sidewalls each including internal fins extending partially into the single passage;

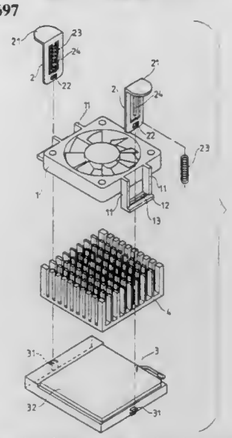
the outer surfaces of the left and right sidewalls each including external fins extending opposite the internal fins of the inner surfaces; and

wherein heat from the corresponding device radiates through the base, the left and right side walls, and the top wall and into the fluid inside the single passage and to the external fins.

5,828,550
HEAT DISSIPATING FAN/INTEGRATED CIRCUIT ASSEMBLIES

Alex Horng, Kaohsiung, Taiwan, assignor to Motor-One Electronics, Inc., Taipei, Taiwan

Filed Mar. 4, 1997, Ser. No. 805,905
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—697 **2 Claims**



1. A heat dissipating fan/integrated circuit assembly, comprising:

a connector adapted to be mounted on a printed circuit board, the connector having an integrated circuit securely mounted to an upper side thereof, the integrated circuit having an upper side, the connector further comprising two protrusions respectively projecting outwardly from two opposite sides thereof,

a fin mounted to the upper side of the integrated circuit;

a fan device mounted on top of the fin and including two slots defined therein;

two engaging members, each engaging member having a stem and each said engaging member extending through an associated slot, each said engaging member further including an engaging hole defined in a lower end of the respective engaging member for releasably engaging with an associated protrusion of the connector; and

an elastic member being mounted by the stem of each said engaging member, said elastic member being mounted between each said engaging member and the fan device to bias the associated engaging member away from the fan device, thereby providing a secure engagement between each said protrusion and the associated engaging hole.

5,828,551
HEAT SINK APPARATUS FOR AN ELECTRONIC COMPONENT

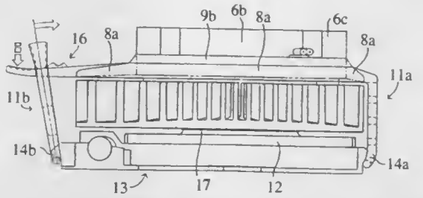
Izumi Hoshino, Nitta-machi, and Hideo Matsushima, Kiryu, both of Japan, assignors to Hoshino Kinzoku Koygo Kabushiki Kaisha, Japan

Filed Apr. 9, 1997, Ser. No. 827,616
Claims priority, application Japan, Mar. 4, 1997, 9-065380
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—697 **19 Claims**

1. A sink apparatus adapted to be mounted on said dissipate heat generated in an electronic device, said heat sink apparatus comprising:

(a) heat conductive base comprising a plate member having a first surface and a second surface;

(b) a plurality of heat dissipation fins projecting upwardly from said first surface and extending radially toward a circumference of said plate member;



(c) said second surface being adapted to be in contact engagement with a surface of said electronic device;

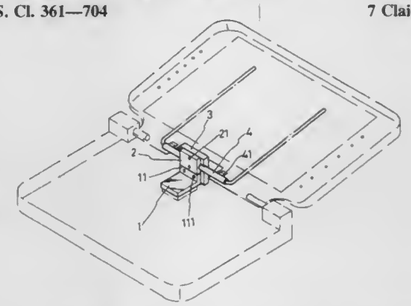
(d) said first surface slopping down radially toward the circumference of said plate member; and

(e) a fan assembly mounted above said heat dissipation fine.

5,828,552
HEAT DISSIPATING STRUCTURE OF A NOTEBOOK COMPUTER

Hsi-Kuang Ma, 4F, No. 48, Sec. 2, Chung Cherng Rd, Taipei, Taiwan

Filed Aug. 12, 1996, Ser. No. 695,913
Int. Cl.[6] H05K *7/20*
U.S. Cl. 361—704 **7 Claims**



1. A heat dissipating structure of a notebook computer, comprising:

a metal heat conductive plate mounted to the mainframe of a notebook computer and disposed in contact with the CPU thereof, having an upright wall raised from a rear side thereof, said upright wall having a plurality of mounting holes;

a metal coupling plate mounted on the upright wall of said metal heat conductive plate, having a plurality of mounting holes, and a horizontal U-groove at a back side thereof through the width;

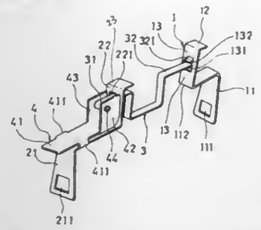
a metal heat collecting panel mounted on the mainframe of the notebook computer and connected to said metal coupling plate and said metal heat conductive plate, having a plurality of mounting holes respectively connected to the mounting holes of said metal coupling plate and the mounting holes of said metal heat conductive plate by screws, and a horizontal U-groove at a fron, side thereof incorporating with the horizontal U-groove of said metal coupling plate into a circular axle hole; and

a tubular metal revolving shaft mounted in said circular axle hole between said metal heat collecting panel and said metal coupling plate, having a plurality of mounting leaves symmetrically raised from the periphery near two opposite ends and respectively fastened to the LCD of the notebook computer.

5,828,553
CPU HEAT SINK FASTENER

Ming Chin Chiou, No. 2, Alley 1, Lane 160, Kai De St., Chien Chen Chu, Kau Hsiung City, Taiwan

Filed Jun. 10, 1997, Ser. No. 872,054
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—704 4 Claims



1. A fastener fastened to a CPU mount to hold down a heat sink above a CPU, comprising:

a first clamping plate, said first clamping plate comprising a vertical bottom hanging portion attached to one lateral side of said CPU mount, a hanging hole at the hanging portion of said first clamping plate and hung on one retainer block on said CPU mount, a horizontal top at an opposite end, and a L-shaped bearing portion connected between the horizontal top and vertical bottom hanging portion of said first clamping plate and attached to said heat sink at a top side and having a through hole and a retaining hole vertically spaced at a vertical section thereof;

a second clamping plate, said second clamping plate comprising a vertical bottom hanging portion at one end attached to an opposite lateral side of said CPU mount, a hanging hole at the hanging portion of said second clamping plate and hung on one retainer block of said CPU mount, a horizontal top at an opposite end, and a L-shaped bearing portion connected between the horizontal top and vertical bottom hanging portion of said second clamping plate and having a through hole at a vertical section thereof;

a curved stretcher connected between said first clamping plate and said second clamping plate, said curved stretcher comprising a U-shaped body, a first shoulder and a second shoulder respectively and horizontally extended from two opposite ends of said U-shaped body in reversed directions, said first shoulder having one end connected to said U-shaped body and an opposite end terminating in a knuckle inserted through the through hole of said second clamping plate and pivoted to a lever, said second shoulder having one end connected to said U-shaped body and an opposite end terminating in a hook inserted through the first through hole of said first clamping plate and fastened to its retaining hole; and

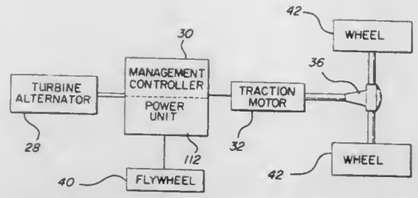
a lever pivoted to the knuckle of the first shoulder of said stretcher and stopped at the vertical section of the L-shaped bearing portion of said second clamping plate and turned between a horizontal position in which the fastener is loosened, and a vertical position in which the fastener is tightened, said lever comprising an elongated flat lever body having a front end, two parallel lugs bilaterally upwardly raised from the front end of said lever body and having a respective pivot hole pivotably connected to two opposite ends of the knuckle of said stretcher by a pivot.

5,828,554
INTEGRATED CHASSIS, ENCLOSURE AND CAGE

Kevin J. Donegan, Merrimack, N.H.; Dennis E. Hartzell, Wertogue, and Gary P. Millas, Avon, both of Conn., assignors to Chrysler Corporation, Auburn Hills, Mich.

Filed May 2, 1996, Ser. No. 641,926
Int. Cl.[6] H05K 7/20
U.S. Cl. 361—707 6 Claims

1. A power assembly for a hybrid vehicle comprising:



a housing including at least two opposing end walls and two longitudinal side walls forming an enclosed perimeter, said end walls including input and output connectors and said side walls including a plurality of fastening openings extending along a center of a longitudinal length thereof;

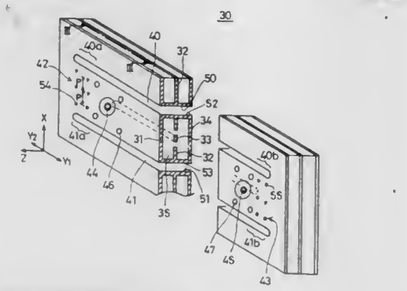
a power unit comprising a DC storage unit and DC bus and power transistors connected with a heat exchanger providing signals to an AC bus, each connected to one another to form a structural unit; and

a plurality of fastener members extending through said fastening openings and mounting apertures in the heat exchanger of said power unit for installation as a single unit in a vehicle.

5,828,555
MULTILAYER PRINTED CIRCUIT BOARD AND HIGH-FREQUENCY CIRCUIT DEVICE USING THE SAME

Takumi Itoh, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed May 20, 1997, Ser. No. 859,669
Claims priority, application Japan, Jul. 25, 1996, 8-196355
Int. Cl.[6] H05K 1/11
U.S. Cl. 361—784 12 Claims



12. A circuit device comprising:

printed-circuit boards on which circuit parts are provided;

a back board to which the printed-circuit boards are attached and arranged side by side;

first connectors provided to the printed-circuit boards; and

second connectors provided to the back board and engaged with the first connectors provided to the printed-circuit boards,

each of the printed-circuit boards and the back boards comprising:

at least one inner-layer signal line connected to one of the first and second connectors;

first and second ground layers between which said at least one inner-layer signal line is sandwiched via a frame member made of an insulating material in a thickness direction of the multilayer printed-circuit board; and

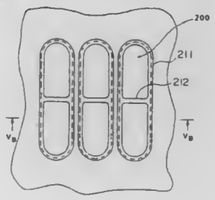
metallic wall members provided on inner walls of slits formed in the frame member and extending along said at least one inner-layer signal line,

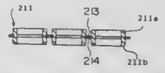
said first and second ground layers and said metallic wall members shielding said at least one inner-layer signal line.

5,828,556
CASE UNIT INCLUDING RING-SHAPED RIBS MADE OF RESIN AS GUIDE RAILS FOR HOUSING PRINTED-CIRCUIT ASSEMBLIES

Hideki Zenitani; Katsuya Fujii; Yuji Yoshitake, and Yoshinori Hoshino, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Division of Ser. No. 446,232, May 22, 1995, Pat. No. 5,696,668. This application Jun. 24, 1997, Ser. No. 881,660
Claims priority, application Japan, Aug. 4, 1994, 6-183794
Int. Cl.[6] H05K 7/14
U.S. Cl. 361—802 6 Claims





1. A case unit for housing printed-circuit assemblies, said case unit comprising:

a top plate made of metal;

a bottom plate, made of metal, facing said top plate;

side plates facing each other, said side plates being positioned between side portions of said top plate and said bottom plate so that a space surrounded by said top plate, said bottom plate and said side plates is formed; and

guide rails, made of resin, integrated with said top plate and said bottom plate, said guide rails guiding edges of said printed-circuit assemblies loaded into said space, each of guide rails integrated with at least one of said top plate and said bottom plate having:

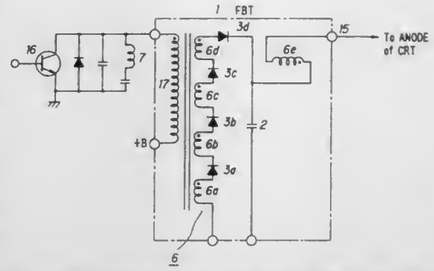
a pair of ring-shaped ribs integrated with a corresponding plate which is said top plate or said bottom plate so as to cover edges of wide holes which are formed through said corresponding plate as air vents, said pair of ring-shaped ribs having first projection portions projecting from an inner surface of said corresponding plate and second projection portions projecting from an outer surface of said corresponding plate, said first projection portions being longer than said second projection portions, a guide groove being formed between said first projection portions of said pair of ring-shaped ribs.

5,828,557
FLYBACK TRANSFORMER

Yoshihiko Sugawara, and Hideyuki Mochida, both of Yokohama, Japan, assignors to Hitachi Media Electronics Co., Ltd., Iwate-ken, Japan

Filed Oct. 30, 1996, Ser. No. 739,203
Claims priority, application Japan, Oct. 31, 1995, 7-283602
Int. Cl.[6] H02M 3/335; H01J 29/70
U.S. Cl. 363—20 4 Claims

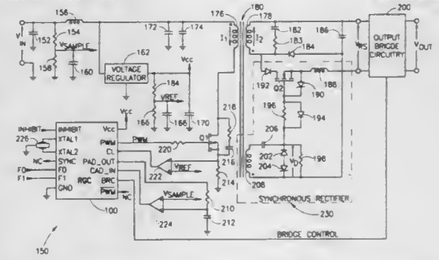
1. A flyback transformer comprising: a primary-side coil; a secondary-side high-voltage coil divided into a predetermined number of coil pieces; high-voltage rectifier diodes connected, in the same polarity, in series with said coil pieces respectively so as to form a series circuit as a whole; a high-voltage capacitor connected to a cathode side of one of said high-voltage rectifier diodes located in a final stage of said series circuit; and an in-phase high-voltage coil reversely connected to said one high-voltage rectifier diode in the final stage of said series circuit so that a reverse pulse generated by said in-phase high-voltage coil is superimposed on the cathode side of said one high-voltage rectifier diode.



5,828,558
PWN CONTROLLER USE WITH OPEN LOOP FLYBACK TYPE DC TO AC CONVERTER

Dror Korcharz, and Alon Ferentz, both of Bat Yam, Israel, assignors to Powerdsine, Ltd., Petach Tikva, Israel

Filed Feb. 11, 1998, Ser. No. 22,281
Int. Cl.[6] H02M 3/335
U.S. Cl. 363—20 40 Claims



1. A controller suitable for controlling an open loop flyback DC to AC converter circuit, said circuit including a transformer having a primary and a secondary, said controller comprising:

sampling means for generating a digital number representative of the magnitude of a source of DC electrical power;

sine generator means for generating a digital representation of a sinusoidal waveform;

processing means for determining the duty cycle of a pulse width modulated (PWM) signal in accordance with the following equation

$$D = \frac{V_{OUT}}{N \cdot V_{IN} + V_{OUT}}$$

wherein

D=duty cycle of PWM signal

N=turns ratio of said transformer

V_{IN}=voltage level of said source of DC electrical power

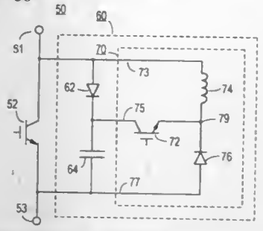
V_{OUT}=digital representation of a sinusoidal waveform; and

pulse width modulation means for generating said PWM signal in response to the duty cycle generated by said processing means.

5,828,559
SOFT SWITCHING ACTIVE SNUBBER

Keming Chen, 7724 Camp Alger Ave., Falls Church, Va. 22042

Filed Feb. 3, 1997, Ser. No. 794,643
Int. Cl.[6] H02H *7/12*
U.S. Cl. 363—56 20 Claims



1. A reliable snubber for providing stress relief for a switching element comprising:

a capacitor for energy absorbing;

rectifying means, coupled in series with said capacitor, the series combination being coupled across the switching element, for providing stress relief for the switching element; and

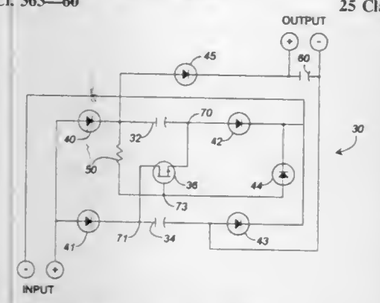
soft switching active reset means, having first, second and third terminals, wherein the first terminal is coupled to a connection point of the switching element and said rectifying means, the second terminal is coupled to a connection point of said capacitor and said rectifying means, for providing a controllable discharging path, and the third terminal is coupled to a connection point of the switching element and said capacitor, for providing a recovering path;

so that a controllable discharging and recovering process of said capacitor is provided by said soft switching active reset means.

5,828,560
VOLTAGE CONVERTER CIRCUIT

Robert J. Alderman, 686 Highland Terrace, Canyon Lake, Tex. 78133

Filed Mar. 24, 1997, Ser. No. 823,373
Int. Cl.[6] H02M *3/18*
U.S. Cl. 363—60 25 Claims



10. A voltage converter circuit comprising:

input terminals for receiving an input voltage;

output terminals for delivering a high voltage pulsed output;

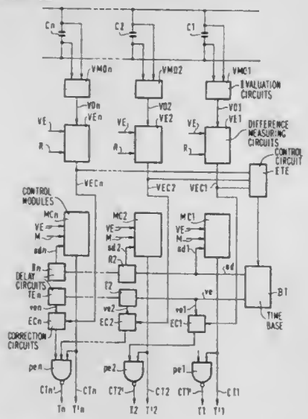
a circuit interconnected between the input terminals and the output terminals having a plurality of charging capacitors;

at least one switching means responsive to a voltage across the input terminals, the switching means being interposed between two of the plurality of the charging capacitors, the switching means being configured to electrically interconnect the two of the plurality of charging capacitors in parallel when the a voltage is present at the input terminals, the switching means being further configured to electrically interconnect the two of the plurality of charging capacitors in series when the voltage at the input terminals is near zero, the circuit being configured so that the voltages across the two of the plurality of charging capacitors is added and placed across the output terminals.

5,828,561
MULTI LEVEL POWER CONVERTER WITH SELF-CORRECTING CAPACITOR CHARGE TIMING ADJUSTMENT

Jean-Paul Lavieville, Gif Sur Yvette, and Juan Gonzalez, St Arnoult en Yvelines, both of France, assignors to GEC Alsthom Transport SA, Paris, France

PCT No. PCT/FR95/01750, § 371 Date Aug. 16, 1996, § 102(e) Date Aug. 16, 1996, PCT Pub. No. WO96/21269, PCT Pub. Date Jul. 11, 1996
PCT Filed Dec. 28, 1995, Ser. No. 700,382
Claims priority, application France, Dec. 29, 1994, 94 15866
Int. Cl.[6] H02M *3/06;3/18*
U.S. Cl. 363—62 9 Claims



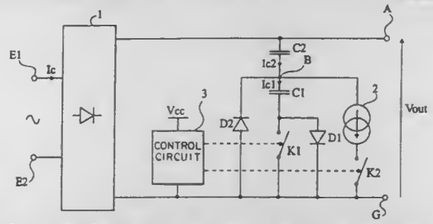
1. A multilevel converter comprising, in particular, between a voltage source (SE) and a current source (C), a succession of controllable switching cells (CL1, CL2, . . . , CLn), each having two switches (T1, T'1; T2, T'2; . . . ; Tn, T'n), with one pole of each of the two switches forming part of a pair of upstream poles and with the other pole of each of the switches forming one of a pair of downstream poles, the pair of downstream poles of an upstream cell being connected to the pair of upstream poles of a downstream cell, and the pair of upstream poles of a first cell (CL1) being connected to said current source (C) while the pair of downstream poles of a last cell (CLn) is connected to said voltage source (SE), the converter further comprising a capacitor (C1, C2, . . . , Cn) for each cell, except that the capacitor of the last cell may be omitted when said voltage source (SE) is suitable for performing the same role, each capacitor being connected between the two poles constituting the pair of downstream poles of the corresponding cell, the converter also comprising control means governing the nominal operation of the converter by acting on the switches of successive cells in such a manner that the two switches of any given cell are always in respective opposite conduction states, such that in response to a cell control signal (CT1, CT2, . . . , CTn) provided by said control means, one of the two switches in a given cell is successively in a first conduction state and then in a second conduction state during a cyclically repeated period, and such that in response to cell control signals that are identical but offset in time by a fraction of said period the switches of successive cells operate respectively in the same manner but offset in time by said fraction of a period, the successive capacitors (C1, C2, . . . , Cn) having respective increasing nominal mean charge voltages, the nominal mean charge voltage of the capacitor in each of said cells being equal to the product of a voltage (VE) from said voltage source (SE) multiplied by the reciprocal of the number of cells and

by the rank of the cell, the converter being characterized in that it comprises means (VMO1, VMO2, . . . , VMOn) for evaluating the mean voltage across the terminals of each capacitor (C1, C2, . . . , Cn), means (VE1, VE2, . . . , VEn) for measuring any difference on each of said capacitors (C1, C2, . . . , Cn) between the evaluated mean charge voltage and the nominal mean charge voltage of the capacitor, and for delivering corresponding difference signals (VEC1, VEC2, . . . , VECn), and correction controlling means (BT, EC1, EC2, . . . , ECn) receiving said difference signals and consequently controlling at least one temporary coupling between two capacitors in order to correct said difference.

5,828,562
DOUBLE DISCHARGE CIRCUIT FOR IMPROVING THE POWER FACTOR

Bertrand Rivet, Tours, France, assignor to SGS-Thomson Microelectronics S.A., Saint Genis, France

Filed Mar. 27, 1997, Ser. No. 825,191
Claims priority, application France, Mar. 29, 1996, 96 04270
Int. Cl.[6] H02M *7/06*
U.S. Cl. 363—125 37 Claims



1. A device for improving the power factor of a rectifying bridge supplied by an AC voltage and meant to issue a rectified DC supply to a load coupled between first and second supply lines, including:

first and second capacitors mounted in series between the first and second supply lines, the second capacitor having a larger capacitance than the first capacitor;

a first charge path extending between the first and second supply lines to charge essentially the first capacitor;

a second charge path, which is switchable, extending between the first and second lines to charge exclusively the second capacitor;

a first discharge path, which is switchable, extending between the first and second supply lines to discharge essentially the first capacitor to the load; and

a second discharge path extending between the first and second supply lines to discharge exclusively the second capacitor to the load.

5,828,563
SINGLE PHASE INPUT HYBRID RECTIFICATION METHOD EMPLOYING AUXILIARY RECTIFICATION

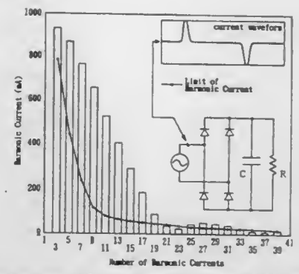
Yasunobu Suzuki, Tokyo, and Toru Teshima, Yokohama, both of Japan, assignors to I-Hits Laboratory, Yokohama, Japan

Filed Oct. 26, 1995, Ser. No. 548,423
Claims priority, application Japan, Dec. 29, 1994, 6-341196
Int. Cl.[6] G05F *3/16*
U.S. Cl. 363—126 4 Claims

1. A single phase input hybrid rectification method comprising:

subjecting a single phase AC input voltage to a single-phase full-bridge rectifier to obtain a first rectified voltage having a fundamental DC component and a harmonic component, the harmonic component being defined by a ripple voltage of the first rectified voltage; and

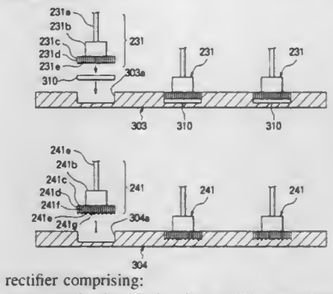
subjecting the first rectified voltage to an auxiliary rectification in which the ripple voltage of the first rectified voltage is rectified and a resultant auxiliary DC component is added to the fundamental DC component to obtain a DC component of a rectified output voltage.



5,828,564
RECTIFIER HEAT DISSIPATION

Masakazu Mori; Shiro Iwatani, and Shinji Iwamoto, all of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 14, 1997, Ser. No. 911,003
Claims priority, application Japan, Feb. 25, 1997, 9-040936
Int. Cl.[6] H02M *1/00;* H01L *23/34;* H02K *11/00*
U.S. Cl. 363—141 7 Claims



1. A rectifier comprising:

a one-way conducting device for rectifying an alternating current, wherein said one-way conducting device includes a metal base serving as one electrode and having a side surface portion and a seating surface portion; and

a metal heat dissipation member, including a socket section for receiving said metal base, for dissipating heat generated at said one-way conductive device, wherein said socket section of said metal heat dissipation member has a side wall portion firmly engaged with said side surface portion of said metal base and a bottom portion in contact with said seating surface portion of said metal base.

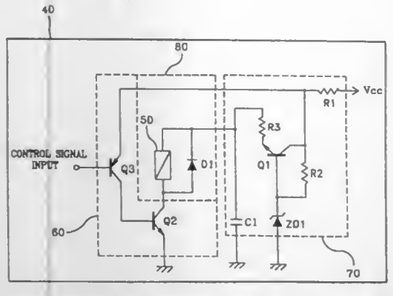
5,828,565
SOLENOID DRIVING CIRCUIT FOR COMPACT DISC PLAYERS FOR CARS

Jong Hwa Park, Suwon, Rep. of Korea, assignor to Samsung Electro Mechanics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 5, 1996, Ser. No. 691,004
Claims priority, application Rep. of Korea, Nov. 30, 1995, 95-46633
Int. Cl.[6] G05B *11/01;* G11B *21/02;* H01H *9/00*
U.S. Cl. 364—140.01 2 Claims

1. A solenoid driving circuit for a compact disc player for use in cars, comprising:

a disc detecting section for detecting an insertion state of a compact disc into the compact disc player to produce detection signals;



a microcomputer for controlling the entire operation of the compact disc player and receiving detection signals from the disc detecting section to produce control signals in accordance with the detection signals;

a motor driving section for providing a driving force to a driving mechanism of the compact disc player in accordance with the control signal of the microcomputer; and

a solenoid driving section, comprising:

a latch type solenoid;

a control section for controlling the operation of the latch type solenoid; and

a regulated voltage circuit for providing a regulated driving voltage to the latch type solenoid,

wherein the latch type solenoid is driven when the control signal of the microcomputer is supplied to the solenoid driving section,

said regulated voltage circuit including a first transistor,

said control section comprising second and third transistors;

first, second and thirds resistors,

said third transistors performing a switching operation in accordance with the input voltage applied to its emitter through said first resistor and the control signal applied to its base from the microcomputer;

said second transistor having a base connected to the collector of the third transistor to receive an output signal of the third transistor and perform a switching operation of the latch type solenoid, a first diode being connected in parallel with the solenoid for prevention of a counter-electromotive force.

5,828,566

VISION ASSISTED FIXTURE CONSTRUCTION

Timothy R. Pryor, Tecumseh, Canada, assignor to Sensor Adaptive Machines, Inc., Windsor, Canada

Division of Ser. No. 158,310, Nov. 29, 1993, Pat. No. 5,455,765, which is a division of Ser. No. 866,653, Apr. 8, 1992, Pat. No. 5,267,143, which is a continuation of Ser. No. 643,905, Jan. 22, 1991, abandoned, which is a continuation of Ser. No. 525,706, May 21, 1990, abandoned, which is a continuation of Ser. No. 382,497, Jul. 21, 1989, abandoned, which is a division of Ser. No. 113,363, Oct. 27, 1987, Pat. No. 4,851,905, which is a continuation of Ser. No. 22,596, Mar. 4, 1987, abandoned, which is a continuation of Ser. No. 660,279, Oct. 12, 1984, abandoned. This application Jun. 6, 1995, Ser. No. 466,874

Int. Cl.[6] G06F *19/00*

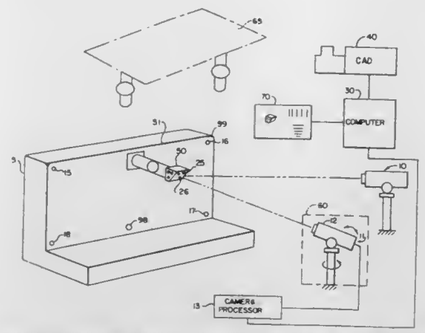
U.S. Cl. 364—167.05 **9 Claims**

1. An apparatus for determining position relative to an object, said apparatus comprising:

an electro-optical sensor;

a moving means for moving said sensor relative to the object;

a triggering means for triggering a control signal as said sensor is being moved by said moving means when said sensor senses a fixed point on the object; and



an encoder means for determining positional data related to the position of said sensor relative to the sensed point on the object in response to reception of said control signal.

5,828,567

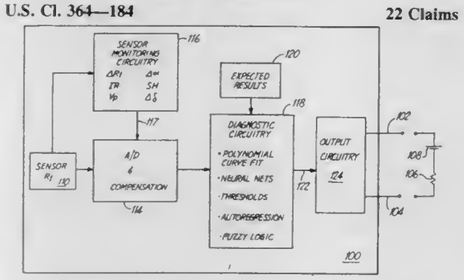
DIAGNOSTICS FOR RESISTANCE BASED TRANSMITTER

Evren Eryurek, Minneapolis, and Gary Lenz, Eden Prairie, both of Minn., assignors to Rosemount Inc., Eden Prairie, Minn.

Filed Nov. 7, 1996, Ser. No. 744,980

Int. Cl.[6] G06F *19/00*

U.S. Cl. 364—184 **22 Claims**



1. A transmitter in a process control system, comprising:

a resistance sensor sensing a process variable and providing a process variable output;

sensor monitoring circuitry coupled to the resistance sensor providing a secondary signal related to a condition of the resistance sensor;

analog to digital conversion circuitry coupled to the process variable output and the sensor monitoring circuitry and providing a digitized primary process variable output and a digitized secondary signal;

output circuitry coupled to a process control loop for transmitting a residual life estimate;

a memory storing a set of expected results related to the secondary signal and to the sensor; and

diagnostic circuitry coupled to the digitized secondary signal and to the memory, for providing the residual life estimate as a function of the expected results in the memory, the digitized process variable output and the digitized secondary signal.

5,828,568

INFORMATION PROCESSING APPARATUS, PROCESSING METHOD THEREOF, AND POWER SUPPLY CONTROL METHOD THEREFOR

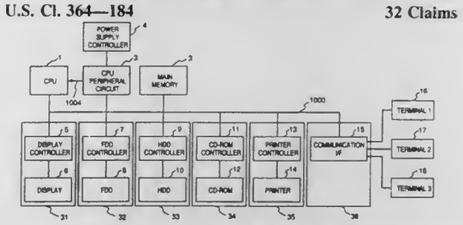
Shinichi Sunakawa, Kawasaki; Kazutoshi Shimada, Yokosuka; Eisaku Tatsumi, Kawasaki; Shigeki Mori, Koshigaya; Kazuhiro Matsubayashi; Takashi Harada, both of Yokohama; Katsuhiko Nagasaki, Ichikawa, and Ryoji Fukuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 434,984, May 4, 1995, abandoned. This application Sep. 18, 1997, Ser. No. 932,466

Claims priority, application Japan, May 9, 1994, 6-095186; Jun. 20, 1994, 6-136953

Int. Cl.[6] G05B *9/02*; **G06F** *1/32*

U.S. Cl. 364—184 **32 Claims**



1. An information processing apparatus for time-divisional execution of a plurality of tasks, comprising:

scheduling means for scheduling an execution order of each task of the plurality of tasks in time division, on the basis of the power required by each task to perform the task;

storage means for storing device power requirement information of all devices connected to the information processing apparatus and for storing the power required to perform each task; and

execute means for executing each task of the plurality of tasks in accordance with the schedule determined by said scheduling means;

wherein said scheduling means schedules so that the task that requires the most power has the highest execution order priority.

5,828,569

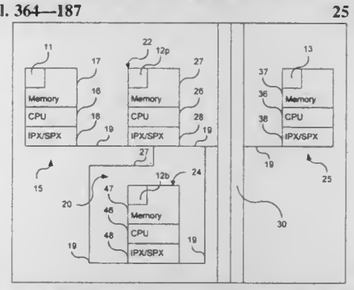
METHOD AND APPARATUS FOR MAINTAINING NETWORK CONNECTIONS ACROSS A VOLUNTARY PROCESS SWITCHOVER

Michael E. Fisher, San Jose, Calif., assignor to Tandem Computers, Inc., Cupertino, Calif.

Continuation of Ser. No. 377,304, Jan. 23, 1995, abandoned. This application May 21, 1997, Ser. No. 861,264

Int. Cl.[6] G05B *9/02*

U.S. Cl. 364—187 **25 Claims**



1. A method for maintaining network connections between a plurality of applications, the method comprising the steps, performed by one or more processors, of:

communicating data between a first application and a primary node running a primary node protocol process application;

said communicated data relating to establishing a network connection between the first application and the primary node protocol process application, said primary node connected to a backup node, and said primary and backup nodes each having independent processors;

checkpointing said communicated data from said primary node to said backup node;

employing, in the event of a voluntary switchover from said primary node to said backup node, said checkpointed data by said backup node to maintain said network connection between said first application and said protocol process application, so that communication between said first application and said protocol process application is not interrupted by the voluntary switchover.

5,828,570

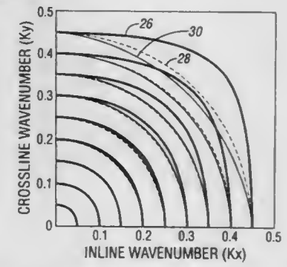
UNCONSTRAINED 2-D TRANSFORMATION FILTER

James E. Gaiser, Littleton, Colo., assignor to Western Atlas International, Inc., Houston, Tex.

Filed Sep. 29, 1995, Ser. No. 536,992

Int. Cl.[6] G01V *1/30;1/28;* **G06F** *19/00*

U.S. Cl. 364—422 **6 Claims**



1. A system for geophysical exploration of subsurface formations, comprising:

an acoustic source for radiating an acoustic wavefield for insonifying said subsurface formations;

an array of seismic receivers responsive to wavefields reflected from said insonified subsurface formations for providing electrical signals representative of the reflected wavefields, said receivers being disposed over a spatial coordinate grid having preselected principal spatial axes;

a programmed computer coupled to said array of seismic receivers for receiving said electrical signals and for synthesizing a transformation filter as a function of wavenumber;

said computer being further programmed to scale and shift said synthesized transformation filter;

means associated with said computer for defining a wavenumber mapping relationship between a numerically averaged response of the scaled and shifted transformation filter over all azimuths and the Chebyshev argument cos (k_x);

said computer further being programmed to apply said averaged, scaled and shifted transformation filter to the received electrical signals; and

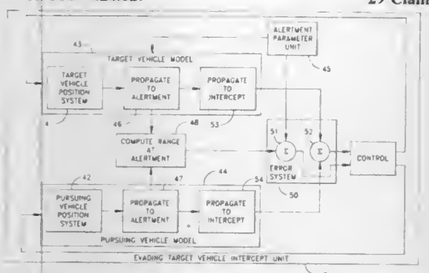
a display means in communication with said computer for displaying the filtered electrical signals.

VOL 1215 ISS 4 OCT 27 1998 UMI

5,828,571
METHOD AND APPARATUS FOR DIRECTING A PURSUING VEHICLE TO A TARGET WITH EVASION CAPABILITIES

Anthony F. Bessacini, Narragansett, and Robert F. Pinkos, Saunderstown, both of R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 30, 1995, Ser. No. 521,207
Int. Cl.[6] G06F *165/00*
U.S. Cl. 364—424.027 **29 Claims**



1. A control method for directing a pursuing vehicle from a launching vehicle to a target vehicle by supplying to guidance means in the pursuing vehicle initial guidance parameters to be used at launch wherein the launching vehicle includes target vehicle state estimation means and identification means for establishing predetermined target vehicle operating characteristics, said method comprising the steps of:

generating a representation of a characteristic trajectory from a generic model of pursuing vehicle trajectory;

generating a representation of a characteristic trajectory from a generic model of target vehicle trajectory, in response to data from the identification means;

initializing predetermined characteristics that represent the interaction of the pursuing vehicle and target vehicle trajectory representations;

iteratively propagating the trajectories in response to the values of the initialized predetermined characteristics and updated predetermined characteristics according to a plurality of approximation relationships between the representations of the pursuing vehicle and target vehicle trajectories until the solutions converge;

generating the guidance parameters from the predetermined characteristics that produce the convergence for transfer to the pursuing vehicle guidance means; and

launching the pursuing vehicle in response to the transferred guidance parameters.

5,828,572
PROCESSING SYSTEM AND SEMICONDUCTOR DEVICE PRODUCTION METHOD USING THE SAME INCLUDING AIR CONDITIONING CONTROL IN OPERATIONAL ZONES

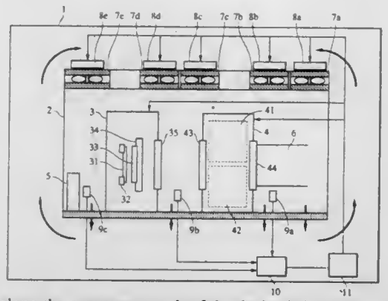
Takayuki Hasegawa; Hidehiko Fujioka, both of Utsunomiya, and Yoshito Yoneyama, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 5, 1996, Ser. No. 677,358
Claims priority, application Japan, Jul. 7, 1995, 7-172066
Int. Cl.[6] B65G *65/30*
U.S. Cl. 364—468.24 **28 Claims**

1. A processing system comprising:

a plurality of processing devices disposed in a clean room for processing a device being moved along a conveyance path in the clean room;

a plurality of measuring devices for measuring atmospheric conditions at a plurality of locations within the clean room,



along the conveyance path of the device being processed by said plurality of processing devices, and for producing corresponding outputs;

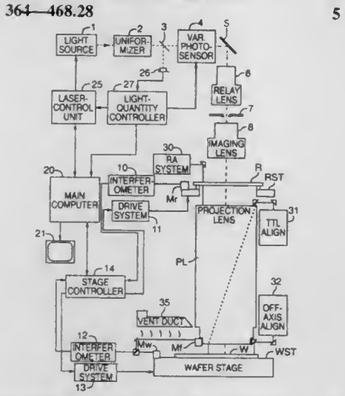
adjusting means for adjusting at least one partial atmospheric condition at each of the plurality of locations along the conveyance path within the clean room; and

control means for receiving (i) the outputs of said plurality of measuring devices and (ii) information related to an operating state of at least one of said processing devices, and for controlling operation of said adjusting means to vary the partial atmospheric condition while at least one of said processing devices is in operation at each of the plurality of locations.

5,828,573
MANUFACTURING METHOD FOR MICROLITHOGRAPHY APPARATUS

Yutaka Hayashi, Yokohama, Japan, assignor to Nikon Corporation, Tokyo, Japan

Filed Nov. 15, 1996, Ser. No. 746,792
Claims priority, application Japan, Nov. 16, 1995, 7-298301
Int. Cl.[6] G06F *19/00*
U.S. Cl. 364—468.28 **5 Claims**



5. A microlithography apparatus for exposing a circuit pattern defined by a mask onto a substrate, the mask being mounted to a movable first stage and the substrate being mounted to a movable second stage, the apparatus comprising:

(a) a computer operable to perform general controlling of the apparatus and to carry out an exposure operation of the substrate by moving said first or second stages according to a program entered into the computer by a user; and

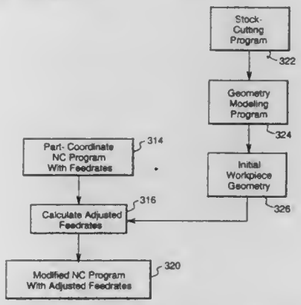
(b) a database memory connected to the computer, the database memory being operable for storing a characteristic of an overall system-analysis model of a kinetic system in the microlithography apparatus, to simulate an exposure accuracy or a transfer precision in accordance with the stored characteristic, as affected by a motion of said first or second stages

and actual disturbances or perturbations encountered under actual operating conditions of the kinetic system.

5,828,574
ADAPTIVE FEEDRATES FROM GEOMETRY MODELING FOR NC MACHINING

Dean Michael Robinson, Schenectady; Weiping Wang, Niskayuna, and Garth M. Nelson, Ballston Lake, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 19, 1997, Ser. No. 858,852
Int. Cl.[6] G06F *15/18;* **G05B** *19/4093*
U.S. Cl. 364—474.15 **2 Claims**



1. A method for determining, by off-line computer simulation of the machining process, an adaptive feedrate for a machine tool used to machine a workpiece initially cut from stock using a stock-cutting program, comprising the steps of:

a) generating initial workpiece geometry from a geometry modeling program using said stock-cutting program as an input;

b) providing an NC (numerical control) program having coded instructions defining a series of cutting tool motions to follow a tool path and machine said workpiece at a chosen baseline feedrate and cutting speed per instruction;

c) using said NC program as an input, continuously modeling in-process workpiece geometry as a solid by subtracting tool swept volume from current workpiece geometry, wherein initial workpiece geometry is obtained from step a);

d) calculating for every tool motion a material removal rate, average cutting force, and cutting tool deflection; and

e) selecting, based on said modeling and calculating, an adjusted feedrate per tool motion to optimize productivity without violating user set constraints including cutting force and tool deflection.

5,828,575
APPARATUS AND METHOD FOR MANAGING AND DISTRIBUTING DESIGN AND MANUFACTURING INFORMATION THROUGHOUT A SHEET METAL PRODUCTION FACILITY

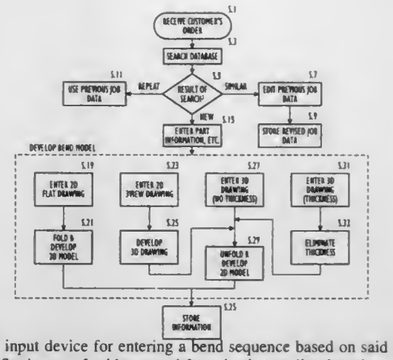
Satoshi Sakai, Newport Coast, Calif., assignor to Amadasoft America, Inc., Lamirada, Calif.

Filed Jul. 31, 1996, Ser. No. 688,860
Int. Cl.[6] G06F *19/00;* **G05B** *19/4097*
U.S. Cl. 364—474.24 **107 Claims**

1. A system for developing a bending plan through the use of a graphical user interface, said bending plan being adapted for use in the production of a part at a facility, said system comprising:

a bend sequence display system for generating and displaying a bend sequence input window on a display device, said bend sequence input window comprising a 2-D flat image of said part;

a tooling display system for generating and displaying tooling information on said display device, said tooling information relating to a plurality of tools;



an input device for entering a bend sequence based on said 2-D flat image of said part and for selecting tooling based on said tooling information displayed on said display device; and

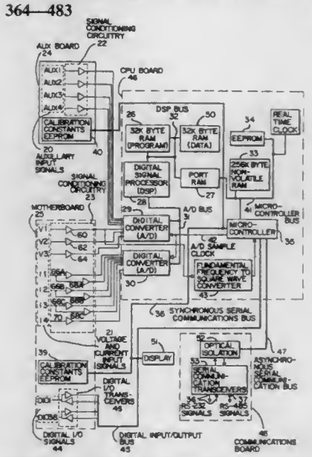
a bending plan storage system for storing said bending plan for said part based on said bend sequence and said tooling entered and selected by said input device;

said bend sequence display system being further adapted to generate and display a plurality of images of said part on said display device based on said bend sequence entered by said input device, each of said plurality of images relating to a representation of said part at a stage within said bend sequence, said plurality of images of said part being simultaneously displayed on said display device in a sequence corresponding to said bend sequence.

5,828,576
POWER MONITOR APPARATUS AND METHOD WITH OBJECT ORIENTED STRUCTURE

Gregory R. Loucks, Sidney; Chuen Shan Simon Ki, Victoria; Douglas S. Ransom, Victoria; Olaf O.W. Dravnieks, Victoria; David A. Chivers, Victoria; Michael E. Teachman, Victoria, and Ronald G. Hart, Victoria, all of Canada, assignors to CD Power measurement Limited, Canada

Division of Ser. No. 369,849, Dec. 30, 1994, Pat. No. 5,650,936. This application Mar. 3, 1997, Ser. No. 810,358
Int. Cl.[6] G06F *15/00;* **G01R** *21/06*
U.S. Cl. 364—483 **18 Claims**



15. A monitoring system for monitoring a plurality of parameters, the system comprising;

a plurality of digital devices, each including a processor, object logic operatively connected to be executed by the processor, the object logic comprising a plurality of independent mod-

ules, each module defined by an active object which receives input data and generates data according to a predefined function and which can invoke methods on other output objects, and at least one of the modules comprising a module operatively connected to receive a message as input data and generate parameters therefrom;

a computer including a processor and object logic comprising a plurality of independent modules, each module defined by an active object which receives input data and generates output data according to a predefined function and which can invoke methods on other objects including the modules on the plurality of digital devices, the object logic defining a virtual digital device; and

a communication network connecting the plurality of digital devices to the central computer.

5,828,577

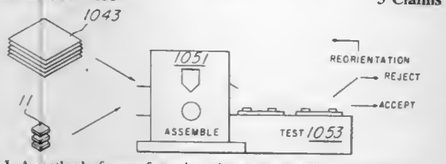
DEVICES AND SYSTEMS WITH PROTECTIVE TERMINAL CONFIGURATION, AND METHODS

Peter N. Ehlig, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 918,902, Jul. 22, 1992, which is a continuation of Ser. No. 347,969, May 4, 1989, abandoned. This application Jun. 7, 1995, Ser. No. 485,265

Int. Cl.[6] G06F *11/30*

U.S. Cl. 364—488 **3 Claims**



1. A method of manufacturing circuit assemblies, comprising the steps of:

loading electronic devices into a machine, where rotational misorientation of the electronic device is possible;

operating said machine to automatically connect one or more of said electronic devices to each of said circuit assemblies;

energizing selected circuit assemblies to nondestructively disable any misoriented electronic device connected thereto;

ascertaining which of the energized circuit assemblies are disabled; and

selecting those circuit assemblies which are disabled for proper reorientation of the electronic device connected thereto.

5,828,578

MICROPROCESSOR WITH A LARGE CACHE SHARED BY REDUNDANT CPUS FOR INCREASING MANUFACTURING YIELD

James S. Blomgren, San Jose, Calif., assignor to S3 Incorporated, Santa Clara, Calif.

Filed Nov. 29, 1995, Ser. No. 564,721

Int. Cl.[6] G06F *11/00*

U.S. Cl. 364—488 **13 Claims**

1. A method of manufacturing microprocessors comprising:

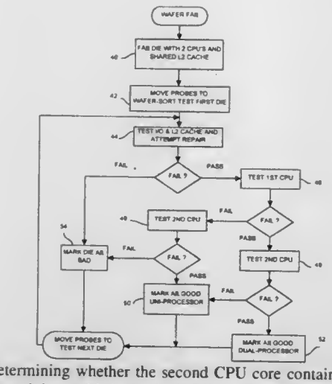
fabricating on a wafer a plurality of dual-processor die, each dual-processor die having a first CPU core, a second CPU core, a shared memory, and a plurality of bonding pads;

(a) making temporary electrical contact with the plurality of bonding pads on a first die (b)

(b) determining whether the shared memory contains a defect be applying a first set of stimuli to the plurality of bonding pads on the first die;

(c) upon a determination that the shared memory contains a defect, marking the first die as defective;

(d) determining whether the first CPU core contains a defect by applying a second set of stimuli to the plurality of bonding pads on the first die;



(e) determining whether the second CPU core contains a defect by applying a third set of stimuli to the plurality of bonding pads on the first die;

(f) upon determinations that the first CPU core contains a defect and that the second CPU core contains a defect, marking the first die as defective;

(g) upon determinations that the shared memory does not contain a defect and that the first CPU core does not contain a defect, marking the first die with a first functional marking;

(h) upon determinations that the shared memory does not contain a defect and that the second CPU core does not contain a defect, marking the first die with a second functional marking; and

removing the temporary electrical contact with the first die and successively repeating steps (a) through (h) for each of the other dual-processor die.

5,828,579

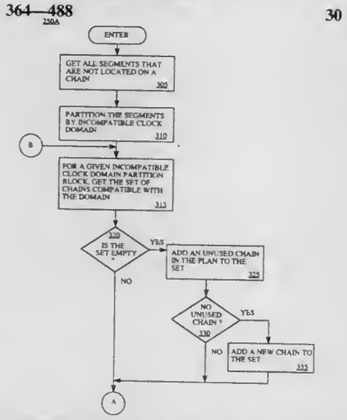
SCAN SEGMENT PROCESSING WITHIN HIERARCHICAL SCAN ARCHITECTURE FOR DESIGN FOR TEST APPLICATIONS

James Beausang, Mountain View, Calif., assignor to Synopsys, Inc., Mountain View, Calif.

Filed Aug. 28, 1996, Ser. No. 704,152

Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—488 **30 Claims**



1. In a computer system, a computer implemented method of constructing scan chains within an integrated circuit design, said method comprising the computer implemented steps of:

a) accessing a first integrated circuit module design within said integrated circuit design;

b) automatically detecting scan resources contained within said first integrated circuit module design, said scan resources detected in step b) referred to as a first inferred scan segment; and

c) adding said first inferred scan segment to a first existing scan chain without altering said first inferred scan segment.

5,828,580

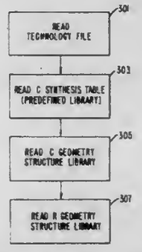
CONNECTIVITY-BASED APPROACH FOR EXTRACTING PARASITIC LAYOUT IN AN INTEGRATED CIRCUIT

William Wai Yan Ho, San Jose, Calif., assignor to EPIC Design Technology, Inc., Sunnyvale, Calif.

Filed Nov. 8, 1994, Ser. No. 335,592

Int. Cl.[6] G06F *15/00*

U.S. Cl. 364—489 **3 Claims**



1. A computer-implemented method for extracting parasitic capacitance data from a layout of an integrated circuit, the integrated circuit being described by a layout database, containing geometries of the integrated circuit, comprising the steps of:

reading a capacitance synthesis table having predefined parasitic capacitance values for predefined capacitance structures for geometries of the integrated circuit, wherein said predefined capacitance structures comprise interconnect capacitances and device capacitances;

comparing one of the geometries of the integrated circuit against said predefined capacitance structures in said capacitance synthesis table; and

selecting one of said predefined parasitic capacitance values if one of the geometries of the integrated circuit matches one of said predefined capacitance structures.

5,828,581

AUTOMATIC LAYOUT SYSTEM

Miho Matumura, Kanagawa, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 632,134

Claims priority, application Japan, Apr. 14, 1995, 7-088915

Int. Cl.[6] G06F *17/50;17/17*

U.S. Cl. 364—489 **11 Claims**

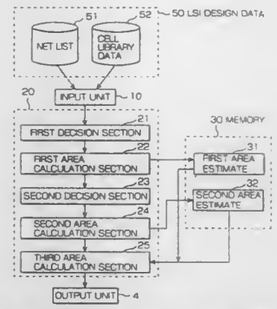
1. An automatic layout system for receiving design data including a net list tabulating a plurality of nets in association with respective cells and cell library data, said layout system comprising:

first means for determining to which one of a standard cell type, a building block type, a mixed cell type and an input/output (I/O cell) type a cell in a given net list belongs and for determining whether the given net list relates to chip data or macro data based on the cell library data;

second means for calculating a first area estimate based on first cells tabulated in the given net list and belonging to the I/O cell type;

third means for calculating a second area estimate based on the cells tabulated in the given net list and belonging to second cells other than said first cells, said third means calculating said second area estimate based on the type determined by said first means; and

fourth means for selecting one of said first and second area estimates as an output area data by comparing both the first and second estimates against each other, when the given net list relates to chip data.



5,828,582

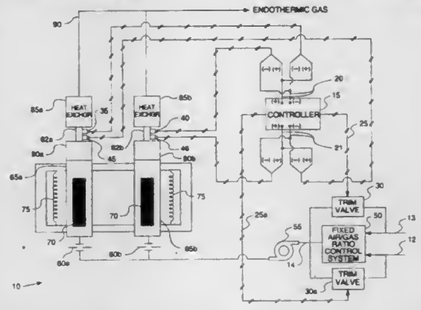
AUTOMATIC CONTROL OF ENDOTHERMIC GAS GENERATORS USING LOW COST OXYGEN SENSING PROBES

Randall R. Conklen, New Holland; Gary D. Keil, Elmwood, and Paul R. Luebbers, Peoria, all of Ill., assignors to Caterpillar Inc., Peoria, Ill.

Filed Mar. 25, 1997, Ser. No. 824,108

Int. Cl.[6] G01N *27/26;* **G05D** *7/00*

U.S. Cl. 364—528.09 **15 Claims**



1. An automatic control for a gas generator, said gas generator including a mixture control connected to input gases, a trim valve, a retort, a catalyst, heating means and a first and second heat exchanger, said automatic control including:

a controller;

an automotive type oxygen sensor connected downstream of said first heat exchanger, said sensor outputting a signal responsive to an oxygen content of gas passing from said first heat exchanger, wherein said controller receives said signal and outputs a control signal;

a trim valve responsive to an output signal produced by said controller;

a second heat exchanger; and

wherein said oxygen sensor is installed between said first and second heat exchanger.

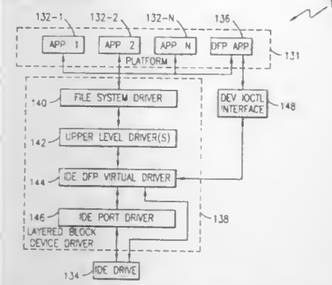
5,828,583
DRIVE FAILURE PREDICTION TECHNIQUES FOR DISK DRIVES

Kenneth L. Bush, Cypress, Tex.; Jonathan R. Didner, Hillsboro, Oreg., and Thomas R. Lenny, Houston, Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 404,812, Mar. 13, 1995, abandoned, which is a continuation-in-part of Ser. No. 110,652, Aug. 20, 1993, Pat. No. 5,559,958, which is a continuation-in-part of Ser. No. 933,920, Aug. 21, 1992, Pat. No. 5,471,617. This application Apr. 18, 1996, Ser. No. 635,429

Int. Cl.[6] G01B *17/00*

U.S. Cl. 364—551.01 **33 Claims**



1. A method of predicting an imminent failure of a storage device within a computer system, comprising:

selecting an attribute as indicative of an imminent failure of a storage device, said selected attribute being a performance attribute;

monitoring said selected performance attribute during normal operation of said storage device;

selecting threshold performance speed for said selected performance attribute;

automatically predicting an imminent failure of said storage device based upon determining that said selected performance attribute has a speed less than said threshold performance speed; and

alerting an operator of the computer system of the imminent failure of said storage device.

5,828,584
DEVICE FOR DETERMINING A DISTANCE RANGE OF AN OBJECT

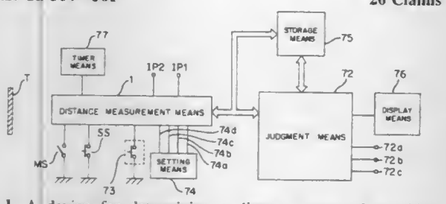
Hajime Oda; Takuma Takahashi, and Shinichi Endo, all of Chiba-ken, Japan, assignors to Seiko Precision Inc., Japan

Filed Dec. 18, 1995, Ser. No. 574,125

Claims priority, application Japan, Dec. 19, 1994, 6-314626; Jan. 10, 1995, 7-001938

Int. Cl.[6] G01C *3/00;* **G02B** *7/04*

U.S. Cl. 364—561 **20 Claims**



1. A device for determining a distance range of an object comprising: a switch for generating a start signal; distance measurement means for measuring a distance to an object; means for adjustable setting a specific distance point in response to the start signal; a memory for storing data representing the specific distance point; setting means for adjustable setting at least one predetermined division point on at least one of the near side and the far side of the specific distance point such that the specific distance point and the at least one predetermined division point define a plurality of measurement zones within an effective measurement range of the distance measurement means; and judgment means for judging which of the plurality of measurement zones a distance measurement result of the distance measurement means belongs to.

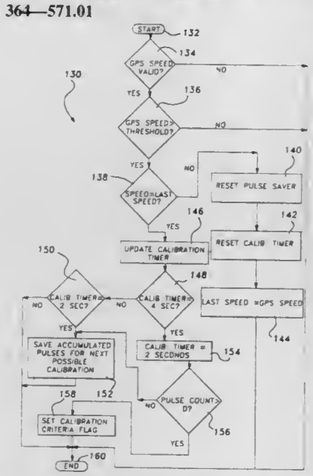
5,828,585
VEHICLE SPEED SIGNAL CALIBRATION

Douglas Lynn Welk, Rossville, and Thac Dinh Nguyen, Westfield, both of Ind., assignors to Delco Electronics Corporation, Kokomo, Ind.

Filed Jan. 17, 1997, Ser. No. 785,182

Int. Cl.[6] G01C *25/00*

U.S. Cl. 364—571.01 **14 Claims**



9. A method of calibrating a vehicle speed sensor signal for use in a vehicle, said method comprising the steps of:

receiving a vehicle speed reference signal;

determining the speed of the vehicle based on the vehicle speed reference signal;

receiving a vehicle speed sensor signal that is generated by a vehicle speed sensor, said vehicle speed sensor generating the vehicle speed sensor signal as a function of a particular number of pulses per distance;

counting pulses of the vehicle speed sensor signal during a time period;

computing a pulse-per-distance ratio of the vehicle speed sensor signal as a function of the vehicle speed reference signal and the pulse count; and

automatically calibrating the vehicle speed sensor signal in accordance with the computed pulse rate.

5,828,586
HIGH SPEED DEVICE SIMULATING METHOD

Ikuhiro Yokota, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 15, 1996, Ser. No. 698,375

Claims priority, application Japan, Aug. 16, 1995, 7-208885

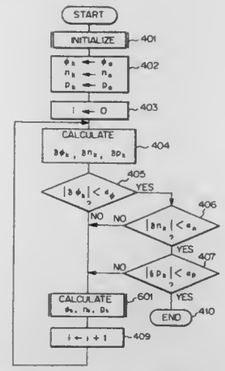
Int. Cl.[6] G06F *17/50*

U.S. Cl. 364—578 **12 Claims**

1. An iterative method for simulating a plurality of parameters including potentials in a semiconductor device, comprising the steps of:

a.) setting a mesh having a plurality of nodes in said semiconductor device;

b.) calculating deviations of each of said parameters for each of said nodes by Newton's method;



c.) calculating electric fields for a plurality of edges, each edge connecting two of said nodes, said calculation using a potential associated with each said connected nodes;

d.) determining whether or not an absolute value of each of said electric fields is larger than a first value;

e.) calculating deviations of said electric fields with respect to previous values thereof for each of said edges, when the absolute values of said electric fields are larger than said first value;

f.) determining whether or not an absolute value of each of said deviations of said electric fields is larger than a second value;

g.) renewing said parameters by adding said deviations of said parameters to said parameters when the absolute values of said electric fields are not larger than said first value or the absolute values of said deviations of said electric fields are not larger than said second value;

h.) renewing said parameters by adding values smaller than said deviations of said parameters to said parameters, when at least one of the absolute values of said electric fields is larger than said first value and at least one of the absolute values of said deviations of said electric fields is larger than said second value;

i.) calculating said values smaller than said deviations of said parameters by multiplying said deviations of said parameters by a damping factor less than 1,

wherein said damping factor is a ratio of said second value to a maximum value of the absolute values of said deviations of said electric fields; and

j.) repeating steps b.) through i.).

5,828,587
ATTACHMENT APPARATUS FOR CHECKBOOK COVER AND METHOD OF USE THEREOF

Mark A. Bedol, 3423 Yankton Ave., Claremont, Calif. 91711

Filed May 6, 1997, Ser. No. 851,690

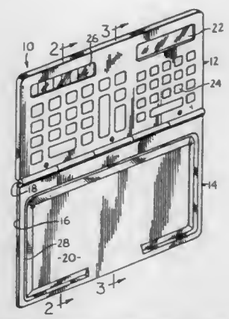
Int. Cl.[6] G06F *19/00;15/02*

U.S. Cl. 364—705.02 **17 Claims**

1. An attachment apparatus for use with a checkbook cover, comprising:

a) a thin functional assembly; and

b) a thin clip assembly, comprising:



i) a first portion rotatably connected to said thin functional assembly; and

ii) a clip portion connected to said first portion for providing attachment to a checkbook cover.

5,828,588
PARAMETRIZABLE CONTROL MODULE COMPRISING FIRST AND SECOND LOADABLE COUNTER, AN ELECTRONIC CIRCUIT COMPRISING A PLURALITY OF SUCH PARAMETRIZED CONTROL MODULES, AND A METHOD FOR SYNTHESIZING SUCH CIRCUIT

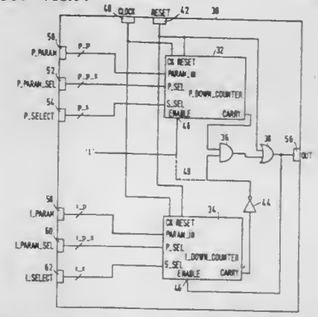
Douglas M. Grant, Glasgow, Scotland, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 25, 1996, Ser. No. 755,673

Claims priority, application European Pat. Off., Nov. 27, 1995, 95203251

Int. Cl.[6] H03K *29/00*

U.S. Cl. 364—718.04 **20 Claims**



1. A parametrizable control module comprising a first and a second loadable counting means, the first counting means being connected to a primary clock input and having a first output feeding an enable input of the second counting means, and a second output of the second counting means feeding a module output,

characterized in that the first and second output by means of a logical combining gate feed both the enable input of the second counting means and the module output, in that the second counting means is clocked by said primary clock input whereby said first and second counting means count clock cycles of the primary clock input, and said module having a reset input that feeds the reset inputs of both counting means and the enabling input of the second counting means.

5,828,589

SELF-ADAPTIVE TRANS-HYBRID BALANCE FILTER

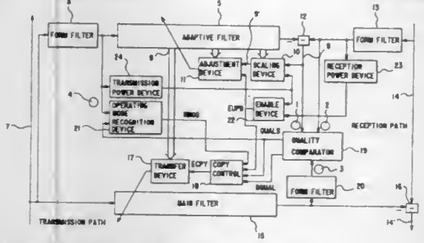
Achim Degenhardt, Germering, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Feb. 23, 1996, Ser. No. 605,902

Claims priority, application Germany, Feb. 23, 1995, 195 06 324.4

Int. Cl.[6] G06F *17/10*; H04M *1/00;9/00;9/08*

U.S. Cl. 364—724.19 11 Claims



1. An adaptive balance filter, comprising:

a transmission path;

a reception path;

an adaptive filter having a signal output, a coefficient output for outputting filter coefficients, an error signal input, and a signal input coupled to said transmission path;

a main filter having a signal output, a signal input coupled to said transmission path, and a coefficient input for loading filter coefficients;

a first subtractor having one input coupled to said reception path, another input coupled to the signal output of said main filter, and an output forming a further course of said reception path;

a second subtractor having one input coupled to said reception path, another input coupled to the signal output of the adaptive filter, and an output coupled to the error signal input of said adaptive filter;

a transfer device being connected between the coefficient output of said adaptive filter and the coefficient input of said main filter and having a control input for loading the filter coefficients of said adaptive filter into said main filter upon an appearance of a corresponding copy signal; and

a transfer control device having first, second and third inputs, the first input being coupled to the output of said second subtractor, the second input being coupled to the one input of said second subtractor, and the third input being coupled to the output of said main filter;

said transfer control device ascertaining echo attenuations of said adaptive filter and said main filter from signals at the first, second and third inputs, comparing two echo attenuations with one another, and sending a corresponding copy signal to said transfer device in the event that the echo attenuation of said adaptive filter is higher than the echo attenuation of said main filter; and

said transfer control device having a quality comparison device and a copy control device;

said transfer control device including:

a third subtractor having one input forming the second input and another input forming the third input of said transfer control device;

a first absolute value former having an input forming the first input of said transfer control device;

a second absolute value former having an input being connected to the one input of said third subtractor;

a third absolute value former connected downstream of said third subtractor;

first, second and third logarithm modules each being connected downstream of a respective one of said first, second and third absolute value formers and each having an output;

a fourth subtractor having inputs each being connected to the output of a respective one of said first and second logarithm modules;

a fifth subtractor having inputs each being connected to the output of a respective one of said second and third logarithm modules;

first and second low-pass filters each being connected downstream of a respective one of said fourth and fifth subtractors and each having an output; and

a sixth subtractor having inputs being connected to the outputs of said first and second low-pass filters, and an output supplying a quality difference signal;

said copy control device having an input being coupled to the output of said sixth subtractor, for comparing the quality difference signal with a first comparison value and generating a copy signal for said transfer device if the quality difference signal and the first comparison value differ in a certain direction, the first comparison value being set equal to a current value of the quality difference signal.

5,828,590

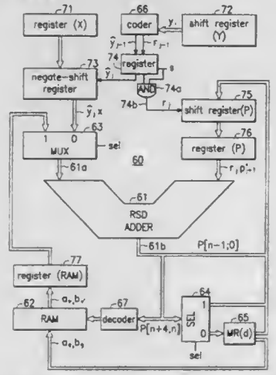
MULTIPLIER BASED ON A VARIABLE RADIX MULTIPLIER CODING

Hong-Yi Chen, and Wei-Xin Gai, both of Beijing, China, assignors to United Microelectronics Corp., Taiwan

Filed Nov. 27, 1996, Ser. No. 758,633

Int. Cl.[6] G06F *7/38;7/52*

U.S. Cl. 364—760.01 10 Claims



1. A device for performing a modular multiplication, comprising:

an X register for storing an n-bit redundant binary multiplicand X and for shifting out the multiplicand X;

a Y shift register for storing an n-bit redundant binary multiplier Y and for shifting out bits y_j of the multiplier Y;

a coder, for receiving y_j from said Y shift register and for coding y_j into

$$\hat{Y} = \sum_{j=0}^{\lfloor n/\log_2 r_j \rfloor} \hat{y}_j r_j$$

with $r_j \in \{4.8\}$, $\hat{y}_j \in \{0,\pm1,\pm2,\pm3,\pm4\}$ and for generating $\hat{y}_j$ and

an additional register for storing and for generating $\hat{y}y_j$ and r_j according to a control signal;

a negate-shift register for receiving $\hat{y}_j$ from said additional register and the multiplicand X shifted out by said X register and for generating a partial product $\hat{y}_j X$;

an RSD adder, for receiving a first input and a second input and for adding the first input to the second input to generate an addition result;

a selector, for receiving the five most significant bits of addition result P[n+4:n] and for generating P[n+4:n] at a first output or at a second output, according to a select signal;

a modular reduction circuit, connected to the first selector output for performing modular reduction in d, wherein d is a predetermined integer, and for generating precomputation results and a modular reduction result based on P[n+4.n];

a P shift register, connected to the adder, the second selector output, and a modular reduction circuit output, for receiving P[n+4:n] or the modular reduction result, according to the select signal, and further for receiving r_j, for generating an intermediate product $r_j P'_j$;

a P register for receiving $r_j P'_j$ and for generating $r_j P'_{j+1}$ and for providing $r_j P'_{j+1}$ to the adder as the second output;

a RAM for receiving the precomputation results and for receiving P[n+4:n] as an address for selectively generating the precomputation results;

a RAM register for receiving the selectively generated precomputation results and for generating the registered precomputation results; and

a multiplexer, having a first input for receiving $\hat{y}_j X$ from the negate-shift register and a second input for receiving the registered precomputation results, for selective provision of $\hat{y}_j X$ or the registered precomputation results as the first input of the adder, according to the select signal;

wherein the RSD adder performs the addition $P_j = r_j P'_{j+1} + \hat{y}_j X$ when the select signal is a logic low, where $\hat{y}_j X$ is the partial product generated by the negate-shift register, $r_j P'_{j+1}$ is an intermediate product generated by the P register, and P_j is the addition result; and

wherein the RSD adder provides all but the five most significant bits of the addition result directly to the P shift register.

5,828,591

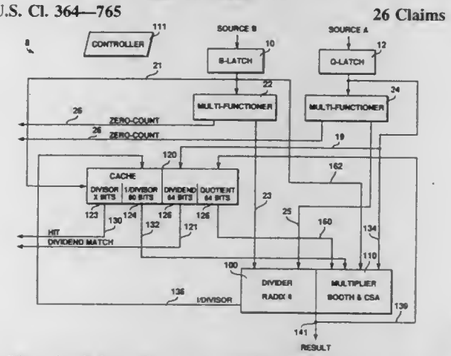
METHOD AND APPARATUS FOR USING A CACHE MEMORY TO STORE AND RETRIEVE INTERMEDIATE AND FINAL RESULTS

Jehoshua S. Rotstain, Haifa, Israel, assignor to Intel Corporation, Santa Clara, Calif.

Filed Nov. 2, 1992, Ser. No. 970,260

Int. Cl.[6] G06F *7/52*

U.S. Cl. 364—765 26 Claims



14. A circuit for performing remainder operations, comprising:

two latches, each for inputting one of a dividend and a divisor;

a cache memory for storing and retrieving values, said cache memory being coupled to said latches for receiving the dividend and the divisor, said cache memory further comprising:

cache memory look-up table circuitry for determining whether a first value is present in the cache memory, the first value representing the value of the divisor, and for determining, upon a determination that the first value is present, whether a second value is present in the cache memory, the second value representing the value of the dividend;

cache memory retrieval circuitry for, upon a determination that the second value is present, both reading the first and second values from the cache memory, and reading a third value from the cache memory as a quotient of the dividend and the divisor; and

a multiplier for finding the remainder of the quotient of the dividend and the divisor using the first, second, and third values read from the cache memory upon a determination that the second value is present in the cache memory, said multiplier being coupled to the cache memory in a way such that said multiplier is capable of receiving the first, second, and third values upon a determination that the second value is present in the cache memory.

5,828,592

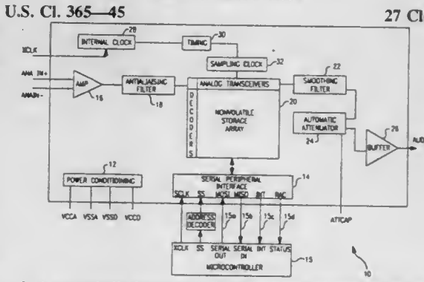
ANALOG SIGNAL RECORDING AND PLAYBACK INTEGRATED CIRCUIT AND MESSAGE MANAGEMENT SYSTEM

Hieu Van Tran, San Jose; Nataraj S. Bindiganavale; Anthony Dunne, both of Cupertino, all of Calif., and Boyce W. Jarrett, Austin, Tex., assignors to Information Storage Devices, Inc., San Jose, Calif.

Filed Mar. 12, 1997, Ser. No. 819,665

Int. Cl.[6] G11C *11/34*

U.S. Cl. 365—45 27 Claims



1. A nonvolatile integrated circuit analog storage device having the capability of receiving, repetitively sampling, storing and reproducing an analog input signal comprising:

a first circuit for sampling an analog signal;

a plurality of analog storage cells coupled to the first circuit, for storing samples of the analog signal; and

a second circuit for reading out the stored samples of the analog signal to reconstruct the analog signal, the second circuit including an attenuator for attenuating noise in the reconstructed analog signal when the reconstructed analog signal is below a predetermined threshold.

5,828,593

LARGE-CAPACITY CONTENT ADDRESSABLE MEMORY

Kenneth James Schultz, Kanata, and Garnet Frederick Randall Gibson, Nepean, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Nov. 14, 1996, Ser. No. 748,928

Int. Cl.[6] G11C *15/00*

U.S. Cl. 365—49 5 Claims

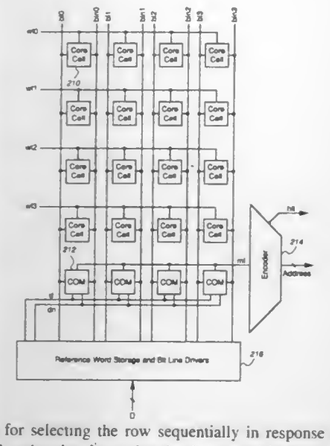
1. A content addressable memory (CAM) chip comprising:

an array of core cells of m rows×n columns, the core cells of each row being connected to the respective word line, the core cells of each column being connected to the respective bit line, the core cell including storage means for storing binary data;

n comparator means, each being connected to the respective bit line;

encoder means connected to the n comparator means via a match line;

self-timing means for generating m clock pulse signals in response to an input clock signal fed to the chip, the m clock pulse signals being sequentially generated on-chip;



means for selecting the row sequentially in response to the m clock pulse signals, so that the data stored in the n core cells of the selected row is readable by the n comparator means; and

means for providing reference data of n bits, each bit data being fed to the respective one of the n comparator means,

wherein the n comparator means compare the data read from the n core cells of the sequentially selected row to the n bit reference data and a comparison result row-by-row is provided via the match line to the encoder means, so that match operation results are provided from the encoder means.

5,828,594

SEMICONDUCTOR MEMORY WITH HIERARCHICAL BIT LINES

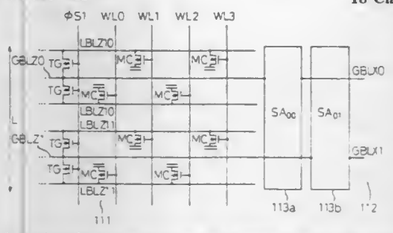
Yasuhiro Fujii, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Division of Ser. No. 668,332, Jun. 25, 1996, Pat. No. 5,701,269, which is a continuation-in-part of Ser. No. 491,762, Jun. 19, 1995, Pat. No. 5,561,626. This application Jul. 15, 1997, Ser. No. 893,072

Claims priority, application Japan, Nov. 28, 1994, 6-293050; Feb. 15, 1996, 8-028030; Mar. 4, 1996, 8-045712

Int. Cl.[6] G11C *5/06*

U.S. Cl. 365—63 **18 Claims**



1. A semiconductor memory having hierarchical bit lines including a plurality of local bit lines and a plurality of global bit lines, comprising:

a plurality of word lines;

a plurality of memory cells each arranged at a connection portion between each of said local bit lines and each of said word lines; and

sense amplifiers each being formed in an area corresponding with an interval of a given number greater than one of said global bit lines and each receiving signals from a pair of said global bit lines arranged on both sides thereof.

5,828,595

OPTICAL RECORDING AND PLAYBACK APPARATUS AND METHOD USING SINGLE LIGHT ABSORBENTS

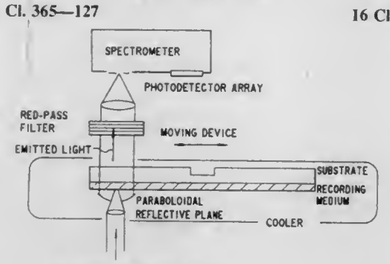
Norio Murase, Ikeda, and Tetsuo Yazawa, Toyono, both of Japan, assignors to Director General, Agency of Industrial Science and Technology, Tokyo, Japan

Filed Oct. 10, 1996, Ser. No. 729,301

Claims priority, application Japan, Oct. 13, 1995, 7-292050

Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—127 **16 Claims**



1. An optical recording and playback apparatus wherein a light absorbent material surrounded by an optically transparent matrix is used as a recording medium and the presence or absence of flourscent emission light of a specific wavelength from unity of said light absorbent material is utilized for optical writing and reading, which comprises a means for condensing the flourscent emitted light and a means for spectrally diffracting the condensed light, detecting the light intensity by wavelength, and relating the light intensity by wavelength to a record bit.

5,828,596

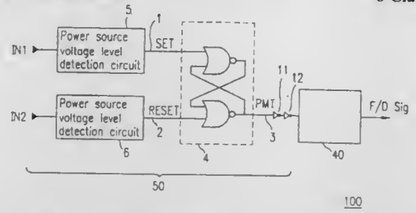
SEMICONDUCTOR MEMORY DEVICE

Hidekazu Takata, Nara-ken, Japan; Thomas Mnich, Woodland Park, Colo., and David Novosel, New Wilmington, Pa., assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Sep. 26, 1996, Ser. No. 723,949

Int. Cl.[6] G11C *11/22*

U.S. Cl. 365—145 **6 Claims**



1. A semiconductor memory device comprising:

a ferroelectric memory having a non-volatile operation mode and a volatile operation mode;

first and second input terminals to which first and second input signals each indicating a voltage level of a power source voltage are respectively input;

a first signal generating circuit outputting a first control signal for regulating activation and inactivation of the non-volatile operation mode to said ferroelectric memory; and

a second signal generating circuit outputting a second control signal for regulating the activation and inactivation of the non-volatile operation mode to said first signal generating circuit, based on the first and second input signals,

the non-volatile operation mode and the volatile operation mode being automatically switched with each other in accordance with changes in the voltage level of the power source voltage under a first operation condition and only the volatile operation mode being activated under a second operation condition, the first and second operation conditions being set based on respective values of the first and second input signals.

5,828,597

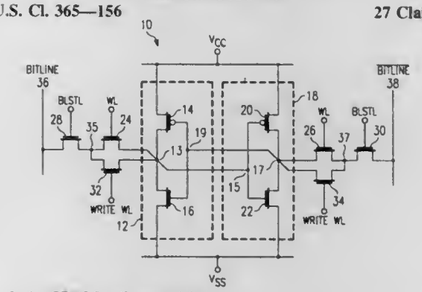
LOW VOLTAGE, LOW POWER STATIC RANDOM ACCESS MEMORY CELL

Sudhir K. Madan, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 2, 1997, Ser. No. 831,811

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—156 **27 Claims**



1. An SRAM cell comprising:

first and second cross-coupled inverters, the first inverter including a first output node of the first inverter and the second inverter including a second output node of the second inverter;

a first pass transistor connected between the output node of the first inverter and a first pass node;

a first bitline select transistor connected between the first pass node and a first bitline;

a first write pass transistor connected between the output node of the first inverter and the first pass node;

a second pass transistor connected between the output node of the second inverter and a second pass node;

a second bitline select transistor connected between the second pass node and a second bitline; and

a second write pass transistor connected between the output node of the second inverter and the second pass node.

5,828,598

MRAM WITH HIGH GMR RATIO

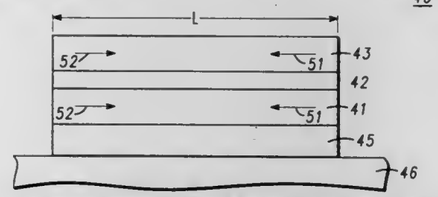
Eugene Chen, Gilbert; Saied N. Tehrani, Tempe, and David W. Cronk, Chandler, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed May 23, 1997, Ser. No. 862,738

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—158 **24 Claims**

40



1. A magnetic memory cell with increased GMR ratio comprising:

first and second layers of magnetic material stacked in parallel, overlying relationship and separated by a layer of non-magnetic material sandwiched between the first and second layers of magnetic material so as to form a multi-layer magnetic memory cell having a length and a width, each of the first and second layers being switchable between a first and a second magnetic state, and each of the first and second layers being formed to switch states with the application of a substantially equal magnetic field;

a third layer of magnetic material positioned adjacent one of the first and second layers of magnetic material so as to alter the amount of magnetic field required to switch the states of the one of the first and second layers of magnetic material.

5,828,599

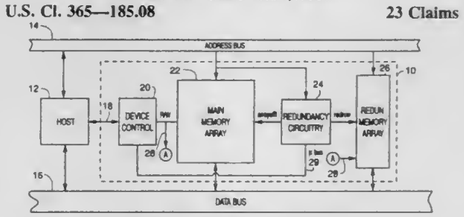
MEMORY WITH ELECTRICALLY ERASABLE AND PROGRAMMABLE REDUNDANCY

Christian E. Herdt, Monument, Colo., assignor to Simtek Corporation, Colorado Springs, Colo.

Filed Aug. 6, 1996, Ser. No. 692,571

Int. Cl.[6] G11C *11/34;7/00*

U.S. Cl. 365—185.08 **23 Claims**



1. A semiconductor memory device, comprising:

a first data storage area comprising a first plurality of data storage locations, said first data storage area being capable of receiving data from an exterior environment, retaining said data, and transmitting said data to said exterior environment;

a second data storage area comprising a second plurality of data storage locations, said second data storage area being capable of receiving data from an exterior environment, retaining said data, and transmitting said data to said exterior environment;

means for receiving an access request from said exterior environment requesting a transfer of data between a first data storage location in said first data storage area and said exterior environment; and

means, in response to said access request, for accessing a second data storage location in said second data storage area for transfer of data between said second data storage location and said exterior environment when said first data storage location is within a defective portion of said first data storage area, wherein said means for accessing includes at least one first memory cell having a volatile portion and a nonvolatile portion, wherein said volatile portion will lose any data located therein if power is removed from said memory device and said nonvolatile portion will retain any data located therein if power is removed from said memory device.

5,828,600

NON-VOLATILE SEMICONDUCTOR MEMORY

Masataka Kato, Musashino; Tetsuo Adachi, Hachioji; Toshihiro Tanaka, Akigawa; Toshio Sasaki, Tokyo, and Hitoshi Kume, Musashino, all of Japan, assignors to Hitachi, Ltd., Toyko, Japan

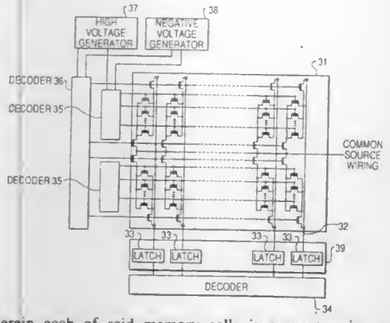
Division of Ser. No. 164,780, Dec. 10, 1993, Pat. No. 5,592,415, which is a continuation-in-part of Ser. No. 85,156, Jul. 2, 1993, abandoned. This application Oct. 30, 1996, Ser. No. 739,156

Claims priority, application Japan, Jul. 6, 1992, 4-177973

Int. Cl.[6] G11C *16/02*

U.S. Cl. 365—185.11 **29 Claims**

1. A non-volatile semiconductor memory having an electrically programmable/erasable function, comprising a plurality of memory arrays each including a plurality of memory cells disposed in a matrix having rows and columns, first and second voltage generators, and a sense circuit including a plurality of latches provided for said memory arrays:



wherein each of said memory cells is a one-transistor type memory cell essentially consisting of one MOSFET including a source region and a drain region disposed in a portion of a semiconductor substrate in a mutually spaced-apart relationship, a gate insulating film having a substantially uniform film thickness from the surface of said source region to the surface of said drain region, a floating gate electrode formed on said gate insulating film, and a control gate formed on said floating gate electrode through an intermediate insulating film;

wherein said drain regions of said MOSFETs of a plurality of said memory cells on the same column are connected to one data line in each of said memory cell arrays;

wherein said control gates of said MOSFETs of a plurality of said memory cells on the same row are connected to one word line in each of said memory cell arrays;

wherein, when an electric programming operation is carried out to pull out charges accumulated at a floating gate of the MOSFET of a memory cell, a first voltage having a first polarity with respect to a potential of said portion of said semiconductor substrate as a reference is applied from said first voltage generator to the drain region of the MOSFET of any memory cell to be subjected to said electric programming operation and a second voltage having a second polarity different from said first polarity with respect to the potential of said portion of said semiconductor substrate as the reference is applied to said control gate of said memory cell whereby said programming operation is effected by use of tunnel mechanism;

wherein, when an electric erasing operation is carried out to inject charges into a floating gate of the MOSFET of a memory cell, a third voltage having said first polarity with respect to said semiconductor substrate is applied from said second generator to the control gates of a plurality of MOSFETs of memory cells to be subjected to said electric erasing operation and the others of said electrodes are all kept at the same voltage as that of said portion of said semiconductor substrate whereby said erasing operation is effected by use of tunnel mechanism;

wherein a number of said latches is equal to a number of memory cells having MOSFETs whose control gates are connected to one word line subjected to a simultaneous erasing operation; and

wherein a number of memory cells connected to one word line is the same as a number of memory cells to be simultaneously erased and a number of memory cells to be simultaneously written.

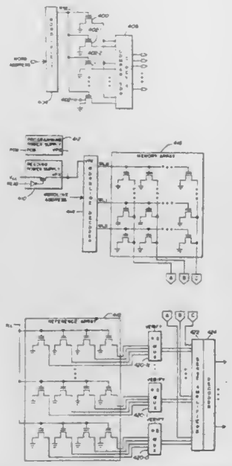
5,828,601

PROGRAMMED REFERENCE

Shane C. Hollmer, and Lee E. Cleveland, both of Santa Clara, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1993, Ser. No. 160,582
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.2 **16 Claims**

1. A memory comprising:



an array cell having an output, an array threshold value set to one of n array threshold values to control a signal provided at the array cell output, and a gate;

a reference cell having an output, a floating gate which stores an electrical charge to allow a reference threshold value to be programmed, and a gate, the reference cell having its reference threshold value programmed between two successive ones of the n array threshold values to control a signal provided at the reference cell output;

a comparison circuit coupled to the array cell output and the reference cell output, the comparison circuit for comparing the signal at the array cell output to the signal at the reference cell output and providing a signal indicating which of the n array threshold values is held by the array cell; and

a power supply for supplying a supply voltage to the gate of the array cell to enable the array cell to provide the signal at the array cell output, the power supply further supplying the supply voltage to the gate of the programmable reference cell to enable the reference cell to provide the signal at the reference cell output.

5,828,602

MEMORY SYSTEM HAVING MULTIPLE PROGRAMMABLE REFERENCE CELLS

Chun Chiu Daniel Wong, 4260 Newberry Ct., Palo Alto, Calif. 94306

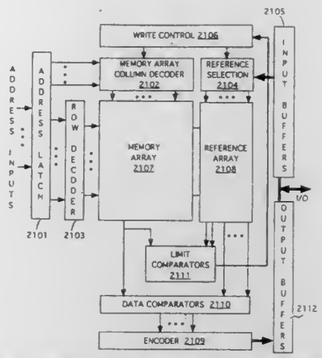
Division of Ser. No. 336,361, Nov. 8, 1994, Pat. No. 5,739,567, which is a continuation of Ser. No. 970,728, Nov. 2, 1992, Pat. No. 5,386,132. This application Jun. 5, 1995, Ser. No. 464,016
Int. Cl.[6] G11C *11/34*
U.S. Cl. 365—185.2 **12 Claims**

1. A memory comprising:

a storage array containing rows and columns of storage cells, wherein each storage cell is electrically programmable to represent a stored value, each storage cell comprising a floating gate transistor having threshold voltage indicating the value stored in the storage cell;

a reference array containing rows and columns reference cells, wherein each row of reference cells contains a plurality of reference cells that are electrically programmable and programmed to represent different reference values, each reference cell comprising a floating gate transistor having a threshold voltage, the threshold voltage of the reference cell indicating the reference value of the reference cell;

a plurality of row lines, wherein each row line is associated with and connects together storage cells in a row in the storage array and reference cells in a row in the reference array; and



a write circuit operably coupled to select a storage cell, select a first reference cell that was programmed to represent a first reference value corresponding to a data value being written, and change the threshold voltage of the selected storage cell in response to a feedback signal from the selected storage cell differing from a first reference signal from the first reference cell, wherein:

in response to a data input signal representing the data value being written, the write circuit causes the first reference cell and a second reference cell to respectively generate the first reference signal and a second reference signal, the second reference cell being preprogrammed to represent a second reference value corresponding to a data value being written; and

when changing the state of the selected storage cell, the write circuit increases the threshold voltage of the selected storage cell in response to a difference between the feedback signal and the first reference signal indicating that the first reference cell has a threshold voltage higher than that of the selected storage cell and decreases the threshold voltage of the selected storage cell in response to a difference between the feedback signal and the second reference signal indicating that the second reference cell has a threshold voltage lower than that of the selected storage cell.

5,828,603

MEMORY DEVICE HAVING A POWER SUPPLY-INDEPENDENT LOW POWER CONSUMPTION BIT LINE VOLTAGE CLAMP

Jagdish Pathak, Los Altos Hills, Calif., assignor to Atmel Corporation, San Jose, Calif.

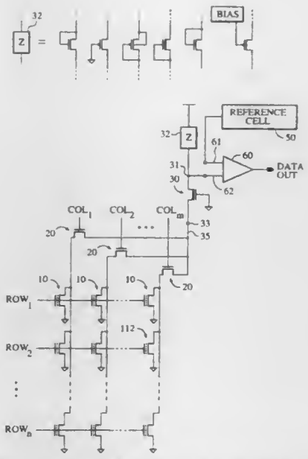
Filed Apr. 23, 1997, Ser. No. 842,008
Int. Cl.[6] G11C *16/06*
U.S. Cl. 365—185.21 **16 Claims**

1. A memory device comprising:

at least one floating gate memory cell;

select means, coupled to said memory cell, for receiving an address and for selecting a memory cell corresponding to a received address;

a sense circuit; and



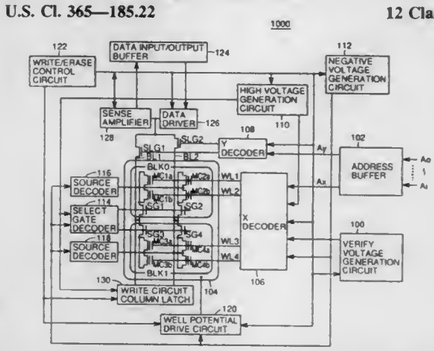
a depletion-mode field effect transistor having a first terminal coupled to said sense circuit, a second terminal coupled to said select means, and a gate terminal coupled to a ground rail.

5,828,604

NON-VOLATILE SEMICONDUCTOR MEMORY DEVICE HAVING LARGE MARGIN OF READOUT OPERATION FOR VARIATION IN EXTERNAL POWER SUPPLY VOLTAGE

Shinji Kawai; Shinichi Kobayashi, and Yasuhiko Taito, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 10, 1997, Ser. No. 781,247
Claims priority, application Japan, May 10, 1996, 8-116297
Int. Cl.[6] G11C *7/00*
U.S. Cl. 365—185.22 **12 Claims**



1. A non-volatile semiconductor memory device comprising:

a memory cell array including a plurality of memory cells arranged in a matrix of rows and columns,

memory cell select means for selectively carrying out data readout/writing with any of said memory cells,

wherein each memory cell includes first and second nodes, and a control node, and has a conductance between said first and second nodes varied according to a potential of said control node controlled by said memory cell select means, and has the conductance varied in a non-volatile manner according to data to be written when the potential of said control node is a first potential,

said non-volatile semiconductor memory device further comprising:

readout amplify means operated by having said first potential supplied for providing a signal according to a comparison result of said conductance of a corresponding memory cell and a threshold value according to said first potential, and

internal control means selectively supplying a second potential to said control node of said corresponding memory cell for verifying data written into said corresponding memory cell according to an output of said readout amplify means,

wherein said internal control means alters said second potential towards a decreasing direction of said conductance according to reduction of said threshold value that alters according to a value of said first potential.

5,828,605

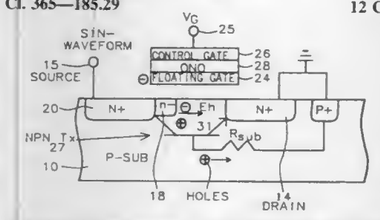
SNAPBACK REDUCES THE ELECTRON AND HOLE TRAPPING IN THE TUNNELING OXIDE OF FLASH EEPROM

Kuo-Reay Peng, Fauny-San; Jian-Hsing Lee; Juang-Ke Yeh, both of Hsin-Chu, and Ming-Chon Ho, Taichung, all of Japan, assignors to Taiwan Semiconductor Manufacturing Company Ltd., Hsin-Chu, Taiwan

Filed Oct. 14, 1997, Ser. No. 949,945

Int. Cl.[6] G11C *16/04*

U.S. Cl. 365—185.29 **12 Claims**



1. A method for preventing cycling-induced electron and hole trapping in the tunneling oxide of a flash EEPROM device in an erase cycle, said flash EEPROM device comprising a source region, a drain region, a tunnel oxide layer, a control gate, and a floating gates in a substrate; said method comprising the steps of:

a) applying a positive sine waveform voltage (Vs) to a source region of said EEPROM device during an entire erase cycle;

b) grounding a substrate of said EEPROM device during said entire erase cycle;

c) grounding a drain region of said EEPROM device during said entire erase cycle;

d) simultaneously applying a negative voltage to a control gate of said EEPROM device during said entire erase cycle; and

whereby said positive sine waveform voltage applied to said source region reduces a electric field in a tunnel oxide layer which reduces the electron and hole trapping.

5,828,606

FULLY SYNCHRONOUS PIPELINED RAM

John R. Mick, San Jose, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Division of Ser. No. 635,128, Apr. 19, 1996. This application May 28, 1997, Ser. No. 864,289

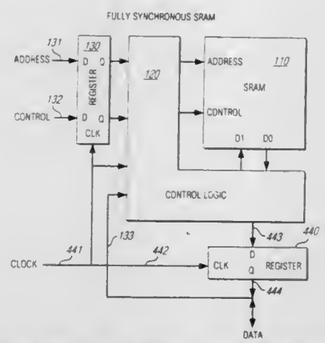
Int. Cl.[6] G11C *13/00*

U.S. Cl. 365—189.05 **3 Claims**

1. A structure which comprises:

a memory;

an input circuit coupled to receive a memory address, a read/write control signal and write data to be written into the memory, said input circuit including one or more storage registers for storing the write data to be written into the memory prior to writing the write data into the memory, the



storage registers being capable of receiving and storing the write data on a rising edge of a clock signal; and

a logic circuit for causing the stored write data to be written from the input circuit into the memory during a pth write operation following the write operation during which said write data was placed in said storage registers, while causing the write data to be held in the storage registers during any intervening read and write operations, where p is a selected integer.

5,828,607

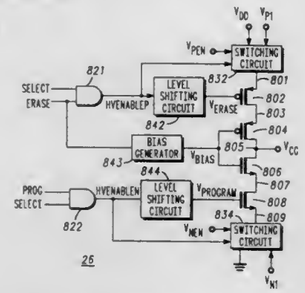
MEMORY PROGRAMMING CIRCUIT AND METHOD

Thomas P. Bushey, Phoenix; James S. Caravella, and Jeremy W. Moore, both of Chandler, all of Ariz., assignors to Motorola, Inc.

Filed May 21, 1997, Ser. No. 861,078

Int. Cl.[6] G11C *7/00;16/04*

U.S. Cl. 365—189.11 **17 Claims**



1. A memory circuit, comprising:

a storage element for storing data;

a charge pump having a first input coupled for receiving a first voltage to produce a first pumped voltage at an output;

a first routing circuit having first and second cascode switches respectively coupled for selecting between the first voltage and the first pumped voltage in response to a first control signal to produce a first selected voltage at an output; and

a first switching circuit operating in response to a second control signal for passing the first selected voltage to the storage element to alter the data.

5,828,608

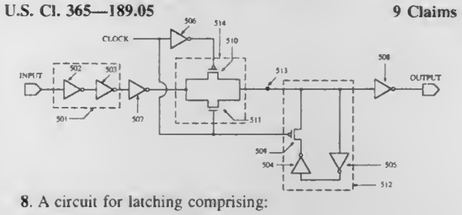
SELECTIVELY DECOUPLED I/O LATCH

Hy V. Nguyen, San Jose, and Richard C. Li, Cupertino, both of Calif., assignors to Xilinx, Inc., San Jose, Calif.

Filed Nov. 26, 1996, Ser. No. 756,619

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—189.05 **9 Claims**



8. A circuit for latching comprising:

an input line;

a latch connected between the input line and an output line, the latch comprising:

a first inverter;

a second inverter coupled in series with the first inverter; and

a transistor, wherein one terminal of the transistor connects to an output of the second inverter, another terminal of the transistor connects to an input of the first inverter, the input line, and the output line, and a control terminal of the transistor receives a control signal; and

a transfer gate connected between the input line and the latch, the transfer gate controlled by the control signal.

5,828,609

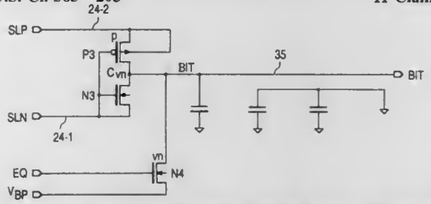
SIMULATED DRAM MEMORY BIT LINE/BIT LINE FOR CIRCUIT TIMING AND VOLTAGE LEVEL TRACKING

Li-Chun Li, Los Gatos; Lawrence C. Liu, Menlo Park, both of Calif., and Michael A. Murray, Bellevue, Wash., assignors to Mosel Vitelic Corporation, San Jose, Calif.

Filed Dec. 3, 1996, Ser. No. 760,125

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **11 Claims**



1. A structure for charging a high voltage rail associated with a sense amplifier in a dynamic random access memory integrated circuit which comprises:

a first switch connected between an external voltage source and the high voltage rail;

a second switch connected between an internal voltage source and the high voltage rail;

a comparator having two input leads and an output lead, one of the input leads being connected to sense a voltage on said high voltage rail, the other input lead being connected to sense a reference voltage to which the high voltage rail is to be driven and the output lead being connected to control the state of the first switch, the first switch functioning to disconnect the external voltage source from the high voltage rail when the voltage on the high voltage rail equals the voltage on the internal voltage source.

5,828,610

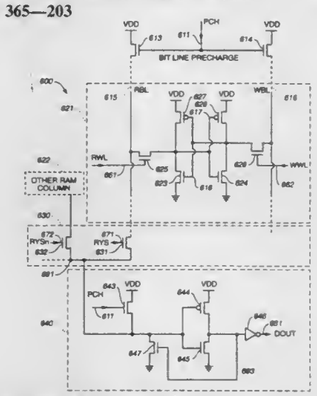
LOW POWER MEMORY INCLUDING SELECTIVE PRECHARGE CIRCUIT

Robert Rogers, Sunnyvale, and Kuang Kai Chi, San Jose, both of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 31, 1997, Ser. No. 828,571

Int. Cl.[6] G11C *7/00;8/00*

U.S. Cl. 365—203 **14 Claims**



1. A low-power RAM, comprising:

plural memory cell columns, each memory cell column including a bit line;

a column multiplexer including an input port in switchable communication with said memory cell column bit lines, a control port and an output port;

a column decoder in communication with the control port of said column multiplexer to control said column multiplexer to select a predetermined number of said memory cell column bit lines according to a received column address;

a primary precharge device in communication with the output port of said column multiplexer to precharge the selected memory cell column bit lines through said column multiplexer upon receipt of a precharge signal; and

a timing means in communication with said memory cell columns and said primary precharge device to generate the precharge signal and isolate said memory cell columns from said memory cell column bit lines when the selected memory cell column bit lines are being precharged.

5,828,611

SEMICONDUCTOR MEMORY DEVICE HAVING INTERNAL VOLTAGE BOOSTER CIRCUIT COUPLED TO BIT LINE CHARGING/EQUALIZING CIRCUIT

Tetsuya Kaneko, Kawasaki, and Takashi Ohsawa, Yokohama, both of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Continuation of Ser. No. 618,094, Mar. 19, 1996, abandoned, which is a continuation of Ser. No. 299,078, Sep. 1, 1994, abandoned. This application May 19, 1997, Ser. No. 859,225

Claims priority, application Japan, Sep. 10, 1993, 5-225336; May 30, 1994, 6-116761

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—203 **29 Claims**

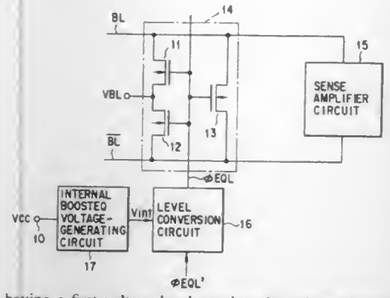
1. A semiconductor memory device comprising:

first and second bit lines;

a boosted voltage generating circuit, connected to a power supply voltage, for constantly generating a boosted voltage while the power supply voltage is supplied thereto, the boosted voltage having a voltage level higher than a voltage level of said power supply voltage; and

a charging/equalizing circuit, connected to said first and second bit lines and coupled to said boosted voltage generating circuit, responsive to a charging/equalizing control signal

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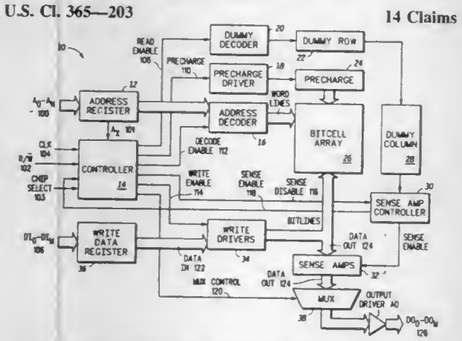
having a first voltage level equal to the voltage level of the boosted voltage, for charging said first and second bit lines with a charging voltage, and for equalizing said first and second bit lines at the same equalized voltage level.

5,828,612

METHOD AND CIRCUIT FOR CONTROLLING A PRECHARGE CYCLE OF A MEMORY DEVICE

Ruey J. Yu; Paul William Hollis, and Renny Lee Eisele, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 27, 1997, Ser. No. 958,646
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—203 **14 Claims**



1. A precharge control circuit for a memory array, comprising:

a write precharge enable circuit that receives a write control signal and a clock signal and generates a write precharge enable signal, wherein the write control signal indicates that the memory array is performing a write cycle;

a write precharge trigger circuit that receives the clock signal and generates a write precharge trigger signal a first selected period of time after receiving the clock signal;

a default precharge trigger circuit that receives the clock signal and generates a default precharge trigger signal a second selected period after receiving the clock signal, wherein the second selected period is greater than the first selected period; and

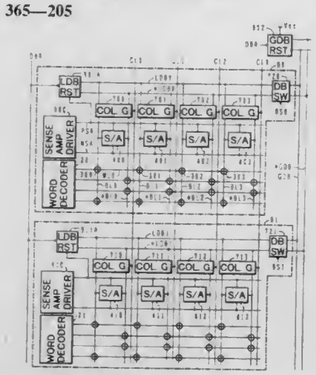
a logic circuit that receives the write precharge enable signal, the write precharge trigger signal and the default precharge trigger signal and generates a precharge signal that controls a precharge cycle of the memory array, wherein the precharge signal is generated in response to a logical combination of the write precharge enable signal, the write precharge trigger signal and the default precharge trigger signal.

5,828,613

RANDOM-ACCESS MEMORY

Atsushi Hatakeyama, and Shusaku Yamaguchi, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Sep. 17, 1997, Ser. No. 932,605
Claims priority, application Japan, Dec. 27, 1996, 8-351276
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—205 **9 Claims**



1. A semiconductor device including a random-access memory, said random-access memory comprising:

a sense amplifier driving circuit, for providing an intermediate potential to a first wiring and a second wiring in response to a selecting signal being inactive, and for providing a first potential higher than said intermediate potential via a first switching element to said first wiring and a second potential lower than said intermediate potential via a second switching element to said second wiring in response to a selecting signal being active;

a sense amplifier, powered by a voltage between said first wiring and said second wiring, for amplifying a voltages between a bit line pair;

a column gate, having a switching element connected between said bit line pair and a first data bus line pair, to be selectively opened/closed corresponding to a given memory address; and

a first bus reset circuit, connected between one of said first wiring or said second wiring and said first data bus line pair, having a switching element to be closed/opened in correspondence to an opened/closed state of said column gate.

5,828,614

MEMORY CELL SENSING METHOD AND CIRCUITRY FOR BIT LINE EQUALIZATION

Iulian Gradinariu, Colorado Springs, Colo., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Filed Apr. 7, 1997, Ser. No. 834,942
Int. Cl.[6] G11C 7/00
U.S. Cl. 365—208 **14 Claims**

1. A memory device comprising:

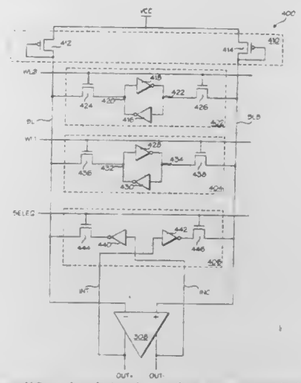
a first bit line;

a second bit line;

a bit line load circuit coupled to the first and second bit lines;

a memory cell couples to the first and second bit lines;

a first equalization circuit having an input, a first output coupled to the first bit line, and a second output coupled to the second bit line; and



(n-1) bit of the flash EEPROM cell, wherein the first comparator continues to output the result of the first comparison while steps b) and c) are performed such that the first comparator outputs the n bit and the second comparator outputs the (n-1) bit simultaneously to indicate the state of the flash EEPROM cell.

5,828,617

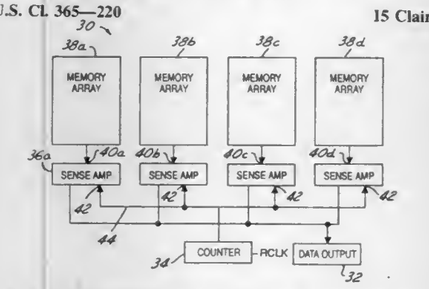
MULTIPLE WORD WIDTH MEMORY ARRAY CLOCKING SCHEME FOR READING WORDS FROM A MEMORY ARRAY

Roland T. Knaack, Starkville, Miss., assignor to Cypress Semiconductor Corp., San Jose, Calif.

Continuation of Ser. No. 584,530, Jan. 11, 1996, Pat. No. 5,682,356. This application May 8, 1997, Ser. No. 852,992

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—220 **15 Claims**



1. A circuit for generating a multiple width word from one or more memories, comprising:

a plurality of memory devices each having an output for presenting one or more fixed width digital words;

a timing circuit configured to generate a timing signal changing to a different value on each cycle of a clock input; and

a plurality of sense amplifiers receiving said memory device outputs and said timing signal, wherein when said timing signal is present at least one of said sense amplifiers forms a multiple-width word by presenting said fixed width digital words from said memory array outputs in an order defined by said timing signal.

5,828,618

LINE MEMORY

Shiro Hosotani, and Minobu Yazawa, both of Tokyo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 17, 1997, Ser. No. 895,908

Claims priority, application Japan, Mar. 10, 1997, 9-055016

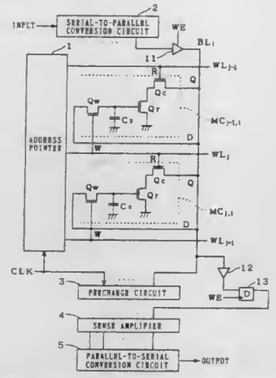
Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—221 **15 Claims**

1. A line memory comprising:

a plurality of memory cells arranged in at least one column, each including a data input terminal, a write control terminal, a data output terminal, and a read control terminal;

word lines each commonly connected to said write control terminal of one of said plurality of memory cells, and said read control terminal of another of said plurality of memory cells, those memory cells being adjacent to each other;



a tristate buffer provided in each of said column, having an input end for receiving an input data to be inputted into said line memory, and an output end;

a bit line provided in each of said column and connected to the output end of said tristate buffer, said data input terminal and said data output terminal; and a latch circuit including an input end connected to said bit line, and an output end, latching in a period exclusive to a period when said output end of said tristate buffer is in a state of high impedance.

5,828,619

SEMICONDUCTOR MEMORY DEVICE

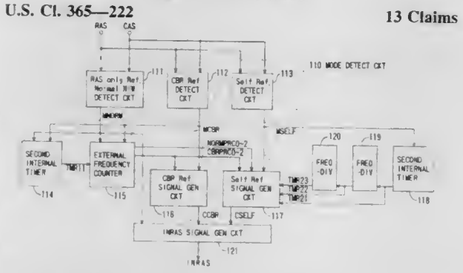
Hiroshige Hirano, Nara, and Masaya Okada, Osaka, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 18, 1996, Ser. No. 635,869

Claims priority, application Japan, Apr. 18, 1995, 7-092038

Int. Cl.[6] G11C *1/406*

U.S. Cl. 365—222 **13 Claims**



1. A semiconductor memory device, comprising:

a memory part;

a control part for controlling writing of data in said memory part, reading of data from said memory part, holding of data in response to a signal which is externally inputted; and

operation cycle detecting means for detecting an operation cycle of the signal which is externally inputted.

5,828,620

HIGH VOLTAGE BOOSTED WORD LINE SUPPLY CHARGE PUMP AND REGULATOR FOR DRAM

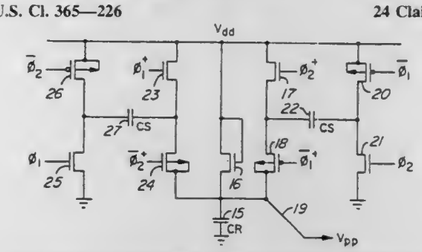
Richard C. Foss, Kirkcaldy Fife, Scotland; Peter B. Gillingham, Kanata, Canada; Robert F. Harland, Carp, Canada, and Valerie L. Lines, Ottawa, Canada, assignors to MOSAID Technologies Incorporated, Ontario, Canada

Continuation of Ser. No. 418,403, Apr. 7, 1995, abandoned, which is a continuation of Ser. No. 134,621, Oct. 12, 1993, Pat. No. 5,406,523, which is a division of Ser. No. 680,994, Apr. 5, 1991, Pat. No. 5,267,201. This application Sep. 2, 1997, Ser. No. 921,579

Claims priority, application United Kingdom, Apr. 6, 1990, 9007791; Apr. 5, 1991, 9107110

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—226 **24 Claims**



13. A method of supplying a boosted voltage to a random access memory circuit comprising:

providing plural voltage levels and a boosting capacitor having first and second terminals;

with clock signals applied to switches, alternately switching the first terminal of the boosting capacitor to the voltage supply and to a capacitive load while alternating the level of the voltage supply connected to the second terminal of the boosting capacitor to pump the capacitive load to a boosted voltage level greater than and of the same polarity as the DC voltage supply;

through a feedback loop from the boosted voltage, inhibiting the pumping of the capacitive load to regulate the boosted voltage to a substantially static value greater in magnitude that the DC voltage of the DC voltage supply and of a correct level required to turn on a selected memory cell access transistor; and

supplying the voltage on the capacitive load as a regulated boosted voltage to a selected word line and the gate of the corresponding memory cell access transistor which accesses a storage cell capacitor.

5,828,621

SEMICONDUCTOR MEMORY DEVICE AND HIGH-VOLTAGE SWITCHING CIRCUIT

Toru Tanzawa, Ebina; Tomoharu Tanaka, Yokohama, and Ken Takeuchi, Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 773,893, Jan. 17, 1997, Pat. No. 5,708,606, which is a continuation of Ser. No. 516,360, Aug. 17, 1995, abandoned. This application Sep. 30, 1997, Ser. No. 941,370

Claims priority, application Japan, Aug. 19, 1994, 6-195823; Aug. 19, 1994, 6-218031

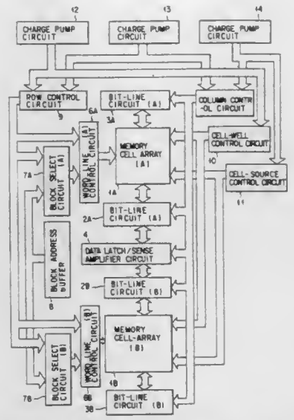
Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—229 **7 Claims**

1. A semiconductor memory device comprising:

a memory cell array where memory cells are arranged in a matrix, said memory cells forming a plurality of memory cell groups;

block select circuits for selecting memory cell blocks containing said plurality of memory cell groups; and



means for bringing all of said block select circuits into a block-selected state in a stand-by condition.

5,828,622

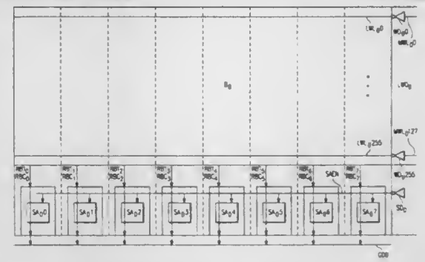
CLOCKED SENSE AMPLIFIER WITH WORDLINE TRACKING

David C. McClure, Carrollton, Tex., assignor to STMicroelectronics, Inc., Carrollton, Tex.

Division of Ser. No. 587,728, Jan. 19, 1996. This application Oct. 6, 1997, Ser. No. 944,649

Int. Cl.[6] G11C *7/00*

U.S. Cl. 365—230.03 **12 Claims**



1. A method of reading data from one or more memory cells in an integrated circuit memory device with a plurality of memory cells arranged in rows and columns, wherein said rows and columns of said primary memory cells are grouped into at least one block, each block having a plurality of local wordlines each coupled to a wordline driver, one or more read circuits each having a sense amplifier coupled to a sense amplifier driver, and a sense amplifier enable line, comprising:

generating a first signal on the wordline driver;

after a first delay generating a second signal on the sense amplifier driver;

receiving said first signal at a memory cell;

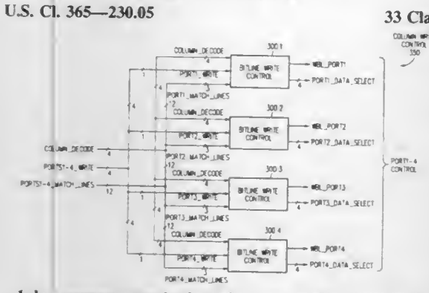
receiving said second signal at a sense amplifier associated with said memory cell after approximately said first delay.

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5,828,623
PARALLEL WRITE LOGIC FOR MULTI-PORT MEMORY ARRAYS

Stephen D. Dilbeck, Moraga, Calif., assignor to Integrated Device Technology, Inc., Santa Clara, Calif.

Filed Feb. 23, 1996, Ser. No. 606,115
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.05 **33 Claims**



1. In a memory array having a first port capable of writing a first memory cell corresponding to an address presented to the first port with write data presented to the first port, and having a second port capable of writing a second memory cell corresponding to an address presented to the second port with write data presented to the second port, said memory array comprising a plurality of physical columns of cells, each physical column including a first and a second differential bitline pair corresponding respectively to the first and second ports of each memory cell connected thereto and located within the physical column, a column interface circuit for a physical column of the array comprising:

a first selector circuit having a first input coupled to a data line conveying the write data presented to the first port, having a second input coupled to a data line conveying the write data presented to the second port, and having an output;

a second selector circuit having a first input coupled to a data line conveying the write data presented to the first port, having a second input coupled to a data line conveying the write data presented to the second port, and having an output;

a first bitline driver circuit having an input coupled to the output of the first selector circuit, and having a pair of complementary outputs respectively coupled to the first differential bitline pair within the physical column; and

a second bitline driver circuit having an input coupled to the output of the second selector circuit, and having a pair of complementary outputs respectively coupled to the second differential bitline pair within the physical column.

5,828,624
DECODER CIRCUIT AND METHOD FOR DISABLING A NUMBER OF COLUMNS OR ROWS IN A MEMORY

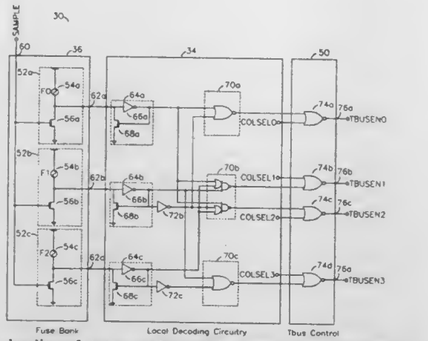
William G. Baker, Starkville, Miss.; Andrew L. Hawkins, Santa Clara, Calif., and Jeffery Scott Hunt, Ackerman, Miss., assignors to Cypress Semiconductor Corporation, San Jose, Calif.

Filed Dec. 23, 1996, Ser. No. 772,497
Int. Cl.[6] G11C *8/00*
U.S. Cl. 365—230.06 **20 Claims**

1. A circuit for disabling or enabling a number of columns in a memory array comprising:

a number of fuses, said number being at least one;

a decode circuit having a number of inputs corresponding to the number of fuses, said decode circuit generating a plurality of control signals in response to said number of fuses; and

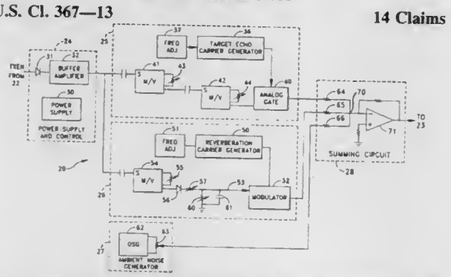


a plurality of gates, each receiving one of said plurality of control signals and disabling or enabling at least one column in said memory array in response to said one of said plurality of control signals.

5,828,625
ECHO SIMULATOR FOR ACTIVE SONAR

David R. Costa, Taunton, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 9, 1997, Ser. No. 954,884
Int. Cl.[6] H04B *17/00*
U.S. Cl. 367—13 **14 Claims**



1. A target echo simulator for testing a sonar receiver in an active sonar system that includes a connection at which a transmit enable pulse appears, said simulator comprising:

first and second carrier generators for generating carrier signals at first and second frequencies, each of said carrier signal generators being continuously operable;

a target echo signal generator connected to said first carrier generator for generating a target echo signal;

a reverberation signal generator connected to said second carrier generator for generating a reverberation signal;

an ambient noise generator for generating ambient noise;

a control circuit for controlling the timing and duration of the signals from said target echo signal generator and said reverberation signal generator;

a summing circuit for combining the signals from each of said generators thereby to produce a composite signal for testing the sonar receiver;

a circuit within the control circuit responsive to the transmit enable pulse for activating said target echo and reverberation signal generators;

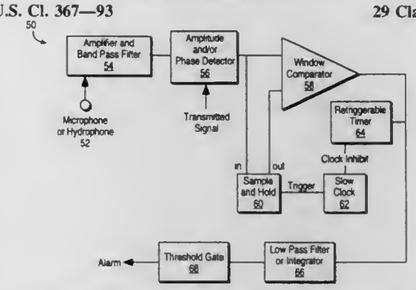
an envelope signal generator within said reverberation signal generator responsive to said activation circuit for generating an envelope signal over a defined period; and

a modulator connected to said second carrier generator and said envelope signal generator for combining the signals therefrom.

5,828,626
ACOUSTIC OBJECT DETECTION SYSTEM AND METHOD

Brett Castile, Del Mar, and Donald Owen, San Diego, both of Calif., assignors to Otincon Corporation, San Diego, Calif.

Filed Jan. 30, 1997, Ser. No. 790,781
Int. Cl.[6] G08B *13/16*
U.S. Cl. 367—93 **29 Claims**



1. A system for detecting an object within a protected space, comprising:

means for generating a standing wave field within a protected space, the standing wave field comprising a plurality of signals traveling along a plurality of propagation paths within the protected space, the propagation paths including reflections of the signals off of objects within the protected space;

means for detecting a change in a predetermined characteristic of the standing wave field upon the changing of a physical characteristic of an object within said protected space, the physical characteristic being the presence or absence of the object in the protected space; and

means for generating an alarm signal when said change in the standing wave field is greater than a predetermined threshold value to detect the presence or absence of the object in the protected space.

5,828,627
METHOD OF AND APPARATUS FOR PRODUCING SPHERICAL WAVES IN THE ULTRASONIC RANGE

Wieslaw Bicz, Wroclaw, Poland, assignor to Sonident Anstalt Liechtensteinischen Rechts, Vaduz, Liechtenstein

Continuation-in-part of Ser. No. 349,879, Dec. 6, 1994, abandoned. This application Sep. 26, 1996, Ser. No. 725,351
Claims priority, application Germany, May 30, 1994, 44 18 830.7
Int. Cl.[6] H04R *17/00*; G10K *11/08*
U.S. Cl. 367—140 **8 Claims**



7. A generator of spherical waves ultrasonic waves, comprising:

an ultrasonic transducer producing initial ultrasonic waves of an ultrasonic frequency of at least 2 MHz which emanate from said transducer;

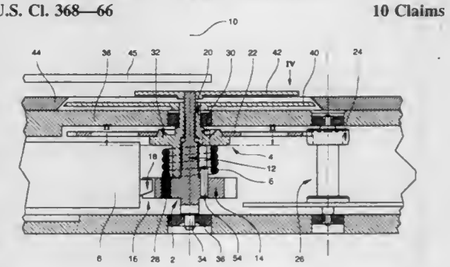
a frustoconical funnel with straight-line generatrices and free from a solid filling positioned to receive said initial ultrasonic waves emanating from said transducer for confining the initial ultrasonic waves emanating from said transducer to condense the initial ultrasonic waves and produce condensed ultrasonic waves; and

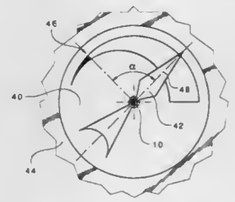
a monomodal ultrasonic waveguide in the form of a tube free from a solid filling of constant cross section, traversed by the condensed ultrasonic waves with a diameter greater than the wavelength of said ultrasonic waves, said tube having an inlet end connected to said funnel for receiving said condensed ultrasonic waves and, upon propagation of said condensed ultrasonic waves through said monomodal ultrasonic waveguide, emitting from an opposite outlet end of said monomodal waveguide substantially spherical ultrasonic waves into free space.

5,828,628
TIMEPIECE COMPRISING A MECHANISM DRIVEN BY MECHANICAL DRIVING MEANS AND A POWER RESERVE INDICATING DEVICE

Jean-Jacques Born, Morges, and Raymond Froidevaux, Boudry, both of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Dec. 17, 1997, Ser. No. 992,696
Claims priority, application Switzerland, Dec. 19, 1996, 3114/96
Int. Cl.[6] G04B *9/00;1/10;1/00*
U.S. Cl. 368—66 **10 Claims**





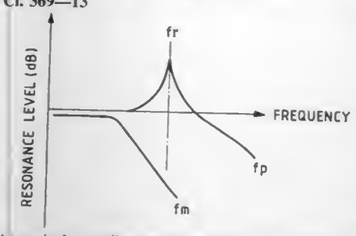
1. A timepiece including a barrel, used for storing the mechanical energy for driving a mechanism, and a device for indicating the power reserve of said mechanism, wherein said power reserve indicating device comprises a resilient element rotatively coupling in a mechanical manner first and second wheels rotatively driven by said barrel about a common geometric axis, and first and second display means rotatively coupled to said first and second wheels respectively and arranged so as to indicate an angular displacement between two directions determined respectively by said first and second display means, at least within a determined range of values of said angular displacement.

5,828,629

OPTICAL RECORDING AND/OR REPRODUCING APPARATUS WITH STUPPING MOTOR DRIVE FREQUENCY WHICH IS LOWER THAN RESONANT FREQUENCY OF TRANSMISSION SYSTEM

Hiroshi Wakuda, Fukushima-ken, Japan, assignor to Alps Electric Co., Ltd., Tokyo, Japan

Filed Nov. 13, 1995, Ser. No. 556,730
Claims priority, application Japan, Nov. 17, 1994, 6-283477
Int. Cl.[6] G11B *11/00;7/00*
U.S. Cl. 369—13 **2 Claims**



1. An optical recording and/or reproducing apparatus for recording information onto and/or reproducing information from a disk, the apparatus comprising:

a stepping motor controlled by a driving pulse signal;

a transmission system; and

an optical pickup provided with an optical head and driven by the stepping motor via the transmission system for movement in radial directions relative to the disk;

wherein the frequency of the driving pulse signal for controlling the stepping motor is lower than the resonant frequency of the transmission system for transmitting the driving force of the stepping motor to the optical pickup; and

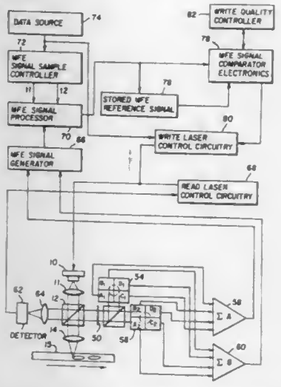
wherein the driving pulse signal includes one of a gradually increasing current and a gradually increasing voltage.

5,828,630

DIFFRACTION-BASED DIRECT READ DURING WRITE USING MAGNETO-OPTIC RECORDING MEDIA

Edward C. Gage, Fairport; Clarke K. Eastman; Steven C. Dohmeier, both of Rochester, and James A. Barnard, Scottsville, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 7, 1997, Ser. No. 852,975
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—13 **9 Claims**



1. A magneto-optic recording apparatus for reading and writing information on a magneto-optic recording medium so that diffraction effects are monitored during writing, comprising:

(a) a source of laser light for projecting a laser light beam during writing and reading;

(b) a first partial polarizing beamsplitter disposed in the beam of light for causing one beam of light to be transmitted to the recording medium and for receiving reflected light and for projecting such reflected light in a first direction;

(c) a second polarizing beamsplitter for receiving polarized light in the first direction from the first partial polarizing beamsplitter and projecting such polarized light in second and third directions;

(d) a first detector for receiving light in the second direction from the second polarizing beamsplitter and a second detector for receiving light in the third direction from the second polarizing beamsplitter;

(e) each detector including at least two photosensitive elements being split in the in-track direction for producing separate signals so that in-track diffraction effects are determined;

(f) means responsive to the signals produced by the first and second detectors for producing a mark formation effectiveness signal;

(g) means for storing a predetermined mark formation effectiveness reference signal which is representative of a desired mark formation effectiveness signal; and

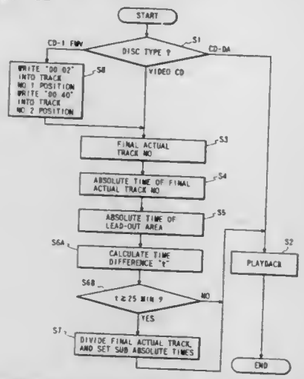
(h) means responsive to the mark formation effectiveness signal and the mark formation effectiveness reference signal for adjusting the amount of power that the laser produces to maintain optimum mark quality.

5,828,631

APPARATUS FOR REPRODUCING INFORMATION FROM A RECORDING MEDIUM USING TABLE OF CONTENTS INFORMATION STORED ON THE RECORDING MEDIUM

Chojun Shimabukuro, Atsugi, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Jun. 26, 1996, Ser. No. 672,072
Claims priority, application Japan, Jun. 26, 1995, 7-183337
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—32 **1 Claim**



1. An apparatus for reproducing information from a recording medium, comprising:

first means for reading TOC data from the recording medium, the TOC data including signals of first absolute start times corresponding to actual tracks on the recording medium respectively and also a signal of a second absolute start time corresponding to a lead-out area of the recording medium;

second means for setting sub absolute times between two adjacent absolute start times from the first and second absolute start times;

third means for assuming fictitious tracks on the recording medium;

fourth means for assigning the sub absolute times to the fictitious tracks respectively;

fifth means for designating a desired track out of the fictitious tracks;

sixth means for detecting the sub absolute time assigned to the desired track designated by the fifth means; and

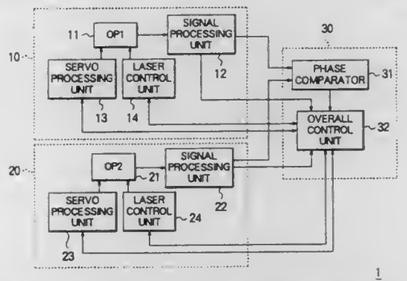
seventh means for starting reproduction of main information from the recording medium in response to the sub absolute time detected by the sixth means whereby reproduction begins in a location within a track represented by said sub absolute time.

5,828,632

DISK RECORDING AND REPRODUCING APPARATUS

Yasuo Nagai, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 19, 1997, Ser. No. 858,585
Claims priority, application Japan, May 20, 1996, 8-124705
Int. Cl.[6] G11B *7/00*
U.S. Cl. 369—32 **5 Claims**



1. A disk recording and reproducing apparatus comprising:

a plurality of heads for recording or reproducing a signal to or from a disk-like recording medium;

a plurality of position control means corresponding to the heads controlling the positions of said heads;

a plurality of output control means for controlling the output from said heads for recording or reproducing a signal with respect to said disk-like recording medium;

a plurality of reproduced signal processing means corresponding to said heads for extracting at least a synchronization signal output with the same phase for every sector on said disk recording medium based on the reproduced signals obtained from said heads;

a phase comparing means for comparing a plurality of said synchronization signals respectively extracted by said plurality of reproduced signal processing means with each other and selecting the synchronization signal having the earliest phase; and

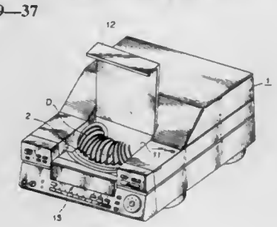
a head control means for controlling said plurality of position control means and said plurality of output control means by using said selected synchronization signal as a reference signal at a timing based on this reference signal.

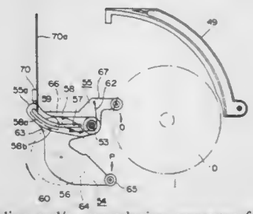
5,828,633

DISC RECORDING AND/OR REPRODUCING CHANGER WITH DISC TRANSPORTING MECHANISM AND DISC DETECTOR

Akihisa Inatani; Shuichi Nagano, both of Kanagawa; Kanji Mita, Tokyo; Shuji Minami, Kanagawa; Haruyuki Tamura, Tokyo; Tsutomu Watanabe, Ibaragi; Akira Katsuyama; Masami Ishikawa, both of Kanagawa, and Taiji Noshitani, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP94/00134, § 371 Date Feb. 19, 1995, § 102(e) Date Feb. 19, 1995, PCT Pub. No. WO94/17526, PCT Pub. Date Aug. 4, 1994
PCT Filed Jan. 31, 1994, Ser. No. 307,671
Claims priority, application Japan, Jan. 30, 1993, 5-034749; Jan. 30, 1993, 5-034750; Jan. 24, 1994, 6-005933
Int. Cl.[6] G11B *19/10*
U.S. Cl. 369—37 **3 Claims**





1. A recording and/or reproducing apparatus for a disc-shaped medium, the apparatus comprising:

a housing unit for disc-shaped recording media supported for rotation about a pivot as a center of rotation and having holder means for radially holding a plurality of disc-shaped recording media with respect to the pivot, wherein major surfaces of the plurality of disc-shaped recording media are held substantially parallel to and extend radially from a major axis of the pivot;

a recording and/or reproducing unit having loading means for loading a selected one of the plurality of disc-shaped recording media, rotating means for rotating the selected disc-shaped recording medium, and recording and/or reproducing means mounted for radial movement relative to the selected disc-shaped recording medium loaded on the rotating means for recording information signals on or reproducing information signals from the selected disc-shaped recording medium loaded on the rotating means;

transporting means for taking out the selected disc-shaped recording medium from the holder means provided in the housing unit and feeding the selected disc-shaped recording medium taken from the holder means to the recording and/or reproducing unit, wherein the transporting means includes

a transport holder for holding the selected disc-shaped recording medium during transport thereof,

detection means for detecting a presence of the selected disc-shaped recording medium in the transport holder, the detection means including a first arm having two ends, one end, which contacts an outer periphery of the selected disc-shaped recording medium to detect the presence of the selected disc-shaped recording medium in the transport holder, wherein when no disc-shaped recording medium is present in the transport holder the other end of the first arm activates a switch of the detection means,

guide means with a feed guide section having a smoothly and continuously curved surface facing the selected disc-shaped recording medium and feed means for feeding the selected disc-shaped recording medium into a loading position on the recording and/or reproducing unit with an outer periphery of the selected disc-shaped recording medium being guided by the feed guide section of the guide means,

a second arm pivotally mounted with said first arm by means of an arm said first and second arms being rotationally biased by rotation bias means such that respective first ends of the first and second arms facing the outer periphery of the selected disc-shaped recording medium approach each other,

a rotatable cam rotationally driven by rotational driving means, the rotatable cam having an arm rotation control cam engaged by engagement means provided on opposite sides of the first and second arms, and

a housing unit rotation control means rotatably mounted on a housing Divot and having an engagement section at a first end thereof for engaging with an engagement recess provided in the housing unit for the plurality of disc-shaped recording media, the housing unit rotation control means having an engagement pin engaged with a cam groove formed in the rotatable cam, wherein the housing unit rotation control means is rotationally controlled by the rotatable cam for engaging the engagement section with and disengaging the engagement section from the engagement recess; and

chuck means for holding the selected disc-shaped recording medium transported by the transporting means to the recording and/or reproducing unit such that the selected disc-shaped recording medium rotates in unison with the rotating means.

5,828,634

OPTICAL DISK TRACKING METHOD AND DEVICE FOR PRODUCING A TRACKING ERROR SIGNAL AND A TRACK CROSSING SIGNAL

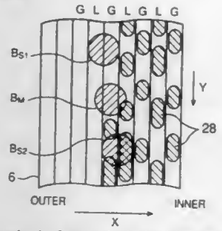
Takehide Ohno, and Hiroshi Maegawa, both of Yokohama, Japan, assignors to Ricoh Company, Ltd., Japan

Filed Feb. 20, 1997, Ser. No. 808,986

Claims priority, application Japan, Feb. 22, 1996, 8-034741; May 16, 1996, 8-121178; Jun. 14, 1996, 8-153600

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—44.26 **20 Claims**



1. A tracking method of an optical disk, the disk having alternate lands and grooves on a surface of the disk, said tracking method comprising steps of:

converting a beam of laser light emitted by a laser light source into a main beam and a pair of sub-beams symmetrical with respect to the main beam;

placing a main spot on the disk by the main beam and a pair of sub-spots on the disk by the sub-beams such that, when the main spot is on a center line of one of the lands and the grooves, one of the sub-spots is between the center line of said one of the lands and the grooves and a center line of an adjacent inner one of the lands and the grooves and the other sub-spot is between the center line of said one of the lands and the grooves and a center line of an adjacent outer one of the lands and the grooves;

producing a first push-pull signal Md from a reflection beam from the main spot on the disk;

producing second push-pull signals S1d and S2d from reflection beams from the sub-spots on the disk;

producing a tracking error signal TE from said first push-pull signal Md and said second push-pull signals S1d and S2d in accordance with the equation: TE= Md−k(S1d+S2d) where k is a predetermined coefficient; and

producing a track crossing signal TC from said second push-pull signals S1d and S2d in accordance with the equation TC=S1d−S2d.

5,828,635

OPTICAL PICKUP APPARATUS CAPABLE OF TRANSFERRING OBJECTIVE LENS IN OPTICAL AXIAL DIRECTION DEPENDING ON THICKNESS OF DISC FOR FOCUSING RESPECTIVELY ONTO DISCS WITH DIFFERENT THICKNESSES

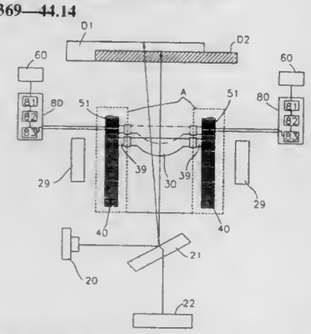
Hwan-Moon Choi, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed May 30, 1996, Ser. No. 656,876

Claims priority, application Rep. of Korea, May 31, 1995, 1995-14153

Int. Cl.[6] G11B 7/095

U.S. Cl. 369—44.14 **5 Claims**



1. An optical pickup apparatus capable of focusing respectively onto optical discs with different thicknesses comprising:

a laser source;

a beam splitting means which makes a laser beam from the laser source go toward an optical disc;

an objective lens for focusing onto a recording surface of the optical disc;

an objective lens positioning system for transferring the objective lens in an optical axial direction depending on a thickness of the optical disc in order to minutely focus on the optical disc, the objective lens positioning system having rack gears respectively fixedly connected to both sides of the objective lens, pinion gears respectively engaged with the rack gears, and fixed supporting parts having guide rails formed in the optical direction, and thereby the rack gears being movable in the optical axial direction along the guide rails by a rotational movement of the pinion gears so the objective lens fixed to the rack gears is movable in the optical axial direction;

a motor driving part for driving the pinion gears of the objective lens positioning system in order to transfer in the optical axial direction the objective lens which is fixedly connected with the rack gears of the objective lens positioning system; and

an objective lens actuator for moving the objective lens fixed to the rack gears of the objective lens positioning system, and thereby carrying out focusing and tracking servos during playing of the optical disc.

5,828,636

OPTICAL DISK APPARATUS HAVING OPTIMIZED FOCUS SHIFT MECHANISM CONTROL

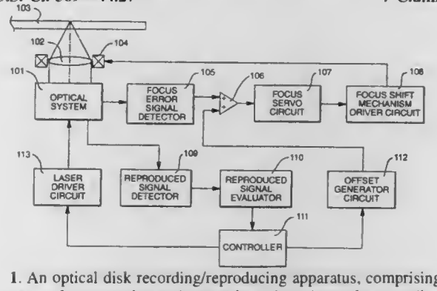
Kiyoshi Matsumoto, Chiba; Hiroyuki Tsuchinaga, Odawara, and Tsuyoshi Toda, Kodaira, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 10, 1996, Ser. No. 711,147

Claims priority, application Japan, Sep. 11, 1995, 7-232868

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—44.27 **7 Claims**



1. An optical disk recording/reproducing apparatus, comprising:

means for generating and outputting a laser beam for recording/reproducing a signal with respect to a disk;

a focus shift mechanism for converging the laser beam onto the disk; and

means for automatically setting a target point of said focus shift mechanism to read/write a signal from/to the disk;

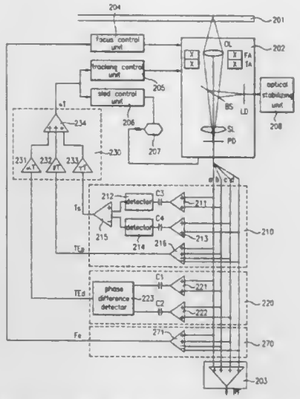
wherein the means for automatically setting a target point:

sets a plurality of target points of the focus shift mechanism in a preliminary recording mode from one of the target points to write a signal on the disk;

sets a plurality of target points of the focus shift mechanism in a preliminary reproducing mode to read a signal that was written according to one of said target points set in said preliminary recording mode;

determines one pair of the target points, said pair being constituted by one of the target points set in said preliminary recording mode and one of the target points set in said preliminary reproducing mode; and

sets each of the target points constituting said pair of target points as the target points of said focus shift mechanism in a recording mode and a reproduction mode, respectively.



a push-pull signal detecting unit for adding said electrical signals detected from the divided optical detectors disposed in upper and lower sides position of said optical pick-up unit to detect at a predetermined level added values and thus to obtain a difference, thereby outputting the difference as a first push-pull signal and for adding said electrical signals detected from the divided optical detectors disposed in the upper and lower sides position of said optical pick-up unit to detect at a predetermined level added values and thus to obtain a difference, thereby outputting the difference as a second push-pull signal;

a phase difference detecting unit for adding said electrical signals detected from the divided optical detectors disposed in the diagonal line position of said optical pick-up unit and for comparing phases of added values to thereby output a phase difference detecting signal; and

a tracking signal operation unit for amplifying by predetermined levels and adding said first and second push-pull signals from said push-pull signal detecting unit and said phase difference detecting signal from said phase difference detecting unit to thereby generate a detracking signal, thereby performing tracking control and sled motor control.

5,828,637

SERVO CONTROL DEVICE OF OPTICAL DISK RECORDING AND REPRODUCING APPARATUS

Dae Young Kim, Seoul, Rep. of Korea, assignor to LG Electronics Inc., Seoul, Rep. of Korea

Filed Jan. 24, 1997, Ser. No. 788,183

Claims priority, application Rep. of Korea, Jan. 24, 1996, 1996/1517

Int. Cl.[6] G11B 7/09

U.S. Cl. 369—44.28 **24 Claims**

1. A servo control device of an optical disk recording and reproducing apparatus, comprising:

an optical disk;

an optical pick-up unit for recording information on said optical disk or for condensing light reflected from said optical disk into a plurality of divided optical detectors to thereby convert a condensed light into electrical signals;

a reproduction signal output unit for adding said electrical signals outputted from the divided optical detectors within said optical pick-up unit to output an added value as a high frequency reproduction signal;

a focus error detecting unit for adding said electrical signals detected from the divided optical detectors disposed is in a diagonal line position of said optical pick-up unit and for obtaining a difference between said electrical signals to output the difference as a focus error signal;

5,828,638

DISC DATA REPRODUCING APPARATUS AND SIGNAL PROCESSING CIRCUIT

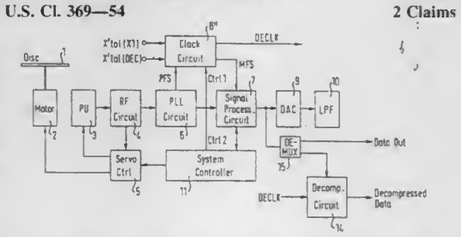
Jun Inagawa; Yasuhiro Hayashi, and Makoto Kubo, all of Kanagawa-ken, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Division of Ser. No. 450,657, May 25, 1995, Pat. No. 5,729,515. This application Oct. 27, 1997, Ser. No. 957,920

Claims priority, application Japan, May 26, 1994, 6-136451; Jul. 7, 1994, 6-177753

Int. Cl.[6] G11B 7/00

U.S. Cl. 369—54 **2 Claims**



1. An apparatus for reproducing disc data capable of being classified into at least a first type data and a second type data, the second type data including a compressed image data composed of

VOL
1
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OC
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1998
UMI

at least one of compressed photographic data and compressed video data, the apparatus comprising:

a disc motor to rotate a disc storing the disc data;

an optical pickup to read the disc data to be reproduced from a disc;

a demodulation circuit to demodulate the disc data read from disc;

a buffer memory to store the demodulated data; and

a decompression circuit to decompress the demodulated data of second type data read from the buffer memory to obtain at least one decompressed photographic data and decompressed video data, decompression being conducted in response to a reference clock signal;

wherein, when the disc data to be reproduced is the second type data, a frequency of the reference clock signal is set to a first value, and when the data to be reproduced is the first type data, the frequency of the reference clock signal is set to a second value lower than the first value so as to reduce power consumption of the decompression circuit.

5,828,639

RECORDING/PLAYBACK DEVICE AND METHOD THEREOF, AND DISC

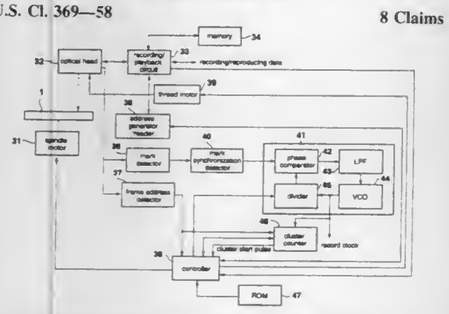
Shoei Kobayashi, Kanagawa; Toru Takeda, Saitama, and Tamotsu Yamagami, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 12, 1997, Ser. No. 799,982

Claims priority, application Japan, Feb. 15, 1996, 8-052502

Int. Cl.[6] G11B *7/02*

U.S. Cl. 369—58 **8 Claims**



1. A recording/playback device for recording data to and playing back data from a disc where regions for recording data are divided into a plurality of zones and a number of data units per one revolution of an outer periphery side zone of a neighboring two of said zones is set to be a larger value than a number of said data units per one revolution of the inner periphery side zone of said pair of zones, said recording/playback device comprising:

reading means for reading track numbers of access points of said disc;

storage means for storing said track numbers and said zones in such a manner that the track numbers of each of said zones correspond to an integer multiple of a number of a plurality of said data units comprising recording or playback units;

determining means for determining said zone for which said track number read by said reading means belongs to by referring to a table for said storage means; and

control means for controlling recording and playing back of said data in accordance with determination results of said determining means.

5,828,640

APPARATUS AND METHODS FOR GENERATING ERROR CORRECTION CODES FOR USE IN AN INFORMATION RECORDING DEVICE

Seiji Kobayashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

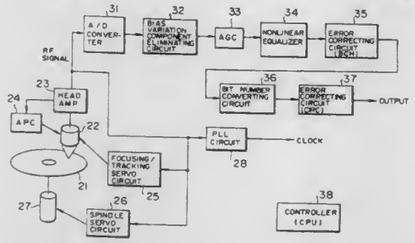
Division of Ser. No. 588,600, Jan. 18, 1996, Pat. No. 5,699,337.

This application Jun. 5, 1997, Ser. No. 869,826

Claims priority, application Japan, Jan. 20, 1995, 7-006903

Int. Cl.[6] G11B *7/00*

U.S. Cl. 369—59 **14 Claims**



1. An apparatus for generating error correction codes for use with an information recording device, wherein the apparatus processes digital information in units of a predetermined plurality of bits, said modulating circuit comprising:

means for assigning, dividing and mapping, operative to assign said units to coordinate points in a two-dimensional plane, said coordinate points being defined in relation to respective values the digital information can have,

wherein said means for assigning, dividing and mapping is operative to divide said coordinate points into two groups so that any coordinate points nearest to each other are separated into different groups,

wherein said means for assigning, dividing and mapping is operative to map a first predetermined bit in such a manner that digital information consisting of said plurality of bits having a value whose predetermined bit is 0 is assigned a coordinate point belonging to a first group and digital information having a value whose predetermined bit is 1 is assigned a coordinate point belonging to a second group,

wherein said means for assigning, dividing and mapping is operative to divide the coordinate points belonging to each group into two subgroups so that any coordinate points nearest to each other are separated into different subgroups,

wherein said means for assigning, dividing and mapping is operative to map another predetermined bit of the digital information in the same way mapping was performed on the first predetermined bit, so that digital information consisting of said plurality of bits is assigned a coordinate point in either subgroup, thereby recording the x and y coordinates of the coordinate point corresponding to said digital information consisting of said plurality of bits; and

means for outputting the x and y coordinates of at least one of the coordinate points corresponding to said digital information consisting of said plurality of bits from said means for assigning, dividing and mapping.

5,828,641

DISC PLAYER

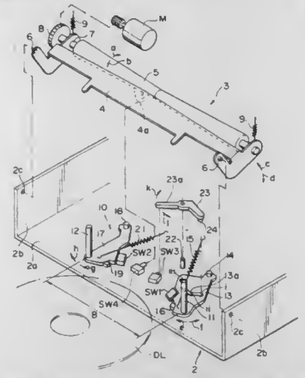
Hiroshi Abe, and Hideki Sakamoto, both of Iwaki, Japan, assignors to Alpine Electronics, Inc., Tokyo, Japan

Filed Feb. 21, 1996, Ser. No. 604,232

Claims priority, application Japan, Mar. 3, 1995, 7-070799

Int. Cl.[6] G11B *33/02*

U.S. Cl. 369—77.1 **16 Claims**



1. A disc player having a disc insertion opening, through which a disc is manually inserted, and conveyance means rotatable in an insertion direction to pull the disc inserted through said disc insertion opening into a body of said disc player, and is rotatable in an ejection direction to eject the disc from the body of said disc player through said disc insertion opening, said disc player comprising:

detection means for discriminating a diameter of a manually inserted disc; and

a control portion which operates said conveyance means in the insertion direction to pull the manually inserted disc into the body of said disc player only when said detection means determines that the manually inserted disc is equal to a predetermined diameter, and which operates said conveyance means in the ejection direction to eject the manually inserted disc from the body when the detection means determines that the manually inserted disc has a diameter other than the predetermined diameter;

a timer which is started when said detection means detects manual insertion of the disc, wherein if detection is not performed within a predetermined time from start of said timer that the diameter of the disk is equal to the predetermined diameter, then said control portion operates said conveyance means in the ejection direction;

wherein said timer is started when said conveyance means starts operating in the ejection direction;

wherein if a detection is performed by said detection means that ejection of the manually inserted disc is completed within the predetermined time from the start of said timer, then said conveyance means is stopped;

wherein if completion of the ejection within the predetermined time from the start of said timer is not detected, then also said conveyance means is stopped;

wherein said detection means includes a pair of detection pins pivotally mounted in the body adjacent the disc insertion opening such that the detection pins are moved away from each other by the outer surface of the manually inserted disc, and detection devices arranged to respectively detect movements of said detection pins,

wherein if movements of said pair of detection pins away from each other for a distance longer than a predetermined distance are detected by said detection devices, then the detection devices output signals indicating that the manually inserted disc has the predetermined diameter, and

wherein if movements of said detection pins away from each other for a distance longer than the predetermined distance are not detected by said detection devices, then the detection devices output signals indicating that the manually inserted disc has a diameter other than the predetermined diameter.

5,828,642

DEVICE AND METHOD FOR REDUCING POWER CONSUMPTION IN A DISK DRIVE

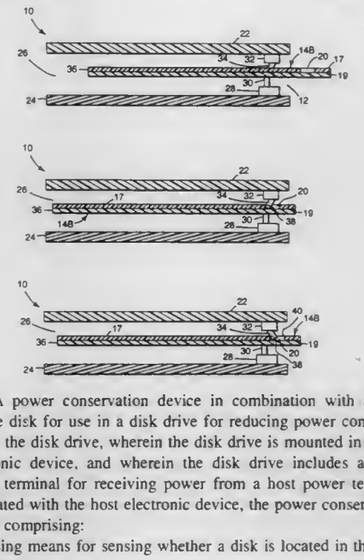
Louis J. Skarda, Lake Elmo, Minn., assignor to Imation Corp., Oakdale, Minn.

Division of Ser. No. 525,399, Sep. 8, 1995, Pat. No. 5,675,567.

This application Oct. 3, 1997, Ser. No. 942,965

Int. Cl.[6] G11B *33/02*

U.S. Cl. 369—77.2 **10 Claims**



1. A power conservation device in combination with a data storage disk for use in a disk drive for reducing power consumption in the disk drive, wherein the disk drive is mounted in a host electronic device, and wherein the disk drive includes a drive power terminal for receiving power from a host power terminal associated with the host electronic device, the power conservation device comprising:

sensing means for sensing whether a disk is located in the disk drive,

the sensing means including an actuator configured to engage a structure of the disk, the actuator being configured to move into a first position by engagement with a portion of the disk when the disk is inserted into the disk drive, and configured to move into a second position only by engagement with the structure of the disk during withdrawal of the disk from the disk drive, and further wherein the actuator is configured to move into the first position by insertion of a disk lacking the structure but is not moved into the second position by withdrawal of the disk lacking the structure; and

switching means, responsive to the sensing means, for coupling the drive power terminal and the host power terminal when the disk having the structure or lacking the structure is loaded in the disk drive and the actuator is moved into the first position, and for decoupling the drive power terminal and the host power terminal when the disk having the structure only is withdrawn from the disk drive and the structure has moved the actuator into the second position; and

the data storage disk comprising:

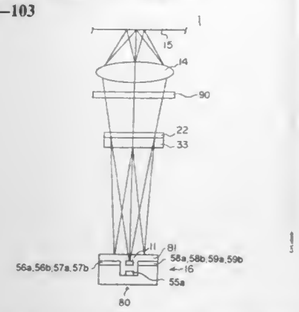
a disk housing;

an article of data storage media mounted within the disk housing; and the structure on the disk for moving the actuator into the first position when the disk is loaded in the disk drive and into the second position when the disk is withdrawn from the disk drive.

5,828,643
OPTICAL PICKUP HEAD APPARATUS

Tadashi Takeda; Yoshio Hayashi, both of Nagano; Hideo Takezoe, Tokyo, and Ken Ishikawa, Nagano, all of Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

Filed Jun. 19, 1996, Ser. No. 665,764
Claims priority, application Japan, Jun. 20, 1995, 7-176666; Jun. 20, 1995, 7-176667
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—103 1 Claim



1. In an optical pickup head apparatus for reading information signals from a recording medium having a laser beam light source, an objective lens and a photodetector, the improvement comprising:

a holographic optical element constructed of a pair of diffraction gratings having different diffractive conditions wherein the element is split into two by a split line near its optical axis as a border; and

a diffraction generation prevention means for preventing the generation of unwanted diffracted beams reflected from a recording medium;

wherein the optical pickup head apparatus irradiates a laser beam emitted from said light source onto a recording medium via said holographic optical element and said objective lens; beams reflected from the recording medium being guided to said photodetector via said objective lens and said holographic optical element, and

said diffraction generation prevention means comprises a pair of diffraction gratings which constitute said holographic optical element are formed of saw teeth having a sloped surface, each of the pair being arranged in opposition, and stepped almost along the direction of the recording track.

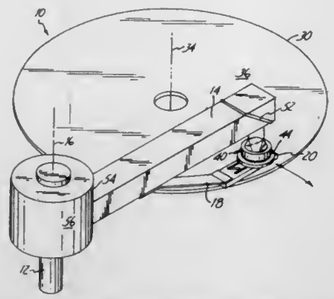
5,828,644
MICROACTUATOR FOR FINE FOCUSING A SLIDER-MOUNTED LENS OF AN OPTICAL DISC DRIVE

Edward Charles Gage, Apple Valley, and Nicholas Jordache, Eden Prairie, both of Minn., assignors to Seagate Technology, Inc., Scotts Valley, Calif.

Filed Jul. 15, 1997, Ser. No. 895,257
Int. Cl.[6] G11B 7/00
U.S. Cl. 369—112 23 Claims

21. The method of optimizing the position of the focal point of an objective lens of a disc drive optical system in which the optical system includes an actuator arm having a slider body arranged to be positioned by the actuator arm relative to a recording surface of an optical recording medium, the slider body supporting a microactuator which supports the objective lens, the microactuator being operable to selectively expand and contract, the method comprising:

positioning the slider body at a selected position relative to the recording surface, and

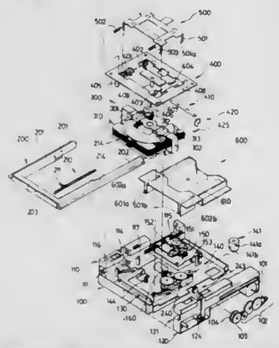


selectively operating the microactuator to move the objective lens relative to the slider body to selectively move the position of the focal point relative to the recording surface.

5,828,645
DISK REPRODUCING APPARATUS HAVING DISK CHANGING FUNCTION

Young-taek Kim, Suwon, and Cheol-woong Ahn, Seoul, both of Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Sep. 30, 1996, Ser. No. 723,571
Claims priority, application Rep. of Korea, Sep. 30, 1995, 1995-34009
Int. Cl.[6] G11B 17/04
U.S. Cl. 369—178 10 Claims



1. A disk reproducing apparatus having a disk changing function, comprising:

a housing having a main deck and first and second chassis members installed at either side of said main deck;

a subdeck installed on a rear side of said housing, pivotably supported at one side thereof on said first chassis member, and provided with disk reproducing elements including a turntable for loading a disk thereon and an optical pickup for generating and receiving optical beams;

a plurality of subtrays positioned at a front side of said housing, each of said subtrays having a loading surface on which a corresponding said disk is loaded;

a stocker, for receiving said plurality of subtrays, supported on said first and second chassis members and operative to ascend and descend;

a main tray member, slidably supported on said first and second chassis members, for transporting one among said plurality of subtrays to be ejected out of said housing;

first transporting means for moving said main tray;

elevating means for lifting and lowering said stocker to place a selected subtray having the corresponding disk loaded thereon on the same level with said main tray;

second transporting means for moving said selected subtray placed on the same level with said main tray to said turntable;

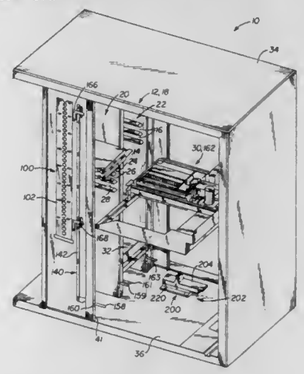
clamping means for securing said disk loaded on said selected subtray moved to said turntable; and

a clutch mechanism, which includes a clutch gear assembly operative to ascend and descend with respect to said main deck, for switching power to selectively drive either said elevating means or said clamping means by a single driving source.

5,828,646
CARTRIDGE HANDLING SYSTEM WITH LOCKING DEVICES

David P. Jones, Bellvue, Colo., assignor to Hewlett-Packard Co., Palo Alto, Calif.

Division of Ser. No. 748,222, Nov. 12, 1996, Pat. No. 5,719,833, which is a division of Ser. No. 371,349, Jan. 11, 1995, Pat. No. 5,717,665. This application Sep. 29, 1997, Ser. No. 939,600
Int. Cl.[6] G11B 5/48;17/00
U.S. Cl. 369—178 3 Claims



1. A cartridge handling system comprising:

a) a plurality of cartridge storage locations adapted to receive and retain cartridges;

b) a cartridge engaging assembly adapted to retrieve and displace said cartridges;

c) a cartridge locking apparatus adapted to simultaneously lock said cartridges within said cartridge storage locations, said cartridge locking apparatus comprising:

i) a plurality of resilient cartridge retainers;

ii) a cartridge locking device simultaneously lockingly positionable with respect to said plurality of resilient cartridge retainers;

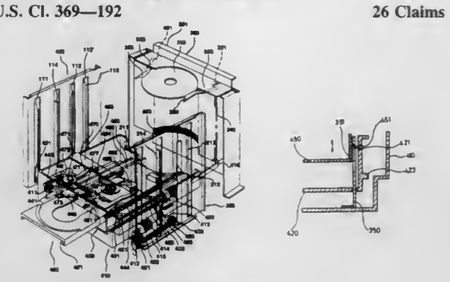
iii) a cartridge locking device actuator engageable with said cartridge locking device; and

d) a cartridge engaging assembly lock-down apparatus adapted to nondisplaceably secure said cartridge engaging assembly to a fixed housing portion of said cartridge handling system whereby the cartridge locking device actuator comprises the cartridge engaging assembly wherein the cartridge locking device actuator actuates the cartridge locking apparatus to simultaneously lock said cartridges within the cartridge storage locations at a location corresponding to the position where the cartridge engaging assembly is fixed to the fixed housing portion by the cartridge engaging assembly lock-down apparatus.

5,828,647
DISK CHANGER WITH REDUCED DRIVING TIME

Young-Won Lee; Byoung-Yub Park, and Sung-Yeon Park, all of Suwon, Rep. of Korea, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed May 24, 1996, Ser. No. 653,451
Claims priority, application Rep. of Korea, Jul. 7, 1995, 95-19926; Jul. 21, 1995, 95-21568
Int. Cl.[6] G11B 17/10
U.S. Cl. 369—192 26 Claims



1. A disk changer comprising:

a magazine portion for storing a plurality of disks;

a deck member having a turntable, on which one of said disks is seated, and including a recording/reproducing element;

a second stage for supporting said deck member;

a tray member slidably mounted on said deck member for loading a disk from outside said disk changer;

first moving means for slidably moving said tray member;

a first stage for supporting said second stage;

a clamp member supported by said first stage for clamping said disk seated on said turntable;

first ascending/descending means for raising and lowering said deck member with respect to said second stage to clamp said disk using said clamp member and release said disk from said clamp member, and second moving means for laterally moving and second stage;

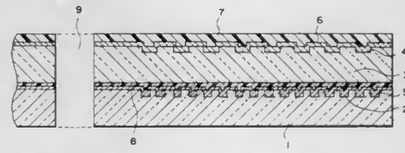
second ascending/descending means for raising and lowering said first stage with respect to said plurality of disks in said magazine portion; and

means for extracting one of said plurality of disks from said magazine portion and seating the extracted disk onto said turntable.

5,828,648
OPTICAL INFORMATION RECORDING MEDIUM AND METHOD OF MANUFACTURING

Akihiko Takasu, Tokyo, and Kazuho Kato, Atsugi, both of Japan, assignors to Nippon Columbia Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 576,751, Dec. 21, 1995, abandoned. This application Jun. 25, 1997, Ser. No. 882,233
Claims priority, application Japan, May 17, 1995, 7-142642
Int. Cl.[6] G11B 7/24
U.S. Cl. 369—275.1 7 Claims



1. An optical information recording medium comprising:

a first information surface having first information that is reproducible by a first reproducing system, said first reproducing system being designed for an optical information recording medium whose transparent substrate is approximately 0.6 (mm) in thickness; and

a second information surface having second information that is reproducible by a second reproducing system, said second reproducing system being designed for an optical information recording medium whose transparent substrate is approximately 1.2 (mm) in thickness.

5,828,649

MAGNETO-OPTICAL MEMORY ELEMENT

Kenji Ohta, Yao; Yoshikazu Fujii, Nara; Tetuya Inui, Nara; Toshihisa Deguchi, Nara, and Shigemi Maeda, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 942,094, Sep. 8, 1992, which is a continuation of Ser. No. 206,973, Jun. 14, 1988, which is a continuation of Ser. No. 783,109, Oct. 2, 1985, abandoned. This application May 23, 1995, Ser. No. 447,738

Claims priority, application Japan, Oct. 2, 1984, 59-207838

Int. Cl.[6] **G11B** *7/24*

U.S. Cl. 369—275.3 **23 Claims**



1. A magneto-optical memory element comprising:

a glass substrate having guide track grooves and address signal pits formed in the glass substrate; and

a magneto-optical recording layer formed on the substrate and having a perpendicular magnetization layer, the thickness of the recording layer being constant even when data information is recorded in the recording layer and read out from the recording layer, wherein address information is read out by detecting the variation of light beam intensity reflected from the address signal pits, the data information in the magneto-optical recording layer provided on the guide track grooves is read out by detecting the variation of magnetic polarization angle properties,

and wherein the width of the guide track grooves is in a range of 0.75 μm to 1.0 μm, and the address signal pits are formed with a pit width narrower than the width of the guide track grooves, and the depth of the address signal pits being substantially equal to the depth of the guide track grooves and being equal to approximately 700 Å, thereby optimizing the quality of read-out of both the data information and the address information.

5,828,650

COMBINED MODULATION—AND MULTIPLE ACCESS METHOD FOR RADIO SIGNALS

Esa Malkamäki, Espoo, and Jari Junell, Vantaa, both of Finland, assignors to Nokia Mobile Phones Ltd., Salo, Finland

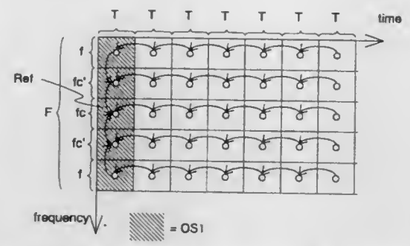
Filed Jul. 2, 1996, Ser. No. 674,350

Claims priority, application Finland, Jul. 3, 1995, 953283

Int. Cl.[6] **H04J** *11/00*

U.S. Cl. 370—203 **7 Claims**

1. A method for the application of data for transfer to a radio-frequency signal, the generation of which is based upon a multiplexing of orthogonal frequency components, comprising a plurality of carriers of differing frequencies, which form subfrequency bands (f) and comprise in a time direction distinct elementary signals (R), in which the simultaneous elementary signals of different subfrequency bands form a symbol (OS; OS1), those symbols in temporal succession forming a symbol sequence, characterized in that said data for transfer are applied to said radio-frequency signal by a phase modulation method in accordance with the steps of:



providing a first symbol (OS1) of said symbol sequence to comprise a first elementary signal (Ref), which contains a phase reference, wherein

the first symbol (OS1) comprises a group of other elementary signals,

defining the information content of the group of other elementary signals as a phase shift in a frequency direction to an adjacent elementary signal for forming a differential phase shift chain, the head of which is said first elementary signal (Ref), and

defining the information content of each elementary signal in other symbols of said symbol sequence as a phase shift to a preceding elementary signal in the time direction of the same subfrequency band for forming another differential phase shift chain, the head of which is the elementary signal of the first symbol (OS1) of said symbol sequence in the subfrequency band.

5,828,651

DEVICE FOR DUPLICATING CONNECTIONLESS SERVER

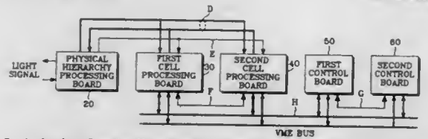
Se-In Jang, Euiwang, and Seong-Rak Choi, Seoul, both of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Dec. 30, 1996, Ser. No. 775,112

Claims priority, application Rep. of Korea, Dec. 28, 1995, 61240/1995

Int. Cl.[6] **H04L** *12/56*

U.S. Cl. 370—219 **16 Claims**



1. A device for duplicating a connectionless server, comprising:

physical hierarchy processor means for converting connectionless input data comprising an optical signal into an electric signal, and for ATM physical hierarchy processing said electric signal to obtain matching signals;

duplication cell processor means connected to said physical hierarchy processor means and including first and second cell processors, each of said cell processors performing header conversion processing operations with respect to an input cell of said matching signals according to a destination address thereof, said duplication cell processor means also including a duplication state decider generating a state signal designating one of said first and second cell processors, said duplication cell processor means enabling only buffers of one of said first and second cell processors according to the state signal generated by said duplication state decider with respect to said cell processor which executes said header conversion processing operation; and

duplication controller means including first and second control boards for maintaining repairing, multi-casting and connection-controlling cells applied from said duplication cell processor means, said duplication controller means enabling for output only buffers of one of the first and second control boards according to the state signal generated by said duplication state decider with respect to said designated cell processor.

5,828,652

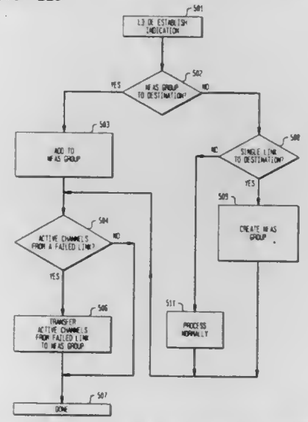
ESTABLISHMENT OF A FLEXIBLE RATE INTERFACE LINK TO RESTORE CHANNELS FROM A FAILED COMMUNICATION LINK

Bruce M. Bales, Louisville; Robert L. Crumpley, Westminster; Sandra S. North, Berthoud, and Stephen M. Thieler, Boulder, all of Colo., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Sep. 30, 1996, Ser. No. 722,715

Int. Cl.[6] **H04J** *3/12*; **H04M** *11/00*

U.S. Cl. 370—225 **16 Claims**



1. A method of preserving active transport channels within a non-facility access service (NFAS) group of communication links interconnecting two of a plurality of switch nodes of a telecommunication switching system wherein all signaling messages for the NFAS group of communication links are communicated via one of the communication links of the NFAS group of communication links via a signaling channel, comprising the steps of:

detecting a failure of one communication link in the NFAS group of communication links that has active transport channels;

determining that no idle transport channels are present within the NFAS group of communication links;

establishing a virtual communication link having virtual transport channels interconnecting the two of the plurality of switch nodes via physical transport channels through other ones of the plurality of switch nodes upon the determination that no idle transport channels are present within the NFAS group of communication links;

adding the virtual communication link to the NFAS group of communication links;

communicating signaling messages for control of the virtual communication link via the signaling channel of the NFAS group of communication links; and

transferring each of the active transport channels of the failed communication link in the NFAS group of communication links to the virtual transport channels of the virtual communication link.

5,828,653

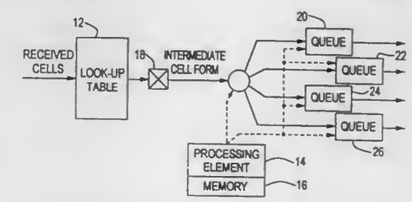
QUALITY OF SERVICE PRIORITY SUBCLASSES

Gregory S. Goss, Lowell, Mass., assignor to Cascade Communications Corp., Westford, Mass.

Filed Apr. 26, 1996, Ser. No. 639,172

Int. Cl.[6] **H04L** *12/56*

U.S. Cl. 370—230 **17 Claims**



1. A method for prioritizing cells of a common quality of service for prioritized entry into a queue of an asynchronous transfer mode network element, said queue being one of plural queues, each for indicating where, in a common buffer, cells of a respective quality of service are stored, the method comprising, with respect to each cell, the steps of:

receiving, by a processing element associated with said network element, a cell having a header portion;

identifying, by said processing element, a quality of service indicator for said cell from said cell header portion;

identifying, by said processing element, a network element queue associated with said identified quality of service;

monitoring the capacity of said identified queue by said processing element;

detecting, by said processing element, one or more queue capacity thresholds associated with said identified queue and achieved by said monitored capacity, said one or more queue capacity thresholds stored in a memory unit associated with said processing element;

identifying, by said processing element, a priority assignment of said cell from said cell header portion; and

determining by said processing element, whether to discard or enqueue said cell in said identified queue associated with said identified quality of service based upon a comparison of said one or more achieved queue capacity thresholds and said identified priority assignment.

5,828,654

ATM CELL POLICING METHOD AND APPARATUS

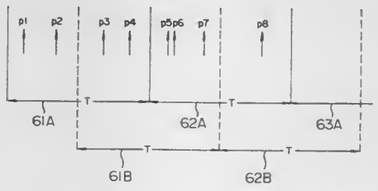
Akihiko Takase, Tokyo; Shigeo Shinada; Mitsuhiro Takano, both of Yokohama; Toshiya Oouchi, Kokubunji; Naoaki Yamanaka, Tokyo, and Youichi Sato, Yokohama, all of Japan, assignors to Hitachi, Ltd., and Nippon Telegraph & Telephone Corp., both of Tokyo, Japan

Continuation of Ser. No. 13,398, Feb. 4, 1993, abandoned. This application May 24, 1996, Ser. No. 653,475

Claims priority, application Japan, Feb. 6, 1992, 4-020974

Int. Cl.[6] **H04J** *3/14*

U.S. Cl. 370—233 **7 Claims**



1. An input cell policing method for use in a network of an asynchronous transfer mode, comprising the steps of:

identifying, according to information contained in a header field of each input cell, one of a plurality of groups of cells to which the input cell belongs;

setting, for each of the groups, respectively monitor periods having substantially the same predetermined length and mutually different phases from each other and counting the number of input cells in each of the monitor periods;

comparing an accumulated value obtained by adding a count value of input cells in a current monitor period to a count value of input cells in a past monitor period consecutive in time to the current monitor period with a predetermined threshold value; and

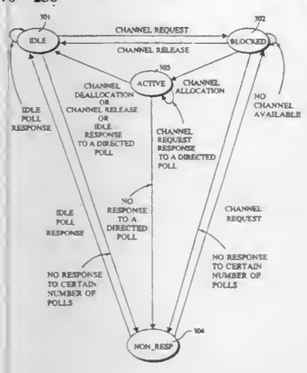
processing as an excess cell a cell inputted under a condition in which the accumulated value associated therewith exceeds the threshold value as a result of the comparison.

5,828,655

HYBRID ACCESS SYSTEM WITH QUALITY-BASED CHANNEL SWITCHING

Eduardo J. Moura, San Jose, and Jan Maksymilian Gronski, Palo Alto, both of Calif., assignors to Hybrid Networks, Inc., San Jose, Calif.

Division of Ser. No. 426,920, Apr. 21, 1995, Pat. No. 5,586,121. This application Aug. 21, 1996, Ser. No. 700,991
Int. Cl.[6] H04H *1/08*
U.S. Cl. 370—236 **44 Claims**



1. A method of providing two way asymmetric network communication between a host and a remote device that is capable of establishing client-server communication with said host, said method comprising:

providing a shared medium,

providing a high speed downstream channel and plural associated lower speed upstream channels wherein the downstream channel conveys data packets from the host to the remote device over said shared medium at rate that is higher than a rate of conveyance of data packets from the remote device to the host over said shared medium in a lower speed upstream channel,

providing an interface associated with said remote device for receiving high speed downstream data packets originating from said host over said downstream channel and for sending lower speed data packets destined for said host over one of said lower speed upstream channels,

controlling at least one of switching and routing functions of paths of both said downstream and upstream channels according to at least one of a request for access to a channel and a request to transfer data initiated by at least one of said host and remote device,

in response to said controlling step, transferring at least one of high speed data packets originating from said host according to a high speed downstream protocol and lower speed data packets originating from said remote device to said host according to a lower speed upstream protocol,

during said transferring step, detecting a level of a quality characteristic of signals in at least one of said upstream channels,

determining whether the level of detected quality characteristic deviates with respect to a predefined norm, and

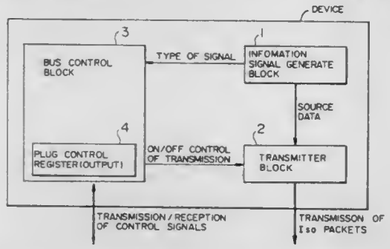
switching to another channel, if sufficient deviation is determined.

5,828,656

METHOD OF CONTROLLING COMMUNICATIONS, AND ELECTRONIC DEVICE

Makoto Sato, Tokyo, and Hisato Shima, Kanagawa, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 10, 1996, Ser. No. 678,044
Claims priority, application Japan, Jul. 12, 1995, 7-199145
Int. Cl.[6] H04L *12/28*
U.S. Cl. 370—254 **6 Claims**



1. A method of controlling communication in a communication system including a plurality of electronic devices connected to each other via a bus which allows transmission of a mixture of control and information signals, said method comprising the steps of:

setting a first period of a time period required for transmitting an information signal depending on the system configuration in terms of connections of electronic devices; and

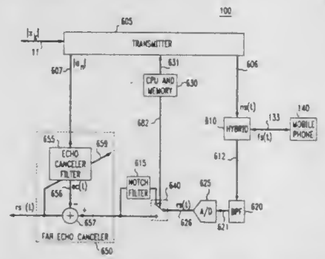
setting a second period of said time period depending on the type of said information signal, so that said first and second periods are set separately.

5,828,657

HALF-DUPLEX ECHO CANCELER TRAINING USING A PILOT SIGNAL

William Lewis Betts, St. Petersburg; Ramon B. Hazen, North Rediogton Beach, and Robert Earl Scott, Indian Rocks Beach, all of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Sep. 29, 1995, Ser. No. 536,916
Int. Cl.[6] H04J *15/00*
U.S. Cl. 370—289 **6 Claims**



1. Data communications equipment apparatus comprising:

an echo canceler that is trained during an echo-canceler training phase of a half duplex training sequence with a far-end data communications equipment while the communication channel is operating in a linear mode; and

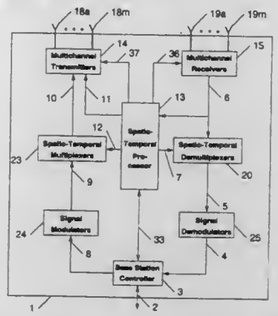
a filter that filters a received signal during the echo-canceler training phase to remove a pilot signal transmitted by the far-end data communications equipment before application of the received signal to the echo canceler to train the echo canceler on an echo signal component thereof.

5,828,658

SPECTRALLY EFFICIENT HIGH CAPACITY WIRELESS COMMUNICATION SYSTEMS WITH SPATIO-TEMPORAL PROCESSING

Björn E. Ottersten, Lidingö, Sweden; Craig H. Barratt, Redwood City, Calif.; David M. Parish, Amherst, N.Y., and Richard H. Roy, III, Mountain View, Calif., assignors to Arraycomm, Inc., San Jose, Calif.

Continuation-in-part of Ser. No. 375,848, Jan. 20, 1995, Pat. No. 5,592,490, which is a continuation-in-part of Ser. No. 806,695, Dec. 12, 1991, Pat. No. 5,515,378, and Ser. No. 234,747, Apr. 28, 1994, Pat. No. 5,546,090. This application Oct. 23, 1996, Ser. No. 735,520
Int. Cl.[6] H04Q *7/00*
U.S. Cl. 370—310 **80 Claims**



1. A wireless system for calculating uplink signals transmitted from a plurality of remote terminals using a common uplink channel, said system including at least one base station, said system comprising:

receiving means at said at least one base station including a plurality of antenna elements and receivers for producing measurements of combinations of said uplink signals from said plurality of remote terminals using said common uplink channel;

receive spatio-temporal processing means for determining and storing receive spatio-temporal signatures for said plurality of remote terminals using said measurements; and

spatio-temporal demultiplexing means using said receive spatio-temporal signatures and said measurements to produce separated uplink signals.

5,828,659

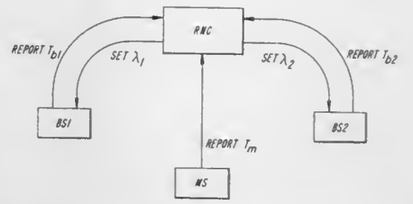
TIME ALIGNMENT OF TRANSMISSION IN A DOWN-LINK OF CDMA SYSTEM

Paul Teder, Täby; Lars Gustav Larsson, and Håkan Anders Persson, both of Stockholm, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Continuation of Ser. No. 75,893, Jun. 14, 1993. This application Aug. 2, 1996, Ser. No. 691,436
Int. Cl.[6] H04J *3/06;13/00*
U.S. Cl. 370—328 **33 Claims**

1. A method of code division multiple access for cellular communication systems, said method comprising the steps of:

broadcasting signals on communication channels;



establishing a first call link between a first base station and a mobile station;

measuring a difference in time between the reception in said mobile station of at least one signal on a common control channel of at least one neighboring base station and a signal on a common control channel from said first base station;

initiating a second call link between said at least one neighboring base station and said mobile station;

delaying transmission of at least one of a communication signal that is to be sent from said first base station and a communication signal that is to be sent from said at least one neighboring base station in accordance with said difference in time between the reception of said signals measured in said mobile station;

transmitting said communication signal that is to be sent from said first base station and said communication signal that is to be sent from said at least one neighboring base station over first and second call links, respectively; and

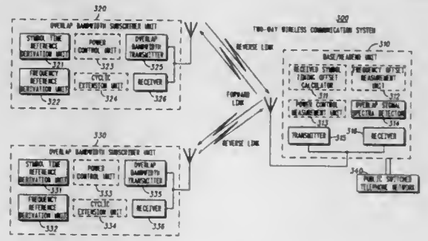
receiving, in said mobile station, said communication signals transmitted over said first and second call links, respectively, within a predetermined time period.

5,828,660

MULTIPLE USER COMMUNICATION SYSTEM, DEVICE AND METHOD WITH OVERLAPPING UPLINK CARRIER SPECTRA

Kevin Baum, Rolling Meadows; Nikhil S. Nadgauda, Chicago; Roger Laurin Peterson, Inverness, and James Robert Kelton, Oakpark, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 26, 1996, Ser. No. 639,370
Int. Cl.[6] H04J *1/02*
U.S. Cl. 370—330 **31 Claims**



1. A bandwidth efficient multiple user digital communication system which facilitates multiple user reverse link communication using overlapped transmit signal spectra of at least two overlap bandwidth subscriber units, comprising:

A) a base/headend unit, for transmitting a forward link signal and receiving a composite signal consisting of a plurality of signals from a plurality of overlap bandwidth subscriber units and detecting a transmit signal from each of the plurality of overlap bandwidth subscriber units, wherein each transmit signal is transmitted to arrive at the base/headend unit substantially simultaneously;

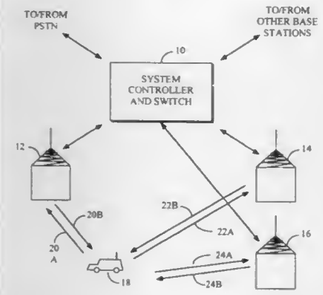
B) the plurality of overlap bandwidth subscriber units, for receiving the forward link signal, each deriving a frequency reference based on at least the forward link signal, and each deriving a symbol timing reference based on at least the forward link signal, the plurality of overlap bandwidth subscriber units each transmitting a reverse link signal to the base/headend unit that receives a composite reverse link signal of the reverse link signals, each reverse link signal comprising at least one modulated data carrier, with each reverse link signal having distinct carrier frequencies, and each transmitted reverse link signal having a symbol timing responsive to the symbol timing reference, and with the frequency spectra of the reverse link signals overlapping.

5,828,661

METHOD AND APPARATUS FOR PROVIDING A CONE OF SILENCE IN A CELLULAR COMMUNICATION SYSTEM

Lindsay A. Weaver, Jr., Boulder, Colo., and Katherine W. White, San Diego, Calif., assignors to Qualcomm Incorporated, San Diego, Calif.

Filed May 22, 1996, Ser. No. 651,368
Int. Cl.[6] H04J *3/16*
U.S. Cl. 370—331 **23 Claims**



1. In a communications network in which a remote unit communicates with another user via at least one base station, said network including a plurality of base stations controlled by a mobile switching center, a method for defining an area in which communication between a set of said base stations and said remote unit is forbidden at a given frequency comprising the steps of:

transmitting from each base station of said plurality of base stations an identifying pilot signal;

transmitting a silent region identifying pilot signal from an auxiliary antenna collocated with a point to point antenna used to transmit a point to point signal, the auxiliary antenna providing a guard band coverage area which does not greatly overlay a coverage area created by said point to point antenna;

providing a second auxiliary antenna collocated with said point to point antenna, wherein said second auxiliary antenna provides a second guard band coverage area which does not greatly overlay said coverage area created by said point to point antenna and wherein said guard band coverage area and said second guard band coverage area are located on opposite sides of said coverage area created by said point to point antenna;

measuring a signal strength of a set of identifying pilot signals corresponding to a neighbor set of base stations at said remote unit;

measuring a signal strength of said silent region identifying pilot signal at said remote unit;

reporting a pilot strength measurement report by said remote unit to said mobile switching center via a first base station with which said remote unit has established communication, wherein said pilot strength measurement report comprises a list of measured pilot offsets having a signal strength which exceeds a predetermined threshold; and

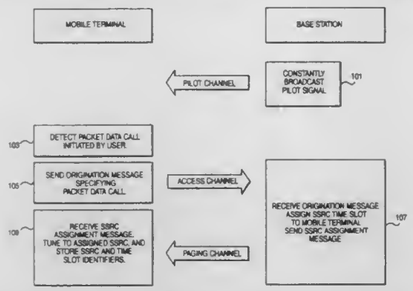
initiating a handoff of said established communication between said remote unit and said first base station if said pilot strength measurement report comprises an entry corresponding to said silent region identifying pilot signal.

5,828,662

MEDIUM ACCESS CONTROL SCHEME FOR DATA TRANSMISSION ON CODE DIVISION MULTIPLE ACCESS (CDMA) WIRELESS SYSTEMS

Ahmad Jalali, Plano, Tex.; Witold Krzymien, Edmonton, and Paul Mermelstein, Cote St. Luc, both of Canada, assignors to Northern Telecom Limited, Quebec, Canada

Filed Jun. 19, 1996, Ser. No. 666,828
Int. Cl.[6] H04B *7/216*
U.S. Cl. 370—335 **16 Claims**



1. A code division multiple access (CDMA) communication system comprising a base station and a plurality of assigned mobile terminals coupled at least one said base station, wherein said base station communicates with said plurality of assigned mobile terminals using at least one transmitter and at least one receiver to transfer at least one of many data bursts, and said transmitter and receiver communicate using a plurality of communication channels comprising:

forward link channels which include a pilot channel, a synchronization channel, at least one paging channel, at least one forward traffic channel, and at least one reservation response channel;

reverse link channels which include at least one access channel, at least one reverse traffic channel, and at least one synchronous synchronization-reservation channel; and

means for establishing a communication link between said base station and said plurality of assigned mobile terminals.

5,828,663

ACCESS CONTROL SYSTEM FOR WIRELESS-LAN TERMINALS

Yoshikazu Ikegami, Tokyo, Japan, assignor to NEC Corp., Japan

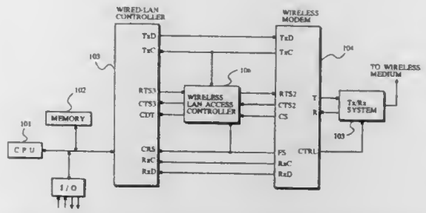
Filed Dec. 1, 1995, Ser. No. 564,685
Claims priority, application Japan, Dec. 2, 1994, 6-329321
Int. Cl.[6] H04L *12/413;* **H04B** *7/204*
U.S. Cl. 370—347 **19 Claims**

1. An access control method of a wireless terminal in a wireless network employing a carrier sense multiple access (CSMA) scheme, said method comprising the steps of:

monitoring the termination of a transmission inhibition period;

monitoring the occurrence of a transmission request;

generating a random-determined time period when said transmission request occurs during said transmission inhibition period, said random-determined time period starting from said termination of said transmission inhibition period;



waiting to start data transmission associated with said transmission request until said random-determined time period has elapsed after said termination of said transmission inhibition period;

checking whether a predetermined channel for transmission is available at the end of said random-determined time period; and

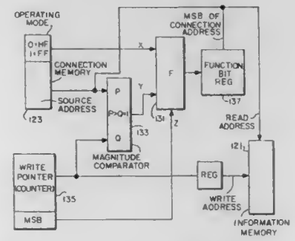
starting said data transmission associated with said transmission request when said random-determined time period has elapsed and said predetermined channel for transmission is available.

5,828,664

INTEGRATED NETWORK SWITCH HAVING MIXED MODE SWITCHING WITH SELECTABLE FULL FRAME/ HALF FRAME SWITCHING

Steven Weir, Petaluma, Calif., assignor to Harris Corporation, Melbourne, Fla.

Continuation of Ser. No. 520,004, Aug. 28, 1995, Pat. No. 5,619,496, which is a continuation of Ser. No. 257,886, Jun. 10, 1994, abandoned. This application Feb. 18, 1997, Ser. No. 802,436
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—375 **2 Claims**



1. An integrated network switch for establishing communication paths among a plurality of peripherals, comprising:

a multi-frame information memory for storing multi-frame information in at least first and second memory cells at memory locations corresponding to source ports;

a connection memory storing for each destination port an information memory source port address;

means for operating the integrated network switch in a half-frame operating mode;

means for operating the integrated network switch in a full-frame operating mode; and

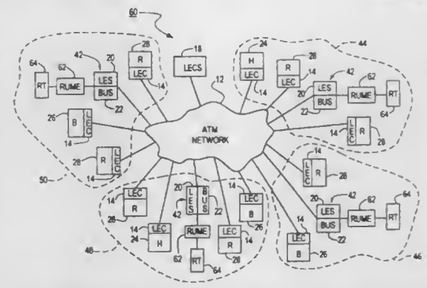
means for detecting connection of each of said peripherals to the integrated network switch and selectively enabling the half-frame operating mode means and the full-frame operating mode means depending on the peripheral connected to the integrated network switch.

5,828,665

APPARATUS AND METHOD FOR SELECTING IMPROVED ROUTING PATHS IN AN EMULATED LAN OVER AN ATM NETWORK

David J. Husak, Windham, N.H., assignor to 3Com Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 641,506, May 1, 1996, Pat. No. 5,754,790. This application Feb. 28, 1997, Ser. No. 807,552
Int. Cl.[6] H04L *12/50*
U.S. Cl. 370—387 **26 Claims**



1. A method for selecting routing paths in an emulated LAN over an ATM network, said method comprising the steps of:

receiving an update message from a first distributed emulated LAN server at a second distributed emulated LAN server, said update message comprising a destination network address and a first integer distance between an origination routing network element and said destination network address, said second distributed emulated LAN server having an associated update message editor which has access to routing information of an associated network routing element, said routing information comprising said destination network address and a second integer distance between said associated network routing element and said destination network address, said first integer distance being measured by a first number of network routing elements located along a first route from said origination network routing element to said destination network address, said second integer distance being measured by a second number of network routing elements located along a second route from said associated network routing element to said destination network address;

comparing said first integer distance with said second integer distance;

if said first number of network routing elements is not equal to said second number of network routing elements, forwarding said update message without modification to LAN emulation clients associated with said second distributed emulated LAN server; and

if said first number of network routing elements is equal to said second number of network routing elements, modifying said update message by increasing the value of said first integer distance.

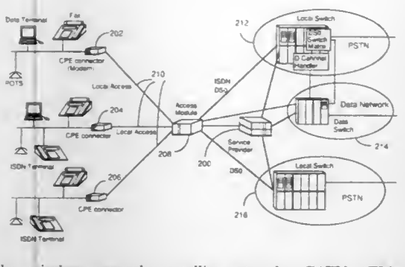
5,828,666

ACCESS TO TELECOMMUNICATIONS NETWORKS IN MULTI-SERVICE ENVIRONMENT

Mihai Focsaneanu, Nepean; Richard Prescott Skillen, Mississauga, and Frederick Caldwell Livermore, Stittsville, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Continuation of Ser. No. 516,269, Aug. 17, 1995, Pat. No: 5,610,910. This application Mar. 6, 1997, Ser. No. 812,834
Int. Cl.[6] H04Q *11/04;* **H04L** *12/28;12/56*
U.S. Cl. 370—389 **6 Claims**

1. A method of interfacing one or more CPEs and communications networks which encompass one or more PSTN, data net-



works, wireless networks, satellite networks, CATV, ATM networks and other communications networks, through local access to form a universal services network comprising steps of:

extracting information content from traffic to determine requested services of said traffic at the local access between the one or more CPEs and the communications networks;

determining one or more appropriate networks among the communications networks or one or more appropriate CPEs, both of which support the requested services, according to the requested services;

routing the traffic directly either to the one or more appropriate networks among said one or more PSTN, data networks, wireless networks, satellite networks, CATV, ATM networks and other communications networks or to the one or more appropriate CPEs to complete interfacing between said appropriate CPEs and appropriate service Providers and/or network resources; and

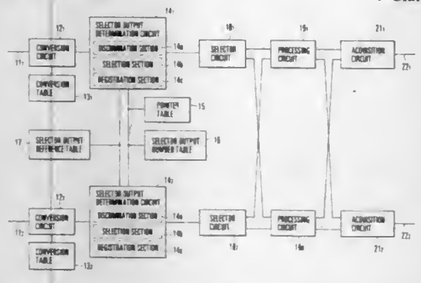
building a local database or remote database.

5,828,667

CELL SELECTION APPARATUS

Tsugio Sugawara, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed May 9, 1996, Ser. No. 645,016
Claims priority, application Japan, May 11, 1995, 7-112754
Int. Cl.[6] H04L *12/56*
U.S. Cl. 370—392 9 Claims



1. A cell selection apparatus comprising:

a plurality of processing circuits for performing predetermined processes for cells to which identifiers for identifying transfer routes in an asynchronous transfer mode communication system are added, not less than one of said processing circuits being provided for each of a plurality of types of processes;

first storage means for storing, in correspondence with each cell identifier, a cell identifier indicating a group to which a cell belongs, and a process identifier indicating a process to be performed for the group;

second storage means for storing, in correspondence with each cell identifier, a circuit identifier indicating a processing circuit for a cell which is designated by a group, and discrimination information indicating whether the circuit identifier is valid;

read means for reading out a corresponding cell identifier and a corresponding process identifier from said first storage means on the basis of an identifier added to each cell;

discrimination means for referring to said second storage means to discriminate on the basis of the discrimination information whether a circuit identifier corresponding to a cell identifier read out by said read means is valid;

selection means for, when said discrimination means discriminates that the circuit identifier is not valid, selecting one of said processing circuits which corresponds to a process type indicated by the process identifier read by said read means;

registration means for registering, in said second storage means, discrimination information indicating that the circuit identifier indicating said processing circuit selected by said selection means is valid; and

switching means for inputting the cell to said processing circuit selected by said selection means, and inputting the cell to said processing circuit indicated by the circuit identifier discriminated as a valid identifier by said discrimination means.

5,828,668

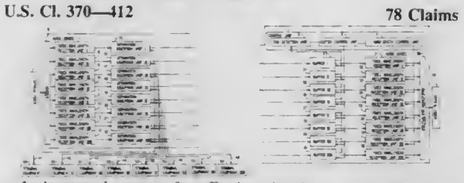
Patent Not Issued For This Number

5,828,669

NETWORK SYSTEM CONNECTING NODE DEVICES WITH PLURAL CHANNELS, NODE DEVICE USED THEREIN, AND TRANSMISSION CONTROL METHOD THEREFOR

Mitsuru Yamamoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 23, 1996, Ser. No. 636,332
Claims priority, application Japan, Apr. 24, 1995, 7-098522; Apr. 9, 1996, 8-086564
Int. Cl.[6] H04J *4/04*
U.S. Cl. 370—412 78 Claims



1. A network system for effecting signal transmission by connecting node devices with at least plural N channels, comprising:

a first node device constituting at least a node device and including:

N fixed-channel reception means for respectively receiving said N channels;

N buffer means for temporarily storing at least signals respectively received by said N fixed-channel reception means, wherein a buffer means of said N buffer means divides said received signals into first signals with designation of a channel for transmission and second signals without designation of a channel for transmission, where the first and second signals are to be transmitted to another node device, and further divides the first signals in respective designate channels;

transmission means for transmitting the first and second signals released from said N buffer means respectively in said N channels;

end detection means for detecting an end of reading of the first and second signals to be transmitted by channels currently capable of transmission;

channel variation control means for controlling said transmission means to vary the channels capable of transmitting released signals from said N buffer means, in response to a detection of the end of reading by said end detection means

such that the released signals from two or more of said N buffer means are not simultaneously supplied to a same channel; and

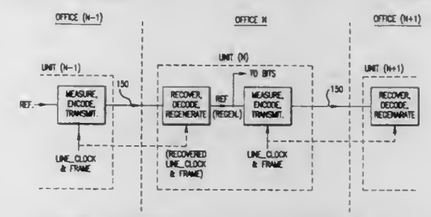
buffer control means for controlling said N buffer means, in synchronization with a variation of the channels capable of transmitting the released signals from said N buffer means, to read the first and second signals based on the variation of the channels.

5,828,670

DISTRIBUTION OF SYNCHRONIZATION IN A SYNCHRONOUS OPTICAL ENVIRONMENT

Madihally Narasimha, and Kishan Shenoi, both of Saratoga, Calif., assignors to Symmetricom, Inc., San Jose, Calif.

Filed Jun. 6, 1995, Ser. No. 467,313
Int. Cl.[6] H04J *3/06*
U.S. Cl. 370—516 33 Claims



1. A method of passing synchronization through a network comprised of a plurality of nodes communicating with each other at a predetermined frame rate, the nodes communicating with each other through frames having predefined starts and with a line clock, the communication occurring by transmitting the frame and the line clock between nodes, the method comprising:

generating at a first node a local timing reference signal at a frequency that is less than the frame rate;

determining with the line clock at the first node the timing difference between a predetermined time of the frame and the local timing reference signal; and

transmitting the timing difference to at least one other node in the network.

5,828,671

METHOD AND APPARATUS FOR DEINTERLEAVING AN INTERLEAVED DATA STREAM

Oscar Gustavo Vela, Pembroke Pines; Kin Chau-Lee, Boynton Beach, and Paul H. Kelley, Boca Raton, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 10, 1996, Ser. No. 633,848
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—2.1 18 Claims

1. A method of deinterleaving an interleaved data stream transmitted as a plurality of data blocks, each data block comprising interleaved data representing N words having M bits in M bit positions, the data block transmitted as a sequence of data groups, each data group including N bits of data from a single bit position of all the N words, the method comprising the steps of:

(a) receiving a first data block of the interleaved data stream;

(b) storing the first data block in a memory in a manner that defines memory locations for each of the N words, thereby deinterleaving the first data block; and

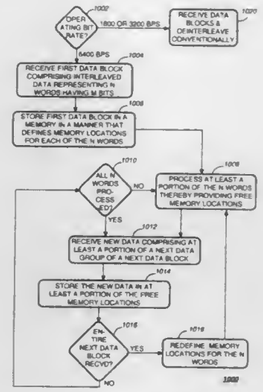
(c) receiving a next data block, comprising the steps of:

(d) processing at least a portion of the N words stored previously in the memory, thereby providing free memory locations, unless all of said N words have been processed;

(e) thereafter receiving new data comprising at least a portion of a next data group of said next data block;

(f) storing the new data in at least a portion of the free memory locations;

(g) repeating steps (d), (e), and (f) until said next data block has been received and stored in entirety; and



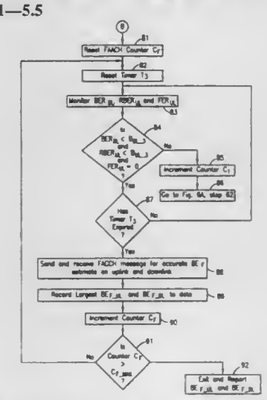
(h) redefining the memory locations for the N words after said next data block has been received and stored in entirety, thereby deinterleaving said next data block, wherein the plurality of data blocks consist of first and second sets, one of the first and second sets consisting of odd numbered data blocks, and another one of the first and second sets consisting of even numbered data blocks, wherein interleaved data of one of the even or the odd numbered data blocks can be read into the memory rowwise and deinterleaved words can be read out columnwise while interleaved data of the other of the even or odd numbered data blocks can be read into the memory columnwise and deinterleaved words can be read out rowwise.

5,828,672

ESTIMATION OF RADIO CHANNEL BIT ERROR RATE IN A DIGITAL RADIO TELECOMMUNICATION NETWORK

Sylvain Labonte, St-Bruno de Montarville, and Eric Turcotte, Verdun, both of Canada, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Filed Apr. 30, 1997, Ser. No. 846,630
Int. Cl.[6] G06F *11/00*
U.S. Cl. 371—5.5 2 Claims



2. A method of determining when a radio telecommunications network should switch between a first grade of service and a second grade of service based upon a highly accurate and reliable estimate of the bit error rate (BER), said method comprising the steps of:

estimating the BER on an uplink and a downlink on a user channel;

determining whether the BER on the uplink and the downlink on the user channel are below a first threshold;

sending and receiving a data message on a Fast Associated Control Channel (FACCH) in response to determining that the BER on the uplink and the downlink on the user channel are below the first threshold;

estimating the BER on an uplink and a downlink on the FACCH channel;

estimating a residual bit error rate (RBER) on an uplink on the FACCH channel;

estimating a frame erasure rate (FER) on the uplink on the FACCH channel;

determining whether the BER on the downlink on the FACCH channel is below a second threshold, whether the RBER on the uplink is below a third threshold, and whether the FER on the uplink is equal to zero; and

switching the radio telecommunications network from said first grade of service to said second grade of service in response to determining that the BER on the downlink on the FACCH channel is below a second threshold, the RBER on the uplink is below a third threshold, and the FER on the uplink is equal to zero.

5,828,673

LOGICAL CHECK APPARATUS AND METHOD FOR SEMICONDUCTOR CIRCUITS AND STORAGE MEDIUM STORING LOGICAL CHECK PROGRAM FOR SEMICONDUCTOR CIRCUITS

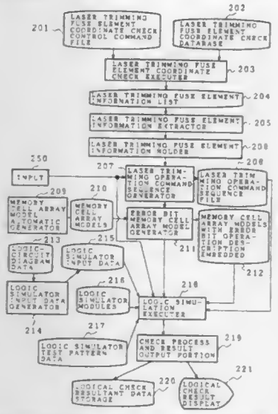
Yukiharu Mikawa; Takahiro Tani, and Tadateru Kamimizo, all of Hyogo, Japan, assignors to Mitsubishi Electric Semiconductor Software Co., Ltd., Hyogo, and Mitsubishi Denki Kaboshiki Kaisha, Tokyo, both of Japan

Filed Dec. 4, 1996, Ser. No. 760,291

Claims priority, application Japan, Jun. 28, 1996, 8-169767

Int. Cl.[6] G11C *29/00*; **G06F** *11/00*; **G06G** *7/48*

U.S. Cl. 371—21.1 **18 Claims**



1. A semiconductor circuit logical check apparatus for performing logical checks of a semiconductor circuit including laser trimming fuse elements and a memory cell array, said semiconductor circuit logical check apparatus comprising:

laser trimming fuse element information extraction means for extracting information about said laser trimming fuse elements from a layout pattern data of said semiconductor circuit and logic-circuit diagram data of said semiconductor circuit;

laser trimming operation command sequence generating means for generating a laser trimming operation command sequence indicating that one or more of said laser trimming fuse elements are broken in said semiconductor circuit on the basis of said laser trimming fuse element information extracted by said laser trimming fuse element information extraction means;

error bit memory cell array generating means for generating, from memory cell array models associated with said memory cell array, error bit memory cell array models representing that an error bit is included in said memory cell array;

logic simulation executing means for executing logic simulation on models of said semiconductor circuit including said error bit memory cell array models on the basis of said laser trimming operation command sequence; and

output means for outputting results of said logic simulation.

5,828,674

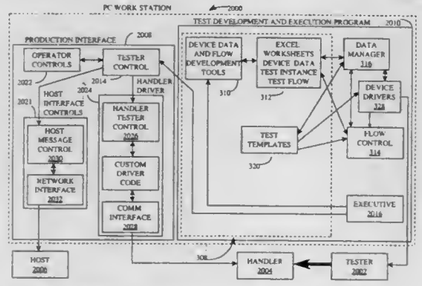
PRODUCTION INTERFACE FOR INTEGRATED CIRCUIT TEST SYSTEM

Daniel C. Proskauer, Newton, Mass., assignor to Teradyne, Inc., Boston, Mass.

Filed Sep. 16, 1997, Ser. No. 931,793

Int. Cl.[6] G06F *11/00*

U.S. Cl. 371—22.1 **23 Claims**



1. A semiconductor test system comprising.

a software control system,

a library of self-contained control objects,

an operator window,

one or more of said self-contained control objects adapted to create a production interface to said software control system, said production interface having 1) a self-contained tester control for providing an application programming interface to said software control system and 2) self-contained operator controls that provide an interface between said operator window and said self-contained tester control,

said self-contained operator controls in said library being "drag and drop" controls adapted to be "dragged and dropped" into said operator window.

5,828,675

VITERBI DECODER CIRCUIT

Franz C. Chen, San Jose, and Roy G. Batruni, Fremont, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

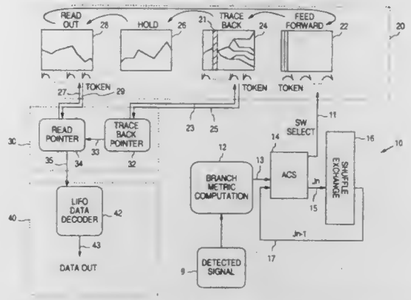
Filed Jun. 6, 1997, Ser. No. 870,831

Int. Cl.[6] H01S *3/10*

U.S. Cl. 371—28 **12 Claims**

1. An apparatus including a Viterbi decoder circuit for decoding an encoded data signal containing Viterbi branch metric information, said Viterbi decoder circuit comprising:

a configurable memory circuit which includes a plurality of portions individually and alternately configured to operate as a respective one of first, second and third memory stages and which is configured to receive an encoded data signal and to receive first and second address signals and in accordance therewith provide first and second data signals, respectively, wherein



said encoded data signal includes a plurality of input data sets,

said first and second address signals represent first and second pluralities of memory addresses, respectively, within said configurable memory circuit,

said first and second data signals contain first and second pluralities of data sets, respectively,

said first memory stage is configured to store each one of a portion of said plurality of input data sets individually in a respective portion thereof,

said second memory stage is configured to provide a portion of a first previously stored portion of said plurality of input data sets from one of said first plurality of memory addresses as one of said first plurality of data sets, and

said third memory stage is configured to provide a portion of a second previously stored portion of said plurality of input data sets from one of said second plurality of memory addresses as one of said second plurality of data sets; and

a data addressing circuit, coupled to said configurable memory circuit, configured to provide said first address signal and in accordance therewith receive said first data signal and in accordance therewith provide said second address signal and in accordance therewith receive and decode said second data signal and in accordance therewith provide an output data signal, wherein each one of said first plurality of memory addresses corresponds dynamically to a respective preceding one of said first plurality of data sets.

5,828,676

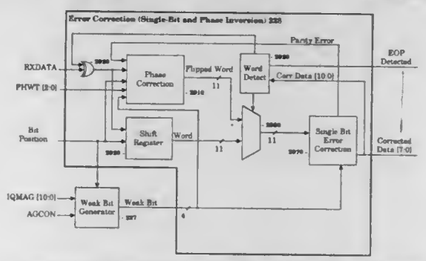
METHOD AND APPARATUS FOR ROBUST COMMUNICATION BASED UPON ANGULAR MODULATION

Amy O. Hurlbut, San Francisco; Philip H. Sutterlin, San Jose, and Walter J. Downey, Los Gatos, all of Calif., assignors to Echelon Corporation, Palo Alto, Calif.

Continuation of Ser. No. 224,820, Apr. 8, 1994, abandoned. This application Jun. 10, 1996, Ser. No. 661,136

Int. Cl.[6] H03M *13/00*; **H04L** *7/00;7/04;27/22*

U.S. Cl. 371—37.01 **89 Claims**



1. A method of communicating binary information, said method comprising the steps of:

encoding said binary information into a data packet having a plurality of data bits, at least one error detection bit, and additional coding bits, said additional coding bits indicating an error if at least one of said additional coding bits is inverted;

transmitting said data packet across a communication channel to a receiver;

detecting at said receiver when phase anomalies occur on said communication channel during said step of transmitting;

decoding said data packet within said receiver to generate recovered binary information;

detecting if a phase related transmission error occurred during said step of transmitting by testing said at least one error detection bit and testing said additional coding bits;

identifying a set of bits in said recovered binary information that are most likely to be in error by determining which data bits were being transmitted when phase anomalies occurred; and

correcting errors detected in recovered binary information by changing the state of said set of bits most likely to be in error.

5,828,677

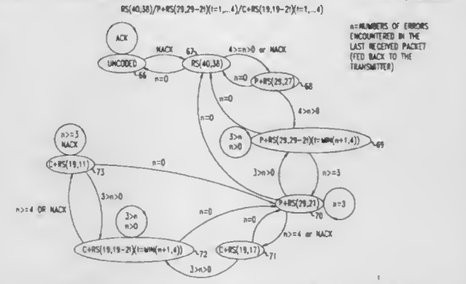
ADAPTIVE HYBRID ARQ CODING SCHEMES FOR SLOW FADING CHANNELS IN MOBILE RADIO SYSTEMS

Zulfiquar Sayeed, Philadelphia, Pa., and Vijitha Weerackody, Watchung, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 20, 1996, Ser. No. 620,053

Int. Cl.[6] H03M *13/00*; **H04L** *1/16*

U.S. Cl. 371—41 **22 Claims**



1. A method of transmitting a signal to a receiver across a wireless communications channel, the method comprising the steps of:

encoding a first portion of the signal with a first code to generate a first encoded signal portion:

transmitting the first encoded signal portion across the channel to the receiver,

receiving acknowledgement data from the receiver, said acknowledgement data comprising information representative of whether the transmitted signal portion was received by the receiver without error:

determining a second code based on the received acknowledgement data:

encoding a second portion of the signal with the second code to generate a second encoded signal portion, and

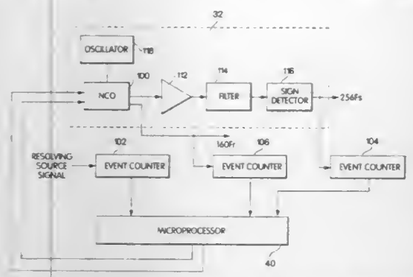
transmitting the second encoded signal portion across the channel to the receiver,

wherein at least one of the first and second codes comprises a combination of a full convolutional code and an error correcting code.

5,828,678
DIGITAL AUDIO RESOLVING APPARATUS AND METHOD

Jeffrey C. Mock, San Francisco, Calif., assignor to Avid Technologies, Inc., Tewksbury, Mass.

Filed Apr. 12, 1996, Ser. No. 635,234
Int. Cl.[6] G06F *11/00*; H03M *13/00*
U.S. Cl. 371—62 **18 Claims**



14. A resolving system having an input to receive an input clock signal having an input clock frequency and a first output that provides an output clock signal having an output clock frequency that is a predetermined rational multiple of the input clock frequency, the resolving system comprising:

a first counter that counts clock pulses of the input clock signal, the first counter having an input coupled to the input of the resolving system to receive the input clock signal and an output that provides a first signal having a first value corresponding to a number of clock pulses of the input signal received by the first counter;

a second counter that counts clock pulses of the first output clock signal, the second counter having an input coupled to the first output of the resolving system to receive the first output clock signal and an output that provides a second signal having a second value corresponding to a number of clock pulses of the first output clock signal;

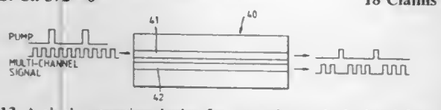
means for comparing a ratio between the second value and the first value with the first predetermined rational multiple to obtain a comparison result; and

means for adjusting the output clock frequency based upon the comparison result.

5,828,679
OPTICAL CLOCK SIGNAL EXTRACTION USING NON-LINEAR OPTICAL MODULATOR

Michael Andreja Fisher, Suffolk, United Kingdom, assignor to British Telecommunications public limited company, London, England

Division of Ser. No. 397,203, Mar. 28, 1995, Pat. No. 5,673,140. This application Jul. 23, 1997, Ser. No. 899,124
Claims priority, application European Pat. Off., Sep. 8, 1992, 92308104
Int. Cl.[6] H01S *3/07*
U.S. Cl. 372—6 **18 Claims**



13. A clock extraction device for extracting a clock signal from an optical data stream, the device comprising:

an optical fibre laser having a resonant cavity which incorporates a non-linear optical modulator,

input means to permit, in use, the optical data stream to be coupled into the resonant cavity for passage through the optical modulator;

the arrangements being such that the laser can, in use, be mode-locked by the data stream, and

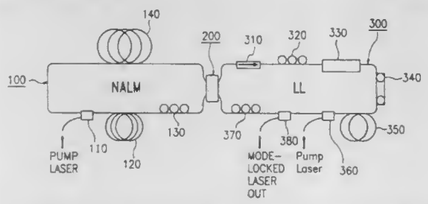
output means to permit pulses produced by the mode-locked laser to be coupled out from the cavity;

wherein the non-linear optical modulator is a semiconductor optical amplifier which is, in use, biased at transparency for the radiation of the optical data stream having a wavelength shorter than a bandgap equivalent wavelength of an active amplifier region.

5,828,680
HYBRID TYPE PASSIVELY AND ACTIVELY MODE-LOCKED LASER SCHEME

Kyong-Hon Kim; Seo-Yeon Park; Hak-Kyu Lee, and Min-Yong Jeon, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommuications Research Institute, Daejeon, Rep. of Korea

Filed Sep. 13, 1996, Ser. No. 712,597
Claims priority, application Rep. of Korea, Oct. 31, 1995, 95-38769
Int. Cl.[6] H01S *3/098;3/10;3/30;3/083*
U.S. Cl. 372—18 **7 Claims**



1. A hybrid type passively and actively mode-locked laser scheme comprising:

a non-linear amplifying loop mirror;

a linear loop;

optical coupling means for connecting said non-linear amplifying loop mirror and said linear loop to form optical paths;

a polarization controller to coordinate a polarization state of optical signals on one of said optical paths within said linear loop;

an optical modulator to adjust an electrical modulating frequency to a level of an integer multiple of a basic resonator frequency;

an optical gain medium added in the linear loop to adjust a gain of optical signals; and

a wavelength dividing optical coupler to couple a laser beam from a pump laser;

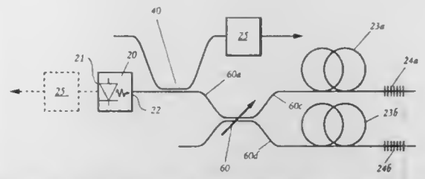
wherein a hybrid type passively and actively mode-locked laser pulse output is achieved.

5,828,681
WAVELENGTH CONTROL OF DATA-MODULATED LASERS AND METHOD USING SAME

Richard Edward Epworth, Herts, Great Britain, assignor to Northern Telecom Limited, Montreal, Canada

PCT No. PCT/GB96/00478, § 371 Date Apr. 22, 1997, § 102(e) Date Apr. 22, 1997, PCT Pub. No. WO96/27928, PCT Pub. Date Sep. 12, 1996
PCT Filed Mar. 4, 1996, Ser. No. 836,182
Claims priority, application United Kingdom, Mar. 6, 1995, 9504432
Int. Cl.[6] H01S *3/10*; H04B *10/04*; G02B *6/34*
U.S. Cl. 372—20 **14 Claims**

1. A method of providing a data modulated signal, which signal comprises an optical carrier amplitude modulated with data, wherein the carrier is generated in an optical cavity incorporating a medium providing optical gain, wherein the optical cavity is defined in part by a spectrally selective reflector having a bandwidth that is not more than 0.1 nm wide, and wherein the length of



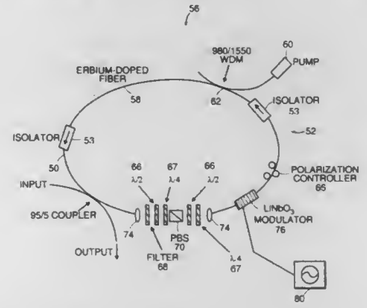
the optical cavity provides a longitudinal mode separation that is sufficiently small compared with the bandwidth of the spectrally selective reflector to provide a carrier for the modulation that is multimode and whose amplitude modulation is small compared with the amplitude modulation imposed by the data modulation.

3. An optical communications transmitter including a laser optically coupled with an external optical modulator, wherein the laser is provided by an optical cavity incorporating a medium providing optical gain, which cavity is defined in part by a spectrally selective reflector, wherein the spectral bandwidth of the reflector is not more than 0.1 nm wide, and the length of the optical cavity provides the cavity with a longitudinal mode separation that is so small compared with the spectral bandwidth of the reflector that, in operation of the laser, a substantial number of longitudinal modes are simultaneously excited.

5,828,682
RATIONAL-HARMONIC APPARATUS AND TECHNIQUE

John D. Moores, Concord, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Jan. 8, 1997, Ser. No. 779,807
Int. Cl.[6] H01S *3/10*
U.S. Cl. 372—26 **12 Claims**



1. A modulated cavity comprising:

a cavity;

a modulation source;

a modulator located with said cavity and in electrical communication with said modulation source

wherein said modulation source overdrives said modulator with a period of modulation T_{mod} substantially equal to:

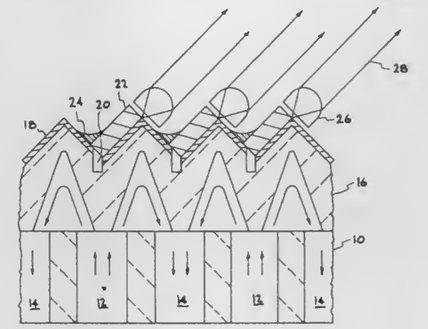
$$T_{roundtrip}\ (n+(p/q))^{-1}$$

wherein n, p, and q are integers and $T_{roundtrip}$ is the period of a signal making one round-trip of the cavity.

5,828,683
HIGH DENSITY, OPTICALLY CORRECTED, MICRO-CHANNEL COOLED, V-GROOVE MONOLITHIC LASER DIODE ARRAY

Barry L. Freitas, Livermore, Calif., assignor to The Regents of the University of California, Oakland, Calif.

Filed Apr. 21, 1997, Ser. No. 845,250
Int. Cl.[6] H01S *3/043*
U.S. Cl. 372—36 **9 Claims**



1. A laser diode array, comprising:

a substrate having an upper surface and a lower surface;

a plurality of v-grooves formed in said upper surface;

a metalization layer formed on said upper surface and within said plurality of v-grooves;

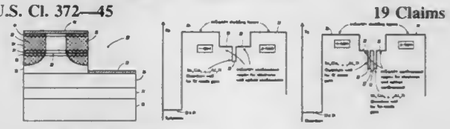
a metalization break formed in each v-groove of said plurality of v-grooves; and

a plurality of laser diode bars, wherein a single laser diode bar of said plurality of laser diode bars is placed within each v-groove of said plurality of v-grooves.

5,828,684
DUAL POLARIZATION QUANTUM WELL LASER IN THE 200 TO 600 NANOMETERS RANGE

Christian Gilbert Van de Walle, Sunnyvale, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 29, 1995, Ser. No. 581,711
Int. Cl.[6] H01S *3/19;3/10*
U.S. Cl. 372—45 **19 Claims**



1. A laser diode comprising:

(a) a substrate having a first lattice constant and a first bandgap,

(b) a semiconductor layer structure deposited over said substrate, said semiconductor later structure having an active layer of a nitride-based III-V compound binary, ternary or quaternary alloy such that said active layer has a second lattice constant different from said first lattice constant and a second bandgap when unstrained, said active layer when deposited over said substrate being tensile strained, and

(c) electrodes for passing current through the active layer to thereby cause TE or TM polarized laser emission in said active layer at a wavelength less than 600 nm.

5,828,685

SEMICONDUCTOR LASER DEVICE AND A METHOD OF GROWING A SEMICONDUCTOR LASER DEVICE

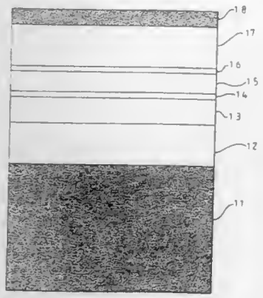
Geoffrey Duggan, Oxfordshire, United Kingdom, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 26, 1996, Ser. No. 773,075

Claims priority, application United Kingdom, Dec. 29, 1995, 9526631

Int. Cl.[6] H01S *3/19*

U.S. Cl. 372—45 9 Claims



1. A semiconductor laser device comprising:

an active region;

a cladding region; and

a carrier blocking layer of the same conductivity type as the cladding region disposed between the active region and the cladding region,

wherein the carrier blocking layer has a greater impurity concentration that the cladding region.

5,828,686

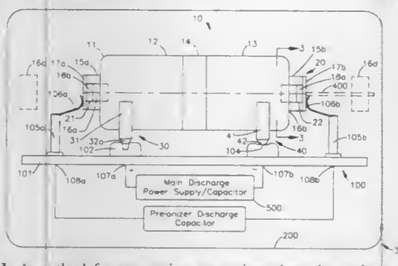
CARTRIDGE EXCIMER LASER SYSTEM

Rudolph W. Frey, and Philip D. Bolen, both of Orlando, Fla., assignors to Autonomous Technologies Inc., Orlando, Fla.

Continuation of Ser. No. 232,754, Apr. 25, 1994, Pat. No. 5,594,753. This application Jan. 14, 1997, Ser. No. 783,501

Int. Cl.[6] H01S *3/22;3/223*

U.S. Cl. 372—57 2 Claims



1. A method for generating an excimer laser beam by using a replacement cartridge, comprising:

(a) providing: (1) a laser cartridge, (2) at least one laser replacement cartridge, (3) a mixture of a halogen and a noble gas associated with said laser cartridge and said replacement laser cartridge, (4) a plurality of preionizing and main discharge electrodes within said laser cartridge and said replacement laser cartridge which have external electrical connections, (5 an assembly for transmitting a laser beam output at each end of said laser cartridge and said replacement laser cartridge, (6) and a gas port on an exterior portion of said laser cartridge and said replacement laser cartridge:

(b) providing a laser base having a compartment for receiving said laser cartridge;

(c) placing said laser cartridge upon a receptacle within said receiving compartment of said laser base in a manner such that said laser cartridge is properly aligned with a plurality of external electrical connections located on said receptacle;

(d) applying an electric charge from a power supply to said preionizing electrodes within said laser cartridge;

(e) applying an electric charge from said power supply to said main discharge electrodes within said laser cartridge;

(f) utilizing a laser beam output emerging from said laser cartridge in a desired application;

(g) removing said laser cartridge when it is spent;

(h) replacing said laser cartridge with said replacement laser cartridge within said receiving compartment of said laser base in a manner such that said replacement laser cartridge is properly aligned with a plurality of external electrical connections located on said receptacle; and

(i) repeating steps (d)–(f) above.

5,828,687

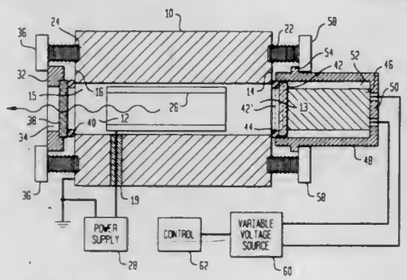
VARIABLE DIMENSION OPTICAL CHAMBER AND LASER INCORPORATING THE SAME

Michael J. Colgan, Flanders, N.J., assignor to Alimenterics Inc., Morris Plains, N.J.

Filed Dec. 24, 1996, Ser. No. 773,026

Int. Cl.[6] H01S *3/08*

U.S. Cl. 372—92 14 Claims



1. An optical chamber comprising:

(a) a hollow container having a wall structure enclosing an interior space, said wall structure defining a hole communicating with said interior space;

(b) an optical structure including a first optical element, said optical structure being movably mounted to said wall structure at said hole;

(c) a resilient sealing element mechanically connecting said wall structure and said optical structure so that said optical structure is movable relative to said wall structure and so that said resilient sealing element deforms upon such movement, said resilient sealing element and said optical structure cooperatively sealing said hole; and

(d) a selectively operable actuator for biasing said optical structure in a first direction relative to said wall structure.

5,828,688

METHOD AND APPARATUS FOR LINEWIDTH REDUCTION IN DISTRIBUTED FEEDBACK OR DISTRIBUTED BRAGG REFLECTOR SEMICONDUCTOR LASERS USING VERTICAL EMISSION

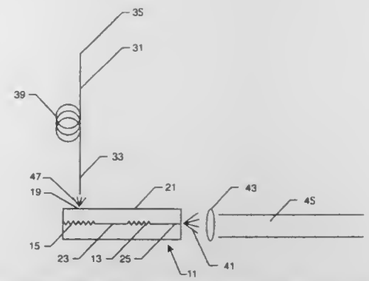
Anthony L. Cook, Hampton, and Herbert D. Hendricks, Poquoson, both of Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Oct. 26, 1995, Ser. No. 549,347

Int. Cl.[6] H01S *3/08;3/13;3/04*

U.S. Cl. 372—96 15 Claims

1. A linewidth-reducing semiconductor laser system comprising:



a distributed feedback semiconductor laser having a front emission of the laser output beam, a second order grating and vertical emission, and having a metallized contact, said metallized contact having at least one window through which said semiconductor laser vertically emits light;

an external cavity means for coupling said vertically emitted light back into said semiconductor laser;

a dc current source for supplying current to said metallized contact of said semiconductor laser; and

a heat sink operatively connected to said semiconductor laser to dissipate heat produced by said semiconductor laser.

5,828,689

ETALON ARRANGEMENT

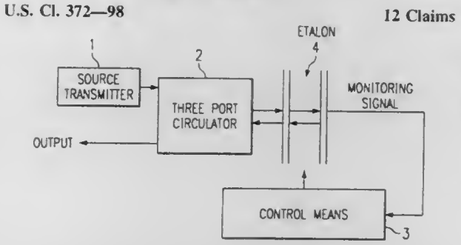
Richard Edward Epworth, Sawbridgeworth, Great Britain, assignor to Northern Telecom Limited, Montreal Quebec, Canada

Filed Apr. 30, 1997, Ser. No. 848,337

Claims priority, application United Kingdom, Jul. 20, 1996, 9615302

Int. Cl.[6] H01S *3/08*

U.S. Cl. 372—98 12 Claims



1. A controller for controlling a wavelength response of an etalon arrangement that receives an optical signal, the arrangement comprising a pair of reflecting surfaces arranged substantially parallel to each other, one of the pair of reflecting surfaces being slightly transparent for transmitting a monitoring signal, the controller comprising:

a derivative generator, coupled to the monitoring signal, for generating a first order and a second order derivative of the monitoring signal; and

an offset signal generator, coupled to the derivative generator and the etalon arrangement, for generating an offset signal from the first order and second order derivatives, the offset signal adjusting the wavelength response of the etalon arrangement.

5,828,690

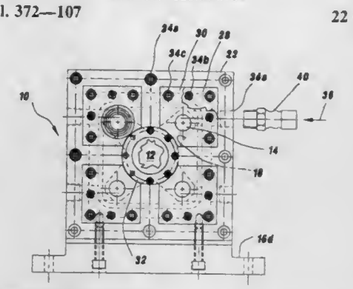
UNITARY BODY LASER HEAD

Josef Robert Unternahrer, Niskayuna, and John Leo August, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 18, 1995, Ser. No. 574,015

Int. Cl.[6] H01S *3/04*

U.S. Cl. 372—107 22 Claims



1. A laser head comprising:

a body having first and second opposite axial ends, and a bore extending axially between for defining a reflector;

said body being a unitary member circumferentially around said reflector;

said reflector including a center cavity for coaxially receiving a laser rod, and a plurality of lateral cavities disposed parallel to and extending radially outwardly from said center cavity for receiving lamps for optically pumping said laser rod to produce a laser beam therefrom, wherein the center cavity, adjacent to the laser rod, is in direct flow communication within the reflector, with the plurality of lateral cavities; and

a pair of first endcaps for fluidly sealing the reflector.

5,828,691

Patent Not Issued For This Number

5,828,692

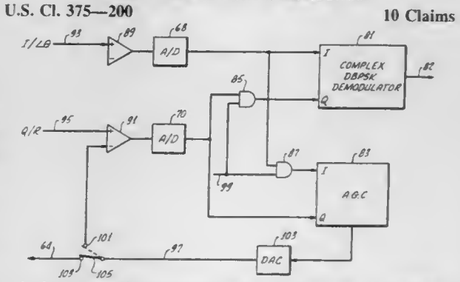
BASEBAND DEMODULATOR FOR POLAR OR RECTANGULAR MODULATED SIGNAL IN A CORDLESS SPREAD SPECTRUM TELEPHONE

John S. Walley, Lake Forest, Calif., assignor to Rockwell International Corporation, Newport Beach, Calif.

Filed Dec. 6, 1995, Ser. No. 568,045

Int. Cl.[6] H04B *1/69;1/16;* H04L *27/00*

U.S. Cl. 375—200 10 Claims



1. In a spread spectrum communication link, a baseband demodulator connected to receive in-phase and quadrature baseband signals and amplitude and phase angle baseband signals, the baseband demodulator comprising:

a digital AGC logic circuit having an output connected to a DAC;

means for connecting the output of the DAC to a differential Q input of the baseband demodulator when amplitude and phase angle signals are being received;

means for connecting the amplitude components of a received signal to a differential Q input of the baseband demodulator; and

means for connecting the phase angle components of the received signal to the differential I input of a baseband demodulator.

5,828,693

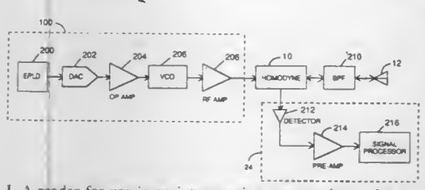
SPREAD SPECTRUM FREQUENCY HOPPING READER SYSTEM

Wesley M. Mays; Aaron J. Kam Siu, and Mike D. Fontanarosa, all of Albuquerque, N. Mex., assignors to Amtech Corporation, Dallas, Tex.

Filed Mar. 21, 1996, Ser. No. 621,724

Int. Cl.[6] H04B *1/713*

U.S. Cl. 375—202 **20 Claims**



1. A reader for use in an interrogation system, the reader generating a radio frequency signal to be returned by an electronic tag when the tag enters a predefined envelope region associated with the reader, the reader comprising:

a radio frequency source outputting a radio frequency signal at one of a plurality of frequencies within a frequency range;

means for hopping the radio frequency signal according to a first sequence among the plurality of frequencies in the frequency range;

a detector for detecting destructive interference in a return signal from an electronic tag located within an envelope region associated with the reader; and

a controller operating to vary the hopping upon the detection of destructive interference in the return signal.

5,828,694

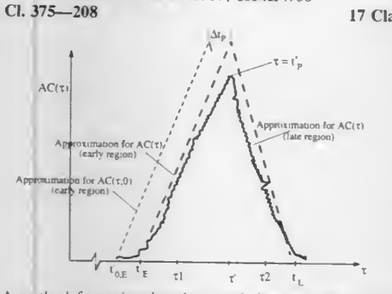
DETERMINATION OF MULTIPATH TRACKING ERROR

John F. Schipper, Palo Alto, Calif., assignor to Trimble Navigation Limited, Sunnyvale, Calif.

Filed Jul. 1, 1996, Ser. No. 672,977

Int. Cl.[6] H04B *1/707;* **H04L** *7/00*

U.S. Cl. 375—208 **17 Claims**



1. A method for estimating the correlation tracking error for a received composite signal that includes a distortion-free reference signal, the method comprising the steps of:

receiving an incoming signal s(t) that includes a known, distortion-free, digital reference signal $S_d(t)$ having a selected bit value interval of Δt_{chip}, and that may include at least one signal that distorts the reference signal;

forming a measured correlation function AC(τ) between the incoming signal s(t) and the known signal $S_d(t+\tau)$, where τ is a selected time shift value of the reference signal relative to the incoming signal;

selecting a first time shift value τ=τ1 for which there exists at least a second time shift value τ'>τ1 satisfying AC(τ')>AC(τ1);

approximating the measured correlation function AC(τ) by a function f(τ) that satisfies f(τ)=0 at a determinable value τ=t_E;

approximating a reference correlation function AC(τ;0) for the distortion-free signal for time shift values τ<τ' by the relation AC(τ;0)≈a+bτ, where b is a selected slope value and a is a selected number; and

estimating a tracking error Δt_p for the incoming signal s(t) from the parameters a, b, τ1, τ' and a knowledge of the function f(τ).

5,828,695

QAM SYSTEM IN WHICH THE CONSTELLATION IS MODIFIED IN ACCORDANCE WITH CHANNEL QUALITY

William Timothy Webb, Southampton, England, assignor to British Telecommunications public Limited company, London, England

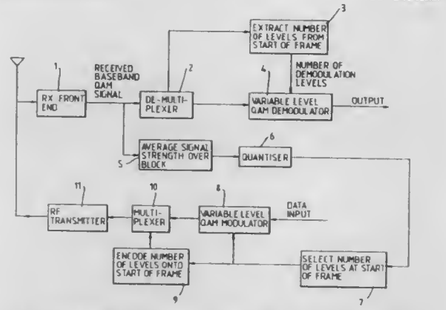
PCT No. PCT/GB92/00988, § 371 Date Feb. 18, 1994, § 102(e) Date Feb. 18, 1994, PCT Pub. No. WO92/22162, PCT Pub. Date Dec. 10, 1992

PCT Filed Jun. 2, 1992, Ser. No. 162,016

Claims priority, application United Kingdom, Jun. 3, 1991, 9111856; Jul. 5, 1991, 9114556

Int. Cl.[6] H04B *1/38;1/40*

U.S. Cl. 375—219 **11 Claims**



1. A radio system comprising a pair of stations at least one of which has a radio transceiver having;

a radio receiver for receiving signals from the other station;

means for assessing a quality of the received radio signals;

means for selecting a transmission modulation state on the basis of the assessment of the quality of the received signals;

a radio transmitter for transmitting signals to the other station using a modulation scheme having a plurality of modulation states;

means for adjusting the transmitting state of the radio transmitter to be the selected modulation state; and

signalling means for including in the signals to be transmitted to the other station an indication of the selected modulation state.

5,828,696

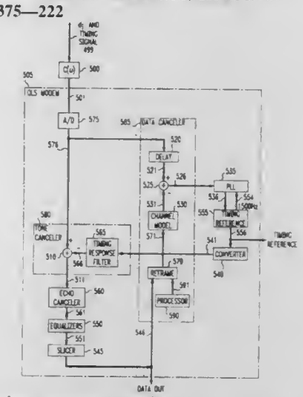
TIMING RECOVERY IN A NETWORK-SYNCHRONIZED MODEM

Ehud Alexander Gelblum, New York, N.Y., and James Emery Mazo, Fair Haven, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Mar. 30, 1995, Ser. No. 413,678

Int. Cl.[6] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—222 **8 Claims**



1. A modem apparatus comprising:

means for receiving a pulsed signal that includes a superimposed timing signal; and

means responsive to the received superimposed timing signal for synchronizing a clock frequency of the modem to a sampling clock of a telecommunications network;

wherein the timing signal is a plurality of tones.

5,828,697

MODEM HAVING EXTERNAL RESET CIRCUIT

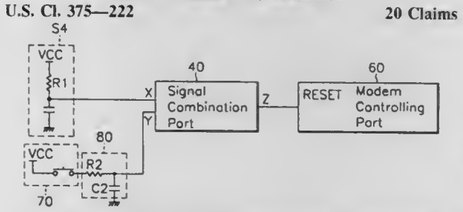
Seong-Kee Shin, Kyungki-do, Rep. of Korea, assignor to Sam-Sung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 26, 1996, Ser. No. 757,092

Claims priority, application Rep. of Korea, Nov. 28, 1995, 44289/1995

Int. Cl.[6] H04B *1/38;* **H04L** *5/16*

U.S. Cl. 375—222 **20 Claims**



1. An external reset circuit for a modem in a computer system, comprising:

an external reset switch provided on the computer system accessible to a user and operable to generate a manual reset signal in response to the user's manipulation of said external reset switch;

a signal stability circuit connected to said external reset switch, for stabilizing said manual reset signal and preventing occurrence of a sudden surge of voltage when said external reset switch is turned on and turned off;

a signal combination circuit having a first input terminal coupled to receive occurrence of said manual reset signal via said signal stability circuit and a second input terminal coupled to receive occurrence of a computer reset signal generated from the computer system, for logically combining occurrence of said manual reset signal and said computer reset signal to generate a modem reset signal; and

a modem control circuit including a modem having a reset terminal connected to said signal combination circuit, for resetting operation of said modem in response to reception of said modem reset signal.

5,828,698

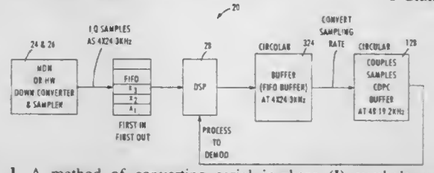
DATA FLOW MANAGEMENT METHOD FOR CDPD DEMODULATOR OPERATING WITHOUT CDPD CLOCK

In-Kyung Kim, N. Potomac, Md., assignor to Hughes Electronics, Los Angeles, Calif.

Filed Feb. 28, 1995, Ser. No. 397,664

Int. Cl.[6] H04L *25/36*

U.S. Cl. 375—223 **1 Claim**



1. A method of converting serial in-phase (I) symbols and quadrature-phase (Q) symbols at a first sampling rate to time-aligned IQ pairs at a second sampling rate, the steps comprising:

generating a serial stream of alternating I symbols and Q symbols at said first sampling rate;

storing said serial stream of I and Q symbols in a buffer;

translating said serial stream of alternating I and Q symbols into time-aligned IQ pairs at said second sampling rate, said translating step further comprising the substeps of:

determining a first serial I symbol;

determining a second serial I symbol

determining an I component of said IQ pair at said second sampling rate by interpolating between said first serial I symbol and said second serial I symbol;

determining a first serial Q symbol;

determining a second serial Q symbol; and

determining a Q component of said IQ pair at said second sampling rate by interpolating between said first serial Q symbol and said second serial Q symbol;

said I component being time-aligned with said Q component to form said time-aligned IQ pair at said second sampling rate; and

reading said time-aligned IQ pairs into a digital signal processor for demodulation.

5,828,699

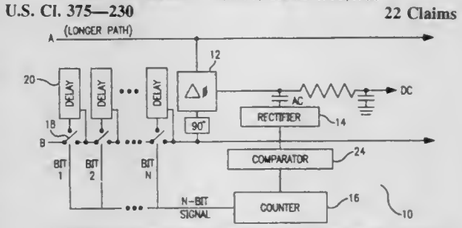
AUTOMATIC DIFFERENTIAL ABSOLUTE TIME DELAY EQUALIZER

James J. Heinemann, Los Altos, Calif., assignor to Harris Corporation, Melbourne, Fla.

Filed Jan. 30, 1997, Ser. No. 792,426

Int. Cl.[6] H03H *7/30;5/00;* **H04B** *1/10;1/06*

U.S. Cl. 375—230 **22 Claims**



17. A differential time delay equalizer for reducing an electrical path length difference between two electromagnetic signal paths comprising:

a phase detector for detecting a phase/time delay difference between signals in two electromagnetic signal paths;

a rectifier for converting an AC component of the detected phase/time delay difference to a rectified AC signal whose magnitude corresponds to a time delay difference that results in a phase difference of 180° or more;

an up/down counter for converting the rectified AC signal to a multi-bit digital signal corresponding to the magnitude of the time delay difference; and

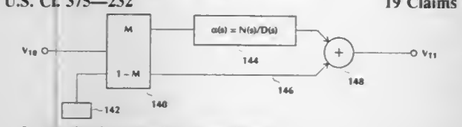
plural delay circuits, each for inserting a time delay into one of the two electromagnetic signal paths so as to reduce the electrical path length difference, each of said delay circuits having a corresponding switch operated by a different one of the bits in the multi-bit digital signal.

5,828,700

ADAPTIVE EQUALIZER CIRCUIT

Thomas H. Korn, San Jose, Calif., assignor to Micro Linear Corporation, San Jose, Calif.

Filed Aug. 5, 1993, Ser. No. 102,695
Int. Cl.[6] H03H *7/30;7/40*
U.S. Cl. 375—232 **19 Claims**



5. An adaptive equalizer comprising:

a. means for receiving an input signal;

b. means for variable splitting the input signal over a continuous range of signal portions into a first partial signal and a second partial signal;

c. means for adjusting the first partial signal according to a predetermined first function for forming a reconstructed first partial signal;

d. means for adjusting the second partial signal according to a predetermined second function for forming a reconstructed second partial signal; and

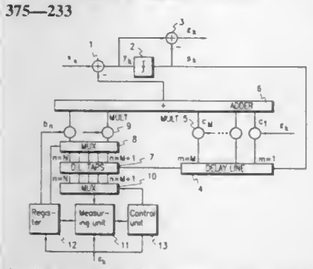
e. means for summing the reconstructed first partial signal and the second reconstructed partial signal for forming a reconstructed output signal.

5,828,701

METHOD AND CIRCUIT ARRANGEMENT FOR COMPENSATING FOR DELAYED COMPONENTS IN TRANSMISSION SIGNAL

Jukka Henriksson, Espoo, Finland, assignor to Nokia Technology GmbH, Pforzheim, Germany

Filed Apr. 22, 1996, Ser. No. 636,056
Claims priority, application Finland, Apr. 24, 1995, 951936
Int. Cl.[6] H03H *7/30;7/40*
U.S. Cl. 375—233 **21 Claims**



12. A circuit arrangement for compensating for delayed components in a received signal, including

a decision feedback equalizer which has, in a closed signal loop, connected in succession,

a decision circuit (**2**) for making a decision for an equalized signal sample (y_k),

a delay line (**4,7**) with taps (1–n),

at least one multiplier unit (**5,9**) for multiplying a respective signal from each tap by a respective weighting coefficient (b_n, c_m), and

at least one adder (**1,6**) to subtract equalization signals, obtained from the multiplier units, from the current signal sample before input to the decision circuit (**2**),

further comprising

a first selector (**8**) coupled to said delay line (**7**) for selecting at least one tap (n) of the delay line (**7**) to be connected to said at least one multiplier unit (**9**).

5,828,702

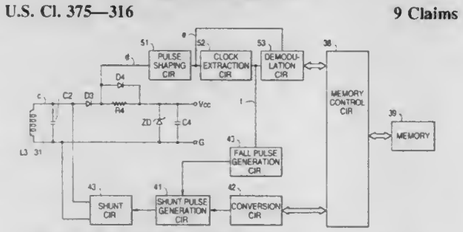
Patent Not Issued For This Number

5,828,703

DATA CARRIER CAPABLE OF INCREASING DATA TRANSMISSION RATE

Yoshimi Kanda, Kyoto, Japan, assignor to Omron Corporation, Kyoto, Japan

Filed Mar. 15, 1996, Ser. No. 616,271
Claims priority, application Japan, Mar. 15, 1995, 7-084917
Int. Cl.[6] H04L *27/06*
U.S. Cl. 375—316 **9 Claims**



2. A demodulation device comprising:

an input circuit coupled to receive a reference voltage and an input signal, the input circuit configured to provide an output signal in which the input signal is rectified to a constant voltage corresponding to the reference voltage when a voltage level of the input signal is above the reference voltage, and in which the input signal is not rectified when the voltage level of the input signal is below the reference voltage;

a pulse shaping circuit configured to receive the output signal of the input circuit and to shape the output signal so as to output a shaped signal as a result thereof;

a clock extraction circuit configured to extract a clock signal based on the shaped signal output by the pulse shaping circuit; and

a demodulation circuit configured to demodulate a transmitted signal based on the shaped signal and the clock signal.

5,828,704

RADIO SELECTIVE CALLING RECEIVER

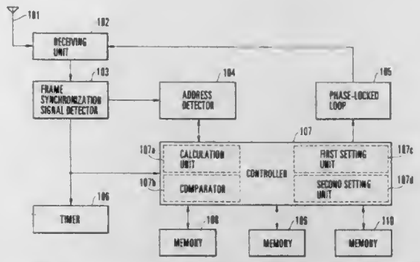
Hiroyasu Kuramatsu, Shizuoka, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Apr. 14, 1997, Ser. No. 834,161
Claims priority, application Japan, Apr. 12, 1996, 8-091447
Int. Cl.[6] H03K *9/00;* **H04L** *7/00;* **H04B** *1/16*
U.S. Cl. 375—316 **8 Claims**

1. A radio selective calling receiver comprising:

receiving means for extracting a digital signal from a radio signal received through an antenna;

frame synchronization signal detecting means for frame-synchronizing the digital signal output from said receiving



means and outputting a state signal representing a frame synchronization state as one of a pull-in state and a pull-out state;

timer means for resetting a timer value to start a timer operation when the state signal from said synchronization signal detecting means represents a change from the pull-in state to the pull-out state, and stops the timer operation to output a timer value when the state signal from said synchronization signal detecting means represents a change from the pull-out state to the pull-in state;

first storage means for sequentially storing a plurality of timer values from said timer means;

second storage means for storing a reference value calculated on the basis of an average value of the timer values stored in said first storage means;

third storage means for storing in advance data necessary for said radio selective calling receiver;

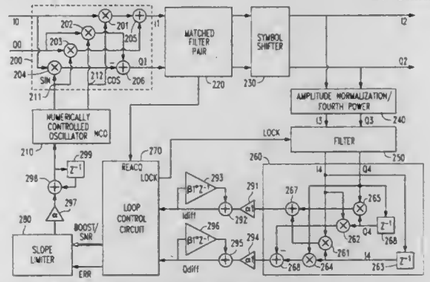
control means for comparing a timer value of said timer means under operation with the reference value stored in said second storage means and resetting receiver data using the data stored in said third storage means when a comparison result represents a coincidence.

5,828,705

CARRIER TRACKING TECHNIQUE AND APPARATUS HAVING AUTOMATIC FLYWHEEL/TRACKING/ REACQUISITION CONTROL AND EXTENDED SIGNAL TO NOISE RATIO

Brian W. Kroeger, 12813 Amberwoods Way, Sykesville, Md. 21784, and Jeffrey S. Baird, 10882 Olde Woods Way, Columbia, Md. 21044

Filed Feb. 1, 1996, Ser. No. 593,154
Int. Cl.[6] H04L *27/14;27/16;27/22*
U.S. Cl. 375—326 **27 Claims**



1. A carrier tracking loop comprising:

mixing means for mixing a received signal with a local oscillator signal to translate the received signal to a near baseband signal;

symbol synchronization means, coupled to said mixing means, for sampling the near baseband signal at an optimum symbol timing and outputting symbol samples;

normalization means, coupled to said symbol synchronization means, for normalizing an amplitude of the symbol samples and removing phase modulation of the symbol samples to output normalized symbol samples;

filter means, coupled to said normalization means, for selectively increasing the signal to noise ratio of the normalized symbol samples in accordance with a lock signal;

frequency discriminating means, coupled to said filter means, for estimating a frequency offset between successive filtered symbol samples and outputting an error signal indicative thereof;

loop control means, coupled to said frequency discriminating means and an externally provided reacquisition initiation signal, for a) determining a signal to noise ratio of the filtered symbol samples in accordance with the error signal and b) generating the lock signal and adjusting the gain of the carrier tracking loop in accordance with the determined signal to noise ratio and the reacquisition initiation signal; and

oscillator means, operatively coupled to said loop control means, for generating the local oscillator signal in accordance with the gain adjusted error signal.

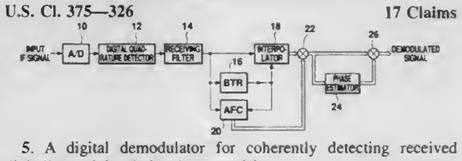
179-298 OG-98-27 - QL3

5,828,706

DIGITAL DEMODULATOR

Fumio Ishizu, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1996, Ser. No. 677,881
Claims priority, application Japan, Sep. 18, 1995, 7-238440
Int. Cl.[6] H04L *27/14;27/16;27/22*
U.S. Cl. 375—326 **17 Claims**



5. A digital demodulator for coherently detecting received digitally-modulated signals, comprising:

(a) a quasi-coherent detector for quasi-coherently detecting each received signal on the basis of a reference signal and outputting a detected sample signal at each sampling timing;

(b) a decision timing generator for generating decision timing for the received signal on the basis of the detected sample signal;

(c) an interpolator for interpolating the detected sample signal on the basis of information concerning the decision timing, and generating a decision timing signal;

(d) a frequency deviation estimator for estimating a frequency deviation between a carrier of the received signal and the reference signal based on the detected sample signal received from the quasi-coherent detector, and generating a first frequency deviation correcting signal for each decision timing received from the decision timing generator and a second frequency deviation correcting signal for each sampling timing, on the basis of the estimated frequency deviation;

(e) a first frequency deviation corrector for correcting the decision timing signal on the basis of the first frequency deviation correcting signal;

(f) a second frequency deviation corrector for correcting the detected sample signal on the basis of the second frequency deviation correcting signal;

(g) a phase estimator for estimating an initial phase component of the detected sample signal on the basis of an output signal of the second frequency deviation corrector, and generating a first phase correcting signal for the sampling timing on the basis of the initial phase component;

(h) a correcting signal modifier for modifying the first phase correcting signal on the basis of the decision timing and the first frequency deviation correcting signal, and generating a second phase correcting signal for the decision timing; and

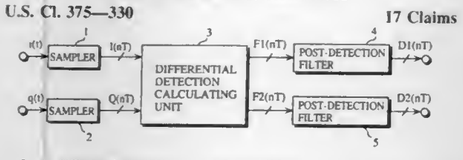
(i) a phase corrector for correcting the output signal of the first frequency deviation corrector on the basis of the second phase correcting signal.

5,828,707

DIFFERENTIAL DETECTING APPARATUS FOR DETECTING PHASE DIFFERENCE OF PHASE-MODULATED SIGNAL

Yoshio Urabe, Ibaraki; Hitoshi Takai, Osaka-fu, and Hidetoshi Yamasaki, Amagasaki, all of Japan, assignors to Matsushita Electric Ind., Co., Ltd., Osaka-fu, Japan

Filed Oct. 21, 1996, Ser. No. 731,830
Claims priority, application Japan, Oct. 24, 1995, 7-275340
Int. Cl.[6] H03D 3/22; H04L 27/22
U.S. Cl. 375—330 17 Claims



1. A differential detecting apparatus for generating a demodulated baseband signal of a phase-modulated signal from an inphase baseband signal and a quadrature-phase baseband signal which are obtained by performing a quadrature detection on the phase-modulated signal, wherein the demodulated baseband signal represents a phase difference between two symbols of the phase-modulated signal with certain symbol times in between, wherein a symbol time corresponds to a symbol which is a unit piece of information of the phase-modulated signal, the differential detecting apparatus comprising:

a first sampler for sampling and digitizing the inphase baseband signal at intervals of a sampling cycle shorter than one symbol time;

a second sampler for sampling and digitizing the quadrature-phase baseband signal at intervals of a sampling cycle shorter than one symbol time, wherein the first sampler and the second sampler synchronize with each other in operation;

differential detection calculating means including

a cosine component calculating unit for alternately calculating and outputting, as first detection data, first inphase data multiplied by second inphase data and first quadrature-phase data multiplied by second quadrature-phase data at intervals of the sampling cycle, wherein the first inphase data and the second inphase data are both output from the first sampler and the first inphase data is output earlier than the second inphase data by the certain symbol times, and wherein the first quadrature-phase data and the second quadrature-phase data are both output from the second sampler and the first quadrature-phase data is output earlier than the second quadrature-phase data by the certain symbol times, and

a sine component calculating unit for alternatively calculating and outputting, as second detection data, the first inphase data multiplied by the second quadrature-phase data and the first quadrature-phase data multiplied by the second inphase data at intervals of the sampling cycle;

a first post-detection filter for generating a first component by performing digital signal processing on the first detection data using the following formula of transfer function H1(z)

$$H1(z) = \alpha(1 + 2z^{-1} + z^{-2}) * \beta \sum_{i=0}^{k-1} z^{-i}$$

where α and β are constants, and i and k integers; and

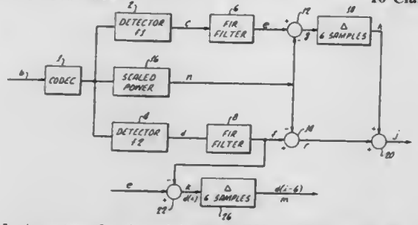
a second post-detection filter for generating a second component by performing the digital signal processing on the second detection data using the formula of transfer function H1(z), wherein the first component and the second component make up the demodulated baseband signal.

5,828,708

CID DEMODULATOR FOR DCT

Ganning Yang, Irvine; Stephen C. Muller, San Diego, and Virginia M. Chan, Fountain Valley, all of Calif., assignors to Rockwell International Corporation, Newport Beach, Calif.

Filed Dec. 7, 1995, Ser. No. 569,489
Int. Cl.[6] H03D 3/00; H04L 27/22
U.S. Cl. 375—334 10 Claims



1. A system for demodulating a FSK digital signal, and for establishing the bit timing of a plurality of data bits in the digital FSK signal that are transmitted at a digital signal bit rate, the system comprising:

means for sampling the FSK digital signal and for outputting signal samples of the FSK digital signal, the sampling means having a sampling rate that is higher than the digital signal bit rate and which provides a non-integer number of samples per data bit which makes the bit timing of the data bits vary in time and with uncertainty relative to the sampling rate;

first and second frequency detectors that receive the signal samples and detect the frequency of the FSK digital signal, said first frequency detector producing an output signal whenever the FSK digital signal is detected to have a first frequency and said second frequency detector producing an output signal whenever the FSK digital signal is detected to have a second frequency;

first and second low pass filters each having an input connected to receive the output signal produced by a respective frequency detector and an output for providing a smoothed version of the output signal;

a first delay line means for delaying the output signal of said first filter by a whole number "n" of sample periods and for outputting a delayed signal;

signal combining means for combining the delayed signal from said first delay line means with the output of said second filter for providing a correlation threshold signal;

signal combining means connected to the outputs of said first and second filters for providing a difference signal d(i)

second delay means for receiving the difference signal d(i) and providing a delayed difference signal d(i−n);

means for establishing an initial bit time of an initial data bit of the FSK digital signal based on the correlation signal, the difference signal d(i), and the delayed difference signal d(i−n); and

means for establishing successive bit times of a limited number of successive data bits of the digital FSK signal based on the initial bit time.

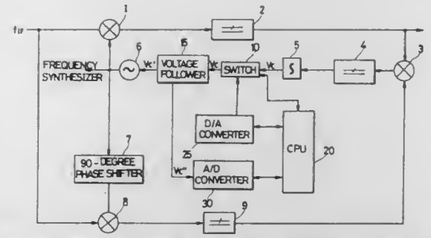
5,828,709

APPARATUS AND METHOD FOR IMPROVING STABILITY OF TRANSMITTING FREQUENCY BY USING COSTAS LOOP SECTION IN COMMUNICATION SYSTEM OF HALF DUPLEX TRANSMITTING METHOD

Jin Seok Lee, Kyoungki-do, Rep. of Korea, assignor to Hyundi Electronics Industries Co., Ltd., Rep. of Korea

Filed Sep. 8, 1995, Ser. No. 525,092
Claims priority, application Rep. of Korea, Dec. 30, 1994, 1994-39869
Int. Cl.[6] H04L 27/06
U.S. Cl. 375—344 3 Claims

1. In a system which provides half duplex communication, an apparatus for improving the stability of a transmitting frequency by using a costas loop, said apparatus being provided between an integrator and a temperature compensating voltage control oscillator and comprising:



a switch for selecting one signal from two signals input from said integrator and a D/A converter;

an A/D converter for receiving output analogue signals of said switch through a voltage follower to convert said output analogue signals into digital signals, said voltage follower eliminating mutual influences between said temperature compensating voltage control oscillator and said A/D converter and adjusting voltages input into respective terminals to a substantially same level;

a central processing unit for continuously storing an output of said A/D converter, and for controlling said A/D converter, said D/A converter, and said switch; and

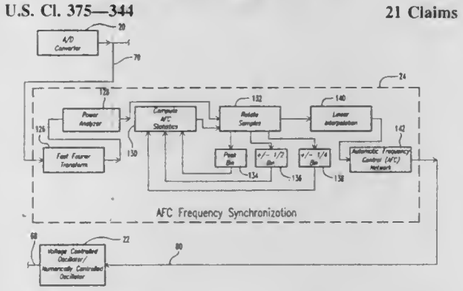
said D/A converter reading the output values of said central processing unit to convert said output values into analogue values during a data retransmission.

5,828,710

AFC FREQUENCY SYNCHRONIZATION NETWORK

Terrance Ralph Beale, Kokomo, Ind., assignor to Delco Electronics Corporation, Kokomo, Ind.

Filed Dec. 11, 1995, Ser. No. 570,213
Int. Cl.[6] H04L 27/06
U.S. Cl. 375—344 21 Claims



16. In combination:

a frame of digital information defined by a number of sample timing synchronization symbols followed by multiple adjacent data carriers transmitted simultaneously over a predefined frequency range, wherein each of the multiple data carriers is modulated over time; and

an automatic frequency control (AFC) frequency synchronization symbol positioned in the frame of digital information adjacent the sample timing synchronization symbols, the AFC frequency symbol comprising:

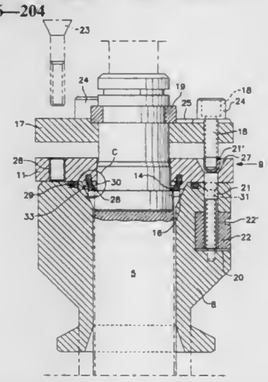
a number of discrete frequency bins each corresponding to a predetermined one of the multiple adjacent carriers and distributed throughout the predefined frequency range, each frequency bin having an independent energy associated therewith, wherein the number of discrete frequency bins includes a peak frequency bin having greatest energy, the peak frequency bin including a discrete frequency at which the peak frequency bin has greatest energy, the discrete frequency defining a transmission frequency of the frame of digital information.

5,828,711

SEALING DEVICE FOR AN INSTRUMENTATION COLUMN

Jacques Malmasson, Evry, France, assignor to Framatome, Courbevoie, and Atea, Société Atlantique de Techniques Avancees, Carquefou, both of France

PCT No. PCT/FR95/00243, § 371 Date Sep. 30, 1996, § 102(e) Date Sep. 30, 1996, PCT Pub. No. WO95/27287, PCT Pub. Date Oct. 12, 1995
PCT Filed Mar. 1, 1995, Ser. No. 718,402
Int. Cl.[6] G21C 13/00
U.S. Cl. 376—204 4 Claims



1. In a pressurized-water nuclear vessel having a head, a plurality of tubular adapters, each fixed into a penetration opening traversing said head and projecting outside the head, and at least one instrumentation column passing through one adapter of said plurality of adapters, a sealing device of said instrumentation column into said one adapter, said sealing device comprising:

(a) a tubular bearing assembly fixed to an end of said adapter outside the head, in an axial extension of said adapter, said instrumentation column being so arranged in said bearing assembly that an end of the instrumentation column projects outside said bearing assembly; and

(b) means for pulling on the end of the instrumentation column in an axial direction of the adapter in order to bring a bearing surface of the instrumentation column into contact with sealed bearing means arranged inside said bearing assembly;

(c) said sealed bearing means comprising:

(i) a clamping ring axially movably mounted inside a groove of the tubular bearing assembly and removable therefrom, said clamping ring having a contact surface matching the bearing surface of the instrumentation column; and

(ii) at least one annular sealing gasket interposed between a bearing face of the clamping ring opposite the contact surface of said clamping ring and an internal bearing surface of the tubular bearing assembly, and arranged around an external surface of said instrumentation column, said tubular bearing assembly including an annular cover fixed on the end of the adapter through which the instrumentation column passes, and comprising the internal bearing surface of the tubular bearing assembly and said groove for receiving a portion of the clamping ring in an assembled and removable relationship;

(iii) wherein the bearing assembly comprises a tubular section fixed to the outer end of the adapter, and means for assembling the tubular section and the cover, the tubular section including at least one external peripheral cavity and at least three openings penetrating part of the tubular section in its axial direction and emerging in the peripheral cavity, the

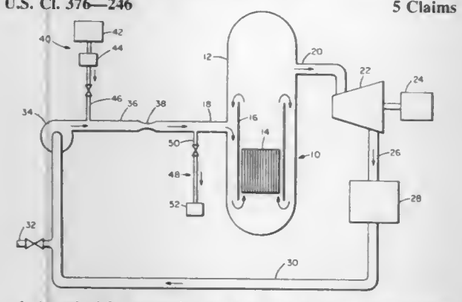
cover being superposed on the tubular section and including penetration openings in an extension of the openings in the tubular section, the means of assembling the cover and the tubular section including at least three assembly pieces inserted into the peripheral cavity of the tubular section comprising tapped openings in the extension of the openings in the tubular section and in the cover, and assembly screws adapted to be introduced into the aligned openings in the tubular section and in the cover and screwed into the assembly pieces.

5,828,712

COOLANT WATER FLOW RATE TEST WITH RUBIDIUM NUCLEAR TRACER FOR REACTORS

Martin Sullivan Laurent; Michael Eildon Ball; Lynn Lawrence Sundberg, and James Leon Simpson, all of San Jose, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Jan. 13, 1992, Ser. No. 819,908
Int. Cl.[6] G21C *17/032*
U.S. Cl. 376—246 **5 Claims**



1. A method for measuring the flow rate of coolant water within the coolant water system of a boiling water nuclear fission reactor, consisting essentially of the combination of steps of:

preparing a solution of a soluble salt of rubidium of a known concentration; injecting a known quantity of the prepared soluble rubidium salt solution into a feedwater conduit of a coolant water system of the boiling water nuclear fission reactor;

sampling coolant water containing injected solution in the feedwater conduit a predetermined distance downstream from the location of the rubidium salt solution injection;

preparing a reference solution of the rubidium salt by accurately diluting an aliquot of the injected solution to approximately the expected concentration of the sampled coolant water containing injected solution; and

analyzing and comparing the reference solution with the sampled coolant water.

5,828,713

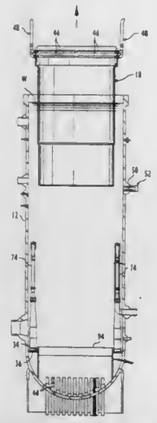
REPLACEMENT CORE SHROUD ASSEMBLY FOR A BOILING WATER REACTOR

William R. Schmidt, Alexandria, Va., and Sterling J. Weems, Chevy Chase, Md., assignors to MPR Associates, Inc., Alexandria, Va.

Division of Ser. No. 730,178, Oct. 15, 1996, Pat. No. 5,687,206. This application Oct. 9, 1997, Ser. No. 948,269
Int. Cl.[6] G21C *19/02*
U.S. Cl. 376—260 **14 Claims**

1. A replacement core shroud assembly for a boiling water reactor having a reactor vessel and supporting structure with a cylindrical portion disposed within the reactor vessel, said replacement core shroud assembly comprising

at least a portion of a core shroud having top and bottom portions, said bottom portion having a configuration to mate cooperatively with the cylindrical portion of the supporting



structure in telescoping relation to limit lateral movement of said replacement core shroud assembly relative to the reactor vessel; and

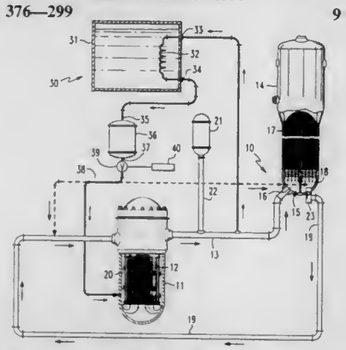
a plurality of tie rods secured between sites on said core shroud and the supporting structure at a respective plurality of angularly spaced locations about the periphery of said core shroud to apply axially compressive forces along substantially all of the shroud length in the direction of the supporting structure.

5,828,714

ENHANCED PASSIVE SAFETY SYSTEM FOR A NUCLEAR PRESSURIZED WATER REACTOR

Theo Van De Venne, Murrysville, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Dec. 19, 1996, Ser. No. 769,120
Int. Cl.[6] G21C *15/18*
U.S. Cl. 376—299 **9 Claims**



5. A passive safety system operable in conjunction with a nuclear reactor coolant system including a hot leg for directing heated water from a reactor vessel accommodating a reactor core into a steam generator, and a cold leg for returning cooled water from said steam generator to a downcomer within said reactor vessel, comprising:

a. a water storage tank,

b. a heat exchanger positioned within said water storage tank and having a heat exchanger inlet connected to said hot leg and a heat exchanger outlet,

c. a core make-up tank having a tank inlet connected to said heat exchanger outlet and having a tank outlet,

d. a pipe connecting said tank outlet to a selected location of said nuclear reactor coolant system, and

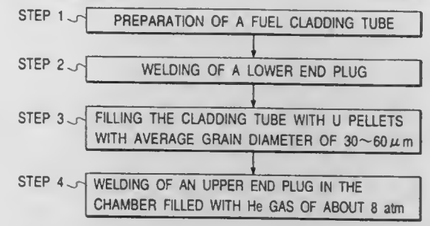
e. valve means situated within said pipe, whereby upon the occurrence of an abnormal condition, said valve means operates to allow heated water to flow by natural circulation from said hot leg through said heat exchanger so that heat may be transferred to said water storage tank, and thereafter flows through said core make-up tank, through said pipe and into said selected location of said nuclear reactor coolant system to provide cooling for said reactor core.

5,828,715

FUEL RODS, ITS MANUFACTURING METHOD AND FUEL ASSEMBLY

Hideki Kurosaki, Hitachi; Kenichi Ito, Hitachinaka; Masana Sasaki, Hitachi, and Kensuke Tokunaga, Tokahagi, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Engineering Co., Ltd., Ibaraki, both of Japan

Filed Aug. 9, 1996, Ser. No. 694,667
Claims priority, application Japan, Aug. 22, 1995, 7-213242
Int. Cl.[6] G21C *3/00*
U.S. Cl. 376—409 **19 Claims**



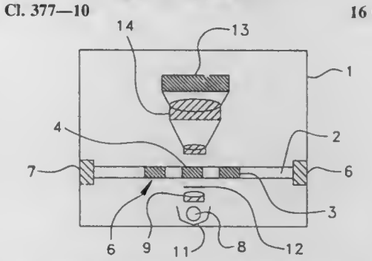
1. A fuel rod having a cladding tube, an upper end plug and a lower end plug that seal the upper and the lower ends of the cladding tube, respectively, and nuclear fuel pellets and helium gas filled in the cladding tube, the average crystal grain size of said nuclear fuel pellets being in the range of 30–60 μm, and the pressure of the helium gas being in the range of 1–8 atm.

5,828,716

PROCEDURE FOR IDENTIFYING THE NUMBER OF PARTICLES THAT ARE WEAKLY LUMINESCENT

Jean-Claude Bisconte de Saint Julien, Brijs Sous Forges, France, assignor to Biocom S.A., Les Ulis Cedex, France

Filed Jun. 12, 1996, Ser. No. 662,312
Int. Cl.[6] G06M *11/02*
U.S. Cl. 377—10 **16 Claims**



1. A procedure for counting faintly luminescent particles marked with a colored or fluorescent stain or marker that selectively marks the particles to be counted with the aid of a photon-accumulator camera, comprising the steps of:

(a) acquiring at least one low-resolution image Ia;

(b) threshold processing of the low-resolution image in order to obtain at least one digital image Ib;

(c) performing at least one dimensional filtration stage on the digital image; and

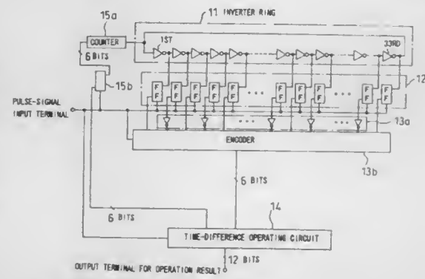
(d) counting the number N of objects belonging to a given class of sizes in the digital image Ib.

5,828,717

TIME COUNTING CIRCUIT AND COUNTER CIRCUIT

Keiichi Kusumoto, Hyogo; Shiro Dosho; Yutaka Terada, both of Osaka, and Akira Matsuzawa, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

Filed Mar. 27, 1996, Ser. No. 624,960
Claims priority, application Japan, Mar. 28, 1995, 7-069805
Int. Cl.[6] G01C *21/00*
U.S. Cl. 377—24 **17 Claims**



1. A time counting circuit, comprising:

a delay circuit ring composed of an odd number of delay circuits having identical structures and connected in a ring, wherein a first signal circulates around the delay circuit ring and transitions from one binary state to another binary state at each delay circuit; and

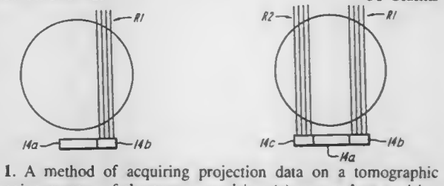
means for converting data obtained from output signals of all of said delay circuits to time data based on a binary system.

5,828,718

METHOD AND APPARATUS FOR HELICAL COMPUTED TOMOGRAPHY SCANNING WITH ASYMMETRIC DETECTOR SYSTEM

Christopher C. Ruth, Danvers; John M. Dobbs, Hamilton, and Carl R. Crawford, Brookline, all of Mass., assignors to Analogic Corporation, Peabody, Mass.

Continuation of Ser. No. 759,368, Nov. 27, 1996. This application Mar. 31, 1997, Ser. No. 829,062
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—19 **51 Claims**



1. A method of acquiring projection data on a tomographic imaging system of the type comprising (a) means for acquiring data from a series of fan beam projections of an imaged object at a plurality of angles as a source of x-rays revolves about a z-axis about a mechanical center of rotation within an imaging plane, (b) means for translating the imaged object and imaging plane relative to one another along the z-axis, wherein the each of the fan beam projections subtends maximum angles ϕ_1 and ϕ_2 respectively with respect to a line connecting the apex of the fan beam with the mechanical center of rotation, wherein ϕ_1 and ϕ_2 are different, said method comprising the steps of:

identifying a slice plane at a position along the z-axis relative to the imaged object;

translating the object and imaging plane relative to one another along the z-axis to move the slice plane through the imaging plane;

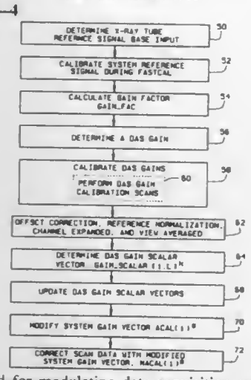
acquiring a tomographic set of data comprised of data from a plurality of projections; and

reconstructing a tomographic image at the slice plane.

5,828,719
METHODS AND APPARATUS FOR MODULATING DATA ACQUISITION SYSTEM GAIN

Hui David He; Gary Richard Strong, both of Waukesha; Thomas Louis Toth, Brookfield, and George E. Seidenschnur, Waukesha, all of Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 23, 1996, Ser. No. 779,961
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—4 17 Claims



1. A method for modulating data acquisition system gain in a computed tomography system and correcting data acquired during a system scan, the system including a data acquisition system, an x-ray tube and a detector, the detector including at least one slice of detectors, said method comprising the steps of:

monitoring at least one data acquisition system parameter;

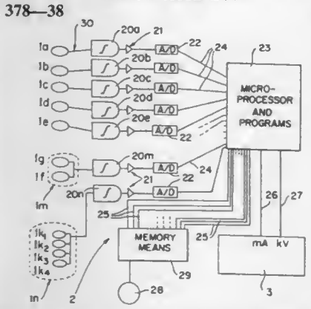
generating a data acquisition gain factor based on the monitored data acquisition system parameter; and

modulating data acquisition gain using the generated data acquisition gain factor.

5,828,720
EXPOSURE AUTOMATICS FOR AN X-RAY APPARATUS

Timo Juhani Syrjänen, Espoo, Finland, assignor to Orion-Yhtyma OY, Espoo, Finland

Filed Dec. 10, 1996, Ser. No. 762,754
Claims priority, application Finland, Dec. 14, 1995, 956003
Int. Cl.[6] A61B *6/14*
U.S. Cl. 378—38 22 Claims



1. A method for automatic adjustment of image receptor exposure during imaging in panoramic or tomographic radiography, comprising the steps of:

passing radiation emitted from a radiation source through an object from one area to another area;

moving the image receptor and radiation source relative to each other during an imaging period at a preset speed to expose said receptor to the radiation;

displaying the object over the imaging period on the image receptor;

measuring varying intensity of the radiation incidence on the image receptor by means of at least two detectors placed behind the receptor to produce a plurality of measurement signals;

immediately and separately integrating over an integration time interval the measurement signal obtained from each detector during the imaging period to produce an integral for each detector, whereby the integrating of each measurement signal occurs independently of the integrating of other measurement signals, the integrating is implemented over the entire imaging period, and the integration time interval is substantially shorter than the imaging period to produce a plurality of individual integrals for each detector during the imaging period;

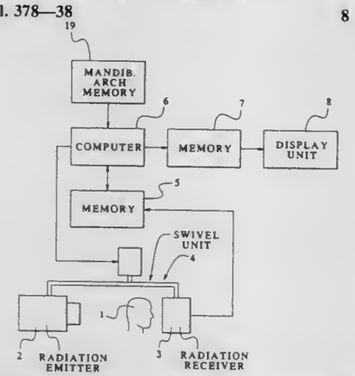
comparing each individual integral with a corresponding predetermined exposure value to produce a comparison value; and

determining an adjustment value on the basis of said comparison values corresponding to each of the detectors and using said adjustment values to adjust during said imaging period at least one of a plurality of x-ray source variables affecting the image receptor exposure.

5,828,721
RADIATION DIAGNOSTICS INSTALLATION AND METHOD FOR PRODUCING PANORAMA TOMOGRAMS

Ulrich Schulze-Ganzlin, Lorsch, and Josef Plötz, Bensheim, both of Germany, assignors to Sirona Dental Systems GmbH & Co. KG, Bensheim, Germany

PCT No. PCT/DE95/00989, § 371 Date Feb. 7, 1997, § 102(e) Date Feb. 7, 1997, PCT Pub. No. WO96/04849, PCT Pub. Date Feb. 22, 1996
PCT Filed Jul. 28, 1995, Ser. No. 793,232
Claims priority, application Germany, Aug. 10, 1994, 44 28 331.8
Int. Cl.[6] A61B *6/14*
U.S. Cl. 378—38 8 Claims



1. A radiation diagnostic installation for producing panorama tomograms comprising:

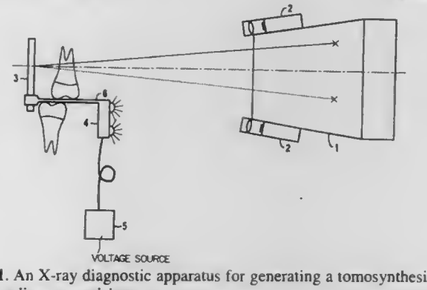
means for tomographically scanning a subject with penetrating radiation and for generating electrical signals dependent on a radiation shadow of said subject, said electrical signals comprising a dataset; and

signal processing means, supplied with said electrical signals, including memory means for storing said dataset during tomographic scanning of said subject and computer means for calculating from said dataset a tomogram of said subject in a desired tomographic slice position, said computer means comprising means for automatically determining said desired tomographic slice position by calculating and evaluating a plurality of individual tomographic slice positions from said dataset.

5,828,722
X-RAY DIAGNOSTIC APPARATUS FOR TOMOSYNTHESIS HAVING A DETECTOR THAT DETECTS POSITIONAL RELATIONSHIPS

Josef Ploetz, and Manfred Franetzki, both of Bensheim, Germany, assignors to Sirona Dental Systems GmbH & Co., KG, Paris, France

Filed May 14, 1997, Ser. No. 856,147
Claims priority, application Germany, May 17, 1996, 196 19 925.5
Int. Cl.[6] A61B *6/03*
U.S. Cl. 378—38 17 Claims



1. An X-ray diagnostic apparatus for generating a tomosynthesis recording, comprising:

a radiation transmitter that transilluminates an object under examination from a plurality of different directions;

a radiation receiver that is adjustably mounted relative to said radiation transmitter and that produces radiation signals for generating the tomosynthesis recording of the object under examination;

an image-generating device that receives the radiation signals for each of the plurality of different directions and computes the tomosynthesis recording of the object under examination;

at least one position detector that produces position signals in accordance with a positional relationship between at least any two of (i) said radiation transmitter, (ii) said radiation receiver, and (iii) the object under examination, wherein said position detector is mounted on at least any one of said radiation transmitter, said radiation receiver, or the object under examination; and

an evaluation device that (i) evaluates the position signals to determine a deviation between the positional relationship and a desired relationship, (ii) generates correction signals in accordance with the evaluated deviation, and (iii) outputs the correction signals to said image-generating device.

5,828,723
PROCESS FOR DETERMINING THE INTERNAL THREE-DIMENSIONAL STRUCTURE OF A BODY OPAQUE TO VISIBLE LIGHT BY MEANS OF RADIATIONS FROM A SINGLE SOURCE, SPECIALLY SUITABLE FOR REINFORCED CONCRETE PARTS

Mario A. J. Mariscotti, Bouloque, Argentina, assignor to Tomografia De Hormigon Armado S.A., Buenos Aires, Argentina

Filed Feb. 15, 1996, Ser. No. 601,763
Claims priority, application Argentina, Feb. 15, 1995, 331.032
Int. Cl.[6] G01N *23/02*
U.S. Cl. 378—58 13 Claims

1. A method for determining the three-dimensional structure of a body opaque to visible light, through radiations from a single source, of the type in which radiations from the source, after passing through said body, influence a sensitive sheet, located between two reinforcement plates, wherein a two-dimensional image formed by shadows caused by different opacities to said radiations of the different materials and parts of the internal structure is recorded, said source being capable of radiating in a limited radiation solid angle for preventing radiation on other close bodies and loss of contrast due to reflections and dispersions from said near bodies, comprising the following steps:

a) determining prior assumption of shapes, location and dimensions of the parts and materials of the internal structure;

b) placing on the peripheral parts of the body controls opaque to radiations, said controls having known shape and dimensions;

c) locating behind the body and attached thereto, a sheet sensitive to said radiations, between two reinforcing plates, and in front of the body a source of the type having a discrete cross section according to the dimensions assumed in step a), spaced therefrom a distance sufficiently short for producing two-dimensional image measurable penumbra zones, apart from said shadows;

d) radiating the body with penetrating radiation during a predetermined exposure time suitable for obtaining a two-dimensional image wherein shadow zones as well as penumbra zones may be distinguished, and quantifying the radiation influencing said zones;

e) applying a point to point measuring method for the radiation influencing the sensitive sheet following a set of parallel straight lines to scan said two-dimensional image, preferably in a direction perpendicular to the assumed dominating direction of step a), said point being spaced apart, selectively, such that a plurality of points are located at each penumbra zone;

f) computing, through mathematical methods applied on measurements of step a) on each line of the line set, with the aid of said assumed shape of said assumed structure assumed in step a), of shapes of said obtained two-dimensional image and from images obtained from controls of step b), a geometrical arrangement of each plane being defined by each of said parallel straight lines and the source, of different parts and materials; and assembling said geometrical arrangements of each of said planes forming the internal three-dimensional structure of the body.

5,828,724
PHOTO-SENSOR FIBER-OPTIC STRESS ANALYSIS SYSTEM

David S. Kurtz, State College, Pa., assignor to Advanced Technology Materials, Inc., Danbury, Conn.

Filed Mar. 25, 1997, Ser. No. 823,971
Int. Cl.[6] G01N *23/20*
U.S. Cl. 378—70 22 Claims

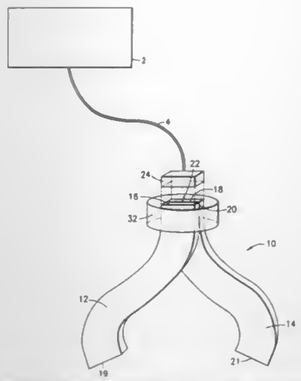
1. An x-ray diffraction system for determining an x-radiation diffraction-detectable characteristic of a material sample, comprising:

a source of x-rays for impingement of x-rays on the sample;

an x-ray detector for detecting x-rays diffracted from the sample, said x-ray detector including:

at least two fiber-optic bundles, each bundle having respective input and output ends, with the input ends being positionable in spaced-apart relationship to one another for receiving x-rays diffracted from the sample, with the input end directionally aligned with respect to the 2θ x-ray diffraction angle for input of diffracted x-rays in a two-dimensional x-radiation image at the input end of each of the fiber-optic bundles, and with the output ends being adjacent to and in

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registration with one another to form an output face including the output ends of the fiber-optic bundles;

a scintillation coating on the input end of each of the fiber-optic bundles for converting the inputted two-dimensional x-radiation image of diffracted x-rays to a two-dimensional image of visible light radiation for transmission to the output end of the fiber-optic bundle at the output face, for formation of a single two-dimensional image of visible light radiation at the output face including the respective two-dimensional images of visible light radiation transmitted by each of the fiber-optic bundles to its output end;

a two-dimensional photosensor array sized to the output face of the fiber optic bundles and optically coupled in light-receiving relationship to the output face, to capture the single two-dimensional image of visible light radiation from the output face and responsively generate a position-preserved intensity signal for each pixel of the single two-dimensional image of visible light radiation; and

a programmable digital computer (i) operatively coupled with the two-dimensional photosensor array to receive therefrom the position-preserved intensity signal for each pixel of the single two-dimensional image of visible light radiation and (ii) programmed to convert same to separate one-dimensional diffraction spectra, wherein each one-dimensional diffraction spectrum corresponds to a respective inputted two-dimensional x-radiation image of diffracted x-rays from a respective fiber-optic bundle, and from said one-dimensional diffraction spectra to determine the x-radiation diffraction-detectable characteristic of the material sample.

5,828,725

PROCESSING IMAGES FOR REMOVAL OF ARTIFACTS

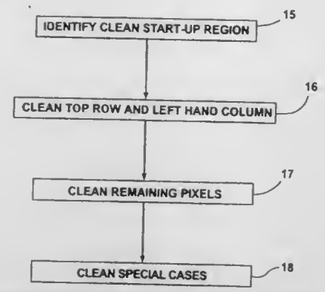
Reuven Levinson, Haifa, Israel, assignor to Eliav Medical Imaging Systems LTD, Haifa, Israel

Filed Jun. 23, 1997, Ser. No. 880,529
Claims priority, application Israel, Jul. 3, 1996, 118784
Int. Cl.[6] H65G *1/64*
U.S. Cl. 378—98 **20 Claims**

1. A method of processing images received on an image sensor of rectangular configuration bounded by four outer edges and including a plurality of pixel elements arranged in a rectangular matrix of horizontal rows and vertical columns, comprising the following operations:

A. locating an initial rectangular-matrix region consisting of pixel elements determined to be free of an artifact;

B. sequentially testing each pixel element along two contiguous outer edges of the image sensor, starting from said initial rectangular-matrix region, to determine whether the pixel value of the tested pixel element is sufficiently large to indicate the probability of an artifact, and for each such pixel element found to have such a pixel value, replacing its pixel value with another having a relation to the pixel value of its



closest neighbours found to be free of an artifact, thereby cleaning the respective pixel element; and

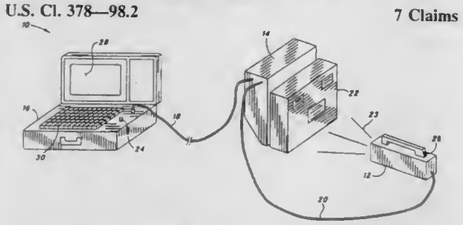
C. testing each of the remaining pixel elements to determine whether its pixel value is sufficiently large to indicate the probability of an artifact, and for each such pixel element found to have such a pixel value, replacing its pixel value with another pixel value having a predetermined relationship to the pixel values of its closest neighbours, thereby cleaning the respective pixel element.

5,828,726

PORTABLE, DIGITAL X-RAY APPARATUS FOR PRODUCING, STORING, AND DISPLAYNG ELECTRONIC RADIOSCOPIC IMAGES

Raulf M. Polichar, and Scott T. Smith, both of San Diego, Calif., assignors to Science Applications International Corp., San Diego, Calif.

Continuation of Ser. No. 494,251, Jun. 23, 1995, Pat. No. 5,608,778. This application Dec. 23, 1996, Ser. No. 773,483
Int. Cl.[6] H05G *1/64*
U.S. Cl. 378—98.2 **7 Claims**



1. Radioscopic imaging apparatus for producing, storing, and displaying a radioscopic image of an object under investigation comprising:

an integrating X-ray image sensor positioned so that X-rays that pass through the object will impinge upon the integrating X-ray image sensor, said integrating X-ray image sensor comprising a scintillation screen and a flat panel, amorphous silicon, thin film transistor (TFT) photo sensor placed in direct contact with the scintillation screen, and including means for integrating the effects of X-rays that pass within a given pixel area of the scintillation screen until the accumulated effects of the integration are sufficient to produce a full-scale image signal and means for generating such full-scale image signal; and

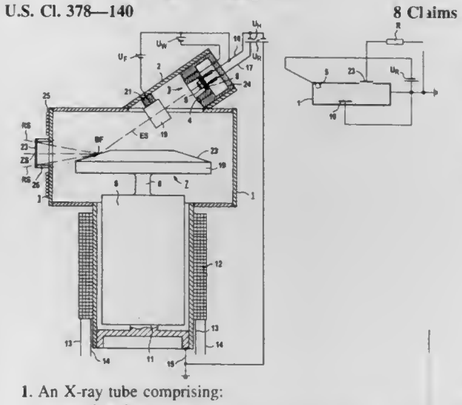
a control unit operatively coupled to the integrating X-ray image sensor, the control unit including a display screen, and further including processing means for: (a) generating control signals to control the generation of X-rays and the integrating function carried out by the X-ray image sensor, (b) processing the image signal to produce a digital image signal having gray-scale pixel values that vary from 0 to at least 255, and (c) displaying an image of the digital image signal on the display screen.

5,828,727

X-RAY TUBE

Markus Schild, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Jul. 2, 1997, Ser. No. 887,192
Claims priority, application Germany, Jul. 4, 1996, 196 27 025.1
Int. Cl.[6] H01J *35/18*
U.S. Cl. 378—140 **8 Claims**



1. An X-ray tube comprising:

a vacuum housing;

a cathode disposed in said vacuum housing which emits an electron beam;

an anode disposed in said vacuum housing which is struck by said electron beam and from which X-rays are emitted;

said vacuum housing having a beam exit window through which said X-rays pass;

means for placing said beam exit window at a negative first potential during operation of said X-ray tube and for electrically connecting said beam exit window via a resistance to a second potential that is positive relative to said negative potential; and

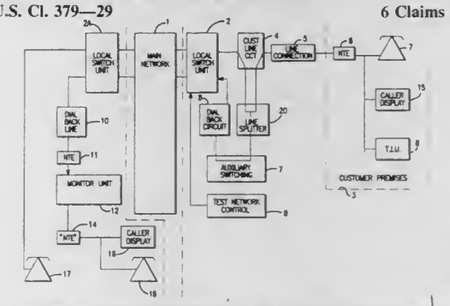
said resistance having a value for, during said operation of said X-ray tube, producing a potential difference between said first potential and said second potential in a range between about 3 kilovolts and about 20 kilovolts.

5,828,728

TELECOMMUNICATIONS NETWORK

Michael D. Hoy, Ipswich, and Stephen J. Curtis, Felixstowe, both of England, assignors to British Telecommunications public limited company, London, England

Filed Jun. 25, 1996, Ser. No. 672,350
Claims priority, application United Kingdom, Feb. 5, 1996, 9602247
Int. Cl.[6] H04M *3/46;1/24*
U.S. Cl. 379—29 **6 Claims**



3. A ringback testing apparatus for use in a telecommunications network, said apparatus comprising:

means for establishing two calls in the network to termination points using separate paths;

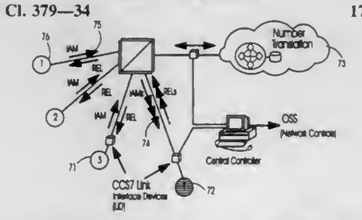
means for holding a first one of said calls while connecting a transmission path through a signal monitoring apparatus during the second one of said calls.

5,828,729

AUTOMATED MASS CALLING DETECTION USING CCS7 MESSAGE PARAMETERS

Normand A. Clermont, St-Hubert; Maurice E. Lavigne, Kanata, and Gerald W. Fikis, Nepean, all of Canada, assignors to Stentor Resource Centre Inc., Ottawa, Canada

Filed Nov. 22, 1995, Ser. No. 561,932
Int. Cl.[6] H04M *1/24*
U.S. Cl. 379—34 **17 Claims**



1. In a telephone network having a number of telephone switching offices which have CCS7 signalling capabilities and wherein each switching office is linked to STPs (Signalling Transfer Points), or other switching offices with CCS7 signalling links, a method of detecting mass calling events using CCS7 signalling data, comprising:

monitoring each signalling link connected to a switch;

identifying for each call attempt, an Initial Address Message (IAM) sent from an originating switch for the call attempt to a terminating switch;

determining the Directory Number (DN) dialled by examining the dialled number in the IAM; and

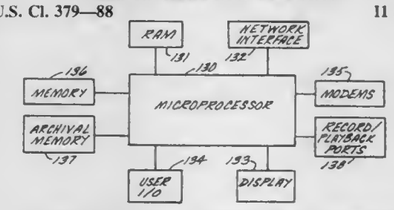
for a predetermined time interval, maintaining a count of call attempts for each to determine an order of magnitude of call flow towards specific DNs in order to detect an excessive number of call attempts to a specific and alerting network administration when an excessive number of call attempts to a specific DN is detected.

5,828,730

METHOD AND APPARATUS FOR RECORDING AND MANAGING COMMUNICATIONS FOR TRANSCRIPTION

Jay Zebryk, Southbridge; Raymond Catuogno, Sr., Belchertown, and George Catuogno, Springfield, all of Mass., assignors to Sten-Tel, Inc., Springfield, Mass.

Continuation-in-part of Ser. No. 374,438, Jan. 19, 1995, abandoned. This application Apr. 10, 1996, Ser. No. 630,549
Int. Cl.[6] H04M *3/56;* **G06F** *13/00*
U.S. Cl. 379—88 **11 Claims**



1. A method for recording, at a first location, a communication at a second location, the first location being remote from the second location and interconnected by a communication medium, the method comprising:

creating a user configurable profile which defines user identification data and recording options for a user;

storing the user configurable profile;

recording the communication, said recording step being responsive to the recording options in the stored user configurable profile;

providing the recorded communication to a transcriptionist for transcription; and

receiving a transcribed communication from the transcriptionist;

wherein the user identification data includes a user identification number assigned to a user and an audible user identification which is associated with each user identification number and assigned to said user the audible user identification providing an audible confirmation of an entered user identification number.

5,828,731

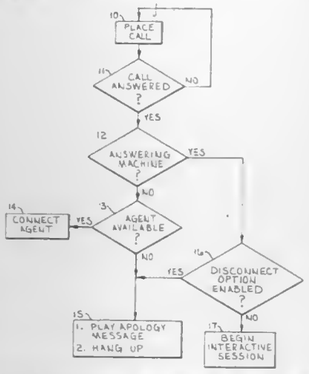
METHOD AND APPARATUS FOR NON-OFFENSIVE TERMINATION OF AN OUTBOUND CALL AND FOR DETECTION OF AN ANSWER OF AN OUTBOUND CALL BY AN ANSWERING MACHINE

Aleksander Szlam, Norcross, and Chester P. Quinn, Chamblee, both of Ga., assignors to Inventions, Inc.

Continuation of Ser. No. 372,889, Jan. 13, 1995, Pat. No. 5,581,602, which is a continuation of Ser. No. 17,108, Feb. 12, 1993, abandoned, which is a continuation-in-part of Ser. No. 901,436, Jun. 19, 1992, abandoned. This application Nov. 22, 1996, Ser. No. 754,151

Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—88 **9 Claims**



1. A method for processing outbound calls, comprising the steps of:

placing an outbound call to a called party;

determining whether said outbound call has been answered;

if said outbound call has been answered then determining whether said outbound call was answered by a machine;

if said outbound call was answered by a machine then playing, for said outbound call, a message which intentionally conceals from a party hearing said message at least one of the reason for said outbound call or the source of said outbound call so as to reduce the likelihood of at least one of the following: that said called partly will activate call blocking, that said called party will activate last call callback, or that said called party will monitor a calling number identification display to determine the telephone number of the calling party; and then terminating said outbound call;

if said outbound call was not answered by a machine then determining whether an agent is available to handle said outbound call;

if an agent is not available to handle said outbound call then playing, for said outbound call, a message which conceals at least one of the reason for said outbound call or the source of said outbound call from a party hearing said message played in response to an agent not being available, and then terminating said outbound call.

5,828,732

GIFT ARTICLE VOICE GREETING SYSTEM

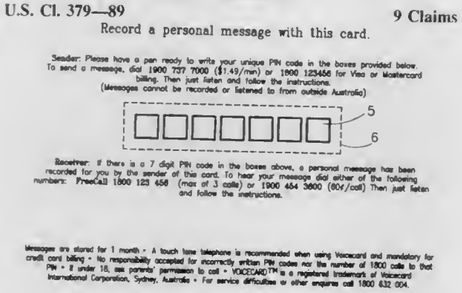
Brendan Patrick Gow, Darling Harbour, Australia, assignor to Vnicecard Int'l Corporation Pty Ltd., New South Wales, Australia

Filed Jan. 11, 1996, Ser. No. 584,050

Claims priority, application Australia, Jan. 13, 1995, PN0535

Int. Cl.[6] H04M *1/64*

U.S. Cl. 379—89 **9 Claims**



1. A gift article voice greeting system connected to a subscriber telecommunications network, said system comprising:

a message recording apparatus for recording a voice message from a subscriber;

a message replaying apparatus for replaying said voice message to a recipient;

access control means for interfacing with said telecommunications network and connecting the subscriber calling via said telecommunications network to said message recording apparatus, said access control means being adapted to generate an assigned unique password for each message recorded by said message recording apparatus and including sound generating means to transmit said assigned password to said subscriber wherein said access control means includes a portion to receive calls via two separate numbers within the telecommunications network and said access control means being further adapted to connect the recipient calling via said telecommunications network to said message replaying apparatus after the recipient calling the message replaying apparatus enters said previously assigned password to replay the message to which said password is assigned;

charge allocating means for directing a selected charge in respect of each call to said access control means to the subscriber or the recipient who has called via said telecommunications network; and

a printed information block associated with each said gift article, said block including data for placing a call to said access control means and a means for recordal of said assigned password.

5,828,733

METHOD AND ARRANGEMENT FOR INCREASING DATA TRANSMISSSION RATE OVER TELEPHONE CABLE

David M. Barton; Eugen Gershon, and Muoi Huynh, all of San Jose, Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

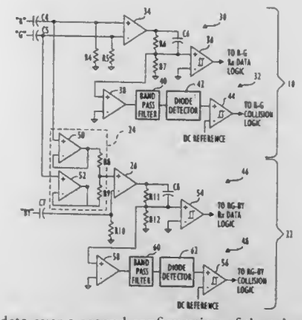
Filed Apr. 3, 1995, Ser. No. 416,129

Int. Cl.[6] H04M *11/00;* **H04B** *1/38*

U.S. Cl. 379—93.01 **22 Claims**

1. An arrangement for transferring data between nodes over a telephone cable that couples the nodes, the telephone cable comprising two inner wires and two outer wires, comprising:

a dual configuration transmitter at one of the nodes, the dual configuration transmitter having a first transmitter circuit that transmits data over a first configuration of the telephone cable and a second transmitter circuit that simultaneously transmits



other data over a second configuration of the telephone cable, the first and second configurations being different from each other; and

a dual configuration receiver at another one of the nodes and coupled to the telephone cable, the dual configuration receiver having a first receiver circuit that separates the data transmitted by the first transmitter circuit from the data transmitted by the second transmitter circuit, and a second receiver circuit that separates the data transmitted by the second transmitter circuit from the data transmitted by the first transmitter circuit,

wherein the first transmitter circuit transmits data by driving the two inner wires differentially in the first configuration of the telephone cable, and the second transmitter circuit transmits data by driving the pair of two inner wires differentially with respect to the pair of two outer wires.

5,828,734

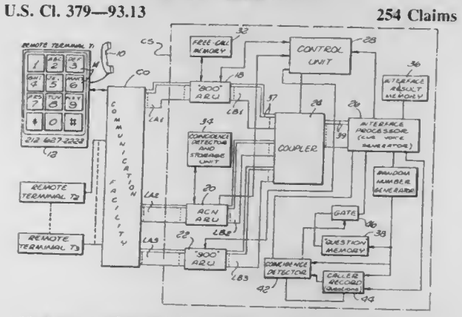
TELEPHONE INTERFACE CALL PROCESSING SYSTEM WITH CALL SELECTIVITY

Ronald A. Katz, Los Angeles, Calif., assignor to Ronald A. Katz Technology Licensing, LP, Los Angeles, Calif.

Continuation-in-part of Ser. No. 335,923, Apr. 10, 1989, and a continuation of Ser. No. 779,762, Oct. 21, 1991, Pat. No. 5,251,252, which is a continuation of Ser. No. 425,779, Oct. 23, 1989, Pat. No. 5,128,984, which is a continuation-in-part of Ser. No. 312,792, Feb. 21, 1989, which is a continuation-in-part of Ser. No. 194,258, May 16, 1988, Pat. No. 4,845,739, which is a continuation-in-part of Ser. No. 18,244, Feb. 24, 1987, Pat. No. 4,792,968, which is a continuation-in-part of Ser. No. 753,299, Jul. 19, 1985, abandoned, said Ser. No. 335,923 is a continuation of Ser. No. 194,258. This application Oct. 4, 1993, Ser. No. 132,062

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93.13 **254 Claims**



11. A process for receiving calls through a telephonic communication facility from a multitude of terminals in different call modes including a toll free call mode and a "900" call mode and processing said calls in accordance with respective interactive interface formats for said different call modes, wherein the process involves digital signals including digital signals provided by said multitude of terminals as for identification or data, comprising the steps of:

receiving calls in said toll free call mode;

providing a qualification number to facilitate toll free participation via said toll free call mode;

qualifying on-line said calls in said toll free call mode based on said qualification number to provide qualified calls;

receiving calls in said "900" call mode; and

concurrently processing said qualified calls received in said toll free call mode and said calls in said "900" mode in accordance with common operations of interactive interface formats for said toll free and said "900" call modes.

5,828,735

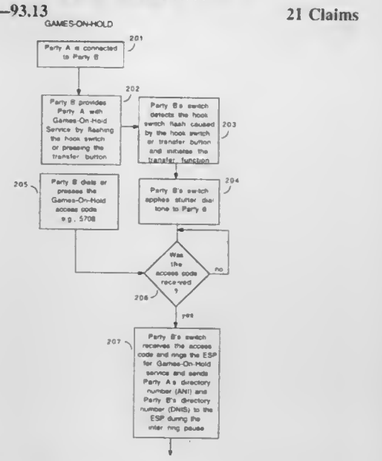
GAMES ON HOLD TELEPHONY SERVICE

Daniel Joseph Farfan, Phoenix, Ariz., assignor to AG Communication Systems Corporation, Phoenix, Ariz.

Filed Jul. 25, 1996, Ser. No. 686,778

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—93.13 **21 Claims**



1. A games-on-hold system for use in a telecommunication system including a switching system and first and second telecommunication devices connected to each other via said switching system, said first telecommunication device being operated by a first party and said second telecommunication device being operated by a subscriber to said games-on-hold system, said games-on-hold system comprising:

processing means;

said subscriber's telecommunication device being operated by said subscriber to access said processing means;

said processing means being operated in response to being accessed by said subscriber's telecommunication device to send a message to said subscriber's telecommunication device indicating that the subscriber can hang up to activate games-on-hold service;

said subscriber's telecommunication device being further operated to generate an on-hook signal when said subscriber hangs up;

said switching system being operated in response to said on-hook signal to connect said first party's telecommunication device to said processing means and to disconnect said subscriber's telecommunication device from said processing means;

said processing means being further operated in response to being connected to said first party's telecommunication device to send prompt messages to said first party's telecommunication device indicating game playing options available to said first party; and

said first party's telecommunication device being operated by said first party to request selected game playing options by sending game option selection response messages to said processing means in response to said game option prompt messages;

whereby said processing means and said first party engage in a game by sending said game option prompt messages and said game option selection response messages, respectively.

5,828,736

VOICE RECORDING AND PLAYBACK APPARATUS

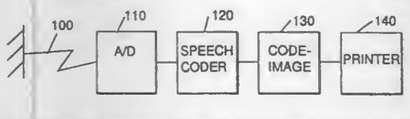
Dan Shmuel Chevion, Haifa, Israel, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 30, 1996, Ser. No. 654,369

Claims priority, application United Kingdom, May 30, 1995, 9510879

Int. Cl.[6] H04M *11/00*

U.S. Cl. 379—100.13 **16 Claims**



1. A recording apparatus adapted for connection to a telephone network and to receive voice signals therefrom, comprising:

a predefined code, comprising a character set in which each character in the set corresponds to a predefined bit sequence in digital data to be encoded, wherein in the predefined code:

each of the characters is represented using a plurality of pixels, wherein the pixels making up each character are contiguous;

each character contain no holes; and

a first dimension of each character in a first direction perpendicular to a row of detectors is greater than a second dimension of the character in a second direction parallel to the row of detectors;

an encoder for converting voice signals received from the telephone network into an optically readable image using the predefined code; and

a printer for printing the optically readable image.

5,828,737

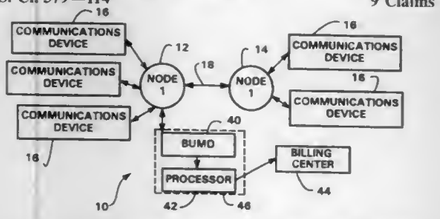
COMMUNICATIONS SERVICE BILLING BASED ON BANDWIDTH USE

Francois Sawyer, St-Hubert, Canada, assignor to Telefonaktiebolaget L M Ericsson, Stockholm

Filed Oct. 24, 1995, Ser. No. 547,543

Int. Cl.[6] H04M *15/00*

U.S. Cl. 379—114 **9 Claims**



1. In a cellular telephone system having a bandwidth-on-demand air interface carrying communication command messages and packet transmissions, and using a minimum bandwidth for maintaining a subscriber communication, a method for determining a charge incurred for use of the air interface bandwidth to carry the subscriber communication, comprising the steps of:

estimating a total amount of air interface bandwidth used over the course of the subscriber communication; and

multiplying the estimated total amount of bandwidth used by a charging rate to identify the charge incurred for the subscriber communication.

5,828,738

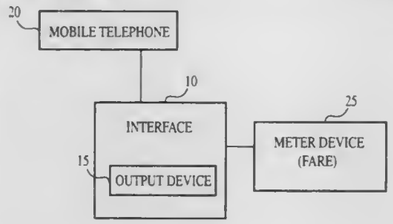
MOBILE TELEPHONE-VEHICLE METER DEVICE INTERFACE

Robert D. Spaeth, 10033 E. Friess Dr., Scottsdale, Ariz. 85260

Filed Dec. 20, 1996, Ser. No. 770,332

Int. Cl.[6] H04M *15/00;11/00;* **G07B** *13/00*

U.S. Cl. 379—130 **17 Claims**



14. An interface for use in a vehicle, connected to a mobile telephone used by a calling party and a metering device accumulating a predetermined billing rate and calculating a metered fare, a method comprising the steps of:

receiving a telephone call;

receiving a metered fare based on the use of a vehicle;

determining and monitoring said telephone call, and outputting at least one cost, based on a combined use of said telephone call and said metered fare.

5,828,739

PORTABLE COMMUNICATION DEVICE FOR DISPLAYING A CALLING PARTY TO BE CALLED WHEN ACTUATED

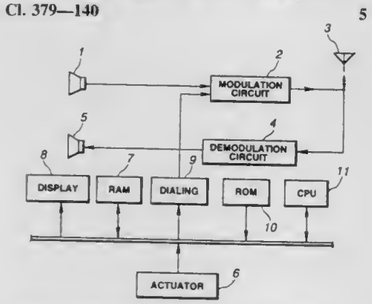
Kosuke Nakanishi, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 17, 1996, Ser. No. 664,511

Claims priority, application Japan, Jun. 19, 1995, 7-151963

Int. Cl.[6] H04M *15/00;1/00;* **H04Q** *7/00*

U.S. Cl. 379—140 **5 Claims**



1. A portable communication device comprising:

storage means for storing a name and telephone number of an owner of the portable communication device;

display means for displaying said name and said telephone number of the owner; and

control means for reading said name and said number of the owner from said storage means and for displaying said name and said number on said display means when the portable communication device is turned on by a finder of the portable communication device, thereby allowing the finder of the portable communication device to call the owner of the device.

5,828,740

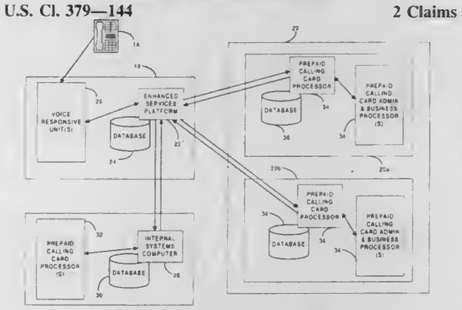
PREPAID CALLING CARD EXTERNAL/ADJUNCT DATABASE PROCESSOR

Minh Duy Khuc, Overland Park, Kans., and Carl Milton Coppage, Harrisonville, Mo., assignors to Sprint Communications Co., L.P., K. C., Mo.

Filed Nov. 14, 1996, Ser. No. 749,128

Int. Cl.[6] H04M *15/00;17/00*

U.S. Cl. 379—144 **2 Claims**



1. A method for providing a pre-paid calling card service for a host and for a plurality of other prepaid card vendors, wherein the host and the other prepaid card vendors each have associated pre-paid cards, the method comprising:

(a) receiving a call from a telecommunications network into a host call server, wherein the call is placed with an access number, wherein the call is associated with one of the prepaid cards, and wherein the one prepaid card is associated with a code number;

(b) receiving the access number and the code number from the telecommunications network into the host call server;

(c) in the host call server, using the access number to determine if the one pre-paid card is associated with the host or with the other prepaid card vendors;

(d) if the pre-paid card is associated with the host, then providing the prepaid calling card service from the host call server; and

(e) if the pre-paid card is associated with the other prepaid card vendors, then performing steps (f)–(j);

(f) in the host call server, using the code number to determine one of the other prepaid card vendors that is associated with the pre-paid card;

(g) sending a message to the one of the other prepaid card vendors;

(h) receiving a response from the one of the other prepaid card vendors that indicates available services for the one pre-paid card;

(i) providing the prepaid calling card service from the host system based on the response; and

(j) sending another message to the one of the other prepaid card vendors that indicates services used on the call.

5,828,741

SYSTEM AND METHOD FOR PROVIDING A MULTI-NUMBER PLAN FOR USE WITH A GENERAL TELEPHONE AND A KEY TELEPHONE IN A KEY TELEPHONE SYSTEM

Hyo-Dong Han, Daegukwangyeok, Rep. of Korea, assignor to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Aug. 22, 1996, Ser. No. 701,432

Claims priority, application Rep. of Korea, Aug. 24, 1995, 1995 26426

Int. Cl.[6] H04M *1/00*

U.S. Cl. 379—157 **15 Claims**

PLAN 1	PLAN 2	
0	0	FRONT DESK CALL
11	1	DINING ROOM CALL
21	2	ROOM SERVICE CALL
29	3	NIGHT CLUB CALL
36	4	WASHING ROOM CALL
4	5	VEHICLE WAIT CALL
5	6	AMUSEMENT HALL CALL
8	7	INFORMATION CALL
71	8	EMERGENCY CALL
61	*	BOY CALL
88	#	ALARM RESERVATION
9	9	CENTRAL OFFICE LINE AUTOMATIC SELECTION

7. A key telephone system having plural subscriber extensions, wherein said subscriber extensions comprise general telephone sets and key telephone sets, said key telephone system utilizing a multi-number plan, said key telephone system comprising:

a central processing unit for performing functions designated by said multi-number plan; and

an extension circuit for interfacing said subscriber extensions with said central processing unit;

said central processing unit checking said extension circuit to determine when a receiver of one of said subscriber extensions has been lifted;

when a receiver of one of said subscriber extensions has been lifted, said central processing unit determining whether said subscriber extension having the lifted receiver utilizes a first number plan or a second number plan by searching a number plan designation table for a position of said subscriber extension having the lifted receiver;

said central processing unit determining whether an input from a dial key of said subscriber extension having the lifted receiver corresponds to a number stored in a table corresponding to one of said first number plan and said second number plan;

said central processing unit performing a function corresponding to said dial key when said input from said dial key corresponds to said number stored in said table corresponding to one of said first number plan and said second number plan.

5,828,742

CALLER DISCRIMINATION WITHIN A TELEPHONE SYSTEM

Zafar M. Khalid, San Jose; William J. Beyda, Cupertino, and Jay Thomas, Los Altos, all of Calif., assignors to Siemens Business Communication Systems, Inc., Santa Clara, Calif.

Filed Aug. 2, 1996, Ser. No. 691,642

Int. Cl.[6] H04M *3/00;3/42;1/00*

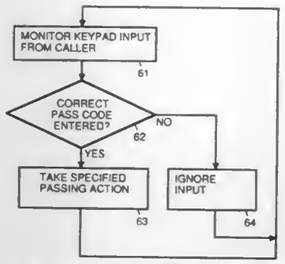
U.S. Cl. 379—199 **24 Claims**

1. A method for distinguishing between callers within a telephone system comprising the steps of:

(a) storing a pass code for a first telephone within a memory of the telephone system; and,

(b) upon a caller calling the first telephone and entering the pass code, taking a specified passing action, including the following substeps:

(b.1) upon the caller calling the first telephone immediately applying a normal ringing pattern to the first telephone and returning a ring back signal to the caller, and



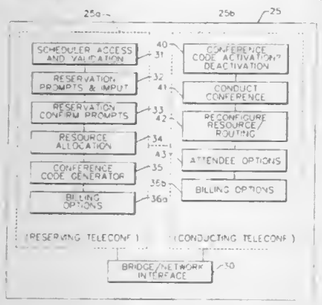
(b.2) upon the caller entering the pass code while the normal ringing pattern is being applied, performing the specified passing action.

5,828,743

APPARATUS AND METHOD FOR AUTOMATED AUDIO TELECONFERENCING HAVING ENHANCED ACCESS AND SECURITY FEATURES

William E. Pinnell, Auburndale, and James H. Campbell, IV, Winter Haven, both of Fla., assignors to Protel, Inc., Lakeland, Fla.

Filed May 12, 1995, Ser. No. 439,587
Int. Cl.[6] H04M *15/00;3/42;3/56*
U.S. Cl. 379—204 **54 Claims**



1. An audio telephone conferencing apparatus permitting a conference scheduler to reserve an audio teleconference and facilitating connection of conference attendees during the audio teleconference, the apparatus comprising:

conference bridging means for establishing au audio teleconference between conference attendees; and

a conference controller for controlling said conference bridging means, said conference controller comprising

access means for receiving an account number of the conference scheduler via a telephone of the conference scheduler,

access validating means for determining validity of the account number of the conference scheduler;

reservation means for generating an audio prompt menu at the telephone of the conference scheduler for directing the conference scheduler to input conference reservation information via the telephone and responsive to a valid account number from the conference scheduler, and for reserving the audio teleconference based upon the input conference reservation information;

billing allocation means for generating audio prompts relating to billing allocation among the conference scheduler and the conference attendees, said billing allocation means further comprising (a) means for permitting mixed billing between the conference attendees including at least one of post-pay, post-pay with credit limits and prepay, (b) means for permitting prepaid billing from one or more of the conference attendees, and (c) means for prompting a conference attendee to add value during the audio teleconference; and

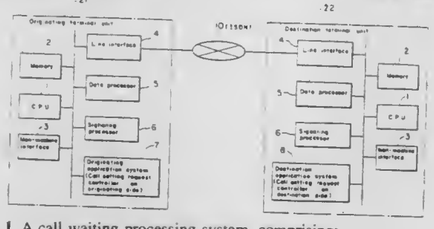
conference code generating means for generating a conference code and communicating the conference code to the conference scheduler via the telephone of the conference scheduler to permit the conference scheduler to communicate the conference code to the other conference attendees to thereby permit the conference attendees to join the reserved audio teleconference.

5,828,744

CALL WAITING PROCESSING SYSTEM, AND ORIGINATING TERMINAL UNIT, DESTINATION TERMINAL UNIT AND ORIGINATING/DESTINATION TERMINAL UNIT UTILIZED IN THE SAME SYSTEM

Kenji Nemoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Continuation of Ser. No. 64,223, May 18, 1993, abandoned. This application Feb. 6, 1996, Ser. No. 597,264
Claims priority, application Japan, May 19, 1992, 4-125180
Int. Cl.[6] H04M *3/48*
U.S. Cl. 379—215 **24 Claims**



1. A call waiting processing system, comprising:

an originating terminal unit; and

a destination terminal unit;

said originating terminal unit requesting a notification of a waiting period for a call setting, to said destination terminal unit when said originating terminal unit transmits an originating call to said destination terminal at a time when said destination terminal unit is in a state of being unavailable for a call setting; and

said destination terminal unit notifying said originating terminal unit of said waiting period when said destination terminal unit receives a request for a notification of said waiting period from said originating terminal unit.

5,828,745

CALL PROCESSING METHOD ADAPTED FOR DELETING A MISDIALED DIGIT

Soo-Jin Jeoung, Incheon, Rep. of Korea, assignor to Daewoo Telecom, Ltd., Icheon, Rep. of Korea

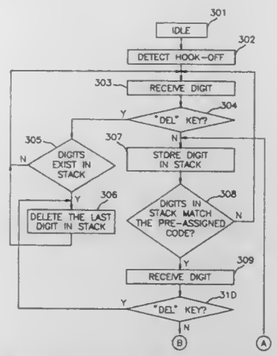
Filed Dec. 13, 1996, Ser. No. 766,741
Claims priority, application Rep. of Korea, Dec. 14, 1995, 95-49792
Int. Cl.[6] H04M *3/42*
U.S. Cl. 379—242 **7 Claims**

1. A call processing method for use in a switching system associated with a caller station equipped with a delete key, comprising the steps of:

(a) detecting an off-hook signal initiating a communication from the caller station, receiving digit(s) from the caller station and storing the digit(s) in a memory;

(b) comparing the stored digit(s) with pre-assigned codes to determine whether the stored digit(s) matches with one of the pre-assigned codes;

(c) erasing the last digit stored in the memory in response to a "delete" signal inputted from the caller station;



(d) sending digit(s) remaining in the memory to a regional center connected to a receiver station if another digit received after having compared the digit(s) at step (b) is not the "delete" signal; and

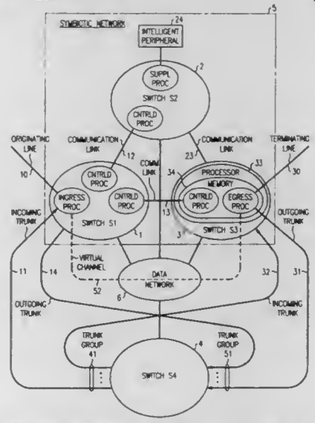
(e) establishing a communication path between the caller station and the receiver station.

5,828,746

TELECOMMUNICATIONS NETWORK

Menachem Tsur Ardon, Naperville, Ill., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 7, 1995, Ser. No. 485,422
Int. Cl.[6] H04M *7/00;1/00;3/42;3/00*
U.S. Cl. 379—230 **16 Claims**



1. In a telecommunications network comprising a plurality of autonomous stand-alone switches, within a set of said plurality of stand-alone switches, a method of establishing a connection between an input port, connected to an incoming trunk or an originating line, of an ingress switch of said set of switches and an output port, connected to an outgoing trunk or a terminating line of an egress switch of said set of switches comprising the steps of:

grouping the set of said plurality of stand-alone switches into a symbiotic network, the switches of said symbiotic network being interconnected by communication links;

ascertaining an identity of said output port;

ascertaining an identity of said egress switch;

assigning an ingress process to said input port;

assigning an egress process to said output port;

establishing a call connection between said input port and said output port using ones of said communication links; and

assigning a controlled process to each end of said ones of said communication links;

wherein said call connection is controlled by said ingress and said egress processes which control said controlled process; and

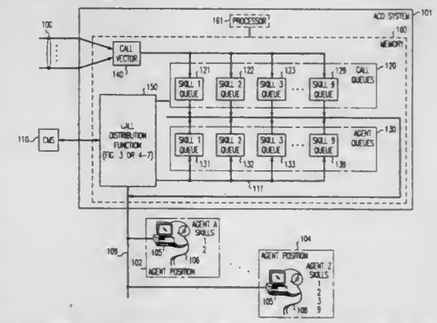
wherein said ingress and said egress processes communicate via data messages transmitted over a data network.

5,828,747

CALL DISTRIBUTION BASED ON AGENT OCCUPANCY

Thomas S. Fisher, Westminster; Andrew D. Flockhart, Thornton; Roy A. Jensen, Westminster; Joylee E. Kohler, Northglenn; Eugene P. Mathews, Barrington, and Edward L. Smelko, Boulder, all of Colo., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jan. 28, 1997, Ser. No. 790,143
Int. Cl.[6] H04M *5/06*
U.S. Cl. 379—309 **32 Claims**



1. A method of distributing calls to a plurality of agents, comprising the steps of:

determining individual occupancies of the agents wherein the occupancy of an agent comprises a ratio of one of (a) time worked by the agent and (b) a number of calls handled by the agent, over a staff time of the agent; and

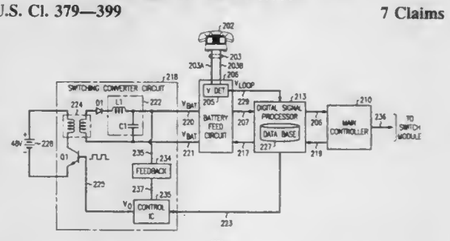
distributing the calls to the agents in inverse order of their individual occupancies.

5,828,748

METHOD FOR CUSTOMIZING OPERATION OF A LINE INTERFACE CIRCUIT IN A TELECOMMUNICATIONS NETWORK

Akhteruzzaman, Naperville, Ill., assignor to Lucent Technologies, Murray Hill, N.J.

Filed Jun. 27, 1996, Ser. No. 672,190
Int. Cl.[6] H04M *19/00*
U.S. Cl. 379—399 **7 Claims**



1. In central office switch interconnected to a plurality of subscriber loops via a plurality of line interface circuits LIC, a method for decreasing power losses in at least one LIC which provides telecommunications services to at least one subscriber loop comprises the steps of:

detecting an electrical parameter associated with the subscriber line;

determining an optimum operating frequency of a switching converter circuit of the LIC to minimize power losses by using the electrical parameter as an index for accessing a database which stores a plurality of operating frequencies; and

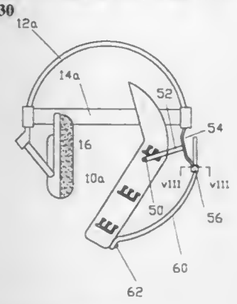
operating the LIC switching converter circuit at the optimum operating frequency.

5,828,749

PHONE HOLDER KIT

Arkadiy Brodskiy, 1255-10th Ave. #6, San Francisco, Calif. 94122

Filed Apr. 4, 1997, Ser. No. 832,942
Int. Cl.[6] H04M *1/05;* **A45F** *5/14*
U.S. Cl. 379—430 **8 Claims**



1. A phone holder kit comprising:

a box-like cradle for accommodating a telephone set insertable in said box-like cradle, said box-like cradle having one side wall, another side wall, a front end, a rear end, and a bottom portion, said rear end having a ramp portion;

a first headband of a flexible material for supporting said box-like cradle on the user's head, one end of said first headband being rigidly attached to said rear end of said box-like cradle and extending further from said ramp portion around the rear side of the user's head;

a ear mount which is attached to the end of said first headband opposite to said one end, said ear mount being located in a position corresponding to the user's ear on the side opposite to the location of said box-like cradle; and

second headband of a flexible material which has one end rigidly attached to said box-like cradle and the other end attached to said ear mount, said second headband being arranged at an angle to said first headband so that the second headband embraces the user's head essentially over the head top, said cradle further including a telephone support means and means for adjusting position of said telephone support means in said cradle with regard to said bottom portion.

5,828,750

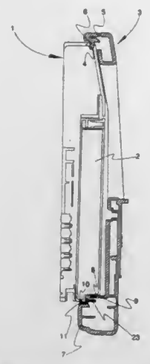
POSITIVE HOLDING RACK

Risto Perälä, Salo, Finland, assignor to Nokia Mobile Phones Ltd., Salo, Finland

Filed Jun. 10, 1996, Ser. No. 658,443
Claims priority, application Finland, Jun. 30, 1995, 953250
Int. Cl.[6] H04M *1/00*
U.S. Cl. 379—446 **6 Claims**

1. In combination with an electronic handset, a rack for locking said handset against movement thereon, said handset having an upper end and a lower end and the rack having frame defining a space with an upper end and a lower end, and the handset is inserted in the space;

said rack having at one end a point of attachment and at the opposite end two points of attachment which are attached to counterparts at corresponding locations in the handset when inserted in the rack thus holding the handset in the rack;



said two points of attachment being defined by a latch comprised of two spaced apart locking hooks protruding from opposite sides of a transverse slide member, said transverse slide member further having at least one pin extending from each side edge thereof, each of said pins being sized and shaped to be received within a corresponding groove in the frame and said transverse slide member being biased in the direction of said locking hooks by at least one first spring;

a push element biased in the direction of the transverse slide member by a second spring, and said frame having an opening therein for allowing a portion of said push element to protrude therethrough;

said push element having a surface engageable with a corresponding surface on said transverse slide member when said push element is moved in a direction oppositely of the bias of said second spring; and

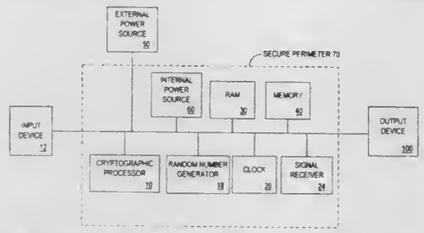
release buttons carried by said frame having shanks which cooperate with a latch claw engagable with said slide member to effect selective locking or unlocking of the transverse slide member.

5,828,751

METHOD AND APPARATUS FOR SECURE MEASUREMENT CERTIFICATION

Jay S. Walker, Ridgefield, Conn.; Bruce Schneier, Oak Park, Ill., and James A. Jorasch, Stamford, Conn., assignors to Walker Asset Management Limited Partnership, Stamford, Conn.

Filed Apr. 8, 1996, Ser. No. 628,920
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—25 **174 Claims**



168. A device for secure measurement acquisition and certification, comprising:

a sensor;

an input device for receiving a request for a certifiable measurement, the input device including a signal receiver;

a time generator for transmitting a representation of a time;

a signal generator; and

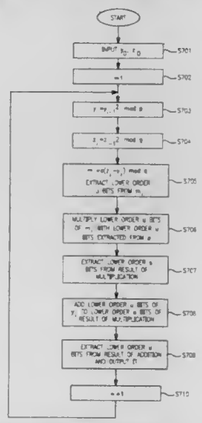
a computing device, including a computer processor and a memory, coupled to receive a measurement signal representative of a physical parameter from the sensor, the representation of the time from the time generator and a corroborative datum indicative of an operating condition of the device from the signal generator, said computing device forming an augmented measurement including the measurement signal, the representation of the time and the corroborative datum, and performing a cryptographic operation on at least a portion of the augmented measurement to form the certifiable measurement, said computing device further forming the certifiable measurement in response to the request for the certifiable measurement.

5,828,752

PSEUDO-RANDOM NUMBER GENERATOR AND COMMUNICATION SYSTEM EMPLOYING THE SAME

Keiichi Iwamura, and Takahisa Yamamoto, both of Kawasaki, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 13, 1995, Ser. No. 402,366
Claims priority, application Japan, Mar. 15, 1994, 6-043544
Int. Cl.[6] H04K *9/00;* **G06F** *7/58*
U.S. Cl. 380—46 **24 Claims**



1. A communication apparatus comprising:

y_i operating means for outputting y_i (i=1, 2, . . . , n, where n is an arbitrary integer) upon performing an operation of a recurrence formula "$y_i=f(y_{i-1}) \bmod p$, (i=1, 2, . . . , n)" based upon a prescribed initial value y_0, a prescribed prime number p and a function $f(y_{i-1})$ of y_{i-1};

z_i operating means for outputting z_i (i=1, 2, . . . , n) upon performing an operation of a recurrence formula "$z_i=g(z_{i-1}) \bmod q$; (i=1, 2, . . . , n)" based upon a prescribed initial value z_0, a prescribed prime number q and a function $g(z_{i-1})$ of z_{i-1};

m_i operating means for extracting prescribed lower order bits out of m_i (i=1, 2, . . . , n) upon performing an operation of a remainder formula "$m_i=a\cdot(z_i-y_i) \bmod q$; (i=1, 2, . . . n)" based upon a prescribed coefficient a and the prescribed prime number q;

prescribed bit operating means for multiplying said prescribed lower order bits extracted from m_i and said prescribed lower order bits extracted from the prescribed prime number p, adding prescribed lower order bits of y_i to prescribed lower order bits of a result of multiplication and adopting prescribed lower order bits of a result of addition as an i-th pseudo-random number X_i (i=1, 2, ... n);

encryption means for generating a cryptogram from a plain text on the basis of the pseudo-random number X_i (i=1, 2, . . . , n) generated by said prescribed bit operating means; and

output means for outputting the cryptogram,

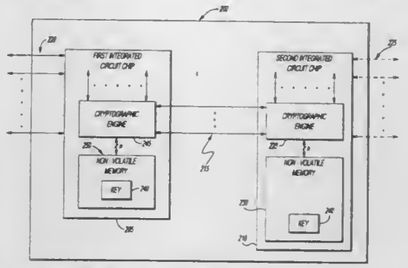
wherein the number of prescribed lower order bits is more than one and less than the minimum number of bits needed to represent "$\log_2(p\cdot q)$".

5,828,753

CIRCUIT AND METHOD FOR ENSURING INTERCONNECT SECURITY WITHIN A MULTI-CHIP INTEGRATED PACKAGE

Derek L. Davis, Phoenix, Ariz., assignor to Intel Corporation, Santa Clara, Calif.

Filed Oct. 25, 1996, Ser. No. 735,976
Int. Cl.[6] H04L *9/00*
U.S. Cl. 380—49 **28 Claims**



1. A multi-chip module comprising:

an interconnect;

a first integrated circuit chip including a first cryptographic engine, the first cryptographic engine being coupled to the interconnect;

a second integrated circuit chip including a second cryptographic engine, the second cryptographic engine being coupled to the interconnect; and

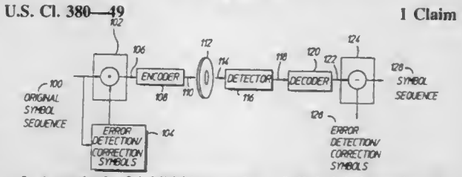
a package containing the first integrated circuit chip and the second integrated circuit chip.

5,828,754

METHOD OF INHIBITING COPYING OF DIGITAL DATA

Josh Hogan, Los Altos, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 606,697, Feb. 26, 1996, Pat. No. 5,699,434. This application Jun. 27, 1997, Ser. No. 883,996
Int. Cl.[6] H04L *9/00;* **H04K** *1/02;1/04;* **G11B** *15/04;19/04;* **H04N** *5/76;* **H03M** *7/00*
U.S. Cl. 380—49 **1 Claim**



1. A method of inhibiting copying of digital information, the method comprising the following steps:

(a) determining a sequence of symbols that encodes into channel bits having an accumulated digital sum variance that exceeds a predetermined limit;

(b) computing error correction bits for the sequence of symbols of step (a);

(c) replacing at least one symbol in the sequence of symbols of step (a) such that the sequence with the replaced symbol encodes into channel bits having an accumulated digital sum variance that does not exceed the predetermined limit and such that the error correction bits of step (b) are incorrect;

(d) encoding the sequence of symbols of step (c) and the error bits of step (b) into channel bits, such that error correction of the resulting channel bits will restore the symbol replaced in step (c); and

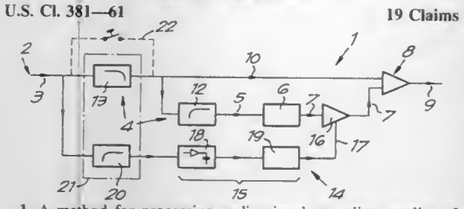
(e) transmitting the channel bits of step (d).

5,828,755

METHOD AND DEVICE FOR PROCESSING SIGNALS

Eric Edmond Feremans, Wandelingstraat 23-2A, B-8500 Kortrijk, and Francis De Smet, Generaal Lemanlaan 151, B-8310 Brugge, both of Belgium

PCT No. PCT/BE95/00028, § 371 Date Nov. 26, 1996, § 102(e) Date Nov. 26, 1996, PCT Pub. No. WO96/31085, PCT Pub. Date Oct. 3, 1996
PCT Filed Mar. 28, 1995, Ser. No. 750,110
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—61 19 Claims



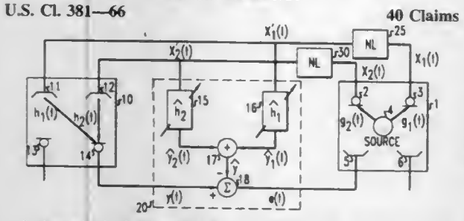
1. A method for processing audio signals to adjust quality of sounds produced comprising:
(a) supplying input signals to be treated;
(b) isolating a set of basis signals from said input signals, said set of basis signals lying exclusively within at least one frequency range;
(c) generating higher harmonic signals representative of higher harmonics of said set of basis signals; and
(d) forming output signals by combining the higher harmonic signals with at least part of said input signals,
wherein said step of combining the generated higher harmonic signals with at least part of said input signals is controlled at least as a function of signals extracted from said input signals, said extracted signals lying at least in part within a frequency range outside said at least one frequency range.

5,828,756

STEREOPHONIC ACOUSTIC ECHO CANCELLATION USING NON-LINEAR TRANSFORMATIONS

Jacob Benesty, New Providence; Joseph Lindley Hall, II, Basking Ridge; Dennis Raymond Morgan, Morristown, and Man Mohan Sondhi, Mountain Lakes, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation-in-part of Ser. No. 344,320, Nov. 22, 1994. This application Nov. 12, 1996, Ser. No. 747,730
Int. Cl.[6] H04B *3/20*
U.S. Cl. 381—66 40 Claims



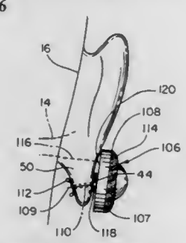
1. A method of acoustic echo cancellation for enhancing communication between first and second locations, at which second location multiple source signals are provided and a signal representing at least acoustic echo signals at said second location is generated, the method comprising the steps of:
performing a non-linear transformation on each of one or more channel signals, each channel signal reflecting at least one of the multiple source signals, thereby resulting in two or more reduced correlation source signals;
estimating two or more impulse responses at the second location;
filtering said reduced correlation source signals based on the estimated impulse responses to produce two or more echo estimate component signals; and
generating a signal representing a difference between a combination of said echo estimate component signals and said signal representing at least said acoustic echo signals.

5,828,757

DIRECTIONAL HEARING AID ASSEMBLY

Robert M. Michalsen, 1434 Oakwood Ave., Des Plaines, Ill. 60016, and Beatrix Kopesdy, 3 Saville Row, Barrington Hills, Ill. 60010

Filed Dec. 12, 1996, Ser. No. 766,188
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—68.6 9 Claims



7. A hearing aid assembly comprising:
(a) a housing sized and configured for insertion within an ear canal of a user;
(b) electronic means disposed within the housing for amplifying sound, the electronic means including a receiver and circuitry electronically connected with one another; and
(c) sound receiving means for operatively transferring sound waves to the electronic means, the sound receiving means including a thin elongated wire structure having first and second wire ends, the first wire end extending within the hearing aid housing and into the ear canal for electrically connecting with the electronic means, the second wire end extending outwardly from the hearing aid housing at a position forward of the ear canal in close proximity to a lowermost portion of the ear canal, the ear canal having an opening remaining substantially free of encumbrance, and a microphone electrically connected to the second wire end; and
(d) connecting means for removably securing the microphone to a post of an earring structure for engagement between an earlobe of the user and a back side of a decorative portion of the earring structure.

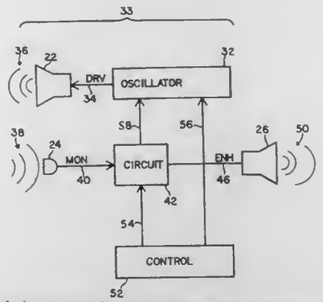
5,828,758

SYSTEM AND METHOD FOR MONITORING THE ORAL AND NASAL CAVITY

Michael L. Byce, 9878 W. Edna, Boise, Id. 83704, and Joel E. Just, 4840 View Dr., Meridian, Id. 83642

Filed Oct. 3, 1995, Ser. No. 539,227
Int. Cl.[6] A61F *1/20*
U.S. Cl. 381—70 3 Claims

1. A system for monitoring an oral-nasal cavity, the system comprising:
a. a sound source that provides a first subaudible signal in the cavity;
b. a sensor that receives a second signal from the cavity, the second signal being responsive to the first signal and to the cavity, the sensor providing a monitor signal, the monitor signal comprising a first modulation and a first period; and
c. a circuit, coupled to the sensor, said circuit comprising a processor, wherein the processor digitizes the monitor signal thereby providing a first sample and a second sample, and determines a third signal in response to the first sample and the second sample, the third signal comprising a second modulation responsive to the first modulation and comprising a second period unequal to the first period.

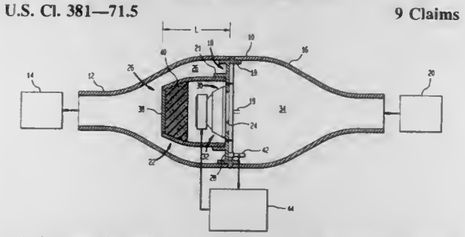


5,828,759

SYSTEM AND METHOD FOR REDUCING ENGINE NOISE

Gary Everingham, Chatham, Canada, assignor to Siemens Electric Limited, Chatam, Canada

Filed Nov. 30, 1995, Ser. No. 565,738
Int. Cl.[6] H03B *29/00*; A61F *11/06*
U.S. Cl. 381—71.5 9 Claims



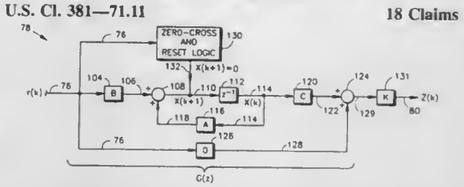
1. A system for reducing noise produced by an internal combustion engine having an air induction system for providing an air flow to supply said engine including:
a main duct for receiving all of said air flow passing through said air induction system to said engine, said main duct including a curvilinear section gradually enlarging from a small diameter portion to a substantially larger diameter portion;
said system also including a speaker enclosure positioned within said larger diameter portion of said main duct, said speaker enclosure also having a curvilinear form and said speaker enclosure coaxially positioned within said larger diameter portion of said main duct curvilinear section so as to provide an annular flow space within said main duct larger diameter portion surrounding a perimeter portion of said speaker enclosure, said air flow passing into said annular flow space;
a speaker coaxially aligned within said enclosure, said speaker having a cone facing towards the air flow into said main duct larger diameter portion, said speaker enclosure allowing sound to be projected out from one end thereof from said speaker and away from said main duct larger diameter portion;
a sound transducer assembly comprising a sound transducer positioned to generate electrical signals corresponding to engine noises propagated along said main duct;
said sound transducer assembly further comprising an audio amplifier connected to receive and amplify said electrical signals, said audio amplifier having an output operably connected to said speaker to drive said speaker with said amplified signals phase shifted by 180°, to generate cancelling sound from said speaker broadcast out from said main duct curvilinear section larger diameter portion.

5,828,760

NON-LINEAR REDUCED-PHASE FILTERS FOR ACTIVE NOISE CONTROL

Clas A. Jacobson, Tolland, and Duane C. McCormick, Colchester, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jun. 26, 1996, Ser. No. 672,168
Int. Cl.[6] H03B *29/00*
U.S. Cl. 381—71.11 18 Claims



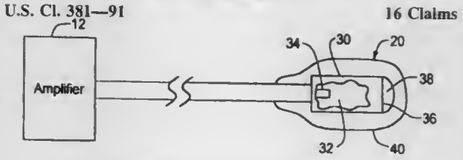
1. An active noise control system, comprising:
an actuator which provides an acoustic anti-noise signal in response to a drive signal;
an error sensor disposed so as to sense said acoustic anti-noise signal from said actuator and to sense disturbance noise and provide an error signal indicative of a combination thereof;
a controller responsive to said error signal, comprising:
a filter having energy states; and
non-linear reset logic which temporarily resets said energy states in said filter to zero when said error signal crosses zero;
said controller providing said drive signal to said actuator; and
said acoustic anti-noise signal having an amplitude and phase so as to attenuate said disturbance noise at said sensor.

5,828,761

SOUND AMPLIFICATION SYSTEM HAVING A SUBMERSIBLE MICROPHONE

Alexander G. Langer, 22942 Captain Kidd La., Cudjoe Key, Fla. 33042

Filed Jun. 19, 1995, Ser. No. 492,412
Int. Cl.[6] H04R *1/02*
U.S. Cl. 381—91 16 Claims



1. A sound amplification system comprising:
an amplifier having an input and an output; and
a submersible waterproof microphone adapted for communication with said input of said amplifier while said microphone is exposed to water, said microphone including a housing defining a cavity, an opening for accessing said cavity, a sound permeable material covering said opening, and a deflectable waterproof membrane responsive to acoustic activity covering said sound permeable material and said opening.

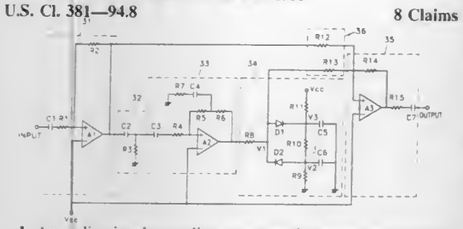
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5,828,762

APPARATUS FOR COMPENSATING AUDIO SIGNAL RECORDING

Hai-wook Lee, Suwon, Rep. of Korea, and Igor G. Vikulov, Ljuberzy, Russian Federation, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 3, 1997, Ser. No. 794,020
Claims priority, application Rep. of Korea, Nov. 9, 1996, 1996 53083
Int. Cl.[6] H04B *15/00*
U.S. Cl. 381—94.8 8 Claims



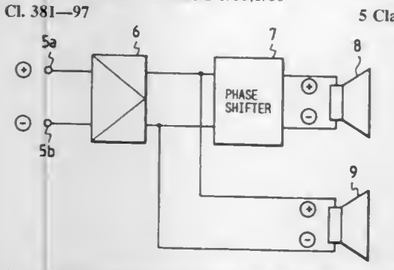
1. An audio signal recording compensation apparatus comprising:
a high-pass filter for passing only a high-frequency component of an audio signal to be recorded to produce a high-pass filtered signal;
a clipper for generating a clipped signal by cutting off said high-pass filtered signal beyond predetermined amplitude levels; and
an adder for generating a compensation recording signal by superimposing said clipped signal and said audio signal to be recorded.

5,828,763

SPEAKER SYSTEM INCLUDING PHASE SHIFT SUCH THAT THE COMPOSITE SOUND WAVE DECREASES ON THE PRINCIPAL SPEAKER AXIS

Shinji Koyano; Koushiro Kogure, and Yuichi Saito, all of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 676,007, Mar. 27, 1991, abandoned.
This application Apr. 5, 1993, Ser. No. 43,610
Claims priority, application Japan, Aug. 31, 1990, 2-231370
Int. Cl.[6] H03G *3/00;5/00*
U.S. Cl. 381—97 5 Claims



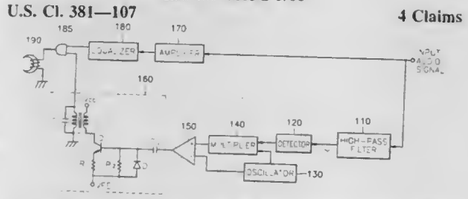
1. A speaker system for reproducing an audio signal, comprising:
a power amplifier for providing the audio signal;
a first speaker for receiving the audio signal from said power amplifier;
phase shifter means, coupled to receive the audio signal from the power amplifier, for shifting a phase of the received audio signal between ±120° and ±180° in the mid- and high-frequency ranges; and
a second speaker for receiving the phase-shifted audio signal from said phase shifter means, a composite sound pressure wave of said first and second speakers decreasing on a principal axis (0°) which corresponds to a line of symmetry of respective radiating axes of said first and second speakers; wherein said first and second speakers are mounted in a single cabinet such that the respective distances from said first and second speakers to a listener are equal to each other, and wherein the speaker system reproduces the audio signal such that the principal axis is directed towards the listener.

5,828,764

APPARATUS FOR CONTROLLING AUDIO RECORDING BIAS

Hai-wook Lee, Suwon, Rep. of Korea, and Igor G. Vikulov, Ljuberzy, Russian Federation, assignors to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Feb. 10, 1997, Ser. No. 795,242
Claims priority, application Rep. of Korea, Nov. 9, 1996, 1996 53082
Int. Cl.[6] H03G *3/00*
U.S. Cl. 381—107 4 Claims



1. An apparatus for controlling an audio recording bias comprising:
a high-pass filter for passing only high frequency components of an input audio signal; and
a bias signal generator for generating an oscillating bias signal which is inversely proportional to the level of said high-pass filtered audio signal in the high-frequency region of said input audio signal, and is of a predetermined level in the middle- and low-frequencies of said input audio signal, wherein said bias signal generator comprises:
a detector for detecting upper and lower peak levels of the high-pass filtered audio signal;
an oscillator for generating an oscillating signal of a predetermined frequency to bias said input audio signal when recorded;
a multiplier for multiplying said oscillating signal by an output signal of said detector and generating a multiplied output signal;
a differential amplifier for generating a controlling bias signal as a differential signal of said multiplied output signal and said oscillating signal; and
a level controller for generating said oscillating bias oscillating signal proportional to the level of said controlling bias signal.

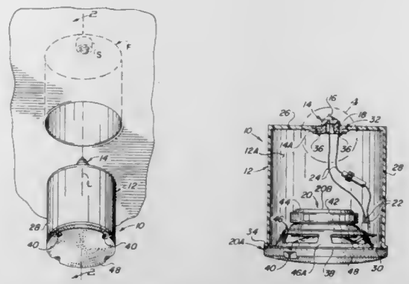
5,828,765

AUDIO LOUDSPEAKER ASSEMBLY FOR RECESSED LIGHTING FIXTURE AND AUDIO SYSTEM USING SAME

Tony L. Gable, OEM Systems Company, Inc., 740 Freeport, Ste. 106, Sparks, Nev. 89431

Filed May 3, 1996, Ser. No. 643,167
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—188 12 Claims

1. An audio loudspeaker assembly for a recessed lighting fixture having a female socket means with an internally threaded surface being adapted to have a light bulb threadably screwed therein, the female socket means having a pair of electrical contacts mounted thereon, said assembly comprising:
(a) a housing having a rear end wall and an annular sidewall connected to and extending from said rear end wall and defining an interior cavity of said housing, said annular sidewall of said housing having a front end disposed opposite from said rear end wall;



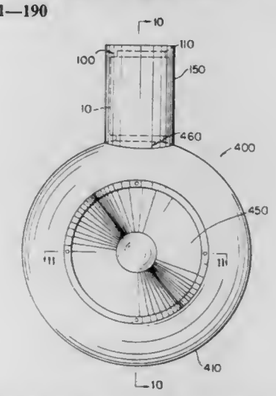
(b) a male socket means attached to and projecting outwardly from said housing and having an externally threaded surface exposed exteriorly of said housing being adapted to threadably screw into the internally threaded surface of the female socket means within the recessed lighting fixture, in the absence of the light bulb being threadably screwed therein, by rotation of said housing and male socket means therewith relative to the female socket means;
(c) a pair of electrical contacts mounted to said male socket means and being exposed exteriorly of said housing for making an electrical connection with the pair of electrical contacts of the female socket means, said pair of electrical contacts of said male socket means also being exposed in said interior cavity of said housing;
(d) an audio loudspeaker module mounted in said interior cavity of said housing and having electrical terminals disposed in said interior cavity of said housing; and
(e) a pair of internal electrical conductor wires disposed in said interior cavity of said housing and being electrically connected to said pair of electrical contacts of said male socket means and extending therefrom and being electrically connected directly to said electrical terminals of said audio loudspeaker module.

5,828,766

ACOUSTIC SPEAKER SYSTEM

Anthony Gallo, Brooklyn, N.Y., assignor to Anthony Gallo Acoustics, Inc., Brooklyn, N.Y.

Continuation of Ser. No. 356,938, Dec. 15, 1994, abandoned.
This application Jul. 21, 1997, Ser. No. 897,376
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—190 170 Claims



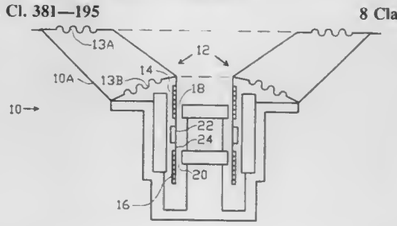
1. An electro-acoustic converter for converting between electrical and acoustic energy, said converter comprising:
an electro-acoustic transducer comprising:
a flexible piezoelectric sheet defining a plane, and having a first edge, a second edge opposed to said first edge, a first face, and a second face opposite said first face,
an electrically conducting first layer disposed on said first face of the sheet, and
an electrically conducting second layer disposed on the second face of said sheet; and
a sound dampening body having an outer surface and a mass density that substantially continuously increases away from said outer surface; wherein:
said transducer is disposed against at least a portion of said outer surface of said body such that said sheet is deformed out of said plane.

5,828,767

INDUCTIVE BRAKING IN A DUAL COIL SPEAKER DRIVER UNIT

Douglas J. Button, Los Angeles, Calif., assignor to JBL Inc., Northridge, Calif.

Filed Sep. 22, 1997, Ser. No. 934,642
Int. Cl.[6] H04R *25/00*
U.S. Cl. 381—195 8 Claims



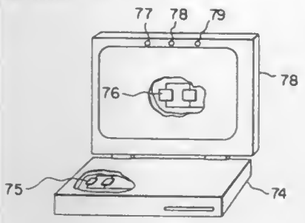
1. A bidirectional inductive braking system, in a dual voice coil electro-magnetic audio loudspeaker, comprising:
a frame of said loudspeaker;
a vibratable voice coil/diaphragm assembly of said loudspeaker having a cylindrical voice coil form;
suspension means for resiliently mounting said voice coil/diaphragm assembly to said frame;
a first voice coil affixed to the voice coil form disposed within a first magnetic field that traverses a first annular gap;
a second voice coil, affixed to the voice coil form spaced from the first voice coil by a voice coil spacing dimension, disposed within a second magnetic field that traverses a second annular gap spaced from the first annular gap by a gap spacing dimension; and
a short-circuited braking coil comprising at least one turn located on the voice coil form substantially midway between said first voice coil and said second voice coil;
the voice coils and the magnetic fields being relatively dimensioned and arranged to cause said braking coil, (a) upon approaching a first limit of working displacement, to enter the first magnetic field and thus exert a braking force on said voice coil/diaphragm assembly, and (b) upon approaching a second limit of working displacement opposite the first limit thereof, to enter the second magnetic field and thus exert a braking force on said voice coil/diaphragm assembly; thus said braking coil is enabled to bilaterally constrain excursions of said voice coil/diaphragm assembly.

5,828,768

MULTIMEDIA PERSONAL COMPUTER WITH ACTIVE NOISE REDUCTION AND PIEZO SPEAKERS

Graham P. Eatwell, Cambridge, United Kingdom; Michael P. McLoughlin, Sykesville, Md.; Stephen F. Hildebrand, Arlington, Va.; William Kokonaski, Columbia, Md., and James W. Hiney, Falls Church, Va., assignors to Noise Cancellation Technologies, Inc., Linthicum, Md.

Filed May 11, 1994, Ser. No. 241,440
Int. Cl.[6] H04R 5/02
U.S. Cl. 381—333 21 Claims



1. A laptop computer employing integrated piezoelectric panels and microphone in a novel arrangement, said computer comprising a main housing means,

lid means physically and operatively connected to said main housing means, said lid means being configured as a hollow enclosure, display means on said lid means and adapted to provide a visual display,

piezoelectric panel means on said lid means and adapted in conjunction with said hollow enclosures, to provide an audio output, control means situated within said main housing means and adapted to drive said piezoelectric audio output and said visual display means in response to input signals,

input means adapted to provide inputs to said control means, wherein said input means includes a voice recognition means and microphone means adapted to function with said voice recognition means to produce input signals to said control means, and wherein said control means includes

analog to digital conversion means adapted to process said microphone means inputs,

finite impulse filter means adapted to receive the output from said conversion means,

summing means adapted to receive the output of said impulse means and adapted to produce a composite digital output,

automatic gain adjustment means adapted to process said composite digital output, and

multiplying digital to analog conversion means adapted to receive said processed output and to change the sensitivity of said microphone means.

5,828,769

METHOD AND APPPARATUS FOR RECOGNITION OF OBJECTS VIA POSITION AND ORIENTATION CONSENSUS OF LOCAL IMAGE ENCODING

J. Brian Burns, Palo Alto, Calif., assignor to Autodesk, Inc., San Rafael, Calif.

Filed Oct. 23, 1996, Ser. No. 735,621
Int. Cl.[6] G06K 9/00;9/62
U.S. Cl. 382—118 24 Claims

1. A method for recognition of an object in an image comprising the steps of:

capturing in electronic memory multiple model images of the object;

selecting from each captured model image multiple model image patches;

encoding respective selected model image patches as respective sets of inner products of respective image patch data and a set of two-dimensional (2D) functions such that the respective sets of inner products include information useful in computing a pose estimate for the object;



capturing in the electronic memory a current image;

selecting from the captured current image multiple current image patches;

encoding respective selected current image patches as respective sets of inner products of respective image patch data and the set of two-dimensional (2D) functions such that the respective sets of inner products include information useful in computing a pose estimate for the object;

comparing respective current image patch encodings with respective model image patch encodings;

identifying respective matches between current image patches and model image patches based upon said comparisons;

computing respective object pose estimates that correspond to respective matches of current image patches and model image patches using respective inner products from such respective matching patches;

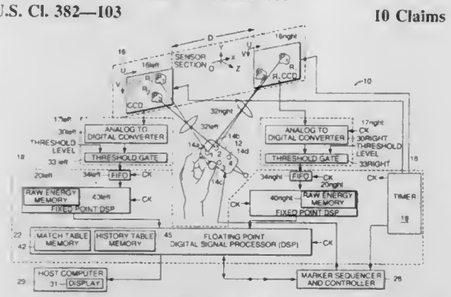
identifying a respective object pose estimate that corresponds to the largest number of patch matches.

5,828,770

SYSTEM FOR DETERMINING THE SPATIAL POSITION AND ANGULAR ORIENTATION OF AN OBJECT

Stephen Eldon Leis, Waterloo, and David Ristau, Kitchener, both of Canada, assignors to Northern Digital Inc., Ontario, Canada

Filed Feb. 20, 1996, Ser. No. 603,791
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—103 10 Claims



1. A system for determining the spatial position and angular orientation of an object, comprising:

a plurality of activatable markers adapted for mounting to the object;

a sensor section adapted to detect energy emitted by the markers;

a processor, responsive to signals produced by the sensor section in response to the energy detected by such sensor section, for determining the position of the detected energy on such sensor section;

a controller for activating the markers in a predetermined sequence during a marker-identification mode and for simultaneously activating a plurality of the markers during a subsequent marker-tracking mode;

and wherein the processor matches the determined position of the detected energy with a corresponding one of the markers during the marker-identification mode and tracks the position of each of the simultaneously activated and identified markers during the marker-tracking mode and,

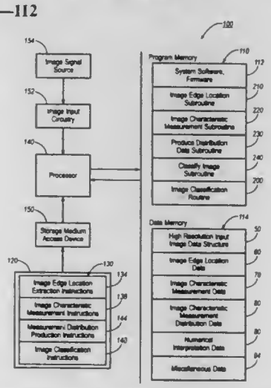
wherein the controller sequentially activates a successively increasing number of the plurality of markers during each of one of a corresponding sequence of sensor cycles during the marker-identification mode.

5,828,771

METHOD AND ARTICLE OF MANUFACTURE FOR DETERMINING WHETHER A SCANNED IMAGE IS AN ORIGINAL IMAGE OR FAX IMAGE

Dan S. Bloomberg, Palo Alto, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 15, 1995, Ser. No. 573,617
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—112 20 Claims



1. An image processing method, implemented in a machine having a processor, for operating on image data defining an image including a first plurality of image locations; the image having an image characteristic capable of being measured in relation to image locations occurring at image edges; the method classifying an image on the basis of a measurement of the image characteristic for the image, and comprising the steps of:

producing a second plurality of image locations, referred to as image edge locations, indicating the image edge locations occurring in the first plurality of image locations at one of vertical or horizontal edges included in the image; said producing step determining a plurality of 8-connected components of vertical edges included in the image;

performing a measurement operation using the image to measure an image characteristic of the image in relation to the image edge locations; the image characteristic being a measurable attribute of the image; the measurement operation producing image characteristic measurement data by performing the steps of:

measuring a height for each of the plurality of 8-connected components of vertical edges, and

producing count data indicating a count of a number of 8-connected components of vertical edges for each height measurement;

producing distribution data indicating a distribution of the image characteristic measurement data; and

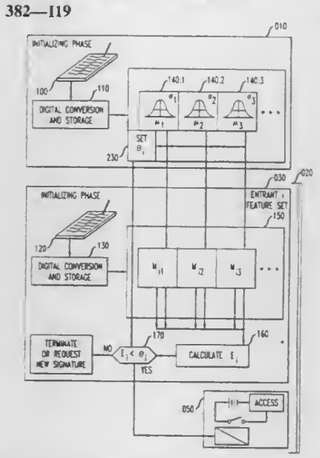
classifying the image as being either an original image or a fax image on the basis of interpretation data indicating a numerical interpretation of the distribution data.

5,828,772

METHOD AND APPARATUS FOR PARAMETRIC SIGNATURE VERIFICATION USING GLOBAL FEATURES AND STROKE-DIRECTION CODES

Ramanujan S. Kashi, Highland Park; Winston Lowell Nelson, Morristown, and William Turin, East Brunswick, all of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Dec. 27, 1995, Ser. No. 579,534
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—119 11 Claims



1. A method for encoding the handwritten signature of a person, comprising:

(a) digitally sampling the trajectory of a stylus thereby to provide a digitized signature record;

(b) storing said record in a digital memory;

(c) digitally processing said record, thereby to derive a numerical value for each of a plurality of global features of the signature;

(d) storing said numerical values in a digital memory;

(e) subdividing the signature into a time-ordered sequence of oriented links;

(f) assigning to each link a quantized stroke-direction value corresponding to the respective orientation of that link, thereby to obtain for the signature as a whole an ordered sequence of stroke-direction values, said sequence to be referred to as a stroke-direction code (SDC);

(g) storing the SDC in a digital memory;

(h) repeating steps (a)–(g) for each of a plurality of signatures provided by the same person, thereby to provide, in a digital memory: (i) a reference set of feature vectors, each of said feature vectors consisting of the numerical global-feature values relating to a respective one of the signatures; and (ii) a reference set of SDCs, each said SDC relating to a respective one of the signatures;

(i) averaging the feature vectors, thereby to derive an average and a deviation measure of each of the respective global features over the feature-vector reference set;

(j) storing the averages and the deviation measures in a digital memory;

(k) evaluating a distance function, to be referred to as the SDC distance, between each pair of SDCs in the SDC reference set;

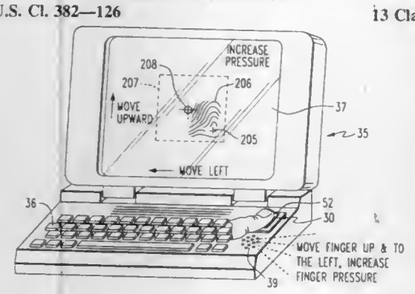
(l) identifying as an average or representative SDC, to be referred to as the SDC template, that one SDC that has the least mean-square distance to all of the other SDCs in the SDC reference set; and

(m) storing the SDC template in a digital memory.

5,828,773
FINGERPRINT SENSING METHOD WITH FINGER POSITION INDICATION

Dale R. Setlak, Melbourne; John C. Schmitt, Indialantic, both of Fla.; Steven D. Wilson, Chicago, Ill., and Ellery Y. Chan, Palm Bay, Fla., assignors to Harris Corporation, Palm Bay, Fla.

Filed Jan. 26, 1996, Ser. No. 590,564
Int. Cl.[6] G06K 9/28;9/32
U.S. Cl. 382—126 13 Claims



1. A method for sensing a fingerprint using a fingerprint sensor including a plurality of sensing elements for sensing identifying features of a fingerprint from a finger of a user, the method comprising the steps of:

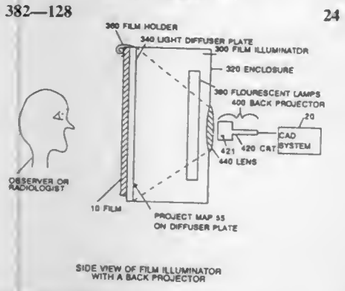
determining an actual fingerprint position on said fingerprint sensor relative to a desired fingerprint position based on the sensed identifying features of a fingerprint of a user; and

generating a finger position indication to assist the user in positioning the finger to the desired fingerprint position based upon the actual fingerprint position on said fingerprint sensor.

5,828,774
COMPUTER-AIDED DIAGNOSIS SYSTEM AND METHOD

Shih-Ping Wang, 409 Becker La., Los Altos, Calif. 94022

Continuation of Ser. No. 129,255, Sep. 29, 1993, abandoned.
This application Dec. 28, 1995, Ser. No. 579,802
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—128 24 Claims



SIDE VIEW OF FILM ILLUMINATOR WITH A BACK PROJECTOR

1. A system comprising:

a source of digitized image data representing x-ray film said digitized image data having a selected spatial resolution;

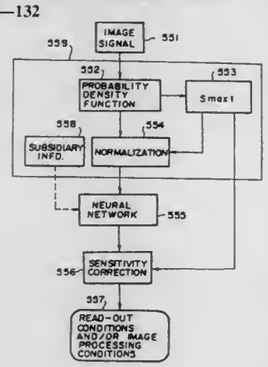
a processor coupled with said source to receive said digitized image data, to process said data to detect abnormal anatomical features meeting selected criteria and to generate annotation maps identifying image portions corresponding to said abnormal anatomical features; and

a display coupled with said processor and illuminating said x-ray film for viewing at full analog spatial and contrast resolution while selectively electronically displaying in association therewith corresponding annotation maps at a lower spatial resolution than said selected spatial resolution of said digitized image data, at positions in space which are spatially matched to said illuminated x-ray film.

5,828,775
METHOD AND APPARATUS FOR ADJUSTING READ-OUT CONDITIONS AND/OR IMAGE PROCESSING CONDITIONS FOR RADIATION IMAGES, RADIATION IMAGE READ-OUT APPARATUS, AND RADIATION IMAGE ANALYZING METHOD AND APPARATUS

Hideya Takeo; Wataru Ito, and Kazuo Shimura, all of Kanagawa-ken, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 591,934, Jan. 29, 1996, which is a division of Ser. No. 164,825, Dec. 9, 1993, Pat. No. 5,515,450, which is a continuation of Ser. No. 687,140, Apr. 18, 1991, abandoned.
This application May 28, 1997, Ser. No. 864,451
Claims priority, application Japan, Apr. 18, 1990, 2-102015; Apr. 19, 1990, 2-103392; Jul. 31, 1990, 2-203070; Aug. 20, 1990, 2-218483; Sep. 14, 1990, 2-244193; Oct. 15, 1990, 2-275584; Oct. 17, 1990, 2-277996; Oct. 19, 1990, 2-282801; Mar. 13, 1991, 3-48362; Mar. 15, 1991, 3-51132; Apr. 5, 1991, 3-73268
Int. Cl.[6] G06K 9/00;9/62
U.S. Cl. 382—132 8 Claims



5. A method for adjusting image processing conditions for radiation image, wherein image processing conditions, under which an image signal is to be image processed, are adjusted on the basis of the image signal representing a radiation image of an object,

the method for adjusting image processing conditions for a radiation image comprising the steps of:

i) taking the value of said image signal, which value represents the maximum amount of the emitted light in part of a probability density function of said image signal other than the part corresponding to a background region in said radiation image, as the maximum value,

ii) normalizing said probability density function with its maximum value in its part between said maximum value and the minimum value of said image signal, a normalized probability density function being thereby created,

iii) feeding information, which represents said normalized probability density function, into a neural network such that a predetermined value, which falls within the range of the maximum value and the minimum value of the image signal in said normalized probability density function, may always be fed into the same input unit of said neural network,

iv) feeding out information representing the image processing conditions from said neural network,

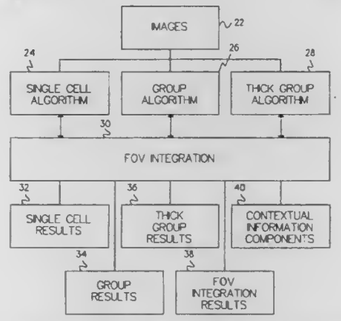
v) correcting the image processing conditions, which are represented by said information fed out from said neural network, on the basis of said predetermined value, and

vi) thereby adjusting the final image processing conditions.

5,828,776
APPARATUS FOR IDENTIFICATION AND INTEGRATION OF MULTIPLE CELL PATTERNS

Shih-Jong J. Lee, Bellevue; Chih-Chau L. Kuan, Redmond; Wendy R. Bannister, Seattle; Paul S. Wilhelm, Kirkland, and Michael G. Meyer, Seattle, all of Wash., assignors to Neo-Path, Inc., Redmond, Wash.

Continuation of Ser. No. 308,992, Sep. 20, 1994, abandoned.
This application Jul. 11, 1996, Ser. No. 678,124
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—133 43 Claims



1. An apparatus for identification and integration of multiple cell patterns comprising:

(a) an automated microscope for acquiring at least one image of a biological specimen having at least one image output;

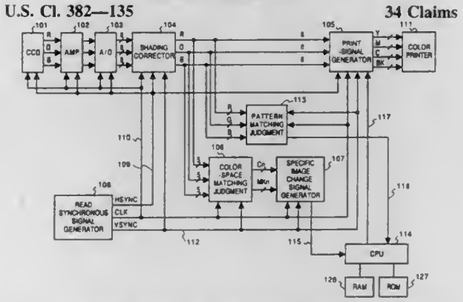
(b) a single cell classifier, a group classifier, and a thick group classifier having a single cell classifier output, a group classifier output, and a thick group classifier output, wherein the thick group classifier identifies thick groups of cells having a plurality of overlapping nuclei; and

(c) integration means, coupled to the single cell classifier output, group classifier output, and thick group classifier output, wherein the integration means has at least one output.

5,828,777
IMAGE PROCESSING METHOD AND APPARATUS FOR PREVENTING COPING OF SPECIFIED DOCUMENTS

Akio Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 22,626, Feb. 25, 1993, abandoned.
This application May 12, 1995, Ser. No. 440,318
Claims priority, application Japan, Feb. 28, 1992, 4-043893
Int. Cl.[6] G06K 9/68
U.S. Cl. 382—135 34 Claims



1. A controlling method for generating a control signal used for controlling an image processing apparatus which processes image data representing an image in synchronism with a synchronizing signal, the method comprising the steps of:

inputting the image data in synchronism with processing performed by said image processing apparatus;

a first judging step, performed by first judging means, for judging similarity between an image represented by the input image data and a specific original image by using a first judging method;

a second judging step, performed by second judging means which is independent of said first judging means, for judging similarity between the image represented by the input image data and the same specific original image as in said first judging step by using a second judging method which is different from the first judging method;

synchronizing said first and second judging means by using the synchronizing signal to provide a common timing signal for said first and second judging means;

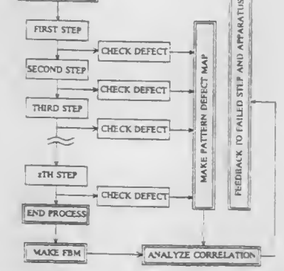
determining similarity between the image represented by the input image data and the specific original image based on judgment results of said first and second judging steps; and

outputting a determination result as the control signal, where the control signal controls image processing of the input image data by the image processing apparatus such that the image processing of the image processing apparatus is performed in parallel with said first and second judging steps and said determining step.

5,828,778
METHOD AND APPARATUS FOR ANALYZING FAILURE OF SEMICONDUCTOR WAFER

Toshio Hagi, and Kazuki Nakata, both of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jul. 12, 1996, Ser. No. 678,879
Claims priority, application Japan, Jul. 13, 1995, 7-177706; Sep. 4, 1995, 7-226656
Int. Cl.[6] G06K 9/00; H01L 21/66
U.S. Cl. 382—145 10 Claims



1. A method for analyzing the failure of a semiconductor wafer comprising:

a first step of checking the pattern defect of said semiconductor wafer to make a pattern defect map which represents the distribution of the pattern defects at each process of semiconductor manufacture;

a second step of making a fail bit map which represents the distribution of electrical defects after said each process of semiconductor manufacture is completed; and

a third step of specifying a process at which a pattern defect that causes said electrical defects is generated by comparing said pattern defect map made at said first step with said fail bit map made at said second step,

said third step including the step of retrieving pattern defects on a first pattern defect map made at the (n−1)th process and a second pattern defect map made at the n-th process to decide that all the pattern defects detected on said second pattern defect map in a predetermined region within a predetermined distance from the position of each pattern defect detected on said first pattern defect map are generated at a process prior to the (n−1)th process, and that pattern defects detected on said second pattern defect map in other regions than said each predetermined region are generated at said n-th process.

5,828,779

METHOD FOR CONSTRUCTING A COLOR TABLE IN A COMPUTER UNIT FOR THE CLASSIFICATION OF PICTURE ELEMENTS IN AN IMAGE

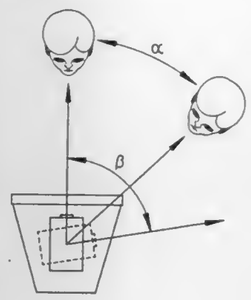
Christoph Maggioni, Munich, Germany, assignor to Siemens Aktiengesellschaft, Munich, Germany

Filed Apr. 15, 1996, Ser. No. 632,626

Claims priority, application Germany, May 5, 1995, 195 16 664.7

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—165 26 Claims



1. A method for constructing a color table in a computer unit for classification of picture elements in an image, comprising the steps of:

transforming the color information of all picture elements into a two-dimensional color space;

employing all colors in the two-dimensional color space displayable by the computer unit as index values of the color table;

marking at least one region having a predetermined color and selectable size;

calculating a first average color value over the at least one region;

calculating at least one second average color value, a selectable percentage of the picture elements in the region whose color points are at a greatest distance from the first average color value not being taken into consideration;

selecting a region of selectable size around the second average color value in the two-dimensional color space;

calculating an arbitrary number of a color not corresponding to the predetermined color representing negative color points in the two-dimensional color space;

carrying out a check for all colors displayable by the computer unit to determine whether the color point representing the color is allocated to the second average color value, said check occurring in such a way that

a perpendicular for every color point representing the respective color is drawn onto each straight connecting line of the at least second average color value to the negative color points, and

the respective color point is allocated to the second average color value when a distance from each perpendicular foot to at least the second average color value is less than to each of the other negative color points corresponding to the respective straightline connection or to a white point, and the color point lies in the region around the second average color value; and

entering a binary result of the check into the color table as a binary value.

5,828,780

IMAGE PROCESSING APPARATUS WITH IMPROVED COLOR CORRECTION

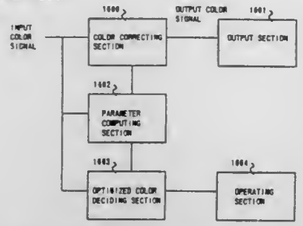
Hiroaki Suzuki, Ichikawa, and Shougo Ooneda, Urayasu, both of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 19, 1994, Ser. No. 359,145

Claims priority, application Japan, Dec. 21, 1993, 5-322873; Feb. 2, 1994, 6-030876

Int. Cl.[6] G06K 9/46

U.S. Cl. 382—167 26 Claims



1. An image processing apparatus comprising:

a virtual device for receiving input color image data, for executing processing in a direction reverse to that in a color image output device, and for outputting output color image data based on said input color image data, said output color image data being in the color space of color image data input into said output color device, said color space having a plurality of dimensions;

a discrimination unit for making a determination as to whether said input color image data is within a color reproduction range according to individual comparisons of values of said output color image data from said virtual device in each of said dimensions in the color space and respective ranges in the color space of the color image output device; and

a color corrector for correcting the input color image data to be within the color reproduction range of the color image output device according to said determination that the input color image data is within the color reproduction range of the color image output device.

5,828,781

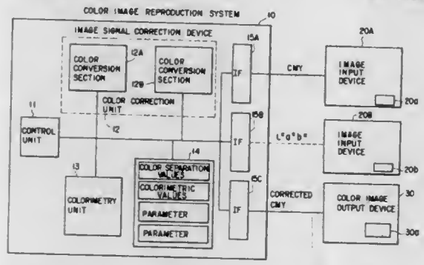
COLOR IMAGE REPRODUCING SYSTEM WITH IMAGE SIGNAL CORRECTION FUNCTION

Yoshiki Nakano, Tokyo, Japan, assignor to Toyo Ink Manufacturing Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 289,131, Aug. 11, 1994, abandoned. This application Feb. 10, 1997, Ser. No. 797,857

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—167 20 Claims



1. A color image signal correction system, comprising:

colorimetry means for generating a first colorimetric value signal from a color sample having predetermined color separation values;

first image input interface means for receiving a first color separation value signal for the color sample and then for a target color image, and receiving sensor detection of an environmental variation;

image output interface means for outputting a second color separation value signal corresponding to the color sample and then to the target color image, and for receiving sensor detection of an environmental variation;

color conversion means comprising a neural network for converting the first color separation value signal into a second colorimetric value signal in accordance with a first parameter;

color correction means comprising a neural network for converting the first and then the second colorimetric value signals into the second color separation value signal in accordance with a second parameter; and

control means for training the neural network of the color conversion means in response to the detection of the environmental variation by the sensor of the first image input interface means so that the first color separation value signal for the color sample is converted into the first colorimetric value signal for the color sample in order to set the first parameter, and training the neural network of the color correction means in response to the detection of the environmental variation by the sensor of the image output interface means so that the first colorimetric value signal for the color sample is converted into the second color separation value signal with the predetermined color separation values in order to set the second parameter.

5,828,782

IMAGE PROCESSING APPARATUS AND METHOD

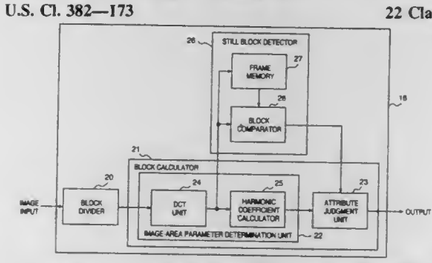
Shinichi Sunakawa, Asaka, and Kazuhiro Matsubayashi, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 30, 1996, Ser. No. 681,958

Claims priority, application Japan, Aug. 1, 1995, 7-196390

Int. Cl.[6] G06K 9/34

U.S. Cl. 382—173 22 Claims



1. An image processing apparatus which transforms image data into data on axes in frequency space, and judges the type of image areas based on features of the data on the axes in space frequency, comprising:

input means for inputting sequentially frame images;

transformation means for orthogonally transforming input frame image data by blocks of a predetermined size;

first judgment means for judging an attribute of a block of interest in a current frame, based on the result of orthogonal transformation by said transformation means;

second judgment means for judging the attribute of the block of interest in the current frame, based on the difference between the result of orthogonal transformation on the current frame and the result of orthogonal transformation on at least one previous frame inputted prior to the current frame; and

discrimination means for discriminating the attribute of the block of interest in the current frame, based on the judgments by said first and second judgment means.

5,828,783

APPARATUS AND METHOD FOR INPUT-PROCESSING HAND-WRITTEN DATA

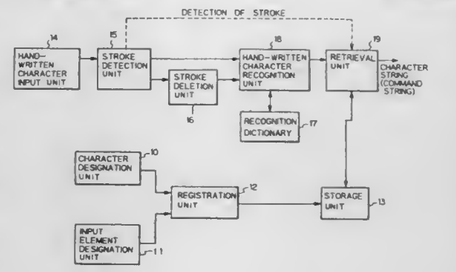
Kazushi Ishigaki, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 626,977, Apr. 3, 1996, abandoned, which is a continuation of Ser. No. 202,135, Feb. 25, 1994, abandoned. This application Oct. 21, 1997, Ser. No. 955,374

Claims priority, application Japan, May 19, 1993, 5-116712

Int. Cl.[6] G06K 9/00

U.S. Cl. 382—186 11 Claims



1. An apparatus for input-processing hand-written data in a computer system, said apparatus comprising:

hand-written character input means for inputting the hand-written data, said hand-written data comprising a hand-written character and a stroke pattern;

stroke detection means for detecting a predetermined particular stroke pattern indicating that a handwritten character combined therewith is a character for conversion, the combination thereof being provided by said hand-written character input means;

stroke deletion means for separating and deleting said predetermined particular stroke pattern from said hand-written character when notified by said stroke detection means that said predetermined particular stroke pattern is detected;

hand-written character recognition means for recognizing as a character code said hand-written character provided by said hand-written character input means when said predetermined particular stroke pattern is not detected and provided by said stroke deletion means when said predetermined particular stroke pattern is detected;

character designation means for designating a character recognizable by said hand-written character recognition means;

input element designation means for designating an input element comprising at least one of a plurality of characters words and figures to be converted from said character code designated by said character designation means;

registration means for registering a pair of said character code designated by said character designation means and the corresponding input element designated by said input element designation means;

storage means for storing said pair of a character code and an input element registered by said registration means; and

retrieval means, if the detection of said predetermined particular stroke pattern is notified by said stroke detection means, for retrieving said character code recognized by said hand-written character recognition means and stored by said storage means, and outputting said corresponding input element instead of said recognized character code, and if not notified, for outputting the recognized character code.

5,828,784

DATA CODING METHOD AND APPARATUS USING A PLURALITY OF BLOCKS OF DIFFERENT LENGTH

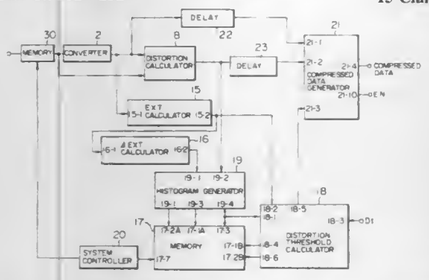
Atsushi Miyashita, Tokorozawa, and Yuuichi Oonami, Iruma, both of Japan, assignors to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 91,182, Jul. 13, 1993, abandoned. This application May 5, 1995, Ser. No. 435,957

Claims priority, application Japan, Jul. 13, 1992, 04-208466; Jul. 13, 1992, 04-208467

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—232 **15 Claims**



1. A data coding method for obtaining coded data by processing image input data in a unit of a predetermined block, said method comprising the steps of:

converting said image input data within each of a plurality of division blocks into approximate data, said division blocks being within a predetermined hierarchical division block structure and each division block having the same number of pixels;

obtaining a distortion value indicative of an error between decoded data to be obtained by decoding said approximate data associated with each of said division blocks, and said image input data within corresponding ones of said division blocks being associated with said decoded data;

obtaining a variable-length quantized data, an additional quantized data EXT and a reference quantized data ND associated with said approximate data in each of said division blocks;

obtaining increment/decrement information indicating a value expressed by ES–EI, EI indicating the additional quantized data associated with the predetermined division blocks, Es indicating the additional quantized data associated with the less-significant division block other than said predetermined division blocks;

obtaining histogram information based on said distortion value and said increment/decrement information, said histogram information indicating the number of said division blocks of each hierarchical level within said predetermined block as parameters of said distortion value and said increment/decrement information;

obtaining a distortion threshold value on the basis of said histogram information;

obtaining division pattern information for selecting said respective division blocks which satisfies a first condition that said distortion value is less than a predetermined distortion threshold value, a second condition that one image is covered by said division blocks without overlap, and a third condition a more significant division block is selected when said distortion values produced from each of said division blocks are the same;

converting said approximate data into variable-length quantized data, said approximate data being associated with said selected division blocks on the basis of said division pattern information;

generating header data indicating said division blocks corresponding to said variable-length quantized data on the basis of said division pattern information; and

obtaining said coded data by combining said variable-length quantized data and said header data,

wherein said distortion threshold value is selected so that the amount of said coded data is substantially coincident with a specified data amount.

5,828,785

METHOD OF REDUCING THE NUMBER OF ACCESS TIMES TO A REFERENCE FRAME MEMORY IN IMAGE COMPRESSION

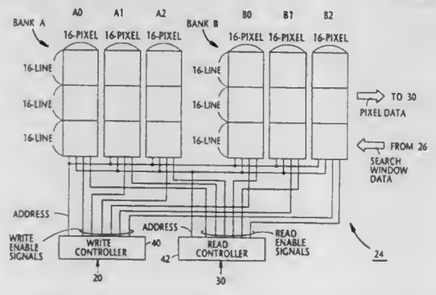
Toshiaki Kitsuki, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 23, 1995, Ser. No. 518,224

Claims priority, application Japan, Aug. 23, 1994, 6-219571

Int. Cl.[6] G06K *9/36;* **H04N** *7/12*

U.S. Cl. 382—232 **4 Claims**



1. A method of reading a plurality of macroblocks of a reference picture frame stored in a first memory and establishing a search window of N×N macroblocks within a second memory wherein N equals 3 or an odd integer greater than 3, said search window having a center macroblock corresponding to a current macroblock block of a current picture frame for implementing block matching between said center and current macroblocks, said reference picture frame being divided into rows and columns and partitioned into a plurality of groups of macroblocks (GOBs) which are successively processed in a predetermined order, the macroblocks of each GOB being successively processed from left to right and top to bottom along rows, said method comprising the steps of:

(a) providing said second memory with first and second memory banks each having memory capacity of N×N macroblocks;

(b) providing said reference picture frame with a plurality of virtual macroblocks at a periphery of said reference picture frame;

(c) writing 1×N macroblocks or 1×N virtual macroblocks from said first memory into said first memory bank so as to complete search windows each having a center macroblock on a given row;

(d) writing 1×N macroblocks or 1×N virtual macroblocks from said first memory into said second memory bank so as to prepare, while completing search windows in step (c), a search window whose center macroblock is an initial macroblock on a row immediately following said given row; and

(e) writing 1×N macroblocks or 1×N virtual macroblocks from said first memory into said second memory bank so as to complete search windows each having a center macroblock on said row immediately following said given row.

5,828,786

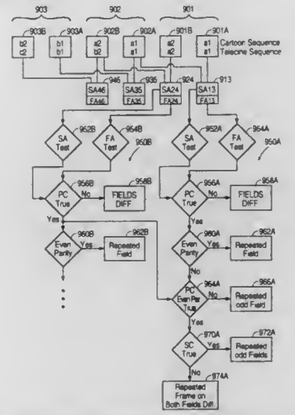
ANALYZER AND METHODS FOR DETECTING AND PROCESSING VIDEO DATA TYPES IN A VIDEO DATA STREAM

R. Padmanabha Rao, Sunnyvale, and Amanda L. Chin, Fremont, both of Calif., assignors to General Instrument Corporation, Horsham, Pa.

Filed Dec. 2, 1993, Ser. No. 162,511

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—236 **51 Claims**



1. A method for improving encoding efficiency of a video data stream, said method comprising:

analyzing each field in said video data stream to detect repeated fields wherein said video data stream includes combinations of a video sequence, a cartoon sequence, and a telecine sequence and further wherein repeated fields in said cartoon sequence are detected and repeated fields in said telecine sequence are detected; and

dropping each detected repeated field from said video data stream to generate a modified video data stream thereby eliminating encoding of redundant information and so improving encoding efficiency.

5,828,787

ENCODING APPARATUS AND ENCODING METHOD OF MOTION IMAGE

Kenji Uehara, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

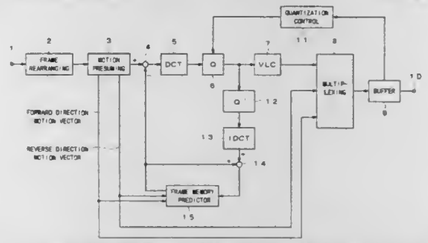
PCT No. PCT/JP96/01074, § 371 Date Dec. 19, 1996, § 102(e) Date Dec. 19, 1996, PCT Pub. No. WO96/33573, PCT Pub. Date Oct. 24, 1996

PCT Filed Apr. 19, 1996, Ser. No. 750,985

Claims priority, application Japan, Apr. 21, 1995, 7-120509

Int. Cl.[6] G06K *9/36*

U.S. Cl. 382—236 **4 Claims**



1. An encoding apparatus of a motion image in which encoded images of three types of an I picture as an intraframe encoded image, a P picture as an interframe forward direction predictive encoded image, and a B picture as a bidirection predictive encoded image are formed by using a predictive encoding in a time direction and a period M at which said I or P picture appears is changed, characterized in that

a frame rearranging unit to which an input image signal is supplied is provided at the front stage of an encoding unit of a predictive encoding,

said frame rearranging unit receives a picture coding type instructed for said input image signal, CUR_M showing the number of M of a present frame, and MAX_M showing the maximum number of M in a sequence which continues with respect to a time, and

the apparatus has a frame delay control unit for giving a frame delay to said input image signal, said frame delay being defined in a manner such that

frame delay=MAX_M–CUR_M

for said picture of which picture coding type is I or P and

frame delay=MAX_M

for said B picture.

5,828,788

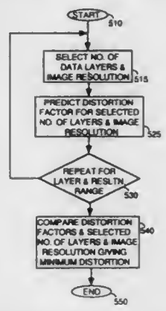
SYSTEM FOR PROCESSING DATA IN VARIABLE SEGMENTS AND WITH VARIABLE DATA RESOLUTION

Tihao Chiang, Plainsboro; Huifang Sun, Cranbury, both of N.J., and Joel Walter Zdepski, Mountain View, Calif., assignors to Thomson multimedia, S.A., France

Filed Dec. 14, 1995, Ser. No. 572,844

Int. Cl.[6] G06K *9/46;* **H04N** *7/12*

U.S. Cl. 382—239 **18 Claims**



1. A method of partitioning data, comprising the steps of:

(a) predicting a first distortion factor for a first number of segments of said data, said predicting step being performed in the spatial domain as a function of the data rate of said data;

(b) predicting a second distortion factor for a second number of segments of said data, said predicting step being performed in the spatial domain as a function of the data rate of said data;

(c) mutually comparing said first and said second distortion factors;

(d) determining which of said first and said second number of segments exhibits the lower distortion factor value, based on said mutual comparison; and

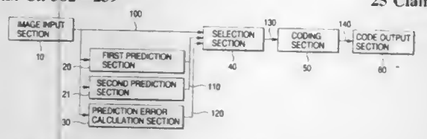
(e) partitioning said data into said determined number of data segments, said step of partitioning of said data being performed in the spatial domain.

5,828,789

IMAGE CODING SYSTEM AND IMAGE DECODING SYSTEM

Taro Yokose; Shuichi Kimura; Yutaka Koshi; Koh Kamizawa, and Kenichi Kawauchi, all of Ashigarakami-gun, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 17, 1996, Ser. No. 729,371
Claims priority, application Japan, Feb. 19, 1996, 8-031074
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—239 25 Claims



1. An image coding system comprising:

means for inputting an image;

a plurality of pixel value prediction means for predicting a pixel value of an object pixel to be coded in the image input through said image input means by different prediction techniques;

prediction error calculation means for calculating an error between the pixel value of an object pixel to be coded in the image input through said image input means and a prediction value predicted by a predetermined prediction technique;

match determination means being responsive to the calculation result of said prediction error calculation means for determining whether or not the pixel value predicted by each of said pixel value prediction means matches the pixel value of the object pixel;

selection means being responsive to determination output of said match determination means for selecting identification information for identifying the pixel value prediction means whose prediction pixel value is determined to match the pixel value of the object pixel by said match determination means or the error calculated by said prediction error calculation means;

means for coding the identification information or error output by said selection means; and

means for outputting code generated by said coding means.

5,828,790

METHOD AND APPARATUS FOR APPROXIMATING A CONTOUR IMAGE OF AN OBJECT IN A VIDEO SIGNAL

Jin-Hun Kim, Seoul, Rep. of Korea, assignor to Daewoo Electronics Co., Ltd., Seoul, Rep. of Korea

Filed Dec. 20, 1996, Ser. No. 769,833
Claims priority, application Rep. of Korea, Dec. 23, 1995, 95-55661
Int. Cl.[5] G06K 9/00
U.S. Cl. 382—242 20 Claims



1. A method for approximating a contour of an object expressed in a digital video signal, the method comprising the steps of:

(a) dividing the contour into a multiplicity of primary contour segments and approximating each primary contour segment by a primary line segment joining two end points of said each primary contour segment;

(b) calculating, for said each primary contour segment, a set of errors which represents a difference between said each primary contour segment and the primary line segment corresponding thereto;

(c) coding the set of errors to provide a set of coded errors;

(d) decoding the set of coded errors to generate a set of reconstructed errors;

(e) generating a reconstructed contour segment based on the set of reconstructed errors;

(f) determining a reconstruction error representing a difference between said each primary contour segment and the reconstructed contour segment;

(g) generating one or more secondary contour segments on the primary contour segment and approximating each secondary contour segment by a secondary line segment joining two end points of said each secondary contour segment;

(h) finding an approximation error representing a difference between said each primary contour segment and the secondary line segment(s); and

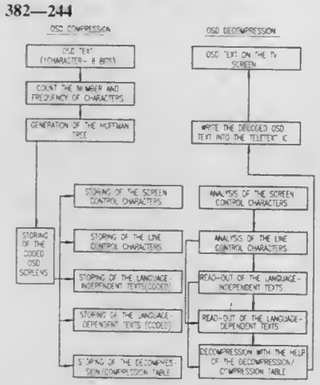
(i) approximating said each primary contour segment by either the reconstructed contour segment or the secondary line segment(s) based on the reconstruction error and the approximation error.

5,828,791

METHOD FOR STORING AND PLAYBACK OF FIXED VIDEOTEXTS

Ingo Chmielewski; Detlef Räth, both of Edemissen; Eckart Neumann, Gifhorn; Christian Seydel, Osterode/Lasfelde, and Rolf Michael Schuller, Peine, all of Germany, assignors to MB Video GmbH, Peine, Germany

Filed May 21, 1996, Ser. No. 650,982
Claims priority, application Germany, May 22, 1995, 195 18 367.3
Int. Cl.[6] G06K 9/36;9/46
U.S. Cl. 382—244 5 Claims



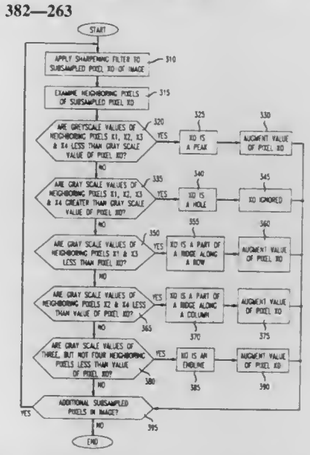
1. Method for storing and playback of a repertoire of fixed videotext for performing an operator control on a television screen, in which the videotext is stored by characters in digital form in an electrical memory, wherein for forming said videotext of one page position data are stored in a first memory, said position data indicating the position of a text sequence to be formed, addresses for forming said text sequence being stored in a second memory which refer to language independent phrases stored in a third memory and to language dependent phrases stored in a fourth memory, and a separate address is assigned to each of those parts of a text occuring often.

5,828,792

METHOD OF REDUCING DOCUMENT SIZE FOR DIGITAL DISPLAY

Lawrence Patrick O'Gorman, Madison, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

Continuation of Ser. No. 371,939, Jan. 12, 1995, abandoned, which is a continuation of Ser. No. 137,567, Oct. 15, 1993, abandoned. This application Dec. 6, 1996, Ser. No. 762,822
Int. Cl.[6] G06K 9/00
U.S. Cl. 382—263 13 Claims



1. A method for generating from an electronic document page having a first resolution a representation of the document page for display on a display device capable of displaying an image having a second resolution which is lower than the first resolution of the electronic document page, the method including enhancing at least one feature of the reduced image, each feature corresponding to one of at least one predefined feature, each predefined feature corresponding to a particular attribute of a text character, each predefined feature represented by a predetermined topological arrangement of pixels, each pixel having a particular gray scale value, the method comprising:

passing the pixels through a low pass filter;

subsampling pixels of the image to achieve a desired degree of reduction of the image size;

applying a sharpening filter to the subsampled pixels which compares a set of pixels within the reduced image, said set comprising one or more pixels within the reduced image, and a plurality of neighboring pixels;

determining if a match exists between the set of pixels and one of a plurality of fixed stored pixel arrangements, each fixed stored pixel arrangement corresponding to a particular one of the at least one predefined feature; and

modifying the gray scale value of the one or more pixels in those pixel sets which match one of the fixed stored pixel arrangements such that the corresponding predefined feature represented by said first set is enhanced, said modifying step modifying the gray scale value of the one or more pixels based on any of the group of a peak, a hole, a ridge, or an endline and further comprising:

increasing the gray scale value of the one or more pixels if the gray scale value of the one or more pixels is greater than the gray scale value of at least one of the neighboring pixels, and

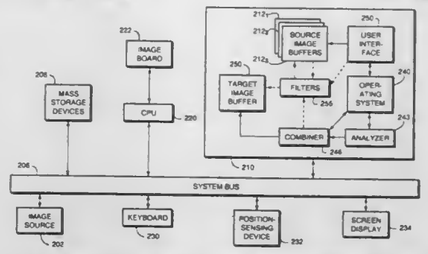
maintaining the gray scale value of the one or more pixels if the gray scale value of the one or more pixels is less than the gray scale value of the plurality of neighboring pixels.

5,828,793

METHOD AND APPARATUS FOR PRODUCING DIGITAL IMAGES HAVING EXTENDED DYNAMIC RANGES

Steve Mann, Cambridge, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.

Filed May 6, 1996, Ser. No. 643,473
Int. Cl.[6] G06K 9/00;9/36
U.S. Cl. 382—284 16 Claims



1. A method of combining a plurality of differently exposed source images of the same object or scene, the method comprising the steps of:

a. establishing a response function characterizing the source images in terms of values of a response parameter and exposures producing the values; and

b. based on the response function, combining the source images into a composite image comprising image detail from each of the source images and having a greater range of image detail than any of the source images

wherein

c. the source and composite images each comprise an ordered array of pixels;

d. the pixels of the composite image correspond to the pixels of the source images; and

e. the images are combined by assigning, to each composite-image pixel, a pixel-parameter value representing a weighted average of the pixel parameter of corresponding pixels from the source images obtained by:

i. for each source image, generating a certainty function characterizing a tonal range of greatest image detail; and

ii. for each composite-image pixel, (A) weighing the corresponding pixels from the source images in accordance with the certainty functions, (B) combining the pixel-parameter values of the corresponding source image pixels in accordance with the weighting, and (C) assigning the combined pixel-parameter value to the composite-image pixel.

5,828,794

IMAGE PROCESSING METHOD AND APPARATUS FOR ENLARGING AND REDUCING IMAGE DATA

Akihiro Katayama; Yoshihiro Isbida, both of Kawasaki, and Akihiro Yoshitani, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

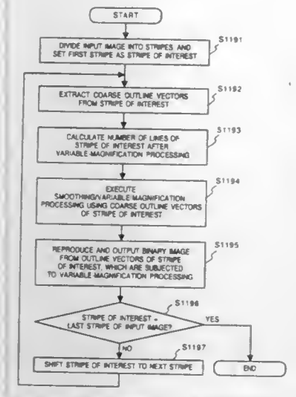
Continuation of Ser. No. 285,444, Aug. 4, 1994, abandoned, which is a division of Ser. No. 124,479, Sep. 22, 1993. This application Apr. 23, 1996, Ser. No. 636,629
Claims priority, application Japan, Sep. 24, 1992, 4-254989; May 7, 1993, 5-106643; May 27, 1993, 5-126319
Int. Cl.[6] G06T 3/40
U.S. Cl. 382—298 22 Claims

1. An image processing apparatus comprising:

division means for dividing input image data into a plurality of areas;

first calculation means for calculating a first image size as a sum of image sizes obtained by execution of enlargement/reduction for each of first to i-th areas;

second calculation means for calculating a second image size as an image size obtained by subjecting an image comprising the total area of the first to i-th areas to enlargement/reduction at a designated enlargement/reduction ratio; and



enlargement/reduction means for determining an enlargement/reduction ratio of enlargement/reduction to be performed on the image comprising the i-th area, based on the first image size and the second image size, and for enlarging/reducing the image of the i-th area at the determined enlargement/reduction ratio.

5,828,795

SEALING DEVICE FOR USE IN A MOTOR

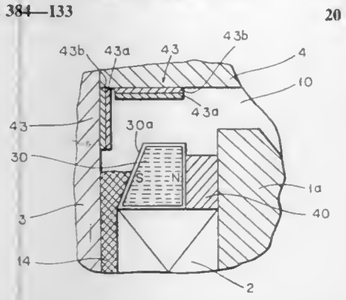
Toshihiko Miyakoshi; Masato Gomyo; Toshihiro Kobayashi; Masamichi Hayakawa; Hirofusa Shirai, and Kenji Hanabusa, all of Nagano, Japan, assignors to Sankyo Seiki Mfg. Co., Ltd., Nagano-ken, Japan

Continuation of Ser. No. 438,953, May 12, 1995, abandoned. This application Sep. 25, 1997, Ser. No. 937,389

Claims priority, application Japan, May 31, 1994, 6-140958; May 13, 1994, 6-100263; May 19, 1994, 6-129559; Sep. 6, 1994, 6-238542

Int. Cl.[6] F16C *33/82*

U.S. Cl. 384—133 **20 Claims**



1. A sealing device for use in a motor, where said motor includes a shaft and a frame that are interconnected by a bearing, said sealing device comprising:

magnetic-fluid-sealing means for sealing said bearing to prevent magnetic fluid retained by said bearing from escaping from said bearing; and

a magnetic fluid absorption member for absorbing fluids which may escape said magnetic-fluid-sealing means, said magnetic fluid absorption member being held out of contact with said magnetic fluid retained by said bearing.

5,828,796

OPTICAL SWITCH FOR REDUCING PROCESSING ERRORS IN A COUPLING REGION

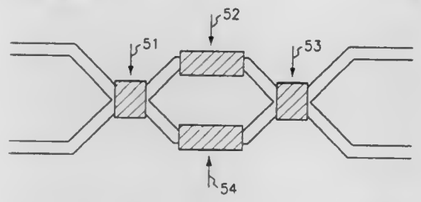
Seon Gyu Han; Hye Young Kim; Myung Hyun Lee; Hyung Jong Lee, and Yong Hyub Won, all of Daejeon, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, Daejeon, Rep. of Korea

Filed Nov. 13, 1996, Ser. No. 747,766

Claims priority, application Rep. of Korea, Nov. 15, 1995, 95-41514

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—9 **1 Claim**



1. An optical switch for considerably reducing processing errors in a coupling region, comprising:

input means having a pair of optical waveguides;

output means having a pair of optical waveguides;

light phase shifting means for inducing an additional phase change on light travelling in said input means;

a first light coupling waveguide for coupling between two light signals of said input means and for providing a coupled signal with said light phase shifting means; and

a second light coupling waveguide for coupling between two light signals of said light phase shifting means and for providing a coupled signal with said output means.

5,828,797

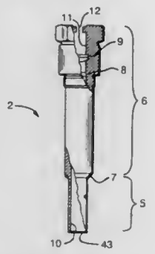
FIBER OPTIC LINKED FLAME SENSOR

George L. Minott, Wilton, and Jonathan C. Plimpton, Canterbury, both of N.H., assignors to Meggitt Avionics, Inc., Manchester, N.H.

Filed Jun. 19, 1996, Ser. No. 666,042

Int. Cl.[6] G02B *6/32*

U.S. Cl. 385—12 **21 Claims**



1. A fiber optic linked flame sensor for monitoring a combustion process within an engine combustion chamber comprising:

an optical probe having a sight tube bore formed therein, said sight tube bore having a sapphire window disposed therein and having a first opening and a second opening, said optical probe being adapted to be fixed within said combustion chamber with said first opening adjacent an engine flame to receive radiant energy emitted from said engine flame into said sight tube bore,

a fiber optic cable having a high temperature end and a low temperature end, said high temperature end of said fiber optic cable being connected to said second opening of said sight tube bore; and

an electro-optics module connected to said low temperature end of said fiber optic cable to receive said radiant energy from said sight tube bore through said fiber optic cable, said electro-optics module comprising a silicon carbide photodiode for converting said radiant energy to an electrical signal, said electrical signal being indicative of the presence of said flame within said combustion chamber.

5,828,798

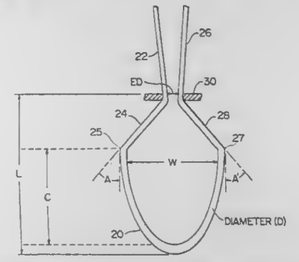
LOOPED FIBER-OPTIC SENSOR FOR THE DETECTION OF SUBSTANCES

Joram Hopenfeld, 1724 Yale Pl., Rockville, Md. 20850

Filed Sep. 9, 1996, Ser. No. 707,870

Int. Cl.[6] G07B *6/00;* **G01J** *1/04*

U.S. Cl. 385—12 **33 Claims**



1. A sensor for detecting the presence or absence of a particular substance, comprising:

a light source;

a photodetector;

a fiber optic guide with a diameter D at some point along its length, an input portion and an output portion, the fiber optic guide characterized by a shortest distance ED between the input and output portions measured in a plane, the input portion coupled to the light source, the output portion coupled to the photodetector, the fiber optic guide between the two portions forming a loop characterized by having at least two tangent lines along the loop and between the input and output portions such that there exists a distance TD, which is the shortest distance between the tangent lines that can be measured by a straight line segment perpendicular to each of the tangent lines, that exceeds ED, TD being measured in the same plane as ED;

wherein the maximum value of TD (W) divided by D is less than 30;

whereby light propagates from the light source to the detector through the loop.

5,828,799

THERMAL OPTICAL SWITCHES FOR LIGHT

David K. Donald, Monte Sereno, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

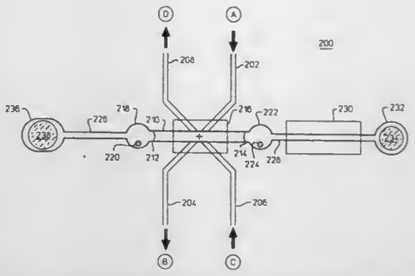
Division of Ser. No. 551,236, Oct. 31, 1995, Pat. No. 5,732,168. This application Oct. 20, 1997, Ser. No. 954,431

Int. Cl.[6] G02B *6/35*

U.S. Cl. 385—16 **20 Claims**

1. An optical switching element, comprising:

a thermal ejector to heat a boilable liquid to boiling and thereby expel the liquid from a channel that intersects a first optical waveguide and cause total internal reflection at the intersection; and



a thermal injector offset from the intersection, the thermal injector to heat the boilable liquid to boiling and thereby inject the liquid into the channel at the intersection, the boilable liquid and waveguide having closely matching indices of refraction such that light will pass through the channel and the waveguide when the channel contains the liquid.

5,828,800

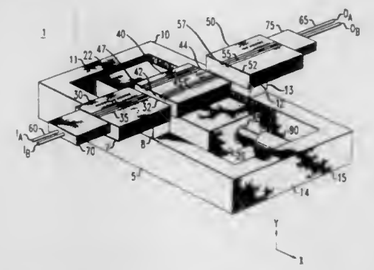
SELF-ALIGNED MECHANICAL M X N OPTICAL SWITCH

Charles Howard Henry, Skillman, and Herman Melvin Presby, Highland Park, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Jun. 23, 1997, Ser. No. 880,702

Int. Cl.[6] G02B *6/26*

U.S. Cl. 385—20 **23 Claims**



1. A mechanical optical switch comprising:

first, second and third silica optical structures cleaved from a monolithic silica optical structure having waveguides extending parallel to a particular structure surface, each of the first and third structures having a corresponding cleaved edge and a respective set of waveguides extending parallel to the particular surface, the second structure having two substantially parallel cleaved edges and a plurality of sets of waveguides extending parallel to the particular surface; and

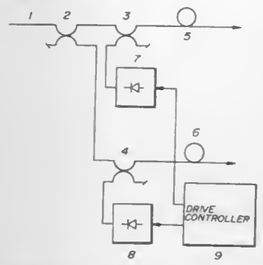
at least one base having a respective reference surface disposed in a plane, the particular surfaces of the first, second and third structures positioned on the reference surface of the at least one base with the cleaved edges of the second structure positioned adjacent to and facing respective ones of the cleaved edges of the first and third structures, wherein the second structure is moveable in a direction along the cleaved edges relative to the first and third structures to selectively provide optical connections between waveguides of the first and third structures.

5,828,801

LIGHT SIGNAL SWITCHING DEVICE AND OPTICAL COMMUNICATION SYSTEM

Hiroshi Sakamoto, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 9, 1996, Ser. No. 694,707
Claims priority, application Japan, Mar. 18, 1996, 8-060728
Int. Cl.[6] G02B 6/28
U.S. Cl. 385—24 7 Claims



1. A light signal switching device including an input optical fiber through which a light signal is received, said light signal switching device comprising:

first and second output optical fibers each being doped with a rare-earth element;

first and second pumping sources inputting first and second excitation light to the first and second output optical fibers; and

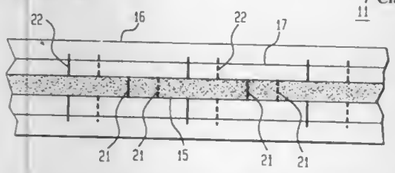
a drive controller driving the first and second pumping sources so that one of the first and second excitation light is applied to one of the first and second output optical fibers through which the light signal received from the input optical fiber is output.

5,828,802

SELF-TUNING OPTICAL WAVEGUIDE FILTER

Rogers Hall Stolen, Rumson; Ashish Madhukar Vengsarkar, Berkeley Heights, both of N.J., and Jau-Sheng Wang, New Haven, Conn., assignors to Lucent Technologies, Inc., Murray Hill, N.J.

Filed Feb. 19, 1997, Ser. No. 803,051
Int. Cl.[6] G02B 6/26
U.S. Cl. 385—27 7 Claims



1. A self-tuning optical waveguide filter for attenuating a lower power light signal at a first wavelength λ_1 more than a higher power signal at a second wavelength λ_2, said filter comprising:

a length of single-core optical waveguide comprising a core and a cladding, said waveguide dimensioned for propagating said signals λ_1, λ_2 each in at least two propagating modes, said propagating modes beating to produce in said waveguide relatively high intensity regions of λ_1, λ_2;

a light injector for injecting into said waveguide light of said signals λ_1, λ_2 each in said two propagating modes; and

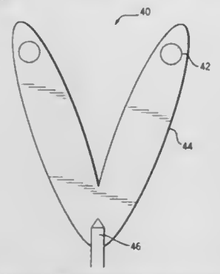
a saturable absorbing material disposed in said waveguide for interacting with said high intensity regions of λ_1, λ_2, whereby the lower power signal λ_1 is absorbed more strongly in said saturable absorbing material than the higher power signal λ_2.

5,828,803

SYSTEM FOR PROVIDING PULSED LIGHT TO AN OPTICAL FIBER

Shimon Eckhouse, Haifa, Israel, assignor to ESC Medical Systems, Ltd., Yokneam, Israel

Division of Ser. No. 964,210, Oct. 20, 1992, Pat. No. 5,405,368.
This application Mar. 6, 1995, Ser. No. 398,542
Int. Cl.[6] G02B 6/36; F21V 7/04
U.S. Cl. 385—88 4 Claims



1. A system of providing pulsed light comprising:

a pulsed toroidal flash tube incoherent light source having a spectrum of frequencies continuous over at least one bandwidth;

a reflector disposed about said incoherent light source, said reflector having a cross-section of substantially an ellipse, in a plane perpendicular to the minor axis of the toroidal light source; and

at least one optical fiber having an end disposed within the reflector, the end of the optical fiber has a cone shape, wherein the cone shape of the end of the optical fiber opens away from the light source and wherein the cone shape of the end of the optical fiber has an included angle β, and a media outside the optical fiber has a refractive index of n_1, and the optical fiber has a refractive index of n_2, and $n_1 > n_2$, and an incidence angle of radiation which impinges upon the cone shape is μ, and μ is less than μ_{crit} as defined in the equation:

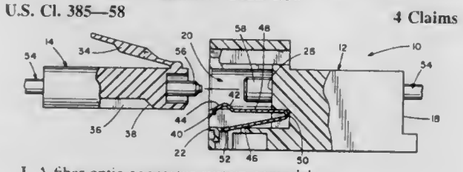
$$\sin(\mu_{crit}) = \cos(\beta) - \{n_1^2/n_2^2 - 1\}^{1/2} \sin(\beta).$$

5,828,804

FIBER OPTIC CONNECTOR SYSTEM

Richard L. Akins, Wheaton; Samuel M. Marrs, Bradley, and Christopher A. Paul, Bloomingdale, all of Ill., assignors to Panduit Corp., Tinley Park, Ill.

Filed Oct. 15, 1996, Ser. No. 720,995
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—58 4 Claims



1. A fiber optic connector system comprising:

a fiber optic plug including a housing surrounding a ferrule and having means for positioning a terminated end of at least one fiber optic cable towards a front end of the plug;

a fiber optic jack having a rear end for accepting and positioning at least one fiber optic cable;

a plug receiving opening formed at a front end of the fiber optic jack; and

a springboard disposed in the plug receiving opening having a projecting cam surface situated so as to engage a complimentary cam surface on the fiber optic plug housing upon full insertion into the receptacle opening wherein the springboard

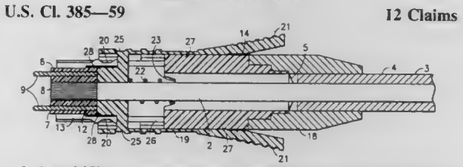
is a reversely bent metal clip having a lower leg secured to the housing and an upper leg for mating with the plug.

5,828,805

MULTIFIBER CONNECTOR PLUG

Danny Morlion, St. Amandsberg, and Jan Peter Karel Van Koetsem, Zwijndrecht, both of Belgium, assignors to Framatome Connectors International, Courbevoie, France

Filed Apr. 22, 1997, Ser. No. 837,705
Claims priority, application Netherlands, Apr. 26, 1996, 1002956
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—59 12 Claims



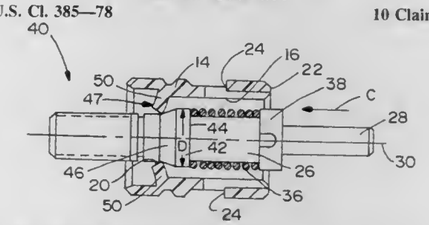
1. A multifibre connector plug, comprising a connector plug part for receiving a plurality of optical fibres, said connector plug part having a contact face at one end, a coupling body, the connector plug part being sidable in said coupling body, wherein the connector plug part projects out of said coupling body with its end having said contact face, a coupling sleeve enclosing said coupling body and being sidable on said coupling body from a coupling position into a decoupling position, and a single common spring extending between and in engagement with the coupling sleeve and the coupling body for biasing the coupling sleeve and the connector plug part in the direction of the contact face.

5,828,806

FIBER OPTIC CONNECTOR

Igor Grois, Northbrook; Scot A. Ernst, Downers Grove; Michael J. Pescetto, Plainfield, and Ilya Makhlin, Wheeling, all of Ill., assignors to Molex Incorporated, Lisle, Ill.

Filed Oct. 10, 1996, Ser. No. 729,271
Int. Cl.[6] G02B 6/38
U.S. Cl. 385—78 10 Claims



10. A fiber optic connector, comprising:

a coupling nut including an axially extending cavity with a circumferential flange projecting radially into the cavity and defining a passage through the flange, the flange being slotted to define a plurality of radially inwardly extending flexible stop fingers;

a ferrule for mounting an optical fiber;

a ferrule holder for mounting the ferrule and having a circumferential rib projecting radially outwardly therefrom to define a circumferential stop shoulder extending in a general radial direction, the outside diameter of the rib being on the order of 0.010–0.012 inch larger than the inside diameter of the passage through the stop fingers, whereby the ferrule holder can be axially assembled into the coupling nut in a first, assembly direction by forcing the rib through the passage flexing said stop fingers, and the ferrule holder is prevented from unforcibly moving in a second, opposite direction by engagement of the stop shoulder with the stop fingers, the circumferential rib having a chamfered surface facing in said first, assembly direction to facilitate forcing the rib through the passage; and

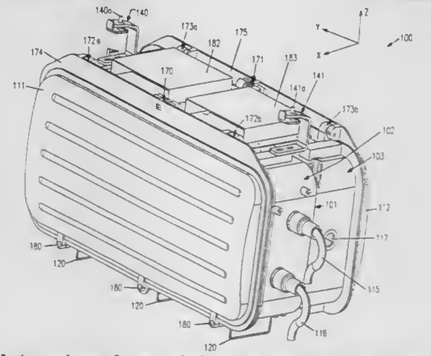
spring means operatively associated between the ferrule holder and the coupling nut to bias the ferrule holder in said second direction and, thereby, bias the stop shoulder toward said stop fingers.

5,828,807

OPTICAL NETWORK UNIT (ONU) MECHANICAL ENCLOSURE

Russell L. Tucker, San Ramon; Mark S. McCall, Santa Rosa, and Bernabe R. Lovina, Benecia, all of Calif., assignors to Next Level Communications, Rohnert Park, Calif.

Filed Apr. 30, 1996, Ser. No. 647,436
Int. Cl.[6] G02B 4/00
U.S. Cl. 385—135 52 Claims



1. An enclosure for an optical network unit (ONU) comprising:

a frame having a first opening and a second opening opposite the first opening;

a partition dividing the frame into a first compartment for housing electronics and optics of the ONU and a second compartment for housing drop terminals of the ONU;

a first door coupled to the frame, the first door covering the first opening and enclosing the first compartment; and

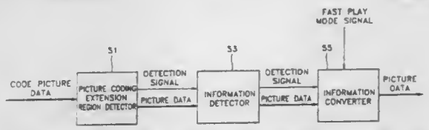
a second door coupled to the frame, the second door covering the second opening and enclosing the second compartment.

5,828,808

PICTURE DECODER FOR PREVENTING JITTER IN FAST-PLAY MODES OF OPERATION

Jung-suk Kang, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-do, Rep. of Korea

Filed Nov. 25, 1996, Ser. No. 755,909
Claims priority, application Rep. of Korea, Nov. 24, 1995, 1995 43666
Int. Cl.[6] H04N 5/783
U.S. Cl. 386—68 7 Claims



1. A picture decoding apparatus for preventing picture jitter when operating in a fast play mode, said apparatus comprising:

a picture coding extension region detector for detecting a picture coding extension region from picture data, and outputting a detection signal and said picture data;

an information region detector, coupled to said picture coding extension region detector, for detecting a region having top_

field_first and repeat_first_field information based on said detection signal and picture data output by said picture coding extension region detector, and outputting an information region signal and said picture data; and

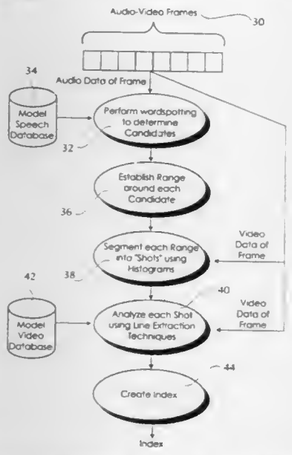
an information converter, coupled to said information region detector and responsive to a fast play mode signal, for converting values of top_field_first and repeat_first_field into 1 and 0, respectively, when in a fast play mode of operation, in accordance with said information region signal output by said information region detector and said fast play mode signal, and outputting said picture data.

5,828,809

METHOD AND APPARATUS FOR EXTRACTING INDEXING INFORMATION FROM DIGITAL VIDEO DATA

Yuh-Lin Chang, Monmouth Junction, and Wenjun Zeng, Princeton, both of N.J., assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 1, 1996, Ser. No. 723,594
Int. Cl.[6] H04N *5/91*
U.S. Cl. 386—69 **50 Claims**



1. A computer-implemented speech and video analysis system for creating an index to indicate locations of a first event occurring within audio-video data, said audio-video data containing audio data synchronized with video data to represent a plurality of events, said first event having at least one audio-feature and at least one video-feature indicative of said first event, comprising the steps of:

(a) providing a model speech database for storing speech models representative of said audio-feature;

(b) providing a model video database for storing video models representative of said video-feature;

(c) performing wordspotting to determine candidates by comparing said audio data with said stored speech models, said candidates indicating positions of said audio-feature within said audio data;

(d) establishing predetermined ranges around each of said candidates;

(e) segmenting into shots those portions of said video data which are located within said ranges;

(f) analyzing said segmented video data to determine video-locations based on a comparison between said segmented video data and said stored video models, said video-locations indicating positions of said video-feature within said segmented video data; and

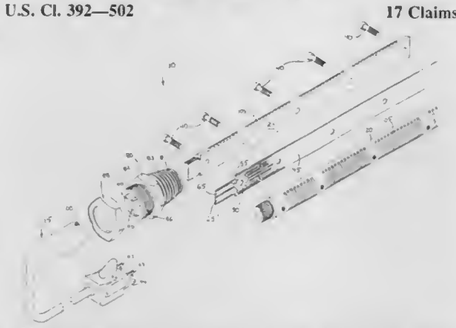
(g) generating an index to indicate locations of said first event based on said video-locations.

5,828,810

POSITIVE TEMPERATURE COEFFICIENT BAR SHAPED IMMERSION HEATER

Kevin L. Frank, and Aime A. Gehri, both of Yakima, Wash., assignors to Nine Lives, Inc., Yakima, Wash.

Filed Apr. 26, 1996, Ser. No. 638,175
Int. Cl.[6] H01C *7/02*
U.S. Cl. 392—502 **17 Claims**



10. An apparatus for electrically heating fluid media, which comprises:

a heat conductive bar having a lengthwise internal space and a surface area,

the heat conductive bar including a first bar and a second bar,

the first bar and the second bar adjoined together with a fastening means,

the lengthwise internal space is between the first bar and the second bar of the heat conductive bar,

the heat conductive bar has an exterior fins for increasing the surface area of the heat conductive bar,

the heat conductive bar has a diameter equal to a diameter of a bore hole;

the exterior fins project from the sides of the heat conductive bar to induce convective flow of the fluid around the heat conductive bar;

a thin strip heating element receivable into the lengthwise internal space of the heat conductive bar,

the thin strip heating element having a positive temperature coefficient of electrical conductivity,

the thin-strip heating element has an attached bi-polar electrical connection; and

an electrical power connection means for supplying electrical power connects to the bi-polar electrical connection of the thin-strip heating element.

5,828,811

SPEECH SIGNAL CODING SYSTEM WHEREIN NON-PERIODIC COMPONENT FEEDBACK TO PERIODIC EXCITATION SIGNAL SOURCE IS ADAPTIVELY REDUCED

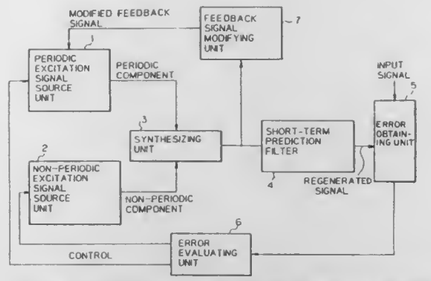
Tomohiko Taniguchi; Yasuji Ohta; Yoshinori Tanaka; Hideaki Kurihara, and Yoshihiro Sakai, all of Kawasaki, Japan, assignors to Fujitsu, Limited, Kawasaki, Japan

Continuation of Ser. No. 838,339, Feb. 20, 1992, abandoned. This application Jan. 28, 1994, Ser. No. 188,124
Claims priority, application Japan, Feb. 20, 1991, 3-026085
Int. Cl.[6] G10L *9/14*
U.S. Cl. 395—2.29 **10 Claims**

1. A speech signal coding apparatus inputting an input speech signal, and coding said input speech signal, comprising:

periodic excitation signal source means holding a set of a plurality of periodic excitation signals, for outputting one of said plurality of periodic excitation signals in response to a first control signal, where said set is adaptively modified according to a feedback signal supplied thereto;

non-periodic excitation signal source means holding a set of a plurality of non-periodic excitation signals, for outputting one



of said plurality of non-periodic excitation signals in response to a second control signal;

synthesizing means for inputting and synthesizing said periodic excitation signal output from said periodic excitation signal source means and said non-periodic excitation signal output from said non-periodic excitation signal source means, to generate an excitation sound source signal;

short-term prediction filter means for inputting said excitation sound source signal, and generating a regenerated signal which simulates said input speech signal, based on excitation sound source signals recently input thereto, by short-term prediction;

error obtaining means for obtaining a difference between said input speech signal and said regenerated signal as an error signal;

error evaluating means for determining said first and second control signals so that a power of said error signal is minimized and thereby optimizing said excitation sound source signal; and

feedback signal modifying means for inputting said optimized excitation sound source signal, modifying said optimized excitation sound source signal by reducing a non-periodic component in said optimized excitation sound source signal according to a relative amount of the non-periodic component in the optimized excitation sound source signal, so that the non-periodic component is reduced more when said relative amount of the periodic component is greater, and supplying said modified optimized excitation sound source signal to said periodic excitation signal source means as said feedback signal.

5,828,812

RECURRENT NEURAL NETWORK-BASED FUZZY LOGIC SYSTEM AND METHOD

Emdadur Rahman Khan, San Jose, and William Shields Neely, Santa Clara, both of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

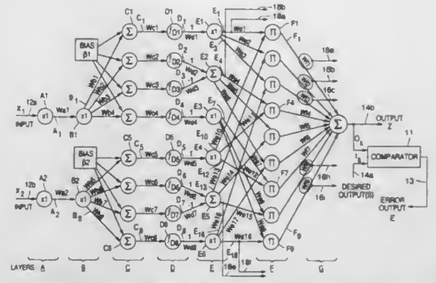
Continuation-in-part of Ser. No. 265,194, Jun. 24, 1994, Pat. No. 5,606,646, which is a continuation-in-part of Ser. No. 36,634, Mar. 24, 1993, Pat. No. 5,579,439. This application May 2, 1995, Ser. No. 432,801
Int. Cl.[6] G06E *1/00;3/00;* **G06F** *15/18;* **G06G** *7/00*
U.S. Cl. 395—22 **34 Claims**

1. A recurrent neural network-based fuzzy logic apparatus comprising:

first neural means for receiving and processing first and second pluralities of input signals and in accordance therewith providing first and second pluralities of neural signals, wherein said first plurality of input signals originates externally to said first neural means and said first plurality of neural signals corresponds to a first plurality of fuzzy logic rule antecedents;

first time-delay means for intra-neurally receiving and time-delaying said second plurality of neural signals and in accordance therewith providing a first plurality of intra-neural recurrent signals as said second plurality of input signals;

second neural means for receiving and processing said first plurality of neural signals from said first neural means and a



plurality of antecedent signals and in accordance therewith providing a plurality of consequent signals, wherein said plurality of antecedent signals corresponds to a second plurality of fuzzy logic rule antecedents and said plurality of consequent signals corresponds to a plurality of fuzzy logic rule consequents; and

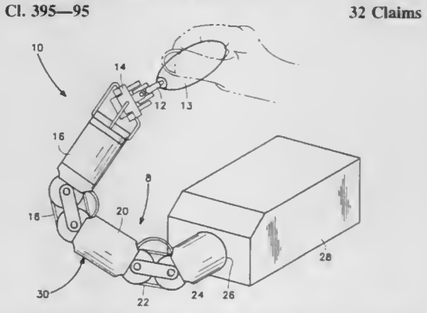
second time-delay means for intra-neurally receiving and time-delaying a portion of said plurality of consequent signals and in accordance therewith providing a second plurality of intra-neural recurrent signals as said plurality of antecedent signals.

5,828,813

SIX AXIS FORCE FEEDBACK INPUT DEVICE

Timothy Obm, La Crescenta, Calif., assignor to California Institute of Technology, Pasadena, Calif.

Continuation-in-part of Ser. No. 525,813, Sep. 7, 1995, Pat. No. 5,710,870. This application Oct. 23, 1996, Ser. No. 734,966
Int. Cl.[6] B25J *15/08*
U.S. Cl. 395—95 **32 Claims**



1. A robot manipulator coupled to an external device, said robot manipulator comprising:

an actuator base with plural actuators and having a mechanism for receiving forces generated by said external device;

an end effector interactive with an operator;

a force feedback sensor coupled between said end effector and said actuator base for receiving said forces from said actuator base, converting said forces into feedback forces, and providing said feedback forces to said operator;

plural arms extending seriatim between said end effector and said actuator base; and

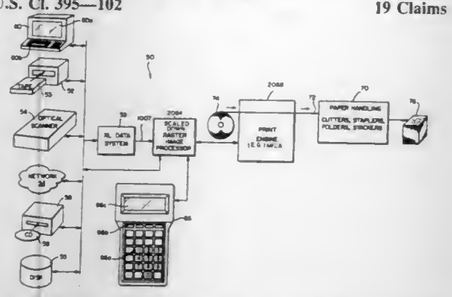
plural joints connected between pairs of adjacent arms;

wherein each one of said plural joints comprises a coupling device for mechanically coupling respective ones of said actuators to respective ones of said joints through intermediate ones of said joints, and wherein said coupling device is decoupled from said intermediate joints.

5,828,814
REDUCED COST HIGH RESOLUTION REAL TIME RASTER IMAGE PROCESSING SYSTEM AND METHOD

Theodore F. Cyman; Kevin P. Kernin, both of Grand Island; Robert J. Recchione, Niagara Falls, and Anthony L. Treis, North Tonawanda, all of N.Y., assignors to Moore Business Forms, Inc., Grand Island, N.Y.

Filed Sep. 10, 1996, Ser. No. 709,848
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—102 **19 Claims**



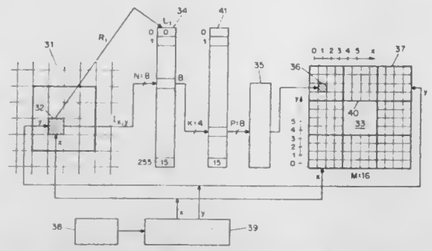
1. A scaled down raster image processor for reduced cost, reduced complexity processing of print image data to be printed on a particular print engine, said scaled down raster image processor comprising:
- a master controller circuit which receives a job description file and, in response to said job description file, prepares displays lists and transfers fonts for storage in a font image memory;
- a scaled down controller circuit that operates in accordance with display lists received from said master controller circuit and said stored fonts to generate a digital representation of an image;
- a bit image memory associated with said scaled down control circuit, wherein said bit image memory stores the digital image representation generated by said scaled down controller; and
- a personality module for said particular print engine, said personality module operable to request and read raster data from said bit image memory and to provide said raster data to said print engine to operate said print engine and thereby produce an image.

5,828,815
HIGH QUALITY MULTILEVEL HALFTONING FOR COLOUR IMAGES WITH REDUCED MEMORY REQUIREMENTS

Marc Herregods, Hever; Roger Baeten, Boortmeerbeek, and Geert Noppen, Mortsel, all of Belgium, assignors to Agfa-Gevaert, Mortsel, Belgium

PCT No. PCT/EP94/02291, § 371 Date Jan. 10, 1996, § 102(e) Date Jan. 10, 1996, PCT Pub. No. WO95/02938, PCT Pub. Date Jan. 26, 1995
PCT Filed Jul. 7, 1994, Ser. No. 571,940
Claims priority, application Belgium, Jul. 12, 1993, 9300713; European Pat. Off., Aug. 27, 1993, 93202522
Int. Cl.[6] H04N *1/46*
U.S. Cl. 395—109 **15 Claims**

1. A method in producing a color image by printing a plurality of superposed monochrome images on a sheet (**37**), using an appropriate color for each of the monochrome images, wherein
- each of the monochrome images is composed of microdots (**36**) each having an address (x,y),
- each of the microdots (**36**) is represented by a pixel (**32**) carrying information about the address (x,y) and an image signal ($I_{x,y}$),
- the microdots (**36**) are partitioned by a screen (**40**) into identical screen cells (**33**) composed of M microdots (R_i), M being a predetermined integer,

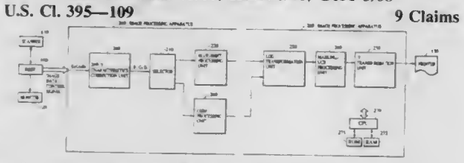


each of the microdots (R_i) has a corresponding pixel tone curve (L_i, **34**);
the method comprising, for each of the pixels (**32**):
- (i) transforming the image signal ($I_{x,y}$) by the corresponding pixel tone curve (L_i, **34**) into a 4-bit bitmap signal (B), and
- (ii) using the bitmap signal (B) in forming a P-bit printer signal, where P is a predetermined integer, for printing the microdot (**36**) at the address (x,y).

5,828,816
IMAGE PROCESSING APPARATUS AND IMAGE PROCESSING METHOD

Takashi Kise; Takatoshi Ohta, and Nobuo Ohnuma, all of Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 29, 1996, Ser. No. 688,275
Claims priority, application Japan, Jul. 31, 1995, 7-194982
Int. Cl.[6] G06F *15/00;* **H04N** *1/46;* **G03F** *3/08*
U.S. Cl. 395—109 **9 Claims**



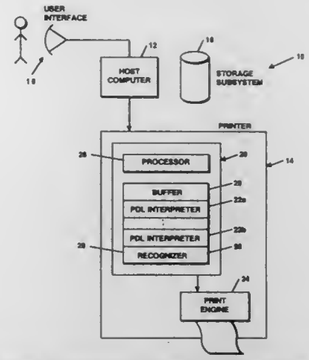
1. An image processing apparatus comprising:
input means for inputting image data;
setting means for setting a desired color processing mode selected from a plurality of color processing modes; and
color processing means for executing color processing according to the color processing mode set by said setting means,
wherein the plurality of color processing modes include a first color-processing mode in which color-space compression processing is performed, and a second color-processing mode in which the color-space processing mode is not performed, the second color-processing mode comprising blue-shift processing for reproducing a blue color based on characteristics of a recording material used in an image output device.

5,828,817
NEURAL NETWORK RECOGNIZER FOR PDLS

Richard B. Landau, Nashua, N.H., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jun. 29, 1995, Ser. No. 496,510
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—112 **13 Claims**

9. A language type recognizer comprising:
- a tabulator that tabulates frequency of occurrence of characters in a file, the file containing characters of a language;
- a scaler that scales the frequency of occurrence of characters in the file, wherein the scaler scales a tabulated frequency of zero to a scaled frequency of 0.00, scales all tabulated frequencies greater than a pre-determined threshold to a scaled frequency of 1.00, and linearly scales all tabulated frequencies

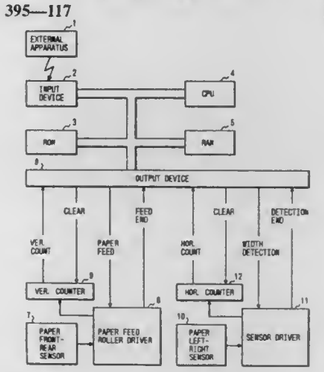


greater than a zero but less than the pre-determined threshold to scaled frequencies in the range 0.10 and 1.00; and
- a neural network that accepts as input the scaled frequency of occurrence of characters to identify the language type of the characters in the file.

5,828,818
PRINT APPARATUS AND METHOD

Katsuhiko Anzai, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 15, 1994, Ser. No. 260,963
Claims priority, application Japan, Jun. 16, 1993, 5-168406
Int. Cl.[6] G06K *15/00*
U.S. Cl. 395—117 **32 Claims**

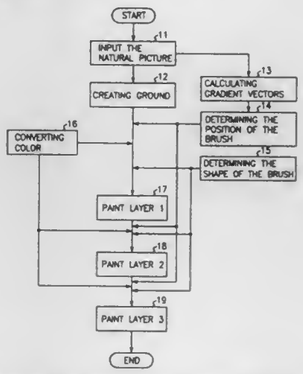


1. An output control apparatus comprising:
paper fed means for feeding a recording paper;
paper width detection means for detecting a width of the recording paper fed by said paper feed means;
paper length detection means for detecting a length of the recording paper by detecting front and rear edges of the recording paper during feeding of the recording paper by said paper feed means; and
correction means for correcting the paper width detected by said paper width detection means and the paper length detected by said paper length detection means on the basis of a plurality of pieces of pre-stored correction information to determine a correct size of the recording paper.

5,828,819
APPARATUS AND METHOD FOR AUTOMATICALLY CREATING A PICTURE IN A STYLE HAVING PAINTING-LIKE COLORING USING AN IMAGE PROCESSING

Hyun Sook Do, and Pyung Dong Cho, both of Yuseong-Ku, Rep. of Korea, assignors to Electronics and Telecommunications Research Institute, and Korea Telecommunication Authority, both of Rep. of Korea

Filed Dec. 26, 1995, Ser. No. 578,093
Claims priority, application Rep. of Korea, Dec. 23, 1994, 1994-36988
Int. Cl.[6] G09G *5/04*
U.S. Cl. 395—131 **18 Claims**



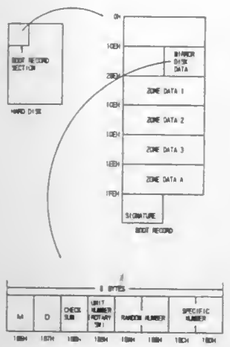
1. An apparatus for automatically creating a picture in a style having painting-like coloring, comprising:
- a picture input means for receiving two-dimensional picture;
- a ground creating means for creating a ground which is relative to complementary color for each pixel of the natural picture input from the picture input means;
- a brush position determining means for calculating the gradient vectors using the Gaussian function and brilliance of the natural picture input from the picture input means, and dividing the input picture into small regions, determining the position of the brush using the calculated gradient vectors;
- a color converting means for converting the value of brilliance and chroma of the input picture using the RGB value of the natural picture input from the picture input means; and
- a paint layer creating means for painting a picture on a computer graphics system using the results from the ground creating means, the brush position determining means and the color converting means, and for repeatedly painting new pictures on the computer graphics system using previously painted picture as a new ground according to the small regions divided by the brush position determining means.

5,828,820
MIRROR DISK CONTROL METHOD AND MIRROR DISK DEVICE

Sakuyuki Onishi, and Yuji Miwa, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 19, 1995, Ser. No. 503,936
Claims priority, application Japan, May 10, 1995, 7-111610
Int. Cl.[6] G06F *11/08;11/20;12/02*
U.S. Cl. 395—182.04 **13 Claims**

1. A mirror disk control method for writing the same data in two disks installed in two disk drive means so that each of said disks can be replaced, comprising the steps of:
- writing a disk-specific number in a disk newly set in said disk drive means;
- writing the disk-specific number with a name of the corresponding disk drive means in a set-up memory;



identifying a disk functioning as a master disk in one of said two disk drive means; and

writing the disk drive means name in said set-up memory;

discretely arranging a plurality of ranges without conflict between each of the ranges, each range having a disk-specific number corresponding to a switching position of a switch;

deciding a first disk-specific number from the plurality of ranges by means of a random function;

assigning serial numbers subsequent to the first disk-specific number and within each range of plurality of ranges as disk-specific numbers of each of the plurality of ranges.

5,828,821

CHECKPOINT RESTART METHOD AND APPARATUS UTILIZING MULTIPLE LOG MEMORIES

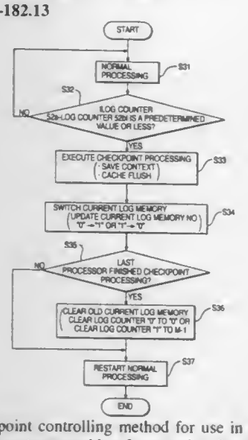
Satoshi Hosbina; Hiroshi Sakai, both of Tokyo; Hideaki Hirayama, Kanagawa-ken; Shigefumi Ohmori; Takahiro Fujii, both of Tokyo, and Yoshio Masubuchi, Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 18, 1996, Ser. No. 665,542

Claims priority, application Japan, Jun. 19, 1995, 7-151735; Dec. 27, 1995, 7-341839

Int. Cl.[6] G06F *11/34*

U.S. Cl. 395—182.13 **21 Claims**



14. A checkpoint controlling method for use in a fault tolerant multiprocessor system capable of recovering from a fault during execution of application programs, wherein the fault tolerant multiprocessor system has a plurality of log memories, at least two processor modules each having a processor unit and a cache memory, a shared memory, and means for storing data in the shared memory at intervals, and wherein each of the processor modules executes checkpoint processing independently, the checkpoint controlling method comprising the steps of:

selecting one of a first log memory and a second log memory of the plurality of log memories of the fault tolerant multiprocessor system;

storing log data in the selected one of the first and the second log memories, the log data including a context of the processing unit and a content of the cache memory for the processor modules executing checkpoint processing;

determining whether all of the processor modules have completed execution of checkpoint processing; and

clearing the selected one of the first and the second log memories when it is determined that all of the processor modules have completed execution of checkpoint processing.

5,828,822

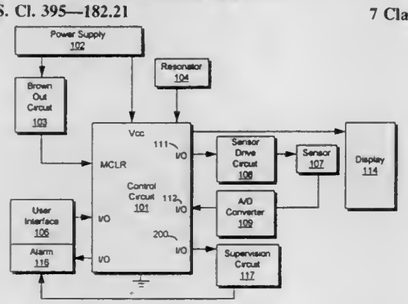
WATCHDOG CIRCUIT FOR CARBON MONOXIDE MONITORS

Stephen M. Ernst, Colorado Springs, Colo., assignor to Nighthawk Systems, Inc., Colorado Springs, Colo.

Filed Apr. 21, 1995, Ser. No. 426,723

Int. Cl.[6] G01R *31/28*

U.S. Cl. 395—182.21 **7 Claims**



1. A carbon monoxide monitor comprising:

means for sensing carbon monoxide concentration and generating an electrical signal indicating the sensed carbon monoxide concentration;

means for signaling having an input for receiving an electrical alarm signal;

a programmable control circuit responsive to the means for sensing and coupled to the input of the means for signaling, wherein the control circuit is programmed to generate the electrical alarm signal based upon the electrical signal provided by the means for sensing, wherein the control circuit generates a high impedance condition on at least one input/output pin during a reset condition; and

circuitry external to the control circuit and coupled to the at least one input/output pin for signaling a failure condition by detecting the high impedance condition and activating the means for signaling independent of the control circuit.

5,828,823

METHOD AND APPARATUS FOR STORING COMPUTER DATA AFTER A POWER FAILURE

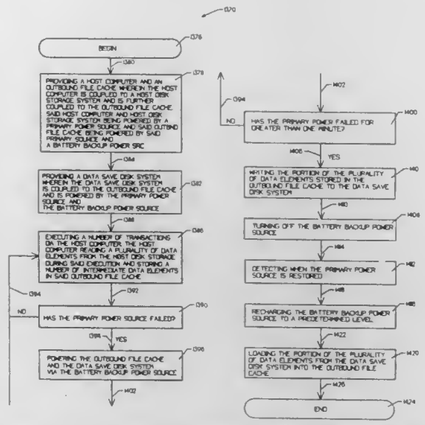
Larry L. Byers, Apple Valley, and Gary R. Robeck, Albertville, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Continuation of Ser. No. 396,951, Mar. 1, 1995. This application Apr. 25, 1997, Ser. No. 845,643

Int. Cl.[6] G06F *12/16*

U.S. Cl. 395—182.22 **43 Claims**

1. In a data processing system having a host processor, a memory module, and a disk storage device, wherein during normal operation the host processor may perform a disk write operation



which stores selected data elements to the disk storage device via the memory module, and may further perform a memory write operation which stores selected data elements to the memory module and not to the disk storage device, the improvement comprising:

a. primary power source means coupled to the data processing system for providing power to the data processing system;

b. detecting means coupled to said primary power source means for detecting a degradation in said primary power source means and when the primary power source means is restored;

c. secondary power source means coupled to the data processing system and further coupled to said detecting means for providing power to at least a portion of the data processing system when said detecting means detects a degradation in said primary power source means;

d. disk storage controller means coupled to the memory module, the disk storage device, and said detecting means for initiating storage of predetermined ones of the data elements that were stored to the memory module via the memory write operation to the disk storage device a predetermined time period after said detecting means detects a degradation in said primary power source means;

e. recharging means coupled to said secondary power source means, said detecting means, and to said disk storage controller for recharging the secondary power source means when said detecting means detects the restoration of the primary power source means; and

wherein said disk storage controller reloading selected data elements from the disk storage device to the host processor only after said recharging means has recharged said secondary power source means to a predetermined level.

5,828,824

METHOD FOR DEBUGGING AN INTEGRATED CIRCUIT USING EXTENDED OPERATING MODES

Gary L. Swoboda, 4435 Balboa, Sugarland, Tex. 77479

Filed Dec. 16, 1996, Ser. No. 766,660

Int. Cl.[6] G06F *11/25*

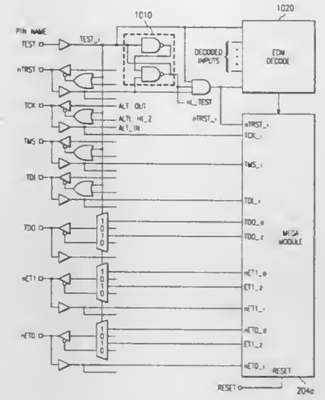
U.S. Cl. 395—183.01 **7 Claims**

1. A method of testing an integrated circuit having a target system debug interface which has a plurality of device debug interface terminals, comprising:

selecting a first extended operation mode from a plurality of combinational extended operating modes by placing a first pattern of signals on said target system debug interface;

operating said integrated circuit according to said selected combinational extended operating mode;

selecting a second extended operation mode from a plurality of latched extended operating modes by placing a second pattern of signals on said target system debug interface;



and

operating said integrated circuit according to said selected latched extended operating mode in response to said second pattern of signals.

5,828,825

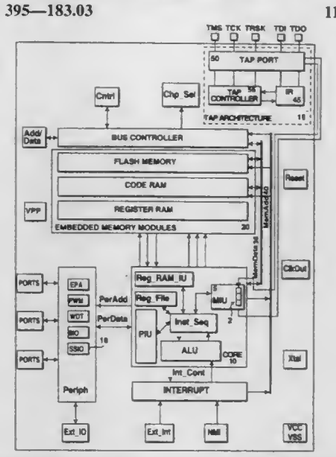
METHOD AND APPARATUS FOR PSEUDO-DIRECT ACCESS TO EMBEDDED MEMORIES OF A MICRO-CONTROLLER INTEGRATED CIRCUIT VIAL THE IEEE TEST ACCESS PORT

Nick G. Eskandari, Chandler, and David D. Sprague, Gilbert, both of Ariz., assignors to Intel Corporation, Saota Clara, Calif.

Coutinuation of Ser. No. 173,404, Dec. 22, 1993, abandoned. This application Apr. 12, 1996, Ser. No. 633,930

Int. Cl.[6] G06F *11/00;15/16*

U.S. Cl. 395—183.03 **11 Claims**



3. An apparatus for performing read and write operations to an embedded memory of an integrated circuit, the integrated circuit including a CPU one or more internal registers, and a memory interface unit with an access circuitry which provides access to the embedded memory via the memory interface unit without use of the CPU, the internal registers coupled to the memory interface unit for reading and writing memory locations of the embedded memory, the apparatus comprising:

an input/output (I/O) means coupled between an external host and the integrated circuit for transmission of signals between the external host and a selected internal register of the inte-

VOL 1215 ISS 4 OCT 27 1998 UMI

grated circuit, the I/O means comprising a register coupled between the external host and the selected internal register for transmitting said signals comprising addresses, data and instructions from the external host to the selected internal register,

an I/O controller coupled to the external host and the selected internal register for transmitting signals comprising controls from the external host to the selected internal register, the I/O controller further coupled to the register for receiving signals comprising instructions transmitted from the external host to the register, and

an output connection coupled between the selected internal register and the external host for transmitting signals comprising addresses, data and instructions from the selected internal register to the external host.

5,828,826

PROCESSING APPARATUS HAVING A NONVOLATILE MEMORY TO WHICH A SUPPLY VOLTAGE IS SUPPLIED THROUGH A SHARED TERMINAL

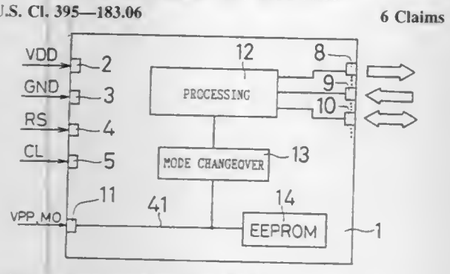
Koji Sato, Tenri; Hirotake Hayashi, Yamabe-gun, and Fumitaka Nishikawa, Soraku-gun, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 28, 1996, Ser. No. 671,635

Claims priority, application Japan, Jul. 27, 1995, 7-191625

Int. Cl.[6] G06F *11/00; G11C 16/06*

U.S. Cl. 395—183.06 **6 Claims**



1. A processing apparatus comprising:

a nonvolatile memory capable of writing program data electrically when a write voltage of a predetermined first voltage is supplied to the processing apparatus,

processing means for processing data on the basis of the program data stored in the nonvolatile memory when an operation voltage of a second voltage lower than the first voltage is supplied to the processing apparatus,

mode changeover means for setting the processing apparatus in an actual operation mode in which the processing means processes data on the basis of the program data stored in the nonvolatile memory when a first mode changeover signal having a third voltage lower than the second voltage is supplied to the processing apparatus, or setting the processing apparatus in a test mode in which a determination is made whether the operation of the processing means is normal when a second mode changeover signal having the second voltage level is supplied to the processing apparatus, and

a plurality of terminals for receiving signals to be fed to the nonvolatile memory, the processing means and the mode changeover means at the defined voltage levels,

wherein one of the terminals is a shared terminal which receives the write voltage, to be supplied to the nonvolatile memory, or to the first or the second mode changeover voltage to be supplied to the mode changeover means.

5,828,827

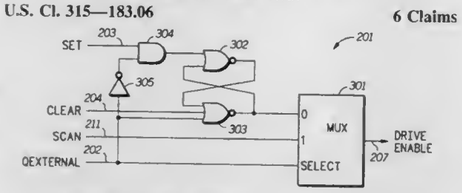
DATA PROCESSING SYSTEM FOR PERFORMING A TEST FUNCTION AND METHOD THEREFOR

Michael A. Mateja; Tulley M. Peters, and Donald L. Tietjen, all of Austin, Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 533,575, Sep. 25, 1995, abandoned. This application Mar. 3, 1997, Ser. No. 810,273

Int. Cl.[6] G06F *11/27*

U.S. Cl. 315—183.06 **6 Claims**



1. An integrated circuit comprising:

circuitry operable for conducting a test in said integrated circuit; and

circuitry in the integrated circuit operable for placing an input/output ("I/O") port of said integrated circuit in a high impedance state upon completion of said test, wherein said I/O port is an output of a driver circuit in the integrated circuit operable for driving signals on said I/O port, and wherein said circuitry for placing said I/O port in said high impedance state sends a control signal to said driver circuit signaling said driver circuit to place said I/O port in said high impedance state, and further wherein said circuitry operable for placing the I/O port in a high impedance state includes:

a multiplexor having an output coupled to said driver circuit, said output operable for sending said control signal, said multiplexor operable for receiving a mode control signal and a scan signal from said circuitry for conducting said test in said integrated circuit, said mode control signal indicating that said test is being performed and signaling said multiplexor to select said scan signal, and

a latch circuit coupled to an input of said multiplexor, said latch circuit operable for receiving said mode control signal and additional input signals and said latch circuit being set in a deterministic state in response to said mode control signal and independent of said additional input signals such that, upon completion of said test, said output sends said control signal to said driver circuit signaling said driver circuit to place said I/O port in s aid high impedance state.

5,828,828

METHOD FOR INSERTING TEST POINTS FOR FULL-AND-PARTIAL-SCAN BUILT-IN SELF-TESTING

Chih-Jen Lin, Lawrenceville, N.J., and Kwang-Ting Cheng, Santa Barbara, Calif., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 606,326, Feb. 23, 1996, abandoned, which is a continuation of Ser. No. 545,323, Oct. 19, 1995, abandoned. This application Sep. 29, 1997, Ser. No. 939,498

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—183.06 **3 Claims**

1. A method for adding at least one test point at one of a plurality of signal receiving nodes within a circuit, comprising the steps of:

(a) establishing, for each node, a slack value representing a maximum extra delay associated with adding a test point that is tolerable by the circuit;

(b) determining, for each node, a testability estimate representing how much testability of the whole circuit would be improved by adding a test point at the node;

(c) successively checking each node to determine (i) whether the testability estimate for that node exceeds the testability estimate for the nodes previously checked and (ii) whether an extra delay value incurred by adding a test point at the node being checked is less than a prescribed threshold, and if both (i) and (ii) are true, then inserting a test point at the node;

(d) computing what percentage of faults will be detected upon insertion of the test point; and

(e) repeating steps (c)–(d) as long as the test points that have been inserted do not exceed in number of maximum allowable number of test points and the percentage faults that will be detected upon test point insertion does not exceed a desired fault coverage percentage;

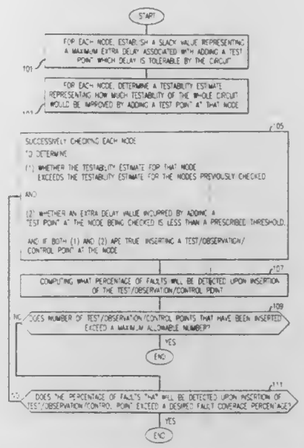
CHARACTERIZED IN THAT

the testability estimate is a function of the average expected test length for faults in the circuit;

the average expected test length is a function of the observability and controllability of the nodes within the circuit;

the step of inserting a test point includes inserting an observation point; and

the step of inserting a test point includes the step of inserting a control point.



5,828,829

SYSTEM TEST SUPPORT SYSTEM AND SYSTEM TEST SUPPORT METHOD

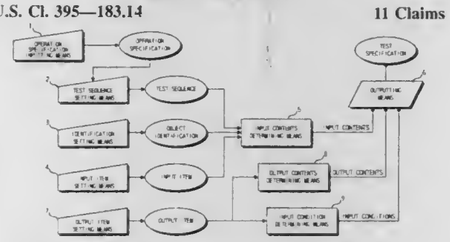
Yoko Yamauchi, Sagamihara; Yuji Tamaki, Niiza; Noboru Fujimaki, Yokohama, and Toshiyuki Obi, Funabashi, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jan. 26, 1996, Ser. No. 592,709

Claims priority, application Japan, Feb. 1, 1995, 7-014944

Int. Cl.[6] G06F *9/455*

U.S. Cl. 395—183.14 **11 Claims**



1. A system test support system comprising:

an operation specification inputting means for entering a state transition model representing a system operation specification in the form of a plurality of transitions, each transition including events and actions;

a test sequence setting means for setting up a test sequence to be tested from a plurality of transition sequences, each one of said plurality of transition sequences consisting of a series of said plurality of transitions included in said state transition model;

identification setting means for setting up an object identification indicating an object associated with each transition for at least each transition included in said test sequence;

input item setting means for setting up an input item containing an operation, which causes an event for each transition, and an operation target, which indicates the type of object on which the operation is to be performed;

input contents determining means for automatically generating input test data adapted to said test sequence by analyzing and testing the cause of an event for each transition along said test sequence, based on said object identification and said input item; and

outputting means for outputting a test specification including said input test data provided by the input contents determining means.

5,828,830

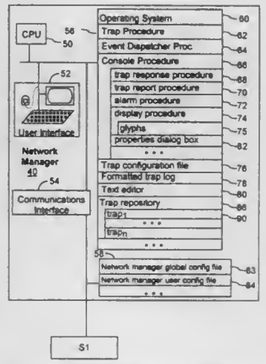
METHOD AND SYSTEM FOR PRIORTIZING AND FILTERING TRAPS FROM NETWORK DEVICES

Govindaraian Rangaraian, Sunnyvale, and Mingyue Wang, Mountain View, both of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Oct. 30, 1996, Ser. No. 741,475

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—185.01 **29 Claims**



16. A computer system for managing a plurality of network devices, said system comprising:

a memory for storing

a trap received from one of said devices, the received trap having a corresponding device identifier and enterprise identifier,

a hierarchical data structure having a plurality of levels representing trap filter and trap priority assignments, a first level representing trap filter and trap priority assignments associated with said devices, a second level representing trap filter and trap priority assignments associated with one or more enterprises, said first level having a higher precedence than said second level; and

a trap procedure for responding to the received trap, said trap procedure including instructions to

traverse said hierarchical data structure for a highest precedent trap filter and trap priority that corresponds to the received trap,

assign said highest precedent trap filter and trap priority to the received trap, and

respond to the received trap in accordance with said assigned trap filter and trap priority.

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5,828,831

SYSTEM FOR PREVENTING UNAUTHORIZED USE OF A PERSONAL COMPUTER AND A METHOD THEREFORE SECURITY FUNCTION, AND METHODS OF INSTALLING AND DETACHING A SECURITY DEVICE TO/FROM A COMPUTER

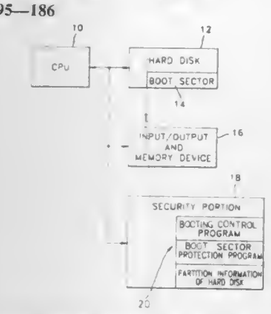
Won-keun Kong, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Kyungki-Do, Rep. of Korea

Filed Aug. 12, 1996, Ser. No. 695,439

Claims priority, application Rep. of Korea, Aug. 10, 1995, 1995-24698

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—186 **18 Claims**



1. A personal computer having a security function comprising:

input/output and memory means for inputting, outputting and storing a password;

a hard disk for storing the password and a boot sector without partition, the boot sector being booted in response to a booting permission signal;

security program storing means for storing the password and a boot sector protection program for protecting the boot sector of said hard disk, said security program storing means also for generating, in response to an initializing signal, the booting permission signal according to whether the password is valid and whether said hard disk is a hard disk which was installed in said personal computer when said security program storing means was initially installed in said personal computer, said security program storing means having a boot sector program with partition;

security means for processing the boot sector protection program and for performing both read and write operations, said security means including said security program storing means; and

a central controller for controlling said hard disk, said input/output and memory means, and said security means, and for generating the initializing signal when power is turned on,

wherein said hard disk is booted in response to whether said security means exists and whether said security means is an initially installed security means.

5,828,832

MIXED ENCLAVE OPERATION IN A COMPUTER NETWORK WITH MULTI-LEVEL NETWORK SECURITY

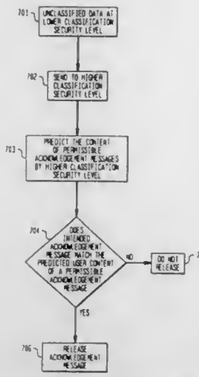
James M. Holden, Valley Center; Stephen E. Levin, Poway; Edwin H. Wrench, Jr., San Diego, all of Calif., and David W. Snow, deceased, late of Covent Station, N.J., assignors to ITT Industries, Inc., White Plains, N.Y.

Filed Jul. 30, 1996, Ser. No. 688,524

Int. Cl.[6] G06F *11/00*

U.S. Cl. 395—187.01 **20 Claims**

1. A method for communicating on a network having a secured plurality of users utilizing multi-level network security devices, each multi-level network security device being operable in a first



and second mode, respectively, and an unsecured plurality of users employing no network security devices, said method comprising the steps of:

sending a communication from any first user;

intercepting said communication by a first multi-level network security device;

discarding said communication if said communication violates security parameters associated with said first multi-level network security device; and,

in said first mode, sending said communication from said first multi-level network security device to any second user; and,

in said second mode, encrypting said communication using said first multi-level network security device, sending said encrypted communication to a second multi-level network security device, decrypting said communication using said second multi-level network security device, and sending said decrypted communication from said second multi-level network security device to a third user selected from said secured plurality of users.

5,828,833

METHOD AND SYSTEM FOR ALLOWING REMOTE PROCEDURE CALLS THROUGH A NETWORK FIREWALL

Daniel R. Belville, Schwartz Creek, and George R. Goble, Troy, both of Mich., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed Aug. 15, 1996, Ser. No. 700,617

Int. Cl.[6] G06F *12/14*

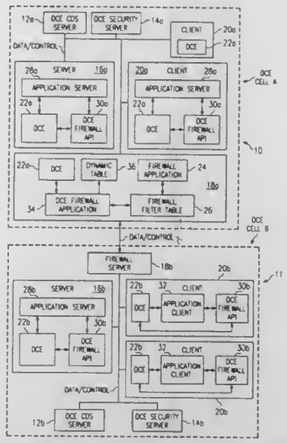
U.S. Cl. 395—187.01 **28 Claims**

1. A method for allowing an application server to receive remote procedure calls through a network firewall, comprising:

receiving a request from the application server to allow remote procedure calls to pass through a firewall;

processing the request to determine whether the application server is authorized to receive remote procedure calls that have passed through the firewall;

placing an identification of the application server in a filter table associated with the firewall if the application server is authorized to receive remote procedure calls that have passed through the firewall; and



allowing a remote procedure call to pass through the firewall to the application server if the identification of the application server was placed in the filter table.

5,828,834

APPARATUS AND METHOD FOR SETTING AN ID CODE USING A MICROCOMPUTER IN A DISPLAY DEVICE

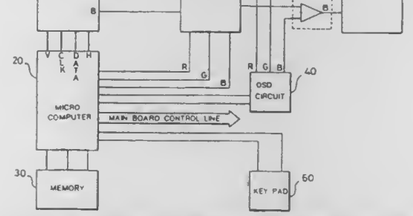
Chun-geun Choi, Suwon, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Rep. of Korea

Filed Jan. 2, 1996, Ser. No. 581,962

Claims priority, application Rep. of Korea, Dec. 30, 1994, 94 38285; Dec. 18, 1995, 95 51338

Int. Cl.[6] C06F *11/00*; H04K *1/00*

U.S. Cl. 395—188.01 **22 Claims**



3. In cooperation with a computer system that provides analog computer image signals, a display system comprising:

a video amplifier to amplify the analog computer image signals to provide amplified image signals;

one of a first microcomputer circuit and a second microcomputer circuit, the first microcomputer circuit including a microcomputer coupled to the video amplifier to control the gain of the video amplifier, the second microcomputer circuit including the microcomputer coupled to analog switches that are coupled between the computer system and the video amplifier so that the microcomputer controls the connection state of the analog switches;

an on-screen circuit to convert digital information signals from the microcomputer into analog on-screen image signals, the microcomputer being coupled to horizontal and vertical synchronizing signals from the computer system to synchronize the analog on-screen image signals with the analog computer image signals;

a memory coupled to the microcomputer to store a stored ID code;

a key pad coupled to the microcomputer to form a keyed ID code, the microcomputer determining when the stored ID code is unequal to the keyed ID code, the microcomputer setting one of (1) the gain of the video amplifier to be substantially zero and (2) a connection state of the analog switches to be in a disconnected state when the microcomputer determines that the stored ID code is unequal to the keyed ID code; and

a mixer to provide CRT drive signals from a mix of the amplified image signals and the analog on-screen image signals.

5,828,835

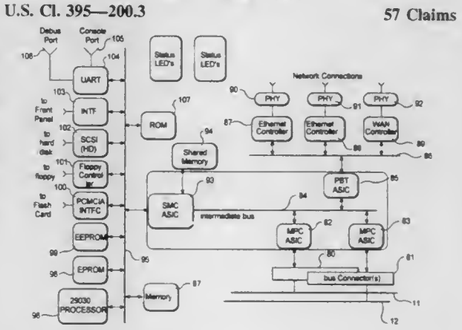
HIGH THROUGHPUT MESSAGE PASSING PROCESS USING LATENCY AND RELIABILITY CLASSES

Mark S. Isfeld, San Jose; Tracy D. Mallory, Palo Alto; Bruce W. Mitchell, San Jose; Michael J. Seaman, Mountain View, and Nagaraj Arunkumar, San Jose, all of Calif., assignors to 3Com Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 599,473, Jan. 23, 1996, which is a continuation-in-part of Ser. No. 438,897, May 10, 1995, Pat. No. 5,592,622. This application Jul. 3, 1996, Ser. No. 675,663

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.3 **57 Claims**



56. A method of transferring data on a communication medium from a source processor to a destination processor, the data including messages of a first transmit latency class and messages of a second transmit latency class, comprising:

queuing messages of the first transmit latency class in the source processor according to a first transmit priority rule in a first transmit queue;

queuing messages of the second transmit latency lass in the source processor according to a second transmit priority rule in a second transmit queue; and

sending a particular message selected from the first and second transmit queues in the source processor according to a queue priority rule to the destination processor without establishing connection with the destination processor for the particular message in advance of sending the particular message;

receiving at the destination processor messages addressed to the destination processor; and

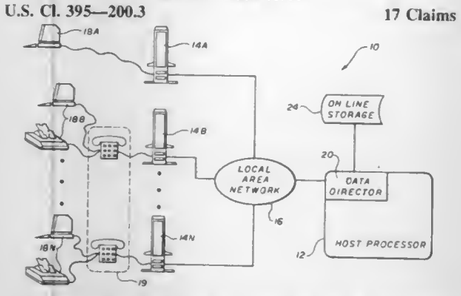
storing the received messages in destination processor memory according to a receive priority rule, the receive priority rule providing for storing messages of a first reliability class if a first threshold amount of storage is available in destination processor memory, and storing messages of a second reliability class if a second threshold amount of storage is available in destination processor memory, wherein the first threshold is larger than the second threshold, and wherein the receive priority rule includes dropping messages of the second reliability class if than the second threshold amount of storage is available in the destination processor memory.

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5,828,836
NETWORKED INFORMATION COMMUNICATION SYSTEM

George E. Westwick, and Mahesh Bhuta, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Research Triangle Park, N.C.

Continuation of Ser. No. 577,302, Dec. 22, 1995, abandoned, which is a continuation of Ser. No. 134,160, Oct. 8, 1993, abandoned. This application Jan. 15, 1997, Ser. No. 783,685
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.3 **17 Claims**



1. A method for minimizing the transfer of data in a networked distributed data processing system having a network host, the method comprising the steps of:

(a) uploading an information unit to a sending controller device for direct transmission to a receiving controller device;

(b) temporarily storing an information unit in a sending controller device until the sending controller device is directed to directly transfer the information unit to a receiving controller device;

(c) controlling the direct transmission of an information unit between a sending and a receiving controller device, wherein the step of controlling the direct transmission of an information unit between a sending and a receiving controller device comprises the steps of:

(1) after an information unit has been uploaded to a sending controller device, sending a control message from the sending controller device to a data director without sending the information unit to the data director or network host;

(2) associating an information unit with a sending and a receiving controller device;

(3) sending a control message from a data director to a receiving controller device to indicate that a sending controller has an information unit which has been associated with the receiving controller device;

(4) sending a request for an information unit from a receiving controller device directly to a sending controller device; and

(5) sending an information unit from a sending controller device directly to a receiving controller device to thereby avoid transmission of an information unit to a host or data director in the network.

5,828,837
COMPUTER NETWORK SYSTEM AND METHOD FOR EFFICIENT INFORMATION TRANSFER

Martin Eikeland, Oygardveien 34, N-1340 Bekkestua, Norway

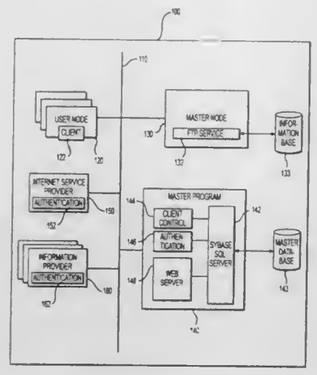
Filed Apr. 15, 1996, Ser. No. 632,102
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—200.32 **55 Claims**

1. A computer network for connecting information providers and users through a network service provider that assigns network addresses to the users comprising:

a user node including

means for sending a user id corresponding to a current user of the user node,

means for receiving and displaying target information,



means for receiving from the current user a request for certain user-selected information, and

means for compiling and transmitting a user report identifying the displayed target information and user-selected information;

a master database containing user information, including user profile information and target information references;

a master node, coupled to the user node over a transmission medium capable of supporting communications between the master node and the user node, the master node including

means for receiving the user id and the respective network address from the network service provider,

means for monitoring the traffic on the transmission medium between the user node and the master node,

means for transferring information to the user node minimizing additional communication delay between the master node and the user node; and

a master program module, coupled to the master node and the master database, including

means for receiving the user id and the respective network address from the master node,

means for accessing from the master database user profile information corresponding to the user id,

means for transmitting to the user node, through the master node, a reference to target information corresponding to the accessed user profile, and

means for storing in the master database the user report from the user node.

34. A method of monitoring network traffic for transferring target information packets while minimizing additional communication delay between a user node and a master node comprising the steps of:

storing each bit of non-target information packets in a shift register;

detecting an identification bit pattern of non-target information packets in a shift register;

controlling a transfer gate in response to the detected identification bit pattern; and

delaying a start signal initiating transfer of target information packets in response to the detected identification bit pattern until transfer of non-target information packet is complete.

37. A method of transferring target information packets while minimizing additional communication delay between a user node and a master node comprising the steps of:

monitoring length of time necessary for transfer of each target information packet; and

adjusting the rate of target information transfer in response to the monitored transfer time.

41. A method for connecting information providers and user nodes coupled to a master node and a master database comprising the steps of:

receiving through the master node a user id corresponding to a current user of the user node;

accessing from the master database user profile information corresponding to the user id and respective network address;

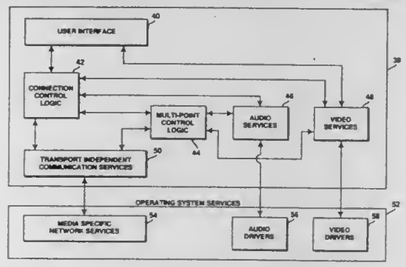
transmitting to the user node, through the master node, a reference to target information corresponding to the accessed user profile; and

storing a user report from the user node.

5,828,838
METHOD AND APPARATUS FOR CONDUCTING MULTI-POINT ELECTRONIC CONFERENCES

Terry Downs, Forest Grove; Philip Lantz, Cornelius, and Michael Maloney, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 20, 1996, Ser. No. 668,570
Int. Cl.[6] G06F *11/00*
U.S. Cl. 395—200.34 **28 Claims**



13. A network of personal conferencing units comprising at least three personal conferencing units coupled to each other for conducting a multi-point electronic conference between the personal conferencing units, each personal conferencing unit having integrated multi-point control logic that operates to cooperate with multi-point control logic of the other personal conferencing units to collectively control audio and video distribution among the personal conferencing units during the multi-point electronic conference.

5,828,839
COMPUTER NETWORK CHAT ROOM BASED ON CHANNEL BROADCAST IN REAL TIME

Craig T. Moncreiff, San Diego, Calif., assignor to Interactive Broadcaster Services Corp., La Jolla, Calif.

Filed Nov. 14, 1996, Ser. No. 749,091
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—200.34 **17 Claims**

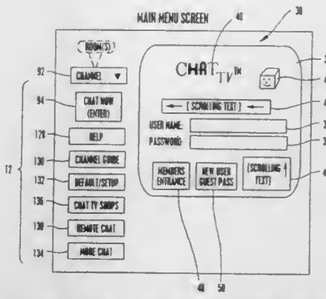
1. A computer program product comprising:

a computer program storage device readable by a digital processing system; and

logic means on the program storage device and including instructions executable by the digital processing system for performing method steps for establishing communication between at least one user computer and at least one chat room in a computer network based on the broadcast time of a broadcast program to which the chat room relates, the method steps comprising:

(a) receiving from the user computer a desired program channel;

(b) receiving from the user computer a desired time zone;



(c) receiving from the user computer a request to enter a chat room;

(d) in response to the receiving steps, establishing communication between the user computer and the computer network chat room;

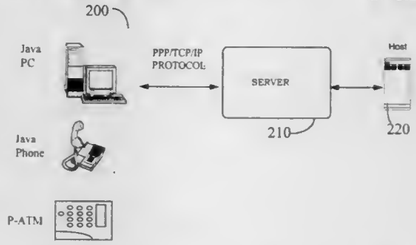
storing in a viewer file for each broadcast program, the number of user computers logged in to a chat room; and

providing accounting data based on the viewer file.

5,828,840
SERVER FOR STARTING CLIENT APPLICATION ON CLIENT IF CLIENT IS NETWORK TERMINAL AND INITIATING CLIENT APPLICATION ON SERVER IF CLIENT IS NON NETWORK TERMINAL

Richard Cowan, Honolulu, Hi.; Gordon P. Eckley, Foresthill, Calif.; Prasad V. R. Panchangam, San Mateo, Calif., and Winston C. W. Leong, Roseville, Calif., assignors to Verifone, Inc., Santa Clara, Calif.

Filed Aug. 6, 1996, Ser. No. 692,489
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—200.33 **25 Claims**



1. A distributed computer system including a client terminal and a server which communicate via a network, comprising:

(a) the client terminal initiating connection to the server utilizing the network;

(b) the server responding to the initial connection by transmitting an enquiry message to the client terminal;

(c) the client terminal responding to the enquiry message with a message comprising identification information indicative of the client terminal being a network terminal or a non-network terminal and identifying a client application the client terminal requires;

(d) the server receiving and analyzing the identification information to determine if the client terminal is a network terminal or a non-network terminal; and

(d1) if the client terminal is a network terminal, then the client loader on the server starts the client application, if necessary, on the client terminal utilizing the network and starts a server application to service future requests from the client terminal; and

(d2) if the client terminal is a non-network terminal, then the server initiates the client application and server application

on the server for processing the client application at the server for the client terminal.

5,828,841

VIDEO SIGNAL RECORDING AND REPRODUCTION APPARATUS

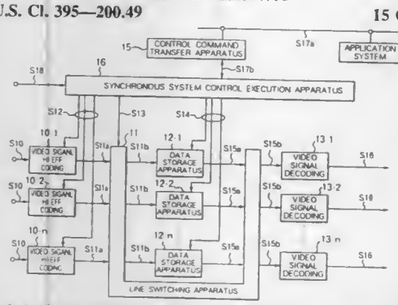
Norikazu Ito; Hiroyuki Fujita; Yuichi Kojima; Atsuo Matsuyama, and Masahiro Kato, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 27, 1995, Ser. No. 548,954

Claims priority, application Japan, Oct. 31, 1994, 6-266635; Feb. 17, 1995, 7-029768

Int. Cl.[6] H04N *7/16*

U.S. Cl. 395—200.49 **15 Claims**



1. A video signal recording and reproduction apparatus, comprising:

a plurality of encoding means, each said encoding means being operable to perform compression encoding on one or more input video signals;

at least one data storage means for recording and reproducing one or more encoded video signals generated by said encoding means;

a line switching means for selectively connecting said encoding means and said data storage means, and/or for selectively connecting said data storage means and one or more output lines; and

a control means for controlling said plurality of encoding means, said line switching means and said data storage means in response to one or more instructions;

wherein each of said encoding means is independently controllable by said control means, and each of said data storage means is independently controllable by said control means.

5,828,842

METHOD OF CREATING INFORMATION FOR EXECUTING NETWORK MANAGEMENT OPERATIONS FROM A SIMPLIFIED DEFINITION OF AN OPERATION SEQUENCE AND PROVIDING A NETWORK MANAGEMENT OPERATION SEQUENCE, USED IN THE INFORMATION

Kiminori Sugauchi; Michio Suzuki, both of Yokohama; Youji Kamata, Chigasaki; Shuji Watanuki, and Takashi Aoyama, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 15, 1996, Ser. No. 648,419

Claims priority, application Japan, May 19, 1995, 7-121112

Int. Cl.[6] G06F *17/60*

U.S. Cl. 395—200.53 **8 Claims**



1. A method of providing management services in a communication network management system for carrying out a management operation on constituent managed objects constituting a communication network, comprising the steps of:

storing in a storage means a management operation set file in which at least one said management operation to be applied to said managed objects is described in a time series as a combination of parameters and information sources for setting parameter values, in addition to predefined behavior information of said managed objects;

obtaining specified individual information according to an executed management operation of said management operation set file, and analyzing results of the operation to derive header information, used to make real parameters for a management operation, or response information, from said predefined behavior information, when a request operation is received from a management application or operator;

creating a common table consisting of individual information for executing management operations and for analyzing results thereof;

making a sequence table containing an index for indicating said common table and sequence indexes indicating sequence numbers of said management operations; and

operating each management operation in real time based on said common table, and executing the required management operation sets in real time based on said sequence tables, according to said request operation.

5,828,843

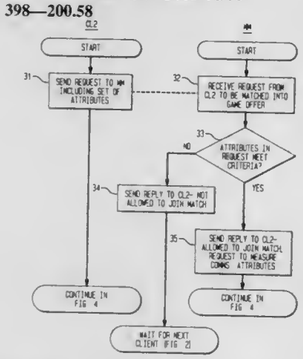
OBJECT-ORIENTED METHOD FOR MATCHING CLIENTS TOGETHER WITH SERVERS ACCORDING TO ATTRIBUTES INCLUDED IN JOIN REQUEST

Stephen M. Grimm, Mountain View; Jeffrey J. Rothschild, Los Gatos; Daniel J. Samuel, Sunnyvale, and Michael A. Wolf, Mountain View, all of Calif., assignors to Mpath Interactive, Inc., Mountain View, Calif.

Filed Mar. 20, 1997, Ser. No. 822,289

Int. Cl.[6] G06F *16/16*

U.S. Cl. 398—200.58 **18 Claims**



1. A method for creating a set of computer objects, said set of computer objects comprising a plurality of client instances of client computer programs together with a server instance of a server computer program selected from a set of server instances, the method comprising the steps of:

(a) receiving from a first client instance a first request to be joined into said set of computer objects, said first request comprising first client attributes associated with said first client instance;

(b) selecting a first server subset of said set of server instances in response to said first request based on said first client attributes;

(c) creating said set of computer objects consisting of said first client instance;

(d) augmenting said set of computer objects with a second client instance of a client computer program, comprising the steps of:

(I) receiving from said second client instance a second request to be joined into said set of computer objects, said second request comprising second client attributes associated with said second client instance.

(ii) removing from said first server subset a second server subset in response to said second request based on said second client attributes, and

(iii) adding to said set of computer objects said second client instance; and

(e) adding to said set of computer objects a member of said second server subset based on attributes associated with each member of said set of computer objects.

5,828,844

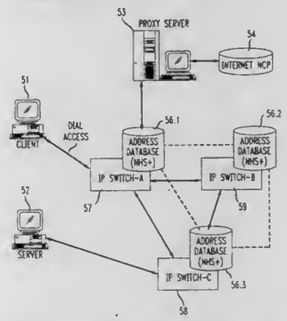
INTERNET NCP OVER ATM

Seyhan Civanlar, Middletown Township, Monmouth County, and Vikram R. Saksena, Freehold, both of N.J., assignors to AT&T Corp., Middletown, N.J.

Filed Oct. 8, 1996, Ser. No. 728,276

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.58 **23 Claims**



1. A telecommunications network for establishing communication between at least one originating station and at least one destination station, comprising:

a plurality of IP switches for addressing and routing data in accordance with an Internet protocol and an ATM protocol;

a server, coupled to at least one of the IP switches, for receiving at least one service attribute requested by an originating station in communication with the IP switch;

a network control point (NCP) for providing data in response to a request from the server for providing said at least one service attribute;

at least one address database associated with each of the IP switches, said at least one address database including a subset of the data available in the NCP.

5,828,845

INTERRUPT-BASED SYSTEM

Hosagrahar Visvesvaraya Jagadish; Inderpal Singh Mumick, both of Berkeley Heights, and Abraham Silberschatz, Summit, all of N.J., assignors to AT&T Corp, Middletown, N.J.

Filed Sep. 8, 1995, Ser. No. 525,931

Int. Cl.[6] G06F *15/16;* **H04N** *7/10*

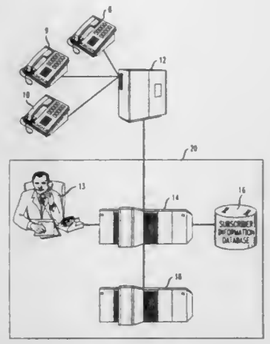
U.S. Cl. 395—200.59 **22 Claims**

1. An interrupt-based system for use in a service subscription system having a central service provider and at least one subscriber unit, said interrupt-based system comprising:

a database for storing subscriber information specific to said at least one subscriber unit, said subscriber information including at least one subscriber selectable condition;

detecting means for detecting at least one request signal from said at least one subscriber unit;

identifying means for identifying said at least one requesting subscriber unit;



extracting means for extracting at least one service request from said at least one detected request signal;

accessing means for accessing from said database subscriber information specific to said at least one identified requesting subscriber unit;

comparing means for comparing said at least one extracted service request and said at least one subscriber selectable condition;

connecting means for making service connections when said at least one extracted service request does not meet said at least one subscriber selectable condition; and

interrupting means for interrupting said at least one service request when said at least one extracted service request meets said at least one subscriber selectable condition.

5,828,846

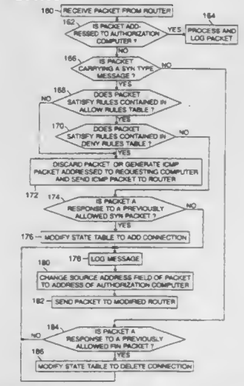
CONTROLLING PASSAGE OF PACKETS OR MESSAGES VIA A VIRTUAL CONNECTION OR FLOW

Alan J. Kirby, Hollis, N.H., and Ashok P. Nadkarni, Shrewsbury, Mass., assignors to Raptor Systems, Inc., Waltham, Mass.

Filed Nov. 22, 1995, Ser. No. 561,790

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—200.68 **14 Claims**



1. A method for controlling a virtual connection or flow of packets or messages between a device and a network which conforms to a predefined communication protocol, comprising:

examining a packet or message for network protocol information that indicates if the packet or message triggers a step in managing a virtual connection or flow;

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if the packet or message triggers a step, identifying the step from the packet or message network protocol information and applying predefined authorization allow and deny rules that indicate whether destination access should be denied to determine whether to permit the step to occur;

if application of the authorization allow and deny rules permit a step that starts a virtual connection or flow, setting up the virtual connection or flow and updating information on the state of virtual connections or flows;

if application of the authorization allow and deny rules permit a step that terminates a virtual connection or flow, terminating the virtual connection or flow and updating information on the state of virtual connections or flows; and

if the packet or message does not trigger a step, permitting the packet or message to pass directly via the virtual connection or flow, without applying the predefined authorization allow and deny rules.

5,828,847

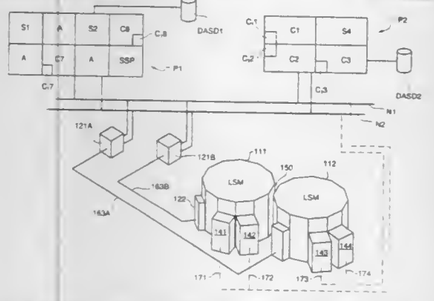
DYNAMIC SERVER SWITCHING FOR MAXIMUM SERVER AVAILABILITY AND LOAD BALANCING

Chuck Royal Gehr, Louisville; Paul David Von Behren, Boulder; Michael Patrick Williams, Longmont, and Robert Barry Wood, Niwot, all of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Filed Apr. 19, 1996, Ser. No. 639,939

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—200.69 **23 Claims**



1. A dynamic server switching system for a client-server network that is populated by a plurality of servers and a plurality of clients, wherein clients and servers communicate via communication methods that serve to interconnect the clients and servers, said dynamic server switching system comprising:

means for storing routing data that defines a hierarchical ordering of servers for each of said plurality of clients, including a primary server and at least one alternate server designated for each of said plurality of clients;

means, responsive to a one of said plurality of clients failing to receive service from said primary server defined for said one client, for retrieving an entry from said stored routing data to identify an available one of said least one alternate server designated for said one of said plurality of clients; and

means, responsive to said retrieved entry, for directing service requests that are received from said one of said plurality of clients to said identified one of said at least one alternate server as defined by said retrieved data.

5,828,848

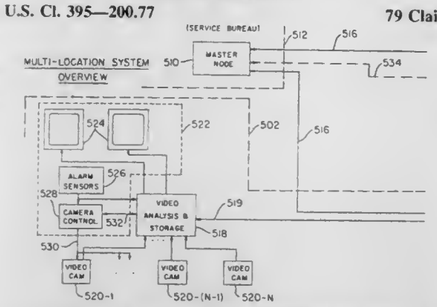
METHOD AND APPARATUS FOR COMPRESSION AND DECOMPRESSION OF VIDEO DATA STREAMS

David Ross MacCormack, San Diego; Charles Park Wilson, Santee; Gerhard Josef Winter, San Diego; Harry Eric Klein, San Diego; Lyn Nguyen, San Diego, and Patrick O. Nunally, Delmar, all of Calif., assignors to Sensormatic Electronics Corporation, Tokyo, Japan

Filed Oct. 31, 1996, Ser. No. 741,914

Int. Cl.[6] H04N *1/413*

U.S. Cl. 395—200.77 **79 Claims**



1. A method of performing data compression with respect to a frame of image data, said image data being representative of pixels arrayed in an image plane, the method comprising the steps of:

dividing said image data into a plurality of data blocks, each of said data blocks representing a respective rectangular part of said image plane;

comparing each of said data blocks with a corresponding data block of a preceding frame of image data to generate a similarity metric indicative of a degree of similarity between said each data block and the corresponding data block of the preceding frame;

comparing said similarity metric with a predetermined threshold value;

on the basis of said comparison of said similarity metric with said predetermined threshold value, selecting one of a first mode for generating encoding values for said each data block and a second mode for generating encoding values for said each data block;

generating encoding values for said each data block in accordance with the selected one of said first mode and said second mode; and

applying a transformation to said encoding values of said each data block to form a respective block of coefficient values therefrom.

5,828,849

METHOD TO DERIVE EDGE EXTENSIONS FOR WAVELET TRANSFORMS AND INVERSE WAVELET TRANSFORMS

Mody Lempel, Sunnyvale; Manoucher Vafai, Los Gatos, and Loganath Ramachandran, San Jose, all of Calif., assignors to LSI Logic Corporation, Milpitas, Calif.

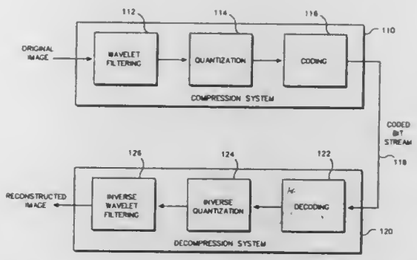
Filed May 14, 1996, Ser. No. 645,574

Int. Cl.[6] H04N *1/41*

U.S. Cl. 395—200.77 **12 Claims**

1. In a wavelet compression-decompression system for multimedia computing, a method for deriving edge extensions for a two-dimensional matrix of values in multiple rows comprising:

forming a one-dimensional array from the two-dimensional matrix by sequencing ends of the rows together;



deriving the edge extensions for each value from adjacent values in the one-dimensional array.

5,828,850

BUSLINE LENGTH RECOGNITION SYSTEM

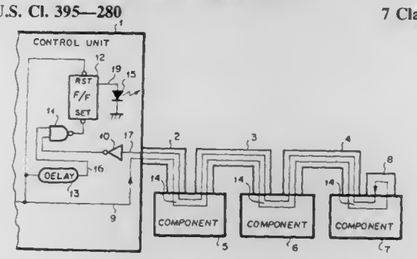
Toshio Misaka, Gunma, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 2, 1994, Ser. No. 336,197

Claims priority, application Japan, Nov. 5, 1993, 5-276249

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—280 **7 Claims**



1. Busline length recognition system comprising:

a control unit;

a plurality of components each having two duplex signal buslines;

a plurality of connecting portions each having two signal lines for connecting said control unit and said plurality of components in series, a first component of said plurality of components being connected to said control unit through a first connecting portion of said plurality of connecting portions; and

a terminal resistance module having a single signal line for short-circuiting said two duplex signal busline of a terminal one of said plurality of components,

wherein said control unit outputs a reset signal to a first component of said plurality of components, and comprises a delay gate to which a said reset signal is input, said delay gate having a delay time set according to a prescribed length of the duplex signal buslines, a logical NOT-gate to which a reset response signal from said first connecting portion is entered, a logical NAND-gate to which the signal emitted from said delay gate and said logical NOT-gate are entered, a flip-flop reset by said reset signal and set by the signal emitted from said logical NAND-gate, and a light emitting diode actuated by the signal emitted from said flip-flop to indicate that the busline length exceeds a predetermined length, and wherein said reset signal is applied to a first of said two duplex signal buslines, and the logical NOT-gate receives the reset response signal from a second of said two duplex signal buslines.

5,828,851

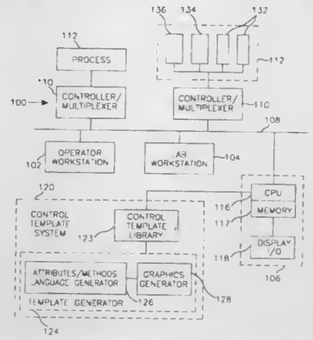
PROCESS CONTROL SYSTEM USING STANDARD PROTOCOL CONTROL OF STANDARD DEVICES AND NONSTANDARD DEVICES

Mark Nixon, Round Rock; Robert B. Havekost, Austin; Larry O. Jundt; Dennis Stevenson, both of Round Rock; Michael G. Ott, Austin, all of Tex.; Arthur Webb, and Mike Lucas, both of Leicestershire, England, assignors to Fisher-Rosemount Systems, Inc., Austin, Tex.

Filed Apr. 12, 1996, Ser. No. 631,862

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—285 **40 Claims**



1. A process control system for controlling a plurality of field devices of multiple different field device types including standard-protocol field devices and non-standard-protocol field devices, the process control system comprising:

a plurality of distributed controllers coupled to the field devices; and

a software system including a plurality of function blocks defined in a standard protocol, the function blocks being selectively installable and operative on ones of the plurality of distributed controllers for selectively controlling a standard-protocol field device and a non-standard-protocol field device.

5,828,852

METHOD FOR OPERATION OF A BUS SYSTEM FOR HIGHLY FLEXIBLE AND QUICK DATA TRANSMISSION BETWEEN UNITS CONNECTED TO THE BUS SYSTEM AND CONFIGURATION FOR CARRYING OUT THE METHOD

Thomas Niedermeier, Rosenheim; Peter Rohm, Pfaffenhofen/Ilm; Richard Schmid, München, all of Germany; David Flynn, Cambridge, Great Britain; Peter Klapproth, Je Eindhoven, Netherlands; Frederik Zandveld, CL Bergeyk, Netherlands; Jacobus Christophorus Koot, TS Eindhoven, Netherlands; Andrew Michael Jones, Bristol; James Graham Matthew, Wiltshire, both of Great Britain, and Bruno Douady, Paris, France, assignors to Siemens Aktiengesellschaft, Munich, Germany; Advanced Risc Machines Ltd., Cambridge, United Kingdom; Philips Electronics N.V., Eindhoven, Netherlands; Inmos Ltd., Bristol, United Kingdom, and Matra MHS S.A., Nantes, France

Filed Nov. 27, 1995, Ser. No. 562,802

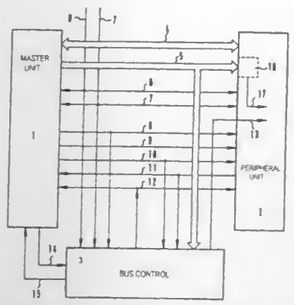
Claims priority, application Germany, May 26, 1993, 43 17 567.8

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—290 **10 Claims**

1. In a method for operation of a bus system having at least one master unit, at least one slave unit, a bus through which the at least one master unit communicates with the at least one slave unit, and a bus control unit for controlling the communication through the bus, the improvement which comprises:

controlling an assignment of the bus to a master unit with the bus control unit;



transmitting data between the master unit and an addressed unit under control of the master unit and the addressed unit; and

transmitting respective data of a bus cycle in encoded form with the master unit or the slave unit through at least one control line of the bus.

5,828,853

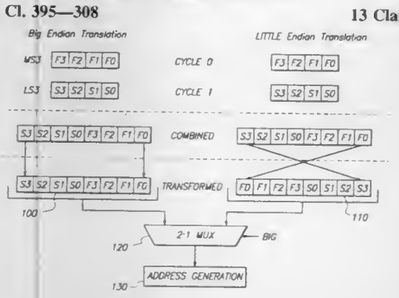
METHOD AND APPARATUS FOR INTERFACING TWO SYSTEMS OPERATING IN POTENTIALLY DIFFERING ENDIAN MODES

Michael L. Regal, Campbell, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation-in-part of Ser. No. 436,989, May 8, 1995, abandoned. This application May 8, 1996, Ser. No. 646,563

Int. Cl.[6] G06F *12/10;13/00*

U.S. Cl. 395—308 **13 Claims**



1. A method of generating a translated address from first address from a first bus operating in a first Endian mode for use on a second bus operating in a second Endian mode, where said second Endian mode may be different from said first Endian mode, the method to being performed by a bridge across the first and second busses and comprising the steps of:

forming a first data segment comprising of a set of byte enable signals;

forming a swapped data segment comprising a rearrangement of said byte enable signals;

selecting one of said first data segment and said swapped data segment on the basis of an indication whether the first Endian mode is the same as said second Endian mode; and

generating said translated address on the basis of the selected one of said first data segment and said swapped data segment;

wherein said second bus address is generated by detecting which byte is a first enabled byte and how many consecutive bytes after said first enabled byte are also enabled.

5,828,854

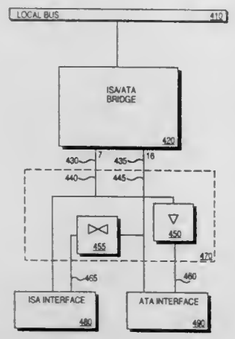
METHOD AND APPARATUS FOR MULTIPLEXING SIGNALS FROM A BUS BRIDGE TO AN ISA BUS INTERFACE AND AN ATA BUS INTERFACE

Nicholas D. Wade, Cameron Park, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 380,020, Jan. 27, 1995, Pat. No. 5,606,627. This application Sep. 26, 1996, Ser. No. 721,271

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—308 **24 Claims**



1. An apparatus, comprising:

a first plurality of pins that transmit first bus signals with tight timing requirements to a first bus and that transmit second bus signals with timing requirements that are not tight to a second bus; and

a second plurality of pins that transmit second bus signals with tight timing requirements to the second bus and that transmit first bus signals with timing requirements that are not tight to the first bus.

5,828,855

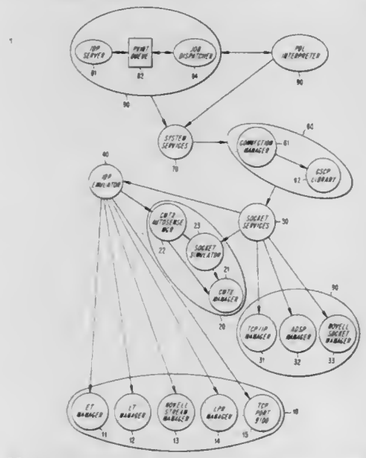
SOCKET SIMULATION PROTOCOL FOR NETWORK PRINTING SYSTEMS

Ted W. Walker, Sunnyvale, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jun. 6, 1995, Ser. No. 470,968

Int. Cl.[6] H01J *13/00*

U.S. Cl. 395—309 **37 Claims**



23. A heterogeneous network printing system comprising:

a plurality of host computers;

a plurality of heterogeneous network service protocols/ports for connecting said host computers to a network;

a printer connected to the network; and

a protocol simulating interface for simulating a multiple channel connection to said printer when a single channel connection is initiated by one of said host computers, wherein said protocol simulating interface comprises a socket simulating protocol (SSP), and wherein said protocol simulating interface automatically senses between SSP and non-SSP data received from a host computer.

5,828,856

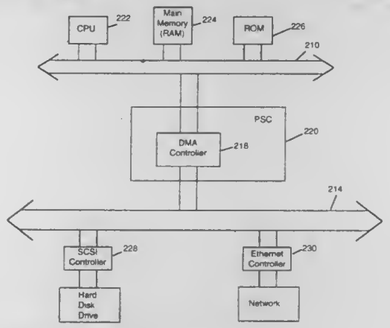
DUAL BUS CONCURRENT MULTI-CHANNEL DIRECT MEMORY ACCESS CONTROLLER AND METHOD

Michael J. Bowes, Cupertino, and Brian A. Childers, Santa Clara, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 189,139, Jan. 28, 1994, abandoned. This application Mar. 21, 1996, Ser. No. 621,200

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **18 Claims**



1. A computer system comprising:

a first bus;

a second bus;

a memory unit and a central processing unit coupled to said first bus;

a plurality of input/output controllers coupled to said second bus; and

a direct memory access controller, coupled to said first bus and said second bus, the direct memory access controller including,

a plurality of direct memory access channels including a first channel and a second channel, for transferring data between said first bus and said second bus, wherein the first channel controls data trans ers from a first input/output controller of the plurality of input/output controllers and the second channel, concurrently with the first channel controlling data transfers from the first input/output controller, controls data transfers from a second input/output controller of the plurality of input/output controllers, wherein the first and second input/output controllers are two different input/output controllers,

a first arbiter coupled to each of said direct memory access channels, said first arbiter selecting one of the first channel or the second channel on behalf of which the direct memory access controller can arbitrate for access to said first bus; and

a second arbiter coupled to each of said direct memory access channels, said second arbiter for arbitrating access requests from said plurality of direct memory access channels for said second bus.

5,828,857

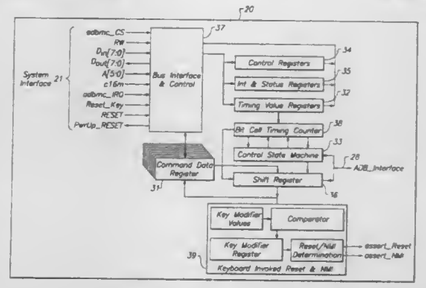
ASIC CELL IMPLEMENTATION OF A BUS CONTROLLER WITH PROGRAMMABLE TIMING VALUE REGISTERS FOR THE APPLE DESKTOP BUS

Albert M. Scalise, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Filed Jan. 5, 1996, Ser. No. 583,375

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—309 **8 Claims**



1. An ASIC (Application Specific Integrated Circuit) cell implementation of an ADB (Apple Desk top Bus) bus controller for an Apple Desktop Bus, comprising:

a system interface for connecting the ADB bus controller to a computer system, including an address bus interface for connecting to an address bus, a data bus interface for connecting to a data bus and a control bus interface for connecting to a control bus;

an ADB interface for connecting to an Apple Desktop Bus;

a command/data register for holding data within the ADB bus controller and transferring data to the computer system via the system interface and to the Apple Desktop Bus via the ADB interface;

programmable timing value registers for holding timing data which is transferred from the computer system; and

a control state machine using the timing data to implement Apple Desktop Bus data signaling and Apple Desktop Bus communications protocol on the ADB interface.

5,828,858

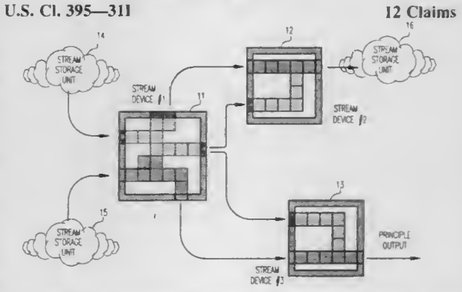
WORM-HOLE RUN-TIME RECONFIGURABLE PROCESSOR FIELD PROGRAMMABLE GATE ARRAY (FPGA)

Peter Athanas, and Ray A. Bittner, Jr., both of Blacksburg, Va., assignors to Virginia Tech Intellectual Properties, Inc., Blacksburg, Va.

Filed Sep. 16, 1996, Ser. No. 714,348

Int. Cl.[6] G06F *15/177*

U.S. Cl. 395—311 **12 Claims**



1. A data stream driven Worm-hole run-time reconfigurable field programmable gate array (FPGA) implemented on a single chip comprising:

a plurality of independent bi-directional data ports for receiving one or more data streams and outputting one or more data streams, each said data stream containing variable length self-configuring header information and variable length data;

a mesh of interconnected and configurable functional units capable of performing programmed arithmetic operations as defined by said header information; and

an interconnection network responsive to said header information for configuring pathways interconnecting data ports and configurable functional units, said field programmable gate array being configurable at run-time through said plurality of independent bi-directional ports to partially reconfigure for one task while simultaneously performing computations for another task.

5,828,859

METHOD AND APPARATUS FOR SETTING THE STATUS MODE OF A CENTRAL PROCESSING UNIT

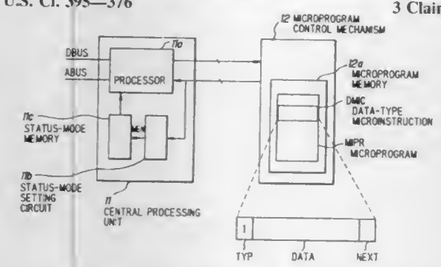
Hisamitsu Tanihira, Iwaki; Kazuo Nagahori, and Renri Nakano, both of Kawasaki, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 948,596, Sep. 23, 1992, abandoned. This application Jun. 19, 1995, Ser. No. 492,391

Claims priority, application Japan, Sep. 30, 1991, 3-251204

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—376 **3 Claims**



1. A status-mode setting method for setting status-modes in a computer system having a microprogram-type central processing unit (CPU) for processing based on said status-modes that have been set, comprising the steps of:

storing a microinstruction of a prescribed type, as a first microinstruction together with microinstructions of other types in a memory, the microinstruction of the prescribed type having a status mode indicator in a data portion;

reading the microinstructions from the memory when power is introduced to the computer system;

deciding whether a first of the prescribed type of the microinstructions is read from the memory; and

storing the status-mode indicator, which has been written in the data portion of the prescribed type microinstruction, in a status-mode memory when the first of the prescribed type of the microinstructions is read and supplying said status-mode indicator to the microprogram-type CPU to set the selected status-mode of the microprogram-type CPU, and

wherein the microinstruction of said prescribed type is a data type microinstruction.

5,828,860

DATA PROCESSING DEVICE EQUIPPED WITH CACHE MEMORY AND A STORAGE UNIT FOR STORING DATA BETWEEN A MAIN STORAGE OR CPU CACHE MEMORY

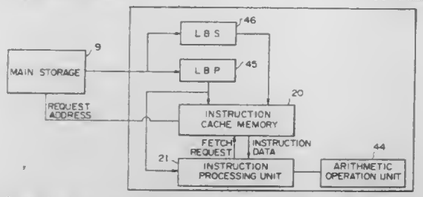
Hitoshi Miyaoku; Atsuhiro Suga; Koichi Sasamori, and Kazuhide Yoshino, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 363,547, Dec. 23, 1994, abandoned, which is a continuation of Ser. No. 137,357, Oct. 18, 1993, abandoned. This application Oct. 28, 1996, Ser. No. 739,062

Claims priority, application Japan, Oct. 16, 1992, 4-278238; Oct. 16, 1993, 5-281759

Int. Cl.[6] G06F *12/08*

U.S. Cl. 395—383 **33 Claims**



1. A data processing device in a computer system having an instruction cache memory for storing an instruction, a lower order storage unit and an instruction processing unit for instructing the lower order storage unit to transmit a necessary instruction to the instruction cache memory when the instruction is not stored in the instruction cache memory, said data processing device comprising:

first transmit instruction data storage means for storing 1-line instruction data containing a first instruction required by the instruction processing unit, followed by a second instruction, and for transmitting the 1-line instruction data from the lower order storage unit to the instruction cache memory and directly to the instruction processing unit;

second transmit instruction data storage means, formed of one or more stages, for storing one or more lines of prefetched instruction data following the 1-line instruction data and for transmitting the one or more lines of prefetched instruction data after the 1-line instruction data is transmitted; and

determining means for determining whether the one or more lines of prefetched instruction data are to be transmitted to the instruction cache memory by comparing only a portion of an address of the second instruction stored in said first transmit instruction data storage means with a corresponding portion of an address of a third instruction required by the instruction processing unit, said determining means determining to transmit the one or more lines of prefetched instruction data to the instruction cache memory when at least the portion of the address of the second instruction and the corresponding portion of the address of the third instruction match.

5,828,861

SYSTEM AND METHOD FOR REDUCING THE CRITICAL PATH IN MEMORY CONTROL UNIT AND INPUT/OUTPUT CONTROL UNIT OPERATIONS

Yoshiyuki Miyayama, Santa Clara, and Cheng-Long Tang, San Jose, both of Calif., assignors to Seiko Epson Corporation, Tokyo, Japan

Filed Mar. 6, 1992, Ser. No. 846,231

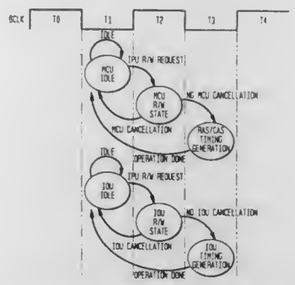
Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—384 **9 Claims**

1. A method for reducing the critical path in a processor-based system during READ/WRITE operations, the system having a memory control unit (MCU), an Input/Output control unit (IOU) and an instruction set, comprising the steps of:

(a) decoding a first part of an instruction from the instruction set;

(b) determining if said instruction requires at least one of a READ and a WRITE operation;



(c) sending a request to both the MCU and the IOU to enter the READ/WRITE state if it is determined in step b that a READ and/or a WRITE is required;

(d) decoding the remainder of the instruction to determine the address(es) to be accessed by the READ and/or WRITE operation;

(e) decoding the address(es) to be accessed, the decoding performed by at least one of the MCU and the IOU to determine whether the access is directed toward memory or I/O devices; and

(f) cancelling one of said requests to the MCU and IOU based on the results of said decoding step (e).

5,828,862

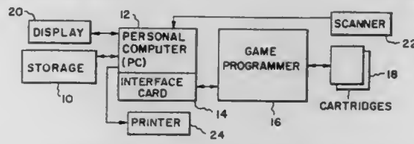
GAME PROGRAMMING FLASH MEMORY CARTRIDGE SYSTEM INCLUDING A PROGRAMMER AND A REPROGRAMMABLE CARTRIDGE

Paripon Singkornrat, Boca Raton; Don E. Basnett, Jr., Pompano Beach; John Dorak, Boca Raton; Glen E. Hamblin, Boca Raton; Kha D. Nguyen, Boca Raton; James T. Tsevdos, Fort Lauderdale, and Donald J. Watzel, Coral Springs, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 238,112, May 4, 1994, abandoned. This application May 13, 1997, Ser. No. 855,478

Int. Cl.[6] G06F *13/00;* **G11C** *7/00*

U.S. Cl. 395—442 **17 Claims**



1. A programmable cartridge system for recording a computer program on a reprogrammable cartridge comprising:

a reprogrammable cartridge housing a non-volatile flash memory which may be programmed, erased and reprogrammed with computer programs via a plug-in connector;

a programmer for receiving the plug-in connector and engaging the reprogrammable cartridge to enable the flash memory to be loaded with a computer program;

a personal computer, including a microprocessor and a storage device for storing computer programs for loading in the flash memory and generating microcode for controlling the reprogrammable cartridge game format;

scanner means for entering into the system customer order information identifying a specific cartridge type and a specific one of the computer programs stored in the storage device;

identification hardware means for (a) verifying that the identifying information in the cartridge corresponds to said specific cartridge type and (b) providing a cartridge verification signal to the programmer to record a computer program in the reprogrammable cartridge; and

sequencer means for (a) writing the specific computer program into the flash memory when verification of the identifying information in the cartridge has occurred, and (b) responding to the microcode supplied by the personal computer for controlling the reprogrammable cartridge game format for the programmer.

5,828,863

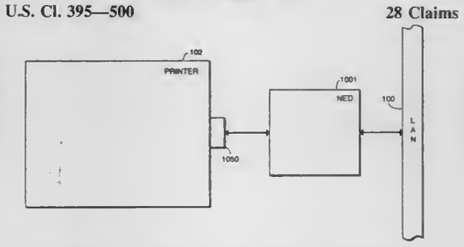
INTERFACE DEVICE CONNECTED BETWEEN A LAN AND A PRINTER FOR OUTPUTTING FORMATTED DEBUG INFORMATION ABOUT THE PRINTER TO THE PRINTER

Lorraine F. Barrett, Yorba Linda; William C. Russell, Laguna Hills, and Daniel A. Danknick, Orange, all of Calif., assignors to Canon Information Systems, Inc., Irvine, Calif.

Filed Jun. 9, 1995, Ser. No. 489,282

Int. Cl.[6] H04L *1/24*

U.S. Cl. 395—500 **28 Claims**



1. A method of outputting formatted debug information from a network device which interfaces between a local area network (LAN) and an image forming apparatus, comprising the steps of:

storing debug information relating to the network device configuration for receiving image forming jobs from the LAN and outputting image forming jobs to the image forming apparatus;

detecting a triggering condition for initiating output of the debug information;

formatting the debug information into an image forming job in response to the triggering condition; and

outputting the formatted debug information to the image forming apparatus;

wherein the outputting step comprises determining whether an image forming job received from the LAN is being output to the image forming apparatus and if so, outputting the formatted debug information to the image forming apparatus after completion of the image forming job being output.

5,828,864

NETWORK BOARD WHICH RESPONDS TO STATUS CHANGES OF AN INSTALLED PERIPHERAL BY GENERATING A TESTPAGE

Daniel A. Danknick, Orange; Lorraine F. Barrett, Yorba Linda, and William C. Russell, Laguna Hills, all of Calif., assignors to Canon Information Systems, Inc., Irvine, Calif.

Filed Jun. 9, 1995, Ser. No. 489,283

Int. Cl.[6] C06K *9/36*

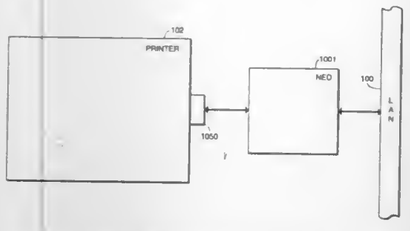
U.S. Cl. 395—500 **35 Claims**

1. An interactive network device which interfaces a LAN to a peripheral that includes a front panel through which a user can affect status of the peripheral, said interactive network device comprising:

a LAN interface which interfaces to the LAN and over which peripheral data is communicated;

a peripheral interface which interfaces to the peripheral and over which the peripheral data is communicated and the status of the peripheral data is received; and

a processor which analyzes the status of the peripheral received over said peripheral interface so as to detect a predetermined



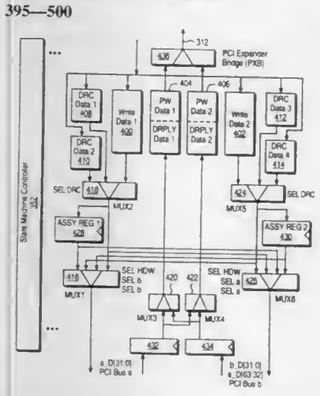
sequence of status changes in the peripheral input via the front panel of the peripheral and which, in response to detection of the predetermined sequence of status changes, (a) generates testpage information containing at least one of network information and interactive network device information and (b) outputs the generated testpage information.

5,828,865

DUAL MODE BUS BRIDGE FOR INTERFACING A HOST BUS AND A PERSONAL COMPUTER INTERFACE BUS

D. Michael Bell, Beaverton, Oreg., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 27, 1995, Ser. No. 579,297
Int. Cl.[6] G06F 9/318
U.S. Cl. 395—500 **10 Claims**



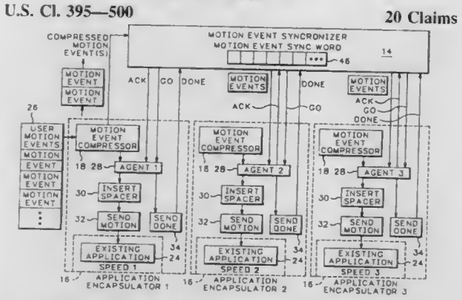
1. A computer system comprising:
a host bus;
at least one microprocessor connected to said host bus;
a first PCI bus capable of operating in either a 32-bit bus mode or a 64-bit bus mode;
a second PCI bus capable of operating in either the 32-bit bus mode or the 64-bit bus mode; and
an interface device for interfacing the first PCI bus and the second to the host bus, with said interface device including means for either coupling the first PCI bus and the second PCI bus operating in 32-bit mode with parallel 32-bit transmission paths to the host bus or coupling the first PCI bus operating in 64-bit mode to the host bus with a single 64-bit transmission path having a first set of transmission queues having a 64-bit data width, a second set of transmission queues having a 64-bit data width, and means for operating the first and second sets of queues in parallel for dual 32-bit operation and for operating the first and second sets of queues alternatively in series for a single 64-bit operation mode.

5,828,866

REAL-TIME SYNCHRONIZATION OF CONCURRENT VIEWS AMONG A PLURAITY OF EXISTING APPLICATIONS

Ming C. Hao, Los Altos Hills, and Joseph S. Sventek, Oakland, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Jul. 8, 1996, Ser. No. 676,762
Int. Cl.[6] G06F 9/46
U.S. Cl. 395—500 **20 Claims**



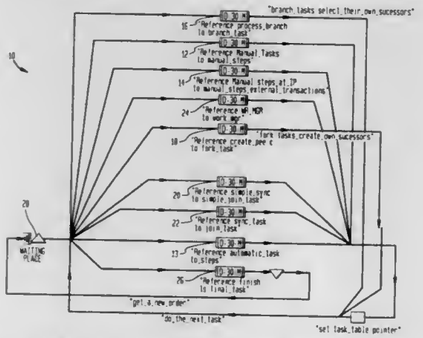
1. A motion event synchronization system, comprising:
multiple existing replicated applications located locally on user workstations for generating motion events initiated directly from user inputs;
a motion event synchronizer for receiving and multi-casting the motion events; and
multiple application encapsulators each operating in conjunction with an associated one of the multiple existing applications, the multiple application encapsulators controllably downloading the motion events multi-cast from the motion event synchronizer independently of the associated applications and the user inputs and then loading the downloaded motion events to the associated existing applications according to a motion event synchronizer.

5,828,867

METHOD FOR DISCRETE DIGITAL EVENT SIMULATION

James Phillip Pennell, Woodbridge, Va., assignor to Lucent Technologies Inc., Murray Hill, N.J.

Continuation of Ser. No. 286,062, Aug. 4, 1994, abandoned. This application Jun. 10, 1997, Ser. No. 872,091
Int. Cl.[6] G06F 9/455
U.S. Cl. 395—500 **12 Claims**



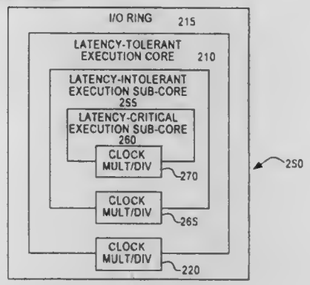
1. A method for creating a discrete event simulation model of a process having a process series of steps, the method comprising the steps of:
creating a template having generic tasks;
determining the steps associated with the process, including the time duration of each step and the resources expended in accomplishing each step;
applying the result of the determining steps to the template to create the discrete event simulation model of the process;
accounting for the resources utilized during each determined step of the simulated process; and,
calculating resource usage during the course of the simulated process via a common clock,
wherein determining steps of the process affecting the time needed to complete the process, but that do not involve critical resource usage, are modeled by advancing parallel, independent virtual clocks.

5,828,868

PROCESSOR HAVING EXECUTION CORE SECTIONS OPERATING AT DIFFERENT CLOCK RATES

David J. Sager; Thomas D. Fletcher; Glenn J. Hinton, and Michael D. Upton, all of Portland, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Nov. 13, 1996, Ser. No. 746,606
Int. Cl.[6] G06F 1/06
U.S. Cl. 395—556 **4 Claims**



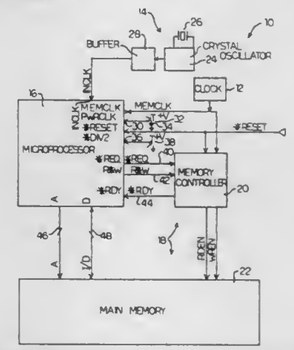
1. A microprocessor comprising:
a third execution sub-core that performs execution operations at a third clock frequency which is higher than a second clock frequency by at least a factor of 1.5, wherein the third execution sub-core comprises,
an adder; and
logic means that performs AND and OR operations;
a second execution sub-core that performs execution operations at the second clock frequency wherein the second execution sub-core comprises,
a multiplier; and
a shifter; and
a first execution sub-core that performs execution operations at a first clock frequency, wherein the first execution sub-core comprises,
an instruction fetch unit; and
an instruction decoder.

5,828,869

MICROPROCESSOR ARRANGED FOR SYNCHRONOUSLY ACCESSING AN EXTERNAL MEMORY WITH A SCALABLE CLOCKING MECHANISM

William M. Johnson, and David B. Witt, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 475,890, Jun. 7, 1995, abandoned, which is a division of Ser. No. 115,981, Sep. 1, 1993, which is a continuation of Ser. No. 663,314, Mar. 1, 1991, abandoned. This application Jun. 19, 1997, Ser. No. 878,676
Int. Cl.[6] G06F 1/06; 13/00
U.S. Cl. 395—556 **77 Claims**



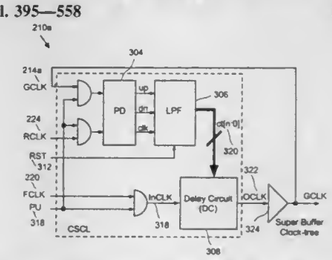
1. A computing system for accessing an external memory operating at a lower clock rate than a microprocessor, the computing system comprising:
a clock circuit producing clock pulses at an external memory accessing rate and at a processing clock rate,
an external memory coupled to the clock circuit, operating at the external memory accessing rate associated with the lower clock rate; and
an integrated microprocessor coupled to the external memory and the clock circuit, operating at the processing clock rate, the integrated microprocessor being coupled to the external memory for synchronously and directly loading data from and storing data in the external memory, whereby the integrated microprocessor continues to operate at the processing clock rate while the external memory is accessed at the memory accessing rate.

5,828,870

METHOD AND APPARATUS FOR CONTROLLING CLOCK SKEW IN AN INTEGRATED CIRCUIT

Peter Gunadisastra, Palo Alto, Calif., assignor to Adaptec, Inc., Milpitas, Calif.

Filed Jun. 30, 1997, Ser. No. 884,863
Int. Cl.[6] G06F 1/12
U.S. Cl. 395—558 **20 Claims**



1. A method for controlling clock skew in an integrated circuit, the integrated circuit including a plurality of functional blocks, each of the functional blocks including a control circuit in commu-

nication with a gated clock which generates a gated clock signal, the gated clock signal having a gated clock phase delay, the method comprising:

a) providing a source clock signal to a control circuit associated with a functional block selected from the plurality of functional blocks;

b) providing a reference clock signal to the control circuit, the reference clock signal being substantially derived from the source clock signal, wherein the reference clock signal has a reference clock phase delay that is greater than the gated clock phase delay;

c) generating a control signal using the reference clock signal and the gated clock signal, the control signal being arranged to indicate a relationship between the reference clock signal and the gated clock signal; and

d) generating a controlled gated clock signal using the control signal, wherein the controlled gated clock signal is generated at least in part by adding a suitable delay to the source clock signal, the controlled gated clock signal having a controlled gated clock phase delay which is substantially the same as the reference clock phase delay.

5,828,871

INFORMATION PROCESSING APPARATUS WITH CONNECTION BETWEEN MEMORY AND MEMORY CONTROL UNIT

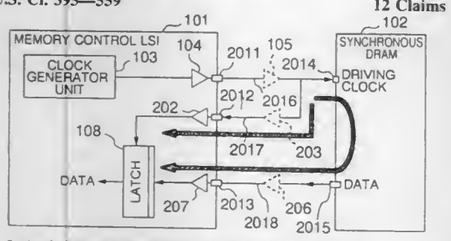
Hitoshi Kawaguchi, Yokobama; Koichi Kimura, Kamakura; Hideki Kamimaki; Takayuki Tamura, both of Yokohama, and Kazushi Kobayashi, Ebina, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 14, 1996, Ser. No. 601,546

Claims priority, application Japan, Feb. 15, 1995, 7-026894

Int. Cl.[6] G06F *1/10*

U.S. Cl. 395—559 **12 Claims**



1. An information processing apparatus comprising:

a storage unit for outputting data every one clock period of time synchronously with a supplied clock signal;

a control unit for carrying out at least the processing of supplying the clock signal to said storage unit and receiving the data;

a first wiring through which the clock signal is delivered from said control unit to said storage unit;

a second wiring through which the data is delivered from said storage unit to said control unit; and

a third wiring, branching from said first wiring, through which the clock signal to be sent to said storage unit is delivered to said control unit,

wherein said control unit includes a data holding unit for fetching therein the data which has been delivered through said second wiring and holding the data on the basis of the clock signal which has been delivered to said control unit through said third wiring.

5,828,872

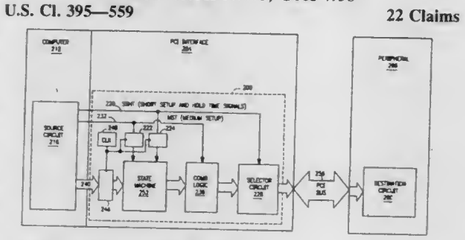
IMPLEMENTATION OF HIGH SPEED SYNCHRONOUS STATE MACHINES WITH SHORT SETUP AND HOLD TIME SIGNALS

John Watkins, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed Jul. 1, 1996, Ser. No. 673,116

Int. Cl.[6] H03K *19/173*; **G06F** *7/38*

U.S. Cl. 395—559 **22 Claims**



1. A processing circuit comprising:

a state machine configured to receive short setup time input signals and to provide a current state at its output;

a combination logic circuit configured to receive the current state from said state machine output and to provide a plurality of possible next states.

5,828,873

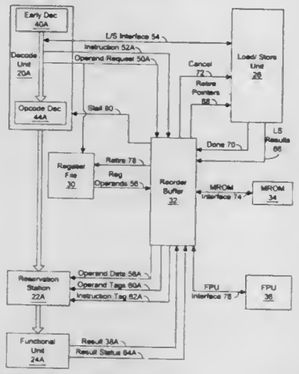
ASSEMBLY QUEUE FOR A FLOATING POINT UNIT

Thomas W. Lynch, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Mar. 19, 1997, Ser. No. 820,962

Int. Cl.[6] G06F *9/302*

U.S. Cl. 395—563 **17 Claims**



1. A microprocessor comprising:

a microcode unit coupled to receive a floating point instruction and to parse said floating point instruction into a floating point operation and a plurality of integer operations;

a reorder buffer coupled to said microcode unit, wherein said reorder buffer is configured to receive instruction information regarding said floating point instruction, to allocate a line of storage for said floating point instruction, and to provide a line tag indicative of said line of storage;

a load/store unit coupled to said microcode unit and said reorder buffer, wherein said load/store unit configured to receive said line tag and said plurality of integer operations, and wherein said plurality of integer operations are configured to cause said load/store unit to load a plurality of memory operands; and

a floating point unit coupled to said microcode unit, said reorder buffer and said load/store unit, wherein said floating point unit includes an assembly queue that includes a plurality of entries; and each of said entries of said assembly queue includes an opcode register for storing an opcode of said floating point operation, a register identifier register for storing a register identifier of said floating point operation, and a plurality of memory operand registers for storing portions of a floating point operand of said floating point operation;

wherein said floating point operand includes said plurality of memory operands, said load store unit is configured to output said plurality of memory operands and a tag associated with each of said plurality of memory operands, said tag includes said line tag received from said reorder buffer and an offset tag, said line tag identifies an entry of said plurality of entries of said assembly queue to which said associated memory operand is stored, and said offset tag identifies to which memory operand register of said plurality of memory operand registers of said entry said associated memory operand is stored.

5,828,874

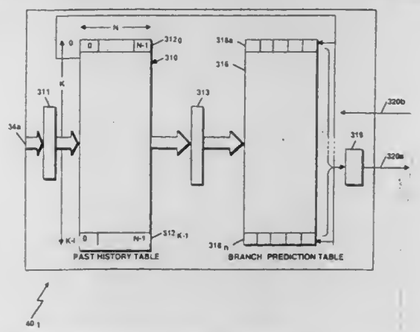
PAST-HISTORY FILTERED BRANCH PREDICTION

Simon C. Steely, Jr., Hudson, N.H., and David J. Sager, Acton, Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Continuation of Ser. No. 352,291, Dec. 8, 1994, Pat. No. 5,564,118, which is a continuation of Ser. No. 975,248, Nov. 12, 1992, abandoned. This application Jun. 5, 1996, Ser. No. 626,868

Int. Cl.[6] G06F *9/40*

U.S. Cl. 395—587 **14 Claims**



1. A branch prediction apparatus comprising:

a predicted past history device, operable to receive an indication of a branch instruction and to output a pattern of past predictions of branch directions for the indicated branch instruction, the pattern of past predictions including at least one prediction of a branch direction for which the correctness of the prediction has not been determined, the predicted past history device comprising a plurality of storage locations, each storage location corresponding to a branch instruction and operable to store a pattern of past predictions of branch directions for the branch instruction, and an output device, operable to output the pattern of past predictions of branch directions stored in the storage location corresponding to the indicated branch instruction; and

a branch prediction device, operable to receive the pattern of past predictions of branch directions for the indicated branch instruction and to output a predicted branch direction for the indicated branch instruction based on the received pattern of past predictions, including the at least one prediction of a branch direction for which the correctness of the prediction has not been determined, the branch prediction device comprising a plurality of storage locations, each storage location corresponding to a pattern of past predictions of branch instructions and operable to store information relating to actual branch directions of past branch instructions, and an output device, operable to output a predicted branch direction for the indicated branch instruction, based on the information relating to actual branch directions stored in the storage location corresponding to the received pattern of predictions of branch instructions.

5,828,875

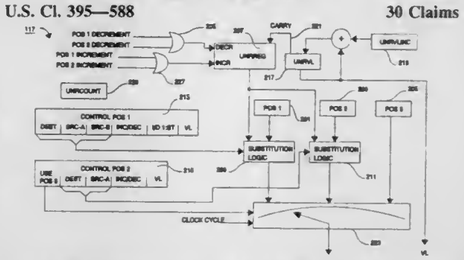
UNROLL OF INSTRUCTIONS IN A MICRO-CONTROLLER

Dan Olov Halvarsson, Stockholm; Lars-Erik Lundström, Ronninge; Tomas Lars Jonsson, Södertäalje, and Tobias Carl Roos, Lidingö, all of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed May 29, 1997, Ser. No. 864,888

Int. Cl.[6] G06F *9/30*

U.S. Cl. 395—588 **30 Claims**



1. An unroll apparatus for generating instructions for controlling a processor, the unroll apparatus comprising:

a first template storage means for storing a first template instruction;

a counter;

generating means for generating a number of instructions, wherein each generated instruction is based on the first template instruction;

means for adjusting the counter to indicate the number of instructions that have been generated by the generating means; and

means for deactivating the generating means in response to the counter indicating that a predetermined number of instructions have been generated.

5,828,876

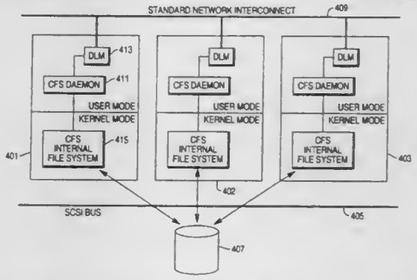
FILE SYSTEM FOR A CLUSTERED PROCESSING SYSTEM

Robert W. Fish, West Chicago, and Lawrence J. Schroeder, Wheaton, both of Ill., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 31, 1996, Ser. No. 690,703

Int. Cl.[6] G06F *17/00*

U.S. Cl. 395—601 **5 Claims**



1. In a clustered file system including a plurality of processing nodes, an interconnection network connecting said processing

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nodes, and a common data storage device connected via a shared interconnect with each one of said plurality of processing nodes, a method for directly accessing said common data storage device simultaneously from all of said plurality of processing nodes; the method comprising the steps of:

providing a distributed lock manager (DLM) for coordinating file system access among said plurality of processing nodes;

providing a file system structure, saved to said common data storage device, which provides sufficient information to enable all of said processing nodes to access said file system;

providing a DLM Interface Daemon within each one of said plurality of processing nodes for interfacing said file system with said DLM to permit said file system to make requests to and receive responses from the DLM for coordinating file system utilization.

5,828,877

CIRCUIT AND METHOD FOR OPTIMIZING CREATION OF A COMPRESSED MAIN MEMORY IMAGE

John J. Pearce, Del Valle, and Charles Zeller, Austin, both of Tex., assignors to Dell USA, L.P., Round Rock, Tex.

Filed Jul. 14, 1994, Ser. No. 275,163

Int. Cl.[6] G06F *12/00*

U.S. Cl. 395—670 **65 Claims**



1. In a computer system having a central processing unit (CPU), a main memory being divisible into two groups of allocable units with the first group storing data therein, a secondary storage unit and an operating system for allocating said allocable units to tasks for use thereby, a suspend circuit for creating an optimized compressed image of the data into the secondary storage unit, comprising:

a circuit for initiating execution of a reducing task on said CPU, said reducing task requesting said operating system to allocate unallocated ones of said allocable units in the second group to said reducing task;

a circuit for storing a bit pattern of said data into said allocable units allocated to said reducing task, said bit pattern chosen to optimize performance of a data compression process; and

a circuit for executing said data compression process to store a compressed image of said bit pattern in said secondary storage unit, said bit pattern allowing a size of said compressed image to be reduced and a time required to compress and store said compressed image to be minimized, wherein said operating system is for allocating said allocable units in said second group to said tasks as a selected one of a read-only allocated unit and a read-write allocated unit, said reducing task further for requesting said task further for requesting said operating system to allocate ones of said read-only allocated allocable units to said reducing task.

5,828,878

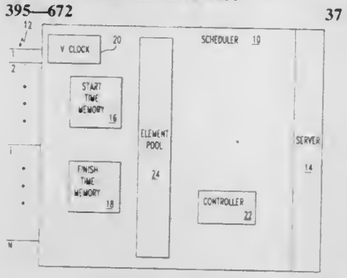
METHOD AND A SCHEDULER FOR CONTROLLING WHEN A SERVER PROVIDES SERVICE WITH RATE CONTROL TO AN ENTITY

Jon C. R. Bennett, Pittsburgh, Pa., assignor to FORE Systems, Inc., Warrendale, Pa.

Continuation-in-part of Ser. No. 375,624, Jan. 20, 1995, which is a continuation-in-part of Ser. No. 362,217, Dec. 22, 1994. This application Jun. 7, 1995, Ser. No. 476,365

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—672 **37 Claims**



1. A scheduler for controlling when N entities, where N is an integer ≥ 1, are operated upon by a server comprising:

a starting time memory having starting times s_i of the N entities, where $1 \leq I < N$ and is an integer, and s_i corresponds to the time the i'th entity first requests service from the server, said starting time memory having only starting times s_i which are greater than virtual time;

a finishing time memory having finishing times f_i of the N entities, where f_i corresponds to the time the i'th entity is to be operated upon by the server, said finishing time memory having finishing times f_i of the N entities whose starting times s_i are less than or equal to virtual time;

a virtual clock that keeps track of virtual time so the starting times s_i and finishing times f_i can be identified; and

a controller for choosing entities to be operated upon by the server from the finishing time memory, for entering entities into the finishing time memory from the starting time memory whose starting times s_i become less than or equal to virtual time, and into the starting time memory whose starting times s_i are greater than the virtual time, and for deleting entities from the starting time memory whose starting times s_i become less than or equal to virtual time, said controller connected to the starting time memory, finishing time memory, and virtual clock.

5,828,879

METHOD AND A SCHEDULER FOR CONTROLLING WHEN A SERVER PROVIDES SERVICE TO AN ENTITY

Jon C. R. Bennett, Pittsburgh, Pa., assignor to Fore Systems, Inc., Warrendale, Pa.

Filed Dec. 22, 1994, Ser. No. 362,217

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—672 **20 Claims**

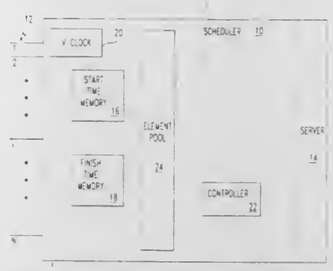
1. A scheduler for controlling when N entities, where N is an integer ≥ 2, are operated by a server, each entity having a rate at which it is to receive service from the server, at least two entities having different rates, all rates of the entities total ≤ 1, comprising:

a starting time memory having arrival times s_i of the N entities, where $1 \leq i < N$ and is an integer, and s_i corresponds to the time the i'th entity first requests service from the server;

a finishing time memory having finishing times f_i of the N entities, where f_i corresponds to the time the i'th entity is to be operated upon by the server;

a virtual clock that keeps track of time so the arrival times s_i and finishing times f_i can be identified; and

a controller which chooses entities to be operated upon by the server in the order of the entities with an earliest finishing time f_i and an arrival time s_i being operated upon first, and then the entities with the earliest or latest starting time s_i or having the highest or lowest id or rate if their finishing times are the same being operated upon next at each given time, with entities able to be operated upon by the server before their finishing time f_i, said controller causing the virtual clock to increment virtual time t the earliest start time of an entity if the earliest start time of an entity is later than virtual time, otherwise the controller causes the virtual clock to increment virtual time by a unit of virtual time.



5,828,880

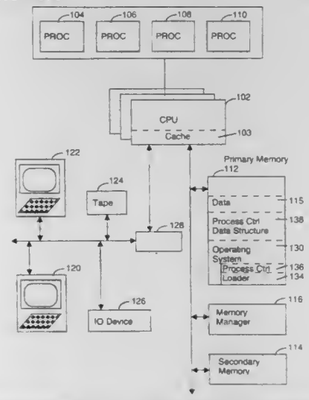
PIPELINE SYSTEM AND METHOD FOR MULTIPROCESSOR APPLICATIONS IN WHICH EACH OF A PLURALITY OF THREADS EXECUTE ALL STEPS OF A PROCESS CHARACTERIZED BY NORMAL AND PARALLEL STEPS ON A RESPECTIVE DATUM

James G. Hanko, Redwood City, Calif., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 6, 1995, Ser. No. 499,287

Int. Cl.[6] G06F *9/00*

U.S. Cl. 395—676 **29 Claims**



1. A pipeline method for executing a process on a multiprocessor computer system having a plurality of processors and a memory, wherein said process includes a plurality of steps, each of said steps being classified as a normal step or a parallel step, said method comprising the steps of:

receiving a data stream including a plurality of datums;

executing a plurality of threads on said plurality of processors, each of said threads executing all of said plurality of steps on a respective one of said datums;

said executing step including executing each of said normal steps by at most one of said threads at a time;

said executing step further including executing each of said parallel steps by any number of said threads at a time;

said executing step including constraining said threads to execute said normal steps in the same order that said threads begin execution of said process on successively received ones of said datums.

5,828,881

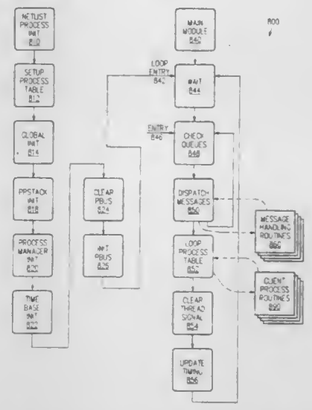
SYSTEM AND METHOD FOR STACK-BASED PROCESSING OF MULTIPLE REAL-TIME AUDIO TASKS

Avery L. Wang, Redwood City, Calif., assignor to Chromatic Research, Inc., Sunnyvale, Calif.

Filed Nov. 9, 1995, Ser. No. 556,420

Int. Cl.[6] G06F *15/163*

U.S. Cl. 395—680 **19 Claims**



1. A software system for controlling a real-time signal processor, the real-time signal processor including a host computer, a message queue, a stack and a media I/O circuit, the host computer for sending a plurality of messages designating ones of a plurality of corresponding signal processing operations asynchronously to the message queue, each signal processing operation corresponding to a client processing module wherein:

the media I/O circuit includes a means for generating a plurality of sequential output synchronization timing signals;

the host computer includes a host task having subroutine for parsing a new net list of signal processes to generate a new signal processing sequence;

the host task includes a subroutine for writing the signal processing sequence into a message queue;

the software system comprising:

a message processing routine for reading the messages from the message queue and dispatching the messages to designated ones of the plurality of client processing modules;

a process sequencing routine for invoking client processing modules and for controlling the stack, the client processing modules communicating signals by a sending client processing module pushing a signal onto the stack, and a receiving client processing module popping the signal from the stack;

a subroutine for waiting for an output synchronization timing signal;

a subroutine operating in response to an output synchronization timing signal for reading the signal processing sequence from the message queue; and

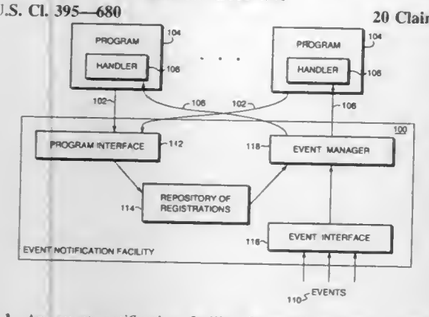
a subroutine for copying the signal processing sequence into a process sequence table so that a new signal flow topology is specified.

5,828,882

EVENT NOTIFICATION FACILITY

Mark Andrew Hinckley, Lindon, Utah, assignor to Novell, Inc., Orem, Utah

Filed Mar. 15, 1996, Ser. No. 617,961
Int. Cl.[6] G06F 9/40
U.S. Cl. 395—680 20 Claims



1. An event notification facility for notifying one or more programs of an event, the event notification facility comprising:

(a) means for storing registration requests and for associating each registration request with a type of event, each registration request comprising:

(i) an identification of a mechanism for notifying one of the one or more programs (registered program) when the event occurs and

(ii) control information that instructs the event notification facility whether to notify the registered program after notifying all other programs of the event (notify the registered program last);

(b) an interface, connected to the means for storing registration requests, for receiving registration requests from the one or more programs and for supplying the received requests to the storage means, each registration request from a requesting program comprising an identification of an event and control information that instructs the event notification facility whether to notify the requesting program last, wherein if the storage means already contains a registration request that instructs the event notification facility to notify one of the registered programs of the same event last, the interface rejects further registration requests that instruct the event notification facility to notify the requesting program last; and

(c) means, connected to the means for storing registration requests, for notifying the registered programs when an event occurs, in accordance with the control information stored in the registration requests that are associated with the event.

5,828,883

CALL PATH REFINEMENT PROFILES

Robert J. Hall, Berkeley Heights, N.J., assignor to Lucent Technologies, Inc., Murray Hill, N.J.

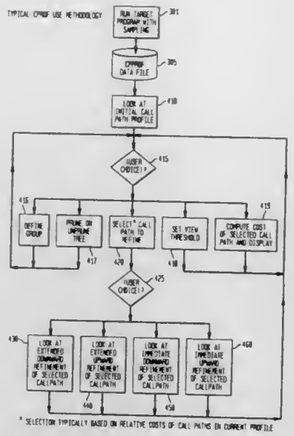
Continuation-in-part of Ser. No. 221,228, Mar. 31, 1994, abandoned. This application Sep. 27, 1995, Ser. No. 535,433
Int. Cl.[6] G06F 9/44
U.S. Cl. 395—704 40 Claims

1. A method for measuring usage of at least one focus resource by a target program having a plurality of call paths, said target program having at least one procedure, comprising the steps of:

providing a call path profile containing a data list, in some predetermined order, of some subset, including a null set, of said plurality of call paths together with associated usage cost of said focus resource;

selecting a focus call path from said call path profile or from said plurality of call paths; and

computing a refinement call path profile showing said usage of said focus resource by refinement call paths of said focus call path wherein said refinement call path profile is invoked by a user via a unique switch with said call path to be analyzed indicated by said focus call path.

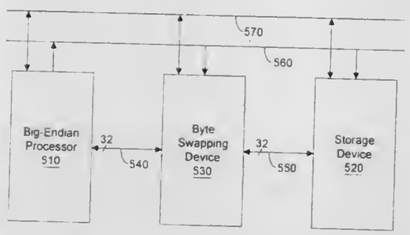


5,828,884

METHOD FOR COMPILING A SOFTWARE PROGRAM AND EXECUTING ON A SYSTEM WHICH CONVERTS DATA BETWEEN DIFFERENT ENDIAN FORMATS

Sherman Lee, Rancho Palos Verdes, Calif., and JoAnne K. Halligan, Austin, Tex., assignors to Advanced Micro Devices, Inc., Austin, Tex.

Filed May 23, 1996, Ser. No. 652,786
Int. Cl.[6] G06F 7/00;9/30
U.S. Cl. 395—705 14 Claims



1. A method for translating a source code module into an object code module, comprising:

choosing a format base for a data element referenced in said source code module;

generating an object offset for said data element;

calculating a data aperture offset of said data element by adding said format base and said object offset;

storing said data aperture offset associated with said data element in said object code module to thereby allow said data aperture offset to be subsequently added to a base memory address;

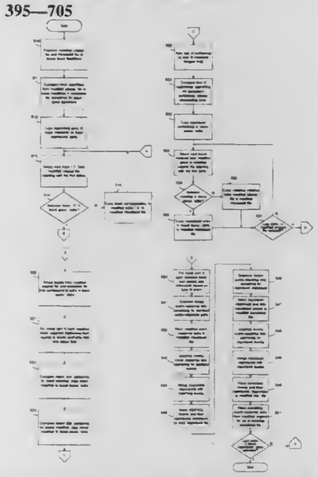
wherein said choosing a format base, said generating an object offset said calculating a data aperture offset, and said associating said data aperture offset being performed for each data element in said source code module.

5,828,885

METHOD AND SYSTEM FOR MERGING FILES HAVING A PARALLEL FORMAT

Suryanarayanan V. Raman, Redmond, Wash., assignor to Microsoft Corporation, Redmond, Wash.

Continuation of Ser. No. 436,929, May 8, 1995, Pat. No. 5,630,138, which is a division of Ser. No. 996,705, Dec. 24, 1992, Pat. No. 5,579,223. This application Aug. 16, 1996, Ser. No. 698,862
Int. Cl.[6] G06F 7/16
U.S. Cl. 395—705 17 Claims



1. A method of merging a first file with a second file to produce an output file, wherein the first and second files are modified versions of an original file wherein different modifications were made to each file, the method comprising the steps of:

examining the first and second files, each file containing text instructions for controlling a data processor to output text and graphics instructions for controlling a data processor to output graphics, wherein the text instructions contain the text to be output;

determining differences between the first file and the second file by comparing the text instructions of the first file with the text instructions of the second file and disregarding the text in the text instructions during the comparison and by comparing the graphics instructions of the first file with the graphics instructions of the second file; and

creating the output file, wherein the output file comprises the text instructions and graphics instructions of the first file that are not in the second file in addition to the text instructions and graphics instructions of the second file that are in the first file.

5,828,886

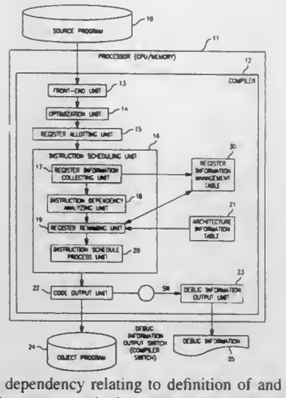
COMPILING APPARATUS AND METHOD FOR PROMOTING AN OPTIMIZATION EFFECT OF A PROGRAM

Masakazu Hayashi, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Feb. 23, 1995, Ser. No. 393,561
Claims priority, application Japan, Feb. 23, 1994, 06-025171
Int. Cl.[6] G06F 9/45
U.S. Cl. 395—709 13 Claims

13. A compiling method for scheduling instructions by rearranging the instructions after allotting registers to object data for each of the instructions in a program, comprising the steps of:

collecting availability information of the registers in a scheduling range in which the instructions are rearranged;



analyzing dependency relating to definition of and reference to the registers among the instructions in the program;

replacing at least one of the registers allotted to the object data in the instructions with at least one of the other registers according to an output of said register information collecting step and an output of said instruction dependency analyzing step; and

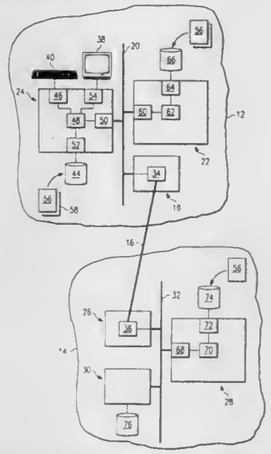
scheduling said instructions based on a result generated by said register renaming step.

5,828,887

NETWORK BASED PROGRAM LOADER SYSTEM AND METHOD OF OPERATION

Jeffrey N. Yeager, Spring Hill; Aaron W. Marshall, Nashville, and Joel R. Jensen, Franklin, all of Tenn., assignors to Electronic Data Systems Corporation, Plano, Tex.

Filed May 23, 1996, Ser. No. 654,064
Int. Cl.[6] G06F 9/06
U.S. Cl. 395—712 23 Claims



1. A method for loading a software application for use at a client node of a network comprising the steps of:

activating a program loader system at the client node;

transmitting a user-specific software application setup file from a server to the client node, the user-specific software application setup file being associated with a user of the client node and being independent of the particular client node being used by the user; and

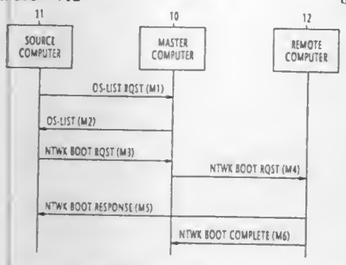
loading an application at the client node using the user-specific software application setup file.

5,828,888

COMPUTER NETWORK HAVING OS-VERSIONS MANAGEMENT TABLE TO INITIATE NETWORK BOOT PROCESS VIA MASTER COMPUTER

Mitsuyoshi Kozaki, and Kiyohiko Yoshida, both of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed Jul. 26, 1996, Ser. No. 690,167
Claims priority, application Japan, Jul. 26, 1995, 7-190318
Int. Cl.[6] G06F *9/06*
U.S. Cl. 395—712 **8 Claims**



1. A computer network comprising:

a plurality of computers respectiveiy identified by unique addresses and interconnected by a network, one of said computers being a master computer having an operating system (OS) management table for mapping said unique addresses to respective versions of all operating system,

each of said computers being responsive to a network boot command signal for performing a network boot process to a source computer by transmitting thereto a copy of a selected version of the operating system, and retrieving a list of said operating system versions from said OS management table to allow a user to select one of the versions from the list and transmitting a request to the master computer indicating the selected version when functioning as said source computer,

said master computer being responsive to said request for transmitting said network boot command signal to a third computer in which the selected version of the operating system is installed so that the third computer performs said network boot process by transmitting a copy of the selected version of the operating system to said source computer.

5,828,889

QUORUM MECHANISM IN A TWO-NODE DISTRIBUTED COMPUTER SYSTEM

Hossein Moiin, San Francisco; Ottalingam T. Satyanarayanan, Fremont, and Angelo Pruscino, Mountain View, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed May 31, 1996, Ser. No. 656,386
Int. Cl.[6] G06F *13/18;11/16*
U.S. Cl. 395—728 **10 Claims**

1. A method for granting to one of at least two nodes of a distributed computer system exclusive access to shared resources of the distributed computer system, which includes at least two preselected shared devices and in which each node includes a fault handler and has a state which specifies whether the node has exclusive access to the shared resources, the method comprising the steps of:

detecting a fault condition in the distributed computer system;

causing each of the fault handlers to perform the following steps when a fault condition is detected:

attempting to reserve all of the preselected shared devices, at least a designated one of which is reserved by one of the at least two nodes other than the node of the fault handler in the absence of a fault condition, wherein the attempted reservation by the fault handler of the designated preselected shared device is a forcible reservation;

causing the state of the node to specify that the node has exclusive access to the shared resources if the fault handler succeeds in reserving all of the preselected shared devices;

causing the state of the node to specify that the node does not have exclusive access to the shared resources if the fault handler fails to reserve all of the preselected shared devices; and

detecting a tie condition if the node succeeds in reserving at least one of the preselected shared devices and fails in reserving at least one other of the preselected shared devices;

wherein the distributed computer system includes a shared device which is predetermined to be a first tie-breaking device;

further wherein each of the fault handlers further perform the following steps when a tie condition is detected:

attempting to reserve the first tie-breaking device;

causing the state of the node to specify that the node has exclusive access to the shared resources if the fault handler succeeds in reserving the first tie-breaking device; and

causing the state of the node to specify that the node does not have exclusive access to the shared resources if the fault handler fails in reserving the first tie-breaking;

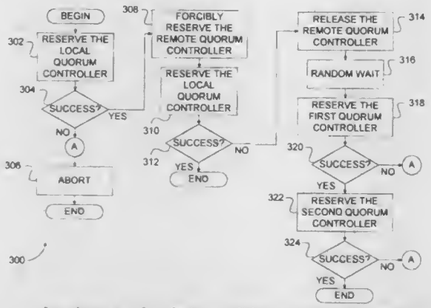
further wherein the distributed computer system includes a shared device which is predetermined to be a second tie-breaking device, which is different from the first tie-breaking device;

further wherein each of the fault handlers, upon successfully reserving the first tie-breaking device, further perform the following steps:

attempting to reserve the second tie-breaking device;

causing the state of the node to specify that the node has exclusive access to the shared resources if the fault handler succeeds in reserving the second tie-breaking device; and

causing the state of the node to specify that the node does not have exclusive access to the shared resources if the fault handler fails in reserving the second tie-breaking device.



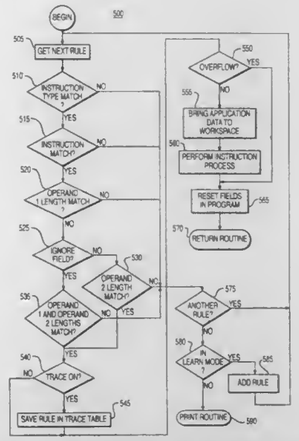
5,828,890

SYSTEM FOR INTERRUPTING PROGRAM OPERATION WHEN AN OUT-OF-RANGE VALUE IS ENCOUNTERED TO CORRECT A DATA VALUE

Steven Robert Rehbock, West Chicago, and Daniel Lawrence Deco, Inverness, both of Ill., assignors to Northbrook Services, Northbrook, Ill.

Filed Jan. 30, 1997, Ser. No. 792,193
Int. Cl.[6] G06F *3/00;17/30*
U.S. Cl. 395—733 **72 Claims**

1. A method of determining a result of an instruction having an operand that assumes an out-of-range value during execution of a program, the method comprising the steps, executed by a data processor, of:



detecting when the program is executing an instruction with an operand assuming an out-of-range value;

temporarily suspending the execution of the program;

determining an instruction type;

ascertaining the proper result of the instruction based on the instruction type and a rule corresponding to the instruction;

placing the proper result, in an appropriate representation, into a field of the instruction designated to contain the result of the instruction; and

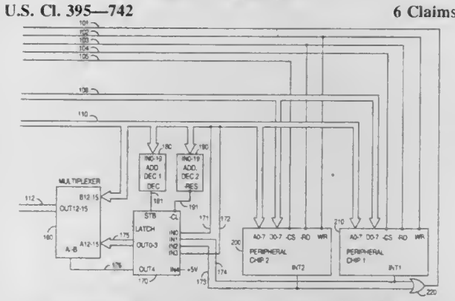
resuming execution of the program.

5,828,891

MULTILEVEL INTERRUPT DEVICE

Alain Benayoun, Cagnes Sur Mer; Jean-Francois Le Pennec, Nice, and Patrick Michel, La Guade, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1996, Ser. No. 766,689
Claims priority, application European Pat. Off., Dec. 20, 1995, 95480188
Int. Cl.[6] G06F *9/46*
U.S. Cl. 395—742 **6 Claims**



1. An interrupt device for enabling a number N of I/O devices (**200**,**210**,**230**) to share a common interrupt line (**101**) in a data communication system comprising a microprocessor (**100**) and a memory (**150**) containing a plurality of interrupt routines, being connected by data/address busses (**108**,**110**), said interrupt device receiving interrupt signals from each of said I/O devices on interrupt lines (**173**,**174**,**231**); said interrupt device being characterized in that it further comprises:

interrupting means (**220**) for receiving any one of said interrupt signals from said I/O devices to interrupt said microprocessor (**100**) and getting a start_address of an interrupt operation from said memory;

a first address decoding means (**180**) decoding said start_address (01000H) on address bus (**110**) for generating a decoding signal (DEC,**181**);

a second address decoding means (**190**) decoding an end_address (0010H) of said interrupt routines from said memory (**150**) for generating a resetting signal (RES,**191**);

an interrupt control means (**170**) responsive to any one of said interrupt signals and to said decoding signal (**181**) for generating a select signal (**176**) and a translated address on a translated address bus (**175**) for initializing the corresponding interrupt routines, and responsive to said resetting signal (**191**) for resetting said translated address bus (**175**) for ending the interrupt routines; and

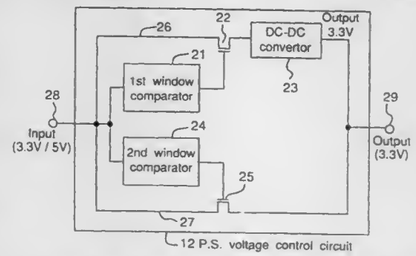
switching means (**160**) responsive to said select signal (**176**) for switching between said translated address received on said translated address bus (**175**) and unchanged microprocessor address received on address bus (**110**) so as to transmit it to said memory (**150**) to read the interrupt routine at the translated address or the microprocessor address.

5,828,892

MEMORY CARDS CAPABLE OF OPERATING WITH MORE THAN ONE POWER SUPPLY VOLTAGE

Masaharu Mizuta, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 26, 1996, Ser. No. 701,801
Claims priority, application Japan, Feb. 27, 1996, 8-039825
Int. Cl.[6] G06F *1/26;* **G11C** *7/00*
U.S. Cl. 395—750.01 **4 Claims**



1. A memory card with at least one integrated circuit memory operating at a predetermined working voltage which is inserted in an information processing device, and is powered by the information processing device, said memory card comprising:

a power supply voltage control circuit which includes

a voltage detecting circuit which compares a power supply voltage provided by the information processing device with the working voltage of the integrated circuit memory and determines whether the voltages are equal or not, and

a voltage output circuit which converts the power supply voltage to the working voltage and outputs the converted voltage when said voltage detecting circuit determines that the power supply voltage is higher than the working voltage, and outputs the power supply voltage intact when the power supply voltage is equal to the working voltage; and

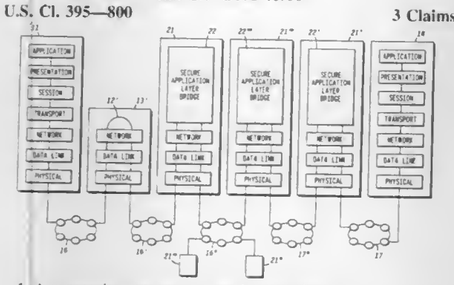
an input/output buffer, disposed between the information processing device and the integrated circuit memory, which receives a drive voltage from said power supply voltage control circuit and converts voltages of signals from the information processing device and the integrated circuit memory.

VOL 1215 ISS 4 OCT 27 1998 UMI

5,828,893
SYSTEM AND METHOD OF COMMUNICATING BETWEEN TRUSTED AND UNTRUSTED COMPUTER SYSTEMS

William J. Wied, Mesa, and Kanchei Loa, Chandler, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 996,465, Dec. 24, 1992, abandoned. This application Aug. 21, 1995, Ser. No. 517,563
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—800 3 Claims

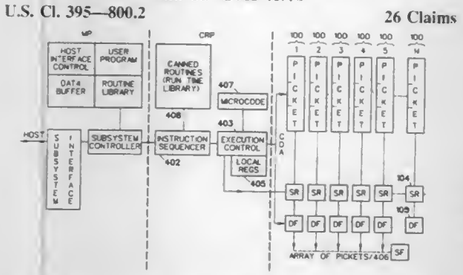


1. A composite computer network, comprising:
a trusted computer network having internal secure administrative control and access for users connected to said trusted computer network;
an untrusted computer network having internal unsecure administrative control and access for users connected to said untrusted computer network; and
a plurality of firewall systems for providing controlled access between said trusted computer network and said untrusted computer network where a first firewall system is connected to said trusted computer network and a second firewall system is connected to said untrusted computer network, said plurality of firewall systems each including a secure application layer bridge which establishes a transparent connection across the plurality of firewall systems to automatically validate communication between said untrusted computer network and said trusted computer network once validation with one firewall system is accomplished.

5,828,894
ARRAY PROCESSOR HAVING GROUPING OF SIMD PICKETS

Paul Amba Wilkinson, Apalachin; James Warren Dieffenderfer, Owego, and Peter Michael Kogge, Endicott, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 431,617, May 1, 1995, which is a continuation of Ser. No. 887,455, May 22, 1992, which is a continuation-in-part of Ser. No. 611,594, Nov. 13, 1990, abandoned, and Ser. No. 798,788, Nov. 27, 1991, abandoned. This application Sep. 30, 1996, Ser. No. 723,370
Int. Cl.[6] G06F *15/16*
U.S. Cl. 395—800.2 26 Claims

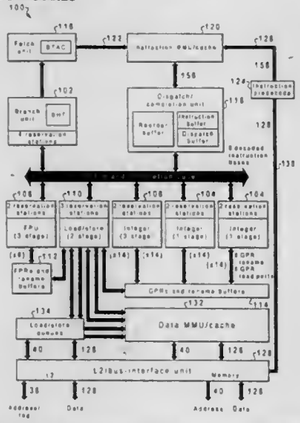


1. An array processor comprising, an array controller and a plurality of array processing elements functioning in a SIMD mode of operation; each of said array processing elements comprising a Picket (PE) including an arithmetic processing element, registers, local memory, and interconnection to other processing elements of the array, each of said Pickets being intercoupled during an operation of the array processor, and each processing element having means for dynamically assigning and reassigning itself to one or more of a plurality of processing groups of Pickets of an array for processing of data in the Pickets of a group and wherein the array controller does not maintain in real-time which Pickets belong in which of said plurality of processing groups;
wherein every processing element in the processor array receives and executes a command from the controller on each clock cycle;
wherein a memory is provided in each Picket having a memory element corresponding to each group, the status of the memory element indicating participation of a particular Picket in the group; and
wherein said array processor provides a multi-processor memory system, including a PME architecture multi-processor memory element on a single semiconductor substrate which functions as a system node, said multi-processor memory element including the plurality of Pickets, means on said substrate for distributing interconnection and controls within the multi-processor memory system node enabling the system to perform SIMD/MIMD functions as a multi-processor memory system, wherein each said local memory is independently accessible by the respectively coupled processing element in both SIMD and MIMD modes exclusive of access by another processing element.

5,828,895
METHODS AND SYSTEM FOR PREDECODING INSTRUCTIONS IN A SUPERSCALAR DATA PROCESSING SYSTEM

Kin Shing Chan, Austin, Tex., and Ravindra Kumar Nair, Briarcliff Manor, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 20, 1995, Ser. No. 531,882
Int. Cl.[6] G06F *9/30*
U.S. Cl. 395—800.23 18 Claims



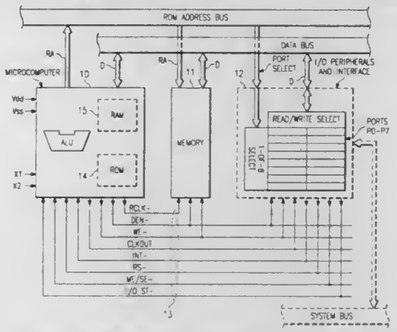
1. A method in a superscalar data processing system for predecoding instructions, wherein said superscalar data processing system includes an instruction cache and a dispatch unit for dispatching instructions to one of a plurality of execution units, said method comprising the steps of:
in response to reloading an instruction from main memory for storing in said instruction cache, selecting from multiple instruction categories a particular instruction category in which said instruction belongs;

determining types of superscalar data processing system resources required for execution of said instruction, and determining quantity of each of said types of superscalar data processing system resources required;
calculating a plurality of predecode bits that represent:
a particular instruction category in which said instruction belongs; and
said type and said quantity of each of said superscalar data processing system resource required for execution of said instruction; and
storing said instruction and said predecode bits in said instruction cache; and
delaying dispatch of said instruction until an execution unit is available to accept said instruction belonging to said selected instruction category, and until said type and quantity of superscalar data processing system resources will be available when said instruction is ready to execute at an instruction unit that receives said instruction.

5,828,896
MICROCOMPUTER SYSTEM FOR DIGITAL SIGNAL PROCESSING

Edward R. Caudel, and Surendar S. Magar, both of Houston, Tex., assignors to Texas Instruments Incorporated

Division of Ser. No. 272,729, Jul. 8, 1994, abandoned. This application Sep. 26, 1997, Ser. No. 938,166
Int. Cl.[6] G06F *15/00*
U.S. Cl. 395—800.33 11 Claims

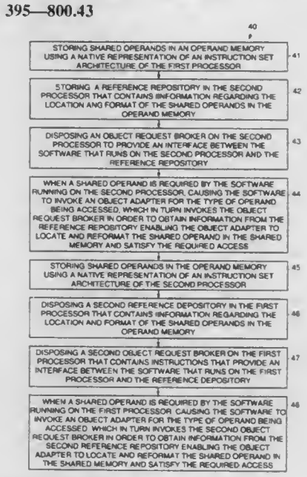


1. A microcomputer device formed in a single semiconductor unit comprising:
an arithmetic/logic unit having data input and data output;
an accumulator having an input connected to said data output and an accumulator output;
a data memory having an address input and having data input/output means;
data bus means coupled to the data input of the arithmetic/logic unit and to said accumulator output and coupled to the data input/output means of the data memory;
means connecting the accumulator output to a data input of the arithmetic/logic unit separately from the data bus means;
data input/output terminals for coupling to circuits external to the semiconductor unit connected to the data bus means;
a shifter in the coupling from the data bus means to a data input of the arithmetic/logic unit for shifting a selectable number of bits under control of the instruction word;
a program memory having an address input and having an instruction output, the program memory storing instruction words;
program address means connected to the address input of the program memory means;
control means for generating controls in response to instruction words, the controls defining operation of the arithmetic/logic unit and transfer to and from the bus means;
program bus means coupled to said instruction output, to said control means, and to said program address means;
and timing means for establishing overlapping operating cycles during one of which data may be transferred from the data memory to a data input of the arithmetic/logic unit via said shifter, and the arithmetic/logic unit produces results to the accumulator for one instruction, the control means receives an instruction word from the instruction output via said program bus means fro the next instruction, and the program address means applies an address to the address input of the program memory for another following instruction.

5,828,897
HYBRID PROCESSOR AND METHOD FOR EXECUTING INCREMENTALLY UPGRADED SOFTWARE

Steven A. Kirsch, Agoura, and Dwight J. Mellema, Pasadena, both of Calif., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 19, 1996, Ser. No. 769,571
Int. Cl.[6] G06F *9/34*
U.S. Cl. 395—800.43 4 Claims



1. Computer apparatus comprising:
a first processor comprising legacy software implemented using a native instruction set of a first instruction set architecture;
a second processor comprising new software implemented using a second instruction set architecture having an extended instruction set;
an operand memory coupled to the first processor and second processor by way of a local bus, that stores shared operands using a native representation of an instruction set architecture of the first processor;
an interface circuit coupled to the local bus that interfaces the second processor and the first processor to the operand memory;
and wherein the second processor further comprises an object adapter, an object request broker and a reference repository that contains information regarding the location and format of the shared operands in the operand memory, and wherein the object adapter is called by the new software when access to a shared operand is required by the new software, and wherein the object adapter by way of the object request broker accesses the reference repository to obtain information which allows the object adapter to provide access to the corresponding shared operand in the operand memory.

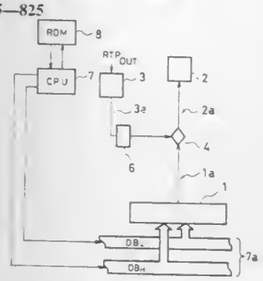
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5,828,898

MICROCOMPUTER FOR OUTPUTTING DATA TO THE OUTSIDE OF THE MICROCOMPUTER IN REAL TIME IN RESPONSE TO A RTP OUTPUT REQUEST SIGNAL RECEIVED FROM OUTSIDE THE MICROCOMPUTER

Yasuhiro Ami, and Takeshi Fujii, both of Hyogo-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 926,615, Aug. 6, 1992, abandoned. This application Jun. 6, 1995, Ser. No. 470,650
Claims priority, application Japan, Aug. 6, 1991, 3-221102
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—825 **6 Claims**



1. A microcomputer having a storage register for temporarily storing output data to be supplied to the outside of the microcomputer, a read only memory (ROM), and a central processing unit (CPU) for storing the output data in the storage register based on an instruction stored in the ROM, said microcomputer comprising:

an external input terminal for receiving an RTP output request signal from the outside of said microcomputer; and

output gate means for supplying the output data stored in the storage register to the outside of the microcomputer in real time in response to said RTP output request signal which is input from the outside of the microcomputer through the external input terminal.

5,828,899

SYSTEM FOR PERIPHERAL DEVICES RECURSIVELY GENERATING UNIQUE ADDRESSES BASED ON THE NUMBER OF DEVICES CONNECTED DEPENDENT UPON THE RELATIVE POSITION TO THE PORT

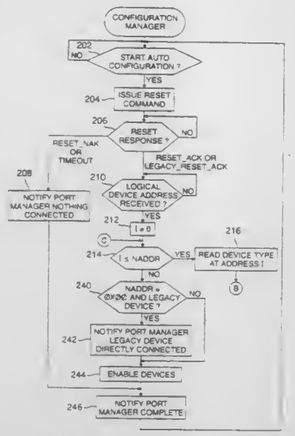
Elizabeth A. Richard, Cypress; Ralph K. Williamson, Spring, both of Tex., and Stephen D. Teter, San Jose, Calif., assignors to Compaq Computer Corporation, Houston, Tex.

Filed Jan. 4, 1996, Ser. No. 583,206
Int. Cl.[6] G06F *3/00*
U.S. Cl. 335—828 **51 Claims**

1. A method for allowing peripheral devices to be added to a port of a computer system while the computer system is powered on, the computer system having a configuration program, the method comprising:

automatically detecting addition of a peripheral device to the computer system port;

the configuration program transmitting a configuration command requesting address information of the peripheral devices; and



the peripheral devices recursively generating their own unique addresses based on the number of peripheral devices connected in response to the configuration command, wherein a peripheral device's address is dependent upon the device's position relative to the computer system port.

5,828,900

INTERNATIONAL MULTIPLE-BYTE CHARACTER GENERATOR SUPPORT IN APPLICATION SHARING WHICH DISTINGUISHES GUEST KEYBOARD INPUT FROM HOST KEY BOARD AND BYPASSING EXECUTION OF THE GENERATOR MODULE WHEN GUEST KEYBOARD INPUT IS DETERMINED

William C. DeLeeuw, and James Thompson, both of Hillsboro, Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jan. 3, 1996, Ser. No. 579,722
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—836 **30 Claims**



1. A computer-implemented method for the sharing of one or more applications by a host and at least one guest, the host and at least one guest generating host and guest keyboard input, respectively, the host having a multiple-byte character generating module for processing keyboard input to generate multiple-byte characters, comprising the steps of:

(a) receiving keyboard input from the at least one guest;

(b) providing a storage queue and storing guest and host keyboard input in the storage queue;

(c) providing a shadow queue in parallel with the host storage queue;

(d) distinguishing guest keyboard input from host keyboard input;

(e) marking host keyboard input and entering the marked host keyboard input into the shadow queue to provide marked host keyboard input which corresponds to the host keyboard input stored in the host storage queue;

(f) examining an output of the shadow queue; and

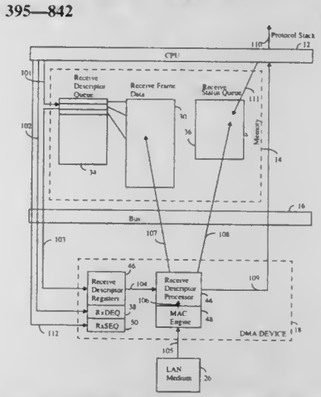
(g) bypassing execution of the multiple-byte character generating module when said output indicates guest keyboard input to prevent the multiple-byte character generating module from processing guest keyboard input.

5,828,901

METHOD AND APPARATUS FOR PLACING MULTIPLE FRAMES OF DATA IN A BUFFER IN A DIRECT MEMORY ACCESS TRANSFER

Anthony J. P. O'Toole, San Jose, and Sriraman Chari, Fremont, both of Calif., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Dec. 21, 1995, Ser. No. 576,869
Int. Cl.[6] G06K *13/28*
U.S. Cl. 395—842 **30 Claims**



1. A method of managing a direct memory access (DMA) operation, comprising:

receiving a sequence of data frames at a controller in a DMA transfer; and

placing the data frames in data buffers in a memory, wherein multiple data frames are stored by the controller in at least one of the data buffers.

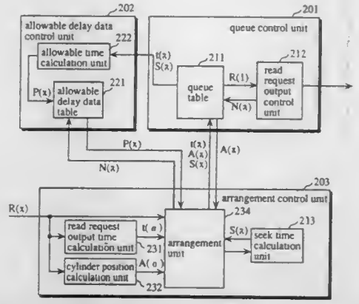
5,828,902

DISC CONTROL DEVICE HAVING REDUCED SEEK TIME BY SCHEDULING DISC READ REQUESTS

Tsutomu Tanaka, Nishinomiya; Yukiko Ito, Moriguchi, and Hideaki Yamashita, Kyoto, all of Japan, assignors to Matsushita Electric Ind., Osaka-fu, Japan

Filed Jun. 9, 1995, Ser. No. 488,868
Claims priority, application Japan, Jun. 10, 1994, 6-128946
Int. Cl.[6] G06F *1/04;3/00*
U.S. Cl. 395—859 **42 Claims**

1. A disc control device for holding a plurality of read requests as a queue, arranging the read requests and a newly inputted read request, reading out the read requests from the queue in the arranged order, and controlling the output of the requested data from a disc, comprising:



queue means for temporarily holding the read requests as the queue in which the read requests can be arranged, the read requests requesting data readout from the disc;

allowable time hold means for holding allowable time, which shows how much more delay can be allowed in order to satisfy delay time until the end of the data output, of each read request in the queue, the delay time being decided based on ranking in the read request in the queue; and

arrangement control means for arranging the read requests in the queue along with the newly inputted read request in the queue so that the allowable time of each read request in the queue is not 0, each time a new read request is inputted, including,

finding means for finding a queue position which can keep direction of head seek in a one-way direction in case the inputted read request is inserted in the queue, each time a new read request is inputted;

time judgement means for judging whether the allowable time of the read requests is below 0 in case the inputted read request is inserted at the found positions, the read requests whose ranking being after the rankirm of the read request inserted at the found position;

position decision means for deciding a position, which is found when the time judgement means judges that the allowable time is not below 0, as the position at which the read request should be inserted; and

arrangement means for arranging the read requests in the queue along with the newly inputted read request, so that the newly inputted read request is inserted at the decided position.

5,828,903

SYSTEM FOR PERFORMING DMA TRANSFER WITH A PIPELINE CONTROL SWITCHING SUCH THAT THE FIRST STORAGE AREA CONTAINS LOCATION OF A BUFFER FOR SUBSEQUENT TRANSFER

Jay Sethuram, Saratoga; Haim Sadger, Sunnyvale, both of Calif.; Kevin C. Kahn, Portland, Oreg., and Farhad Mighani, San Jose, Calif., assignors to Intel Corporation, Santa Clara, Calif.

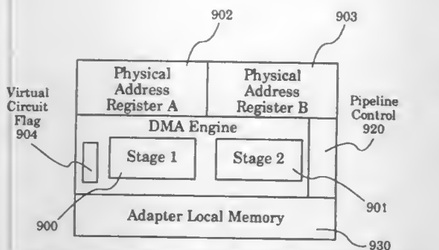
Continuation of Ser. No. 315,878, Sep. 30, 1994, abandoned. This application Nov. 19, 1996, Ser. No. 751,340
Int. Cl.[6] G06F *13/00*
U.S. Cl. 395—817 **49 Claims**

1. A system for transferring information on a network comprising:

a host device coupled to a network;

a first and second storage area; and

a pipeline control having a first pipeline stage for retrieving a location of a buffer for a next transfer and storing the location of the buffer for the next transfer in the second storage area and a second pipeline stage for performing a DMA transfer using a buffer for a current transfer, the location of the buffer for the current transfer stored in the first storage area, said



pipeline control switching the first and second storage areas such that host devices stores an identification of a buffer for a subsequent transfer in the first storage area.

5,828,904

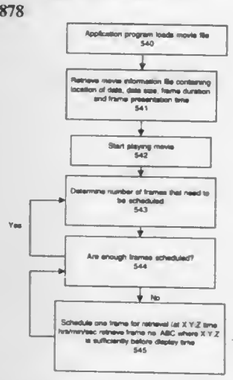
SYSTEM FOR DATA RETRIEVAL BY SCHEDULING RETRIEVAL IF NUMBER OF UNITS SCHEDULED EQUALS OR LESS THAN PREDETERMINED NUMBER AND RETRIEVING BEFORE OR AT TIME ELAPSED

James D. Batson, Sunnyvale, and J. Peter Hoddie, Mountain View, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 438,199, May 9, 1995, abandoned. This application Jun. 3, 1997, Ser. No. 868,025

Int. Cl.[6] G06F *13/00*

U.S. Cl. 395—878 **45 Claims**



1. A method for synchronizing data retrieval in a data processing system comprising:

determining whether a predetermined number of units of data have been scheduled for retrieval;

determining a specified time for retrieving data from a storage media;

scheduling retrieval of said data from said storage media at or before said specified time, wherein retrieval is scheduled only if a number of units which have been scheduled for retrieval equals or is less than said predetermined number;

retrieving said data from said storage media at or before said specified time has elapsed; and

processing said data from said storage media.

5,828,905

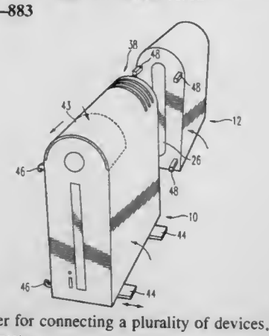
ADAPTER AND METHOD OF CONNECTING DEVICES ASSOCIATED WITH AT LEAST THREE DIFFERENT PROTOCOLS

Mahesh Chandra Rao, San Jose, Calif., assignor to Mitsubishi Chemical America, Inc., San Jose, Calif.

Filed Nov. 13, 1995, Ser. No. 556,675

Int. Cl.[6] G06F *15/02*

U.S. Cl. 395—883 **30 Claims**



1. An adapter for connecting a plurality of devices, comprising:

a support structure;

at least three connectors connected to the support structure, each connector being configured to operate in accordance with a respective first, second and third different protocol; and

conversion means connected to the connectors for converting between said respective first, second and third protocols associated with said at least three connectors,

wherein the conversion means includes an application specific integrated circuit chip.

5,828,906

SYSTEM FOR SEQUENTIALLY SHIFTING BITS FROM THE NEXT ONE OF THE MOST SIGNIFICANT BIT AND THEN OUTPUTTING THE MOST SIGNIFICANT BIT ACCORDING A SELECTION SIGNAL

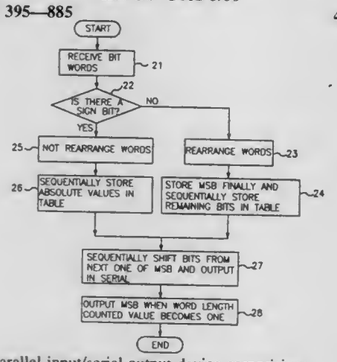
Joon Hyeon Jeon, and Gee Ho Jeon, both of Seoul, Rep. of Korea, assignors to Korea Telecommunication Authority, Seoul, Rep. of Korea

Filed Jun. 14, 1996, Ser. No. 664,172

Claims priority, application Rep. of Korea, Jun. 15, 1995, 1995 15901

Int. Cl.[6] G06F *3/00*

U.S. Cl. 395—885 **4 Claims**



1. A parallel input/serial output device comprising:

latching means for receiving the most significant bit word externally, latching and outputting the same;

a plurality of shifting means for receiving bit words except the most significant bit word externally in parallel, sequentially shifting and outputting bits from the next one of the most significant bit;

counting means for receiving a bit word length externally, counting the same and outputting a selection signal if said counted value becomes a predetermined value; and

multiplexing means for receiving the outputs of said shifting means and outputting the same in serial and outputting the outputs of said latching means according to said selection signal of said counting means.

5,828,907

TOKEN-BASED ADAPTIVE VIDEO PROCESSING ARRANGEMENT

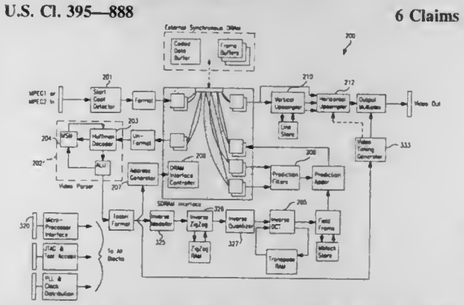
Adrian P. Wise, Bracknell, and Martin W. Sotheran, Bristol, both of United Kingdom, assignors to Discovision Associates, Irvine, Calif.

Division of Ser. No. 473,813, Jun. 7, 1995, and a continuation-in-part of Ser. No. 400,201, Mar. 7, 1995, Pat. No. 5,603,012, which is a division of Ser. No. 400,397, Mar. 7, 1995, which is a continuation-in-part of Ser. No. 382,958, Feb. 2, 1995, which is a continuation of Ser. No. 82,291, Jun. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 482,381

Claims priority, application United Kingdom, Jul. 29, 1994, 9415413; Jun. 19, 1995, 9511569

Int. Cl.[6] G06F *3/14;13/37*

U.S. Cl. 395—888 **6 Claims**



1. A pipelined video decoder system having an input, an output and a plurality of processing stages therebetween, comprising:

a universal adaptation unit in the form of a first interactive interfacing token for control and/or data functions among said processing stages;

a start code detector, responsive to a picture start code in an input stream of encoded data comprising MPEG data;

a token generator, responsive to said start code detector for generating said first interactive interfacing token, wherein said first interactive interfacing token is serially transmitted through said processing stages;

wherein said processing stages comprise electrical circuits, and said picture start code comprises an MPEG2 extension_start_code_identifier, and said first interactive interfacing token is a SEQUENCE_EXTN token for indicating sequence extension identification.

5,828,908

PHOTO CABIN

Donald E. Mauchan, 85 Pheasant Hill Rd., Marlboro, Mass. 01752

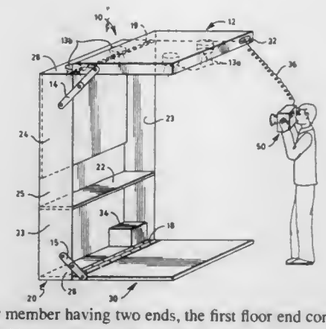
Filed Sep. 18, 1997, Ser. No. 932,783

Int. Cl.[6] G03B *15/00*

U.S. Cl. 396—2 **12 Claims**

1. A photo cabin for capturing an image of a subject, the cabin comprising:

a background module comprising a plurality of wall members cooperatively connected to define a subject receiving space including means for providing a background for the image;



a floor member having two ends, the first floor end comprising a floor hinge secured to the background module for pivoting the floor member about a horizontal pivot axis of the floor hinge;

a roof member having two ends, the first roof end comprising a roof hinge secured to the background module for pivoting the roof member about a horizontal pivot axis of the roof hinge;

means for releasably locking both the floor member and the roof member in a substantially perpendicular orientation with respect to the background module.

5,828,909

DRIVING APPARATUS

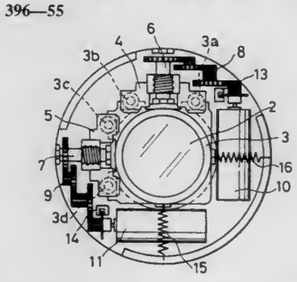
Tadao Kai, Kawasaki, and Hidenori Miyamoto, Urayasu, both of Japan, assignors to Nikon Corporation, Tokyo, Japan

Continuation of Ser. No. 379,589, Feb. 6, 1995, abandoned. This application Apr. 22, 1997, Ser. No. 837,794

Claims priority, application Japan, Jun. 7, 1993, 5-136235

Int. Cl.[6] G03B *17/00*

U.S. Cl. 396—55 **36 Claims**

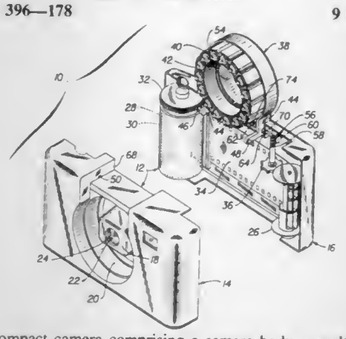


1. A driving apparatus for driving an object housed in a main body of said driving apparatus in a direction which is determined by a predetermined reference axis, said driving apparatus comprising:

a detector which detects a physical amount relating to a rotary motion of said main body around a predetermined detection axis;

an arithmetic device which calculates a driving amount of said object based on at least an output of said detector and an angle between said detection axis and said reference axis; and a driving mechanism which drives said object in said direction determined by said reference axis, based on a calculation output from said arithmetic device.

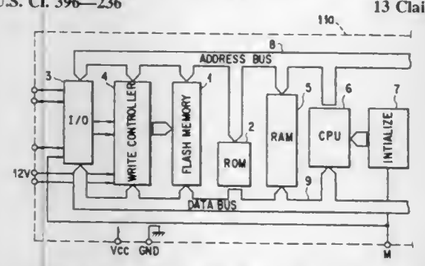
5,828,910
COMPACT CAMERA WITH FLIP-UP MULTI-LAMP FLASH WHEEL
Joel S. Lawther, East Rochester, N.Y., and Ralph M. Lyon, Marshfield, Wis., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 14, 1997, Ser. No. 891,929
Int. Cl.[6] G03B *15/03*
U.S. Cl. 396—178 9 Claims



1. A compact camera comprising a camera body, a multi-lamp flash unit supported for movement relative to said camera body to advance respective flash lamps successively to a flash illumination position for illuminating a subject being photographed, and a drive assembly actuated to move said flash unit to advance said flash lamps to the flash illumination position in coordination with film movement to advance respective unexposed film sections successively to an exposure position in said camera body, is characterized in that:

said flash unit is supported for movement to a folded position collapsed to said camera body for compactness, and separated from said drive assembly to prevent actuation of the drive assembly from moving the flash unit, and to an unfolded position extended from the camera body to be used, and engaged with the drive assembly to permit actuation of the drive assembly to move the flash unit.

5,828,911
ONE CHIP MICROCOMPUTER BUILT-IN SYSTEM
Azuma Miyazawa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan
Continuation of Ser. No. 247,071, May 20, 1994, abandoned. This application Nov. 21, 1996, Ser. No. 752,746
Claims priority, application Japan, May 24, 1993, 5-121079; May 24, 1993, 5-121080; May 24, 1993, 5-121081
Int. Cl.[6] G03B *7/00*
U.S. Cl. 396—236 13 Claims



1. A method for storing adjustment data in a camera having a control system main body and a one-chip microcomputer incorporated in said control system main body, wherein said one-chip microcomputer includes a flash memory storing a control program for controlling said control system main body, write means for writing data in said flash memory, a random access memory for temporarily storing data, and a communication terminal for providing communication between the one-chip microcomputer and an external adjustment device, the method comprising the steps of:

starting an adjustment operation of said external adjustment device;

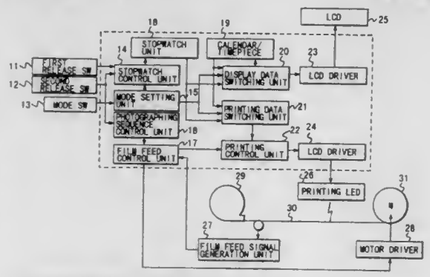
storing adjustment data in said random access memory during the adjustment operation of said external adjustment device;

stopping the adjustment operation of said external adjustment device;

storing a write program, for executing a writing operation, in said flash memory; and

executing the write program to write the adjustment data stored in said random access memory in said flash memory.

5,828,912
DATA PRINTING APPARATUS
Koji Mizobuchi, Sagamihara, and Hitoshi Maeno, Hichioji, both of Japan, assignors to Olympic Optical Co., Ltd., Tokyo, Japan
Filed Mar. 21, 1997, Ser. No. 821,866
Claims priority, application Japan, Apr. 2, 1996, 8-080171; Mar. 10, 1997, 9-054746
Int. Cl.[6] G03B *17/24*
U.S. Cl. 396—310 30 Claims



1. A data printing apparatus comprising:

a first timer which generates a first time-measurement output by performing a predetermined first timer operation;

a second timer which starts to reset, or measures a lap time, in response to a release operation, for generating a second time-measurement output by performing a second timer operation different from the first timer operation of said first timer; and

a printing unit for printing at least one of the first and second time-measurement outputs generated by said first and second timers on a film in an exposure operation of the film.

5,828,913
METHOD FOR THREE DIMENSIONAL MEASUREMENT AND IMAGING HAVING FOCUS-RELATED CONVERGENCE COMPENSATION
Pieter O. Zanen, 107 Cayuga Heights Rd., Ithaca, N.Y. 14850
Continuation-in-part of Ser. No. 470,130, Jun. 6, 1995, Pat. No. 5,532,777. This application Jun. 5, 1996, Ser. No. 659,164
Int. Cl.[6] G03B *35/00*
U.S. Cl. 396—324 10 Claims

1. A method of measuring the position of a subject in three dimensions from a left and a right image produced by an apparatus for creation of three-dimensional images using a single lens, having a right and a left outer mirror facing outward toward the subject, the outer mirrors being pivotable simultaneously and oppositely about a vertical axis, such that the outer mirrors are adjusted to converge at an angle of convergence related to the lens, the method comprising the steps of:

a) calibrating the apparatus with a plurality of targets having a plurality of measurement points at known position in three dimensions, resulting in a plurality of calibration maps, each map being indexed by angle of convergence and each comprising a plurality of two dimensional coordinates representing the position of the measurement points on the target in each of the left and right images, and a plurality of coordinates representing the actual position of the measurement points on the target in three dimensions:

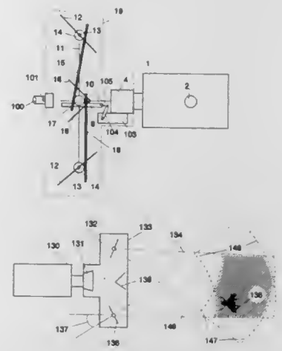
b) aiming the apparatus on the subject, simultaneously converging the outer mirrors so as to maximize the overlap of the images;

c) measuring the angle or convergence of the outer mirrors;

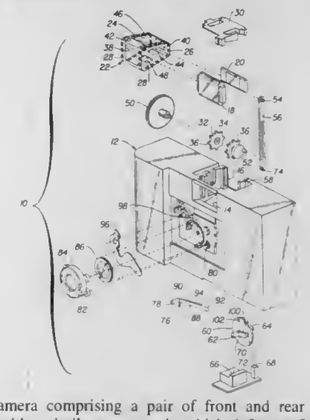
d) selecting the calibration map most closely matching the measured angle of convergence;

e) measuring the two-dimensional position of the subject in each of the left and right images; and

f) Using the measured two dimensional positions of the subject in the left and right images, determining the actual position of the subject in three dimensions from the selected calibration map.



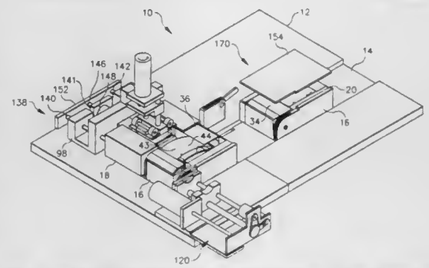
5,828,914
CAMERA WITH VARIABLE FORMAT VIEWFINDER
Edward N. Balling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Jun. 16, 1997, Ser. No. 876,934
Int. Cl.[6] G03B *13/10*
U.S. Cl. 396—378 8 Claims



1. A camera comprising a pair of front and rear viewfinder openings with a similar aspect ratio which defines a field of view through said front and rear viewfinder openings, a pair of front and rear viewfinder lenses positioned at said front and rear viewfinder openings, and a masking device having a front and rear masking openings with a similar aspect ratio that is different than the aspect ratio of said front and rear viewfinder openings and being supported to be positioned over said front and rear viewfinder openings to change the field of view through the front and rear viewfinder openings, is characterized in that:

said masking device is an endless masking belt having said front and rear masking openings and extends between said front viewfinder opening and said front viewfinder lens and between said rear viewfinder opening and said rear viewfinder lens to partially occlude the lenses.

5,828,915
FILM WINDING FIXTURE FOR USE WITH A FILM CARTRIDGE AND METHOD
Edward Norman Balling, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Dec. 6, 1995, Ser. No. 567,820
Int. Cl.[6] G03B *1/00*
U.S. Cl. 396—387 25 Claims



24. A method of prewinding a filmstrip from a film cartridge containing film spool means rotatable in a film unwinding direction to thrust a leader portion of the filmstrip from the cartridge and having light blocking means openable to permit the filmstrip to be thrust from the cartridge, comprising the steps of:

loading a non-lighttight camera body section on an assembly fixture, said camera body section having chambers for containing the film cartridge and a separate film roll and a pair of film rails for supporting the filmstrip;

loading the film cartridge into said camera body section chamber;

opening the light blocking means;

moving at least one roller into engagement with the film rails prior to rotating the film spool means of the film cartridge; following

following said moving step, rotating the film spool means in the film unwinding direction to thrust the leader portion of the filmstrip from the cartridge and between said at least one roller and said film rails; and

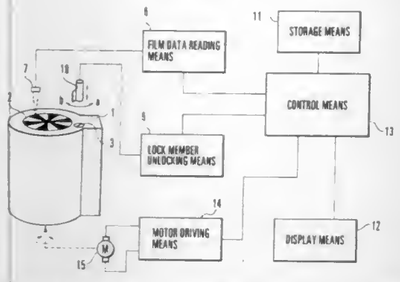
rotating said at least one roller to preadvance the film from the cartridge into a separate film roll.

5,828,916
CAMERA
Masanori Ohtsuka, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 546,723, Oct. 23, 1995, abandoned. This application Aug. 13, 1997, Ser. No. 910,388
Claims priority, application Japan, Nov. 11, 1994, 6-277875
Int. Cl.[6] G03B *1/00*
U.S. Cl. 396—408 5 Claims

1. A camera adapted to stow a film cartridge having an information member provided with predetermined information, the information member being arranged to be movable with the rotation of a film feed spool by a drive source disposed in the camera, said camera being provided with a lock member for locking the rotation of the information member, comprising:

a) reading circuit for reading the information from the information member with the film cartridge stowed in a stowing part of the camera, said reading circuit being arranged to read the

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information while said information member is in a state of being driven by the rotation of said film feed spool in the film rewind direction;

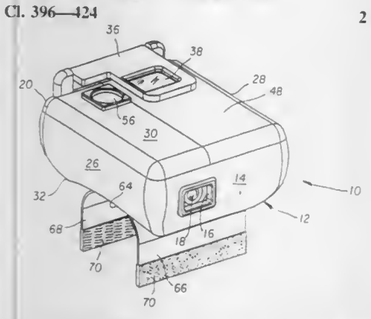
b) a detection member for detecting the stowing of the cartridge in the stowing part;

c) a release member which operates in response to the detection that the stowing of the cartridge in the stowing part by the detection member to release the locking of the lock member;

d) a delay circuit which operates in response to the releasing operation of the release member; and

e) reading control circuit for causing said reading circuit to begin to perform a reading operation after a lapse of a predetermined period of time defined by the delay circuit.

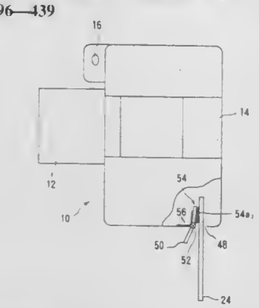
5,828,917
CAMERA WITH BUILT-IN SUPPORT
Stanley W. Stephenson, Spencerport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.
Filed Sep. 3, 1997, Ser. No. 922,737
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—424 **2 Claims**



1. A camera comprising a non-expandable housing having an opposite top and bottom and an opposite front and rear between said top and bottom, and a support for one's forearm and/or wrist, is characterized in that:

said bottom of the housing is concave to define a rounded inward hollow at a location directly beneath said top of the housing for receiving one's forearm and/or wrist along the bottom of the housing to serve as said support, said front of the housing has an opening for a taking lens, and said top and bottom of the housing each have greater surfaces areas than said front and rear of the housing.

5,828,918
ELECTRO-DEVELOPING TYPE CAMERA USING ELECTRO-DEVELOPING RECORDING MEDIUM
Tetsuya Abe, and Makoto Mogamiya, both of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 651,763, May 22, 1996, abandoned. This application Sep. 15, 1997, Ser. No. 929,055
Claims priority, application Japan, May 22, 1995, 7-146764
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—439 **10 Claims**



1. An electro-developing type camera that receives an electro-developing recording medium for recording and developing an optical image on the electro-developing recording medium, the electro-developing recording medium being contained within a recording medium holder, said electro-developing type camera comprising a camera body provided with a slot formed therein, said slot allowing for insertion of said recording medium holder into said camera and for movement of said recording medium holder toward a photographing position, said camera further comprising conductive electric-charge-eliminating means for eliminating an electric charge from the electro-developing recording medium, said conductive electric-charge-eliminating means being movably mounted so as to be resiliently biased towards said slot of said camera body to close said slot, thereby ensuring that said conductive electric-charge-eliminating means comes into electrical contact and physical contact with the electro-developing recording medium upon insertion of said recording medium holder, containing the electro-developing recording medium, into said electro-developing type camera through said slot of said camera body,

wherein said conductive electric-charge-eliminating means eliminates said electric charge from the electro-developing recording medium in response to said electrical contact between said conductive electric-charge-eliminating means and the electro-developing recording medium contained within said recording medium holder, and removes particulate matter from the electro-developing recording medium in response to said physical contact between said conductive electric-charge-eliminating means and the electro-developing recording medium contained within said recording medium holder.

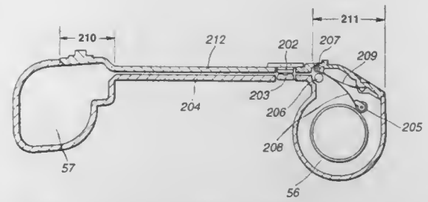
5,828,919
CAMERA
Hiroaki Furuya; Yasuo Asakura, and Yuji Kobayashi, all of Hachioji, Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan
Filed Apr. 16, 1997, Ser. No. 835,827
Claims priority, application Japan, Apr. 18, 1996, 8-097196; Feb. 4, 1997, 9-021789
Int. Cl.[6] G03B *17/00*
U.S. Cl. 396—440 **12 Claims**

1. A camera which allows a film cartridge to be loaded in a direction of an axis of rotation of the film cartridge comprising:

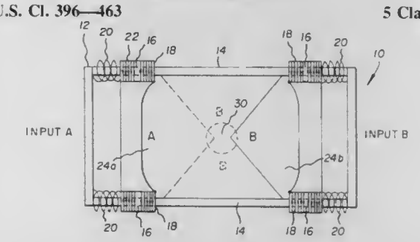
a camera body comprising a film cartridge compartment for accommodating a film cartridge, a film take-up spool compartment for taking up a film and a film transport path, formed between said compartments, and having a film frame aperture, and

a shading cover comprising integral first, second and third shading sections, said first shading section which, when the shading cover is assembled to the camera body, forms, along with the film cartridge compartment, a shaded film cartridge compartment, the second shading section which, when the shading cover is assembled to the camera body, forms, along with the film take-up spool compartment, a shaded film take-up spool compartment, and the third shading section which, when the shading cover is assembled to the camera body, keeps the film, along the film transport path, in a plane perpendicular to an optical path while forming a shaded film passing space, and

an outer covering member for covering the camera body and the shading cover.



5,828,920
TRANSLATIONAL ELECTROMAGNETIC CAMERA SHUTTER FOR VARIABLE APERTURE APPLICATIONS
Thomas Michael Stephany, Churchville, and Edward Paul Furlani, Lancaster, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Apr. 23, 1996, Ser. No. 635,160
Int. Cl.[6] G03B *9/08*
U.S. Cl. 396—463 **5 Claims**



1. A shutter comprising:

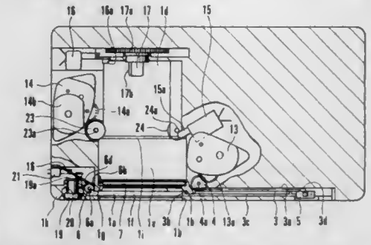
a shutter blade frame comprised of two spaced apart rails, each rail incorporating at least one magnet section;

at least one pair of electromagnet means positioned for movement along said rails;

at least one shutter blade having an opening defined thereby and connected between the at least one pair of electromagnet means for movement along said rails from a rest position to an open position so as to cause an alignment of the shutter blade's defined opening with a selected light path when current is applied to said electromagnet means; and

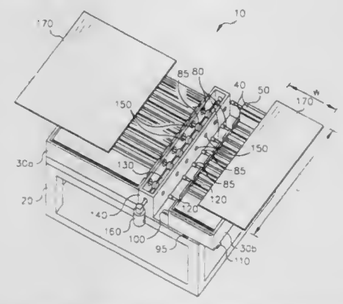
spring means positioned on said shutter blade frame for urging the at least one shutter blade to a rest position.

5,828,921
CAMERA OR APPARATUS ADAPTED TO USE FILM CARTRIDGE OR DEVICE APPLICABLE TO SUCH CAMERA OR APPARATUS
Makoto Miyawaki, Kanagawa-ken, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 23, 1994, Ser. No. 363,398
Claims priority, application Japan, Dec. 28, 1993, 5-349312; Apr. 20, 1994, 6-104389; Apr. 20, 1994, 6-104390
Int. Cl.[6] G03B *17/02;17/26*
U.S. Cl. 396—538 **14 Claims**



1. An apparatus adapted to a film cartridge, comprising an image recordation device for recording an image on a film of the film cartridge, a film cartridge chamber and a driving device which performs loading of the film cartridge in said chamber, said driving device including a supplying portion which supplies a driving power by rotating about an axis substantially parallel with an optical axis of said apparatus, said chamber being disposed aside said optical axis, said driving device including a roller having an output shaft disposed substantially in parallel with the optical axis.

5,828,922
DUAL PROCESSING MODULE FOR PHOTOSENSITIVE MATERIAL
Ralph L. Piccinino, Jr., Rush, and John H. Rosenburgh, Hilton, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Oct. 8, 1997, Ser. No. 947,421
Int. Cl.[6] G03D *3/08*
U.S. Cl. 396—622 **5 Claims**



1. A processing apparatus for processing of photographic material, the apparatus comprising:

(a) a first plurality of successive processing tanks, each containing a processing solution, said plurality of first tanks forming a first processing path for a first photographic material;

(b) a second plurality of successive processing tanks, each containing a processing solution, said second plurality of tanks forming a second processing path for processing a second photographic material, said first plurality of tanks being disposed adjacent said second plurality of processing tanks;

(c) a first transport system for driving of said first photographic material through said first processing path;

(d) a second transport system for driving of said second photographic material through said second processing path; and

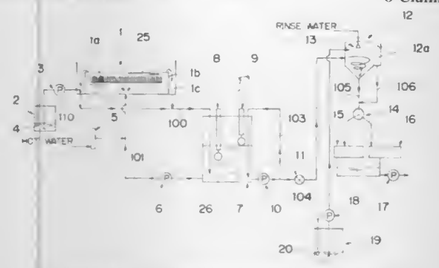
(e) a drive shaft for driving both said first and second transport systems.

5,828,923

APPARATUS AND METHOD FOR PROCESSING WATER WASH PHOTOPOLYMER SOLUTION

Gregory K. Harabin; Tadashi Hayashi, both of Charlotte, N.C.; Kimiaki Hirayama, Ibaraki, and Keiichi Okajima, Katano, both of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 5, 1996, Ser. No. 707,611
Int. Cl.[6] G03D *3/02*
U.S. Cl. 396—626 8 Claims



1. An apparatus for processing water wash photopolymer solution, said apparatus comprising:

a washout unit for washing a flexographic printing plate with water and thereby forming a resultant effluent;

a surfactant supply to supply surfactant to said washout unit;

a hot water supply to supply hot water to said washout unit;

a holding tank for receiving the effluent flowing from said washout unit and for holding the effluent; and

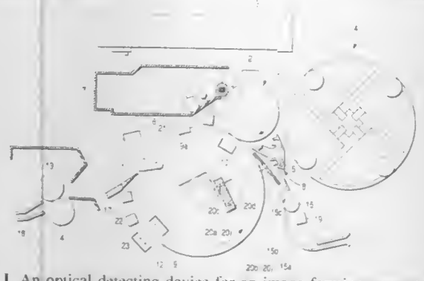
a mixing cone for receiving an amount of the effluent held in said holding tank from said holding tank and for mixing the amount of effluent with a coagulant, thereby to coagulate a solid content of the effluent with the coagulant.

5,828,924

OPTICAL DETECTING DEVICE FOR AN IMAGE FORMING APPARATUS AND AN IMAGE FORMING APPARATUS USING THE SAME

Satoshi Fukada; Nobuo Hyakutake; Kenji Tomizawa; Junichirou Sameshima; Mikio Kobayashi; Norio Hokari; Yukio Hayashi; Shuji Iseki, and Ryoichi Tsuruoka, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 10, 1996, Ser. No. 727,991
Claims priority, application Japan, Oct. 12, 1995, 7-264075
Int. Cl.[6] G03G *15/00;21/16*
U.S. Cl. 399—16 12 Claims



1. An optical detecting device for an image forming apparatus, which optically detects an object by optical means, said device disposed facing a moving path of the detected object, said optical detecting device comprising:

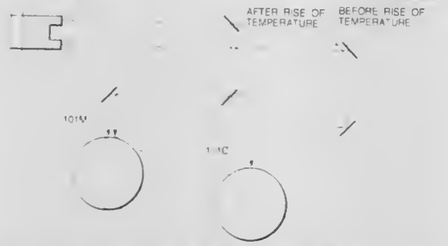
conductive attracting means connected to a predetermined potential and disposed close to said optical means.

5,828,925

IMAGE FORMING APPARATUS CAPABLE OF CORRECTING POSITION DEVIATION OF IMAGE

Atsutomo Yoshizawa, Kawasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 621,974, Mar. 26, 1996, abandoned.
This application Mar. 18, 1997, Ser. No. 820,239
Claims priority, application Japan, Mar. 31, 1995, 7-076251; Mar. 11, 1996, 8-053077
Int. Cl.[6] G03G *15/01;15/04;* G06F *15/62*
U.S. Cl. 399—39 36 Claims



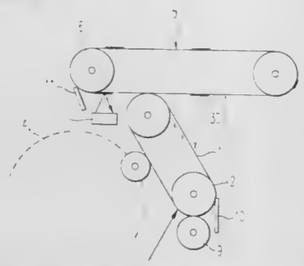
29. A controller used with an image forming apparatus in which respective images are formed on a recording medium by exposing respective image holding members of each of a plurality of image forming units using an exposing unit and in which a difference between positions of the images respectively formed by said plurality of image forming units is detected, in a detection operation, to correct said difference in a correction operation, said controller controlling the detection operation and the correction operation based upon a temperature at a first position near said exposing unit and a temperature at a second position in said apparatus different from the first position.

5,828,926

REGISTRATION CONTROL FOR AN IMAGE FORMING APPARATUS HAVING AN INTERMEDIATE TRANSFER BELT

Nobuo Iwata, Sagamihara; Shingo Katou, Yokohama; Yutaka Shio, Yokohama, and Tomonori Yabuta, Yokohama, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 19, 1996, Ser. No. 699,035
Claims priority, application Japan, Aug. 17, 1995, 7-231959
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—66 9 Claims



1. A full-color toner image forming apparatus, comprising:

a photo-conductive member on which predetermined mono-color toner images are respectively formed in a predetermined order;

an intermediate transfer member onto which each of said mono-color toner images are respectfully transferred to form a full-color toner image thereon;

a final transfer member for transferring said full-color toner images from said intermediate transfer member to a copy sheet;

a cleaning device for cleaning said intermediate transfer member;

timing marks disposed on said intermediate transfer member;

a sensor for detecting one of said timing marks to generate a start signal for starting a first mono-color toner image forming process;

a controller for adjusting a start timing of subsequent mono-color toner image forming processes using said timing marks so that subsequent mono-color images are superimposed on said first mono-color image, and for starting of generating said start signal for said first toner image forming process only when said cleaning device is apart from said intermediate transfer member; and

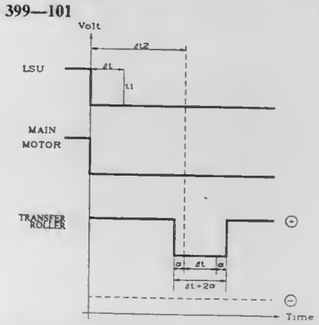
a timer means for delaying an output of said start signal by a predetermined time period, and which begins timing after the cleaning device is moved away from the intermediate transfer member.

5,828,927

METHOD OF PREVENTING BACK SIDE OF PAPER FROM CONTAMINATION IN ELECTROPHOTOGRAPHY PRINTER

Yong-Baek Yoo; Moon-Sik Lee, both of Suwon-si, and Tagoku Izumi, Dongkyungdo, all of Rep. of Korea, assignors to SamSung Electronics Co., Ltd., Suwon, Rep. of Korea

Filed Jun. 12, 1997, Ser. No. 874,131
Claims priority, application Rep. of Korea, Jun. 12, 1996, 1996/21023
Int. Cl.[6] G03G *15/16;21/00*
U.S. Cl. 399—101 19 Claims



1. A method of printing using an electrophotographic printer, the method comprising the steps of:

minimizing a potential difference created on a surface of a photosensitive drum of the electrophotographic printer by driving a main motor of the electrophotographic printer while warming up a scanning unit of the electrophotographic printer; and

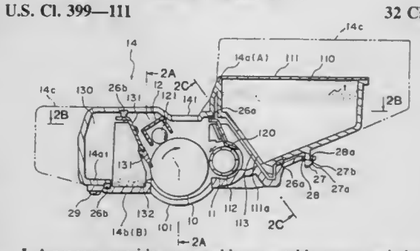
preventing the toner from adhering to the photosensitive drum during a period of exposing the photosensitive drum for receiving an image on the photosensitive drum, and preventing the toner from adhering to a transfer roller of the electrophotographic printer before a paper reaches the transfer roller, the transfer roller for transferring toner to the paper, by applying a non-positive voltage to the transfer roller from a first predetermined time before said period of exposing the photosensitive drum to a second predetermined time after said period of exposing the photosensitive drum.

5,828,928

PROCESS CARTRIDGE MOUNTABLE IN AN IMAGE FORMING SYSTEM AND A METHOD FOR ASSEMBLING A CLEANING DEVICE

Yoshikazu Sasago, Tokyo; Kazumi Sekine, Kawasaki; Tadayuki Tsuda, Kawasaki; Isao Ikemoto, Kawasaki; Kazushi Watanabe; Shinya Noda, both of Yokohama; Kazunori Kobayashi, Kawasaki; Takeo Shoji, Yokohama; Kazuhiko Ishiwata, Tokyo; Kazuo Shishido; Kanji Yano, both of Kawasaki; Hiroyuki Shirai; Makoto Tanaka, both of Tokyo; Shinichi Sasaki, Fujisawa; Yoshiya Nomura, and Toshiyuki Karakama, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 952,948, Sep. 28, 1992, abandoned, which is a continuation-in-part of Ser. No. 785,401, Oct. 30, 1991, and Ser. No. 689,517, Apr. 23, 1991, Pat. No. 5,208,634.
This application Mar. 28, 1995, Ser. No. 412,100
Claims priority, application Japan, Apr. 27, 1990, 2-110613; Nov. 6, 1990, 2-301779; Mar. 19, 1991, 3-054446; Jun. 30, 1992, 4-194660; Jul. 24, 1992, 4-217423
Int. Cl.[6] G03G *21/18*
U.S. Cl. 399—111 32 Claims



1. A process cartridge removably mountable onto a main body of an image forming system, said process cartridge comprising:

an electrophotographic photosensitive member;

process means for acting on said photosensitive member;

a first frame;

a second frame to be separably connected with said first frame;

lock means for separably connecting said first frame and said second frame;

recesses formed on said second frame; and

projections provided on said first frame, said projections configured to fit into respective ones of said recesses upon connection by said lock means of said first frame and said second frame so that said first frame and said second frame do not shift,

wherein said first frame and said second frame are separably connected by said lock means in a state where said projections engage said recesses.

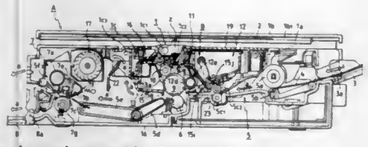
5,828,929

IMAGE FORMING SYSTEM AND PROCESS CARTRIDGE HAVING PARTICULAR ARRANGEMENT OF ELECTRICAL CONTACTS

Kazushi Watanabe, Yokohama; Kazumi Sekine, Kawasaki; Tadayuki Tsuda, Kawasaki; Isao Ikemoto, Kawasaki; Yoshimasu Yamaguchi, Kawasaki; Yoshikazu Sasago, Ohta-ku; Shinya Noda, Yokohama, and Kazunori Kobayashi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 430,160, Apr. 27, 1995, abandoned, which is a continuation of Ser. No. 167,612, Dec. 16, 1993, abandoned, which is a continuation of Ser. No. 60,507, May 12, 1993, abandoned, which is a continuation of Ser. No. 952,945, Sep. 28, 1992, abandoned. This application Apr. 14, 1997, Ser. No. 837,127
Claims priority, application Japan, Jun. 30, 1992, 4-194663
Int. Cl.[6] G03G *21/00*
U.S. Cl. 399—111 88 Claims

1. A process cartridge removably mountable to a main body of an image forming system, said process cartridge comprising:



an electrophotographic photosensitive member;

a charging roller for charging said electrophotographic photosensitive member;

a developing roller for developing a latent image formed on said electrophotographic photosensitive member;

a developing bias contact for applying a developing bias to said developing roller;

an earthing contact for earthing said electrophotographic photosensitive member; and

a charging bias contact for applying a charging bias to said charging roller,

wherein said developing bias contact, said earthing contact, and said charging bias contact are arranged in an area adjacent to an end of said electrophotographic photosensitive member in a longitudinal direction of said electrophotographic photosensitive member, such that (i) said developing bias contact is arranged at a first side of said electrophotographic photosensitive member in a direction orthogonal to the longitudinal direction of said electrophotographic photosensitive member, (ii) said charging bias contact is arranged at a second side of said electrophotographic photosensitive member in the orthogonal direction, and (iii) said earthing contact is provided at a position other than a rotation center of said electrophotographic photosensitive member,

wherein a position of said earthing contact is closer to said charging bias contact than a position of said developing bias contact, and

wherein, when said process cartridge is mounted to the main body of the image forming system, said developing bias contact, said charging bias contact, and said earthing contact respectively contact with a main body developing bias contact, a main body charging bias contact and a main body earthing contact, all of which are provided in the main body of the image forming system.

5,828,930

ELECTROSTATIC RECORDING APPARATUS AND ITS RECORDING METHOD

Shogo Matsumoto; Yasushi Kinoshita, both of Ibaraki-ken, and Junichi Matsuno, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1997, Ser. No. 828,171

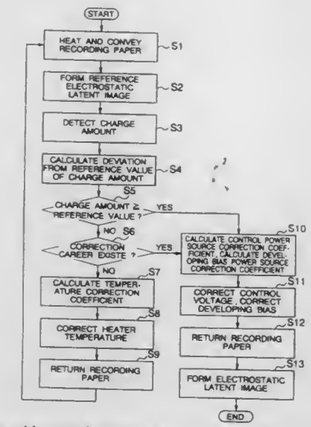
Claims priority, application Japan, Mar. 19, 1996, 8-062485

Int. Cl.[6] G03G *21/20;13/05*

U.S. Cl. 399—135 **9 Claims**

2. An electrostatic recording apparatus comprising: a supplying unit for supplying a recording medium; latent image forming means which has an ion generating source and control electrodes for controlling a flow of ions, irradiates the ions onto the recording medium supplied from said supplying unit, and forms an electrostatic latent image; developing means for developing said electrostatic latent image; and an ejecting unit for ejecting the developed recording medium,

wherein the ions generated from said ion generating source are directly irradiated onto a general paper, thereby forming the electrostatic latent image; and



wherein said general paper is a recording medium whose surface resistance value changes in a range from 5×10^7 ω or more and 2×10^6 ω or less in a state in which it is left under an environment of humidities of 20% and 80%, respectively.

5,828,931

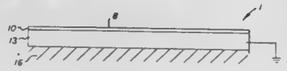
COMPLIANT PHOTOCONDUCTIVE IMAGE MEMBER AND METHOD OF USE

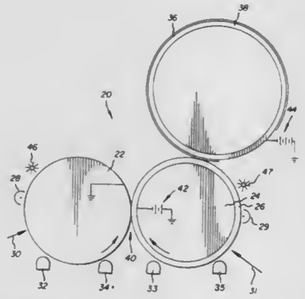
John W. May, Rochester, and Thomas N. Tombs, Brockport, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed May 30, 1996, Ser. No. 655,656

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—159 **32 Claims**





12. A photoconductive image member comprising a conductive layer and a compliant photoconductive layer having a Young's modulus of less than 5×10^7 Pascals.

5,828,932

DOCUMENT READING APPARATUS AND DOCUMENT READING METHOD

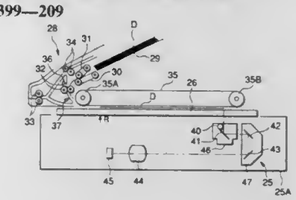
Mitsuharu Ohata; Keiko Uto, and Hideki Sugiura, all of Ebina, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

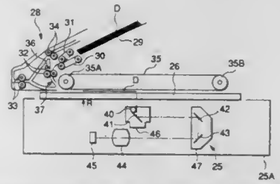
Filed Mar. 18, 1997, Ser. No. 819,266

Claims priority, application Japan, Mar. 19, 1996, 8-063207

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—209 **9 Claims**





4. A document reading method, comprising the steps of:

causing reading means to read an attribute of an original stopped on a mounting means;

causing the reading means to read an image of the original stopped on the mounting means while transporting the reading means in a first direction;

holding the reading means at a first position near an image reading end position after reading of the image of the original is completed;

ejecting the original from the mounting means;

transporting the reading means in the first direction from the first position to a second position when a next original is larger than the original on the mounting means after the reading of the image of the original is completed and before the reading means is held by the holding means;

feeding the next original from an original storing means and stopping it on the mounting means; and

causing the reading means to read an attribute of the next original stopped on the mounting means while transporting the reading means in a second direction opposite the first direction.

5,828,933

ADDITIVE COLOR RECHARGE, EXPOSE, AND DEVELOP ELECTROPHOTOGRAPHIC PRINTING

James D. Rees, Pittsford, and Charles H. Tabb, Rochester, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1997, Ser. No. 976,943

Int. Cl.[6] G03G *15/01*

U.S. Cl. 399—223 **6 Claims**

1. A color printing machine, comprising:

a photoreceptor having at least one image area;

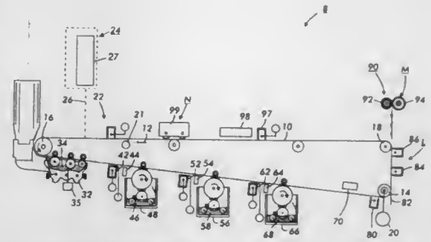
a first charging station for charging said image area;

a first exposure station for exposing said image area so as to produce a first latent image;

a developing station for depositing a first color of toner on said first latent image;

a second charging station for recharging said image area;

a second exposure station for exposing said image area so as to produce a second latent image that overlaps said first latent image;



a second developing station for depositing a second color of toner on said second latent image, wherein said second color of toner is an additive color;

a third charging station for recharging said image area;

a third exposure station for exposing said image area so as to produce a third latent image that overlaps said first and second latent images; and

a third developing station for depositing a third color of toner on said third latent image, wherein said third color of toner is an additive color;

wherein said second exposure station exposes said image area with a light intensity such that said second developing station develops bare sections of said image area but is inhibited from developing previously developed sections.

5,828,934

DRIVING DEVICE OF DEVELOPING UNITS AND TONER REPLENISHING UNITS FOR USE IN IMAGE FORMING APPARATUS

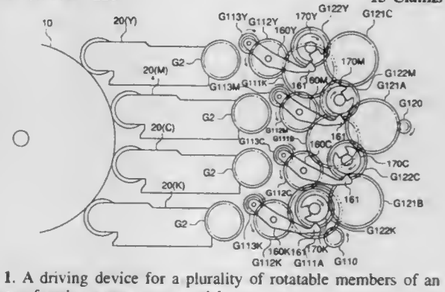
Takashi Tamura; Yozo Fujii; Kenji Sato; Masahiro Shigetomi, and Isao Matsuoka, all of Hachioji, Japan, assignors to Konica Corporation, Japan

Filed Jun. 4, 1996, Ser. No. 668,498

Claims priority, application Japan, Jun. 7, 1995, 7-140515; Aug. 23, 1995, 7-214694; Sep. 1, 1995, 7-225204

Int. Cl.[6] G03G *15/00;21/00*

U.S. Cl. 399—228 **13 Claims**



1. A driving device for a plurality of rotatable members of an image forming apparatus comprising:

a driving means;

a plurality of sets of sun gears and a plurality of sets of planetary gears, wherein said driving means engages said plurality of sun gears, and transmits a driving force thereto;

a plurality of follower gears each engaging said plurality of rotatable members, through which said driving force is transmitted thereto,

wherein each said follower gear is engaged by one of said planetary gears when said planetary gears revolve around a corresponding sun gear, and is rotated by said planetary gear when said planetary gear rotates around its axis while engaging each corresponding follower gear;

a revolution control for controlling each said planetary gear rotatably around said sun gear; said revolution control comprising:

a plurality of supporting members, each supporting a first planetary gear of said plurality of planetary gears, said first planetary gear being adapted to revolve around a first sun gear of said plurality of sun gears; and

a cam mechanism for engaging a portion of each supporting member and for controlling a revolution of said first planetary gear rotatably around said first sun gear,

wherein said cam mechanism comprises a rotatable cam shaft, a plurality of cams being provided on said rotatable cam shaft, and a cam driving gear on said rotatable cam shaft.

5,828,935

IMAGE FORMING APPARATUS, TONER SUPPLY UNIT, AND TONER BOTTLE ATTACHED THERETO

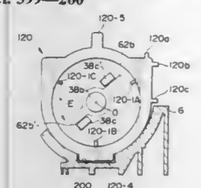
Kenzo Tatsumi; Noboru Kusunose, both of Yokohama, and Shigeru Yoshiki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

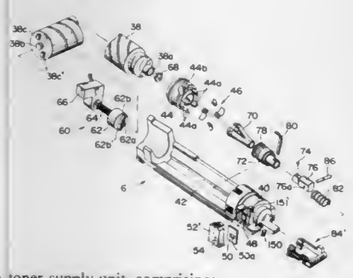
Filed Oct. 11, 1996, Ser. No. 729,525

Claims priority, application Japan, Oct. 11, 1995, 7-263085; Oct. 25, 1995, 7-277756; Aug. 25, 1996, 8-242587

Int. Cl.[6] G03G *15/08*

U.S. Cl. 399—260 **24 Claims**





12. A toner supply unit, comprising:

a toner bottle having a toner discharging port formed in a middle of an end of a cylindrical body of said toner bottle;

bottle holding means for holding said toner bottle substantially horizontally in a state in which toner can be introduced from said toner discharging port into a toner introducing portion of a developing unit; and

rotational driving scans for rotating said toner bottle held by said bottle holding means around a central axis of said toner bottle extending in a longitudinal direction of said toner bottle;

wherein said toner bottle can be attached to and detached from a body of said toner supply unit in the direction of the central axis in a state in which said toner bottle is held by said bottle holding means.

5,828,936

DEVELOPING DEVICE

Tamotsu Shimizu, Settsu, and Eiji Gyotoku, Itami, both of Japan, assignors to Minolta Co., Ltd., Osaka, Japan

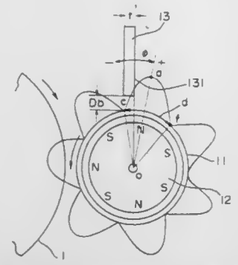
Filed Mar. 31, 1997, Ser. No. 831,330

Claims priority, application Japan, Apr. 2, 1996, 8-106283

Int. Cl.[6] G03G *15/09*

U.S. Cl. 399—275 **5 Claims**

1. A developing device comprising:



a magnetic member having a plurality of magnetic poles N and S within a developing sleeve which rotates to transport developer to an image bearing member, said magnetic member being fixed and thereby prevented from rotating, and

a regulating member formed of magnetic material disposed so as to maintain a predetermined spacing from said developing sleeve,

wherein the relationship $t \geq d/6$ is satisfied when the thickness of said regulating member is designated t, and the distance on the developing sleeve is designated d between points where the perpendicular magnetic flux density become 0 (zero) on the upstream side and downstream side in the developer transport direction at the opposing magnetic pole of said magnetic member near the position at which the regulating member faces the developing sleeve.

5,828,937

ELECTROSTATOGRAPHIC SINGLE-PASS MULTIPLE STATION PRINTER AND METHOD WITH REGISTER CONTROL

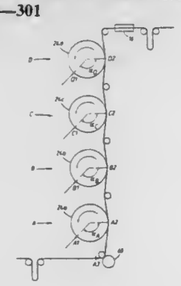
Ronny Jean Valentine Aerens, Belsele; Etienne Marie De Cock; Lucien Amede De Schamphelaere, both of Edegem; Peter Alexander Roger Steylaerts, Lier, and Erik Gabriel Gerardus van Weverberg, Mortsel, all of Belgium, assignors to Xeikon N.V., Mortsel, Belgium

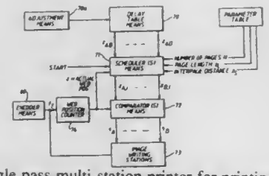
Division of Ser. No. 554,513, Nov. 7, 1995, Pat. No. 5,649,267, which is a division of Ser. No. 257,111, Jun. 8, 1994, Pat. No. 5,499,093. This application May 30, 1997, Ser. No. 862,817

Claims priority, application European Pat. Off., Jun. 18, 1993, 93304773

Int. Cl.[6] G03G *15/01;15/16*

U.S. Cl. 399—301 **43 Claims**





1. In a single pass multi-station printer for printing an image on a moving web by transfer of component images formed on an initial and subsequent rotatable endless surfaces at component image-printing stations, the improvement wherein said rotatable endless surfaces are driven by frictional engagement with said moving web, and wherein there is provided a printing control responsive to displacement of said web for delaying initiation of formation of said component images on said subsequent rotatable endless surfaces for a period corresponding to a predetermined displacement of said web.

5,828,938

TRANSFERRING DEVICE AND IMAGE FORMING APPARATUS USING THE SAME

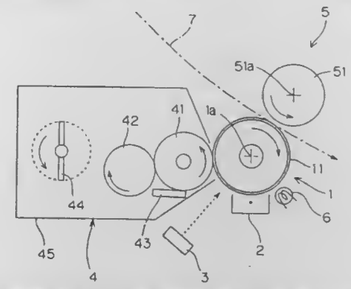
Hiroyuki Hazama; Masaru Watanabe; Takashi Terada; Hirotsugu Ogawa, and Toru Ueno, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Mar. 7, 1997, Ser. No. 813,073

Claims priority, application Japan, Mar. 13, 1996, 8-056178; Jan. 20, 1997, 9-007943

Int. Cl.[6] G03G *15/16*

U.S. Cl. 399—313 **6 Claims**



1. A transferring device for transferring a toner image carried on an organic photosensitive drum having a diameter of 10 to 20 mm to a transfer material, comprising

a transfer roller having a diameter which is not less than 60% of the diameter of the organic photosensitive drum and arranged with a clearance provided between the transfer roller and the organic photosensitive drum.

5,828,939

SMOOTH TRANSFER SHEET ROLLER TRANSPORT

Katsuhiro Yoshiuchi; Masahiko Nakao, and Keizo Yamamoto, all of Osaka, Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Division of Ser. No. 569,980, Dec. 8, 1995, Pat. No. 5,651,539. This application Feb. 21, 1997, Ser. No. 803,642

Claims priority, application Japan, Jan. 10, 1995, 7-2290; Jan. 10, 1995, 7-2291; Jan. 10, 1995, 7-2292

Int. Cl.[6] G03G *15/00*

U.S. Cl. 399—388 **4 Claims**

1. An image forming apparatus of electrophotographic type for transferring an image on a transfer sheet having a length longer than a distance between an image transferring position and a fixing position, the image forming apparatus comprising:

an image reading section for reading an image of a document original along a reading line;

document original feeding means for changing a relative positional relation between the image reading section and the document original in a direction perpendicular to the reading line;

a transportation path for guiding the transfer sheet;

a drum-shaped photoreceptor provided in a predetermined relation with respect to the transportation path and constantly rotating at a predetermined speed for electrophotographically forming a latent image corresponding to the image of the document original read by the image reading section on a surface thereof, developing the latent image into a toner image and carrying the toner image thereon;

transferring means disposed opposite to the surface of the drum-shaped photoreceptor with the transportation path interposed therebetween for transferring the toner image carried on the photoreceptor to the transfer sheet transported through the transportation path;

fixing means disposed downstream of the transferring means along the transfer sheet transportation direction on the transportation path for fixing the toner image on the transfer sheet while taking in the transfer sheet transported along the transportation path at a relatively high transportation speed and discharging the transfer sheet; and

feeding speed control means for controlling the document-original feeding means so as to change the relative positional relation between the image reading section and the document original at a relatively low first speed until the leading edge of the transfer sheet transported through the transportation path reaches the fixing means and, in response to the leading edge of the transfer sheet reaching the fixing means, controlling the document-original feeding means so as to change the relative positional relation at a relatively high second speed.

5,828,940

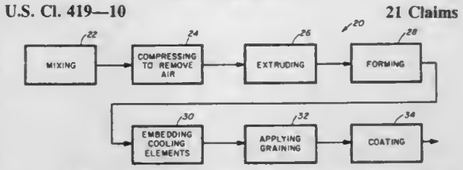
FORMABLE COMPOSITE MAGNETIC FLUX CONCENTRATOR AND METHOD OF MAKING THE CONCENTRATOR

Thomas J. Learman, Grand Haven, Mich., assignor to Learflux Inc., Ferrysburg, Mich.

Division of Ser. No. 351,510, Dec. 7, 1994, Pat. No. 5,529,747, which is a continuation-in-part of Ser. No. 150,392, Nov. 10, 1993, Pat. No. 5,418,069. This application Jan. 26, 1996, Ser. No. 592,097

Int. Cl.[6] B22F *3/02*

U.S. Cl. 419—10 **21 Claims**



1. A method of making a formable composite magnetic flux concentrator, comprising the steps of:

(a) preparing a body in a formable putty-like state by mixing together a ferromagnetic material and a binder, said ferromagnetic material being in a percent by weight in the range of about 65% to 90% and said binder being in a percent by weight range of about 35% to 10%;

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(b) shaping said body while in said formable putty-like state into a selected shape; and

(c) solidifying said formable body by applying heat to said body to cause said binder to change said formable body having the selected shape to a solid body.

5,828,941

ELECTRICAL CONTACT COMPOSITIONS AND NOVEL MANUFACTURING METHOD

Graham A. Whitlow, Murrysville; William R. Lovic, New Kensington, and Paul G. Slade, Pittsburgh, all of Pa., assignors to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 220,129, Mar. 30, 1994, Pat. No. 5,516,995. This application Aug. 8, 1996, Ser. No. 553,178

Int. Cl.[6] B22F *3/12;3/26*

U.S. Cl. 419—17 **8 Claims**



500x

1. The method of making an improved electrical contact comprising an alloy of Ag and a material selected from the group consisting of Cr_xC_y and Cr comprising the steps of cold pressing a mixture of said Ag and said selected material to form an unsintered blank and elevated temperature infiltration of silver into said unsintered blank to obtain an essentially 100% dense, porosity free microstructure, wherein cold pressing and forming a blank further comprises:

(a) blending Ag and a material selected from the group consisting of Cr_3C_2, Cr_7C_3, $Cr_{23}C_6$, and mixtures thereof, and Cr to form a blend,

(b) treating the blend with hydrogen to precoat/presinter a blended powder mass,

(c) granulating the blended powder mass and passing it through a mesh screen and,

(d) reblending the blended powder mass; and shaping into solid blanks.

5,828,942

METHOD FOR SUBJECTING MOLDED ARTICLE TO ISOSTATIC PRESSING

Taketoshi Tsutsumi, Kuwana-gun, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

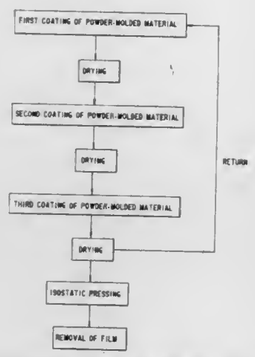
Continuation of Ser. No. 412,907, Mar. 29, 1995, abandoned. This application Mar. 26, 1997, Ser. No. 824,184

Claims priority, application Japan, Mar. 31, 1994, 6-062588

Int. Cl.[6] B22F *3/12;* **C04B** *35/64*

U.S. Cl. 419—38 **15 Claims**

1. A method for subjecting a molded article comprised of a powder material and having a complicated shape to isostatic pressing, the method comprising the step of covering the molded article



with a water impermeable rubber film having a thickness of 0.2–1 mm, the rubber film having a surface area larger than a surface area of the molded article.

5,828,943

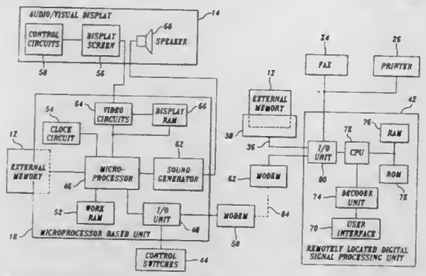
MODULAR MICROPROCESSOR-BASED DIAGNOSTIC MEASUREMENT APPARATUS AND METHOD FOR PSYCHOLOGICAL CONDITIONS

Stephen James Brown, Palo Alto, Calif., assignor to Health Hero Network, Inc., Mt. View, Calif.

Continuation of Ser. No. 682,385, Jul. 17, 1996, abandoned, which is a continuation of Ser. No. 479,570, Jun. 7, 1995, abandoned, which is a continuation of Ser. No. 233,674, Apr. 26, 1994, abandoned. This application Apr. 16, 1997, Ser. No. 843,495

Int. Cl.[6] G09B *7/00*

U.S. Cl. 434—258 **49 Claims**



48. A method of assessing a psychological condition of a human patient, said method comprising:

(a) displaying images and presenting audible signals to the patient on an audiovisual display;

(b) providing a programmable microprocessor-based unit comprising:

(i) a microprocessor,

(ii) a switch operable for supplying an electrical signal that is detectable by the microprocessor,

(iii) circuit means responsive to signals supplied by the microprocessor for generating a visual display on said audiovisual display,

(iv) a memory storing program instructions for performing the method of:

generating an animated sequence of images on said audiovisual display for provoking interactive operation of said switch;

causing operation of said microprocessor and said circuit means that changes said animated sequence in response to interactive operation of said switch by said human patient;

processing signals for executing a set of instructions that performs one or more analyses of the interactive operation of said switch in response to said animated sequence that is displayed on said audiovisual display;

including within said animated sequence stimuli for provoking operation of said switch,

displaying said stimuli initially in said animated sequence at a predetermined rate, and

varying said rate in response to said human patient's operation of said switch in response to said stimuli during use of the apparatus by said human patient.

5,828,944

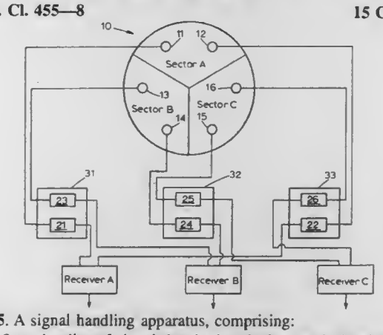
DIVERSITY RECEPTION SIGNAL PROCESSING SYSTEM

Moorthy K. Uppaluri, Mount Prospect, and Edward W. Laves, Oak Park, both of Ill., assignors to Illinois Superconductor Corporation, Mt. Prospect, Ill.

Filed Jan. 11, 1996, Ser. No. 585,151

Int. Cl.[6] H04B *3/36*

U.S. Cl. 455—8 **15 Claims**



15. A signal handling apparatus, comprising:

a first plurality of signal developing devices each developing a signal having information content therein wherein at least a portion of the information content of each of the signals is substantially the same as the information content of another one of the signals associated therewith; and

a second plurality of receivers each receiving one of the signals and the signal associated with the one signal; and

a third plurality of environmental maintenance units each providing a controlled environment for at least two of the signal developing devices wherein the at least two of the signal developing devices are connected to different receivers.

5,828,945

MERGING MULTI-SOURCE INFORMATION IN A TELEVISION SYSTEM

Brian Lee Klosterman, San Ramon, Calif., assignor to Star-Sight Telecast, Inc., Fremont, Calif.

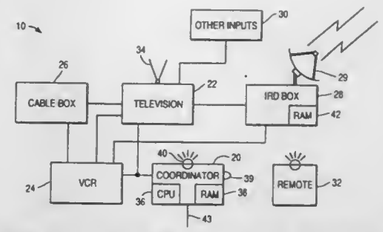
Continuation-in-part of Ser. No. 623,429, Mar. 28, 1996, which is a continuation of Ser. No. 424,861, Apr. 17, 1995, Pat. No. 5,550,576. This application Aug. 8, 1996, Ser. No. 694,369

Int. Cl.[6] H04N *7/10*

U.S. Cl. 455—4.2 **19 Claims**

1. A method of providing a consolidated channel guide information listing to a television system, the method comprising the steps of:

receiving a first individual channel guide information listing from a first source by a merging system, wherein said first source is selected from the group consisting of a cable, a broadcast source, a direct broadcast satellite system, a telephone line, and a fiber optic;



receiving a second individual channel guide information listing from a second source by said merging system, wherein said second source is selected from the group consisting of a keyboard and a recorded medium;

merging said first and second individual channel guide information listings to form said consolidated channel guide information listing, wherein said consolidated channel guide information listing includes at least one signal source identifier associated with each channel, each of said signal source identifiers identifying one of multiple signal providing sources; and

transmitting said consolidated channel guide information listing over at least one television signal source.

5,828,946

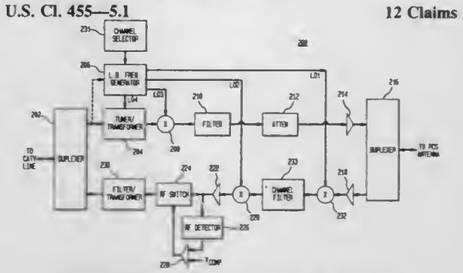
CATV-BASED WIRELESS COMMUNICATIONS SCHEME

Farid Feisullin, Chatham, and George P. Vella-Coleiro, Summit, both of N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Nov. 22, 1996, Ser. No. 755,508

Int. Cl.[6] H04N *7/173*

U.S. Cl. 455—5.1 **12 Claims**



1. A communications method, comprising the steps of:

(a) receiving communications signals corresponding to any frequency in a wideband mobile frequency range from one or more mobile units;

(b) converting each communications signal to an intermediate frequency (IF) to generate an IF signal;

(c) filtering each IF signal;

(d) converting each filtered IF signal to any frequency in a wideband cable frequency range to generate a cable signal;

(e) characterizing each cable signal;

(f) for each cable signal, combining the cable signal with any other cable signals, only if the characterization of the cable signal satisfies specified conditions; and

(g) transmitting the combined signals over a cable network.

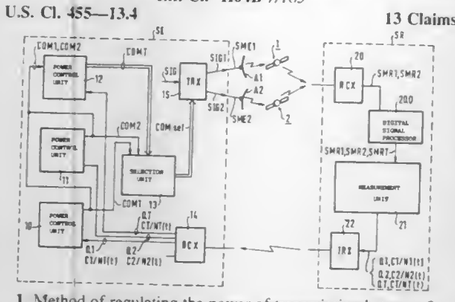
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5,828,947

METHOD OF POWER REGULATION IN A SATELLITE TELECOMMUNICATION NETWORK WITH AT LEAST TWO SATELLITES IN VIEW

Cyril Michel, Paris; Guillaume Calot, Versailles; Alain Feniou, Courbevoie, and Denis Rouffet, Boulogne Billancourt, all of France, assignors to Alcatel Espace, Nanterre, France

Filed Feb. 13, 1996, Ser. No. 600,769
Int. Cl.[6] H04B 7/185
U.S. Cl. 455—13.4 13 Claims



1. Method of regulating the power of transmission between first and second stations in a satellite telecommunication network, a call signal being selectively transmitted from said first station to said second station either on different propagation paths via N respective satellites, in the form of N combined first signals received in the form of N combined second signals by said second station, together forming a global received signal, or via one of said N satellites on the corresponding propagation path, in the form of a first isolated signal received in the form of a second isolated signal by said second station, N being an integer greater than or equal to 2,

said method comprising the following cyclic steps:

regulation, for each of said N channels, of an isolated transmit power level command signal such that when it commands the power at which said first station transmits said first isolated signal in each of said channels the quality level of the corresponding isolated second signal received by said second station is equal to a reference quality level, and

regulation, for all of said N channels, of N combined transmit power level command signals such that when they command the levels at which said first station respectively transmits said N combined first signals on said N channels the quality level of the global received signal formed from said N combined second signals is equal to said reference quality level, and

where the isolated command signal having the minimal level is such that this minimal level is also less than a maximal tolerated isolated command level, selection of said minimal level isolated command signal to command the power with which said first station transmits said isolated first signal in said corresponding channel,

otherwise, selection of said N combined command signals to command the power with which said first station transmits the respective combined first signals on said N channels.

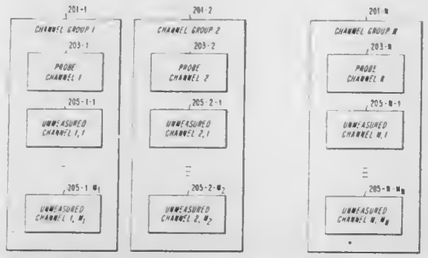
5,828,948

DYNAMIC ALLOCATION OF CHANNELS IN A CELLULAR TELEPHONE SYSTEM

Knut Magnus Almgren, Sollentuna, and Yngve Kenneth Wallstedt, Solna, both of Sweden, assignors to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

Filed Apr. 7, 1995, Ser. No. 418,684
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—34.1 18 Claims

1. In a cellular communication system comprising a plurality of cells and a plurality of channels, the plurality of channels comprising a plurality of probe channels for which interference can be measured in both uplink and downlink directions and a plurality of



unmeasured channels for which interference measurements are not made in both uplink and downlink directions, a method of allocating the plurality of channels, comprising the steps of:

organizing the plurality of channels into a plurality of channel groups, wherein each channel group comprises at least one probe channel, and wherein at least one of the channel groups further comprises at least one unmeasured channel; and

for each one of the cells, performing an allocation routine comprising the steps of:

monitoring at least one of the channel groups by making and collecting uplink and downlink interference measurements on said at least one probe channel of said at least one of the channel groups over a predetermined time period;

analyzing the collected uplink and downlink interference measurements; and

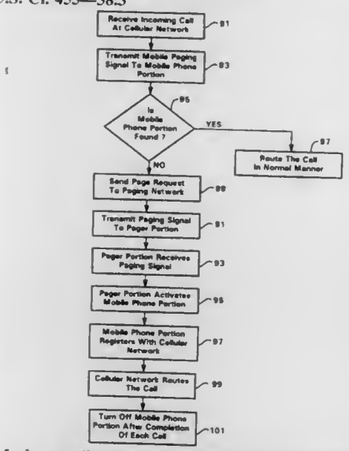
allocating a selected one of the monitored channel groups to said one cell in dependence on the analyzed uplink and downlink interference measurements.

5,828,949

RADIO TELECOMMUNICATIONS NETWORK AND METHOD OF SUPPORTING OPERATION OF A COMBINED MOBILE TELEPHONE AND PAGER

Andrew Silver, St. Luc, and Donald Joong, Montreal, both of Canada, assignors to Telefonaktiebolaget LM Ericsson (publ), Stockholm, Sweden

Continuation-in-part of Ser. No. 579,005, Dec. 27, 1995. This application Jul. 10, 1996, Ser. No. 677,876
Int. Cl.[6] H04Q 7/38
U.S. Cl. 455—38.3 8 Claims



1. In a radio telecommunications network having a cellular network and a paging network, a method of delivering a telephone call to a mobile station having a telephone portion, a pager portion, and a relay switch between said telephone portion and said pager portion, said method comprising the steps of:

recording in a home location register (HLR) associated with said mobile station, data indicating that said mobile station is capable of receiving standard paging messages from said paging network;

receiving said telephone call in said cellular network;

determining whether said mobile station is inactive;

determining from said data in said HLR whether said mobile station is capable of receiving standard paging messages, upon determining that said mobile station is inactive;

requesting said paging network to page said pager portion of said mobile station by sending a page request on a datalink from said cellular network to said paging network, upon determining that said mobile station is capable of receiving standard paging messages;

receiving, in said pager portion, said page from said paging network;

activating said telephone portion through said relay switch in response to receiving said page in said pager portion; and

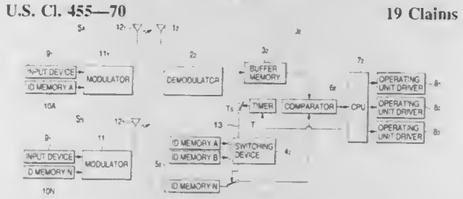
routing said call to said mobile station.

5,828,950

RECEIVING APPARATUS

Tetsuro Uchida, Kanagawa, Japan, assignor to Mitsumi Electric Co. Ltd., Tokyo, Japan

Filed Jul. 23, 1996, Ser. No. 681,356
Claims priority, application Japan, Jul. 28, 1995, 7-212460
Int. Cl.[6] H04B 1/00;7/00
U.S. Cl. 455—70 19 Claims



1. A receiving apparatus for receiving a plurality of command signals from a plurality of transmitters, said command signals including received ID numbers, said received ID numbers each being uniquely associated with a corresponding one of said transmitters, said apparatus comprising:

an ID number memory unit for storing a plurality of stored ID numbers;

a buffer memory, operatively connected to said ID memory unit, for temporarily storing a command signal of said command signals received from one of the transmitters;

a comparator, connected to said ID number memory unit and said buffer memory, for comparing a received ID number of said received ID numbers received from said transmitter with said stored ID numbers in said ID number memory unit and outputting a match signal when one of said stored ID numbers matches said received ID number;

a central processing unit connected to said buffer memory, wherein said command signal is sent from said buffer memory to said central processing unit when said comparator outputs said match signal; and

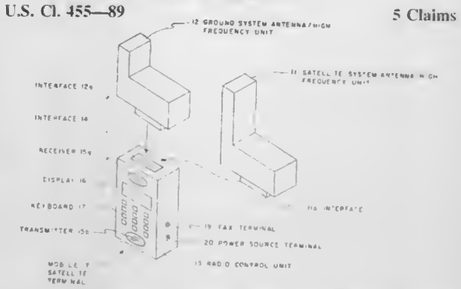
a timer, connected to said ID number memory unit, for inhibiting said comparator from referring to said ID number memory unit for a predetermined period of time when said match signal is output from said comparator, wherein said predetermined period of time is greater than a time for executing said command signal.

5,828,951

MOBILE SATELLITE TERMINAL EQUIPMENT

Goro Suemitsu, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 25, 1995, Ser. No. 519,541
Claims priority, application Japan, Aug. 29, 1994, 6-203170; Aug. 29, 1994, 6-203181
Int. Cl.[6] H04B 1/40
U.S. Cl. 455—89 5 Claims



1. A mobile satellite terminal equipment accessible to both a mobile satellite communication system and a mobile ground communication system, comprising:

a satellite system antenna/high frequency unit including a satellite system antenna for the mobile satellite communication system and a satellite system high frequency circuit connected to said satellite system antenna and adapted to convert a receiving signal into an intermediate frequency signal and outputting it to a first interface and to convert the intermediate frequency signal input from said first interface into a satellite system high frequency signal;

a ground system antenna/high frequency unit including a ground system antenna for the mobile ground communication system and a ground system high frequency circuit connected to said ground system antenna and adapted to convert a receiving signal into an intermediate frequency signal and outputting it to a second interface and to convert the intermediate frequency signal input from said second interface into a ground system high frequency signal; and

a radio control unit housed in a casing, said radio control unit including at least a radio control interface, a key board and a telephone set provided externally of said casing and a circuit portion provided inside of said casing for demodulating a receiving input intermediate frequency signal input through said radio control interface according to a demodulation system of an assigned communication system, modulating a transmission signal according to a modulation system of an assigned communication system, converting the modulated transmission signal into an intermediate frequency signal and outputting the intermediate frequency signal to said radio control interface, wherein, in use, only one of said first and second interfaces is connected to said radio control interface.

5,828,952

SYSTEM AND METHOD FOR EXECUTING SIGNALLING CUT-THROUGH

Steven Paul Sawyer, Fountain Hills, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

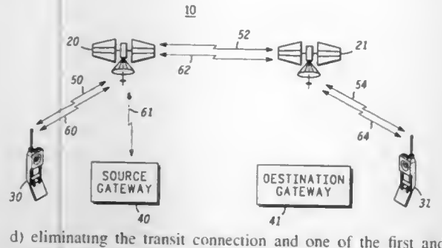
Filed Dec. 26, 1995, Ser. No. 578,256
Int. Cl.[6] H04Q 7/36
U.S. Cl. 455—427 14 Claims

1. A method for eliminating signalling connections in a network, comprising the steps of:

a) establishing a first local connection, a second local connection and a transit connection;

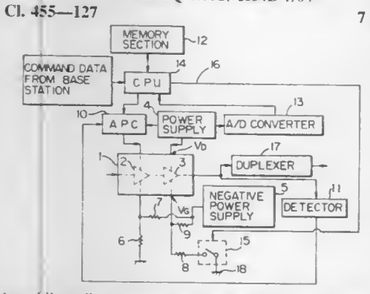
b) selecting a gateway to handle signalling resources;

c) establishing a third local connection with the selected gateway; and



d) eliminating the transit connection and one of the first and second local connections.

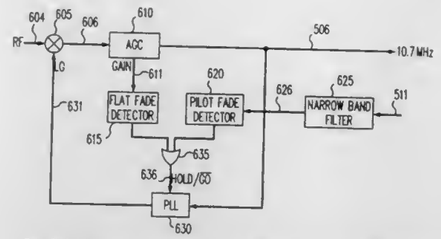
5,828,953
MOBILE RADIO COMMUNICATION APPARATUS ADAPTABLE TO POWER SUPPLY VOLTAGE CHANGE
Kouichi Kawase, Hyogo-ken, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Continuation of Ser. No. 366,043, Dec. 29, 1994, abandoned. This application May 22, 1997, Ser. No. 861,520
Claims priority, application Japan, Jan. 27, 1994, 6-007774
Int. Cl.[6] H01Q 11/12; H04B 1/04
U.S. Cl. 455—127 **7 Claims**



1. A mobile radio communication apparatus comprising:
a power supply;
a transmission amplifier provided with a driving voltage from said power supply for providing a transmission output;
a memory storing reference data for evaluating the driving voltage from said power supply and control data for controlling the driving range of said transmission amplifier;
a controller comparing voltage data based on the driving voltage detected from said power supply with the reference data stored in said memory and reading the corresponding control data out of said memory in accordance with the comparison; and
a driving range control means for receiving the read out control data and controlling the driving range of said transmission amplifier in accordance with the read out control data so as to maintain a constant amplifier driving range when said driving voltage from said power supply decreases.

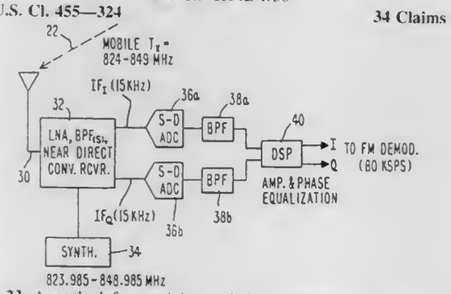
5,828,954
TRANSMISSION SYSTEM FOR DIGITAL AUDIO BROADCASTING
Jin-Der Wang, Ocean, N.J., assignor to Lucent Technologies Inc., Murray Hill, N.J.
Filed Apr. 4, 1996, Ser. No. 628,117
Int. Cl.[6] H04B 1/06
U.S. Cl. 455—260 **3 Claims**

1. Apparatus for use in a communications receiver, the apparatus comprising:
means for receiving a communications signal including at least one carrier frequency;



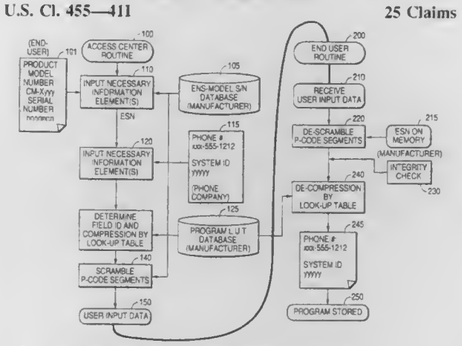
a flat fade detector that provides a flat fade signal representative of when the received communications signal is affected by a flat fade;
a frequency fade detector that provides a frequency fade signal representative of when the received communications signal is affected by a frequency fade; and
circuitry responsive to either the flat fade signal or the frequency fade signal for inhibiting a phase lock loop from tracking the phase of the at least one carrier frequency wherein the circuitry inhibits the phase lock loop by comparing a threshold value to a value calculated as a function of different weighting coefficient values that are associated with the flat fade signal and the frequency fade signal.

5,828,955
NEAR DIRECT CONVERSION RECEIVER AND METHOD FOR EQUALIZING AMPLITUDE AND PHASE THEREIN
Joseph T. Lipowski, Boxborough, and Dennis Michael Cleary, Clinton, both of Mass., assignors to Rockwell Semiconductor Systems, Inc., Newport Beach, Calif.
Filed Aug. 30, 1995, Ser. No. 521,568
Int. Cl.[6] H04B 1/30
U.S. Cl. 455—324 **34 Claims**



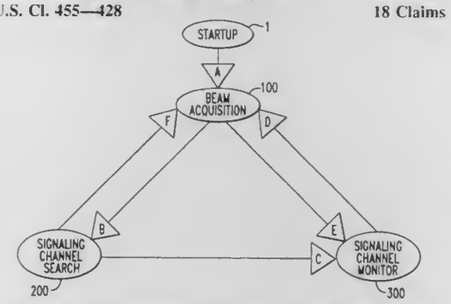
23. A method for receiving and downconverting a radio frequency (RF) signal, comprising the steps of:
(a) receiving said RF signal;
(b) downconverting said RF signal to an in-phase intermediate frequency (IF) signal (IF_I) and a quadrature-phase IF signal (IF_Q);
(c) digitizing said IF signals (IF_I, I_Q);
(d) correcting said IF signals so that they are substantially equal in magnitude and substantially 90° out of phase by:
(1) adjusting the magnitude of at least one of said IF signals; and
(2) providing a sum signal representative of a sum of a difference, if any, in the magnitudes of said IF signals, and employing said sum signal as a feedback signal in said adjusting step; wherein said adjusting step adjusts the magnitude of said at least one of said IF signals so as to minimize any difference in the magnitudes of said IF signals;
(e) downconverting said IF signals to baseband signals (I, Q), wherein said RF signal is downconverted to an intermediate frequency of approximately one-half the channel spacing of the RF signal.

5,828,956
PROGRAMMABLE CELLULAR TELEPHONE AND SYSTEM
Kazuhiko Shirai, San Diego, Calif., assignor to Sony Electronics, Inc., Park Ridge, N.J.
Continuation-in-part of Ser. No. 366,502, Dec. 30, 1994. This application Jun. 7, 1995, Ser. No. 474,164
Int. Cl.[6] H04M 11/00
U.S. Cl. 455—411 **25 Claims**



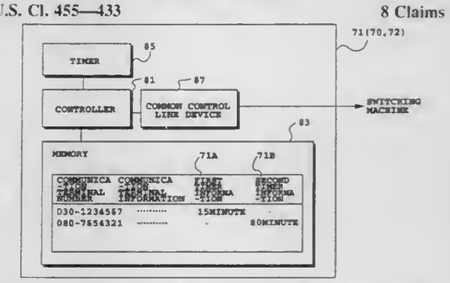
1. A code module for a cellular phone, comprising:
input means for receiving input signals from a keypad on said cellular phone, wherein said input signals are generated by a sequence of keypad inputs encoding parameter information for activation of said cellular phone;
a processor means for processing said input signals to obtain said parameter information to cause said cellular phone to be activated on a phone network based on said parameter information; and
means for randomly generating a password when said cellular phone is activated and for preventing said cellular phone from being reprogrammed until said password is input into said input means.

5,828,957
SATELLITE BEAM ACQUISITION/CROSSOVER FOR A MOBILE TERMINAL
Brian W. Kroeger, 12813 Amberwoods Way, Sykesville, Md. 21784; Gregory W. Seker, 5310 Cedar La. #208, Columbia, Md. 21044; Paul J. Peyla, 6528 Meadowfield Ct., Elkridge, Md. 21227; George N. Eberl, 10106 Darlington Rd., Columbia, Md. 21044, and Denise M. Cammarata, 12087 Long Lake Dr., Owings Mills, Md. 21117
Filed Mar. 14, 1996, Ser. No. 615,937
Int. Cl.[6] H04Q 7/00
U.S. Cl. 455—428 **18 Claims**



1. A method of satellite beam acquisition for a mobile terminal in a satellite communications system having a plurality of satellites which each transmit and receive signals over a plurality of satellite beams, each of the satellite beams including a pilot channel, a plurality of signalling channels carrying bulletin board information and a plurality of communication channels, the method of satellite beam acquisition including the steps of:
(a) searching for and acquiring a strongest pilot channel of the satellite beams received by the mobile terminal;
(b) acquiring a signalling channel of the satellite beam corresponding to the acquired pilot channel of said step (a); and
(c) monitoring reception of the acquired signalling channel of said step (b);
wherein said step (a) comprises:
(a1) searching for and acquiring an operational pilot channel which is the pilot channel of an acquired signalling channel most recently monitored by the mobile terminal;
(a2) determining a signal to noise ratio of the operational pilot channel of said step (a1); and
(a3) establishing the operational pilot channel as the acquired pilot channel if the determined signal to noise ratio of the operational pilot channel is greater than a first predetermined signal to noise ratio (SNR) threshold.

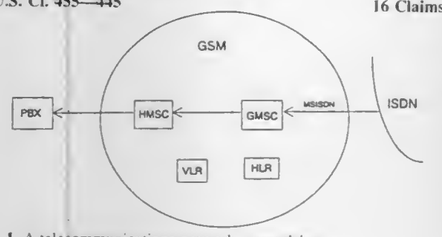
5,828,958
MOBILE COMMUNICATIONS SYSTEM AND COMMUNICATIONS NETWORK
So Ishida, Tama; Hiroshi Nakamura, Tokyo, and Yasuyuki Uchiyama, Choufu, all of Japan, assignors to NTT Mobile Communications Network, Inc., Japan
PCT No. PCT/JP96/00241, § 371 Date Sep. 27, 1996, § 102(e) Date Sep. 27, 1996, PCT Pub. No. WO96/25014, PCT Pub. Date Aug. 15, 1996
PCT Filed Feb. 6, 1996, Ser. No. 716,182
Claims priority, application Japan, Feb. 7, 1995, 7/19419
Int. Cl.[6] H04B 7/24
U.S. Cl. 455—433 **8 Claims**



1. A mobile communications system including a plurality of communications networks, and a communication terminal which moves in and between one or more visiting areas in said communications networks, and carries out a location registration in a current visiting area, said mobile communications system comprising:
a location register located in each of said communications networks for storing information about said communication terminal and a visiting area in which said communication terminal is present, when said communication terminal enters the communications network in which said location register is located from another communications network, and carries out said location registration; and
a visitor register located in each of said visiting areas for receiving information about said communication terminal sent from said location register in said communications network, and for storing said information about said communication terminal, when said communication terminal moves to the visiting area in which said visitor register is located from another visiting area in the same communications network, wherein said visitor register further comprises:
first timer means for counting a time period after having been reset when a call connection occurs to said communication terminal; and
means for registering in said location register a number of said visitor register of said visiting area in which said

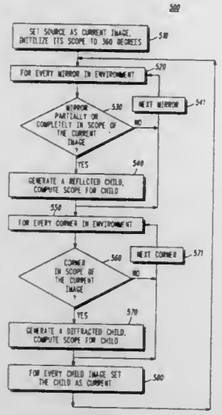
communication terminal is present, when said communication terminal carries out a location registration after said first timer has counted a predetermined first time period.

5,828,959
TELECOMMUNICATIONS NETWORK
Lauri Söderbacka, Espoo, Finland, assignor to Nokia Telecommunications Oy, Espoo, Finland
PCT No. PCT/FI94/00437, § 371 Date Feb. 15, 1996, § 102(e) Date Feb. 15, 1996, PCT Pub. No. WO95/09514, PCT Pub. Date Apr. 6, 1995
PCT Filed Sep. 28, 1994, Ser. No. 596,212
Claims priority, application Finland, Sep. 28, 1993, 934259
Int. Cl.[6] H04Q *7/24*
U.S. Cl. 455—445 **16 Claims**



1. A telecommunications network, comprising:
exchanges,
subscriber stations, at least part of them being capable of moving in the network
at least one subscriber data base for maintaining location information of subscribers,
a first type of subscriber numbers requiring a routing data interrogation to said at least one subscriber data base for routing an incoming call,
a second type of subscriber numbers directly indicating the point of the network to which a call will be routed, without an interrogation to said at least one subscriber data base,
the exchanges of the telecommunications network being arranged to analyze the subscriber number related to the incoming call and, on the basis of the analysis, either route the call directly to the point of the network indicated by the subscriber number when the analyzed subscriber number is said second type of subscriber number, or make said routing data interrogation to said at least one data base when said subscriber number is said first type of subscriber number,
the subscribers being classified on the basis of mobility into subscribers having a high mobility and subscribers having a low mobility,
the subscribers having a high mobility having said first type of subscriber numbers not directly containing any information of the actual location of a subscriber having a number and not indicating any predetermined access point in the network whereby, in case of incoming calls, the first exchange of the telecommunications network processing the call is arranged to make an interrogation to a data base of the called subscriber for routing information and to route the call on the basis of the received routing information to an exchange serving the current access point of the subscriber, and
the subscribers having a low mobility have said second type of subscriber numbers indicating fixedly a predetermined access point of the network, whereby, in case of calls to a subscriber having said second type of a subscriber number, the first exchange processing the call is arranged not to make any data base interrogation, but to route the call on the basis of the information included in the subscriber number directly to an exchange of the telecommunications network serving the access point indicated by the subscriber number.

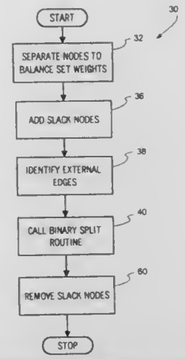
5,828,960
METHOD FOR WIRELESS COMMUNICATION SYSTEM PLANNING
Yuqiang Tang, Plano, and John Douglas Reed, Arlington, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Mar. 31, 1995, Ser. No. 415,051
Int. Cl.[6] H04B *17/00;* **H04Q** *7/00;9/00*
U.S. Cl. 455—446 **18 Claims**



1. A computer implemented method of determining signal propagation characteristics for a known environment to determine placement of a receiver comprising:
(a) determining each of plural reflective surfaces and each of plural diffractive surfaces of the known environment;
(b) determining a first image tree for a first transmitter source location within the known environment by:
(i) determining first order images of the first image tree, for each of the plural reflective surfaces and each of the plural diffractive surfaces, the first order image of the plural reflective surfaces or the plural diffractive surfaces having a limited scope;
(ii) determining second and higher order images of the first image tree by repeating step (b)(i), for a predetermined number of reflections and diffractions, such that for each of the plural reflective surfaces and plural diffractive surfaces, respectively, a next order image is determined when the plural reflective surfaces or the plural diffractive surfaces have a scope within the limited scope of the prior order image;
(c) selecting a first receiver location and back-tracing from the first receiver location using the first image tree to determine each one of plural propagation paths from the first receiver location to the first transmitter source location;
(d) determining a signal quality change for said each one of plural propagation paths; and
(e) determining a received signal quality measure at the first receiver location based on the signal quality change for said each one of plural propagation paths for use in the placement of the receiver.

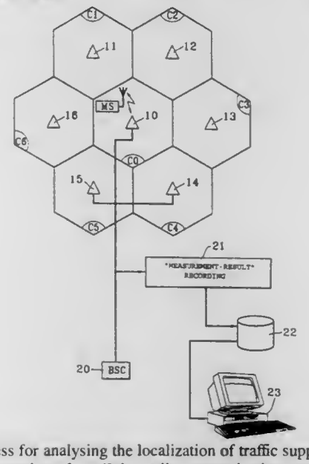
5,828,961
SYSTEM AND METHOD FOR PARTITIONING A CELLULAR ENVIRONMENT
Sairam Subramamian, Garland, and Seshagiri Rao Madhavapeddy, Richardson, both of Tex., assignors to Northern Telecom Limited, Montreal, Canada
Filed Apr. 21, 1997, Ser. No. 837,621
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 455—446 **8 Claims**

1. A method for partitioning a cellular telephone system into a plurality of sets, each set having a set weight and an edge weight,



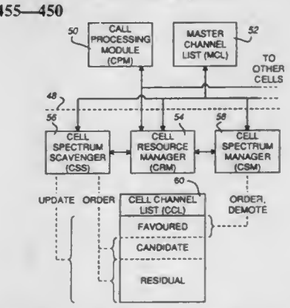
so that the sum of the set weight and edge weight for each set is balanced, the method comprising the steps of:
a) modeling subsets of the cellular telephone system as nodes, each node including a node weight and an edge weight;
b) distributing the nodes into the sets so that each set has approximately the same set weight;
c) providing a slack node for at least one of the sets so that, with the addition of the slack node to the at least one of the sets, all the sets have exactly the same set weight;
d) performing a plurality of binary split operations of the nodes between the plurality of sets, for each binary split tracking a gain in response to that binary split;
e) determining a maximum gain from the gains tracked for each binary split operation; and
f) swapping the nodes in accordance with the binary split operations that were performed to achieve the maximum gain.

5,828,962
PROCESS FOR ANALYSING TRAFFIC LOCALIZATION WITHIN A CELLULAR RADIOCOMMUNICATION NETWORK
Olivier Ho-A-Chuck, Paris, France, assignor to France Telecom, France
Filed Apr. 17, 1997, Ser. No. 842,815
Claims priority, application France, Apr. 18, 1996, 96 04865
Int. Cl.[6] H04B *17/00*
U.S. Cl. 455—446 **4 Claims**



1. Process for analysing the localization of traffic supported by a given base station of a cellular radiocommunication network, each mobile station served by said given base station periodically transmitting to said given base station measurement samples each including values of a radio parameter measured by said mobile station relative to said given base station and to several neighbouring base stations identified among a predetermined set of base stations neighbouring said given base station, the process including the steps of:
gathering measurement samples received by said given base station;
processing the gathered measurement samples in such a way as to produce a processed sample of p data groups from each measurement sample emanating from a mobile station, each data group including an identifier of one of the neighbouring base stations of said predetermined set and a measurement datum dependent on a value of the radio parameter measured by the mobile station relative to the identified neighbouring base station, the data groups of each processed sample being ordered such that a group of rank i ($1 \leqq i \leqq p$) corresponds to the i-th largest value of the radio parameter measured relative to the neighbouring base stations of the set;
distributing the processed samples into categories, each category being associated, for each integer i lying between 1 and p, with a pair of rank i constituted by an identifier of a base station of said predetermined set and by an interval of variation, a processed sample being assigned to a category when, for each integer i lying between 1 and p, on the one hand the base station identifier of the data group of rank i of said processed sample coincides with the base station identifier of the pair of rank i associated with said category, and on the other hand the measurement datum of the data group of rank i of said processed sample falls within the interval of variation of the pair of rank i associated with said category;
associating respective geographical zones with some at least of the categories on the basis of mapping data of the radio parameter; and
estimating traffic densities within said geographical zones on the basis of the numbers of samples assigned to the associated categories.

5,828,963
SELECTING RADIO FREQUENCY CHANNELS FOR REUSE IN MICRO-CELLULAR RADIO COMMUNICATIONS SYSTEMS
Sudheer A. Grandhi, Dallas; Seshagiri R. Madhavapeddy, Richardson; Kalyan Basu, Plano; Steven J. Willhoff, Richardson, and Hong D. Staley, Dallas, all of Tex., assignors to Northern Telecom Limited, Montreal, Canada
Filed Mar. 24, 1995, Ser. No. 409,802
Int. Cl.[6] H04Q *7/36*
U.S. Cl. 455—450 **19 Claims**



13. A method of selecting radio frequency channels, for use in a plurality of microcells of a microcellular radio communications system, from a set of frequency channels, comprising the steps of, for each microcell;
performing signal measurements for frequency channels in the set;
determining a favoured set of frequency channels for use in the microcell in dependence upon signal measurements per-

formed during operation of the microsystem for each frequency channel only when the frequency channel is not in use in any microcell of the microsystem; and

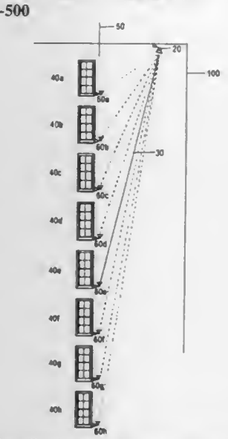
selecting a frequency channel for use in the microcell from the favoured set of frequency channels in dependence upon signal measurements performed during operation of the microsystem regardless of whether or not the frequency channel is in current use in any microcell of the microsystem.

5,828,964

APPARATUS AND METHOD FOR POINT-TO-POINT MULTIPOINT RADIO TRANSMISSION

Jack Needle, Dix Hill, N.Y., assignor to Bell Atlantic Science & Technology Inc

Filed Dec. 8, 1994, Ser. No. 351,986
Int. Cl.[6] H04B *1/00*
U.S. Cl. 455—500 **13 Claims**



1. A system for effecting broadcast radio transmission between a transmitter and a plurality of receivers, the system comprising

the transmitter situated in line of sight relationship to the receivers,

the transmitter further comprising a directional antenna with the beam focused on the most distant one of the receivers, and

the receivers arranged in a linear alignment angular to the beam such that each successively closer receiver to the transmitter has a successively greater angular divergence from the beam, allowing for signal reception utilizing the beam.

5,828,965

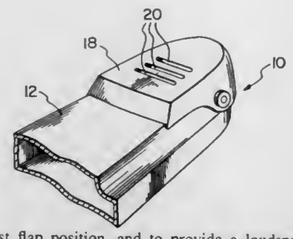
WIRELESS TELEPHONE HANDSET

Michael Brown; Laura A. Mahan; Andre J. Van Schyndel, all of Kanata; Hugh M. Collins; Frederic Simard, both of Nepean, and Christopher M. Forrester, Ottawa, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 26, 1996, Ser. No. 720,277
Int. Cl.[6] H04Q *7/32*
U.S. Cl. 455—550 **4 Claims**

1. A portable wireless telephone handset comprising:

a housing carrying speaker means, a flap mounted upon the housing and moveable between a first position close to the speaker means for location of the flap adjacent to an ear of the user in use of the handset, and a second position in which the flap is further from the speaker means, to detract from use of the handset close to the ear, and switch means controlled by the position of the flap, to cause operation of the speaker means in a personal low volume sound mode with the flap in the first flap position, and to provide a loudspeaker sound mode of the speaker means with the flap in the second position.

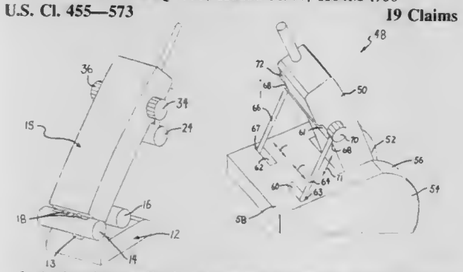


5,828,966

UNIVERSAL CHARGING CRADLE FOR CORDLESS TELEPHONES

Russell Davis, 391 Ralph St., San Francisco, Calif. 94112; Paul Eric Peterson, 1 Chaves St., San Francisco, Calif. 94127, and William Leung, 138 Brunswick St., San Francisco, Calif. 94112

Filed May 23, 1996, Ser. No. 652,820
Int. Cl.[6] H04Q *7/00;* **H01M** *10/44;* **H04M** *1/00*
U.S. Cl. 455—573 **19 Claims**



1. A charging cradle for a cordless telephone having external charging elements comprising:

a base, said base having a front section and a rear section, said base including an electrical charging unit,

a first support element, said first support element attached to said front section, said first support section having a first pair of electrical contacts, said first pair of electrical elements in communication with said electrical charging unit,

a second support element, said second support element attached to said rear section,

an elongated element, said elongated element attached to said second support element, said elongated element further having a distal end,

a third support element, said third support element attached to said distal end,

wherein the cordless telephone rests in said cradle formed by said first support element, said second support element and said third support element, with the cordless telephone's charging elements in contact with said first pair of electrical contacts, permitting the cordless telephone to be recharged.

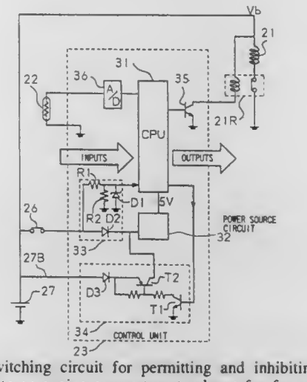
5,828,967

CONTROL DEVICE FOR ENGINE COMPARTMENT COOLING

Yoshiaki Ueda, Fuji, Japan, assignor to Jatco Corporation, Japan

Filed Dec. 15, 1995, Ser. No. 574,431
Claims priority, application Japan, Dec. 28, 1994, 6-339054
Int. Cl.[6] F01P *7/12;11/10*
U.S. Cl. 701—1 **1 Claim**

1. A control device for an automobile comprising:



a first switching circuit for permitting and inhibiting power supply to an engine compartment exhaust fan for exhausting air from an engine compartment;

a processing block for controlling ON and OFF states of the first switching circuit;

a power source circuit for producing a source voltage to the processing block from electric power of an on-vehicle battery supplied through a key switch;

a temperature sensor for detecting an air temperature level in the engine compartment;

a power source sensor for generating an output corresponding to one of ON and OFF states of the key switch; and

a second switching circuit provided between the on-vehicle battery and the power source circuit, for permitting power supply through a by-pass line to the power source circuit in response to a command from the processing block;

wherein said processing block includes first means for turning on the second switching circuit before the key switch is turned off, second means for turning on and off the first switching circuit on the basis of an output of the air temperature sensor, third means for determining the ON and OFF states of the key switch on the basis of an output of the power source sensor, and fourth means for turning off the second switching circuit after the engine compartment exhaust fan is kept controlled for a predetermined time period when the key switch is determined to be in the OFF state; and

wherein said fourth means comprises means for starting a cooling timer when the key switch is determined in the OFF state, means for turning off the second switching circuit if control of the engine compartment exhaust fan to cool the engine compartment to a desired temperature is completed upon timeout of the cooling timer, and for starting an extended timer if control of the engine compartment exhaust fan to cool the engine compartment to the desired temperature has not been completed, means for turning off the second switching circuit immediately after the control of the exhaust fan to cool the engine compartment to the desired temperature is completed during counting of the extended timer, and means for turning off the second switching circuit upon timeout of the extended timer even if the control of the engine compartment exhaust fan to cool the engine compartment to the desired temperature has not been completed.

5,828,968

METHOD OF CONTROLLING AUTOMATICALLY DRIVEN MOTOR VEHICLE

Akira Ilboshi, and Takaaki Nagai, both of Wako, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

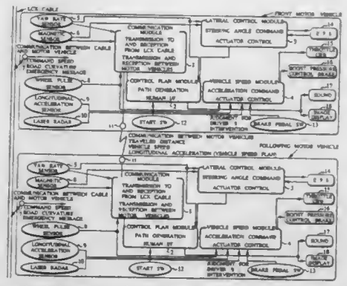
Filed Oct. 29, 1996, Ser. No. 739,406
Claims priority, application Japan, Oct. 31, 1995, 7-283981
Int. Cl.[6] G06F *165/00*
U.S. Cl. 701—23 **3 Claims**

1. A method of controlling an automatically driven motor vehicle to travel automatically along a predetermined running path on a road while successively detecting magnetic sources positioned along the running path with a sensor on the motor vehicle, comprising the steps of:

recognizing a position of the motor vehicle on the running path based on detection of the magnetic sources with the magnetic sensor while the motor vehicle is running along the running path;

estimating a present position of the motor vehicle on the running path based on map information of said running path, which is stored on the motor vehicle, and positional information of the motor vehicle produced upon the detection of the magnetic sources before the sensor becomes unable to detect the magnetic sources, when the motor vehicle deviates from the running path and the sensor is unable to detect the magnetic sources; and

correcting a steering control quantity for the motor vehicle based on a positional relationship between said present position and said running path, for thereby automatically returning the motor vehicle to the running path.

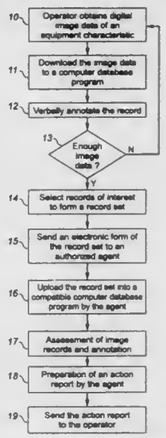


5,828,969

PROCESS FOR USE WITH AIRCRAFT REPAIRS

Lyle James Chamney, Calgary, and Garry Steve Lynchuk, Saskatoon, both of Canada, assignors to Canadian Digital Photo/Graphics Inc., Calgary, Canada

Filed Jun. 22, 1995, Ser. No. 493,471
Int. Cl.[6] G06F *19/00*
U.S. Cl. 701—29 **6 Claims**



1. A process for use by an aircraft operator to obtain repair procedures instructions from an authorized agent, comprising:

(a) obtaining visual data of an aircraft component to be repaired using digital imaging means;

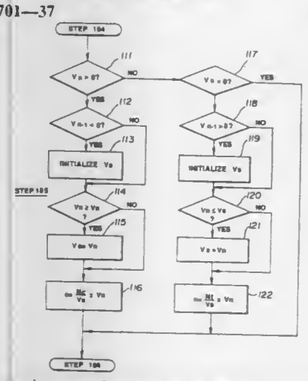
(b) obtaining descriptive data describing the aircraft component and rendering the obtained descriptive data digitally;
(c) inputting the obtained digital visual data into a computer database to produce one or more database records;
(d) annotating the obtained digital descriptive data to the database record or records in the computer database which were produced for the component, for describing and uniquely identifying the aircraft component;
(e) electronically transmitting the database record or record for inputting into a compatible database located at a remote facility of the authorized agent and producing a visual representation of the record's or records' digital visual and digital descriptive data, the recipient at the remote facility preparing instructions for the proper Implementation of a repair in accordance with relevant regulations;
(f) returning the repair instructions back to the aircraft operator; and
(g) conducting the repair to the aircraft component in accordance with the returned repair instructions.

5,828,970

SUSPENSION CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Makoto Kimura; Toru Takahashi, and Hiroyuki Shimizu, all of Kanagawa Prefecture, Japan, assignors to Atsugi Unisia Corporation, Japan

Filed Aug. 4, 1992, Ser. No. 924,630
Claims priority, application Japan, Aug. 6, 1991, 3-196833; Feb. 4, 1992, 4-019088
Int. Cl.[6] B60G *17/015*
U.S. Cl. 701—37 **12 Claims**



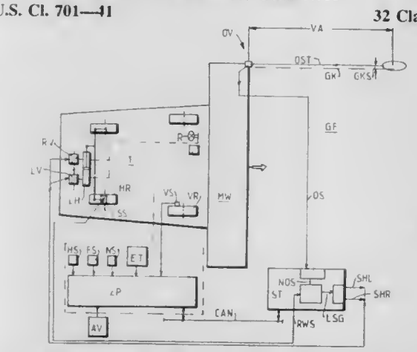
1. A suspension control system for an automotive vehicle, comprising:
a) at least one shock absorber, interposed between a vehicle body and a road wheel, having a piston member and a damping force coefficient varying means operatively changing its position in response to a control signal so that a damping force coefficient of at least one or both extension and contraction stroke sides of the piston member is set to a target damping coefficient effecting position according to its input control signal;
b) at least one sprung mass acceleration detecting means for detecting a vertical sprung mass acceleration and outputting a vertical sprung mass acceleration signal indicative thereof;
c) at least one sprung mass vertical velocity determining means comprising a digital type low pass filter type integrator, for integrating the vertical sprung mass acceleration signal to derive a vertical sprung mass velocity signal;
d) band pass filtering means for passing only a signal frequency component of either the vertical sprung mass acceleration signal or the vertical sprung mass velocity signal whose frequency falls in a predetermined frequency region having an inherent sprung mass resonance frequency as its center frequency;
e) setting means for calculating a threshold value for the vertical sprung mass velocity signal value;
f) determining means for determining whether the vertical sprung mass velocity signal value derived using said band-pass filtering means is below the threshold value; and
g) controlling means for outputting the control signal to the damping coefficient varying means according to a result of the determination of the determining means so as to control the damping coefficient to the target damping force coefficient.

5,828,971

AUTOMATIC STEERING DEVICE FOR AN ELECTRICALLY CONTROLLABLE HYDRAULIC STEERING SYSTEM, ESPECIALLY FOR AN AGRICULTURAL VEHICLE

Norbert Diekhans, Guetersloh; Ludger Autermann, Drensteinfurt; Stefan Hagedorn, Warendorf, and Jochen Huster, Harsewinkel, all of Germany, assignors to Claas KGaA, Harsewinkel, Germany

Filed Mar. 8, 1996, Ser. No. 612,531
Int. Cl.[6] A01B *69/00*; G06F *17/00*
U.S. Cl. 701—41 **32 Claims**



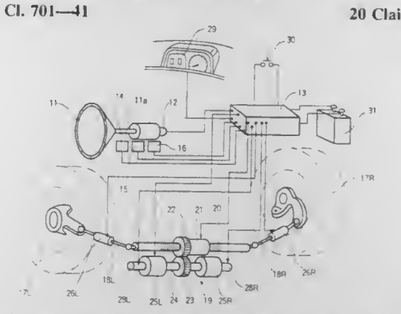
1. An automatic steering device for an electrically controllable hydraulic steering system of a steered vehicle having steered wheels (HR), said hydraulic steering system including means for controlling said steered wheels (HR) according to at least one electronic steering control signal (SHL,SHR), said automatic steering device comprising
at least one locating device (OV) including means for generating at least one locating signal (OS) and
a regulating device (ST) including means for receiving said at least one locating signal (OS), means for periodically digitizing the at least one locating signal (OS) to form an at least one digitized locating signal and means for producing said at least one electronic steering control signal (SHL,SHR) by a logic combination of said at least one digitized locating signal and a predetermined locating criterion to minimize a deviation of said at least one locating signal (OS) determined according to said predetermined locating criterion so that said at least one electronic steering control signal (SHL,SHR) increases in an approximately proportional manner in the vicinity of a null deviation from said predetermined locating criterion but increases progressively beyond said vicinity of said null deviation.

5,828,972

MOTOR VEHICLE STEERING SYSTEM WITH AUTOMATIC DISTURBANCE SUPPRESSION

Nobuyoshi Asanuma; Yutaka Nishi, and Takashi Nishimori, all of Tochigi, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1992, Ser. No. 950,081
Claims priority, application Japan, Sep. 27, 1991, 3-277023
Int. Cl.[6] B62D *5/04*
U.S. Cl. 701—41 **20 Claims**



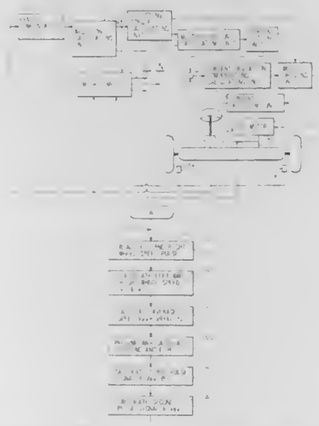
12. In a motor vehicle steering system having a steering handle movable by an operator of the vehicle for controlling steering actions of the vehicle, an improvement comprising:
means for determining a steering rate of said steering handle;
means for detecting a motor vehicle behavior induced by a disturbance applied to the motor vehicle; and
means for applying a force to said steering handle which urges the steering handle to move in a direction that will suppress the motor vehicle behavior, said force including a component serving to damp said steering rate, determined by said steering rate determining means, in a predetermined manner.

5,828,973

ELECTRIC POWER STEERING APPARATUS

Kanji Takeuchi, Kamagoori, and Takeshi Sawada, Chiryu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 15, 1996, Ser. No. 616,632
Claims priority, application Japan, Mar. 17, 1995, 7-058417; Mar. 20, 1995, 7-060285
Int. Cl.[6] B62D *5/04;6/10*
U.S. Cl. 701—41 **25 Claims**



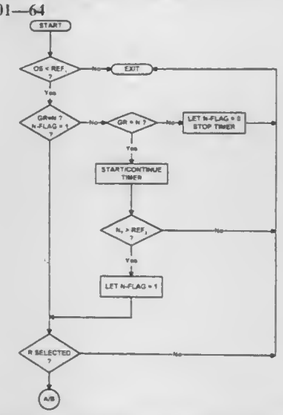
1. An electric power steering apparatus comprising:
a motor for generating assisting torque in response to a movement of a steering wheel of a vehicle;
steering torque detecting means for detecting steering torque of said steering wheel to output a steering torque signal, wherein the assisting torque generated by said motor is controlled based on said steering torque signal output from said steering torque detecting means;
steering angle calculating means for calculating a steering angle based on speeds of a left steered wheel and a right steered wheel of the vehicle;
recovery compensating means for calculating recovery compensating torque based on the steering angle calculated by said steering angle calculating means; and
means for applying said recovery compensating torque to said steering apparatus.

5,828,974

REVERSE ENGAGEMENT INTERLOCK CONTROL

Jeffrey Philip Hawarden, Rossendale; Michael Douglas Whitehead, Manchester; Paul Martin Fowler, Lymm; Robert Stanley Wheeler, Preston, and Anthony Stasik, Coppull, all of England, assignors to Eaton Corporation, Cleveland, Ohio

Continuation of Ser. No. 421,104, Apr. 13, 1995, abandoned. This application Sep. 26, 1997, Ser. No. 938,038
Claims priority, application United Kingdom, May 5, 1994, 9408883; Feb. 3, 1995, 9502207
Int. Cl.[6] G06G *7/70*
U.S. Cl. 701—64 **30 Claims**



1. A method of controlling engagement of a reverse ratio in an automated change-gear transmission system (**10**) comprising a fuel throttle-controlled engine (**14**), a multi-speed change-gear transmission (**12**) having a plurality of forward ratios and at least one reverse ratio, a manually operated shift selector for selecting forward, neutral and reverse modes of transmission operation (**1**), a central processing unit (**38**) for sensing operation of said manual shift selector and receiving input signals and for processing same according to predetermined logic rules to issue command output signals including command output signals for drivingly engaging said at least one reverse ratio to non-manually controlled operators including a transmission operator (**34**), said method comprising the steps of:
receiving a first input signal indicative of a time during which said shift selector has remained in the neutral selection position;
receiving a second input signal indicative of an operator selection of the reverse selection position; and
issuing said command output signals to drivingly engage said at least one reverse drive ratio if said first input signal indicates that said shift selector has remained in the neutral selection position for at least a reference period of time (N_7>REF_2), or preventing issuance of said command output signals to prevent engagement of said at least one reverse drive ratio if said

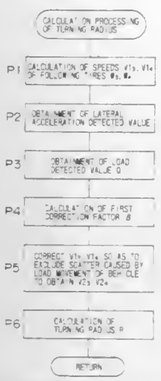
first input signal indicates that said shift selector has not remained in the neutral selection position for at least said reference period of time ($N_T \leqq REF_2$).

5,828,975

METHOD AND DEVICE FOR CALCULATING TURNING RADIUS OF VEHICLE TAKING LOAD MOVEMENT THEREOF INTO CONSIDERATION

Isao Isshiki, and Mikao Nakajima, both of Osaka, Japan, assignors to Sumitomo Rubber Industries, Ltd., and Sumitomo Electric Industries, Ltd., both of Hyogo, Japan

Filed Nov. 14, 1995, Ser. No. 557,322
Claims priority, application Japan, Nov. 21, 1994, 6-286928
Int. Cl.[6] G06F *7/70*; B60C *23/02*
U.S. Cl. 701—72 **54 Claims**



1. A vehicle turning radius calculating method for determining a turning radius of a vehicle having left and right tires, comprising:
detecting the respective rotational angular velocities of left and right tires;
detecting a lateral acceleration of the vehicle;
detecting the load of the vehicle; and
determining a turning radius of the vehicle, based on the detected rotational angular velocities, by taking into consideration a change in effective rolling radiuses of the tires due to a load movement of the vehicle, including
determining a correction factor based on the detected load of the vehicle, and
excluding an influence on the rotational angular velocities, of the change in effective rolling radiuses of the tires due to the load movement of the vehicle, using the determined correction factor and the detected lateral acceleration of the vehicle.

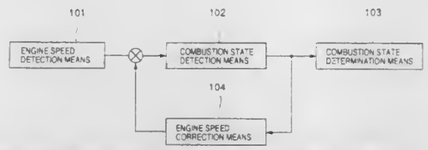
5,828,976

DETECTOR DEVICE FOR COMBUSTION STATE IN INTERNAL COMBUSTION ENGINE

Eisaku Fukuchi, Hitachi; Akihito Numata, Urizuramachi; Takanobu Ichihara, Hitachinaka, and Toshio Ishii, Mito, all of Japan, assignors to Hitachi, Ltd., Tokyo, and Hitachi Car Engineering Co., Ltd., Ibaraki-ken, both of Japan

Filed Aug. 28, 1996, Ser. No. 704,368
Claims priority, application Japan, Sep. 4, 1995, 7-226831
Int. Cl.[6] G01M *15/00*
U.S. Cl. 701—110 **22 Claims**

1. A detector device for detecting combustion state in an internal combustion engine by using a combustion state parameter calculated from a time signal for a time period during which a crank shaft rotates in a predetermined angle, comprising means for calculating correcting quantity for correcting said time signal by comparing a normal combustion value of the combustion state



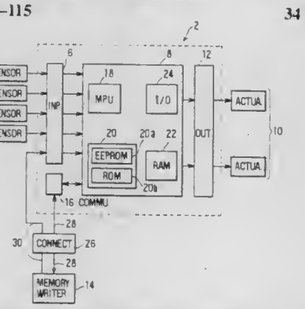
parameter representative of a non-misfire state with one of a predetermined value and a predetermined range, means for correcting said time signal based on said correction quantity, and means for calculating the combustion state parameter by using said corrected time signal.

5,828,977

PROGRAM/DATA OVERWRITING CONTROL AFTER MACHINE STOP

Shinnosuke Hayashi, Nukata-gun, and Hiroshi Shibata, Kariya, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 26, 1996, Ser. No. 686,699
Claims priority, application Japan, Jul. 31, 1995, 7-195519
Int. Cl.[6] F02O *41/00*
U.S. Cl. 701—115 **34 Claims**



1. A machine controller for controlling operation of a machine, said controller including a built-in computer program and control data stored in at least one memory device to control the operation of a computer, said machine controller comprising:
write command detecting means for detecting an external write command;
operating condition detecting means for detecting an operating condition of said machine predetermined to correspond to substantial inoperativeness of said machine; and
writing means for overwriting an externally supplied control program on said built-in program based on said external write command detected by said write command detecting means and said operating condition detected by said operating condition detecting means.

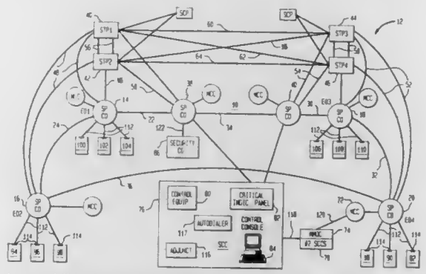
5,828,978

LINE RESTORATION DETECTION FOR SECURITY SYSTEMS

Vivodh Z. J. Anand, Glen Ridge, and Andrew L. Westra, Ridgewood, both of N.J., assignors to ZafarLOOP, Inc., Glen Ridge, N.J.

Filed Feb. 23, 1996, Ser. No. 606,085
Int. Cl.[6] H04J *1/16*
U.S. Cl. 701—117 **12 Claims**

1. A method of monitoring the connection between a monitoring center and a monitored premises comprising
a) providing a monitoring center,
b) providing a plurality of monitored premises each having sensor means connected to an interface at said premises,
c) providing a signaling point (SP) connected to said interface via digital data link means.



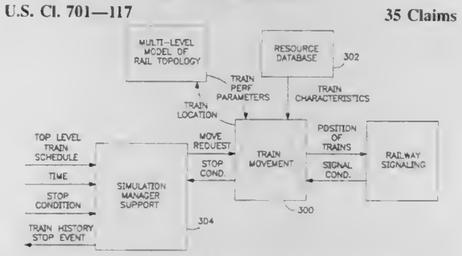
d) providing interruption detection means at said SP to provide an interruption signal to identify any interruption of said data link means,
e) providing processor means connected to said SP for receiving said interruption signal and for providing a trouble signal identifying said data link means in response to said interruption signal,
f) transmitting said trouble signal from said processor means to said monitoring center
g) providing restoration detection means at said SP to provide a restoration signal to said processor to identify restoration of said data link means when said interface at said monitored premises signs-on to said SP, said sign on comprising receiving clocking information from said SP,
h) transmitting said restoration signal from said processor means to said monitoring center.

5,828,979

AUTOMATIC TRAIN CONTROL SYSTEM AND METHOD

Alan L. Polivka, and William L. Matheson, both of Palm Bay, Fla., assignors to Harris Corporation, Melbourne, Fla.

Continuation-in-part of Ser. No. 299,271, Sep. 1, 1994, Pat. No. 5,623,413. This application May 15, 1997, Ser. No. 856,754
Int. Cl.[6] B61L *3/00*
U.S. Cl. 701—117 **35 Claims**



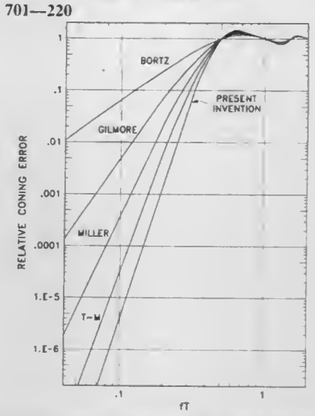
1. A method of control of a plural freight trains with varying numbers of cars and varying loads over a pre-determined track layout, the method comprising the steps of:
(a) providing a railway with both periodic and non-periodic freight train service;
(b) providing a realizable movement plan for all trains over the track layout, the plan including ETAs and ETDs at all stations of significance calculated on the basis of track parameters, train handling constraints, actual train position and velocity data, wind data to the extent available, and track condition data to the extent available to cause the freight trains to operate on the trajectories indicated by the plan;
(c) updating the movement plan in response to unplanned or deviant movements of freight trains over the track layout; and
(d) alternatively displaying commands (to comply with the movement timeline profile derived from the updated movement plan) to the train engineer or automatically executing power and brake settings for the locomotive in response thereto for immediate execution of the updated movement plan.

5,828,980

CONING COMPENSATION IN STRAPDOWN INERTIAL NAVIGATION SYSTEMS

Daniel A. Tazartes, West Hills, and John G. Mark, Pasadena, both of Calif., assignors to Litton Systems, Inc., Woodland Hills, Calif.

Continuation of Ser. No. 618,269, Mar. 18, 1996, abandoned. This application Jul. 1, 1997, Ser. No. 937,251
Int. Cl.[6] G05D *1/00*
U.S. Cl. 701—220 **24 Claims**



1. A coning compensation method for use in a strapdown inertial navigation system, the method utilizing the incremental angles of rotation of a coordinate system expressed as a vector $\Delta\Theta(k,n,m)$ and measured in successive time periods to obtain an estimate of the coning compensation for NK successive time periods, the vector $\Delta\Theta(k,n,m)$ corresponding to the vector angle of rotation for the (mNK+nK+k)'th data sampling interval of duration T as provided by orthogonally mounted gyros in a body-fixed coordinate system, k taking on integer values from 1 to K, n taking on integer values from 1 to N, m taking on integer values, N and K being predetermined integers, the method comprising the steps:
calculating R(h,m) for K equal to 5 and h equal to 1, 2, and 3, R(h,m) being the vector cross-product of the sum of $U(h,k)\Delta\Theta(k,n,m)$ and the sum of $V(h,k)\Delta\Theta(k,n,m)$, the sums being taken over all values of k and all values of n, U(h,k) and V(h,k) being predetermined numbers for all values of h and k;
calculating R(m), R(m) being the sum of W(h)R(h,m) over all values of h, W(h) being a predetermined number for each value of h where h takes on the values 1, 2, and 3, the estimate of the coning compensation comprising R(m).

5,828,981

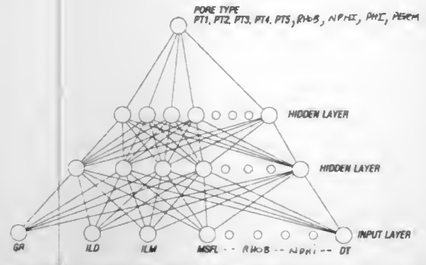
GENERATING PORE TYPES AND SYNTHETIC CAPILLARY PRESSURE CURVES FROM WIRELINE LOGS USING NEURAL NETWORKS

Christie Ann Callender; James Joseph Funk, both of Houston; Cynthia Marie Ross, Bellaire, and John Benjamin Turbeville, Jr., Houston, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 11, 1995, Ser. No. 439,343
Int. Cl.[6] G01V *1/48*
U.S. Cl. 702—6 **14 Claims**

1. A method for determining the pore type of earth formations penetrated by a well borehole from plural wireline well logs of the well borehole, comprising the steps of:

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providing a neural network having an input layer, at least two hidden layers for receiving signals from said input layer and an output layer for receiving signals from the hidden layers, said neural network layers being fully interconnected;

selecting core samples from the same depth intervals as wireline well logs which have been run, said core samples representing all lithological variations and all distinct wireline log response intervals, and measuring on each of said selected core samples porosity, permeability and capillary pressure;

analyzing two dimensional pore size and shape data from thin section images corresponding to said selected core samples, said images being generated by a petrographic microscope and defining therefrom plural distinct pore types for the well;

training said neural network by inputting, depth aligned with core samples, wireline log data to said input layer, comparing with measured core sample data using the iterative back propagation training technique to produce synthetic output data, said measured data and said synthetic output data comprising pore type proportion, porosity, permeability and capillary pressure,

validating the trained neural network by using wireline log input data and producing synthetic output data from well depths not used to train the neural network but for which measured core sample data is available; and

applying the trained, validated neural network to wireline log data from other depth intervals of the well for which no core samples were measured to produce synthetic outputs of pore type proportions.

5,828,982

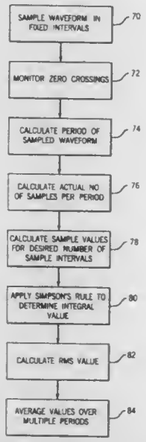
Patent Not Issued For This Number

5,828,983

METHOD AND APPARATUS FOR PROCESSING A SAMPLED WAVEFORM

Steven A. Lombardi, Waukesha, Wis., assignor to Allen Bradley Company, LLC, Milwaukee, Wis.

Filed Aug. 29, 1996, Ser. No. 705,568
Int. Cl.[6] G01R *13/34*
U.S. Cl. 702—66 **20 Claims**



14. An apparatus for monitoring and analyzing a waveform of uncertain period comprising:

a sensor for detecting a parameter of interest for the waveform and for generating parameter signals representative of first values of the parameter;

a sampling circuit coupled to the sensor, the sampling circuit monitoring the parameter signals and sampling the first values at predetermined sampling intervals, the sample intervals having a predetermined, uniform duration independent of the waveform period;

a memory circuit coupled to the sampling circuit, the memory circuit saving the sampled first values; and

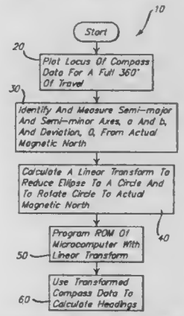
a signal processing circuit coupled to the memory circuit, the signal processing circuit determining the period of the waveform and the number of sample intervals in the period, the signal processing circuit determining a plurality of desired sample locations along the waveform based upon the waveform period, the number of sample intervals and a desired number of samples, the signal processing circuit determining second values for the parameter at each of the desired sample locations, the desired number of samples being an integer appropriate for application of Simpson's rule for determination of an integral value for the waveform over the sample intervals, the signal processing circuit being further configured to calculate an integral value for the parameter over the sample intervals by application of Simpson's rule to the second values.

5,828,984

DATA PROCESSING METHOD FOR AN ELECTRONIC COMPASS SYSTEM

Russell E. Cage, Ann Arbor, and Rafi A. Al-Attar, Troy, both of Mich., assignors to Chrysler Corporation, Auburn Hills, Mich.

Continuation of Ser. No. 815,266, Dec. 27, 1991, abandoned. This application Oct. 1, 1993, Ser. No. 131,014
Int. Cl.[6] G01C *17/38*
U.S. Cl. 702—92 **5 Claims**



1. A method of offsetting elliptification and rotation distortion caused by induced magnetism to obtain undistorted heading data values for determining accurate compass headings in an electronic compass used for a vehicle configuration, comprising:

orienting first and second sense coils of a flux-gate sensor perpendicular to each other in the earth's magnetic field;

saturating said first and second sense coils using a drive signal;

measuring an induced voltage in said first and second sense coils induced by said magnetic field;

calibrating said electronic compass for said vehicle configuration for induced magnetism causing said elliptification and rotation distortion by generating first, second, third and fourth linear transform coefficients;

storing said first, second, third and fourth linear transform coefficients in memory;

obtaining first and second distorted heading data values related to said induced voltage in said first and second sense coils;

multiplying said first linear transform coefficient by said first distorted heading data value to obtain a first product using a processor;

multiplying said second linear transform coefficient by said second distorted heading data value to obtain a second product using said processor;

subtracting said second product from said first product to obtain a first transformed heading data point using said processor;

multiplying said third linear transform coefficient by said first distorted heading data value to obtain a third product using said processor;

multiplying said fourth linear transform coefficient by said second distorted heading data point to obtain a fourth product using said processor;

subtracting said fourth product from said third product to obtain said second transformed heading data point using said processor; and

generating a compass heading from said first and second transformed heading data points using said processor.

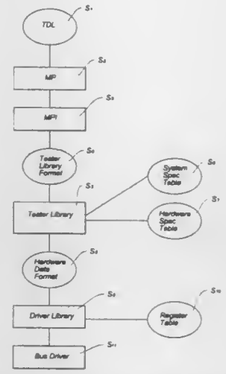
5,828,985

SEMICONDUCTOR TEST SYSTEM

Robert F. Sauer; Jun Makino, and Hiroaki Yamoto, all of Sant Clara, Calif., assignors to Advantest Corp., Tokyo, Japan

Filed Nov. 20, 1996, Ser. No. 754,230
Int. Cl.[6] G06F *11/00*
U.S. Cl. 702—122 **3 Claims**

3. A semiconductor test system for testing a semiconductor device by applying a test signal to a semiconductor device under test in synchronism with a reference period and comparing the resultant output of the semiconductor device under test with an expected value to determine whether the semiconductor device functions correctly or not, comprising:



a test program input for providing a test program to specify various test conditions necessary to test the semiconductor device including a waveform of a test signal to be supplied to a predetermined terminal of the semiconductor device under test, the test program being changed in its test description format when there is a change in hardware of the semiconductor test system;

a master processor for converting the test program to object codes through compilation and interpretation process;

a processor interface for storing data indicating the hardware characteristics of the semiconductor test system in a table format to assist the compilation and interpretation of the test program in the master processor;

a library having data tables based on specifications of the semiconductor test system for converting the data compiled and interpreted by the master processor to hardware format data, and

a driver for providing the hardware format data to a data bus to transfer the data to registers in the hardware of the semiconductor test system;

wherein, the library is provided with new parameters corresponding to the change in the hardware of the semiconductor test system, and the data in the table format in the processor interface is modified in response to the new parameters in the library, thereby the change in the test description format is converted to object codes by the master processor with use of modified data in the processor interface without any changes in the master processor.

5,828,986

VIDEO CAMERA FOR PHOTOGRAPHING ANIMATED IMAGES

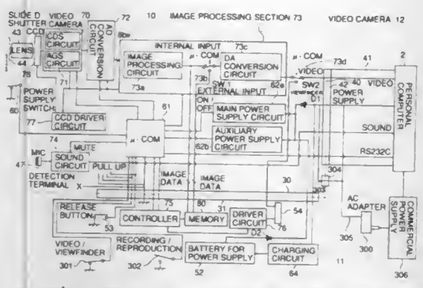
Koichi Horigòme, Tokyo; Toshimitsu Harada, Hachioji; Takashi Terauchi, Hachioji; Masaki Shimada, Hachioji, and Masashi Saito, Hachioji, all of Japan, assignors to Konica Corporation, Tokyo, Japan

Filed Mar. 29, 1996, Ser. No. 622,910
Claims priority, application Japan, Apr. 3, 1995, 7-101708
Int. Cl.[6] H04N *5/30;5/225*
U.S. Cl. 702—126 **8 Claims**

1. A video camera for photographing animated images, comprising:

a main camera body for outputting analog image signals corresponding to said animated images, said main camera body including

a digital converter for converting said animated images into digital image signals, and



an analog converter for converting said digital image signals to said analog image signals: and

a memory adapter, detachable from said main camera body, for recording at least one of said animated images as a still picture, said memory adapter including

memory means for storing said digital image signals,

a controller for controlling said memory means,

a release button for executing a photographing operation,

a battery for supplying electricity to said main camera body and said memory adapter,

a battery charger for charging said battery,

a view finder for viewing said animated images,

a first mode-changing switch for changing modes between a video mode, wherein said main camera body outputs said analog image signals, and a view finder mode, wherein said main camera body outputs image signals for said view finder without outputting said analog image signals, and

a second mode-changing switch for changing modes between a recording mode, wherein said controller controls said memory means so as to store said digital image signals corresponding to an image of said animated images as a still picture when said release button is pressed, and a reproduction mode, wherein said still picture stored in said memory means is reproduced,

wherein said still picture is stored in said memory means during a first condition when both of said video mode and said recording mode are selected and said release button is pressed,

and wherein a second condition is automatically set after said first condition, during said second condition

a freeze mode, wherein said still picture stored in said memory means is outputted as said analog image signals being selected, and

a mute mode, wherein sound signals from said camera main body are in a state of mute, being selected, said freeze mode and said mute mode being maintained when a lens barrier, provided on said main camera body, is set to a closed position while said release button is pressed.

5,828,987

MOVEMENT DETECTING DEVICE

Michiyasu Tano, Yokohama, and Tsutomu Miyasaka, Tokyo, both of Japan, assignors to Data Tec Co., Ltd., Japan

PCT No. PCT/JP96/02407, § 371 Date Apr. 22, 1997, § 102(e) Date Apr. 22, 1997, PCT Pub. No. WO97/08514, PCT Pub. Date Mar. 6, 1997

PCT Filed Aug. 28, 1996, Ser. No. 809,459

Claims priority, application Japan, Aug. 28, 1995, 7-242507

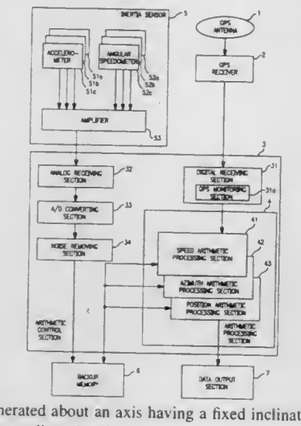
Int. Cl.[6] G06F *17/00;* **G08G** *1/0968*

U.S. Cl. 702—150 **7 Claims**

5. A movement detecting device comprising:

GPS arithmetic means for producing first movement data based on GPS signals, said first movement data including variation components of an absolute position, an absolute speed and an absolute azimuth of a moving object;

an inertia sensor for detecting an acceleration generated in a traveling direction of the moving object and an angular velocity generated about an axis having a fixed inclination relative to the traveling direction;



means for producing second movement data from the acceleration and the angular velocity measured by said inertia sensor, said second movement data including variation components of a relative position, a relative speed and a relative azimuth of the moving object; and

arithmetic control means for correcting said first and second movement data based on the mutual data and producing actual movement data including an actual position, an actual speed and an actual azimuth of the moving object through calculation, wherein said arithmetic control means comprises a position arithmetic processing section which comprises:

(1) means for deriving a moved distance (D) by integrating said actual speed (Vm), and deriving a latitude variation value and a longitude variation value based on said moved distance (D) and said actual azimuth (ψm); and

(2) means for producing the actual position (LOGn, LATn) by correcting the sequentially updated absolute position (LOG, LAT) during its non-updated term using said latitude variation value and said longitude variation value.

5,828,988

Patent Not Issued For This Number

5,828,989

SEMICONDUCTOR MANUFACTURING SYSTEM HAVING A BAR-CODE INTERFACE

John G. Zvonar, and Gerald W. Barnett, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 22, 1997, Ser. No. 787,074

Int. Cl.[6] G06F *19/00*

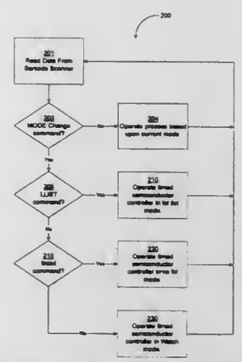
U.S. Cl. 702—188 **12 Claims**

1. A method for controlling a semiconductor manufacturing process, the semiconductor manufacturing process processing semiconductor material, comprising

associating the semiconductor material with bar-code information, the bar-code information including information relating to manufacturing process parameters;

scanning the bar-code information prior to initiating a manufacturing process step;

decoding the bar-code information to provide process step parameters; and



configuring a controller according to the process step parameters wherein the bar-code information includes a data bar-code relating to encoded data and a command bar-code relating to commands for the individual step.

5,828,991

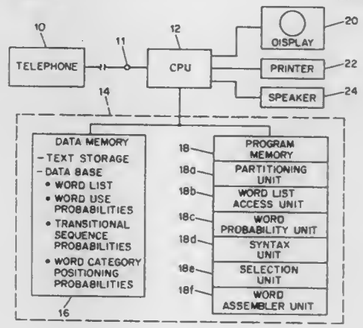
SENTENCE RECONSTRUCTION USING WORD AMBIGUITY RESOLUTION

Steven S. Skiena, New York, N.Y., and Harald Rau, Wurzburg, Germany, assignors to The Research Foundation of the State University of New York, Stony Brook, N.Y.

Filed Jun. 30, 1995, Ser. No. 497,149

Int. Cl.[6] G06F *17/20*

U.S. Cl. 704—9 **15 Claims**



1. A sentence reconstruction method, for resolving word ambiguities in a selected language sentence structure entered using single stroke activation of a key set including text entry keys each representing a group of letters, comprising the steps of:

(a) providing first key stroke indicia each ambiguously representing a letter of a group of letters and second key stroke indicia including indicia representing spaces between words;

(b) partitioning, by use of said second key stroke indicia, said first key stroke indicia into a sequence of word positions, each word position comprising a code block represented by at least one of said first key stroke indicia;

(c) accessing a database including a word list to identify for an individual word position a word group including alternative word choices formable from the letter groups represented by the code block for said word position;

(d) repeating step (c) for said sequence of word positions to identify a corresponding word group including at least one word choice for each of a plurality of word positions;

(e) utilizing a stored word use rule set representative of relative frequency of particular word usage in said selected language to derive, for the word group for one of said word positions, probability values for word choices for said word position;

(f) utilizing a stored language rule set representative of usage in said selected language to derive probability values for a sequencing of individual word choices for said word position relative to at least one word choice for an adjacent word position in said sentence structure, said language rule set including rules in both of the following categories (i) rules based on transitional probability of use of particular word sequences, and (ii) rules based on probability of relative positioning of words of particular word categories in a sentence structure;

(g) repeating steps (e) and (f) for any additional word positions having an associated word group including a plurality of alternative word choices; and

(h) selecting, by use of said probability values derived in steps (e) and (f), one word from each said word group for inclusion at a respective word position in a reconstructed sentence structure.

5,828,990

ELECTRONIC NEWS TRANSLATING AND DELIVERY APPARATUS

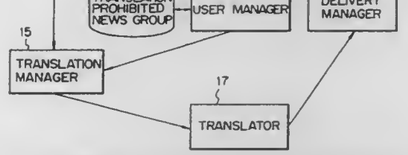
Fumihito Nishino, and Naomi Sugimoto, both of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 367,774, Jan. 3, 1995, abandoned, which is a continuation of Ser. No. 91,015, Jul. 14, 1993, abandoned. This application Mar. 25, 1996, Ser. No. 624,956

Claims priority, application Japan, Aug. 14, 1992, 4-216938

Int. Cl.[6] G06F *17/28*

U.S. Cl. 704—2 **13 Claims**



3. An electronic news translating and delivery apparatus for use by a plurality of registered users, for translating and delivering news, said electronic news translating and delivery apparatus comprising:

a user manager which registers news groups reserved by each of said plurality of registered users, each news group comprising articles, and manages the news groups to be translated;

a translator which translates the articles into a preselected form;

a translation manager which manages said translator to translate said articles registered by said user manager;

a delivery manager which delivers the articles translated by said translator to registered users; and

said translation manager causing the translator to translate the articles based on information stored in a translation managing information file which contains information for controlling which articles and in which sequence the articles are to be provided to said translator.

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5,828,992
AUTOMATED CONTROL SYSTEM WITH BILINGUAL STATUS DISPLAY

Richard Anthony Kusmierczyk, Windsor, Canada, assignor to Unova IP Corp., Beverly Hills, Calif.

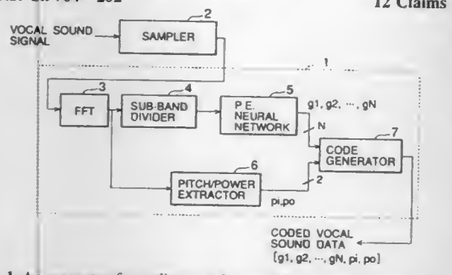
Filed Dec. 11, 1995, Ser. No. 570,107
Int. Cl.[6] G06F *3/00*
U.S. Cl. 704—8 **8 Claims**

1. In a method of displaying control information to an operator in an automated control system that comprises the steps of:
(a) storing in electronic memory first fields of graphic indicia for generating at an operator display graphic representations of conditions to be monitored and second fields of text indicia associated with the graphic indicia, and
(b) selectively displaying at an operator display one of first fields of graphic indicia and an associated field of text indicia so that both graphic and text indicia are simultaneously displayed to an operator,
the improvement for selective bilingual display of said text indicia with said graphic indicia wherein: said step (a) includes the step of: storing said second fields of text indicia in sets of separate sub-fields in each of two text languages, with each said set being associated with a specific first field of graphic indicia, and
said step (b) includes the step of: alternately selecting between said sets of sub-fields of text indicia in such a way that the text fields displayed with said graphic fields are all in one or the other of said two text languages.

5,828,993
APPARATUS AND METHOD OF CODING AND DECODING VOCAL SOUND DATA BASED ON PHONEME

Masayou Kawauchi, Kamakura, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Sep. 25, 1996, Ser. No. 720,160
Claims priority, application Japan, Sep. 26, 1995, 7-271931
Int. Cl.[6] G10L *9/00*
U.S. Cl. 704—202 **12 Claims**

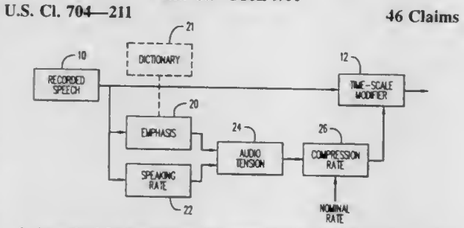


1. An apparatus for coding vocal sound data signals, comprising:
transforming means for orthogonal-transforming sequential input digital vocal sound data signals per predetermined number of the data signals to obtain power spectrum data signals;
converting means for converting the power spectrum data signals into a data conversion form that features corresponding to phonemes of the vocal sound data signals are extracted;
comparing means for comparing converted data signals from the converting means with reference data pattern signals related to the features corresponding to the data conversion form to obtain correlation data signals between the converted data signals and the reference data pattern signals;
first extracting means for extracting pitch signals in a frequency direction on the basis of the power spectrum data signals or the converted data signals;
second extracting means for extracting power value signals on the basis of the vocal sound data signals or the power spectrum data signals; and
coding means for sequentially coding the correlation data signals, pitch signals, and power value signals, and outputting sequential coded vocal sound data signals.

5,828,994
NON-UNIFORM TIME SCALE MODIFICATION OF RECORDED AUDIO

Michele Covell, and M. Margaret Withgott, both of Los Altos Hills, Calif., assignors to Interval Research Corporation, Washington, D.C.

Filed Jun. 5, 1996, Ser. No. 659,227
Int. Cl.[6] G10L *9/00*
U.S. Cl. 704—211 **46 Claims**

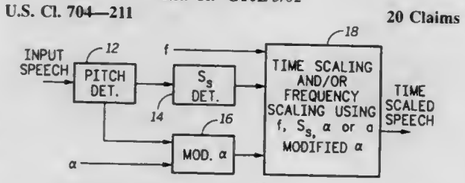


1. A method for modifying the temporal scale of an audio signal, comprising the steps of:
determining the emphasis of different respective portions of the audio signal relative to one another; and
modifying the temporal scale of the audio signal to be produced at a rate different from the rate represented by the unmodified signal, said modification being performed in a non-uniform manner such that portions of the signal having higher relative emphasis are modified less than portions of the signal having lower relative emphasis.

5,828,995
METHOD AND APPARATUS FOR INTELLIGIBLE FAST FORWARD AND REVERSE PLAYBACK OF TIME-SCALE COMPRESSED VOICE MESSAGES

Sunil Satyamurti, Delray Beach; Paul Edward Gorday, Boynton Beach, and Radha Khan, Lake Worth, all of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 415,840, Apr. 3, 1995, abandoned, which is a continuation-in-part of Ser. No. 395,739, Feb. 28, 1995, abandoned. This application Oct. 17, 1997, Ser. No. 953,271
Int. Cl.[6] G10L *3/02*
U.S. Cl. 704—211 **20 Claims**

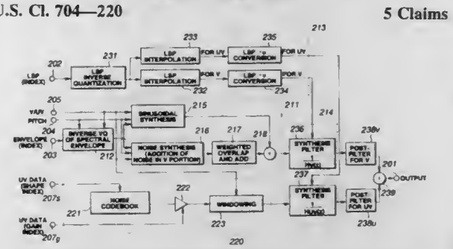


1. A method for intelligible fast, forward and reverse playback of messages comprising compressed speech, in a communication system using a time-scale modification technique, the method comprising the steps of:
receiving a message comprising compressed speech which is compressed at a predetermined compression rate, and a message rate identifier which identifies the predetermined compression rate;
storing the message received as compressed speech in a memory, and the message rate identifier; and
processing the compressed speech stored in memory to time-scale expand the compressed speech at an expansion rate that is equal to the predetermined compression defined by the received message rate identifier so as to produce a normal speech playback speed, and
processing the compressed speech stored in memory to time-scale expand the compressed speech at an expansion rate that is lower than the predetermined compression rate defined by the received message rate identifier, so as to produce a perceptibly increased speech playback speed.

5,828,996
APPARATUS AND METHOD FOR ENCODING/DECODING A SPEECH SIGNAL USING ADAPTIVELY CHANGING CODEBOOK VECTORS

Kazuyuki Iijima, Saitama; Masayuki Nishiguchi, Kanagawa; Jun Matsumoto, Kanagawa, and Shiro Omori, Kanagawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Oct. 25, 1996, Ser. No. 736,988
Claims priority, application Japan, Oct. 26, 1995, 7-279417
Int. Cl.[6] G10L *7/02*
U.S. Cl. 704—220 **5 Claims**



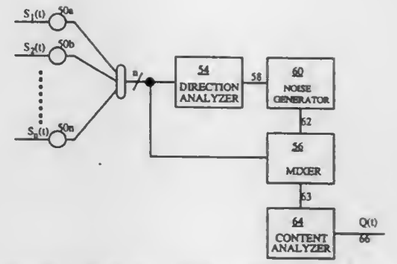
1. A speech signal encoding method comprising the steps of:
encoding a voiced portion of an input speech signal using a sinusoidal analysis technique; and
encoding an unvoiced portion of said input speech signal using a code excitation linear prediction (CELP) technique, including
dividing said input speech signal on a time axis into units of blocks; and
encoding said divided input speech signal by vector quantization using a time-domain closed-loop search of an optimum vector based on an analysis-by-synthesis method, said optimum vector being a vector that minimizes an error between said input speech signal and an encoded speech signal, wherein said vector quantization of said divided input speech signal uses a codebook memory containing a first set of codebook vectors generated by clipping a Gaussian noise at a plurality of predetermined threshold values and a second set of codebook vectors generated by adaptively changing said first set of codebook vectors using said first set of codebook vectors as initial values.

5,828,997
CONTENT ANALYZER MIXING INVERSE-DIRECTION-PROBABILITY-WEIGHTED NOISE TO INPUT SIGNAL

Nathaniel I. Durlach, Weston, and Robert A. Berkovitz, Brookline, both of Mass., assignors to Sensimetrics Corporation, Cambridge, Mass.

Filed Jun. 7, 1995, Ser. No. 485,368
Int. Cl.[6] G10L *5/06; G01S 3/80*
U.S. Cl. 704—233 **4 Claims**

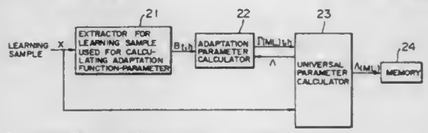
4. A method for converting a source signal to a symbolic signal comprising the steps of:
obtaining at least one input signal from the source signal;
calculating a probability that the source signal originates from one of at least one predetermined directions;
generating a noise signal inversely proportional to the calculated probability;
mixing the at least one input signal with the generated noise signal; and
generating from the mixed signal a content signal representative of a probable value of the source signal.



5,828,998
IDENTIFICATION-FUNCTION CALCULATOR, IDENTIFICATION-FUNCTION CALCULATING METHOD, IDENTIFICATION UNIT, IDENTIFICATION METHOD, AND SPEECH RECOGNITION SYSTEM

Naoto Iwahashi, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 24, 1996, Ser. No. 710,941
Claims priority, application Japan, Sep. 26, 1995, 7-247890
Int. Cl.[6] G10L *9/06*
U.S. Cl. 704—236 **18 Claims**



1. A speech recognition system comprising:
acoustic analysis means for acoustically analyzing a speech signal and calculating characteristic feature vectors of the speech signal;
a calculation unit for calculating adaptive discriminant data based on the characteristic feature vectors using discriminant data for identifying the characteristic feature vectors, the adaptive discriminant data including an adaptive discriminant function parameter that adapts to a predetermined variation state of the speech signal;
a determination unit for determining a speech recognition result based on a calculation result from the calculation unit, wherein
the adaptive discriminant function parameter is obtained based on a universal discriminant function parameter that is independent of the predetermined variation state of the speech signal and a maximum likelihood adaptive parameter for transforming the adaptive discriminant data, and
the maximum likelihood adaptive parameter maximizes a probabilistic likelihood of generating a signal sample in the predetermined variation state of the speech signal when the adaptive discriminant data is used; and
means for providing the universal discriminant function parameter obtained by a learning method which:
determines a maximum likelihood learning parameter by maximizing a probabilistic likelihood of generating a learning sample based on a variation state of the characteristic feature vector from the acoustic analysis means when the adaptive discriminant data is used,
calculates a likelihood of the universal discriminant function parameter with respect to the maximum likelihood learning parameter and a previously-obtained universal discriminant function parameter to produce a calculated likelihood value,
determines whether the calculated likelihood value is equal to or greater than a predetermined threshold, and

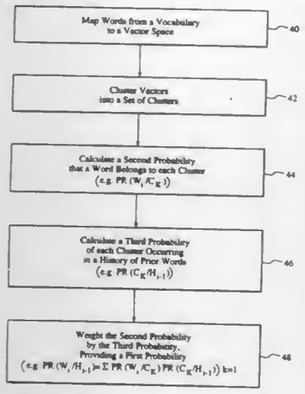
uses the universal discriminant function parameter as a learning value when the calculated likelihood is equal to or greater than the predetermined threshold.

5,828,999

METHOD AND SYSTEM FOR DERIVING A LARGE-SPAN SEMANTIC LANGUAGE MODEL FOR LARGE-VOCABULARY RECOGNITION SYSTEMS

Jerome R. Bellegarda, Los Gatos, and Yen-Lu Chow, Saratoga, both of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 6, 1996, Ser. No. 643,521
Int. Cl.[6] G10L *5/06*
U.S. Cl. 704—240 **32 Claims**



1. A method for deriving a large-span semantic language model for a large vocabulary recognition system, the method comprising the steps of:

(a) mapping words into a vector space, where each word is represented by a vector;

(b) clustering the vectors into a set of clusters, where each cluster represents a semantic event;

(c) computing a first probability that a first word will occur given a history of prior words by,

(i) calculating a second probability that a vector representing the first word belongs to each of the clusters, the second probability capable of being independent of a location of the first word in a sentence;

(ii) calculating a third probability of each cluster occurring in a history of prior words; and

(iii) weighting the second probability by the third probability.

5,829,000

METHOD AND SYSTEM FOR CORRECTING MISRECOGNIZED SPOKEN WORDS OR PHRASES

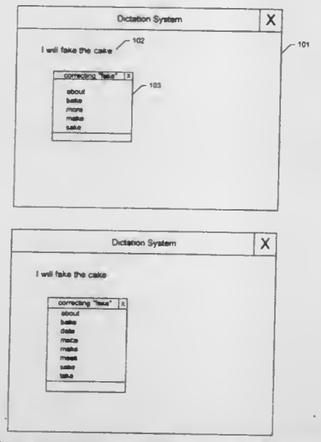
Xuedong D. Huang, Redmond; Hsiao-Wuen Hon, Woodinville, and Li Jiang, Bellevue, all of Wash., assignors to Microsoft Corporation, Redmond, Wash.

Filed Oct. 31, 1996, Ser. No. 741,696
Int. Cl.[6] G01L *5/06*
U.S. Cl. 704—252 **15 Claims**

7. A method in a computer dictation system for correcting a misrecognized word, the method comprising:

receiving a newly spoken utterance representing a correction of the misrecognized word for a previously spoken utterance, the previously spoken utterance having previous alternative words with probabilities;

identifying new alternative words with probabilities for the newly spoken utterance;



recognizing the newly spoken utterance as a newly recognized word other than the misrecognized word based on the combined probabilities of the words other than the misrecognized word in the previous alternative words and the new alternative words; and

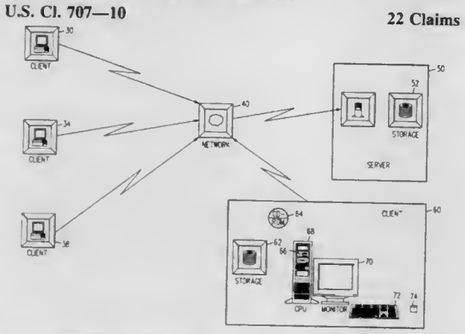
replacing the misrecognized word with the newly recognized word.

5,829,001

DATABASE UPDATES OVER A NETWORK

Kong Li, San Jose; Her-Daw Che, Cupertino; Wei-Jen Chuang, Milpitas; Prayoon Phathayakorn, San Jose, and Ching-Fa Hwang, Cupertino, all of Calif., assignors to NetIQ Corporation, Santa Clara, Calif.

Filed Jan. 21, 1997, Ser. No. 784,593
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—10 **22 Claims**



1. A method for updating data objects stored in a storage of a client with data objects of a database stored in a server, the method comprising:

the client providing a last update time to the server, wherein the last update time indicates a last time at which the client received an update from the server; and

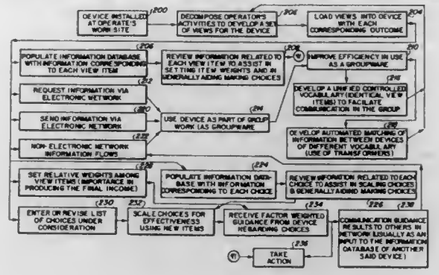
the server providing a plurality of data objects stored in the database to the client, a value of the data objects having been updated in the database at a time later than the last update time.

5,829,002

SYSTEM FOR COORDINATING INFORMATION TRANSFER AND RETRIEVAL

W. Curtiss Priest, 19 Diana La., Lexington, Mass. 02173

Continuation of Ser. No. 979,527, Nov. 23, 1992, abandoned, which is a continuation-in-part of Ser. No. 311,230, Feb. 15, 1989, Pat. No. 5,167,011. This application Dec. 8, 1995, Ser. No. 816,206
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—10 **4 Claims**



1. A computer system for use by human operators, the computer system comprising:

a plurality of processors, wherein each human operator has control of one of said processors in said plurality of processors,

at least one of said processors being connected to at least one other one of said processors via a communications channel,

an input/output device coupled with each of said processors for communication of signals and symbols between said processor and a corresponding human operator, and for communication of commands from a human operator and a corresponding processor,

a memory element dedicated to each of said processors,

a controlled vocabulary dictionary including a plurality of dictionary items of said controlled vocabulary dictionary stored in said memory element dedicated to each said processor,

a plurality of database information items indexed by each of said dictionary items of said controlled vocabulary dictionary for each one of said processors, whereby a set of said database information items is uniquely indexed by each of said dictionary items,

editing elements adapted to receive commands from an operator and responsive to such commands to alter said controlled vocabulary dictionary whereby dictionary items may be edited, added, or deleted,

the editing elements including remote transfer elements adapted to transmit, via said communications channel, changes to the controlled vocabulary dictionary,

telecommunication processing elements responsive to commands from an operator to select one of said database information items, indexed by a selected one of said dictionary items, for delivery via a telecommunications message with said selected dictionary item embedded therein to a destination selected by said operator whereby said operator may deliver said database information item to another processor,

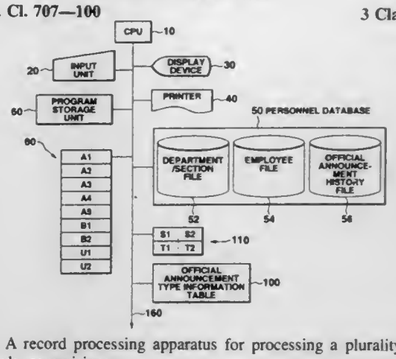
storage control elements adapted to store telecommunicated messages received by one of said processors as a database information item indexed by one of said dictionary items, by matching said embedded dictionary item in said message with a corresponding item in said controlled vocabulary dictionary stored in the memory of the receiving processor.

5,829,003

RECORD PROCESSING APPARATUS, METHOD AND COMPUTER READABLE STORAGE HAVING ATTRIBUTE INFORMATION REPRESENTING A HIERARCHICAL CONNECTION FOR DISPLAY OF DATA

Osamu Okura, Kawagoe, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed May 13, 1996, Ser. No. 644,953
Claims priority, application Japan, May 23, 1995, 7-149391; Jun. 23, 1995, 7-157987
Int. Cl.[6] G06F *17/30*
U.S. Cl. 707—100 **3 Claims**



1. A record processing apparatus for processing a plurality of records, comprising:

means for storing the plurality of records each having attribute information representing a hierarchical connection relationship with another record and having (i) a higher connection code representing connection to a record having a higher connection relationship in a hierarchical relationship and (ii) a lower connection code representing connection to a record having a lower connection relationship;

means for, when display data having a one-to-one correspondence with each record is to be displayed on a display screen in a hierarchical state, determining a display position of the display data on said display screen based on the attribute information included in each record, and displaying the display data corresponding to each record at the determined display position;

means for arbitrarily selecting desired first display data of all display data displayed on said display screen in the hierarchical state and arbitrarily designating a destination display position of the selected first display data, thereby moving the selected first display data to the destination display position;

means for detecting a change in hierarchical display position relationship between each display position of each display data displayed on said display screen in the hierarchical state and display positions of the selected first display data before and after movement of the selected first display data; and

means for changing attribute information of a record corresponding to the selected first display data in accordance with the change in hierarchical display position relationship detected by said detecting means, said changing means comprising:

means for searching the hierarchical display position relationship between the moved display position of the selected first display data and display positions of other display data displayed on said display screen in the hierarchical state;

means for specifying, based on the hierarchical display position relationship searched by said searching means, second display data at a display position having a hierarchical display position relationship toward a higher hierarchical level of the moved display position of the selected first display data, and third display data at a display position having a hierarchical display position relationship toward a lower hierarchical level; and

means for changing the lower connection code included in attribute information of a record corresponding to the specified second display data into a change for designating the

record corresponding to the first display data, and changing the higher connection code included in attribute information of a record corresponding to the specified third display data into a code for designating the record corresponding to the first display data.

5,829,004

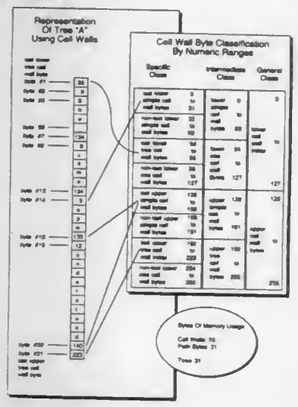
DEVICE FOR STORAGE AND RETRIEVAL OF COMPACT CONTIGUOUS TREE INDEX RECORDS

Lawrence Au, 1321 N. Rolfe St., Arlington, Va. 22209-3007

Filed May 20, 1996, Ser. No. 650,945

Int. Cl.[6] G06F *7/00*

U.S. Cl. 707—100 **18 Claims**



1. In a data-processing system, a method executed by a data processor for fetching the size of an allocated contiguous section of memory, by decoding a sequence of bitmaps, said sequence of bitmaps located adjacent to a boundary of said section of memory, each of said bitmaps containing information describing whether that bitmap is last or not last in its sequence of bitmaps, each of said bitmaps containing information describing a length number, said method employing a radix number constant, said method comprising the steps of:

(a) designating a bitmap adjacent to a boundary of said section of memory to be the current bitmap, then fetching said length number information contained within said current bitmap, initializing a multiplier number to one, initializing an accumulator number to zero, proceeding to step b,

(b) multiplying said length number by said multiplier number and adding the result to an accumulator number, proceeding to step c,

(c) reading the current bitmap to see whether or not the current bitmap is last in its sequence, then if the current bitmap is last in its sequence, proceeding to step d, otherwise proceeding to step f,

(d) designating the next bitmap in said sequence to be the current bitmap, proceeding to step e,

e) reading said current bitmap to fetch said length number information contained within, multiplying said multiplier number by said radix number, proceeding to step b,

(f) returning the accumulator number as the size of said section.

5,829,005

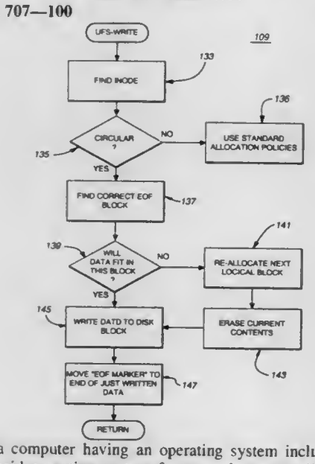
CIRCULAR SIZE-BOUNDED FILE TECHNIQUE FOR A COMPUTER OPERATING SYSTEM

Steven T. Senator, Colorado Springs, Colo., assignor to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 3, 1996, Ser. No. 675,040

Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—100 **4 Claims**



1. In a computer having an operating system including a file system, said operating system for executing an application program, a method of storing log data into said file system comprising the computer implemented steps of:

receiving from an application program, an argument indicating that log data is to be written to a particular file;

finding an index structure to the particular file;

noting from a field in the index structure whether the particular file is a circular file;

writing the log data to the particular file using newly allocated physical data blocks when the particular file is not a circular file;

re-allocating a physical data block already identified in the index structure when the particular file is a circular file; and

writing the log data into the re-allocated physical data block when the particular file is a circular file.

5,829,006

SYSTEM AND METHOD FOR EFFICIENT RELATIONAL QUERY GENERATION AND TUPLE-TO-OBJECT TRANSLATION IN AN OBJECT-RELATIONAL GATEWAY SUPPORTING CLASS INHERITANCE

Bhaskar A. Parvathaneny, and Venkatachary Srinivasan, both of Santa Clara, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 6, 1995, Ser. No. 465,702

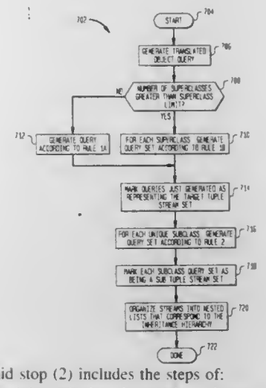
Int. Cl.[6] G06F *17/30*

U.S. Cl. 707—101 **28 Claims**

1. A method of processing object-oriented queries so as to retrieve data from a relational database management system (RDBMS), comprising the steps of:

(1) receiving an object-oriented query and at least one prefetch path from an object-oriented source, said object-oriented query identifying one or more target objects of a target class which are desired to be constructed, said at least one prefetch path identifying one or more prefetch path objects which are desired to be constructed; and

(2) generating from said object-oriented query a set of relational queries that, when processed, enable said RDBMS to retrieve tuples required to initialize base attributes of said target objects that are defined by said target class and by any super-classes and sub-classes of said target class;



wherein said stop (2) includes the steps of:

(a) determining whether the number of super-classes of said target class is greater than a super-class limit, and

(b if the number of super-classes of said target class is greater than sad super-class limit, then generating a query for each super-class of said target class, wherein said query, when processed, enables said RDBMS to retrieve base attributes of said each super-class.

5,829,007

TECHNIQUE FOR IMPLEMENTING A SWING BUFFER IN A MEMORY ARRAY

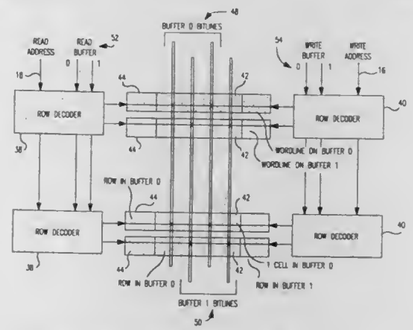
Adrian P. Wise; Kevin D. Dewar; Anthony Mark Jones, all of Bristol; Martin William Sotheran, Gloucestershire; Colin Smith, Bristol; Helen Rosemary Finch, Gloucestershire; Anthony Peter John Claydon, Avon; Donald William Patterson, Bristol; Mark Barnes, Wiltshire; Andrew Peter Kuligowski, Bristol; William P. Robbins, Gloucestrshire; Nicholas Birch, Bristol, and David Andrew Barnes, Gloucestershire, all of United Kingdom, assignors to Discovision Associates, Irvine, Calif.

Division of Ser. No. 473,813, Jun. 7, 1995, and a continuation-in-part of Ser. No. 400,201, Mar. 7, 1995, Pat. No. 5,603,012, which is a division of Ser. No. 400,397, Mar. 7, 1995, which is a continuation-in-part of Ser. No. 382,958, Feb. 2, 1995, abandoned, which is a continuation of Ser. No. 82,291, Jun. 24, 1993, abandoned. This application Jun. 7, 1995, Ser. No. 486,908

Claims priority, application United Kingdom, Jul. 29, 1994, 9415413; Jun. 7, 1995, 9511569

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—5 **7 Claims**



1. A swing buffer apparatus, comprising:

a single memory array having a first buffer and a second buffer defined therein;

a write control circuit in communication with said memory array through bit lines;

a read control circuit in communication with said memory array through bit lines;

a read row decoder and a write row decoder;

a plurality of wordlines, each said wordline being in communication with a row of said memory array;

wherein said read row decoder communicates with a first pair of said wordlines and said write row decoder communicates with a second pair of said wordlines each wordline of said first pair being assigned a single read address by said read row decoder, and each wordline of said second pair being assigned a single write address by said write row decoder;

a first selector in said read row decoder for selecting one of said wordlines of said first pair, whereby said first buffer is accessed at said read address;

a second selector in said write row decoder for selecting one of said wordlines of said second pair, whereby said second buffer is accessed at said write address;

a first control line interconnecting said read control circuit and said write control circuit having a first signal thereon that is indicative of a selected wordline of said first pair; and

a second control line interconnecting said read control circuit and said write control circuit having a second signal thereon that is indicative of a selected wordline of said second pair.

5,829,008

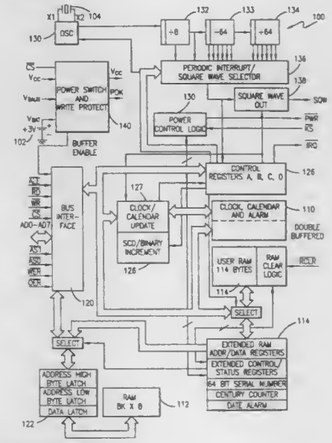
REAL-TIME CLOCK WITH EXTENDABLE MEMORY

William J. Podkowa, Plano, and Douglas Scott Bankes, Allen, both of Tex., assignors to Dallas Semiconductor Corporation, Dallas, Tex.

Continuation of Ser. No. 13,917, Feb. 5, 1993, Pat. No. 5,678,019. This application Apr. 30, 1997, Ser. No. 846,752

Int. Cl.[6] G06F *12/02*

U.S. Cl. 711—5 **5 Claims**



1. A circuit, comprising:

a clock portion including:

an oscillator for providing a wave output of a predetermined shape and frequency;

a plurality of dividers coupled to said oscillator, each of said plurality of dividers for successively dividing said wave output by a predetermined factor;

a clock/calender updater coupled to at least one of said plurality of dividers;

a first memory for receiving and storing a time value, which time value is provided by said clock portion, wherein said first memory is addressable by a first address bus;

a plurality of control registers coupled to said clock/calender updater, at least for controlling the updating of said time value; and

a second memory addressable by a second address bus,

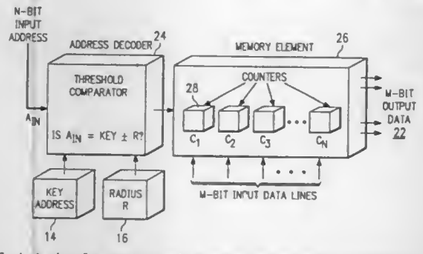
wherein said second memory is accessed by one of a direct address access and an indirect address access, said indirect address access involving accessing at least a portion of said first memory.

5,829,009

METHOD AND DEVICE FOR STORING AND RECALLING INFORMATION IMPLEMENTING A KANERVA MEMORY SYSTEM

Gary A. Frazier, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 7, 1993, Ser. No. 1,474
Int. Cl.[6] G06F *12/00*
U.S. Cl. 711—100 **5 Claims**



1. A device for storing and recalling information comprising:

an address space, defined by a plurality of memory chips, for holding address associative information;

a radius of capture corresponding to each key address, said key addresses partitioning said address space such that a hypersphere defined by said radius of capture of each key address does not overlap any other hyperspace within each memory chip in order to allow information within said address space to be associated with at most one key address;

a dedicated address decoder corresponding to each key address for receiving an address over an address signal path in order to activate said key address;

a memory element corresponding to each key address for storing said address associative information; wherein each memory element includes a plurality of multiple bit binary counters, each multiple bit binary counter corresponding to a separate bit position of information stored at each key address; and

wherein each memory chip has a plurality of key addresses partitioning said address space such that said hyperspheres corresponding to each key address do not overlap a hypersphere of any other key address within each memory chip in order to allow information to be associated with at most one key address per memory chip.

5,829,010

APPARATUS AND METHOD TO EFFICIENTLY ABORT AND RESTART A PRIMARY MEMORY ACCESS

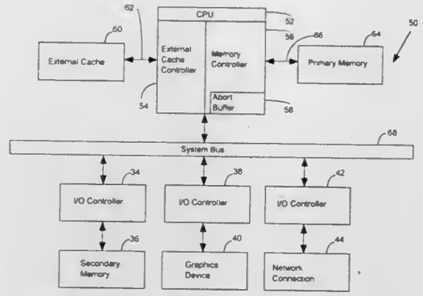
Rajasekhar Cherabuddi, Sunnyvale, Calif., assignor to Sun Microsystems, Inc., Mountain View, Calif.

Filed May 31, 1996, Ser. No. 657,817
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—100 **12 Claims**

1. A central processing unit of a computer, comprising:

an external cache controller to selectively generate an external cache free signal and an external cache busy signal; and

a primary memory controller including an abort buffer, said primary memory controller including:



circuitry to abort a primary memory access in response to said external cache busy signal and store, in said abort buffer, a data segment generated by said primary memory access before said abort operation, wherein said circuitry to abort said primary memory access includes a strobe control circuit to eliminate a column strobe to primary memory, and

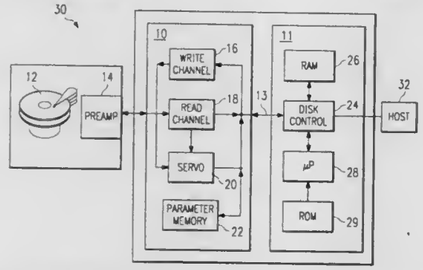
circuitry to restart said primary memory access in response to said external cache free signal by passing said data segment to said external cache controller and passing the remaining data associated with said primary memory access to said external cache controller, wherein said circuitry to restart said primary memory access includes a strobe control circuit to continuously apply a row strobe signal to primary memory.

5,829,011

APPARATUS AND METHOD OF EXCHANGING DATA AND OPERATIONAL PARAMETERS IN A MASS STORAGE SYSTEM

Kerry C. Glover, Wylie, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 31, 1997, Ser. No. 797,679
Int. Cl.[6] G06F *12/00*
U.S. Cl. 711—100 **20 Claims**



1. An electronic circuit for use in a mass storage system comprising:

a parameter memory operable to receive and store an operational parameter;

a read channel operable to receive and process a stored data signal during a read operation and to generate an output data signal in response, the read channel operable to access the operational parameter from the parameter memory during the read operation;

control circuitry having a microprocessor and memory, the control circuitry operable to provide the operational parameter to the parameter memory, the control circuitry operable to receive the output data signal from the read channel during the read operation; and

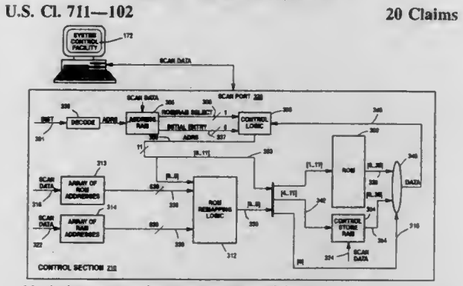
a data/parameter path coupling the control circuitry to the read channel and parameter memory, the data/parameter path operable to provide the operational parameter from the control circuitry to the parameter memory, the data/parameter path operable to provide the output data signal from the read channel to the control circuitry during the read operation.

5,829,012

SYSTEM FOR PROGRAMMABLY PROVIDING MODIFIED READ SIGNALS WITHIN A ROM-BASED MEMORY

Gregory Allen Marlan, San Jose, Calif.; Ronald Gene Arnold, Apple Valley, and Gerald Gregory Fagerness, Lino Lakes, both of Minn., assignors to Unisys Corporation, Blue Bell, Pa.

Filed Apr. 19, 1996, Ser. No. 636,759
Int. Cl.[6] G06F *12/02;13/00*
U.S. Cl. 711—102 **20 Claims**



11. A data processing system, comprising:

a memory subsystem capable of storing machine instructions;

an instruction processor coupled to the memory subsystem capable of executing said machine instructions, said instruction processor comprising,

an embedded read-only memory having predetermined, stored micro-instructions for controlling execution of said machine instructions and an input address port and an output data port;

a control logic circuit directly coupled to said input address port and said output data port of said read-only memory and capable of generating a read-only memory address for accessing said micro-instructions;

an embedded random access memory having predetermined, stored micro-instructions that replace predetermined ones of said micro-instructions stored in said read-only memory, and having an input address port and an output data port, said output data port being directly coupled to the control logic circuit;

a first set of registers having predetermined addresses of said read-only memory, whereby said predetermined addresses of said read-only memory are designated as remapped to said random access memory;

a second set of registers, each respectively associated with one of said first set of registers and having predetermined addresses of said random access memory, whereby said predetermined addresses of said random access memory specify addresses in said random access memory to which said predetermined address of said read-only memory have been remapped; and

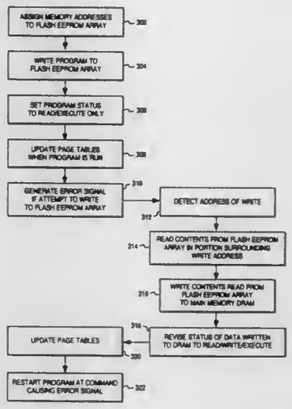
a remapping logic circuit directly coupled to the control logic circuit for receiving said generated read-only memory address, coupled to said first set of registers for receiving said predetermined addresses of said read-only memory, coupled to said second set of registers for receiving said predetermined addresses of said random access memory, said remapping logic circuit further having output address signal lines directly coupled to said input address port of said read-only memory and directly coupled to said input address port of said random access memory, said remapping logic circuit to remap said generated read-only memory address to one of said predetermined addresses of said random access memory which is respectively associated with any one of said predetermined addresses of said read-only memory having a predetermined relationship to said generated read-only memory address.

5,829,013

MEMORY MANAGER TO ALLOW NON-VOLATILE MEMORY TO BE USED TO SUPPLEMENT MAIN MEMORY

Robert N. Hasbun, Shingle Springs, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 26, 1995, Ser. No. 578,474
Int. Cl.[6] G06F *12/02;12/10*
U.S. Cl. 711—103 **20 Claims**



1. A method of executing a program comprising the steps of:

a) initiating execution of a program stored in a non-volatile memory;

b) generating an exception if a program command attempts to write to a location within the non-volatile memory;

c) relocating a portion of the contents of the non-volatile memory including the location to a main memory in response to the exception; and

d) restarting the program at the program command.

5,829,014

METHOD OF SUPERVISING STORAGE OF DATA IN A MEMORY CARD HAVING EEPROM AND A MEMORY CARD SYSTEM USING THE SAME

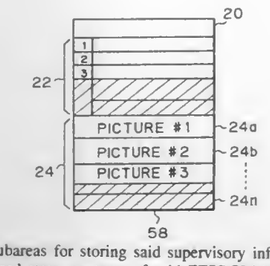
Kenkichi Hayashi, Tokyo, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 499,043, Jul. 6, 1995, abandoned, which is a continuation of Ser. No. 857,504, Mar. 25, 1992, abandoned. This application Feb. 28, 1997, Ser. No. 808,859
Claims priority, application Japan, Apr. 4, 1991, 3-097867
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—103 **15 Claims**

1. In a system in which a flash type EEPROM (Electrically Erasable Programmable Read Only Memory) is adopted as a storage device for storing image data, the image data being stored on a write once basis, a method of supervising storage of data and supervisory information associated with the data in a memory card having the flash type EEPROM as a memory device, said method comprising the steps of:

formatting said EEPROM into a data area having a plurality of data subareas for storing data and a directory area having a plurality of supervisory subareas, said supervisory subareas being associated on a one-to-one basis with said plurality of

VOL 1215 ISS 4 OCT 27 1998 UMI



data subareas for storing said supervisory information in an initialized state, contents of said EEPROM being initialized with a same value;

forming in each of said plurality of supervisory subareas an identification (ID) field for writing an occupancy code which remains in the initialized state until the data is written to an associated data subarea and which assumes a state different from the initialized state once said data is written to the associated data subarea, said different state representing the associated data subarea as being occupied said occupancy code being changed automatically without being initiated by an operator, whereby data management is carried out on a file-by-file basis so as to avoid rewriting of said supervisory subareas; and

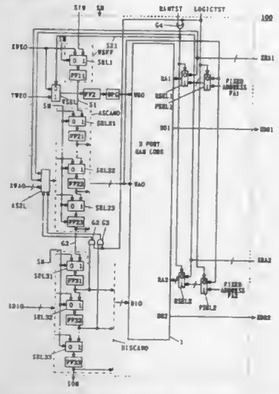
reading or writing data in or out of any one of said plurality of data subareas after determining whether or not the occupancy code exists in the ID field related to the associated data subarea.

5,829,015

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE HAVING MULTI-PORT RAM MEMORY WITH RANDOM LOGIC PORTION WHICH CAN BE TESTED WITHOUT ADDITIONAL TEST CIRCUITRY

Hideshi Maeno, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 28, 1997, Ser. No. 790,251
Claims priority, application Japan, Sep. 5, 1996, 8-235051
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 711—104 **5 Claims**



1. A semiconductor integrated circuit device, comprising:

a multi-port RAM which can make a simultaneous access to a plurality of addresses; and

a random logic portion for transferring a predetermined signal from/to said multi-port RAM,

wherein said multi-port RAM comprises:

a multi-port RAM core which is a main body of said RAM; and

signal transfer means for transferring said predetermined signal between said RAM core and said random logic portion,

wherein said signal transfer means comprises:

read address supply means connected to an address input terminal of a read port of said RAM core; and

a scan path circuit connected to an address input terminal of a write port of said RAM core, for supplying a predetermined address signal,

wherein said read address supply means comprises:

a first function for supplying said address input terminal of said read port with fixed data which are fixed to a predetermined value as first address data in a first operation mode of said semiconductor integrated circuit device;

a second function for supplying said address input terminal of said read port with held data which are held in said scan path circuit as second address data in a second operation mode of said semiconductor integrated circuit device; and

a third function for supplying said address input terminal of said read port with first data outputted from said random logic portion as third address data in a third operation mode of said semiconductor integrated circuit device,

wherein said scan path circuit has a parallel input terminal for data and parallelly shifts at least second data outputted from said random logic portion to supply said address input terminal of said write port with said second data as said predetermined address signal,

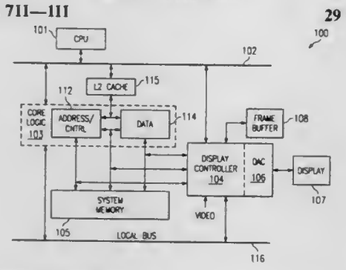
and wherein a data output terminal of said read port of said RAM core is directly given to said random logic portion.

5,829,016

MEMORY SYSTEM WITH MULTIPLEXED INPUT-OUTPUT PORT AND SYSTEMS AND METHODS USING THE SAME

Sudhir Sharma, Plano; Ronald T. Taylor, Grapevine; Michael E. Runas, McKinney, and G. R. Mohan Rao, Dallas, all of Tex., assignors to Cirrus Logic, Inc., Fremont, Calif.

Filed Apr. 24, 1996, Ser. No. 638,953
Int. Cl.[6] G06F *12/00*
U.S. Cl. 711—111 **29 Claims**



1. A memory comprising:

a plurality of input/output terminals multiplexed by cycle for exchanging data bits during a data access cycle and receiving addresses command opcodes and control bits during a command and control cycle;

an array of memory cells;

data input/output circuitry for transferring data between said input/output terminals and said array of memory cells during said data access cycle; and

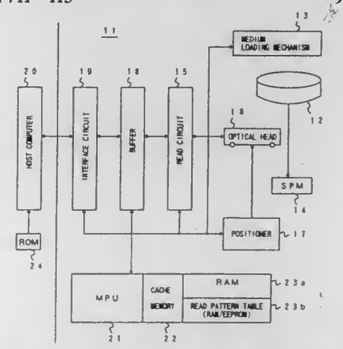
control circuitry for controlling operations of said memory in response to command opcodes and control bits received at said input/output terminals during said command and control cycle.

5,829,017

REMOVABLE MEDIUM DATA STORAGE WITH PRE-READING BEFORE ISSURANCE OF A FIRST READ COMMAND

Masaoki Ohtsuka, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Nov. 30, 1995, Ser. No. 565,118
Claims priority, application Japan, Mar. 15, 1995, 7-055717
Int. Cl.[6] G06F *12/08*
U.S. Cl. 711—113 **9 Claims**



1. A removable medium data storage apparatus in which a recording medium is removable, and data transfer between said removable medium data storage apparatus and a host apparatus is carried out, said removable medium data storage apparatus comprising:

address information storage means for storing address information specified by a read command issued by said host apparatus before the medium is inserted;

read means for reading data including address information, from said recording medium;

a controller for controlling said read means so that said read means reads data from said medium in accordance with said address information stored in said address information storage means before said host apparatus issues a first read command for said medium; and

a buffer memory for storing said data read by said read means from said recording medium.

5,829,018

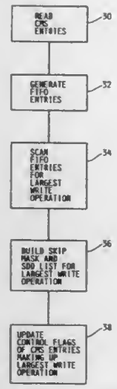
APPARATUS AND METHOD FOR WRITING DATA FROM A CACHE TO A STORAGE DEVICE

Daniel F. Moertl, Rochester; Mark D. Christianson, Hastings; Lee D. Cleveland, West Concord; David E. Becker, and Gene S. Van Grinsven, both of Rochester, all of Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 328,486, Oct. 25, 1994, abandoned. This application May 23, 1997, Ser. No. 863,101
Int. Cl.[6] G06F *12/08*
U.S. Cl. 711—113 **20 Claims**

9. A write cache operation builder for use in building a write operation to write sectors of data from a cache, storing a plurality of cache management stack entries, to a data storage device defining a plurality of sectors, the cache and the data storage device being coupled to a processor and a first-in-first-out (FIFO) register, the write cache operation builder comprising:

a first logic being arranged and configured for converting some of the cache management stack entries stored in the cache to an entry in the FIFO register; and



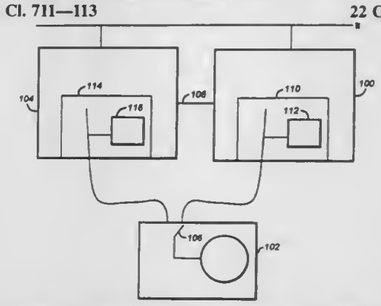
a second logic being arranged and configured to operate in parallel with execution of the first logic, for removing the entry from the FIFO register and scans the entry in order to determine a write operation having a maximum number of sectors of data.

5,829,019

COMPUTER NETWORK SERVER BACKUP WITH POSTED WRITE CACHE DISK CONTROLLERS

Mark J. Thompson, Sping, and Randy D. Schneider, Spring, both of Tex., assignors to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 527,649, Sep. 13, 1995, Pat. No. 5,623,625. This application Apr. 22, 1997, Ser. No. 837,827
Int. Cl.[6] G06F *11/28*
U.S. Cl. 711—113 **22 Claims**



1. A storage system controller for use with a computer and a mass storage subsystem, the storage system controller comprising:

a microcontroller for executing code;

microcontroller executable code that when executed by said microcontroller determines whether the mass storage subsystem has been written to since a most recent writing of data to the mass storage subsystem; and

a posted write cache for holding data from the computer for intended storage in the mass storage subsystem, the posted write cache including cache flush logic that flushes the cache in response to said microcontroller executable code determining that the mass storage subsystem has been written to.

5,829,020

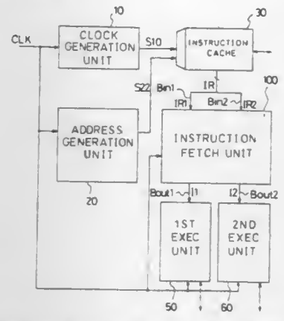
Patent Not Issued For This Number

5,829,021

SYSTEM FOR CONTROLLING OPERATING TIMING OF A CACHE MEMORY

Hiroaki Yamamoto; Shinji Ozaki, and Yoshito Nishimichi, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Jun. 6, 1995, Ser. No. 470,933
Claims priority, application Japan, Jun. 7, 1994, 6-125149
Int. Cl.[6] G06F *12/00*
U.S. Cl. 711—118 8 Claims



1. A data processor having at least a cache memory, said data processor comprising:

means for generating an address signal;

means for generating an address synchronization clock signal in timing corresponding to a change in timing of said address signal;

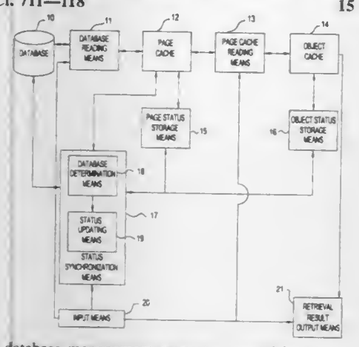
means for controlling an operating timing of said cache memory with an assistance of said address synchronization clock signal.

5,829,022

METHOD AND APPARATUS FOR MANAGING COHERENCY IN OBJECT AND PAGE CACHES

Yoshiki Watanabe, and Hiroshi Hayata, both of Nakai-machi, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Apr. 15, 1996, Ser. No. 632,069
Claims priority, application Japan, Aug. 29, 1995, 7-243671
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 711—118 15 Claims



1. A database management apparatus comprising:

a page cache to store a page having a fixed length containing an object read from a database storing the object;

an object cache that stores the object read from the page stored in the page cache;

a page status information storage device to store page cache status information indicating whether the page stored in the page cache and the page on the database corresponding to the page are consistent;

an object status information storage device to store object cache status information indicating whether the object stored in the object cache and the object on the database corresponding to the object are consistent; and

a status information synchronizing device to execute a synchronization process in order to make the page cache status information stored in the page status storing device corresponding to the page stored in the page cache consistent with the object cache status information stored in the object status information storage device corresponding to the object that is read from the page and stored in the object cache, wherein the status information synchronizing device comprises:

a database determination device to determine whether the page to be stored in the page cache containing the object for which the access request is received consistent with the page in the database corresponding to the pages and

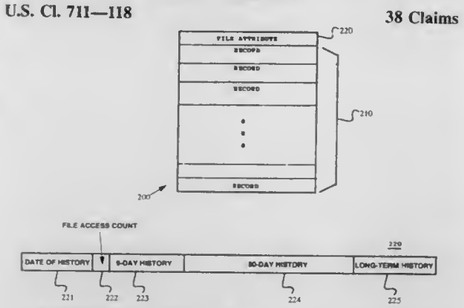
a status information updating device that sets the page status information of the page to invalid status indicating inconsistency with the database when the database determination device determines inconsistency and sets the object status information that is stored in the object status information storage device corresponding to the object read from the page and stored in the object cache to the invalid status that is a status not guaranteeing consistency with the corresponding object in the database.

5,829,023

METHOD AND APPARATUS FOR ENCODING HISTORY OF FILE ACCESS TO SUPPORT AUTOMATIC FILE CACHING ON PORTABLE AND DESKTOP COMPUTERS

Peter B. Bishop, Sunnyvale, Calif., assignor to Cirrus Logic, Inc., Fremont, Calif.

Filed Apr. 24, 1996, Ser. No. 639,016
Int. Cl.[6] G06F *12/00*
U.S. Cl. 711—118 38 Claims



1. A method for encoding a file access history comprising the steps of:

generating a file access history date data field representing a file access history date upon one of which a file access history and a file access for a particular file has occurred,

generating a current access history data field representing a level of access for the particular file on the file access history date,

generating a near term history data field representing levels of access for the particular file for a first predetermined number of days preceding the file access history date,

combining the file access history date data field, the current access history data field, and the near term history data field into a file access history attribute, and

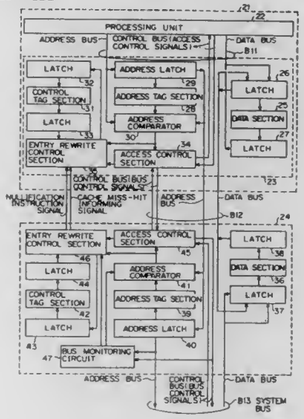
storing the file access history attribute in a memory.

5,829,024

HIERARCHICAL CACHE MEMORY SYSTEM AND METHOD FOR CONTROLLING DATA COHERENCY BETWEEN A PRIMARY AND A SECONDARY CACHE

Taizo Sato, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 63,656, May 20, 1993, abandoned.
This application Jul. 8, 1996, Ser. No. 676,506
Claims priority, application Japan, May 21, 1992, 4-128755
Int. Cl.[6] G06F *12/08;13/00*
U.S. Cl. 711—122 8 Claims



1. A hierarchical cache memory system in which a processing unit performs processing independent of a system bus to which a main memory is connected, the hierarchical cache memory system comprising:

a primary cache memory connected to the processing unit to which the processing unit makes direct access;

a second cache memory connected between said primary cache memory, said main memory and the system bus such that the processing unit cannot accesses the system bus except through said secondary cache memory; and

a first entry rewrite control means, provided in said primary cache memory, for receiving an address corresponding to a replacement entry, which is an entry to be invalidated, from said secondary cache memory when a cache miss-hit is made in said secondary cache memory and when said primary cache memory has a corresponding entry to the replacement entry, making the corresponding entry the replacement entry otherwise setting the replacement entry based on a predefined replace priority; and

a second entry rewrite control means, provided in said secondary cache memory, for transferring the address of the replacement entry to said primary cache memory prior to a transfer of data to said primary cache memory when said cache miss-hit is made in said secondary cache memory;

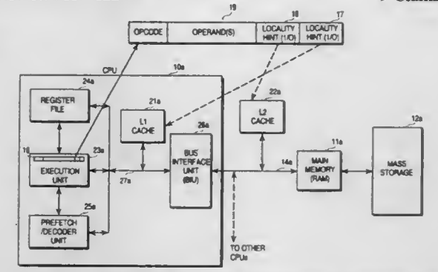
wherein when said secondary cache memory has a first entry corresponding to an address in the main memory which is to be rewritten, said second entry rewrite control means makes the first entry invalid and directs said primary cache memory to make a corresponding entry invalid and outputs the address of the first entry to said primary cache memory, and said first entry rewrite control means invalidates the corresponding entry in said primary cache memory.

5,829,025

COMPUTER SYSTEM AND METHOD OF ALLOCATING CACHE MEMORIES IN A MULTILEVEL CACHE HIERARCHY UTILIZING A LOCALITY HINT WITHIN AN INSTRUCTION

Millind Mittal, South San Francisco, Calif., assignor to Intel Corporation, Santa Clara, Calif.

Filed Dec. 17, 1996, Ser. No. 767,950
Int. Cl.[6] G06F *13/00;12/12*
U.S. Cl. 711—122 9 Claims



1. A computer system for providing cache memory management comprising:

a main memory;

a processor coupled to said main memory for accessing locations of said main memory for data transfer between said processor and said main memory;

a plurality of cache memories coupled to said processor and said main memory and arranged so that a cache memory closest to said processor with respect to data transfer is at a lowest level of a cache hierarchy and any other cache memories in said cache hierarchy are arranged at a higher level or levels in said cache hierarchy;

said processor for receiving an instruction in which a locality hint value is included therein for determining at which of the cache levels cache allocation is to be made, said locality hint value specifying a particular access for data as being temporal or non-temporal at a given one of the cache levels, in the event that said particular access is specified as temporal with respect to a cache level Li, then said particular access is further specified to be temporal for all cache levels Lj, where j is greater than i; in the event that said particular access is specified as non-temporal with respect to a cache level Lk, then said particular access is further specified to be non-temporal for all cache levels Ll, where l is less than or equal to k, and temporal for all cache levels Lm, where m is greater than k, wherein values of k nearest to zero denote said cache level Lk being closer to said processor in said cache hierarchy with respect to data transfer.

5,829,026

METHOD AND STRUCTURE FOR IMPLEMENTING A CACHE MEMORY USING A DRAM ARRAY

Wingyu Leung, Cupertino, and Fu-Chieh Hsu, Saratoga, both of Calif., assignors to Monolithic System Technology, Inc., Sunnyvale, Calif.

Continuation of Ser. No. 343,306, Nov. 22, 1994, abandoned.
This application Mar. 5, 1997, Ser. No. 812,000
Int. Cl.[6] G06F *12/08*
U.S. Cl. 711—122 47 Claims

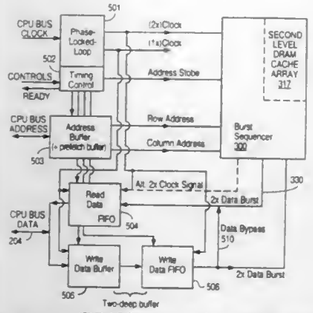
1. A computer system comprising:

a central processing unit (CPU);

a first level cache memory integrated with the CPU;

a bus coupled to the CPU wherein data is transferred on the bus in response to a first clock signal having a first clock frequency, wherein data is transferred on the bus at a first data rate; and

a next level cache memory coupled to the bus, wherein the next level cache memory comprises at least one dynamic random



access memory (DRAM) array and a control circuit for controlling data transfer between the bus and the DRAM array, wherein the control circuit derives a second clock signal from the first clock signal, and causes data to be transferred to and from the DRAM array in response to a second clock signal at a second data rate which is faster than the first data rate, wherein the control circuit comprises a read buffer having a data input port coupled to the DRAM array and a data output port coupled to the bus, wherein the data input port is clocked by the second clock signal and the data output port is clocked by the first clock signal, and data is transferred from the DRAM array to the read buffer via the data input port faster than data is transferred from the read buffer to the bus via the data output port.

5,829,027

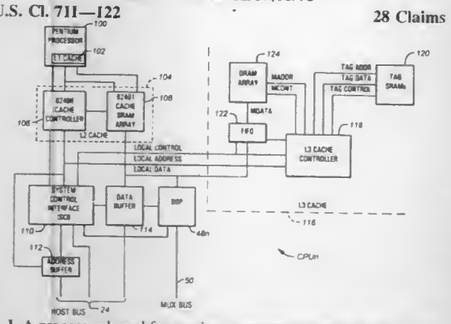
REMOVABLE PROCESSOR BOARD HAVING FIRST, SECOND AND THIRD LEVEL CACHE SYSTEM FOR USE IN A MULTIPROCESSOR COMPUTER SYSTEM

Alan L. Goodrum, Cypress, Tex., assignor to Compaq Computer Corporation, Houston, Tex.

Continuation of Ser. No. 238,248, May 4, 1994, abandoned. This application Mar. 31, 1997, Ser. No. 828,868

Int. Cl.[6] G06F *12/08;12/12*

U.S. Cl. 711—122 **28 Claims**



1. A processor board for use in a computer system, the processor board connectable to a host bus of the computer system, the host bus being coupled to a main memory, comprising:

a circuit board defining an area;

a microprocessor;

a first level cache system connected to said microprocessor and contained within the area defined by said circuit board;

a second level cache system connected to said first level cache system and larger than said first level cache system, said second level cache system being contained within the area defined by said circuit board; and

an automatically enabled third level cache system removably connected to said second level cache system and larger than said second level cache system, said third level cache system being contained within the area defined by said circuit board, the computer system executing operations for which data is available in said first level cache system second level cache system and third level cache system on said circuit board thereby reducing operations executed in main memory and preventing saturation of the host bus.

5,829,028

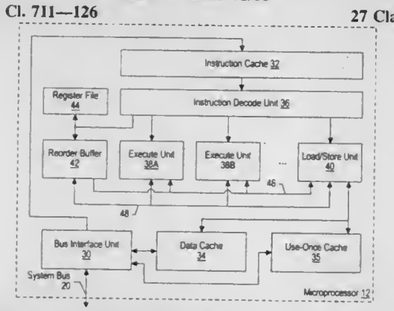
DATA CACHE CONFIGURED TO STORE DATA IN A USE-ONCE MANNER

Thomas W. Lynch, and Christopher J. Yard, both of Austin, Tex., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed May 6, 1996, Ser. No. 643,343

Int. Cl.[6] G06F *12/08*

U.S. Cl. 711—126 **27 Claims**



18. A microprocessor comprising:

a first data cache configured to store first data for access by said microprocessor in response to instructions executed by said microprocessor, wherein said first data cache is configured to retain said first data when said first data is accessed by said microprocessor;

a second data cache configured to store second data for access by said microprocessor in response to instructions executed by said microprocessor, wherein said second data cache is configured to discard said second data when said second data is accessed by said microprocessor; and

a load/store unit coupled to said first data cache and said second data cache, wherein said load/store unit is configured to access said first data cache and said second data cache in response to load memory operations.

5,829,029

PRIVATE CACHE MISS AND ACCESS MANAGEMENT IN A MULTIPROCESSOR SYSTEM WITH SHARED MEMORY

William A. Shelly; Robert J. Baryla, both of Phoenix, and Minoru Inoshita, Glendale, all of Ariz., assignors to Bull HN Information Systems Inc., Billerica, Mass.

Filed Dec. 18, 1996, Ser. No. 769,682

Int. Cl.[6] G06F *12/08*

U.S. Cl. 711—133 **3 Claims**

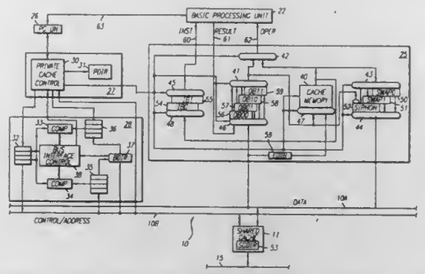
1. A computer system comprising:

A) a group of central processor units;

B) a private cache module for each of said central processor units in said group, each said private cache module communicating bilaterally with its central processor unit to receive requests for instruction and operand information blocks and for servicing such requests;

C) a CPU bus coupled to all said private cache modules in said group for bilateral communication therewith of address, control and information blocks;

D) a shared cache unit coupled to said CPU bus for bilateral communication therewith of address, control and information blocks;



E) each said private cache memory module including a cache memory and a cache controller, said cache controller comprising:

1) a processor directory for identifying information blocks resident in said cache memory;

2) cache miss detection means for detecting that a requested block of information requested by said private cache memory module's central processing unit is not resident in said cache memory;

3) means for selecting a block resident in said cache memory to be swapped out in contemplation of a serviced request to bring said requested block into said cache memory and for instituting a swap operation;

4) a command/address output buffer stack;

5) means for entering the identification of said requested block and the identification of said block to be swapped out into said command/address output buffer stack;

6) means for selectively sending the identifications of said requested block and said block to be swapped out from said command/address output buffer stack onto said CPU bus;

7) a command/address input buffer stack;

8) means for copying the identifications of all requested blocks from all said central processor units in said group into said command/address input buffer stack;

9) a first comparator for comparing the identifications of blocks to be swapped out in said command/address output buffer stack with the identifications of blocks in said command/address input buffer stack;

10) means, responsive to said first comparator ascertaining that a swap identification in said command/address output buffer stack and a request identification in said command/address input buffer stack identify the same block, for inhibiting the transfer of a swap command for said same block onto said CPU bus and for converting said swap operation into a siphon operation to thereby service the request for the same block;

11) a bus directory;

12) a command/address transfer buffer stack;

13) means for sending information from said command/address input buffer stack for selective transfer into said bus directory to update the contents thereof;

14) means for selectively transferring information from said bus directory to said command/address buffer stack;

15) a second comparator for comparing the identifications of blocks to be swapped out in said command/address output buffer stack with the identifications of blocks in said command/address transfer buffer stack; and

16) means, responsive to said second comparator ascertaining that a swap identification in said command/address output buffer stack and a block identification in said command/address input buffer stack identify the same block, for inhibiting the transfer of a swap command for said same block onto said CPU bus and for converting said swap operation into a siphon operation to thereby service the request for said same block.

5,829,030

SYSTEM FOR PERFORMING CACHE FLUSH TRANSACTIONS FROM INTERCONNECTED PROCESSOR MODULES TO PAIRED MEMORY MODULES

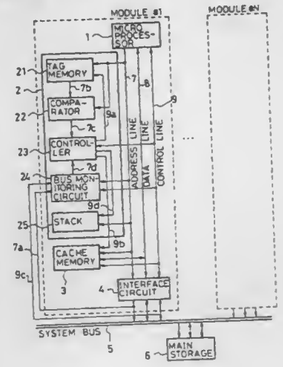
Hitoshi Ishida; Minoru Shiga; Toyohito Hatashita; Yuichi Tokunaga; Hiroyuki Fukuda, and Shunyo Minesaki, all of Kanagawa-ken, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 948,430, Oct. 10, 1997, which is a division of Ser. No. 355,093, Dec. 13, 1994, Pat. No. 5,749,091, which is a continuation of Ser. No. 787,246, Nov. 4, 1991, abandoned. This application Dec. 17, 1997, Ser. No. 992,757

Claims priority, application Japan, Nov. 5, 1990, 2-299487; Sep. 27, 1991, 3-276804

Int. Cl.[6] G06F *12/12*

U.S. Cl. 711—135 **2 Claims**



1. A fault tolerant computer having a plurality of processor modules and a plurality of memory modules connected to each other by a bus, comprising:

in said processor module a processor, a write-back type cache memory, and control means for controlling the cache memory;

wherein the memory modules are paired for the same physical storage space, each pair of memory modules are connected to each other by a communication line, and each memory module comprises a memory, a buffer memory for temporarily storing a cache block transferred from the cache memory and transferring it to the memory, and control means for controlling the buffer memory and carrying out control for the mutual detection of the states of the pair of memory modules through the communication means;

wherein the processor module has notification means for giving to the bus notification of carrying out a cache flush transaction for all the processor modules, and cache block transfer means for carrying out the processing of transferring all the updated cache blocks continuously to memory modules capable of executing the cache flush transaction by a single bus transaction; and

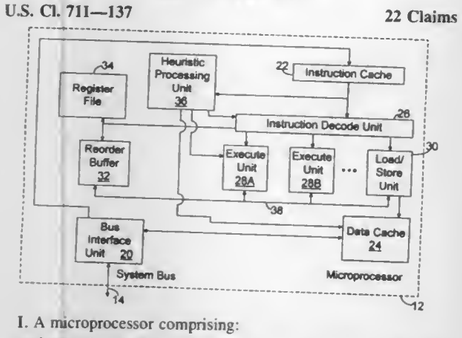
wherein each pair of the memory modules carry out the processing of storing the transferred cache blocks into the memory by the control of the control means and confirm the completion of the storage processing through the communication means, and either one of the pair of memory modules notifies the processor module of the completion through the bus after it confirms the completion of the storage processing.

5,829,031

MICROPROCESSOR CONFIGURED TO DETECT A GROUP OF INSTRUCTIONS AND TO PERFORM A SPECIFIC FUNCTION UPON DETECTION

Thomas W. Lynch, Austin, Tex., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Feb. 23, 1996, Ser. No. 605,869
Int. Cl.[6] G06F *12/00*
U.S. Cl. 711—137 22 Claims



1. A microprocessor comprising:

an instruction cache configured to store a plurality of instructions;

a control unit coupled to receive said plurality of instructions, wherein said control unit is configured to examine said plurality of instructions to detect a predetermined group of instructions indicative of a specific function, and wherein said group of instructions comprises at least two instructions from said plurality of instructions, and wherein said control unit is configured to assert a control signal upon detection of said group of instructions; and

a second unit coupled to receive said control signal, wherein said second unit is configured to perform said specific function upon receipt of said control signal.

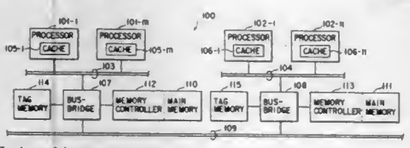
6. The microprocessor as recited in claim 1 wherein said second unit comprises a data cache configured to store data operated upon by said plurality of instructions.

5,829,032

MULTIPROCESSOR SYSTEM

Hiroshi Komuro, Sayama; Hiroo Hayashi, and Nobuhiko Yamagami, both of Tokyo, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Oct. 30, 1995, Ser. No. 550,403
Claims priority, application Japan, Oct. 31, 1994, 6-267770; Jun. 19, 1995, 7-151738
Int. Cl.[6] G06F *12/08*
U.S. Cl. 711—141 18 Claims



1. A multiprocessor system comprising:

a plurality of nodes; and

a system bus for connecting said plurality of nodes to each other, wherein each of said plurality of nodes comprises:

one or more processors, each of said one or more processors having a cache memory;

a processor bus for connecting said one or more processors to each other;

a main memory having allocated a specific part of an address space shared by said plurality of nodes, for storing data n data blocks;

a tag memory for storing tag information for each data block stored in each said main memory of each one of said plurality of nodes, the tag information indicating whether or not each data block is invalidated by any one of said one or more processors in any one of said plurality of nodes other than a present node; and

a controller provided between said system bus and said processor bus in the said present node, comprises:

determining means responsive to a data access request issued from one of said one or more processors of said plurality of nodes, for determining whether or not data requested by the data access request is stored in said main memory of said present node; and

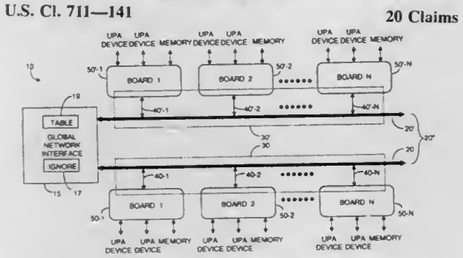
control means for performing control processing of the requested data according to at least one of the determination by said determining means and the tag information.

5,829,033

OPTIMIZING RESPONSES IN A COHERENT DISTRIBUTED ELECTRONIC SYSTEM INCLUDING A COMPUTER SYSTEM

Erik Hagersten, Palo Alto; Ashok Singhal, Redwood City, and Bjorn Liencres, Palo Alto, all of Calif., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 673,059
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—141 20 Claims



1. In an electronic system that includes memory, and a plurality of devices including at least a first device that can initiate a request to read data stored in said memory, and including at least a second device that can communicate beyond said electronic system, said memory and each of said devices connected to a common broadcast bus medium, a method for extending coherency beyond said electronic system, the method comprising the following steps:

(a) detecting, when said first device initiates a read request transaction to a given address in said memory, whether data at said address is marked as having a stale state;

(b) if not marked as having a stale state, satisfying said request by permitting said first device to receive said data; but

(c) if marked as having a stale state, then satisfying said request by permitting said second device to obtain an undated version of said data from beyond said electronic system; and

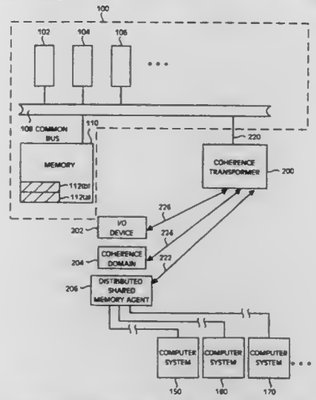
(d) in a single operation sending said updated version of said data to said address for writing in said memory and sending said updated version of said data to said requesting first device.

5,829,034

METHOD AND APPARATUS FOR A COHERENCE TRANSFORMER WITH LIMITED MEMORY FOR CONNECTING COMPUTER SYSTEM COHERENCE DOMAINS

Erik E. Hagersten, Palo Alto, Calif.; Mark Donald Hill, and David A. Wood, both of Madison, Wis., assignors to Sun Microsystems, Inc., Palo Alto, Calif.

Filed Jul. 1, 1996, Ser. No. 677,014
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—141 20 Claims



1. In a computer system having a computer node which has a common bus, a method for enabling an external device in an external domain that is external to said computer node to share memory blocks having local physical addresses in a memory module at said computer node irrespective whether said external device and said common bus both employ a common protocol and irrespective whether said external device and said common bus both operate at the same speed, each of said memory blocks having an associated Mtag for tracking a global state associated with said each of said memory block, including a global exclusive state for indicating that said each of said memory blocks is exclusive to said computer node, a global shared state for indicating that said each of said memory blocks is shared by said computer node with said external device, and a global invalid state for indicating that said each of said memory blocks is invalid in said computer node, said method comprising:

receiving through a coherence transformer that is coupled to said common bus, a first memory access request for a first memory block from said external device;

obtaining a first copy of said first memory block, using said coherence transformer, from said common bus, said coherence transformer having a snoop tag array having a plurality of snoop tags, each of said plurality of snoop tags being configured to track an external state of a copy of one of said memory blocks if cached by said external device, said external state including one of an external exclusive state for indicating that said copy of one of said memory blocks is exclusive to said external domain, an external shared state for indicating that said copy of one of said memory blocks is shared by said external domain, and an external invalid state for indicating that said copy of one of said memory blocks is invalid in said external domain;

if at least one tag in said plurality of snoop tags is available for tracking said external state of said first copy of said first memory block, responding to said first memory access request using a snoop-only approach by tracking said external state of said first copy of said first memory block using said at least one tag;

else if at least one tag in said plurality of snoop tags is not available for tracking said external state of said first copy of said first memory block, responding to said first memory access request using an Mtag-only approach by modifying a first Mtag associated with said first memory block in said memory module at said computer node using said coherence transformer to reflect that said external device is caching said first copy of said first memory block; and

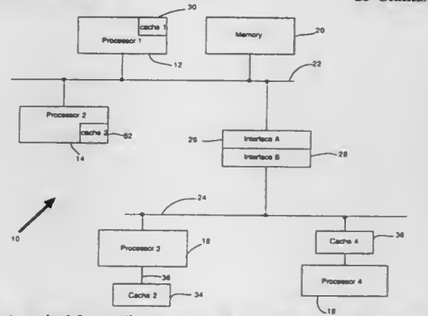
sending said first copy of said first memory block from said coherence transformer to said external device.

5,829,035

SYSTEM AND METHOD FOR PREVENTING STALE DATA IN MULTIPLE PROCESSOR COMPUTER SYSTEMS

David V. James, Palo Alto; Glen D. Stone, San Jose, and Donald N. North, Saratoga, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 577,867, Dec. 22, 1995, abandoned. This application Oct. 3, 1997, Ser. No. 941,807
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—141 23 Claims



1. A method for reading contents of a requested memory address in a first memory device, comprising the steps of:

receiving a first address signal corresponding to the requested memory address;

transmitting data contained in a first memory address location, corresponding to the requested memory address, to a second memory address location, located in a second memory device associated with said requesting processor; and

storing an ownership code in said first memory address location, said ownership code being stored in at least portions of said first memory address location containing said data, before determining if said transmitted contents of said first memory address location is valid data.

5,829,036

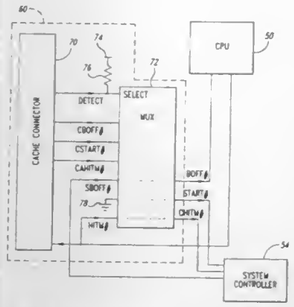
METHOD FOR PROVIDING AND OPERATING UPGRADEABLE CACHE CIRCUITRY

Dean A. Klein, Eagle, Id., assignor to Micron Electronics, Inc., Nampa, Id.

Continuation of Ser. No. 677,267, Jul. 9, 1996. This application Oct. 31, 1997, Ser. No. 961,698
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—141 3 Claims

1. In a computer circuit having a controller coupling a processor with a main memory, the main memory operable to store data and the processor including an internal cache operable to store a subset of the data stored in the main memory, the controller operable to transfer data between the main memory and the processor, the computer circuit further including external cache circuitry coupled with the processor and the controller, the external cache circuitry including cache connecting circuitry operable to receive an external cache module, a method of controlling a cache coherency inquire cycle, comprising the steps of:

producing a detect signal of first and second states, the detect signal of the first state indicating the absence of the external cache module and the detect signal of the second state indicating the presence of the external cache module;



producing first and second cache inquire signals, each having asserted and deasserted states;

in response to the detect signal of the first state, inputting the first cache inquire signal to the processor;

in response to the detect signal of the second state, inputting the second cache inquire signal to the processor; and

in response to an asserted one of the first and second cache inquire signals input to the processor, initiating a cache coherency inquire cycle.

5,829,037

MULTIPROCESSOR SYSTEM HAVING A LARGE NUMBER OF PROCESSOR SYSTEM COMPONENTS CONNECTED TO A PLURALITY OF SERIAL HIGH-SPEED-BUSES

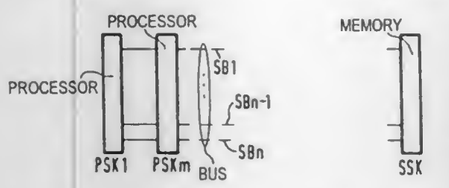
Harald Sachs, Hofolding, Germany, assignor to Siemens Nixdorf Informationssysteme Aktiengesellschaft, Paderborn, Germany

Continuation of Ser. No. 733,093, Oct. 16, 1996, abandoned, which is a continuation of Ser. No. 90,324, Jul. 13, 1993, abandoned. This application Nov. 21, 1997, Ser. No. 976,216

Claims priority, application European Pat. Off., Aug. 19, 1992, 92114159

Int. Cl.[6] G06F *12/00;13/00*

U.S. Cl. 711—141 **4 Claims**



4. A multiprocessor system having a large number of processor units, comprising:

a plurality of processor units, said plurality of processor units being composed of more than 100 processor units, each processor unit of said plurality of processor units having a cache memory;

a system bus for data processing operations directly connected to each processor unit of said plurality of processor units, said system bus having only a plurality of serial high-speed buses arranged in parallel, each processor unit of said plurality of processor units being directly connected to each of said plurality of serial high-speed buses that have a transmission rate greater than four gigabits/sec;

at least one memory component that is connected to said plurality of serial high-speed buses;

each processor unit of said plurality of processor units having a cache memory consistency protocol for maintaining consistency of contents of said cache memories given memory accesses that occur via said system bus, the system bus consisting of only serial high-speed buses;

wherein Raid cache memory consistency protocol is a snoopy cache protocol and wherein each processor unit of said plurality of processor units has means for maintaining consistency of contents of the ;cab memories, for every high-speed his;

wherein said multiprocessor system further comprises an N-wire arbitration bus having bis arbitration mechanism for arbitrating accesses to said plurality of serial high-speed buses amongst said plurality of processors units.

5,829,038

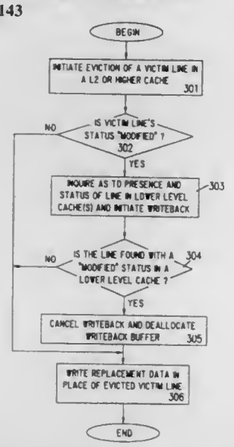
BACKWARD INQUIRY TO LOWER LEVEL CACHES PRIOR TO THE EVICTION OF A MODIFIED LINE FROM A HIGHER LEVEL CACHE IN A MICROPROCESSOR HIERARCHICAL CACHE STRUCTURE

Quinn Merrell, Aloha, and Wen-Hann Wang, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Filed Jun. 20, 1996, Ser. No. 670,253

Int. Cl.[6] G06F *13/14*

U.S. Cl. 711—143 **10 Claims**



1. A method of reducing the number of data writebacks performed in a microprocessor system having an integrated hierarchical cache, in which the cache includes at least a first and a second level cache memory, each of the first and second level cache memories is coupled to at least one writeback buffer, each of the first and second level cache memories includes a data field and a status field, each status field of the plurality of cache lines in the second level cache memory is denoted as a victim cache line and has a status field which indicates a modified status, the method comprising the steps of:

(a) initiating eviction of the victim cache line in the second level cache memory;

(b) initiating a writeback operation on the data in the data field of the victim cache line and allocating the data in the data field of the victim cache line to a writeback buffer coupled to the second level cache memory;

(c) inquiring as to the presence of an associated cache line in the first cache memory corresponding to the victim cache line in the second cache memory;

(d) upon locating an associated cache line in the first cache memory which corresponds to the victim cache line, determining whether the status field of the associated cache line indicates a "modified" or a "clean" status; and

(e) if the status field of the associated cache line indicates a "modified" status, canceling the writeback operation and deallocating the writeback buffer.

5,829,039

MEMORY CONTROL METHOD/DEVICE FOR MAINTAINING CACHE CONSISTENCY WITH STATUS BIT INDICATING THAT A COMMAND IS BEING PROCESSED WITH RESPECT TO A MEMORY AREA

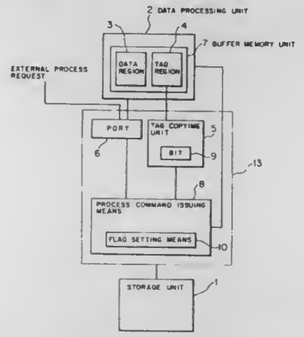
Masatoshi Sugino; Naozumi Aoki; Yukihiko Kitano, and Kenro Nagato, all of Kawasaki, Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 405,984, Mar. 17, 1995, abandoned. This application Jun. 5, 1997, Ser. No. 869,740

Claims priority, application Japan, Jun. 1, 1994, 6-119904

Int. Cl.[6] G06F *12/08*

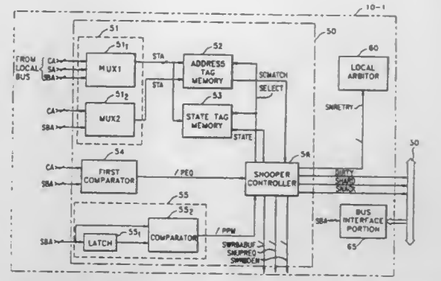
U.S. Cl. 711—144 **26 Claims**



1. A memory control method for an information processing system including a memory unit, at least one of data processing units, each of which operates based on data stored in said memory unit, a memory control unit that controls data transfer between said memory unit and said data processing unit, and a buffer memory unit, said buffer memory unit having a data region which holds a piece of data stored in said memory unit of each data processing unit and a tag region which holds tag information including the address of data stored in said data unit; said memory control unit including a tag copying unit that holds a piece or all of copy information stored in said tag region in said buffer memory unit, and a port which holds a process request sent from each data processing unit or an external process request; said memory control method including issuing a predetermined processing command sent to said buffer memory unit within said data processing unit from said memory control unit, according to a process request held by said port and with reference only to said tag copying unit; and controlling the data holding state of said buffer memory unit on a store-in basis; said memory control method further comprising the steps of:

issuing said predetermined processing command sent to said buffer memory unit within said data processing unit; and

setting at the same time a flag showing a process under request, to a portion to be processed under said predetermined processing command held in said tag copying unit.



a system bus connecting the processor board and the main memory; and

a snooper circuit located on the processor board, the snooper circuit including:

address tag memory means for storing an address of the cache memory of the processor board to which the address tag memory belongs, receiving the address operated on the system bus by an other requester, and outputting an address match signal if the received address matches the stored address;

a state tag memory for storing data state of the matched address;

a multiplexer for providing tag addresses to both said address tag memory and said state tag memory;

a first comparator means for comparing the address driven by the other requester and the address driven by snooper controller and generating a signal indicative of the results of the comparison;

a second comparator means for latching the address driven by the CPU at the starting time of the CPU's bus operation, and comparing the monitored address on the system bus with the latched address at a predetermined interval and generating a signal indicative of the results of the comparison; and

a snooper controller means for determining whether the address driven by the other requester matches the address of the snooper controller according to the signal of the first comparator, determining, before finish of the bus operation requested by a specific requester, whether the other requester requests the bus operation for the same address according to the signal of the second comparator, outputting a predetermined cache coherency signal on the system bus according to the determined results and the address match signal, outputting on the local bus a first control signal for write-back, a second control signal for updating state, a third control signal for controlling a data buffer and fourth control signal for retrying of the CPU, and referring or updating the state tag memory.

5,829,040

SNOOPER CIRCUIT OF A MULTI-PROCESSOR SYSTEM

Min-hee Son, Seoul, Rep. of Korea, assignor to Samsung Electronics Co., Ltd., Suwon, Rep. of Korea

Continuation of Ser. No. 361,484, Dec. 22, 1994, abandoned. This application Apr. 18, 1997, Ser. No. 839,346

Claims priority, application Rep. of Korea, Apr. 11, 1994, 94-7531

Int. Cl.[6] G06F *13/00*

U.S. Cl. 711—146 **4 Claims**

4. A multi-processor system comprising: a plurality of processor boards each having a CPU, cache memory and cache controller for controlling the cache memory, which are connected to each other with a local bus;

at least one main memory;

5,829,041

METHOD AND APPARATUS FOR MANAGING SINGLE VIRTUAL SPACE SUITABLE FOR DISTRIBUTED PROCESSING

Toshio Okamoto, Tokyo; Tetsuro Kimura, and Kenji Shirakawa, both of Kanagawa-ken, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Sep. 14, 1995, Ser. No. 528,335

Claims priority, application Japan, Sep. 14, 1994, 6-219655

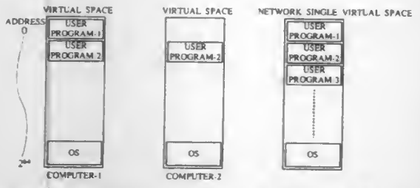
Int. Cl.[6] G06F *13/00*

U.S. Cl. 711—147 **28 Claims**

1. A method for managing a virtual space in a distributed system formed by a plurality of computers capable of communicating with each other, the method comprising the steps of:

sharing a virtual space for arranging programs and/or data among said plurality of computers;

dividing the virtual space into a plurality of regions;



requesting from each computer a part of the virtual space to be managed independently by each computer, in units of said regions;

allocating one of said regions to each computer in response to each request from each computer, while managing allocations of said regions to said plurality of computers so as not to allocate each one of said regions to more than one computer;

managing one allocated region independently at each computer; and

using at one computer a part or a whole of a desired one of said regions allocated to another computer, by obtaining a permission from said another computer that independently manages said desired one region.

5,829,042

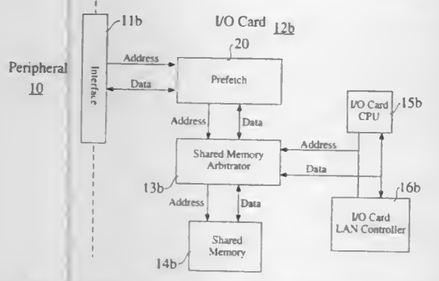
PREFETCH OPERATION FOR NETWORK PERIPHERAL DEVICE HAVING SHARED MEMORY

Samuel C. Leung, Roseville, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Feb. 15, 1996, Ser. No. 601,909

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—147 **44 Claims**



1. An apparatus for reducing shared memory contention at an interface between a peripheral device and a computer network, the interface implementing a data transfer protocol such that packet data is linearly transmitted via said interface to said shared memory, and the control mechanism for said packet resides in a predefined location in a shared memory, the apparatus comprising:

a shared memory;

a shared memory arbitrator; and

a prefetch module located between said peripheral device and said shared memory arbitrator, said prefetch module prefetching the next requested data in a read operation on said packet data, said prefetch module further comprising:

an access state machine for processing peripheral device shared memory requests;

at least one prefetch address register;

at least one prefetch buffer with at least one valid flag; and

a prefetch fence register.

5,829,043

COUPLER CIRCUIT AND ITS USE IN A CARD AND PROCESS

Roger Gilet, deceased, late of L'Hay Les Roses, France; by Renale Gilet, administrator, 2, allée des Troënes, l'Haÿ les Roses, France, and Pascal Vergnory Mion, 29, rue de l'avant-garde, 93700 Drancy, France

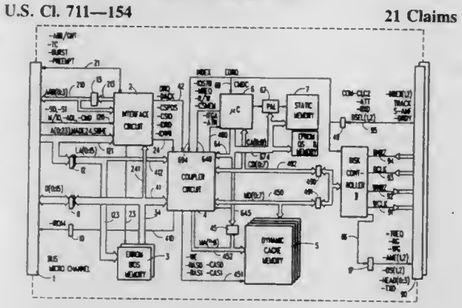
Continuation of Ser. No. 133,103, Sep. 28, 1994, abandoned.

This application Nov. 12, 1996, Ser. No. 747,995

Claims priority, application France, Apr. 15, 1991, 91-04598; WIPO, Apr. 14, 1992, PCT/FR92/00332

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—154 **21 Claims**



1. A coupler circuit (**4**) for relieving a microprocessor (**6**) of directing individual data exchanges between a disk controller (**9**), a dynamic cache memory (**5**), and a central processor, said coupler circuit (**4**) comprising:

means for directing data exchanges between said disk controller (**9**) and said dynamic cache memory (**5**) including first circuitry (**495**, **494**, **480**, **447**, **446**, **443**, **442**, **441**, **440**, **430**, **48**) for receiving a disk controller data exchange request signal, for assigning a highest level of priority to said disk controller data exchange request signal, and for providing access control signals to said dynamic cache memory (**5**), said first circuitry being initialized by said microprocessor (**6**);

means for refreshing said dynamic cache memory (**5**) including second circuitry (**4960**, **494**, **480**, **430**, **48**) for generating a refresh cycle request signal, for assigning a second highest level of priority to said refresh cycle request signal, and for providing refresh control signals to said dynamic cache memory (**5**);

means for directing data exchanges between said microprocessor (**6**) and said dynamic cache memory (**5**) including third circuitry (**4920**, **4500**, **480**, **447**, **430**, **402**, **48**) for receiving a microprocessor data exchange request signal, for assigning a third highest level of priority to said microprocessor data exchange request signal, and for providing access control signals to said dynamic cache memory (**5**); and

means for directing data exchanges between said dynamic cache memory (**5**) and a stack (**47**) incorporated into said coupler circuit (**4**) including fourth circuitry (**4500**, **480**, **447**, **446**, **445**, **444**, **430**, **402**, **48**) for receiving a stack data exchange request signal, for assigning a lowest level of priority to said stack data exchange request signal, and for providing access control signals to said stack (**47**) and said dynamic cache memory (**5**), said fourth circuitry being initialized by said microprocessor (**6**).

5,829,044

FILING APPARATUS FILING SYSTEM FILE PROCESSING METHOD AND PROGRAM CONTAINING FILE PROCESSING METHOD

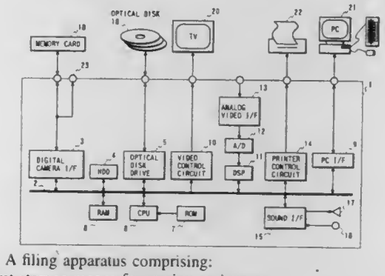
Koichi Sono, Hiratsuka, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 1, 1996, Ser. No. 690,995

Claims priority, application Japan, Aug. 2, 1995, 7-215497

Int. Cl.[6] G06F *12/00*

U.S. Cl. 711—156 **11 Claims**



1. A filing apparatus comprising:

first storage means for storing an image;

second storage means having a faster access speed than that of said first storage means;

retrieval information storage means for storing retrieval information for retrieving images stored in said first and second storage means; and

control means for transferring the image stored in said second storage means to said first storage means in response to reading of the image from said first storage means using the retrieval information.

5,829,045

APPARATUS FOR RESTORING/COPYING THE CONTENTS RECORDED IN A STORAGE MEDIUM TO AN AUXILIARRY STORAGE INCLUDING PARTITIONS HAVING INDEPENDENT FILE STRUCTURES

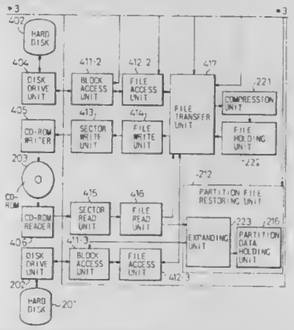
Minoru Motoyama, Kawasaki, Japan, assignor to Fujitsu Limited, Tokyo, Japan

Filed Sep. 12, 1995, Ser. No. 527,198

Claims priority, application Japan, Oct. 28, 1994, 6-265699

Int. Cl.[6] G06F *12/16*

U.S. Cl. 711—162 **2 Claims**



1. An apparatus for restoring the contents recorded in a storage medium to an auxiliary storage, comprising:

a first auxiliary storage comprising at least one partition having an independent file structure, and one particular partition recording partition data concerning storage position of data in said at least one partition;

a second auxiliary storage comprising one partition data file corresponding to said particular partition in said first auxiliary storage for holding said partition data, and at least one partition file corresponding to said at least one partition in said first auxiliary storage for holding contents of said at least one partition;

a partition data restoring unit, operatively connected to said first auxiliary storage and said second auxiliary storage, reading said partition data file from said second auxiliary storage and recording said partition data into said particular partition in said first auxiliary storage in response to an input command for restoration from said second auxiliary storage to said first auxiliary storage;

a partition file restoring unit, operatively connected to said first auxiliary storage and said second auxiliary storage, receiving said partition data from said partition data restoring unit, sequentially reading said at least one partition file from said second auxiliary storage in accordance with said input command, and recording the contents of said at least one partition file into corresponding storage position in said at least one partition in said first auxiliary storage;

a third auxiliary storage recording having the same data format as said first auxiliary storage and recording said partition data to be restored in said first auxiliary storage and contents of said at least one partition;

a fourth auxiliary storage having the same data recording format as said first auxiliary storage and having storage capacity equal to or exceeding contents to be restored into said first auxiliary storage;

a partition data file preparing unit, operatively connected to said third auxiliary storage and said fourth auxiliary storage, reading said partition data in said third auxiliary storage, preparing a partition data file including said partition data, and storing said partition data file into said fourth auxiliary storage;

a partition file preparing unit, operatively connected to said third auxiliary storage and said fourth auxiliary storage, reading the contents of said at least one partition in said third auxiliary storage based on said partition data read by said partition data file preparing unit preparing at least one partition file including the contents of said at least one partition, and storing said partition file into said fourth auxiliary storage;

a first file transferring unit, operatively connected to said second auxiliary storage and said fourth auxiliary storage, transferring said partition data file and said at least one partition file, both stored in said fourth auxiliary storage, to said second auxiliary storage;

a compression device, operatively connected to said second auxiliary storage and said fourth auxiliary storage, compressing the contents of said partition data file and said at least one partition file, both stored in said second auxiliary storage, based on a predetermined compression method;

a first expanding device provided in said partition data restoring unit expanding said partition data file compressed by said compression means and stored in said second auxiliary storage, based on a predetermined expanding method;

a second expanding device provided in said partition restoring unit expanding said at least one partition file compressed by said compression device and stored in said second auxiliary storage, based on the predetermined expanding method; and

a second file transfer unit, operatively connected to said compression device and said second auxiliary storage, transferring said partition data file and said at least one partition file, both compressed by said compression device, to said second auxiliary storage.

5,829,046

ON-LINE TAPE BACKUP USING AN INTEGRATED CACHED DISK ARRAY

Percy Tzelnic, Concord, and Scott R. Dunham, Billerica, both of Mass., assignors to EMC Corporation, Hopkinton, Mass.

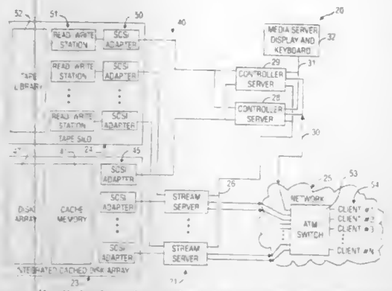
Filed Jun. 10, 1996, Ser. No. 661,187

Int. Cl.[6] G06F *12/14*

U.S. Cl. 711—162 **34 Claims**

1. A file server for providing save and restore backup services to clients in a data network, said file server comprising, in combination:

a cached disk storage subsystem including a random access cache memory and a multiplicity of disk drives;



a tape silo linked to the cached disk storage subsystem for the transfer of data from the cached disk storage subsystem to the tape silo;

a plurality of stream server computers linking the cached disk storage subsystem and tape silo to the data network for transfer of data between the cached disk storage subsystem and the data network and between the tape silo and the data network; and

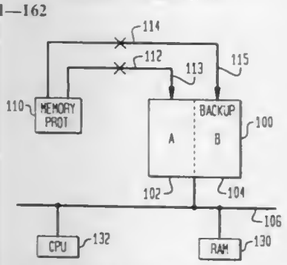
a controller server for receiving a save or restore backup service request from a client in the data network, for performing volume management and scheduling for the backup service request, and for selecting one of the stream server computers to receive backup data from the client in response to a save backup service request or to transmit the backup data to the client in response to a restore backup service request, and further in response to the save backup service request, for prestaging the backup data from the client into the cached disk storage subsystem and at a later time staging the backup data into the tape silo by transfer of the backup data from the cached disk storage subsystem to the tape silo.

5,829,047

BACKUP MEMORY FOR RELIABLE OPERATION

Steven Anthony Jacks, Villa Park, Ill., and Kevin John McNeley, Succasunna, N.J., assignors to Lucent Technologies Inc., Murray Hill, N.J.

Filed Aug. 29, 1996, Ser. No. 703,145
Int. Cl.[6] G06F *13/00*
U.S. Cl. 711—162 **15 Claims**



1. A method of providing a reliable long term backup memory from memory having write protection arrangements comprising the steps of:

applying write protection when the backup memory is not being updated;

splitting said backup memory into at least two segments each segment having separately controllable write protection each segment having a complete copy of a block of backup data, and each block of backup data being stored in at least two of said segments;

updating one of said segments while removing write protection only from the segment being updated;

following an update of a segment of backup memory verifying contents of the updated segment; and

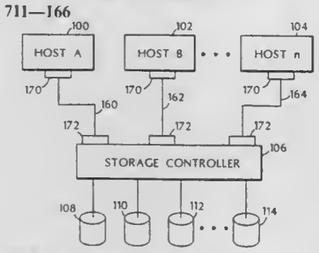
if contents of the updated segment are verified, applying write protection to the updated segment.

5,829,048

RESET PROPAGATION FOR A MULTI-PORT STORAGE CONTROLLER

Erez Ofer, Brookline; John Fitzgerald, Mansfield, and Yuval Ofek, Hopkinton, all of Mass., assignors to EMC Corporation, Hopkinton, Mass.

Filed Jun. 3, 1996, Ser. No. 657,340
Int. Cl.[6] G06F *13/14*
U.S. Cl. 711—166 **6 Claims**



1. A mass storage system comprising:

a mass storage array having a plurality of mass storage devices,

a storage controller for receiving commands and data over a plurality of host buses, and storing the data in the mass storage array,

a first host for communicating data and commands over a first host communications bus connected to said storage controller at a first port,

a second host for communicating data and commands over a second host communications bus connected to said storage controller at a second port,

each host being able to generate a reset command to said storage controller to reset at least one storage device to which it has access, and

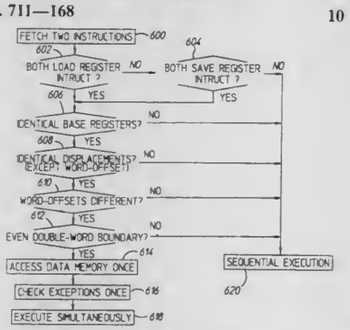
said storage controller enabling any other host having access to said reset storage devices to recognize that the storage controller received a reset command from a different host to reset said storage devices.

5,829,049

SIMULTANEOUS EXECUTION OF TWO MEMORY REFERENCE INSTRUCTIONS WITH ONLY ONE ADDRESS CALCULATION

William L. Walker; Mark R. Storey; Patrick Knebel, and Stephen R. Undy, all of Fort Collins, Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Continuation of Ser. No. 322,050, Oct. 12, 1994, abandoned. This application Jan. 21, 1997, Ser. No. 785,105
Int. Cl.[6] G06F *9/28*
U.S. Cl. 711—168 **10 Claims**



1. A method of improving the performance of a computer processor, the method comprising the following steps:

(a) extracting a first data address of a first instruction;

(b) extracting a second data address of a second instruction, the first and second instructions having target registers that are not contiguous;

(c) determining that the two data memory addresses are both in the same double word;

(d) determining that the first and second instructions can be executed simultaneously based only on the outcome of step (c);

(e) accessing data memory only once; and

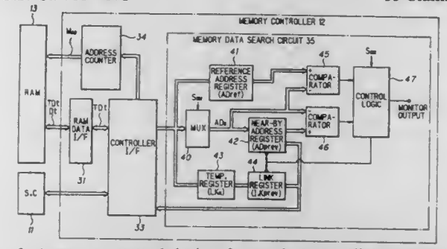
(f) executing the first and second instructions simultaneously.

5,829,050

MEMORY CONTROL DEVICE AND MEMORY DATA SEARCH CIRCUIT

Yasuaki Maeda, Kanagawa, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation of Ser. No. 230,117, Apr. 20, 1994, abandoned. This application Mar. 24, 1997, Ser. No. 822,823
Claims priority, application Japan, Apr. 23, 1993, 5-119302
Int. Cl.[6] G06F *12/02*
U.S. Cl. 711—171 **16 Claims**



1. A memory control device, for use in a recording apparatus, having memory means for reading out and storing recording information and management information from or to a recording medium which medium includes a plurality of recordable segments and a plurality of recorded segments and within the plurality of recorded segments, the recording medium has recorded thereon recording data and management information data, wherein the management information data includes addresses of the segments and can be used to manage the plurality of recordable segments and the plurality of recorded segments and wherein recording, erasing, and overwriting operations for the recording medium are carried out on the basis of the management information in the memory means by editing the management information stored in the memory means following the recording, erasing, or overwriting edited management information on the recording medium at predetermined of predetermined segments so as to minimize wasted recording medium space, the memory control device comprising:

a system control means for providing addresses of predetermined segments on the recording medium;

a reference address register, coupled to the system control means, for storing a reference address (N_{ref}) of a reference segment on the recording medium to be edited, wherein the reference address is transmitted to the reference address register from the system control means;

a searching address register for storing a searching address;

comparison means, coupled to the reference address register and the searching address register, for comparing addresses stored in the searching address register to addresses stored in the reference address register;

retrieving means for retrieving searching addresses until an address (N) of a segment on the recording medium nearest to the reference address (N_{ref}) of the reference segment is detected; and

discriminating means for discriminating the sequence and relative difference of positions on the recording medium of the address (N) and the reference address (N_{ref}) to detect wasted recording medium space,

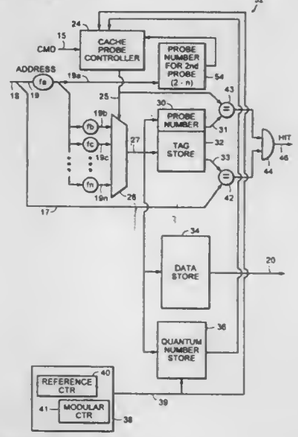
wherein if wasted recording medium space is detected by the discriminating means, the management information data is edited so as to connect the segments identified by the address (N) and the reference address (N_{ref}).

5,829,051

APPARATUS AND METHOD FOR INTELLIGENT MULTIPLE-PROBE CACHE ALLOCATION

Simon C. Steely, Jr., Hudson, N.H.; Richard B. Gillett, Jr., Westford, and Tryggve Fossum, Northborough, both of Mass., assignors to Digital Equipment Corporation, Maynard, Mass.

Filed Apr. 4, 1994, Ser. No. 223,069
Int. Cl.[6] G06F *9/26*
U.S. Cl. 711—216 **17 Claims**



1. An apparatus comprising:

a bus disposed to provide address data;

a memory subsystem coupled to said bus, said memory subsystem comprising:

a first memory having a plurality of locations for storing data, said first memory addressed by a lower portion of said address;

means for encoding said lower portion of said address on said bus to provide at least three alternative addresses for accessing said first memory; and

means for selecting one of said plurality of alternative addresses for accessing said first memory, wherein said means for selecting includes means for precluding the selection of alternative addresses corresponding to locations in said first memory which store data that is not associated with said lower portion of said address.

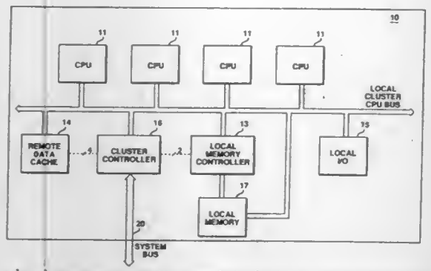
5,829,052

METHOD AND APPARATUS FOR MANAGING MEMORY ACCESSES IN A MULTIPLE MULTIPROCESSOR CLUSTER SYSTEM

Stephen Pawlowski, Beaverton, and Tom Holman, Portland, both of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 367,443, Dec. 28, 1994, abandoned. This application Dec. 10, 1996, Ser. No. 762,996
Int. Cl.[6] G06F *12/00;13/00*
U.S. Cl. 711—147 **8 Claims**

1. In a multiple-cluster computer system in which a cluster includes a processor and a local memory and wherein said local memory is part of a system address space of said computer system, such that said local memory is accessible by said processor and by resources remote to said cluster, an apparatus for controlling accesses to said local memory comprising:



a local memory controller coupled to said processor and to said local memory and being configured to control accesses to said local memory by said processor;

a cluster controller coupled to said local memory controller and to said resources remote to said cluster and being configured to control accesses to said local memory by said resources;

said cluster controller including a look-up table of local memory locations which can be accessed by said remote resources, said look-up table including a portion which stores address tags associated with said local memory locations access by a remote resource to a first location in said local memory being permitted when said first location is not being accessed by another remote resource;

said cluster controller being further configured to arbitrate for access to said local memory from said local memory controller in response to an access request by said remote resource;

said cluster controller also being configured to control access to said local memory by said processor via said local memory controller, wherein an attempted access by said processor to a location in said local memory is permitted when said location is not being accessed by one of said remote resources;

a data cache which contains data accessed from locations remote to said cluster for use by said processor, wherein said cluster controller is further configured to obtain data from remote locations when requested by said processor and to retain address of said remote locations of data stored in said data cache, such that data from remote location are stored in said data cache for use by said processor.

5,829,053

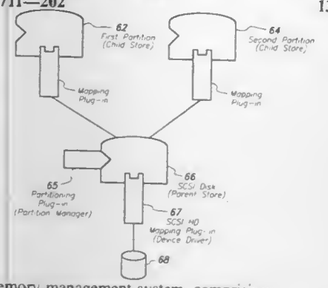
BLOCK STORAGE MEMORY MANAGEMENT SYSTEM AND METHOD UTILIZING INDEPENDENT PARTITION MANAGERS AND DEVICE DRIVERS

David Lee Smith, San Francisco; William J. Keenan, Redwood, and Steven J. Szymanski, Cupertino, all of Calif., assignors to Apple Computer, Inc., Cupertino, Calif.

Filed May 10, 1996, Ser. No. 644,412

Int. Cl.[6] G06F *12/00;12/10*

U.S. Cl. 711—202 **13 Claims**



6. A memory management system, comprising:

a plurality of physical storage media for storing memory data;

a memory manager for generating virtual storage devices containing addresses of memory data stored in the physical storage media, receiving requests to access data corresponding to a portion of the addresses, and accessing the requested data, wherein the virtual storage devices include:

one or more first virtual storage devices, each having a corresponding first device driver for interfacing with the plurality of storage media, each first device driver scanning its corresponding first virtual storage device to determine its partitioning format, and generating one or more second virtual storage devices from a partition map stored in a first partition manager associated with the corresponding first storage device;

each second virtual storage device having one or more second partitioning formats, a second partition manager, and a second device driver, each second device driver being associated with one of the one or more first virtual storage devices, and the first and second partition managers being independent of the first and second device drivers.

5,829,054

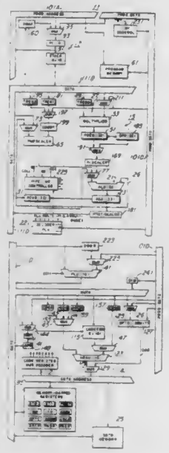
DEVICES AND SYSTEMS WITH PARALLEL LOGIC UNIT OPERABLE ON DATA MEMORY LOCATIONS

Peter N. Ehlig, Houston, and Reid E. Tatge, Richmond, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 1,915, Jan. 8, 1993, abandoned, which is a continuation of Ser. No. 347,968, May 4, 1989, abandoned. This application Feb. 26, 1997, Ser. No. 806,463

Int. Cl.[6] G06F *12/00;15/76*

U.S. Cl. 711—202 **55 Claims**



55. A method for addressing data in a data processing device, having:

a central processor with at least one register,

an address generator with auxiliary registers,

a data memory, and,

circuitry for communicating between said central processor, address generator, and data memory;

said method for addressing,

a) memory mapping said auxiliary registers;

b) accessing and manipulating the contents of said auxiliary registers by said central processor using a memory address; said contents comprising data addresses;

c) requesting release of data from data memory stored in accessible location corresponding to said data addresses, and,

d) sending said data to said central processor for access and manipulation, whereby said central processor accesses registers associated with the addresses generator without adding a register field to an instruction.

PATENTS

GRANTED October 27, 1998

ERRATA

Designs

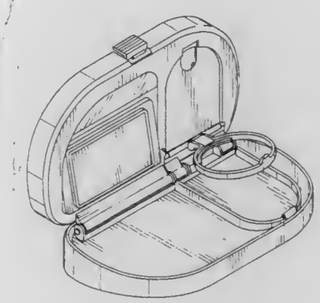
For CLASS	See PATENT NO.
D12—419	D399,985
D21—166	D400,297

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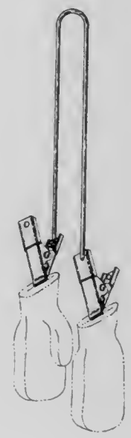
DESIGNS

OCTOBER 27, 1998

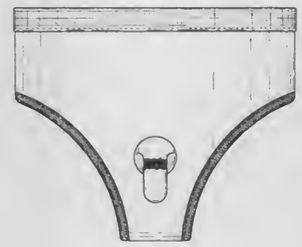
399,985
COMBINED CAR TRAY MIRROR AND LIGHT DEVICE
Chi Ming Hui, Tsuen Wan, Hong Kong, assignor to Chi Bon Metal & Plastic Manufactory, Ltd., Tsuen Wan, Hong Kong
Filed Jul. 2, 1997, Ser. No. 73,164
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—419



399,986
CLOTHING TETHER
John K. Schultheis, 9215 Strobel Rd., Arkport, N.Y. 14807
Filed Jun. 2, 1997, Ser. No. 71,749
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D2—624



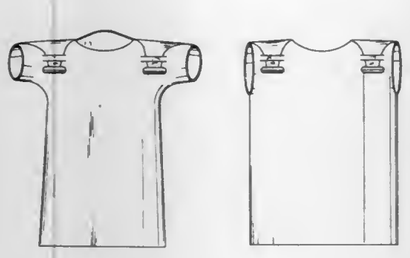
399,987
UNDERGARMENT WITH ATTACHED PROPHYLACTIC
Jerry L. Bradley, 1030 Hayworth Ave., Duncanville, Tex. 75137
Filed Aug. 14, 1997, Ser. No. 75,096
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—713



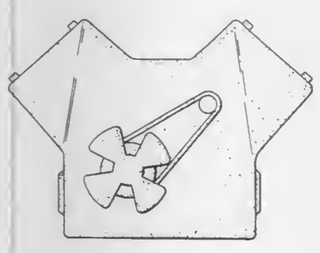
399,988
PACKAGED SLEEPING BAG
Lisa Deborah Frank, Tucson, Ariz., assignor to Lisa Frank, Inc., Tucson, Ariz.
Filed Aug. 20, 1997, Ser. No. 75,436
Term of patent 14 years
LOC (6) Cl. 02 - *01*
U.S. Cl. D2—719



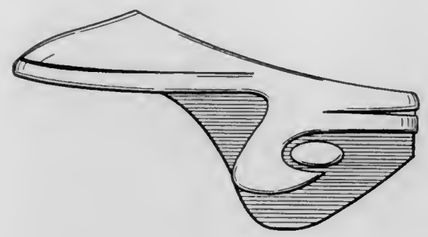
399,989
PATIENT GOWN
Gilles Bastille, 48 Elizabeth Dr., Fort Payne, Ala. 35967
Filed Dec. 11, 1996, Ser. No. 63,606
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—720



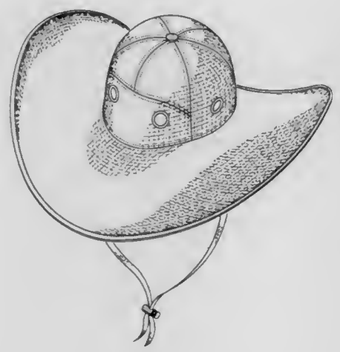
399,990
HAT
Nathan W. Parson, 15507 Doris, Livonia, Mich. 48154, and James E. Waring, 31721 Staman Cir., Farmington Hills, Mich. 48336
Filed Sep. 30, 1997, Ser. No. 77,251
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—869



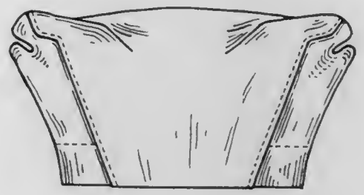
399,991
HEAD GEAR
Minna Minkkinen, Lahti, Finland, assignor to Caminno Consulting Oy Ab, Jorvas, Finland
Filed Aug. 26, 1997, Ser. No. 76,220
Claims priority, application Finland, Feb. 27, 1997, 161/97
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—872



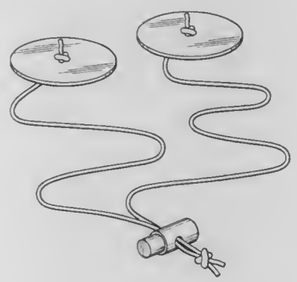
399,992
HAT
Tomima L. Edmark, P.O. Box 671269, Dallas, Dallas County, Tex. 75367-1269
Filed Oct. 14, 1997, Ser. No. 77,967
Term of patent 14 years
LOC (6) Cl. 02 - *02*
U.S. Cl. D2—880



399,993
HEAD COVERING
Anthony Delgado, 822 Shorehaven, Garland, Tex. 75040
Filed Nov. 4, 1997, Ser. No. 78,981
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—881



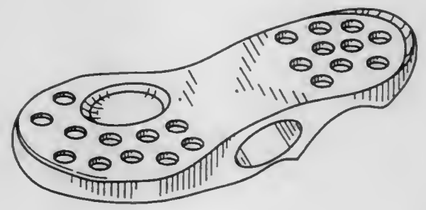
399,994
HAT KEEPER
James Y. Saka, 2265 Gondar Ave., Long Beach, Calif. 90815
Filed Oct. 6, 1997, Ser. No. 77,557
Term of patent 14 years
LOC (6) Cl. 02 - *03*
U.S. Cl. D2—891



399,995
SHOE SOLE
Youngsoul Park, 584-14, Myonmok-Tong Junglang-Gu, Seoul, Rep. of Korea
Filed Feb. 9, 1996, Ser. No. 50,168
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—954



399,996
SHOE SOLE
YoungSoul Park, Sangil Usong Town 6-301, 174 Sangil-tong Kangdong-ku, Seoul, Rep. of Korea
Filed Aug. 28, 1996, Ser. No. 59,137
Claims priority, application Rep. of Korea, Jun. 25, 1996, 96-13186
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—954

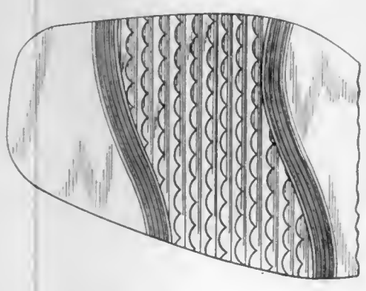


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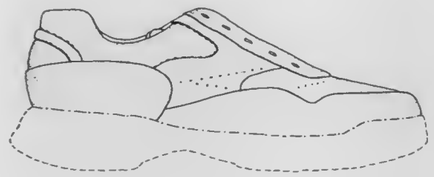
399,997
SOLE OF A CROSS COUNTRY SKI BOOT
Francois Girard, Veyier du Lac, France, assignor to Salomon S.A., Cedex, France
Continuation-in-part of Ser. No. 39,090, Mar. 15, 1995, abandoned. This application Jan. 6, 1997, Ser. No. 64,569
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—960



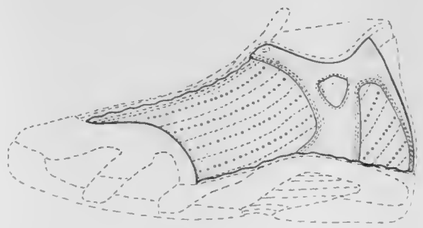
399,998
PORTION OF A SHOE SOLE
Norman H. Finn, Newton, Mass., assignor to AmAsia International, Ltd., Burlington, Mass.
Filed Mar. 20, 1997, Ser. No. 69,582
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—960



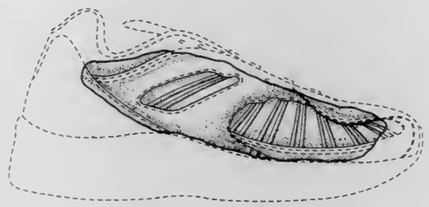
399,999
SHOE UPPER
Gary P. Duclos, Newburyport, Mass., assignor to The Rockport Company, Inc., Marlboro, Mass.
Filed Feb. 6, 1998, Ser. No. 83,233
Term of patent 14 years
LOC (6) Cl. 02 - *04*
U.S. Cl. D2—969



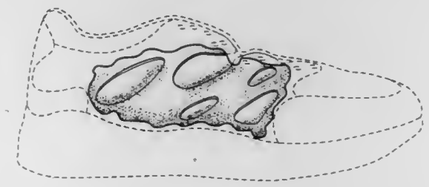
400,000
PORTION OF A SHOE UPPER
Tinker L. Hatfield, Portland, and Mark J. Smith, Beaverton, both of Oreg., assignors to Nike, Inc., Beaverton, Oreg.
Filed Apr. 23, 1998, Ser. No. 86,924
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



400,001
SIDE ELEMENT OF A SHOE UPPER
Sergio G. Lozano, Beaverton, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Oct. 28, 1997, Ser. No. 78,731
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



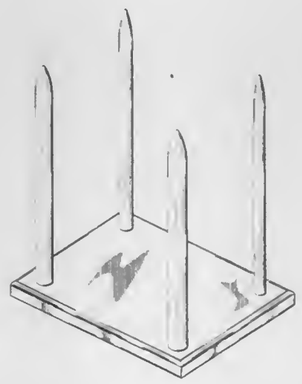
400,002
SIDE ELEMENT OF A SHOE UPPER
James Tong, Tigard, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Nov. 7, 1997, Ser. No. 79,099
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972



400,003
PORTION OF A SHOE UPPER
Peter M. Fogg, Lake Oswego, Oreg., assignor to Nike, Inc., Beaverton, Oreg.
Filed Apr. 13, 1998, Ser. No. 86,391
Term of patent 14 years
LOC (6) Cl. 02 - *99*
U.S. Cl. D2—972

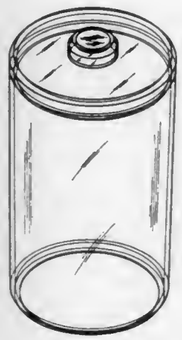


400,004
CROCHET WORK STATION
Alice Laird Hyche, 9405 Indian Springs Dr., Roswell, Ga. 30075
Continuation-in-part of Ser. No. 32,601, Dec. 21, 1994, Pat. No. Des. 371,234. This application Jul. 1, 1996, Ser. No. 56,523
The portion of the term of this patent subsequent to Jul. 2, 2010, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D3—26

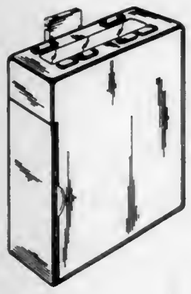


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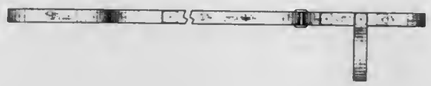
400,005
CONTAINER
Stephen H. Wolff, New York, N.Y., assignor to Wolff Marketing Group, Inc., New York, N.Y.
Continuation of Ser. No. 16,597, Dec. 20, 1993, abandoned. This application Feb. 23, 1996, Ser. No. 50,788
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—203



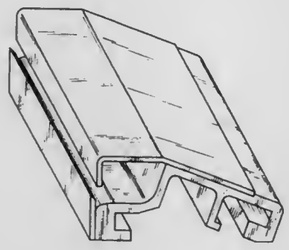
400,006
PAGER-SHAPED PILL BOX WITH DRAWER
Nina Girvetz, 2913 Third St. Unit 310, Santa Monica, Calif. 90405
Filed Jun. 2, 1997, Ser. No. 71,736
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—215



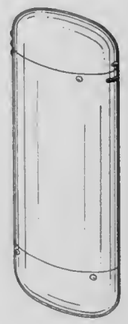
400,007
PISTOL SLING
Bryon R. Stevens, Rte. 2 Box 426, St. Mary's, W. Va. 26170
Filed Apr. 3, 1997, Ser. No. 68,878
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—221



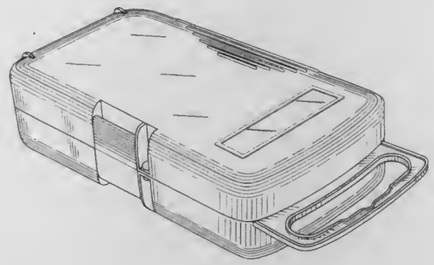
400,008
TRACK FOR STORING FISH HOOKS
Geir Jørn Liaklev, Gjøvik, Norway, assignor to O. Mustad & Son A/S, Gjovik, Norway
Filed Dec. 20, 1996, Ser. No. 64,039
Claims priority, application Norway, Jun. 24, 1996, 960449
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—260



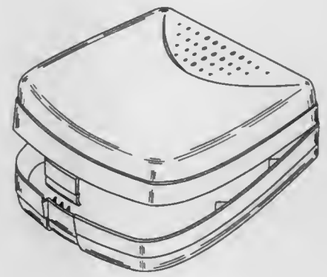
400,009
EYEGLASS CASE
Gary Roy Conway, Liverpool, England, assignor to Optoplast Manufacturing Company Limited, Merseyside, England
Filed Sep. 17, 1996, Ser. No. 59,914
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—265



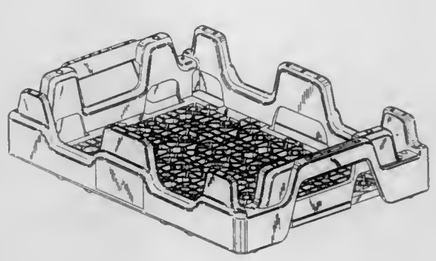
400,010
TOOL CONTAINER
Kailash C. Vasudeva, Waterloo, Canada, assignor to Maxtech Manufacturing Inc., Waterloo, Canada
Filed May 15, 1997, Ser. No. 70,771
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—276



400,011
RAPID TRANSFER CASE
Christopher G. Palmer; Peter J. Palmer, both of Saratoga, and Steven A. Gelphman, San Jose, all of Calif., assignors to Creative Point, Inc., Fremont, Calif.
Filed Mar. 11, 1997, Ser. No. 68,591
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—294

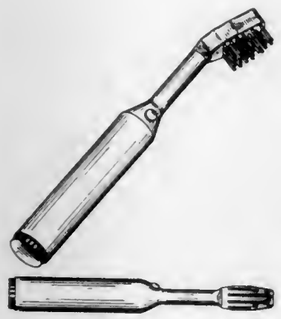


400,012
BOTTLE CRATE
William Patrick Apps, Alpharetta, Ga., assignor to Rehrig Pacific Company, Inc., Los Angeles, Calif.
Filed May 15, 1997, Ser. No. 70,776
Term of patent 14 years
LOC (6) Cl. 03 - *01*
U.S. Cl. D3—314

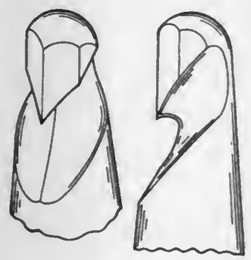


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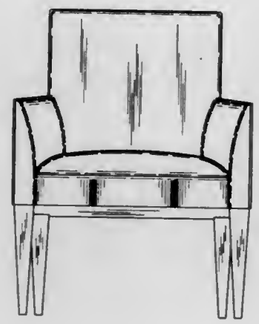
400,013
TOOTHBRUSH WITH SELF CONTAINED TOOTHPASTE STORAGE CYLINDER
Lance Moulton, Henniker, N.H., assignor to Lance Moulton, Henniker, N.H.
Filed Oct. 7, 1997, Ser. No. 77,727
Term of patent 14 years
LOC (6) Cl. 04 - *02*
U.S. Cl. D4—108



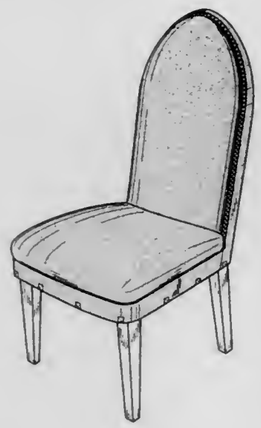
400,014
TINE FOR A MANUAL BRUSHING-COMB
Edward Howard, 5805(#3) Andros Ct., San Diego, Calif. 92115
Filed Sep. 4, 1996, Ser. No. 59,167
Term of patent 14 years
LOC (6) Cl. 04 - *99*
U.S. Cl. D4—199



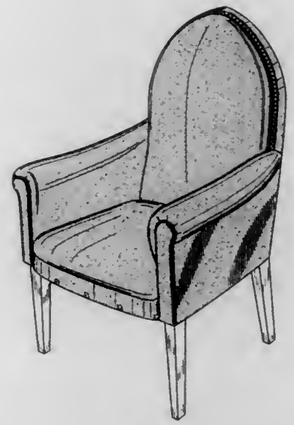
400,015
CHAIR
John Huttoo, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Jan. 10, 1997, Ser. No. 64,796
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



400,016
DINING SIDE CHAIR
Don Silva, Emeryville, Calif., assignor to National Upholstering Company, Oakland, Calif.
Filed Nov. 4, 1997, Ser. No. 78,826
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



400,017
DINING ARM CHAIR
Don Silva, Emeryville, Calif., assignor to National Upholstering Company, Oakland, Calif.
Filed Nov. 4, 1997, Ser. No. 78,845
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—334



400,018
CHAIR
Paul A. James, and Mehmet Ergelen, both of Rochester, N.Y., assignors to HON Technology Inc., Muscatine, Iowa
Filed May 28, 1997, Ser. No. 71,360
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



400,019
CHAIR
Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yen Enterprise Co., Ltd., Taipei, Taiwan
Filed Aug. 28, 1997, Ser. No. 75,945
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



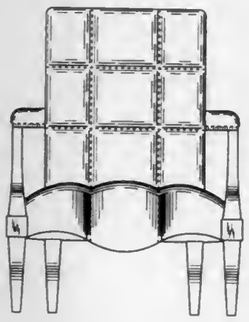
400,020
CHAIR
Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yen Enterprise Co., Ltd., Taipei, Taiwan
Filed Aug. 28, 1997, Ser. No. 76,004
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



400,021
CHAIR
Chuen-Jong Tseng, Chiayi Hsien, Taiwan, assignor to Shin Yen Enterprise Co., Ltd., Taiwan
Filed Aug. 28, 1997, Ser. No. 76,006
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—366



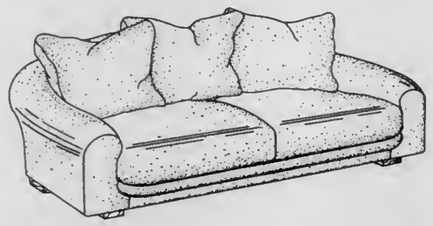
400,022
CHAIR
John Hutton, New York, N.Y., assignor to Donghia Furniture Co., Ltd., New York, N.Y.
Filed Jan. 10, 1997, Ser. No. 64,817
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—379



400,023
CHAIR
Ogden R. Olson, Muscatine, Iowa, assignor to HON Technology Inc., Muscatine, Iowa
Filed Jun. 2, 1997, Ser. No. 71,560
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—379



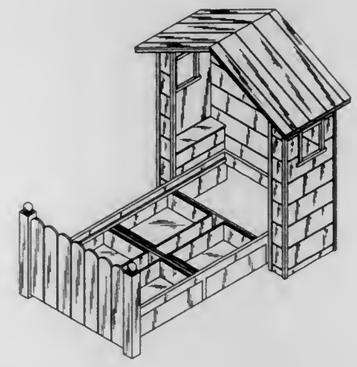
400,024
SEAT
Robert Gera, Glencoe, Ill., assignor to BenchCraft a division of Universal Furniture Industries Inc., High Point, N.C.
Filed Feb. 27, 1997, Ser. No. 67,762
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—381



400,025
COMBINED LOFT BED, DESK AND FILING CABINETS
Todd Lightner, R.R. 2 Box 95, Wapwallopen, Pa. 18660
Filed Jul. 21, 1997, Ser. No. 73,287
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—384



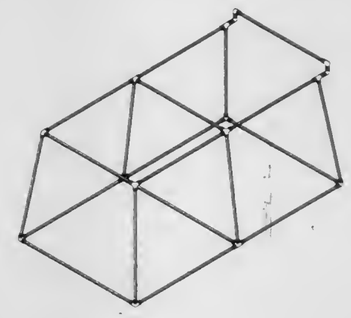
400,026
CHILD'S BED
Jaime C. Bender, 17935 Pueblo Vista La., San Diego, Calif. 92127
Filed Sep. 19, 1997, Ser. No. 76,790
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—388



400,027
DISPLAY STAND WITH EXTENDING TABLE
Antonio Canton Gongora; Carlos Jesús Cruz Fernandez; José Maria Munagorri Enriquez, and Juan Carlos Rayo Ortigüela, all of Madrid, Spain, assignors to Telefonica De Espana, S.A., Madrid, Spain
Filed Nov. 22, 1996, Ser. No. 62,761
Claims priority, application Spain, May 22, 1996, 137547
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—396

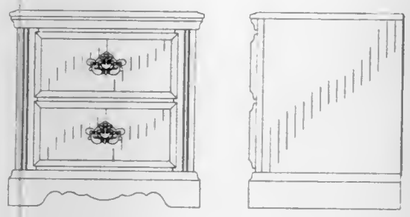


400,028
PICKUP CAMPER SHELL STAND
Barry D. Farrer, 29530 Sherwood Rd., Fort Bragg, Calif. 95437
Filed Mar. 13, 1997, Ser. No. 67,995
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—431

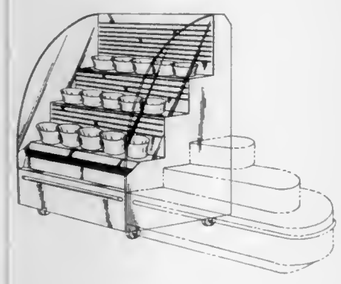


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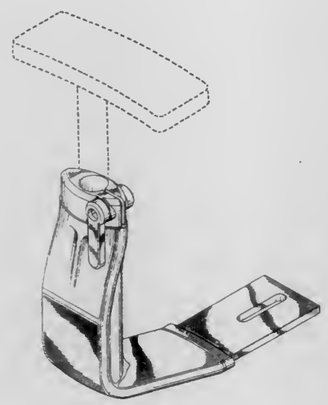
400,029
NIGHT TABLE
Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture, Ltd., Winnipeg, Canada
Filed Feb. 28, 1997, Ser. No. 67,407
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—446



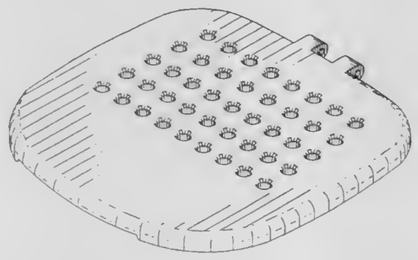
400,030
REFRIGERATED FLORAL DISPLAY UNIT
Michael L. Wetzel, Skaneateles, N.Y., assignor to Floratech Industries, Inc., Syracuse, N.Y.
Filed Oct. 10, 1997, Ser. No. 77,971
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—474



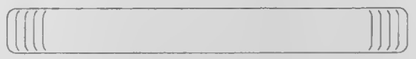
400,031
ADJUSTABLE HEIGHT CHAIR ARM
Drew J. Congleton, College Station, Tex., assignor to Body Bilt Seating, Inc., Nauasota, Tex.
Continuation-in-part of Ser. No. 42,078, Jul. 31, 1995, abandoned. This application Mar. 24, 1997, Ser. No. 68,578
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—501



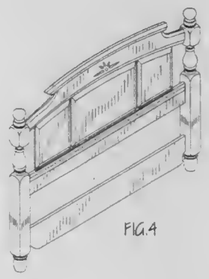
400,032
SEAT PLATE
Herbert Richter, Drosselweg 8, 75331, Engelbrand, Germany
Filed Sep. 29, 1997, Ser. No. 77,214
Term of patent 14 years
LOC (6) Cl. 06 - *06*
U.S. Cl. D6—502



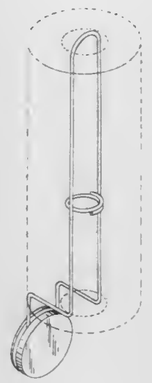
400,033
BRIDGE HEADBOARD
Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture Ltd., Winnipeg, Canada
Filed Feb. 28, 1997, Ser. No. 67,181
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—505



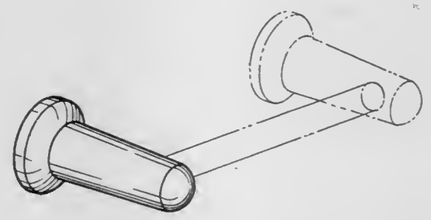
400,034
HEADBOARD
Paul Zaidman, Winnipeg, Canada, assignor to Palliser Furniture Ltd., Winnipeg, Canada
Filed Feb. 28, 1997, Ser. No. 67,188
Term of patent 14 years
LOC (6) Cl. 06 - *01*
U.S. Cl. D6—505



400,035
TUBED MATERIAL HOLDER
Richard E. Kulkey, 16683 Sycamore St. NW., Andover, Minn. 55304
Filed Oct. 23, 1997, Ser. No. 78,394
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D6—521

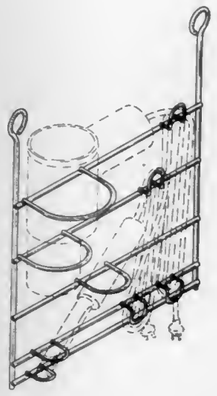


400,036
POST FOR BATH ACCESSORY
Glenn David Moore, 51 Charcoal Rd., Newfoundland, N.J. 07045, and Leszek Solowiej, 3 Independence Ct., Montville, N.J. 07045
Filed Apr. 4, 1997, Ser. No. 68,344
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—550

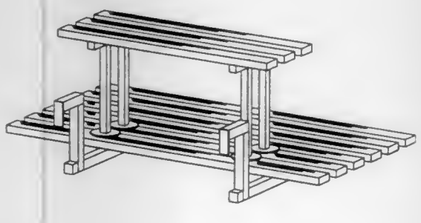


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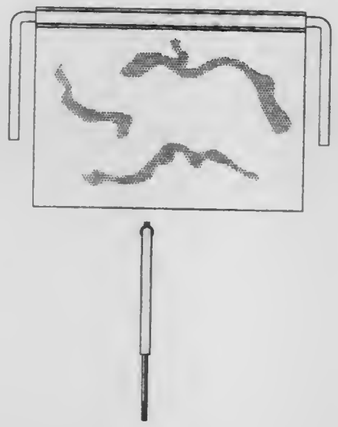
400,037
HAIR CARE ACCESSORY RACK
Dudley Bartholow, 13911 Ridgedale Dr., #401, Minnetonka, Minn. 55305
Filed Aug. 15, 1997, Ser. No. 75,390
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D6—566



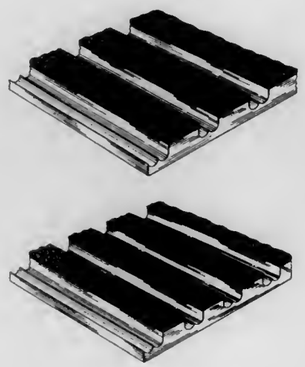
400,038
SHELF
Richard J. Herman, Hendersonville, and John J. Bush, Waynesville, both of N.C., assignors to Leisure Craft Inc., Hendersonville, N.C.
Filed Jan. 16, 1997, Ser. No. 64,994
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D6—574



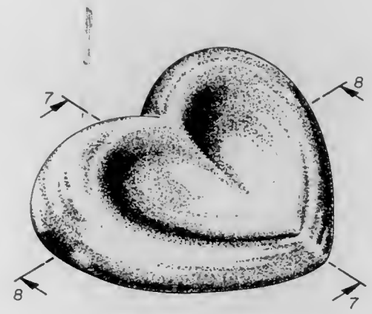
400,039
PRIVACY CURTAIN
Michele D. Wolgan, 6308 W. Pima, Phoenix, Ariz. 85043
Filed Jul. 21, 1997, Ser. No. 73,299
Term of patent 14 years
LOC (6) Cl. 06 - *10*
U.S. Cl. D6—575



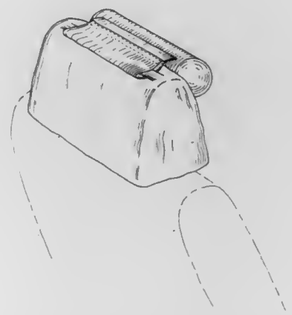
400,040
FLOOR COVERING
Ian Karl Pawson, Worcester, and Stephen James Pym, Shropshire, both of England, assignors to Nuway Manufacturing Co., Ltd., London, England
Filed Jan. 29, 1997, Ser. No. 65,255
Claims priority, application United Kingdom, Dec. 27, 1996, 2062090; Dec. 27, 1996, 2062091
Term of patent 14 years
LOC (6) Cl. 06 - *11*
U.S. Cl. D6—582



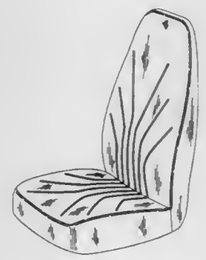
400,041
THERAPEUTIC CUSHION
Marc D. Selner, 4335 Laurel Canyon Blvd., Studio City, Calif. 91604
Filed Jul. 3, 1997, Ser. No. 74,257
Term of patent 14 years
LOC (6) Cl. 06 - *09*
U.S. Cl. D6—597



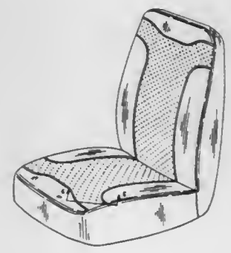
400,042
HEADREST COVER
John L. Black, Jr., 3108 McKinley Way, Costa Mesa, Calif. 92626
Filed Aug. 20, 1997, Ser. No. 75,334
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—610



400,043
SEAT COVER
Reuven Rosenberg, Haifa, Israel, assignor to Elegant Industries, Inc., Totowa, N.J.
Filed Mar. 7, 1997, Ser. No. 67,436
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—611

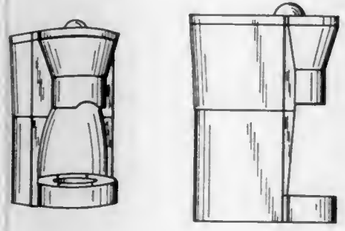


400,044
SEAT COVER
Reuven Rosenberg, Haifa, Israel, assignor to Elegant Industries, Inc., Totowa, N.J.
Filed Mar. 7, 1997, Ser. No. 67,437
Term of patent 14 years
LOC (6) Cl. 06 - *13*
U.S. Cl. D6—611

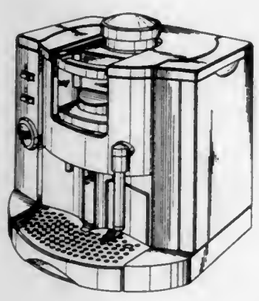


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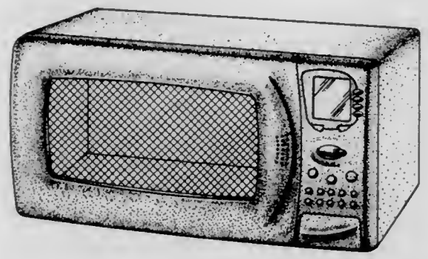
400,045
COFFEE MAKER
Ulrich Schade, Neu-Ulm, Germany, assignor to Severin Elektrogerate GmbH, Sundern, Germany
Filed May 15, 1997, Ser. No. 70,770
Claims priority, application Germany, Nov. 28, 1996, M 96 10 212.8
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



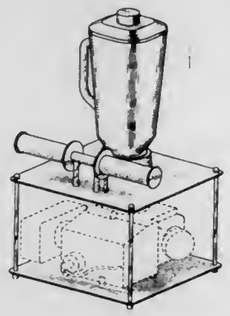
400,046
ESPRESSO MACHINE
Florian Seiffert, Wiesbaden, Germany, assignor to Robert Krups GmbH & Co. KG, Solingen, Germany
Filed Jun. 2, 1997, Ser. No. 71,735
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—309



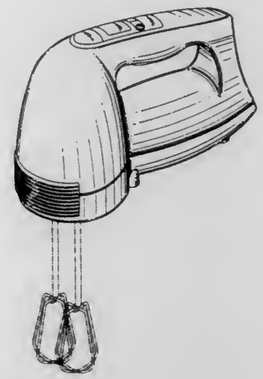
400,047
MICROWAVE OVEN
Makoto Takimoto, Nara-ken; Nobuhiro Fujii, Osaka-fu, and Takashi Matsuda, Nara-ken, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jun. 12, 1997, Ser. No. 72,195
Claims priority, application Japan, Dec. 12, 1996, 8-37928
Term of patent 14 years
LOC (6) Cl. 07 - *02*
U.S. Cl. D7—351



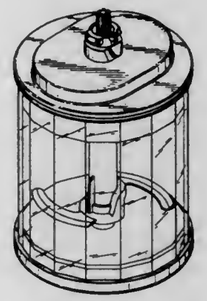
400,048
HURRICANE PORTABLE BLENDER
John Ollson, 14685 Seminole Trail, Reno, Nev. 89511
Filed Oct. 10, 1997, Ser. No. 77,843
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—378



400,049
MIXER
David J. Wanat, Meriden; Roger A. Letso, Sandy Hook, and Paul M. Ackels, Simsbury, all of Conn., assignors to Conair Corporation, Stamford, Conn.
Filed Oct. 7, 1997, Ser. No. 78,099
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—379



400,050
BOWL FOR FOOD PROCESSING WITH AN ATTACHABLE DRIVE UNIT
Ludwig Littmann, Keonberg, German Dem. Rep., assignor to Braun Aktiengesellschaft, Germany
Filed Oct. 1, 1997, Ser. No. 77,237
Claims priority, application WIPO, Apr. 2, 1997, DMA003670
Term of patent 14 years
LOC (6) Cl. 31 - *00*
U.S. Cl. D7—412



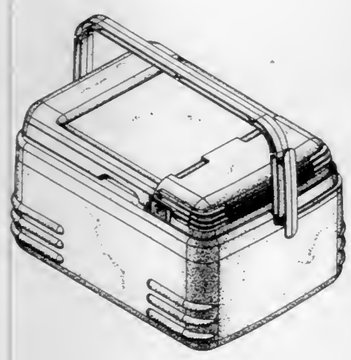
400,051
GLASS
Kokichi Miyagi, No. 526, Zukeran, Kitanaka Gusuku Son, Nakagami gun, Okinawa ken, Japan
Filed Jul. 31, 1997, Ser. No. 74,343
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D7—524



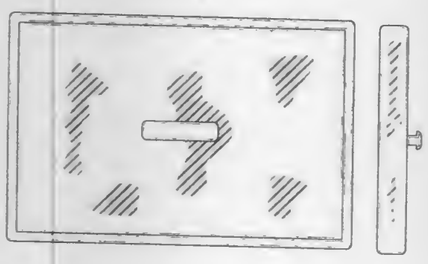
400,052
FRUIT RIPENING STAND
Virginia Thomas, Appt. 336, 850 S. Tamiami Trail, Sarasota, Fla. 34236
Filed Nov. 20, 1997, Ser. No. 79,731
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—601



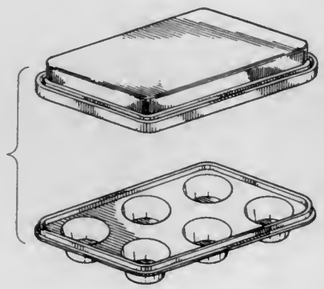
400,053
THERMOELECTRIC COOLER AND WARMER FOR FOOD
Stephen L. Coffee; James J. J. Costello; Winthrop A. Eastman; Laurence R. Giles; Jonathan H. Godshall; Eve Heim-Grubb, and Ninh G. Pham, all of Houston, Tex., assignors to Igloo Products Corp., Houston, Tex.
Filed Feb. 4, 1997, Ser. No. 67,549
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—605



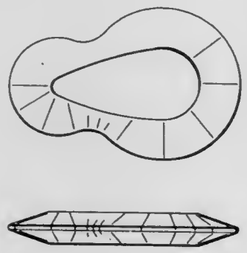
400,054
INSULATOR COVER FOR COOLER
Richard Emery, 490 Mary Dixon, Mechanicsville, Md. 20659
Filed Apr. 29, 1997, Ser. No. 70,094
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—605



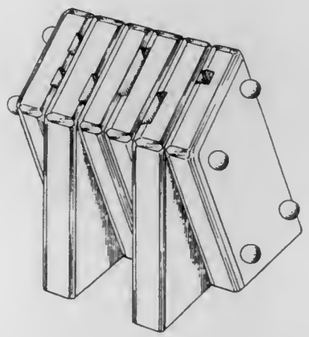
400,055
PORTABLE MUFFIN/CUPCAKE PAN WITH DOME COVER
James Mc Fadzean, Cedar Grove, N.J., assignor to Sun Fun Products, L.L.C., Cedar Grove, N.Y.
Filed Oct. 20, 1997, Ser. No. 78,312
Term of patent 14 years
LOC (6) Cl. 07 - *07*
U.S. Cl. D7—610



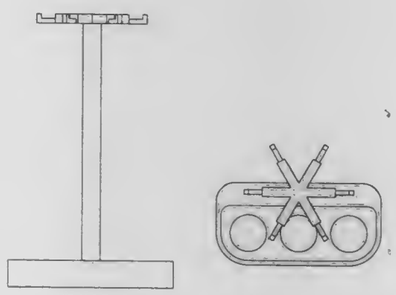
400,056
NAPKIN RING
Tuur Cornelissen, Blankerbergen, Belgium, assignor to De Ster NV, Hoogstraten, Belgium
Filed Oct. 14, 1997, Ser. No. 78,264
Claims priority, application Germany, Apr. 11, 1997, M 97 03 728.1
Term of patent 14 years
LOC (6) Cl. 07 - *06*
U.S. Cl. D7—633



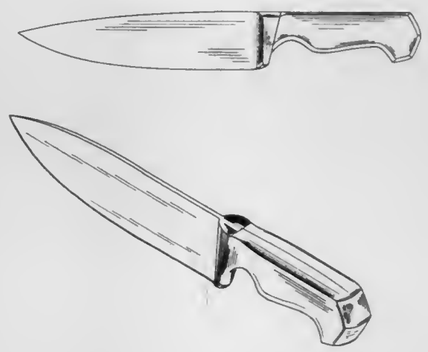
400,057
KNIFE BLOCK
William E. Bounds, deceased, late of Torrance, Calif., and by Helen J. Bounds, executrix, 1737 W. 240th St., Torrance, Calif. 90505
Filed Oct. 30, 1997, Ser. No. 78,555
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D7—637



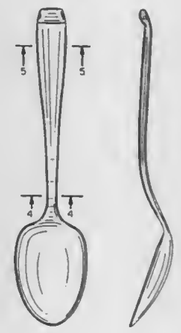
400,058
BARBECUE UTENSIL HOLDER
Shirley Grier, 11236 Sauk River Ct., Rancho Cordova, Calif. 95670
Filed Nov. 19, 1997, Ser. No. 79,832
Term of patent 14 years
LOC (6) Cl. 06 - *04*
U.S. Cl. D7—637



400,059
KNIFE
Milton L. Cohen, Hewlett Bay Park; Jeff Siegel, Great Neck, and Adam Krent, Brooklyn, all of N.Y., assignors to Lifetime Hoan Corporation, Westbury, N.Y.
Filed Aug. 5, 1996, Ser. No. 57,956
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—649



400,060
SPOON
Stephen W. Thompson, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 26, 1996, Ser. No. 63,099
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—653



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400,061
SPOON
Diane Shane-Schuldt, Sherrill, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 7, 1997, Ser. No. 79,066
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—653



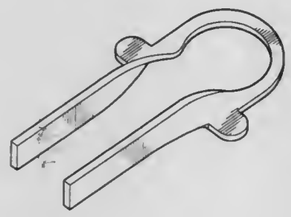
400,062
SPOON
Stephen W. Thompson, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 7, 1997, Ser. No. 79,068
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—653



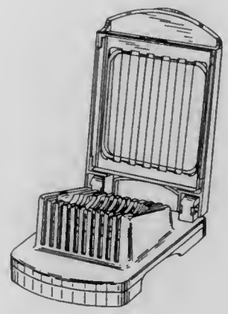
400,063
SPOON
Diane Shane-Schuldt, Sherrill, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Nov. 7, 1997, Ser. No. 79,067
Term of patent 14 years
LOC (6) Cl. 07 - *03*
U.S. Cl. D7—662



400,064
BAKERY DEVICE
Frank Tellez, 136 Chesapeake Estate Dr., Stevensville, Md. 21666
Filed Oct. 23, 1997, Ser. No. 78,253
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—669



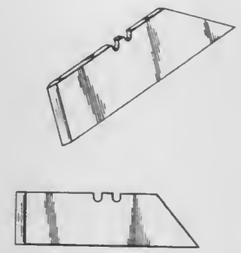
400,065
EGG SLICER
Scott R. Fohrman, Wilmette, Ill., assignor to The Pampered Chef, Ltd., Addison, Ill.
Filed Sep. 2, 1997, Ser. No. 76,104
Term of patent 14 years
LOC (6) Cl. 07 - *04*
U.S. Cl. D7—673



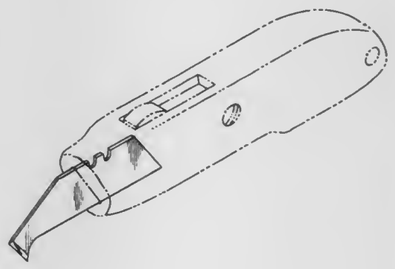
400,066
IN-LINE SKATE TOOL
Mark S. Kelsey, 85 Cedar Cliff Rd., Braintree, Mass. 02184; A. M. Hay, 51 Tide Mill Rd., Hampton, N.H. 03842, and Stephen J. Barbarisi, 2 Pillowlace La., Ipswich, Mass. 01938
Filed Feb. 18, 1997, Ser. No. 70,948
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—14



400,067
UTILITY KNIFE SCRAPING BLADE
Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570
Filed Nov. 1, 1996, Ser. No. 61,862
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—20



400,068
PLASTIC CUTTER BLADE
Peter Gold, 465 N. Wood Rd., Rockville Centre, N.Y. 11570
Filed Jun. 2, 1997, Ser. No. 71,573
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—20

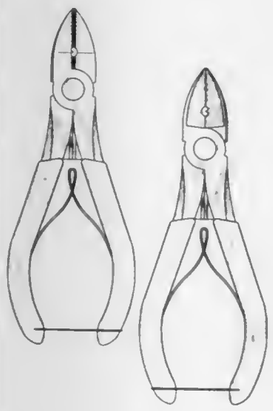


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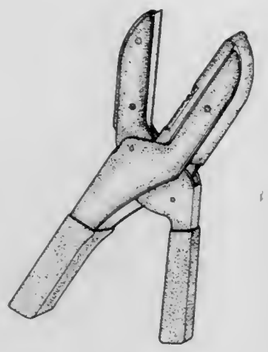
400,069
RING APPLYING AND CLINCHING DEVICE
Raymond F. Cluggish, Shelbyville, Ind., assignor to Stanley-Bostitch, Inc., Eat Greenwich, R.I.
Filed Oct. 16, 1997, Ser. No. 78,106
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—51



400,070
WIRE CRIMPING DEVICE
Luis Gregorio Valdivia, 11101 Lyndora St., Norwalk, Calif. 90650
Filed Dec. 20, 1996, Ser. No. 64,033
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



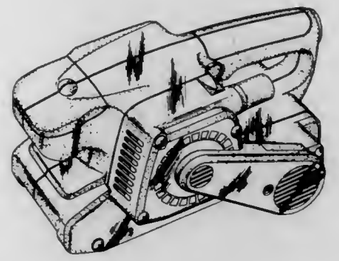
400,071
WIRE STRIPPING TOOL
Jan Hel Wang, 7F-1, No. 170, Sec. 1, San Min Road, Taichung, Taiwan
Filed Jul. 18, 1997, Ser. No. 73,864
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—52



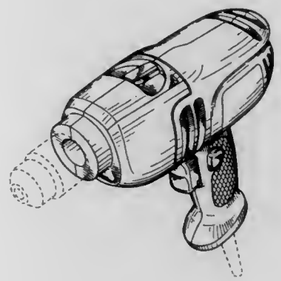
400,072
CONTROL BARREL FOR A PIPE CUTTER
Wu Sheng Huang, P.O. Box 63-99, Taichung, Taiwan
Filed Jan. 13, 1997, Ser. No. 65,295
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—60



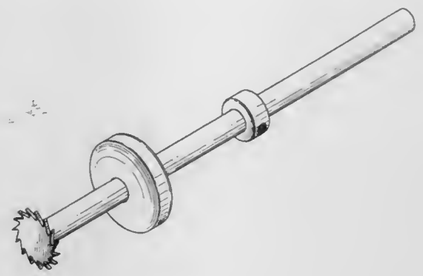
400,073
PORTABLE ELECTRIC BELT SANDER
Akihito Hara, Anjo, Japan, assignor to Makita Corporation, Japan
Filed Nov. 12, 1997, Ser. No. 79,288
Claims priority, application Japan, Jun. 25, 1997, 9-59480
Term of patent 14 years
LOC (6) Cl. 08 - *01*
U.S. Cl. D8—62



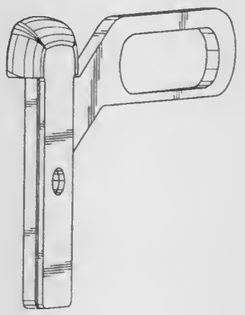
400,074
DRILL
Vincent Paul Cooper, Pylesville, Md., assignor to Black & Decker Inc., Newark, Del.
Filed Jun. 4, 1997, Ser. No. 72,879
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—68



400,075
PIPE CUTTING TOOL
Mark Martelle, Fullerton, Calif., assignor to Grinnell Corp., Exeter, N.H.
Filed May 19, 1997, Ser. No. 71,077
Term of patent 14 years
LOC (6) Cl. 08 - *03*
U.S. Cl. D8—70

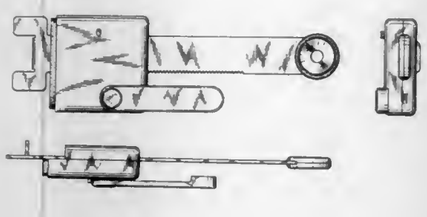


400,076
CABINET LATCH
John J. Jancsek, Blaine, and Bruce W. Larson, Andover, both of Minn., assignors to Hoffman Enclosures, Inc., Anoka, Minn.
Filed Jan. 22, 1997, Ser. No. 68,077
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—331

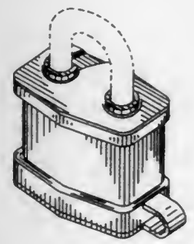


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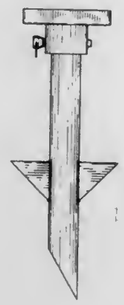
400,077
DOOR LOCK
Noel E. Zeller, c/o Zelco Industries, Inc. 630 S. Columbus Ave., Mount Vernon, N.Y. 10551-4445
Filed Feb. 14, 1997, Ser. No. 66,505
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—339



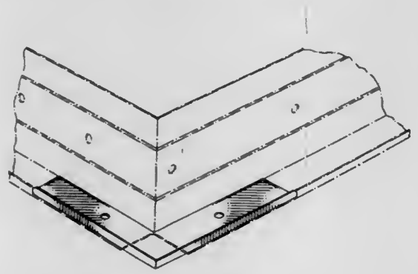
400,078
WEATHERPROOF PADLOCK COVER
Gerard G. Adelmeyer, Anaheim, Calif., assignor to Emhart Inc., Newark, Del.
Filed Jul. 30, 1997, Ser. No. 74,200
Term of patent 14 years
LOC (6) Cl. 08 - *07*
U.S. Cl. D8—346



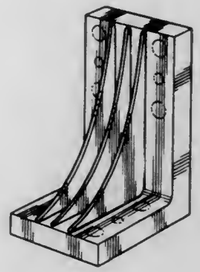
400,079
SUPPORT STAND
James Madison Chase, 19 Canal St., Deepwater, N.J. 08023
Filed Jan. 17, 1997, Ser. No. 65,032
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—349



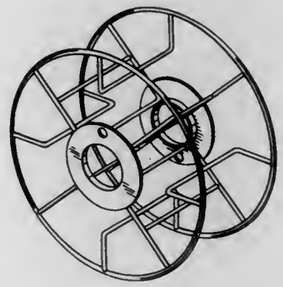
400,080
BACKLESS ANGLED CORNER SUPPORT
Harold W. Beard, Jr., P.O. Box 5485, Carefree, Ariz. 85377
Filed Oct. 27, 1995, Ser. No. 45,699
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



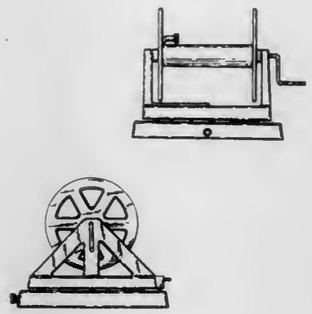
400,081
ANGLE BRACKET FIXTURE
Shigenari Ibaragi, Rochester Hills, Mich., assignor to Eagle Technology & Manufacturing, Inc., Roseville, Mich.
Filed Jun. 9, 1997, Ser. No. 71,944
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—354



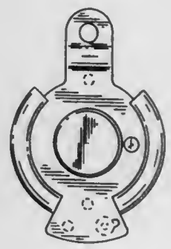
400,082
WIRE SPOOL
Wayne C. Colman, P.O. Box 308, 1370 Lytle Rd., Troy, Ohio 45373
Filed Oct. 23, 1997, Ser. No. 78,289
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—358



400,083
WATER HOSE WALL MOUNT
Daryl L. Bodine, 1560 Rte. 54, Penn Yan, N.Y. 14527
Filed Jan. 24, 1997, Ser. No. 65,351
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—359

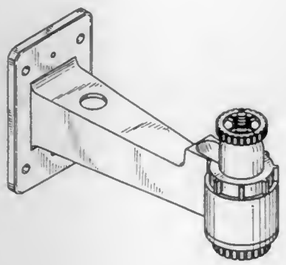


400,084
ELEVATING AND LOWERING PULLEY
Frank Wullimann, Bettlach, Switzerland, assignor to Rollgliss AG, Switzerland
Filed Apr. 17, 1996, Ser. No. 53,204
Claims priority, application Switzerland, Oct. 27, 1995, 122763
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—360



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400,085
CAMERA MOUNT
Igor Haskin, Skokie, Ill., assignor to Peerless Industries, Melrose Park, Ill.
Filed Aug. 4, 1997, Ser. No. 77,676
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—363



400,086
SHELLFISH HANGER PIN UNIT
Yoshisada Matsuura, Yokohama, Japan, assignor to Kabushiki Kaisha Towa Denki Seisakusho, Hokkaido, Japan
Filed Jan. 14, 1997, Ser. No. 64,902
Claims priority, application Japan, Aug. 1, 1996, 8-22952
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—372



400,087
BAG HOLDER
Jerome J. Hartmann, Carlisle, and Thomas R. Steinhagen, West Des Moines, both of Iowa, assignors to Cobbs Manufacturing Company, Des Moines, Iowa
Filed Nov. 6, 1997, Ser. No. 79,016
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—373



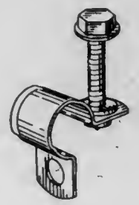
400,088
SLIP-ON FOOT ELEMENT FOR CHAIR LEG
Marilyn J. Hurrie, P.O. Box 308, Harwinton, Conn. 06791
Filed Oct. 6, 1997, Ser. No. 77,476
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—374



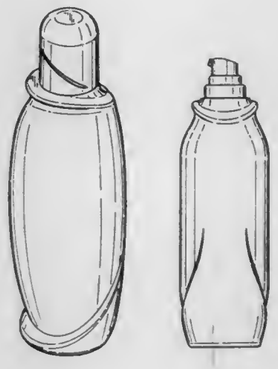
400,089
SLIDER ASSEMBLY
Karel Willem Boon, 4540 Promenade Paton, Laval, Quebec, Canada, H7W 4W6
Filed Jun. 11, 1996, Ser. No. 55,713
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D8—377



400,090
CABLE CLIP AND FASTENER COMBINATION
Gene Coll, Cranford, N.J., assignor to Diamond Communication Products, Inc., Garwood, N.J.
Filed Oct. 29, 1997, Ser. No. 78,563
Term of patent 14 years
LOC (6) Cl. 08 - *08*
U.S. Cl. D8—356



400,091
COSMETIC DISPENSER
Robert J. Croft, Jersey City; James F. Warner, Hoboken, both of N.J., and Norman D. Poisson, Andover, Mass., assignors to The Gillette Company, Boston, Mass.
Filed Jul. 16, 1997, Ser. No. 73,729
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—300

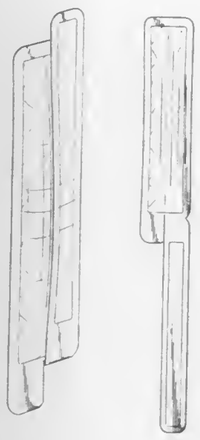


400,092
FOOD PACKAGE
Ihor Wyslotsky, 6133 N. Forest Glen, Chicago, Ill. 60646
Filed Apr. 15, 1997, Ser. No. 69,429
Term of patent 14 years
LOC (6) Cl. 09 - *05*
U.S. Cl. D9—305



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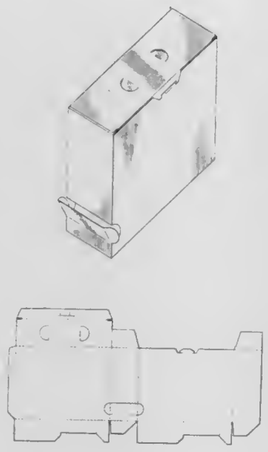
400,093
FLUID CONTAINER
Anette Israelsson; Agneta Pettersson, both of Göteborg, and Jan Utas, Kungsbacka, all of Sweden, assignors to Astra Aktiebolag, Sodertalje, Sweden
Filed Jul. 18, 1997, Ser. No. 73,813
Claims priority, application Sweden, Jan. 22, 1997, 97-0142
Term of patent 14 years
LOC (6) Cl. 09 - *05*
U.S. Cl. D9—305



400,094
COSMETIC DISPENSER
Norman D. Poisson, Andover, Mass.; Walter Herbst, Lake Forest, Ill.; Mark Dziersk, and Jose Perez, both of Chicago, Ill., assignors to The Gillette Company, Boston, Mass.
Filed Oct. 24, 1997, Ser. No. 78,449
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—338



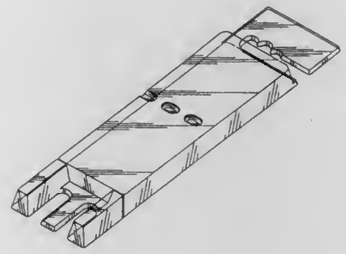
400,095
MULTIPLE ROUND AMMUNITION CARTON WITH INDIVIDUAL ROUND DISPENSER AND CARRYING HANDLE
Steven Alfred Uebele, Sherwood, Ak., assignor to Remington Arms Company, Inc., Madison, N.C.
Filed Mar. 10, 1997, Ser. No. 67,487
Term of patent 14 years
LOC (6) Cl. 09 - *03*
U.S. Cl. D9—339



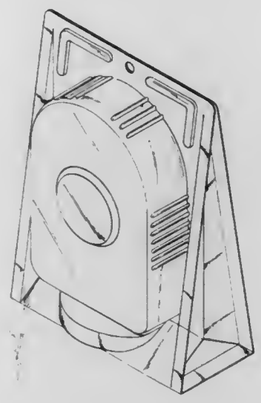
400,096
PACKAGE
Noel Lee, South San Francisco, Calif., assignor to Monster Cable International, Ltd., Brisbane, Calif.
Filed Dec. 29, 1995, Ser. No. 49,605
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



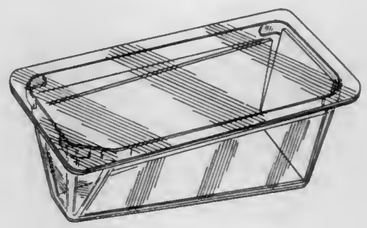
400,097
CONTAINER
Paul Von Stein, Moon Township, Pa., assignor to SmithKline Beecham Corporation, Philadelphia, Pa.
Filed Jul. 3, 1997, Ser. No. 73,210
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



400,098
PACKING CASE
I-Hwa Wang, P.O. Box 55-175, Taichung, Taiwan
Filed Oct. 27, 1997, Ser. No. 78,497
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—415



400,099
TRAY
Arne H. Brauner, Minnetonka, and Gary S. Bachand, Farmington, both of Minn., assignors to General Mills, Inc., Minneapolis, Minn.
Filed Jul. 14, 1997, Ser. No. 73,516
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—431



400,100
BOTTLE HOLDER WITH EXPANDABLE MIDSECTION
Donna Minard, P.O. Box 1598, Manhattan Beach, Calif. 90267-1598
Filed Dec. 6, 1996, Ser. No. 63,407
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—434



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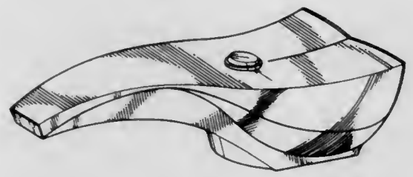
400,101
PLASTIC BAG CARRIER WITH MUSCLES
Charles B. Pruitt, and Brenda C. Pruitt, both of 4205 Whittier Ct., Decatur, Ga. 30034
Filed Feb. 22, 1997, Ser. No. 67,740
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—434



400,102
TRIGGER TYPE DISPENSING PUMP
Tetsuya Tada, Tokyo, Japan, assignor to Canyon Corporation, Tokyo, Japan
Filed Oct. 28, 1996, Ser. No. 61,629
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



400,103
PUMP FOR BOTTLE OF SPRING WATER
Kyoung Seo Park, 1-602 Lucky Apt., 1257 Kuro 6-dong, Kuro-Ku, Seoul, Rep. of Korea
Filed Oct. 3, 1997, Ser. No. 77,540
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—448



400,104
NECKLACE HOLDER
Janis L. Ash, and Jerry L. Ash, both of 4704 Eden Rd., Kennedale, Tex. 76060
Filed Aug. 8, 1997, Ser. No. 75,922
Term of patent 14 years
LOC (6) Cl. 09 - *07*
U.S. Cl. D9—457



400,105
BOTTLE WITH HANDLE
Timothy Jon Beechuk, and Gerard Laurent Buisson, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Jun. 27, 1997, Ser. No. 73,003
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—531



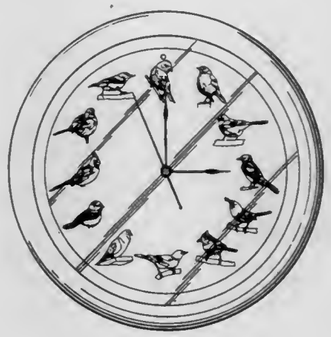
400,106
BOTTLE
Jack Anderson; Heidi Favour; Suzanne Haddon, all of Seattle; Julie Lock, Newcastle; Anita Lehmann, Seattle; George Reynolds; Don Valencia, both of Bellevue, all of Wash.; Gary Briggs, New Canaan; Ann Glover, Stamford, both of Conn., and Cheriyan Reggie Thomas, Woodside, N.Y., assignors to North American Coffee Partnership, Somers, N.Y.
Filed Jul. 25, 1996, Ser. No. 57,455
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—551



400,107
COMBINED BOTTLE AND WOODEN CAP FOR COSMETIC PRODUCTS
Catherine Krunas, Ramsey, N.Y., assignor to Fendi Profumi S.p.A., Parma, Italy
Filed Jul. 30, 1996, Ser. No. 57,697
Claims priority, application Hague Agreement, Mar. 18, 1996, DM/035868
Term of patent 14 years
LOC (6) Cl. 09 - *01*
U.S. Cl. D9—563

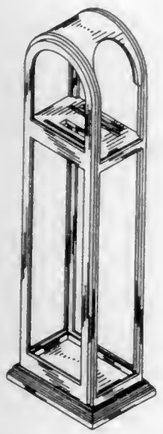


400,108
CLOCK
Mark S. Feldstein, 6038 Wild Ivy Ct., Sylvania, Ohio 43560
Filed Nov. 17, 1997, Ser. No. 79,430
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—7

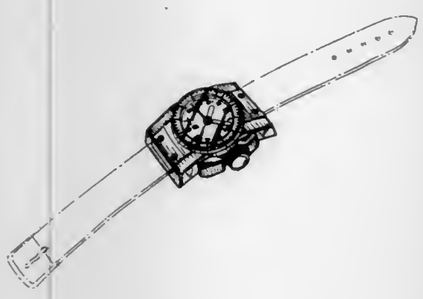


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400,109
GRANDFATHER CLOCK
Robert W. Mann, HCR 3, Box 953, Tuscon, Ariz. 85739
Filed Nov. 7, 1997, Ser. No. 79,075
Term of patent 14 years
LOC (6) Cl. 10 - *01*
U.S. Cl. D10—16



400,110
WATCH
Myron Polenberg, New York, N.Y., assignor to Swiss Army Brand Ltd., Shelton, Conn.
Filed Dec. 9, 1996, Ser. No. 63,470
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—39

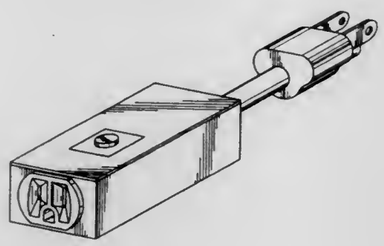


400,111
Patent Not Issued For This Number

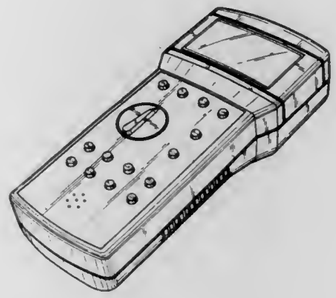
400,112
LINE LENGTH MEASURING SYSTEM
Charles R. Rider, 68 N. Water St., Spring Grove, Pa. 17362
Filed Sep. 25, 1997, Ser. No. 77,052
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—70



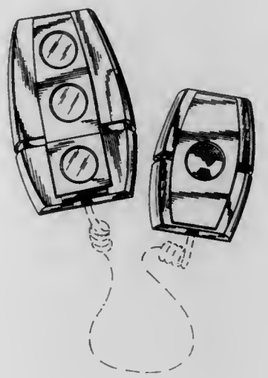
400,113
CONTINUITY TESTER FOR ENGINE BLOCK HEATER
Kari U. Aalto, 8012 Newcastle Cresent, Prince George, BC, Canada, V2N 3X5
Filed Sep. 5, 1996, Ser. No. 59,228
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—78



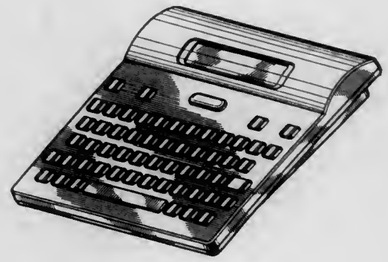
400,114
ELECTRONIC HAND HELD MEASURING INSTRUMENT
Christian Beha, Glottertal, Germany, assignor to Ch. BEHA GmbH Technische Neuentwicklungen, Germany
Filed Oct. 10, 1997, Ser. No. 77,845
Term of patent 14 years
LOC (6) Cl. 10 - *04*
U.S. Cl. D10—78



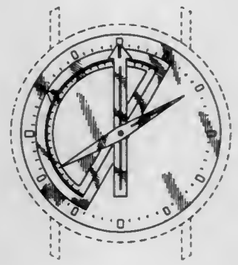
400,115
COMBINED TRANSMITTER AND RECEIVER FOR A VEHICLE PARKING INDICATOR SENSOR
Michael Yaron, 936 Moredon Rd., Meadowbrook, Pa. 19046; Dany Chalhoub, Woodside, N.Y.; Joo Hwang Chun, Palisades Park, N.J.; Robert Lachman, Norwalk, Conn.; Lex Curtiss, Long Island City, N.Y.; Stuart Leslie, Brooklyn, N.Y., and Matt Hayduk, Glen Cove, N.Y., assignors to Michael Yaron, Meadowbrook, Pa.
Filed Oct. 27, 1997, Ser. No. 78,472
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—104



400,116
SELECTIVE CALL MESSAGE ENTRY DEVICE
David Townsend, Dublin, Ireland; Neil Johan Schmertmann, Boynton Beach, Fla., and Suthirug Num Pisutha-Arnond, Wheeling, Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Apr. 29, 1996, Ser. No. 53,749
Term of patent 14 years
LOC (6) Cl. 10 - *05*
U.S. Cl. D10—108



400,117
WATCH DIAL
Félix Fischer, Grenchen, Switzerland, assignor to Juvenia Montres, S.A., La Chaux-de-Fonds, Switzerland
Filed Sep. 9, 1997, Ser. No. 76,425
Claims priority, application Hague Agreement, Mar. 12, 1997, DM/039 492
Term of patent 14 years
LOC (6) Cl. 10 - *02*
U.S. Cl. D10—124



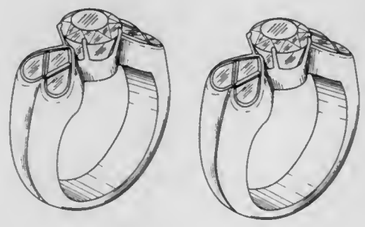
400,118
BRACELET
Israel Itzkowitz, N. Hollywood, Calif., assignor to Ambar Diamonds Inc., Los Angeles, Calif.
Filed Oct. 16, 1997, Ser. No. 78,047
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—4



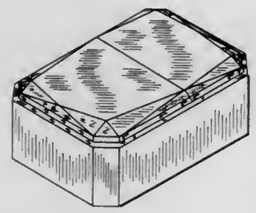
400,119
FINGER RING
Israel Itzkowitz, N. Hollywood, Calif., assignor to Ambar Diamonds Inc., Los Angeles, Calif.
Filed Mar. 10, 1997, Ser. No. 67,484
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—26



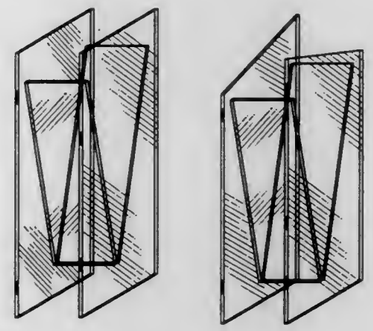
400,120
RING
Israel Itzkowitz, N. Hollywood, Calif., assignor to Ambar Diamonds Inc., Los Angeles, Calif.
Filed Mar. 27, 1997, Ser. No. 68,806
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—26



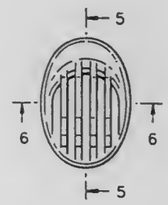
400,121
TWO STONE JEWELRY SETTING
Betzalel Ambar, Encino, Calif., assignor to Ambar Diamonds Inc., Los Angeles, Calif.
Filed Mar. 17, 1997, Ser. No. 68,186
Term of patent 14 years
LOC (6) Cl. 11 - *01*
U.S. Cl. D11—91



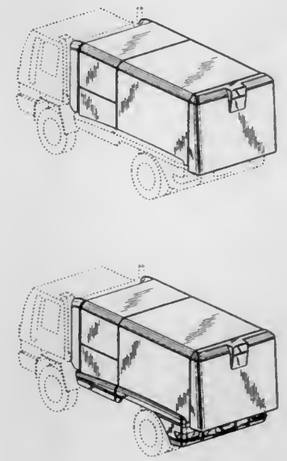
400,122
VASE
Ruby Zabari, 7009 SW. Canby La., Portland, Oreg. 97223
Filed Mar. 11, 1997, Ser. No. 67,735
Term of patent 14 years
LOC (6) Cl. 11 - *02*
U.S. Cl. D11—155



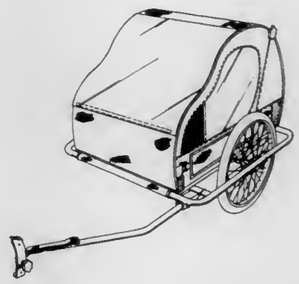
400,123
CUFF LINK
Stefano Ricci, Rome, Italy, assignor to Asprey London Limited, London, United Kingdom
Filed Feb. 27, 1997, Ser. No. 67,229
Claims priority, application United Kingdom, Aug. 28, 1996, 2058827
Term of patent 14 years
LOC (6) Cl. 02 - *07*
U.S. Cl. D11—226



400,124
TRUCK BODY
Robert D. Mason, Hanover Park, Ill.; Dennis Otto, Elkhart, Ind., and Christian Pourias, Vauhallan, France, assignors to Elgin Sweeper Co., Elgin, Ill.
Filed May 5, 1997, Ser. No. 69,474
Term of patent 14 years
LOC (6) Cl. 12 - *08*
U.S. Cl. D12—93



400,125
TRAILER
Ping-Jan Chiu, No. 1146, Chung-San Rd., Ta-Chia Chen, Taichung Hsien, Taiwan
Filed Apr. 16, 1997, Ser. No. 67,973
Term of patent 14 years
LOC (6) Cl. 12 - *10*
U.S. Cl. D12—102

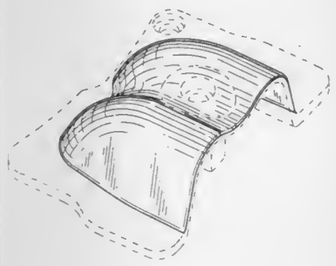


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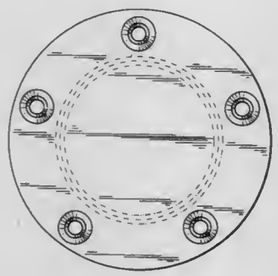
400,126
MOTORCYCLE BELLY PAN
Thomas John Hutchins, 5090 93rd Ave. N., Pinellas Park, Fla. 33782
Filed Aug. 26, 1996, Ser. No. 58,986
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—114



400,127
MOTORCYCLE FLUID LINE COVER
Earl F. Golden, Milwaukee, and William G. Davidson, Delafield, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.
Filed Sep. 18, 1997, Ser. No. 76,806
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—126



400,128
MOTORCYCLE CAM COVER MEDALLION
Earl F. Golden, Milwaukee, and William G. Davidson, Delafield, both of Wis., assignors to Harley-Davidson Motor Company, Milwaukee, Wis.
Filed Sep. 18, 1997, Ser. No. 76,813
Term of patent 14 years
LOC (6) Cl. 12 - *11*
U.S. Cl. D12—126



400,129
BABY WALKER
Gerald W. Udelhoven, 10513 County Rd. S., Blue River, Wis. 53518, assignor to Gerald W. Udelhoven, Blue River, Wis.
Filed Oct. 27, 1997, Ser. No. 78,461
Term of patent 14 years
LOC (6) Cl. 12 - *12*
U.S. Cl. D12—130



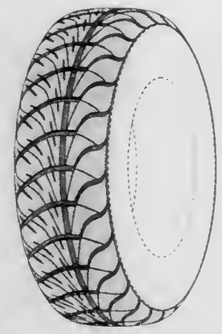
400,130
TIRE TREAD
Leonard F. Blankenship, Sterling; James G. Guspodin, Akron, and Joseph N. Neff, Cuyahoga Falls, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Jul. 10, 1997, Ser. No. 73,235
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



400,131
TIRE TREAD
Maurice Graas, Reichlange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 5, 1997, Ser. No. 76,126
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146



400,132
TIRE TREAD
Paul Bryan Maxwell, Munroe Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 20, 1997, Ser. No. 78,249
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—146

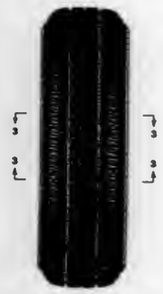


400,133
TIRE TREAD
Christopher Paul Johenning, Wadsworth; Randall Raymond Brayer, North Canton; John Janis Taube, Tallmadge; Terry John Waibel, Wadsworth; Thomas Carl Evans, Copley, and Christopher Alan Mantheiy, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Continuation-in-part of Ser. No. 47,723, Dec. 11, 1995, Pat. No. Des. 379,446. This application Feb. 7, 1997, Ser. No. 66,222
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



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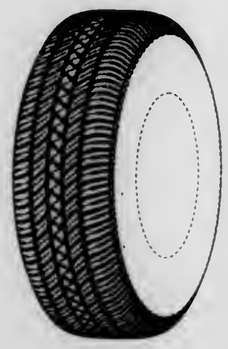
400,134
AUTOMOBILE TIRE
Yoshiki Sato, and Asuka Nakamura, both of Osaka, Japan, assignors to Toyo Tire & Rubber Co., Ltd., Osaka, Japan
Filed Jul. 11, 1997, Ser. No. 73,618
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



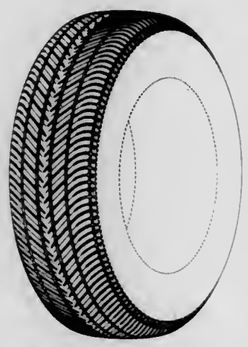
400,135
TIRE TREAD
Leonard F. Blankenship, Sterling; James G. Guspodin, Akron, and Joseph N. Neff, Cuyahoga Falls, all of Ohio, assignors to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Aug. 5, 1997, Ser. No. 74,609
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



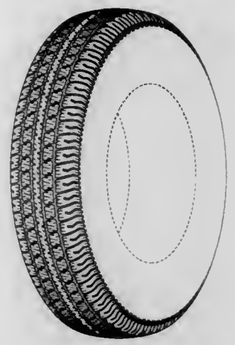
400,136
TIRE TREAD
Richard Heinen, Habay-la-Neuve, and Pascale de Briey-Terlinden, Lischert, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 9, 1997, Ser. No. 76,382
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



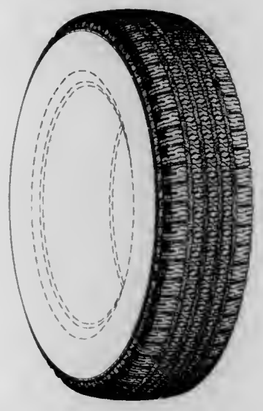
400,137
TIRE TREAD
Richard Heinen, Habay-la-Neuve, and Pascale de Briey-Terlinden, Lischert, both of Belgium, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Sep. 10, 1997, Ser. No. 76,570
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



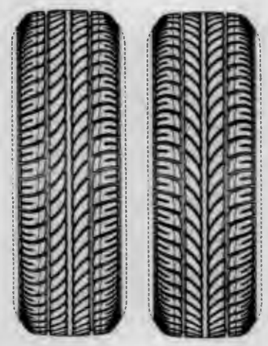
400,138
TIRE TREAD
Leonard F. Blankenship, Sterling, Ohio, assignor to Bridgestone/Firestone, Inc., Akron, Ohio
Filed Oct. 22, 1997, Ser. No. 78,266
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



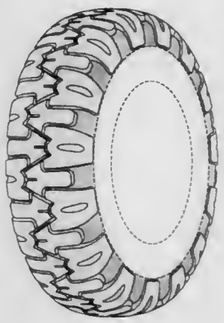
400,139
TIRE TREAD
Karl Koenigstein, Greenville, and William A. Downey, Simpsonville, both of S.C., assignors to Michelin Recherche et Technique, Switzerland
Filed Oct. 20, 1997, Ser. No. 78,315
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



400,140
TIRE TREAD
Maurice Graas, Reichlange, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Nov. 3, 1997, Ser. No. 78,995
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—147



400,141
TIRE TREAD
Paul Bryan Maxwell, Munroe Falls, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Aug. 5, 1997, Ser. No. 74,537
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—149



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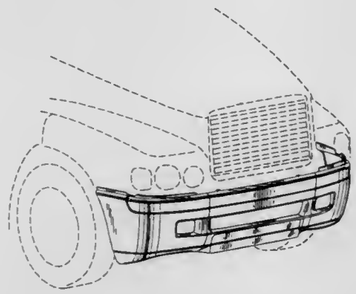
400,142
MOTORCYCLE TIRE
Johann Haas, München, and Franz Wimmer, Jettenbach, both of Germany, assignors to Metzeler Reifen GmbH, Munich, Germany
Filed Feb. 26, 1997, Ser. No. 67,215
Claims priority, application Germany, Sep. 6, 1996, 96 07 834.0
Term of patent 14 years
LOC (6) Cl. 12 - *15*
U.S. Cl. D12—151



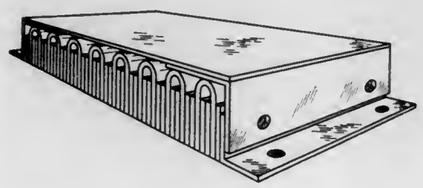
400,143
BUMPER FOR OFF-ROAD UTILITY/RECREATIONAL VEHICLE
Richard Scott Walters, and Glenn Thomas Walters, both of Port Washington, Wis., assignors to Polaris Industries Inc., Minneapolis, Minn.
Filed Sep. 29, 1995, Ser. No. 44,685
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—169



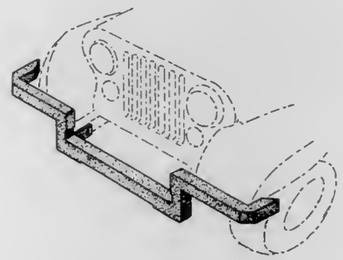
400,144
VEHICLE FRONT BUMPER EXTERIOR SURFACE
Ferdinand F. Hellhake, Beaverton, and Sigmun D. Runyon, Sandy, both of Oreg., assignors to Freightliner Corporation, Portland, Oreg.
Continuation of Ser. No. 50,611, Feb. 16, 1996, abandoned.
This application Dec. 16, 1996, Ser. No. 63,811
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—169



400,145
VEHICLE IMPACT BUMPER
Thomas E. Secor, Willard, and James E. Morrow, Monroeville, both of Ohio, assignors to Durable Corporation, Norwalk, Ohio
Filed Apr. 3, 1997, Ser. No. 69,898
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—169



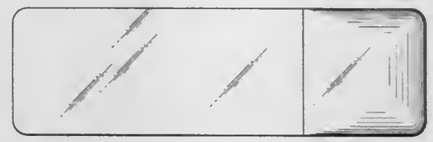
400,146
VEHICLE BUMPER
DeWayne Timothy Marsceau, 157 Haley Mill Rd., Easley, S.C. 29640, and Christopher James Sullivan, 120 Pennwood La., Greenville, S.C. 29609
Filed Sep. 23, 1997, Ser. No. 76,956
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—169



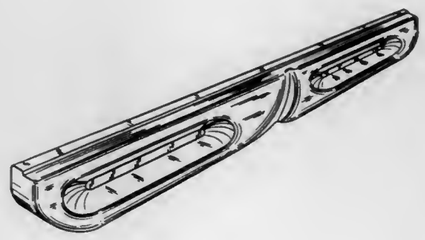
400,147
BRAKE PEDAL HOLDER
William Gipson, 56 Hopes Grove, High Halden Ashford, Kent, United Kingdom, TN26 3ND
Filed Jul. 10, 1997, Ser. No. 73,445
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—180



400,148
REARVIEW MIRROR
Rudy R. Moreno, 407 S. Everett St., Glendale, Calif. 91205
Filed Nov. 6, 1997, Ser. No. 79,029
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—187



400,149
SPORT UTILITY VEHICLE RUNNING BOARD
Edward Zentner, Clarkston, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.
Filed Nov. 24, 1997, Ser. No. 79,852
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—203

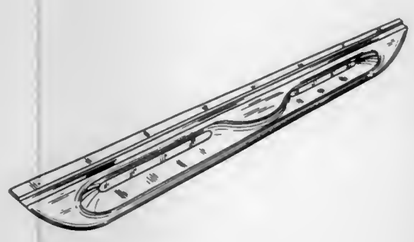


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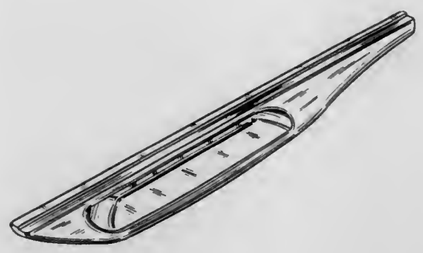
400,150
PICKUP TRUCK RUNNING BOARD
Edward Zentner, Clarkston, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.
Filed Nov. 24, 1997, Ser. No. 79,853
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—203



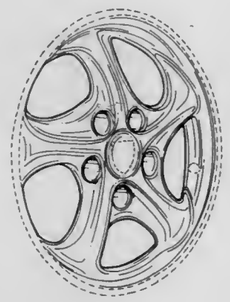
400,151
SPORT UTILITY VEHICLE RUNNING BOARD
Edward Zentner, Clarkston, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.
Filed Nov. 24, 1997, Ser. No. 79,854
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—203



400,152
PICKUP TRUCK RUNNING BOARD
Edward Zentner, Clarkston, Mich., assignor to Durakon Industries, Inc., Lapeer, Mich.
Filed Nov. 24, 1997, Ser. No. 79,858
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—203



400,153
FRONT EXTERIOR SURFACE CONFIGURATION OF A VEHICLE WHEEL
Randjit Bhambra, Stuttgart, Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Weissach, Germany
Filed Jul. 9, 1997, Ser. No. 73,435
Claims priority, application Germany, Jan. 10, 1997, 970 02 44.5
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



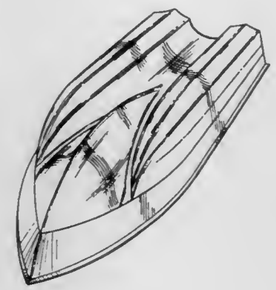
400,154
WHEEL
Frank Noriega, 9246 Claymore St., Pico Rivera, Calif. 90660
Filed Nov. 4, 1997, Ser. No. 78,742
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—209



400,155
BOAT HANDLING SLOTS
William E. Masters, Easley, S.C., assignor to Mainstream Products, Inc., Easley, S.C.
Filed May 27, 1997, Ser. No. 71,298
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—302



400,156
BOAT HULL EXTERIOR
Arthur Herbert Duvenage, P.O. Box 344, Pongola 3140, and Francois Gerhardus Joubert, 91A Struben Street, Pretoria, both of South Africa
Filed Jan. 27, 1997, Ser. No. 65,393
Claims priority, application South Africa, Jul. 26, 1996, 96/0695
Term of patent 14 years
LOC (6) Cl. 12 - *06*
U.S. Cl. D12—312

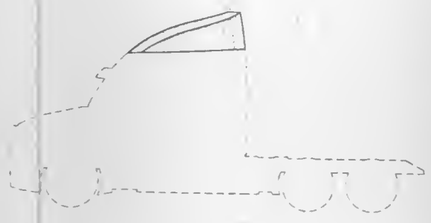


400,157
PATCH AND SWIVEL FOR A DRIFT CONTROL PARACHUTE FOR A BOAT
Jenero Fiorentino, 2148 Paseo del Mar, San Pedro, Calif. 90732, and Kimberly A. Hadash, 383 Monte Vista Ave., #C, Newport Beach, Calif. 92627
Filed Jun. 13, 1997, Ser. No. 65,761
Term of patent 14 years
LOC (6) Cl. 12 - *07*
U.S. Cl. D12—321

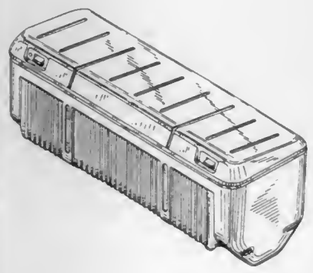


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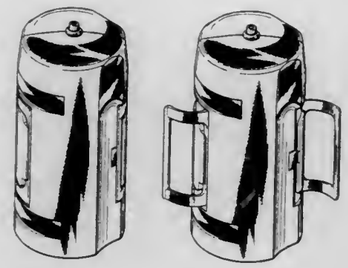
400,158
TRUCK ROOF FAIRING
Roy L. Meryman, Renton, and Wayne K. Simons, Kent, both of Wash., assignors to Paccar Inc., Bellevue, Wash.
Filed May 1, 1996, Ser. No. 53,891
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—401



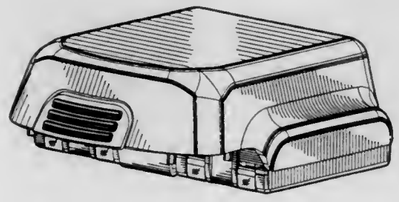
400,159
TRUCK CARGO BED UTILITY BOX
Karl A. Niemi, Waunakee, and Patrick J. Quigley, Portage, both of Wis., assignors to Penda Corporation, Portage, Wis.
Filed Apr. 23, 1997, Ser. No. 69,775
Term of patent 14 years
LOC (6) Cl. 12 - *16*
U.S. Cl. D12—423



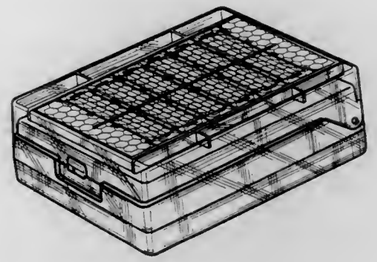
400,160
BATTERY CASE
Toshiyuki Nagano, Takarazuka, Japan, assignor to Cateye Co., Ltd., Japan
Filed Aug. 7, 1996, Ser. No. 58,054
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



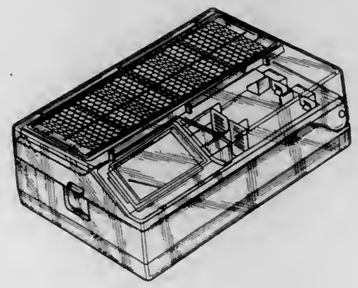
400,161
BATTERY HOUSING
Albert L. Nagele, Wilmette; John F. Hannon, Gurnee, and Lisa M. Kaye, Palatine, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jul. 31, 1997, Ser. No. 74,460
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—103



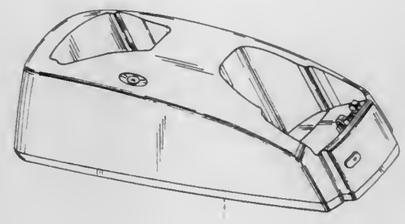
400,162
SOLAR POWERED BATTERY CHARGER
Yuen-Ming Lam, 15/F., Tak King Industrial Building, 27 Lee Chung Street, Chaiwan, Hong Kong
Filed Oct. 4, 1996, Ser. No. 60,689
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—107



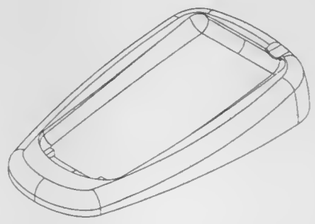
400,163
SOLAR POWERED BATTERY CHARGER
Yuen-Ming Lam, 15/F., Tak King Industrial Building, 27 Lee Chung Street, Chaiwan, Hong Kong
Filed Oct. 4, 1996, Ser. No. 60,746
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—107



400,164
TABLE CHARGER
Richard Lindahl, Malmö, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden
Filed Nov. 18, 1996, Ser. No. 62,522
Claims priority, application Sweden, May 17, 1996, 96-1132
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—108

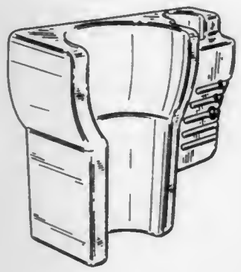


400,165
CHARGER FOR A PORTABLE COMMUNICATION DEVICE
Albert L. Nagele, Wilmette, and Steven C. Emmert, Crystal Lake, both of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 17, 1997, Ser. No. 72,436
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—108

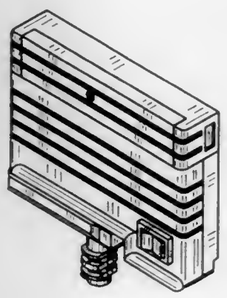


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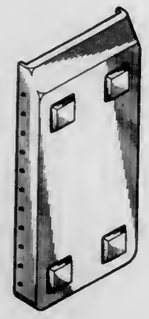
400,166
CHARGER HOUSING
Gabriel E. Concari, Eldersburg, and Gregory Scott Snider, Bel Air, both of Md., assignors to Black & Decker Inc., Newark, Del.
Filed Jul. 29, 1997, Ser. No. 74,155
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—108



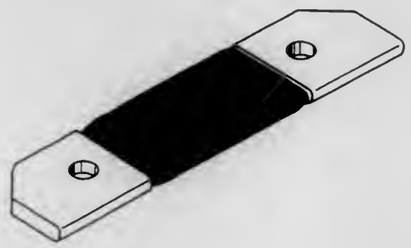
400,167
TRACK-LIGHTING POWER SUPPLY
Dale A. Klaus, St. Albans, Mo., assignor to Dal Partnership, St. Louis, Mo.
Filed Jul. 10, 1997, Ser. No. 73,239
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



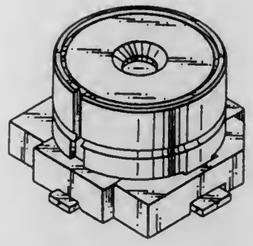
400,168
AC ADAPTER UNIT ENCLOSURE
Daniel Neil Kuczyk; Kenneth Nicholas Kuczyk, both of Scottsdale, and Lynn Eric Terpening, Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 24, 1997, Ser. No. 73,919
Term of patent 14 years
LOC (6) Cl. 13 - *02*
U.S. Cl. D13—110



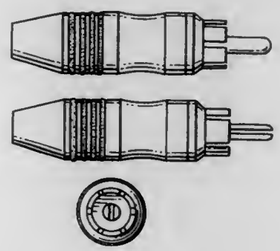
400,169
LEADING WIRE
Syuuei Endo, Fukushima, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Mar. 26, 1996, Ser. No. 52,196
Claims priority, application Japan, Sep. 27, 1995, 7-28796
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—120



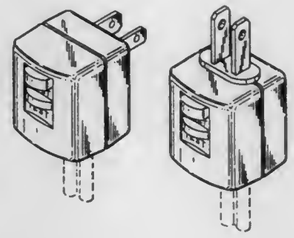
400,170
COAXIAL CONNECTOR
Kiyoshi Asai; Katsuhisa Serizawa, and Yoshiyuki Kaku, all of Tokyo, Japan, assignors to SMK Corporation, Tokyo, Japan
Filed Oct. 17, 1996, Ser. No. 61,169
Claims priority, application Japan, Jun. 13, 1996, 8-17543
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—133



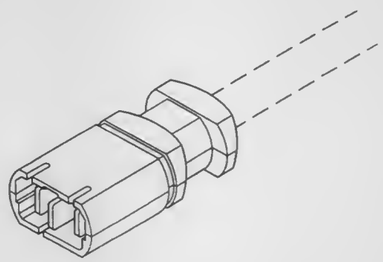
400,171
AUDIO CONNECTOR PLUG
Roy Nimpoeno, Aqoura Hills, and Roger J. Alves, Simi Valley, both of Calif., assignors to Scosche Industries, Inc., Oxnard, Calif.
Filed May 27, 1997, Ser. No. 71,312
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—133



400,172
MINI APPLIANCE LEAKAGE CURRENT INTERRUPTER
Victor V. Aromin, West Warwick, R.I., assignor to Tower Manufacturing Corporation, Providence, R.I.
Filed Apr. 22, 1997, Ser. No. 69,750
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—138.1



400,173
ELECTRICAL PLUG
Rado Starec, and James Cowhey, both of Tullamarine, Australia, assignors to Greenshell Pty Ltd, Tullamarine, Australia
Filed Jun. 11, 1997, Ser. No. 71,975
Claims priority, application Australia, Jan. 14, 1997, 76/97
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—138.1

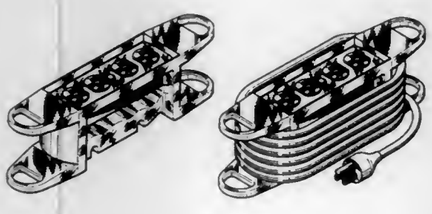


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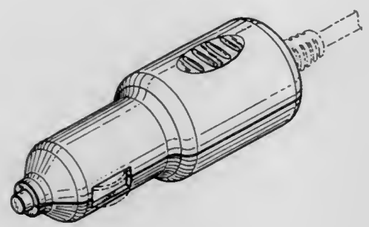
400,174
MINI APPLIANCE LEAKAGE CURRENT INTERRUPTER
Louis J. Shatkin, Warwick, R.I., assignor to Tower Manufacturing Corporation, Providence, R.I.
Filed Aug. 15, 1997, Ser. No. 75,237
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—138.1



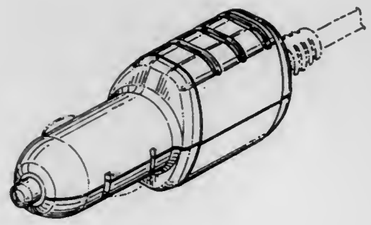
400,175
COMBINED OUTLET AND HAND REEL
Isao Okamoto, Osaka, Japan, assignor to Nichido Kogyo Kabushiki Kaisha, Osaka, Japan
Filed Apr. 25, 1997, Ser. No. 70,067
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—139.7



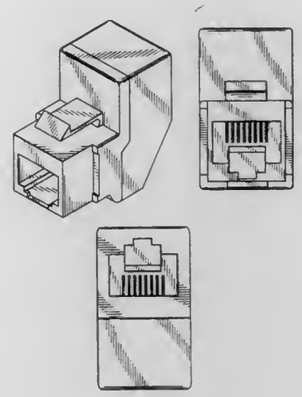
400,176
CIGARETTE LIGHTER ADAPTER
Christopher R. Jones, Oak Lawn, Ill., assignor to Andrew Corporation, Itasca, Ill.
Filed May 14, 1997, Ser. No. 70,717
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—144



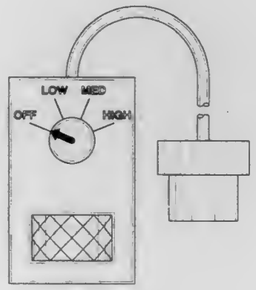
400,177
CIGARETTE LIGHTER ADAPTER
Christopher R. Jones, Oak Lawn, Ill., assignor to Andrew Corporation, Itasca, Ill.
Filed Jun. 26, 1997, Ser. No. 72,935
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—144



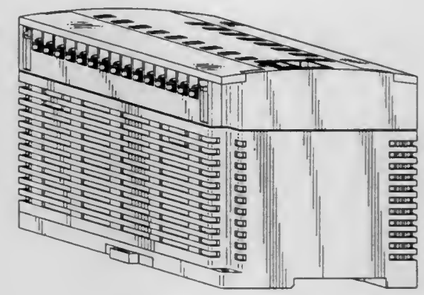
400,178
EXTENSION COUPLER
Danny Liu, Hsin-Tien, Taiwan, assignor to Dan-Chief Enterprise Co., Ltd., Taipei, Taiwan
Filed Apr. 24, 1997, Ser. No. 69,523
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—147



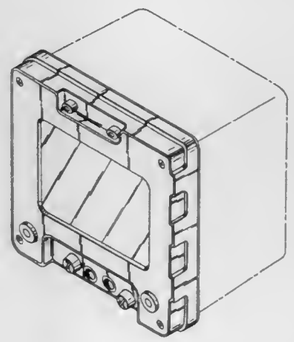
400,179
THREE WAY SWITCH
James C. Jones, 145-61 158th St., Jamaica, N.Y. 11434
Filed Aug. 29, 1997, Ser. No. 76,028
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—158



400,180
PROGRAMMABLE LOGIC CONTROLLER
Norio Shimizu, Tokyo, Japan, assignor to Facts Engineering, Inc., New Port Richey, Fla.
Filed Sep. 10, 1996, Ser. No. 59,404
Claims priority, application Japan, May 30, 1996, 8-15509
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—162.1



400,181
PROGRAMMABLE INTEGRATED COMMUNICATIONS TERMINAL
Walter J. Floyd, 1805 Evangeline Dr., Picayune, Miss. 39466
Filed Apr. 28, 1997, Ser. No. 69,560
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—162

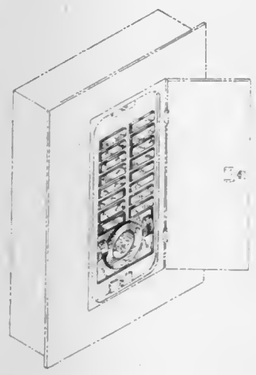


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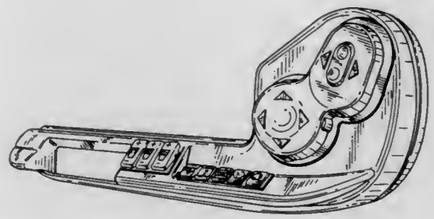
400,182
MOTOR CONTROLLER
Shigekazu Yamada, Tama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan
Filed Oct. 27, 1997, Ser. No. 78,466
Claims priority, application Japan, Apr. 28, 1997, 9-52910; Apr. 28, 1997, 9-52911
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—162



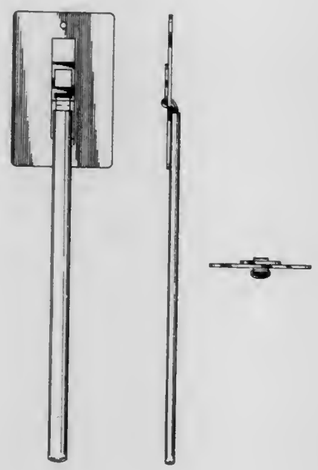
400,183
POWER INPUT TRANSFER PANEL
David D. Flegel, Racine, Wis., assignor to Reliance Time Controls, Inc., Milwaukee, Wis.
Filed Nov. 27, 1996, Ser. No. 63,124
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—164



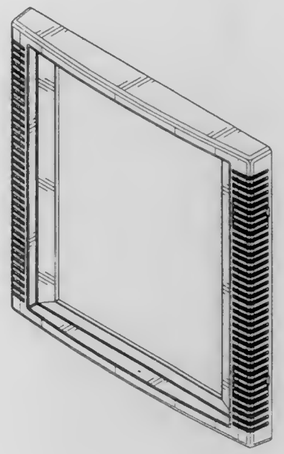
400,184
SWITCH MODULE FOR MOTORCAR SEAT ADJUSTING
Hermann Meiller; Martin Hegen, both of Amberg, and Raymond Carter, Newbury Park, all of Calif., assignors to Grammer AG, Amberg, Germany
Filed Dec. 24, 1996, Ser. No. 64,233
Claims priority, application Germany, Jun. 29, 1996, M9605741.6
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—171



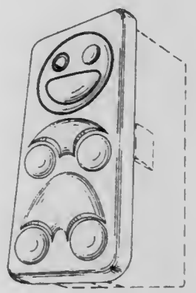
400,185
LIGHT SWITCH EXTENSION
John Martello, 2155 E. Steger Rd., Crete, Ill. 60417
Filed Nov. 5, 1996, Ser. No. 62,018
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—173



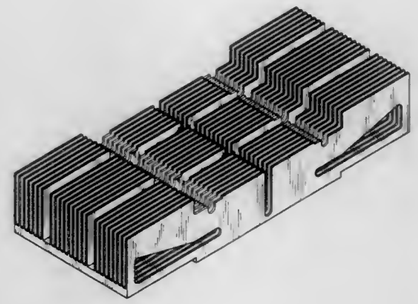
400,186
BEZEL
Trent T. Jones, White Bear Lake, Minn., assignor to Hoffman Enclosures, Inc., Anoka, Minn.
Filed Jan. 21, 1997, Ser. No. 65,103
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—177



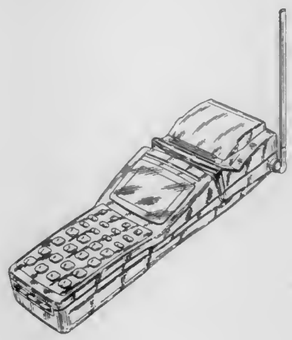
400,187
SWITCH PANEL FOR A VEHICLE ENTERTAINMENT SYSTEM
Bruce Trevor Bryant, Nuneaton, England, assignor to Rover Group Limited, Warwick, England
Filed Aug. 25, 1997, Ser. No. 76,138
Claims priority, application United Kingdom, Mar. 1, 1997, 2063722
Term of pateot 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—177



400,188
HEAT SINK
Ho-Kang Chu, Sunnyvale, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan
Filed Oct. 9, 1997, Ser. No. 77,712
Claims priority, application Taiwan, May 22, 1997, 86304474
Term of patent 14 years
LOC (6) Cl. 13 - *03*
U.S. Cl. D13—179

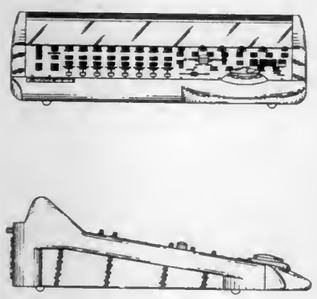


400,189
TERMINAL UNIT FOR THE CONTROL OF SALES DATA
Masakatu Yotukura, Yokohama, Japan, assignor to Kanda Tsushin Kogyo Co., Ltd., Tokyo, Japan
Filed Jul. 21, 1997, Ser. No. 73,850
Claims priority, application Japan, Jan. 27, 1997, 9-1569
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



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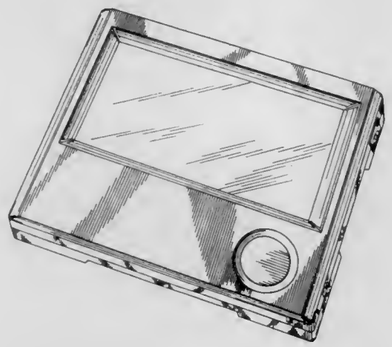
400,190
USER INTERFACE
Greg C. Mackie, Kirkland, and Joseph L. Erno, Everett, both of Wash., assignors to Mackie Designs Inc., Woodinville, Wash.
Filed Nov. 3, 1997, Ser. No. 78,813
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—100



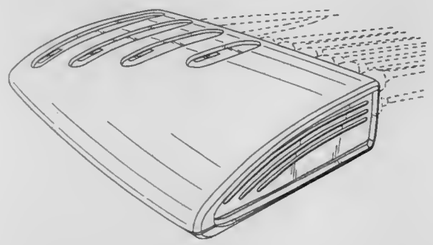
400,191
POINT-OF-SALE CARD READER
Bradford F. Butts, Oak Park; Arnold Crater, Hoffman Estates; Michael D. Prince, and Paul F. O'Connor, both of Chicago, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 15, 1997, Ser. No. 78,416
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—105



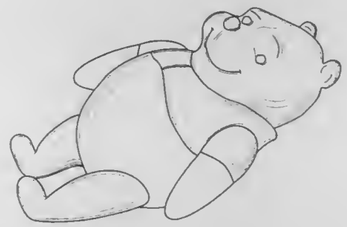
400,192
DISPLAY UNIT
Eiichi Shimizu, Hiroshima-ken, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Jul. 8, 1997, Ser. No. 73,425
Claims priority, application Japan, Jan. 8, 1997, 9-262
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—113



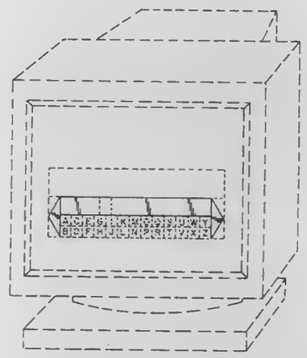
400,193
VIDEO CAPTURE DEVICE
David Bernard Small, San Jose; Paul Salvadore Rago, Danville, and Scott David Eckerman, Campbell, all of Calif., assignors to Shooting Star Products, LLC, Pleasanton, Calif.
Filed Jun. 17, 1997, Ser. No. 72,454
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



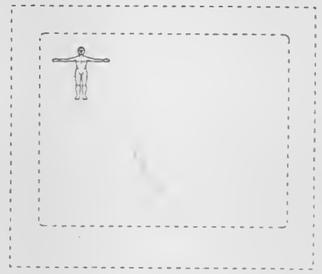
400,194
COMPUTER MOUSE
Richard Leifer, 11 Beaumont Dr., Melville, N.Y. 11747
Filed Sep. 12, 1997, Ser. No. 76,672
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114



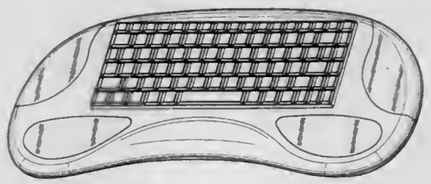
400,195
COMPUTER DISPLAY WITH COMPUTER-GENERATED ICON
Brian Utesch, Raleigh, N.C., assignor to Northern Telecom Limited, Montreal, Canada
Filed Apr. 4, 1997, Ser. No. 68,901
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.1



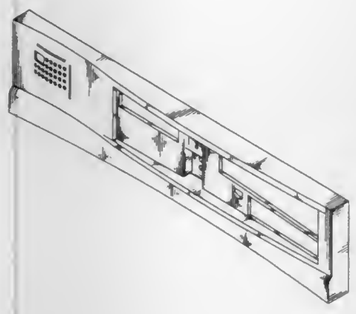
400,196
THREE DIMENSIONAL COMPUTER GENERATED ICON FOR A COMPUTER SCREEN
Bruce M. Cameron, Mazeppa, and Richard A. Robb, Rochester, both of Minn., assignors to Mayo Foundation for Medical Education and Research, Rochester, Minn.
Filed Apr. 2, 1997, Ser. No. 69,469
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—114.7



400,197
KEYBOARD
Mark S. Aubuchon; Jeffery T. Lininger, both of Spring, and Meera K. Manahan, Tomball, all of Tex., assignors to Compaq Computer Corporation, Houston, Tex.
Filed Dec. 30, 1996, Ser. No. 64,367
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



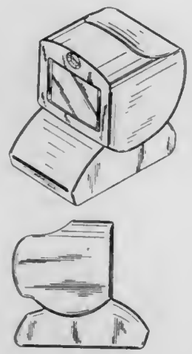
400,198
FRONT BEZEL FOR DESKTOP PERSONAL COMPUTER
Richard C. Y. Fu, Cerritos, Calif., assignor to Hon Hai Precision Ind. Co., Ltd., Taipei Hsien, Taiwan
Filed Oct. 14, 1997, Ser. No. 77,955
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—115



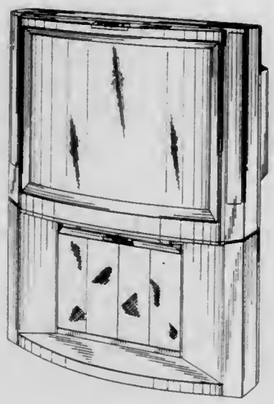
400,199
BAR CODE READER
Timothy R. Fitch, Syracuse; Robert L. Naas, Skaneateles, and Craig Whitaker, Marietta, all of N.Y., assignors to Welch Allyn, Inc., Skaneateles Falls, N.Y.
Filed Nov. 5, 1997, Ser. No. 78,916
Term of patent 14 years
LOC (6) Cl. 14 - *02*
U.S. Cl. D14—116



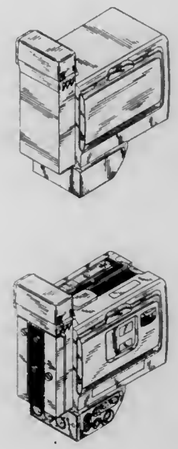
400,200
TELEVISION RECEIVER COMBINABLE WITH TELEPHONE
Akira Yamazaki, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 6, 1996, Ser. No. 59,296
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—130



400,201
TELEVISION RECEIVER
Takahiro Tsuge, Edgewater, N.J., and Keiichi Totsuka, Weehawken, N.Y., assignors to Sony Corporation, Tokyo, Japan, and Sony Electronics, Inc., Parkridge, N.J.
Filed Oct. 14, 1997, Ser. No. 77,925
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—133



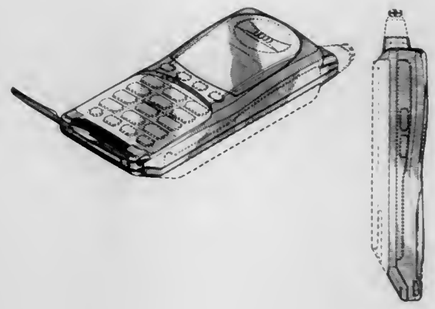
400,202
VIDEO TAPE RECORDER
Fumitaka Kikutani, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan
Filed Sep. 23, 1996, Ser. No. 60,124
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—135



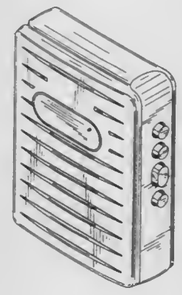
400,203
HANDSET
Petteri Kolinen, Helsinki, Finland, assignor to Nokia Mobile Phones Limited, Salo, Finland
Filed Apr. 2, 1997, Ser. No. 69,467
Claims priority, application Finland, Oct. 3, 1996, 649/96
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138



400,204
PORTABLE RADIOTELEPHONE
Phillip E. Lindeman, Gurnee; Bruce C. McLellan, Schaumburg, and Reena Saluja, Deerfield, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 26, 1997, Ser. No. 72,936
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—138

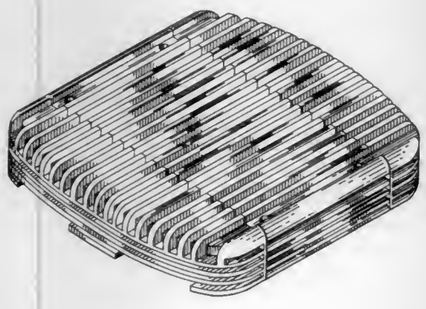


400,205
TAPE PLAYER
Ken Yano, Tokyo, Japan, and John Tree, Weybridge, United Kingdom, assignors to Sony Corporation, Tokyo, Japan
Filed Jun. 18, 1997, Ser. No. 72,539
Claims priority, application Japan, Mar. 7, 1997, 9-6473
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—165



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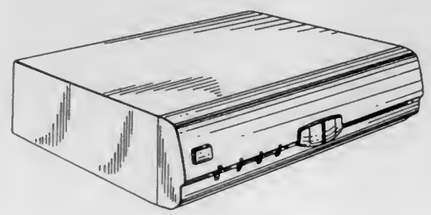
400,206
COMBINED AUDIO AMPLIFIER AND COVER
Hersel Mahgerefteh, 20491 Whitetree Cir., Huntington Beach, Calif. 92646
Filed Oct. 6, 1997, Ser. No. 78,097
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—188



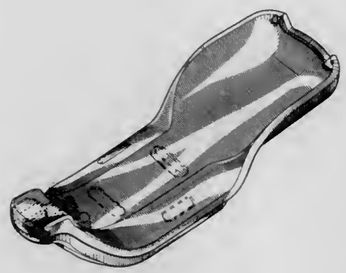
400,207
SPEAKER
George K. Wu, 1357 Kuehner Dr., Simi Valley, Calif. 93063
Filed Aug. 18, 1997, Ser. No. 75,387
Term of patent 14 years
LOC (6) Cl. 14 - *01*
U.S. Cl. D14—214



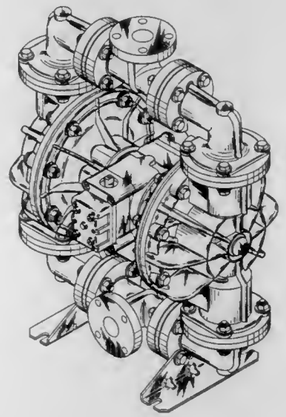
400,208
COMPACT DIGITAL SATELLITE SYSTEM RECEIVER
Knut Thomas Fenner, Westfield, N.J., assignor to Sony Corporation, Tokyo, and Sony Corporation of America, New York, N.Y.
Filed Aug. 29, 1997, Ser. No. 75,848
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—125



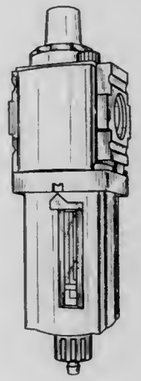
400,209
HOLDER
Daniel L. Williams, Vernon Hills; Daryl R. Harris, Rolling Meadows; Simon F. Vollmer, Buffalo Grove, and Jason W. Meyer, Gurnee, all of Ill., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Oct. 10, 1996, Ser. No. 60,917
Term of patent 14 years
LOC (6) Cl. 14 - *03*
U.S. Cl. D14—253



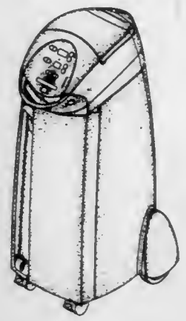
400,210
DIAPHRAGM PUMP
Steven M. Reynolds, Lucas; Brad Courson, Mansfield; Mark Frye, Mansfield; Greg Hughes, Mansfield; Curt Young, Galion, and Ian Pratt, Shelby, all of Ohio, assignors to Warren Rupp, Inc., Mansfield, Ohio
Filed May 29, 1997, Ser. No. 71,447
Term of patent 14 years
LOC (6) Cl. 15 - *02*
U.S. Cl. D15—7



400,211
LUBRICATOR UNIT
Axel Thallemer, and Jan Kleffmann, both of Esslingen, Germany, assignors to Festo AG & Co., Esslingen, Germany
Filed Oct. 2, 1997, Ser. No. 77,490
Claims priority, application WIPO, Apr. 8, 1997, DM/039796
Term of patent 14 years
LOC (6) Cl. 15 - *02*
U.S. Cl. D15—7



400,212
PORTABLE AIR ABRASION SYSTEM
John Michael Brassil, 2523 Bel Air Dr., Glenview, Ill. 60025; John Andrew Lake, 925 Forest Ave., 1E, Evanston, Ill. 60202; Andrew C. Burroughs, 7404 7th Ave., Kenosha, Wis. 53143; Stephen D. Berry, 13854 S. Petoskey Dr., Plainfield, Ill. 60544; Shu Kun Chang, 1245 Elmwood, Apt. 212, Evanston, Ill. 60202; Roberto Giovanni Fraquelli, 1 Byron Villas, Vale of Health, London NW3 1AR, and David Howard Meldrum Annett, 3 Rossett Drive, Harrogate, North Yorkshir, H92 9NS, both of United Kingdom
Filed Oct. 17, 1997, Ser. No. 78,676
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—124

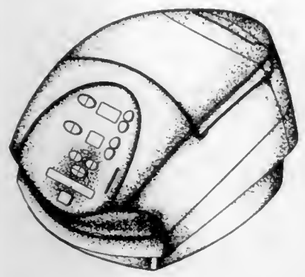


400,213
AIR ABRASION HAND PIECE
John Michael Brassil, 2523 Bel Air Dr., Glenview, Ill. 60025; Shu Kun Chang, 1245 Elmwood, Apt. 212, Evanston, Ill. 60202; Roberto Giovanni Fraquelli, 1 Byron Villas, Vale of Health, London NW3 1 AR, United Kingdom, and Gary Nelsson, 454 Kings Way, Mundelein, Ill. 60060
Filed Oct. 17, 1997, Ser. No. 78,677
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—124

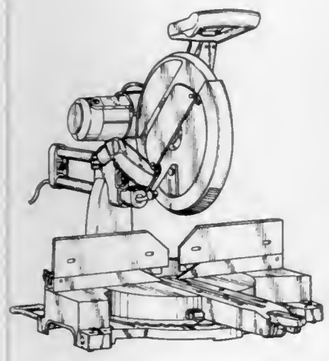


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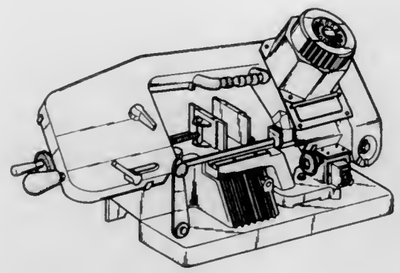
400,214
COUNTERTOP AIR ABRASION SYSTEM
John Michael Brassil, 2523 Bel Air Dr., Glenview, Ill. 60025; John Andrew Lake, 925 Forest Ave., Apt. 1E, Evanston, Ill. 60202; Andrew C. Burroughs, 7404 7th Ave., Kenosha, Wis. 53143; Stephen D. Berry, 13854 S. Petoskey Dr., Plainfield, Ill. 60544; Shu Kun Chang, 1245 Elmwood, Apt. 212, Evanston, Ill. 60202; Roberto Giovanni Fraquelli, 1 Byron Villas, Vale of Health, London NW3 1AR, and David Howard Meldrum Annett, 3 Rossett Drive, Harrogate, North Yorkshir, N92 9NS, both of United Kingdom, H92 9NS
Filed Oct. 17, 1997, Ser. No. 78,402
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—125



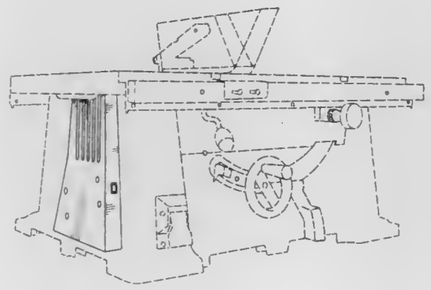
400,215
SLIDING COMPOUND MITER SAW
Scott Price, Singapore, Singapore; John W. Miller, Upperco, Md.; Daryl S. Meredith, Hampstead, Md.; Thomas R. Kaye, Jr., Bel Air, Md.; William R. Stumpf, Kingsville, Md.; Mark E. Brunson, Abingdon, Md.; and Robert P. Welsh, Hunt Valley, Md., assignors to Black & Decker Inc., Newark, Del.
Continuation-in-part of Ser. No. 63,037, Dec. 2, 1996, Pat. No. Des. 391,973, which is a continuation-in-part of Ser. No. 55,881, Jun. 4, 1996. This application Sep. 10, 1997, Ser. No. 76,560
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—133



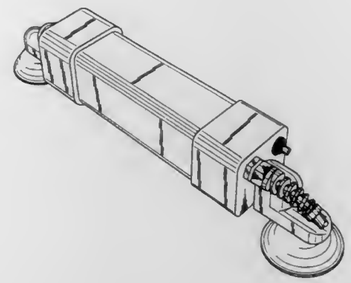
400,216
METAL CUTTING BAND-SAW
Kuo-Chuan Lin, No. 26-4, Hou Chuang Road, Pei Tun Chu, Taichung, Taiwan
Filed Jul. 23, 1997, Ser. No. 77,162
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—134



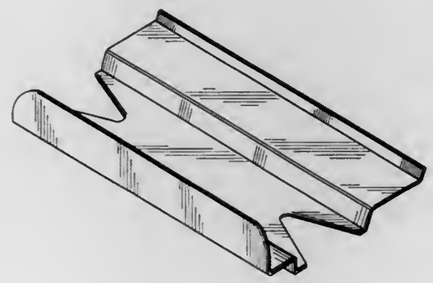
400,217
MITER GAUGE HOLDER FOR A TABLE SAW
Warren A. Ceroll, Owings Mills; Robert S. Gehret, Hampstead; Daniel Puzio, Baltimore; Frederick R. Bean, Finksburg; Michael L. O'Banion, Westminster, all of Md.; David A. Porter, Hanover, Pa., and Daniel A. Ferrara, Jr., Bantam, Conn., assignors to Black & Decker Inc., Newark, Del.
Continuation of Ser. No. 57,853, Aug. 1, 1996, which is a continuation of Ser. No. 51,851, Mar. 1, 1996, abandoned. This application May 8, 1997, Ser. No. 72,889
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—140



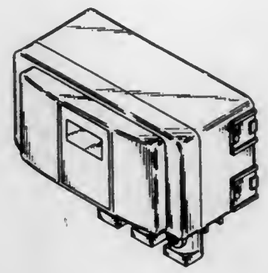
400,218
ULTRAVIOLET LAMP
Jonathan P. Thomas, Maple Lake, Minn., assignor to TCG International, Inc., Burnaby, Canada
Filed Oct. 2, 1996, Ser. No. 60,608
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—144



400,219
TRAY FOR A HORIZONTAL COLLATING AND KITTING CAROUSEL
Paul D. Mercier, 5 High St., Antrim, N.H. 03440
Filed Apr. 11, 1997, Ser. No. 69,127
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—145



400,220
POSITIONING DEVICE FOR AN ACTUATOR
Kazuo Nemoto, and Tooru Nakamichi, both of Ibaraki-ken, Japan, assignors to SMC Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 9, 1997, Ser. No. 77,690
Claims priority, application Japan, Apr. 18, 1997, 9-51800
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—148

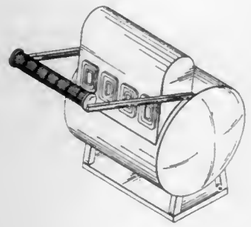


400,221
OIL PAN LINER
Elbert R. Henderson, 7304 Donald Ct., Woodbine, Md. 21797
Filed Aug. 21, 1997, Ser. No. 75,568
Term of patent 14 years
LOC (6) Cl. 15 - *09*
U.S. Cl. D15—150

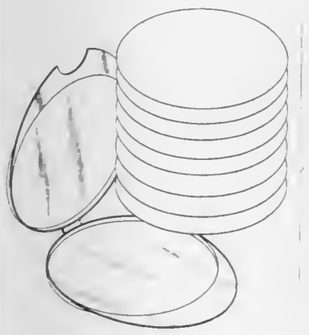


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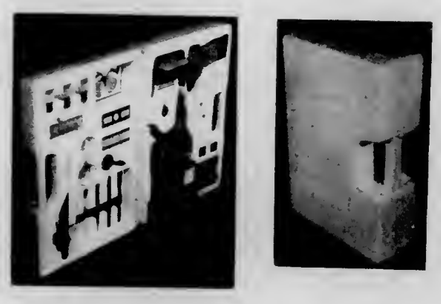
400,222
DYEING MACHINE
Chi-Lung Chang, P.O. Box 82-144, Taipei, Taiwan
Filed Aug. 4, 1997, Ser. No. 74,892
Term of patent 14 years
LOC (6) Cl. 15 - *99*
U.S. Cl. D15—199



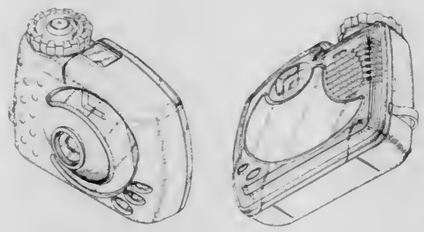
400,223
COMBINED CASE AND TINTED LENS COVERINGS
Virginia Conatser, 1330 S. Burlington, Muncie, Ind. 47302
Filed Mar. 4, 1996, Ser. No. 51,086
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—101



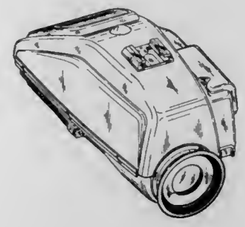
400,224
MICROSCOPE KIT
Shoichi Omi, Tokyo, Japan, assignor to Lunax Company Limited, Ibaraki-ken, Japan
Filed May 6, 1997, Ser. No. 70,320
Claims priority, application Canada, Dec. 18, 1996, 1996-2910
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—131

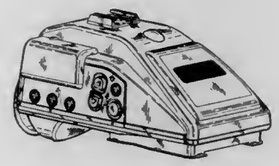


400,225
CAMERA WITH A WATER RESISTANT HOUSING
Michael Reibl, Boeblingen, Germany; Steven S. Chapman, Corfu, and James G. Rydelek, Henrietta, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Jul. 14, 1997, Ser. No. 73,543
Claims priority, application Germany, Jan. 22, 1997, 9700724.2
Term of patent 14 years
LOC (6) Cl. 16 - *01*
U.S. Cl. D16—204

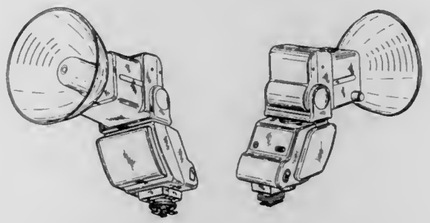


400,226
VIEWFINDER FOR CAMERA
Lave Tenne, Göteborg, Sweden, assignor to Victor Hasselblad AB, Sweden
Filed Mar. 13, 1997, Ser. No. 68,135
Claims priority, application Germany, Sep. 17, 1996, M 96 08 228.3
Term of patent 14 years
LOC (6) Cl. 16 - *05*
U.S. Cl. D16—220

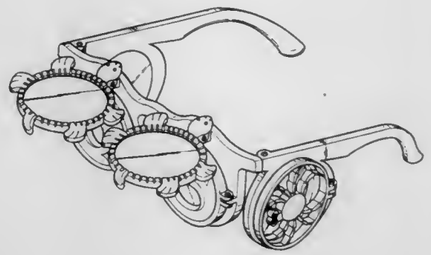




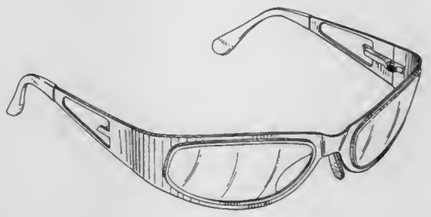
400,227
FLASHGUN FOR CAMERA
Lave Tenne, Göteborg, Sweden, assignor to Victor Hasselblad AB, Sweden
Filed Mar. 13, 1997, Ser. No. 68,133
Claims priority, application Germany, Sep. 17, 1996, M 96 08 230.5
Term of patent 14 years
LOC (6) Cl. 16 - *05*
U.S. Cl. D16—239



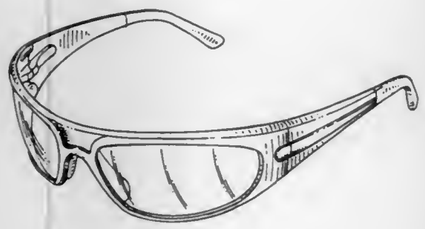
400,228
EYEGLASSES
T. S. Chang, 1, Alley 99, Lane 274, Chungcheng S. Road, Yungkang, Tainan, Taiwan
Filed Nov. 6, 1997, Ser. No. 78,920
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—307



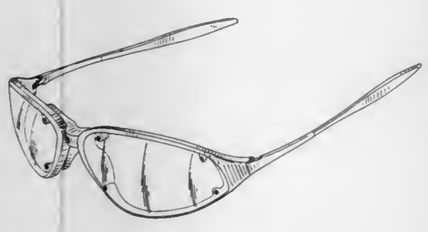
400,229
EYEWEAR
Gregory F. Arnette, Monarch Beach, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Nov. 21, 1996, Ser. No. 62,691
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—321



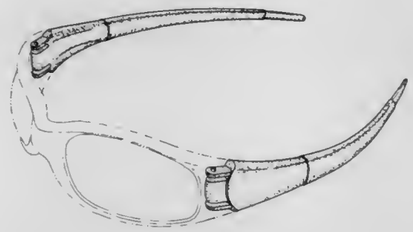
400,230
EYEWEAR
Gregory F. Arnette, Monarch Beach, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Feb. 20, 1997, Ser. No. 66,630
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—326



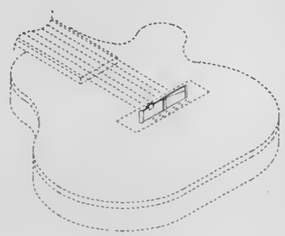
400,231
EYEWEAR
Simon M. Conway, New York, N.Y., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Oct. 16, 1997, Ser. No. 78,076
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—327

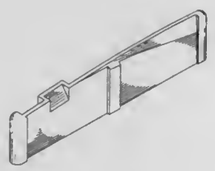


400,232
BARSTEMS
James H. Jannard, East Sound, Wash., and Peter K. Yee, Irvine, Calif., assignors to Oakley, Inc., Foothill Ranch, Calif.
Continuation of Ser. No. 66,368, Feb. 6, 1997, abandoned, which is a division of Ser. No. 55,614, Jun. 10, 1996. This application Aug. 19, 1997, Ser. No. 75,962
Term of patent 14 years
LOC (6) Cl. 16 - *06*
U.S. Cl. D16—335

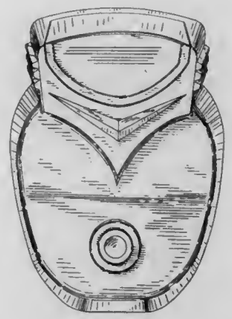


400,233
SADDLE FOR GUITAR
In Jae Park, 477-7, Tokgye-Ri, Hoechon-Eup, Yangju-Gun, Kyonggi-Do, Rep. of Korea
Filed Sep. 17, 1996, Ser. No. 59,862
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—20

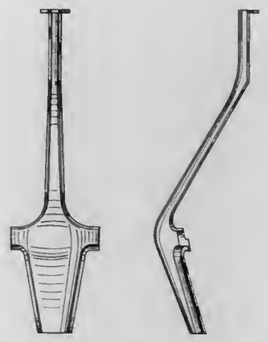




400,234
MUSICAL INSTRUMENT EFFECTS PEDAL
Steve Ridinger, Irvine, Calif., assignor to Evets Corporation, San Clemente, Calif.
Filed Apr. 25, 1997, Ser. No. 70,927
Term of patent 14 years
LOC (6) Cl. 17 - *03*
U.S. Cl. D17—20



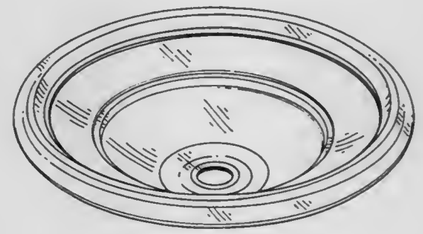
400,235
LEG FOR A GAME MACHINE
David Anthony Jukes, Kent, England, assignor to Cromptons Leisure Machines Limited, Kent, England
Filed Feb. 4, 1997, Ser. No. 66,069
Claims priority, application United Kingdom, Aug. 7, 1996, 2058356
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—13



400,236
TELESCOPING ICE FISHING ROD
Dale Gleffe, S. 2270 State Rd. 35, Cochrane, Wis. 54622-9436
Filed Dec. 17, 1996, Ser. No. 63,876
Term of patent 14 years
LOC (6) Cl. 22 - *05*
U.S. Cl. D22—142

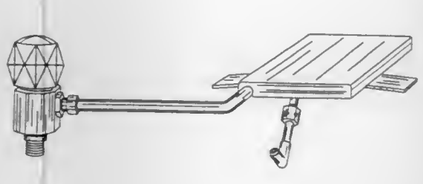


400,237
LAVATORY
Theresa J. Millard, and James M. Neiman, both of Sheboygan Falls, Wis., assignors to Kohler Co., Kohler, Wis.
Filed Apr. 3, 1997, Ser. No. 68,880
Term of patent 14 years
LOC (6) Cl. 23 - *01*
U.S. Cl. D23—293.1

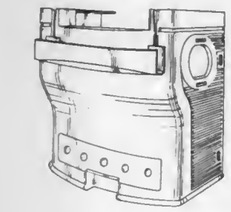


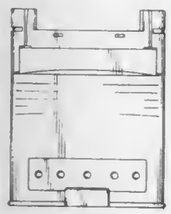
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400,238
TRAVEL BIDET
H. William New, 25188 Marion Ave. V-15, Punta Gorda, Fla. 33950-4155
Filed May 20, 1997, Ser. No. 71,458
Term of patent 14 years
LOC (6) Cl. 23 - *02*
U.S. Cl. D23—295



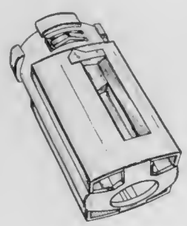
400,239
AIR DISTRIBUTION HOUSING FOR A PERSONAL ENVIRONMENT SYSTEM
Dennis E. Miller, Greendale, Wis.; Sven Adolph, Boston, Mass.; Doug Cooke, Charlestown, Mass., and Richard Watson, Boston, Mass., assignors to Johnson Service Company, Milwaukee, Wis.
Filed Oct. 25, 1996, Ser. No. 61,559
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—355





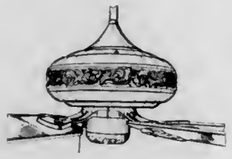
400,240
BOWL GUARD
Axel Thallemer, and Jan Kleffmann, both of Esslingen, Germany, assignors to Festo AG & Co., Esslingen, Germany
Filed Oct. 2, 1997, Ser. No. 77,478
Claims priority, application WIPO, Apr. 8, 1997, DM/039796
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—355



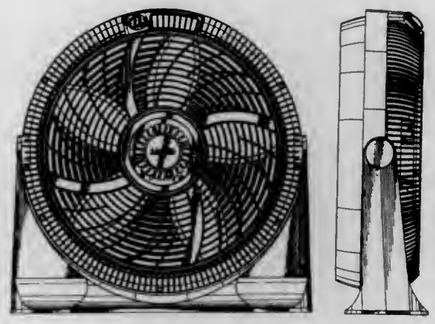


400,241
CEILING FAN
Jan Jaspers-Fayer, Idyllwild, and Dean Dal Ponte, Los Angeles, both of Calif., assignors to Minka Lighting, Inc., Corona, Calif.
Continuation of Ser. No. 37,717, Apr. 18, 1995, abandoned, which is a division of Ser. No. 17,922, Jan. 25, 1994, abandoned. This application Mar. 15, 1996, Ser. No. 51,663
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—377

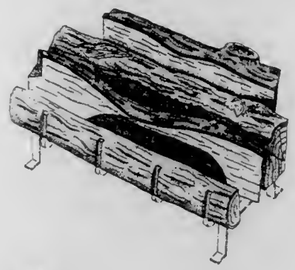




400,242
PIVOT FAN
Charles Litvin, 1065 Stable La., West Chester, Pa. 19382
Filed Jul. 28, 1997, Ser. No. 74,688
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—382

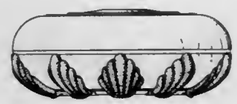


400,243
GAS-FIRED ARTIFICIAL LOG FIREPLACE UNIT WITH TWO LOGS HAVING THE SPLIT SIDE FACING OUT
R. Dean Newman, and William Herman Johnson, both of Harrisonburg, Va., assignors to Shenandoah Manufacturing Company, Inc., Harrisonburg, Va.
Filed Jun. 13, 1996, Ser. No. 55,768
Term of patent 14 years
LOC (6) Cl. 23 - *03*
U.S. Cl. D23—409



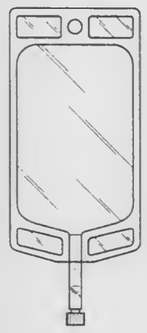


400,244
CEILING FAN HOUSING
William S. Davis, Jr., Fort Worth, Tex., assignor to Quorum International, Fort Worth, Tex.
Filed Jan. 3, 1997, Ser. No. 64,527
Term of patent 14 years
LOC (6) Cl. 23 - *04*
U.S. Cl. D23—411





400,245
FLEXIBLE MEDICAL FLUID CONTAINER
John J. Niedospial, Jr., Burlington; Irene K. Ropiak, Somerset; Julius P. Zodda, Mercerville, and Michelle L. Robinson, East Windsor, all of N.J., assignors to Bracco Diagnostics Inc., Princeton, N.J.
Filed Jun. 23, 1997, Ser. No. 72,674
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—118



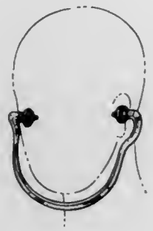
400,246
FLEXIBLE MEDICAL FLUID CONTAINER
John J. Niedospial, Jr., Burlington, and Irene K. Ropiak, Somerset, both of N.J., assignors to Bracco Diagnostics Inc., Princeton, N.J.
Filed Oct. 14, 1997, Ser. No. 78,001
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—118



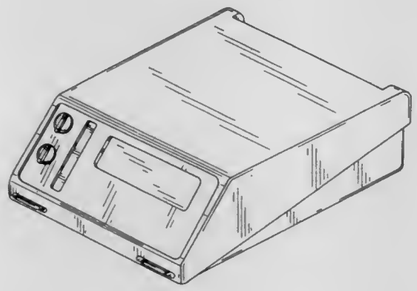
400,247
CONDOM WITH TESTICLE BAG
Melvin Landberg, 1483 Douglas Ave., Gardnerville, Nev. 89410
Filed Oct. 9, 1996, Ser. No. 60,857
Term of patent 14 years
LOC (6) Cl. 28 - *01*
U.S. Cl. D24—105



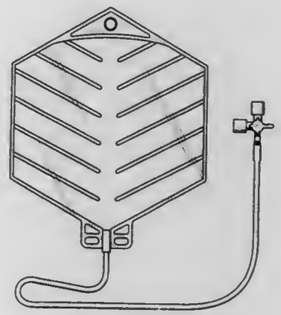
400,248
BAND EARPLUG
Howard S. Leight, San Diego, Calif., assignor to Howard S. Leight and Associates, Inc., San Diego, Calif.
Filed Oct. 22, 1997, Ser. No. 78,231
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—106



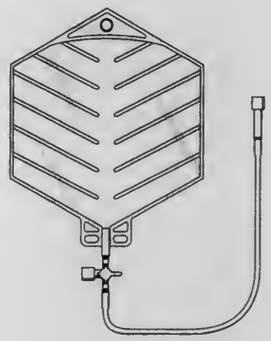
400,249
CONSOLE FOR CONTROLLING A RADIATION PROBE
Mark E. Holubar, Boulder, Colo., and Michael J. Sidi, Loveland, Colo., assignors to Neoprobe Corporation, Dubin, Ohio
Filed Oct. 14, 1997, Ser. No. 77,957
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—107



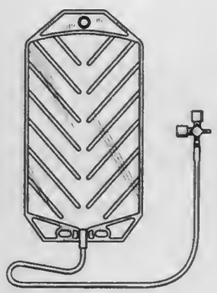
400,250
FLEXIBLE MEDICAL FLUID CONTAINER
Irene K. Ropiak, Somerset, and John J. Niedospial, Jr., Burlington, both of N.J., assignors to Bracco Diagnostics Inc., Princeton, N.J.
Filed Oct. 29, 1996, Ser. No. 61,705
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—118



400,251
FLEXIBLE MEDICAL FLUID CONTAINER
Irene K. Ropiak, Somerset, and John J. Niedospial, Jr., Burlington, both of N.J., assignors to Bracco Diagnostics Inc., Princeton, N.J.
Filed Oct. 29, 1996, Ser. No. 61,706
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—118



400,252
FLEXIBLE MEDICAL FLUID CONTAINER
Irene K. Ropiak, Somerset, and John J. Niedospial, Jr., Burlington, both of N.J., assignors to Bracco Diagnostics Inc., Princeton, N.J.
Filed Oct. 29, 1996, Ser. No. 61,708
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—118



400,253
FLEXIBLE MEDICAL FLUID CONTAINER
John J. Niedospial, Jr., Burlington; Irene K. Ropiak, Somerset; Julius P. Zodda, Mercerville, and Michelle L. Robinson, East Windsor, all of N.J., assignors to Bracco Diagnostics Inc., Princeton, N.J.
Filed Jun. 23, 1997, Ser. No. 72,153
Term of patent 14 years
LOC (6) Cl. 24 - *02*
U.S. Cl. D24—118

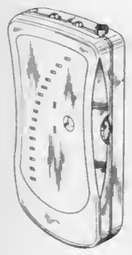


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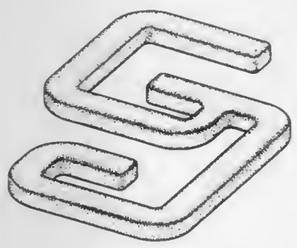
400,254

Patent Not Issued For This Number

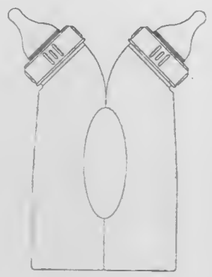
400,255
ELECTROMYOGRAM DEVICE FOR MONITORING INCONTINENCE
Harold Myers, Montreal, Canada, and Nigel Verity, Ormond Beach, Fla., assignors to Thought Technology Ltd., Montreal, Canada
Filed Mar. 12, 1997, Ser. No. 67,798
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—186



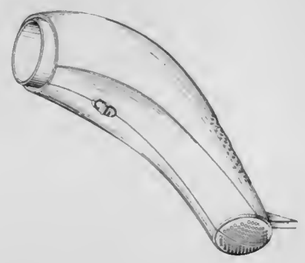
400,256
PACIFIER
Patricia A. Fagan, 112 Alexander Ave., Upper Montclair, N.J. 07043
Filed Aug. 8, 1997, Ser. No. 74,815
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—194



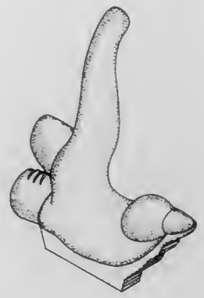
400,257
DOUBLE BABY BOTTLE
Elizabeth Crump, 118 Third Ave., Long Branch, N.J. 07740
Filed Jul. 3, 1997, Ser. No. 73,180
Term of patent 14 years
LOC (6) Cl. 07 - *01*
U.S. Cl. D24—197



400,258
THERAPEUTIC LAMP
Heinz Bolleter, St. Gallenkappel, Switzerland, assignor to Aracaria B.V., Amsterdam, Netherlands
Filed Nov. 25, 1997, Ser. No. 79,786
Claims priority, application Germany, Sep. 22, 1997, M 97 08 922.2
Term of patent 14 years
LOC (6) Cl. 24 - *99*
U.S. Cl. D24—210



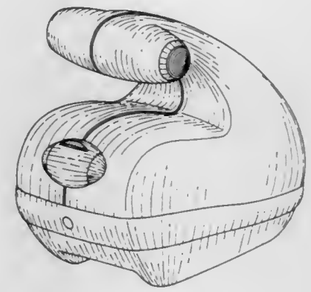
400,259
MASSAGER
Chia-Sh Huang, No. 268-5, Ching-Liao, Mo-Lin Tsun, Hou-Pi Hsiang, Tainan Hsien, Taiwan
Filed Sep. 10, 1997, Ser. No. 76,489
Term of patent 14 years
LOC (6) Cl. 24 - *04*
U.S. Cl. D24—214



400,260
ELECTRIC MASSAGER
Maki Hirakawa, and Taro Mochida, both of Kadoma, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jan. 10, 1997, Ser. No. 64,824
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D24—215



400,261
ANTI CELLULITE DEVICE
Paula Andrea Attende, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Mar. 17, 1997, Ser. No. 67,772
Claims priority, application Hague Agreement, Sep. 30, 1996, DMA/003471
Term of patent 14 years
LOC (6) Cl. 24 - *03*
U.S. Cl. D24—215

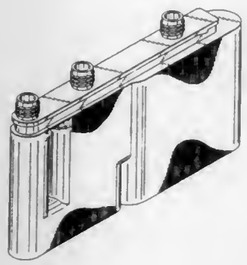


400,262
COMBINED NERVE AND MUSCLE STIMULATOR
Maki Hirakawa, Osaka, and Keiichi Kitagawa, Chiba-ken, both of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan
Filed Jul. 9, 1997, Ser. No. 73,468
Claims priority, application Japan, Jan. 9, 1997, 9-431
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D24—215

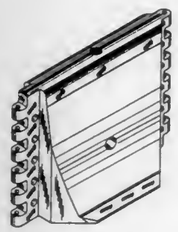


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400,263
REAGENT CARTRIDGE
Phillip G. Shugart, Brea, Calif., assignor to Carolina Liquid Chemisteries Corporation, Brea, Calif.
Filed Jul. 17, 1997, Ser. No. 73,803
Term of patent 14 years
LOC (6) Cl. 24 - *01*
U.S. Cl. D24—224



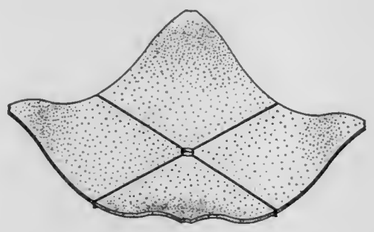
400,264
BARRIER
Richard R. Striefel, Eagle Creek, Oreg., and Michael C. McKinney, 27522 SE. Highway 224, Eagle Creek, Oreg. 97022, assignors to Richard D. Striefel, and Michael C. McKinney, both of Eagle Creek, Oreg.
Filed Oct. 17, 1997, Ser. No. 78,082
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—38



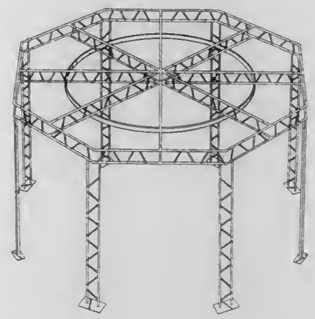
400,265
PET SECURITY DOOR WITH TWO PINS
George N. Davlantes, 21457 Iglesia Dr., Woodlawn Hills, Calif. 91364
Filed Jan. 21, 1997, Ser. No. 65,112
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—48



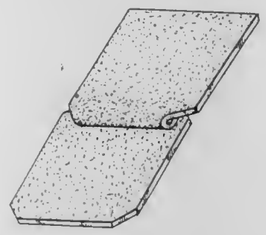
400,266
MODULAR CANOPY SHELTER UNIT
Richard Dattner, 180 Cabrini Blvd., New York, N.Y. 10033
Division of Ser. No. 36,646, Mar. 23, 1995, Pat. No. Des. 382,348. This application Jan. 24, 1997, Ser. No. 65,677
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—56



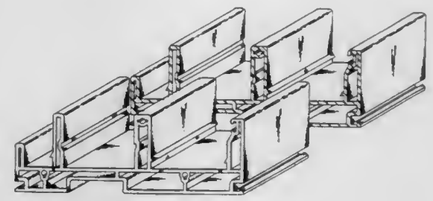
400,267
MODULAR STILL PHOTOGRAPHY STUDIO
Jack Edwin Counts, Jr., 16445 S. Collins Ave. Unit 2426, Miami Beach, Fla. 33160
Filed May 28, 1997, Ser. No. 71,358
Term of patent 14 years
LOC (6) Cl. 25 - *02*
U.S. Cl. D25—61



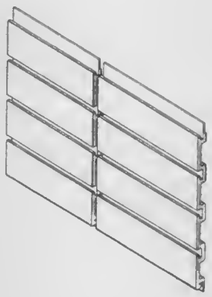
400,268
FOLDED HIP AND RIDGE ROOFING SHINGLE
Frederick W. Sieling, Bound Brook; William R. Carroll, Sussex, and Alfredo A. Bondoc, Somerset, all of N.J., assignors to Building Materials Corporation, Wayne, N.J.
Continuation-in-part of Ser. No. 44,743, Jun. 23, 1995, abandoned. This application Oct. 14, 1997, Ser. No. 77,826
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—139



400,269
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Maple Valley, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Oct. 30, 1997, Ser. No. 78,899
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124

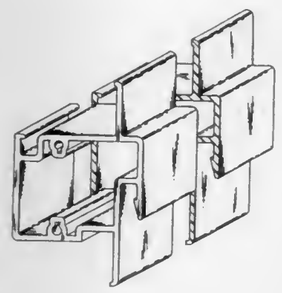


400,270
EXTRUDED SLATWALL SECTION
Wayne A. Current, Holmdel, N.J., assignor to International Visual Corporation, Port Washington, N.Y.
Filed May 16, 1997, Ser. No. 71,050
The portion of the term of this patent subsequent to Apr. 28, 2012, has been disclaimed.
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—123

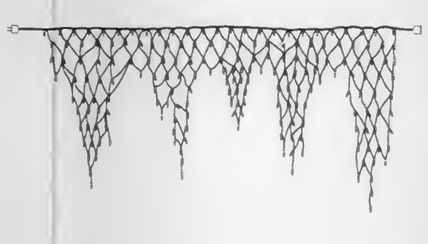


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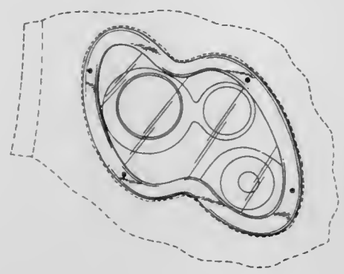
400,271
WINDOW COMPONENT EXTRUSION
Jeffrey R. Franson, Maple Valley, Wash., assignor to Mikron Industries, Inc., Kent, Wash.
Filed Oct. 10, 1997, Ser. No. 77,876
Term of patent 14 years
LOC (6) Cl. 25 - *01*
U.S. Cl. D25—124



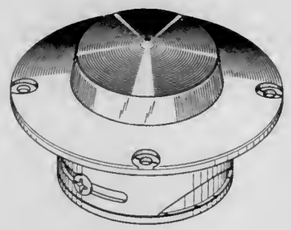
400,272
DECORATIVE LIGHTING FIXTURE
Todd J. Mount, 1918 Nancy Jane Cir., Garland, Tex. 75043
Filed Sep. 9, 1997, Ser. No. 76,424
Term of patent 14 years
LOC (6) Cl. 26 - *04*
U.S. Cl. D26—25



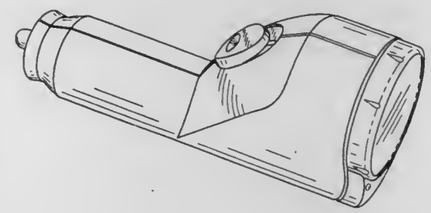
400,273
EXTERIOR SURFACE CONFIGURATION OF AN AUTOMOBILE FRONT LIGHT ASSEMBLY
Jens Manske, Weil der Stadt, and Volker Leutz, Herrenberg, both of Germany, assignors to Mercedes-Benz AG, Stuttgart, Germany
Filed Dec. 5, 1996, Ser. No. 63,308
Claims priority, application Germany, Jun. 5, 1996, M 96 04 786.0
Term of patent 14 years
LOC (6) Cl. 26 - *06*
U.S. Cl. D26—28



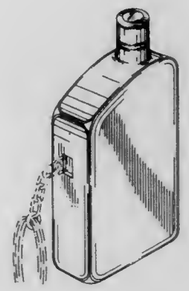
400,274
RADAR ARCH LIGHT
Theodore Ziaylek, Jr., 140 Riverview Dr., and Michael P. Ziaylek, 15 Cold Spring Ave., both of Yardley, Pa. 19067
Filed Jul. 8, 1997, Ser. No. 73,429
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—36



400,275
VEHICLE FLASHLIGHT
Donald Joseph Huntting, Moorpark, and Ravi Kumar Sawhney, Calabasas, both of Calif., assignors to LHI, Inc., Jackson, Wyo.
Filed Dec. 10, 1997, Ser. No. 80,488
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—37



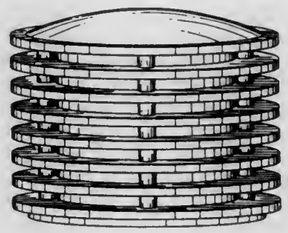
400,276
REPLICA OIL CONTAINER LIGHT
Thomas G. Petruzzi, 5118 Belleville Ave., Orlando, Fla. 32812
Filed Dec. 16, 1996, Ser. No. 63,788
Term of patent 14 years
LOC (6) Cl. 26 - *02*
U.S. Cl. D26—38



400,277
POLE MOUNTED STREET LUMINAIRE
Robert Lowell Ewing, Newark, and Richard Albert Peterson, Columbus, both of Ohio, assignors to Holophane Corporation, Newark, Ohio
Filed Dec. 22, 1995, Ser. No. 48,287
Term of patent 14 years
LOC (6) Cl. 26 - *03*
U.S. Cl. D26—67

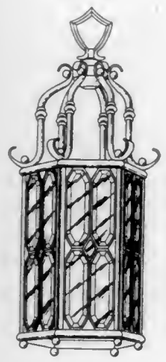


400,278
BOLLARD-HEAD LUMINAIRE
Wisoot Binsukor, Samutprakarn THX, assignor to WE-EF Lighting Co., Ltd., Samutprakarn THX
Filed Mar. 13, 1997, Ser. No. 67,773
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—67

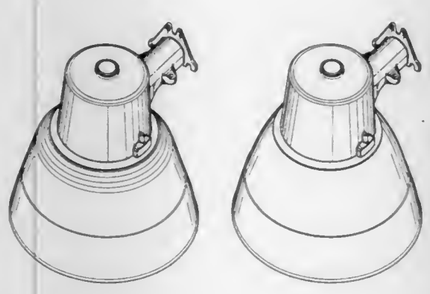


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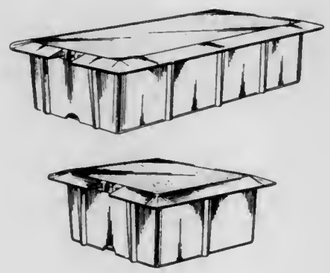
400,279
LIGHTING FIXTURE
William S. Davis, Jr., Fort Worth, Tex., assignor to Quorum International, Fort Worth, Tex.
Filed Jan. 3, 1997, Ser. No. 64,516
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—85



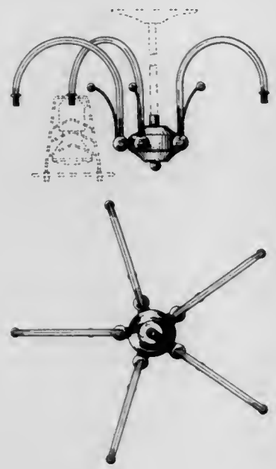
400,280
MERCURY VAPOR LIGHT
Monte A. Leen, 1804 W. Lake Sammamish Pkwy. NE., Bellevue, Wash. 98008
Filed Oct. 3, 1997, Ser. No. 77,509
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—71



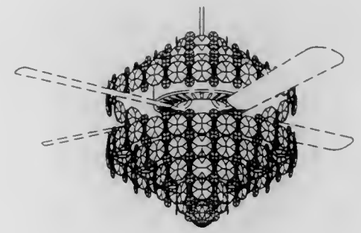
400,281
ILLUMINATING BRICK/DECK LIGHT
Glenn Harvey Kerr, 185 Andrews Avenue, Smith Falls, Ontario, Canada, K7A 4R9
Filed Jul. 11, 1997, Ser. No. 73,605
Claims priority, application Canada, Jan. 20, 1997, 1997-0101
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—74



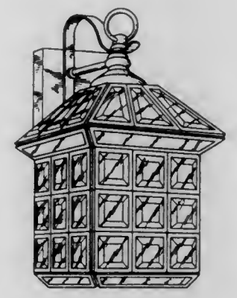
400,282
DECORATIVE CHANDELIER WITH FIVE BRANCHES
Alphonse Stewart, Protections Equinox Int'L Inc., 4480, Cote-de-Liesse, Suite 224, Ville Mont-Royal, Canada, H4N 2R1
Filed Jun. 16, 1997, Ser. No. 72,383
Claims priority, application Canada, Mar. 13, 1997, 1996-0622
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—86



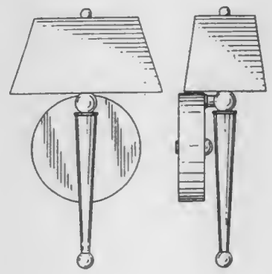
400,283
CEILING FIXTURE HOUSING
Brit W. Lawrence, Albuquerque, N. Mex., assignor to Nicor
Filed Jul. 10, 1997, Ser. No. 73,252
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—86



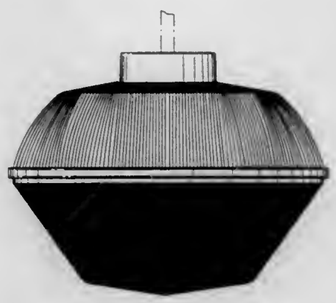
400,284
LIGHTING FIXTURE
William S. Davis, Jr., Fort Worth, Tex., assignor to Quorum International, Fort Worth, Tex.
Filed Jan. 3, 1997, Ser. No. 64,526
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



400,285
LIGHTING FIXTURE
Sandra E. Littman, and Kirina S. Kaufman, both of New York, N.Y., assignors to Sandy Littman, Inc., New York, N.Y.
Division of Ser. No. 48,318, Dec. 26, 1995, Pat. No. Des. 386,806. This application Oct. 17, 1997, Ser. No. 78,086
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—87



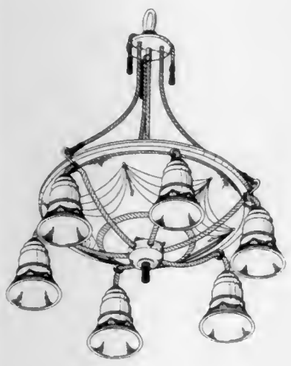
400,286
HIGH INTENSITY LIGHT FIXTURE
Ann P. Greene, Cranford, and Thomas Russello, Freehold, both of N.J., assignors to The Genlyte Group Incorporated, Union, N.J.
Filed Sep. 30, 1997, Ser. No. 77,256
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—88



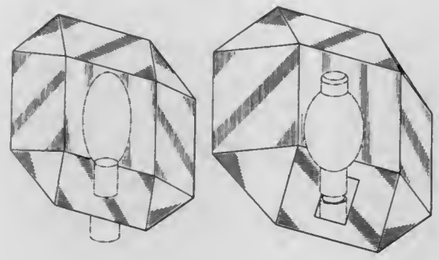
400,287
LIGHTING FIXTURE
Sandra E. Littman, and Karina S. Kaufman, both of New York, N.Y., assignors to Sandy Littman, New York, N.Y.
Division of Ser. No. 48,311, Dec. 26, 1995, Pat. No. Des. 389,598. This application Oct. 17, 1997, Ser. No. 78,087
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—88



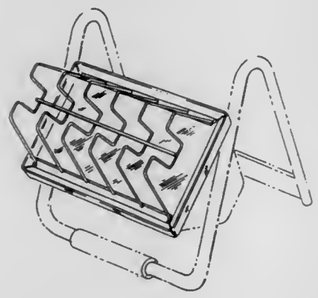
400,288
CHANDELIER
Keen Hsu, Taichung, Taiwan, assignor to Bright Yin Huey Co., Ltd., Taichung, Taiwan
Filed Dec. 4, 1997, Ser. No. 80,313
Term of patent 14 years
LOC (6) Cl. 29 - *05*
U.S. Cl. D26—90



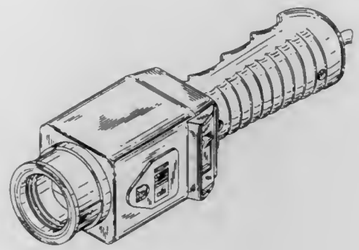
400,289
REFLECTOR FOR HORTICULTURAL LIGHTING
Peter B. Wardenburg, and Timothy D. Allega, both of San Rafael, Calif., assignors to Applied Hydroponics, Inc., Petaluma, Calif.
Continuation-in-part of Ser. No. 60,160, Sep. 23, 1996. This application Mar. 17, 1997, Ser. No. 68,145
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—118



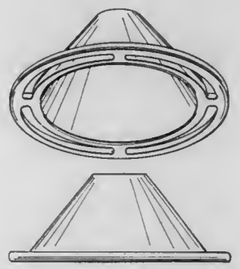
400,290
COMBINED PROTECTIVE GRILL AND LENS FOR PORTABLE LAMP
Donald B. Hart, Dana Point, Calif., assignor to Alltrade Inc., Long Beach, Calif.
Continuation of Ser. No. 62,727, Nov. 22, 1996, abandoned. This application Jul. 21, 1997, Ser. No. 73,973
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—119



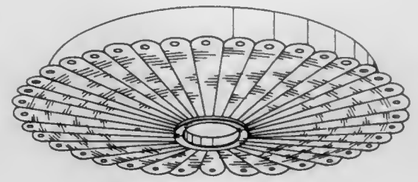
400,291
TROUBLE LIGHT HANDLE
Edward Meltzer, Brooklyn, N.Y., assignor to U.S. Asian Mfg. Corp., Brooklyn, N.Y.
Filed Dec. 5, 1997, Ser. No. 80,260
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—119



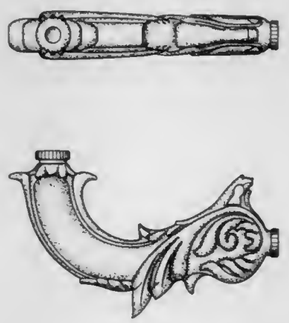
400,292
GLASS LAMP SHADE
Bernd Hoffbauer, Herne, Germany, assignor to Herner Glas Bernd Hoffbauer GmbH & Co. Leuchten Und Industrieglas KG, Herne, Germany
Filed May 9, 1997, Ser. No. 70,510
Claims priority, application Hague Agreement, Nov. 15, 1996, DM/038247
Term of patent 14 years
LOC (6) Cl. 26 - *05*
U.S. Cl. D26—135



400,293
CANOPY FOR LIGHTING FIXTURE
Charles Edwards, 582 Kings Road, London SW6 2DY, United Kingdom
Filed Sep. 17, 1996, Ser. No. 59,888
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—142



400,294
CAST ARM FOR LIGHT FIXTURE
Luis Esteban Lopez Fraile, Valencia, Spain, assignor to Quorum International, Fort Worth, Tex.
Filed Jul. 9, 1997, Ser. No. 73,544
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—145



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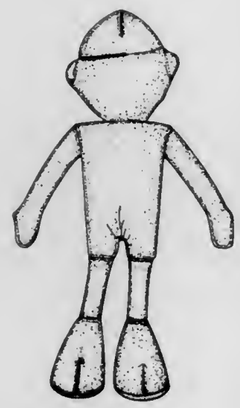
400,295
CAST ARM FOR LIGHT FIXTURE
Luis Esteban Lopez Fraile, Valencia, Spain, assignor to Quorum International, Fort Worth, Tex.
Filed Jul. 9, 1997, Ser. No. 73,553
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—145



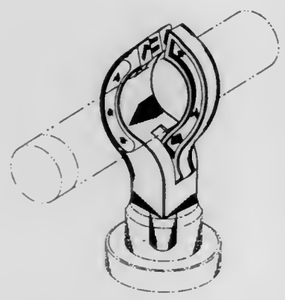
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CAST ARM FOR LIGHT FIXTURE
Luis Esteban Lopez Fraile, Valencia, Spain, assignor to Quorum International, Fort Worth, Tex.
Filed Jul. 9, 1997, Ser. No. 73,567
Term of patent 14 years
LOC (6) Cl. 26 - *99*
U.S. Cl. D26—145



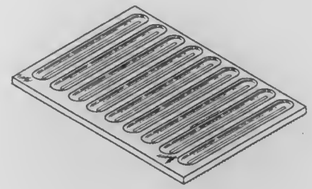
400,297
STUFFED DOLL
David F. Chazen, New York, N.Y., assignor to Good Stuff Corporation, Long Island City, N.Y.
Filed Nov. 9, 1995, Ser. No. 46,233
Term of patent 14 years
LOC (6) Cl. 21 - *01*
U.S. Cl. D21—166



400,298
CIGAR HOLDER
Eugene Vignerot, 3719 S. Glencoe St., Denver, Colo. 80237-1022
Filed Apr. 4, 1997, Ser. No. 69,346
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—183



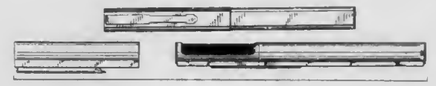
400,299
SLIDING TRAY FOR HUMIDOR
Marvin Karpa Feldman, Sócrates No. 385 - ler.. Piso, Colonia Polanco C.P. 11560, Mexico
Filed Oct. 20, 1997, Ser. No. 78,313
Term of patent 14 years
LOC (6) Cl. 27 - *06*
U.S. Cl. D27—186



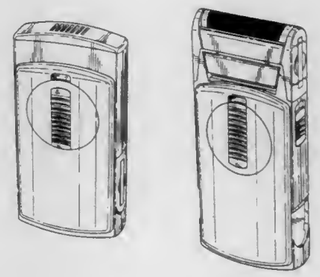
400,300
CIGARETTE ROLLER
Evert Jacobus Brandenburg, Landsmeer; Hans Johan Hendrik de Gooijer, and Jurriaan Borstlap, both of Amsterdam, all of Netherlands, assignors to Handelsonderneming Future B.V., Netherlands
Filed Oct. 31, 1996, Ser. No. 61,810
Claims priority, application Hague Agreement, May 7, 1996, DM/036386
Term of patent 14 years
LOC (6) Cl. 27 - *99*
U.S. Cl. D27—194



400,301
PEN SHAVER
Wai Tse Wong, 23/F., Flat A,B&D, Etat Factory Bldg., 4 Heung Yip Road, Wong Chuk Hang, Hong Kong
Filed Aug. 15, 1996, Ser. No. 58,451
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—45

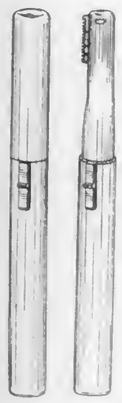


400,302
DRY SHAVER
Roland Ullmann, Offenbach, Germany, assignor to Braun Aktiengesellschaft, Frankfurt, Germany
Filed Feb. 19, 1997, Ser. No. 68,457
Claims priority, application Hague Agreement, Aug. 19, 1996, DM/037284
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—49

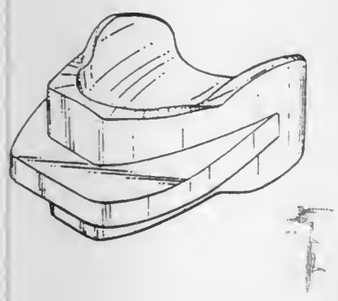


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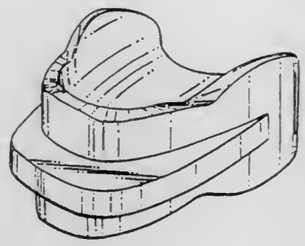
400,303
ELECTRIC SHAVER
Yosuke Tanaka, Kobe, and Kazuo Takada, Nara, both of Japan, assignors to Sanyo Electric Co., Ltd., Osaka, Japan
Filed Jul. 21, 1997, Ser. No. 74,583
Claims priority, application Japan, Jan. 23, 1997, 9-1762
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—49



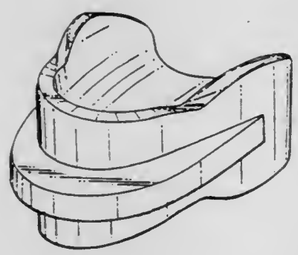
400,304
NAIL FILING GUIDE
Bill Stankovic, 526 Bryant St., Palo Alto, Calif. 94301, assignor to Bill Stankovic, Palo Alto, Calif.
Filed Jul. 25, 1997, Ser. No. 74,132
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—57



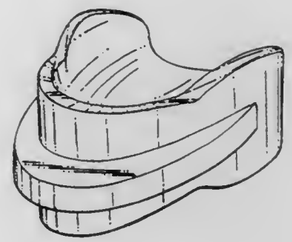
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NAIL FILING GUIDE
Bill Stankovic, 526 Bryant St., Palo Alto, Calif. 94301, assignor to Bill Stankovic, Palo Alto, Calif.
Filed Jul. 25, 1997, Ser. No. 74,133
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—57



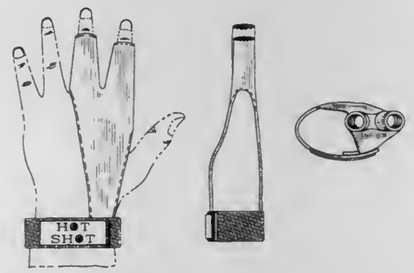
400,306
NAIL FILING GUIDE
Bill Stankovic, 526 Bryant St., Palo Alto, Calif. 94301, assignor to Bill Stankovic, Palo Alto, Calif.
Filed Jul. 25, 1997, Ser. No. 74,138
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—57



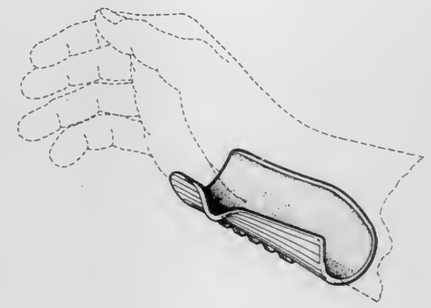
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NAIL FILING GUIDE
Bill Stankovic, 526 Bryant St., Palo Alto, Calif. 94301, assignor to Bill Stankovic, Palo Alto, Calif.
Filed Jul. 25, 1997, Ser. No. 74,140
Term of patent 14 years
LOC (6) Cl. 28 - *03*
U.S. Cl. D28—57



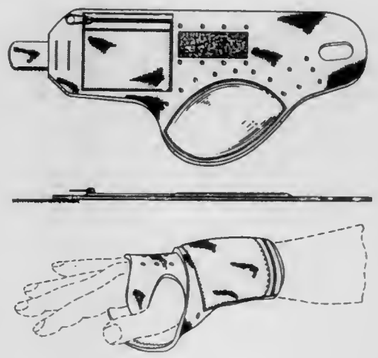
400,308
BASKETBALL GLOVE
Chris Paparella, 400 Loomis St., Elizabeth, N.J. 07206, and Yesenia Ramos, 129 Valley View Rd., Hillside, N.J. 07205
Filed Jan. 21, 1997, Ser. No. 65,129
Term of patent 14 years
LOC (6) Cl. 02 - *06*
U.S. Cl. D29—114



400,309
WRIST SUPPORT
William E. Kuntz, Ellicott City, Md., and Ian A MacKay, Falls Church, Va., assignors to Eagle Inventors, LLC, Ellicott City, Md.
Filed Apr. 2, 1997, Ser. No. 69,620
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—120

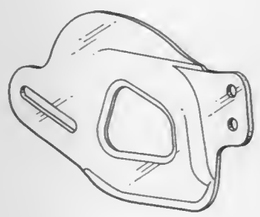


400,310
COMBINED HAND AND WRIST PROTECTOR
John W. Chang, 12F., No. 200, Hsing Yi Road, Sec. 3, Taipei, Taiwan
Filed Apr. 23, 1997, Ser. No. 69,765
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—120



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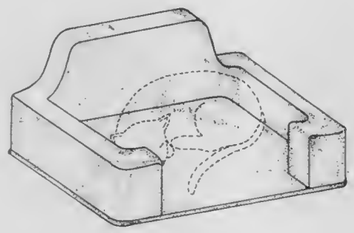
400,311
HELMET EAR PROTECTOR
Daniel Chartrand, Deux-Montagnes, Canada, assignor to Bauer, Inc., Canada
Filed Feb. 21, 1997, Ser. No. 67,062
Claims priority, application Canada, Aug. 23, 1996, 1996-1898
Term of patent 14 years
LOC (6) Cl. 29 - *02*
U.S. Cl. D29—122



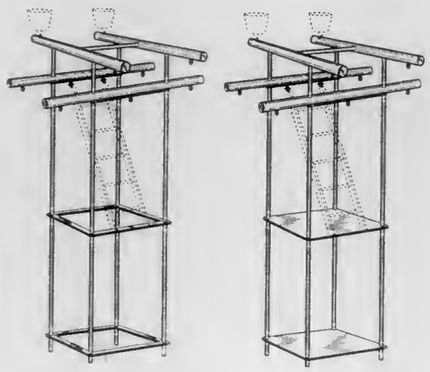
400,312
TOY FOR AN AQUARIUM
Tony Ng Tung Wing, Chai Wan, Hong Kong, assignor to Veny Plastic Co., Ltd., Hong Kong
Filed Jan. 19, 1996, Ser. No. 49,177
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—106



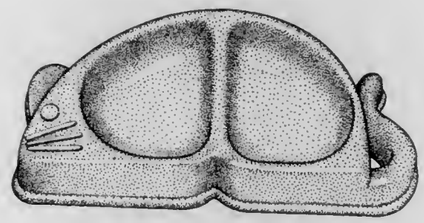
400,313
HEATED PET BED
Christine Chatwell, 438 Mountain Laurel Ct., Mountain View, Calif. 94043
Filed Nov. 17, 1997, Ser. No. 79,500
Term of patent 14 years
LOC (6) Cl. 30 - *06*
U.S. Cl. D30—118



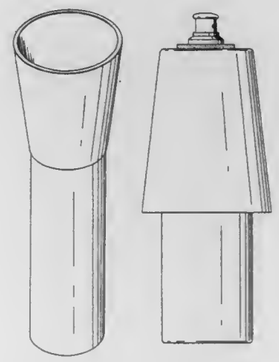
400,314
BIRD PERCH
Peter Joseph Nicolai, and Sally Ann Davis Hollyfield, both of 10416 Mill Creek La., Bent Mountain, Va. 24059
Filed May 16, 1997, Ser. No. 70,982
Term of patent 14 years
LOC (6) Cl. 30 - *02*
U.S. Cl. D30—119



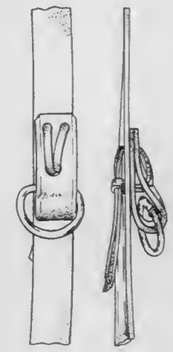
400,315
ANIMAL FEEDING BOWL
Steven Frederick Keller, and Karen Sue Keller, both of 8721 Golden Gardens Dr. NW., Seattle, Wash. 98117
Filed Aug. 15, 1997, Ser. No. 75,035
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—130



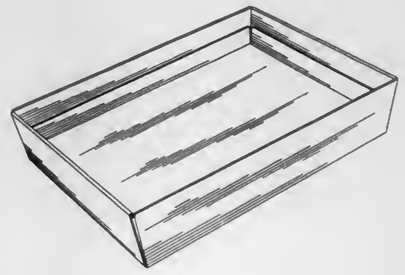
400,316
COMBINED PORTABLE PET DISH AND WATER BOTTLE
Thomas E. Kolterman, and Susan Donahue, both of 216 Cassandra Dr., Chalfont, Pa. 18914
Filed Jan. 24, 1997, Ser. No. 65,368
Term of patent 14 years
LOC (6) Cl. 30 - *03*
U.S. Cl. D30—132



400,317
KNOTTED LEATHER FITTING FOR A PET LEASH
Heinrich Koch, Landsberg, Germany, assignor to Ernst Koch, and Hunde & Katzen Accessoires, both of Landsberg, Germany
Filed Sep. 30, 1996, Ser. No. 60,537
Claims priority, application Germany, Apr. 3, 1996, M 96 03 106.9
Term of patent 14 years
LOC (6) Cl. 30 - *09*
U.S. Cl. D30—152

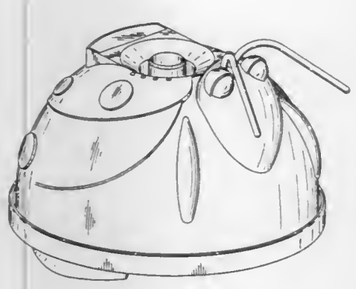


400,318
CAT LITTER CONTAINER
Joseph R. Lucas, Columbus, Ohio, assignor to K.P. Products, Ltd., Columbus, Ohio
Filed Aug. 26, 1997, Ser. No. 75,824
Term of patent 14 years
LOC (6) Cl. 30 - *99*
U.S. Cl. D30—161

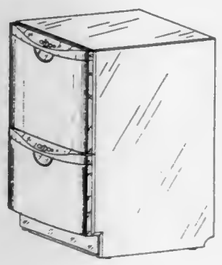


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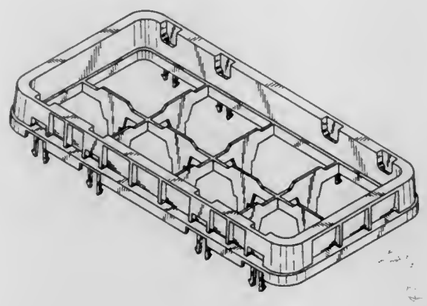
400,319
SWIMMING POOL CLEANER HOUSING
Leonard L. Hofheins, Walnut Creek, and Del M. Thornock, Concord, both of Calif., assignors to H-Tech, Inc., Wilminton, Del.
Filed May 7, 1997, Ser. No. 70,346
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—1



400,320
DISHWASHER
Philip John Brace, Auckland, New Zealand, assignor to Fisher & Paykel Limited, Auckland, New Zealand
Filed Jun. 6, 1997, Ser. No. 72,061
Claims priority, application New Zealand, Dec. 6, 1996, 28109
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—2



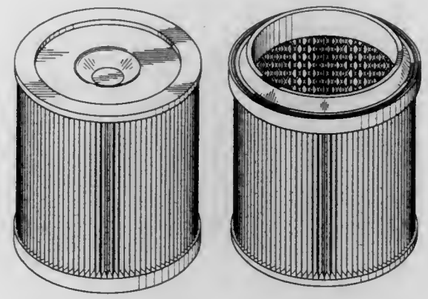
400,321
HALF DISH RACK EXTENDER
John W. Goodin, Coto de Caza, and Charles W. Jarvis, Irvine, both of Calif., assignors to Cambro Manufacturing Company, Huntington Beach, Calif.
Filed Dec. 23, 1997, Ser. No. 81,175
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—3



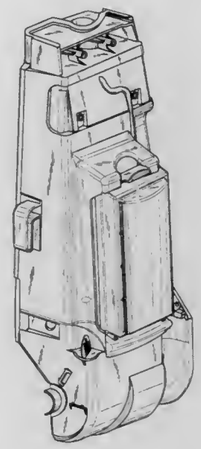
400,322
COMBINED BLOWER AND VACUUM
Craig Webster, Newcastle-Upon-Tyne, and John Sadler, Darlington, both of United Kingdom, assignors to Black & Decker Inc., Newark, Del.
Filed May 2, 1997, Ser. No. 69,454
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—15



400,323
FILTER FOR A WET/DRY VACUUM CLEANER
John J. Scanlon, Wilmington; Raymond M. Wnenchak, Newark, both of Del., and Richard W. Giannetta, Elkton, Md., assignors to W. L. Gore & Associates, Inc., Newark, Del.
Filed Aug. 19, 1996, Ser. No. 58,588
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—30



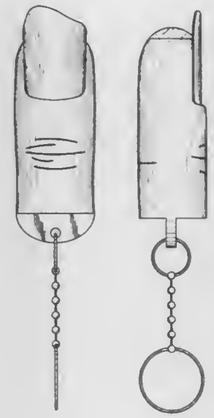
400,324
UPRIGHT VACUUM CLEANER BODY
Vincent L. Bobrosky, Normal, and Samuel E. Hohulin, Lexington, both of Ill., assignors to White Consolidated Industries, Inc., Cleveland, Ohio
Filed Jan. 10, 1997, Ser. No. 64,840
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—31



400,325
BENT SOFT BRUSH NOZZLE
Ulrike Broecking, Rheinberg, Germany, assignor to Vorwerk Elektrowerke Stiftung & Co. KG, Wuppertal, Germany
Filed Aug. 7, 1996, Ser. No. 58,074
Claims priority, application Germany, Feb. 7, 1996, M 96 01 138.6
Term of patent 14 years
LOC (6) Cl. 15 - *05*
U.S. Cl. D32—33



400,326
COMBINED LOTTERY TICKET SCRAPER, KEY CHAIN AND FLASHLIGHT
Shelly Fisher, 24 W. French St., Rice Lake, Wis. 54868
Filed Dec. 17, 1997, Ser. No. 80,825
Term of patent 14 years
LOC (6) Cl. 08 - *05*
U.S. Cl. D32—42



400,327

Patent Not Issued For This Number

400,328

LONG HANDLE GRILL CLEANER

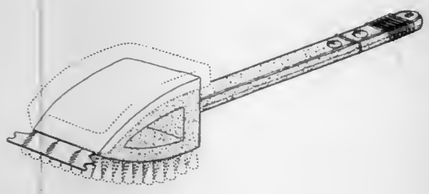
Marc Zemel, Old Bethpage, N.Y., assignor to Mr. Bar-B-Q, Inc., Old Bethpage, N.Y.

Filed Oct. 17, 1997, Ser. No. 78,116

Term of patent 14 years

LOC (6) Cl. 08 - *05*

U.S. Cl. D32—49



400,329

COVER FOR A PAINT ROLLER PAN

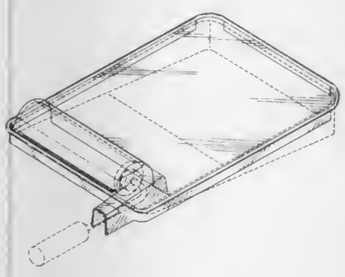
Christopher Wayne Lindo, 19 Tucker St., East Greenwich, R.I. 02818

Filed Sep. 18, 1997, Ser. No. 76,814

Term of patent 14 years

LOC (6) Cl. 07 - *07*

U.S. Cl. D32—53.1



400,330

WASTE DISPOSAL BAG STAND

Sandra L. Aycock, 373 Robinson Rd., Plattsburgh, N.Y. 12901

Filed Oct. 20, 1997, Ser. No. 78,123

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—5



400,331

HANDLED TRASH BASKET

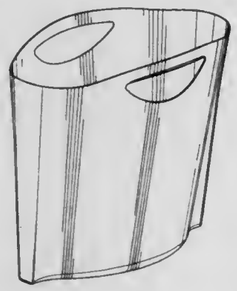
Kevin Rausch, Wooster, Ohio, assignor to Rubbermaid Incorporated, Wooster, Ohio

Filed Dec. 15, 1997, Ser. No. 80,737

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—1



400,332

COMBINED LID, HINGE AND UPPER PORTION OF A REFUSE CONTAINER

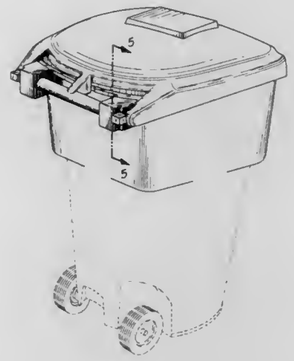
Gorden J. Sanden, Jr., Huntington Beach, Calif., assignor to Roto Industries, Inc., Anaheim, Calif.

Continuation of Ser. No. 26,602, Aug. 1, 1994, abandoned, which is a division of Ser. No. 996,314, Dec. 23, 1992, abandoned, which is a continuation of Ser. No. 765,049, Sep. 24, 1991, Pat. No. 5,217,136. This application Mar. 4, 1997, Ser. No. 66,596

Term of patent 14 years

LOC (6) Cl. 09 - *09*

U.S. Cl. D34—10



400,333

CHRISTMAS TREE TRANSPORT CART

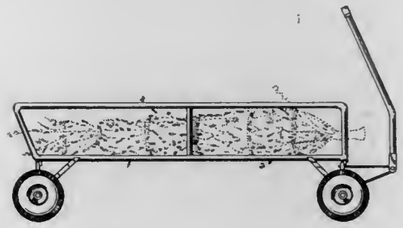
Gary Westlake, 1060 S. Keim St., Pottstown, Pa. 19464

Filed Mar. 17, 1997, Ser. No. 68,158

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—17



400,334

PORTABLE SERVICE CART

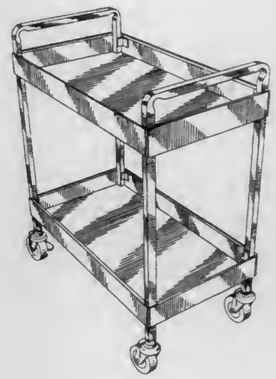
Joseph O. Hawkins, Greenville, S.C., assignor to Sunex International, Inc., Travelers Rest, S.C.

Filed May 6, 1997, Ser. No. 70,333

Term of patent 14 years

LOC (6) Cl. 12 - *02*

U.S. Cl. D34—21



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LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27th DAY OF OCTOBER, 1998

NOTE— Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Finkl & Sons Co.: *See*—
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A. W. Chesterton Co.: *See*—
Ramsay, Thomas W., 5,827,042, Cl. 415-112.000.

A-Z Ausrustung und Zubehor GmbH & Co., KG: *See*—
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Baumann, Thomas; Paul, Willi; and Rhyner, Jakob, 5,828,291, Cl. 338-32.00S.
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Dohnalek, Margaret Ione Halpin; Ostrom, Karin Margaret; and Hilty, Milo Duane, 5,827,526, Cl. 424-440.000.

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Thorne, Nicholas Adrain; Encrenaz, Claude; Aboulfaraj, Mostafa; and McHenry, Robert J., 5,827,555, Cl. 426-112.000.

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Wu, Tsung-Hsun, 5,828,351, Cl. 345-11.000.

Achelpohl, Fritz; Duwendag, Rüdiger; and Witzke, Joachim, to Windmöller & Hölscher. Device for pulling open continuously cross-conveyed tube sections for the purpose of forming bottoms in the manufacture of sacks. 5,827,165, Cl. 493-256.000.

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Wright, J. Nelson; Cole, Christopher R.; and Gee, Albert, 5,827,188, Cl. 600-447.000.

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Bustamante, Eleazor Felipe; Adams, Phillip G.; Hoskin, Catherine; and Leng, David Yan, 5,828,151, Cl. 310-90.000.

Adams, Robin M.: *See*—
Mainzer, Stanley E.; Yoast, Sienna; Adams, Robin M.; Palombella, Tony V.; and Schmidt, Brian F., 5,827,552, Cl. 426-7.000.

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Kroll, Mark W.; Adams, Theodore P.; Anderson, Kenneth M.; and Smith, Charles U., 5,827,326, Cl. 607-5.000.

Adaptec, Inc.: *See*—
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Adnan, Sarmad; and McBride, Roger W., to Schlumberger Technology Corp. Measuring recording and retrieving data on coiled tubing system. 5,826,654, Cl. 166-250.010.

Adomeit, Heinz-Dieter, to Petri AG. Airbag system for vehicle. 5,826,901, Cl. 280-728.200.

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March, Adrian Anthony Cecil, 5,827,981, Cl. 73-862.642.

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Aerens, Ronny Jean Valentine; De Cock, Etienne Marie; De Schamphelaere, Lucien Amede; Steylaerts, Peter Alexander Roger; and van Weverberg, Erik Gabriel Gerardus, to Xeikon N.V. Electrostatographic single-pass multiple station printer and method with register control. 5,828,937, Cl. 399-301.000.

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AGIP S.p.A.: *See—*
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Akao, Mutsuo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Injection molded article for photographic photosensitive material, molding method thereof and package using the same. 5,827,584, Cl. 428-35.700.

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Iketani, Masaru; Koizumi, Yutaka; Kashino, Toshio; Karita, Seiichiro; Terai, Haruhiko; Omata, Kouichi; Tajima, Hiroki; Sawada, Yasuhiro; and Haruyama, Hiroshi, 5,826,333, Cl. 29-890.100.

Takada, Akio; Honda, Tadayuki; Shibata, Takuji; and Abe, Moriaki, to Sony Corporation. Thin-film magnetic head having magnetic resistance effect stabilizing layer. 5,828,527, Cl. 360-113.000.

Takagi, Seiichi: *See—*
Yoshihara, Koutarou; Takagi, Seiichi; Inoue, Toyofumi; Okuno, Hiroyoshi; Torigoe, Tetsu; Okuyama, Hiroe; and Uchida, Masahiro, 5,827,631, Cl. 430-110.000.

Takaha, Takeshi; Yanase, Michiyo; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, to Ezaki Glico Co., Ltd. Process for preparing glucans having a cyclic structure. 5,827,697, Cl. 435-101.000.

Takahashi, Haruhiko: *See—*
Wataya, Masafumi; Yanaka, Toshiyuki; Kadowaki, Hidejiro; Tsuchii, Ken; Takahashi, Haruhiko; Takamiya, Makoto; and Yamamoto, Kosuke, 5,828,387, Cl. 347-14.000.

Takahashi, Kazuaki; and Torii, Yuichi, to Fuji Photo Optical Co., Ltd. Optical system for electronic endoscopes. 5,827,172, Cl. 600-176.000.

Takahashi, Kazuhide: *See—*
Kita, Setsuo; Komeda, Haruhiko; Higashiguchi, Teruo; Takahashi, Kazuhide; and Oota, Sumio, 5,827,443, Cl. 252-8.610.

Takahashi, Kazuyuki: *See—*
Sekiya, Takaomi; Takahashi, Kazuyuki; and Eguchi, Masaru, 5,828,498, Cl. 359-660.000.

Takahashi, Masatoshi: *See—*
Murao, Naoto; Takahashi, Masatoshi; Asada, Nobuyoshi; Nakamigawa, Jun-ichi; and Kobayashi, Nobuyuki, 5,827,599, Cl. 428-141.000.

Takahashi, Naoki, to Sharp Kabushiki Kaisha. AlInAs semiconductor device contaning Si and P. 5,828,087, Cl. 257-96.000.

Takahashi, Sadahiro: *See—*
Nakagawa, Takashi; Takahashi, Sadahiro; Sasaki, Takayuki; Ando, Tetsuo; and Sawada, Toru, 5,828,520, Cl. 360-104.000.

Takahashi, Takao; and Arai, Naohisa, to Sony Corporation. Plane sequential color display apparatus and method for driving same. 5,828,362, Cl. 345-153.000.

Takahashi, Takuma: *See—*
Oda, Hajime; Takahashi, Takuma; and Endo, Shinichi, 5,828,584, Cl. 364-561.000.

Takahashi, Toru: *See—*
Kimura, Makoto; Takahashi, Toru; and Shimizu, Hiroyuki, 5,828,970, Cl. 701-37.000.

Takahashi, Toyomi, to Seikagaku Kogyo Kabushiki Kaisha. Injection tool and method of its use. 5,827,236, Cl. 604-240.000.

Takahashi, Yoshinobu: *See—*
Osawa, Yoshihito; Nezu, Sachiko; Takahashi, Yoshinobu; and Kuwata, Satoshi, 5,827,921, Cl. 524-837.000.

Takahata, Osamu: *See—*
Sunago, Seizo; Takahata, Osamu; Kagayama, Akira; Futagawa, Hitoshi; Miyamoto, Tetsuji; and Murakami, Mitsuo, 5,826,713, Cl. 206-222.000.

Takai, Hitoshi: *See—*
Urabe, Yoshio; Takai, Hitoshi; and Yamasaki, Hidetoshi, 5,828,707, Cl. 375-330.000.

Takama, Toshio: *See—*
Dou, Xiaoming; and Takama, Toshio, 5,828,450, Cl. 356-301.000.

Takamiya, Makoto: *See—*
Wataya, Masafumi; Yanaka, Toshiyuki; Kadowaki, Hidejiro; Tsuchii, Ken; Takahashi, Haruhiko; Takamiya, Makoto; and Yamamoto, Kosuke, 5,828,387, Cl. 347-14.000.

Takano, Masatoshi; Takasugi, Eiji; Kikuchi, Shinji; Sato, Tsutomu; Saito, Hiroyuki; Araki, Yoshiyuki; Iima, Mitsunori; Sasaki, Takashi; and Iizuka, Takashi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Cascade scanning optical system. 5,828,479, Cl. 359-201.000.

Takano, Mitsuhiro: *See—*
Takase, Akihiko; Shinada, Shigeo; Takano, Mitsuhiro; Oouchi, Toshiya; Yamanaka, Naoaki; and Sato, Youichi, 5,828,654, Cl. 370-233.000.

Takano, Tsunesuke; Sinzawa, Kouichi; and Yabata, Yoji, to Kabushiki Kaisha T an T. Switch. 5,828,024, Cl. 200-531.000.

Takano, Yoshishige: *See—*
Yamagata, Shin-ichi; Kamitake, Kazuya; and Takano, Yoshishige, 5,828,127, Cl. 257-706.000.

Takaoka, Naoki: *See—*
Kubo, Masahiro; Taniguchi, Koichi; Takaoka, Naoki; and Shinohara, Mamoru, 5,828,461, Cl. 358-296.000.

Takaoka, Yuji: *See—*
Kamide, Yukihiro; Takaoka, Yuji; and Yamamichi, Yasuaki, 5,827,436, Cl. 216-77.000.

Takara Shuzo Co., Ltd.: *See—*
Koyama, Nobuto; Miyoshi, Eiji; Ihara, Yoshito; Nishikawa, Atsushi; and Taniguchi, Naoyuki, 5,827,687, Cl. 435-69.100.

Takase, Akihiko; Shinada, Shigeo; Takano, Mitsuhiro; Oouchi, Toshiya; Yamanaka, Naoaki; and Sato, Youichi, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Corp. ATM cell policing method and apparatus. 5,828,654, Cl. 370-233.000.

Takasu, Akihiko; and Kato, Kazuho, to Nippon Columbia Co., Ltd. Optical information recording medium and method of manufacturing. 5,828,648, Cl. 369-275.100.

Takasugi, Eiji: *See—*

Takano, Masatoshi; Takasugi, Eiji; Kikuchi, Shinji; Sato, Tsutomu; Saito, Hiroyuki; Araki, Yoshiyuki; Iima, Mitsunori; Sasaki, Takashi; and Iizuka, Takashi, 5,828,479, Cl. 359-201.000.
Takata, Hidekazu; Mnich, Thomas; and Novosel, David, to Sharp Kabushiki Kaisha. Semiconductor memory device. 5,828,596, Cl. 365-145.000.
Takata, Hiroki: *See—*
Takaha, Takeshi; Yanase, Michiyo; Okada, Shigetaka; Takata, Hiroki; Nakamura, Hiroyasu; and Fujii, Kazutoshi, 5,827,697, Cl. 435-101.000.
Takata, Masayuki, to Brother Kogyo Kabushiki Kaisha. Connecting device between ink supply source and ink jet head. 5,828,395, Cl. 347-86.000.
Takebayashi, Manabu: *See—*
Seto, Kaoru; Kashihara, Atsushi; and Takebayashi, Manabu, 5,828,396, Cl. 347-111.000.
Takeda, Goro, to Cateye Co., Ltd. Equipment for attaching a part on a substrate. 5,827,973, Cl. 73-756.000.
Takeda, Masanobu; Tetsui, Shunichi; Mizuno, Yasumasa; and Yamamoto, Hirotaka, to Denyo Kabushiki Kaisha. Rotor with permanent magnet of generator and method of manufacturing the same. 5,828,152, Cl. 310-156.000.
Takeda, Masatoshi: *See—*
Fukuda, Koichi; Fujinaga, Masataka; Mitani, Atsuyuki; Takeda, Masatoshi; and Ishitobi, Shinichi, 5,827,792, Cl. 501-138.000.
Takeda, Tadashi; Hayashi, Yoshio; Takezoe, Hideo; and Ishikawa, Ken, to Sankyo Seiki Mfg. Co., Ltd. Optical pickup head apparatus. 5,828,643, Cl. 369-103.000.
Takeda, Toru: *See—*
Kobayashi, Shoei; Takeda, Toru; and Yamagami, Tamotsu, 5,828,639, Cl. 369-58.000.
Takei, Tsunetomo; Ohtsubo, Eiji; and Ohkawa, Hirosi, to Tokyo Tanabe Company Ltd. Synthetic peptide, lung surfactant containing the same and remedy for respiratory distress syndrome. 5,827,825, Cl. 514-12.000.
Takemoto, Hideharu: *See—*
Yokoo, Masahide; Nagano, Masao; and Takemoto, Hideharu, 5,828,218, Cl. 324-427.000.
Takemoto, Takatoshi; and Kawashima, Kazunari, to Kabushiki Kaisha Ace Denken. Bill handling system in a gaming house. 5,826,680, Cl. 186-37.000.
Takemura, Yasuhiko, to Semiconductor Energy Laboratory Co., Ltd. Electro-optical device and method of driving with voltage supply lines parallel to gate lines and two transistors per pixel. 5,828,429, Cl. 349-42.000.
Takenaka, Mikio: *See—*
Yamashita, Ryo; Kitagaki, Kenichi; Matsubara, Takahiro; and Takenaka, Mikio, 5,827,586, Cl. 428-36.600.
Takeo, Hideya; Ito, Wataru; and Shimura, Kazuo, to Fuji Photo Film Co., Ltd. Method and apparatus for adjusting read-out conditions and/or image processing conditions for radiation images , radiation image read-out apparatus, and radiation image analyzing method and apparatus. 5,828,775, Cl. 382-132.000.
Takeuchi, Hiroaki; and Okuda, Tohru, to Sharp Kabushiki Kaisha. Rotary head cylinder device. 5,828,523, Cl. 360-107.000.
Takeuchi, Kanji; and Sawada, Takeshi, to Nippondenso Co., Ltd. Electric power steering apparatus. 5,828,973, Cl. 701-41.000.
Takeuchi, Ken: *See—*
Tanzawa, Toru; Tanaka, Tomoharu; and Takeuchi, Ken, 5,828,621, Cl. 365-229.000.
Takeuchi, Toru: *See—*
Ohmori, Kazuo; Okada, Masayuki; Tokumaru, Toyohisa; Takeuchi, Toru; and Itoh, Sumihiko, 5,826,455, Cl. 72-164.000.
Takeuchi, Tutomu: *See—*
Muraoka, Yusuke; and Takeuchi, Tutomu, 5,826,601, Cl. 134-2.000.
Takezoe, Hideo: *See—*
Takeda, Tadashi; Hayashi, Yoshio; Takezoe, Hideo; and Ishikawa, Ken, 5,828,643, Cl. 369-103.000.
Takizawa, Masaaki, to Hitachi, Ltd. Low bit rate coder for still and motion images using sub-sampling. 5,828,411, Cl. 348-415.000.
Takizawa, Yoshinobu; and Goto, Fumihiko, to Lintec Corporation. Printed label, method and apparatus for manufacturing printed labels, and method and apparatus for attaching printed labels. 5,827,389, Cl. 156-234.000.
Talc de Luzenac: *See—*
Fourty, Georges, 5,827,917, Cl. 524-451.000.
Talmadge, Karen D.: *See—*
Reiley, Mark A.; Scholten, Arie; and Talmadge, Karen D., 5,827,289, Cl. 606-86.000.
Talreja, Sanjay: *See—*
Bauer, Mark E.; Talreja, Sanjay; Fazio, Albert; Atwood, Gregory; Javanifard, Johnny; and Frary, Kevin W., 5,828,616, Cl. 365-210.000.
Tamada, Janet: *See—*
Kurnik, Ronald T.; Tamada, Janet; and Tierney, Michael, 5,827,183, Cl. 600-345.000.
Tamai, Kazuhiko: *See—*
Koden, Mitsuhiro; and Tamai, Kazuhiko, 5,828,434, Cl. 349-148.000.
Tamai, Mikitaka, to Sanyo Electric Co., Ltd. Battery apparatus. 5,828,202, Cl. 320-141.000.
Tamai, Shigeki; and Ogawa, Yoshinori, to Sharp Kabushiki Kaisha. Display panel driving method and display apparatus. 5,828,357, Cl. 345-89.000.
Tamaki, Yuji: *See—*
Yamauchi, Yoko; Tamaki, Yuji; Fujimaki, Noboru; and Obi, Toshiyuki, 5,828,829, Cl. 395-183.140.
Tamaoki, Taiki; and Nakabayashi, Hidekazu, to University Technologies International, Inc. Method of expressing genes in mammalian cells. 5,827,686, Cl. 435-69.100.
Tamba, Akihiko; and Kobayashi, Yutaka, to Hitachi, Ltd. Insulated gate semiconductor device having trench gate and inverter provided with the same. 5,828,100, Cl. 257-328.000.
Tamura, Akihiko: *See—*
Wijaranakula, Witawat; and Tamura, Akihiko, 5,827,367, Cl. 117-208.000.
Tamura, Atsushi: *See—*
Shiokawa, Sohjiro; Atsumi, Kunio; Iwamatsu, Katsuyoshi; Tamura, Atsushi; and Shibahara, Seiji, 5,827,845, Cl. 514-206.000.
Tamura, Haruyuki: *See—*
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,828,633, Cl. 369-37.000.
Tamura, Takashi; Fujii, Yozo; Sato, Kenji; Shigetomi, Masahiro; and Matsuoka, Isao, to Konica Corporation. Driving device of developing units and toner replenishing units for use in image forming apparatus. 5,828,934, Cl. 399-228.000.
Tamura, Takayuki: *See—*
Kawaguchi, Hitoshi; Kimura, Koichi; Kamimaki, Hideki; Tamura, Takayuki; and Kobayashi, Kazushi, 5,828,871, Cl. 395-559.000.
Tamura, Yoshikazu; and Yamashita, Yoshinori, to Sumitomo Wiring Systems, Ltd. Method and apparatus for processing a wire. 5,826,472, Cl. 83-72.000.
Tamura, Yoshinori; Yamada, Hiroyuki; and Aoyagi, Muneo, to Kao Corporation. Liquid bleaching agent composition. 5,827,447, Cl. 252-186.380.
Tanaka, Gentaro: *See—*
Tonegawa, Takeshi; Kadowaki, Akira; Tanaka, Gentaro; Itoh, Shigeo; and Kogure, Yuuichi, 5,827,048, Cl. 417-48.000.
Tanaka, Hiroshi: *See—*
Fuwa, Naohide; and Tanaka, Hiroshi, 5,826,564, Cl. 123-491.000.
Tanaka, Kazunori: *See—*
Aoki, Tatsuya; and Tanaka, Kazunori, 5,828,456, Cl. 356-358.000.
Tanaka, Makoto: *See—*
Sasago, Yoshikazu; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Noda, Shinya; Kobayashi, Kazunori; Shoji, Takeo; Ishiwata, Kazuhiko; Shishido, Kazuo; Yano, Kanji; Shirai, Hiroyuki; Tanaka, Makoto; Sasaki, Shinichi; Nomura, Yoshiya; and Karakama, Toshiyuki, 5,828,928, Cl. 399-111.000.
Tanaka, Masashi: *See—*
Shimamune, Takayuki; Wakita, Shuhei; Ashida, Takahiro; Tanaka, Masashi; and Nishiki, Yoshinori, 5,827,412, Cl. 204-252.000.
Tanaka, Shoichi: *See—*
Fujioka, Hiroshi; and Tanaka, Shoichi, 5,828,443, Cl. 356-5.080.
Tanaka, Sigeya: *See—*
Itagaki, Tsuguo; Tomita, Hideo; and Tanaka, Sigeya, 5,828,417, Cl. 348-553.000.
Tanaka, Takaho: *See—*
Shiota, Tetsu; Tokura, Hideki; Morimoto, Kenji; Tanaka, Takaho; Kaneda, Yoshiharu; Itoh, Keiichi; Kimura, Ken; and Kitamura, Shigeo, 5,828,227, Cl. 324-772.000.
Tanaka, Tomoharu: *See—*
Tanzawa, Toru; Tanaka, Tomoharu; and Takeuchi, Ken, 5,828,621, Cl. 365-229.000.
Tanaka, Toshihiro: *See—*
Kato, Masataka; Adachi, Tetsuo; Tanaka, Toshihiro; Sasaki, Toshio; and Kume, Hitoshi, 5,828,600, Cl. 365-185.110.
Tanaka, Toshiya: *See—*
Nishio, Kiyoshi; Ogishi, Kazuhisa; Yasuda, Takeo; and Tanaka, Toshiya, 5,828,170, Cl. 313-493.000.
Tanaka, Toshizumi, to Fuji Photo Optical Co., Ltd. Endoscopically inserting ultrasound probe. 5,827,175, Cl. 600-104.000.
Tanaka, Toshizumi; and Yamanaka, Kazuhiro, to Fuji Photo Optical Co., Ltd. Endoscopic imaging system with rotating photoelectric line sensor. 5,827,176, Cl. 600-109.000.
Tanaka, Tsutomu; Ito, Yukiko; and Yamashita, Hideaki, to Matsushita Electric Ind. Disc control device having reduced seek time by scheduling disc read requests. 5,828,902, Cl. 395-859.000.
Tanaka, Yoshiaki; Yanagiya, Tomoyuki; Matsumoto, Fumiaki; Fukutomi, Masao; Asano, Toshihisa; Komori, Kazunori; and Maeda, Hiroshi, to Sumitomo Heavy Industries, Ltd.; and National Research Institute for Metals. Oxide superconductive wire and process for manufacutring the same. 5,827,801, Cl. 505-230.000.
Tanaka, Yoshihiro; and Nogami, Takashi, to Nissin Electric Co., Ltd. Rotary section current transmitting mechanism. 5,827,080, Cl. 439-164.000.
Tanaka, Yoshinori: *See—*
Taniguchi, Tomohiko; Ohta, Yasuji; Tanaka, Yoshinori; Kurihara, Hideaki; and Sakai, Yoshihiro, 5,828,811, Cl. 395-2.290.
Tandem Computers, Inc.: *See—*
Fisher, Michael E., 5,828,569, Cl. 364-187.000.
Tandrup, Laurie L. Infant support and positioning system. 5,826,287, Cl. 5-655.000.
Tang, Andrew J.: *See—*
Noguchi, Takashi; Reif, Rafael; Tsai, Julie; and Tang, Andrew J., 5,828,084, Cl. 257-65.000.
Tang, Cheng-Long: *See—*
Miyayama, Yoshiyuki; and Tang, Cheng-Long, 5,828,861, Cl. 395-384.000.

Tang, Liang; and Blehm, E. Scot, to Heska Corporation. Dirofilaria and Brugia ankyrin proteins, nucleic acid molecules, and uses thereof. 5,827,692, Cl. 435-69.100.
Tang, Yuqiang; and Reed, John Douglas, to Motorola, Inc. Method for wireless communication system planning. 5,828,960, Cl. 455-446.000.
Tani, Hiroji: *See—*
Nishide, Mitsuyoshi; and Tani, Hiroji, 5,827,605, Cl. 428-209.000.
Tani, Takahiro: *See—*
Mikawa, Yukiharu; Tani, Takahiro; and Kamimizo, Tadateru, 5,828,673, Cl. 371-21.100.
Tanigawa, Hidemi: *See—*
Fujishita, Mikio; and Tanigawa, Hidemi, 5,828,007, Cl. 174-120.00R.
Tanigawa, Takaho, to NEC Corporation. Semiconductor memory device with a stacked capacitance structure. 5,828,097, Cl. 257-306.000.
Taniguchi, Hideki; and Asahina, Katsushi, to Mitsubishi Denki Kabushiki Kaisha. Output buffer circuit. 5,828,260, Cl. 327-387.000.
Taniguchi, Koichi: *See—*
Kubo, Masahiro; Taniguchi, Koichi; Takaoka, Naoki; and Shinohara, Mamoru, 5,828,461, Cl. 358-296.000.
Taniguchi, Naoyuki: *See—*
Koyama, Nobuto; Miyoshi, Eiji; Ihara, Yoshito; Nishikawa, Atsushi; and Taniguchi, Naoyuki, 5,827,687, Cl. 435-69.100.
Taniguchi, Tomohiko; Ohta, Yasuji; Tanaka, Yoshinori; Kurihara, Hideaki; and Sakai, Yoshihiro, to Fujitsu, Limited. Speech signal coding system wherein non-periodic component feedback to periodic excitation signal source is adaptively reduced. 5,828,811, Cl. 395-2.290.
Taniguchi, Yasushi: *See—*
Numata, Yoshito; Asada, Hidehisa; Dohi, Keiji; Fukunaga, Takahiro; and Taniguchi, Yasushi, 5,827,674, Cl. 435-7.940.
Tanihira, Hisamitsu; Nagahori, Kazuo; and Nakano, Renri, to Fujitsu Limited. Method and apparatus for setting the status mode of a central processing unit. 5,828,859, Cl. 395-376.000.
Tanner, Paul Robert; Hertz, Patricia Ritenour; O'Donoghue, Margaret Ann; and Irwin, Christopher, to Procter & Gamble Company, The. Stable photoprotective compositions. 5,827,508, Cl. 424-59.000.
Tano, Michiyasu; and Miyasaka, Tsutomu, to Data Tec Co., Ltd. Movement detecting device. 5,828,987, Cl. 702-150.000.
Tanski, John A.: *See—*
Carter, William A.; Tanski, John A.; Saucedo, Ismael G.; and Gerber, Howard L., 5,827,576, Cl. 427-436.000.
Tanzawa, Hiroshi, to Mukoyama Orchids Ltd. Support for growing/regenerating plant and method of growing/regenerating plant. 5,827,743, Cl. 435-430.000.
Tanzawa, Toru; Tanaka, Tomoharu; and Takeuchi, Ken, to Kabushiki Kaisha Toshiba. Semiconductor memory device and high-voltage switching circuit. 5,828,621, Cl. 365-229.000.
Tapp, William T., to Baker Hughes Incorporated. Hydraulic setting tool. 5,826,652, Cl. 166-120.000.
Target Therapeutics, Inc.: *See—*
Berenstein, Alejandro; and Sepetka, Ivan, 5,826,587, Cl. 128-898.000.
Samson, Gene; and Nguyen, Kim, 5,827,201, Cl. 600-585.000.
Tassoudji, Mohammad Ali; Thompson, James H.; and Standke, Randolph E., to QUALCOMM Incorporated. Dual-band octafilar helix antenna. 5,828,348, Cl. 343-895.000.
Tatge, Reid E.: *See—*
Ehlig, Peter N.; and Tatge, Reid E., 5,829,054, Cl. 711-202.000.
Tatlock, John H.: *See—*
Dressman, Bruce A.; Fritz, James E.; Hammond, Marlys; Hornback, William J.; Kaldor, Stephen W.; Kalish, Vincent J.; Munroe, John E.; Reich, Siegfried Heinz; Tatlock, John H.; Shepherd, Timothy A.; and Rodriguez, Michael J., 5,827,891, Cl. 514-616.000.
Kalish, Vincent J.; Reich, Siegfried Heinz; Tatlock, John H.; and Rodriguez, Michael J., 5,827,858, Cl. 514-307.000.
Kalish, Vincent J.; Reich, Siegfried Heinz; Rodriguez, Michael J.; and Tatlock, John H., 5,827,859, Cl. 514-307.000.
Tatsumi, Eisaku: *See—*
Sunakawa, Shinichi; Shimada, Kazutoshi; Tatsumi, Eisaku; Mori, Shigeki; Matsubayashi, Kazuhiro; Harada, Takashi; Nagasaki, Katsuhiko; and Fukuda, Ryoji, 5,828,568, Cl. 364-184.000.
Tatsumi, Kenzo; Kusunose, Noboru; and Yoshiki, Shigeru, to Ricoh Company, Ltd. Image forming apparatus, toner supply unit, and toner bottle attached thereto. 5,828,935, Cl. 399-260.000.
Tatsuno, Katashi: *See—*
Obara, Rikuro; and Tatsuno, Katashi, 5,826,989, Cl. 384-613.000.
Taylor, Grant. Wheeled vehicle. 5,826,674, Cl. 180-219.000.
Taylor, James F.: *See—*
Harris, Michael R.; and Taylor, James F., 5,827,992, Cl. 89-191.010.
Taylor, Robert E.; and Bull, David W., to Nartron Corporation. Turbidity sensor. 5,828,458, Cl. 356-440.000.
Taylor, Ronald T.: *See—*
Sharma, Sudhir; Taylor, Ronald T.; Runas, Michael E.; and Rao, G. R. Mohan, 5,829,016, Cl. 711-111.000.
Taylor, William G.: *See—*
Brandt, Jeffrey R.; Taylor, William G.; and Miller, James M., 5,827,462, Cl. 264-179.000.
Tazartes, Daniel A.; and Mark, John G., to Litton Systems, Inc. Coning compensation in strapdown inertial navigation systems. 5,828,980, Cl. 701-220.000.
TC Manufacturing Co., Inc.: *See—*
Gebhardt, Terry D., 5,826,724, Cl. 206-554.000.
TDK Corporation: *See—*
Nakayama, Masatoshi; and Shibahara, Masanori, 5,827,613, Cl. 428-408.000.
Yano, Yoshihiko; and Noguchi, Takao, 5,828,080, Cl. 257-43.000.
Teachman, Michael E.: *See—*
Loucks, Gregory R.; Ki, Chuen Shan Simon; Ransom, Douglas S.; Dravnieks, Olaf O.W.; Chivers, David A.; Teachman, Michael E.; and Hart, Ronald G., 5,828,576, Cl. 364-483.000.
Team Worldwide Corporation: *See—*
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Technicas Especiales de Oxigenacion, S.L.: *See—*
Romero Salvo, Gerardo Antonio, 5,826,514, Cl. 101-483.000.
Tecnol Medical Products, Inc.: *See—*
Bowen, Michael L., 5,827,246, Cl. 604-313.000.
Teder, Paul; Larsson, Lars Gustav; and Persson, Håkan Anders, to Telefonaktiebolaget LM Ericsson. Time alignment of transmission in a down-link of CDMA system. 5,828,659, Cl. 370-328.000.
Tegethoff, Helmut; Struberg, Karl; and Czeslik, Paul, to MAN Gutehoffnungshütte Aktiengesellschaft. Process for repairing heat exchanger tubes in tube apparatus. 5,826,335, Cl. 29-890.031.
Tehrani, Saied N.: *See—*
Chen, Eugene; Tehrani, Saied N.; and Cronk, David W., 5,828,598, Cl. 365-158.000.
Teikoku Seiyaku Kabushiki Kaisha: *See—*
Ono, Masahiro; Akazawa, Mitsuji; Seki, Michiko; Iwamoto, Kiyomi; and Konishi, Ryoji, 5,827,529, Cl. 424-448.000.
Teitell, Murray; Pelka, David G.; and Bais, Mathiew, to VR Sports, Inc. Magnetic golf club swing sensor and golf simulator. 5,826,874, Cl. 473-225.000.
Tektronix, Inc.: *See—*
Titterington, Donald R.; Banning, Jeffery H.; King, Clifford R.; and Bui, Loc V., 5,827,918, Cl. 524-590.000.
Telefonaktiebolaget L M Ericsson: *See—*
Sawyer, Francois, 5,828,737, Cl. 379-114.000.
Östlund, Anders, 5,828,311, Cl. 340-825.440.
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von Rohrscheidt, Friedrich, Punch/binding machine. 5,827,034, Cl. 412-40.000.

Voorhis, Daniel, to American Water Heater Company. Low NO, water heater with finned burner. 5,826,569, Cl. 126-361.000.

Voronin, Sergei Petrovich: *See—*
Yanenko, Alexandr Stepanovich; Astaurova, Olga Borisovna; Voronin, Sergei Petrovich; Gerasimova, Tatyana Vasilievna; Kirsanov, Nikolai Borisovich; Paukov, Vladimir Nikolaevich; Polyakova, Inga Nikolaevna; and Debabov, Vladimir Georgierich, 5,827,699, Cl. 435-129.000.

Voss, Darrell W.: *See—*
Klein, Gary D.; and Voss, Darrell W., 5,826,899, Cl. 280-284.000.

Voss, Gerhard: *See—*
Wereniez, Harald; Wittkopf, Thomas; Voss, Gerhard; Remmers, Peter; Katsaros, Mark G.; Polance, Robert Gordon; and Kroll, Mark S., 5,827,252, Cl. 604-367.000.

Voutsas, Tolis, to Sharp Microelectronics Technology, Inc.; and Sharp Kabushiki Kaisha. Method for forming polycrystalline silicon from the crystallization of microcrystalline silicon. 5,827,773, Cl. 438-488.000.

Voyta, John: *See—*
Bronstein, Irena; Edwards, Brooks; and Voyta, John, 5,827,650, Cl. 435-6.000.

VR Sports, Inc.: *See—*
Teitell, Murray; Pelka, David G.; and Bais, Mathiew, 5,826,874, Cl. 473-225.000.

VSSI, Inc.: *See—*
Cranston, Dale, 5,826,286, Cl. 5-606.000.

Vulcan Materials Company: *See—*
Mainz, Eric L.; and Nyberg, Janice M., 5,827,809, Cl. 510-365.000.

Vulgamore, Gary; and May, Kevin T., to Riverwood International Corporation. Divider sheet for stacked products and method of supplying planar articles. 5,826,870, Cl. 271-1.000.

Vutek, Inc.: *See—*
Cleary, Arthur L.; and Duffield, Peter L., 5,828,388, Cl. 347-21.000.

W. E. Williams Enterprises, Inc.: *See—*
Williams, Warren E., 5,826,707, Cl. 200-302.100.

W. L. Gore & Associates, Inc.: *See—*
Repollé, Damian I.; and Principe, Frank S., 5,828,012, Cl. 181-175.000.

W. R. Grace & Co.-Conn.: *See—*
Block, Jacob; and Fan, Xiyun, 5,827,331, Cl. 29-623.500.
Indge, Donald S.; and Straker, William R., 5,826,861, Cl. 256-1.000.
Killinger, Glenn W.; McDonald, Gregory E.; and Zende, Charles C., 5,826,405, Cl. 53-459.000.

W. Schlafhorst AG & Co.: *See—*
Hermanns, Ferdinand; Krüger, Andreas; and Meyer, Urs, 5,826,815, Cl. 242-477.800.

Waanders, Peter W.: *See—*
Sary, Hamid; LaRose, Jeffrey A.; LaRue, Albert D.; and Waanders, Peter W., 5,827,054, Cl. 431-184.000.

Wachi, Masatada, to Yamaha Corporation. Electronic musical instrument with an instruction device for performance practice. 5,827,988, Cl. 84-609.000.

Wacker, Oskar: *See—*
Regenass, Urs; Caravatti, Giorgio; and Wacker, Oskar, 5,827,846, Cl. 514-211.000.

Wada, Katsuo; Onishi, Miyuki; Nakayama, Junichiro; Miyake, Tomoyuki; Iwaki, Takashi; and Yamaguchi, Takeshi, to Sharp Kabushiki Kaisha. Information processing apparatus having a floating-type head. 5,828,512, Cl. 360-75.000.

Wada, Mitsuyoshi: *See—*
Goto, Akihiro; Wada, Mitsuyoshi; and Ozaki, Yoshio, 5,828,027, Cl. 219-69.180.

Waddell, Jennifer E.; Sierakowski, Michael J.; Savu, Patricia M.; Moore, George G. I.; Jariwala, Chetan P.; and Guerra, Miguel A., to Minnesota Mining and Manufacturing Company. Leaching of precious metal ore with fluoroaliphatic surfactant. 5,827,348, Cl. 75-733.000.

Wade, Bruce B. Device for the removal of liquid from canned food products. 5,826,502, Cl. 100-234.000.

Wade, Nicholas D., to Intel Corporation. Method and apparatus for multiplexing signals from a bus bridge to an ISA bus interface and an ATA bus interface. 5,828,854, Cl. 395-308.000.

Wagner, Fritz; Volkel, Dirk; Bommarius, Andreas; and Drauz, Karlheinz, to Degussa Aktiengesellschaft. Microorganisms their use and method of producing L-α-amino acids. 5,827,717, Cl. 435-195.000.

Wagner, Marcus L. Field or board game and method of play. 5,826,876, Cl. 273-244.000.

Wagner, Wayne M.; Barris, Marty A.; Flemming, Douglas E.; Rothman, James C.; and Betts, Peter A., to Donaldson Company, Inc. Muffler with catalytic converter arrangement; and method. 5,828,013, Cl. 181-255.000.

Wakabayashi, Katuhiko, to Hard Lock Kogyo Co. Nut free from inadvertent loosening and a method of making same. 5,827,027, Cl. 411-283.000.

Wake Forest University: *See—*
Townsend, Leroy B.; Drach, John C.; and Kucera, Louis S., 5,827,833, Cl. 514-49.000.

Wakita, Shuhei: *See—*
Shimamune, Takayuki; Wakita, Shuhei; Ashida, Takahiro; Tanaka, Masashi; and Nishiki, Yoshinori, 5,827,412, Cl. 204-252.000.

Wakuda, Hiroshi, to Alps Electric Co., Ltd. Optical recording and/or reproducing apparatus with stupping motor drive frequency which is lower than resonant frequency of transmission system. 5,828,629, Cl. 369-13.000.

Wales, Kenneth S.: *See—*
Schulze, Dale R.; Parashac, Joseph; Fox, William D.; Setser, Michael E.; Wales, Kenneth S.; and Zeiner, Mark S., 5,826,776, Cl. 227-176.100.

Wales, Peter Alexander: *See—*
Doutre, Don Allen; Hay, Gary; and Wales, Peter Alexander, 5,827,982, Cl. 73-863.230.

Walke, Berthold: *See—*
Best, Dieter; Reinhardt, Wilhelm; Rebentrost, Rudolf; Streng, Gunter; and Walke, Berthold, 5,828,147, Cl. 310-71.000.

Walker, Andrew J.: *See—*

Van Dort, Maarten J.; and Walker, Andrew J., 5,828,099, Cl. 257-314.000.

Walker Asset Management Limited Partnership: *See—*
Walker, Jay S.; Schneier, Bruce; and Jorasch, James A., 5,828,751, Cl. 380-25.000.

Walker, Clarence W.: *See—*
Graham, Eric J.; Walker, Clarence W.; Rosen, Louis A.; and Richard, Steven E., 5,828,006, Cl. 174-99.00R.

Walker, Jay S.; Schneier, Bruce; and Jorasch, James A., to Walker Asset Management Limited Partnership. Method and apparatus for secure measurement certification. 5,828,751, Cl. 380-25.000.

Walker, Ted W., to Apple Computer, Inc. Socket simulation protocol for network printing systems. 5,828,855, Cl. 395-309.000.

Walker, William L.; Storey, Mark R.; Knebel, Patrick; and Undy, Stephen R., to Hewlett-Packard Company. Simultaneous execution of two memory reference instructions with only one address calculation. 5,829,049, Cl. 711-168.000.

Wall, Frederick E. C.: *See—*
Elsasser, Glenn R.; and Wall, Frederick E. C., 5,826,382, Cl. 52-181.000.

Wallace Computer Services, Inc.: *See—*
Gregory, Vance P., Jr., 5,826,915, Cl. 283-67.000.

Wallace, Daniel T.: *See—*
Lunsford, John P.; Hlavka, Edwin J.; Roschak, Edmund J.; Wallace, Daniel T.; Gresl, Charles, Jr.; McCallum, David B.; and Mead, Dana G., 5,827,314, Cl. 606-192.000.

Wallace, George William Donald: *See—*
Yazici, Muammer; Richarz, Werner; and Wallace, George William Donald, 5,827,044, Cl. 415-132.000.

Wallenstein, Richard, to LDT GmbH & Co. Laser-Display-Technologie KG. Process and apparatus for generating at least three laser beams of different wavelength for the display of color video pictures. 5,828,424, Cl. 348-760.000.

Wallerstein, Robert W. Shoe construction providing spring action. 5,826,350, Cl. 36-7.800.

Walley, John S., to Rockwell International Corporation. Baseband demodulator for polar or rectangular modulated signal in a cordless spread spectrum telephone. 5,828,692, Cl. 375-200.000.

Wallner, Hermann F.: *See—*
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Wallstedt, Yngve Kenneth: *See—*
Almgren, Knut Magnus; and Wallstedt, Yngve Kenneth, 5,828,948, Cl. 455-34.100.

Walsh, Kathryn: *See—*
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Walston, Randall R.: *See—*
Jacks, David C.; and Walston, Randall R., 5,826,779, Cl. 228-42.000.

Walter Grassle GmbH: *See—*
Rupp, Michael; Schiffer, Werner; Varhaniovsky, Gyula; Kirchner, Thomas; and Asteriadis, Nikolaus, 5,826,696, Cl. 198-392.000.

Walters, Harry J., to Oberg Industries, Inc. Method of making a height compensated laminar stack. 5,826,323, Cl. 29-593.000.

Walz, Ulrich: *See—*
Büngeler, Jörg; Berwind, Manfred; Göppner, Thomas; John, Thomas; Oppitz, Horst; Schmitt, Bernhard; and Walz, Ulrich, 5,826,687, Cl. 188-296.000.

Wan, Kam To: *See—*
Davis, Mark E.; and Wan, Kam To, 5,827,794, Cl. 502-162.000.

Wang, Avery L., to Chromatic Research, Inc. System and method for stack-based processing of multiple real-time audio tasks. 5,828,881, Cl. 395-680.000.

Wang, Chih-Hsien; and Chen, Min-Liang, to Mosel Vitelic, Inc. Method for forming LDD CMOS using double spacers and large-tilt-angle ion implantation. 5,827,747, Cl. 438-199.000.

Wang, Chung-Che. Cooking device. 5,826,494, Cl. 99-340.000.

Wang, Dennis; and Wang, Jessica. Flashing control circuit for decorative light string. 5,828,183, Cl. 315-185.500.

Wang, Jau-Sheng: *See—*
Stolen, Rogers Hall; Vengsarkar, Ashish Madhukar; and Wang, Jau-Sheng, 5,828,802, Cl. 385-27.000.

Wang, Jessica: *See—*
Wang, Dennis; and Wang, Jessica, 5,828,183, Cl. 315-185.500.

Wang, Jin-Der, to Lucent Technologies Inc. Transmission system for digital audio broadcasting. 5,828,954, Cl. 455-260.000.

Wang, John H. S.; Williamson, Weldon S.; and Sorbo, Nelson William, to Raytheon Company. Indoor air pollutant destruction apparatus and method using corona discharge. 5,827,407, Cl. 204-164.000.

Wang, Jyh-yun J.: *See—*
Yeo, Cheuw Lee; and Wang, Jyh-yun J., 5,827,196, Cl. 600-509.000.

Wang, Kenneth, to Team Worldwide Corporation. Air pump. 5,827,052, Cl. 417-478.000.

Wang, Mam-Tsung: *See—*
Chen, Chung-Ju; and Wang, Mam-Tsung, 5,828,113, Cl. 257-391.000.

Wang, Mingyue: *See—*
Rangaraian, Govindaraian; and Wang, Mingyue, 5,828,830, Cl. 395-185.010.

Wang, Shih-Ping. Computer-aided diagnosis system and method. 5,828,774, Cl. 382-128.000.

Wang, Weiping: *See—*
Robinson, Dean Michael; Wang, Weiping; and Nelson, Garth M., 5,828,574, Cl. 364-474.150.

Wang, Wen-Hann: *See—*
Merrell, Quinn; and Wang, Wen-Hann, 5,829,038, Cl. 711-143.000.

Wang, Yi; and Ehman, Richard L., to Mayo Foundation for Medical Education and Research. Dynamic MR digital subtraction angiography with complex subtraction. 5,827,187, Cl. 600-419.000.

Wang, Zhi Mei: *See—*
Rubin, Harvey; Cooperman, Barry; Schechter, Norman; Plotnick, Michael; and Wang, Zhi Mei, 5,827,662, Cl. 435-6.000.

Warburton, Richard Grove: *See—*
Martell, Dennis; Warburton, Richard Grove; Lindner, Laura Ann; and Lindner, Juergen, 5,827,948, Cl. 73-31.060.

Ward, Daniel E., to Vector Slot Machine Company, L.L.C. Slot cabinet and base unit therefor. 5,826,882, Cl. 273-309.000.

Ward, Darrell, to Pioneer/Eclipse Corporation. Enhanced performance carburetor system. 5,827,335, Cl. 48-180.100.

Ward, Richard M.: *See—*
Lee, Mark H.; Carter, Thurman B.; Blizzard, William A., Jr.; and Ward, Richard M., 5,826,651, Cl. 166-117.600.

Ward, William C., Jr.: *See—*
Kershaw, Roger C.; Romano, Frank J.; Swanson, Leonard C.; and Ward, William C., Jr., 5,827,070, Cl. 434-322.000.

Ware, Richard William: *See—*
Day, Robert Charles Lewis; and Ware, Richard William, 5,826,995, Cl. 400-615.200.

Warner, Stanley H.; and Warner, Terry P. Telescoping pole with quick length adjustment. 5,826,847, Cl. 248-354.100.

Warner, Terry P.: *See—*
Warner, Stanley H.; and Warner, Terry P., 5,826,847, Cl. 248-354.100.

Warren, Warren S.: *See—*
Prucnal, Paul R.; and Warren, Warren S., 5,828,474, Cl. 359-123.000.

Washer, Tom J., to Phillips Petroleum Company. Hydrocarbon gas monitor desk. 5,828,307, Cl. 340-632.000.

Washington University: *See—*
Ostlund, Richard E.; and Sherman, William R., 5,827,896, Cl. 514-715.000.

Washino, Komei: *See—*
Seki, Ikuya; Itaya, Yoshitoshi; Shirakami, Yoshifumi; and Washino, Komei, 5,827,498, Cl. 424-1.690.

Wasmuth, John J.: *See—*
Chandy, Kanianthara G.; Cahalan, Michael D.; Grissmer, Stephan; Goldin, Alan L.; Dethlefs, Brent A.; Gutman, George A.; and Wasmuth, John J., 5,827,655, Cl. 435-6.000.

Watada, Tsutom: *See—*
Nakazawa, Takashi; and Watada, Tsutom, 5,828,022, Cl. 200-61.880.

Watanabe, Kazushi; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Yamaguchi, Yoshimasu; Sasago, Yoshikazu; Noda, Shinya; and Kobayashi, Kazunori, to Canon Kabushiki Kaisha. Image forming system and process cartridge having particular arrangement of electrical contacts. 5,828,929, Cl. 399-111.000.

Watanabe, Kazushi: *See—*
Sasago, Yoshikazu; Sekine, Kazumi; Tsuda, Tadayuki; Ikemoto, Isao; Watanabe, Kazushi; Noda, Shinya; Kobayashi, Kazunori; Shoji, Takeo; Ishiwata, Kazuhiko; Shishido, Kazuo; Yano, Kanji; Shirai, Hiroyuki; Tanaka, Makoto; Sasaki, Shinichi; Nomura, Yoshiya; and Karakama, Toshiyuki, 5,828,928, Cl. 399-111.000.

Watanabe, Kei; Kakoki, Hiroyuki; and Ito, Kenzo, to Shiseido Company, Ltd. Emulsion composition. 5,827,920, Cl. 524-833.000.

Watanabe, Kenichi: *See—*
Shirai, Shoji; and Watanabe, Kenichi, 5,828,191, Cl. 315-382.000.

Watanabe, Masahito, to NEC Corporation. Czochralski growing apparatus suppressing growth striation of long large-diameter monocrystalline silicon. 5,827,366, Cl. 117-202.000.

Watanabe, Masaru: *See—*
Hazama, Hiroyuki; Watanabe, Masaru; Terada, Takashi; Ogawa, Hirotsugu; and Ueno, Toru, 5,828,938, Cl. 399-313.000.

Watanabe, Masura: *See—*
Kikuchi, Misao; Kitagawa, Yasushi; Oba, Shuji; Tahara, Tadayuki; Urano, Makoto; Watanabe, Masura; Furuno, Makiko; Hayasaka, Hisayoshi; Yago, Kiyotaka; and Saito, Yoshinori, 5,827,120, Cl. 463-40.000.

Watanabe, Motohiko, to Mitsubishi Denki Kabushiki Kaisha. Vehicular theft preventive system and a theft determining device thereof. 5,828,296, Cl. 340-426.000.

Watanabe, Takanori: *See—*
Yonehara, Takao; Miyawaki, Mamoru; Ishizaki, Akira; Hoshi, Junichi; Sakamoto, Masaru; Sugawa, Shigetoshi; Inoue, Shunsuke; Koizumi, Toru; Kohchi, Tetsunobu; Sakaguchi, Kiyofumi; and Watanabe, Takanori, 5,827,755, Cl. 438-30.000.

Watanabe, Toshio: *See—*
Yamamoto, Kenji; Ichimura, Isao; Maeda, Fumisada; Watanabe, Toshio; and Ohsato, Kiyoshi, 5,828,453, Cl. 356-345.000.

Watanabe, Touichi: *See—*
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Watanabe, Tsutomu: *See—*
Inatani, Akihisa; Nagano, Shuichi; Mita, Kanji; Minami, Shuji; Tamura, Haruyuki; Watanabe, Tsutomu; Katsuyama, Akira; Ishikawa, Masami; and Noshitani, Taiji, 5,828,633, Cl. 369-37.000.

Watanabe, Yoko: *See—*

Motojima, Shozo; Serita, Masanori; and Watanabe, Yoko, 5,827,540, Cl. 424-489.000.

Watanabe, Yoshiki; and Hayata, Hiroshi, to Fuji Xerox Co., Ltd. Method and apparatus for managing coherency in object and page caches. 5,829,022, Cl. 711-118.000.

Watanuki, Shuji: *See*—
Sugauchi, Kiminori; Suzuki, Michio; Kamata, Youji; Watanuki, Shuji; and Aoyama, Takashi, 5,828,842, Cl. 395-200.530.

Wataya, Masafumi; Yanaka, Toshiyuki; Kadowaki, Hidejiro; Tsuchii, Ken; Takahashi, Haruhiko; Takamiya, Makoto; and Yamamoto, Kosuke, to Canon Kabushiki Kaisha. Recording apparatus with compensation for variations in feeding speed. 5,828,387, Cl. 347-14.000.

Waterman, Timothy; Vezmar, John; and Yon, James, to Northrop Grumman Corporation. Electrically short wide-band, wide-scan, slow wave dual notch radiator. 5,828,345, Cl. 343-770.000.

Waters Investments Limited: *See*—
Jarrell, Joseph A.; and Tomany, Michael J., 5,828,062, Cl. 250-288.000.

Watkins, Charles M.; and Dynka, Danny, to Micron Technology, Inc. Low temperature method for evacuating and sealing field emission displays. 5,827,102, Cl. 445-25.000.

Watkins, Charles M.: *See*—
Cathey, David A.; Watkins, Charles M.; and Hofmann, James J., 5,827,101, Cl. 445-24.000.

Watkins, John, to Sun Microsystems, Inc. Implementation of high speed synchronous state machines with short setup and hold time signals. 5,828,872, Cl. 395-559.000.

Watson, James Allen: *See*—
Cliff, Richard G.; Cope, L. Todd; McClintock, Cameron; Leong, William; Watson, James Allen; Huang, Joseph; Ahanin, Bahram; Sung, Chiakang; and Chang, Wanli, 5,828,229, Cl. 326-40.000.

Watson, James D.: *See*—
Wiggins, Philippa M.; Ferguson, Alexander B.; and Watson, James D., 5,827,640, Cl. 435-1.100.

Watts, Kenneth R.: *See*—
Anderton, Peter W.; Haselkorn, Michael H.; Holt, William A.; Metz, Jerry A.; Mikrut, Daniel L.; Watts, Kenneth R.; and Yousefnia, Harry M., 5,826,884, Cl. 277-85.000.

Watts, Leon B., to Le-Ron Plastics Inc. Sewer inspection chamber with back-flow prevention valve and method and apparatus for installing valve in sewer inspection chamber. 5,826,609, Cl. 137-15.000.

Watzel, Donald J.: *See*—
Singkornrat, Paripon; Basnett, Don E., Jr.; Dorak, John; Hamblin, Glen E.; Nguyen, Kha D.; Tsevdos, James T.; and Watzel, Donald J., 5,828,862, Cl. 395-442.000.

WavePhore, Inc.: *See*—
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Weatherford/Lamb, Inc.: *See*—
Lee, Mark H.; Carter, Thurman B.; Blizzard, William A., Jr.; and Ward, Richard M., 5,826,651, Cl. 166-117.600.

Weatherley, Richard. Socket mounting system. 5,827,088, Cl. 439-540.100.

Weaver, Elvin W. Concrete block with offset ledge and installation guide means. 5,826,395, Cl. 52-606.000.

Weaver, Lindsay A., Jr.; and White, Katherine W., to Qualcomm Incorporated. Method and apparatus for providing a cone of silence in a cellular communication system. 5,828,661, Cl. 370-331.000.

Weaver, Mark V.; and Hart, Mark S., to Power Tool Holders Incorporated. Quick release chuck device. 5,826,888, Cl. 279-23.100.

Webb, Arthur: *See*—
Nixon, Mark; Havekost, Robert B.; Jundt, Larry O.; Stevenson, Dennis; Ott, Michael G.; Webb, Arthur; and Lucas, Mike, 5,828,851, Cl. 395-285.000.

Webb, Bruce Allen; and Cui, Liwang, to University of Kentucky Research Foundation. Viral and insect genes that inhibit the immune system and methods of use thereof. 5,827,518, Cl. 424-186.100.

Webb, William Timothy, to British Telecommunications public limited company. QAM system in which the constellation is modified in accordance with channel quality. 5,828,695, Cl. 375-219.000.

Weber, Darrell Curtis: *See*—
Mittel, James Gregory; McKee, John M.; and Weber, Darrell Curtis, 5,828,295, Cl. 340-407.100.

Weber, Gerhard: *See*—
Leitner, Ernst; Schneider, Elisabeth; Schoergendorfer, Kurt; and Weber, Gerhard, 5,827,706, Cl. 435-183.000.

Weber, Gregory T.; Thomas, Christopher P.; Vincent, Michael T.; Weglarz, Michael W.; and Seitz, Gary L., to Chrysler Corporation. Oxygen sensor linearization system and method. 5,826,426, Cl. 60-274.000.

Weber, Michael F.: *See*—
Ouderkirk, Andrew J.; Benson, Olester, Jr.; Cobb, Sanford, Jr.; Jonza, James M.; Weber, Michael F.; Wortman, David L.; and Stover, Carl A., 5,828,488, Cl. 359-487.000.

Weber, Michael G., to Lionel LLC. Coupler arm assembly with distinct uncoupling devices. 5,826,736, Cl. 213-75.00A.

Webster, John M.; Li, Jianxiong; and Chen, Genhui. Xenomins novel heterocyclic compounds with antimicrobial and antneoplastic properties. 5,827,872, Cl. 514-421.000.

Webster, Wilton W., Jr., to Cordis Webster, Inc. Deflectable tip electrode catheter with nylon stiffener and compression coil. 5,827,278, Cl. 606-41.000.

Weedbug Pty. Ltd.: *See*—
Stevens, Alec Martin, 5,826,370, Cl. 47-1.500.

Weeks, Bruce V.; Arthur, Richard; and Ingram, Gary E., to Advanced Cutting Technologies, Inc. Boiler tube removal method. 5,826,334, Cl. 29-890.031.

Weeks, Ian: *See*—
Nelson, Norman Charles; Woodhead, James Stuart; Weeks, Ian; and Cheikh, Azzouz Ben, 5,827,656, Cl. 435-6.000.

Weems, Sterling J.: *See*—
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Weerackody, Vijitha: *See*—
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Weglarz, Michael W.: *See*—
Weber, Gregory T.; Thomas, Christopher P.; Vincent, Michael T.; Weglarz, Michael W.; and Seitz, Gary L., 5,826,426, Cl. 60-274.000.

Wehinger, Horst, to Mercedes-Benz AG. Method and apparatus for evaluating vehicle tire condition by comparing tire operating parameters with present limits overtime. 5,827,957, Cl. 73-146.300.

Weigle, David S.; Kuijper, Joseph L.; Forstrom, John W.; and Lehner, Joyce M., to University of Washington; and Zymogenetics, Inc. Materials and methods for determining ob protein in a biological sample. 5,827,734, Cl. 435-325.000.

Weigum, Hans; and Illi, Oscar E., to Hans Weigum. Device for externally securing fractures. 5,827,284, Cl. 606-59.000.

Weinstein, James N.; and Tolson, Scott A., to General Mills, Inc. Method for making a complexly patterned extrudate. 5,827,557, Cl. 426-249.000.

Weintritt, Donald J.: *See*—
Zaleski, Peter L.; Derwin, David J.; Weintritt, Donald J.; and Russell, George W., 5,826,669, Cl. 175-72.000.

Weir, Steven, to Harris Corporation. Integrated network switch having mixed mode switching with selectable full frame/half frame switching. 5,828,664, Cl. 370-375.000.

Weirauch, Donald F., to Raytheon TI Systems, Inc. Uncooled mercury cadmium telluride infrared devices with integral optical elements. 5,828,068, Cl. 250-370.130.

Weisenberger, Johannes: *See*—
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Weiss, Arno: *See*—
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Weiss, Volker: *See*—
Bergner, Rainer; Droessler, Hubert; Kittscher, Peter; Konkel, Siegfried; Weiss, Volker; and Weltgen, Paul-Otto, 5,827,456, Cl. 264-39.000.

Weissbaeh, Edward. Multi-purpose Hammer. 5,826,466, Cl. 81-26.000.

Weisshaar, Duane E.: *See*—
Porter, Marc D.; and Weisshaar, Duane E., 5,827,417, Cl. 204-489.000.

Welch, James D.: *See*—
Feldman, Richard L., 5,827,033, Cl. 412-3.000.

Welk, Douglas Lynn; and Nguyen, Thac Dinh, to Delco Electronics Corporation. Vehicle speed signal calibration. 5,828,585, Cl. 364-571.010.

Welsh, Thomas J., Jr.: *See*—
Mariol, John V.; and Welsh, Thomas J., Jr., 5,826,285, Cl. 5-99.100.

Weltgen, Paul-Otto: *See*—
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O'Brien, Paul; and Previato, Mario, RE. 35,938, Cl. 439-160.000.

Mori, Keiji: *See*—
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Nishiwaki, Toshikazu: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, RE. 35,939, Cl. 528-308.600.

O'Brien, Paul; and Previato, Mario, to Molex Incorporated. Ejector system for an IC pack connector apparatus. RE. 35,938, Cl. 439-160.000.

Permanent Technologies, Inc.: *See*—
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Plambeck, Eric D.: *See*—
Heinz, Thomas J.; Walker, Thomas A.; and Plambeck, Eric D., RE. 35,940, Cl. 602-19.000.

Previato, Mario: *See*—
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R. B. Schnel, Inc.: *See*—
Scholl, Robert, RE. 35,933, Cl. 220-695.000.

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Sugihara, Shigeharu: *See*—
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Takai, Yasuhiro, to NEC Corporation. Semiconductor memory device synchronous with external clock signal for outputting data bits through a small number of data lines. RE. 35,934, Cl. 365-189.050.

Takeuchi, Hiroshi: *See*—
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Toyo Boseki Kabushiki Kaisha: *See*—
Fukuda, Kouji; Sugihara, Shigeharu; Kamoto, Takeshi; Mori, Keiji; Nishihara, Seiki; Emoto, Katsuya; Nishiwaki, Toshikazu; and Takeuchi, Hiroshi, RE. 35,939, Cl. 528-308.600.

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Bausch & Lomb Incorporated: *See*—
Mowrey-McKee, Mary F.; Proud, David W.; and Minno, George E., B1 096,607, Cl. 422-28.000.

Brookhiser, William L., to Cable Innovations, Inc. Method and apparatus for suppressing cable line transients. B1 216,569, Cl. 361-107.000.

Cable Innovations, Inc.: *See*—
Brookhiser, William L., B1 216,569, Cl. 361-107.000.

Dorough, Joe, Jr. Simulated glass-block structure. B1 622,019, Cl. 52-308.000.

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Palmaz, Julio C., B1 739,762, Cl. 606-108.000.

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Mowrey-McKee, Mary F.; Proud, David W.; and Minno, George E., to Bausch & Lomb Incorporated. Method for cleaning and disinfecting contact lenses. B1 096,607, Cl. 422-28.000.

Palmaz, Julio C., to Expandable Grafts Partnership. Expandable intraluminal graft, and method and apparatus for implanting an expandable intraluminal graft. B1 739,762, Cl. 606-108.000.

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Mowrey-McKee, Mary F.; Proud, David W.; and Minno, George E., B1 096,607, Cl. 422-28.000.

Slage, Randall P., to Advanced Recovery Systems, Inc. Metal and fluoring values recovery from fluoride salt matrices. B1 516,496, Cl. 423-20.000.

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Wincent, Tommy, to Swecoin AB. Document feeding device. B1 215,393, Cl. 400-621.000.

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Allega, Timothy D.: *See*—
Wardenburg, Peter B.; and Allega, Timothy D., 400,289, Cl. D26-118.000.

Allende, Paula Andrea, to U.S. Philips Corporation. Anti cellulite device. 400,261, Cl. D24-215.000.

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Wu, George K. Speaker. 400,207, Cl. D14-214.000.
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Young, Curt: *See*—

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Zaidman, Paul, to Palliser Furniture Ltd. Bridge headboard. 400,033, Cl. D6-505.000.
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Zeller, Noel E. Door lock. 400,077, Cl. D8-339.000.
Zemel, Marc, to Mr. Bar-B-Q, Inc. Long handle grill cleaner. 400,328, Cl. D32-49.000.
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ISSUED OCTOBER 27, 1998

NOTE—First number, class; second number, subclass; third number, patent number

CLASS 2
10 5,826,271
12 5,826,272
69 5,826,273
5,826,274
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175.4 5,826,278
181 5,826,279
322 5,826,280
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CLASS 49
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198 5,826,383
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223.9 5,826,384
236.3 5,826,386
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302.1 5,826,388
308 B1 622,019
309.1 5,826,389
408 5,826,390
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459 5,826,392
473 5,826,393
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1.73 5,827,943
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23.42 5,827,945
24.06 5,827,947
31.06 5,827,948
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116 5,827,954
146 5,827,956
146.3 5,827,957
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204.26 5,827,960
290 R 5,826,459
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466 5,827,964
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514.33 5,827,967
514.39 5,827,968
620 5,827,970
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862.642 5,827,981
863.23 5,827,982
865.3 5,827,983
866 5,827,984
866.5 5,827,985
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512 5,826,463
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198 F 5,826,557
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668 5,827,431
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121.63 5,828,031
121.64 5,828,032
5,828,033
209 5,828,034
216 5,828,035
390 5,828,036
444 5,828,038
486 5,828,039
544 5,827,438
695 5,828,040
702 5,828,041
705 5,828,042

CLASS 220
23.6 5,826,742
480 5,826,743
625 5,826,744
695 RE. 35,933

CLASS 221
40 5,826,745
185 5,826,746
210 5,826,747

CLASS 222
1 5,826,748
5,826,749
79 5,826,750
92 5,826,751
105 5,826,752
153.13 5,826,753
185.1 5,826,754
309 5,826,755
321.3 5,826,756
511 5,826,758
590 5,827,439

CLASS 223
85 5,826,759
5,826,760
112 5,826,761

CLASS 224
270 5,826,762
5,826,763
274 5,826,764
321 5,826,765
5,826,766
324 5,826,767
486 5,826,768
497 5,826,769
607 5,826,770
651 5,826,771

CLASS 225
2 5,826,772

CLASS 226
39 5,826,773
44 5,826,774

CLASS 227
67 5,826,775
176.1 5,826,776
179.1 5,826,777

CLASS 228
42 5,826,779
44.7 5,826,778
217 5,826,780

CLASS 229
114 5,826,781
117.13 5,826,782
120.32 5,826,783
125 5,826,784
162 5,826,785
303 5,826,787
403 5,826,786

CLASS 232
43.2 5,826,789
62.52 5,827,444

CLASS 235
380 5,828,043
5,828,044
455 5,828,045
462 5,828,047
5,828,048
5,828,049
467 5,828,050
472 5,828,051
492 5,828,052
5,828,053

CLASS 236
48 R 5,826,790

CLASS 238
35 5,826,791

CLASS 239
69 5,826,792
124 5,826,793
265.17 5,826,794
318 5,826,795
327 5,826,796
394 5,826,797
403 5,826,798
428.5 5,826,799
505 5,826,800
533.4 5,826,801
533.8 5,826,802
556 5,826,803
585.1 5,826,804
691 5,826,805

CLASS 241
1 5,826,806
19 5,826,807
27 5,826,808
167 5,826,809
222 5,826,810

CLASS 242
345.2 5,826,811
363 5,826,812
383.1 5,826,813
403 5,826,814
477.8 5,826,815
532.6 5,826,816
588.6 5,826,817
615.21 5,826,818

CLASS 244
X14 5,826,819
X16 5,826,820
3.27 5,826,821
17.25 5,826,822
110 B 5,826,823
129.3 5,826,824
137.1 5,826,825
137.3 5,826,826
139 5,826,827
164 5,826,828
165 5,826,829
169 5,826,830
5,826,831
173 5,826,832
183 5,826,833
195 5,826,834

CLASS 246
415 A 5,826,835

CLASS 247
373 5,828,110

CLASS 248
27.3 5,826,836
97 5,826,837
5,826,838
118 5,826,839
5,826,840
5,826,841
118.1 5,826,842
176.1 5,826,843
210 5,826,844
224.61 5,826,845
280.11 5,826,846
345.1 5,826,848
346.06 5,826,849
354.1 5,826,847
415 5,826,850
466 5,826,851
519 5,826,852
552 5,826,853

CLASS 249
91 5,827,440
5,827,441
193 5,827,442

CLASS 250
201.5 5,828,054
214 R 5,828,055
223 B 5,828,056
225 5,828,057
227.14 5,828,058
227.18 5,828,059
231.13 5,828,060
237 G 5,828,061
259.44 5,828,075
288 5,828,062
5,828,063
310 5,828,064
339.07 5,828,066
370.11 5,828,067
370.13 5,828,068
390.01 5,828,069
443.1 5,828,070
492.1 5,828,071
506.1 5,828,073
551 5,828,074

CLASS 251
144 5,826,855
149.9 5,826,854
335.3 5,826,856
355 5,826,788

CLASS 252
8.61 5,827,443
62.54 5,827,445
67 5,827,446
186.38 5,827,447
299.61 5,827,448
299.62 5,827,449
299.63 5,827,450
312 5,827,451
314 5,827,452
321 5,827,453
364 5,827,454

CLASS 254
8 R 5,826,857
17 5,826,858
134 3 R 5,826,859
5,826,860

CLASS 256
1 5,826,861

CLASS 257
24 5,828,076
25 5,828,077
30 5,828,078
39 5,828,079
43 5,828,080
48 5,828,081
57 5,828,082
59 5,828,083
65 5,828,084
80 5,828,085
94 5,828,086
96 5,828,087
98 5,828,088
173 5,828,089
183.1 5,828,090
218 5,828,091
295 5,828,092
5,828,093
296 5,828,094
299 5,828,095
306 5,828,096
5,828,097
310 5,828,098
314 5,828,099
328 5,828,100
330 5,828,101
337 B1 642,666
342 5,828,102
344 5,828,103
5,828,104
350 5,828,106
363 5,828,107
372 5,828,108
5,828,109
377 5,828,111
378 5,828,112
391 5,828,113
401 5,828,114
415 5,828,115
417 5,828,116
458 5,828,117
466 5,828,118
491 5,828,119
499 5,828,120
522 5,828,121
531 5,828,122
536 5,828,123
557 5,828,124
668 5,828,125
695 5,828,126
706 5,828,127
738 5,828,128
751 5,828,129
754 5,828,130
757 5,828,131
759 5,828,132
766 5,828,133
774 5,828,134

CLASS 261
23.2 5,827,455

CLASS 264
39 5,827,456
43 5,827,457
46.2 5,827,458
46.4 5,827,459
171.23 5,827,460
177.1 5,827,461
179 5,827,462
187 5,827,463
211.12 5,827,464
279.1 5,827,466
322 5,827,467
328.16 5,827,465
508 5,827,468
512 5,827,469
604 5,827,470
645 5,827,471
665 5,827,472

CLASS 266
44 5,827,473
5,827,474
135 5,827,475

CLASS 267
64.17 5,826,862
5,826,863
136 5,826,864
188 5,826,865

CLASS 269
7 5,826,866
75 5,826,867

CLASS 270
30.12 5,826,868
52.02 5,826,869

CLASS 271
1 5,826,870

CLASS 273
153 S 5,826,871
156 5,826,872
157 R 5,826,873
243 5,826,875
244 5,826,876
249 5,826,877
256 5,826,878
261 5,826,880
299 5,826,881
309 5,826,882
349 5,826,879

CLASS 277
80 5,826,883
85 5,826,884
302 5,826,885
314 5,826,886
605 5,826,887

CLASS 279
23.1 5,826,888

CLASS 280
6.153 5,826,889
11.18 5,826,890
14.2 5,826,891
33.997 5,826,892
43 5,826,893
86.756 5,826,894
87.042 5,826,895
124.171 5,826,896
250.1 5,826,897
279 5,826,898
284 5,826,899
291 5,826,900
602 5,826,909
618 5,826,910
728.2 5,826,901
5,826,913
735 5,826,902
5,826,903
737 5,826,904
743.1 5,826,905
801.1 5,826,906
808 5,826,907
814 5,826,908

CLASS 283
61 5,826,914
67 5,826,915
91 5,826,916

CLASS 285
24 5,826,918
139.2 5,826,919
305 5,826,920
334 5,826,921
151 5,828,178
159 5,828,179
160 5,828,180
169.3 5,828,181
171 5,828,182
183.06 5,828,827
185.5 5,828,183
209 R 5,828,184
246 5,828,185
290 5,828,186
291 5,828,187
309 5,828,188
368.24 5,828,189
381 5,828,190
382 5,828,191

CLASS 318
139 5,828,192
254 5,828,193
290 5,828,194
366 5,828,195
434 5,828,196
567 5,828,197
640 5,828,198
779 5,828,199
807 5,828,200

CLASS 320
40 5,826,958
104 5,828,201
141 5,828,202
150 5,828,203

CLASS 323
266 5,828,204
268 5,828,205
273 5,828,206
281 5,828,207
282 5,828,208
354 5,828,209

CLASS 324
173 5,828,210
209 5,828,211
230 5,828,212
235 5,828,213
303 5,828,214
306 5,828,215
322 5,828,216
393 5,828,217
427 5,828,218
529 5,828,219
627 5,828,220
662 5,828,221
678 5,828,222
754 5,828,223
755 5,828,224
758 5,828,225
762 5,828,226
772 5,828,227

CLASS 326
35 5,828,228
40 5,828,229
41 5,828,230
81 5,828,231
83 5,828,232
86 5,828,233
98 5,828,234
121 5,828,235
5,828,236
126 5,828,237

CLASS 327
39 5,828,238
51 5,828,239
62 5,828,240
67 5,828,241
5,828,242
99 5,828,243
108 5,828,244
5,828,245
5,828,246
110 5,828,247
113 5,828,248
115 5,828,249
116 5,828,250
143 5,828,251
156 5,828,253
157 5,828,254
5,828,255
161 5,828,256
276 5,828,257
291 5,828,258
376 5,828,259
387 5,828,260
5,828,261
390 5,828,262
512 5,828,263
562 5,828,264
563 5,828,265

CLASS 329
325 5,828,266

CLASS 330
124 D 5,828,268
124 R 5,828,267
275 5,828,269

CLASS 332
106 5,828,270

CLASS 333
10 5,828,272
24.1 5,828,271
127 5,828,273
143 5,828,274
207 5,828,275

CLASS 335
35 5,828,276
132 5,828,277
213 5,828,278
214 5,828,279
216 5,828,280
286 5,828,281
828 5,828,899

CLASS 336
84 R 5,828,282
200 5,828,283

CLASS 337
37 5,828,284
112 5,828,285
343 5,828,286
394 5,828,287

CLASS 338
20 5,828,288
32 S 5,828,291
47 5,828,289
162 5,828,290

CLASS 340
307 5,828,292
310.04 5,828,293
326 5,828,294
407.1 5,828,295
426 5,828,296
5,828,297
458 5,828,298
468 5,828,299
539 5,828,300
5,828,301
540 5,828,302
545 5,828,303
566 5,828,304
573 5,828,306
632 5,828,307
658 5,828,309
664 5,828,308
674 5,828,310
825.44 5,828,311
5,828,312
5,828,313
825.54 5,828,314
825.69 5,828,315
5,828,316
5,828,317
5,828,318
903 5,828,319
942 5,828,320
988 5,828,321
5,828,322

CLASS 341
22 5,828,323
51 5,828,324
52 5,828,325
99 5,828,326
139 5,828,328
155 5,828,329
159 5,828,330

CLASS 342
22 5,828,331
26 5,828,332
70 5,828,333
90 5,828,334
352 5,828,335
357 5,828,336
359 5,828,337
374 5,828,338

CLASS 343
700 MS 5,828,339
5,828,340
702 5,828,341
5,828,342
5,828,343
755 5,828,344
770 5,828,345
826 5,828,346
882 5,828,347
895 5,828,348

CLASS 345
3 5,828,349
11 5,828,351
55 5,828,353
58 5,828,354
59 5,828,355
60 5,828,356
74 5,828,352
89 5,828,357
133 5,828,358
146 5,828,360
150 5,828,361
153 5,828,362
156 5,828,363
163 5,828,364
5,828,365
204 5,828,366
211 5,828,367
213 5,828,368
302 5,828,369
328 5,828,370
5,828,371
330 5,828,372
333 5,828,373
339 5,828,375
341 5,828,374
420 5,828,377
422 5,828,378
429 5,828,379
441 5,828,380
473 5,828,381
501 5,828,382
507 5,828,383
508 5,828,384

CLASS 346
74.2 5,828,385

CLASS 347
9 5,828,386
14 5,828,387
21 5,828,388
23 5,828,389
40 5,828,390
51 5,828,391
71 5,828,393
72 5,828,394
86 5,828,395
111 5,828,396
131 5,828,397
153 5,828,399
238 5,828,400
259 5,828,401

CLASS 348
5.5 5,828,402
7 5,828,403
21 5,828,404
61 5,828,405
220 5,828,406
295 5,828,408
312 5,828,407
374 5,828,409
383 5,828,410
415 5,828,411
5,828,412
422 5,828,413
423 5,828,414
458 5,828,415
512 5,828,416
553 5,828,417
556 5,828,418
563 5,828,419
564 5,828,420
565 5,828,421
614 5,828,422
699 5,828,423
760 5,828,424
845 5,828,425
845.3 5,828,426

CLASS 349
5 5,828,427
40 5,828,428
42 5,828,429
44 5,828,430
86 5,828,431
139 5,828,432
147 5,828,433
148 5,828,434
190 5,828,435

CLASS 351
41 5,828,436
44 5,828,437
137 5,828,438
205 5,828,439

CLASS 353
20 5,826,959
5,826,960
74 5,826,961
82 5,826,962

CLASS 355
32 5,828,441
40 5,828,442

CLASS 356
5.08 5,828,443
28 5,828,444
40 5,828,445
124 5,828,446
152.1 5,828,447
237 5,828,448
5,828,449
301 5,828,450
326 5,828,451
328 5,828,452
345 5,828,453
349 5,828,454
354 5,828,455
358 5,828,456
394 5,828,457
440 5,828,458
444 5,828,459
446 5,828,460

CLASS 358
296 5,828,461
5,828,462
298 5,828,463
299 5,828,464
400 5,828,465
404 5,828,466
428 5,828,467
434 5,828,468
498 5,828,469
504 5,828,470

CLASS 359
15 5,828,471
123 5,828,472
5,828,474
139 5,828,475
152 5,828,476
181 5,828,477
5,828,478
201 5,828,479
206 5,828,480
208 5,828,481
211 5,828,482
216 5,828,483
258 5,828,484
291 5,828,485
341 5,828,486
466 5,828,487
487 5,828,488
5,828,489
557 5,828,490
565 5,828,491
575 5,828,492
584 5,828,493
615 5,828,494
621 5,828,495
626 5,828,496
634 5,828,497
660 5,828,498
676 5,828,499
798 5,828,500
819 5,828,501
5,828,502
824 5,828,503
841 5,828,504
857 5,828,505

CLASS 360
3 5,828,506
48 5,828,507
49 5,828,508
51 5,828,509
5,828,510
69 5,828,511
75 5,828,512
77.08 5,828,513
77.12 5,828,514
78.06 5,828,515
78.14 5,828,516
96.5 5,828,517
99.12 5,828,518
5,828,519
104 5,828,520
5,828,521
105 5,828,522
107 5,828,523
108 5,828,524
113 5,828,525
5,828,526
5,828,527
5,828,528
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5,828,530
5,828,531

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5,828,532
126 5,828,533
132 5,828,534
135 5,828,536
137 5,828,537

CLASS 361

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93 5,828,539
107 B1 216,569
195 5,828,540
280 5,828,542
637 5,828,543
641 5,828,544
683 5,828,545
685 5,828,546
5,828,547
5,828,548
695 5,828,549
697 5,828,550
5,828,551
704 5,828,552
5,828,553
707 5,828,554
784 5,828,555
802 5,828,556

CLASS 362

32 5,826,963
61 5,826,964
74 5,826,965
82 5,826,966
92 5,826,967
119 5,826,968
120 5,826,969
147 5,826,970
188 5,826,971
5,826,972
297 5,826,973
307 5,826,974
414 5,826,975

CLASS 363

20 5,828,557
5,828,558
56 5,828,559
60 5,828,560
62 5,828,561
125 5,828,562
126 5,828,563
141 5,828,564

CLASS 364

140.01 5,828,565
167.05 5,828,566
184 5,828,567
5,828,568
187 5,828,569
412 5,826,976
422 5,828,570
424.027 5,828,571
468.24 5,828,572
468.28 5,828,573
474.15 5,828,574
474.24 5,828,575
483 5,828,576
488 5,828,577
5,828,578
5,828,579
489 5,828,580
5,828,581
528.09 5,828,582
551.01 5,828,583
561 5,828,584
571.01 5,828,585
578 5,828,586
705.02 5,828,587
718.04 5,828,588
724.19 5,828,589
760.01 5,828,590
765 5,828,591

CLASS 365

45 5,828,592
49 5,828,593
63 5,828,594
127 5,828,595
145 5,828,596
156 5,828,597
158 5,828,598
185.08 5,828,599
185.11 5,828,600
185.2 5,828,601
5,828,602
185.21 5,828,603
185.22 5,828,604
185.29 5,828,605
189.05 RE. 35,934
5,828,606
5,828,608
189.11 5,828,607
203 5,828,609
5,828,610
5,828,611
5,828,612
205 5,828,613
208 5,828,614
210 5,828,615
5,828,616
320 5,828,617
221 5,828,618
222 5,828,619
226 5,828,620
229 5,828,621
230.03 5,828,622
230.05 5,828,623
230.06 5,828,624

CLASS 366

176.4 5,826,978
242 5,826,979
337 5,826,981
348 5,826,977

CLASS 367

13 5,828,625
93 5,828,626
140 5,828,627

CLASS 368

66 5,828,628
278 5,828,541

CLASS 369

13 5,828,629
5,828,630
32 5,828,631
5,828,632
37 5,828,633
44.14 5,828,635
44.26 5,828,634
44.27 5,828,636
44.28 5,828,637
54 5,828,638
58 5,828,639
59 5,828,640
77.1 5,828,641
77.2 5,828,642
103 5,828,643
112 5,828,644
178 5,828,645
5,828,646
192 5,828,647
275.1 5,828,648
275.3 5,828,649

CLASS 370

203 5,828,650
219 5,828,651
225 5,828,652
230 5,828,653
233 5,828,654
236 5,828,655
254 5,828,656
289 5,828,657
310 5,828,658
328 5,828,659
330 5,828,660
331 5,828,661
335 5,828,662
347 5,828,663
375 5,828,664
387 5,828,665
389 5,828,666
392 5,828,667
412 5,828,669
516 5,828,670

CLASS 371

2.1 5,828,671
5.5 5,828,672
21.1 5,828,673
22.1 5,828,674
28 5,828,675
37.01 5,828,676
41 5,828,677
62 5,828,678

CLASS 372

6 5,828,679
18 5,828,680
20 5,828,681
26 5,828,682
36 5,828,683
45 5,828,684
5,828,685
57 5,828,686
92 5,828,687
96 5,828,688
98 5,828,689
107 5,828,690

CLASS 374

14 5,826,983
124 5,826,980
149 5,826,982
161 5,826,984

CLASS 375

200 5,828,692
202 5,828,693
208 5,828,694
219 5,828,695
222 5,828,696
5,828,697
223 5,828,698
230 5,828,699
232 5,828,700
233 5,828,701
316 5,828,703
5,828,704
326 5,828,705
5,828,706
330 5,828,707
334 5,828,708
344 5,828,709
5,828,710

CLASS 376

204 5,828,711
246 5,828,712
260 5,828,713
299 5,828,714
409 5,828,715

CLASS 377

10 5,828,716
24 5,828,717

CLASS 378

4 5,828,719
19 5,828,718
38 5,828,720
5,828,721
5,828,722
58 5,828,723
70 5,828,724
98 5,828,725
98.2 5,828,726
140 5,828,727

CLASS 379

29 5,828,728
34 5,828,729
88 5,828,730
5,828,731
89 5,828,732
93.01 5,828,733
93.13 5,828,734
5,828,735
100.13 5,828,736
114 5,828,737
130 5,828,738
140 5,828,739
144 5,828,740
157 5,828,741
199 5,828,742
204 5,828,743
215 5,828,744
230 5,828,746
242 5,828,745
309 5,828,747
399 5,828,748
430 5,828,749
446 5,828,750

CLASS 380

25 5,828,751
46 5,828,752
49 5,828,753
5,828,754

CLASS 381

61 5,828,755
66 5,828,756
68.6 5,828,757
70 5,828,758
71.11 5,828,760
71.5 5,828,759
91 5,828,761
94.8 5,828,762
97 5,828,763
107 5,828,764
188 5,828,765
190 5,828,766
195 5,828,767
333 5,828,768

CLASS 382

103 5,828,770
112 5,828,771
118 5,828,769
119 5,828,772
126 5,828,773
128 5,828,774
132 5,828,775
133 5,828,776
135 5,828,777
145 5,828,778
165 5,828,779
167 5,828,780
5,828,781
173 5,828,782
186 5,828,783
232 5,828,784
5,828,785
236 5,828,786
5,828,787
239 5,828,788
5,828,789
242 5,828,790
244 5,828,791
263 5,828,792
284 5,828,793
298 5,828,794

CLASS 383

200 5,826,985

CLASS 384

133 5,828,795
472 5,826,986
517 5,826,987
572 5,826,988
613 5,826,989

CLASS 385

9 5,828,796
12 5,828,797
5,828,798
16 5,828,799
20 5,828,800
24 5,828,801
27 5,828,802
58 5,828,804
59 5,828,805
78 5,828,806
87 RE. 35,935
88 5,828,803
135 5,828,807

CLASS 386

68 5,828,808
69 5,828,809

CLASS 392

502 5,828,810

CLASS 395

2.29 5,828,811
22 5,828,812
95 5,828,813
102 5,828,814
109 5,828,815
5,828,816
112 5,828,817
117 5,828,818
131 5,828,819
182.04 5,828,820
182.13 5,828,821
182.21 5,828,822
182.22 5,828,823
183.01 5,828,824
183.03 5,828,825
183.06 5,828,826
5,828,828
183.14 5,828,829
185.01 5,828,830
186 5,828,831
187.01 5,828,832
5,828,833
188.01 5,828,834
200.3 5,828,835
5,828,836
200.32 5,828,837
200.33 5,828,840
200.34 5,828,838
5,828,839
200.49 5,828,841
200.53 5,828,842
200.58 5,828,844
200.59 5,828,845
200.68 5,828,846
200.69 5,828,847
200.77 5,828,848
5,828,849
280 5,828,850
285 5,828,851
290 5,828,852
308 5,828,853
5,828,854
309 5,828,855
5,828,856
5,828,857
311 5,828,858
352 5,828,376
376 5,828,859
383 5,828,860
384 5,828,861
442 5,828,862
500 5,828,863
5,828,864
5,828,865
5,828,866
5,828,867
556 5,828,868
5,828,869
558 5,828,870
559 5,828,871
5,828,872
563 5,828,873
587 5,828,874
588 5,828,875
601 5,828,876
670 5,828,877
672 5,828,878
5,828,879
676 5,828,880
680 5,828,881
5,828,882
704 5,828,883
705 5,828,884
5,828,885
709 5,828,886
712 5,828,887
5,828,888
728 5,828,889
733 5,828,890
742 5,828,891
750.01 5,828,892
800 5,828,893
800.2 5,828,894
800.23 5,828,895
800.33 5,828,896
800.43 5,828,897
817 5,828,903
825 5,828,898
836 5,828,900
842 5,828,901
859 5,828,902
878 5,828,904
883 5,828,905
885 5,828,906
888 5,828,907

CLASS 396

2 5,828,908
55 5,828,909
178 5,828,910
236 5,828,911
310 5,828,912
324 5,828,913
378 5,828,914
387 5,828,915
408 5,828,916
424 5,828,917
439 5,828,918
440 5,828,919
463 5,828,920
515 RE. 35,936
538 5,828,921
622 5,828,922
626 5,828,923

CLASS 398

200.58 5,828,843

CLASS 399

16 5,828,924
39 5,828,925
66 5,828,926
101 5,828,927
111 5,828,928
5,828,929
135 5,828,930
159 5,828,931
209 5,828,932
223 5,828,933
228 5,828,934
260 5,828,935
275 5,828,936
301 5,828,937
313 5,828,938
388 5,828,939

CLASS 400

124.13 5,826,990
207 5,826,991
489 5,826,992
569 5,826,993
615.2 5,826,994
5,826,995
621 B1 215,393
642 5,826,996

CLASS 401

52 5,826,997
5,826,998
54 5,826,999
65 5,827,000
145 5,827,001
174 5,827,002

CLASS 402

13 5,827,003
46 5,827,004

CLASS 403

322.1 5,827,005
340 5,827,006

CLASS 404

25 5,827,007
47 5,827,008
75 5,827,009

CLASS 405

27 5,827,011
36 5,827,010
131 5,827,012
180 5,827,013
259.3 5,827,014
286 5,827,015

CLASS 407

115 5,827,016
116 5,827,017

CLASS 408

82 5,827,018
227 5,827,019

CLASS 409

80 5,827,020
231 5,827,021

CLASS 410

78 5,827,022
110 5,827,023
5,827,024

CLASS 411

11 5,827,025
174 5,827,026
283 5,827,027
329 RE. 35,937
368 5,827,028
373 5,827,029
387 5,827,030
480 5,827,031
5,827,032

CLASS 412

3 5,827,033
40 5,827,034

CLASS 414

417 5,827,035
462 5,827,036
556 5,827,037
725 5,827,038
744.6 5,827,039
795.6 5,827,068

CLASS 415

106 5,827,040
112 5,827,041
5,827,042
115 5,827,043
132 5,827,044

CLASS 416

96 A 5,827,045
178 5,827,046
193 A 5,827,047

CLASS 417

48 5,827,048
171 5,827,049
207 5,827,050
478 5,827,052
904 5,827,051

CLASS 419

10 5,828,940
17 5,828,941
38 5,828,942

CLASS 420

40 5,827,476

CLASS 422

28 B1 096,607
56 5,827,477
64 5,827,478
67 5,827,479
68.1 5,827,480
81 5,827,481
82.02 5,827,482
122 5,827,483
171 5,827,484
179 5,827,485
282 5,827,486
297 5,827,487

CLASS 423

20 B1 516,496
235 5,827,488

239.1 5,827,489
5,827,490
328.2 5,827,491
488 5,827,492
588 5,827,493
594 5,827,494
600 5,827,495
659 5,827,496

CLASS 424

1.37 5,827,497
1.69 5,827,498
1.73 5,827,499
9.1 5,827,500
9.33 5,827,501
9.52 5,827,502
5,827,504
49 5,827,505
54 5,827,503
59 5,827,506
5,827,507
5,827,508
60 5,827,509
74 5,827,510
75 5,827,511
78.05 5,827,512
85.2 5,827,513
93.2 5,827,514
5,827,515
93.21 5,827,516
139.1 5,827,517
186.1 5,827,518
231.1 5,827,519
401 5,827,520
405 5,827,521
5,827,522
5,827,523
409 5,827,524
435 5,827,525
440 5,827,526
5,827,527
443 5,827,528
448 5,827,529
449 5,827,530
450 5,827,531
5,827,532
5,827,533
451 5,827,534
5,827,535
5,827,536
5,827,652
472 5,827,537
473 5,827,538
489 5,827,539
5,827,540
5,827,541
616 5,827,542
653 5,827,543
677 5,827,544
678 5,827,545

CLASS 425

116 5,827,546
5,827,547
5,827,548
145 5,827,549

CLASS 426

1 5,827,551
7 5,827,552
59 5,827,550
89 5,827,553
107 5,827,554
112 5,827,555
233 5,827,556
249 5,827,557
274 5,827,558
412 5,827,559
435 5,827,560
513 5,827,561
548 5,827,562
572 5,827,563
620 5,827,564
623 5,827,565

CLASS 427

8 5,827,566
135 5,827,567
136 5,827,568
243 5,827,569
255 5,827,570
255.3 5,827,571
255.4 5,827,572
327 5,827,573
341 5,827,574
380 5,827,575
436 5,827,576
475 5,827,577
479 5,827,578
552 5,827,579
580 5,827,580

CLASS 428

13 5,827,581
34.4 5,827,582
35.2 5,827,583
35.7 5,827,584
36.2 5,827,585
36.6 5,827,586
5,827,587
36.9 5,827,588
40.1 5,827,589
5,827,590
41.7 5,827,591
44 5,827,592
64.1 5,827,593
66.6 5,827,594
71 5,827,595
96 5,827,596
131 5,827,597
5,827,598
141 5,827,599
5,827,600
167 5,827,601
195 5,827,603
209 5,827,604
5,827,605
5,827,606
326 5,827,607
332 5,827,608
354 5,827,609
361 5,827,610
375 5,827,611
378 5,827,612
408 5,827,613
411.1 5,827,614
463 5,827,615
464 5,827,616
484 5,827,617
621 5,827,618

CLASS 429

1 5,827,619
31 5,827,620
176 5,827,621
194 5,827,602

CLASS 430

5 5,827,622
5,827,623
5,827,624
5,827,625
7 5,827,626
18 5,827,627
28 5,827,628
30 5,827,629
63 5,827,630
110 5,827,631
137 5,827,633
270.1 5,827,634
372 5,827,635
461 5,827,636
505 5,827,637
5,827,638
567 5,827,639

CLASS 431

110 5,827,632
121 5,827,053
184 5,827,054
255 5,827,055

CLASS 432

8 5,827,056
205 5,827,057

CLASS 433

9 5,827,058
30 5,827,059
77 5,827,060
93 5,827,061
173 5,827,062
213 5,827,063
216 5,827,064

CLASS 434

29 5,827,065
188 5,827,066
208 5,827,067
225 5,827,069
258 5,828,943
322 5,827,070
323 5,827,071
416 5,827,072

CLASS 435

1.1 5,827,640
5,827,641
2 5,827,642
5,827,643
5,827,644
4 5,827,645
5 5,827,646
5,827,647
5,827,648
6 5,827,649
5,827,650
5,827,651
5,827,653
5,827,654
5,827,655
5,827,656
5,827,657
5,827,658
5,827,659
5,827,660
5,827,661
5,827,662
5,827,663
7.1 5,827,666
5,827,668
7.21 5,827,670
7.22 5,827,671
7.24 5,827,673
7.51 5,827,669
7.92 5,827,672
5,827,673
7.94 5,827,674
8 5,827,675
28 5,827,677
29 5,827,678
5,827,679
34 5,827,680
5,827,681
68.1 5,827,682
69.1 5,827,683
5,827,684
5,827,685
5,827,686
5,827,687
5,827,688
95 5,827,078
125 5,827,689
5,827,691
5,827,692
69.51 5,827,694
69.6 5,827,690
5,827,693
91.2 5,827,695
91.41 5,827,696
101 5,827,697
115 5,827,698
129 5,827,699
144 5,827,700
168 5,827,701
172.1 5,827,702
172.3 5,827,703
5,827,704
5,827,705
178 5,827,707
183 5,827,706
5,827,708
188 5,827,709
190 5,827,710
191 5,827,711
193 5,827,712
5,827,713
194 5,827,714
5,827,715
195 5,827,717
198 5,827,718
5,827,719
201 5,827,720
5,827,721
240.27 5,827,723
252.33 5,827,726
255.2 5,827,724
280 5,827,727
297.2 5,827,729
320.1 5,827,730
5,827,731
325 5,827,733
5,827,734
5,827,735
346 5,827,736
348 5,827,737
349 5,827,738
358 5,827,739
372 5,827,740
374 5,827,741
377 5,827,742
430 5,827,743

CLASS 436

49 5,827,744
54 5,827,745
70 5,827,746
527 5,827,748
534 5,827,749
547 5,827,750

CLASS 438

20 5,827,752
24 5,827,753
28 5,827,751
30 5,827,755
40 5,827,754
50 5,827,756
34.1 5,828,948
38.3 5,878,949
70 5,828,950
89 5,828,951
127 5,828,953
260 5,828,954
324 5,828,955
411 5,828,956
427 5,828,952
428 5,828,957
433 5,828,958
445 5,828,959
446 5,828,960
5,828,961
5,828,962
450 5,828,963
500 5,828,964
550 5,828,965
573 5,828,966

CLASS 463

7 5,827,119
40 5,827,120

CLASS 464

61 5,827,074
79 5,827,075
5,827,076
139 5,827,125
213 5,827,126
225 5,826,874
266 5,827,127
267 5,827,128
164 5,827,080
5,827,081
342 5,827,131
350 5,827,132
262 5,827,167
326 5,827,085
357 5,827,086
395 5,827,087
540.1 5,827,088
567 5,827,089
571 5,827,090
594 5,827,091
620 5,827,092
752 5,827,093
857 5,827,094

CLASS 440

6 5,827,095
89 5,827,096
106 5,827,097

CLASS 441

82 5,827,098

CLASS 442

38 5,827,787
164 5,827,788

CLASS 445

24 5,827,099
5,827,100
5,827,101
25 5,827,102

CLASS 446

71 5,827,103
114 5,827,104
120 5,827,105
128 5,827,106
263 5,827,107
266 5,827,108
373 5,827,109

CLASS 451

5 5,827,110
14 5,827,111
21 5,827,112
36 5,827,113
75 5,827,114
123 5,827,115

CLASS 452

170 5,827,116

CLASS 453

9 5,827,117

CLASS 454

187 5,827,118

CLASS 455

4.2 5,828,945
5.1 5,828,946
8 5,828,944
13.4 5,828,947
162 5,827,794
180 5,827,795

CLASS 503

209 5,827,796

CLASS 504

245 5,827,799
262 5,827,800

CLASS 505

230 5,827,801
430 5,827,797
5,827,798
473 5,827,802

CLASS 507

137 5,827,803
273 5,827,804

CLASS 508

198 5,827,805
332 5,827,806

CLASS 510

118 5,827,807
220 5,827,808
365 5,827,809
369 5,827,810
377 5,827,811
411 5,827,812
443 5,827,813
509 5,827,815

CLASS 514

2 5,827,816
5,827,817
5,827,818
5,827,819
5,827,820
11 5,827,821
5,827,822
12 5,827,823
5,827,824
5,827,825
5,827,826
17 5,827,827
21 5,827,829
25 5,827,828
5,827,830
47 5,827,831
49 5,827,832
5,827,833
54 5,827,834
57 5,827,835
77 5,827,836
103 5,827,837
106 5,827,838
152 5,827,840
169 5,827,841
5,827,842
170 5,827,843
176 5,827,844
206 5,827,845
211 5,827,846
212 5,827,847
215 5,827,849
243 5,827,850
255 5,827,852
5,827,853
292 5,827,855
297 5,827,856
301 5,827,857
307 5,827,858
5,827,859
312 5,827,862
341 5,827,863
352 5,827,865
369 5,827,860
5,827,866
374 5,827,868
5,827,869
383 5,827,861
390 5,827,870
411 5,827,871
421 5,827,872
422 5,827,873
423 5,827,874
424 5,827,875
448 5,827,876
454 5,827,877
458 5,827,878
469 5,827,879
492 5,827,880
512 5,827,881
546 5,827,882
5,827,883
557 5,827,884
558 5,827,885
562 5,827,886
563 5,827,887
5,827,888
565 5,827,889

575 5,827,890
616 5,827,891
648 5,827,892
653 5,827,893
674 5,827,894
690 5,827,895
715 5,827,896
725 5,827,897
734 5,827,898
762 5,827,900

CLASS 518

706 5,827,901
5,827,902
710 5,827,903

CLASS 523

113 5,827,904
124 5,827,905
205 5,827,906
206 5,827,907
210 5,827,913
212 5,827,908
346 5,827,909
400 5,827,910

CLASS 524

89 5,827,911
155 5,827,912
394 5,827,915
425 5,827,916
451 5,827,917
590 5,827,918
5,827,919
833 5,827,920
837 5,827,921
5,827,922
854 5,827,923

CLASS 525

102 5,827,925
123 5,827,924
127 5,827,926
143 5,827,927
217 5,827,928
272 5,827,929
440 5,827,930
453 5,827,931

CLASS 528

308.6 RE. 35,939

CLASS 530

324 5,827,932
409 5,827,934

CLASS 536

23.1 5,827,935
123.12 5,827,937

CLASS 558

459 5,827,938

CLASS 560

205 5,827,939

CLASS 600

15 5,827,170
16 5,827,171
28 5,827,173
33 5,827,174
104 5,827,175
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509 5,827,195
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528 5,827,198
564 5,827,199
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585 5,827,201
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78 5,827,205
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16 5,827,208
19 RE. 35,940
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23 5,827,210
27 5,827,211
53 5,827,212
62 5,827,213

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15 5,827,215
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104 5,827,227
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174 5,827,230
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CLASS 606

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01	:	5,826,714	5,826,396	5,826,975	5,827,313	5,827,810	5,828,336
		5,827,316	5,826,404	5,826,976	5,827,314	5,827,816	5,828,338
		5,827,321	5,826,423	5,826,992	5,827,319	5,827,821	5,828,340
		5,827,705	5,826,432	5,827,004	5,827,323	5,827,824	5,828,348
02	:	5,826,339	5,826,434	5,827,023	5,827,333	5,827,827	5,828,363
		5,826,656	5,826,470	5,827,040	5,827,334	5,827,831	5,828,370
04	:	5,826,298	5,826,503	5,827,058	5,827,340	5,827,858	5,828,374
		5,826,362	5,826,504	5,827,063	5,827,406	5,827,859	5,828,383
		5,826,727	5,826,547	5,827,078	5,827,407	5,827,884	5,828,394
		5,826,808	5,826,575	5,827,099	5,827,414	5,827,889	5,828,454
		5,826,834	5,826,576	5,827,104	5,827,415	5,827,898	5,828,455
		5,826,878	5,826,578	5,827,128	5,827,418	5,827,904	5,828,469
		5,826,913	5,826,582	5,827,129	5,827,424	5,827,927	5,828,477
		5,827,074	5,826,584	5,827,140	5,827,437	5,827,935	5,828,482
		5,827,243	5,826,602	5,827,142	5,827,471	5,827,945	5,828,491
		5,827,327	5,826,603	5,827,145	5,827,490	5,827,958	5,828,493
		5,827,408	5,826,606	5,827,154	5,827,513	5,827,959	5,828,502
		5,827,482	5,826,617	5,827,171	5,827,514	5,827,966	5,828,506
		5,827,753	5,826,621	5,827,180	5,827,515	5,827,969	5,828,511
		5,828,171	5,826,633	5,827,181	5,827,532	5,828,030	5,828,518
		5,828,226	5,826,653	5,827,183	5,827,535	5,828,031	5,828,529
		5,828,249	5,826,682	5,827,188	5,827,539	5,828,034	5,828,530
		5,828,514	5,826,731	5,827,200	5,827,552	5,828,073	5,828,531
		5,828,545	5,826,738	5,827,201	5,827,580	5,828,078	5,828,532
		5,828,598	5,826,744	5,827,202	5,827,583	5,828,099	5,828,534
		5,828,607	5,826,748	5,827,203	5,827,609	5,828,102	5,828,538
		5,828,735	5,826,749	5,827,204	5,827,622	5,828,110	5,828,569
		5,828,738	5,826,779	5,827,207	5,827,648	5,828,118	5,828,575
		5,828,753	5,826,791	5,827,208	5,827,649	5,828,126	5,828,578
		5,828,825	5,826,803	5,827,212	5,827,651	5,828,135	5,828,579
		5,828,893	5,826,807	5,827,218	5,827,655	5,828,138	5,828,580
		5,828,952	5,826,819	5,827,223	5,827,656	5,828,176	5,828,587
		5,829,029	5,826,823	5,827,225	5,827,657	5,828,182	5,828,592
05	:	5,826,400	5,826,828	5,827,230	5,827,694	5,828,197	5,828,601
		5,826,448	5,826,829	5,827,237	5,827,702	5,828,200	5,828,602
06	:	RE. 35,940	5,826,830	5,827,242	5,827,703	5,828,223	5,828,603
		5,826,278	5,826,831	5,827,265	5,827,707	5,828,229	5,828,606
		5,826,288	5,826,852	5,827,268	5,827,711	5,828,230	5,828,608
		5,826,310	5,826,874	5,827,269	5,827,721	5,828,231	5,828,609
		5,826,325	5,826,906	5,827,272	5,827,729	5,828,232	5,828,610
		5,826,326	5,826,910	5,827,273	5,827,737	5,828,233	5,828,616
		5,826,340	5,826,916	5,827,277	5,827,741	5,828,236	5,828,623
		5,826,346	5,826,919	5,827,278	5,827,762	5,828,238	5,828,626
		5,826,350	5,826,922	5,827,289	5,827,771	5,828,243	5,828,655
		5,826,369	5,826,923	5,827,290	5,827,775	5,828,245	5,828,658
		5,826,377	5,826,927	5,827,293	5,827,777	5,828,254	5,828,664
		5,826,384	5,826,934	5,827,299	5,827,780	5,828,268	5,828,670
		5,826,387	5,826,958	5,827,304	5,827,785	5,828,329	5,828,675
		5,826,394	5,826,973	5,827,305	5,827,794	5,828,330	5,828,676

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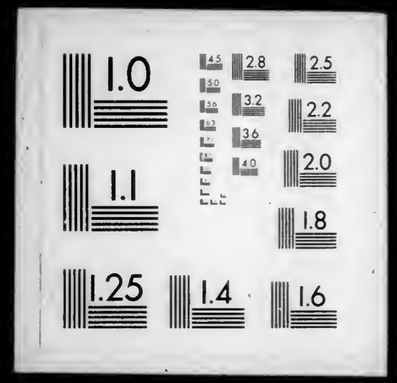
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